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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
April 7, 1987 Volume 1077 Number 1

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Apr. 1, 1987 and was announced in the *Official Gazette* at 1077 O.G. 3 on Apr. 7, 1987.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

Schedule of current PCT fees effective Apr. 1, 1987

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
If paid before Apr. 1, 1987:	1015.00
If paid on or after Apr. 1, 1987:	1180.00
International fees	
Basic fee (first 30 pages):	430.00
Basic Supplemental fee (for each page over 30):	8.00
Designation fee for the first 10 national or regional offices:	105.00
Designation fee for 11th and subsequent designations:	No charge

DONALD J. QUIGG,
Mar. 23, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Patent Cooperation Treaty (PCT) Update

Change in International Search Fee Charged by the European Patent Office Effective Apr. 1, 1987.

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that, due to changes in the exchange rate of the U.S. dollar with regard to the German Mark, effective Apr. 1, 1987, the dollar amount of the International search fee charged by the European Patent Office for PCT applications filed in the United States Receiving Office will be $1,180.00.

DONALD J. QUIGG,
Mar. 23, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 3, 1984, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,439,871 through 4,441,210
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
dn By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) $ 55.00
By other than a small entity $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 18, 1987, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,368,544	06/277,634	1/18/83
4,368,548	06/342,285	1/18/83
4,368,550	06/252,912	1/18/83
4,368,553	06/250,540	1/18/83
4,368,556	06/230,588	1/18/83
4,368,564	06/291,647	1/18/83
4,368,569	06/236,703	1/18/83
4,368,587	06/225,381	1/18/83
4,368,588	06/233,069	1/18/83
4,368,594	06/233,936	1/18/83
4,368,619	06/218,810	1/18/83
4,368,646	06/241,717	1/18/83
4,368,672	06/220,804	1/18/83
4,368,673	06/256,862	1/18/83
4,368,690	06/234,106	1/18/83
4,368,718	06/275,627	1/18/83
4,368,745	06/280,446	1/18/83
4,368,746	06/268,691	1/18/83
4,368,763	06/224,708	1/18/83
4,368,771	06/270,627	1/18/83
4,368,777	06/233,258	1/18/83
4,368,784	06/254,386	1/18/83
4,368,792	06/282,034	1/18/83
4,368,795	06/260,848	1/18/83
4,368,801	06/241,797	1/18/83
4,368,827	06/246,045	1/18/83
4,368,857	06/223,807	1/18/83
4,368,884	06/228,720	1/18/83
4,368,887	06/244,667	1/18/83
4,368,894	06/265,245	1/18/83
4,368,909	06/249,103	1/18/83
4,368,919	06/233,145	1/18/83
4,368,921	06/239,593	1/18/83
4,368,932	06/256,488	1/18/83
4,368,933	06/302,070	1/18/83
4,368,960	06/289,518	1/18/83
4,368,962	06/229,667	1/18/83
4,368,986	06/291,185	1/18/83
4,369,000	06/216,955	1/18/83
4,369,024	06/273,426	1/18/83
4,369,043	06/340,492	1/18/83
4,369,060	06/222,512	1/18/83
4,369,073	06/256,121	1/18/83
4,369,083	06/216,617	1/18/83
4,369,084	06/313,188	1/18/83
4,369,089	06/257,090	1/18/83
4,369,094	06/329,565	1/18/83
4,369,111	06/293,172	1/18/83
4,369,118	06/220,457	1/18/83
4,369,121	06/274,745	1/18/83
4,369,122	06/234,944	1/18/83
4,369,129	06/253,080	1/18/83
4,369,148	06/284,830	1/18/83
4,369,175	06/288,236	1/18/83
4,369,180	06/300,992	1/18/83
4,369,192	06/270,089	1/18/83
4,369,196	06/260,397	1/18/83
4,369,204	06/343,809	1/18/83
4,369,221	06/243,630	1/18/83
4,369,250	06/288,989	1/18/83
4,369,262	06/283,761	1/18/83
4,369,279	06/313,590	1/18/83
4,369,283	06/241,092	1/18/83
4,369,286	06/317,830	1/18/83
4,369,297	06/307,345	1/18/83
4,369,325	06/292,002	1/18/83
4,369,358	06/252,155	1/18/83
4,369,360	06/252,782	1/18/83
4,369,365	06/256,597	1/18/83
4,369,375	06/252,386	1/18/83
4,369,382	06/267,437	1/18/83
4,369,384	06/335,555	1/18/83
4,369,399	06/248,969	1/18/83
4,369,421	06/283,815	1/18/83
4,369,429	06/246,230	1/18/83
4,369,437	06/244,202	1/18/83
4,369,460	06/231,559	1/18/83
4,369,489	06/223,494	1/18/83
4,369,492	06/244,123	1/18/83

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,328,588, Re. S.N. 013,981, Filed Feb. 12, 1987, Cl. 375/106, SYNCHRONIZATION SYSTEM FOR DIGITAL DATA, Richard A. Smithson, Owner of Record: *Rockwell International Corp., El Segundo, Calif.,* Attorney or Agent: David J. Arthur, et al., Ex. Gp.: 263

4,444,174, Re. S.N. 013,951, Filed Feb. 12, 1987, Cl. 125/23T, TILE PARTING DEVICE, Paul S. Hepworth, et al., Owner of Record: *Plas Plugs Ltd., Derby, England,* Attorney or Agent: W. Robert Spensley, et al., Ex. Gp.: 323

4,461,046, Re. S.N. 012,311, Filed Feb. 9, 1987, Cl. 4/235, FAMILY TOILET SEAT, Harold D. Adams, Owner of Record: *Inventor,* Attorney or Agent: Jacob Shuster, et al., Ex. Gp.: 243

4,472,118, Re. S.N. 908,620, Filed Sept. 18, 1986, Cl. 417/517, MULTI-WAY VALVES FOR PUMPS FOR CONVEYING HEAVY FLOWABLE MATERIAL, Friedrich Schwing, Owner of Record: *Friedrich Wilh Schwing GmbH, Herne, West Germany,* Attorney or Agent: Frederick E. Lange, et al., Ex. Gp.: 343

4,481,727, Re. S.N. 899,058, Filed Aug. 22, 1986, Cl. 036/83, SHOE SOLE CONSTRUCTION, Jerry D. Stubblefield, Owner of Record: *Pensa, Inc., Portland, Oreg.,* Attorney or Agent: Perry J. Saidman, et al., Ex. Gp.: 247

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4,488,823, Re. S.N. 939,551, Filed Dec. 9, 1986, Cl. 374/170, SELECTIVE TEMPERATURE CONTROL SYSTEM, Daniel A. Baker, Owner of Record: *Whirlpool Corp., Benton Harbor, Mich.*, Attorney or Agent: Thomas E. Turcottle, et al., Ex. Gp.: 240

4,492,597, Re. S.N. 940,721, Filed Dec. 9, 1986, Cl. 72/092, 1,5-DIPHENYL DERIVATIVE OF 1H-1,2,4-TRIAZOLE-3-CARBOXAMIDE AND HERBICIDE CONTAINING THE SAME, Katsumichi Aoki, et al., Owner of Record: *Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Arthur R. Crawford, et al., Ex. Gp.: 129

4,499,226, Re. S.N. 014,739, Filed Feb. 13, 1987, Cl. 524/382, HIGH CLARITY COLORLESS POLYESTERS, Douglas D. Callander, et al., Owner of Record: *Goodyear Tire & Rubber Co., Akron, Ohio,* Attorney or Agent: Alvin T. Rockhill, et al., Ex. Gp.: 155

4,545,523, Re. S.N. 007,750, Filed Jan. 28, 1987, Cl. 232/43.1, WASTE MATERIAL HANDLING CONTAINER WITH LIQUID TIGHT DOOR SEAL, Donald E. Galbreath, et al., Owner of Record: *Galbreath, Inc., Winamac, Ind.*, Attorney or Agent: Harold R. Woodward, et al., Ex. Gp.: 333

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,638,439, Reexam. No. 90/001,177, Requested: Feb. 24, 1987, Cl. 405/159, EMBEDDING CABLELIKE MEMBERS, Otto Neiderer, Owner of Record: *Aqua-Tech, Inc., Norwich, Conn.*, Attorney or Agent: Robert E. Hillman, Ex. Gp.: 350, Requester: Jeff Gill, Pompano Beach, Fla.

3,778,308, Reexam. No. 90/001,181, Requested: Feb. 25, 1987, Cl. 428/421, MAGNETIC STORAGE DEVICE COATING AND PROCESS, Kent G. Roller, et al., Owner of Record: *Ball Brothers Research Corp., Muncie, Ind.*, Attorney or Agent: Gilbert E. Alberding, Ex. Gp.: 150, Requester: Xidex Corp., Mountain View, Calif.

4,218,786, Reexam. No. 90/001,180, Requested: Feb. 24, 1987, Cl. 4/206, WATER SAVING TRAP PRIMER, Joseph Taglarino, Owner of Record: *Inventor, Tampa, Fla.*, Attorney or Agent: None, Ex. Gp.: 240, Requester: Robert Kraverath, N. Lauderdale, Fla.

4,366,241, Reexam. No. 90/001,179, Requested: Mar. 4, 1987, Cl. 435/7, CONCENTRATING ZONE METHOD IN HETEROGENEOUS IMMUNOASSAYS, Henry K. Tom, et al., Owner of Record: *Syva Co., Palo Alto, Calif.*, Attorney or Agent: Theodore J. Leitereg, Ex. Gp.: 130, Requester: Owner

4,426,339, Reexam. No. 90/001,178, Requested: Mar. 2, 1987, Cl. 264/22, METHOD OF MAKING ELECTRICAL DEVICES COMPRISING CONDUCTIVE POLYMER COMPOSITIONS, Hundi P. Kamath, et al., Owner of Record: *Raychem Corp., Menlo, Calif.*, Attorney or Agent: Lyon & Lyon, Ex. Gp.: 130, Requester: Owner

4,478,094, Reexam. No. 90/001,183, Requested: Mar. 6, 1987, Cl. 73/863.320, LIQUID SAMPLE HANDLING SYSTEM, Kari Salomaa, et al., Owner of Record: *Cetus Corp., Emeryville, Calif.*, Attorney or Agent: Albert P. Halluin, Ex. Gp.: 260, Requester: Owner

4,496,553, Reexam. No. 90/001,176, Requested: Feb. 27, 1987, Cl. 514/166, PHARMACEUTICAL COMPOSITION AND METHOD FOR THE TREATMENT OF COLITIS ULCEROSA AND CROHN'S DISEASE BY ORAL ADMINISTRATION, Soren Halskov, Owner of Record: *Farmaceutisk Laboratorium Ferring A/S, Vanlose, Denmark,* Attorney or Agent: Fleit, Jacobson, et al., Ex. Gp.: 120, Requester: Millen & White, Arlington, Va.

4,555,957, Reexam. No. 90/001,182, Requested: Mar. 6, 1987, Cl. 73/864, BI-DIRECTIONAL LIQUID SAMPLE HANDLING SYSTEM, Arthur E. Frankel, et al., Owner of Record: *Cetus Corp., Emeryville, Calif.*, Attorney or Agent: Arthur Halluin, Ex. Gp.: 260, Requester: Owner

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Errata

"All reference to Patent No. 4,640,108, to Quentin H. Young, San Antonio, Tex., for 'DOOR LOCKING SYSTEM' appearing in the Official Gazette of Feb. 3, 1987, should be deleted since no patent was granted."

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representative, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Ad Art, Inc., Columbus, Ohio, Reg. No. 913,665, for the mark "RUMPERSTICKER", Canc. No. 16,021.

Melville Corp., assignee, of Melville Shoe Corp., New York, N.Y., Reg. No. 860,199, for the mark "GETAWAYS", Canc. No. 16,035.

ERMA S. BROWN,
Administrator of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Listing of Commercial Bonded Draftsmen

The following listing of bonded draftsmen supersedes the listing published on Sept. 24, 1985 at 1058 O.G. 27.

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Alexandria, Va. 22314
(703) 548-3766

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Arlington, Va. 22215

Publication of this list does not constitute a recommendation or endorsement of any individual or firm by the Patent and Trademark Office. All arrangements for drafting related services are the sole responsibility of users of such services.

Mar. 11, 1987.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Patent Term Extended Under 35 USC 156

A certificate extending the term of the following patent was issued on Mar. 11, 1987.

PATENT NO. 4,024,163, granted May 17, 1977, to Elliott, et al., Owner of Record: National Research Development Corp., Title: INSECTICIDES, Classification: 514-461, Term Extended: 2 years.

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PATENT NOTICES

Certificates of Correction for the Week of Apr. 7, 1987

Re. 32,172	4,592,373	4,612,518	4,624,667
Re. 32,299	4,593,200	4,612,697	4,625,841
D. 284,503	4,593,593	4,613,302	4,625,880
D. 287,146	4,594,003	4,613,571	4,626,376
D. 287,199	4,594,391	4,614,135	4,626,845
3,943,105	4,595,723	4,614,549	4,626,941
4,322,928	4,597,007	4,615,183	4,627,012
4,326,090	4,597,258	4,615,988	4,627,021
4,443,082	4,598,605	4,616,063	4,627,456
4,495,051	4,601,029	4,616,343	4,627,737
4,522,214	4,601,638	4,617,478	4,628,127
4,531,993	4,601,806	4,617,658	4,628,613
4,546,758	4,602,061	4,618,735	4,628,760
4,553,276	4,602,127	4,619,053	4,630,678
4,554,709	4,602,800	4,619,251	4,631,086
4,555,951	4,603,403	4,619,710	4,631,666
4,563,666	4,603,418	4,619,914	4,631,760
4,568,415	4,604,178	4,620,161	4,632,156
4,571,242	4,604,665	4,620,287	4,632,673
4,571,369	4,606,469	4,620,405	4,632,924
4,571,371	4,609,074	4,620,614	4,633,441
4,574,518	4,609,229	4,622,462	4,633,602
4,578,066	4,609,396	4,622,477	4,634,005
4,580,605	4,609,941	4,622,548	4,634,213
4,584,822	4,610,002	4,622,615	4,634,337
4,585,632	4,610,540	4,623,551	4,634,736
4,585,708	4,610,797	4,623,859	4,634,843
4,586,679	4,610,938	4,623,958	4,636,612
4,587,479	4,610,990	4,624,019	4,637,896
4,588,466	4,611,367	4,624,173	4,638,077
4,591,573	4,612,418	4,624,494	

Disclaimers

4,078,566—*Joseph J. Urban, Jr.*, Richboro, Pa. UNIT-DOSING-NIPPLE. Patent dated Mar. 14, 1978. Disclaimer filed Dec. 19, 1986, by the *inventor*.

The term of this patent subsequent to Dec. 13, 1986, has been disclaimed.

4,222,263—*Clifford M. Armstrong*, Leek Wootton, England. CRANKSHAFT POSITION TRANSDUCER SYSTEM. Patent dated Sept. 16, 1980. Disclaimer filed Dec. 16, 1986, by the assignee, *Lucas Industries Ltd.*

The term of this patent subsequent to Nov. 1, 1986, has been disclaimed.

4,372,779—*Takeshi Sugiyama*; *Shoji Shirouchi*; *Osamu Tsuchiya*, Kobe; *Mamoru Onoda*, Miki; *Atsuko Yamashita*, *Isao Fujita*, and *Nobuyuki Imanishi*, Kobe, Japan. IRON ORE PELLETS CONTAINING COARSE ORE PARTICLES. Patent dated Feb. 8, 1983. Disclaimer filed Dec. 9, 1986, by the assignee, *Kobe Steel, Ltd.*

Hereby enters this disclaimer to all claims of said patent.

4,623,542—*Glenn Wallin*, Minneapolis; *Diane Rosenwald*, Brooklyn Park; *James Citti*, Minneapolis; and *Samuel Yong*, Minneapolis, Minn. HIGH STABILITY, HIGH FLAVOR, BREAKFAST PASTRY AND METHOD FOR PREPARING THE SAME. Patent dated Nov. 18, 1986. Disclaimer filed Jan. 16, 1987, by the assignee, *The Pillsbury Co.*

The term of this patent subsequent to Sept. 16, 2003 has been disclaimed.

Disclaimers and Dedications

4,559,237—*Kurt Meier*, Allschwil; *Niklaus Buherl*, Rheinfelden; *Jean-Francois Reber*, Riehen, all of Switzerland. PROCESS FOR THE DEPOSITION OF METALS ON SEMICONDUCTOR POWDERS. Patent dated Dec. 17, 1985. Disclaimer and Dedication filed Dec. 12, 1986, by the assignee, *Ciba-Geigy Corp.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,619,838—*Kurt Meier*, Allschwil; *Niklaus Buhler*, Rheinfelden; *Jean-Francois Reber*, Riehen, all of Switzerland. PROCESS FOR THE DEPOSITION OF METALS ON SEMICONDUCTOR POWDERS. Patent dated Oct. 28, 1986. Disclaimer and Dedication filed Dec. 15, 1986, by the assignee, *Ciba-Geigy Corp.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

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	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
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	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF February 14, 1987

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-22-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-26-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	7-25-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	2-25-85
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-19-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	7-03-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	1-25-85
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	2-22-85
DESIGN, GROUP 290—K. L. CAGE, Director	8-09-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-29-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-06-85
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	8-12-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during February 1987, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,492,672 to 3,497,871, inclusive
Plant Patents ..... None

REEXAMINATIONS

APRIL 7, 1987

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Des. 269,745 (662nd)
SETTEE
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Reexamination Request No. 90/000,721, Feb. 11, 1985.
Reexamination Certificate for Patent No. Des. 269,745, issued Jul. 19, 1983, Ser. No. 337,607, Jan. 7, 1982.
U.S. Cl. D6—381

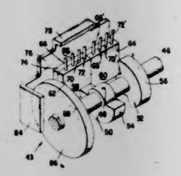


AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 1 is confirmed.

The ornamental design for a settee, substantially as shown and described.

B1 3,815,531 (663rd)
SEWING MACHINE EQUIPPED WITH PULSE GENERATOR
John W. Wurst, Dover, and James E. O'Brien, Kenilworth, both of N.J., assignors to The Singer Company, New York, N.Y.
Reexamination Request No. 90/000,925, Dec. 16, 1985.
Reexamination Certificate for Patent No. 3,815,531, issued Jun. 11, 1974, Ser. No. 364,835, May 29, 1973.
Int. Cl.[4] D05B *69/10*
U.S. Cl. 112—220



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

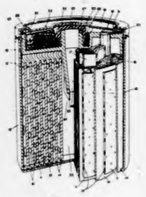
Claims 2–6 are cancelled.

Claims 1 and 7 are determined to be patentable as amended.

Claim 8, dependent on an amended claim, is determined to be patentable.

1. [In a] *A* sewing machine having stitch forming instrumentalities including *a* needle *carrying* bar, actuating means including a [main] *drive* shaft operatively connected [to] *thereto*, means for controlling said stitch forming instrumentalities *to form a stitch pattern*, and [pulse generator] means [driven by said main-shaft and providing], *for generating signals detectable by said means for controlling said stitch forming instrumentalities, said signal generating means including a plurality of sensors, each sensor responsive individually to rotation of said drive shaft, said sensors together generating* at least three successively different [digitally coded signals] *digital codes each* related to a preselected angular [positions] *position* of said [main] *drive* shaft, *in which the signals detectable by said controlling means constitute a predetermined sequence of occurrence of particular ones of said successively different digital codes, whereby said signals can be generated only* upon movement of said [main-] *drive* shaft in one direction [of rotation] for synchronizing said controlling means with said shaft.

B1 3,862,861 (664th)
MAINTENANCE-FREE TYPE LEAD ACID
Donald H. McClelland, Littleton, and John L. Devitt, Denver, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.
Reexamination Request No. 90/000,747, Mar. 28, 1985.
Reexamination Certificate for Patent No. 3,862,861, issued Jan. 28, 1975, Ser. No. 257,719, May 30, 1972.
Continuation of Ser. No. 62,227, Aug. 3, 1970, abandoned.
Int. Cl.[4] H01M *2/14, 4/73, 10/12*
U.S. Cl. 429—57



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **12–20** is confirmed.

Claims **4, 9** and **11** are cancelled.

Claims **1, 10** and **21–23** are determined to be patentable as amended.

Claims **2, 3** and **5–8**, dependent on an amended claim, are determined to be patentable.

New claims **24–32** are added and determined to be patentable.

1. A maintenance-free type lead acid cell which sustains substantial overcharge in any indiscriminate attitude of the cell, said cell operating in a normally sealed configuration utilizing an "oxygen" cycle, comprising:

[non-self-supporting] lead based grids *which do not support themselves in the cell* having a high hydrogen overvoltage, said grids pasted with active material to form porous positive and negative plates;

an electrolyte absorbing and retaining separator material characterized by having a high heat of wetting *and high surface area* and intimately contacting [adjacnt] *adjacent*, opposite polarity plates;

[an] *a liquid* electrolyte *present in a starved amount* absorbed and retained by said separator and by said plates to the degree that no free unabsorbed electrolyte is present in the cell, said plates containing a thin layer of electro-

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lyte on said active material sufficient to sustain electrochemical reactions at the plates and permitting oxygen transfer to and from the active material through a void volume formed in substantially all of the pores of said plates, said thin layer of electrolyte uniformly distributed throughout said plates and said void volume formed by virtue of the presence of only the thin layer of electrolyte on the active material [.];

a container tightly constraining said plates, separator and absorbed electrolyte under firm stacking pressure to form a self-supporting integral cell.

B1 3,982,261 (665th)

EPITAXIAL INDIUM-GALLIUM-ARSENIDE PHOSPHIDE LAYER ON LATTICE-MATCHED INDIUM-PHOSPHIDE SUBSTRATE AND DEVICES

George A. Antypas, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

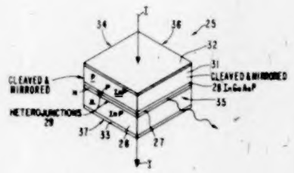
Reexamination Request No. 90/000,424, Jul. 25, 1983.
Reexamination Certificate for Patent No. 3,982,261, issued Sep. 21, 1976, Ser. No. 496,487, Aug. 12, 1974.
Continuation of Ser. No. 291,457, Sep. 22, 1972, abandoned.
Int. Cl.⁴ H01L *29/205, 31/00;* **H01S** *31/19*
U.S. Cl. 357—16

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINTED THAT:

Claims 1-9 are cancelled.

[1. A lattice-matched heterojunction device comprising:

a substrate comprising a binary III-V compound of the elements indium and phosphorus and having a lattice constant falling within the range of 5.45 to 6.05 angstrons;



an epitaxial quaternary III-V layer of the compound InGaAsP joined to the surface of said substrate to form a heterojunction with said substrate, said epitaxial layer having a lattice constant matched to within 0.5 percent of the lattice constant of said substrate to form a lattice matched heterojunction between said substrate and said epitaxial layer.]

STATUTORY INVENTION REGISTRATIONS

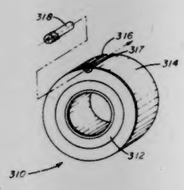
PUBLISHED APRIL 7, 1987

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H242
METHOD OF KEYING OUTER BEARING RACE TO HOUSING

Patrick S. Eng, Germantown, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 8, 1986, Ser. No. 887,464
Int. Cl.⁴ B23P *19/02;* **F16C** *35/077*
U.S. Cl. 29—525 **6 Claims**



1. A method of securing the outer race of an anti-friction bearing in a cylindrical recess of a housing for preventing axial rotation of the race therein comprising the steps of:

providing means on the outer peripheral face of the outer race disposed in a direction parallel to the axis of the race;

providing means on the inner face of the housing cylindrical recess disposed in a direction parallel to the axis of the cylindrical recess; and,

establishing interference between the means for preventing axial rotation of the outer race in the housing recess.

H243
CATALYSTS FOR THE PRODUCTION OF HYDROCARBONS FROM CARBON MONOXIDE AND WATER

Richard S. Sapienza, Shoreham; William A. Slegeir, Hampton Bays, and Robert I. Goldberg, Selden, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 6, 1985, Ser. No. 797,509
Int. Cl.⁴ C07C *27/08*
U.S. Cl. 518—701 **5 Claims**

1. A method for the reaction of a mixture of carbon monoxide, hydrogen and water for the production of at least one carbonaceous product selected from the group consisting of hydrocarbons, alcohols and mixture thereof comprising contacting the reactants together in a slurry containing a catalyst suspended in a reaction inert liquid medium at a temperature of from about 200° to 350° C., the catalyst being on a zinc oxide support and being selected from the group consisting of cobalt, nickel, ruthenium, palladium, platinum, iridium, rhodium, copper and mixtures thereof.

H244
METALLOGRAPHIC PREPARATION OF E-GLASS-EPOXY COMPOSITE MATERIAL

Eugene L. Goodwin, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 16, 1986, Ser. No. 841,377
Int. Cl.⁴ B24B *1/00*
U.S. Cl. 51—281 R **3 Claims**

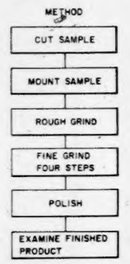
1. A method of preparing samples of E-Glass-Epoxy composite material for microscopic examination thereof comprising the steps of:

a. selecting a sample from the parent material;

b. encapsulating said sample;

c. rough grinding said sample for removing rough edges resulting from the cutting operation, said rough grinding being accomplished on a belt surfacer using a 180 grit silicon carbide belt with water soluble oil as a lubricant;

d. cleaning said sample in running water;



e. fine grinding said sample on a pregrinder in a series of grinding steps with water soluble oil as a lubricant, each step accomplished with a finer grit of grinding material to obtain a relatively flat, scratch-free surface;

f. cleaning said sample in running water;

g. polishing said material on a flat bronze wheel covered with a microcloth impregnated with a water slurry of 0.3 micron alumina powder and a liquid detergent by applying varying pressures for a predetermined length of time; and,

h. cleaning and drying said sample.

H245
PLASMID FOR PRODUCING HUMAN INSULIN

Chander P. Bahl, El Cerrito, Calif., assignor to Cetus Corporation, Emeryville, Calif.

Continuation of Ser. No. 278,331, Jun. 29, 1981, abandoned.
This application Jun. 27, 1984, Ser. No. 625,176
Int. Cl.⁴ C12P *21/04;* **C12N** *15/00;* **C12P** *21/00*
U.S. Cl. 435—71 **10 Claims**

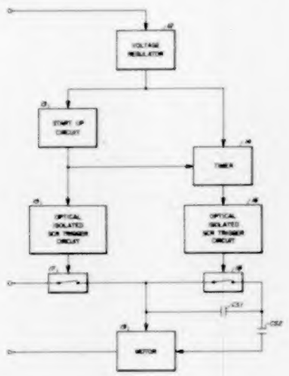
1. A plasmid capable of replication in an *E. coli* host organism, said plasmid comprising a DNA sequence of plasmid pJW2172 encoding the amino acid sequence of the ampicillinase leader peptide-human preproinsulin, said DNA sequence capable of expression in said *E. coli* host transformed with said plasmid to make preproinsulin product comprising a partial ampicillin leader sequence and partial human preproinsulin wherein the partial presequence thereof is perfectly fused to the partial ampicillin leader sequence, wherein said preproinsulin product, when processed in vivo by an *E. coli* host is transported across the host cell membrane to form human proinsulin.

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H246
MOTOR DRIVE CIRCUIT

George A. Basura, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 17, 1985, Ser. No. 788,619
Int. Cl.[4] H02P 1/04; G05B 1/06
U.S. Cl. 318—480 8 Claims



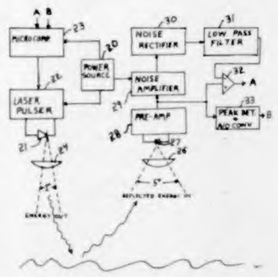
1. A power-up circuit comprising:
an electric load having an electrical supply;
a first switch means connected in series with said electric supply;
at least one impedance determining component externally connected to said load;
a second switch means connected to said impedance determining component for selectively disconnecting the impedance determining component to alter the impedance of the load;
a timer circuit effectively connected to said second switch means to cause operation thereof in response to a trigger pulse applied thereto; and
a start-up circuit effectively connected to said first switch means to cause operation thereof in response to a DC voltage applied thereto and connected to said timer circuit to apply a trigger pulse thereto.

H247
ROLL MEASUREMENT SYSTEM FOR FLIGHT VEHICLE

Lee K. Clark, Santa Ana; Michael C. Peron, Eltoro, and James A. Wes, Diamond Bar, all of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 11, 1986, Ser. No. 887,496
Int. Cl.[4] G06F 15/50; G05D 1/08; G01C 23/00
U.S. Cl. 364—434 10 Claims

1. In a flight vehicle subject to roll about its axis, a system for the determination of the direction and degree of roll, the roll determination system including
an electrical power source and a pulsable laser means connected to said power source to propagate a pulsed laser beam;
focusing means to direct said beam from said laser means into a narrow beam adapted to be directed toward the earth when the vehicle is in flight;
a laser beam receiver means to detect and receive the reflections from the earth of said propagated laser beam and produce electrical signals in accordance therewith; and

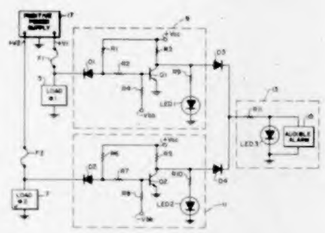


computation means connected to said receiver means to derive the roll angle from the said electrical signals.

H248
FUSE STATUS INDICATOR SYSTEM

Herbert Middlebrooks, Columbus, Ga., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 4, 1984, Ser. No. 646,535
Int. Cl.[4] G08B 21/00
U.S. Cl. 340—639 5 Claims



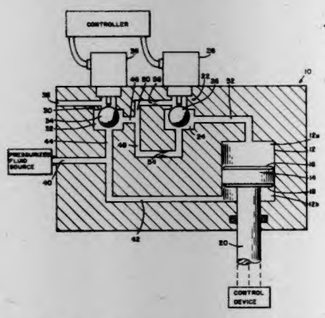
1. A fuse status indicator system comprising, one or more power supplies comprising a plurality of voltage outputs supplying separate loads, a fuse connecting each of said voltage outputs to each of said loads, an on-line indicator connected to each of said fuses, said on-line indicators each comprising a first light emitting diode which is passive and not illuminated if its protected fuse is good and which becomes illuminated if its protected fuse opens due to a short circuit or excessive current drain in the said load connected thereto, and a master fuse status indicator comprising a second light emitting diode connected to each of said on-line indicators by means of OR gates, said second light emitting diode of said master indicator adapted to become illuminated whenever any one of the said on-line indicators connected thereto beomes illuminated.

H249
DUAL RATE ACTUATOR

Gordon D. Welford, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 7, 1986, Ser. No. 919,992
Int. Cl.[4] F15B 15/17, 11/08, 13/04
U.S. Cl. 91—417 R 2 Claims

1. An actuator having a piston for providing a linear reciprocating motion comprising:
an actuator body having an inlet port, an outlet port, a control chamber, a first valve chamber, a second valve chamber, and means for interconnecting in series said first and second valve chambers to permit fluid flow therebetween; said piston having an upper piston surface and a lower piston surface of smaller area than said upper piston surface, said piston dividing said control chamber into an upper control subchamber bounded in part by said upper piston surface and a lower control subchamber bounded in part by said lower piston surface, the respective volume of said subchambers varying with displacement of said piston; said inlet port and said outlet port being connected by a plurality of passageways to said first valve chamber to



permit fluid flow therebetween, said inlet port further connected to a source of pressurized fluid and to said lower control subchamber for directing fluid to said lower piston surface; said first and second valve chambers having solenoid actuated ball poppet valves therein, said second control valve further being connected by a passageway to said upper control subchamber, whereby said fluid being selectively directed into and out of said upper subchamber in response to selective activation and deactivation of said solenoid actuated valves to create a pressure differential across said piston for variable rate displacement of said piston.

H250
HIGH EFFICIENCY MARINE ANCHOR SYSTEM

Robert J. Taylor, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1986, Ser. No. 865,706
Int. Cl.[4] B63B 21/24
U.S. Cl. 114—303 12 Claims

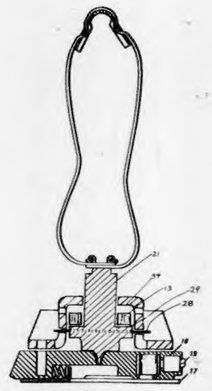


1. A light-weight, high efficiency mooring anchor for general use in a variety of seafloor materials and for effectively developing a system capacity greater than twice the capacity of the anchor when connected in tandem, comprising:
a. a shank having a forward end with a shackle means for attachment to a mooring cable, an aft end with a trunion bar receiving bore, and a heavy duty padeye means aft of said trunion bar receiving bore;
b. a unitary fluke assembly consisting of a generally angular open box-like crown portion having main sides which also form the palms and which meet at an apex pointing toward the forward end of said shank with twin hollow elongated box-like flukes secured to the apex of the crown portion; said crown portion being disposed equally on either side of said shank with said apex parallel to the traverse axis passing through said shank bore and disposed toward the aft end of said shank with relation to said traverse axis;
c. said hollow box-like flukes being tapered and streamlined, disposed on opposite sides of said shank and extending toward the forward end thereof;
d. a trunion bar extending transversely of said shank through said bore, and means in said crown portion of the fluke assembly for receiving said trunion bar for pivotally securing the aft end of said shank to said fluke assembly;
e. a pair of socket means extending into the crown portion of said fluke assembly from either side thereof and axially aligned with said trunion bar; the length of said trunion bar being limited by the inner ends of said socket means;
f. a pair of anchor roll stabilizer bars, one each removably mounted in said socket means;
g. stopper means mounted on the palms of said unitary fluke assembly at a maximum distance from the transverse axis of said trunion bar receiving bore and aligned to limit the rotation of said fluke assembly and thus the angle of the flukes with respect to said shank and reduce the bending moment on the shank; wherein, said high efficiency mooring anchor, on being used as a first and forward anchor when connected together in tandem from the aft end of its said shank to the forward end of the shank of a second same-type high efficiency mooring anchor, will operate to cause said second anchor to penetrate deeper into seafloor soils than the second anchor would when operating as a single anchor alone due to the action of said forward anchor dragging the second anchor at a lower level in the seafloor, thereby, because of added depth thus attained by the second anchor, effectively increasing the combined holding capability of the first and second anchors used together in tandem to greater than twice the combined holding capability of the two anchors used singly in seafloor soils.

H251
INCREASED SAFETY IN USE, AND IMPROVED FUNCTION, OF AMMUNITION ITEMS

Werner Field, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 790,579, Oct. 23, 1985, Published Application No. H000136. This application Jul. 31, 1986, Ser. No. 892,000
Int. Cl.[4] F42B 27/00
U.S. Cl. 102—487 5 Claims



1. An electrical fuze for use in detonating a grenade which

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includes a main charge and a deploying ribbon loop for arming the grenade, said fuze comprising:

means including a piezoelectric crystal for generating an electromotive force signal by the retarding action of said ribbon when deployed;

electrical circuit means for conditioning and storing said signal for use in detonating said grenade;

electrically operated detonation means for setting off the main charge, receiving a conditioned signal from said electrical circuit means;

means for closing a circuit upon a physical impact, said switch means positioned between said electrical circuit means and said detonation means.

H252
FILLING NEEDLE HOLDER ASSEMBLY

Edgar J. Sturmas, 708 Southern Dr., West Chester, Pa. 19380

Filed Sep. 2, 1986, Ser. No. 902,913
Int. Cl.⁴ B65B *1/04*
U.S. Cl. 141—392 **1 Claim**



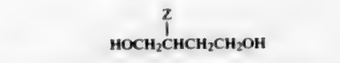
1. A filling machine needle holder comprising: (a) an integral hub section, collar and shaft, (b) a non-integral hub section, and (c) fill needle restricting means disposed at the needle nozzle end of said shaft; said integral hub section and said non-integral hub section being drilled and tapped to receive plural bolt means; said hub sections, collar and shaft defining the circumference of an internal channel of non-uniform diameter in which a fill needle may be detachably secured by said hub sections and said restricting means.

H253
BRANCH CHAINED POLYNITRODIOLS

Michael E. Sitzmann, Adelphi, and William H. Gilligan, Ft. Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 17, 1986, Ser. No. 875,159
Int. Cl.⁴ C07D *307/28, 307/26*
U.S. Cl. 549—321 **11 Claims**

1. A diol of the formula



wherein Z is selected from the group consisting of $—C(NO_2)_3$, $—CF(NO_2)_2$, $—C(NO_2)_2CH_3$, and $—N(NO_2)CH_3$.

H254
METHOD OF INCREASING THE VOLUME YIELD OF EXFOLIATED VERMICULITE

James R. Hladman, Libby, Mont., assignor to W. R. Grace & Co., Lexington, Mass.

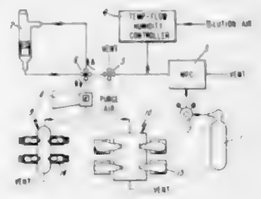
Filed Jul. 19, 1984, Ser. No. 632,575
Int. Cl.⁴ C04B *20/06*
U.S. Cl. 252—378 R **5 Claims**

1. A method for increasing the volume yield of expanded vermiculite ore particles comprising the sequential steps of applying about 0.1% to about 1% by weight of a vegetable oil to said particles, based on the weight of said particles, at a temperature below that at which said ore particles undergo exfoliation and thermally exfoliating said ore particles in an expansion oven or expansion furnace.

H255
CHARCOAL ADSORBENT TEST APPARATUS AND METHOD USING FILTER TUBES

James A. Genovese, Forest Hill; John T. James, Severn, and Leonard C. Buettner, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1986, Ser. No. 900,880
Int. Cl.⁴ A61K *49/00*; G01N *31/00, 33/48, 30/96*
U.S. Cl. 424—9 **14 Claims**



1. An apparatus for testing the performance of a sample charcoal adsorbent material, comprising

(a) means for supplying a gaseous sample containing contaminants to a filtering means;

(b) filtering means for removing the toxic contaminants from the gaseous sample, said filtering means including a filter tube containing a sample charcoal adsorbent material for adsorbing thereon the toxic contaminants;

(c) chemical analysis means for chemically analyzing the gaseous effluent from the filtering means to detect toxic contaminants remaining in the gaseous effluent; and

(d) test animal chambers for exposing test animals contained therein to the gaseous effluent from said filtering means to determine the toxic effects on the test animals of toxic contaminants remaining in the gaseous effluent, said test animal chambers including means for measuring respiratory changes in the test animals.

H256
WHEEL STOP AND TIE-DOWN FOR AIRCRAFT CARRIER FLIGHT AND ELEVATOR DECKS

Joseph R. Annibale, Fairfax, and Joseph C. Testa, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 21, 1986, Ser. No. 900,127
Int. Cl.⁴ B65D *63/00*
U.S. Cl. 248—499 **5 Claims**

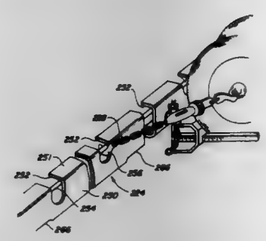
1. An aircraft wheel stop and tie-down arrangement for use on carrier flight and elevators decks for securing aircraft in position thereon, comprising:

an elongated channel member having flanges connected by a web;

one of the flanges having a plurality of spaced apart openings adapted to be received over spaced-apart fastening means extending upwardly from the deck surface along its outboard edge;

means for removably securing the one flange onto the fastening means with the web upstanding from the deck whereby the channel member defines an aircraft wheel stop;

said channel web and other flange having cut-outs at spaced apart locations along its length;



rod means secured to the channel shaped member along the web and other flange and bridging the cut-outs thereof for defining means for receiving cable hooks;

a first tie-down chain having hooks adapted for connection between the wheel stop and an aircraft wheel parked inboard thereof; and,

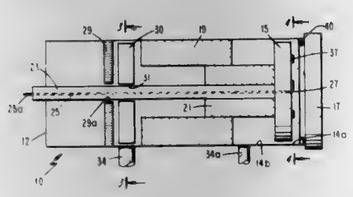
a second tie-down chain having hooks adapted for connection between the wheel stop and a position on the aircraft body outboard of the wheel stop;

whereby the aircraft is restrained against movement.

H257
DRY POWDER AEROSOLIZER

Irving F. Barditch, Baltimore, and Ronald M. Rauer, Darlington, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 1, 1986, Ser. No. 891,664
Int. Cl.⁴ B05B *7/14, 9/00*
U.S. Cl. 239—124 **16 Claims**



1. A dry powder aerosolizer, comprising:

(a) a hollow body having means for defining a chamber therein;

(b) a piston head dividing said chamber into first and second sub-chambers communicating with each other about the periphery of the piston head, said first sub-chamber adapted to contain a quantity of dry powder, said piston head carrying means exposed to the first sub-chamber for stirring the dry powder upon rotation of the piston head;

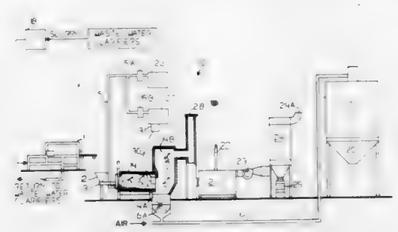
(c) means responsive to a motive source of pressurized gas for rotating said piston head; and

(d) means for directing a flow of pressurized gas into the second sub-chamber during rotation of said piston head and thereby about the periphery of the piston head into the first sub-chamber to aerosolize the dry powder and direct same out of the aerosolizer through outlet means.

H258
DEWATERING PROCESS AND APPARATUS FOR SLURRY RECOVERED FROM WASTE WATER

Jeffrey L. Henninger, R.D. #2, Kempton, Pa. 19529; Michael A. Hart, 3901 Royena Ave., Reading, Pa. 19605; James R. Garraway, 1660 Reading Blvd., Wyomissing, Pa. 19610; Robert G. Elbert, 523 Martin Ave., Reading, Pa. 19601, and Curtis P. Olinger, 234 E. Arch St., Fleetwood, Pa. 19522

Filed Oct. 11, 1985, Ser. No. 786,672
Int. Cl.⁴ B01D *21/01, 37/00*; C02F *1/00*
U.S. Cl. 210—737 **8 Claims**

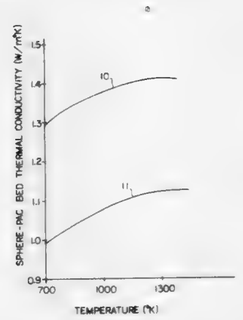


1. In a process for treating water recovered from aqueous solutions used in the treatment of metals and in which at least a portion of the waste water is a slurry containing solids, the steps of mechanically removing water from said slurry to provide a liquid output and an output in the form of a sludge having a substantially greater concentration of solids than said slurry, bringing said sludge into heat-exchange relationship with a hot drying agent so as to substantially dry said sludge and provide a primary stream of substantially dry solids and a secondary stream of said drying agent substantially free of solids, and recovering useful heat from said secondary stream.

H259
COATED CERAMIC BREEDER MATERIALS

Shiu-Wing Tam, Downers Grove, and Carl E. Johnson, Elk Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 22, 1986, Ser. No. 899,139
Int. Cl.⁴ G21B *1/00*
U.S. Cl. 376—146 **5 Claims**



1. A coated ceramic particle for use in the breeder blankets of nuclear fusion reactors, said particle comprising a core material of a lithium containing ceramic material, said core material having a certain thermal conductivity, said particle having a coating selected from the group consisting of Be and BeO.

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H260
METALLIZATION FOR HERMETIC SEALING OF CERAMIC MODULES

Hayden Morris, Washington, D.C.; Henry W. Rhodes, Brentwood, and Margaret C. Marlow, Monrovia, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1986, Ser. No. 887,166
Int. Cl.[4] B27N *5/02*; B32B *1/04*
U.S. Cl. 428—35 **2 Claims**



1. A module for hermetically sealing an interior cavity thereof comprising:

a casing comprising a base member and a lid member, the base member defining a cavity for receiving within the cavity a hermetically sealable member, the lid member being adapted for covering the open side of the cavity and enclosing the sealable member within the cavity,

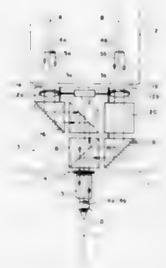
the base member having a first metallization portion circumscribed about the opening of the cavity the metallization being adapted for receiving a hermetically sealing material adhereable to the metallization, the metallized portion being adapted for receiving and abuttingly engaging the lid member thereon with the lid member having an engagably compatible surface for engaging the metallization portion, a portion of the compatible surface of the lid surface being circumscribingly second metallized for mating with the first metallized portion and adhering receiving the hermetically sealing material,

the radial outer dimensions of the metallized surface of the lid being smaller than the corresponding radial outer dimensions of the first metallized portion so that portions of the first and second metallization are exposed, the lid member having a peripheral edge thickness, the metallization of the lid member extending over a portion of the edge thickness so that the hermetically sealing material when applied to the first and second metallizations will form a bead of sealing material. about the outside perimeter of the engagement of the base member and the lid member, said bead extending along the exposed portions of the first and second metallizations.

H261
OPTICAL ALIGNMENT METHOD FOR BINOCULAR DISPLAYS

Harry L. Task, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 441,815, Nov. 11, 1982. This application May 29, 1985, Ser. No. 738,940
Int. Cl.[4] G01B *11/26, 11/00*
U.S. Cl. 356—138 **6 Claims**



1. A method for detecting misalignment in a binocular display system having first and second optical axes, which comprises the steps of:

a. forming identical first and second images transmitted, respectively, along said first and second optical axes from said binocular display system;

b. forming a composite image of said first and second images by projecting said first and second images along respective optical paths of identical optical lengths and optically folding said first image onto said second image and projecting said composite image along a third optical axis;

c. providing means defining an imaging plane along said third optical axis for displaying said composite image;

d. displaying said composite image on said imaging plane; and

e. comparing said first and second images in said composite image as displayed on said imaging plane defining means to detect misalignment of said first and second images.

REISSUES

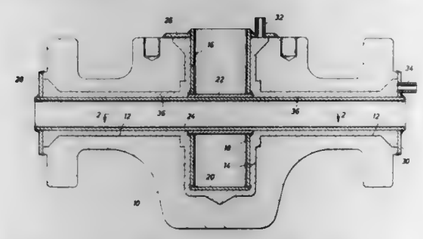
APRIL 7, 1987

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,389
METHOD OF PRODUCING A LINED STRUCTURE

James R. Becker; Edward L. Raymond, both of Houston, Tex., and David W. Cameron, Allegany, N.Y., assignors to Cameron Iron Works, Inc., Houston, Tex.

Original No. 4,477,955, dated Oct. 23, 1984, Ser. No. 393,055, Jun. 28, 1982. Continuation-in-part of Ser. No. 138,874, Apr. 10, 1980, abandoned. Application for reissue Mar. 20, 1985, Ser. No. 714,156
Int. Cl.[4] B21D *53/00*; B21K *29/00*; B23P *15/26*
U.S. Cl. 29—157.1 R **15 Claims**



12. The method of applying a corrosion resistant lining to intersecting passages of a high strength pressure vessel comprising

securing and sealing a thin hollow yieldable metal mold in spaced relationship to the passages to be lined to provide an interconnected sealed space lining said passages with at least a portion of said thin hollow metal mold blocking the intersecting passages,

removing gases from said space which would interfere with the subsequent formation of a suitable consolidated corrosion resistant lining,

filling the space between the passages and the mold with metal powder,

subjecting the mold, metal powder and pressure vessel to elevated temperature and pressure sufficient to consolidate the metal powder into a dense uniform interconnected metal lining in the passages, and

machining the material in the lined passages to remove the portion of said thin hollow metal mold blocking communication between said passages.

Re. 32,390
HYDRAULIC ACTUATING MEANS FOR SUBSURFACE SAFETY VALVE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Original No. 4,527,630, dated Jul. 9, 1985, Ser. No. 538,000, Sep. 30, 1983. Continuation-in-part of Ser. No. 383,897, Jun. 1, 1982, abandoned. Application for reissue Oct. 2, 1985, Ser. No. 782,783
Int. Cl.[4] E21B *43/12*
U.S. Cl. 166—321 **17 Claims**

17. In a subsurface well safety valve for controlling the fluid flow through a well conduit and including a housing having a bore and a valve closure member moving between open and closed positions for controlling the fluid flow through the bore, a tubular member telescopically moving in the housing for controlling the movement of the valve closure member, and biasing means for moving the tubular member in a direction to close the valve, the improvement in fluid actuating means for actuating the valve closure member comprising,

a cylinder in the housing,

a piston in and movable relative to the cylinder in response to fluid pressure in the cylinder, one of said cylinder and piston engaging and moving the tubular member,

said cylinder on one side of the piston adapted to be in communication with a fluid control passageway, and said cylinder on the second side of the piston adapted to be in communication with a biasing fluid,

first and second metal valve seats on one of the piston and cylinder, and first and second valve elements which coact with



the first and second seats, respectively, said valve elements being on the other of the piston and cylinder, and

said first seat and first valve element positioned to shut off flow from the fluid control passageway to the cylinder when the safety valve is in one of said open and closed positions, and said second seat and second valve element positioned to shut off flow of the biasing fluid to the cylinder when the safety valve is in the other of said open and closed positions.

Re. 32,391
WARNING INDICATOR FOR A CAMERA

Floyd L. Berg, 24391 Wagon Wheel La., Lake Elsinore, Calif. 92330

Original No. 4,340,291, dated Jul. 20, 1982, Ser. No. 93,307, Nov. 13, 1979. Application for reissue Jul. 11, 1984, Ser. No. 629,687
Int. Cl.[4] G03B *1/00, 17/20*
U.S. Cl. 354—215 **9 Claims**



10. In a camera having a case with a chamber for receiving a roll of film and a take-up mechanism for advancing the film frame by frame, the film having a plurality of registration holes along at least one edge thereof, a warning system independent of the shutter release mechanism for warning an user of the camera

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of the improper threading of the film into said take-up mechanism, said warning mechanism comprising:

(a) an assembly having sprockets adapted to engage the registration holes in the film, said assembly moving in response to advancement of the film;

(b) a window in said case;

(c) a rotation warning device disposed internally of said case and viewable through said window, said rotational warning device having two display conditions, a first display condition warning the operator of the camera of the non-advancement of the film and a second display condition advising the operator of the proper advancement of the film; and

(d) means independent of the shutter release mechanism operationally coupling said sprockets to said warning device for rotating said warning device from said first display condition in response to movement of said assembly when the film is properly threaded into said take-up mechanism, said warning device not rotating when said shutter release mechanism is operated.

Re. 32,392

CATALYST PELLETS WITH RESIN BINDER FOR DECOMPOSITION OF HYPOCHLORITE

Roger T. Clark, Pottstown, and David M. Gardner, Collegeville, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Original No. 4,400,304, dated Aug. 23, 1983, Ser. No. 216,042, Dec. 15, 1980. Continuation-in-part of Ser. No. 081,925, Oct. 4, 1979, abandoned. Application for reissue Aug. 21, 1985, Ser. No. 767,943

Claims priority, application Belgium, Mar. 15, 1981, 888,204; 03191981, Mar. 19, 1981, 1244/81

Int. Cl.⁴ B01J *31/28, 31/06;* **C08K** *3/22;* **C02B** *1/28*

U.S. Cl. 502—159 **5 Claims**

1. A porous catalyst matrix [in pellet form] consisting essentially of a mixture of a powdered oxide or hydroxide of a metal selected from the group consisting of iron, copper, magnesium, nickel and cobalt, and a powdered thermoplastic organic resin [comprising polyvinylidene fluoride] *selected from the group consisting essentially of solid polyolefins and halogenated polyolefins and mixtures thereof* in a weight ratio of oxide or hydroxide of metal to resin within [1:1 to 15:1] *100:1 to 1:10*, which mixture of powders has been compacted into pellets and then thermally sintered at or about the softening temperature of the resin, thereby forming a porous [ctalyst] *catalyst* matrix [in pellet form] which is stable in aqueous hypochlorite solutions.

4. The porous catalyst matrix of claim 1 in which the powdered thermoplastic solid organic resin is selected from the group consisting essentially of polyvinylidene fluoride, polyethylene, polypropylene, polytetrafluoroethylene, and mixtures thereof.

5. The porous catalyst matrix of claim 4 wherein the powdered oxide or hydroxide of said metal is supported with a catalyst support material selected from the group of materials consisting essentially of silica, diatomaceous earth, alkaline earth metal and alkali metal silicates; aluminas; silicates and mixed aluminum compounds of oxides, hydroxides and silicates; magnesia and mixed magnesium compounds of oxides, hydroxides, silicates and mixtures thereof.

Re. 32,393

COMPOSITION FOR ENHANCING THE ADMINISTRATION OF PHARMACOLOGICALLY ACTIVE AGENTS

Karl A. J. Wretlind, Stockholm; Stellan Ljungberg, Lidingö; Ivan Hakansson, Stockholm, and Bengt M. Ajaxon, Upsala, all of Sweden, assignors to KabiVitrum AB, Stockholm, Sweden

Original No. 4,168,308, dated Sep. 18, 1979, Ser. No. 854,404, Nov. 23, 1977. Division of Ser. No. 666,264, Mar. 12, 1976, Pat. No. 4,073,943, which is a continuation-in-part of Ser. No. 504,880, Sep. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 88,474, Nov. 10, 1970, abandoned, which is a continuation-in-part of Ser. No. 754,738, Aug. 22, 1968, abandoned. Application for reissue Aug. 14, 1984, Ser. No. 605,760

Claims priority, application Sweden, Sep. 1, 1967, 12159/67

Int. Cl.⁴ A61K *31/02, 31/08, 31/16, 31/40*

U.S. Cl. 514—219 **38 Claims**

1. A composition for enhancing [parenteral] *intravenous* administration comprising a stable, oil-in-water emulsion *capable of withstanding autoclaving*, containing a pharmacologically inert lipoid as a hydrophobic phase dispersed in a hydrophilic phase and an effective dose of a pharmacologically active, oil-soluble agent predominantly dissolved in said lipoid at a fraction ratio thereto in the hydrophobic phase, said lipoid being dispersed in the emulsion as finely divided particles having a mean particle size less than 1 micron to achieve rapid onset of an acceptable therapeutic effect attributable to said effective dose of the active agent, said active, *oil soluble* agent being selected from a class of substances consisting of central depressants, analgesics, [spasmolytics,] muscle relaxants, and vasodepresaants.

PLANT PATENTS

GRANTED APRIL 7, 1987

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,925

ROSE PLANT—BENBLACK

Frank A. Benardella, Old Tappan, N.J., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed May 28, 1985, Ser. No. 738,295

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by unusually dark red flowers that hold color well through development and aging.

5,926

PLUM TREE ("JD-1")

John D. Young, Modesto, Calif., assignor to Young Family Trust, Modesto, Calif.

Filed Aug. 14, 1985, Ser. No. 765,519

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, characterized, in particular, by the regular and productive bearing of small but marketable size, early ripening, freestone fruit having wine red skin and dark red flesh; the fruit being of good eating quality and pleasing flavor.

5,927

KALANCHOE PLANT NAMED VERACRUZ

Claude Hope, Cartago, Costa Rica, assignor to Ball Pan Am Plant Company, Parrish, Fla.

Filed Jun. 17, 1985, Ser. No. 745,129

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Veracruz, as illustrated and described, and particularly characterized by its salmon pink flower color, compact and free branching habit, floriferous habit, 12 week flowering response, small, thick leaves, and by its suitability for production in 10–15 cm pots.

5,928

GERANIUM PLANT NAMED TWIST

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 760,765

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Twist, as described and illustrated, and particularly characterized by its carmine-salmon flower color; semi-double flower form with large flowerhead; dark green foliage; fast rooting; compact growth habit; and very good chlorophyll quality for transportation.

5,929

GERANIUM PLANT NAMED MERCURY

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,009

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Mercury, as described and illustrated, and particularly characterized by its red flower color; semi-double flower form; fast rooting; compact growth habit with excellent branching; good chlorophyll quality for transportation; relatively small leaves, and good temperature tolerance.

5,930

GERANIUM PLANT NAMED DISCO

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,010

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Disco, as described and illustrated, and particularly characterized by its red flower color; semi-double flower form; large flowerhead; good rooting; fast growth; very early flowering response, and excellent flower production.

5,931

GERANIUM PLANT NAMED WALTZ

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,011

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Waltz, as described and illustrated, and particularly characterized by its single, large, round flower form and red flower color; green foliage with very strong dark brown leaf zonation; fast rooting; early flowering response and prolific flower production; and very good chlorophyll quality for transportation.

5,932

GERANIUM PLANT NAMED COLUMBIA

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,012

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Columbia, as described and illustrated, and particularly characterized by its red flowering startel flower type, with strong divided petals; novel, decorative zonal foliage; compact growth habit with good branching; and its heavy flower yield.

5,933

GERANIUM PLANT NAMED TANGO

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,014

Int. Cl.⁴ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Tango, as described and illustrated, and particularly characterized by its red flower color; semi-double flower form with large flowerhead; dark green foliage; fast rooting; very good chlorophyll quality for transportation; small zonation; and good weather resistance.

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5,934
CHRYSANTHEMUM PLANT NAMED FRISKY
Leonard H. Shoesmith, deceased, late of Westfield, England (by May V. Shoesmith, executrix), assignor to Ball Pan Am Plant Co., Parrish, Fla.
Filed Mar. 18, 1985, Ser. No. 712,693
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of Chrysanthemum named Frisky, as described and illustrated, and particularly characterized by its dwarf habit; late eight to early nine week response; anemone flower form; white ray florets with yellow disc florets or cushion, and by its ability to be grown year around in 9 cm. pots with little growth regulation.

5,935
CHRYSANTHEMUM PLANT NAMED LOBO
May V. Shoesmith, Westfield, England, assignor to Ball Pan Am Plant Company, Parrish, Fla.
Filed Jun. 20, 1985, Ser. No. 746,799
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—77 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Lobo, as described and illustrated, and particularly characterized by its flat capitulum form and decorative capitulum type; bright white ray florets on outside rows, with mature center florets being creamy yellow; uniform eight week flowering response using photoperiodic control, and natural flowering date of October 8 in the midwest and October 31 in Florida when grown as a garden variety; diameter across inflorescence is 1" to 2", and height is 6" to 8" above edge of a 4" pot when grown photoperiodically and 1' to 2' high when grown as a garden variety.

5,936
CHRYSANTHEMUM PLANT NAMED PANTHER
May V. Shoesmith, Westfield, England, assignor to Ball Pan Am Plant Company, Parrish, Fla.
Filed Jun. 20, 1985, Ser. No. 746,856
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Panther, as described and illustrated, and particularly characterized by its globular cushion capitulum form and button flower type, bright yellow color, diameter across face of flower of 0.75" to 1.5", uniform eight week flowering response when grown photoperiodically, and natural outdoor flowering date of October 8 in the midwest and October 31 in Florida, and by its height of 6" to 8" when grown photoperiodically and 1' to 2' when grown outdoors.

PATENTS

GRANTED APR. 7, 1987

ERRATA

For CLASS	See PATENT NO.
062-140	4,655,055
083-023	4,655,107
273-073	4,655,449
299-033	4,655,493
062-018	4,655,809
424-070	4,656,043
379-093	4,656,318
379-029	4,656,319
380-023	4,656,474

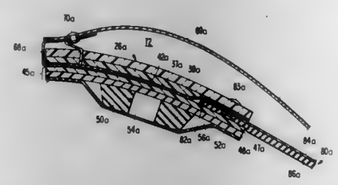
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PATENTS

GRANTED APRIL 7, 1987

GENERAL AND MECHANICAL

4,654,893
SHOULDER PAD BRACE
Andrew Meyers, West Hempstead; Jeffrey Minkoff, New York, and David Langevin, North Port, all of N.Y., assignors to Sports Protective Orthotics Ltd., New York, N.Y.
Filed Sep. 23, 1985, Ser. No. 779,103
Int. Cl.[4] A41D *13/00*
U.S. Cl. 2—2 27 Claims



1. An improved shoulder pad brace for protecting the shoulder regions of a user from shock, comprising:

a. a harness assembly for overlying the user's chest, said harness assembly including first and second breast sections of impact resistant plastic;

b. first and second saddle members of impact resistant plastic, each of which is connected to the harness assembly, for overlying and proteoting the upper region of each shoulder, wherein the shoulder-engaging side of each saddle member includes a resilient shock absorbing assembly, and

c. first and second cup members flexibly connected to said first and second saddle members, respectively, and mounted in partially overlapping relationship over said first and second saddle members, respectively, for overlying and protecting both the acromioclavicular and glenohumeral joints of each shoulder, said shock absorbing assembly including a shock absorbing cushion means positioned over the region surrounding the acromioclavicular joint of a user, said shock absorbing cushion means including a resilient pad means secured to each said saddle member and shock dissipating means secured to said resilient pad means and extending outwardly therefrom, said shock dissipating means defining at least one air space, the compressibility of said shock dissipating means differing from the compressibility of said resilient pad means.

4,654,894
SWIMSUIT
Kazunori Kudo, Tokyo, Japan, assignor to Kabushiki Kaisha Tokyo Fashion, Tokyo, Japan
Filed Jul. 15, 1986, Ser. No. 885,682
Int. Cl.[4] A41D *5/00*
U.S. Cl. 2—67 1 Claim

1. A swimsuit comprising a brassiere section in the upper part and a shorts type bottom section in the lower part,

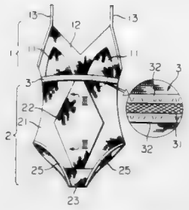
a mesh cloth being sewn all over the area on the reverse side of the bottom section,

a retaining cloth consisting of a vertically elastic mesh cloth being vertically sewn to the mesh cloth on the reverse side on the front center section of the bottom section,

a hip lift cloth made of a mesh cloth being sewn on the reverse side in the lower part behind the bottom part,

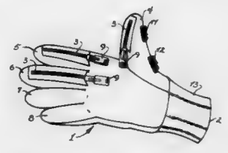
shirring tapes being sewn around leg holes in the bottom section, and

a shirring tape being sewn on the reverse side in the lower center part behind the bottom part and in the vertical



direction in such a way that its upper and lower ends can be allowed to reach a waist line as well as the hip lift cloth.

4,654,895
GLOVE
John P. Peters, 274 Brompton Rd., Williamsville, N.Y. 14221
Filed Aug. 15, 1986, Ser. No. 896,849
Int. Cl.[4] A47D *19/00*
U.S. Cl. 2—161 A 14 Claims



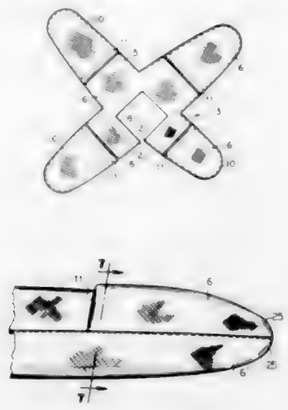
1. A cold weather sports glove comprising a thumb compartment and at least one finger compartment, said thumb and finger compartments having on a first side thereof a closure means and on a second side of said glove a compartment securing means, said closure means adapted to be opened to allow a thumb or at least one finger to extend outwardly therefrom and subsequently adapted to be closed to render said glove substantially weatherproof, said securing means adapted to fix a compartment in position as the thumb and at least one finger are extended out of said compartments.

4,654,896
FINGER PORTION FOR A GLOVE
Dixie L. Rinehart, Aspen, Colo., assignor to Rinehart Glove, Ltd., Aspen, Colo.
Filed Feb. 27, 1985, Ser. No. 706,421
Int. Cl.[4] A41D *19/02*
U.S. Cl. 2—163 6 Claims

1. A finger portion for a glove having a palm part and a back part characterized in that said finger includes two superimposed four-pointed star-shaped pattern pieces with each point comprising a finger part, in that each pattern piece has an inner substantially rectangularly shaped cut out, in that said pieces are joined together about their outer peripheries wherein one pattern piece forms the back side of the finger portion and the other pattern piece forms the palm side of the finger portion, in that the pattern piece comprising the back side has longer finger parts than the pattern piece forming the palm side before being joined thereto, in that each finger part of the pattern piece comprising the back side is shortened by having at least one tuck therein extending across the width of the finger part whereby the length of the finger part may be made substantially equal in length to a corresponding finger part of the

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pattern piece forming the palm side when the two pattern pieces are joined together at their peripheries, each said tuck comprising a portion of the finger part folded upon itself with the fold secured only at the ends thereof when the two pattern



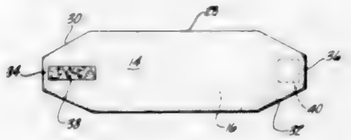
pieces are joined together along their outer peripheries, and in that the junction between the pattern pieces around their outer peripheries extends along lines of non-extension of each finger part.

4,654,897

TAIL-LESS NECK SCARF

Leslie J. Rossen, 45451 Turtlehead Dr., Plymouth, Mich. 48170

Filed Nov. 29, 1985, Ser. No. 803,071
Int. Cl.[4] A42B *5/00*
U.S. Cl. 2—207 **13 Claims**



1. A substantially tail-less scarf whose length is closely dimensionable to the circumference of a wearer's neck comprising:

an elongated, imperforate piece of material having a pair of faces, a pair of ends, and a parallel pair of straight edges disposed one each at one of said ends; said piece having a length somewhat greater than said circumference of said wearer's neck; and

joinable means on said pair of faces for fastening said scarf about said wearer's neck, comprising a first fastener on one of said faces adjacent one of said edges, and a second fastener on the other of said faces adjacent the other of said edges;

wherein said first fastener is joinable at a plurality of locations along said second fastener so as to vary the circumference of the scarf to closely match the circumference of the wearer's neck; and wherein said ends of said piece of material are tapered sufficiently to form a pair of V-shaped notches along said material when said fasteners are joined together.

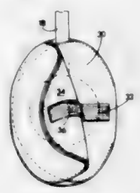
4,654,898

REMOVABLE EAR MUFF FOR HEADPHONES

Gerald K. Ishikawa, 1613-D W. Greenleaf, Chicago, Ill. 60626

Filed Oct. 11, 1985, Ser. No. 786,507
Int. Cl.[4] A41D *21/00*
U.S. Cl. 2—209 **6 Claims**





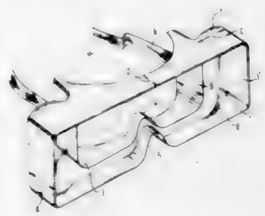
1. An ear muff comprising a cover having an ear engaging member, inner and outer flaps secured to said member to form a pocket between said member and said flaps, said pocket is capable of opening so as to receive therein the lower end of a headband and an earpiece attached thereto wherein said ear muff is constructed so that both of said flaps overlap said headband and said earpiece, so as to close said pocket with said headband and said earpiece therein with said earpiece aligned with the ear of the wearer, and fastener means associated with said flaps so that said flaps are releasably securable over said headband and said earpiece.

4,654,899

EYE PROTECTORS

Geoffrey W. Harris, Sheffield, United Kingdom, assignor to National Research Development Corporation, London, England

Filed Feb. 19, 1986, Ser. No. 830,877
Claims priority, application United Kingdom, Feb. 19, 1985, 8504262
Int. Cl.[4] A61F *9/02*
U.S. Cl. 2—436 **17 Claims**



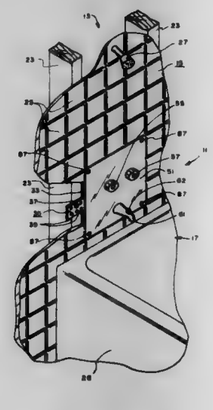
1. An eye protector comprising a lens structure for spanning both eyes of a wearer, a circumambient wall member extending rearwardly from said lens structure and such as to leave a substantially unobstructed flow path for air across a central zone of the eye protector, and an open fronted, open backed frame member adapted to engage a wearer's face in use, said lens structure being carried by said frame member spaced forwardly from at least a substantial part of the front of the frame member, said circumambient wall member having side portions disposed laterally beyond said frame member and a bottom portion disposed below said frame member, wherein at least one ventilation aperture is defined between the frame member and the circumambient wall member to provide substantially unobstructed ventilation aperture area on each side of said central zone of at least 500 mm^2.

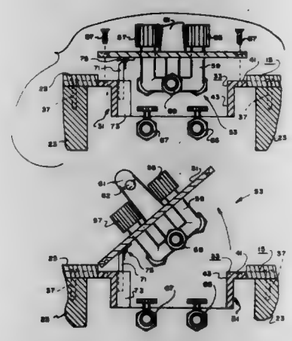
4,654,900

BATHTUB VALVE FIXTURE MODULE

Charles M. McGhee, 2319 Cardigan, Memphis, Tenn. 38119

Filed Nov. 21, 1985, Ser. No. 800,397
Int. Cl.[4] E03C *1/00, 1/04*
U.S. Cl. 4—191 **10 Claims**





1. A bathtub valve fixture module for attachment within a cavity in wall structure adjacent a bathtub assembly and for being coupled to a hot water supply conduit and a cold water supply conduit, said module comprising:

(a) an elongated, flexible hot water connecting line attached to said hot water supply conduit;

(b) an elongated, flexible cold water connecting line attached to said cold water supply conduit;

(c) a valve fixture means attached to said hot water connecting line and said cold water connecting line for controlling the flow of hot and cold water to said bathtub assembly;

(d) a cover plate attached to said valve fixture means;

(e) slide means slidably attached relative to said wall structure for movement between an in position and an out position; and

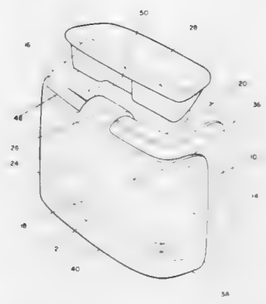
(f) hinge means attached to said cover plate and to said slide means for allowing said cover plate to pivot between a closed position and an open position when said slide means is in said out position.

4,654,901

SOAP HOLDER COVER

Steven A. Garcia, 1729 Procyon, Rio Rancho, N. Mex. 87124

Filed Aug. 21, 1985, Ser. No. 767,762
Int. Cl.[4] A47K *5/00*
U.S. Cl. 4—605 **3 Claims**



1. A soap holder cover for a conventional built-in, bathtub/-shower soap-holding fixture for preventing water from spraying or splashing on soap cotained in said fixture, said fixture generally containing a bottom tray for holding soap and a U-shaped support which extends outwardly from the bathtub/-shower wall, said soap holder cover comprising:

(a) A shield comprising a curved, channel-shaped member, said curved member wrapping around the exterior of a conventional, bathtub/shower soap-holding fixture, when provided, with the upper edge of said member being positioned generally at the U-shaped support level of the soap-holding fixture, and the lower edge of said member being positioned generally at the soap tray level of said soap-holding fixture when said shield is seated in a closed position; and

(b) Attachment means for attaching said shield to sai U-shaped support of said soap-holding fixture, said attachment means enabling said shield to be rotated upwards and away from said soap tray to an open position to giain access to soap contained in said soap-holding tray, and further enabling said shield to be rotated downwards towards said soap tray to be seated in a closed position to prevent water from spraying or splashing into said soap-holding fixture; and

(c) A plug which has the general shape of and fits into the space between said U-shaped support of said soap-holding fixture and the rear wall of said soap-holding fixture, said plug preventing water from entering the top of said soap-holding fixture.

4,654,902

CONVERTIBLE SEAT-BED

Fred J. Shrock, and Rex D. Hall, both of 28531 Jami Dr., Elkhart, Ind. 46515

Filed Apr. 3, 1986, Ser. No. 847,756
Int. Cl.[4] A47C *12/04*
U.S. Cl. 5—37 R **2 Claims**

1. In a convertible seat-bed including a floor supportable frame, a seat support for supporting a seat cushion, and a back support for supporting a back cushion, pivot means connecting said seat support and said back support to said frame for allowing movement of said seat and back supports between a seat position wherein said back support is generally upright and the

seat support generally horizontal, and a bed position wherein said seat and back supports are generally horizontal, the improvement wherein said seat support and back support each include a mounting plate, said pivot means includes a first pivot plate pivotally connected at one end to said back support mounting plate and at an end opposite said one end to said

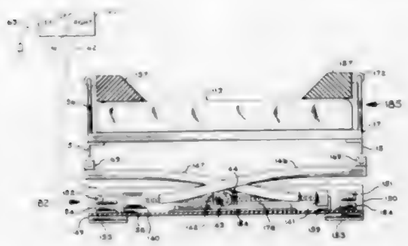


support frame, a second pivot plate pivotally connected at one end to said seat support mounting plate and at an end opposite said second pivot plate one end to said support frame, said mounting plates being pivoted together at a location spaced from said first and second pivot plate connections to the mounting plates, and an arm pivotally connected between said first and second pivot plates.

4,654,903
BEDSORE PREVENTION DEVICE IN AN INVALID BED ARRANGEMENT

Charles F. Chabè, Brookville, and Joseph C. Vaiana, Melville, both of N.Y., assignors to Nova Technologies, Inc., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 731,533, May 7, 1985. This application Nov. 13, 1985, Ser. No. 797,701
Int. Cl.⁴ A61G 7/10
U.S. Cl. 5—61 **21 Claims**



1. A bedsore prevention arrangement comprising a bed with two opposite sides and including a mattress, a bed frame and legs; tilt means for tilting the bed toward either one of said two sides; patient support means for supporting a reclining patient when the bed is tilted; said tilting means comprising reversible motor drive means coupled to a worm screw; a ball nut driven by said worm screw; first roller means and track means for guiding and restraining said ball nut; second roller means connected to said ball nut and supporting lever arm members actuated by said ball nut so that motion of said ball nut in one direction moves said supporting lever arm members for raising one side of said bed frame and motion of said ball nut in an opposite direction moves said supporting lever arm members for raising an opposite side of said bed frame.

4,654,904
INVALID CHAIR

Elizabeth A. Britz, 2303 1st St., New Port Richey, Fla. 33552

Continuation-in-part of Ser. No. 622,043, Jun. 19, 1984, abandoned. This application Sep. 30, 1985, Ser. No. 783,046
Int. Cl.⁴ A61G 7/08
U.S. Cl. 5—81 R **8 Claims**



1. In an invalid chair having a pair of side frames with front and rear vertical tubular legs interconnected by a first horizontal tubular member adjacent the bottom of the legs and a second tubular member adjacent the top of the legs gently sloping downward toward the back legs, webbing interconnecting the second tubular member on each side frame to form a seat, a third horizontal tubular member at right angles to and interconnecting the rear legs adjacent their top, the improvement comprising:

(a) a back support frame having a pair of tubular members extending upwardly from the top of the legs to an interconnection with a tubular arm rest and then further upwards and backwardly to an end portion where the pair of back support tubular members are interconnected with a first position tubular member at right angles to the pair of back support members,

(b) a rotatable second position tubular member spaced apart but parallel to the first position tubular member and attached to the first position tubular member by a rotating sleeve so that rotation of the second position tubular member from a location below the first position tubular member to a position above the first position tubular member moves a back rest frame from a semi-reclining position to an upright position, the back rest frame being rectangular in shape and rotatably mounted on the third horizontal tubular member interconnnecting adjacent the top of each back leg, the back rest frame resting on the first position tubular member in the semi-reclining position and on the second position tubular member in the upright position,

(c) the tubular arm rests are each rotatably mounted to the back support frame at a back end and latchingly attached to the top of the front leg at a front end so that disengagement of the latch will allow the arm rest to swing outwardly from the chair,

(d) a fourth horizontal tubular member interconnnecting each front leg adjacent the bottom of the legs and

(e) a fifth horizontal tubular member interconnecting each front leg adjacent the top of the legs.

4,654,905
BODY SUPPORT FOR BED OR SEAT

John E. Miller, Denton, N.C., assignor to Parma Corporation, Denton, N.C.

Continuation-in-part of Ser. No. 559,235, Dec. 8, 1983, Pat. No. 4,620,336, which is a continuation-in-part of Ser. No. 367,874, Apr. 13, 1982, Pat. No. 4,489,450. This application Dec. 10, 1984, Ser. No. 680,189
Int. Cl.⁴ A47L 23/02
U.S. Cl. 5—249 **39 Claims**

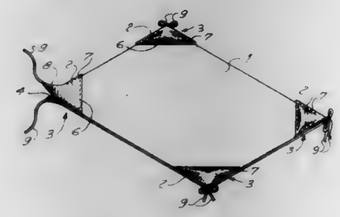


1. A body support such as a mattress or a box spring including opposed upper and lower portions and a plurality of support members located between said upper and lower portions and movable between a retracted inoperative position for reducing the depth dimension of the body support measured between said opposed portions for storage or transport and an erect operative position for increasing the depth dimension of the body support for use in supporting a body, and stop means on a number of said support members for defining the erect position of said support members, said stop means being engageable with one of said upper and lower portions to define the erect position of said support members, said support members including wirelike elements, and said stop means including a bent portion integral with said wirelike elements.

4,654,906
BEACH BLANKET WITH SAND POCKETS

Barry N. Roberts, 102 Christopher St., New York, N.Y. 10014

Filed Apr. 2, 1984, Ser. No. 595,584
Int. Cl.⁴ A47G 9/06; B32B 3/08
U.S. Cl. 5—417 **4 Claims**

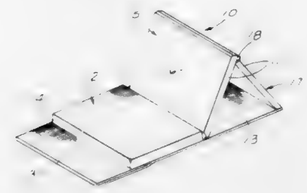


1. A beach blanket operable with a plurality of weighting means, comprising a single base sheet having a central part and a peripheral edge, a plurality of pockets at selected locations on said peripheral edge, each pocket having an opening which faces outwardly for receiving one of said weighting means, and means for releasably closing each of said outwardly facing openings, said base sheet having rectangular shape with four right triangular corners, and each of said pockets has right triangular shape congruent with one of said corners.

4,654,907
FOLDING RECREATION CHAIR-PAD

Bradley R. Haugaard, 2320 E. Oakdale St., Pasadena, Calif. 91107

Filed Jan. 24, 1986, Ser. No. 822,251
Int. Cl.⁴ A47G 9/06
U.S. Cl. 5—420 **1 Claim**



1. A folding, recreation chair-pad combination comprising:
an exterior double folded tubular exterior cloth cover, having the confronting tubular cover two edges secured together and also having the confronting two edges of said tubular folded exterior cover first terminus secured together,
a first compartment having said one double tubular folded exterior cloth cover edge first terminus, having said confronting tubular cover two secured edges, and having a first cloth hinge area adaptively secured and delineated by a cloth sewing line, said first compartment containing a conforming sized first foam pad,
a second compartment formed by said one double tubular folded exterior cloth cover two secured edges, said first cloth hinge area, said second compartment containing a conforming sized second foam pad and a first thin plywood board equivalent to the size of the second foam pad, said second compartment having a second cloth hinge area adaptively sized and delineated by a cloth sewn securing line,
a third compartment formed by said one double tubular folded exterior cloth cover two secured edges, said second cloth hinge area, said third compartment containing a conforming sized third foam pad and a second thin plywood board equivalent to the size of said third foam pad, said third compartment having a third cloth hinge area adaptively sized and delineated by a cloth sewing line, said secured plywood board coadjacently opposed and confronting said first plywood board in said second compartment, and,
a tubular cloth extension extending from said third hinge area to said second cover terminus,
a pair of opposed hook forming pile thread fastener tape sets each adaptively spaced and secured on opposed faces of said tubular folded exterior cloth cover, one said hook fastener tape secured on said third compartment cover adjacent said plywood board, and one opposed said hook fastener tape disposed and secured on the second opposed face of said exterior cover of said extension cover, said opposed tape fasteners adaptively spaced to mate when said first, second and third compartments are folded at said first, second and third hinge areas, and covered by said tubular cloth extension, a luggage handle adaptively secured and disposed on said tubular cloth extension, providing a handle for said chair-pad combination folded as a piece of luggage, and, a linear wood stop adaptively sized and secured on the edge of the first plywood panel adjacent said second hinge area, providing a stop for said second plywood panel.

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4,654,908
Patent Not Issued For This Number

4,654,909
HAMMER WITH STABILIZER BAR
Richard Jones, 1902 Frenchman St., New Orleans, La. 70116
Filed Dec. 20, 1985, Ser. No. 811,764
Int. Cl.[4] B25D *1/04*
U.S. Cl. 7—143 **16 Claims**



1. Apparatus characterized as a hammer, udeful for driving tacks or nails in inaccessible places, which comprises

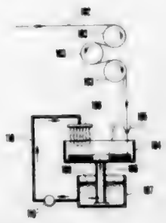
a first elongate center bar containing a deep U-shaped indentation at approximately the mid portion therof, the open end of the U-shaped indentation facing upwardly to form a lower bottom face of arcuate shape providing a shiftable fulcrum about which said bar can be rocked, an upper face of one terminal end of said first elongate center bar providing a surface against which the head of a tack, or nail, can be rested, the other terminal end providing a handle, and

a second elongate stabilizing bar oriented in a direction transverse to that of said first elongate center bar, a midpotion of which is received within and contacting said U-shaped indentation thereof, the two ends of said second elongate stabilizing bar being of substantially equal length measured from the U-shaped indentation outwardly to a terminal end thereof,

whereby, a tack or nail with its head resting against the upper face can be driven into an inaccessible location by downward force directed against the handle provided by said elongate center bar which applies an equal and oppositely directed force against the head of the tack or nail to drive same.

4,654,910
SPUN YARN PILING AND CLEANING METHOD
Yoshihiro Kusuki; Masao Kikuchi, and Yoshio Takeuchi, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan
Filed Sep. 25, 1985, Ser. No. 780,060
Claims priority, application Japan, Sep. 28, 1984, 59-201460; Jun. 7, 1985, 60-122824
Int. Cl.[4] D06B *3/04*
U.S. Cl. 8—151.2 **3 Claims**

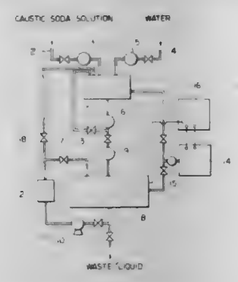
1. A method for piling and cleaning spun yarn comprising the steps of withdrawing a spun yarn at a predetermined velocity, dropping said yarn by its own weight into a cylindrical container with a bottom having holes while traversing said yarn in the radial direction of said cylindrical container so that said yarn is piled at the bottom of said cylindrical container in the form of a ring, continuously sparying a cleaning liquid against said yarn while said yarn is being piled, filling beads into said cylindrical container in such a way that said beads



cover the piled yarn in said cylindrical container while extending the trailing end of said yarn out of the top surface of said bead, and rotating said container in the direction opposite to the direction in which said cylindrical container was rotated while said yarn was being piled and cleaned, whereby said piled and cleaned yarn is withdrawn out of said cylindrical container from said trailing end of said yarn to the exterior of said cylindrical container.

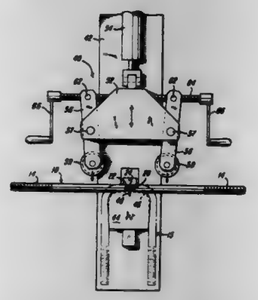
4,654,911
PROCESS FOR DEGRADING BY HYDROLYSIS TEXTILES COMPRISING POLYESTER FIBER OR ACETATE FIBER
Keisuke Kouishi, Fukui, and Isao Tanaka, Kawanishi, both of Japan, assignors to Wako Technical Research Co., Ltd., Fukui and Mitsubishi Chemical Industries Limited, Tokyo, both of, Japan
Filed Apr. 11, 1985, Ser. No. 722,159
Claims priority, application Japan, Apr. 11, 1984, 59-72279; Dec. 28, 1984, 59-279385
Int. Cl.[4] D06M *5/02*
U.S. Cl. 8—158 **11 Claims**

9. A process for the hydrolytic degradation of textiles of polyester or acetate fiber comprising the steps of: charging a known quantity of a treating bath containing a basic substance at a known concentration into a chamber which accommodates a known weight, based on the dry state, of the textiles in the wet state, the amount of the basic substance in the treating bath being in stoichiometric excess to the amount necessary to attain the desired rate of degradation of the textiles; mixing the treating bath in the chamber to obtain a uniform concentration and under conditions so that the hydrolysis does not substantially proceed; raising the temperature of the treating bath up to hydrolysis temperature; carrying out the hydrolysis while maintaining the hydrolysis temperature substantially constant, maintaining the chamber substantially closed and the concentration of the treating bath substantially uniform throughout the chamber during the hydrolysis; measuring the concentration of the treating bath at designated intervals during the hydrolysis; estimating from these measured values, a future concentration value using the method least squares; calculating the rate of degradation of the textile at the specific future point in time on the basis of said estimated values, the weight of textile in the chamber, the quantity and concentration of the treating bath charged in the apparatus, and the value of the



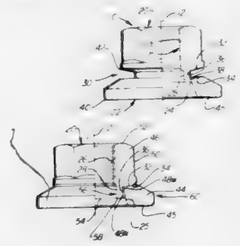
concentration of the treating bath measured prior to raising the temperature of the treating bath to the hydrolysis; and determining the time for interrupting the hydrolysis by comparing the estimated rate of degradation with the desired rate of degradation.

4,654,912
PRODUCTION OF THREADED METAL RODS FOR MAKING U-BOLTS
John C. Gray, 3050 Dryden Rd., Dayton, Ohio 45439
Continuation of Ser. No. 651,796, Sep. 18, 1984, abandoned, which is a continuation of Ser. No. 412,998, Aug. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 173,639, Jul. 30, 1980, abandoned. This application Jun. 20, 1986, Ser. No. 876,739
Int. Cl.[4] B21K *1/74*; B21D *9/08*
U.S. Cl. 10—27 UB **5 Claims**



1. A method of efficiently producing heavy duty U-bolts of different sizes, wherein each U-bolt has two legs of substantially equal length, the method comprising the steps of cutting a series of elongated straight cylindrical metal bars at longitudinally spaced intervals to form a supply of straight metal rods, the rods having opposite ends, smooth cylindrical outer surfaces, different predetermined lengths, and radially extending center planes defining a longitudinal center of each rod substantially equidistant from the ends of each rod, forming helical threads on opposite end portions of each rod, cleaning any oil from the outer cylindrical surface of each rod, successively feeding the straight metal rods into a marking machine having a relative movable marking head with means for applying a color contrasting material to the rods, successively marking the outer surfaces of the rods by applying the color contrasting material with the marking head at substantially the radially extending center plane of each rod to produce a visually perceptible mark at the longitudinal center of each rod, successively transferring the rods from the marking machine, inserting each rod for bending into a forming machine having a mandrel supported between two bending members, said mandrel and said bending members being relatively movable with respect to each other, the mandrel having a surface for supporting the rod between its ends during bending, locating each rod within the forming machine with the visually perceptible mark on the longitudinal center of the rod aligned with a visual reference indicative of a center plane of the forming machine at said mandrel surface, and moving the mandrel and the bending members with respect to each other to bend each rod around the mandrel surface, with the bending members engaging the rod in an area spaced longitudinally from the visually perceptible mark on each rod, thereby producing a U-bolt having two legs of substantially equal length from each rod and a supply of U-bolts differing in leg length size from each other, and with minimum scrap resulting from differing leg lengths in a single U-bolt.

4,654,913
METHOD FOR MANUFACTURE OF CAPTIVE NUT AND WASHER
William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.
Filed Dec. 5, 1985, Ser. No. 804,826
Int. Cl.[4] B21D *53/24*
U.S. Cl. 10—86 R **5 Claims**



1. A method for producing a wheel nut comprising a nut body and a washer unengageably captured thereto from an annular axially symmetric nut-washer blank of a metallic material, the nut-washer blank having a central axial bore, two axial ends, and having a nut portion substantially disposed toward a first axial end of the blank and a washer portion substantially disposed toward the second axial end of the blank, the method comprising the steps of:

(A) forming an axially symmetric frusto conical surface adjacent the second axial end of the blank tapering inwardly toward the first axial end of the blank to a minimum diameter greater than the diameter of the adjacent portion of the central bore of the blank;

(B) forming an annular shoulder between said frusto conical surface and the central bore of the blank intersecting said frusto conical surface at its minimum diameter, said intersection having a radius of curvature in a plane passing through the axis that is small relative to the diameter of the intersection;

(C) forming an axially symmetric groove in the nut-washer blank, the groove consisting of a first bearing surface on the nut portion, a second bearing surface on the washer portion, and a third surface therebetween, the intersection of the second and third surfaces having a radius of curvature in a plane passing through the axis that is small relative to the diameter of the intersection and having a diameter slightly less than the diameter of the intersection of said shoulder and said frusto-conical surface, the groove

leaving a relatively thin web of material between said intersections; and

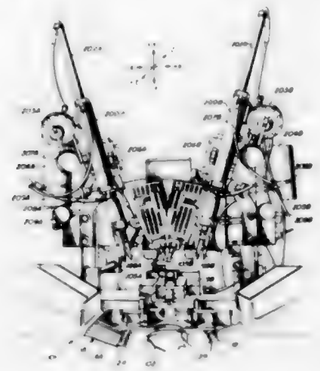
(D) axially compressing the nut-washer blank to create a substantially frusto-conical fracture surface between said intersections, whereby the washer is rotatably captured on the nut body by the fracture surface.

4,654,914

SIDE AND HEEL LASTING MACHINE

Alan L. Looper, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Apr. 11, 1986, Ser. No. 850,785
Int. Cl.⁴ A43D *21/12, 21/16, 21/00*
U.S. Cl. 12—10.5 **4 Claims**



1. A machine operable on a footwear assembly comprising a last having an insole located at its bottom and an upper mounted thereon with the toe portion of the upper margin wiped against and secured to the insole and unwiped portions of the upper extending heelwardly of the wiped margin, which unwiped margin portions extend upwardly at an open angle to the insole, for applying adhesive in the region between said unwiped margin portions and the corresponding portions of the insole at said region, said machine comprising:

a footwear assembly support for supporting the footwear assembly with the insole directed upwards;

nozzle means spaced upwardly from and facing said insole and mounted for motion toward and away from the insole as well as transverse and longitudinal movement with respect to the insole, said nozzle means being operable to apply adhesive into said region;

a lasting tool operable to clamp the upper tightly against the last and to apply light backup pressure against the unwiped margin to support the same, but nevertheless maintaining the open angle between the unwiped margin portions and the insole to permit application of adhesive into said region, said lasting tool comprising two lasting instrumentalities each comprising an inner lasting pad, one inner lasting pad being disposed at each side of the footwear assembly, each lasting pad being made of an elastic, flexible and deformable material, one end of each inner lasting pad being formed into a plurality of relatively rigid segments;

actuator means to press the rigid segments of the inner lasting pad at each side of the footwear assembly inwardly of the footwear assembly to press the upper tightly against the last and to apply said light backup pressure while maintaining said open angle, which actuator means moves the relatively rigid segments of the two inner lasting pads inwardly and over the insole in a wiping action to fold the margin onto the insole to adhere the margin onto the insole; and

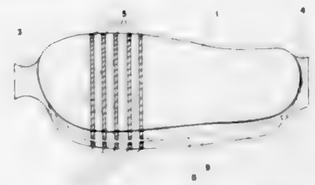
pincer means to grasp the unwiped margin portions of the footwear assembly at each side of the upper assembly in the area between the heel portion of the footwear assembly and the toe portion thereof operable to apply an upward drafting force on the upper at said unwiped margin portions as well as a forward drafting force and an inward drafting force thereon, to draw the upper snugly about the last, after which the upper is wiped.

4,654,915

PROCESS FOR THE PRODUCTION OF A FLEXIBLE ANATOMICAL INSOLE IN WOOD FOR SHOES AND FLEXIBLE INSOLE OBTAINED BY SAID PROCESS

Pietro L. Rigon, Via San Lazzaro, 7 Vicenza, Italy

Filed Jul. 10, 1985, Ser. No. 753,683
Claims priority, application Italy, Aug. 1, 1984, 85618 A/84
Int. Cl.⁴ A43B *13/08, 13/38*
U.S. Cl. 12—146 B **1 Claim**



1. A process for producing a flexible anatomical insole of wood for footwear consisting of the steps of:

providing a block of wood of approximate parallelepipedal shape,

shaping said block to obtain two opposed surfaces shaped in the approximate configuration of an insole, with two gripping projections extending from the ends thereof,

cutting transverse channels on both of said surfaces, wherein said channels extend to approximately one-half the thickness of the block,

introducing resilient rubber into said channels,

cutting said block along a plane corresponding to one-half the thickness of the block, whereby two symmetrical insoles are obtained, each comprising transverse wooden strips connected to each other by strips of rubber.

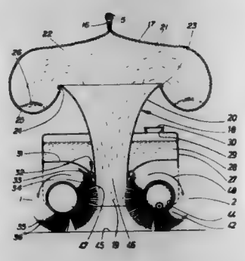
4,654,916

APPARATUS FOR CLEANING HARD SURFACES

Arne Postonen, Tangelstavägen 35C, S-137 00 Västerhaninge, and Henry Bergström, Partille, both of Sweden, assignors to Arne Postonen, Sweden

PCT No. PCT/SE84/00196, § 371 Date Jan. 23, 1985, § 102(e) Date Jan. 23, 1985, PCT Pub. No. WO84/04663, PCT Pub. Date Dec. 6, 1984
PCT Filed May 23, 1984, Ser. No. 705,338
Claims priority, application Sweden, May 24, 1983, 8302899
Int. Cl.⁴ A47L *11/18*
U.S. Cl. 15—50 C **3 Claims**

1. Apparatus for cleaning of preferably hard surfaces such as floors, stairs and the like having two substantially cylindrical brushes rotating in opposition to each other, said apparatus being supported on a surface by said brushes, means for the supply of liquid detergent to the brushes in contact with said brushes to moisten the latter when the brushes are rotated, said means having outlet pipes which run along the longitudinal direction of the brushes and are situated above the periphery of the brushes, said pipes having openings which point upward and which are covered by a combined throttling and distributing device for the liquid, at least one container on said apparatus, said brushes being arranged to transport dirt particles to said container merely by means of their rotation between them, a transport channel for each brush positioned between the brushes and the container, each transport channel having an inlet and an outlet located at the container, a guide plate part of each transport channel extending substantially tangential with respect to the periphery of its corresponding brush, a scraping edge on each guide plate for removal of adhered dirt particles from its corresponding brush, each scraping edge being located at the inlet of its corresponding transport channel and situated substantially at the tangential point to the periphery of its corresponding brush making contact with said periphery,



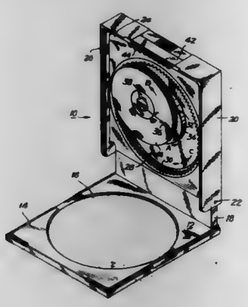
each brush having bristles designed to be bent at contact with the surface and thereafter to straighten out and throw at least part of the dirt particles up through its corresponding transport channel, and an air outlet located in the container in communication with said transport channels at their outlets, whereby an air flow is established passing through each transport channel, said air flow being generated by the rotation of the brushes facilitating the transport of dirt particles through each transport channel.

4,654,917

COMPACT DISC CLEANER

Choi K. Yeung, Hong Kong, Hong Kong, assignor to Recoton Corporation, Long Island City, N.Y.

Filed Jan. 17, 1985, Ser. No. 745,672
Int. Cl.⁴ G11B *3/58;* **B08B** *11/02*
U.S. Cl. 15—97 R **24 Claims**



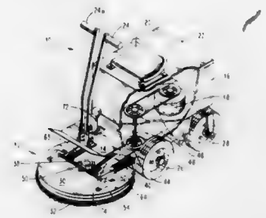
1. Cleaning apparatus for a compact disc comprising a housing; a rotatable carrier disposed in said housing and having an axis of rotation; a cleaning pad fastened to said carrier and adapted to contact the surface of a compact disc to clean the same; drive means coupled to said carrier for driving said carrier to rotate about the axis of rotation thereof and concurrently to cause said axis of rotation to move along a predetermined path; said drive means comprising a drive wheel rotatable about an axis thereof; means coupled to said drive wheel for rotating said drive wheel about said axis thereof; coupling means for coupling said drive wheel to said carrier to rotate the latter about said axis of rotation and to cause said carrier to revolve about the drive wheel axis; said coupling means including fastening means for fastening the axis of rotation of said carrier to a fixed location on said drive wheel radially outward of the drive wheel axis; and means for constraining said path of movement of said axis of rotation to a curved path relative to an axis of revolution, whereby said carrier and said cleaning pad concurrently rotate about said axis of rotation and revolve about said axis of revolution.

4,654,918

BUFFER DECK ASSEMBLY AND SURFACE MAINTENANCE APPARATUS

Donald K. Cooper, Symsonia, Ky., assignor to Jerald T. Allcock, Symsonia and Billy D. Hargis, Gilbertsville, both of, Ky.

Filed Nov. 18, 1985, Ser. No. 799,340
Int. Cl.⁴ A47L *11/162*
U.S. Cl. 15—98 **16 Claims**



1. A buffer deck assembly for floor scrubbing, cleaning and polishing machines or the like, comprising:

a buffer means;

deck housing for said buffer means;

means for displaceably mounting said deck housing for movement relative to said machine;

means for biasing said buffer deck housing to a normal operative position;

drive means for operating said buffer means; and

means for interrupting said drive means upon displacement of said buffer deck housing from said operative position.

4,654,919

SPREADER TOOL FOR APPLYING PLASTER AND CEMENT TO WALLBOARD, AND THE LIKE

Isak Liberman, 9238 Barberry La., Des Plaines, Ill. 60016

Filed Nov. 29, 1985, Ser. No. 802,682
Int. Cl.⁴ B05C *17/10*
U.S. Cl. 15—104 S **7 Claims**



1. A tool for spreading plaster, or the like, on wallboard surfaces, or the like, comprising:

a main body portion;

an application-surface member mounted to a portion of said main body portion;

said application-surface member comprising a pair of contoured surface layers each having a curvature starting at one side edge-surface of said application-surface member and continuing toward the center portion of said application-surface member;

a first layer of said pair of layers being a rigid backing-

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material layer having a first edge-surface thereof fixedly connected to said main body portion, and the second layer of said pair of layers being a flexible layer fixedly connected to a surface face of said backing layer, to thus form a laminate;

said first layer having a second edge-surface portion remote from said first edge-surface portion, said second flexible layer having a projecting edge-surface portion projecting outwardly of said second edge-surface portion of said backing layer;

each said layer having a respective mutually-contacting contoured surface defining said contoured surface portion.

4,654,920

SPONGE MOP WITH SCRUBBER ATTACHMENT

William J. O'Neil, Jr., and Richard P. Burkhart, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Mar. 24, 1986, Ser. No. 843,526
Int. Cl.[4] A47L *13/12, 13/144*
U.S. Cl. 15—119 A **9 Claims**



1. A scrubber attachment for a sponge mop having an elongated sponge retractably and transversely mounted relative to a yoke, said yoke having leg members for rotatably supporting a pair of elongated parallel axle members between which said sponge may be retracted, said attachment comprising:

a frame;

a scrubber pad attached to said frame so as to be operable from one side of said frame;

bearing means secured to the other side of said frame for, in operation, receiving therethrough one of said axle members;

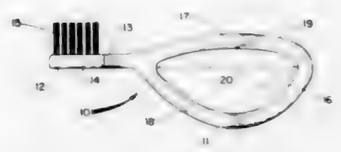
at least one locking means associated with said leg members for engaging a predetermined portion of said bearing means to secure same to one of said leg members.

4,654,921

TOOTHBRUSHES

Mark E. W. Dinner, 27 Twain Clr., R.D. #1, Sugarloaf, Pa. 18249

Continuation of Ser. No. 660,783, Oct. 17, 1984, abandoned. This application Jan. 16, 1986, Ser. No. 820,423
Int. Cl.[4] A46B *5/00*
U.S. Cl. 15—167 R **1 Claim**



1. A toothbrush for young children and infants comprised of:

a handle of unitary rigid construction including an oval ring and a bridge member extending longitudinally from a forward end of said oval ring, said oval ring having an oval aperture therein having dimensions proportioned to permit a young child or infant to hold said oval ring within the grip of its four fingers over an upper half of said oval ring and through said oval aperture, and with its thumb closed about said upper half of said oval ring in the vicinity of said bridge member; said upper half of said oval ring having a cross-sectional circumference greater than the cross-sectional circumference of a lower half of said oval ring; and

a brush head including a bristle support member extending longitudinally in a direction generally in alignment with a major axis of said oval ring, and an array of bristles supported by and extending from said bristle support member.

4,654,922

BRUSH WITH UNIVERSAL JOINTS

Horng Y. Chen, 1, 4th Floor, No. 12, Lane 348, Min Chun East Road, Taipei, Taiwan 104

Filed May 28, 1985, Ser. No. 738,275
Int. Cl.[4] A46B *9/04*
U.S. Cl. 15—172 **10 Claims**



1. A toothbrush comprising a handle, a neck portion including a rear maip brush portion, and two equally divided smaller front brush portions, said front and main brush portions having bristles extending downwardly therefrom, said front brush portions being about ½ of the length, in the axial direction, of the main brush portion, the main brush portion being about ⅔ths the length of the front and rear brush portions combined, each of the two smaller front brush portions having a joint to couple with the main brush body so that said small brush portions can be pivoted upwardly and downwardly or turned outwardly and inwardly, and a joint connected between the handle portion and the neck portion to allow the brush body to be pivoted or turned in any direction so as to be able to clean the hard-to-get-at areas of the teeth, thus increasing the brushing and cleaning efficiency of the toothbrush.

4,654,923

LOTTERY TICKET PROCESSOR

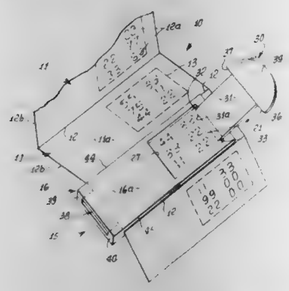
Gregory R. Faciane, 201 W. Grand View, Sierra Madre, Calif. 91024, and Maxine M. Faciane, 19503 S. Tilman, Carson, Calif. 90746, assignors to Gregory R. Faciane, Sierra Madre; Maxine M. Faciane; Louis H. Faciane, both of Carson and Ralph G. Faciane, Monterey Park, all of, Calif., a part interest

Filed Dec. 5, 1985, Ser. No. 804,925
Int. Cl.[4] A47L *13/02*
U.S. Cl. 15—236 R **16 Claims**

1. In a device for processing a string of lottery tickets interconnected along laterally extending folds, each ticket being rectangular, the combination comprising:

(a) a body having upper and lower flat, generally parallel, laterally extending plates which extend in proximity to define a space therebetween, the plate and said spaced sized to slidably pass the string of tickets, in sequence, longitudinally between the plates and so that at least one fold lines up with a plate edge as a ticket is received into said space,

(b) a window in the upper plate to register with a zone of a ticket in said space, and via which alphanumberic characters on the ticket are presented, upon removal of an overlying film at said zone,



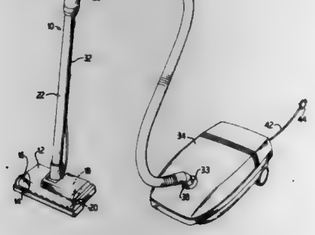
(c) and a scraper carried by said body for scraping off said film on said zone of the ticket at said space, when a portion of the scraper is inserted through said window.

4,654,924

MICROCOMPUTER CONTROL SYSTEM FOR A CANISTER VACUUM CLEANER

Edward H. Getz, Pipestone Township, Berrien County, and Roger D. Burdi, Royalton Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 31, 1985, Ser. No. 815,384
Int. Cl.[4] A47L *9/28*
U.S. Cl. 15—319 **22 Claims**



1. A vacuum cleaner comprising:

a motor fan suction unit having a first electric motor;

a floor contacting motor brush unit having a second electric motor driving a rotating brush;

a suction hose connecting said suction unit and motor brush unit having a hand engaging portion when in use in easy access position for propelling said motor brush unit over a floor;

means for controlling the energization of said first and second motors simultaneously;

means for controlling the energization of said second motor independent of said first motor;

means for controlling the speed of said first motor independent of said second motor;

circuit means for connecting both said motors to said control means and to a source of alternating current comprising three current carrying conductors embodied in said hose;

means for detecting pressure levels in said motor fan suction unit and in said suction hose;

means on said hand engaging portion for indicating to a user that a low suction level is present in said motor fan suction unit and in said suction hose when detected;

means for measuring the rotational speed of said rotating brush; and

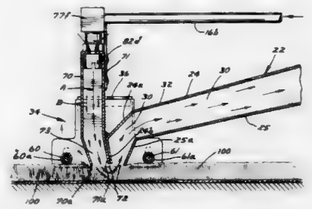
means on said hand engaging portion for indicating to the user that said brush is rotating below a preselected rotational speed.

4,654,925

NOZZLE STRUCTURE FOR A SURFACE COVERING CLEANING MACHINE

Dale L. Grave, 125 Queensland La. North, Plymouth, Minn. 55447

Filed Apr. 28, 1986, Ser. No. 856,346
Int. Cl.[4] A47L *11/30*
U.S. Cl. 15—322 **9 Claims**



1. In connection with a surface cleaning apparatus, a cleaning head structure comprising

a hood having a chamber therein,

said hood tapering at one end,

a tubular member extending from said tapered end of said hood and communicating with a source of suction,

said hood diverging in width at its other end,

a housing extending across said other end of said hood,

a manifold comprising a plurality of jets,

said housing supporting said manifold,

said jets extending into said housing spaced thereacross,

means supplying said jets with cleaning fluid,

said hood forming a passage into and adjacent the bottom of said housing,

a passage in said housing extending to adjacent the bottom thereof defining a path for cleaning fluid from said jets,

said first and second mentioned passages having adjoining walls above the bottom plane of said housing forming a passage therebeneath,

a plurality of air ports adjacent said jets into said housing providing an air stream co-mixing with the cleaning fluid from said jets,

means providing a second stream of air into said housing,

said suction drawing upon said tubular member and said passages forming a low pressure area at the base of said first and second mentioned passages, causing a venturi effect to draw said second stream of air into confluence with said co-mixed air and cleaning fluid stream in said second mentioned passage at the bottom of said second passage, and

whereby said confluent streams are drawn through the surface being cleaned in a continuous motion leaving only a residue of dampness.

4,654,926

VACUUM CLEANER

James McCambridge, Polo, Ill., assignor to Central Quality Industries, Inc., Polo, Ill.

Filed Apr. 8, 1985, Ser. No. 721,061
Int. Cl.[4] A47L *9/00*
U.S. Cl. 15—327 D **6 Claims**

1. An improved vacuum cleaner of the type having a canis-

VOL 1077 ISS 1 AP 7 1987 UMI

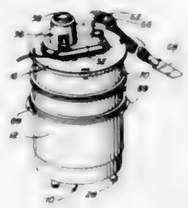
ter with a peripheral surface and defining a space therewithin for accumulation of matter, a removable lid for sealing the canister and having a downwardly facing surface, means for removably attaching the lid to the canister, means for evacuating air from the space within the canister, an inlet to admit matter into the space for accumulation therein and an outlet to exhaust air evacuated from the space, the improvement comprising:

said canister having an upper edge with a laterally projecting plastic lip defining an upwardly facing surface;

a first canister extension for connection to the canister to increase the space for accumulation of matter,

said canister extension having a lower edge with a laterally projecting plastic lip defining a downwardly facing surface for engagement with the upwardly facing surface of the canister lip so that plastic-to-plastic engagement can be made between the canister and canister extension lips continuously about the peripheral surface of the canister;

said canister extension having an upper edge with a plastic lip having an upwardly facing surface;



means for connecting the lid selectively to the canister and canister extension so that the downwardly facing surface on the lid can be selectively engaged continuously about the peripheral canister surface with the upwardly facing surface on the upper edge of the canister and the upwardly facing surface on the lip on the upper edge of the canister extension,

said surface on the lip at the bottom edge of the canister extension being selectively engageable continuously about the peripheral canister surface with the surface on the lip on the upper edge of the canister and the surface of a lip on an upper edge of a second canister extension that is identical to the first canister extension,

whereby the canister is universal in nature and can be usded selectively alone and in conjunction with at least one extension depending upon the desired accumulation capacity and the engaging lips on the canister and canister extension can be fused as by sonic welding to sealingly connect the canister and canister extension.

4,654,927

SIDE SWEEPING BRUSHING VACUUM MACHINE

Harry E. Novinger, 4961 S. Chester St., Englewood, Colo. 80111

Filed Dec. 5, 1984, Ser. No. 678,346

Int. Cl.[4] A47L *5/28*

U.S. Cl. 15—340 **14 Claims**

1. Brushing apparatus, comprising:

a nozzle;

at least one brush;

means rotatably connected to the nozzle, comprising cylindrical members with axes substantially parallel to a work surface, for propelling the nozzle over the work surface and for mounting the at least one brush;

the rotatable members including at least one brush roll for mounting the at least one brush and further including at least one wheel type propelling member coaxial to the at least one brush roll;

power means for rotating the rotatable means;

control means for controlling the nozzle and the rotatable means over the work surface including means forming an elongated handle on the nozzle with its longitudinal axis aligned with a plane perpendicular to the work surface, and the handle axis further aligned about 45 degrees to the axes of the rotatable means, and the plane aligned substantially parallel to the axes of the rotatable means; and,



the control means responsive to operator urging so as to effect powered side sweeps of the nozzle over the work surface in directions perpendicular to the axes of the rotatable means and to the plane of the elongated handle means.

4,654,928

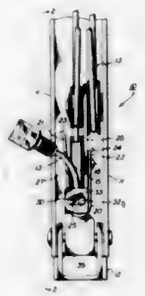
ADJUSTABLE FRICTION BLOCK AND TACKLE WINDOW BALANCE SYSTEM

Robert S. Flight, Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.

Filed Apr. 11, 1986, Ser. No. 850,719

Int. Cl.[4] E05F *1/00*

U.S. Cl. 16—199 **32 Claims**



1. In a block and tackle window balance system having a pulley with a radial face disposed adjacent a fixed support and a spring arranged adjacent a radial face of said pulley opposite said support, the improvement comprising:

a. a cam movable between high and low friction positions;

b. said cam being accessible when said block and tackle window balance system is mounted in a window so that said cam can be moved between said positions;

c. said cam being disposed to engage said spring in at least one of said positions; and

d. said spring being in frictional engagement with said pulley when said cam is in said high friction position, and said spring being out of engagement with said pulley when said cam is in said low friction position.

4,654,929

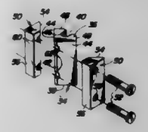
HINGE RE-BUILD ASSEMBLY

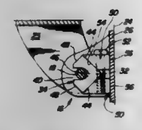
Jesse L. Fahnders, and Barbara A. Fahnders, both of 1206 S. 18th St., Pekin, Ill. 61554

Filed Aug. 22, 1986, Ser. No. 898,975

Int. Cl.[4] E05D *5/00*

U.S. Cl. 16—261 **4 Claims**





1. For use in the re-building of a hinge of the type mounting a vehicle door to a vehicle body part for horizontal swinging, wherein the body part has a pair of vertically spaced apart horizontal ears interfitting with a pair of vertically spaced apart ears affixed to the proximate edge of the door and a vertical hinge pin spanning and interconnecting the door and body part ears and spaced forwardly of the door edge: a hinge repair assembly comprising a block of bearing material having top and bottom ends and front and rear upright portions and dimensioned to fit between the door ears and between the door edge and hinge pin, the front portion having an U-shaped bearing groove open toward the front of the block and running from top to bottom for receiving and said U-shape terminates in a closed, rounded bottom with a semicircal shape such that said U-shaped groove partly embracing the hinge pin from its rear, the rear portion of the block being V-shaped in section as seen from above and having an apex forming said block's rear most end and a pair of ramp faces diverging forwardly from the apex, a pair of wedge members disposed in laterally spaced apart relation with the block between them and respectively having ramp faces diverging from rear to front on the order of and respectively engaging the block faces, and further respectively having rear edge portions abutting the proximate edge of the door, and screw means disposed crosswise of the block and wedge members and cross-connecting the members to clamp them together and thus to exert a forward force on the block to improve the bearing engagement between the groove and the hinge pin.

4,654,930

SELF-CLOSING OVER-CENTER HINGE HAVING A LINK GUIDED IN A SPRING BIASED CAM

Karl Lautenschläger, Jr., Reinheim, and Gerhard Lautenschläger, Brensbach, both of Fed. Rep. of Germany, assignors to Karl Lautenschläger GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

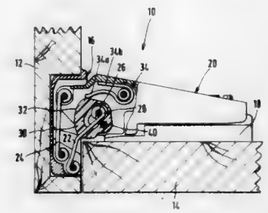
Filed Apr. 22, 1986, Ser. No. 854,997

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1985, 3514480

Int. Cl.[4] E05F *1/08*

U.S. Cl. 16—288 **6 Claims**

1. An over-center self-closing hinge comprising: a wall-related part having means for attachment to a wall of a cabinet, a door-related part for attachment to a door of a cabinet, a first hinge link, and a second hinge link, a first shaft pivotally connecting said first hinge link to said wall-related part, a second shaft for pivotally connecting said first hinge link to said door-related part, means for pivotally connecting said second hinge link to said wall-related part and to said door-related part, said first hinge link being closer to said attachment means than said second hinge link, a single-arm lever forming a compression spring and having a stationary end journalled in said wall-related part and also having a free end, a cam body having a cam face engaged by said free end of said compression spring, a third shaft for pivotally supporting said cam body in said wall-related part, and guide means in said cam body for displaceably guiding said first hinge link between said first and second shafts, said third shaft being in all positions of the hinge at a greater distance from said cam face than said first shaft.



4,654,931

HINGE DEVICE WITH BRAKE SPRING FOR TILTING WINDOWS

Siegfried Sonneborn, Tangstedt; Manfred Handel; Ernst Mack, both of Weilheim/Teck, all of Fed. Rep. of Germany; Carl F. Gerstrom, Allerod, and Peter Sorensen, Lyngby, both of Denmark, assignors to V Kaan Rasmussen Holding A/S, Soborg, Denmark

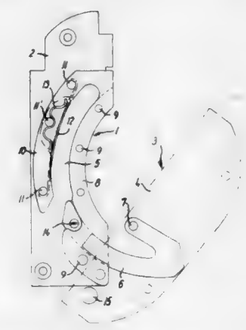
PCT No. PCT/DK84/00119, § 371 Date Jul. 2, 1985, § 102(e) Date Jul. 2, 1985, PCT Pub. No. WO85/02646, PCT Pub. Date Jun. 20, 1985

PCT Filed Dec. 14, 1984, Ser. No. 758,218

Claims priority, application Denmark, Dec. 15, 1983, 5788/83

Int. Cl.[4] E05C *17/64*; E05D *1/108*

U.S. Cl. 16—337 **1 Claim**



1. A hinge device for tilting windows, particularly tilting windows for installation in an inclined roof, comprising:

two hinge parts adapted to be secured to the frame of the window and its sash, respectively, said hinge parts having respective base plates;

guide means on one of said base plates, said guide means forming a part-circular guide channel;

a slide member on the other of said base plates, said slide

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member corresponding in shape to said guide channel and defining a tilting axis spaced from the plane of the window;

a plate element forming the concave guide means on one side of the part-circular guide channel, said plate element being spaced from said base plate and secured thereto by means of rivets or similar pins to the base plate of the hinge part;

an arched blade spring arranged in the space between said plate element and base plate, said blade spring having curved end portions gripping partly around and held in place by two of said rivets securing said plate element;

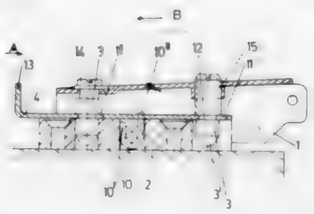
a guide pin on said hinge part having said slide member, said guide pin being positioned to frictionally engage the concave surface of said arched blade spring when the sash is moving close to its closed position; and

an undulated spring having legs resting on the convex side of said arched blade spring, said undulated spring springloading said arched blade spring while a mid portion is supported against a rivet located intermediate to the two blade spring supporting rivets.

4,654,932
HINGE

Erich Röck, Höchst; Helmut Rupprechter, and Klaus Brüstle, both of Lustenau, all of Austria, assignors to Julius Blum Gesellschaft M.B.H., Höchst, Austria

Filed Dec. 28, 1984, Ser. No. 687,430
Claims priority, application Austria, Dec. 30, 1983, 4571/83; Oct. 19, 1984, 3338/84
Int. Cl.⁴ E05D *7/12*
U.S. Cl. 16—382 **13 Claims**



1. In a furniture hinge of the type including a mounting plate adapted to be mounted on a furniture body to extend in a mounting plane, a hinge arm adapted to support a furniture door, and means for removably mounting said hinge arm on said mounting plate, the improvement wherein said mounting means comprises:

at least one recess formed in said mounting plate;

at least one rod attached to said hinge arm and extending therefrom, said rod being insertable into said recess in a direction transverse to said mounting plane, and said rod having formed therein a notch;

a catch member mounted on said mounting plate for sliding movement relative thereto in opposite first and second longitudinal directions parallel to said mounting plane, said catch member having therethrough at least one hole through which extends said rod when said rod is inserted into said recess;

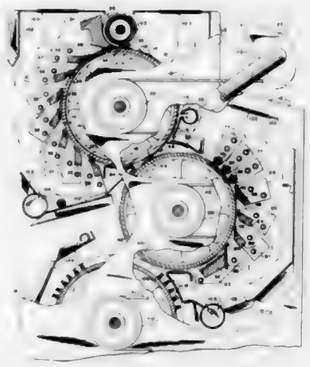
spring means, mounted on said mounting plate and operable between said mounting plate and said catch member, for urging said catch member in said first direction, such that an edge of said catch member defining said hole engages in said notch, thereby locking said rod and thus said hinge arm to said mounting plate, said spring means comprising a torsion spring mounted within said mounting plate and having a first leg abutting said mounting plate and a second leg abutting said catch member; and

means for moving said catch member in said second direction against the spring force of said spring means and thereby for removing said edge from said notch, such that said rod may be removed from said recess and said hole.

4,654,933
GIN LINT CLEANER WITH FIBER RETURN

James L. Horn, Horn and Gladden, P.O. Box 64720, Lubbock, Tex. 79464; Robert C. Schwartz, and John E. Sparks, both of Lubbock, Tex., assignors to James L. Horn, Lubbock, Tex.

Division of Ser. No. 566,393, Dec. 28, 1983, Pat. No. 4,528,725.
This application Apr. 25, 1985, Ser. No. 727,390
The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.
Int. Cl.⁴ D01B *1/04*; D01G *9/06*
U.S. Cl. 19—200 **6 Claims**



1. A system for cleaning lint cotton including the steps of:

a. receiving seed cotton into a gin building,

b. transporting the seed cotton to gin stands, then

c. separating the seeds and the lint cotton of the seed cotton with the gin stands, then

d. conveying the lint cotton to a feeder of a lint cleaner,

e. feeding a layer of lint cotton, having more than 5% foreign matter content, to a rotating saw cylinder of the lint cleaner, having a length, at a rate of at least 0.6 pound of lint cotton per minute per inch of the saw cylinder length,

f. engaging the layer with a plurality of saw teeth on the saw cylinder

g. moving the layer on the saw teeth beneath a plurality of stationary grid bars, each having an elongated edge transverse and proximate the saw tooth movement, thereby

h. disturbing the lint fibers in the layer with the edge of the grid bars, thus

i. loosening foreign matter from the layer;

wherein the improvement comprises the following steps after the above:

j. disengaging most of the layer from the saw cylinder at a pinch between the saw cylinder and a device downstream of the grid bars for disengaging lint fibers from the saw cylinder,

k. moving remaining lint fibers not disengaged from the saw cylinder at the pinch downstream of the pinch on the teeth of the saw cylinder,

l. suctioning the remaining lint fibers from the saw cylinder into a lint return duct adjacent the saw cylinder,

m. returning the remaining lint fibers in the lint return duct to the feeder of the lint cleaner, and

n. combining the remaining lint fibers with lint cotton conveyed to the feeder from the gin stands, while

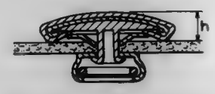
o. conveying the lint fibers disengaged at the pinch to a bale press, and then

p. pressing the lint fiber conveyed to the press into dense bales.

4,654,934
COVERED BUTTON

Kenji Hasegawa, Fujisawa, Japan, assignor to Scovill Japan Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1986, Ser. No. 832,285
Claims priority, application Japan, Mar. 4, 1985, 60-29717[U]
Int. Cl.⁴ A44B *1/12, 1/38*
U.S. Cl. 24—113 R **2 Claims**



1. A covered button including a button body which has a mushroomlike head covered with a piece of covering material and a shank formed inside, and a washer fitted onto the shank and which securely presses the fold-back peripheral edge of the covering material in place, characterized in that the washer is provided with a plurality of leaf-spring-like projections extending radially inwardly and away from said head and terminating in edges defining a hole having a diameter smaller than that of said shank, whereby the covering material is held in place by the washer, with the edges of the projections firmly engaging the shank under the springback urging of the covering material as well as the resiliency of said projections.

4,654,935
STRUCTURE, USE AND MANUFACTURE OF FASTENERS

Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Dec. 10, 1984, Ser. No. 679,737
Int. Cl.⁴ A44B *9/00*; B65D *85/24*
U.S. Cl. 24—150 FP **13 Claims**



1. An attachment comprising a cross bar, a head portion and a connector joining said cross bar to said head portion;

said connector forming a first transition angle with said cross bar in one orientation and a second transition angle, different from the first, in another orientation;

thereby to provide a toggle effect which promotes the reorientation of said cross bar relative to its equilibrium position after said attachment has been used by having said cross bar folded against said connector driven into an object.

4,654,936
FASTENER HOOK

Albert L. Courtney, 1601 Gulf St., Lamar, Mo. 64759

Filed May 27, 1986, Ser. No. 867,077
Int. Cl.⁴ F16G *11/04*
U.S. Cl. 24—230.5 W **9 Claims**

1. A fastener hook operable to interconnect a flexible line with a target member capable of being engaged by a hook, and comprising:

a. a substantially planar and rigid hook body having a channel formed therein constituting a generally spiral slot of at least 360 degrees in angular extent formed through the thickness thereof, said slot opening at one end through an edge of the body whereby to be engageable over said target object and being closed at its opposite end, and being of sufficient transverse width to allow said target member to move therethrough to its closed end, and

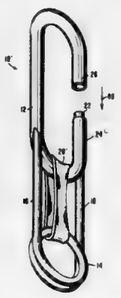


b. an elongated connector member permanently connected at one end to said hook body at a point generally internally of the spiral form of the channel formed therein, extending from said body member in a direction lying substantially in the plane thereof, said hook body being freely rotatable in its own plane relative to said connector member, about an axis normal to the plane of said body member.

4,654,937
POSITIVE ACTION GATE CLIP

James E. Brown, 948 Jeannette Ave., Thousand Oaks, Calif. 91362

Continuation of Ser. No. 604,885, Apr. 27, 1984, abandoned.
This application Jan. 8, 1986, Ser. No. 817,477
Int. Cl.⁴ A44B *21/00*
U.S. Cl. 24—523 **7 Claims**



1. A positive action gate clip capable of releasably securing a load to a support comprising:

(a) a tubular frame substantially forming a loop and having first and second parallel opposing tube sections, said frame having a gate element exit opening into said first tube section, said first tube section being discontinuous so as to provide a first tube portion having a first end opening and a second tube portion having a second end opening opposing said first end opening so as to define a gap thereinbetween;

(b) a gate element having a major axis, and first and second parallel rod sections parallel to said major axis, each corresponding to a respective one of said first and second parallel opposing tube sections, the first corresponding one of said rod sections retractably extending into said first tube section via said gate element exit opening and through said

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second tube portion and into said first tube portion via said first and second end openings so as to form a retractable gate across the gap thereinbetween; and

(c) means, coupled between an exterior surface of said frame and said gate element, for resisting the retraction of said gate element from across the gap and for permitting the partial withdrawal of said gate element from said first tube section and from across the gap between said first and second end openings in response to the application of force to said gate element in a direction parallel to said first rod section, whereby said retraction resisting means provides a retraction resisting force independent of any force applied to said clip and of the orientation of said frame and said gate element.

4,654,938

DESCALER HEAD ASSEMBLY FOR A DESCALING MACHINE

Tore Dalseide, Bekkjarvik, Norway, assignor to Dalseide & Co., Bekkjarvik, Norway

Filed Mar. 19, 1984, Ser. No. 590,757
Claims priority, application Norway, Mar. 22, 1983, 830996
Int. Cl.⁴ B21C *43/00*
U.S. Cl. 29—81 E **3 Claims**



1. For use in a descaling machine, a descaler head assembly comprising

a rotatable central support shaft;

a plurality of rigid bar-shaped holding elements slidably mounted on said shaft for rotation therewith, each said holding element being angularly offset and axially displaced from an adjacent holding element along said shaft and being angularly adjustable on said shaft;

means on said shaft for fastening said holding elements together coaxially on said shaft;

a flexible connecting element mounted on each end of each holding element to extend radially of said shaft; and

a descaler element connected to an end of each connecting element.

4,654,939

FOIL BEARING SURFACES AND METHOD OF MAKING SAME

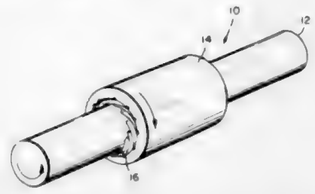
Alexander Silver, Tarzana, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 033,931, Apr. 27, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,322
Int. Cl.⁴ B21D *53/10*
U.S. Cl. 29—149.5 A **28 Claims**

1. A method of supporting relative movement between two members, one of which being supportive of the other, comprising the steps of:

positioning a plurality of compliant, overlapping foils between the two members, the positioned foils each having an essentially smooth rubbing contact surface facing one of the members;

coating the rubbing contact surfaces of said foils with a dry lubricant coating; and



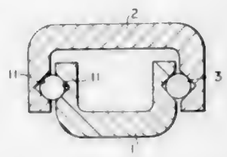
providing a multiplicity of dry lubricant reservoirs beneath the surfaces of the dry lubricant coatings, each of said reservoirs being circumscribed by a portion of one of the essentially smooth rubbing contact surfaces.

4,654,940

ROLLING BEARING MADE BY THIN STEEL PLATES FOR PROVIDING A RECTILINEAR MOVEMENT

Kengo Hidano, Fujisawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Division of Ser. No. 674,584, Nov. 26, 1984, Pat. No. 4,593,957. This application Oct. 16, 1985, Ser. No. 795,923
Int. Cl.⁴ B21D *53/10*
U.S. Cl. 29—149.5 R **2 Claims**



1. A method of manufacturing a rolling bearing for rectilinear movement, comprising the steps of:

(a) making a table and a bed of the bearing from thin metal plates, respectively, and cutting them so as to have predetermined dimensions;

(b) bending said metal plates at predetermined portions due to plastic deformation so as to have a U-shaped cross section;

(c) forming track grooves each having a V-shaped cross section in the metal plates due to cutting work and/or grinding work so that the depth of said track grooves is 20% to 50% of the thickness of said metal plates, thereby manufacturing the table and bed; and

(d) assembling said table over said bed through a plurality of rolling bodies in said track grooves.

4,654,941

METHOD OF ASSEMBLING A VARIABLE NOZZLE TURBOCHARGER

Fred E. Burdette, Torrance; Jean-Luc Fleury, and Manfred Roessler, both of Manhattan Beach, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 602,644, Apr. 20, 1984. This application Dec. 13, 1985, Ser. No. 808,917
Int. Cl.⁴ B23P *15/04*
U.S. Cl. 29—156.8 R **4 Claims**

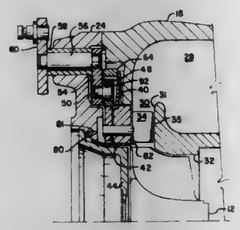
1. In a turbocharger having an exhaust gas driven turbine rotatably mounted to a shaft having a compressor impeller thereon, a compressor housing enclosing said compressor impeller, a center housing including bearing means for rotatably supporting the shaft, and a turbine housing enclosing said

turbine and forming a volute therein, a method of assembling the turbocharger with a spring loaded nozzle ring comprising the steps of:

mounting a flange member having a central opening to said center housing;

pivotably mounting a plurality of vanes to said nozzle ring;

sliding a tube member having a tab at each end within said central opening;



indexing one of said tabs within a slot in said flange member;

sliding said nozzle ring onto the tube member;

indexing the other tab within a slot in said nozzle ring;

simultaneously mounting said turbine housing to said flange member and biasing said nozzle ring toward said turbine housing such that said plurality of vanes are spring loaded against a portion of said turbine housing.

4,654,942

METHOD OF MAKING A BRANCHED HOSE CONSTRUCTION

James B. Rush, Waynesville; James S. Bryan, Clyde; Jonas L. Gunter, Canton; Guy W. Dillard, Sylva; Roger D. Meadows, Waynesville, and Pearison W. Henry, Sylva, all of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 709,962, Mar. 8, 1985. This application Sep. 26, 1985, Ser. No. 780,517
The portion of the term of this patent subsequent to Jan. 20, 2004, has been disclaimed.
Int. Cl.⁴ B21D *53/00*
U.S. Cl. 29—157 T **10 Claims**



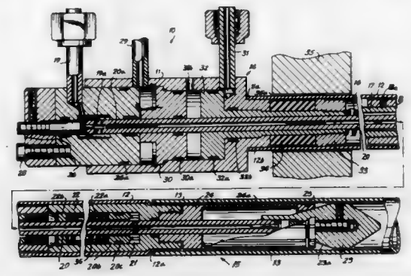
1. In a method of making a branched hose construction comprising the steps of providing a first tubular member having opposed ends, providing a second tubular member having opposed ends, forming said first tubular member to have an opening therein intermediate said opposed ends thereof, providing a joint construction that comprises a tubular insert having opposed ends, joining one of said ends of said second tubular member to said opening by having one end of said tubular insert disposed through said opening and the other end thereof interconnected to said one end of said second tubular member whereby said tubular members are in fluid communication with each other through said tubular insert and said second tubular member branches outwardly from said first tubular member, forming said joint construction to further comprise a washer-like member, telescoping said washer-like member on said tubular insert, mechanically clamping said one tubular member between said washer-like member and said one end of said tubular insert completely around said opening thereof, and securing said washer-like member to said tubular insert, the step of securing said washer-like member to said tubular insert taking place after the step of disposing said one end of said tubular insert through said opening of said one tubular member, the improvement wherein said fastening member comprises an annular internally tined washer frictionally engaging said tubular insert and engaging and compacting said washer-like member toward said one end of said tubular insert.

4,654,943

TUBE POSITIONING TOOL AND METHOD FOR USE

George B. Rabe, Sparta, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Feb. 24, 1986, Ser. No. 833,624
Int. Cl.⁴ B21D *53/00*; B23P *15/26, 19/04*
U.S. Cl. 29—157.4 **12 Claims**



1. A tool device for remotely positioning a replacement tube in axial alignment engagement with an existing tube, comprising:

(a) a main body having a cylindrical bore therein and containing dual connections spaced apart longitudinally and extending into said bore, and a divider provided within said bore between said dual connections;

(b) a rear piston means slidably interfitting partially within the rear portion of said bore in said main body, said rear piston having a pressure connection and an elongated inner tube unit attached thereto, said inner tube unit extending forwardly through the divider and main body and being rigidly connected at its forward end to a tapered nosepiece;

(c) a forward piston means slidably located within said body bore and slidably enclosing said elongated inner tube unit, said forward piston having a retainer collar attached thereto and enclosing a resilient clamping mandrel located between the main body forward end and said retainer; and

(d) a clamp body provided at the forward end of said main body and slidably fitted over said inner tube unit, said clamp body being attached at its forward end to a collet clamp located between said clamp body and said tapered nosepiece, whereby said clamp body and collet can be inserted into a replacement tube for axially moving the replacement tube forward toward said annular collet clamp means when anchored in an existing tube.

9. A method for remotely positioning a replacement tube in axial alignment and interfitting engagement with an adjacent existing tube, comprising:

(a) inserting a front end section of an elongated positioning tool through the replacement tube and into the existing tube;

(b) pressurizing an inner tube of said tool and withdrawing a

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nosepiece into a concentric tube clamp and thereby expanding the clamp to contact the existing tube inner wall and clamp the tool front end section to the existing tube:

(c) pressurizing a rear piston means in the tool body to move the body and replacement tube forward into axial engagement with the existing tube end; and

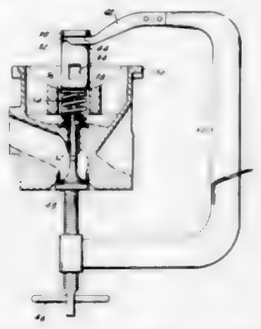
(d) pressurizing the positioning tool forward piston to clamp a resilient mandrel of the tool against the inner cylindrical surface of the replacement tube to radially expand the replacement tube into a surrounding tube sheet.

4,654,944

OVERHEAD CAM VALVE SPRING COMPRESSOR ADAPTER

Richard W. Graf, 3 Jericho Rd., Box 5279, Clinton, N.J. 08809

Filed Sep. 13, 1985, Ser. No. 775,630
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—217 **15 Claims**



1. In combination with a C-clamp valve spring compressor having a bifurcated jaw.

an adapter for adapting said compressor to extend into a bore in a cylinder head, said adapter comprising:

a member having an upper portion for receiving a compressing force from a C-clamp compressor and an opposite lower portion with a lower end face for engaging a valve spring assembly to be compressed by the compresaing force;

means on the upper portion of the member for connecting to the C-clamp compressor, including means for receiving said bifurcated jaw of said C-clamp compressor; the means for receiving the bifurcated jaw comprising a groove formed in the outer surface of the upper portion of the member for receiving, and coacting with, said bifurcated jaw for securing the adapter against relative motion of the member with respect to the jaw; the jaw-receiving means being configured for being removably and replaceably fitted to said bifurcated jaw;

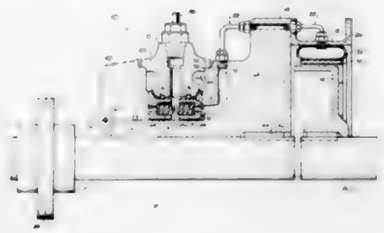
the member having a central opening defined therein extending from the lower end face toward the upper portion for receiving a valve stem of the valve spring assembly as the valve spring assembly is compressed; the member further having at least one lateral opening defined in the lower portion and connecting to the central opening for permitting access to the valve stem.

4,654,945

METHOD FOR A COMPACT CONVERSION AIR-ACTUATED DRIVE UNIT

David M. Cline, Greenville; William R. Branyon, Landrum, and Norman E. Voelzow, Greenville, all of S.C., assignors to The Cline Company, Greenville, S.C.

Filed Oct. 28, 1985, Ser. No. 791,925
Int. Cl.⁴ B23P *17/04, 11/00*
U.S. Cl. 29—401.1 **9 Claims**



1. A method of converting a mechanically-actuated drive unit to an air-actuated drive unit in an industrial power transmission system of the type having a rotating input drive shaft, a spider affixed to said input drive shaft so that said spider and input drive shaft rotate together, said mechanically-actuated drive unit adapted to be mounted to said spider so that said input drive shaft and said mechanically-actuated drive unit rotate together, an output shaft releasably connected to said mechanically-actuated drive unit in a manner in which said output shaft rotates with said input drive shaft when said mechanically-actuated drive unit is activated and released from said rotation with said input drive shaft when said mechanically-actuated drive unit is deactivated, said method comprising removing said mechanically-actuated drive unit from said spider and mounting said air-actuated drive unit on said spider in place of said mechanically-actuated drive unit, and supplying air from a stationary source to said air-actuated drive unit, wherein the improvement comprises:

providing a rotary air seal adaptor having a rotary member, and a stationary air chamber member;

providing a stationary air chamber member having an air chamber and an air inlet adapted to be connected to an external air supply source for delivery of air into said air chamber;

machining a hub of said spider for axially receiving said rotary air seal adaptor;

machining a radial flange of said spider to interface with said rotary air seal adaptor including machining a rotary interface surface for forming a rotating interface between said stationary air chamber member of said rotary air seal adapator and said radial flange of said spider;

forming a first air delivery passage in said spider in a direction substantially parallel to the axis of rotation of said input drive shaft;

forming a second air delivery passage in said spider in communication with said first passage;

connecting said second air delivery passage to an air actuator of said air-actuated drive unit with an air delivery conduit;

providing air distribution means connected between said stationary air chamber and said first air delivery passage for distributing air from said stationary air chamber to said air actuator;

sealing said rotary interface for preventing external air leakage from said air distribution means between said stationary chamber member and said spider flange as air passes from said stationary air inlet and chamber to said first passage; and

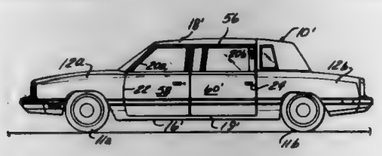
assembling said rotary air seal adaptor directly onto said spider hub in a manner in which said stationary air chamber is held stationary while said radial spider flange rotates relative to said stationary air chamber member.

4,654,946

METHOD OF CONVERTING A SEDAN TO A LIMOUSINE

Charles W. Phillips, Boca Raton, Fla., assignor to Phillips Motor Car Corporation, Margate, Fla.

Continuation of Ser. No. 441,321, Nov. 12, 1982, Pat. No. 4,589,181. This application May 20, 1986, Ser. No. 865,104
Int. Cl.⁴ B60P *3/26*
U.S. Cl. 29—401.1 **20 Claims**



1. A method for converting a frame designed for a two-door production motor vehicle adapted for the attachment of two oppositely disposed side doors opening from a payload compartment to a lengthened frame for a lengthened motor vehicle adapted for the attachment of four side doors and having a lengthened payload compartment and a lengthened wheel base, said method comprising the steps of:

severing said frame transversely at said payload compartment and longitudinally separating said severed rearward frame segment and forward frame segment of the frame thereat;

inserting a longitudinal roof frame section and a longitudinal floor frame section between the separated rearward and forward segements of the frame at the payload compartment;

joining each of said inserted longitudinal frame sections at each of its edges adjoining sections of said rearward and forward frame segments to said frame sections; and

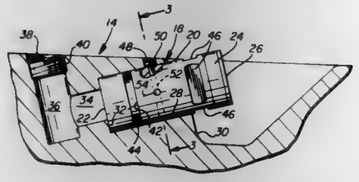
inserting a vertical pillar between said roof and said floor on each side of the frame and joining said pillars at each end to said frame.

4,654,947

DRILL BIT AND METHOD OF RENEWING DRILL BIT CUTTING FACE

Kenneth Davis, Midland, Tex., assignor to W. Wesley Perry, Midland, Tex.

Filed Dec. 2, 1985, Ser. No. 803,325
Int. Cl.⁴ F21C *13/00;* **B23P** *7/00*
U.S. Cl. 29—402.08 **9 Claims**



1. In a drill bit having a lower formation engaging face which includes a plurality of sockets formed therein, a stud assembly mounted in each socket, the method of removing the stud assemblies from the bit face comprising the steps of:

placing a seal means about each stud assembly so that a stud assembly can sealingly reciprocate within a socket with a piston-like action;

forming a reduced diameter passageway which extends rearwardly from communication with each socket to the exterior of the bit;

flowing fluid into the passageway, thereby exerting fluid pressure against the rear end of the stud assembly;

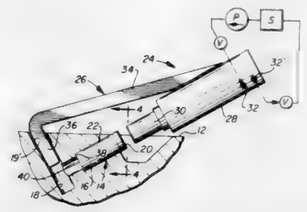
applying sufficient pressure to the fluid within the passageway to produce a pressure differential across the stud assembly to force the stud assembly to move outwardly in a direction away from the socket, thereby releasing the stud assembly from the socket.

4,654,948

METHOD FOR RENEWING THE CUTTING FACE OF A DIAMOND DRILL BIT

Kenneth Davis, Midland, Tex., assignor to W. Wesley Perry, Midland, Tex.

Filed Dec. 2, 1985, Ser. No. 803,331
Int. Cl.⁴ B23P *7/00;* **E21C** *13/00*
U.S. Cl. 29—402.08 **7 Claims**



1. In a diamond drill bit having a formation engaging face and a plurality of diamond cutter stud assemblies, each stud assembly is mounted in a counterbore at said face for penetrating the earth, the method of increasing the cutting efficiency of the bit comprising the steps of:

(1) forming a passageway which extends from the bottom of the counterbore and to an external location on the bit, said external location being spaced from an outer end of the counterbore;

(2) forcing a stud assembly to move out of a counterbore by applying fluid pressure to the passageway connected to the last said counterbore;

(3) rotating the last said stud assembly about the longitudinal axis thereof to present an unused cutting area of the diamond cutter stud assembly in properly oriented position for engaging a formation;

(4) forcing the stud assembly into operative seated position within the counterbore by connecting a hydraulic piston and cylinder assembly to the drill bit body and stud assembly and forcing the stud assembly to move into the bit body as the piston moves respective to the cylinder.

4,654,949

METHOD FOR AUTOMATICALLY HANDLING, ASSEMBLING AND WORKING ON OBJECTS

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Canada

Continuation of Ser. No. 348,803, Feb. 16, 1982, abandoned. This application Mar. 19, 1985, Ser. No. 716,592
Int. Cl.⁴ B23Q *17/00, 15/00;* **B23P** *21/00*
U.S. Cl. 29—407 **5 Claims**

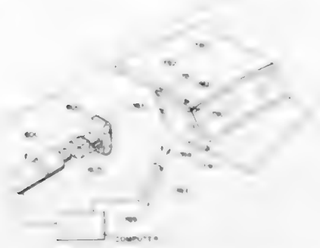
1. A method of assembling doors or other panels into openings in objects comprising the steps of:

providing a robot with electro-optical sensors on the tooling used to grasp said panel,

with said sensors, sensing the location of said object and said opening in said object,

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positioning said panel in said opening with said robot using said sensors to feed back data to the control system of said robot,



from said data, adjusting said position in said opening to equalize the gap between said panel and said opening so as to align said panel with said opening.

4,654,950

STABBING PROTECTOR WITH FLEX FITTING INSERTS AND METHOD OF ATTACHING SAME IN WORKING POSITION

Delbert K. Maidlow, Humble, Tex., assignor to Hydril Company, Houston, Tex.

Continuation of Ser. No. 622,751, Jun. 20, 1984, abandoned. This application Aug. 28, 1986, Ser. No. 902,009

Int. Cl.⁴ B25B *27/14*

U.S. Cl. 29—428 **24 Claims**



1. In combination with a stabbing guide for centering the making of a connection between the pin end of a first joint and the accommodating box end of the adjacent second joint,

said stabbing guide including

a removable annular housing that axially separates on at least one side for surrounding at least a substantial circumferential portion of the box end, and

a split resilient protector insert that axially separates at its split on at least one side located within and conforming to the internal annulus of said housing for absorbing the stabbing impact of said pin end into said box end and guidingly aligning the pin end threads into engagement with the box end threads,

said split insert, comprising

a plurality of resilient internal projections located circumferentially about the inside surface of the box end, said projections suitable for accommodating a range of outside diameter box ends.

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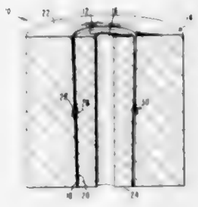
METHOD OF ASSEMBLING EXTREME PRESSURE BELTED STRUCTURES

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 682,569, Dec. 14, 1984, Pat. No. 4,582,243, which is a continuation of Ser. No. 302,891, Sep. 16, 1981, abandoned, which is a division of Ser. No. 137,092, Apr. 4, 1980, Pat. No. 4,308,044. This application Feb. 3, 1986, Ser. No. 827,124

Int. Cl.⁴ B23P *11/02*

U.S. Cl. 29—453 **1 Claim**



1. A method for assembling a prestressed hollow extrusion die of a brittle insert housed within a sleeve without harm to the insert, comprising the steps of:

providing mateable tapered outer and inner surfaces, respectively on the insert and the sleeve, with the outer surface being of a size with respect to the inner surface which will enable the brittle insert to be placed under compression by the sleeve;

lubricating at least one of the tapered surfaces;

press-fitting the tapered outer surface of the insert within the tapered inner surface of the sleeve to place the insert under compression and with the lubricant between said surfaces; and

locking the insert and the sleeve together for preventing slippage between the surfaces by utilizing facing grooves in the tapered surfaces, installing a spring ring under biased potential energy in one of the grooves of the insert and the sleeve, and releasing the energy upon completion of said press-fitting step for permitting the ring to reside partially in both of the grooves.

4,654,952

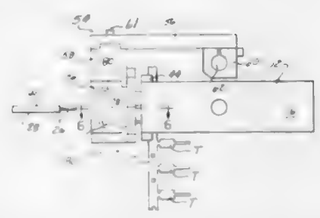
WIRE LOCATER FOR ELECTRICAL TERMINAL CRIMPING APPARATUS

Joseph Baldyga, Islamorada, Fla., assignor to Diamond Die & Mold Co., Mt. Clemens, Mich.

Filed Jul. 9, 1986, Ser. No. 883,775

Int. Cl.⁴ H01R *43/04*

U.S. Cl. 29—566.2 **8 Claims**



1. In an apparatus for crimping generally U-shaped transverse cross-sectional portions of an electric terminal tightly around an electric conductor at a crimping station wherein said terminals are fed to said crimping station integrally attached to an elongate carrier strip and severed from said strip during the crimping of the terminal, said apparatus including stationary anvil means having a flat vertical front surface and a terminal seat at the top of said anvil means extending rearwardly from said front surface crimping die means mounted above said anvil means for vertical movement between an elevated ready position spaced above said anvil and a lowered crimping position adjacent said anvil, said die means being operable upon downward movement to said crimping position to crimp the U-shaped portion of a terminal supported on said terminal seat, and cutter means mounted for vertical sliding movement against said front surface of said anvil means between an elevated normal position and a lowered actuated position, said cutter means being operable during downward movement from said normal position to said actuated position to sever a terminal supported on said terminal seat from said carrier strip;

the improvement comprising wire locating means including

a fixed frame spaced above and in front of said cutter means and said anvil, a slide block mounted in said frame at the rearward side thereof for vertical movement between an elevated rest position and a lowered locating position, spring means biasing said block to said rest position, a pair of opposed locating fingers mounted on the rearward side of said block for pivotal movement in a general plane parallel to said front surface of said anvil between an open position and a closed position, finger actuating means mounted on the front of said die means and operable to locate said fingers in said open position when said die means is in its ready position and to locate said fingers in said closed position when said die means is below said ready position and to drive said fingers and said slide block downwardly against the action of said spring means as said die means moves downwardly from said ready position, said fingers when in said closed position being operable to grip an electric conductor between the lower portions of said fingers and to vertically align the conductor with the U-shaped portions of a terminal on said terminal seat and to carry the gripped conductor downwardly onto said terminal as said die means moves downwardly toward said crimping position, said fingers further including rearwardly offset, downwardly projecting extensions located in vertical alignment with said cutter means when said fingers are in their closed position and operable upon downward movement of said fingers to drive said cutter means to its actuated position.

4,654,953

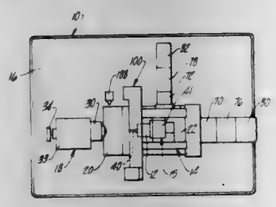
TOOL QUILL EXCHANGING MECHANISM FOR A MACHINE TOOL

Robert N. Hobbs, Springfield, Vt., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 4, 1984, Ser. No. 646,992

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **13 Claims**



1. A machine having a toolhead with a rotatable spindle releasably holding a tool quill and means for exchanging a replacement tool quill for a tool quill already on the toolhead spindle, said tool quill exchanging means comprising a tool quill storage means for storing a plurality of replacement tool quills, means for positioning a replacement tool quill of the storage means at a pick-up position, a tool quill discharge means having a tool quill pick-off cam means in spaced juxtaposition to the tool quill pick-up position and tool-quill receiving means adjacent said pick-off cam means, a pivotal tool quill exchange arm pivotable to a first tool quill exchange position relative to the tool quill pick-up position and discharge means and a second tool quill exchange position relative to the toolhead and having a first tool quill station for releasably retaining a tool quill removed from the spindle and a second tool quill station for releasably retaining the replacement tool quill in spaced juxtaposition to the removed tool quill such that when said tool quill exchange arm is pivoted to the first tool quill exchange position the tool quill at said first tool quill station is removed therefrom by camming engagement with said tool quill pick-off means and is received in said tool quill receiving means and the replacement tool quill at said pick-up station is releasably retained by said second tool quill station, means for pivoting the tool quill exchange arm between the first and second tool quill exchange positions, and means for relatively moving the tool quill exchange arm and toolhead relative to the second tool quill exchange position to remove the tool quill from the spindle to said first tool quill station and to insert said replacement tool quill therein from said second tool quill station.

4,654,954

MACHINE TOOLS

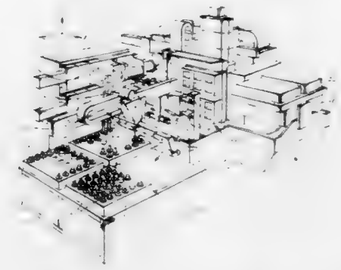
Michael G. Bayes, Wolverhampton, and Walter Coulthard, Preston, both of United Kingdom, assignors to British Aerospace Public Limited Company, London and Marwin Production Machines Limited, Wednesfield, both of, England

Filed Oct. 12, 1984, Ser. No. 660,133

Claims priority, application United Kingdom, Oct. 13, 1983, 8327437

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **7 Claims**



1. A tool handling system for handling tools of the type having a machining portion and a common base portion for being drivably engaged in a rotatable drive spindle of a workhead, said system being programmable to select a predetermined tool from storage and to more it to a transfer station, said system including:

(i) a generally horizontal support platform;

(ii) tool storage means movably supported on said support platform and comprising a tool crate having an upper surface region defining a generally horizontal close-packed rectangular array of tool storage apertures each adapted to receive the base portion of a tool with its machining portion pointing upwardly and each being provided with location means for locating a stored tool against angular movement;

(iii) tool selector means comprising carriage means movably mounted on said support platform for preprogrammable movement in a generally horizontal plane over said tool storage means and tool gripper means carried by said carriage means for vertical movement between a low level

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and high level and being operable to grip a selected tool; and

programmable means to cause said tool selector means to move to a position adjacent a selected tool storage aperture, to grip the selected tool therein and to withdraw it generally vertically from said storage means.

4,654,955

TOOL CHANGER MECHANISM FOR MACHINING CENTERS

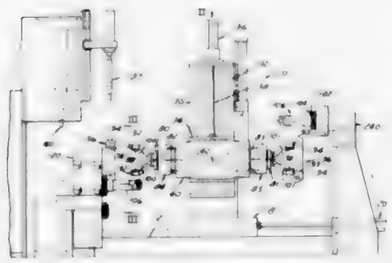
Gerald W. Mathis, Holly, Mich., assignor to The Valeron Corporation, Troy, Mich.

PCT No. PCT/US82/01216, § 371 Date Aug. 12, 1983, § 102(e) Date Aug. 12, 1983, PCT Pub. No. WO84/00915, PCT Pub. Date Mar. 15, 1984

PCT Filed Sep. 7, 1982, Ser. No. 524,405

Int. Cl.⁴ B23Q *3/155, 3/157*

U.S. Cl. 29—568 **16 Claims**



1. A tool changer for a machining center comprising

means for storing a tool,

means for supporting a tool in cutting position,

a slide movable toward and away from said storing and cutting positions, and

an arm on said slide rotatable about an axis equally spaced between the tool engaging means thereon and which extends at a right angle to the direction of movement of said slide, and

tool engaging means attached at each end of said arm by a wrist rotatable about an axis parallel to the axis of rotation of said arm for removing and replacing tools at both said storing and cutting positions.

4,654,956

DRILL APPARATUS FOR USE WITH COMPUTER CONTROLLED PLOTTER

Ronald G. Reed, and Michael Gustafson, both of Colorado Springs, Colo., assignors to ProtoCAD, Inc., Colorado Springs, Colo.

Filed Apr. 16, 1985, Ser. No. 725,415

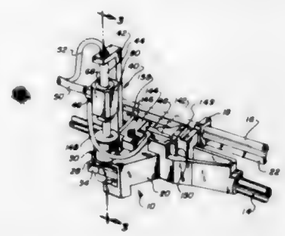
Int. Cl.⁴ B23Q *3/157*; B23B *47/22, 47/08*

U.S. Cl. 29—568 **42 Claims**

1. Drill apparatus for use with a computer-controlled plotter for drilling holes in material resting on a plotter table of the plotter at selected positions established by operation of the plotter, the plotter including a movable carrier mechanism having retaining means for holding a conventional plotter instrument transferred to the carrier mechanism during use of the plotter, said drilling apparatus comprising:

a drill motor having a drill bit operatively connected thereto; and

means associated with the drill motor and cooperative with the retaining means of the carrier mechanism for allowing the drill motor to be transferred to and from the carrier mechanism and for locating the drill motor on the carrier



mechanism with the drill bit extending toward the plotter table.

4,654,957

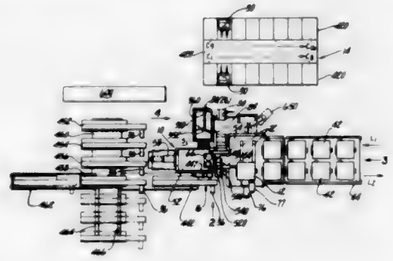
FLEXIBLE MACHINING APPARATUS WITH SINGLE SHANK TOOL AND MULTI-SPINDLE TOOL HEAD CHANGING AND OPERATING CAPABILITIES

Thomas A. Powell; Kenneth O. Kolnes; Kenneth J. Sprenger; John D. Casarotto; Kenneth P. Whitney, and Gerald M. Hammer, all of Rockford, Ill., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Jun. 22, 1984, Ser. No. 623,678

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **5 Claims**



1. A machining apparatus comprising:

(a) a machine tool including a first slide movable in a first direction and having a single spindle mounted on the front for chucking and rotating a single shank tool or alternatively drivingly coupling to a tool head about a spindle axis extending in a second direction transverse to said first direction and a second slide carrying the first slide and movable in the second direction, said first slide having a tool head support rail mounted fixedly thereon extending transversely in a third direction across the front relative to the first and second directions past one side of the machine tool terminating in a cantilevered end and from which the tool head hangs with the support rail supportively receiving and positioning the tool head for drivingly coupled engagement with the spindle, said tool head support rail including a fluid-actuated clamp member movably mounted therein to clamp the tool head in drivingly coupled position relative to the spindle and including fluid passage means therein for supplying fluid pressure to said clamp member from a fluid pressure source,

(b) a stationary tool head storage unit adjacent said one side of the machine tool for storing a plurality of tool heads,

(c) tool head changing means adjacent said one side of the machine tool including a tool head load means and tool head unload means spaced apart in the first direction, said tool head load means including a roller load rail extending

transversely in the third direction for carrying a tool head and pusher means for pushing a tool head from the load rail onto the tool head support rail when the load rail and cantilevered end of said support rail are placed in generally end-to-end relation by slide movement and said tool head unload means including a roller unload rail extending transversely in the third direction and puller means for pulling a tool head from the support rail onto the unload rail when the unload rail and cantilevered end of said support rail are placed in generally end-to-end relation by slide movement,

(d) overhead robot means adjacent said one side of the machine tool movable between the tool head storage unit and the tool head changing means and having a depending tool head gripper for carrying a tool head between the tool head storage unit and load rail and unload rail including loading a tool head onto the load rail and unloading a tool head from the unload rail of the tool head changing mechanism,

(e) a single shank tool storage unit adjacent an opposite side of the machine tool from said one side for storing a plurality of single shank tools, and,

(f) a single shank tool changer positioned between the single shank tool storage unit and spindle adjacent said opposite side of the machine tool for exchanging a single shank tool between the spindle and single shank tool storage unit when the machine tool is not machining with a tool head for chucking and rotation of the single shank tool by said spindle means.

4,654,958

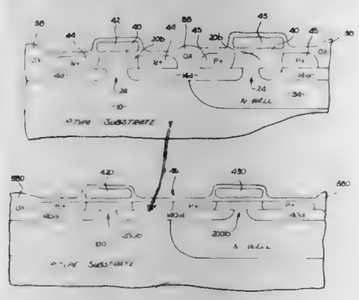
PROCESS FOR FORMING ISOLATED SILICON REGIONS AND FIELD-EFFECT DEVICES ON A SILICON SUBSTRATE

William Baerg, Palo Alto; Chin H. Ting, Saratoga, and Terence T. Hwa, Santa Clara, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 11, 1985, Ser. No. 700,607

Int. Cl.⁴ H01L *21/477*

U.S. Cl. 29—571 **16 Claims**



1. In the fabrication of field-effect devices on a silicon substrate where insulative regions are used to isolate said devices from one another, improved processing comprising the steps of:

forming an insulative layer on said substrate so as to define windows between regions of said insulative layer;

etching said insulative layer to expose said substrate at said windows;

forming a silicon layer over said insulative regions and windows;

subjecting said layer of silicon to a treatment which causes recrystallization of said silicon layer, said recrystallization occurring by crystal growth from said substrate expanding into said silicon layer through said windows and further expanding laterally in said silicon layer disposed above said insulative regions;

forming a gate, wherein said gate is disposed above said windows;

doping regions of said silicon layer disposed above said insulative layer to form drain and source regions;

whereby source and drain regions are isolated from said substrate by said insulative layer;

4,654,959

METHOD FOR THE MANUFACTURE OF THIN FILM TRANSISTORS

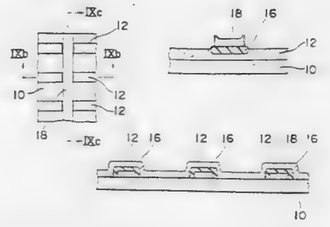
Yutaka Takafuji, Nara; Hiroaki Kato, Tenri, and Fumiaki Funada, Yamatokoriyama, all, Japan, assignors to Sharp Kabushiki Kaisha and Japan Electronic Industry Development Association, both of Osaka, Japan

Division of Ser. No. 786,190, Oct. 11, 1985, which is a continuation of Ser. No. 396,266, Jul. 8, 1982, abandoned. This application Apr. 17, 1986, Ser. No. 853,034

Claims priority, application Japan, Jul. 15, 1981, 56-111027

Int. Cl.⁴ H01L *21/203, 21/06, 21/363*

U.S. Cl. 29—571 **4 Claims**



1. A method for making a thin film transistor comprising the steps of:

forming a semiconductor layer on one surface of an electrically insulating substrate;

placing a patterned mask having a predetermined pattern opening defined thereby on said semiconductor layer;

oxidizing a portion of said semiconductor layer which is exposed through the pattern opening and a peripheral edge of said semiconductor layer to form an oxide layer having an electrically insulating property, said oxidizing step being controlled so as to render a portion of said semiconductor layer underneath said oxide layer to have a predetermined thickness;

forming an electroconductive layer on said patterned mask;

and removing said patterned mask so as to leave a portion of said electroconductive layer, corresponding to the pattern opening, on the oxide layer to form a gate electrode.

4,654,960

METHOD FOR FABRICATING GAAS BIPOLAR INTEGRATED CIRCUIT DEVICES

William V. McLevige, Plano; Han-Tzong Yuan, Dallas; Walter M. Duncan, Dallas, and Friedrich H. Doerbeck, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 317,367, Nov. 2, 1981, Pat. No. 4,573,064. This application Dec. 13, 1985, Ser. No. 808,901

Int. Cl.⁴ H01L *21/265, 29/48*

U.S. Cl. 29—576 B **15 Claims**

1. A method for fabricating a GaAs bipolar integrated circuit structure, comprising the steps of:

growing an intermediate layer of N+ GaAs;

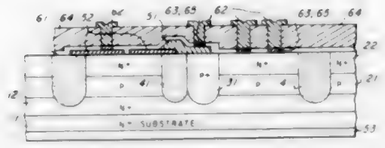
growing a top layer of lightly doped N− GaAs;

ion implanting said top layer of GaAs to convert surface of said layer to N+ type;

annealing the resulting structure;

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ion implanting said top layer to convert bottom of said layer to P type;
annealing the resulting structure;
ion-implanting said structure in selected areas to create semi-insulating areas in said structure for device isolation;
depositing ohmic material on selected surface areas for device contacts;



growing an insulating layer on said structure surface for surface passivation and etching windows for ohmic contacts in selected surface areas; and
depositing a patterned metallic layer for interconnection between device contacts.

4,654,961

METHOD FOR PRODUCING SUPERCONDUCTING COIL

Katsuhiko Asano, Hitachi; Isao Kurita, Takahagi, and Isamu Kamishita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 21, 1985, Ser. No. 703,903
Claims priority, application Japan, Feb. 24, 1984, 59-32422
Int. Cl.⁴ H01L *39/29*
U.S. Cl. 29—599 **13 Claims**





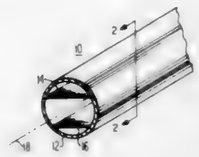
1. A method for producing a superconducting coil, comprising the following steps of:
providing a substantially cylindrical bobbin having inner and outer surfaces, said substantially cylindrical bobbin having a plurality of shallow grooves in the outer surface thereof;
forming a coil by winding a superconducting member by a predetermined number of turns around the outer surface of said substantially cylindrical bobbin;
thereafter fitting a support cylinder around an outer periphery of said coil;
thereafter severing said substantially cylindrical bobbin from the inner surface toward the plurality of grooves; and
further thereafter removing said substantially cylindrical bobbin apart from said coil.

4,654,962

METHOD OF FABRICATING DOUBLY-TRUNCATED CIRCULAR WAVEGUIDE

Oded Ben-Dov, Marlton, N.J., assignor to Sola Basic Industries, Inc., Stamford, Conn.

Filed May 30, 1985, Ser. No. 739,427
Int. Cl.⁴ H01P *11/00*
U.S. Cl. 29—600 **4 Claims**



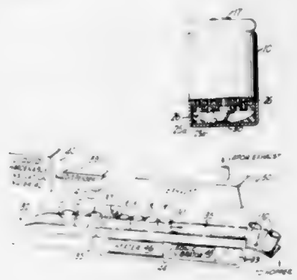
1. A method for fabricating waveguide, comprising the steps of:
forming an elongated conductive circular cylinder having an axis;
cutting said elongated conductive circular cylinder along a plane passing through said axis to form first and second complete half-circular portions;
forming first and second elongated conductive plates having a width less than the diameter of said circular cylinder;
conductively attaching said first flat conductive plate along its elongated edges to the interior of said first half-circular portion with said first plate parallel with said axis;
conductively attaching said second flat conductive plate along its elongated edges to the interior of said second half-circular portion with said second plate parallel with said axis; and
conductively joining the cut edges of said first and second half-circular portions to define a closed conductive waveguide including a pair of spaced-apart parallel plane walls and a pair of spaced-apart curved walls.

4,654,963

METHOD FOR MAKING ELECTROCHEMICAL CELL HAVING CAST-IN-PLACE INSULATOR

Raymond K. Sugalski, Gainesville, Fla., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 96,461, Nov. 21, 1979, Pat. No. 4,320,182.
This application Apr. 22, 1980, Ser. No. 142,771
Int. Cl.⁴ H01M *2/08*
U.S. Cl. 29—623.1 **1 Claim**



1. In a method for manufacturing an electrochemical cell having a conductive casing and an electrode plate assembly received therein, said plate assembly having exposable portions adjacent an interior surface of the casing, the improvement comprising the steps of:

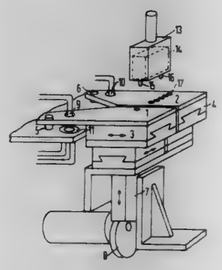
dispensing in the casing a flowable, settable material formed of solvent and solute and having electrical insulation properties;
disposing said casing so as to permit said material to coat the interior surface of said casing, said dispensing step including the step of dispensing said material in said casing in such an amount so as to leave a portion of said exterior surface uncovered;
permitting said material to set by withdrawing said solvent and thereby lessening the depth of said material at the bottom of said casing in the manner of a meniscus;
inserting the electrode assembly into the casing whereby said material forms a casting effective to insulate said coated interior surface from the exposable portions of said electrode assembly; and
forming an electrical connection between the uncovered surface portion and a plate electrode of the assembly.

4,654,964

SENSOR FOR COMPONENT PLUG-IN

Bernd Schneider, and Stefan Mueller, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 6, 1986, Ser. No. 816,438
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1985, 3500421
Int. Cl.⁴ B23P *21/00, 19/00*
U.S. Cl. 29—705 **8 Claims**



1. A sensor for the determination of the position of leads of electronic components in automatic component plug-in, comprising: two perforated plates indexed in the idle position are upwardly displaceable by a drive along a linear guide into a measuring position, thereby coming free from the indexing and being freely movable in x, y direction by means of further linear guides; each perforated plate carrying an infrared light-emitting diode which is positioned opposite a respective, stationary positioning photodiode at whose output an evaluation electronics is provided, the result of the latter serving for at least one of positional correction and rejection of the components.

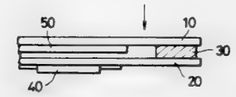
4,654,965

METHOD OF MANUFACTURING LIQUID CRYSTAL DISPLAY UNIT

Kiyohiro Uehara, Yokohama, and Shigeyuki Sakai, Nakatsugawa, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 16, 1985, Ser. No. 755,430
Claims priority, application Japan, Jul. 16, 1984, 59-107283[U]; Sep. 19, 1984, 59-195931[U]
Int. Cl.⁴ H05K *3/36, 7/02*
U.S. Cl. 29—830 **41 Claims**

1. An electrical connection circuit for connecting signal wires of a display device to connection points on a printed-circuit board comprising:
a heat-sealing connector disposed on the printed-circuit board and contacting said connection points; and
an energy-transparent panel board made of a resin sheet on which the display device is mounted, said panel board being disposed on the heat-sealing connector so that an electrically conductive path is formed between the connection points of said printed circuit board and said signal wires of the display device; wherein the heat-sealing connector is heated by energy passed through said energy-transparent panel board.



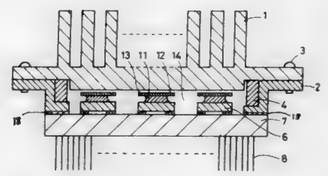
4. A method of connecting a printed circuit board to a panel board on which a liquid crystal display device is mounted, comprising the steps of:
(a) forming said panel board as a sheet made of synthetic resin;
(b) sandwiching an electrically conductive heat-sealing connector between said printed-circuit board and said panel board; and
(c) applying heat to said heat-sealing connector through said resin sheet of said panel board to cause said heat-sealing connector to be thermally fused for joining said printed circuit board and said panel board and wires thereon.

4,654,966

METHOD OF MAKING A DIMENSIONALLY STABLE SEMICONDUCTOR DEVICE

Masanobu Kohara; Shin Nakao, and Hiroshi Shibata, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 534,840, Sep. 22, 1983, Pat. No. 4,561,011. This application Oct. 3, 1985, Ser. No. 783,537
Claims priority, application Japan, Oct. 5, 1982, 57-176524; Oct. 5, 1982, 57-176525
Int. Cl.⁴ H05K *3/34*
U.S. Cl. 29—840 **6 Claims**



1. A method of manufacturing a semiconductor device, comprising the steps of
preparing a base board,
preparing a semiconductor chip having two main faces, and to be mounted onto said base board at one of said two main faces,
mounting said semiconductor chip onto said base board at one of said two main faces,
preparing a metallic plate of a good thermal conductivity to be mounted onto said semiconductor chip on the other of said two main faces,
preparing a first adhesive material,
placing said metallic plate onto said other main face of said

semiconductor chip with said first adhesive material interposed between said metallic plate and said other main face of said semiconductor chip,

preparing a head dissipating and enclosing member to be mounted onto said base board for hermetically enclosing said semiconductor chip and having a portion facing to said metallic plate mounted onto said other main face of said semiconductor chip with a gap therebetween for dissipating the heat of said semiconductor chip,

preparing a second adhesive material,

said first adhesive material being selected to have a melting point lower than that of said second adhesive material,

placing said heat dissipating and enclosing member onto said base board with said second adhesive material interposed between said heat dissipating and enclosing member and said base board and with said metallic plate placed onto said other main face of said semiconductor chip in close contact with said heat dissipating and enclosing member,

heating said first and second adhesive materials simultaneously to said melting points of said first and second adhesive materials for mounting said metallic plate onto said other main face of said semiconductor chip and for hermetically mounting said heat dissipating and enclosing member onto said base board, whereby a gas is formed between said metallic plate and said portion of said heat dissipating and enclosing member facing to said metallic plate so as to be controlled as a result of earlier solidification of said second adhesive material than that of said first adhesive material.

4,654,967

METHOD AND DEVICE FOR ALIGNING AND STRAIGHTENING FLEXIBLE, INSULATED CONDUCTORS

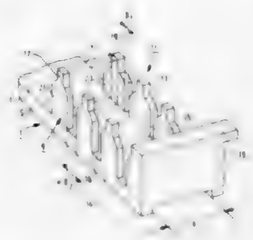
Günther Theuner, Giessen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 27, 1985, Ser. No. 770,029

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1984, 3432735

Int. Cl.⁴ H01R *43/02*; B23P *21/00*

U.S. Cl. 29—860 **7 Claims**



1. A method of arranging flexible, insulated conductors of a bundle of unaligned conductors having stripped ends into an aligned condition prior to soldering said stripped ends to associated connectors, said method including drawing said conductors through the spaces between parallel teeth of each of two non-metallic combs, said combs being disposed one behind the other as a front comb and a rear comb with a space between them, said teeth of said rear comb being broader at their bases than at their tips so as to narrow the spaces between them, said conductors being so drawn until the junction between the stripped end of each and its insulation portion is located just within the space between said combs in said aligned condition with said stripped ends lying between associated teeth of said front comb and clamping said conductors in such position by pressing their insulation portions down into the narrow spaces between the broadened portions of the teeth of said rear comb.

2. A combination of a plurality of flexible insulated conductors and a device for arranging them in aligned condition, said conductors having stripped ends, said device comprising two non-metallic combs each with parallel teeth, said combs being disposed one comb behind the other as a front comb and a rear comb with a space between said two combs, and a base plate interconnecting said combs, said teeth of said rear comb being broader at their bases than at their tips whereby the spaces between them are narrower at their bases than at their tips, each said conductor being disposed with the junction between its stripped end and its insulation portion located in the space between said combs with its stripped end located between two of the teeth of said front comb and its insulation portion pressed into one of the narrower spaces between two of the teeth of said rear comb.

4,654,968

KNIFE SHARPENERS

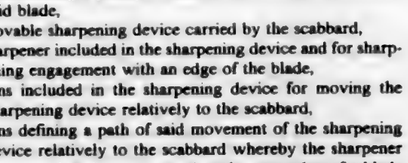
Derrick R. Gatley, Reading, and David S. Duncan, London, both of England, assignors to Wilkinson Sword Limited, High Wycombe, England

Filed Dec. 10, 1985, Ser. No. 807,398

Claims priority, application United Kingdom, Dec. 13, 1984, 8431456; Nov. 26, 1985, 8529042

Int. Cl.⁴ B24B *3/54*

U.S. Cl. 30—138 **14 Claims**



1. A knife sharpener comprising:

a scabbard having two ends,

means defining an opening for a knife blade at one of said two ends of the scabbard,

means defining a passage within the scabbard for receiving said blade,

a movable sharpening device carried by the scabbard,

a sharpener included in the sharpening device and for sharpening engagement with an edge of the blade,

means included in the sharpening device for moving the sharpening device relatively to the scabbard,

means defining a path of said movement of the sharpening device relatively to the scabbard whereby the sharpener passes with a sharpening action along an edge of a blade within the scabbard; and

wherein a locking device is provided for holding a knife in the scabbard, to prevent the knife being pushed out of the scabbard during sharpening.

4,654,969

CUTTING MACHINE FOR FLAT MATERIAL

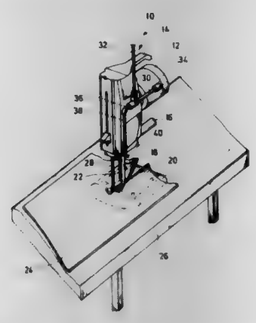
John M. Schwartzott, Norcross, Ga., assignor to Krauss u. Reichert GmbH & Co. KG, Fed. Rep. of Germany

Filed May 14, 1986, Ser. No. 862,966

Int. Cl.⁴ B26B *15/00*; B26D *5/10*

U.S. Cl. 30—275 **6 Claims**

1. A cutting machine for flat material, such as fabrics, foils and the like, the cutting machine comprising a blade like knife, drive means for vertically oscillating said knife, a foot plate, column means bearing against the foot plate for supporting the drive means, two knife guides having the shape of flat strips being disposed at the column, said guides delimiting a gap in which the knife is guided for oscillating parallel to the longitudinal direction of the column, a cooling channel extending in the column approximately parallel to the knife and substantially over the length of said column, means for introducing cooling air into said cooling channel for cooling the knife guides and column, and a compressed-air-operated vortex tube connected to the cooling channel.



4,654,970

HEATED HANDLE FOR A CHAIN SAW

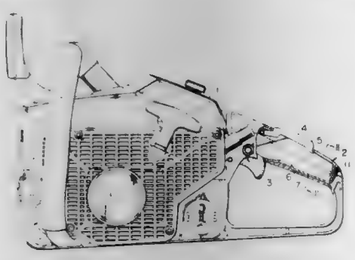
Akira Nagashima, Kawasaki, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Continuation of Ser. No. 642,890, Aug. 21, 1984, abandoned. This application Feb. 28, 1986, Ser. No. 834,510

Claims priority, application Japan, Aug. 26, 1983, 58-131841

Int. Cl.⁴ B23D *57/02, 59/00*

U.S. Cl. 30—383 **5 Claims**



1. A handle for a portable power-driven machine comprising: an upper half-shell handle member and a lower half-shell handle member which are adjoined to each other to present the form of a handle on a portable power-driven machine; and an anti-slip rubber layer lining the outer surface of said lower handle member, said rubber layer having an upper end folded back on the upper ends of both side walls of said lower handle member to overlie the upper inner periphery of said side walls, said upper handle member having vertical downward projections extending toward inside of said side walls which engage the folded end portions of said rubber layer overlying the upper inner periphery of said lower handle member; wherein said rubber layer is provided on the extremities thereof overlying said upper inner periphery of said lower handle member with steps which engage the lower ends of said vertical downward projections.

4,654,971

PRUNNER WITH COLLAPSIBLE DRIVE SHAFT AND HOUSING

Ian Fettes, Newport Beach, and Gary F. Jervis, Corona, both of Calif., assignors to Hudd Enterprises, Las Vegas, Nev.

Filed Sep. 13, 1985, Ser. No. 775,805

Int. Cl.⁴ B27B *17/02*

U.S. Cl. 30—383 **13 Claims**



1. A portable, collapsible pruner for cutting limbs, branches, and the like, and including:

hollow, elongated housing assembly means comprising a plurality of telescoping, tubular housing sections concentrically aligned with one another;

rotatable, elongated drive shaft assembly means extending through said housing assembly means and comprising a plurality of telescoping, tubular drive shaft sections concentrically aligned with one another;

wear-resistant bearing means located between said housing assembly means and said drive shaft assembly means, said bearing means having inner and outer bearing surfaces over which said drive shaft sections and said housing sections respectively slide when said drive shaft and housing assembly means are extended or collapsed;

power source means interconnected with said drive shaft assembly means at one end thereof for rotating said drive shaft assembly means; and

cutting means interconnected with said drive shaft assembly means at the opposite end thereof so as to be driven by said drive shaft assembly means.

4,654,972

POWER SAW BLADE

Horst Sellmaier, Walsertalstr. 4, Munich 71, Fed. Rep. of Germany (D-8000), and Hartwig Sandbolzer, Sigmund-Freud-Str. 103, Frankfurt/M. 60, Fed. Rep. of Germany (D-6000)

PCT No. PCT/DE84/00253, § 371 Date Jul. 23, 1985, § 102(e) Date Jul. 23, 1985, PCT Pub. No. WO85/02363, PCT Pub. Date Jun. 6, 1985

PCT Filed Nov. 23, 1984, Ser. No. 762,730

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342323; Jul. 6, 1984, 8420326[U]; Sep. 14, 1984, 3433746

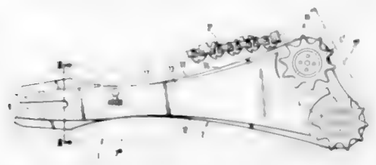
Int. Cl.⁴ B27B *17/02, 17/14*

U.S. Cl. 30—385 **10 Claims**

1. In a chain saw having a chain assembly comprising an elongate chain support blade projecting cantilever-wise from a motor casing and an endless saw chain wound around a drive wheel adjacent and inner end of the blade and a spur wheel on an outer end of the blade for penetration of the chain assembly as a whole through wood when the chain is driven by the

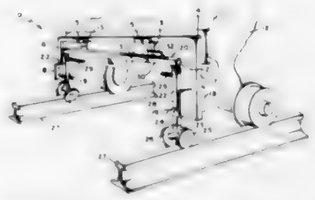
VOL 1077 ISS 1 AP 7 1987 UMI

motor, the improvement wherein the blade is shaped to provide clearance between forward and reverse runs of the chain



and respective longitudinal edges of the blade along substantially the entire length of the blade.

4,654,973
RAILROAD TRACK GAGE
James T. Worthy, 4513 Northwood Ave., Columbus, Ga. 31907
Filed Oct. 21, 1985, Ser. No. 789,517
Int. Cl.[4] E01B *29/04*
U.S. Cl. 33—144 5 Claims



1. Apparatus for continously monitoring the gage of the rails of a railroad track from a vehicle on the track comprising:

an extra-vehicular frame having two arms extending therefrom, said frame further comprising an elongated horizontal member with substantially identical vertical arms extending from each end thereof;

a distal vertical plate secured at the end of each arm;

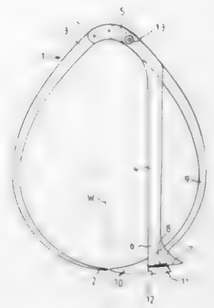
an inward facing yoke adjustably secured to each distal plate;

measurement means pivotally mounted to said yokes, said measurement means further comprising a horizontal telescoping rod having pivotally connected to each end thereof, a vertical telescoping multiple wheel member, each wheel member being pivotally secured at about its midsection to one of said yokes, and a tension spring interconnecting portions of said wheel members near said telescoping rod and drawing said portions toward each other, further provided that said wheel members do not support the weight of said vehicle, with said wheel member further comprising an elongated portion which houses a wheel mount and a compressed spring which presses said wheel mount away from said elongated portion in a telescoping manner, said wheel mount further comprising a top wheel for contacting the top of a railroad track rail in a rolling manner and an inside wheel for contacting the inside of a railroad track rail in a rolling manner;

measurement indication means remotely connected to said measurement means; and

means for securing said frame to the rear of a railroad vehicle.

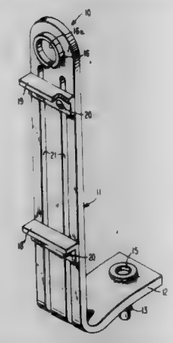
4,654,974
CALIPER
Harry L. Arnall, Lot 3, Enterprise Drive, Berkeley Vale, New South Wales, 2259, Australia
Filed Dec. 19, 1985, Ser. No. 811,007
Claims priority, application Australia, Jan. 4, 1985, PG8767
Int. Cl.[4] G01B *3/38*
U.S. Cl. 33—149 B 3 Claims



1. A thickness measuring caliper comprising first and second legs in fixed spatial relationship, said first leg of said pair being elongated and curved along its length and having a free end adapted for engagement with a surface of a member the thickness of which is to be measured, the second leg of said pair being elongated and having a free end which lies adjacent the free end of the first leg and is spaced therefrom by at least the maximum thickness to be measured by the caliper, an elongated third leg curved along its length and pivotally connected at one end to said second leg, the other end of the third leg being adapted for engagement with a surface of a member the thickness of which is to be measured and being aligned with the free end of said first leg, said second leg and said third leg having overlying portions to provide a measuring assembly with a registration marking on one of said portions and a scale on the other of said portions whereby a direct reading of the spacing apart of said free end of said first leg and said other end of said third leg can be made.

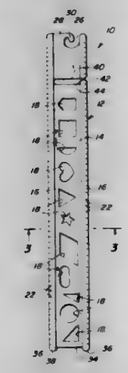
4,654,975
SIDING GAUGE
Joe L. Lopez, 1007 Dallas St., South Houston, Tex. 77587
Filed Jun. 2, 1986, Ser. No. 869,280
Int. Cl.[4] G01B *3/30*
U.S. Cl. 33—626 4 Claims

1. A siding gauge, comprising, a main body, supporting a carpenter's nail gun, an upper bar and a lower bar received on said gauge, for adjustment to various size sidings, and a nipple



fitting secured to said gauge, for receiving the air valve of a nail gun and a compressed air line.

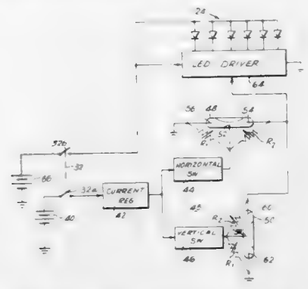
4,654,976
RULER BELT HANGER
Nazir Diwan, 1345 Cr. Samson, Brossard, Quebec, J4X 1K7, Canada
Filed Aug. 8, 1985, Ser. No. 763,833
Int. Cl.[4] B43L *7/00*; A41D *27/22*
U.S. Cl. 33—485 2 Claims



1. A ruler belt hanger, comprising, in combination, an elongated one piece body having a pair of side ribs with an interconnected web having one surface recessed below the side ribs, a measuring scale formed along at least one rib, and a plurality of geometric cut-outs along said web, a hook formed at one end of said body for hanging from a display rack, the opposing end of said body having a notch defined by a recess formed longitudinally into said web leaving the side ribs projecting beyond the web, and an intermediate transverse notch adjacent said edge of said body partly there across, whereby a belt can lie flat along the body fitting into said recess and can also be wrapped around the body between said notch at the opposing end and said transverse notch.

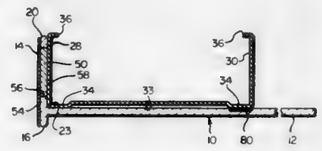
4,654,977
ELECTRONIC LEVEL
Edward Pakus, East Northport, N.Y., assignor to Irwin Measuring Tool Company, Patchogue, N.Y.
Filed Nov. 19, 1985, Ser. No. 799,406
Int. Cl.[4] G01C *9/06*
U.S. Cl. 33—366 36 Claims

1. An electronic level comprising: housing means; a battery within said housing means; an electrolytic transducer within said housing means, the electrolytic transducer including a container partially filled with electrolyte and exhibiting an effective impedance that varies with a change in the orientation thereof relative to a reference plane; drive signal generating means energized by said battery to generate an output signal; means for connecting said electrolytic transducer to said drive signal generating means for varying said output



signal as a function of the effective impedance of said transducer; an array of visual display indicators selectively driven to provide a visual indication of a deviation of said housing means with respect to a reference orientation; and display driver means coupled to receive said output signal for driving said visual display indicators as a function of the magnitude of said output signal.

4,654,978
MARKING GUIDE FOR USE WITH METAL STUDS
Otis Wolford, Jr., 1105 N. Meadow La., Mt. Prospect, Ill. 60056
Filed Oct. 4, 1985, Ser. No. 785,064
Int. Cl.[4] B43L *13/00*
U.S. Cl. 33—481 18 Claims



1. A guide for use primarily with a steel framing member such as a conventional "metal stud" having a narrow side and a wide side meeting across an exterior corner, the combination of

an elongated planar body, and a planar cross bar disposed at one of the end edges of the elongated body, somewhat in the configuration of a "T";

the elongated body projecting from the cross bar a distance, of the order of 6–8 inches, to well exceed the width of the wide side of the "metal stud" framing member,

the elongated planar member being of a triangular shape having adjacent edges disposed normal to one another,

one of the edges of the elongated body and a corresponding edge of the cross bar lying in a common plane disposed normal to a corner intersection between the elongated body member and cross bar,

one end of the cross bar projecting from the elongated body only a short distance, of the order of ¼ to ½ of an inch,

the other end of the cross bar projecting from the elongated body a much greater distance, of the order of 1⅛ to 1¼ of an inch, to correspond to the width of the narrow side of the "metal stud" framing member,

the other end of the cross bar being formed in part of a magnetic metal piece having a base wall, and short peripherial walls extended transverse to the base wall,

magnet material having opposite flat faces, one flat face being secured against and to the base wall and the other flat face being coplanar with the end edges of the transverse walls,

the magnet material and wall edges together defining a reference surface perpendicular to the elongated planar body and facing in the direction of the planar body along one side thereof and operable when positioned against the metal framing member to magnetically hold the guide in place against the metal framing member,

the magnet material extending over a major portion, relative to the length and width of the extended cross bar end, operable to provide holding power sufficient to retain the guide to place against the framing member even without high density flux.

4,654,979

ELECTROSTATIC METHOD AND APPARATUS FOR TREATING MATERIAL

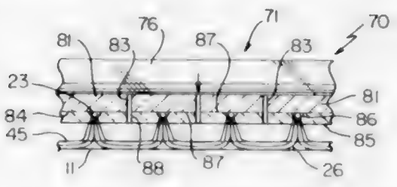
James T. Cundor, 5440 Cynthia La., Dayton, Ohio 45429

Continuation of Ser. No. 757,735, Jul. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 624,006, Jun. 25, 1984, Pat. No. 4,551,924, which is a continuation of Ser. No. 548,646, Nov. 4, 1983, abandoned, which is a continuation of Ser. No. 401,078, Jun. 23, 1982, abandoned, which is a division of Ser. No. 306,703, Jun. 9, 1982, abandoned, which is a continuation-in-part of Ser. No. 319,114, Nov. 9, 1981, Pat. No. 4,404,754, which is a continuation-in-part of Ser. No. 261,784, May 8, 1981, Pat. No. 4,338,729, which is a division of Ser. No. 124,224, Feb. 25, 1980, Pat. No. 4,283,862, which is a division of Ser. No. 50,807, Jun. 2, 1979, Pat. No. 4,208,807, which is a continuation-in-part of Ser. No. 925,376, Jul. 17, 1978, abandoned, which is a division of Ser. No. 863,910, Dec. 23, 1977, Pat. No. 4,111,773, which is a continuation-in-part of Ser. No. 732,846, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned, said Ser. No. 569,815, is a continuation-in-part of Ser. No. 548,666, Feb. 10, 1975, Pat. No. 3,965,581, which is a continuation-in-part of Ser. No. 469,820, May 14, 1974, Pat. No. 3,931,682, and a continuation-in-part of Ser. No. 405,023, Oct. 10, 1973, Pat. No. 4,060,449, and a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898. This application Feb. 6, 1986, Ser. No. 826,556

The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.

Int. Cl.[4] F26B *3/34*; B01D *57/02, 13/02*

U.S. Cl. 34—1 **40 Claims**



21. In a method for drying material comprising the steps of disposing said material in a heating apparatus to have the heating means thereof heat at least part of the liquid particles of said material, disposing charged electrode means so as to be adjacent one side of said material when said material is disposed in said heating apparatus and to define two adjacent electrostatic fields that are substantially constant and non-oscillating so that said electrostatic fields at least partially extend through said material while said material is disposed in said heating apparatus, and moving said material in one direction through said heating apparatus to cause at least a portion of said material to have the heated particles of liquid thereof serially moved through said electrostatic fields whereby said electrostatic fields augment the drying effect of said heating means on said material, the improvement comprising the step of disposing means between said adjacent electrostatic fields to change the normal shape of said adjacent electrostatic fields between said electrode means and said material so that when said material is moved in said one direction said heated particles of liquid of said portion serially move through the thus reshaped electrostatic fields.

4,654,980

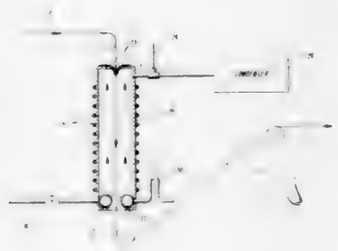
SOLVENT REMOVAL USING A CONDENSABLE HEAT TRANSFER VAPOR

Dinesh M. Bhat, Richmond, Va., assignor to James Rivers Corporation, Richmond, Va.

Filed Apr. 11, 1985, Ser. No. 721,942

Int. Cl.[4] F26B *3/04*

U.S. Cl. 34—12 **28 Claims**



1. A process for the removal of a non-aqueous liquid from a web material impregnated or coated with same, comprising contacting the web material with an effective amount of a condensable, heat transfer vapor which condenses at least in part upon the web in an amount sufficient to provide substantially all of the energy for removal of the non-aqueous liquid, with the contact being conducted countercurrent fashion, and with the amount of heat transfer vapor employed being at least 50% by weight of the non-aqueous liquid.

4,654,981

DRYING APPARATUS FOR SLICED VENEER

Ingo Grebe, Neuenstein, and Walter Münch, Bebra, both of Fed. Rep. of Germany, assignors to Babcock-BSH Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

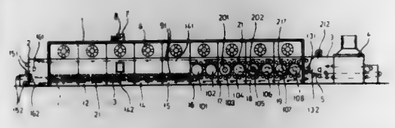
Filed Feb. 19, 1985, Ser. No. 702,554

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1984, 3405754

Int. Cl.[4] F26B *13/04, 13/08*

U.S. Cl. 34—114 **23 Claims**

1. In a drying apparatus for sheets of sliced veneer having a maximum width, comprising two juxtaposed conveyor belts running together jointly along a drying path including a partially curvilinear looped path segment guided alternately over and under successive guide drums generally in one horizontal direction with said sheets of sliced veneer positioned between said belts and displaced in the direction of their widths, the improvement wherein said drums are fluid permeable, said conveyor belts press said sheets while extending around said drum but run rectilinearly out of contact with said drums between at least two of said guide drums for a distance at least



equal to half the maximum width of said sheets, and nozzles are provided for training a drying medium against said sheets at a multiplicity of locations along said path and perpendicularly thereto where said sheets extend around said drums.

4,654,982

TOE VENTILATING PNEUMATIC SHOES

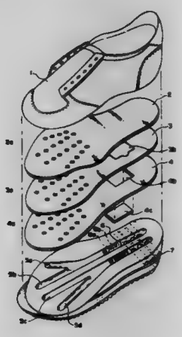
Kuyn C. Lee, Room 405, Taepyung Yang Apt. 6, 1774-1, DaeYun 6 Dong, Namku, Pusan, Rep. of Korea

Filed Apr. 18, 1986, Ser. No. 853,462

Claims priority, application Rep. of Korea, Apr. 18, 1985, 1985-4450

Int. Cl.[4] A43B *7/06, 13/20, 13/41*

U.S. Cl. 36—3 R **2 Claims**



1. A shoe ventilation apparatus providing ventilation while the shoe is worn, comprising:

flexible, cushion, mid-sole and uppers bonded together and to an out-sole;

said bonded combination removably fitted with an in-sole;

said out-sole providing branching air-channel means, and air exhaust channel means open to ambient air;

said air-channel means corresponding to a series of corresponding air passages means bored through said in-sole, cushion and uppers;

said air passage means providing egress for air from the interior of said shoe;

said air channel means removably fitted with air-exhausting means at their junction with said air exhaust channel means;

in which said cushion means are composed of an elastomeric, gas impermeable foam, and said out-sole means are composed of an elastomeric, gas impermeable material;

and in which said mid-sole and cushion means have air-exhauster access ports therein, said ports having removable cover means fitted therein;

and in whch said air exhaust channel means are perpendicular to said air channel means.

4,654,983

SOLE CONSTRUCTION FOR FOOTWEAR

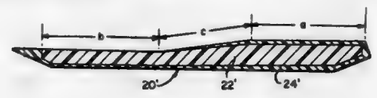
Kenneth W. Graham, Wakefield; Edward J. Norton, Oxford, both of Mass., and Shuhei Kurata, Fukuoka, Japan, assignors to New Balance Athletic Shoe, Inc., Boston, Mass.

Continuation of Ser. No. 617,388, Jun. 5, 1984, Pat. No. 4,561,140, which is a continuation-in-part of Ser. No. 535,288, Sep. 23, 1983, Pat. No. 4,551,930. This application Dec. 26, 1985, Ser. No. 813,752

The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

Int. Cl.[4] A43B *13/14, 13/18, 13/04*

U.S. Cl. 36—30 R **12 Claims**



1. A midsole for use in the sole unit of footwear, such as an athletic shoe comprising a core composed of plastic material which is light of weight, providing a characteristic of springiness, and a shell also composed of plastic material more dense than the plastic material of said core, said shell being molded and partially disposed about said core covering one of its opposed surfaces throughout and extending to but substantially not beyond the plane including the other opposed surface thereby to cover the entire peripheral side of said core between surfaces, leaving substantially uncovered the other of the opposed surfaces, and said shell serving at least to maintain integrity and prevent break down and/or compression of said core under stress.

4,654,984

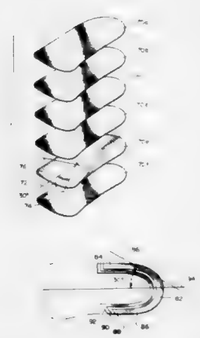
REINFORCED HEEL ORTHOTIC INSERT

Dennis N. Brown, Custer, Wash., assignor to Northwest Podiatric Laboratories, Inc., Blaine, Wash.

Filed Apr. 3, 1985, Ser. No. 719,324

Int. Cl.[4] A43B *13/38*

U.S. Cl. 36—44 **7 Claims**

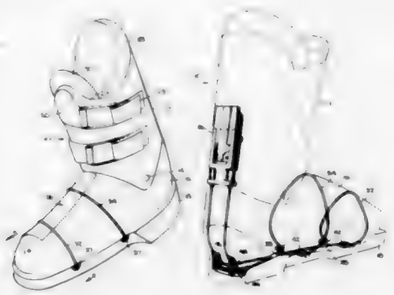


1. A substantially unitary orthotic insert adapted to be placed in an article of footwear, said insert having a longitudinal axis parallel to a lengthwise axis of a foot for which the insert is used, and a transverse axis, with the foot having a plantar surface, which has a calaneal area, a metatarsal head area, and a mid-foot area, said insert comprising:

a. a rear portion adapted to underlie and engage the plantar surface of the calcaneal area of the foot;

b. a forward portion adapted to underlie and engage the plantar surface of the metatarsal head area of the foot;
c. an intermediate portion connecting to and extending between said rear and forward portions to engage the plantar surface of the mid-foot area of the foot;
d. said insert having outside and inside edge portions adapted to be positioned adjacent an outside edge and an inside edge of the foot, respectively;
e. a heel reinforcing member having a generally U-shaped configuration and having a rear portion extending along a back edge portion of the insert, and two side portions extending along opposite rear edge portions of the insert, said heel reinforcing member comprising a plurality of generally parallel fibers having a predetermined alignment of orientation, such that impact loads imparted to the heel reinforcing member are transmitted along said alignment of orientation.

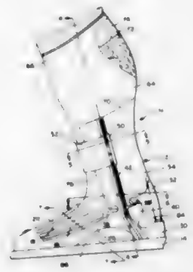
4,654,985
ATHLETIC BOOT
Edward L. Chalmers, 4907 Clubhouse Cir., Boulder, Colo. 80301
Filed Dec. 26, 1984, Ser. No. 686,148
Int. Cl.⁴ A43B *11/00, 5/04*
U.S. Cl. 36—50 **19 Claims**



1. A closure mechanism for an athletic boot having overlapping closure flaps which comprises: at least one flexible cable arranged exteriorly over said flaps; means directing said cable interiorly of said boot whereby said cable substantially forms a loop encompassing said overlapping flaps; means directing said cable interiorly of said boot to a position remote from said overlapping flaps; means directing said cable exteriorly of said boot at said remote position; and latch means connected to at least one end of said cable, said latch means being secured to the exterior of said boot and adapted to pull said cable to draw said loop and flaps closed.

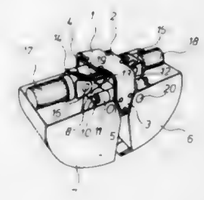
4,654,986
VACUUM FITTING SKI BOOT
Frederick W. George, 6009-B Suarise Blvd., Citrus Heights, Calif. 95610
Filed Feb. 7, 1986, Ser. No. 827,092
Int. Cl.⁴ A43B *5/04, 7/14*
U.S. Cl. 36—119 **10 Claims**

1. A ski boot for supporting the foot, ankle and lower calf of a user, comprising the combination of a rigid outer shell to fit about the ankle and foot and provide lateral support while permitting forward flexing of the ankle and foot, a sole below the shell for mounting on a ski or other platform, flexible sheath means cooperating with the shell for forming an hermetical seal about the foot, ankle and calf, and means for maintaining a partial vacuum between the sheath means and the foot, ankle and calf whereby the boot and sheath are caused to at least partially conform in close-fitting contact with the ankle



and foot without creating objectionable pressure on the user's skin.

4,654,987
GRAB BUCKET AND ACTUATING MECHANISM THEREFOR
Alfred Kinshofer, Wendelsteinstrasse 8, 8160 Miesbach, Fed. Rep. of Germany
Filed Sep. 9, 1985, Ser. No. 773,634
Int. Cl.⁴ B66C *3/02;* **E02F** *3/413*
U.S. Cl. 37—186 **12 Claims**

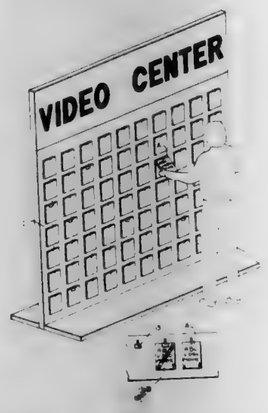


1. A two sided grab bucket comprising a U-shaped scoop carrier including an upper cross arm and depending side legs, a pair of scoops each including a pair of opposite side walls and a crosspiece extending between and affixed to a respective pair of said scoop side walls said crosspieces being pivoted to said scoop carrier legs for rotation about transversely spaced axes, an actuating lever secured to each of said crosspieces and a transversely extending piston-cylinder unit pivoted at opposite ends to and intercoupling the free ends of said levers, said grab bucket being characterized in that said crosspieces are defined by shafts having annular bearing surfaces on opposite sides of the plane intermediate said scoops and in comprising a pair of split bearings rotatably engaging each of said bearing surfaces, inner bearing shells secured to opposite sides of each of said scoop carrier legs and outer bearing shells separably secured to each of said inner bearing shells, each of said split bearings being mounted in a respective pair of said inner and outer bearing shells.

4,654,988
METHOD FOR DISPLAYING THE AVAILABILTY OF VIDEOCASSETTE FILMS FOR RENTAL
Gregroy S. Ericksen, P.O. Box A, Bountiful, Utah 84010
Filed Apr. 17, 1985, Ser. No. 724,012
Int. Cl.⁴ G09F *1/00*
U.S. Cl. 40—124.1 **12 Claims**

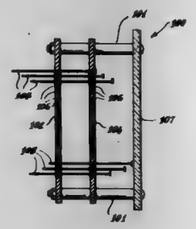
1. A process for displaying the availability of videocassette films for rental, comprising the steps of

(a) reproducing the information on a plurality of videocassette containers which identify the contents thereof
(b) hanging the reproductions on a display board to indicate the availability of the videocassette films for rental
(c) the number of reproductions on the display board corresponding to the number of videocassette films available for rental



(d) the reproductions for different videocassette films being located in different positions on the display board and the reproductions for the same videocassette films being positioned in superposed relation on the display board, and
(e) selectively removing the reproductions individually from the display board as the videocassette corresponding thereto is rented.

4,654,989
VERTICAL THREE-DIMENSIONAL IMAGE SCREEN
Ward Fleming, 88 W. Broadway, New York, N.Y. 10007
Division of Ser. No. 527,741, Aug. 30, 1983, Pat. No. 4,536,980, which is a continuation-in-part of Ser. No. 423,114, Sep. 24, 1982, abandoned, which is a division of Ser. No. 91,125, Mar. 21, 1980, Pat. No. D. 270,317. This application Aug. 16, 1985, Ser. No. 766,872
Int. Cl.⁴ A47F *11/06*
U.S. Cl. 40—427 **8 Claims**



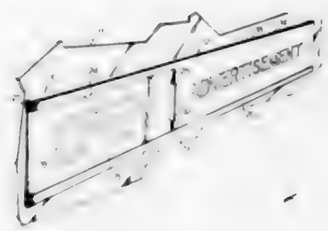
1. A vertically orientable pin screen for providing a three-dimensional image of a three-dimensionally configured object applied thereto comprising:
first and second spaced parallel vertically orientable apertured interconnected plates adapted to receive and hold a plurality of pins inserted into the apertures in said two plates,
said respective apertures in said respective plates when said plates are vertically oriented being in horizontal alignment such that a pin inserted through said aligned apertures in each of said plates will be horizontally oriented,
said apertures in each of said plates being aligned in rows,
said rows being in a staggered pattern with said apertures in alternate rows being aligned with each other,
a plurality of pins each having a shank with a head on one end thereof and with the other end of the shank being blunt,
said apertures being slightly larger than the shanks of said pins,
said shanks being inserted through aligned apertures in said first and second plates with said heads abutting against said first plate,
each pin having a head larger than said apertures to prevent said pins from passing through said apertures,
said first and second plates being spaced apart from each other a distance less than the length of said pins inserted through said apertures in said plates for allowing the end portions of their shanks to project beyond said second apertured plate when said heads are abutting against said apertured plate,
said spacing of said plates being sufficient to maintain said pins inserted through said aligned apertures in said respective plates in a substantially horizontal orientation when said plates are vertically oriented,
said plates being adapted to allow selective horizontal displacement of said pins relative to said plates when said plates are vertically oriented,
a transparent cover mounted in a plane parallel to said first and second apertured plates and being spaced from said first apertured plate, said first apertured plate being disposed between said transparent cover and said second apertured plate, the spacing between said transparent cover and said first apertured plate being less than the length of said pins inserted through said apertured plates for limiting the displacement of said pins in said apertures and preventing the pins falling out of said plates head first,
said pins being horizontaly displaceable by pressing a three-dimensionally configured object against said end portions of their shanks projecting beyond said second apertured plate for displacing away from said first apertured plate and toward said transparent cover the heads of those pins whose end portions have been pressed by such object for causing the displaced heads as seen through said transparent cover to create a three-dimensionally configured image of such object,
said displaceable pins being held in their respective displaced positions by frictional engagement of the shanks of the pins in said apertures for retaining said three-dimensionally configured image while said plates are vertically oriented, and
said pins being returnable to their original positions in which their heads are abutting against said first apertured plate by gravitational force by lifting and tilting said pin screen with the end portions oriented downwardly.

4,654,990
DOUBLE FACE CHANGEABLE SIGN
Everett T. Suters, 501 Peachtree Battle Ave., N.W., Atlanta, Ga. 30305
Filed Nov. 25, 1985, Ser. No. 801,230
Int. Cl.⁴ G09F *11/00*
U.S. Cl. 40—491 **6 Claims**

1. A double face changeable sign for mounting to a transparent wall or the like for exhibitng messages to both sides of the wall comprising an elongated sign envelope including a pair of side panels mounted in juxtaposed overlying parallel relationship and defining a sign plate passage therebetween, the first of said side panels defining an opening adjacent one end portion of said envelope, the second of said side panels defining an opening adjacent the other end portion of said envelope, said first side panel having a first visible message in visible alignment with the opening of said second side panel, said second

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side panel having a second visible message in visible alignment with the opening of said first side panel, a sign plate positioned in said sign plate passage, said sign plate being of a length shorter than said envelope and also having the first and second visible message applied on opposite sides thereof with its first visible message facing in a direction opposite to the direction in which the first visible message of said first side panel faces and having its second visible message facing in a direction opposite to the direction in which the second visible message of said second side panel faces, whereby when the sign plate is moved in the sign plate passage to one end portion of the envelope the sign plate moves out of registration with the opening of the second side panel and into visible registration with the opening



of the first side panel and blocks the view of the second message on the second side panel and displays its first message through the opening of the first side panel, but when the sign plate is moved in the sign plate passage to the other end portion of the envelope the sign plate moves out of registration with the opening of the first side panel and into visible registration with the opening of the second side panel and blocks the view of the first message on the first side panel and displays its second message through the opening of the second side panel, so that similar messages are always displayed simultaneously on both sides of the sign and are changed when the sign plate is moved from one end portion to the other end portion of the sign envelope.

4,654,991

TOY OR OBJECT HANGER FOR VISUAL DISPLAY

Leila H. Jones, 1045 River Rd., Sykesville, Md. 21784

Filed May 14, 1985, Ser. No. 734,111
Int. Cl.[4] G09F *7/22*
U.S. Cl. 40—617 **15 Claims**



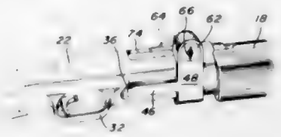
1. A toy hanger for visually displalying toys, dolls and the like within a room, comprising:
(a) a hanging strap;
(b) means for mounting the hanging strap to a support structure, and
(c) fastening means secured to the hanging strap for releasably securing a toy or the like to said hanging strap for visual display, wherein said fastening means is a fastening strip having opposite ends connectable with each other to define a support loop for receiving and supporting said toy on the hanging strap.

4,654,992

FIRE-ARM SAFETY DEVICE

Robert Lavergne, P.O. Box 351, Cheneville, Quebec, Canada J0V 1E0

Filed Sep. 23, 1985, Ser. No. 779,098
Int. Cl.[4] F41C *11/02, 11/06, 17/08*
U.S. Cl. 42—70.01 **4 Claims**



1. A safety device for preventing unauthorized use of a shotgun including a loading chamber provided with both a lateral ejector opening and an underside loading aperture, a barrel, a magazine and a breech block; said safety device including: a rigid frame removably mounting said shotgun in registry with said lateral ejector opening and said underside loading aperture; first closure means upstanding through said underside loading aperture for closing the inner opening of the magazine of said shotgun upon said rigid frame engaging an operative mounting position; and second movable closure means removably extending through said lateral ejector opening, for releasably closing the inner opening of the barrel of said shotgun, and concurrently locking said safety device to said shotgun in the operative mounting position of the rigid frame; said second movable closure means being movable relative to said frame between operative and inoperative positions and includes a locking menber for actuating said second movable closure means in between its operative and inoperative positions and for concurrently locking said second movable closure means in its operative position against unauthorized disengagement thereof.

4,654,993

STOCK ASSEMBLY FOR FIREARM

Maxwell G. Atchisson, 6695 Ridgemoore Dr., Doraville, Ga. 30360

Division of Ser. No. 639,526, Aug. 8, 1984, Pat. No. 4,553,469, which is a continuation of Ser. No. 336,328, Dec. 1, 1981, abandoned. This application Oct. 4, 1985, Ser. No. 784,155
Int. Cl.[4] F41C *23/00*
U.S. Cl. 42—71.01 **6 Claims**



1. Firearm apparatus comprising:
means defining a butt at the back of the firearm;
front means disposed in predetermined location adjacent the muzzle end of the firearm;
a pair of mutually separable stock halves each extending longitudinally from said butt means to said front means;
each such stock half enclosing a side portion of the firearm along the entire enclosed length of the firearm, and the stock halves mutually confronting each other along substantially longitudinal parting lines;
means associated with either said butt means or said front means to engage the one ends of said stock halves and hold the stock halves in place against lateral displacement away from said firearm;
latch means associated with the other of said butt means and said front means, and selectably operative to engage and secure the other ends of said stock halves against lateral movement, so that said stock halves are retained on the firearm;
a pistol grip on the under side of the firearm;
said pistol grip formed by mating portions of said stock halves extending downwardly from the side portions of the stock halves and mutually confronting along a grip parting line;
a stock catch member selectively movable to either a first or a second position at a predetermined location on said pistol grip along the grip parting line; and
said stock catch member and said pistol grip having mutually engaging means cooperative to hold together said grip mating portions in said first position of the stock catch member, and operative to release the grip mating portion in said second position of the stock catch member.

4,654,994

CRAPPIE FISHING ROD

William A. Roberts, Jr., P.O. Box 172, Lexington, Tenn. 38351

Filed Feb. 10, 1986, Ser. No. 827,646
Int. Cl.[4] A01K *91/02*
U.S. Cl. 43—19 **6 Claims**



1. An attachment for mounting on a forward end of a crappie fishing rod, said rod provided with a fishing line threaded through a central passageway of said rod for carrying at least a float and a fish hooking element, which attachment comprises:
an elongated housing provided with a cylindrical bore symmetrical about an axis, said bore having a diameter sufficient to freely receive said float and a length to contain said float and fish hooking element, said housing having a first end for attachment to said rod with said axis aligned with said central passageway of said rod for threading said line into said bore, and a second end, said bore provided with an inwardly directed shoulder proximate said first end of said housing, said second end of said housing terminating in a radially extending symmetrical enlargement;
a coiled spring positioned within said bore, said spring having a first end to contact and be secured at said shoulder, and a free second end to contact said float when said float is within said bore; and
wherein said spring has a selected strength whereby tension applied to said line, with said float in contact with said second end of said spring, causes complete compression of said spring, and when tension on said line is released, causes release of said float and fish hooking element from said bore.

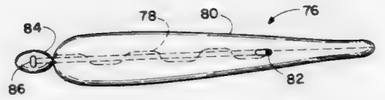
4,654,995

ARTICULATED FISHING LURE WITH REINFORCEMENT WEB

Donald G. Rapelje, 2600 NW. Cascade, East Wenatchee, Wash. 98801

Filed Sep. 4, 1985, Ser. No. 772,549
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.15 **15 Claims**



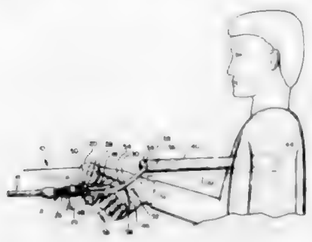


1. A fishing lure comprising:
a first body segment having front and rear ends and a center of buoyancy, said rear end having an end face;
a second body segment having front and rear ends and a center of buoyancy, said front end having an end face;
wherein each body segment has a horizontal axis and wherein a front retarding surface is fixed adjacent the front end of said first segment and a rear retarding surface is fixed adjacent the front end of said second segment, said rear retarding surface having a surface area of at least 50% of the surface area of said front retarding surface, the retarding surfaces on both segments being inclined with respect to said horizontal axes by substantially similar angles of between 40 degrees and 80 degrees;
articulation means attached to and joining said end face of said first segment to said end face of said second segment only at a point below their respective centers of buoyancy, wherein said first body segment and said second body segment are joined only by said articulation means;
wherein the front and rear retarding surfaces are constructed and arranged to produce a side-to-side, relative two-dimensional swiveling motion of the first and second body segment axes about said articulation means, said first segment front end and said second segment rear end having movements of a greater side-to-side magnitude than that of said articulation means; and
at least one hook attached to at least one body segment.

12. A fishing lure, in combination with a fish hook, comprising:
a formed portion; and
a resilient flexible nylon mesh web embedded in said formed portion, wherein said web is embedded in a siusoidal-like meandering pattern about a median plane of said formed portion.

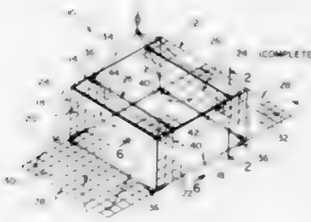
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4,654,996
CASTING ROD HANDLE WITH PISTOL GRIP AND BUTT EXTENSION
David A. Gieselman, Coos Bay, Oreg.
Filed May 16, 1986, Ser. No. 864,087
Int. Cl.[4] A01K *87/00, 97/16*
U.S. Cl. 43—23 18 Claims



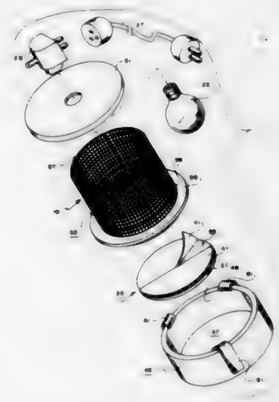
1. A handle for a fishing rod, comprising:
(a) a base portion having a reel seat including means for securing a fishing reel thereto and having means for attaching thereto a forwardly-extending rod member;
(b) a hand grip located rearwardly proximate said reel seat and extending rearwardly and downwardly;
(c) an elongate butt extension support limb extending rearwardly and laterally away from said reel seat and thence extending to a location rearwardly and upwardly separated from said reel seat; and
(d) mounting means located on said support limb for receiving a front end portion of a butt extension member.

4,654,997
CRAB TRAP
Charles Ponzo, 37 Abby La., Shirley, N.Y. 11967
Filed Jul. 29, 1986, Ser. No. 890,339
Int. Cl.[4] A01K *69/10*
U.S. Cl. 43—102 1 Claim



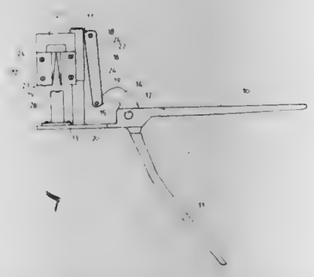
1. A crab trap, comprising:
(a) a parallelepiped frame covered on top, bottom and two sides with grid intersecting bars in which two equal dimensioned panels form said top and said bottom and two equal dimensioned panels form said sides, said two side panels and said top and said bottom panels are connected by a first set of hinges in at least two places along four places of intersection of said panels, said first set of hinges including an elliptically shaped band which encircles said adjacent panels in order to permit free hinging of said panels, said frame having open ends whereby crabs may enter either of said ends but are prevented from exiting said top, said bottom and said sides due to said grid;
(b) means for stabilizing said frame, said stabilizing means including two narrow locking flaps, wherein each of said locking flaps are covered with a grid of intersecting bars, said locking flaps spaced apart and suspended from said bars of said top panel by a second set of hinges in at least two places to extend between said side panels to stabilize said frame and when said frame is to be collapsed said locking flaps can manually pivot upwards against said top panel so that said top and said bottom panels are allowed to move parallel to each other to collapse said frame;
(c) two doors each covered with additional grid intersecting bars, each of said doors hinges to said bottom of said frame at said open ends thereof; and
(d) a hoist line connected to said doors so that when said doors are pulled up by said hoist line, said crabs inside of said frame become trapped therein.

4,654,998
DEVICE FOR ATTRACTING AND TRAPPING FLEAS
Anthony H. Clay, 5161 Rolling Fields, Memphis, Tenn. 38134
Filed Dec. 5, 1985, Ser. No. 804,903
Int. Cl.[4] A01M *1/04, 1/16*
U.S. Cl. 43—113 13 Claims



1. A device for attracting and trapping fleas, said device comprising:
(a) a housing assembly having a hollow interior and having an entrance opening for allowing fleas to enter said hollow interior thereof, said housing assembly including an open mesh screen means covering said entrance opening for allowing fleas to freely pass therethrough while preventing anything substantially larger than a normal flea from passing therethrough;
(b) attractant means located within said hollow interior of said housing assembly for attracting fleas through said open mesh screen means into said hollow interior of said housing assembly; and
(c) trapping medium means located within said hollow interior of said housing assembly for trapping fleas within said interior of said housing assembly; said housing assembly including a pan member having a substantially flat bottom and an upturned peripheral edge for containing said trapping medium means and including a top member spaced above said upturned peripheral edge of said pan member with the space between said top member and said upturned peripheral edge of said pan member defining said entrance opening into said hollow interior of said housing assembly; said open mesh screen means including an open mesh screen sleeve member having a lower end and having an upper end; said housing assembly including means for attaching said lower and upper ends of said open mesh screen sleeve member relative to said upturned peripheral edge of said pan member and said top member respectively and for preventing inadvertent access into said hollow interior of said housing assembly except through said open mesh screen means and for allowing easy advertent disassembly of said housing assembly to provide access into said hollow interior of said housing assembly by authorized persons.

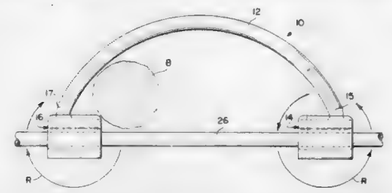
4,654,999
CUTTING DEVICE
William C. P. Raggett, 10 Cheeseman Road, Gisborne, New Zealand
Filed Nov. 4, 1983, Ser. No. 548,774
Int. Cl.[4] A01G *1/00*
U.S. Cl. 47—6 10 Claims



1. A portable cutting device adapted to be held and operated with one hand of an operator comprising a base member, a fixed handle projecting from said base member, a lever handle pivotally mounted to said fixed handle adjacent said base member, a fixed rigid guide member of angular cross-section projecting upwardly from said base member, a blade mount having a rigid sleeve of corresponding angular internal cross-section to that of the guide member, said sleeve being slidingly engaged on said guide member but, due to the angular cross-section of both the guide member and sleeve, being restrained from rotational movement, at least one blade member mounted by said blade mount, support means mounted by said base member, said support means having a support surface on which a scion or rootstock can be located for cutting, said sleeve being pivotally coupled to one end of link means which is in turn pivotally coupled at its other end to an extension of said lever beyond the pivot mount between said handles, said support means having an opening formed therein which is of dimensions and shape such as to permit at least a portion of said blade member to pass therethrough as the lever handle is moved about the pivot mount toward the fixed handle.

4,655,000
BRANCH RETAINER
E. Grant Swick, Bartlett, Ill., and Peter K. McCully, Auckland, New Zealand, assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 25, 1985, Ser. No. 727,051
Int. Cl.[4] A01G *17/08*
U.S. Cl. 47—44 5 Claims

1. A one-piece fastener molded of a resilient plastic material and adapted to snap fit onto a support wire for loosely retaining a plant, said fastener comprising a flexible filament portion and a clip portion integrally formed at the opposite ends of said filament portion, said flexible portion being molded to be in a relaxed stretched-out condition and to be disposed along a generally straight line, each of said clip portions having a generally tubular body extending transversely to said flexible filament portion, a cylindrical-shaped throughbore formed longitudinally through said tubular body, and an elongate slot formed lengthwise through the surface of said tubular body and in direct communication with said throughbore to define a throat for receiving said support wire into said throughbore, each of said ends of said filament portion connected to one of said tubular bodies adjacent to said elongate slot at a location between the mid-length point and one of its ends to provide an offset relationship between said flexible filament portion and



each of said tubular bodies, said ends of said filament portion being connected to said tubular bodies in a perpendicular relationship with a radial line of said cylindrical-shaped throughbore and with said elongate slot of said tubular bodies facing each other when said filament portion is in said relaxed stretched-out condition.

4,655,001
TREATMENT OF TREES AND BUSHES
Nicholas W. Lepp, Liverpool, and David A. Phipps, Southport, both of England, assignors to Pilkington Brothers P.L.C., St. Helens, England
Filed Oct. 11, 1985, Ser. No. 786,687
Claims priority, application United Kingdom, Oct. 19, 1984, 8426553; Jun. 12, 1985, 8514885
Int. Cl.[4] A01G *7/06;* C05G *3/00*
U.S. Cl. 47—57.5 10 Claims

1. A process for treating trees and bushes having a xylem structure through which sap passes to provide trace elements or micro-nutrients thereto, which process comprises inserting into the xylem structure a solid glass article comprising a phosphate base glass containing in oxide form a trace element or micro-nutrient selected from calcium, zinc, magnesium, iron, manganese, copper, molybdenum, nickel, boron, and mixtures thereof, the phosphate base glass being a phosphate glass in which the major components, which comprise at least 56 mol % of the glass composition, are P_2O_5 and R_2O (wherein R is one or more of Na, K, and Li), the maximum content of P_2O_5 being 55 mol %, and the minimum content of R_2O being 17 mol %, the phosphate glass optionally comprising one or more glass-modifying or glass-forming materials (other than the trace elements present) in non phytotoxic amounts, the formulation of the phosphate base glass being selected so that the solubility of the phosphate glass in the sap of the tree or shrub being treated is sufficient to provide a transfer of the said trace elements or micro-nutrients from the glass into the sap by dissolution of the glass.

4,655,002
RAILROAD CROSSING WARNING GATE
Clifford R. Everson, 1408 16th Ave., Camanche, Iowa 52730
Filed Jul. 21, 1986, Ser. No. 887,744
Int. Cl.[4] E05D *15/40;* E01F *13/00*
U.S. Cl. 49—246 2 Claims

1. A protected signal arm for a railroad crossing gate having a relatively short supporting section and an elongated abutting end section, said supporting section to be connected to a standard for moving said signal arm between an upright position and a horizontal position, a hinge connecting said end section to said supporting section, said hinge having a pintle aligned over the abutment of said supporting section and said end section, said abutment being inclined outward at a substantial angle with respect to a perpendicular line across said arm in a direction away from said standard and from that edge of said

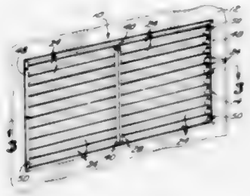
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signal arm that is the lower edge while said signal arm is horizontal, said pintle being adjacent that side of said arm to be facing a railroad and therefore opposite oncoming traffic on a highway such that said end section is normally maintained



straight outward by gravity while said supporting section is horizontal and is rotatable slantingly upward about said pintle for movement out of the way by any contact with oncoming traffic on said highway.

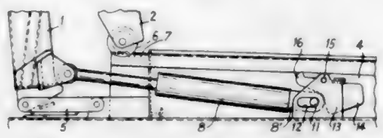
4,655,003
SHUTTER ASSEMBLY WITH INDIVIDUALLY REMOVABLE SLATS
John B. Healey, Sr., 27128 Nona Ave., Highland, Calif. 92346
Filed Apr. 16, 1986, Ser. No. 852,839
Int. Cl.[4] E05F *17/00*; E06B *7/08*
U.S. Cl. 49—88 **24 Claims**



1. A shutter assembly, comprising:
a pair of opposed vertical side rails, each having a plurality of vertically-spaced, horizontally-extending grooves, each of said grooves having a downwardly-extending notch; and
a plurality of horizontal slats, each having first and second opposed ends with a dowel extending from each of said ends;
whereby the dowels on each of said slats are removably received in an opposed pair of said grooves so as to be rotatably seated in an opposed pair of said notches.

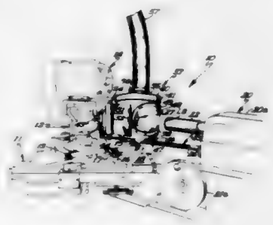
4,655,004
DEVICE FOR AUTOMATICALLY LOCKING A HATCHWAY PANEL IN THE OPEN OR CLOSED POSITION
René Caillet, Saint Germain en Laye, France, assignor to Kone Oy, Helsinki, Finland
Filed Aug. 27, 1985, Ser. No. 769,643
Claims priority, application France, Jun. 25, 1982, 82 11226
Int. Cl.[4] E05F *15/00*
U.S. Cl. 49—280 **6 Claims**

1. A device for automatically locking a hatchway panel in the open or closed position, comprising:
(a) a control actuator consisting of a cylinder and piston unit disposed between a fixed support and a panel element for moving said panel from a closed position to an open position or inversely,
(b) an automatic locking mechanism for the panel, said mechanism comprising a pivoted locking element movable between an operative locking position in which it registers with a portion of a panel element and prevents displacement of the panel and an inoperative unlocked position in which said panel is free to move, and
(c) connecting means between said control actuator and said fixed support, said connecting means comprising a transverse axis rigid with the bottom of the cylinder of the



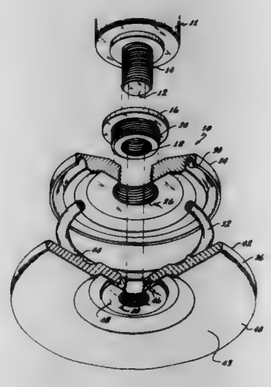
control acuator and an ovalized hole provided in the fixed support and within which said transverse axis is adapted to slide, said bottom of the actuator cylinder being disposed in the vicinity of a portion of the locking element so that, at the beginning of the actuation of the control actuator for opening the panel, the actuator cylinder moves in said ovalized hole to engage said locking element and rock same to an unlocked position.

4,655,005
APPARATUS AND PROCESS FOR DRY CUTTING OF PLASTIC OPTICAL LENSES
Tiner E. Roberts, St. Stephen, Minn., assignor to Flo-Bob Industries Inc., St. Cloud, Minn.
Continuation of Ser. No. 694,445, Jan. 24, 1985, Pat. No. 4,589,231. This application May 19, 1986, Ser. No. 864,267
Int. Cl.[4] B24B *7/00*
U.S. Cl. 51—124 L **1 Claim**



1. A lens generating process for generating plastic lenses in a dry operation without the use of liquid coolant, the lens to be ground being mounted on a horizontal lens holder, consisting of the steps of:
positioning the lens blank in a chamber and, while engaging one surface thereof with a revolvable multi-grit plated diamond grinding medium, the grinding medium being oscillatable in a horizontal path relative to the lens blank, the diamond grinding medium, when revolved, continuously cutting swarth material from the lens blank as the grinding medium is oscillated relative to the lens blank during the grinding and cutting operation, the chamber being defined by a chamber structure having a top wall, bottom wall, and a peripheral wall,
introducing a high volume, high velocity flow of air into the chamber through an opening in the peripheral wall of the chamber structure through which the lens holder projects and simultaneously evacuating the air through a vacuum conduit connected to an opening in the top wall of the chamber structure above the inner engaging grinding medium and lens blank to form a high volume, high velocity stream of air across the interface between the lens blank and the grinding medium to entrain the plastic swarth in the stream of air to thereby continuously cool the lens blank and grinding medium and continuously remove the cut plastic swarth material from the chamber.

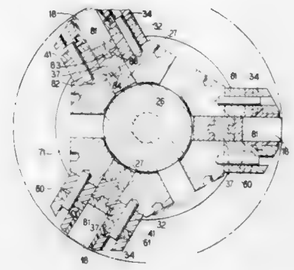
4,655,006
ABRASIVE APPARATUS
Aleck Block, 800 Warner Ave., Los Angeles, Calif. 90024
Filed Jan. 17, 1985, Ser. No. 692,235
Int. Cl.[4] B24B *41/00*
U.S. Cl. 51—168 **45 Claims**



41. In combination,
a disc made from a stiff material and provided with first and second opposite faces,
there being abrasive particles attached to the first surface of the disc,
engaging means extending from the second surface of the disc,
a reinforcing plate
a yieldable clutching member disposed on the reinforcing plate for engaging the engaging means on the second surface of the disc,
the engaging means being externally exposed relative to the yieldable clutching member, and
means for providing a rotation of the reinforcing plate into a firm engagement between the yieldable clutching member on the reinforcing plate and the engaging means on the second surface of the disc when the projection on the second surface of the disc initially engages the yieldable clutching member on the reinforcing plate and is further rotated in a direction opposite to the direction of the firm engagement between the yieldable clutching member and the engaging means.

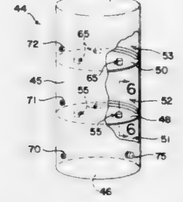
4,655,007
HONING APPARATUS
Richard P. Graft, Angola, and Gary I. Smith, Auburn, both of Ind., assignors to Brammall, Inc., Angola, Ind.
Filed Jun. 16, 1986, Ser. No. 874,462
Int. Cl.[4] B24B *33/02*
U.S. Cl. 51—338 **7 Claims**

1. A honing tool comprising, a tool body having an outer peripheral surface formed with at least one slot and at least one flat outer surface in said perpheral surface upon which a honing stone can be mounted, an expander mounted in said tool body for longitudinal movement and for engagement with a cam surface of an expander member extending into said slot, a stone driving spacer mounted in said slot and engaged by said expander member so as to move it radially of said tool body, a stone holder formed with a slot in which said honing stone is mounted, and a mounting spacer located between and attached to said flat outer surface of the tool body and to said stone



holder and formed with a slot through which said stone driving spacer can be moved.

4,655,008
INFLATABLE SHELTER LIFT BAG
James M. Parish, Wadsworth, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Filed Dec. 19, 1985, Ser. No. 811,071
Int. Cl.[4] E04B *1/34*
U.S. Cl. 52—2 **17 Claims**



1. An inflatable lift tube for use in erecting an inflatable shelter comprising an elongated air impermeable bag that has an upper panel and a bottom panel, said bag having a bulk-head for separating the interior of said bag into compartments, said bulk-head having relief valve means for communicating one of said compartments upon reaching a preset pressure with another one of said compartments, and inlet valve means operatively connected to said one compartment for effecting initial inflation on said one compartment from a pressure source followed by pressurization of said other one of said compartments through said relief valve means in said bulk-head for effecting the lifting of the center portion of an inflatable shelter.

4,655,009
WEATHERPROOFING STRIP
Henry R. DeGraan, 20520 Walnut Dr., Walnut, Calif. 91789
Filed Sep. 13, 1985, Ser. No. 775,837
Int. Cl.[4] E04D *1/36*
U.S. Cl. 52—58 **10 Claims**

1. A weatherproofing strip for sealing the joint between two surfaces or the intersection of adjacent members on one surface, said strip comprising:
an elongated, integral elastomeric strip having a flexible central web and at each longitudinal edge having a thickened portion having a deformable metallic strip in the center thereof and a strip of sealant material having an

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upper portion and sides, said sealant material being affixed along the underside of the elastomeric strip near each longitudinal edge, each of said strips of sealant material being confined in a recessed channel surrounding the



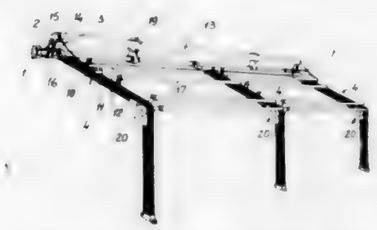
upper portion of said strips of sealant material and having an elastomeric caulk retaining and sealing rib along each side of each of said strips of sealant material and said strips of sealant material being positioned below said deformable metallic strips.

4,655,010

SUPPORT FRAME FOR AN AWNING HAVING A ONE-PIECE FABRIC COVER

Ettore Arquati, Via Caduti del Lavoro, 31, 43044 Collecchio (Parma), Italy

Filed Jul. 3, 1985, Ser. No. 752,247
Claims priority, application Italy, Jul. 3, 1984, 21736 A/84
Int. Cl.⁴ E04H *15/58*; E04F *10/06*; A47H *3/10*; F16C *11/10*
U.S. Cl. 52—63 **4 Claims**



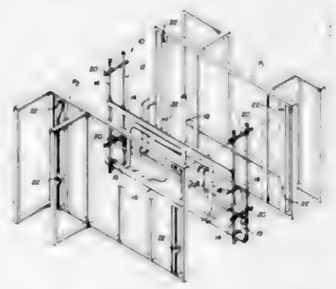
1. A support frame for an awning comprising brackets for attachment to a support structure, which brackets support a square bar on which are positioned attachment carriers mounted at the ends of guides on which are slidable carriages for a draw bar to which one end of an awning fabric can be attached, said draw bar lying above said guides over the whole of its longitudinal length to allow the use of a one-piece awning fabric, said awning fabric, at its other end, being wound on a wind-up roller rotatably supported by arms connected to said square bar, said guides having, in cross-section, a substantially rectangular conformation with channels for awning drive belts on the upper and lower faces thereof respectively, there further being provided lateral cavities within which slide said carriages supporting said awning fabric draw bar, as well as grooves for housing small bars joining said guides together, said awning fabric wind-up roller being supported by arms connected to said square bar by means of a splined hole, said frame further comprising, connected to said square bar, support elements which extend around said awning fabric wind up roller to support it part way along its length, support rollers extending transversely between laterally adjacent guides and operable to support the fabric of the awning in the span between said laterally adjacent guides, and, interposed between longitudinally adjacent guides, respective guide curves allowing the variation, with continuity, of the mutual inclination between said longitudinally adjacent guides, said guide curves having guide connectors which can be inserted into the interior of the guides to provide a structural continuity for the channels, as well as for said lateral cavities, respective ends of said guide connectors being pivotally engaged with a pair of guide sectors disposed opposite one another, there being further provided side plates including a first side plate provided with a circular protuberance adjacent which there is a second side plate provided with an arcuate recess matching the conformation of the protuberance, and a clamping bolt constituting a pivot axis of said curve, said connectors being symmetrically provided on either side of said curve.

4,655,011

PREFABRICATED BUILDING SYSTEM

Anthony A. Borges, 18601 S. Main St., Gardena, Calif. 90248

Filed Sep. 12, 1984, Ser. No. 649,624
Int. Cl.⁴ B23Q *3/18*; E03C *1/00*; E04B *2/08, 2/56*
U.S. Cl. 52—79.1 **4 Claims**



1. A prefabricated building system comprising a portable wall unit having a supporting frame and utility apparatus mounted on said supporting frame, said utility apparatus being constructed to be connected to appliances in the building in which said portable wall unit is installed, wall partitions adapted to be connected to said portable wall unit, said wall partitions and said portable wall unit comprising aligning means for facilitating the connection thereof, and means for adjustably mounting said utility apparatus on said supporting frame, said aligning means comprising laterally extending members on said supporting frame and apertures in said wall partitions adapted to receive said laterally extending members therein to support, align and space said wall partitions.

4,655,012

SYSTEM FOR JOINING TWO ADJACENT BUILDING STRUCTURES

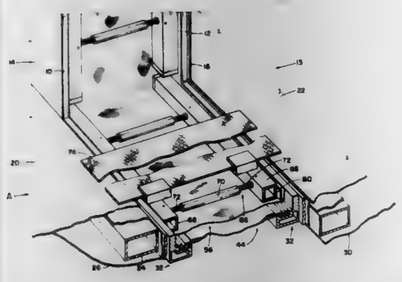
Donald R. Downey, Tulsa, and Donald W. Witten, Collinsville, both of Okla., assignors to Nordam, Tulsa, Okla.

Filed Oct. 27, 1983, Ser. No. 545,874
Int. Cl.⁴ E04H *9/00*
U.S. Cl. 52—79.8 **4 Claims**

1. A system for forming a passageway between two adjacent buildings having opposed asymetrically spaced apart openings therein to provide radio shielding of the passageway, each building having an exposed conductive member around the opening therein, comprising;

a tubular boot of selectable length of flexible electrical frequency impervious material, the length of said boot being greater than said space between said two buildings at said opposed openings therein, the boot having a peripheral edge at each end thereof;

a plurality of separate, spaced apart, expandable members positioned between said two buildings for forcing on peripheral edge of said boot into electrical contact with the conductive member of one of said buildings and the other said peripheral edge of said boot into electrical



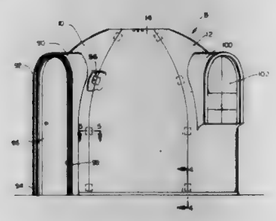
contact with the conductive member of the other of the said buildings, the boot forming a short length tube communicating one building opening with the other.

4,655,013

PREFABRICATED MODULAR BUILDING AND METHOD OF ASSEMBLY

Norman A. Ritland, 7262 Black Hill Rd., Lodi, Wis. 53555

Filed Jan. 30, 1985, Ser. No. 696,574
Int. Cl.⁴ E04B *1/32*
U.S. Cl. 52—80 **23 Claims**



1. A prefabricated modular building assembly, comprising:

(a) circular ring means of substantial diameter;

(b) a plurality of lightweight contoured panels, each of said panels having arcuate top, bottom and side edges providing panels of identical size and contour;

(c) said top edges conforming to said ring means;

(d) means associated with each of said top edges cooperatively engaged with said ring means for positively securing said top edges and thereby said panels around said ring means;

(e) one of the side edges of each panel including a tongue and the other side edge including a conforming groove; and,

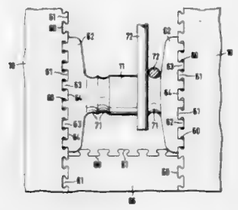
(f) compression securement means extending from the side edges of each panel, the securement means of adjacent panels interengaged and drawing said panels together so that the tongue of a panel is seated in and sealed by the groove of the adjacent panel for thereby rigidly interconnecting said panels and providing a self-supporting building assembly.

4,655,014

FORMWORK ASSEMBLY FOR CONCRETE WALLS

Edmond D. Krecke, 15-17, Route de Grundhof, 6315 Beanfort, Luxembourg

Filed Feb. 15, 1985, Ser. No. 702,040
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1985, 3405736
Int. Cl.⁴ E04B *1/02*
U.S. Cl. 52—105 **16 Claims**



1. A formwork assembly useful for producing a wall structure, comprising:

a plurality of side wall portions each including adjacently disposable edges, and recess and projection means disposed at said edges for positionally securing said wall portions to one another;

a plurality of connecting members for interconnecting said side wall portions; and

at least one reinforcing member disposable between said side wall portions when interconnected by said connecting members;

wherein said of said side wall portions includes an inwardly facing surface and first engagement means disposed on said surface, and said connecting members comprise second engagement means cooperable with said first engagement means for securing said connecting members to said side wall portions; and

wherein said connecting members each additionally comprise a pair of opposed circular end portions and a central shaft portion connecting said end portions, said shaft portion including at least one peripheral groove disposed adjacent said end portions and being dimensioned to supportively contact said reinforcing member

wherein each circular end portion has an outwardly facing surface, said surface having at least two planes which are parallel to each other and to the reinforcing member so that substantially the entire outwardly facing surface of each end portion flatly abuts against its associated side wall portion.

4,655,015

ANCHOR TIE FOR CARRYING PREFABRICATED CONCRETE MEMBERS

Peter Hoyer, Memmingen, Fed. Rep. of Germany, assignor to Firma Pfeifer Seil-und Hebetechnik GmbH & Co., Memmingen, Fed. Rep. of Germany

Continuation of Ser. No. 593,569, Mar. 26, 1984, abandoned. This application Mar. 11, 1986, Ser. No. 838,885
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312458
Int. Cl.⁴ E04B *1/38*
U.S. Cl. 52—125.4 **2 Claims**

1. An anchor tie member for use in carrying prefabricated concrete components, consisting essentially of a threaded portion for connecting the tie member to a lifting device and a tie rod having a diameter and two end portions, the first portion of which is linear and secured to said threaded portion and the second of which is shaped by cold forming with an undulation therein having only first and second bends, the first bend being located external one side of the the diameter of the first

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portion of the the rod, said first bend describing a relatively short arc, and a second bend extending from the first bend in an opposite direction to the first bend, said second bend describing a relatively long arc on which a tip of the rod is located, the



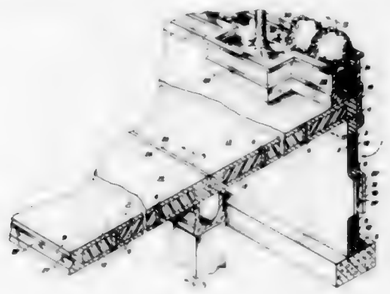
tip of the rod being positioned beyond another side , said another side being diametrically opposite to said one by 180°, of the said first portion of the rod to that of the first bend and the second bend having a depth from one to two times the diameter of the rod.

4,655,016

BUILDING CONSTRUCTION

David E. Jacob, 420 N. Orange, Mesa, Ariz. 85201

Filed Sep. 16, 1985, Ser. No. 776,657
Int. Cl.⁴ E02D *1/92*
U.S. Cl. 52—169.1 **5 Claims**



1. A structural building panel comprising:

A. first and second spaced apart and generally parallel concrete outer layers;

B. first and second concrete ends extending between said first and second concrete outer layers;

C. first and second concrete edges extending between said first and second concrete outer layers;

D. at least one transverse structural tie, said structural tie comprising:

1. a transverse concrete structural link extending between said first and second concrete outer layers and disposed generally normal with respect thereto;

2. said transverse concrete structural link extending between said first and second edges and disposed generally normal with respect thereto;

3. at least one reinforcing bar having a central section and first and second end sections;

i. said central section included within said concrete structural link and extending from said first concrete outer layer to said second concrete outer layer;

ii. said first end section extending at a right angle with respect to said central section and disposed within said first concrete outer layer; and

iii. said second end section extending at a right angle with respect to said central section and disposed within said second concrete outer layer; and

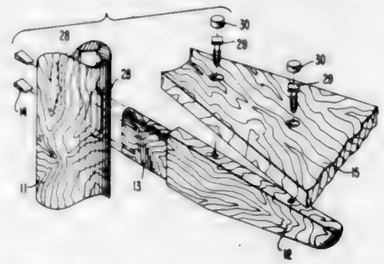
E. said first and second concrete outer layers, said first and second concrete ends and said concrete structural cooperatively defining at least two cavities.

4,655,017

WOODEN CIRCULAR STAIR WITH BALUSTRADE AND METHOD FOR FABRICATING THE SAME

Henry J. Bond, P.O. Box 469, Somerset, Va. 22972

Filed Nov. 6, 1985, Ser. No. 795,545
Int. Cl.⁴ E04F *11/00*
U.S. Cl. 52—187 **5 Claims**



1. A wooden spiral staircase comprising:

a hollow central support column comprised of staves of continuous pieces of wood which are glued and clamped together, with edge joints reinforced by hardwood dowels;

a plurality of tread supports each having an oblate tenon slit at its inboard end, which tenon completely intersects the central column through a close-fitting mortise and has a compression wedge driven into each of its slits;

a plurality of tapered treads, the narrow inboard ends of which abut but do not attach to the central column, each tread being fastened to a tread support by screws; and

a plurality of spacerblocks, one being located between every two adjacent treads, with each such spacerblock being secured in place adjacent the wide outboard end of the tread by piece of threaded rod running entirely through said two treads and the spacerblock.

4,655,018

ROOF PAVER ELEMENT AND SYSTEM

Jorge Pardo, Reston, Va., assignor to National Concrete Masonry Association, Herndon, Va.

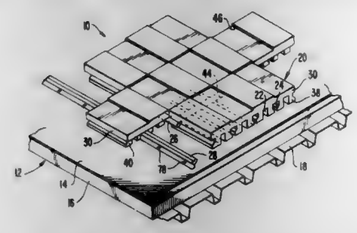
Filed Jan. 31, 1985, Ser. No. 696,710
Int. Cl.⁴ E04B *1/70*
U.S. Cl. 52—302 **25 Claims**

1. A roof paver element for providing ballast for a roof comprising:

an elongate planar portion; and

a plurality of drainage grooves defined by spaced, generally parallel ribs projecting from the planar portion and terminating in feet each having a bottom surface for contacting the roof, said bottom surface being greater in area than every cross section of the rib above the foot and parallel to said bottom surface, wherein each foot has a projecting toe portion, the toe portions on at least some of the feet

face one another to define with their ribs drainage grooves shaped to retain a member for connecting the roof paver



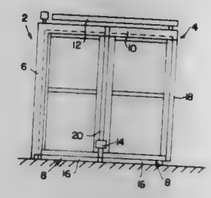
element to a similar roof paver element, and said drainage grooves defined by said feet are generally dovetail shaped.

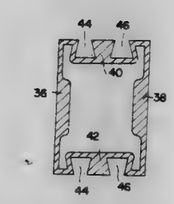
4,655,019

PANEL-LIKE STRUCTURAL COMPONENT

Gabriel Rejc, Moosburg, Fed. Rep. of Germany, assignor to EFAFLEX Transport-und-Lager-Technik GmbH, Bruckberg-Edlkofen, Fed. Rep. of Germany

Filed Sep. 24, 1985, Ser. No. 779,704
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1984, 3435300
Int. Cl.⁴ E04B *3/04*
U.S. Cl. 52—475 **12 Claims**





1. Panel-like structural component comprising:

a main wall having at least one essentially flat panel,

a rectangular frame having a plurality of straight sectional members having a hollow rectangular cross-section, each of the sectional members having an inner wall which faces inside of the frame and in which two parallel grooves are formed which extend in the longitudinal direction of the sectional member and widen toward the interior of the groove,

two sectional members each being interconnected at a right angle by means of a connecting piece, the connecting piece comprising a longitudinal segment of a sectional member with a hollow rectangular cross-section, the connecting piece being inserted in the interior of a first one of the two interconnected sectional members at one of its ends wherein the connecting piece lies with at least two opposite wall flush against inner surfaces of the first sectional member,

the first sectional member being fastened to the connecting piece by means of connection means,

two projecting strips being formed on a third wall of the connecting piece to form two projections each of which is engaged with one of the two grooves of the second one of the two sectional members and is positively engaged with the sides of the groove, and

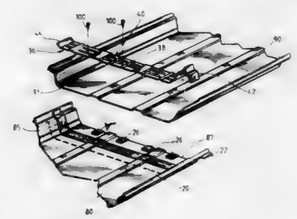
a tightening means engaging into the connecting piece or into the associated inner wall of the second sectional member for bracing the inner wall and the connecting piece against each other.

4,655,020

CINCH STRAP AND BACKUP PLATE FOR METAL ROOF ENDLAP JOINT

Albert R. Ginn, Jr., Magnolia, Tex., assignor to Metal Building Components, Inc., Houston, Tex.

Filed Apr. 3, 1986, Ser. No. 847,691
Int. Cl.⁴ E04D *1/34*
U.S. Cl. 52—551 **30 Claims**



1. An apparatus for assembling channel-shaped roofing panels on a roof wherein each panel has a planar web portion and upstanding sidewalls configured to engage the sidewalls of laterally adjacent panels in a male/female relationship to form upstanding seam connections and wherein the lower end of a panel overlaps the upper end of a lower, abutting panel in a shingle-like manner, comprising:

a channel-shaped backup plate having a length corresponding directionally to the width of such panels and configured to be positionable below said panels so that each side of said plate conforms to at least part of the inner configuration of said upstanding seams formed by said panels, the ends of said plate terminating in laterally outward extending shoulders;

a separate cinch strap configured to extend laterally across the width of said overlapping panels so as to sandwich said panels between said backup plate and said strap, one end of said strap configured to overlap a portion of said upstanding sidewall of said panel, and the opposite end of said strap configured to overlap and cover the upstanding seam connection formed by said adjacent panels, said ends of said strap defining a horizontal section of said strap between them; and

said strap having at least one longitudinally disposed reinforcing spine and at least one laterally disposed drainage channel, said strap being formed to engage the contour of the upper surface of said roofing panel.

4,655,021

RETICULAR STRUCTURE

Franco Franchin, and Paolo Bellomo, both of Treviso, Italy, assignors to Antonio Eliano Paglianti, Treviso, Italy

Filed Oct. 24, 1985, Ser. No. 791,103
Claims priority, application Italy, Nov. 9, 1984, 84144 A/84
Int. Cl.⁴ E04C *3/02*
U.S. Cl. 52—641 **7 Claims**

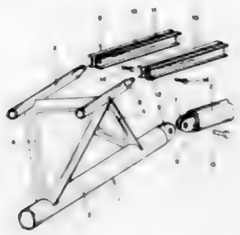
1. A reticular building structure comprising:

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a plurality of rectilinear trusses of substantially equal length, each truss comprising

at least three parallel bars defining a polygonal cross-section for the truss, said bars being placed at two different levels, those at one level having a length different from those at another level,

the longer of said bars being directly connected to like bars



of a neighboring truss, and the shorter of said bars being connected to like bars of a neighboring truss by means of a connecting link, whose length thereby determines the shape of said building structure, each truss further comprising

a plurality of ribbed polygonal plates, each interconnecting all of said bars of the truss, each plate being oblique to the length of the truss.

4,655,022

JOINTED EXTENDIBLE TRUSS BEAM

Michihiro Natori, Tokyo, Japan, assignor to Japan Aircraft Mfg. Co., Ltd., Yokohama, Japan

Filed Jul. 5, 1985, Ser. No. 752,445

Claims priority, application Japan, Jul. 12, 1984, 59-145136

Int. Cl.⁴ E04H *12/18*

U.S. Cl. 52—646 **22 Claims**

1. A jointed extendible truss beam comprising a plurality of tetrahedrons each having six bars and four joints rotatably coupled with the bars to form one unit, only one triangular plane of each of the tetrahedrons being common between adjacent tetrahedrons to form said truss beam;

each of said tetrahedrons has in a lengthwise direction of said truss beam at least one helical bar forming part of a smallest helical pitch, at least one angle bar forming part of a medium helical pitch, and at least one longitudinal bar forming part of a large helical pitch;





at least one of the angle bars in each tetrahedron having an expansion/contraction means for varying its length and locking it into a designated length.

4,655,023

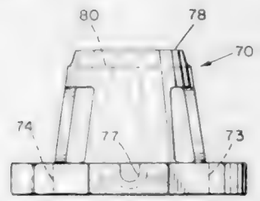
SPACER FOR CONSTRUCTION USE

Fernand P. Yung, 927 S. Laurel St., Santa Ana, Calif. 92704

Filed Jan. 23, 1985, Ser. No. 693,977

Int. Cl.⁴ F04C *5/16*

U.S. Cl. 52—685 **12 Claims**



1. In a spacer device for use in construction applications for supporting construction members, such as cabling, tubular members, bar-like members, or rod-like members relative to a supporting surface, the combination comprising:

body means having saddle means for receiving a construction member at least partially thereon, said body means including a plate portion and a support post portion thereon with said saddle means formed in a surface of said post portion generally parallel to said plate portion, said plate portion having an enlarged surface area;

a pair of openings formed in said post portion, said openings including tang means formed therein;

a separable generally U-shaped clamp member having barbed ends insertable into said openings for engagement with said tang means for fastening of the construction member within said saddle means; and

other means secured to said body means for spacing said device from a supporting structure.

4,655,024

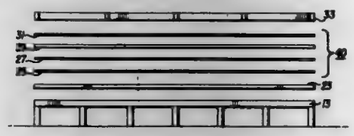
PRECONSTRUCTED BUILDING STRUCTURES AND METHOD OF CONSTRUCTION AND ASSEMBLY

Edward M. Grace, Hyattsville, Md., and Robert E. Phillips, Pensacola, Fla., assignors to Grace Building Systems, Inc., Hyattsville, Md.

Filed Nov. 18, 1983, Ser. No. 553,014

Int. Cl.⁴ E04G *21/00;* **B32B** *31/00*

U.S. Cl. 52—745 **5 Claims**



1. A method for constructing a unitary building structure consisting of the steps of

(1) preparing a substantially flat master mold having a predetermined surface texture;

(2) spraying gel coat over said master mold;

(3) spraying a first layer of a fiberglass reinforced resin over said gel coat;

(4) laying a core of insulating material over said reinforced fiberglass;

(5) spraying a second layer of fiberglass reinforced resin over said core of insulating material whereby a panel is formed comprising said core and said layers of reinforced fiberglass;

(6) laying studding over said second layer of reinforced fiberglass in a predetermined framing configuration;

(7) laminating said studding to said layer of reinforced fiberglass;

(8) curing said panel and lamination;

(9) removing said structure from said mold; and

(10) securing four of said structures together at abutting edges so as to form four self-supporting load bearing walls of a building.

4,655,025

EDGE RAIL FOR A WINDOW PANE, IN PARTICULAR AN ALL-GLASS DOOR

Mario Marinoni, Magenta, Italy, assignor to Casma Di V. Marinoni & Figli, Magenta, Italy

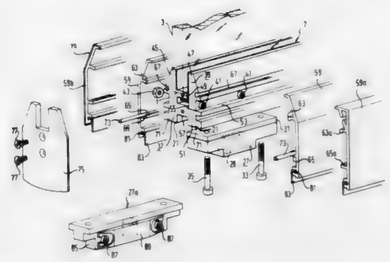
Filed Feb. 13, 1985, Ser. No. 701,130

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1984, 8404254[U]

Int. Cl.⁴ E04B *1/60*

U.S. Cl. 52—771 **10 Claims**

1. Edge rail for a longitudinally extending edge (1) of a pane in the form of a window pane (3) or all-glass door with the pane having a pair of oppositely directed faces, comprising at least two clamping rail sections (5, 7) extending in the longitudinal direction of and embracing the edge (1) of the pane and with said rail sections spaced apart in the longitudinal direction of the edge (1), each said rail section being continuous for the length thereof in the longitudinal direction of the edge (1), each clamping rail section comprising two profiled rail members (37, 39) coextensive for the length of said rail section in the longitudinal direction of the edge (1) of the pane and each located on a different opposite face of the pane, means (41) extending transversely to the faces of the pane for interconnecting said rail members so that said rail members form a unit prior to placement along the edge (1) of the pane, at least one fitting member (9, 27) releasably fitted to at least one of the profiled rail members (37), and two cover strips (59) extending in the longitudinal direction of the edge of the pane and each covering a different one of the opposite surface of the clamping rail sections (5, 7) facing outwardly from the faces of the pane, said clamping rail sections (5, 7) being spaced apart in the longitudinal direction thereof and forming a gap extending in the longitudinal direction therebetween on both faces of the



pane (3), said at least one fitting member releasably fitted to the clamping rail sections (5, 7) within and filling the gap therebetween and extending in the longitudinal direction of the edge of the pane (1) between the two clamping rail sections (5, 7) and is affixed to at least one of said profiled rail members (37) of each of said clamping rail sections (5, 7) so that said rail sections and fitting member form a continuous unit in the longitudinal direction of the edge of the pane for substantially the length thereof.

4,655,026

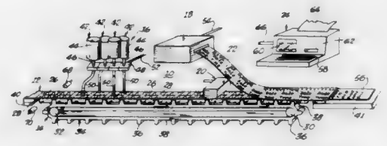
PILL DISPENSING MACHINE

Luis T. Wigoda, 345 N. Shore Dr., Miami Beach, Fla. 33141

Filed Dec. 11, 1985, Ser. No. 807,754

Int. Cl.⁴ B65B *5/12, 59/02, 61/26*

U.S. Cl. 53—55 **20 Claims**



1. A medication dispensing machine for dispensing, into a single container, a plurality of different medications to be simultaneously taken, said machine comprising:

means for moving a plurality of containers along a path;

a plurality of medication dispensing devices, each positioned to dispense at least one medication into a container as said plurality of containers move past said plurality of dispensing devices;

printing means for printing a series of labels, each of which is to be attached to one associated container, the printed matter on each label manifesting the time at which the medication in the associated container is to be taken; and

controller means, including data input means, memory means for storing a data base and output means, said data input means being adapted for receiving input data manifesting medication to be taken and the time at which that medication is to be taken, and said output means providing, in response to said data base, command signals to control said means.

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4,655,027

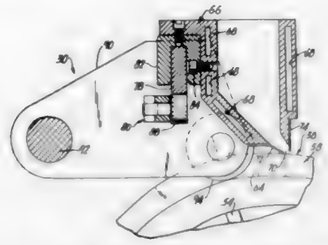
METHOD AND APPARATUS FOR FORMING CAPSULES

Sydney A. Chesman, 1350 Outlook Dr., Mountainside, N.J. 07092

Continuation of Ser. No. 539,550, Oct. 6, 1983, Pat. No. 4,567,714, which is a continuation-in-part of Ser. No. 210,132, Nov. 24, 1980, abandoned. This application Nov. 14, 1985, Ser. No. 797,979

Int. Cl.[4] B65B 47/00

U.S. Cl. 53—140 20 Claims



1. An apparatus for forming a web of predetermined thickness from a molten material, said apparatus comprising:

a rotatable cylindrical drum having a cylindrical gel forming surface thereon and first and second cylindrical support surfaces thereon, said first and second cylindrical support surfaces being spacedly positioned along the axis of rotation of said drum on opposite sides of said gel forming surface, and said first and second cylindrical support surfaces being concentric with said cylindrical gel forming surface and each being of a diameter which is different from the diameter of said cylindrical gel forming surface;

support means arranged with respect to said cylindrical drum to ride on said first and second cylindrical support surfaces as said drum rotates;

molten material supply means arranged to deposit molten material onto said rotatable cylindrical drum as said drum is rotated;

blade means carried by said support means and spaced from said gel forming surface on said drum for spreading deposited molten material to form a continuous layer of said material on said gel forming surface of said drum as said drum rotates therepast, the spacing of said blade means from said gel forming surface on said drum controlling the thickness of said continuous layer formed thereon; and

adjustment means carried by said support means and operative to adjust the position of said blade means relative to said support surfaces to control the spacing of said blade means from said gel forming surface of said drum to correspond to said predetermined thickness of said web.

4,655,028

METHOD OF PRODUCING FILM-WRAPPED PACKAGES OR PACKAGED UNITS

Peter Silbernagel, Weilautstrasse 18, D-4434 Ochtrup, Fed. Rep. of Germany

Filed Jan. 10, 1985, Ser. No. 690,242

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1984, 3401217; May 10, 1984, 3417341

Int. Cl.[4] B65B 61/18, 13/14

U.S. Cl. 53—399 2 Claims

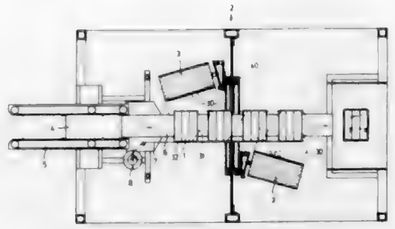
1. A process for wrapping a package comprising the steps of:

providing a wrapping device through which a package to be wrapped can be conveyed;

conveying a package towards and through said wrapping device;

providing a tear-up thread having first and second sides, and applying the first side of said tear-up thread to a said package as said package is being conveyed through said wrapping device, said second side of said tear-up thread having an adhesive coating;

providing a film hose and wrapping said film hose about a said package as said package passes through said wrapping device, said film hose being formed by helically wrapping a stretch wrap film hose enclosing foil about said package,



said film hose enclosing said tear-up thread along the length of a said package, said second side of said tear-up thread contacting said film hose and being adhesively bound thereto; and

severing said thread after said package passes through said wrapping device.

4,655,029

METHOD AND APPARATUS FOR FILLING BOTTLES OR THE LIKE WITH LIQUID

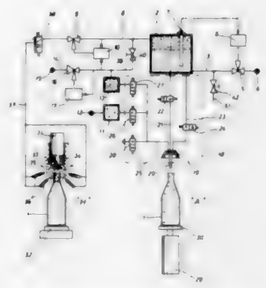
Wilhelm Weiss, Regensburg, Fed. Rep. of Germany, assignor to Kroses AG Herman Kronseder Maschinenfabrik, Fed. Rep. of Germany

Filed Oct. 18, 1985, Ser. No. 788,868

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1984, 3439736

Int. Cl.[4] B65B 31/06

U.S. Cl. 53—432 7 Claims



1. A method of filling containers such as bottles with liquid so the liquid has minimum exposure to air, comprising the steps of:

storing the liquid in a tank under a space for containing gas at above atmospheric pressure,

coupling a bottle to be filled and containing air to a filler head,

evacuating said bottle so it contains minimal residual air,

filling said bottle with pure CO_2 gas at a pressure at least as high as the gas pressure in said tank, and discontinuing said filling,

conducting said liquid under the influence of gravity from said tank to said bottle while concurrently conducting to said tank the CO_2 gas and residual air mixture displaced from said bottle by filling it with said liquid,

injecting pure CO_2 at a pressure higher than the gas pressure in the tank into the space above the desired liquid level in the bottle to force a small quantity of liquid back into said tank and replace said quantity with said pure CO_2,

uncoupling said bottle and moving said bottle to an enclosure element applying device, and

maintaining an atmosphere of predominantly CO_2 gas in the region of the bottle mouth and the enclosure element at least until the enclosure element is applied.

4,655,030

SIDE-FOLDING PACKER FOR SOFT CIGARETTE PACKS

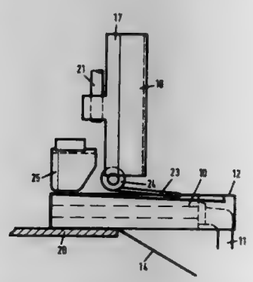
Joachim Zeitel, Hagen, and Horst Hedtstück, Gevelsberg, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Alfred Schermund, Gevelsberg, Fed. Rep. of Germany

Filed Feb. 18, 1986, Ser. No. 830,634

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1985, 3505620

Int. Cl.[4] B65B 9/20, 49/08

U.S. Cl. 53—456 10 Claims



1. In an apparatus for folding sheet material into a package having a rectangular cross-section with at least one closed end, the apparatus conveying an object about which the package is to be formed continuously along a linear path, the sheet material being delivered into said path in a direction generally transverse thereto, the improvement comprising:

first means for folding the sheet material about the object so that portions of the sheet material respectively lie in a first plane generally parallel to one end of the object and in second and third planes generally parallel to a first pair of oppositely disposed sides of the object, said sides of said first pair being generally transverse to and extending from said one end, further portions of the sheet material extending outwardly generally in said first, second and third planes beyond planes defined by a second pair of oppositely disposed sides of the object;

generally U-shaped means for folding said outwardly extending sheet material in said second plane into planes generally parallel to said second pair of sides of the object to define a first pair of package side walls, said U-shaped folding means being obliquely movable relative to the object and initially acting upon a region of said sheet material adjacent the leading end of the object as said U-shaped folding means travels with the object and in an oblique direction from a first position adjacent said second plane to a second position adjacent said third plane, said U-shaped folding means being retained in said second position while motion of the object continues whereby said outwardly extending sheet material from said second plane will be folded along the length the object, the folding of the sheet material into said planes resulting in tabs which extend outwardly with respect to said sides of said second pair and from said one end; and

second means for folding said tabs backwardly against said side walls of said first pair of side walls was movement of said object continues.

4,655,031

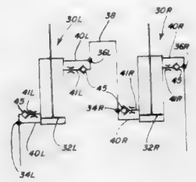
PHASING CIRCUIT FOR SERIALLY

Frank C. Kucera, Lyons, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 24, 1985, Ser. No. 758,298

Int. Cl.[4] A01D 34/24; A01B 63/22

U.S. Cl. 56—11.9 2 Claims



1. A phasing circuit for a pair of serially connected hydraulic cylinders comprising:

a port in each of said cylinders adjacent the top and bottom thereof;

a fluid inlet and longitudinally spaced flow-restricting orifice in each of said ports;

conduit means connecting the top port of one cylinder with the bottom port of the other cylinder;

a piston in each of said cylinders positionable in either full-stroke position between the associated inlet and orifice; and

a check valve operationally connected to each of said orifices permitting flow of fluid out of the cylinder but preventing flow therethrough into the cylinder,

thereby preventing flow of fluid into the cylinder ahead of the piston and concomitant loss of fluid pressure acting on the piston when the piston is being moved from either full stroke position.

4,655,032

GRASS TRIMMER

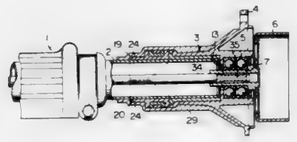
Hiroyuki Tanaka, Tanashi, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Mar. 21, 1985, Ser. No. 714,522

Claims priority, application Japan, Mar. 29, 1984, 59-45357[U]

Int. Cl.[4] A01D 34/82

U.S. Cl. 56—12.7 1 Claim



1. In a grass trimmer of the type including

a prime mover,

a control rod including a tubular portion extending from the prime mover,

a tubular support having a first end supporting the tubular portion of the control rod, and a second end,

clutch means adjacent the second end of the tubular support,

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transmission means including a transmission shaft connecting the clutch means with the prime mover, the transmission shaft having one end coupled to the prime mover and an opposite end coupled to the clutch means, and being disposed within the tubular support,

clamping members, coupled to the tubular support adjacent the first end thereof, for securing the tubular portion of the control rod to the tubular support,

the improvement comprising:

a tubular elastic cover covering the outer periphery of said tubular portion of said control rod and at least a major portion of said tubular support including the portion adjacent said tubular portion,

the outer surface of said cover being configured as a grip for an operator's hand and insulating the operator's hand from vibration and heat transmitted by said prime mover or by said clutch means.

4,655,033

METHOD AND EQUIPMENT FOR MAKING STRANDED ROPES

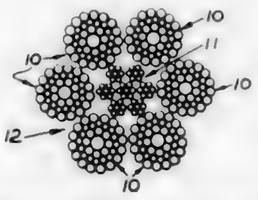
Philip Christian, Norton, and John M. Walton, Sprotbrough, both of England, assignors to Bridon plc, Doncaster, England

Filed Jan. 31, 1986, Ser. No. 825,142

Claims priority, application United Kingdom, Feb. 1, 1985, 8502557

Int. Cl.⁴ D07B *3/00*

U.S. Cl. 57—11 **13 Claims**



1. A method of making stranded ropes comprising assembling a plurality of strands and a core side-by-side; clamping all the strands and the core permanently together in a predetermined closed array at one, leading end; securing all the strands and the core separately at the other, trailing end; applying tension to each of the strands and to the core; progressively guiding the strands intermediate the ends into the closed array through guiding means; moving the aforesaid guiding means progressively from the leading end to the trailing end; rotating the leading end progressively as the aforesaid guiding means moves progressively and with a predetermined relationship; rotating the trailing ends of the strands and the core progressively in the same direction as the leading end and with a predetermined relationship; permanently securing all the strands and the core together adjacent the trailing end of the closed array; and releasing the trailing ends of the strands and the core and the tension applied thereto.

4. Equipment for making stranded ropes comprising an elongate track; a clamp at one, leading end of the track for clamping a predetermined closed array of a plurality of strands and a core forming the rope, and said clamp being rotatable about an axis parallel to the track; anchor means restrained at a distance along the track from the clamp and having rotatable tensioning spaced anchorages for the trailing ends of the strands, which extend along the track from the clamp, the anchor means also having radially equidistant from the strand anchorages a central rotatable tensioning anchorage for the trailing end of the core, which also extends along the track from the clamp; a trolley movable along the track between the clamp and the anchor means; a forming die carried by the trolley for progressively closing the strands to the core in the predetermined closed rope array; a lay plate carried by the trolley and having strand guide apertures spaced radially equidistant from a core guide aperture; first drive means for moving the trolley along the track from the leading end; second drive means for rotating the clamp at the leading end of the track with a predetermined relationship to movement of the trolley; and third drive means for rotating the trailing ends of the strands and the core progressively in the same direction as the clamp at the leading end and with a predetermined relationship.

4,655,034

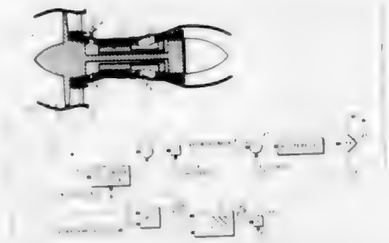
TRANSIENT GAS TURBINE ENGINE BLEED CONTROL

David F. Kenison, Glastonbury, and David G. Lyan, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1984, Ser. No. 683,886

Int. Cl.⁴ F02C *9/18*

U.S. Cl. 60—39.29 **2 Claims**



1. For a gas turbine twin spool engine having a high pressure compressor, low pressure compressor and a burner for powering aircraft, a bleed valve and control for opening said bleed to discharge compressor air to prevent surge, means for opening or closing said bleed valve during engine transients to operate said engine close to its surge line, said means including:

means responsive to the first order time constant of burner pressure to produce a first signal indicative of an approximate rate of change of the burner pressure,

means responsive to corrected high pressure compressor speed and altitude for generating a schedule indicative of the limits of the rate of change of burner pressure for producing a second signal, and

means responsive to the difference of said first signal and said second for controlling said bleed valve upon exceeding a predetermined value.

4,655,035

AUXILIARY AIR INJECTOR ASSEMBLY

Robert L. Sager, Jr., Grass Lake, Mich., assignor to Tenneco Inc., Lincolnshire, Ill.

Filed Jul. 12, 1985, Ser. No. 754,822

Int. Cl.⁴ F01N *3/30, 7/18*; F16L *5/00, 25/00*

U.S. Cl. 60—307 **2 Claims**



1. An auxiliary air injector assembly kit for replacement use to connect a secondary air line from an engine air pump to an exhaust pipe in a variety of combustion engine exhaust systems, said exhaust pipe having an auxiliary air receiving hole formed in a wall thereof, said assembly comprising a flexible conduit adapted to be readily cut to length and connected at one end to said secondary air line, a metal tube, means for connecting a first end of the metal tube to the other end of the flexible conduit, a hollow fitting with an air flow-through passage and having a conical portion adapted to fit in said hole in a leak resistant manner, said fitting having a bearing portion with a convex spherical surface located outside said exhaust pipe when said conical portion is in said hole, a second end of said metal tube having a flange with a concave spherical surface to seat against said convex spherical surface in a leak resistant manner, and clamp means for connecting said metal tube to said exhaust pipe and applying pressure on said metal tube flange against said bearing portion of said fitting to hold the fitting in the hole, said clamp means including a saddle having an opening larger than said tube but smaller than said tube flange, said tube extending through said saddle opening, said clamp means also including a U-bolt assembly for extending around the exhaust pipe and forcing the saddle against the tube flange and toward the exhaust pipe.

4,655,036

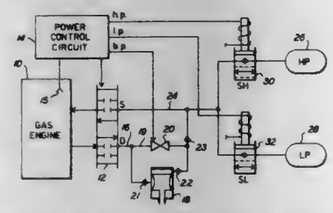
TWO-TANK WORKING GAS STORAGE SYSTEM FOR HEAT ENGINE

Clyde J. Hindes, Troy, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Mar. 7, 1986, Ser. No. 837,368

Int. Cl.⁴ F02G *1/06*

U.S. Cl. 60—521 **5 Claims**



1. In a working gas control system for use in connection with a hot gas engine including a power controller for admitting the working gas to the engine to increase engine power and for releasing working gas from the engine to decrease engine power, a compressor for compressing the working gas released from said engine, a plurality of storage vessels for storing said working gas received from the compressor and supplying said gas through the power controller to said engine, each said vessel storing the working gas at a different pressure, and valve means for selectively coupling said vessels to said controller and selectively coupling said vessels to said compressor so that the selected vessel can supply said working gas to the engine or receive the gas from the compressor, and respective gas lines connecting said valve means with said compressor and said power controller; the improvement wherein said vessels include a high pressure vessel and a low pressure vessel, said valve means includes a low-pressure solenoid two-position valve on the line to said low pressure vessel, a first position permitting flow of said gas in either direction, a second position permitting flow only in the direction towards said engine; and a high-pressure solenoid two-position valve on the line to said high-pressure vessel, one position permitting flow of said gas in either direction, the other position permitting flow only in the direction towards said high-pressure vessel.

4,655,037

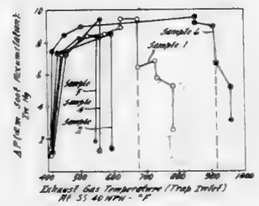
CARBON IGNITION TEMPERATURE DEPRESSING AGENT AND METHOD OF REGENERATING AN AUTOMOTIVE PARTICULATE TRAP UTILIZING SAID AGENT

Vemulapalli D. N. Rao, Bloomfield Township, Oakland County, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 685,921, Dec. 24, 1984. This application Feb. 18, 1986, Ser. No. 830,407

Int. Cl.⁴ F01N *3/02*; C10L *1/14*

U.S. Cl. 60—274 **12 Claims**



1. A method of regenerating a particulate trap containing carbonaceous particles extracted from the exhaust gas of an internal combustion engine, said engine having a fossil fuel supply, comprising the steps of:

(a) uniformly codepositing carbon particles and selected heat reducible first metal oxides within said trap, said carbon particles being deposited in a size range of 50–60 angstroms, the selected metal oxides being deposited in a particle size range of less than 500 angstroms and in a sufficient intimate concentration with the deposited carbon particles to promote, upon reheating by the exhaust gas, continued reduction of said oxides to a lower level of oxygen for the metal atom of the oxide and to catalyze the ignition of the carbon particles in the temperature range of 450°–675° F. (250°–307C.); and

(b) when the deposited density of said carbon particles and first metal oxides have reached a predetermined density, operating the engine associated with the particulate trap at a speed, load and acceleration condition to increase the exhaust gas temperature and thereby the trap temperature to as low as 450° F. and up to below 675° F. (250°–357° C.) and sustaining said trap temperature over a period of at least eight seconds to reheat said metal oxides, the metal oxides functioning under such trap temperature and exhaust gas flow to reduce and supply oxygen for the chemical oxidation of said carbonaceous particles.

4,655,038

EXHAUST GAS TURBO-CHARGER TURBINE

Ulrich Lissi, Zürich, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 29, 1986, Ser. No. 823,539

Claims priority, application Switzerland, Feb. 20, 1985, 771/85

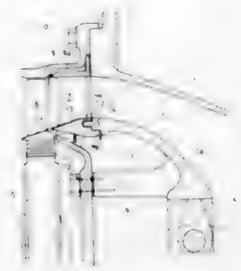
Int. Cl.⁴ F02D *23/00*

U.S. Cl. 60—602 **7 Claims**

1. In an exhaust gas turbo-charger for internal combustion engines of the type having a vaned guide device located upstream of turbine rotor blades, said turbine rotor blades being rotatable about an axis, said vaned guide device including a main guide vane ring and an auxiliary guide vane ring with mutually separate supply ducts, and butterfly valve means for controlling exhaust gas flow to the auxiliary vaned guide rings,

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the improvement comprising the auxiliary guide vane ring being located radially inside of the main guide vane ring and



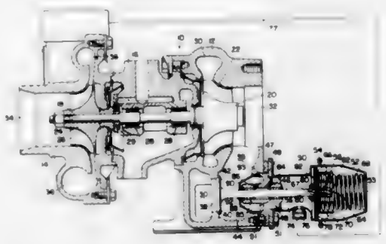
the butterfly valve means being located upstream of the auxiliary guide vane ring.

4,655,039
LIFT SYSTEM
Paul P. McCabe, and James Woolston, both of Greene, N.Y., assignors to The Raymond Corporation, Greene, N.Y.
Filed Jun. 20, 1985, Ser. No. 746,843
Int. Cl.[4] F16D *31/00*
U.S. Cl. 60—328 **11 Claims**



1. In a battery-powered hydraulic lifting system which includes an electric battery, an electric motor, a hydraulic pump, hydraulic motive means, and first control means for commanding a desired lifting effort, said electric motor being electrically connected to be powered by said battery and mechanically connected to drive said hydraulic pump, and said hydraulic pump being hydraulically connected to drive said hydraulic motive means; the improvement comprising: a proportional valve connected between said pump and said hydraulic motive means to control flow of hydraulic fluid between said pump and said motive means; means responsive to said first control means for deriving a first signal commensurate with a commanded lifting effort; means for deriving a second signal commensurate with the state of charge of said electric battery; and second control means responsive to said first signal and said second signal for adjusting said proportional valve.

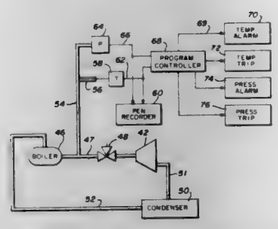
4,655,040
WASTEGATE VALVE FOR INTERNAL COMBUSTION ENGINE TURBOCHARGER
John Parker, Highburton, England, assignor to Holset Engineering Company Limited, Huddersfield, England
Filed Mar. 15, 1985, Ser. No. 712,960
Claims priority, application United Kingdom, Mar. 16, 1984, 8406860
Int. Cl.[4] F02B *37/12*
U.S. Cl. 60—602 **12 Claims**



1. A wastegate valve assembly for a turbine mounted for rotation within a turbocharger housing having an inlet passage for delivering hot exhaust gases to said turbine, said valve assembly comprising;
means for defining an exhaust gas flow path around said turbine, said flow path means including a valve seat;
a valve head carried by a valve stem;
a valve guide means slideably mounting said valve stem for movement between two positions, the first of which causes said valve head to engage said valve seat and block flow through said flow path means and the second of which permits flow through said flow path means, the
means for forming a chamber around the free end of the valve stem;
diaphragm means connected to the valve stem and dividing the chamber means into first and second variable volume portions, the first of which is located between the valve head and the diaphragm means and when pressurized urges the valve stem and head toward said second position,
means for connecting a source of pressure to said first portion of the chamber means;
means for yieldably urging said valve and stem and head toward said first position;
means for forming a fixed wall in said first portion of the chamber means having an opening through which said stem extends, said wall means having an orifice of predetermined size separate from said opening, said wall means being positioned between the pressure source means and said diaphragm means; and,
annular seal means mounted in the opening in said wall means and frictionally engaging and surrounding said valve stem,
whereby oscillations in the movement of said valve stem and head are damped by the seal means and by the restriction provided by said orifice to flow towards and away from said diaphragm.

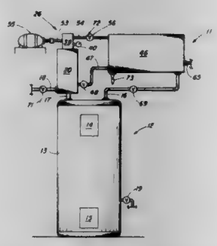
4,655,041
RATE OF CHANGE OF PRESSURE TEMPERATURE PROTECTION SYSTEM FOR A TURBINE
Richard J. Del Vecchio, Wellsville, and James A. Gram, Andover, both of N.Y., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Jan. 21, 1986, Ser. No. 820,617
Int. Cl.[4] F01K *21/00*
U.S. Cl. 60—646 **24 Claims**

1. In a steam turbine being driven from a source of inlet steam, a control system for protecting said turbine from undesirable steam pressure variation comprising:
a. means for establishing an acceptable range of variation of actual steam pressure,
b. means coupled to said acceptable pressure range establishing means for generating a first alarm signal only if said actual steam pressure is outside said acceptable range,



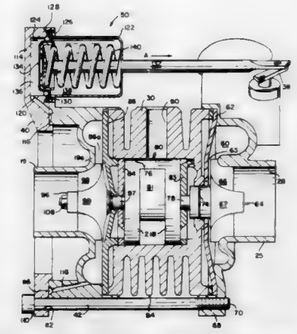
c. means for generating a second signal representing an acceptable rate of change of said actual pressure, and
d. means coupled to said first alarm signal generating means and said second signal generating means for generating a second alarm signal only if the actual rate of change of steam pressure exceeds said acceptable rate of change and said actual steam pressure is outside of said acceptable range of steam pressure variation.

4,655,042
METHOD AND APPARATUS FOR IMPROVING THE OPERATION OF A HOT WATER HEATER
Gary W. Kries, 429 N. Sacramento St., Lodi, Calif. 95240
Filed Oct. 8, 1986, Ser. No. 916,961
Int. Cl.[4] F01K *25/08*
U.S. Cl. 60—648 **4 Claims**



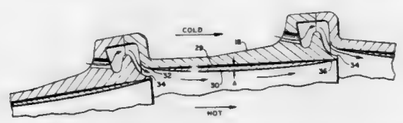
1. A method of using a portion of the thermal energy in the hot water in a domestic water heater having a tank, a cold water inlet, a thermal energy source and a hot water outlet, said method comprising the steps of:
a. providing a closed pipe circuit containing a refrigerant;
b. transferring heat from the hot water to the refrigerant in an evaporator in order to vaporize the refrigerant;
c. driving an expansion engine by means of the vaporized refrigerant;
d. condensing the exhausted refrigerant in a condenser cooled by the cold inlet water; and,
e. returning the condensed refrigerant to the evaporator for repetition of the cycle.

4,655,043
TURBOCHARGER
Charles E. McInerney, Rolling Hills Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.
Division of Ser. No. 498,228, May 26, 1983, Pat. No. 4,613,288.
This application Feb. 10, 1986, Ser. No. 827,981
Int. Cl.[4] F02B *37/00*
U.S. Cl. 60—602 **17 Claims**



1. A method of providing turbocharger compressor outlet pressure to a turbocharger actuator comprising the steps of:
forming a circumferential fluid passageway between the compressor housing and an annular ring disposed around the compressor housing;
exposing the circumferential fluid passageway to compressor housing pressure; and
exposing the turbocharger actuator to the pressure in the circumferential fluid passageway.

4,655,044
COATED HIGH TEMPERATURE COMBUSTOR LINER
James A. Dierberger, Hebron, and Thomas F. Tumicki, Yantic, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 21, 1983, Ser. No. 563,848
Int. Cl.[4] F02C *1/00*; F02G *3/00*
U.S. Cl. 60—753 **3 Claims**



1. For a combustor for a gas turbine power plant having a plurality of louver panels attached end to end to define a combustion chamber wherein cool air is heated to hot gases, each of said louver panels having an inner surface being subjected to the hot gases in said combustion chamber and an outer surface being subjected to the cooler air of said power plant, cooling air film generating means including a discharge lip formed on the end of each of said louver panels for receiving said cooler air and injecting a film of said cooler air adjacent said inner surface of said, louver panels a ceramic coating on said inner surface of each of said louver panels contiguous with said combustion chamber each of said louver panels being subjected to axial bending stresses and the largest bending stress occurring at a point intermediate its ends, said coating being dimensioned so that one end is gradually tapering from a thickest portion immediately adjacent the point of the largest axial bending stress of each of said louver panels to an upstream end adjacent said tip where the film of cool air is formed.

4,655,045

CRYOGENIC VESSEL FOR A SUPERCONDUCTING APPARATUS

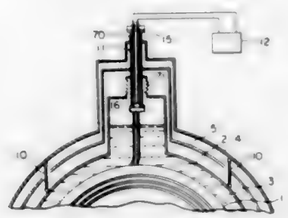
Takahiro Matsumoto; Tetsuo Nishio; Hirofumi Maekawa, and Hisashi Oota, all of Aka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1986, Ser. No. 819,856

Claims priority, application Japan, Jan. 17, 1985, 60-4888; Apr. 12, 1985, 60-76749; May 14, 1985, 60-100542; May 14, 1985, 60-100543; Sep. 17, 1985, 60-205661

Int. Cl.[4] F17C *1/04*

U.S. Cl. 62—45 19 Claims



1. A cryogenic vessel for superconducting apparatus comprising:

a cylindrical inner vessel for containing a superconducting winding of a superconducting device and a cryogenic mixture;

a cylindrical dividing pipe having an outer end secured to an outer surface of said inner vessel and an inner end extending into said inner vessel;

a cylindrical outer vessel surrounding said inner vessel and providing a vacuum-insulating space between said vessels for thermal insulation;

a connecting pipe extending into said inner vessel along the inside of said dividing pipe with a radial clearance between the outer surface of said connecting pipe and the inner surface of said dividing pipe and having an inner end opening into the inside of said inner vessel and an outer end opening into the outside of said outer vessel, the inner end of said connecting pipe being connected to the inner end of said dividing pipe and the radial clearance being in communication with the vacuum-insulating space; and

a rupture-type safety valve disposed at one of the ends of said connecting pipe.

4,655,046

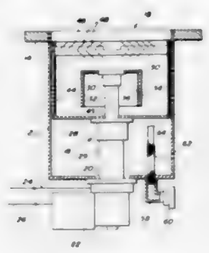
CRYOPUMP WITH EXHAUST FILTER

Michael J. Eacobacci, Randolph, and David C. Planchard, Shrewsberry, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed Jul. 19, 1985, Ser. No. 757,003

Int. Cl.[4] B01D *8/00*

U.S. Cl. 62—55.5 10 Claims



1. A cryopump comprising cryopanels within a vacuum vessel cooled to cryogenic temperatures to condense gases from the volume within the vacuum vessel, the vacuum vessel having an exhaust port closed by a valve during operation of the cryopump, the cryopump further comprising a filter conduit extending from the exhaust port into the volume within the vacuum vessel away from the wall of the vacuum vessel, the filter conduit being formed of porous filter material for retaining solid debris within the vacuum vessel while passing liquid and gas therethrough, the filter conduit being open away from the exhaust port to permit substantially unrestricted flow of gas to the exhaust port.

4,655,047

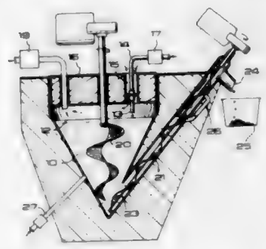
PROCESS FOR FREEZING OR CHILLING

George A. Temple, Toronto; Donald W. Kirkwood, Oakville, and Bosko Milankov, Mississauga, all of Canada, assignors to I.Q.F. Inc., Mississauga, Canada

Filed Mar. 25, 1985, Ser. No. 715,893

Int. Cl.[4] F25D *17/02*

U.S. Cl. 62—64 32 Claims



1. A method for freezing or chilling a substance, characterized by the steps:

of discharging the substance from a nozzle into a very much colder liquid from such a small height above the surface of the liquid that the substance solidifies gently into pellets that are substantially consistent in size;

and of imparting such a large relative velocity between the liquid and the nozzle that turbulence on the surface of the liquid due to local boiling is carried away from the nozzle substantially immediately.

4,655,048

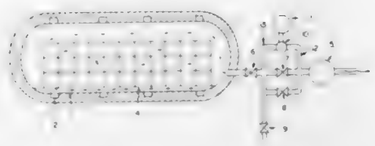
HYPOBARIC STORAGE OF NON-RESPIRING ANIMAL MATTER WITHOUT SUPPLEMENTARY HUMIDIFICATION

Stanley P. Burg, 3770 Kent Ct., Miami, Fla. 33133

Filed Dec. 6, 1985, Ser. No. 805,749

Int. Cl.[4] F24F *3/16*

U.S. Cl. 62—78 17 Claims



1. A method of preserving non-respiring animal matter comprising:

placing said animal matter in a storage tank,

continuously controlling the temperature of said animal matter to a temperature range between just above the freezing point of said animal matter and 3.7 degrees Celsius above said freezing point,

simultaneously continuously evacuating said storage tank without introducing any air into said storage tank to remove oxygen from said storage tank, and

controlling the evacuation rate to continuously evacuate cool steam that boils from said animal matter and flushes oxygen from said storage tank during said temperature controlling and continuous evacuation steps, said evacuating step being performed at a rate to continuously evacuate steam from said storage tank at a rate equal to 0.1% to 3.0% of the initial fresh weight of said animal matter per month to create an anaerobic condition especially conducive to preserve non-respiring animal matter in said storage tank.

4,655,049

PURE-AIR GENERATOR

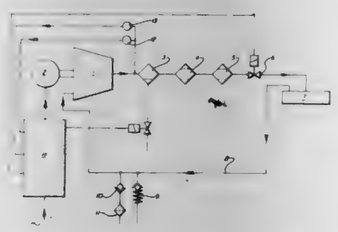
David K. Andrews, Cheltenham; Trevor P. Benson, Evesham, and Michael W. Smart, Churchdown, all of England, assignors to Dowty Fuel Systems Limited, Cheltenham, England

Filed Aug. 20, 1985, Ser. No. 767,428

Claims priority, application United Kingdom, Sep. 5, 1984, 8422444

Int. Cl.[4] F25B *19/02*

U.S. Cl. 62—172 11 Claims



1. A generator for producing pure air at high pressure including a compressor, electrical means for driving the compressor, means for purifying compressed air generated by the compressor, a first sensor for detecting the pressure of the compressed air, a second sensor for detecting the absolute temperature of the compressed air, means for transferring an electrical signal from the first sensor to an electronic controller and means for transferring an electrical signal from the second sensor to the electronic controller, which controller processes the electrical signals and varies the power supplied to the means for driving the compressor in such a manner that the ratio of pressure of the compressed air to the absolute temperature of the compressed air remains substantially constant, thereby to maintain the mass of the compressed air, before expansion, substantially constant.

4,655,050

CIRCUIT CONFIGURATION FOR CONTROLLING REFRIGERATION CIRCUITS FOR AT LEAST 2 REFRIGERATION AREAS

Matthias Aschberger; Karlheinz Flirber, both of Giengen, and Anton Deininger, Bachhagel, all of Fed. Rep. of Germany, assignors to The Coca-Cola Co., Atlanta, Ga. and Bosch-Siemens Hausgerate GmbH, Fed. Rep. of Germany

Filed Aug. 22, 1985, Ser. No. 768,364

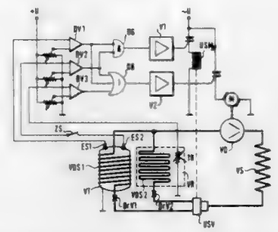
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1984, 3430946

Int. Cl.[4] F25B *5/00*; F25D *17/02*

U.S. Cl. 62—200 12 Claims

1. A circuit configuration for the control of refrigeration circuits for at least two refrigeration areas, more particularly with cooling of a CO_2 water supply and of a beverage concentrate chamber in a beverage dispenser by means of one of two evaporators that can be alternatively switched into the refrigeration circuit of a condenser through a valve assembly in accordance with a refrigeration requirement measured by sensors, one of said refrigeration areas having a higher priority for being connected into circuit, comprising:

sensors assigned to said one of the refrigeration areas for sensing at least two refrigeration-requirement criteria, and to another refrigeration area for sensing at least one refrigeration-requirement criterion; and



combinational logic circuit means connected in series with the sensors, the sensors with different priorities being connected in such a way that the priority of the refrigeration-requirement criteria alternates between said refrigeration areas.

4,655,051

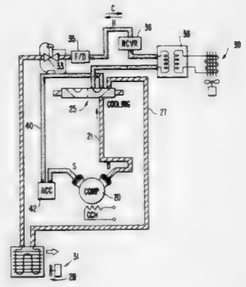
HEAT EXCHANGE SYSTEM WITH REVERSING RECEIVER FLOW

Richard D. Jones, Springfield, Va., assignor to UHR Corporation, Alexandria, Va.

Filed Nov. 26, 1985, Ser. No. 801,946

Int. Cl.[4] F25B *13/00*

U.S. Cl. 62—324.4 8 Claims



1. A heat exchange system comprising

a compressor;

first and second heat exchangers;

an expansion valve;

a receiver;

flow direction reversing means; and

conduit means interconnecting said compressor, said heat exchangers, said expansion valve, said receiver and said reversing valve to form a system containing refrigerant in which heat can be exchanged in either direction between said exchangers,

said flow direction reversing means and said receiver being positioned in said system so that said reversing means controls the continuous flow of refrigerant in one direction through said receiver during heat exchange in a first direction and through said receiver in the opposite direction during heat exchange in the second direction and so that the proportion of liquid to gas entering said receiver is always substantially equal to the proportion of liquid to gas leaving said receiver during heat exchange in either direction.

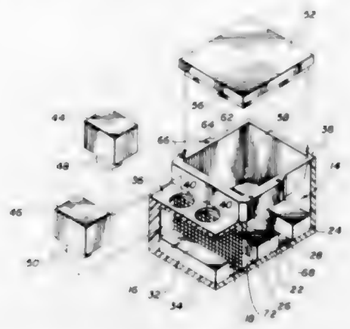
VOL 1077 ISS 1 APR 7 1987 UMI

4,655,052

PORTABLE COOLER

Luciano F. Garcia, 34737 Kaarr Rd., Yucaipa, Calif. 92399

Filed Feb. 24, 1986, Ser. No. 832,339
Int. Cl.[4] F25D *11/02*
U.S. Cl. 62—441 **3 Claims**



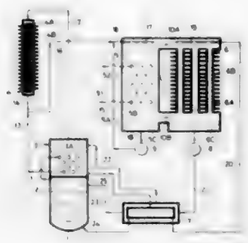
1. A portable cooler comprising:
a main chest cavity for storing foodstuffs and coolant;
an auxiliary cavity for storing beverages which can be consumed while simultaneously being cooled; and
a partition separating said main cavity and said auxiliary cavity having a plurality of apertures formed therein for enabling cool air to be circulated from said main cavity to said auxiliary cavity and preventing items in said main cavity from entering said auxiliary cavity, said main cavity having its own removable cover for enabling access therein, said auxiliary cavity containing openings for storing beverage cans therein with a relatively close fit; and
plug members incorporated in said cooler for closing said openings to prevent cool air from escaping from said cavity where a beverage can is not positioned in said opening, said beverage cans when inserted in said openings allowing only minimal cool air to escape from the interior of said cooler, said beverage cans when in said openings being accessible from the exterior of said cooler.

4,655,053

AIR-COOLED ABSORPTION REFRIGERATION SYSTEM

Yoshifumi Kusagi; Shigeo Sugimoto; Kyoji Kohno; Tomihisa Ouchi, and Kenji Machizawa, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1985, Ser. No. 809,907
Claims priority, application Japan, Dec. 19, 1984, 59-266102
Int. Cl.[4] F25B *15/00*
U.S. Cl. 62—476 **11 Claims**



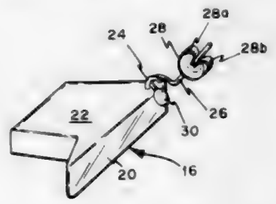
1. In an air-cooled absorption refrigeration system provided with a first generator having a heat source, a second generator using, as a heat source, refrigerant vapor generated from the first generator, an air-cooled condenser adapted to cool the refrigerant medium carried from the first generator and the second generator, respectively, an evaporator adapted to cool a medium to be cooled, an air-cooled absorber having a plurality of vertical tubes and a solution heat exchanger, the improvement comprising a plurality of communication passages adapted to establish a communication between each of the vertical tubes of said absorber and an interior of a shell of said evaporator, said communication passages being respectively arranged at different heights in a direction of the height of each of said vertical tubes whereby the refrigerant vapor from said evaporator is introduced into each of said communication passages and is then received by said communication passages arranged at different heights.

4,655,054

INTERCHANGEABLE JEWELRY ASSEMBLY

Marcia G. Roesch, 3268 Observatory Ave., Cincinnati, Ohio 45208

Filed Mar. 29, 1985, Ser. No. 717,382
Int. Cl.[4] A44C *7/00*
U.S. Cl. 63—13 **5 Claims**



1. An interchangeable jewelry assembly, comprising:
(a) a jewelry ornament, said jewelry ornament including a face surface, a rear surface opposite said face surface, and a peripheral side surface separating said face and rear surfaces;
(b) a fastening loop secured to an upper portion of the rear surface of said jewelry ornament, said fastening loop being disposed in a plane substantially perpendicular to said rear surface and having a predetermined internal dimension; and
(c) a fastening element of generally uniform external dimension smaller than said loop internal dimension adapted for interconnecting with said fastening loop to loosely support said jewelry ornament, said fastening element including a single elongated linear portion joined to an end portion arranged in a serpentine configuration, said serpentine end portion terminating in an enlarged outboard end having a dimension greater than the predetermined internal dimension of the fastening loop so as to prevent said enlarged outboard end from passing through said fastening loop, said serpentine end portion of said elongated fastening element proximal to said enlarged end being defined by a U-shaped supporting loop perpendicularly joined to the linear portion of the elongated structure.

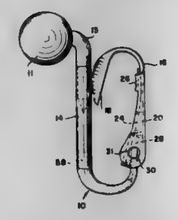
4,655,055

JEWELRY MOUNTING CONSTRUCTION

Leonardo Moody, Downers Grove, Ill., assignor to Luc-Co., Inc., Chicago, Ill.

Continuation of Ser. No. 728,444, Apr. 30, 1985, which is a continuation of Ser. No. 460,284, Jan. 24, 1983, abandoned. This application Feb. 24, 1986, Ser. No. 832,843
Int. Cl.[4] A44C *7/00*
U.S. Cl. 63—14 D **3 Claims**

1. An improved jewelry mounting construction for adapting pierced-ear earrings having a generally linear smooth sided earring post for use in unpierced ears, comprising, in combination:
receptacle for the pierced-ear earring post, the receptacle defining a bore, compatible with the earring post, in which the earring post may be slidably inserted and slidably removed the receptacle further comprising a tube section defining the bore, the bore being cylindrical and central to the tube section, and further being adapted for slidable insertion of a portion of the post into the tube section;
means for securing the earring post in the receptacle bore to restrain sliding movement by the post in directions generally parallel to longitudinal axis of the post, said means comprising an elastic material contained in the receptacle and affixed to the bore's inner surface to secure the post in the receptacle by a friction fit between the post and the bore's inner surface;
a pincer jaw disposed opposite the post receptacle, the pincer jaw having a shank with an upper and lower end, the pincer jaw further having a contact surface affixed to the shank at the shank's upper end, the contact surface being adapted for pressure contact with an ear lobe;
a leaf spring with a restrained end and a free end, the leaf spring being affixed at the restrained end to the shank near the connection of the contact surface to the shank's upper end, the leaf spring further being disposed to extend longitudinally along and parallel to the shank;
a spanning arm connecting the earring post receptacle to the pincer jaw, the spanning arm having a fixed end and a pivot end, the spanning arm also having a pivot point at the pivot end, the earring post receptacle being affixed to the spanning arm at the spanning arm fixed end, and the pincer jaw being pivotally connected to the spanning arm at the pivot end of the spanning arm, the connection to the pincer jaw being to the shank's lower end and further being connected about the pivot point in the spanning arm pivot end, the pincer jaw being disposed to pivot in a single plane about the pivot point, the pincer jaw further being pivotable between a first, open position with the pincer jaw angled away from the post receptacle, and a second, closed position with the pincer jaw in close proximity to the receptacle and with the shank of the pincer jaw being substantially parallel to the post receptacle when the pincer jaw is in the closed position, the tube section of the post receptacle being affixed to the spanning arm fixed end;



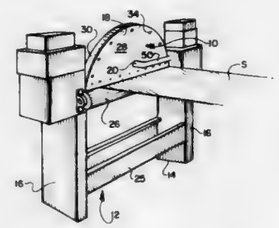
a lever affixed to the spanning arm's pivot end and extending from and beyond the pivot point, the lever being generally parallel to the post receptacle and disposed between the leaf spring free end and the pincer jaw shank lower end, the lever being generally parallel to the leaf spring and shank when the pincer jaw is in the second, closed position, the lever forming an approximate right angle with the pincer jaw when the pincer jaw is pivoted about the pivot point by approximately ninety angular degrees, the lever adapted to latch the leaf spring free end and shank lower end when the shank and pincer jaw are in the first, open position, whereby an earring post with an attached decorative piece may be inserted into the post receptacle and restrained therein, and the resulting combination of earring post, decorative piece and earring clamp may be removably affixed to an ear by clamping the ear lobe between the pincer jaw and earring post receptacle, with the leaf spring acting to urge the opposed surfaces of the pincer jaw and post receptacle together in clamping action on the ear lobe when the pincer jaw is in the closed position, and the earring clamp may be latched conveniently open with the pincer jaw in the open position during attachment of the earring clamp to the ear lobe.

4,655,056

FOAMED TREATING LIQUOR APPLICATOR

Dieter F. Zeiffer, Iron Station, N.C., assignor to Gaston County Dyeing Machine Co., Stanley, N.C.

Filed Jun. 11, 1985, Ser. No. 743,488
Int. Cl.[4] D06B *1/04*
U.S. Cl. 68—205 R **16 Claims**



1. Apparatus for applying foamed treating liquor across the width of a traveling substrate comprising a housing having a foam inlet port foamed therein for communication with a source of said foamed treating liquor, an elongated emission opening formed in said housing for disposition across the width of said substrate for applying said foamed treating liquor thereto, a foam distribution chamber defined within said housing for providing communication between said inlet port and said emission opening for delivering said foamed treating liquor to the full elongate extent of said emission opening, said inlet port being of a reduced dimension relative to the longitudinal dimension of said emission opening, partition means disposed in said distribution chamber intermediate said inlet port and said emission opening and including an interior wall in said distribution chamber having a curved edge centered about said inlet port and extending substantially normal to said emission opening to define a turning foam pathway from said inlet port to said emission opening about said curved edge for flow of said foamed treating liquor in a plurality of flow paths of substantially uniform length from said inlet port to said emission opening to cause travel of substantially all of the foamed treating liquor substantially the same distance from said foam inlet port to said elongated emission opening during a substantially uniform residence time in said distribution chamber, thereby causing foam degeneration of said foamed treating liquor to occur uniformly along the length and across the width of said distribution chamber for uniform treatment of said substrate across the width thereof.

4,655,057

SECURITY DEVICE FOR A VIDEO CASSETTE RECORDER OR THE LIKE

Jay S. Derman, Redondo Beach, Calif., assignor to Z-Lock Corporation, Redondo Beach, Calif.

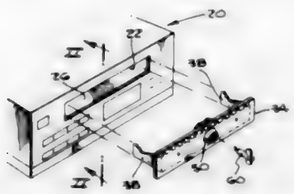
Filed Feb. 5, 1985, Ser. No. 698,312
Int. Cl.[4] B65D *55/14*
U.S. Cl. 70—14 **7 Claims**

1. In combination with a video cassette recorder or the like in which the cassette recorder has a cassette-receiving chamber provided with a chamber opening and a hinged door therefor, a security device comprising:
means for closing said opening to prevent unauthorized access to the cassette chamber, including:
a front panel having edge margins seated against edge margins defining said chamber opening,

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inwardly projecting engagement members on said panel extending into said chamber,

said engagement members having means cooperable with said door upon insertion of said engagement members into said chamber for locking against outward movement and removal of the closing means,



and unlock means carried by said panel and having an unlock element positioned within the cassette chamber,

said unlock element moving the door out of engagement with the engagement members to allow removal of the closing means.

4,655,058

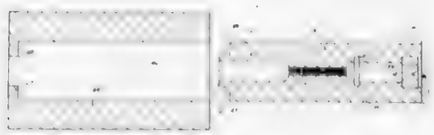
SLEEVE-TYPE SECURITY DEVICE

James R. Collet, 315 Lynn Dr., Lafayette, La. 70508

Continuation-in-part of Ser. No. 373,439, Apr. 30, 1982, abandoned. This application Mar. 21, 1983, Ser. No. 477,632

Int. Cl.[4] **F16C** *3/00*; **F16B** *41/00*

U.S. Cl. 70—178 **4 Claims**



1. A sleeve-type locking apparatus, comprising:

a generally cylindrical shaft means having a first internal bore for receiving, at least in part, a portion of a protected item, a second internal bore communicating with the first internal bore and adapted to receive, at least in part, a portion of the protected item, and a third internal bore communicating with the second bore and adapted to receive a locking means, said third bore being further provided with a hexagonal port; and

a generally cylindrical sleeve means having a first internal bore of a diameter slightly greater than the outer diameter of the shaft means, and a second internal bore adapted to receive a collar means attached to one end of the shaft means, said sleeve means being adapted to receive the shaft means and the collar means in rotational relationship within the internal bores.

4,655,059

LEVER HANDLE

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 270,825, Jun. 5, 1981, Pat. No. 4,394,821, which is a continuation-in-part of Ser. No. 136,746, Apr. 2, 1980, abandoned. This application Jun. 13, 1983, Ser. No. 503,769

The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.

Int. Cl.[4] **E05C** *13/00*

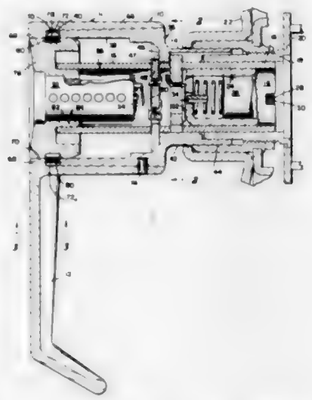
U.S. Cl. 70—224 **21 Claims**

1. A door handle adapted to contain a key-operated lock mechanism comprising

a hollow body having a neck adapted to be mounted on a knob sleeve or the like and having an outward-extending body shell terminating at a circular eend face surrounding a circular body opening,

an outer shell telescopically received over said body shell, fixed thereto, and having an end flange defining a circular opening, said flange being axially spaced from said end face of the body shell and defining therewith an inward-opening circumferential groove,

means for rigidly interconnecting the body shell and the outer shell,



an end closure member rotatably received within the end opening formed by said rigidly interconnected shells and containing or adapted to conain key-operated lock mechanism, and

means engaged in said inward-opening circumferential groove for securing said end closure member in axially fixed rotatable relation with said assembled rigidly interconnected shells.

4,655,060

LOCKING DEVICE FOR TWO-HOLED DRUMS AND CONTAINERS

Gary Jakubas, Rutherford, N.J., assignor to Taurus Precision, Inc., Fairfield, N.J.

Filed Jun. 17, 1986, Ser. No. 875,289

Int. Cl.[4] **B65D** *55/14*

U.S. Cl. 70—230 **4 Claims**



1. A locking device for a container having first and second openings comprising:

(a) first and second lock caps each having a base portion for insertion in said first and second openings respectively, a body portion having a central bore and upstanding lugs;

(b) a swivel rotatably mounted on each said lock caps comprising a top section having a hole extending therethrough and a shaft rotatably and slidably fitted into said central bore of said lock cap;

(c) means for rotatably retaining said swivel in each of said lock caps; and

(d) a locking bar extending through said central hole of each said swivel having means for retaining said bar in one of said holes at one end and means for locking said bar at the other end.

4,655,061

CLOCK LOCK

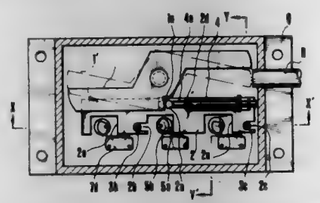
Makoto Nishikawa; Takeo Inada; Hiroaki Tomoda; Eiro Naruto; Kazuyaki Oki, all of Hiroshima, and Kouichi Hirano, Kure, all of Japan, assignors to Kamakira Safe Co., Inc., Hiroshima, Japan

Filed Aug. 15, 1985, Ser. No. 765,961

Claims priority, application Japan, Oct. 1, 1984, 59-205800; Feb. 2, 1985, 60-19151

Int. Cl.[4] **E05B** *43/00*

U.S. Cl. 70—271 **10 Claims**



1. A clock lock of the type using an electronic timer circuit as a clock mechanism so that a locking member in a lock mechanism is actuated toward an unlocked state in response to an unlocking signal generated by said electronic timer circuit, comprising:

at least one motor adapted to be activated in response to the unlocking signal transmitted from the electronic timer circuit,

a first cam and a second cam in operative association with said at least one motor,

a spring means having a movable member normally held in a locked state, said movable member being displaced toward an unlocked state by said first cam when said at least one motor starts its rotation,

a locking member held at a locked position by the movable member, said locking member being turned to an unlocked position by the effect of a turning moment caused by its own dead weight when it is released from the locked position,

a plurality of microswitches, in operative association with said second cam, for turning on and off driving voltage for said at least one motor, and

a motor driving circuit adapted so that said at least one motor is not actuated to turn said movable member toward a locked state until said at least one motor has failed to finish rotation toward an unlocked state.

4,655,062

SYSTEM OF INTERCONNECTED LOCK-CYLINDERS

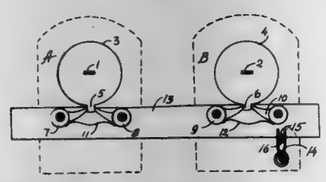
Lazar Kaufman, 112 Centre St., #9F, Brookline, Mass. 02145

Filed Jan. 10, 1983, Ser. No. 456,865

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.[4] **E05B** *35/12*

U.S. Cl. 70—339 **3 Claims**



1. A locking system comprising a housing, first and second lock cylinders each including a disk having an extension, each of said disk being rotated by a suitable key, a thrust bar having notches to receive said extensions and having a locking position for which said extensions are engaged in said notches, said thrust bar being movable when said disks are rotated simultaneously so that said extensions move out of said notches, means to maintain said extensions in said notches when said thrust bar is in its locking position, and means to urge said thrust bar to its locking position.

4,655,063

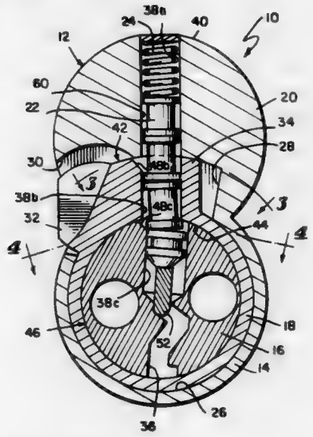
PICK-RESISTANT CORE

William R. Foshee, Indianapolis, and John P. McCrory, Carmel, both of Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed May 20, 1985, Ser. No. 736,145

Int. Cl.[4] **E05B** *15/14*

U.S. Cl. 70—419 **18 Claims**



1. A lock comprising

a core body formed to include a chamber for receiving at least a key plug and a plurality of tumbler pin bores extending from the chamber,

a plurality of downwardly-biased tumbler pins received in each tumbler pin bore, and

a key plug having a cylindrical exterior surface defining an annular shearline, the key plug being rotatably received in the chamber and formed to include a key slot and a plurality of first tumbler pin passageways extending from the slot toward the cylindrical exterior surface of the key plug for alignment with the tumbler pin bores of the core body, the tumbler pin bores of the core body being substantially the same diameter as the first tumbler pin passageways of the key plug, one tumbler pin being arranged to position its lowermost edge at about the annular shearline, at least one of the first passageways having a first radially inwardly sloping shoulder extending between the cylindrical exterior surface of the key plug and the at least one of the first passageways to intersect the annular shearline and defining an enlarged opening on the exterior surface of the key plug that is non-concentric with a companion first tumbler pin passageway, each first radially inwardly sloping shoulder being configured to face the lowermost edge of a companion said one tumbler pin in response to rotation of the key plug through about a predetermined arc in relation to the core body during a lock-picking attack so that the lowermost edge of said companion tumbler pin is cammed in a radially inward direction along the underlying first radially inwardly sloping shoulder into its first tumbler pin passageway to a point below the annular shearline during downward movement of said companion tumbler pin to inhibit further rotation of the key plug to a lock-actuating position.

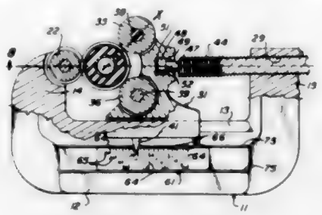
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4,655,064

ROTARY CRIMPING TOOL

Gregory K. Hoback, Aurora, Colo., assignor to HoseCo, Inc., Arvada, Colo.

Filed Dec. 2, 1985, Ser. No. 803,240
Int. Cl.⁴ B21D *17/04*
U.S. Cl. 72—35 **9 Claims**



1. A crimping tool for securing a hose coupling to a non-metallic flexible hose to form a fluid-tight joint comprising:

a frame having a main body portion and two leg portions extending generally transversely from opposite ends of said main body portion;

first roller means in the form of a crimping die roller having two arcuate ridges separated by an arcuate groove, said groove extending radially inwardly from the base of said ridges, said ridges and groove having substantially the same radius;

second roller means disposed opposite said first roller means;

one of said first and second roller means being supported on a carriage movable relative to said frame for movement toward and away from the other of said roller means, said other of said roller means being supported by one of said leg portions;

means on the other of said leg portions to move said carriage and one roller means toward the other of said roller means to force said crimping die roller into engagement with a hose coupling on a hose between said first and second roller means as said frame is rotated around said coupling and said one roller means is advanced to effect the crimping of said hose coupling against said hose and form a fluid-tight joint; and

pre-calibrated crimp measuring means including a first pointer carried by said carriage and a first calibrated scale extending along one side of said main body portion that alines with said pointer to indicate the correct limit of movement for said one roller means to provide the correct amount of crimp for the particular size and type of hose and hose coupling being joined and a second pointer carried by said carriage and a second calibrated scale extending along the other side of said main body portion that aligns with said second pointer to provide the correct amount of crimp for a range of user selected hose sizes and hose couplings being joined.

4,655,065

PLUG DRAWING OF TUBES AND OTHER HOLLOW ITEMS

Dennis H. Sansome, Sutton Coldfield, and Gerald M. Jones, Bewdley, both of England, assignors to National Research Development Corporation, London, England

Filed Jan. 21, 1986, Ser. No. 820,729
Claims priority, application United Kingdom, Jan. 22, 1985, 8501572
Int. Cl.⁴ B21C *9/00, 1/24*
U.S. Cl. 72—45 **5 Claims**

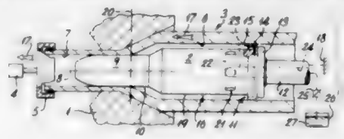
1. A method of plug-drawing an elongated tubular workpiece in a forward direction, comprising the following method steps:

providing such an elongated tubular workpiece presenting an inner wall and a transverse dimension;

forming a plug comprising a forward region with which said inner wall of said workpiece makes contact as its said transverse dimension diminishes in the course of drawing, a rearward region adapted to lie with a clearance within the undrawn part of said workpiece at all times, an intermediate region between said forward surface region and said rearward region;

providing a flexible and deformable ring seal and supporting said seal on said rearward region of said plug, said seal having a first and relaxed state in which it offers minimum resistance to relative movement of aid plug and said undrawn part of said workpiece and a second and deformed state in which it is adapted to make a firm contact with both said plug and said inner wall of said workpiece;

and providing through said plug a fluid passage having an outlet in said intermediate region and an inlet formed in



said plug rearward of said seal so as to be accessible from that part of the interior of the said undrawn part of said workpiece lying rearward of said plug;

forming a cylindrical space bounded at the forward end thereof by the contact between said plug and said workpiece, at its inner radius by the surface of said intermediate region, at its outer radius by said inner wall of said workpiece and at its rearward end by said seal;

connecting said inlet to a source of lubricant under pressure, and so filling said cylindrical space with said lubricant; and

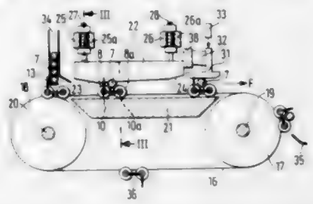
drawing said workpiece over said plug, and in so doing exerting a forward force on at least part of said plug; and by the action of at least one of said above method steps, causing said seal to deform from its said first state to its said second state, whereby it seals said rearward end of said cylindrical space and so enhances the pressure at which said lubricant can be contained within said space without escaping from it by way of said rearward end.

4,655,066

DEVICE FOR STRAIGHTENING COLD-DEFORMABLE, ROTATIONALLY-SYMMETRICAL WORKPIECES

Erhard Justus, Guentersteiner Weg 22, D-6313 Homberg, Fed. Rep. of Germany

Filed Dec. 24, 1985, Ser. No. 813,108
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1985, 3500481
Int. Cl.⁴ B21D *3/02*
U.S. Cl. 72—90 **11 Claims**



1. A device for straightening rotationally-symmetrical workpieces, comprising:

at least one stationary bearing means,

at least two stationary upper members situated above the stationary bearing means along a longitudinal direction of the bearing means, said stationary upper members being laterally spaced apart from each other, each stationary upper member having inlet and outlet at longitudinal end portions thereof respectively, and a lower point between the inlet and outlet, and

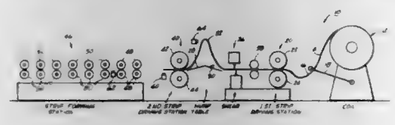
at least one supporting means to be moved between the bearing means and upper members, said supporting means including two shafts extending perpendicularly to the longitudinal direction of the upper member and being spaced apart from each other at a predetermined distance and at least one pair of rollers free-rotationally situated on the two shafts respectively, said rollers being located in the center of the two upper members so that when the workpiece is placed on the two rollers, an upper point of the workpiece on the rollers is situated slightly above the lower point of the upper member, whereby when the rollers are moved from a portion adjacent the inlet to a portion adjacent the outlet between the bearing means and the upper members, the workpiece rotates and deforms between the bearing means and the upper members to thereby straighten the workpiece.

4,655,067

PANEL FORMING LINE

Terry Frost, Rockford, Wash., and Terry B. Smith, Coeur D'Alene, Id., assignors to ASC Machine Tools, Inc., Spokane, Wash.

Filed Mar. 31, 1986, Ser. No. 846,298
Int. Cl.⁴ B21D *35/00*
U.S. Cl. 72—131 **16 Claims**



1. An improved method of cutting and forming profiled panels from a continuous strip of flexible material, comprising the steps of:

(a) passing the material from a source of same in a selected travel path from said source until the leading portion of the material has reached a first selected point along said travel path;

(b) restraining the leading portion of the material while continuing to pass material from the source so that a hump is formed to extend generally normal to the travel path and to a preselected hump height;

(c) terminating the restraint of the leading portion of the material and again passing same along the travel path;

(d) passing the material exiting the hump through a forming operation to form the material into a selected panel profile;

(e) stopping a terminal portion of the material when a selected panel length has passed from the source, the leading portion of the material continuing to pass along the travel path; and

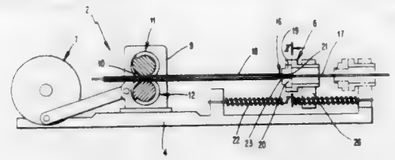
(f) shearing the material at the stopped terminal portion so that the material past the shearing station is free to continue passing along the travel path, the hump being dissipated as the terminal portion of the sheared panel length passes therethrough.

4,655,068

FLOATING CYLINDRICAL MANDREL AND METHOD FOR PRODUCING TUBING

John H. Schemel, Kennewick, Wash., assignor to Sandrik Special Metals Corp.

Filed Mar. 22, 1985, Ser. No. 714,800
Int. Cl.⁴ B21B *21/00*
U.S. Cl. 72—208 **3 Claims**



1. In a method of producing hollow tubes comprising a series of forming steps including:

advancing a cylindrical workpiece of a predetermined external radius and containing a cylindrical mandrel defining the workpiece inner diameter axially into and through a tube-forming zone;

turning a pair of metal forming rolls from a first position with the rolls provided with circumferential tube forming grooves therein, said grooves positioned in mating relationship with said tube forming zone;

turning the rolls in an opposite direction back to said first position;

repeating said advancing step and subsequently repeating said turning steps so as to reciprocate the rolls back and forth from said first position to said second position and advance said cylindrical workpiece;

moving the mandrel with a substantially cylindrical outer surface within the workpiece simultaneously with each of said advancing steps of said workpiece, the moving of the mandrel and the advancing of the workpiece being identical increments of movement from the first position, the diameter of the mandrel being substantially the diameter of said workpiece;

gripping and applying a friction force to the mandrel by a plurality of friction contact surfaces carried by a crosshead so as to restrain the mandrel by said friction force and prevent the mandrel from being pulled through the tube-forming zone, said restraining force being less than the mandrel's yield strength.

4,655,069

AUTOMATIC MACHINE FOR CURVING THIN AND RECTILINEAR ELEMENTS, SUCH AS METAL WIRES

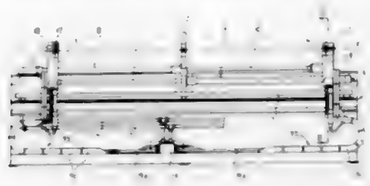
Michel Remy, Raon l'Etape; Jean-Francois Delaite, Nompatelize, and Guy Woirgard, Thiaville, all of France, assignors to Autocoussin, Paris, France

PCT No. PCT/FR84/00245, § 371 Date Jul. 2, 1985, § 102(e) Date Jul. 2, 1985, PCT Pub. No. WO85/01898, PCT Pub. Date May 9, 1985
PCT Filed Oct. 31, 1984, Ser. No. 756,975
Claims priority, application France, Nov. 2, 1983, 83 17379
Int. Cl.⁴ B21F *45/00*; B21D *11/00*
U.S. Cl. 72—306 **12 Claims**

1. A machine for curving thin and rectilinear sections of a metal element, such as a wire, strip, tube or the like, said machine comprising: positioning means for holding the section to be bent on a first axis, at least one bending member, a counter-bending part placed on said first axis and cooperating with said bending member, a first drive mechanism for driving said bending member with an angular rotational movement about a second axis perpendicular to said first axis and aligned with the counter-bending part, a second drive mechanism for moving said bending member with a reciprocal movement along a third axis parallel to said second axis, said bending member being further movable jointly with the counter-bending part in

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a direction parallel to said first axis, said positioning means comprising a nipper for immobilizing on said first axis the section to be bent, and also comprising a pair of jaws movable jointly with said bending member, at least one of said jaws being mobile, said jaws having tapered noses which form said



counter-bending part, control means associated with said noses for moving the mobile jaw away from the other jaw upon movement of the bending member along the element to be bent, said nipper being mounted for rotation about said first axis, and a third drive mechanism associated with said nipper for imparting thereto an angular rotation about said first axis.

4,655,070
SCORED CONCAVE-CONVEX RUPTURE DISK AND METHOD OF MANUFACTURE
Miner E. Clift, 2309 W. Indianola, Broken Arrow, Okla. 74012
Filed Sep. 26, 1984, Ser. No. 654,393
Int. Cl.[4] B21D *51/24*
U.S. Cl. 72—325 **5 Claims**



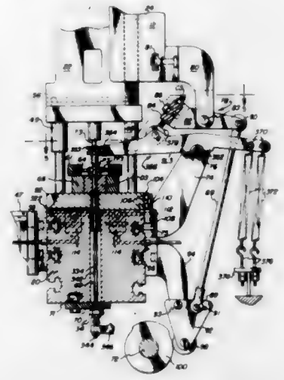
1. A method of manufacturing a scored concave-convex rupture disk having a known rupture pressure from a section of sheet metal comprising the following steps:

a. sectioning a portion of sheet metal into a disk shaped blank;

b. forming a concave-convex dome on the sheet metal disk blank to a pressure value slightly lower than the disk burst pressure; and

c. forming a score on the convex surface of the concave-convex dome and after forming the concave-convex dome to a pressure value near disk burst pressure.

4,655,071
TRANSFER PRESS WITH QUICK CHANGE DIE SET ARRANGEMENT
Werner K. Allweier, Huntington, and David W. Knight, Stratford, both of Conn., assignors to The U.S. Baird Corporation, Stratford, Conn.
Filed Nov. 26, 1985, Ser. No. 801,927
Int. Cl.[4] B21D *45/04, 45/08*
U.S. Cl. 72—346 **40 Claims**



21. A multi-station metal forming press comprising:

a press frame having a press bed with a substantially planar, horizontally orientated die set supporting surface, said press bed having a vertical slot therethrough;

a single ram mounted on said frame for vertical reciprocation above said press bed;

power drive means operationally connected to said ram to reciprocate said ram;

a die set having a punch block secured to said ram and a die block secured to said press bed in a face-to-face relationship with said die set supporting surface, said die block having a plurality of apertures spaced along its longitudinal axis aligned with said slot of said press bed, each of said apertures having an intermediate knockout pin located therein, said die set including a plurality of guide post arrangements extending between said punch and die blocks;

a plurality of metal forming dies mounted on said die block, each of said dies having a centrally located work forming opening therein aligned with a selected one of said die block apertures, each of said openings having a knockout plunger located therein;

a plurality of metal forming punching tools mounted on said punch block and corresponding in number to said plurality of metal forming dies, each of said punching tools being aligned with and configured to enter into the centrally located work forming opening of its associated die, the associated pairs of dies and punches forming work stations spaced longitudinally within said die set;

transfer means mounted on said frame and extending within said die set for carrying workpieces sequentially in a predetermined manner to each of said work stations;

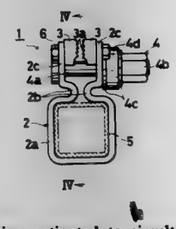
a knockout mechanism having a plurality of knockout rods, each having upper and lower ends, mounted for longitudinal movement within said slot of said press bed, means positioning each of said knockout rods to a position where its upper end is normally flush with said horizontal surface of said press bed and into operative engagement with its associated intermediate knockout pin, each of said knockout rods and its associated intermediate knockout pin are separate elements, and means engaging said lower ends of said knockout rods for providing a periodic positive upward force on the same within said slot to move said knockout rods out of their normally flush position with said horizontal surface of said of said press bed;

a stripper mechanism having a stripper sleeve surrounding each of said punching tools and a plurality of stripper levers corresponding in number to the number of said stripper sleeves and operatively engaged therewith, said stripper levers being supported for pivotal movement adjacent said die set; and

stripper relief means mounted on said frame and having a removable bar carrying a plurality of adjustable contact elements operatively engageable with said stripper levers;

whereby said die set, said dies and punching tools, said knockout plungers and intermediate knockout pins can be removed from said frame without interference from said knockout mechanism when said knockout rods have said upper ends thereof flush with said horizontal surface of said die bed.

4,655,072
CLAMP
Makoto Miyoshi, Tondabayashi, Japan, assignor to Sanko Kinzoku Co., Ltd., Osaka, Japan
Filed Nov. 14, 1985, Ser. No. 798,087
Int. Cl.[4] B21D *1/12*
U.S. Cl. 72—422 **8 Claims**



1. A clamp for being activated to simultaneously grip a horizontal elongated supporting member and upright other members of various thicknesses, located above said elongated supporting member, said clamp comprising:

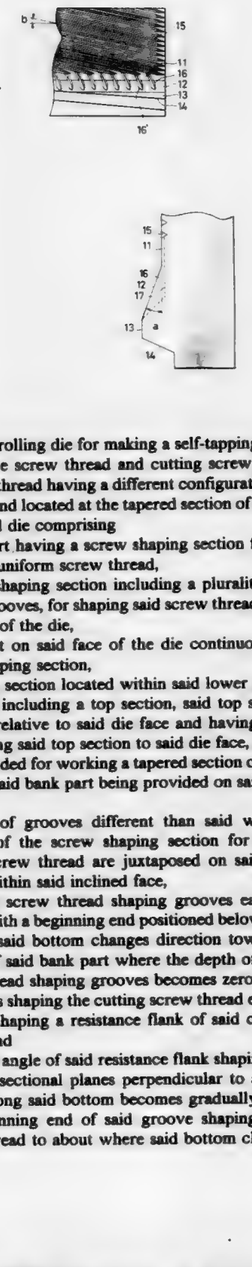
an elastic metallic band being bent to form a roughly U-shaped tube portion for enclosing three sides of said elongated member, two inwardly protruding recessed portions separately bent inwardly from the tube portion to thereby form shoulders for partially enclosing a portion of a fourth side of said elongated member, and being bent outwardly to two gripping portions, thereby separating inner faces of outer ends of the gripping portions, wherein said tube portion and said two recessed portions of said elastic means form a substantial square shape for snugly receiving an elongated, substantially square in cross-section, member which may be slidably inserted through the tube portion;

two opposing clamp teeth mounted on the inner face of the gripping portions of the elastic means; and,

a fastening means for engaging said gripping portions between said opposing clamp teeth and said recessed portions for forcing the two gripping portions toward each other to thereby contract the tube portion and, simultaneously, force the opposing two clamp teeth toward each other;

whereby, as said tube portion is made to contract onto and grip said elongated member by said fastening means said gripping portions are caused to simultaneously close said opposing clamp teeth for gripping said other member so that said elongated member can support said other member upright in relation to said elongated member when said elongated member is substantially horizontal.

4,655,073
THREAD ROLLING DIE FOR SELF-TAPPING SCREW
Hisayoshi Yamamoto, Kawachinagano, Japan, assignor to Yamahiro Co., Ltd., Osaka, Japan
Division of Ser. No. 615,076, May 29, 1984. This application Sep. 23, 1985, Ser. No. 778,966
Claims priority, application Japan, Feb. 24, 1984, 59-34528
Int. Cl.[4] B21H *3/06*
U.S. Cl. 72—469 **18 Claims**



1. A thread rolling die for making a self-tapping screw having at least one screw thread and cutting screw thread, said cutting screw thread having a different configuration than said screw thread and located at the tapered section of said self-taping screw, said die comprising

an upper part having a screw shaping section for rolling at least one uniform screw thread,

said screw shaping section including a plurality of wedge-shaped grooves, for shaping said screw thread, juxtaposed on a face of the die,

a lower part on said face of the die continuous with said screw shaping section,

a machining section located within said lower part,

a bank part including a top section, said top section being elevated relative to said die face and having an inclined face joining said top section to said die face, said inclined face provided for working a tapered section of the screw's top end, said bank part being provided on said machining section,

a plurality of grooves different than said wedge-shaped grooves of the screw shaping section for shaping the cutting screw thread are juxtaposed on said machining section within said inclined face,

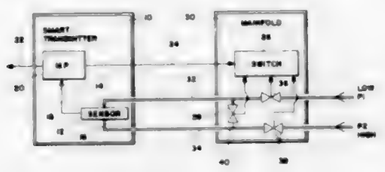
said cutting screw thread shaping grooves each having a bottom with a beginning end positioned below said face of said die, said bottom changes direction toward said top section of said bank part where the depth of said cutting screw thread shaping grooves becomes zero,

said grooves shaping the cutting screw thread each having a face for shaping a resistance flank of said cutting screw thread, and

an included angle of said resistance flank shaping face taken on cross sectional planes perpendicular to a virtual line traced along said bottom becomes gradually larger from said beginning end of said groove shaping the cutting screw thread to about where said bottom changes direction.

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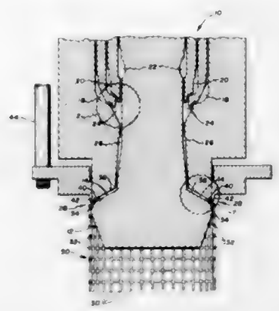
4,655,074
SELF-ZEROING PRESSURE TRANSMITTER WITH AUTOMATIC PRESSURE MANIFOLD
John W. Robertson, Jr., Chesterland; Edward Bastijaaic, Concord, and Edward L. Sterling, Jr., Cleveland, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Aug. 12, 1985, Ser. No. 764,916
Int. Cl.[4] G01L *9/00, 27/00*
U.S. Cl. 73—4 R **6 Claims**



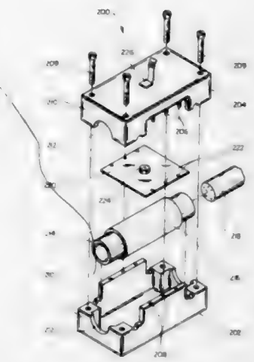
1. A self-zeroing pressure transducer assembly comprising:
a pressure transducer having two inputs;
a first pressure line connected to one of said two inputs;
a second pressure line connected to the other of said two inputs;
a first valve in said first pressure line;
a second valve in said pressure line;
a pressure equalizing connecting line between said first and second pressure lines at a point on said first and second pressure lines between said first and second valves and said transducer;
a pressure equalizing valve in said connecting line;
switch means connected to said first valve and said pressure equalizing valve and functioning upon receiving one control signal to open said first valve while maintaining said pressure equalizing valve closed and, upon receiving another control signal, to close said first valve while opening said pressure equalizing valve for equalizing the pressure between said first and second pressure lines and thus equalizing the pressure at said two inputs of said transducer;
control means connected to said pressure transducer for receiving its signal and connected to said switch means for generating said one and other control signals to alternately expose said two inputs of said pressure transducer to separate pressures on said first and second pressure lines; and
said control means comprising a microprocessor with said valves and switch means being incorporated in a pressure manifold embracing said first and second pressure lines and said connecting line.

4,655,075
VIBRATING TUBE DENSIMETER
Henry J. Albert, Bettendorf, Iowa, and Robert H. Wood, Newark, Del., assignors to University of Delaware, Newark, Del.
Continuation-in-part of Ser. No. 654,443, Sep. 26, 1984. This application Feb. 19, 1986, Ser. No. 830,436
Int. Cl.[4] G01N *9/00*
U.S. Cl. 73—32 A **1 Claim**

1. In a vibrating tube densimeter for fluids comprising:
a U-shaped tube adapted to contain test fluid;
electrical means for vibrating the tube in a magnetic field; and
electrical means for sensing the resonant frequency of the tube;
the improvement wherein the means for vibrating the tube and the means for sensing the resonant frequency of the tube comprise separate bare wire electrical conductors, each conductor passing once through said magnetic field, the conductors being insulatively attached to and adapted to move with the vibrating tube, whereby to permit operation up to about 500° C.

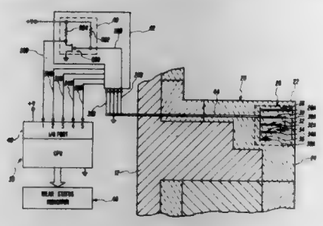


4,655,076
MOISTURE MEASURING APPARATUS
Gary R. Weihe, Fremont, and Roger D. Lion, Menlo Park, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Jan. 23, 1984, Ser. No. 573,230
Int. Cl.[4] G01N *19/10*
U.S. Cl. 73—73 **7 Claims**



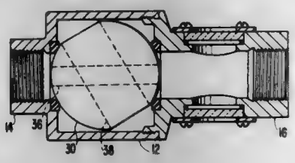
1. An apparatus for measuring humidity comprising:
(a) a rigid, porous, cylindrical substrate, the substrate being capable of passing water therethrough;
(b) a tube of water-swellable polymer in contact with the cylindrical substrate, the water-swellable polymer having a fully swollen volume when in its fully swollen state in equilibrium with water at least about 2 times its dry volume, said tube and substrate being substantially completely contained in a chamber, the volume of the chamber being sufficiently large to accomodate the tube in its fully swollen state; and
(c) sensing means responsive to the volume of the water-swellable polymer for producing a signal that varies with the water content of the environment exterior to the chamber.

4,655,077
WEAR SENSOR SYSTEM
Howard A. Purvis, and Robert F. Stricker, both of P.O. Box 79286, Houston, Tex. 77279
Filed May 31, 1985, Ser. No. 739,899
Int. Cl.[4] G01N *17/00*
U.S. Cl. 73—86 **1 Claim**



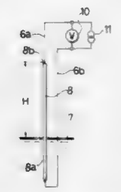
1. Apparatus for detecting a wearable condition of a component comprising:
a wear sensor probe including at least one conductive loop embedded within said component; and,
means coupled to said wear sensor probe for determining the continuity status of said conductive loop;
said at least one conductive loop having a signal conductor portion, a return conductor portion and a wearable, conductive segment connected in electrical series relation with said signal conductor portion and said return conductor portion, said wearable, conductive segment being relatively frangible with respect to the component in which it is embedded.

4,655,078
SPRINKLER DRAIN AND TEST VALVE
Augustus W. Johnson, 70 W. 51 St., Hialeah, Fla. 33012
Filed Jan. 30, 1985, Ser. No. 696,525
Int. Cl.[4] G01M *19/00*; F16K *5/10*
U.S. Cl. 73—168 **12 Claims**



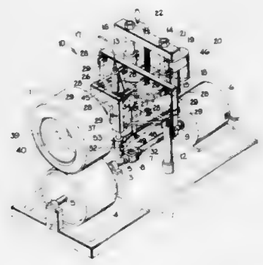
1. A sprinkler drain and test valve unit for testing a sprinkler system, said drain and test valve unit comprising:
a housing disposed in a conduit;
an inlet and an outlet disposed on either end of said housing and serving to connect said housing to said conduit;
a single ball valve disposed within said housing between said inlet and said outlet, said ball valve defining two channels providing communication between said inlet and said outlet, the first of said channels allowing a flow substantially equivalent to that of one sprinkler head in said system and the second of said channels allowing a flow substantially equivalent to that of said conduit to thus allow an unrestricted flow through said ball valve;
a means for alternatively rotating said ball valve between a first position whereby said first channel provides communication between said inlet and said outlet, a second position whereby said second channel provides communication between said inlet and said outlet, a means for preventing communication between said inlet and said outlet; and
a sight glass disposed within said housing downstream of said ball valve so as to permit observation of the flow through said ball valve.

4,655,079
LEVEL GAUGE FOR LIQUID HELIUM
Tsuyoshi Masumoto, Sendai; Akihisa Inoue, Kawauchi; Tetsuo Oka, Toyoake; Masami Ishii, Toyota; Hiroshi Motoyama, Toyota, and Ryohei Yabuno, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Nov. 21, 1984, Ser. No. 673,931
Claims priority, application Japan, Nov. 22, 1983, 58-220076
Int. Cl.[4] G01F *23/00*; C22C *16/00*; H01B *1/02, 12/00*
U.S. Cl. 73—295 **7 Claims**



1. A level gauge for liquid helium comprising:
a sensing element comprising a wire of a superconductive alloy which has a superconducting transition temperature, T_c, of 4.2° to 4.5° K.;
a support member for linearly supporting and dielectrically insulating said sensing element;
means for energizing said sensing element;
and means for detecting a current passed through the sensing element;
said superconductive alloy consisting essentially of zirconium, ruthenium and rhodium which are represented by a formula $Zr_{100-x}(Ru_yRh_{1-y})_x$ in which x represents contents of at least one of said ruthenium and said rhodium in atomic % and in a numerical value of $22.5 \leqq x \leqq 27.5$ and y represents a numerical value of $0 \leqq y \leqq 1$, and said superconductive alloy having an amorphous phase which is obtained when a molten alloy is rapidly quenched.

4,655,080
DYNAMIC TIRE BALANCING MACHINE AND METHOD
Theodore Ongaro, c/o Ongaro Dynamics, Ltd., 939 King St., Columbus, Ohio 43212
Filed Oct. 2, 1985, Ser. No. 782,992
Int. Cl.[4] G01M *1/22*
U.S. Cl. 73—462 **15 Claims**



1. A tire balancing machine comprising a supporting frame, an axle box mounted on said frame, a wheel axle projecting outwardly from said axle box, means for rotatably mounting the tire and wheel on said wheel axle, a road wheel spaced from said wheel axle with its axis of rotation parallel to the longitudinal axis of said wheel axle, drive means for rotating said road wheel at a selected speed of rotation equivalent to the speed of rotation for which the tire is being balanced, means mounting said axle box for pivotal movement relative to said

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road wheel while maintaining the longitudinal axis of said wheel axle parallel to the axis of rotation of said road wheel, means for applying a predetermined resilient load to said wheel axle to load a tire mounted on said wheel axle against said road wheel, sensor means mounted on said axle box, said sensor means being positioned to measure the horizontal and vertical dynamic forces generated at the footprint of the tire as it is rotated while loaded against the road wheel, and encoder means to measure the angular locations of said forces during each revolution of the tire.

4,655,081

GYROSCOPIC DEVICES

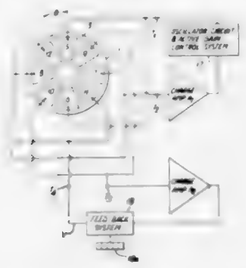
James S. Burdess, Whitley Bay, England, assignor to National Research Development Corporation, London, England

Filed Feb. 20, 1985, Ser. No. 703,538

Claims priority, application United Kingdom, Feb. 22, 1984, 8404668

Int. Cl.⁴ G01P *9/04*

U.S. Cl. 73—505 **9 Claims**



1. A gyroscopic device comprising:
- a circular disc having first and second oppositely facing faces, and axis, and comprising an intergral mass of material having piezo-electric properties, said disc being adapted to be rotated about its axis at a rate of turn, said second face having an electrode;
- a plurality of first electrodes mounted in an axisymmetric formation on said disc first face;
- means for providing an AC voltage between said plurality of first electrodes and said electrode on said second face for causing, in conjunction with the piezo-electric properties of said disc, a pattern of strain to be generated within said disc, said pattern varying cyclically around said disc in a circumferential direction;
- a plurality of second electrodes axisymmetrically mounted on said disc first face and angularly displaced with respect to said plurality of first electrodes, said second electrodes emitting electrical signals which are generated by an interaction between said pattern of strain and the piezo-electric properties of said disc, said electrical signals varying when said disc is rotated about its axis due to an angular displacement of the cyclically varying strain pattern; and
- means for measuring said rate of turn from the variation of said electrical signals.

4,655,082

MINING MACHINE HAVING VIBRATION SENSOR

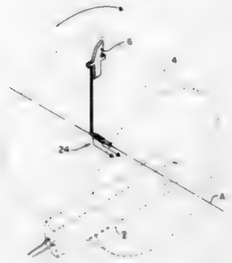
Carl R. Peterson, Boxford, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 31, 1985, Ser. No. 761,043

Int. Cl.⁴ G01V *29/00*; E21C *39/00*

U.S. Cl. 73—594 **15 Claims**

1. A mining machine having means for sensing property variations of the materials associated with a seam of a mine comprising:
- a cutting tool including a member rotatable about an axis,
- at least one cutter carried by the rotatable member at a point spaced from the axis for cutting material from the seam,
- a conductor rod carried by the rotatable member and held in releasable engagement with the cutter, the rod extending to the axis of the rotatable member to conduct to the axis,



strain waves which are induced by variations in cutter vibration as the cutter encounters property variations of the materials associated with the seam, and
- a transducer located at the axis of the rotatable member in communication with the conductor rod to convert the strain waves in the rod to electric signals.

4,655,083

SURFACE ULTRASONIC WAVE INTERFERENCE MICROSCOPE

Noriyoshi Chubachi, 4-6-203, Katahira 1-chome, Sendai-shi, Miyagi 980, Japan

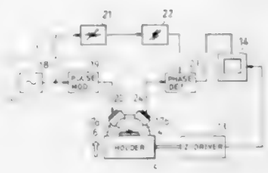
PCT No. PCT/JP85/00384, § 371 Date Mar. 4, 1986, § 102(e) Date Mar. 4, 1986, PCT Pub. No. WO86/00710, PCT Pub. Date Jan. 30, 1986

PCT Filed Jul. 8, 1985, Ser. No. 845,272

Claims priority, application Japan, Jul. 8, 1984, 59-141204; Mar. 13, 1985, 60-51190

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—606 **26 Claims**



1. A surface ultrasonic wave interference microscope comprising:
- a high-frequency pulse generator for generating high-frequency pulses produced by pulse modulating a carrier of an ultrasonic frequency;
- a transmitting ultrasonic transducer which is supplied with the high-frequency pulses from the high-frequency pulse generator and forms a transmitting focused ultrasonic beam for exciting a leaky elastic surface wave in the surface of a sample;
- a holder for holding the sample;
- a receiving ultrasonic transducer which receives the leaky elastic surface wave propagating in the sample surface and then reradiating therefrom and forms a receiving focused ultrasonic beam;
- a reference signal generating means for creating a reference signal from the carrier of the high-frequency pulses; and
- a mixing circuit for mixing the reference signal from the reference signal generating means and the received signal from the receiving ultrasonic transducer.

4,655,084

ULTRASONIC TEST INSTRUMENT

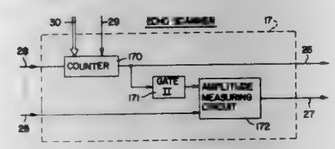
Peter Renzel, Düren, Fed. Rep. of Germany, assignor to Krautkramer-Branson, Inc., Lewistown, Pa.

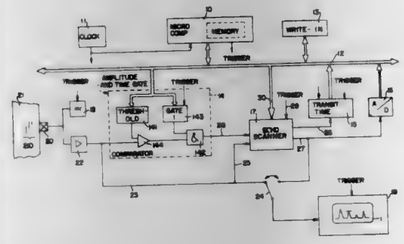
Filed May 1, 1986, Ser. No. 858,105

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1985, 3519797

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—611 **2 Claims**





1. An ultrasonic test instrument for the nondestructive testing of workpieces including a pulse generator for producing ultrasonic transmit signals at predetermined time intervals and a receiver for receiving ultrasonic echo signals corresponding to the transmit signals and evaluating the amplitudes and the transit times of the ultrasonic echo signals appearing during an expected measurement range, the latter signals being supplied to an amplitude and a first time gate circuit and to a transit time measuring circuit and an amplitude measuring circuit for causing only one echo signal at a time to have its amplitude and transit time evaluated between the predetermined time intervals, the improvement comprising:
- a presettable counter coupled for receiving the output signal from said amplitude and time gate circuit and providing an output signal whenever the number of pulses received at the input of said counter is equal to the preset value of said counter;
- said output signal from said counter being coupled to said transit time measuring circuit as well as by means of a second time gate circuit to said amplitude measuring circuit,
- whereby to cause said amplitude measuring circuit to evaluate an echo signal only during the time interval defined by said second time gate circuit.

4,655,085

TRACKLESS SCANNER

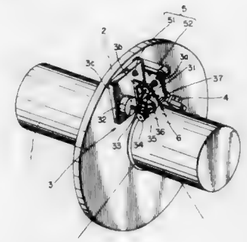
Fumio Tomizawa, Hitachi; Kenji Tsuchita, Hitachiota, and Sakae Sugiyama, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1985, Ser. No. 759,288

Claims priority, application Japan, Jul. 27, 1984, 59-155196

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—638 **14 Claims**



1. A trackless scanner for examination of pipings comprising:
- an annular base removably mountable to a pipe to be examined;
- a plurality of drive wheels for running supported on said base and being in contact with said pipe;
- a sensor, associated with each drive wheel, for detecting a circumferential turning of said base relative to said pipe;
- a circumferential posture control mechanism, associted with each drive wheel, responsive to a detection signal from said sensor so as to control an axial running of said drive wheel; and
- a sensor, associated with each drive wheel, for detecting a curvature of said pipe.

4,655,086

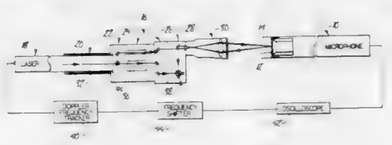
METHOD AND MEANS FOR MEASURING SOUND INTENSITY

Anna Mielnicka-Pate, and David K. Holger, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Apr. 30, 1985, Ser. No. 728,890

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—646 **24 Claims**



19. A device for determining sound intensity within an acoustic field, comprising:
- first means in said acoustic field for measuring instantaneous acoustic pressure at a single point, and including a target adapted to move in response to the acoustic field thereby producing a target output voltage proportional to said instantaneous acoustic pressure at said target, and
- second means in said acoustic field for measuring instantaneous acoustic particle velocity at said single point by measuring the velocity of said target as said target moves in response to the acoustic field, said target velocity being proportional to said instantaneous acoustic particle velocity.

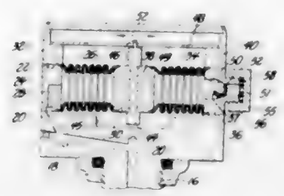
VOL 1077 ISS 1 AP 7 1987 UMI

4,655,087

TEMPERATURE-COMPENSATED PRESSURE GAGE

Edward J. Rozaiecki, 31041 Angeline, St. Clair Shores, Mich. 48082

Filed Aug. 19, 1985, Ser. No. 767,099
Int. Cl.[4] G01L *7/06, 19/04*
U.S. Cl. 73—708 5 Claims



1. In association with a fire suppression bottle charged with a vaporizable liquid fire extinguishant under pressure; said bottle being designed for use in a vehicle that can be located in desert atmospheres where the temperature is relatively hot or in arctic atmospheres where the temperature is relatively cold, whereby the extinguishant pressure can vary within wide extremes without rendering the bottle inoperable for fire suppression purposes: the improvement comprising a state-of-charge indicator device connected to the bottle for detecting leakage of extinguishant out of the bottle; said indicator device comprising a housing having two opposed walls; a first bellows located within the housing, with one end thereof secured to one of the aforementioned housing walls; a second sealed bellows located within the housing, with one end thereof secured to the other of the aforementioned housing walls; said first and second bellows being substantially indentical as respects length in the free state, number of convolutions, spring rate, and effective area; said first and second bellows being arranged in axial alignment with one another so that the other ends thereof are in close adjacency to one other; an indicator element operatively connected to the other ends of the bellows, whereby when the pressure within the first bellows is greater than the pressure within the second bellows the indicator element is moved in a first direction, and when the pressure within the second bellows is greater than the pressure within the first bellows the indicator element is moved in a second direction; a passage means extending within the housing, said passage means operably connecting the interior of the first bellows to the interior of the aforementioned fire suppression bottle, whereby said first bellows applies a force on the indicator element proportional to the pressure of the fire extinguishant within the bottle; and a second vaporizable liquid charged into the second liquid bellows under pressure, said second liquid and associated pressurization agent having the same pressure-temperature response characteristic as the bottle liquid; the pressurized liquid in the second bellows causing the second bellows to apply a force on the indicator element in direct opposition to the force developed on the indicator element by the first bellows; the charge within the second bellows being sufficient so that when the bottle is properly charged, the indicator element will take a predetermined position wherein it can move in the first direction or the second direction; said one end of the second sealed bellows having a port (50) therein connected to a fluid-admission passage (51) to define a shoulder (57), and a deformable sealing member (52) located in the port in engagement with the shoulder to maintain the bellows in a sealed condition.

4,655,088

UNIBODY PRESSURE TRANSDUCER PACKAGE

Victor J. Adams, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 7, 1985, Ser. No. 784,980
Int. Cl.[4] G01L *19/14, 9/00*
U.S. Cl. 73—756 5 Claims



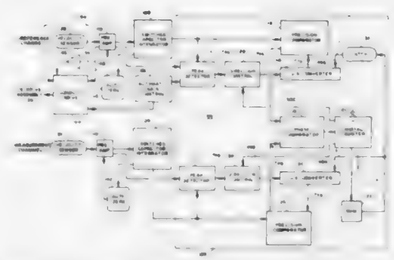
5. A pressure transducer within a unibody package, the unibody being a molded polymer housing having a base and walls surrounding the base with leads molded into and extending through the walls, and a semiconductor pressure transducer within the unibody electrically coupled to the leads.

4,655,089

MASS FLOW METER AND SIGNAL PROCESSING SYSTEM

Eric G. Kappelt, Fairview, and Frederick A. Ciccozzi, Erie, both of Pa., assignors to Smith Meter Inc., Erie, Pa.

Continuation-in-part of Ser. No. 742,567, Jun. 7, 1985, abandoned. This application Nov. 14, 1985, Ser. No. 797,980
Int. Cl.[4] G01F *1/84*
U.S. Cl. 73—861.38 7 Claims



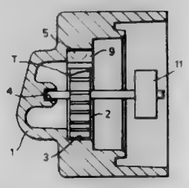
1. A mass flow meter comprising:
a conduit mounted at its ends to a support;
means for vibrating said conduit;
means for producing a pair of periodic electrical signals representative of a characteristic of the motion of said conduit at two predetermined points; and
a system that provides an indication of the phase difference existing between the two periodic electrical signals comprising:
means for producing a measurement comparison signal from a first of the periodic electrical signals and a measurement threshold signal, the phase difference between said measurement comparison signal and the first periodic signal depending on the level of said measurement threshold signal relative to the first periodic signal;
means for generating a measurement characteristic signal, said measurement characteristic signal being related to the peak amplitude of the first periodic signal;
means for creating a command signal, the nature of said command signal depending on whether said measurement comparison signal leads or lags a reference signal derived from the second periodic signal;
means for accumulating a count signal, said command signals determining when the level of said count signal is increased and decreased; and
means for combining a signal corresponding to said count signal and said measurement characteristic signal to produce said measurement threshold signal;
whereby said count signal provides an indication of the phase difference existing between the periodic electrical signals and the rate of mass flow of matter flowing through said conduit.

4,655,090

TURBINE FLOWMETER FOR FLUIDS

Alain Rousseau, Paris, France, assignor to Sato Electronique S.A., Paris, France

Filed May 5, 1986, Ser. No. 859,482
Claims priority, application France, May 9, 1985, 85 07001
Int. Cl.[4] G01F *1/08*
U.S. Cl. 73—861.81 1 Claim



1. A turbine flowmeter for fluids comprising
(a) a casing having a chamber of substantially circular section into which there open an admission orifice substantially tangential to the said chamber and an outlet orifice,
(b) a turbine equipped with blades rotatable in said chamber about the axis of said chamber under the action of the fluid passing through the chamber from the admission orifice to the outlet orifice,
(c) means for measurement of the speed of rotation of the rotor, the wall of the said chamber adjacent to the extremities of the turbine blades being equipped with recesses substantially parallel to the axis of the chamber and creating a turbulence in the fluid flow through the chamber, each recess having opposite lateral walls said admission orifice opening into one of the lateral walls of one of the said recesses of the chamber in such manner that at least a part of the fluid flow comes to strike upon the opposite lateral wall of the one of the said recesses.

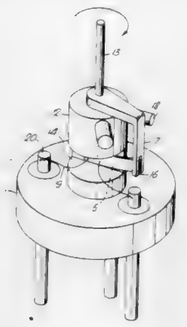
4,655,091

ROTATIONAL MOVEMENT

John C. Greenwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 28, 1984, Ser. No. 594,166
Claims priority, application United Kingdom, May 10, 1983, 8312776
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—862.08 9 Claims

1. A transducer for detecting relative rotational movement comprising:
a first body;
a second body rotatably coupled to said first body permitting relative rotation between said first and second bodies;
a single crystal piezo-resistive flexible strip coupled at one end to said first body and at an opposing end to said second body, relative rotation of said first and second bodies causing a flexure of said strip, wherein said single crystal piezo-resistive flexible strip is particularly characterized by comprising a plurality of integral piezo-resistors formed therein, each one of said piezo-resistors being formed within said strip at a distinguishable location on one surface of said strip and said piezo-resistors forming a two dimensional array on said surface of said thinned portion of said strip;
means disposed on said one surface for coupling said plurality of piezo-resistors into an electrical network; and



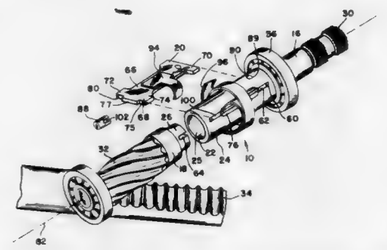
means for generating an amplified output signal from said electrical network formed from said plurality of piezo-resistors,
whereby relative rotation between said first and second bodies is transformed into said output signal.

4,655,092

TRANSDUCER COUPLING

Alistair G. Taig, 19032 Summers Dr., South Bend, Ind. 46637

Filed May 2, 1985, Ser. No. 729,837
Int. Cl.[4] G01L *3/10*
U.S. Cl. 73—862.35 10 Claims



1. A torque transducer coupling comprising input and output members coaxially journaled for relative rotational movement, a deformable torsion member resiliently connecting said input and output members; lost-motion coupling means for connecting said input and output members in response to a predetermined angular movement therebetween, said lost motion coupling including co-operatively connected portions of said input, output, and torsion members, said co-operatively connected portions of said input and output member portions each having slots therein, said torsion member portion being fixedly secured in one of said slots and engaging the other of said slots in response to said predetermined angular movement, and strain sensing means connected to said torsion member for generating an electrical signal as a function of the strain thereof.

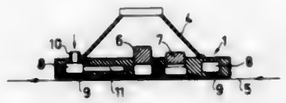
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4,655,093

WEB TENSION MEASURING METHOD AND DEVICE

Valter E. Ström, Stockholm; Bo-Lennart I. Johansson, Uppsala; Hakan I. Karlsson, Akersberga, and Thomas Östman, Spånga, all of Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden

Filed Jul. 16, 1985, Ser. No. 755,459
Claims priority, application Sweden, Jul. 18, 1984, 8403761
Int. Cl.[4] G01L *5/04*; G01H *13/00*
U.S. Cl. 73—862.41 6 Claims



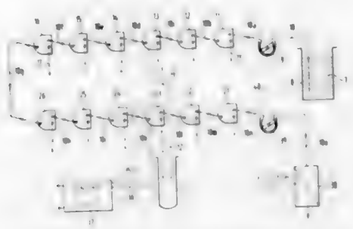
3. A method of measuring tension in a web, comprising the steps of:
- conveying said web along a web path;
- positioning a movable measuring head at a location along said web path, said measuring head movable in a direction substantially normal to said web path at said location, said measuring head defining a measuring space;
- spacing said movable measuring head from the web by discharging pressurized air between said measuring head and the web, whereby the discharged pressurized air prevents said measuring head from contacting the web;
- causing the web within said measuring space to oscillate transversely at said location; and
- detecting a resonance frequency of said transverse oscillation with said measuring head, whereby web tension may be determined.

4,655,094

DEVICE FOR TAKING AND MEASURING SAMPLES

Claus D. Herzfeldt, Karben, Fed. Rep. of Germany, assignor to Erweka Apparatebau GmbH, Heusenstamm, Fed. Rep. of Germany

Filed Sep. 6, 1984, Ser. No. 647,750
Int. Cl.[4] G01N *1/14, 1/18*
U.S. Cl. 73—863.31 13 Claims



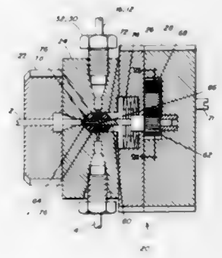
1. A device for taking and measuring samples of a testing liquid, comprising:
- (a) a plurality of testing vessels;
- (b) at least one reservoir means for containing a testing liquid;
- (c) a first pump means operatively associated with said at least one reservoir and with a first row of a plurality of serially connected valve means, each of said valve means being operatively associated with respective ones of said testing vessels;
- (d) a corresponding second row of a plurality of serially connected valve means serially connected to the first row of valve means, each of said valve means in said second series operatively associated with respective ones of said testing vessels, the valve means at respectively ordered positions in each series associated with the same testing vessel;
- (e) at least one detector means for evaluating samples from the testing vessels; and
- (f) a second pump means for supplying a testing sample from said testing vessels to said detector means through at least a portion of the series of second valve means.

4,655,095

COMPOUND VALVE

Manuel A. Russo, Holliston, and William Richards, Medway, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Apr. 2, 1986, Ser. No. 847,282
Int. Cl.[4] G01N *1/00*
U.S. Cl. 73—864.83 8 Claims



1. A compound valve comprising:
- a single valve body,
- a pair of rotary spool valves located in the valve body, each valve having a shaft,
- an axial bore in one end of each shaft and a radial bore communicating with the axial bore,
- a pinion fixed to each shaft and a common driving gear engaging both pinions to rotate both valve shafts simultaneously,
- a pair of valve seals, each seal surrounding one of the shafts, the valve seals being substantially ellipsoidal in configuration,
- a pair of semi-ellipsoidal cavities in the valve body, each cavity engaging substantially half of one valve seal, and
- a pair of seal retainers, each having a semi-ellipsoidal cavity engaging the other half of one valve seal.

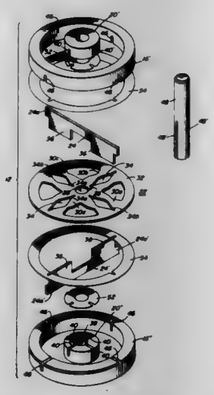
4,655,096

FLEXURE MOUNT ASSEMBLY FOR A DYNAMICALLY TUNED GYROSCOPE

Robert O. Westhaver, Westwood; Donald W. Carow, East Walpole, and Frank R. Archibald, Needham, all of Mass., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Aug. 31, 1984, Ser. No. 646,420
Int. Cl.[4] G01C *19/02*
U.S. Cl. 74—5 F 7 Claims

1. In an inertial instrument having a driving shaft and a driven rotating member which are normally coaxial with a spin axis, a flexure mount for coupling said driving shaft to said driven rotating member which permits two-degree-of-freedom angular deflection of said driven member about axes normal to said spin axis comprising a spider normally disposed transversely to said spin axis and having four equiangularly disposed webs extending from an inner central area adjacent said drive shaft to an outer annular area adjacent said rotating member, each of said webs including two similar sections, each



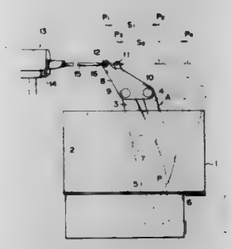
said section having the approximate shape of two parabolas joined at their vertices.

4,655,097

DEVICE FOR VARYING FEED STROKE OF FEED BARS FOR USE IN A TRANSFER PRESS

Masami Suzuki, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 22, 1985, Ser. No. 790,063
Claims priority, application Japan, Oct. 23, 1984, 159168[U]
Int. Cl.[4] B21D *43/00*
U.S. Cl. 74—53 6 Claims



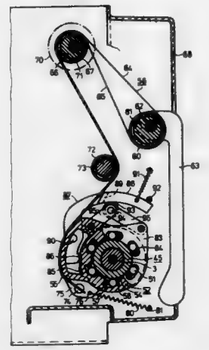
1. A device for varying feed stroke of feed bars for use in a transfer press, comprising:
- (a) a feed carrier connected to a connecting rod;
- (b) a first link having first and second ends, said first link pivotally mounted on a cam box at its first end and having at its second end a connecting portion connectable to said connecting rod;
- (c) a second link having first and second ends, said second link extending in parallel relationship with the first link and pivotally mounted at its first end on the cam box;
- (d) a third link having first and second sides, said third link pivotally mounted at its first side on an intermediate part of said first link and also on the second end of said second link, and having on its second side a connecting portion connectable to said connecting rod so as to form a four-node linkage mechanism together with said first and second links; and
- (e) a cam rotatably mounted in said cam box to actuate said four-node linkage mechanism, wherein said connecting rod is connectable to either the connecting portion of said first link or the connecting portion of said third link.

4,655,098

DRIVE MECHANISM FOR A CIRCUIT BREAKER USING ECCENTRIC MEMBER AND DIRECTIONAL LOCK

Ulrich Marquardt, and Ralf Seebold, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 3, 1985, Ser. No. 771,941
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1984, 3432696
Int. Cl.[4] F16H *27/00*
U.S. Cl. 74—163 13 Claims



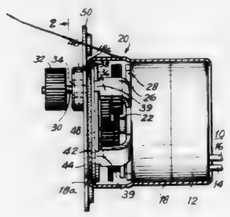
1. A drive mechanism for a circuit breaker having an energy storage spring tensionable by means of a crank pin seated upon a shaft rotatable by a motor through a first rotatingly driveable eccentric member by a directional coupling seated on the shaft, comprising:
- a cooperating pair of contacts operable by said energy storage spring;
- a flexible traction member connected to the directional coupling; and
- an additional eccentric member seated on a shaft of a hand lever, located between the first eccentric member and the directional coupling, said additional eccentric member being at least partially wrapped around by the traction member.

4,655,099

NOISELESS STEPPER MOTOR

Charles W. Hansen, Wolcott, Conn., assignor to Tri-Tech, Incorporated, Waterbury, Conn.

Filed Feb. 26, 1985, Ser. No. 705,748
Int. Cl.[4] F16H *1/12, 1/20*
U.S. Cl. 74—421 A 14 Claims



1. A rotating machine assembly comprising:

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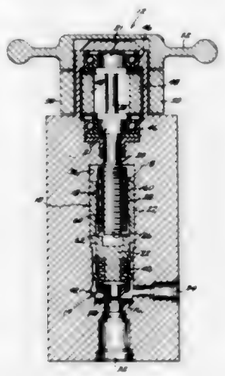
an electric rotating machine having a rotor, with a rotor pinion affixed thereon;
a reducing gear assembly having at least one reducing gear, each such gear having a respective shaft, with an initial reducing gear thereof being meshed with said pinion and a final reducing gear having its shaft arranged as an output shaft;
a casing over said electric rotating machine and at least a portion of said reducing gear assembbly;
means providing sufficient bushings for said reducing gear shafts and an output bearing journalling said output shaft;
a first mounting plate, the casing being mounted onto said first mounting plate;
a second mounting plate having portions to accommodate the mounting of said casing on said first mounting plate, with an aperture coaxial with said output bearing, and including mounting means and a collar in spaced coaxial relationship with said bearing; and
a layer of resilient material disposed between said first and second mounting plates and affixed thereto, said layer or resilient material including an annular extension forming a bushing disposed between said output shaft and said collar to coaxially surround and isolate said output shaft from said collar, for acoustically isolating said first and second mounting plates, as well as said output shaft and said output bearing.

4,655,100

ROLLING ELEMENT JACKSCREW

Gary L. Frederick, Loves Park, Ill., and Robert A. Null, Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 28, 1984, Ser. No. 645,872
Int. Cl.[4] F16H *25/22*
U.S. Cl. 74—424.8 C **20 Claims**



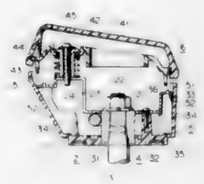
1. A rolling element jackscrew for converting a rotary input to a linear output, said jackscrew comprising:
a threaded nut;
a threaded shaft received coaxially into said nut;
one of said shaft and nut having a spiral thread with a selected pitch angle and a selected number of threads per unit length and a number of thread starts not exceeding two;
the other of said shaft and nut having grooved threads of zero pitch and a different selected number of threads per unit length;
said selected numbers of threads per unit length on said shaft and nut being chosen to provide a plurality of axially spaced nodal points of axial coincidence of said spiral and grooved threads, said nodal points being disposed along at least three axial lines about the circumference of said spiral threads and each of said axial lines including a plurality of said nodal points; and
at least three elongated planetary rollers arranged in a generally equiangularly spaced pattern concentrically between said shaft and nut, said rollers being provided in a number corresponding with and being installed along the axial lines of said nodal points and each including annular means at a plurality of selected ones of said nodal points and along the lines of said nodal points for meshing between said spiral and grooved threads.

4,655,101

STEERING WHEEL ASSEMBLY

Tetugi Endo, and Kazuyoshi Nishijima, both of Fuji, Japan, assignors to Nihon Plast Co., Ltd., Shizuoka, Japan

Filed Jan. 10, 1985, Ser. No. 690,285
Claims priority, application Japan, Jan. 18, 1984, 59-4911[U]
Int. Cl.[4] B62D *1/10*
U.S. Cl. 74—552 **4 Claims**



1. A steering wheel assembly comprising:
(a) a hub section disposed substantially at the center of said wheel and adapted to be secured to a shaft for steering of a vehicle;
(b) a rim section circumscribing said hub section;
(c) a spoke section mechanically connecting said hub section to said rim section and having at least one radial spoke;
(d) a decorative and unstressed cup-shaped lower cover member having an upwardly open peripheral wall extending around said hub section in radially spaced relationship thereto and having an upper peripheral edge;
(e) an upper cover member disposed to close the upward opening of said lower cover member;
(f) an inner reinforcement member secured to said hub section and having a radially outer peripheral section extending radially outward substantially to the inner peripheral surface of said peripheral wall of said lower cover member adjacent to said upper peripheral edge thereof; and
(g) means fixing said outer peripheral section of said inner reinforcement member to said lower cover member peripheral wall adjacent to said upper peripheral edge thereof.

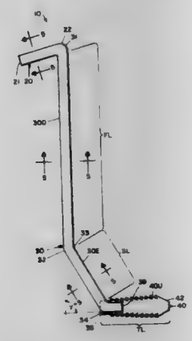
4,655,102

LOCKSMITH TOOL FOR UNLOCKING MOTOR VEHICLE DOORS

Donald L. Parkins, 846 S. 35th Ave., Omaha, Nebr. 68105

Continuation-in-part of Ser. No. 666,152, Oct. 29, 1984. This application Oct. 7, 1985, Ser. No. 784,997
Int. Cl.[4] E05B *19/20*
U.S. Cl. 81—15.9 **11 Claims**

1. For use with motor vehicle doors having an internally positioned lock-rod, a locksmith tool for probing and actuating said internally positioned lock-rod from the vehicle external side and said locksmith tool comprising:
(A) a handle member having a finite handle-length extending between a handle rear-end and a front-end;
(B) an elongate carrier member having a finite carrier-length between an upper and rearward trail-end and a lower and forward lead-end thereof, said carrier-length predominately comprising a trail-ward vertical-length and the remaining and leadward minority of said carrier-length including at least a generally horizontal-length, and said carrier-length being much lengthier than said handle-length; and
(C) a sawteeth member rigidly attached to and extending along and confined to the carrier member nearer to the



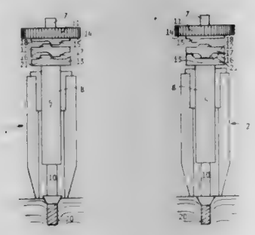
lead-end than to the trail-end, said sawteeth member comprising at least two substantially linearly extending multi-teeth rows, the said two sawteeth rows occupying distinctly different planes, and at least one of said sawteeth rows providing an angular relationship to the carrier member vertical-length within the range of about 75° to 105°.

4,655,103

CLUTCH FOR POWER SCREWDRIVERS

Wolfgang Schreiber; Manfred Ludwig, both of Stuttgart, and Ewald Hald, Filderstadt, all of Fed. Rep. of Germany, assignors to C. & E. Fein GmbH & Co., Stuttgart, Fed. Rep. of Germany

Filed Jan. 13, 1986, Ser. No. 818,220
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1985, 3510605
Int. Cl.[4] B25B *23/157*
U.S. Cl. 81—474 **5 Claims**



1. A clutch for power screwdrivers with a transmission, comprising: a one-piece drive shaft; a gear rotatable about said shaft; a clutch disk mounted on said shaft; an intermediate disk rotatable about said shaft and positioned between said gear and said clutch disk; said intermediate disk having two faces; catch means on one face of said intermediate disk; cam means on the other face of said intermediate disk; cam means on a face of said gear for engaging said cam means on said other face of said intermediate disk; catch means on a face said clutch disk for engaging said catch means on said one face of said intermediate disk; and spring means positioned between said gear and said intermediate disk.

4,655,104

ADJUSTABLE TORQUE WRENCH

Raymond J. Blattner, Palos Hills, Ill., assignor to Ryeson Corporation, Franklin Park, Ill.

Filed Jan. 6, 1986, Ser. No. 816,273
Int. Cl.[4] B25B *23/142*
U.S. Cl. 81—483 **14 Claims**



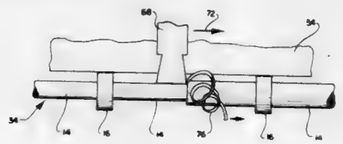
1. In an adjustable torque wrench having a head, a hollow lever arm pivotally connected at one end to said head, a hollow rotatable grip member telescoped over a portion of another end of said lever arm, adjustable means disposed within said lever arm and grip member for preventing pivoting of said head relative to said arm until the torque on said head exceeds a preselected value, means for adjustment of said torque value, and control means positioned within said lever arm and grip member for selectively permitting and preventing the adjustment of the torque value, said control means comprising:
(a) an adjusting screw having one end in threaded engagement with said lever arm to permit relative rotative and axial movement therebetween;
(b) a load screw having one end in threaded engagement with said grip member to permit rotative movement and axial movement therewith;
(c) said adjusting and load screws having other ends disposed in telescoping interlocking relation with each other to permit relative axial movement and prevent relative rotative movement therebetween;
(d) lock means carried in said lever arm for selective engagement and disengagement with said load screw for allowing and preventing the rotation of said adjustment and load screws relative to said lever arm when said load screw is moved axially with said grip member relative to said adjusting screw and lever arm between preselected locked and unlocked positions.

4,655,105

WORKPIECE AND METHOD OF FORMING THE SAME

Bryan L. Maxwell, South Euclid, and James J. Urbanic, Concord, both of Ohio, assignors to Leemax Manufacturing Corporation, Mentor, Ohio

Filed Aug. 31, 1984, Ser. No. 646,898
Int. Cl.[4] B23B *1/00, 5/08*
U.S. Cl. 82—1 C **22 Claims**



1. A method of making a tubular product having a side wall with axially extending cylindrical thin wall sections having a thickness of 0.050 inches or less and annular thick side wall sections between the thin wall sections, the thin wall sections having a combined axial extent which is substantially greater than the combined axial extent of the thick side wall sections, said method comprising the steps of providing an elongated tubular workpiece having a relatively thick side wall and cylindrical outer side surface, axially tensioning the workpiece, said step of axially tensioning the workpiece including applying a relatively large axial tension force to the workpiece and

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reducing the relatively large axial tension force, rotating the workpiece about its central axis at a speed of between 5,000 and 6,000 revolutions per minute, supporting the workpiece against sidewise movement with a pair of rolls having cylindrical outer side surfaces with an axial extent which is at least as great as the axial extent of a major portion of the cylindrical outer side surface of the workpiece, said step of supporting the workpiece with a pair of rolls including engaging the outer side surface of the workpiece with the outer side surfaces of the rolls throughout the length of the outer side surfaces of the rolls, and thereafter reducing the radial thickness of the sidewall of the workpiece to 0.050 inches or less at a plurality of spaced apart locations along the workpiece at areas of engagement of the rolls with the outer side surface of the workpiece while continuing to perform said steps of axially tensioning the workpiece with the reduced tension force, rotating the workpiece at a speed of between 5,000 and 6,000 revolutions per minute and supporting the workpiece with a pair of rolls, said step of reducing the thickness of the side wall of the workpiece at spaced apart locations includes leaving annular sections having a relatively large radial thickness between and projecting radially outwardly from areas of reduced thickness, said step of continuing to support the workpiece includes engaging the annular sections with the outer side surfaces of the rolls with the outer side surfaces of the rolls spaced from the workpiece at the areas of reduced thickness.

4,655,106

TUBE OR PIPE PROFILING APPARATUS

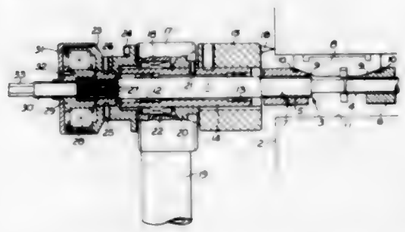
David C. Munn, Abingdon, England, assignor to Tube Runner Limited, Oxfordshire, England

Filed Oct. 4, 1985, Ser. No. 784,788

Claims priority, application United Kingdom, Oct. 11, 1984, 8425711

Int. Cl.⁴ B23B *5/16*

U.S. Cl. 82—4 C **9 Claims**



1. Apparatus for profiling end faces of pipes or tubes, the apparatus comprising:

a shaft, one end of which is insertable into an open end of a pipe or tube to be profiled;

collett means expandable into engagement with an internal surface of said pipe or tube, said collett means including first and second screw threads of opposite hand on said one end of said shaft, first and second nuts in threaded engagement with the respective first and second screw threads, said nuts being movable in mutually opposite directions along said one end of the shaft when said shaft is rotated, and engaging means supported on said nuts for engaging the internal surface of said pipe or tube;

means for moving said engaging means radially of said shaft into and out of engagement with the internal surface of the pipe or tube when said nuts are moved along the screw threads of said shaft by rotation of said shaft;

cutting means rotatably mounted on said shaft for profiling the end face of the pipe or tube;

drive means mounted on said shaft for driving said cutting means, and

a housing for said drive means said housing including means selectively coupling the housing to said shaft for rotation therewith such that torque reaction on said housing from said cutting means can be transmitted through said shaft to said collett means, said shaft being selectively rotatable by rotation of said housing to effect the engagement or disengagement of said collett means, wherein said shaft has a third screw thread thereon and wherein said housing rotatably supports means in threaded engagement with said third screw thread for moving said cutting means, said drive means and said housing longitudinally of said shaft.

4,655,107

TRANSPORT SYSTEM FOR AN AUTOMATIC CABLE PROCESSING MACHINE

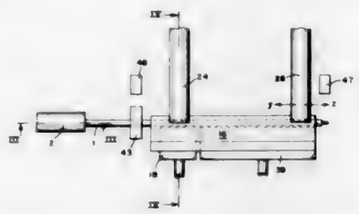
Bernhard Juergenhake, Im Brok 45, 4782 Erwitte-Völlinghausen, Fed. Rep. of Germany

Filed May 3, 1985, Ser. No. 730,348

Claims priority, application Fed. Rep. of Germany, May 4, 1984, 3416432; Aug. 7, 1984, 3429054

Int. Cl.⁴ B65H *51/10*

U.S. Cl. 83—23 **37 Claims**



34. A method of transporting a cable in an automatic cable processing machine comprising

feeding in a cable from a cable supply means;

transporting a cable coming from the cable supply means in the direction of the axis of the cable with a first transporting unit;

surrounding and guiding the cable coming from the first transporting unit with a guide channel;

engaging the channel with a slider, which slider is constructed for moving the cable out of the guide channel through a slot in the guide channel disposed opposite to the slider and adapted to open up upon advancement of the slider toward the slot;

transporting the cable in a direction about perpendicular to the axis of the cable with a second transporting unit disposed near the output end of the guide channel;

receiving the cable in a clamping pinch carrier disposed at the second transporting unit; and

cutting the cable held by the second transporting unit in a cutting station.

4,655,108

TUBE-SQUARING TOOL AND CLAMPING MECHANISM

Imre G. Galos, Downers Grove, Ill., assignor to The E. H. Wachs Company, Wheeling, Ill.

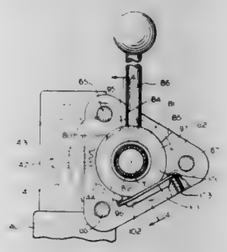
Filed Sep. 16, 1985, Ser. No. 776,353

Int. Cl.⁴ B23B *5/16;* **B25B** *5/08*

U.S. Cl. 82—38 R **3 Claims**

1. A clamping mechanism for releasably holding a tube in a fixed position relative to a cutting tool comprising, a housing having a bore with a lateral opening therefrom, a generally cylindrical member mounted for rotation in said bore and having a handle extending through said lateral opening, closure means associated with the housing and at each side of the bore to capture the rotatable member in said bore and having

a pair of aligned openings for receiving the tube, an opening in said rotatable member, raised surfaces on said rotatable member engageable with the wall of the bore in a first position of the rotatable member to align all of said openings, and a cam



lobe on said rotatable member operable in a second rotative position of the rotatable member and engageable with the wall of the bore to misalign the opening in the rotatable member with said other openings and with said raised surfaces out of engagement with the wall of the bore.

4,655,109

METHOD AND APPARATUS FOR SEVERING COMPARATIVELY LONG WORKPIECES, SUCH AS PIPES, IN PARTICULAR AT HIGH TEMPERATURES

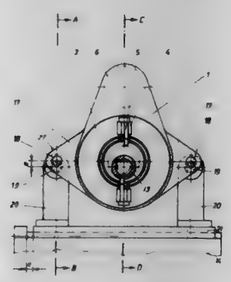
Helmut Rungger, Roitham, Austria, and Ernst Linsinger, deceased, late of Steyrermühl, Austria (by Margarete Linsinger, heir), assignors to Dr. Techn. Linsinger & Co. Gesellschaft m.b.H., Steyrermühl, Australia

Filed Mar. 29, 1982, Ser. No. 363,024

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3113072

Int. Cl.⁴ B23B *5/14*

U.S. Cl. 82—47 **7 Claims**



1. A method for severing comparatively long workpieces of metal material, at high temperatures, in a normal plane relative to the axis at an arbitrary site with the aid of a cutting tool, comprising:

fixedly clamping each workpiece being machined on either side of the cutting plane in fixed tension blocks,

providing a cutting tool which comprises at least one knife firmly inserted in a knife head seated at the end of a hollow working shaft,

causing said at least one knife to travel in a circle about the workpiece,

making a periodically interrupted cut and thereby producing a chip of limited length,

said hollow working shaft, being driven by a motor and operating within a housing mounted on an adjustable transverse carriage of a longitudinal guideway, and

substantially continuously advancing said transverse carriage toward the workpiece axis, while briefly retracting the carriage out of the cut by approximately the measure of the chip thickness following each completion of substantially one revoltuion, and then immediately thereafter returning and transversely further advancing said carriage by the amount of the selected chip thickness.

4,655,110

METHOD AND APPARATUS FOR CUTTING BLEMISHES FROM ELONGATE ARTICLES

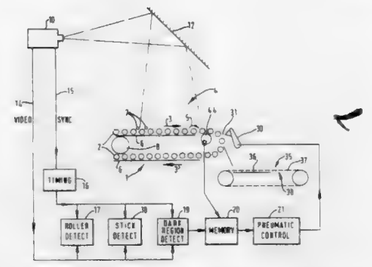
Robert M. Cowlin, and Simon Cowlin, both of Thorpness, United Kingdom, assignors to Lockwood Graders (UK) Limited, Danbury, United Kingdom

Filed Jan. 31, 1986, Ser. No. 824,966

Claims priority, application United Kingdom, Jan. 31, 1985, 8502389

Int. Cl.⁴ B26D *5/30*

U.S. Cl. 83—27 **11 Claims**



11. A method for treating elongate articles, which method comprises

causing the articles to pass through an inspection region with their axes transverse to their direction of motion,

rotating the articles in the inspection region, whereby the combined effect of the movement and rotation of the articles in the region is to tend to render substantially stationary an upper point on each article for at least a period of time during its passage through the inspection region,

scanning the articles in the inspection region using a raster scan television camera,

deriving from the television camera an output indicative of the presence and location on the articles of regions having a shade which differs substantially from that of the remainder of the articles,

actuating cutting devices in accordance with the said output obtained, to sever from the articles, as relatively small pieces, the said regions, and means for separating the relatively small pieces from the remainder of the articles, to thereby remove from the articles the said regions with a shade difference.

4,655,111

FIBER CUTTING DEVICE

James G. Blaker, Des Moines, and Joseph F. Statsney, Indianola, both of Iowa, assignors to Cemen Tech, Inc., Indianola, Iowa

Filed Aug. 12, 1985, Ser. No. 764,488

Int. Cl.⁴ B26D *5/20*

U.S. Cl. 83—356.3 **11 Claims**

1. A device for cutting an elongated multi-strand fiber into a plurality of segments, said device comprising:

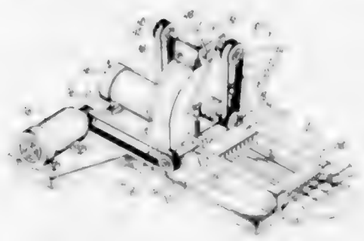
a die block having a feed opening extending therethrough along a feed opening axis for receiving said multi-strand fiber, said die block having a flat cutting surface at one end of said feed opening;

feed means for feeding said fiber through said feed opening toward said cutting surface;

a rotatable cutting blade mounted to rotate about an axis substantially parallel to said feed opening axis of said feed opening, said blade having a cutting edge adapted to pass in sliding frictional engagement with said cutting surface of said die block once during each revolution of said cutting blade so as to cooperate with said cutting surface to cut said fiber exiting from said feed opening;

said feed means comprising a cylindrical roller and a slide block;

said slide block having at least one elongated horizontal groove extending therethrough, said groove having a longitudinal groove axis, a first end adjacent said feed opening and a second end, said groove having an elongated bottom wall forming a slide surface adapted to receive said fiber for longitudinal sliding movement within said groove toward said feed opening;



said slide block further including an arcuate indentation located between said first and second ends of said groove and having an arcuate surface with an axis of curvature extending transversely to said groove axis, said slide surface being approximately tangential to said arcuate surface at a pressure point located between said first and second ends of said groove;

said roller having a roller axis and an outer cylindrical surface, said roller being rotatably mounted about said roller axis and being positioned within said arcuate indentation with said cylindrical surface in close proximity to said slide surface at said pressure point so as to hold said fiber in frictional engagement

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4,655,112

AUTOMATIC MUSIC PLAYING APPARATUS

Tsuyoshi Mitarai, Yokohama, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 562,420, Dec. 16, 1983, abandoned. This application Jun. 20, 1985, Ser. No. 746,940

Claims priority, application Japan, Dec. 30, 1982, 57-232842; Dec. 30, 1982, 57-232845

Int. Cl.[4] G10F *1/00*

U.S. Cl. 84—1.03 **22 Claims**

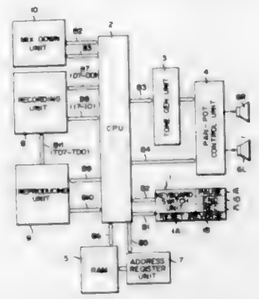
1. An automatic music playing apparatus, comprising:

player operable manual tone information input means for simultaneously inputting a plurality of tone information, each tone information including one pitch information and one ON/OFF information, to be generated simultaneously together with one another;

counter means for outputting timing information when the contents of said tone information change;

memory means for storing said tone information designated by said tone information input means and timing information outputted from said counter means when the contents of said tone information change; and

tone signal generation means coupled to said memory means for simultaneously generating a plurality of tone signals including plural pitches according to the plurality of tone information and the timing information read out from said memory means, and means for sounding said plurality of



tone signals simultaneously in accordance with the read out timing information.

4,655,113

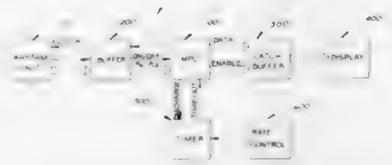
RYTHM RATE AND TEMPO MONITOR FOR ELECTRONIC MUSICAL INSTRUMENTS HAVING AUTOMATIC RHYTHM ACCOMPANIMENT

David A. Bunger, Cincinnati, Ohio; Walter Munch, Ft. Thomas, Ky., and Russell L. Withington, Cincinnati, Ohio, assignors to Baldwin Piano & Organ Company, Loveland, Ohio

Continuation of Ser. No. 143,269, Apr. 24, 1980, abandoned. This application Feb. 4, 1982, Ser. No. 345,798

Int. Cl.[4] G10F *1/00*

U.S. Cl. 84—1.03 **11 Claims**



1. In an electronic musical instrument of the type having means for automatically producing a preselected rhythm accompaniment having a desired tempo and an analog tempo rate control for establishing said desired tempo, the improvement in combination therewith comprising display means including a plurality of numerical display devices for displaying said tempo in numeric characters, digital data processing means for producing a rate determined by said rate control to establish said desired tempo, means responsive to said processing means for causing said display means to display said tempo in numeric characters representing the number of beats per minute, said processing means including hysteresis means for reducing the sensitivity of said rate control when changing tempos so as to reduce jitter in the display of said numeric characters on said display means.

4,655,114

TONE GENERATING APPARATUS

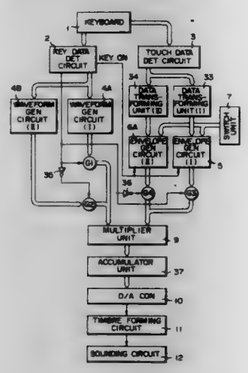
Takuya Sunada, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1984, Ser. No. 633,189

Claims priority, application Japan, Jul. 30, 1983, 58-139823

Int. Cl.[4] G10H *1/02, 3/00*

U.S. Cl. 84—1.19 **4 Claims**



1. A tone generating apparatus comprising:

means for sequentially outputting a plurality of waveform data constituting one waveform period, each waveform data representing one of the portions of a waveform;

means for setting a plurality of timbre data corresponding to at least one designated timbre;

means coupled to said timbre data setting means for generating a plurality of different envelope waveforms;

means for generating touch data in accordance with a way of operation of performance keys;

means for controlling at least one of said plurality of different envelope waveforms as a function of said touch data; and

means for selectively allotting said envelope waveforms for each of the waveform portions so as to obtain a tone data by adapting an allotted envelope waveform to a waveform data corresponding to the waveform portion.

4,655,115

ELECTRONIC MUSICAL INSTRUMENT USING AMPLITUDE MODULATION WITH FEEDBACK LOOP

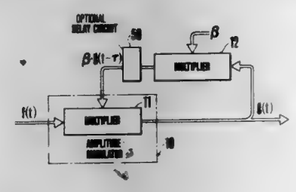
Tetsuo Nishimoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 418,539, Sep. 15, 1982, abandoned, and a continuation of Ser. No. 197,652, Oct. 16, 1980, abandoned. This application Aug. 23, 1984, Ser. No. 644,139

Claims priority, application Japan, Oct. 26, 1979, 54-138534

Int. Cl.[4] G10H *1/08, 1/14*

U.S. Cl. 84—1.19 **34 Claims**



24. An electronic musical instrument comprising:

carrier wave generating means for generating a carrier wave having a frequency corresponding to a selected note;

amplitude modulation means for multiplying said carrier wave by a modulation signal and for delivering the resultant signal as an amplitude-modulated carrier wave to be used for producing a musical tone signal; and

feedback means for generating said modulation signal by multiplying said amplitude-modulated carrier wave by a selected modulation index, the resultant product being delayed and provided as said modulation signal.

4,655,116

FINE TUNING MECHANISM FOR GUITARS AND THE LIKE STRINGED INSTRUMENTS

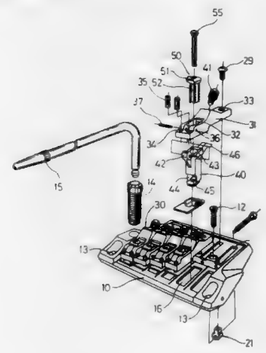
Kazuhiro Matsui, Aichi, Japan, assignor to Hoshino Gakki Co., Ltd., Japan

Filed May 2, 1985, Ser. No. 729,671

Claims priority, application Japan, May 9, 1984, 59-67593[U]

Int. Cl.[4] G10D *3/04, 3/14*

U.S. Cl. 84—312 R **22 Claims**



1. A tuning mechanism for tuning strings of a musical instrument, the mechanism comprising:

a base and means for securing the base to the body of an instrument;

a plurality of saddles mounted to the base next to one another, each saddle being associated with a particular string of the musical instrument; each saddle including means for securing one end of its string to the saddle, the saddle being movable back and forth on the base along a path to vary the effective length of the particular string secured thereto;

a moving means individual to each saddle operable to move the saddle along the path and for holding the saddle on the path even if the saddle is not at the moment secured; and

a securing means individual to each saddle and operable for clamping the saddle to the base and for preventing movement of the saddle along the path.

4,655,117

COMPLETE TRANSPOSABLE NOTATION AND KEYBOARD MUSIC SYSTEM FOR TYPISTS

Lars D. Roose, 10100 Chapala Ct., NE., Albuquerque, N. Mex. 87111

Continuation-in-part of Ser. No. 617,229, Jun. 4, 1984, abandoned. This application Jun. 19, 1985, Ser. No. 746,271

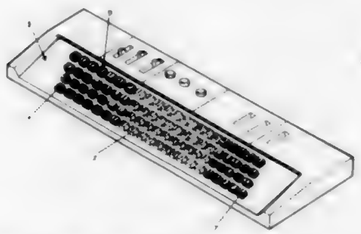
Int. Cl.[4] G10C *3/12*

U.S. Cl. 84—423 B **2 Claims**

1. A keyboard for a musical instrument of a type which includes means for producing musical tones when the keys are touched, wherein each key of the keyboard when pressed plays a particular note, said keyboard comprising a standard type-

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writer keyboard wherein each key has a letter, symbol, or number, and wherein the keys of the standard keyboard are arranged in four horizontal rows of ten keys in each row, and wherein the bottom row is closest to a person playing the instrument, and wherein the row next to the bottom row has its keys offset approximately one-half key-width to the left with respect to the bottom row, and wherein the third row of keys is offset approximately one-quarter key-width from the next to the bottom row of keys to the left, and wherein the fourth and top row of keys is offset to the left with respect to the third row of keys approximately one-half key-width, and wherein the sixth key from the left in the bottom row when pressed plays the note middle C, and wherein the notes played when keys in any row are pressed sequentially from left to right are successively one half-step higher than the note played when the preceding key is pressed, and wherein the first key in all rows, but the bottom row, when pressed play a note one half-step higher than the note played when the key at the right hand end of the next lower row is pressed, and wherein five additional keys are added to the right hand end of each row, and seven additional keys are added to the left hand end of each row, and wherein the additional keys at the right hand end of each row when pressed sequentially from left to right play a note which is one half-step higher than the note played by pressing the key immediately adjacent to the left, and wherein the additional keys at the left end of each row when pressed sequentially from right to left play a note one half-step lower than the note played when the key immediately adjacent to the right is pressed, and wherein, therefore the additional keys on



the left end of the bottom row play lower notes than any keys on the standard keyboard, and wherein, therefore, the additional keys to the right of the top row play notes which are higher than any notes played by pressing any keys of the standard keyboard, and wherein the additional keys, when pressed, on the left end of the second, third and top rows play redundant notes and these additional keys are designated with the same letter or symbol as the key in the standard keyboard which plays the same note, and wherein the additional keys on the right hand end of the bottom, second and third rows also play redundant notes when pressed, and these additional keys are designated with the letter, symbol, or number of the key in the standard keyboard which when pressed play the same note, and wherein the additional keys to the right of the top row are from left to right designated **11**, **12**, **13**, **14**, and **15**, and the additional keys to the left of the bottom row are designated respectively from right to left as I, II, III, IV, V, VI, and VIII, and wherein the music written for the said instrument comprises a standard musical score with a key designation in a ball in a clef, and said key designation being indicated by a letter in the ball, and wherein the letter in the ball designates the specific key which a typist would normally finger using his/her left hand little finger to strike the closest and furthest left key using normal touch typing techniques thereby designating a home row to the typist, and wherein the notes which are normally light in the center would have dark letters, numbers, or symbols which indicate which key the typist should press, and those notes which are normally dark in the center would have light letters in the center, wherein a typist could sit to the instrument, read the letters, numbers, and symbols on the sheet of music and using his/her normal typing expertise immediately begin playing the musical score.

4,655,118

ARRANGEMENT FOR LOCKING A BREECHBLOCK HEAD AT THE REAR END OF A WEAPON BARREL

Werner Bruderer, and Erwin Bohler, both of Zürich, Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Nov. 25, 1985, Ser. No. 801,625

Claims priority, application Switzerland, Dec. 20, 1984, 06064/84

Int. Cl.⁴ F41D *3/06*

U.S. Cl. 89—185 **3 Claims**



1. An arrangement for locking a reciprocatable breechblock head at a predetermined position in a rear end of a weapon barrel defining a weapon barrel axis, said arrangement comprising:

an inner annular flange provided at said rear end of said weapon barrel and possessing teeth forming an inner gear toothing;

an outer gear toothing formed by teeth provided at said breechblock head;

said rear end of said weapon barrel containing an internal circumferential groove arranged to follow said inner annular flange in a forward direction of said weapon barrel;

said teeth of said outer gear toothing provided at said breechblock head being located in said internal circumferential groove and bearing upon said teeth of said inner gear toothing of said inner annular flange when said breechblock head is locked at said predetermined position in said rear end of said weapon barrel;

said internal circumferential groove being bounded by an annular front end face located remote from said inner annular flange;

said annular front end face which bounds said internal circumferential groove, being provided with chamfered portions; and

said chamfered portions provided at said annular front end face bounding said internal circumferential groove, being inclined relative to said weapon barrel axis such that said breechblock head, during the process of being locked at said predetermined position in said rear end of said weapon barrel, is rearwardly displaced along said chamfered portions in order to thereby insure essentially backlash-free locking of said breechblock head at said predetermined position in said rear end of said weapon barrel.

4,655,119

LOW-PRESSURE CASING FOR A BRAKE BOOSTER

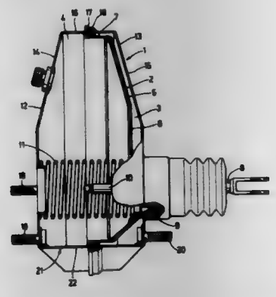
Jochen Burgdorf, Offenbach-Rumpenheim, and Rolf Weiler, Frankfurt-Sindlingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 22, 1981, Ser. No. 286,101

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1980, 3032049

Int. Cl.⁴ F01B *11/02*

U.S. Cl. 92—169 **2 Claims**



1. A low-pressure casing for a brake booster comprising:

two sheet metal casing shells coaxial of a longitudinal axis sealingly interconnected at the casing periphery to form said casing, said casing having a front and a rear end wall spaced from each other;

an axially movable wall sealingly subdividing said casing into a low-pressure chamber and a working chamber;

a first pair of mounting bolts affixed to said rear wall, extending therefrom and adapted to be mounted to an external mounting wall of a vehicle;

a second pair of mounting bolts affixed to said front wall extending therefrom and adapted to be mounted to a flange on a master cylinder, each of said rear bolts lying on a common axis with a respective one of said front bolts, each said common axis lying parallel to the longitudinal axis of said casing;

said casing having two waists defining two casing wall sections, each of said wall sections extending parallel to and substantially on a respective one of said common axes to transmit tractive forces; and

said casing further having circumferential casing sections disposed on each of said front and rear end walls between said waists, each of said circumferential casing sections on said front and said rear wall being disposed on a common cylindrical surface having an axis coinciding with the longitudinal axis of said casing.

4,655,120

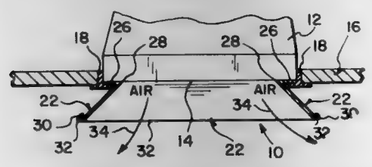
DEFLECTOR SKIRT

Patrick V. Lemmo, 249-24 147th Rd., Rosedale, N.Y. 11422

Filed Dec. 23, 1985, Ser. No. 812,848

Int. Cl.⁴ F24F *13/062*

U.S. Cl. 98—40.05 **2 Claims**



1. A deflector skirt for an air duct having an outlet port, said deflector skirt, when in use, being hanged from a suspended ceiling having a plurality of cross tee members and angle members, said deflector skirt comprising:

four elongated deflector plates, each of said deflector plates being substantially trapezoidal in shape so that each of said deflector plates has two angular short side ends, a top long end and a bottom long end;

four bent edges with one of said bent edges at said bottom long end of each of said four elongated deflector plates; and

four outwardly extending flanges for hanging said deflector skirt from said suspended ceiling, with one of said outwardly extending flanges at said top long end of each of said four elongated deflector plates so that when said deflector plates are assembled together to form said deflector skirt, said assembly being carried out by connecting said angular short side ends of each of said deflector plates to said angular short ends of said deflector plates positioned adjacent thereto, said deflector skirt takes on a frustum-like shape with four trapezoidal-shaped sides, said deflector skirt to be hanged from said suspended ceiling with a first set being two of said outwardly extending flanges, positioned opposite to one another, resting on two of said cross tee members of said suspended ceiling and a second set being two of said outwardly extending flanges, positioned opposite to one another, resting on two of said angle members of said suspended ceiling thereby permitting said deflector skirt to hang from said suspended ceiling and allowing air exhausted from said air duct to be deflected away from said suspended ceiling.

4,655,121

CHIMNEY DEFLECTOR HOOD

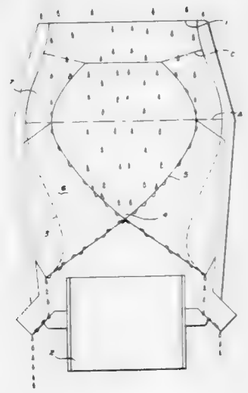
Hans Ludwig, Dreieich, Fed. Rep. of Germany, assignor to Heinrich Brinkmann Anlagenverpachtung GmbH & Co. KG, Dreieich, Fed. Rep. of Germany

Filed Nov. 22, 1985, Ser. No. 800,775

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1984, 3442588

Int. Cl.⁴ F23L *17/12*

U.S. Cl. 98—78 **4 Claims**



1. A chimney deflector hood serving as a cap for an exhaust line comprising:

an outer jacket with an upper and a lower opening, the upper opening being an exhaust outlet and the lower opening being an exhaust inlet, and having an expanding contour from both the upper and lower opening towards a center plane located between said openings;

an inner body held in the outer jacket, having a contour corresponding to the outer jacket which expands from a

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lower base area of the inner body in an upward direction toward the center plane and narrowing toward an upper outlet opening;

the inner body and the outer jacket define an annular space enclosed between said outer jacket and said inner body having a continuously increasing cross-sectional area from the exhaust inlet to the exhaust outlet;

the inner body having an internal surface open toward the upper outlet opening; and

a channel means for fluid drainage, connecting a space within the inner body to an area external to the outer jacket, leading through a wall of said outer jacket.

4,655,122

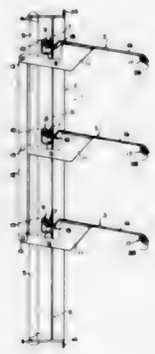
AERODYNAMIC SHAPE WITH IMPROVED LIFT CHARACTERISTICS

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Continuation of Ser. No. 428,621, Sep. 30, 1982, abandoned. This application May 23, 1986, Ser. No. 866,873

Int. Cl.⁴ F24F *13/15*

U.S. Cl. 98—119 **20 Claims**



1. For a damper including a plurality of blades having a predetermined cross-sectional length pivoted for rotation within a peripherally disposed damper frame between a closed position and an open position in response to the movement of air through the damper, an aerodynamically improved damper blade comprising:

(a) a centrally disposed, essentially planar face portion having first and second opposing longitudinal edges, the length of said central portion from said first edge to said second edge comprising approximately 83.75% of the cross-sectional length of the blade;

(b) a leading depending member associated with said first longitudinal edge of the face portion, depending outwardly from the first longitudinal edge of the face portion forming a first angle with respect to the face portion, said leading depending member comprising approximately 10% of the cross-sectional length of the blade and having a height equal to approximately 10% of the cross-sectional length of the blade; and

(c) a trailing depending member associated with said second longitudinal edge of the face portion, depending outwardly from the second longitudinal edge of the face portion forming a second angle with respect to the face portion, said trailing member comprising approximately 6.25% of the cross-sectional dimension of the blade and having a height less than the height of said leading depending member, such that that the central face portion and leading and trailing members combine to define a cross-sectionally inverted, pan-shaped enclosure when the blade is in its open position.

4,655,123

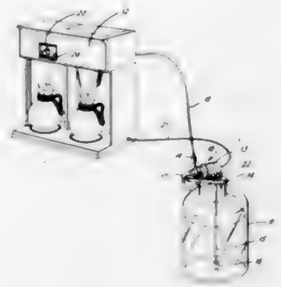
COFFEE MAKER IMPROVEMENT FOR MEASURED CHARGES FROM BOTTLED WATER

W. Charles Schrader, North Hills, Pa., assignor to Tru-Brew, Hatboro, Pa.

Filed Oct. 28, 1985, Ser. No. 792,052

Int. Cl.⁴ A47J *31/00*

U.S. Cl. 99—279 **9 Claims**



8. In an automatic coffee-making machine of the type including a drip coffee maker having water holding and heating means and a hot-water discharge region, a receptacle for holding ground coffee beneath said discharge region to receive the hot water emerging from said water holding and heating means, and a container for receiving the fluid resulting from passage of the hot water through the ground coffee, the improvement for insuring maximum flexibility of use and the best quality of the resulting beverage, comprising:

a bottled water supply from which to obtain water of assured purity and quality,

electrically controlled pump means for pumping water up from the bottom region of said bottled water supply and delivering it up to said water holding and heating means at a predetermined rate of flow,

and means responsive to an electrical initiating signal to initiate the energization of said pump means and sustain its energization the predetermined length of time necessary for the desired charge of water of said water holding and heating means at said predetermined rate of flow.

4,655,124

CARBONATING APPARATUS

Robert P. Child, Portsmouth, England, assignor to THORN EMI Appliances Limited, London, England

Filed Jul. 8, 1985, Ser. No. 752,959

Claims priority, application United Kingdom, Jul. 12, 1984, 8417772

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 99—323.2 **7 Claims**

1. Carbonating apparatus including:

a reservoir for retaining liquid;

a pressure vessel connected to said reservoir;

means for causing liquid to flow from said reservoir into said vessel to fill said vessel to a predetermined level;

means for introducing pressurised gas into the liquid within said vessel to effect carbonation of said liquid;

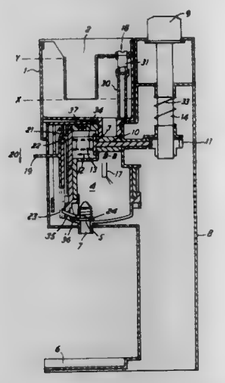
means for venting excess pressure from within said vessel;

outlet means for dispensing said carbonated liquid from said vessel;

a control member;

means for guiding said control member, upon sliding movement thereof, along a rectilinear path;

means to actuate said venting means to vent said excess pressure upon an initial sliding movement of said control member; and



means to actuate said outlet means to dispense said carbonated liquid, upon a further sliding movement of said control member.

4,655,125

APPARATUS FOR PRODUCING BAKED PRODUCTS

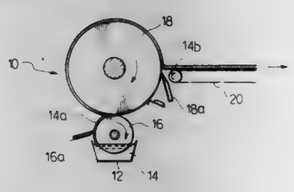
Kunio Ishida, Kawasaki; Satoshi Saito, Tokyo; Akinaka Habuto; Tadahiko Murata, both of Yokohama, and Hisayoshi Oiso, Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Dec. 17, 1985, Ser. No. 809,820

Claims priority, application Japan, Feb. 15, 1985, 60-26502; May 28, 1985, 60-78427[U]

Int. Cl.⁴ A47J *37/00*

U.S. Cl. 99—355 **3 Claims**



1. An apparatus for producing baked products, which comprises an open vessel to store a raw material batter for the product, a transcription roller which is rotary driven and a part of which is immersed in the batter in said open vessel to feed the batter adhered on an outer surface thereof, and a baking roller arranged adjacent to said transcription roller to bake the batter transcribed from said transcription roller to its outer heating surface, and a scraper for peeling off the baked product from said baking roller, said baking roller comprising a stationary tubular body of a magnetic material, which as a longitudinal slit extending from one end to the other end, an exciting coil body arranged on said stationary tubular body, and an outer hollow cylindrical member of a magnetic material, which is rotatably supported in concentric manner to said stationary tubular body and adjacent to and outside of said exciting coil body.

4,655,126

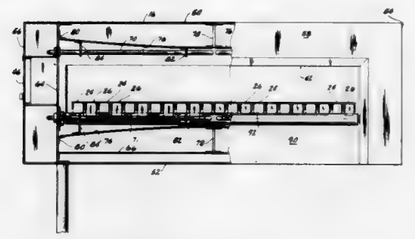
COOKING APPARATUS

Harold D. Wells, 14015 Margaux, Chesterfield, Mo. 63017

Filed May 3, 1985, Ser. No. 730,673

Int. Cl.⁴ A47J *37/04*

U.S. Cl. 99—386 **17 Claims**



1. A cooking apparatus comprising:

(a) a longitudinally extending housing assembly including a heating chamber having an upper portion, a lower portion, opposed side portions, a first end portion defining an entrance opening and a second end portion defining an exit opening,

(b) a heater assembly including an upper and lower heater means, housed in the upper portion of the heating chamber, and control means for the heater means, and

(c) a longitudinally extending conveyor assembly including a plurality of first elongate rails and a plurality of second elongate rails disposed in side-by-side alternating relation with said first rails, each of said rails having a product carrying upper surface, and said rails being disposed below the upper heater means, said conveyor assembly also including means for moving the second rail surfaces in orbital relation relative to the first rail surfaces, said lower heater means being disposed below the first and second rails to heat said rails and provide a hearth-like product carrying surface.

4,655,127

APPARATUS FOR PRODUCING ACID AND HEAT COAGULATED TYPES OF CHEESE

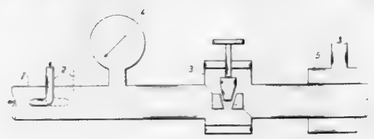
Erik Skovhauge, Vejlo O, and Karl Simonsen, Randers, both of Denmark, assignors to Pasilac A/S, Denmark

Filed Apr. 1, 1985, Ser. No. 718,451

Claims priority, application Denmark, Aug. 10, 1984, 3879/84

Int. Cl.⁴ A01J *25/00*; A23C *19/00*

U.S. Cl. 99—455 **3 Claims**

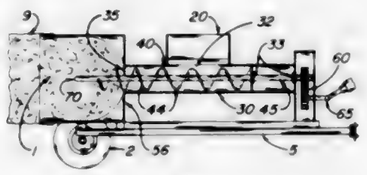


1. An apparatus for producing acid and heat coagulated cheese from starting materials selected from the group consisting of milk, whey, and mixtures thereof by pasteurizing the starting materials, cooling and filtering the pasteurized materials to produce a retentate, heating the retentate, acidifying the retentate to form a mixture of acid-containing retentate, subjecting the mixture to a sudden pressure drop, cooling the mixture, packaging the mixture to form a packaged product, and subjecting the packaged product to secondary cooling, wherein said apparatus comprises a piping system including dosing means for adding a coagulant to the hot retentate to acidify the retentate and a back pressure regulator adjacent and

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downstream of said dosing means for causing the sudden drop of pressure to which the mixture of acid-containing retentate is subjected.

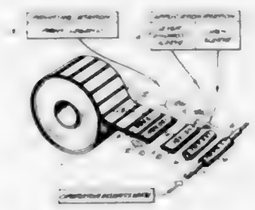
4,655,128
BULK MATERIAL COMPRESSOR
Rodney St. Clair, Rte. 6, Box 6523, Nampa, Id. 83651
Filed Aug. 5, 1985, Ser. No. 762,285
Int. Cl.⁴ B65G 3/04
U.S. Cl. 100—145 **3 Claims**



12

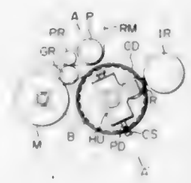
1. Apparatus for loading bulk material into a storage bag, said apparatus comprising:
a hopper;
a substantially horizontal auger tube, said auger tube opening into said hopper for receiving bulk materials therefrom, and said auger tube provided with a discharge port for discharge of the material;
bag support means affixed to said auger tube adjacent said discharge port, said bag support means being of greater cross-sectional diameter than said auger tube; and
an auger rotatably mounted within said auger tube substantially coaxial with said tube, said auger extending beyond said discharge port into said bag support means; the pitch of the portion of said auger extending beyond said discharge port being shorter than the pitch of that portion of said auger contained within the auger tube.

4,655,129
MARKER SLEEVE PROCESSING MACHINE
Gary J. Wirth, Milwaukee; Robert F. Behlmer, Whitefish Bay, and Steven D. Hoyt, Lake Geneva, all of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.
Filed Oct. 11, 1985, Ser. No. 787,211
Int. Cl.⁴ B41F 17/00; B23P 19/00
U.S. Cl. 101—35 **10 Claims**
MICROFICHE APPENDIX INCLUDED
(58 Microfiche, 1 Pages)



1. Apparatus for processing a series of open-ended marker sleeves fed along a feed path comprising, in combination:
a printing station including print means adjacent the feed path for printing at least one character on a marker sleeve that is moved into a printing position adjacent the print means;
a sleeve removal station for removing a printed marker sleeve from the series of marker sleeves;
feed means for feeding a marker sleeve into the printing position, and later, for feeding a printed marker sleeve from the printing position to the sleeve removal station;
means for designating the character to be printed on a marker sleeve;
memory means for storing a program of instructions for reading the designated character, for controlling the feed means to feed the marker sleeve into the printing position, for directing the print means to print the designated character on the marker sleeve, and for controlling the feed means to move the printed marker sleeve to the sleeve removal station where the printed marker sleeve can be removed from the series of marker sleeves; and
digital processing means interfaced to the feed means, to the print means and to the sleeve removal station and responsive to the program of instructions in the memory means for (i) controlling the feed means to move a marker sleeve into the printing position, (ii) for controlling the print means to print the designated character on the marker sleeve, and (iii) for controlling the feed means to move the printed marker sleeve to the sleeve removed station where the printed marker sleeve can be removed from the series of marker sleeves according to the program of instructions in the memory means.

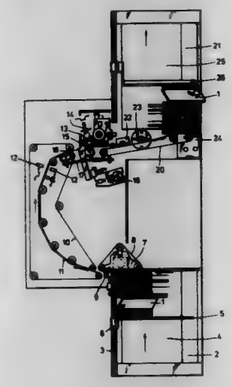
4,655,130
PRINTER
Hiroshi Kyogoku, Kawasaki; Mineo Nozaki, and Masahiro Rachi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 592,742, Mar. 23, 1984, abandoned, which is a continuation of Ser. No. 321,778, Nov. 16, 1981, abandoned, which is a continuation of Ser. No. 121,656, Feb. 15, 1980, abandoned, which is a continuation of Ser. No. 877,686, Feb. 14, 1978, abandoned. This application Jan. 13, 1986, Ser. No. 818,404
Claims priority, application Japan, Feb. 28, 1977, 52-21294
Int. Cl.⁴ B41J 1/30, 9/04
U.S. Cl. 101—93.23 **9 Claims**



1. A printer for printing characters on a recording medium, comprising:
a rotatable printing drum having at one end thereof an opening, having an outer surface with a first portion and a second portion at a location on said drum circumferentially spaced from said first portion, said first and second portions respectively providing thereon a plurality of first sets of type faces and a plurality of second sets of type faces, each said first set being offset with respect to one of said second sets, and being longer in the direction of its rotating axis than its diameter;
hammer means arranged within said printing drum for striking a single type face at a time and having a plurality of hammer heads dimensioned with a sufficient width to define first and second striking portions such that the type faces of one said first sets are arranged to be struck by said first striking portion and the type faces of said second set offset from said one first set are arranged to be struck by said second striking portion;
inking means opposed to said printing drum for depositing ink thereon; and

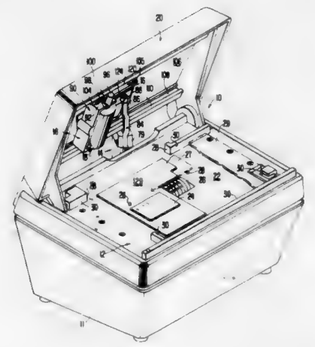
a rotatable roller mounted on said hammer means within said printing drum for projecting said type faces beyond the outer surface of said printing drum into contact with said inking means.

4,655,131
APPARATUS FOR CONVEYING AND PRINTING POSTAL ITEMS
Wilfried Krämer, Berlin, Fed. Rep. of Germany, assignor to Heinrich H. Klussendorf GmbH & Co. KG, Fed. Rep. of Germany
Continuation of Ser. No. 653,308, Sep. 20, 1984, abandoned. This application Nov. 18, 1985, Ser. No. 799,199
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1983, 3336971
Int. Cl.⁴ B41F 21/00, 5/02
U.S. Cl. 101—236 **5 Claims**



1. An apparatus for stamping flat objects of different sizes and thicknesses, particularly postal items, comprising:
a feed table on which said objects are arranged in a vertical or approximately vertical manner;
a separating device located on the feed table, the separating device comprising:
(a) a perforated revolving belt oriented parallel to the leading flat object, the perforated revolving belt moving at a first speed and having means for creating a first vacuum force through the perforations such that the revolving belt lifts the leading object from the feed table by means of the first vacuum force; and
(b) a pneumatic backstop adjacent to the feed table and parallel to the perforated revolving belt, the pneumatic backstop having a means for creating a second vacuum force less than the first vacuum force, the pneumatic backstop capable of separating a second object from the leading object and holding the second object at the feed table;
means for conveying the objects away from the separating device, the conveying means comprising two oppositely revolving conveyor belts oriented parallel to one another for a portion of each revolution forming an inlet located adjacent to the separating device and an outlet, the conveyor belts moving at a second speed greater than the first speed at which the perforated revolving belt moves;
a revolving stamp located adjacent to the outlet of the two revolving belts, the revolving stamp movable between an actuated position and a basic position;
means for detecting the object as it approaches the stamp, the detecting means triggering movement of the stamp;
means for conveying the object away from the stamp; and
a depositing table to which said objects are fed as they are conveyed away from the stamp, the fed and deposited objects being arranged in planes parallel to one another and the feed and depositing tables are successively arranged in a direction perpendicular to said planes, the objects being removed from the feed table at right angles to said direction and are supplied to the depositing table, where the objects are placed on the feed table with their leading edges in alignment in the conveying direction during individual removal and the conveying path thereof between the feed table and the depositing table is horizontal.

4,655,132
ELECTRICALLY POWDERED IMPRINTER
Walter R. Weickert, Petersburg, and Paul J. Foley, Kitchener, both of Canada, assignors to National Business Systems, Inc., Canada
Filed Sep. 27, 1985, Ser. No. 780,969
Int. Cl.⁴ B41F 3/04
U.S. Cl. 101—269 **41 Claims**

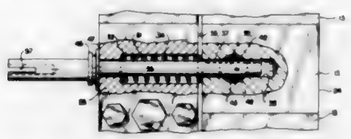


1. A motor operated imprinter comprising:
(a) a base having means for receiving a print bearing element having printing to be imprinted and a print receiving element to be imprinted;
(b) a head means pivotably connected to the base which is pivotable between an open position, providing access to the means for receiving, and a closed position positioning the head means for imprinting;
(c) a movable carriage means mounted in the head means having mounted therein a rolling platen means movable from a home position to a print complete position to complete imprinting and movable from the print complete position back to the home position; and
(d) means for driving the carriage means including:
(i) a motor mounted in the base;
(ii) a transmission means coupling the motor to the movable carriage means comprising a coupling means having a rotatably driven shaft with a vertically extending axis of rotation, a linkage means having a first end pivotably coupled to the rotatably driven shaft and a second end which is coupled to the carriage, said linkage means being pivotable in a vertical plane with respect to the rotatably driven shaft and upon closing of the head means the linkage means pivoting in the vertical plane with respect to the rotatably driven shaft to cause the rolling platen means to move to its home position; and
(iii) control means for activating the motor in response to the closing of the head means and for deactivating the motor after the rolling platen means has reached the print complete position, and activation of the motor causing the rolling platen means to be moved from its

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home position to the print complete position to cause imprinting when the print receiving element and the print bearing element are positioned on the base.

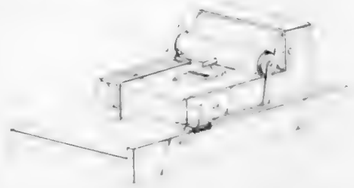
4,655,133
INK FOUNTAIN ASSEMBLY AND SEGMENTED FILM METERING, BLADE
Kevin J. O'Dea, Mystic, Conn., and David J. McCooey, Westerly, R.I., assignors to Harris Graphics Corporation, Melbourne, Fla.
Continuation of Ser. No. 665,961, Oct. 29, 1984, abandoned. This application Jan. 27, 1986, Ser. No. 822,945
Int. Cl.[4] B41F *31/04*
U.S. Cl. 101—363 **7 Claims**



1. An ink fountain for printing presses comprising a fountain roller journaled for rotation, an ink trough adjacent to said roller, a plurality of metering segments mounted on said ink trough for movement generally in a plane toward and away from the fountain roller to form a metering gap, said fountain roller in cooperation with said trough and metering segments defining an ink reservoir for containing ink which coats the surfaces of said fountain roller as said fountain roller rotates, screw thread actuators associated with metering segments, each thread actuator comprising a nut pivotally connected to an associated metering segment for allowing said associated metering segment to pivot in a later plane to align itself with respect to said fountain roller and a screw connected to said trough, said segments having a predetermined clearance therebetween to provide for pivoting of said associated segment, and means for effecting relative rotation between said screw and nut in one direction for moving said associated metering segment toward said fountain roller and in the other direction opposite to said one direction for moving said associated metering segment away from said fountain roller, said nut being formed with a cylindrical exterior surface positioned within a cross-bore in said associated metering segment to provide a pivot connection between said nut and said associated metering segment, said nut have a central axis generally perpendicular to the plane of movement of said metering segment, and said nut and said bore being located entirely between front and rear edges of said metering segment.

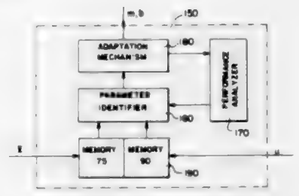
4,655,134
METHOD OF BRANDING A SEMICONDUCTOR CHIP PACKAGE
Charles C. Chen, Houston, Tex., assignor to Thomson Composents-Mostek Corporation, Carrollton, Tex.
Filed Jul. 18, 1985, Ser. No. 756,461
Int. Cl.[4] B41F *17/00*
U.S. Cl. 101—426 **10 Claims**

1. A method for branding a semiconductor chip package comprising:
a. warming the chip package to a temperature of about 95° F. (35° C.) to about 130° F. (55° C.);
b. applying an inked brand to the warmed chip package resulting in a branded chip package;
c. maintaining the branded chip package at a temperature of at least about 80° F. (27° C.) until raising the temperature to a temperature sufficient to cure the ink on the branded chip package; and



d. curing the ink on the branded chip package resulting in a brand having greater clarity and permanency.

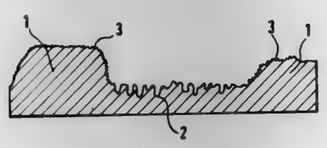
4,655,135
ADAPTIVE CONTROL SYSTEM FOR PRESS PRESETTING
Yakov Z. Brovman, Mystic, Conn., assignor to Harris Graphics Corporation, Westerly, R.I.
Filed Oct. 16, 1981, Ser. No. 311,826
Int. Cl.[4] B41F *31/04, 33/16*
U.S. Cl. 101—426 **4 Claims**



1. Process for presetting the fountains of a printing press based on objective data obtained from optically scanning the material to be printed, comprising the steps of:
a. optically scanning the material to be printed along those areas corresponding to the keys of an ink fountain to obtain objective data regarding the average density of ink coverage in those areas;
b. storing said objective data derived from a predetermined number of the most recent jobs run on a particular printing press;
c. sensing the position of each key of an ink fountain after the keys have been set to the operator's satisfaction as subjective data representing a particular job;
d. storing said subjective data for a corresponding number of the most recent jobs;
e. correlating the objective and the subjective data for each of the jobs accumulated;
f. calculating a regression line representing the best fit among all of the stored jobs;
g. comparing each job to the calculated regression line, and rejecting that job which has the greatest deviation from said regression line in excess of a predetermined acceptable limit;
h. recalculating a new regression line to obtain the best fit among the remaining jobs;
i. comparing each remaining job to the recalculated regression line and rejecting that job which has the greatest deviation in excess of a predetermined acceptable limit;
j. repeating steps h and i until all jobs remaining fit the recalculated regression line within the acceptable limits; and
k. using the redefined regression line to calculate the anticipated key settings for the next job to be run on the press based on the objective data obtained from optically scanning the material to be printed; and

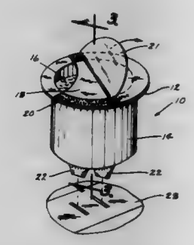
l. presetting the keys of the fountain in accordance with the calculated key settings.

4,655,136
SHEET MATERIAL OF MECHANICALLY AND ELECTROCHEMICALLY ROUGHENED ALUMINUM, AS A SUPPORT FOR OFFSET-PRINTING PLATES
Kurt Reiss, Wiesbaden; Walter Niederstätter, Eltville; Joachim Stroszynski, Wiesbaden; Dieter Bohm, Eltville, and Gerhard Sprintschnik, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 6, 1984, Ser. No. 577,381
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1983, 3305067
Int. Cl.[4] B41N *3/02; C25D 4/44*
U.S. Cl. 101—459 **8 Claims**



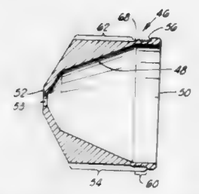
1. A support material in the form of a sheet, a foil or a strip comprising aluminum or an alloy thereof, which has been first mechanically roughened and then electrochemically roughened on one or both surfaces, said aluminum support comprising a first structure comprising about 60–90% of the support surface, which includes a plurality of pits in which the arithmetic means of the distribution of pit diameters D_{a1} is in the range from about 1 to 5 microns, and a second structure, raised in relation to said first structure, having an average base F from about 100 to 1500 microns^2 and comprising about 10–40% of the support surface, said second structure including a plurality of pits in which the arithmetic mean of the distribution of pit diameters D_{a2} is in the range from about 0.1 to 1 micron. .

4,655,137
IGNITER FOR A MODEL ROCKET ENGINE
John O. Boltz, 2 Jackson Cir., Selma, Ala. 36701
Filed Feb. 21, 1986, Ser. No. 831,768
Int. Cl.[4] F42C *19/12*
U.S. Cl. 102—202 **8 Claims**



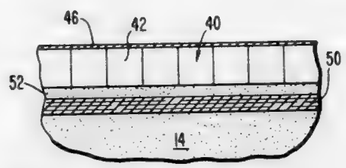
1. In an electrically actuated igniter for use in conjunction with a model rocket including a rocket engine casing having an open lower end containing a propellant charge, the improvement comprising:
a housing including a ring disposed to support the lower end of said engine casing; and a container disposed to receive a quantity of fuel in communication with said propellant charge;
an electrical resistance heating element having a coating of flammable material, said heating element being disposed within said container in contact with said fuel;
a pair of electrically conductive pins, each having one end disposed within said container and an other end extending outwardly therefrom, said one ends being electrically interconnected by said heating element; and
an ignition system attached to said other ends, said ignition system including means for selectively activating said heating element.

4,655,138
SHAPED CHARGE CARRIER ASSEMBLY
John A. Regalbuto, Fort Worth; Philip W. Mayes, Denton, both of Tex., and William C. Behling, Duncan, Okla., assignors to Jet Research Center, Inc., Arlington, Tex. and Halliburton Company, Duncan, Okla.
Filed Sep. 17, 1984, Ser. No. 651,201
Int. Cl.[4] F42B *1/02*
U.S. Cl. 102—307 **11 Claims**



1. A shaped charge case comprising a unitary body having an interior cavity, a substantially open forward end in communication with said interior cavity, an outer surface including a first grooved portion, and having a first shoulder extending radially outward thesefrom beyond said first grooved portion, and a rearward end extending from and of lesser diameter than said first grooved portion.

4,655,139
SELECTABLE DEPLOYMENT MODE FRAGMENT WARHEAD
Earl E. Wilhelm, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 28, 1984, Ser. No. 655,702
Int. Cl.[4] F42B *13/18*
U.S. Cl. 102—494 **5 Claims**



1. A fragmentation warhead, comprising:
a main explosive charge having a longitudinal axis;
first detonating means for selectively detonating said main charge in a selected pattern;
a coaxial secondary explosive layer encompassing the periphery of said main charge;
a coaxial fragment layer encompassing the periphery of said secondary explosive layer;
second detonating means for selectively detonating said secondary explosive layer in a selected pattern;
a detonation wave barrier coaxially disposed between said main explosive charge and said secondary explosive layer, said wave barrier preventing the blast wave from one of

said main explosive charge and said secondary explosive layer from detonating the other of said main explosive charge and secondary explosive layer; and

fuze means for sensing a target and for selectively detonating one of said first and said second detonating means to generate a selected fragment pattern.

4,655,140

PROJECTILE, FOR EXAMPLE FOR HUNTING PURPOSES, AND PROCESS FOR ITS MANUFACTURE

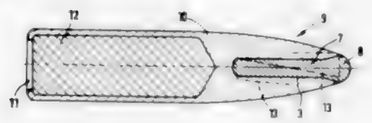
Hans-Ludwig Schirracker, Engelalit 10, Möhnesee-Völlinghausen, Fed. Rep. of Germany

Continuation of Ser. No. 424,359, Sep. 27, 1982, abandoned, which is a continuation of Ser. No. 128,157, Mar. 7, 1980, abandoned. This application Apr. 18, 1985, Ser. No. 724,467

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909471; Mar. 31, 1979, 2912910

Int. Cl.⁴ F42B *11/10*

U.S. Cl. 102—508 **14 Claims**



1. A projectile, comprising:

(a) a body having a tapered front end and a longitudinal axis, said body being formed with an opening extending from said front end along said longitudinal axis;

(b) a plurality of first generally longitudinal notches formed in spaced relationship in said body and extending from said forward end, said notches being inclined at an angle relative to said longitudinal axis and in a direction opposite to a direction of rotation of said projectile; and

(c) a plurality of strips defined by the spaces between said notches, said strips being rolled back upon impact of said projectile on a target, said strips when rolled back each having a front surface lying in a plane forming an oblique angle with a plane perpendicular to said longitudinal axis, said front surfaces serving to enhance rotation of said projectile in said target upon impact.

4,655,141

LOAD HANDLING TROLLEY

Alan Gillson, Oxenhope Nr. Keighley, England, assignor to Joloda Loading Systems Limited, Liverpool, England

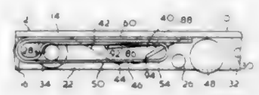
Filed Jul. 30, 1984, Ser. No. 635,841

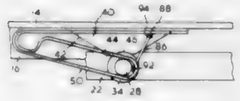
Claims priority, application United Kingdom, Jul. 30, 1983, 8320591; Jun. 16, 1984, 8415408

Int. Cl.⁴ B65G *25/02*

U.S. Cl. 104—307 **21 Claims**

1. A load handling trolley for running in channel tracks comprising at least one bogie assembly, an elongate load engager raisable and lowerable relative to said at least one bogie assembly, ramp-and-roller means which are cooperable to effect said raisable and lowerable movement of said engager relative to said bogie assembly, and positive retention means between said engager and bogie assembly, wherein the positive retention means comprises a device having a first component that is anchored to one of said engager and bogie assembly and at least one other relatively movable component connected to said first component, said movable component having a portion coupled to the other one of said engager and bogie assembly so as to move during relative movement of the engager and bogie assembly.





4,655,142

APPARATUS FOR CORRECTING THE LEVEL AND CROSS LEVEL OF A TRACK

Josef Theurer, Vienna, and Gernot Bock, Aschach/Donau, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jun. 13, 1984, Ser. No. 620,145

Claims priority, application Austria, Nov. 16, 1983, 4036/83

Int. Cl.⁴ E01B *29/04*

U.S. Cl. 104—7.1 **7 Claims**



1. A mobile apparatus for correcting the grade and cross level of a track having two rails, the apparatus being arranged for mobility along the track in an operating direction from successive corrected track sections to uncorrected track sections to be corrected, which comprises

(a) a track lifting assembly including tools for engaging and lifting the track rails and a respective lifting drive connected to the tools and associated with each track rail,

(b) a leveling reference system associated with the track lifting assembly, the reference system including

(1) a reference line associated with each track rail, each reference line having a forward end and a rear end, in the operating direction,

(2) a forward track sensing element supporting the forward end of the reference lines in a respective one of the uncorrected track sections,

(3) a rear track sensing element supporting the rear end of the reference lines in a respective one of the corrected track sections, and

(4) a level sensor associated with each track rail and supported on a respective one of the corrected track sections rearwardly of the track rail engaging and lifting tools for measuring the level of each track rail with respect to the associated reference line, the level sensor generating a control signal responsive to the measured level,

(c) an element for measuring the cross level mounted on each track sensing element, each cross level measuring element generating an output signal responsive to the measured level,

(d) a respective vertical adjustment drive associated with each forward end of a respective one of the reference lines for vertically adjusting each forward end,

(e) a respective signal difference forming unit having one input receiving the output signal of the forward cross level measuring element and another input receiving signal corresponding to a desired superelevation of the associated track rail, the unit emitting a signal corresponding to the difference between the input signals to an associated one of the vertical adjustment drives,

(f) a further signal difference forming unit having one input receiving the output signal of the rear cross level measuring element and another input receiving a signal corresponding to a desired cross level at the rear cross level measuring element, the further unit generating a correction signal corresponding to the difference between the input signals, and

(g) a leveling control receiving the control signal and the correction signal, the control actuating the lifting drives in response to said signals.

4,655,143

ARTICULATED TRUCKS

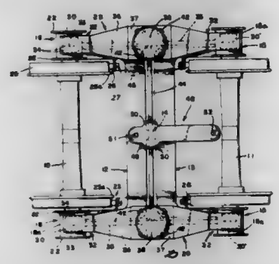
Harold A. List, Bethlehem, Pa., assignor to Railway Engineering Associates, Inc., Bethlehem, Pa.

Continuation-in-part of Ser. No. 948,878, Oct. 5, 1978, Pat. No. 4,455,946, which is a continuation-in-part of Ser. No. 608,596, Aug. 28, 1975, Pat. No. 4,131,069, which is a continuation-in-part of Ser. No. 438,334, Jan. 31, 1974, abandoned. This application Jun. 21, 1984, Ser. No. 623,189

The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.

Int. Cl.⁴ B61F *3/08, 5/14*

U.S. Cl. 105—168 **14 Claims**



1. A vehicle truck assembly comprising: at least two axle-borne wheelsets; main truck framing having a pair of spaced generally parallel load bearing side frame elements; at least one flexible cross-tie interconnecting the spaced side frame elements; a pair of steering arms each having spaced portions journalling an axle-borne wheelset and having load bearing connection with the truck framing in the regions of said spaced portions of the steering arms, each steering arm having a portion extending from its associated wheelset to a common region substantially midway between the two axles; means in said common region pivotally intercoupling said steering arms independently of the load bearing truck framing and providing for coordinated substantially equal and opposite yawing movements of the steering arms and consequent positioning of the associated axles substantially radially of a curved path; resilient means interposed between said framing and at least one of said steering arms resiliently opposing departure of said steering arms from a position in which said wheelsets are parallel; and tow bar means extending generally longitudinally of the truck said tow bar means having an intermediate fulcrum pivotally coupled to said flexible cross-tie in the mid region thereof, with freedom for yawing movements of said tow bar means about said intermediate fulcrum, one end portion of said tow bar means having means pivotally connected with the car body with which the truck is associated, and the other end portion having means pivotally connected to one of said steering arms.

4,655,144

CABIN FOR ACCOMMODATING PASSENGERS

Anton Frech, Weggis, and Georg Riser, Böckten, both of Switzerland, assignors to CWA Constructions SA, Olten, Switzerland

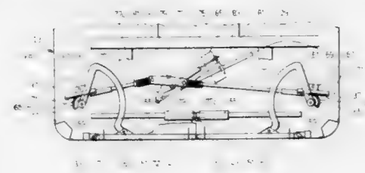
PCT No. PCT/CH84/00060, § 371 Date Dec. 13, 1984, § 102(e) Date Dec. 13, 1984, PCT Pub. No. WO84/04283, PCT Pub. Date Nov. 8, 1984

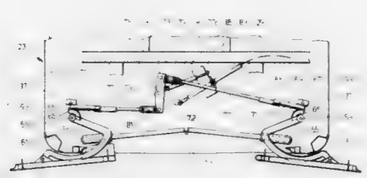
PCT Filed Apr. 24, 1984, Ser. No. 694,395

Claims priority, application Switzerland, Apr. 20, 1983, 2116/83

Int. Cl.⁴ B60N *5/00*; B61D *17/00*; E05F *13/00*

U.S. Cl. 105—341 **22 Claims**





1. A cabin for accommodating passengers for a transport apparatus, such as a cable railway or the like, comprising:

at least one doorway;

at least one door member for closing said doorway;

at least one guide means associated with said at least one door member for translatably guiding said at least one door member along a substantially straight line;

said at least one guide means comprising upper guide means and lower guide means;

said upper guide means defining an upper substantially vertical pivot axis and being pivotably mounted to the cabin to pivot about said upper substantially vertical pivot axis;

said lower guide means defining a lower substantially vertical pivot axis coaxial with said upper vertical pivot axis and being pivotably mounted to the cabin to pivot about said lower pivot axis;

means defining at least one further substantially vertical pivot axis;

at least one pivot arm pivotable about said at least one further substantially vertical pivot axis;

means for pivoting said at least one pivot arm about said at least one further substantially vertical pivot axis;

a hinge connection for connecting said at least one pivot arm to said at least one door member;

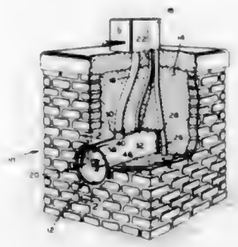
a sensing member for sensing control members of a station of the transport apparatus; and

door actuating means operatively connected with said sensing member for opening said at least one door member when entering said station and for closing said at least one door member when departing said station.

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VOL 1077 ISS 1 AP 7 1987 UMI

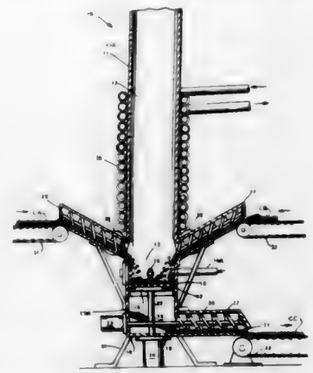
4,655,145
COIN SAFE CONSTRUCTION
John T. Naylor, 4150 Dunkirk, Toledo, Ohio 43606
Filed Dec. 2, 1985, Ser. No. 803,607
Int. Cl.⁴ E05G *1/04*
U.S. Cl. 109—52 **4 Claims**



1. A safe construction comprising:
(a) a cylindrical housing having a closed end and an open end;
(b) a substantially cylindrically shaped drawer having closed ends and an open portion extending therebetween, one of said said closed ends including a closure plate snugly receivable in the open end of said cylindrical housing;
(c) stop means disposed within said cylindrical housing and positioning said closure plate in recessed relation adjacent the open end of said cylindrical housing;
(d) a locking mechanism, including an elongate integral rod having a threaded distal end, said rod rotatably mounted in said closure plate with the distal end of the integral rod extending beyond the opposite end of said drawer, said locking mechanism having a locked position and an unlocked rotatable position; and
(e) an internally threaded means fixed to the closed end of said cylindrical housing for threadedly receiving the threaded distal end of the integral rod of said locking mechanism whereby rotation of the locking mechanism in one direction causes a closure door and associated drawer to be snugly seated and held in a closed recessed position relative the open end of said housing and rotation of the locking mechanism in the opposite direction disengages the distal end of the integral rod from said internally threaded means and releases said drawer from said cylindrical housing.

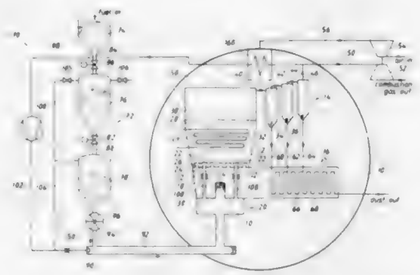
4,655,146
REACTION APPARATUS AND METHOD
Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540
Filed Aug. 1, 1984, Ser. No. 636,680
Int. Cl.⁴ F23G *5/26*
U.S. Cl. 110—346 **18 Claims**

1. A method of burning matter in a reactor comprising:
(a) controllably admitting select amounts of a reaction material to be burned and a fuel for burning said reaction material to a combustion zone of an elongated combustion reactor having at least one walled gas column defining an exhaust region operatively coupled to said combustion zone for receiving and conducting hot gases of combustion from said reaction zone, wherein said gas column is operatively dimensioned so as to cause hot combustion gases flowed thereto from said combustion zone during the combustion of said fuel to resonate at the natural sonic frequency of said gas column,
(b) continuously burning said fuel and said reaction material in said combustion zone and generating and maintaining a gas-dynamic resonating movement of hot gas in said gas column and causing, by means of the resonating movement of said hot gas in said gas column, the inducement of flow of ambient air into said combustion zone so as to sustain said combustion at a high combustion efficiency,
(c) causing reaction material burned in said reaction zone to flow through said reactor downstream of said reaction



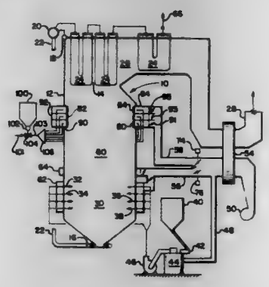
zone and to be subjected to the hot gases of said resonating gas column in travel beyond said reaction zone, and
(d) continuously removing the products of reaction from said reactor beyond said reaction zone.

4,655,147
PLANT FOR THE COMBUSTION OF PARTICULATE FUEL IN A FLUIDIZED BED
Roine Brännström, and Martin Mansson, both of Finspong, Sweden, assignors to ASEA Stal AB, Västerås, Sweden
Filed Feb. 4, 1986, Ser. No. 826,045
Claims priority, application Sweden, Feb. 18, 1985, 8500750
Int. Cl.⁴ F23C *11/02*
U.S. Cl. 110—263 **20 Claims**



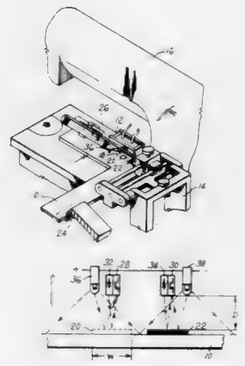
1. A fuel combustion plant for combustion of a particulate fuel material comprising:
a combustion chamber;
a bed of particulate material contained in said chamber;
a bottom in said chamber with nozzles for introducing particulate fuel and nozzles for introducing air for fluidizing said bed and combustion of said fuel;
a compressor for compressing said air;
a pneumatic fuel delivering system having an upstream conduit for delivering particulate fuel and transport gas to a fuel distributor;
a plurality of downstream conduits, each connecting an individual fuel nozzle with said distributor; and,
a pressure drop generating means in each of said downstream conduits between said distributor and said fuel nozzle comprising two tube parts connected in series by a chamber for diverting a flow of said particulate fuel and transport gas such that said generating means has a predetermined coefficient of pressure drop, the coefficients of pressure drop of the generating means in said plurality of downstream conduits being selected to cause said fuel distributor to provide a desired distribution of said fuel among said fuel nozzles.

4,655,148
METHOD OF INTRODUCING DRY SULFUR OXIDE ABSORBENT MATERIAL INTO A FURNACE
Ralph D. Winship, Ottawa, Canada, assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Oct. 29, 1985, Ser. No. 792,392
Int. Cl.⁴ F23D *1/00*
U.S. Cl. 110—347 **5 Claims**



1. In a fossil fuel-fired steam generator having a vertically elongated furnace with a gas outlet, steam generating tubes lining the walls of said furnace, fuel injection ports located in a lower region of the furnace remote from the gas outlet thereof, windbox means associated with the fuel injection ports for supplying combustion air to the furnace, and a gas exit duct opening to the gas outlet of said furnace for conveying gases therefrom, a method of firing said furnace comprising:
a. combusting a sulfur-bearing fuel in a first quantity of air in a first zone in the lower region of said furnace remote from the gas outlet thereof to generate hot product gases;
b. dispersing a sulfur oxide absorbing particulate material in a second quantity of air;
c. injecting the sulfur oxide absorbing particulate material dispersed in a second quantity of air into the product gases in a second zone in an upper region of said furnace between the first zone and the gas outlet of said furnace at at least a first and second elevation within the second zone through a plurality of air streams introduced at each elevation; and
d. directing the sulfur oxide absorbing particulate material containing air streams introduced at the first elevation tangentially to a first imaginary circle within the second zone, and directing the sulfur oxide absorbing particulate material containing air streams introduced at the second elevation tangentially to a second imaginary circle within the second zone, the first and second imaginary circles having differing radii, the step of dispersing a sulfur oxide absorbing particulate material in a second quantity of air into the product gases in a second zone comprising splitting the second quantity of air into a plurality of air streams, the pluality of air streams subdivided into at least a first and a second portion disposed about the periphery of said furnace at the first and the second elevations respectively; entraining the sulfur oxide absorbing particulate material into a carrier gas; and dispersing a portion of the carrier gas with the entrained sulfur oxide absorbing particulate material into each of the plurality of air streams.

4,655,149
OPTICAL SENSOR FOR AUTOMATIC SEWING MACHINE
Nicholas P. Szydlek, Exeter, N.H., assignor to USM Corporation, Farmington, Conn.
Filed Apr. 29, 1986, Ser. No. 858,415
Int. Cl.⁴ D05B *21/00*
U.S. Cl. 112—121.12 **19 Claims**



14. A system for optically sensing encodings appearing on workpiece holders being processed by an automatic sewing machine, said system comprising:
a plurality of means for intermittently illuminating the respective encodings at a predefined frequency;
a plurality of sensing means each located at a distance above a respective encoding appearing on a workpiece holder presented to the automatic sewing machine, the distance of each sensing means above a respective encoding being allowed to vary over a predefined range of distances;
a plurality of means, equally spaced from said plurality of means for intermittently illuminating the encodings at a predefined frequency, for continuously illuminating the encodings on a workpiece presented to the automatic sewing machine so as to thereby provide a steady, non varying bias to at least one of said plurality of sensing means; and
means, responsive to each of said plurality of sensing means, for assigning a binary value to the sensed amount of reflected light from each encoding.

4,655,150
DEVICE FOR ALIGNING CONTOURS OF FABRICS FOR INDUSTRIAL SEWING MACHINES
Antonino Romano, via Chiesa Nuova 22, 03039 Sora (FR), Italy
PCT No. PCT/IT85/00030, § 371 Date Apr. 29, 1986, § 102(e) Date Apr. 29, 1986, PCT Pub. No. WO86/01546, PCT Pub. Date Mar. 13, 1986
PCT Filed Aug. 28, 1985, Ser. No. 871,404
Int. Cl.⁴ D05B *35/10*
U.S. Cl. 112—153 **20 Claims**

1. Device for aligning the contours of two plies for industrial sewing machines, characterized by that it comprises three generally rectangular shaped blades (1, 2, 3) laid one upon the other and hinged at one end to a transversal hinge pin (4) and arranged like a double pliers, wherein the lower blade (1) is supported near a sewing station (5) by a connecting bracket (6) to be fastened to a supporting means of said machine between the hinge area of said hinge pin (4) and the opposite end where

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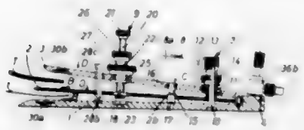
a receiving area of the plies of fabric (t, T) is provided, following means being provided after one another from the hinge pin (4) of the blades (1, 2, 3) onwards:

return spring means (7) of the adjustable type to bring back the blades under working conditions and to press them against the lower blade (1);

means (8) opposing the action of the return spring means (7) in order to bring the blades (1, 2, 3) from the preliminary condition to the working position, thus allowing the insertion of the plies;

angular opening controlling means (9) acting on the blades (1, 2, 3) both in the preliminary and working conditions;

abuting means (28a, 28b, 28c) for defining the aligning position of both plies; and



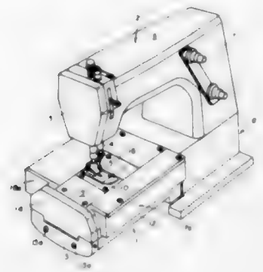
means to make the insertion of the contours and their alignment easier so that after the adjustment of said means according to the requirements of the plies to be sewed and to the processing conditions and after having activated the angular opening means and having inserted in the receiving area the contours of the plies to be sewed together, the angular opening means is deactivated and the aligning means is activated to automatically align the contours of the plies to be sewed to each other so that the contour of one ply is laid upon the contour of the second ply and both plies can successively reach the sewing station generally parallel to each other.

4,655,151

CONVERTIBLE WORK SUPPORT HOUSING FOR A SEWING MACHINE

Adriano Alberti, Pavia, and Giancarlo Miselli, Milan, both of Italy, assignors to Rockwell-Rimoldi S.p.A., Italy

Filed Dec. 16, 1985, Ser. No. 809,558
Claims priority, application Italy, May 27, 1985, 21970/85[U]
Int. Cl.⁴ D05B *73/06*
U.S. Cl. 112—168 **6 Claims**



1. A housing forming the cantilevered bed base of a sewing machine and containing the lower stitching components cooperating with the needle of said machine in forming the stitches, a work support surface comprising a needle plate formed at the upper part on said housing, wherein said housing is detachable from said machine and comprises a tray-shaped base module designed to accomodate said lower stitching components, flat plates for closing the middle part of said work support surface located alongside the opposite edges of said needle plate, a tiltable end-piece mounted on the side of the free end of said base module immediately adjacent to one of said closing flat plates, and interchangeable closing shaped elements defining both the front and rear side walls of said housing and a flat surface part of said work support surface not covered by said closing flat plates and by said needle plate; said interchangeable shaped elements being provided in a plurality of types differentiated from each other by the different shape of said flat surface part thereof and by the roundings carried out in the region of the junction area between said side walls and the flat surface part.

4,655,152

THREAD CLAMP FOR SEWING MACHINES

Eugen Angele, and Ludwig Drechsel, both of Kaiserslautern, Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed May 1, 1986, Ser. No. 859,328
Claims priority, application Fed. Rep. of Germany, May 4, 1985, 3516046
Int. Cl.⁴ D05B *53/00*
U.S. Cl. 112—253 **7 Claims**



1. A thread clamping for sewing machines comprising a helical spring clamp element having successive windings with spaced apart winding areas in which the windings have greater spacing therebetween than the remaining coil windings and define thread-clamps therebetween, a guide holding said spring in a position to define spaced apart thread pull-off guides at said winding areas, said spring having a variable length.

4,655,153

PORTABLE STANCHION FOR SHIPS

Ronald Bel, Local 920 ILA, 514 Bay St., Staten Island, N.Y. 10304

Filed Mar. 27, 1985, Ser. No. 716,558
Int. Cl.⁴ B63B *25/28*
U.S. Cl. 114—75 **3 Claims**



1. A stanchion for use on ship decks handling container loads, said stanchion comprising

a manually operable locking member comprising a pivotable foot lever pivotable about a vertical axis and a cylindrical base having a slot in which said foot lever is moved,

said locking member moveable by said foot lever from a position locking said member to the deck to a position freeing the locking member from the deck,

the base of the locking member bearing against said container to firmly hold containers on the dick of the ship,

a rigid vertical cylindrical stanchion post integrally attached to said locking member, the diameter of said cylindrical stanchion post being smaller than the diameter of the cylindrical base of the locking member such that the stanchion can be grasped by a deckhand while a container firmly supported by the locking member,

said vertical stanchion post further comprising rings for attaching safety ropes thereto,

said locking member fixedly securing said stanchion in place on the deck of the ship whether or not a container is in place,

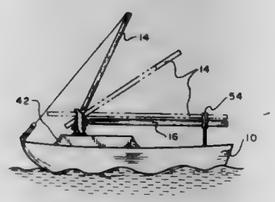
said stanchion being of sufficient weight to be portable so as to be carried between locations on the deck and being of sufficient height to be grasped by a deckhand.

4,655,154

COLLAPSIBLE MAST ASSEMBLY

James B. Leonard, 324 N. Oxford Ave., Ventnor, N.J. 08406

Filed Jan. 27, 1986, Ser. No. 822,997
Int. Cl.⁴ B63B *15/00*
U.S. Cl. 114—91 **8 Claims**



1. In a sailboat having a mast and a boom, the improvement comprising:

a mast support for supporting the lower end of said mast, said mast support including substantially rigid and immovable side and rear walls and a partial lower front wall but otherwise being substantially open at the front thereof, said walls being spaced apart a sufficient distance to allow said mast to be freely moved in a vertical direction into and out of said support, said rear wall being lower than said side walls and terminating in an upper edge which can support said mast for pivotal and slideable motion;

a base plate secured to the bottom of said walls for mounting said mast support on the deck of the boat;

means associated with said base plate and located within said mast support and cooperating with said mast to prevent lateral movement of the bottom of said mast relative to said base plate;

means connecting the forward upper ends of said mast support side walls together;

means carried on the outer surface of said mast support rear wall for securing the forward end of the boom thereto;

whereby a mast supported in a vertical position by said mast support is lowered by first lifting the same slightly until the bottom no longer cooperates with said base plate and then tilting the mast backward where it rests and pivots on the upper edge of the rear wall as the bottom of the mast pivots upwardly above said partial lower front wall and through the opening at the front of the mast support.

4,655,155

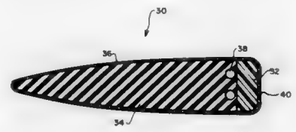
HIGH-SPEED FAIRED TOWLINE

Reece Folb, Laytonsville, Md., and Shelton M. Gay, Jr., Vienna, Va., assignors to The United States of America as represented by the Secretary of the Navy, Bethesda, Md.

Filed Jan. 28, 1985, Ser. No. 695,510
Int. Cl.⁴ B63B *21/00*
U.S. Cl. 114—243 **15 Claims**

1. A faired twoline for towing submerged objects which comrpises:

a leading-edge elongated load-bearing member, said load-bearing member having a cross-sectional shape of a rectangle wherein the top-to-bottom dimension is the longer one, the rectangular corners at the leading edge of said towline are rounded so that 20 to 90 percent of the rectangular side in the leading edge of said towline is linear, and the second-movemnt-of-area about the vertical axis at the centroid of the member is less than the second-moment-of-area about the horizontal axis at the centroid;



a flexible fairing, in continuous contact with said load-bearing member; and

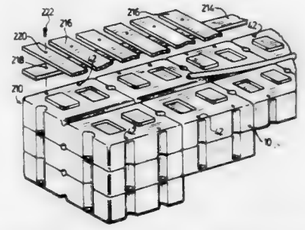
a smooth material which encloses said load-bearing member and said fairing so that a smooth surface is provided for said towline.

4,655,156

FLOTATION SYSTEM

Ferdinand M. Svirklys, Toronto, and Peter G. Lancucki, Scarborough, both of Canada, assignors to Dominion Al-Chrome Corporation Ltd., Toronto, Canada

Filed Feb. 15, 1985, Ser. No. 701,997
Int. Cl.⁴ B63B *35/38*
U.S. Cl. 114—266 **4 Claims**



1. A modular flotation unit useful for vertical assembly with other like flotation units to provide floating structures of desired buoyancy, which comprises:

a generally cubic or box-like shape having upper and lower surfaces, end surfaces and side surfaces and constructed to float on water,

said upper surface having a pair of diagonally-spaced protrusions and a pair of diagonally-spaced depressions complementarily-shaped with respect to said protrusions,

said lower surface having a pair of diagonally-spaced protrusions located complementarily to said depressions in said top surface and a pair of diagonally-spaced depressions located complementarily to said protrusions in said top surface and complementarily-shaped with respect to said protrusions,

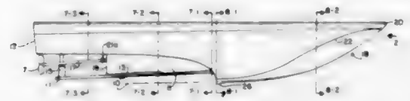
each said end wall having at least one depression extending for substantially the height thereof and terminating in a wall at the upper end and open at the lower end,

each said side wall having at least one depression extending for the height thereof and terminating in a wall at the lower end and open at the upper end,

each said wall having a bore therethrough to enable abutted walls of surface-abutting flotation units to be fastened together by fastening means engaging the aligned bores.

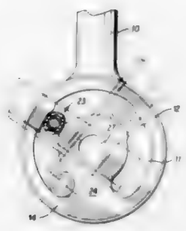
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4,655,157
HIGH SPEED PLANING BOAT WITH CANTILEVERED PLANING SURFACE
Samuel C. Sapp, Ocala, Fla., assignor to Marine Technological Exchange, Inc., Ocala, Fla.
Filed Apr. 5, 1985, Ser. No. 720,290
Int. Cl.⁴ B63B *1/32*
U.S. Cl. 114—291 **19 Claims**



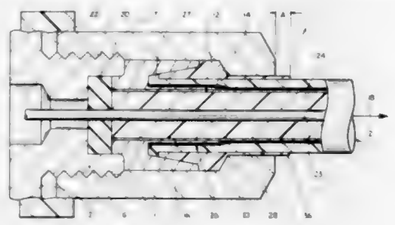
1. A high speed, high efficiency planing boat comprising:
a passenger compartment having a bottom,
a pair of forward hulls depending downwardly from said bottom of said passenger compartment,
said hulls being spaced apart and lying on opposite sides of the longitudinal centerline of said boat,
each said hull having a ski-like surface toward the rear thereof,
a wedge-shaped member having a bottom surface and extending downwardly along said bottom of said passenger compartment with its apex lying between said hulls along the longitudinal centerline of the boat,
a plate of predetermined length,
said wedge shaped member terminating at a distance from the stern of said boat approximately equal to the length of said plate,
said plate extending from at least the rear of said wedge shaped member to near the stern of said boat to provide a planing surface for said boat, and
means for normally holding the said plate in a continuous plane with the bottom surface of said wedge shaped member and cushioning movement of said plate toward said bottom of said passenger compartment.

4,655,158
BOAT ANCHOR INCLUDING RELEASABLE COUPLING MEANS
Larry Holder, Rt. 1, Bremen, Ga. 30110
Filed Feb. 19, 1985, Ser. No. 703,035
Int. Cl.⁴ B63B *21/44*
U.S. Cl. 114—297 **12 Claims**



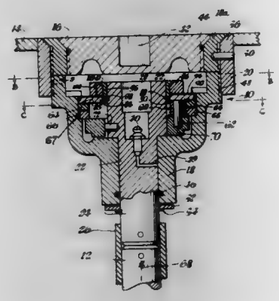
1. An improved boat anchor assembly comprising:
A. at least one penetrating fluke;
B. an anchor shank pivotally attached to said fluke;
C. motion limiting means for limiting the pivotal movement of said shank relative to said fluke;
D. releasable coupling means including pins for releasably interlocking said fluke and said shank into an integral configuration, said coupling means further including a hub located on one end of said shank and rigidly affixed thereto;
E. wherein one of said pins extends transversely thru said fluke and thru the center of said hub of the shank;
F. wherein said motion limiting means includes said hub containing motion limiting stops arresting the pivotal motion of the fluke relative to the shank;
G. wherein one of said pins extends transversely thru said fluke and thru the motion limiting portion of said hub;
H. wherein said motor limiting stops of said hub comprise an arcuate guide slot having a substantially uniform radial dimension having at least one restriction of a reduced radial dimension therein;
I. wherein the ratio of the arcuate guide slot opening area to the opening area of said restriction is from 2 to 1 greater that 1 to 1; and
J. Wherein said pins are of deformable material such that a predetermined force is necessary to move the pins and the flukes attached thereto in the arcuate guide slot through the at least one restriction.

4,655,159
COMPRESSION PRESSURE INDICATOR
Corey J. McMills, Los Altos, Calif., assignor to Raychem Corp., Menlo Park, Calif.
Filed Sep. 27, 1985, Ser. No. 781,386
Int. Cl.⁴ G01L *5/00*
U.S. Cl. 116—212 **18 Claims**



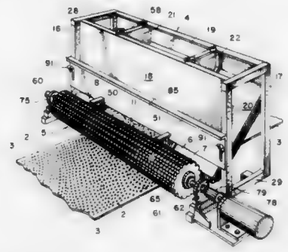
10. A termination, comprising:
a compression member;
means for focusing deformation of the compression member; and
means for axially driving the compression member against the focusing means so as to deform the compression member;
the compression member having a ring-type shape and having an indicator portion at one end thereof, the driving means having a ring-type shape and having an internal diameter on a portion thereof large enough to allow at least part of the indicator portion to be concentrically disposed within the driving means so as to allow the indicator portion to extend therefrom, the compression member having a collapsible portion therein having a strength less than that of the focusing means and said portion of the driving means, the collapsible portion and the indicator portion being constructed so as to form a V-shaped channel therebetween such that when the compression member is pressurized beyond a predetermined amount by movement of the driving means toward the focusing means the collapsible portion collapses against the driving means allowing the compression member to move and thereby fill the V-shaped channel and cause the indicator portion to move at least partially outside of said portion of the driving means.

4,655,160
DECK BOX
David R. Ligh, 700 NE. 26 Ave., Ft. Lauderdale, Fla. 33304, assignor to David R. Ligh, Fort Lauderdale, Fla.
Continuation of Ser. No. 774,385, Sep. 10, 1985, abandoned, which is a continuation of Ser. No. 367,475, Apr. 12, 1982, abandoned. This application Jun. 6, 1986, Ser. No. 873,269
Int. Cl.⁴ F16K *37/00*
U.S. Cl. 116—277 **5 Claims**



1. A deck access box mountable in an aperture in the deck of a ship to operate a below deck mechanical device between two different positions by the turning of a reach rod between two extremities of rotation, comprising:
a tubular housing mountable upright in a deck aperture and having an open upper end;
a spindle rotatably mounted in said housing coaxially therewith and projecting therebelow for detachable connection with a reach rod, the upper end of said spindle being provided with means detachably engageable by tool means for rotating said spindle; and
means for indicating the position of the device relative to its said two different positions comprising:
an upper ring gear and a lower ring gear in said housing coaxial with said spindle, said gears being of the same pitch diameter but having different numbers of teeth, said lower gear being fixed and said upper gear being rotatable relative to said housing;
a flat ring overlying and fixed to said upper gear against rotation relative thereto;
at least two first marker means visible through said housing upper end, one of said first marker means being fixed to the upper surface of said ring;
a planetary gear meshing with said ring gears;
means connecting said planetary gear to said spindle for revolution about the axis of said ring gears on rotation of said spindle to thereby rotate said upper gear;
at least one second marker means cooperating with said two first marker means to indicate the position of the below deck device relative its said two different positions, said second marker means being fixedly supported relative to said housing and visible through said housing open upper end;
ring means accessible through said housing open upper end carrying the other of said first marker means, said ring means being coaxially and rotatively mounted to said ring for angular adjustment relative to said one first marker means about the axis of said ring gears for calibrating said indicating means; and
means for fixing said ring means to said ring in the adjusted position of said other of said first marker means.

4,655,161
APPARATUS FOR DEPOSITING CHOCOLATE CHIPS AND THE LIKE ONTO EDIBLE FOOD PRODUCTS
John M. Thompson, Alton, Ill., assignor to Ralston Purina Company, St. Louis, Mo.
Filed Dec. 13, 1985, Ser. No. 808,465
Int. Cl.⁴ B05C *19/00*
U.S. Cl. 118—24 **34 Claims**



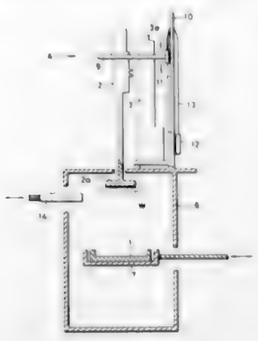
1. An apparatus for depositing chips of chocolate, fudge, and the like, on food products, comprising:
a feed hopper shaped to retain a plurality of chips therein, and having an outlet opening through which the chips are dispensed from said hopper;
a depositor roll mounted for rotation about a longitudinal axis thereof, and having a peripheral surface with a plurality of recessed pockets shaped for receiving the chips therein;
a feed plate having a first end thereof positioned adjacent to the outlet opening of said hopper, and a second end thereof positioned adjacent to the peripheral surface of said depositor roll at an elevation generally commensurate with the elevation of the longitudinal axis of said depositor roll; said feed plate having a length measured between said first and second ends which is greater than twice the largest dimension of one of the chips, thereby defining a dynamic, free-surface reservoir between said hopper outlet opening and the peripheral surface of said depositor roll in which the chips temporarily pool prior to lodging in the pockets of said depositor roll;
means for flowing the chips over said feed plate from the outlet opening of said hopper to said reservoir; and
means for rotating said depositor roll about the longitudinal axis thereof, whereby the chips continuously feed from said hopper along said feed plate, and into the pockets of said depositor roll, and are thence swept upwardly out of said reservoir, and deposited onto food products conveyed therebelow without breaking the chips.

4,655,162
SEMICONDUCTOR DEVICE MANUFACTURING APPARATUS
Masaomi Kameyama, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan
Filed Mar. 1, 1985, Ser. No. 707,449
Claims priority, application Japan, Mar. 12, 1984, 59-46868
Int. Cl.⁴ B05C *3/18, 13/02*
U.S. Cl. 118—50 **3 Claims**

1. A semiconductor device manufacturing apparatus comprising:
a cup containing processing liquid;
vacuum chuck means positioned above said cup and adapted for fixing by suction the upper non-processed face of a wafer to be processed; and
displacing means for displacing at least one of said cup and said chuck means thereby causing relative approaching or

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distancing of said cup and said chuck means, said displacing means having rotary means for causing said cup or



chuck means to effect a planetary motion about an axis perpendicular to the processed face of the wafer.

4,655,163

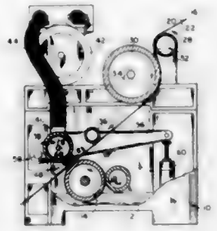
APPARATUS FOR PRESSING CORRUGATED WEB AGAINST GLUE APPLICATOR ROLL

Earl G. Hokenson, 620 N. Douglas St., Appleton, Wis. 54914

Continuation of Ser. No. 636,125, Jul. 30, 1984, abandoned. This application Dec. 9, 1985, Ser. No. 807,103

Int. Cl.[4] B05C *1/08, 13/00*

U.S. Cl. 118—62 **10 Claims**



1. An apparatus for applying glue to the flute tips of the corrugated medium of a web, comprising:

frame means for providing support to the various other parts, having a tank containing glue which tank has an open top;

an applicator roll, journaled in said frame means and partially submerged in the glue in said tank, which roll turns at approximately the same speed as the web moves through the machine;

an air bar, communicating with a source of air, disposed behind the web with respect to said applicator roll, and having outlets for allowing the air to escape from said air bar and impact on the web; and

flexible gasket means attached to the surface of said air bar for directing the escaping air more directly against the web;

such that the flute tips are forced against said applicator roll by the escaping air and a small amount of glue is applied to the flute tips.

4,655,164

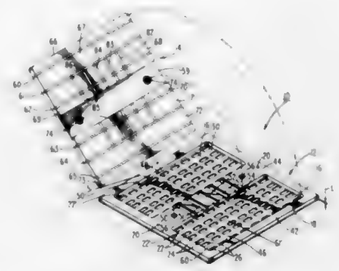
FIXTURE FOR SOLDER PROCESSING INTEGRATED CIRCUIT PACKAGE LEADS

Leonard Nelson, Cherry Hill, and Frank N. Travis, Jr., Waterford Works, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 4, 1985, Ser. No. 804,391

Int. Cl.[4] B05C *13/02*

U.S. Cl. 118—503 **11 Claims**



1. A fixture for supporting integrated circuit packages whose leads are to be solder processed while supported, said packages each comprising a body containing a semiconductor chip and at least one array of leads protruding from the body, said fixture comprising:

a planar base member having a plurality of spaced lead receiving apertures aligned in an array, said member being sufficiently thin relative to the length of said leads such that a portion of the received leads pass therethrough and project therefrom an amount sufficient to be solder processed, said member comprising material substantially inert to acid solder flux and substantially solder repelling when contacted by molten solder, said member in a region adjacent to said aperture array adapted for supporting a package body thereon; and

a planar cover member including means for releasably securing it to the base member spaced from the plane of the apertures for locking said supported packages to said base member, said cover member including a lead processing fluid receiving groove facing said base member region and extending across said cover edge to opposite edge;

said means for releasably securing including means for securing the cover member to said base member in spaced relation thereto for resiliently captivating the packages in the space between the cover and the base in one position of said cover and for fixedly locking the packages in said latter space in a second position of said cover.

4,655,165

DEVELOPMENT APPARATUS FOR LATENT IMAGES ON SUPPORTED SHEETS

Gene F. Day, Cupertino, Calif., assignor to Precision Image Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 763,040, Aug. 6, 1985. This application Nov. 12, 1985, Ser. No. 796,872

Int. Cl.[4] G03G *15/06*

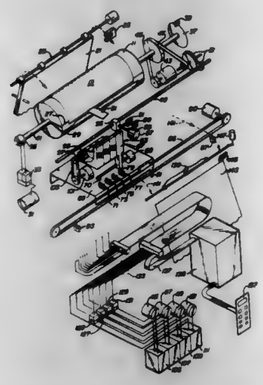
U.S. Cl. 118—647 **20 Claims**

1. Apparatus for applying fluid developer to a latent image on a sheet supported by a backing member comprising,

a shoe with raised peripheral edges conforming to the shape of a supported sheet bearing a latent image stripe, said shoe having a central recessed area surrounded by said edges, said edges contacting said sheet near opposed lateral boundaries of said latent image stripe and having an opening defined therein forming a drain,

pressure means for injecting fluid developer into said recessed area thereby creating a flow of developer to said drain,

means for moving said shoe relative to said sheet, and



means for removing excess developer from said drain and away from said sheet.

4,655,166

APPARATUS FOR PREVENTING OSCILLATION OF RUNNING STRIP

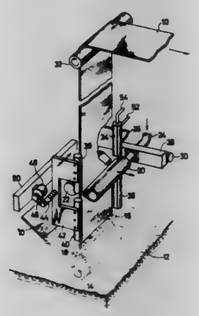
Kazuyoshi Nishimura, Ichikawa; Kenji Tabushi, Chiba; Tadashi Nishino, and Tomoaki Kimura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., and Nisshin Steel Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 215,071, Dec. 10, 1980, abandoned. This application Feb. 1, 1983, Ser. No. 462,972

Claims priority, application Japan, Dec. 26, 1979, 54-168407; Jun. 13, 1980, 55-78902

Int. Cl.[4] B05C *11/00*

U.S. Cl. 118—673 **21 Claims**



1. An apparatus for continuously conveying a self-supporting strip formed of magnetic material, comprising:

means having a plurality of spaced apart members defining a free span for suspending a self-supported strip over the span between the members with the members disposed at opposite ends of the span in contact with the strip, and for continuously drawing the strip longitudinally along a predetermined path across said span at a speed causing deformation of said strip within said span in a plane transverse to the width of said strip and normal to the length of said strip, and causing oscillation of said strip within said span about a plane defined by the width and length of said strip;

magnetic means having a plurality of discrete spaced-apart elements providing a plurality of magnetic poles of alternate polarity, disposed between said spaced apart members, facing and separated by a gap from a side edge of said strip with the separation between successive poles along the side edge being less than the width of the strip, for applying a magnetic field to the strip in the direction of the width of the strip transversely to the direction of said path independently of any source of a magnetic field disposed along an opposite side edge of the strip, thereby tending to attract an edge of the strip in the direction of the magnetic means and for attenuating said deformation and the amplitude of said width of said strip;

means for producing a signal indicative of changes in said gap between the side edge of the strip and said magnetic means; and

means for controlling said magnetic means in response to the signal so as to maintain said gap substantially constant.

4,655,167

APPARATUS FOR MANUFACTURING OF ABRASION RESISTANT MAGNETIC RECORDING PRODUCT

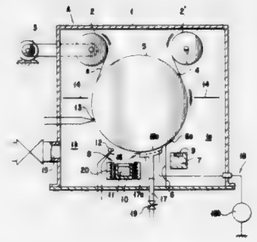
Kyuzo Nakamura, and Yoshifumi Ota, both of Yachimata, Japan, assignors to Nikon Shinku Gijutsu Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 451,733, Dec. 21, 1982, Pat. No. 4,581,245. This application Jun. 18, 1985, Ser. No. 746,169

Claims priority, application Japan, Dec. 24, 1981, 56-207996

Int. Cl.[4] C23C *14/08, 14/26, 14/30*

U.S. Cl. 118—718 **3 Claims**



1. An apparatus for manufacturing an abrasion resistant magnetic recording product comprising a single vacuum container having a partition means for dividing the container into a first vaporizing zone having means for evaporating a magnetic substance, a second vaporizing zone having means for evaporating a lubricant and for providing a narrow passageway for a substrate traveling in the vacuum container between the two zones, wherein an oxidizing means for oxidizing the magnetic substance on the substrate is interposed between the two zones.

4,655,168

CONTINUOUS VACUUM DEPOSITION APPARATUS WITH CONTROL PANELS FOR REGULATING WIDTH OF VAPOR FLOW

Yoshio Shimozato; Tetsuyoshi Wada; Kenichi Yanagi; Mitsuo Kato; Heizaburo Furukawa; Kanji Wake, all of Hiroshima; Arihiko Morita, Sakai; Norio Tsukiji, Sakai; Takuya Aiko, Sakai; Toshiharu Kittaka, Sakai, and Yasuji Nakanishi, Sakai, all of Japan, assignors to Nisshin Steel Co., Ltd. and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 10, 1985, Ser. No. 774,290

Claims priority, application Japan, Sep. 17, 1984, 59-192575

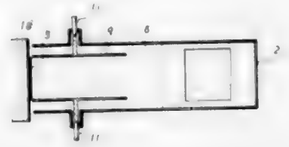
Int. Cl.[4] C23C *13/10*

U.S. Cl. 118—718 **6 Claims**

1. A continuous vacuum deposition apparatus for coating a metal strip which comprises an evacuable deposition chamber

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provided with a seal roll system at the entrance and the exit for entering and egressing of the strip and an evaporation chamber which is placed in said evacuable deposition chamber and which further comprises an evaporation bath and a vapor channel which leads the vapor to the surface of the substrate strip, wherein a pair of control panels for varying the width of vapor flow are provided in said vapor channel adjacent to the



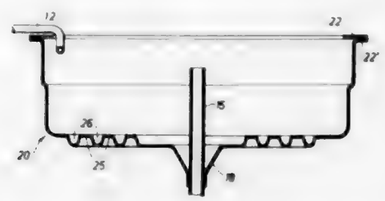
substrate strip, said control panels respectively comprising a lateral board and an intercepting board perpendicularly secured to said lateral board, said intercepting board being operated by an operation rod secured thereto wherein said control panels have means thereon for preventing leak of the metal vapor through the interstices between each of said control panels and the wall of said vapor channel.

4,655,169

TANK FOR GROWING FISH

Arvo Pullola, Bålbäcken, 682 00 Filipstad, Sweden

Filed Feb. 25, 1986, Ser. No. 833,645
Claims priority, application Sweden, Feb. 27, 1985, 8500975
Int. Cl.[4] A01K *63/00*
U.S. Cl. 119—3 **6 Claims**



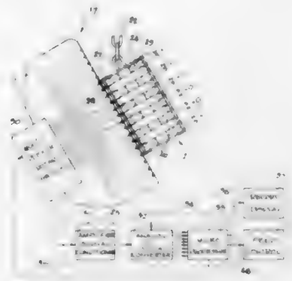
1. Arrangement in tanks or vessels for cultivating living fish, and comprising open tanks with a peripherally disposed inlet and centrally disposed outlet for water, which is given a circulatory movement in the tank while simultaneously approaching the outlet or outlets in a circulatory movement with the individual particles of water following a spiral path of small gradient, characterised in that along the bottom of the tank (**20**) there are arranged one or more spiral grooves or furrows (**26**), separated by similarly spiral ribs or ridges (**25**), the spiral grooves having the same direction for their gradient as spiral paths of the flowing water particles but with a considerably greater gradient than these paths, such that particles of sludge or dirt sinking into the grooves (**26**) are urged or guided by the sides of the grooves and the action of the flowing water towards the centre of the tank (**20**) at a greater radial rate than that of the water particles, the groove (**26**) or grooves close to the centre opening out into, or merging with, a sludge-collecting means, e.g. a depression or funnel (**18,30,40**) at the bottom of the tank.

4,655,170

ANIMAL IDENTIFICATION FEED CONTROL SYSTEM

Daniel R. DaSilva, 234 N. Juanita Ave., Redondo Beach, Calif. 90277

Filed Dec. 2, 1985, Ser. No. 803,241
Int. Cl.[4] A01K *5/02*
U.S. Cl. 119—51 R **7 Claims**



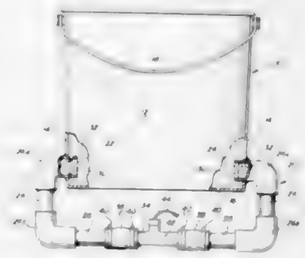
1. An animal identification feed control system comprising the combination of:
- a magnetically encoded identification module carried on the animal;
- a feed bin for holding a quantity of feed;
- a magnetic decoder secured on said bin for detecting coded information carried on said identification module;
- a microprocessor operably coupled to said decoder for receiving signals therefrom and for generating control signals in response thereto;
- a feed control mechanism operably connected to said microprocessor and responsive to said control signals for dispensing feed into said bin;
- said decoder is coupled to said microprocessor by a multiplex device for sequentially decoding detected magnetic signals from said encoded module;
- said encoder module including a coaxial stack of washer permanent magnets arranged in fixed spaced apart relationship;
- each of said magnetic field assigned a given binary number depending upon the polarity of the magnetic force field; and
- the combination of said force fields defining a coded identification of a particular animal.

4,655,171

LIVESTOCK WATERING DEVICE

Anthony J. Tomasovich, P.O. Box 482, St. Charles, Ill. 60174

Filed Nov. 22, 1985, Ser. No. 800,804
Int. Cl.[4] A01K *7/00*; **F24H** *1/06*
U.S. Cl. 119—73 **14 Claims**



1. A livestock watering device, comprising:

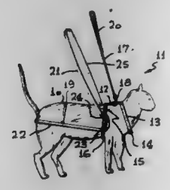
- a bucket-like container, including side wall means and a bottom wall, for holding a quantity of water;
- conduit means including inlet means and outlet means communicating through the side wall means of the container spaced above the bottom wall thereof;
- filter means in the conduit means adjacent said outlet means; and
- heater means for heating water in the conduit means and effecting flow of water out of the container through the outlet means, through the conduit means, and back into the container through the inlet means.

4,655,172

TRAINING HARNESS FOR CATS

Shannon C. King, 7745 Romaine, #9, West Hollywood, Calif. 90046

Filed Apr. 25, 1985, Ser. No. 727,095
Int. Cl.[4] A01K *27/00*
U.S. Cl. 119—96 **1 Claim**



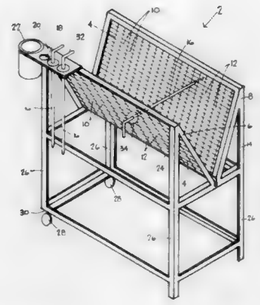
1. A small animal training harness urging an animal to walk in a forward direction during a training procedure comprising the combination of:
- a chest harness having an elongated back or body strap terminating at its opposite ends with a chest strap and a neck strap respectively, said chest strap and said neck strap being joined together solely by said back or body strap;
- said chest strap adapted to encircle the chest of the animal immediately behind the forelegs and said neck strap adapted to encircle the neck of the animal immediately ahead of the forelegs;
- a leash detachably connected to a midsection of said back or body strap midway between its opposite ends for controlling direction of the animal;
- an endless control strap trained about the rear of the animal and slidably guided on said chest strap to extend substantially parallel to said leash for forceably urging the animal forward during the training procedure;
- said endless control strap includes a body loop portion extended about the opposite sides of the body of the animal from its rear to said chest strap and a handle loop extending in a reverse upward direction from said chest strap to terminate in a hand grip end in spaced relationship to said leash;
- guide means slidably carrying said control strap on opposite sides of said chest strap comprising a pair of spaced apart retainers on opposite sides of said chest strap separated by said back or body strap movably holding said control strap on said chest harness;
- each of said chest and neck straps includes a closure means for detachably coupling the opposite ends of said respective straps so as to constitute an adjustment means; and
- said leash and said endless control strap are held in the hands of a trainer in spaced apart parallel relationship wherein manipulation of said leash applies a load force about the neck of the animal forward of its legs to lead the animal in a preselected forward direction and independent manipulation of said endless control strap applies a load force to the hind end of the animal beneath its tail to forceably urge the animal forward under tension in said preselected direction.

4,655,173

STOCK FOR RESTRAINING AN ANIMAL

Charles R. Pope, Conn, Canada, assignor to Daniel C. Pope, Durham, Canada

Filed Oct. 24, 1985, Ser. No. 790,875
Claims priority, application Canada, Nov. 13, 1984, 467661
Int. Cl.[4] A61D *3/00*
U.S. Cl. 119—103 **16 Claims**



1. A stock for restraining an animal comprising a grid having two sides and a V-shaped cross-section with filaments of said grid defining numerous openings therein, means to support said grid, and rods of appropriate thickness and length to extend through said openings on either side of said grid in order to restrain said animal between said rods and said grid.

4,655,174

HOT LIQUID GENERATOR WITH CONDENSATION AND INSTALLATION INCORPORATING THIS GENERATOR

Jean P. R. Fillios, 49, Rue Pereire, 78100 Saint Germain-en-Laye, France

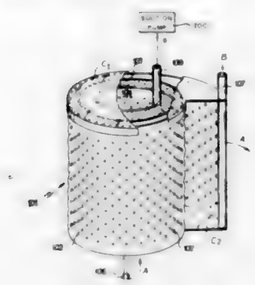
Continuation-in-part of Ser. No. 543,146, Oct. 18, 1983, abandoned, which is a continuation-in-part of Ser. No. 317,491, Nov. 2, 1981, abandoned, which is a continuation of Ser. No. 144,279, Apr. 28, 1980, abandoned. This application Jan. 17, 1986, Ser. No. 819,617
Claims priority, application France, Apr. 26, 1979, 79 10656; Jun. 25, 1979, 79 16196; Oct. 25, 1979, 79 26525; Nov. 30, 1979, 79 29518
Int. Cl.[4] F22B *21/26, 21/28*
U.S. Cl. 122—261 **5 Claims**

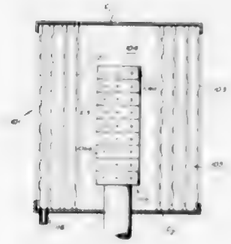
1. In an installation incorporating a hot liquid generator with steam condensation including a pair of spaced parallel metal sheets spirally wound with spaced turns about a vertical central axis to define hollow spiral wall means; a pair of continuous planar end closure members cooperating with opposite ends of said spiral wall means to define a first spiral passage between successive spaced turns of the wall means and a central combustion chamber communicating with said first spiral passage, said sheets being sealed together at their upper and lower ends to define a second spiral passage, and said first and second spiral passages extending continuously between said end closure members, the outer portion of said second passage being adapted for connection with a fluid inlet and the inner portion of said second passage being adapted for connection with a fluid outlet; burner means including a plurality of burner elements axially arranged within said combustion chamber for heating said chamber along the vertical dimension thereof; blower means connected with the outer portion of said first passage for drawing combustion gases from said combustion chamber through said first spiral passage; and means for removing condensed steam from said first spiral passage, the improvement wherein said installation comprises

(a) suction pump means connected with the inner portion of

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said second passage for circulating a liquid through said second passage from the fluid inlet to the fluid outlet, said liquid being heated by heat exchange from said combustion gases through said spiral wall means;





(b) a spacing between successive turns of said spiral wall means which decreases in the direction from the inner portion toward the outer portion of said spiral wall; and

(c) the surfaces of said spiral wall means defining said first passage containing a plurality of local deformations evenly distributed thereon.

4,655,175

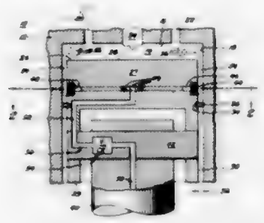
STEAM PURGE OF A PISTON/CYLINDER GAP IN A DIESEL ENGINE

Gary L. Leonard, Sitterly Rd., Apt. 89C, Clifton Park, N.Y. 12065, and Sanjay M. Carrea, 1091 Mohawk Rd., Schenectady, both of N.Y. 12309, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 27, 1986, Ser. No. 822,500

Int. Cl.⁴ F02M *25/02*

U.S. Cl. 123—25 C **17 Claims**



1. In an internal combustion engine comprising a block defining at least one cylinder including a head surface and a wall surface; a piston slidingly mounted in said cylinder including a crown having a crown surface adjacent said cylinder head surface and a sidewall surface spaced from said cylinder wall surface by a gap; sealing means circumferentially surrounding said piston sidewall surface and spaced from said crown surface for establishing a compression seal between said piston and said cylinder; the combination of:

said piston crown further defining a first chamber;

means situated in said piston sidewall surface between said sealing means and said piston crown surface for conducting a vapor between said first chamber and said gap;

means for conducting a liquid into said first chamber and containing said liquid under pressure in said first chamber such that said liquid is vaporized by the heat in said cylinder and said vapor seeps through said vapor conducting means and purges said gap between said piston sidewall surface and cylinder wall surface.

4,655,176

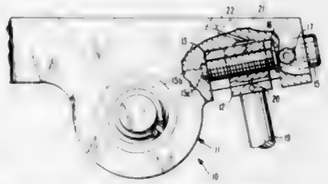
ADJUSTABLE RATIO ROLLER ROCKER FOR INTERNAL COMBUSTION ENGINES

Kevin A. Sheehan, 1509 Weaverly Dr., Petaluma, Calif. 94952, assignor to Kevin A. Sheehan, Petaluma, Calif.

Filed Dec. 5, 1985, Ser. No. 804,911

Int. Cl.⁴ F01L *1/34*

U.S. Cl. 123—90.16 **2 Claims**



1. An adjustable ratio roller rocker for internal combustion engines, comprising, a body, a sliding pushrod seat received in said body, a bolt received in said sliding pushrod seat, a pushrod received in said sliding pushrod seat and said sliding pushrod seat includes a threaded opening that receives said bolt, and the rotation of said bolt causes said sliding pushrod seat to traverse a recessed opening in said body.

4,655,177

ROCKER ARM SUPPORT ASSEMBLY

Larry Wells, Columbus, and James D. Baugh, Greensburg, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 28, 1985, Ser. No. 749,753

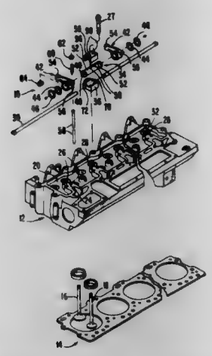
Int. Cl.⁴ F01M *11/02*

U.S. Cl. 123—90.36 **31 Claims**

1. A support assembly for mounting at least one rocker arm rotatably journaled on a cylindrical shaft on an internal combustion engine for operating a valve connected with an engine cylinder in response to actuation by a push rod and an engine cylinder head having a locating means for accurately positioning the support assembly relative to the engine valves, said support assembly comprising:

(a) pedestal means for engaging the shaft and securing the shaft to the engine head; and

(b) pedestal positioning means located on said pedestal means to extend downwardly therefrom for positively engaging the corresponding location means of the head for positioning said pedestal means so that said shaft is in



substantial alignment with the longitudinal axis of the cylinder head.

4,655,178

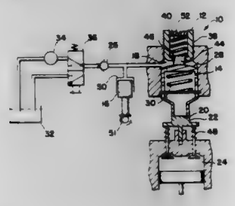
ANTI-LASH ADJUSTER

Vincent A. Meneely, 9837 McKinnon, R.R. No. 10, Langley, British Columbia, Canada V3A 6X5

Filed May 8, 1985, Ser. No. 732,164

Int. Cl.⁴ F02D *9/06*

U.S. Cl. 123—321 **10 Claims**



1. A compression relief engine brake for internal-combustion engines, comprising:

an engine having an engine oil pump, exhaust valves, and means for actuating the exhaust valves;

a fluid cavity for accepting engine oil under engine oil pressure;

means for supplying engine oil under normal pressure to the fluid cavity;

a slave piston having a predetermined surface area exposed to the fluid cavity, mounted for reciprocating motion within the fluid cavity, wherein the slave piston has a retracted position defining a maximum clearance between one end of the slave piston and the exhaust valve actuating mechanism and an extended position for reducing the clearance between the end of the slave piston and the exhaust valve actuating mechanism;

means for biasing the slave piston to the retracted position under a predetermined retracting force sufficient to prevent extension of the slave piston upon application of the engine oil at normal pressures to the fluid cavity;

means for applying a supplemental force which does not exceed the predetermined retracting force over a limited distance to the surface of the slave piston wherein the resultant force due to the force imposed by oil pressure within the fluid cavity acting on the predetermined surface area of the slave piston and the supplemental force exceeds the predetermined retracting force so that the slave piston is biased to the extended position over the limited distance through which the supplemental force acts; and

means for temporarily trapping the oil in the fluid cavity so that displacement of the slave piston in the direction of the extended position is maintained due to the incompressibility of the temporarily trapped oil.

4,655,179

METHOD AND APPARATUS FOR CONTROLLING AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINE

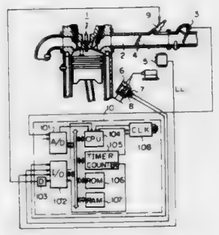
Toshimi Kashiwagura, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 22, 1985, Ser. No. 757,650

Claims priority, application Japan, Aug. 14, 1984, 59-168802

Int. Cl.⁴ F02D *5/00*

U.S. Cl. 123—326 **24 Claims**



1. A method for controlling the air-fuel ratio in an internal combustion engine having a throttle valve therein, comprising the steps of:

detecting a transition of said engine from a fuel cut-off state to a fuel cut-off recovery state;

measuring a duration period after the transition from the fuel cut-off state to the fuel cut-off recovery state;

detecting an acceleration state of said engine;

calculating a fuel enrichment in accordance with the measured duration of said period, when an acceleration state is detected in said engine; and

incrementing fuel to be supplied to said engine by said fuel enrichment.

4,655,180

ADJUSTING DEVICE FOR ADJUSTING A STOP COUPLED WITH A CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

Peter-Josef Bauer, Bühl; Erik Männle, Oberkirch; Kurt Rapp, Bühl; Hans-Peter Schemel, Achern, and Lothar Schmidt, Bühl, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 24, 1986, Ser. No. 832,189

Claims priority, application Fed. Rep. of Germany, May 30, 1985, 3519324

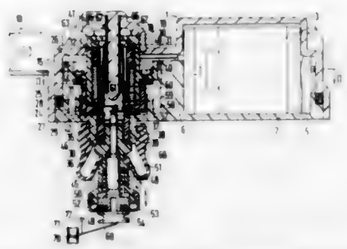
Int. Cl.⁴ F02M *3/07;* **F02D** *41/00*

U.S. Cl. 123—361 **5 Claims**

1. A control device for an internal combustion engine adapted to actuate a throttle valve in an intake manifold comprising power means arranged to transform rotary motion through plural gear means into linear motion, one of said gear means having a rotatable hub portion threadly engaging gear means of a spindle, spaced electrical wiper means including electrical contacts carried by said spindle means projecting from a cap member into said hub means and said spindle, said

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last named means having oppositely disposed electrical contact paths which are engaged by said wiper means and stop means



to prevent locking of said gear means during linear movement of said spindle.

4,655,181

AIR-FUEL RATIO CONTROL SYSTEM

Kiyoshi Ohtaki, Fuchu, and Kazuo Hara, Musashino, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1985, Ser. No. 787,416
Claims priority, application Japan, Oct. 22, 1984, 59-222627
Int. Cl.⁴ F02M *7/00*; F02B *3/00*
U.S. Cl. 123—440 **8 Claims**



1. In a vehicle having an air-fuel ratio control system for an internal combustion engine having an induction passage, means for supplying air-fuel mixture to the engine via the induction passage, an electromagnetic valve for correcting the air-fuel ratio of the air-fuel mixture supplied by the supply means, an O_2 sensor for detecting oxygen concentration in exhaust gases of the engine, an ignition pulse generator for producing an engine speed signal, a coolant temperature sensor for sensing temperature of coolant of the engine, and a feedback control circuit including comparator means for comparing the output of the O_2 sensor with a reference value and for producing an output signal responsive to the comparison, the feedback control circuit including pulse generating circuit means responsive to the output signal of the comparator means for generating first pulses having a duty ratio which is dependent on the output signal of the comparator means, the first pulses being for driving the electromagnetic valve to correct the air-fuel ratio, the improvement comprising:

an engine restart detecting means including an engine speed detecting circuit for producing a restart signal when the engine speed signal is below a predetermined value;

second pulse generating means responsive to a signal of the coolant temperature sensor for producing second pulses having a duty ratio which is dependent on the coolant temperature;

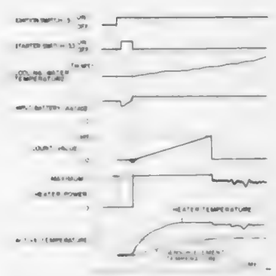
switching means responsive to the restart signal for exclusively supplying the second pulses to the electromagnetic valve, the second pulses operating the electromagnetic valve dependent on the coolant temperature so as to prevent extreme enrichment of the air-fuel mixture.

4,655,182

METHOD AND SYSTEM FOR INTERNAL COMBUSTION ENGINE OXYGEN SENSOR HEATING CONTROL WHICH PROVIDE MAXIMUM SENSOR HEATING AFTER COLD ENGINE STARTING

Jiro Nakano; Takao Ishibashi; Takao Akatsuka, and Mamoru Takata, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 30, 1984, Ser. No. 666,388
Claims priority, application Japan, May 7, 1984, 59-090679
Int. Cl.⁴ F02D *41/14*
U.S. Cl. 123—440 **8 Claims**



1. A method for controlling electrical power supplied to an electrically powered heater incorporated in an oxygen sensor element in an exhaust system of an internal combustion engine, said heater being adapted to heat oxygen sensing elements such as electrodes and exhaust gas dispersing layers of said oxygen sensor when said heater is supplied with electrical power, wherein the method comprises:

determining the temperature of said engine at the time of starting up the engine, and only if the temperature of said engine at the time of starting is less than a certain value, providing said heater with electrical power to the maximum practicable amount for a certain continuous time duration after said engine is started up.

4,655,183

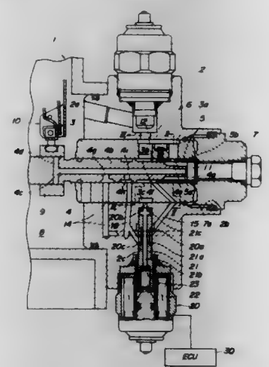
DISTRIBUTOR-TYPE FUEL INJECTION PUMP HAVING INJECTION RATE CONTROL FUNCTION FOR INTERNAL COMBUSTION ENGINES

Shigeo Taira, and Toru Ishibashi, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1985, Ser. No. 775,125
Claims priority, application Japan, Sep. 19, 1984, 59-140926[U]
Int. Cl.⁴ F02M *41/12, 59/08*
U.S. Cl. 123—449 **5 Claims**

1. In a distributor-type fuel injection pump for an internal combustion engine having a plurality of cylinders and a plurality of fuel injection valves for injecting fuel into respective ones of said cylinders, said fuel injection pump including a plunger arranged for concurrent reciprocating and rotative motion in response to rotation of said engine to perform pressure delivery and distribution of fuel into said cylinders of said engine, said plunger having a first portion and a second portion having different diameters from each other, a first pump working chamber defined by said first portion, a second pump working chamber defined by said second portion, a plurality of fuel delivery passageways arranged for communication with said first pump working chamber and leading to respective ones of said fuel injection valves of said engine, a communication passageway arranged for communicating said second

pump working chamber with said fuel delivery passageways, a drain passageway arranged for communicating said communication passageway with a zone under a lower pressure of said pump, a control sleeve displaceable relative to said plunger for determining the timing of fuel injection end, a selector valve arranged to selectively close and open said drain passageway, and control means responsive to operating conditions of said engine for driving said selector valve to selectively assume a closed position and an open position in which said drain passageway is closed and opened, respectively, whereby fuel is pressure delivered to said fuel injection valves from one or both of said first and second pump working chambers, depending upon whether said selector valve assumes said closed position or said open position, the improvement comprising means for increasing a delivery stroke to be executed by said plunger, when said control sleeve assumes a predetermined position relative to said plunger and at the same time said selector valve is controlled by said control means to assume a predetermined one of said closed position and said open position.

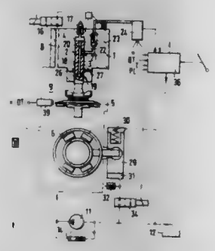


4,655,184

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Konrad Eckert, Stuttgart; Hermann Eisele, Vaihingen-Enz; Helmut Laufer, and Max Straubel, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 382,002
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1981, 3123325
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—458 **20 Claims**



1. In a fuel injection apparatus having at least one pump work chamber enclosed within a cylinder in a housing by a pump piston, said pump work chamber being connectable via at least one supply line with a fuel injection location said pump work chamber being connectable with a fuel inlet conduit having a fuel quantity metering device which controls fuel flow from a fuel supply source to said pump work chamber, the improvement wherein:

said pump work chamber being connected continuously to said fuel inlet conduit

a relief conduit having a flowthrough cross section that leads away from said pump work chamber, the flowthrough cross section of said relief conduit being openable upon a preset pressure stroke of said pump piston during a remaining stroke thereof by a control edge guided in synchronism with the movement of the pump piston and closeable once again beyond an intake stroke corresponding to said remaining stroke of the piston;

said fuel quantity metering device is embodied as an electrically actuatable valve, which can be brought into an open position or closed position depending upon triggering and is switchable by a control unit in such a manner that said fuel quantity metering device is already opened prior to the closure of the relief conduit during the intake stroke of the pump piston and is closed after a metering pump intake stroke of the pump piston following the closure of the relief conduit depending upon the fuel quantity to be injected; and

a contoured track that periodically actuates said pump piston; said contoured track is embodied such that a change in stroke of said pump piston per unit of movement of said contoured track during the intake stroke of said pump piston is substantially less than that during the compression stroke of the pump piston.

4,655,185

PRESSURE REGULATING DEVICE

Gerald Showman, 440 E. Georgia Ave., Connellsville, Pa. 15425

Division of Ser. No. 691,979, Jan. 17, 1985, Pat. No. 4,553,512.
This application Aug. 5, 1985, Ser. No. 762,508
Int. Cl.⁴ F02M *41/00*
U.S. Cl. 123—459 **4 Claims**



1. A pressure regulating device which comprises:

a cap having a recess formed in the underside of said cap,

a retainer element operatively associated with the recess in said cap,

said retainer element having an axial recess formed therethrough,

plug means fitting in slidable engagement with said retainer element,

said plug means having an axial recess open toward one end thereof,

said plug means also having a protrusion extending outward from the opposite end thereof,

biasing means generally coaxial with said plug means which fits in the recess of said means and which urges said plug means into the recess in said retainer element, and

nut means which adjustably influences said biasing means to a predetermined amount urging said plug means forward into the recess in said retainer element.

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4,655,186

METHOD FOR CONTROLLING FUEL INJECTION AMOUNT OF INTERNAL COMBUSTION ENGINE AND APPARATUS THEREOF

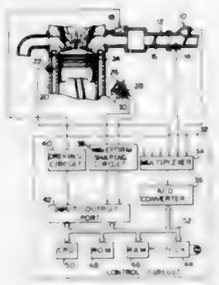
Yuji Takeda; Katsushi Aszai; Osamu Harada, and Toshio Suematsu, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 21, 1985, Ser. No. 767,917

Claims priority, application Japan, Aug. 24, 1984, 59-175213; Aug. 25, 1984, 59-175838

Int. Cl.⁴ F02B *3/00*

U.S. Cl. 123—480 **24 Claims**





1. A method for controlling a fuel injection amount in an internal combustion engine, comprising the steps of:

detecting a load of the engine;

determining whether said load is higher than a predetermined amount;

calculating a fuel quantity to be injected to the engine under a high load state in accordance with said load of the engine when said load of the engine is higher than said predetermined amount;

gradually increasing an upper limit value for said fuel quantity at predetermined intervals while said load of the engine is higher than said predetermined amount;

determining whether said fuel quantity exceeds said upper limit value;

adjusting said fuel quantity to said upper limit value only when said fuel quantity exceeds said upper limit value; and

supplying an mount of fuel to the engine which is based on said fuel quantity.

4,655,187

FUEL CONTROL SYSTEM

Robert E. Gravestock, Ruislip, Great Britain, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Oct. 1, 1985, Ser. No. 782,489

Claims priority, application United Kingdom, Oct. 13, 1984, 8425926

Int. Cl.⁴ F02D *17/00*

U.S. Cl. 123—481 **4 Claims**

1. A fuel control system for a fuel supply system for a multicylinder internal combustion engine of the compression-ignition type, the fuel supply system including at least one electromagnetically operated valve which is operated to cause fuel to be supplied to the combustion chambers of the associated engine, the fuel control system comprising first means responsive to engine position signals and to a fuel demand signal for providing a sequence of control signals for said valve, second means including an AND gate for driving said valve, one input of said AND gate receiving said sequence of control signals, an OR gate having its output connected to the other input of said AND gate, fuel demand comparison means and speed comparison means for comparing the actual fuel demand and the actual speed with fuel demand and speed reference signals, respectively, a further AND gate responsive to said fuel demand and speed comparison means and producing an output when the speed is above a predetermined value, switch means responsive to the output of said further AND gate and through which the fuel demand signal is supplied to said first means when the speed is below said predetermined value and the fuel demand is above said predetermined value and for supplying an extended fuel demand signal when the speed is above said predetermined value and the fuel demand is below said predetermined value, fuel demand modifying means for producing said extended fuel demand signal in response to a status signal, a sequence selection circuit responsive to the fuel demand signal for producing said status signal, the value of said status signal determining the extended fuel demand signal, circuit means responsive to said status signal and said engine position signals for supplying a series of sequence signals which coincide with said control signals, to one input of said OR gate, the other input of said OR gate being connected to receive the inverted output of said further AND gate, said series of sequence signals having every n^{th} one signal omitted to prevent operation of the valve, n being an odd number in the case of an engine having an even number of cylinders and the value of n depending on said status signal whereby, when the engine speed is above said predetermined value and the fuel demand is below the predetermined value, the firing of every n^{th} cylinder of the engine will be prevented.

4,655,188

APPARATUS FOR LEARNING CONTROL OF AIR-FUEL RATIO OF AIR-FUEL MIXTURE IN ELECTRONICALLY CONTROLLED FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, Takasaki; Shoji Furuhashi, Yokohama, and Seiichi Otani, Machashi, all of Japan, assignors to Japan Electronic Control Systems Co., Ltd., Japan

PCT No. PCT/JP85/00024, § 371 Date Aug. 8, 1985, § 102(e) Date Aug. 8, 1985, PCT Pub. No. WO85/03329, PCT Pub. Date Sep., 1985

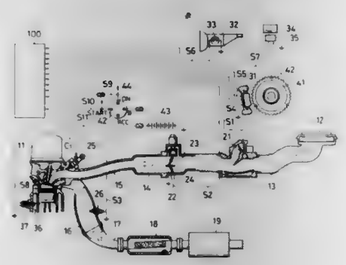
PCT Filed Jan. 23, 1985, Ser. No. 768,480

Claims priority, application Japan, Jan. 24, 1984, 59-0009443; Jan. 24, 1984, 59-0009445; Jan. 24, 1984, 59-0009446

Int. Cl.⁴ F02M *51/00*

U.S. Cl. 123—489 **17 Claims**

1. An apparatus for learning control of the air-fuel ratio of an air-fuel mixture in an electronically controlled fuel injection type internal combustion engine, wherein comprises engine-driving state detecting means including at least first detecting means **21** for detecting a flow quantity Q of intake air in the engine, second detecting means **31** for detecting a rotation speed N of the engine and third detecting means **26** for detecting an actual air-fuel ratio λ of the air-fuel mixture sucked in the engine by detecting a concentration of an exhaust component, fuel injection means **25** for injecting and supplying a fuel to the engine in an on-off manner in response to a driving pulse signal, basic fuel injection quantity operating means **201** for operating a basic injection quantity Tp of the fuel to be supplied to the engine based on the flow quantity Q of intake air in the engine, which is put out by said first detecting means **21**, and the engine rotation speed N put out by said second detecting means **31**, reloadable memory means **205** in which a learning correction coefficient αo for correcting said basic fuel injection quantity Tp is stored in advance for each of engine-driving state areas of a predetermined range, learning correction coefficient retrieval means **206** for retrieving the learning correction coefficient αo from said memory means **205** according to the actually detected driving state of the engine, feedback correction coefficient setting means **202** for increasing, for decreasing, and for setting a feedback correction coefficient α for correcting said basis fuel injection quantity Tp so that the actual air-fuel ratio λ put out by said third detecting means **26** is brought close to a preset aimed air-fuel ratio λt, learning correction coefficient renewal means **207** for setting a new learning correction coefficient αo(new), which is operated based on the feedback correction coefficient α set by said feedback correction coefficient setting means **202** and the learning correction coefficient αo retrieved by said learning correction coefficient retrieval means **206** according to the detected driving state of the engine, as the learning correction



coefficient αo of the corresponding engine-driving state area of said memory means, learning advance degree judging means **209** for judging a degree of the advance of learning in each engine-driving state area by a frequency C of renewal of the learning correction by said correction renewal means **210** for estimating and operating the learning correction coefficient αo of the engine-driving state area, in which the degree of the advance of learning is judged as being small by said learning advance degree judging means **209**, with a certain relation to the learning correction coefficient αo of the engine-driving state area in which the learning advance degree is judged as being large and setting said estimated learning correction coefficient αs as the learning correction coefficient αo of the corresponding engine-driving state area of said memory means **205**, fuel injection quantity operating means **203** for correcting the basic fuel injection quantity Tp based on retrieval and on renewed learning correction coefficients αo and further correcting the basic fuel injection quantity Tp based on the feedback correction coefficient α set by said feedback correction coefficient setting means **202**, and operating a fuel injection quantity Ti based on said corrected value, and driving pulse signal output means **204** for putting out the driving pulse signal corresponding to the fuel injection quantity Ti to said fuel injection means **25**.

4,655,189

DEVICE FOR PROCESSING FUEL VAPOR

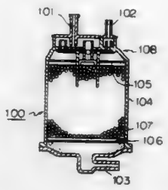
Itsuo Koga, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 28, 1985, Ser. No. 717,007

Claims priority, application Japan, Mar. 31, 1984, 59-045876[U]; Feb. 2, 1985, 60–013013[U]

Int. Cl.⁴ F02M *33/02*

U.S. Cl. 123—519 **5 Claims**



1. A device for processing a fuel vapor comprising:

a canister having an absorbent for absorbing components of the fuel vapor; and

means for separating the fuel vapor into liquid components and vapor components, said separating means being provided between said canister and a fuel vapor source, said separating means having a separating chamber in which the liquid component is held to prevent it from flowing into said canister, a lead tube communicating said fuel vapor source with said separating chamber, an inlet tube through which the vapor component in said separating chamber flows into said canister, and an outlet tube through which a portion of the vapor component in said canister flows into said separating chamber, said lead tube extending downward from a ceiling of said separating chamber, an end opening of said lead tube being positioned near a bottom of said separating chamber, an end opening of each of said inlet and outlet tubes being located above the surface of the liquid component.

4,655,190

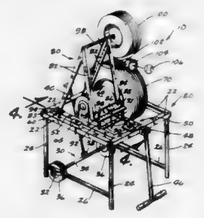
BALL PITCHING MACHINE WITH SELECTIVE ADJUSTMENT BETWEEN DRIVE AND PRESSURE WHEELS

Clifford V. Harris, 11010 N. Memorial, Owasso, Okla. 74055

Filed Feb. 7, 1986, Ser. No. 827,033

Int. Cl.⁴ A63B *69/40*

U.S. Cl. 124—78 **6 Claims**



1. In a ball pitching machine including a drive wheel and a pressure wheel supported in spaced radially aligned relationship on a mainframe, and a guide tube having a discharge end disposed intermediate said drive wheel and said pressure wheel, the improvement comprising:

a subframe pivotally attached to said mainframe, said subframe carrying a variable speed electric motor drive

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means having an output shaft directly coupled to said drive wheel;

means for selectively tilting said subframe with respect to said mainframe by pivoting said subframe to a number of selected positions, whereby the trajectory of a pitched ball is selectively adjusted; wherein said subframe tilting means includes a first threaded hand bolt journalled to rotate within an opening in said mainframe and having a threaded portion disposed to selectively engage a threaded opening in said subframe, whereby the subframe is selectively tilted with respect to said mainframe by rotation of said first hand bolt;

a bracket comprising an A-frame member pivotally attached at one end to said subframe, said A-frame member provided at its apex with an outwardly extending shaft attached to and rotatably supporting said pressure wheel; and,

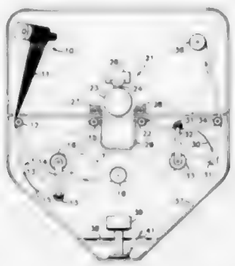
means for selectively pivoting said A-frame member with respect to said subframe; wherein said A-frame member pivoting means includes a second threaded hand bolt journalled to rotate within an opening in the other end of said A-frame member and having a threaded portion disposed to selectively engage a threaded opening in said subframe, and a compression spring disposed between said other end and said subframe biasing said A-frame member away from said subframe, whereby said A-frame member is selectively pivoted with respect to said subframe by rotation of said second hand bolt, thereby selectively adjusting the spacing between said drive wheel and said pressure wheel.

4,655,191

WIRE SAW MACHINE

Raymond C. Wells, Scottsdale, and Thomas J. Hatfield, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 8, 1985, Ser. No. 709,758
Int. Cl.[4] B28D *1/06*
U.S. Cl. 125—16 R **14 Claims**



1. A wire saw machine for cutting brittle materials into a plurality of thin slices, comprising:

single spindle means for supplying a plurality of strands of wire;

a pair of wire guides each having a plurality of grooves for receiving the plurality of strands of wire and arranged to form a cutting area between the pair of wire guides;

means for imparting back and forth motion to the plurality of strands of wires by engaging the plurality of strands of wires on each side of the pair of wire guides; and

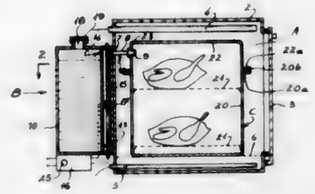
means for taking up used wire.

4,655,192

COOKING APPARATUS USING STEAM INJECTION AT ATMOSPHERIC PRESSURE

Dragomir Jovanovic, 6, Impasse J. Moulin, 38800 Pont de Claix, France

Filed May 16, 1985, Ser. No. 734,938
Claims priority, application France, May 17, 1984, 84 07985
Int. Cl.[4] A21B *1/08*
U.S. Cl. 126—20 **5 Claims**



1. A cooking apparatus for cooking a foodstuff under atmospheric pressure, comprising:

a nonpressurized cooking enclosure provided with at least one access door and with holding means for supporting at least one cooking container in said enclosure in spaced relationship with respect to walls thereof;

a closable but nonpressurized cooking container adapted to receive said foodstuff supported on said holding means in said enclosure in said spaced relationship with respect to walls thereof;

an intermittently operable boiler affixed to said enclosure and having a heater in contact with a thin layer of water for instantaneous generation of steam upon energization of said heater;

means including at least one steam injection nozzle opening into said container for connecting said container in said enclosure with said boiler for intermittently introducing steam into said container to cook the foodstuff therein; and

heating means, independent of said heater associated with said boiler, within said enclosure externally of said container and space therefrom for heating air in a space between said walls and said container to a temperature of at least 100° C. wherein the temperature of said walls and said container is raised a level precluding condensation of steam on said walls and said container, condensation occurring onto said food stuff as long as it is at a temperature below 100° C.

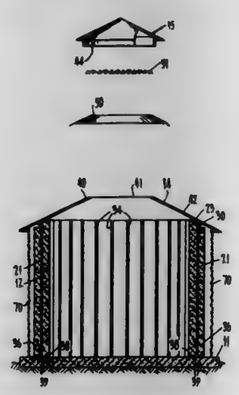
4,655,193

INCINERATOR

Arnold M. Blacket, 5 Powys Drive, Beaumaris, Victoria 3193, Australia

Filed Jun. 5, 1985, Ser. No. 741,563
Claims priority, application Australia, Jun. 5, 1984, PG5365
Int. Cl.[4] F23G *5/00*
U.S. Cl. 126—224 **13 Claims**

1. An incinerator comprising panels secured together in an array to define a vertical enclosure with narrow gaps between adjacent panels, at least two of the panels being shorter than the other panels and being arranged to be lifted to define a gap at the base of the incinerator to facilitate ash removal, and a removable cover member arranged to sit on the top of the array of panel, the cover member being of hollow construction and having a cross-section that converges upwardly to a smoke discharge aperture, the cover member acting both as a weather protective roof and a chimney to encourage the drawing capacity of the incinerator.

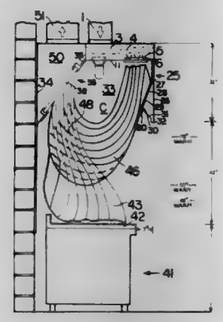


4,655,194

SYSTEM FOR REMOVING FUMES

William G. Wooden, Louisville, Ky., assignor to Heat Transfer Specialties, Inc., Louisville, Ky.

Filed Apr. 15, 1986, Ser. No. 852,134
Int. Cl.[4] F24C *15/20*
U.S. Cl. 126—299 D **15 Claims**



1. A system for removing fumes, including the products of combustion and volatilization incident to cooking, from the space above a cooking surface, with a minimum of disturbance or displacement of ambient air, which comprises:

A. a hood having front and side wall panels located above said cooking surface and covering the space above said cooking surface and extending forwardly of said cooking surface to form an entrainment chamber between said hood and said cooking surface, which is generally co-extensive with the width of said cooking surface and which extends forwardly of said cooking surface;

B. air intake means having:

1. an intake blower for introduction of air from the outside into the entrainment chamber,

2. a pressurized plenum, located above said cooking surface for receipt of air from said air intake means, which includes:

a. air distribution baffle;

b. an air velocity valve assembly comprising:

1. adjustable air diffusion plates arranged transversely across said plenum, and

2. a diffusion baffle and secondary filter at the bottom of said pressurized plenum, which opens into said entrainment chamber:

C. an air foil located below the diffusion grill and extending across the front panel of said hood and projecting at an acute angle toward the cooking surface for directing the diffused air pattern toward the fumes rising from said cooking surface for mixture within the entrainment chamber;

D. exhaust means in operative relation with the entrainment chamber of said hood, which includes:

1. an exhaust stack, and

2. an exhaust blower:

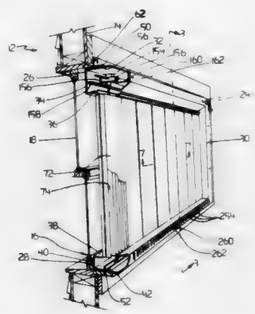
E. filter means situated between said entrainment chamber of said hood and said exhaust means.

4,655,195

SOLAR HEAT REGULATOR

Sharon L. Boynton, Cleveland Heights, Ohio, assignor to Solara, Inc., Mayfield Heights, Ohio

Continuation of Ser. No. 709,352, Mar. 7, 1985, abandoned, which is a continuation of Ser. No. 387,429, Jun. 11, 1982, abandoned. This application Dec. 24, 1985, Ser. No. 815,268
Int. Cl.[4] E04D *13/18*
U.S. Cl. 126—429 **9 Claims**



1. A solar heat regulating device for selectively heating with sunlight the air inside a building having a window and shielding and insulating the air inside the building from the heat of sunlight outside the building including:

a frame for mounting said solar heat regulating device inside the building and adjacent to the window,

a plurality of hollow vanes, each of said vanes having at least one passageway for passing air therethrough,

said vanes having a heat absorptive surface on a first side thereof which allows solar radiation impinging on said heat absorptive surface to heat the air contained in said one passageway of said vanes,

said vanes having a heat reflective surface on a second side of said vanes which reflects the solar radiation impinging on said second side of said vanes and shields the inside of the building from solar radiation impinging on said vanes,

said vanes having side portions extending between said first and second sides of said vanes, said side portions, and said first and second sides forming said one passageway through each of said vanes, said side portions and said first and second sides of said vanes terminating in top end and bottom end portions,

means for rotatably mounting said plurality of vanes to said frame about substantially vertical axes to selectively position one of said first and said second sides of said vanes to face the outside of the building and adjacent to the inside of the window,

a first manifold means for conducting cooler air from the

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inside of the building to the bottom of said passageways of said vanes, said first manifold means having a portion thereof positioned adjacent said bottom end portion of each of said vanes,

a second manifold means for conducting heated air from the top of said passageways of said vanes to the inside of the building, said second manifold means having a portion thereof positioned adjacent said top end portion of each of said vanes,

means for sealing said outside facing surface of said vanes from the inside of the building and providing a sealed space between said vanes and the window,

said outside sealing means including at least one seal member extending along at least one of said side portions of each of said vanes from said top end portion to said bottom end portion,

said outside sealing means including means for sealing said bottom end portion of said vanes to said first manifold means, said bottom end sealing means including at least one bottom seal member secured to one of said bottom end portions of said vanes and said first manifold means, said one bottom seal member extends substantially cntinuously along said bottom end portions of said vanes and said first manifold means when said vanes are positioned with one of said first and second sides thereof facing the outside of the building and,

said outside sealing means including means for sealing said top end portion of said vanes to said second manifold means, said top end sealing means including at least one top seal member secured to one of said top end portions of said vanes and said second manifold means, said one top end seal member extends substantially continuously along said top end portions of said vanes and said second manifold means when said vanes are positioned with one of said first and second sides thereof facing the outside of the building.

4,655,196

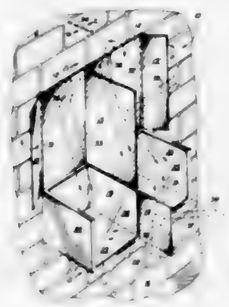
THROUGH THE WALL SOLAR COOKER

Barbara P. Kerr, P.O. Box 576, Taylor, Ariz. 85939

Filed May 22, 1986, Ser. No. 865,764

Int. Cl.[4] F24J *2/02*

U.S. Cl. 126—451 **14 Claims**



1. A solar appliance for extending from the interior of a kitchen through an exterior wall of the building and beyond a predetermined distance in a cantilever manner to receive and concentrate in the appliance outside of the building, solar radiation rays for cooking purposes comprising:

a housing,

said housing being mounted to extend from a kitchen through an external wall of a building and beyond in a cantilever manner and forming a closed oven,

said oven comprising a bottom, glass top, a pair of sides and a first end positioned with access from within the kitchen and comprising an oven door,

a first reflective panel member mounted above, juxtapositioned to one edge of said glass top for positioning against the outer surface of the external wall and extending laterally therefrom for receiving and directing solar rays impinging thereon through said glass top and into said oven, and

a second double-sided reflective panel mounted above and juxtapositioned to said glass top and extending substantially perpendicular to said first reflective panel for receiving solar rays impinging on either side thereof, and directing said solar rays into said oven.

4,655,197

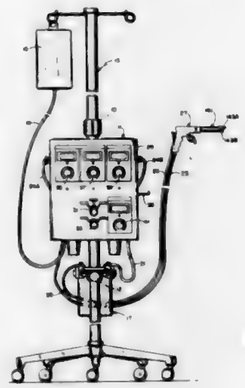
LAVAGE SYSTEM WITH VARIABLE FREQUENCY, FLOW RATE AND PRESSURE

Robert W. Atkinson, Dover, Ohio, assignor to Snyder Laborstories, Inc., Dover, Ohio

Filed Dec. 1, 1982, Ser. No. 445,793

Int. Cl.[4] A61H *9/00*

U.S. Cl. 128—66 **3 Claims**



1. Medical, dental, or therapeutic lavage apparatus comprising:

means for producing a pulsating fluid flow; and

means for varying the pulsation frequency of said pulsating fluid flow while maintaining the pressure of said fluid flow substantially constant;

means for varying the fluid pressure of fluid flow while maintaining said frequency constant;

means for fixing said frequency at a predetermined frequency;

a switch having a first position in which said means for varying the frequency is enabled to control said pulsation frequency, and a second position in which said means for fixing said frequency is enabled to control said pulsation frequency;

said means for varying the pressure of fluid flow includes:

a first manually settable control for controlling the pressure of fluid flow; and

a second manually settable control for controlling the pressure of fluid flow; and

said switch includes means for switching control of the pressure to said first control when said switch is in said first position and for switching control of the pressure to said second control when said switch is in said second position.

4,655,198

HAND-HELD APPLIANCE FOR PERSONAL HYGIENE

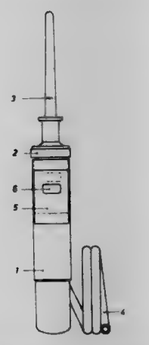
Edgar Hommann, Grossaffoltern, Switzerland, assignor to Gimelli & Co AG, Switzerland

Filed May 14, 1985, Ser. No. 733,763

Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420213

Int. Cl.[4] A61H *9/00*

U.S. Cl. 128—66 **13 Claims**



1. A hand-held appliance for personal hygiene, in particular for tooth and mouth care, comprising a grip portion formed by an essentially hollow shell; a spray nozzle affixed thereto; a pinch valve disposed within said shell for controlling the flow of liquid to said nozzle; an actuating means which comprises a manipulating element for adjusting the flow-rate through said pinch valve, said manipulating element being longitudinally slidingly mounted on the outer surface of said shell; and shut-off means for temporarily interrupting the flow by actuating said pinch valve without changing the setting of the flow-rate; said shut-off means comprising a push button mounted for reciprocal radial movement through an opening in said shell and an opening in said manipulating element, and having two guiding surfaces at a lower portion thereof, each of said guiding surfaces bearing against one of two longitudinal inclined surfaces inside the shell on each side of the pinch valve, said push button being movable along the inclined surfaces by shifting the manipulating element.

4,655,199

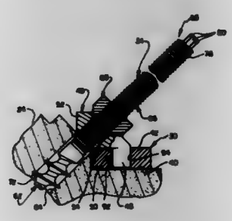
SPINAL COLUMN STRAIGHTENING APPARATUS

Arthur D. Steffee, Moreland Hills, Ohio, assignor to AcroMed Corporation, Cleveland, Ohio

Filed Mar. 29, 1985, Ser. No. 717,954

Int. Cl.[4] A61F *5/04*

U.S. Cl. 128—69 **8 Claims**



1. An apparatus for maintaining a desired spatial relationship between adjacent vertebrae and the sacrum, said apparatus comprising:

elongated plate means for engaging the vertebrae and the sacrum, said elongated plate means including surface means defining a plurality of openings;

first force transmitting means extending through a first opening of the plurality of openings in said plate means for transmitting force along a first axis to connect said plate means with a vertebra;

a fixture projecting from said plate means, said fixture having a mounting end portion which is disposed in a second opening of the plurality of openings and an outer end portion which is offset to one side of said mounting end portion; and

second force transmitting means extending through an opening in said outer end portion of said fixture for transmitting force along a second axis which is skewed at an acute angle relative to a plane containing the first axis and the central axis of said plate means to connect said plate means with the sacrum.

4,655,200

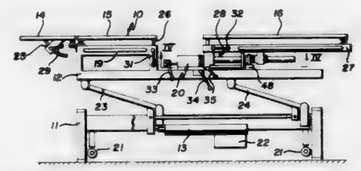
ORTHOPEDIC APPARATUS

Allan C. Knight, Weston, Canada, assignor to Intra Med Industries Limited, Mississauga, Canada

Continuation of Ser. No. 442,517, Nov. 18, 1982, abandoned. This application Feb. 15, 1985, Ser. No. 701,869

Int. Cl.[4] A61F *5/00*

U.S. Cl. 128—71 **8 Claims**



1. Orthopedic apparatus, comprising:

(a) a main base adapted to rest on the floor,

(b) a support frame mounted on the main base, including a jack for adjusting the vertical height position of the frame above the base and including a horizontal cylindrical rail,

(c) a head table mounted on the support frame,

(d) a center table mounted on the support frame, and

(e) an end table mounted on the rail for sliding adjustment along the centerline of the rail, for rotative adjustment about the centerline, and for swinging about a vertical pivotal axis passing through the centerline of the rail, the center table being mounted at an intermediate part of the frame, while the head and end tables are located at opposite ends of the center table,

wherein the support frame is provided with an intergral abutment that holds the head and center tables at a level which is a substantial distance above the frame, wherein an adjustment mechanism, including the said rail, is provided that permits the adjustments of the end table and that holds the end table above the frame at the same general level as the head and center table, wherein the mechanism for producing swinging adjustment includes a primary block with a vertical bore that is mounted on the support frame adjacent the center table, wherein a vertical pivot pin lies in the bore and has its upper end connected to the rail, and wherein a locking device is mounted in the primary block to selectively prevent rotation of the pin in the bore.

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4,655,201
KNEE ORTHOSIS AND JOINT CONSTRUCTION THEREFOR

Robert E. Pirmantgen, Chicago, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Jul. 13, 1984, Ser. No. 630,648
Int. Cl.[4] A61F 3/00
U.S. Cl. 128—80 C 7 Claims



1. An orthotic knee joint assembly comprising a rigid planar femoral member having a head portion with a narrow arcuate bearing surface of varying radii of curvature and having a femoral sidebar projecting from said head portion and adapted to extend upwardly alongside a wearer's upper leg; a rigid tibial member having a body portion and a tibial sidebar adapted to extend downwardly alongside a wearer's lower leg; said body portion having a pair of planar side walls spaced apart to define a narrow upwardly-opening socket slidably receiving said head portion and having an arcuate guide surface engagable with said bearing surface for guiding movement of said members between flexion and extension along constantly changing instantaneous axes of rotation; said bearing surface being slidable posteriorly and anteriorly along said guide surface when said members are in flexion; and means provided by said members to direct said bearing surface with respect to said guide surface during articulation of a patient's knee; wherein the improvement comprises

said head portion having planar surfaces on opposite sides thereof slidably engaging said side walls of said body portion within said socket, whereby, on each side of said head portion are presented a pair of opposing and slidably engaging surfaces, one provided by said head portion and the other by said body portion; one of said opposing surfaces of one of said pairs being provided with a recess having its major dimensions extending in the plane of such surface and having a narrow cam track about the periphery thereof; and the other of said opposing surfaces being provided with a plurality of protuberances engagable with portions of said cam track during flexion and extension for exerting constraining forces similar to those that would be exerted by certain ligaments of the wearer's knee if such ligaments were present, healthy, and functioning properly; said recess being substantially larger than said protuberances so that at any given stage of articulation the contact between a protuberance and said cam track constrains movement of said head portion in only certain selected directions along a plane parallel with said side walls without constraining movement of said head portion in directions along said plane opposite from said selected directions; said protuberances being positioned and arranged for successively engaging portions of said cam track of said recess during flexion and extension with only one of said protuberances engaging said track at any given stage of articulation.

4,655,202
BANDAGES, COMPONENTS THEREOF AND USE

William D. Potter, Bishops Stortford; Sinan B. Kiamil, Harlow, and Nicholas D. White, Bishops Stortford, all of United Kingdom, assignors to Smith and Nephew Associated Companies p.l.c., United Kingdom

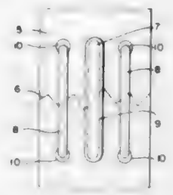
Continuation-in-part of Ser. No. 562,593, Oct. 19, 1983. This application Aug. 10, 1984, Ser. No. 639,914
Claims priority, application United Kingdom, Aug. 18, 1983, 8322200
Int. Cl.[4] A61F 5/04; C08F 122/10
U.S. Cl. 128—90 16 Claims

1. An orthopaedic bandage which comprises a support carrying a vinyl compound which compound polymerises when exposed to a water activated vinyl polymerisation catalyst in which the vinyl compound is a hydrophilic prepolymer which contains more than one polymerisable vinyl group and said prepolymer is in association with at least one component of a water-activatable vinyl polymerisation redox catalyst in a solid particulate form in a water pervious coating in which the particles have an uncoated size of from 10 to 500 μm and in which the water pervious coating is present over in excess of 95% of the particle surface and in which the weight ratio of catalyst to coating is 99:1 to 1:9 and in which the coating is insoluble in the prepolymer.

4,655,203
BONE FRACTURE SURGICAL DEVICE

Pertti Tiirmälä, Tampere; Pentti Rokkanen, Helsinki; Jyrki Kilpikari, Tampere; Hannu Pätiälä, Helsinki; Seppo Vainionpää, Helsinki; Kimmo Vihtonen, Helsinki, and Matti Mero, Helsinki, all of Finland, assignors to Materials Consultants Oy, Tampere, Finland

Filed Sep. 12, 1984, Ser. No. 649,648
Claims priority, application Finland, Sep. 20, 1983, 833351
Int. Cl.[4] A61F 5/04
U.S. Cl. 128—92 YP 15 Claims



1. A surgical device for immobilization of a bone fracture, which surgical device has at least one organ which goes beyond or perforates the fracture and is in connection with the parts of bone on opposite sides of the fracture, said surgical device comprising:

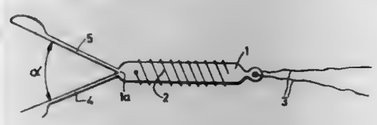
at least one, at least directly after a surgical installation operation, essentially stiff and at least partially resorbable osteosynthesis plate or beam which is constructed at least partially of resorbable organic polymeric material(s) and is positioned to go beyond or perforate the fracture; and,

at least one fixing element which is flexible at least during a stage of installation, is constructed at least partially of fibrous material and is fastened to bone and/or tightened to its place to go beyond or to perforate the fracture and/or to go beyond or to perforate the osteosynthesis plate or beam in such a way that the osteosynthesis plate or beam, the fixing element and a region of immobilized bone where the fracture exists form an assembly whose stiffness is high enough to confirm the healing of the fracture, the resorption characteristics of said at least partially resorbable osteosynthesis plate or beam being such that during the healing of the fracture the stiffness and mechanical strength of the surgical device decreases as the stiffness and mechanical strength of the healing fracture increases and after the healing of the fracture there is no need to remove the surgical device or a part of it at a separate subsequent operation.

4,655,204
INTRAUTERINE CONTRACEPTIVE DEVICE FOR ANIMALS SUCH AS FEMALE DOGS

Michel Basuyaux, Lille, France, assignor to Societe Europeenne de Recherche d'Instrumentations Medicales Company, Paris, France

Filed May 22, 1984, Ser. No. 612,900
Int. Cl.[4] A61F 5/46
U.S. Cl. 128—130 4 Claims

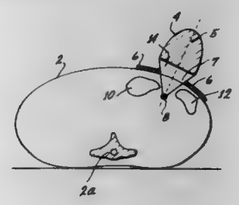


1. A contraceptive device for female animals of the canine specie comprising a central stem member having a first end and a second end spaced from said first end, said stem having means at said first end for securing means for retrieving said contraceptive device from the womb of a animal, and means at said second end for maintaining said contraceptive device in place in the womb of the animal, said means at said second end including a pair of diverging substantially straight arms having a selected angle therebetween with each arm terminating in smoothly curving surfaces, said angle between said arms being greater than the angle formed between the y-shaped channels of the uterus of said animal.

4,655,205
DELINEATING AND LIMITING THE ZONE OF SHOCK WAVES FOR THERAPEUTIC PURPOSES

Wolfgang Hepp, Immenstaad; Bernd Forssmann, Friedrichshafen; Walter Brendel, Planegg, all of Fed. Rep. of Germany, and Christian Chaussy, Los Angeles, Calif., assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed May 8, 1985, Ser. No. 732,359
Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417710
Int. Cl.[4] A61B 17/22
U.S. Cl. 128—132 R 9 Claims

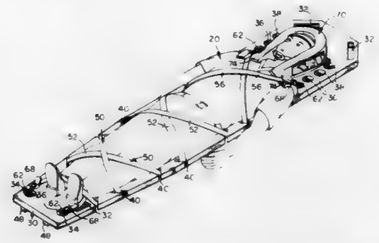


1. In a device for therapeutic treatment of the body of a living being by means of shock waves the improvement for limiting the entrance zone for these shock waves, comprising a template member made of shock wave impermeable material and having an adhesive layer thereon for affixing the template directly to the body of the living being, the template having a particularly shaped opening for the passage of shock waves into said body.

4,655,206
SPINAL RESTRAINT

Brian Moody, 1619 16th La., Lake Worth, Fla. 33463

Filed Mar. 2, 1984, Ser. No. 585,848
Int. Cl.[4] A61F 13/12; A61G 1/00
U.S. Cl. 128—134 16 Claims



1. An apparatus for restraining a patient, comprising:

A rigid board and a flat, elongated strap for typing the patient to the board, the board having openings at opposite ends thereof with pins being disposed across said openings, the board having a plurality of slots at spaced points between said means for engaging the opposite ends, the slots being at least as long as the strap is wide, the slots extending inwards from peripheral, opposite side edges of the board and the slots opening at the peripheral edges of the board, the slots being angled at about forty-five degrees with respect to an axis of the board and consecutive slots along the edges being substantially perpendicular, whereby the patient may be quickly tied to the board by passing portions of the strap intermediate the opposite ends into the slots from the peripheral edges.

15. A patient restraint apparatus, comprising:

a spine board to be tied against the patient's back, the board having a plurality of slots extending inward from opposite side edges of the board, the slots opening at the opposite side edges, the slots being angled at about forty-five degrees with respect to an axis of the board and consecutive slots along the edges being substantially perpendicular to one another, the board having openings at opposite ends thereof with pins being disposed across said openings;

a strap having hooks at each end and a means for shortening the straps intermediate the hooks, the strap being flat and dimensioned to fill the slots; and,

a head restraint pad partially enclosing the patient's head and shoulders, the pad being engaged by the strap at the patients shoulders.

4,655,207
BODY RESTRAINT

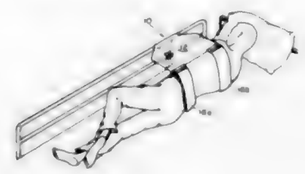
Thomas B. Ellis, 3015 Weymouth, Apartment 106, Durham, N.C. 27707

Filed Oct. 21, 1985, Ser. No. 789,742
Int. Cl.[4] A61F 5/37; A61G 7/06
U.S. Cl. 128—135 14 Claims

1. A restraint for holding a person in a side-lying position on a bed, said restraint comprising a flexible main section, at least one flexible weighted arm member depending from said flexible main section, and means affixed to said main section for securing said restraint to the bed, whereby said restraint may

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be placed over the uppermost side of the person in the side-lying position with said at least one flexible weighted arm



member extending generally across the back of the person and the restraint secured with said securement means to the bed.

4,655,208

FAST-SETTING CASTING TAPE

Hee K. Yoon, North Brunswick, N.J., assignor to Johnson & Johnson Products Inc., New Brunswick, N.J.

Filed Mar. 12, 1986, Ser. No. 838,980
Int. Cl.⁴ A61L *15/00*
U.S. Cl. 128—156 **10 Claims**

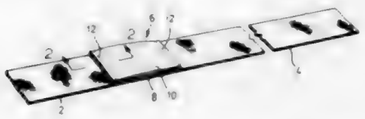
1. A storage stable fast setting orthopedic casting tape comprising a water activatable polyurethane prepolymer coated on a fibrous substrate, said prepolymer comprising an aromatic polyisocyanate and a polyol in an equivalent ratio of 2:1 to 15:1, said polyol being a hydrophilic polyol and having a molecular weight of from 200 to 6,000 and from one to 10 percent by weight, based on the total weight of the prepolymer formulation, of a dimorpholinodialkylether catalyst.

4,655,209

SURGICAL DRESSING AND PACKAGING

Douglas G. Scott, 677 Glancaster Road, Mount Hope, Ontario, Canada L0R 1W0

Filed May 5, 1986, Ser. No. 859,425
Int. Cl.⁴ A61L *15/00*
U.S. Cl. 128—156 **9 Claims**



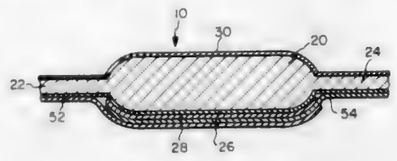
1. A compress type bandage comprising a length of surgical gauze, and a dressing pad sewn to the gauze by lines of stitching at longitudinally spaced locations intermediate the ends of the length of gauze so that the end portions of the length of gauze form tails by means of tension in which the pad may be pressed against a wound, wherein the gauze has substantial longitudinal elasticity, and is sewn to the pad whilst in a substantially unextended condition, and the pad consists of at least two superposed absorbent layers readily separable from one another between the lines of stitching to form a pouch, both layers comprising absorbent padding, and at least one layer having high tensile strength and limited extensibility at least in the longitudinal direction.

4,655,210

FOAM BANDAGE

Martin I. Edenbaum, Princeton Junction, N.J., and Borys Rybalka, Philadelphia, Pa., assignors to Seton Company, Newark, N.J.

Filed Jan. 17, 1986, Ser. No. 819,686
Int. Cl.⁴ A61L *15/00*
U.S. Cl. 128—156 **19 Claims**



13. A method for preparing a foam bandage, comprising:
(a) selecting a low density liquid permeable foam sheet;
(b) adhering a porous pressure sensitive adhesive layer, which is permeable to liquid water and serum, to said low density foam sheet to form a laminate;
(c) positioning a wound release material in the area of said laminate intended for wound contact to separate the adhesive from a tissue healing area; and
(d) heat compressing the entire sheet thus produced except in the area of said wound release material.

4,655,211

HEMOSTATIC AGENT

Izumi Sakamoto; Tukasa Unigame, and Kunihiko Takagi, all of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Aug. 8, 1985, Ser. No. 763,589
Claims priority, application Japan, Aug. 9, 1984, 59-166884
Int. Cl.⁴ A61L *15/00*
U.S. Cl. 128—156 **12 Claims**

1. A hemostatic agent comprising a carrier in the shape of individual, separate flake or fiber having thrombin and Factor XIII fixed thereto, wherein said carrier is composed of a biodegradable material having a water absorption capability of about 50 weight percent or more, said flake has a longer dimension of about 5,000 microns or less, a shorter dimension of about 3,000 microns or less, and a thickness of about 2,000 microns or less, and said fiber has a single yarn fineness of about 30 deniers or less and a yarn length of about 10 mm or less.

4,655,212

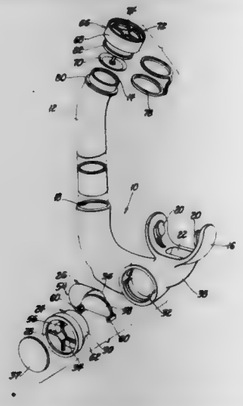
FRESH-AIR SNORKEL

John B. Delphia, 1021 Schuyler Dr., Milford, Mich. 48042

Continuation-in-part of Ser. No. 553,506, Nov. 21, 1983, abandoned. This application Apr. 4, 1985, Ser. No. 720,454
Int. Cl.⁴ B63C *11/18, 11/16*
U.S. Cl. 128—201.11 **23 Claims**

1. A diving snorkel assembly (**10**) comprising: a snorkel tube (**12**) having an air inlet end (**14**) and an opposite end; a mouthpiece (**16**) at said opposite end of said tube (**12**), said tube (**12**) defining a fluid passageway (**18**) extending between said inlet end (**14**) of said tube (**12**) and said mouthpiece (**16**); exhaust valve means (**24,24'**) disposed between said mouthpiece (**16**) and said inlet end (**14**) of said tube (**12**) for allowing one-way exhaust of fluid from said fluid passageway (**18**); and exhaust baffling means (**26,26'**) for establishing an exhaust fluid flow from said mouthpiece (**16**) through said fluid passageway (**18**) toward said exhaust valve means (**24,24'**) in response to air pressure from said mouthpiece, said exhaust valve means (**24,24'**) defining an exhaust passageway (**28**) extending laterally from and in fluid communication with one side of said fluid passageway (**18**), said baffling means (**26,26'**) including a wall

portion (**36'**) extending inwardly from the opposite side of said fluid passageway (**18**) toward said exhaust passageway (**28**) to



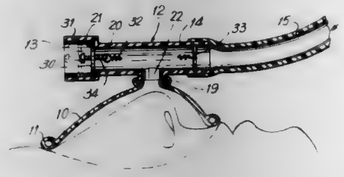
direct the flow of exhaust fluid through said fluid passageway (**18**) into said exhaust passageway (**28**).

4,655,213

METHOD AND APPARATUS FOR THE TREATMENT OF OBSTRUCTIVE SLEEP APNEA

David M. Rapoport and I. Barry Sorkin, both of New York, N.Y., assignor to New York University, N.Y.

Filed Oct. 6, 1983, Ser. No. 539,723
Int. Cl.⁴ A61M *16/00*
U.S. Cl. 128—205.25 **1 Claim**



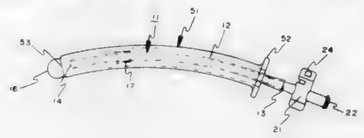
1. A method of treatment of a patient for obstructive sleep apnea, comprising the steps of applying compressed air continually to a nose mask fitted to cover the patient's nose, maintaining a positive pressure of air within said mask to maintain the nasopharyngeal airway of a patient open, continually exhausting air from said mask by way of a threshold valve which is continually open during normal respiration of the patient, said valve operates in one of a seated state in the absence of said compressed air pressure and in a continuous unseated state when said nose mask is donned on a patient and application of said compressed air pressure to said nose mask causes said valve to operate in said continuously unseated state, said valve being adjustably biasable to select an operating pressure within said mask in a range of from 5 to 15 centimeters of H_2O, and further comprising the step of selecting a positive pressure for treatment of said patient within said range by adjusting said bias.

4,655,214

INFLATABLE INTRODUCER FOR AIDING THE INTUBATION OF CATHETERS AND ENDOTRACHEAL TUBES

Gerald S. Linder, P.O. Box 1085, Pacific Palisades, Calif. 90272

Filed Jun. 28, 1984, Ser. No. 624,487
Int. Cl.⁴ A61M *25/00, 16/00*
U.S. Cl. 128—207.18 **2 Claims**



2. The improved medical apparatus for intubating a passageway of a patient, comprising in combination:
(a) a hollow, cylindrical catheter composed of soft, pliable material and having open proximal and distal ends;
(b) a long, hollow tube of pliable material situated within said hollow, cylindrical catheter, said long, hollow tube having open proximal and distal ends, the open proximal end of said hollow tube extending outside the open proximal end of said catheter and the open distal end of said hollow tube terminating within said catheter near its distal end, said hollow tube having an external diameter less than the inside diameter of said catheter;
(c) a cylindrical, elongated, inflatable sheath composed of thin, soft and pliable material surrounding and enclosing the distal end portion and the open distal tip of said hollow, pliable tube, said inflatable sheath having a closed, smooth, rounded distal tip portion, an open proximal end portion and a central, cylindrical portion situated between the distal tip portion and the open proximal end portion; the smooth rounded distal tip portion being spaced apart from the open distal tip of said hollow tube and protruding beyond the open distal end of said catheter, the open proximal end portion of said inflatable sheath being securely attached to the outside cylindrical surface of said hollow tube for forming an airtight seal between the inside of said inflatable sheath and the distal end portion of said hollow tube, the central, cylindrical portion of said inflatable sheath being situated within the distal end portion of said catheter and having a diameter larger than the external diameter of said hollow tube and less than the inside diameter of said catheter, the open proximal end of said hollow tube extending outside the open proximal end of said catheter being adapted for coupling to a source of air of sufficient pressure to expand the central, cylindrical portion of said inflatable sheath to a diameter at least as large as the inside diameter of said catheter to provide physical contact between the outer cylindrical surface of the central, cylindrical portion of said inflatable sheath and the inner cylindrical surface of the distal end portion of said catheter, the expansion of the central, cylindrical portion of said inflatable sheath by air under pressure causing the smooth, rounded distal tip portion protruding beyond the open distal end of said catheter to expand to a diameter larger than the inside diameter of said catheter to a diameter approximately equal to the outside diameter of said catheter; and
(d) means associated with the open proximal end portion of said hollow, pliable tube for closing and sealing the open proximal end portion after said inflatable sheath has been inflated for maintaining physical contact between the outer cylindrical surface of the central, cylindrical portion with the inner cylindrical surface of the distal end portion of said catheter to prevent sliding of said inflatable sheath relative to said catheter as said catheter is being intubated, the inflated, smooth, rounded tip portion of said inflatable sheath providing a soft, pliable, air-filled cushion ahead of

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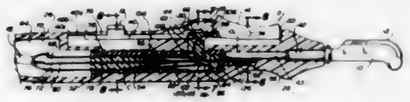
the distal end of said catheter for opening the passageway of the patient through which said catheter is to be intubated, said means associated with the open proximal end portion of said hollow, pliable tube including means for opening the open proximal end of said hollow, pliable tube after intubation of said catheter to deflate said inflatable sheath, thereby allowing said hollow, pliable tube and inflatable sheath to be withdrawn from said catheter.

4,655,215

HAND CONTROL FOR ELECTROSURGICAL ELECTRODES

Harold Pike, 10 Hier La., Castle Rock, Colo. 80104

Filed Mar. 15, 1985, Ser. No. 712,271
Int. Cl.⁴ A61B *17/36*
U.S. Cl. 128—303.14 **8 Claims**



1. A hand control for electrosurgical electrodes, comprising:
an elongated housing for containing electrical wiring circuits and circuits-switching means, said housing having a top surface and a bottom surface and a proximal or rear end and a distal or front end, and defining a switch seat in its top surface adjacent its distal end;
an electrosurgical blade having a proximal end in said housing and a distal end extending from said distal end of said housing;
a rocker arm control switch for activating at least two electrosurgical current modes of said electrosurgical blade, said switch having a proximal end and a distal end and being pivotably mounted between said ends in said switch seat, directly above the said proximal end of said electrosurgical blade;
finger-engaging portions on said proximal and distal ends of said rocker arm control switch for pivoting said control switch in two opposite directions;
a cantilevered shoulder portion rigidly mounted on said proximal end of said rocker arm control switch and extending rearward within said housing beyond said proximal end of said electrosurgical blade; and
circuit closing means having a plurality of circuit modes, said circuit closing means being transversely mounted within said housing, between said top and bottom surfaces, rearwardly of said proximal end of said electrosurgical blade and connected to and movable with said shoulder portion to selectively activate said circuits.

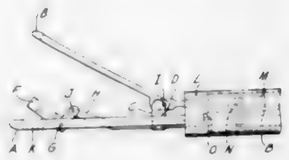
4,655,216

COMBINATION INSTRUMENT FOR LAPAROSCOPICAL TUBE STERILIZATION

Alfred Tlacher, Potsdamer Strasse 105, 1000 Berlin 30, Fed. Rep. of Germany

Filed Jul. 23, 1985, Ser. No. 758,165
Int. Cl.⁴ A61B *17/36*
U.S. Cl. 128—303.17 **6 Claims**

1. A surgical combination instrument, comprising means for grasping human or animal tissue, the grasping means including first and second grasping members, the second grasping member connected and pivotally movable relative to the first grasping member between an open and a closed position of the grasping means, the grasping members defining central openings aligned with one another when the grasping means is in the closed position, the first and second grasping members electrically insulated from one another and forming electrodes for high frequency current to be utilized for bipolar coagulation of the tissue grasped by the grasping means, cutting means attached and pivotable relative to the grasping members in the central opening thereof for cutting the non-coagulated portion of tissue extending across the aligned openings of the grasping means, wherein the cutting means (F) is U-shaped in its transverse direction and is pivotally hinged inside the opening (E) of the stationary first grasping member (A) about a joint (G) and lowered in the closed position of the cutting device (F)



into the opening (E) of the stationary first grasping member (A) and to be entirely receivable within the central opening (E) of the stationary first grasping member (A), and wherein underneath the opening (E) of the stationary first grasping member (A) is provided in a holding means (K) forming part of the stationary first grasping member (A) for catching the tissue portion cut by the cutting device (F) and forced into the holding means (K) by the cutting device (F).

4,655,217

METHOD AND APPARATUS FOR DISABLING VEIN VALVES IN-SITU

Matt H. Reed, 22 Thatcher St., Hyde Park, Mass. 02136

Filed Oct. 11, 1985, Ser. No. 786,658
Int. Cl.⁴ A61F *17/32*
U.S. Cl. 128—305 **14 Claims**



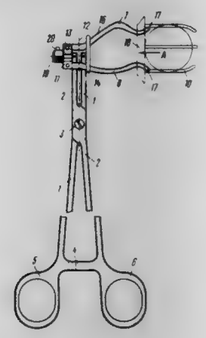
1. An apparatus, for disabling valve cusps within a vein, comprising:
(i) a flexible guide tube of a diameter substantially smaller than that of the vein so that the guide tube may be contained entirely within the lumen of the vein along the entire length of the vein, thus allowing minimal contact with the interior vein wall;
(ii) hooking means, for ensnaring a valve cusp within the vein, including at least one springy wire retractably disposed within the guide tube for axial motion of such hooking means into first and second positions, such wire being configured at its distal end into a hook formation so as to have a main stem portion and a hooked portion including a vertex, a tip and a gap between the tip and the main stem portion, the gap of each hook being sufficiently small as to preclude entry therein of any venous structure substantially thicker than a valve cusp,
the hooking means in the first position being retracted substantially entirely within the guide tube, with the hooked portion of the each wire resting just outside, and against, the distal end of the guide tube, and the tip of each hook being pressed against the guide tube so as to seal off the gap of the hook, such that the hooked portion of the hooking means assumes a configuration about the distal end of the guide tube which is sufficiently compact as to be contained entirely with the lumen of the vein along a substantial length of the vein without contacting the vein wall;
the hooking means in the second position being retracted up the guide tube so as to expose a desired length of each wire beyond the distal end of the guide tube, and wherein such exposed length flares outwardly so as to bring a lateralmost surface of the hooked portion thereof into contact with the vein wall; and
(iii) control means, attached to the guide tube and the hooking means, for controllably moving the hooking means axially within the guide tube.

4,655,218

PROSTHETIC VALVE HOLDER

Yaroslav P. Kulik, Blagoveschensk; Ivan I. Shmyris, Vladivostok; Rustam I. Utyamyshev, Moscow; Marina N. Vyrzhikovskaya, and Boris A. Smirnov, both of Moscow, all of U.S.S.R., assignors to Blagoveschensky Gosudarstvenny Meditsinsky Institut, Blagoveschensk, U.S.S.R.

Filed Oct. 10, 1985, Ser. No. 786,246
Int. Cl.⁴ A61B *17/28*; A61M *29/00*
U.S. Cl. 128—321 **3 Claims**



1. A holder of a valve prosthesis implantable in a patient's circulatory system, comprising:
a first arm and a second arm hinge-joined to each other; said first arm having a first end and a second end; said second arm having a first end and a second end;
handles provided at said first ends of said first and second arms;
at least three similar working jaws, which can be brought together for a valve prosthesis to set thereon, and be brought apart for said valve prosthesis to hold thereto, thus giving said valve at least three bearing points;
said working jaws pivotally mounted at said second end of said first arm and having vacant ends which, when brought apart, define a circle along their perimeter;
a plate having a plurality of slots equal in number to that of said working jaws; said plate being secured at said second end of said second arm in such a manner that one of said working jaws is passed through each of said slots so that when said working jaws are being brought together or apart, they are free to traverse along said slots.

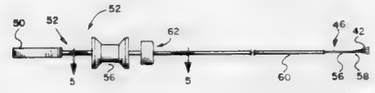
4,655,219

MULTICOMPONENT FLEXIBLE GRASPING DEVICE

Claude E. Petruzzi, Brouxville, N.Y., assignor to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 516,225, Jul. 22, 1983, abandoned. This application Jun. 24, 1986, Ser. No. 880,333
Int. Cl.⁴ A61B *1/06*
U.S. Cl. 128—321 **6 Claims**

1. A forceps-like accessory compatible for use in conjunction with an endoscopic instrument, said forceps-like accessory comprising:
(a) an elongated shaft, said shaft being equipped on its distal end with a plurality of resilient finger-like appendages which are biased in spaced apart relation from one another;
(b) a tubular sheath arranged about said elongated shaft for housing and guiding said elongated shaft of said accessory and its finger-like appendages during the relative movement thereof;
(c) tubular means arranged about said sheath for engaging the forceps-like accessory to an accessory channel of said



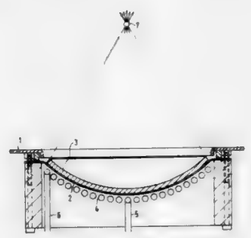
endoscopic instrument so as to restrain movement of said tubular means relative to said endoscopic instrument during movement of the tubular sheath of said accessory within the tubular means; and
(d) control means for supporting said shaft and said tubular means so that there is essentially no longitudinal relative movement therebetween and for supporting said tubular sheath for reciprocal longitudinal movement in opposing directions relative to said tubular means and said shaft;
whereby said sheath is operative to close or space apart said finger-like appendages without longitudinally moving said shaft by said reciprocal movement in said respective opposing direction.

4,655,220

APPARATUS FOR CONTACTLESS FRAGMENTATION OF CONCREMENTS IN VIVO

Alfred Hahn, and George Vogel, both of Erlangen, Fed. Rep. of Germany, assignors to Siekens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 24, 1985, Ser. No. 694,578
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1984, 8413031
Int. Cl.⁴ A61B *17/22*
U.S. Cl. 128—328 **2 Claims**

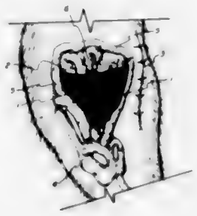


1. Shock wave generator apparatus for fragmenting concretions in vivo, comprising:
a radiator element bounding a liquid-filled volume and shaped as a spherical segment which is smaller than a hemisphere and which faces concave forward into said volume, the volume being large enough to receive a concretion to be destroyed; and
a coil located behind the radiator element and shaped as a spherical segment which is smaller than a hemisphere and which faces concave forward to conform with the radiator element, the coil and radiator element being so coupled together that when the coil is briefly energized by a

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high voltage, the radiator element generates a shock wave in said liquid.

4,655,221
METHOD OF USING A SURGICAL REPAIR MESH
Dennis F. Devereux, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed May 6, 1985, Ser. No. 731,198
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—334 R **19 Claims**



1. A surgical method of using a material manufactured from a bioabsorbable polymer in a warm-blooded mammal comprising:
opening the abdomen of said mammal;
elevating at least one pelvic organ essentially above the true pelvic inlet;
placing the material beneath the organ or organs from the elevating step;
attaching said material to the wall of the peritoneal cavity, thereby preventing said organ or organs from descending into said pelvic inlet; and
closing said abdomen.

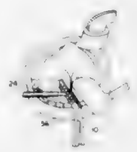
4,655,222
COATED SURGICAL STAPLE
Hugo R. Florez, Somerset, and Robert J. Tuunhauser, Piscataway, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed Jul. 30, 1984, Ser. No. 635,763
Int. Cl.[4] A61B *17/04*
U.S. Cl. 128—334 R **5 Claims**

1. A sterile surgical staple for use with a stapling instrument in closing a wound of human or animal tissue comprising a pair of legs joined at one end by a crown with substantially the entire surface of said staple coated with a low molecular weight fluorocarbon polymer whereby it is easier to place said staple in said skin to close a wound and it is easier to remove said staple from said skin when the wound has healed.

4,655,223
FRENOTOMY METHOD AND APPARATUS
Daniel S. Y. Kim, 16103 NE. 33rd Ave., Ridgefield, Wash. 98642
Filed Aug. 5, 1985, Ser. No. 762,766
Int. Cl.[4] A61B *17/04, 17/28*
U.S. Cl. 128—334 R **15 Claims**

1. A method for performing a frenotomy comprising the following steps:
a. suturing the frenum with two adjacent rows of sutures, and





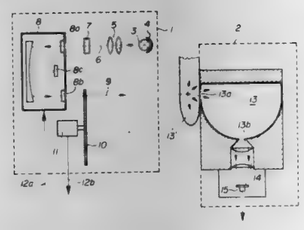
b. severing the frenum between the suture rows, step a occurring before step b.

4,655,224
BRASSIERE
Harold Stern, Wyckoff, N.J., and Elisabeth Saleiman, Newark, Del., assignors to International Playtex, Inc., Stamford, Conn.
Filed Dec. 6, 1985, Ser. No. 806,067
Int. Cl.[4] A41C *3/08*
U.S. Cl. 128—443 **11 Claims**



11. A brassiere frame comprising:
a pair of breast cups each having a upper portion and a lower portion, said upper portion being made of a non-stretchable material, said lower portion being stretchable only in the vertical direction;
a pair of dorsal panels each adjacent a different one of said pair of breast cups, each dorsal panel having a side segment adjacent its respective breast cup and having a back segment adjacent said side segment opposite said respective breast cup, said back segment being stretchable principally only in the horizontal direction;
a body band adjacent the lower edge of said frame and connected to said pair of breast cups and said pair of dorsal panels, said body band being stretchable in the horizontal direction, wherein said side segment stretches in a diagonal direction when the diagonal direction is taken at the intersection of said body band and the line of connection of said side segment to its respective back segment;
a pair of shoulder straps each connected to a different one of said pair of breast cups and its respective dorsal panel;
a pair of strips each located adjacent the inboard margin of said upper portion of a different one of said pair of breast cups and extending from said shoulder strap to said body band, wherein said pair of strips cross each other at a point adjacent said upper portions of said breast cups, said strips being non-stretchable;
a triangular member positioned between said pair of breast cups and also between the point where said pair of strips cross and said body band, said triangular band connects together said pair of breast cups, wherein said triangular member stretches only in the horizontal direction; and
closure means for connecting said pair of dorsal panels about the body of a wearer.

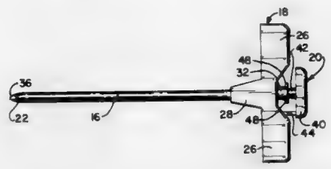
4,655,225
SPECTROPHOTOMETRIC METHOD AND APPARATUS FOR THE NON-INVASIVE
Claus Dähne, Onex, and Daniel Gross, Carouge, both of Switzerland, assignors to Kurabo Industries Ltd., Osaka, Japan
Filed Apr. 18, 1985, Ser. No. 724,667
Int. Cl.[4] A61B *6/00*
U.S. Cl. 128—633 **9 Claims**



1. A spectrophotometric apparatus for determining the glucose concentration in body tissues transcutaneously and non-invasively, comprising:
(a) a directional optical light source located external to the body, the spectral composition of the beam of light from said source being such that it can penetrate the skin to tissues below;
(b) means for collecting light transmitted or diffusely reflected from said irradiated tissue;
(c) means for detecting and converting into electrical signals light gathered from at least one band with a measuring signal wavelength λG of 1575, 1765, 2100 or 2270 + or − 15 nm, typical of the glucose absorption spectrum, and at least one band with a reference signal wavelength λR in the range of 1000 to 2700 nm, typical of the absorption spectrum of background tissue containing glucose but in which the absorption of glucose is nil or insignificant; and
(d) means for transforming said electrical signals into data representing glucose determinations.

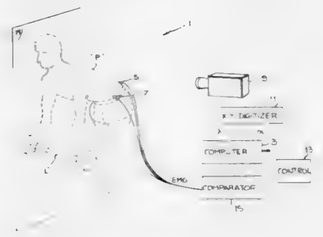
4,655,226
DISPOSABLE BIOPSY NEEDLE UNIT
Peter F. Lee, Edina, Minn., assignor to Southland Instruments, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 562,272, Dec. 16, 1983, abandoned. This application Dec. 20, 1984, Ser. No. 684,129
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—754 **10 Claims**

1. A biopsy needle unit, comprising:
a straight cannula of substantially uniform cylindrical configuration over the major portion of its length and having distal and proximal ends, the distal end being tapered and bevelled;
a tapered hollow fitting having distal and proximal ends with the distal end being connected to the proximal end of said cannula in coaxial relationship to define a longitudinal bore therethrough;
a handle of generally T-shape having a distal end defining a central hub portion, and a proximal end defining oppositely extending lateral wing portions with a transverse recess between the wing portions opposite the hub portion;
the hub portion of said handle being formed about the adjacent connected proximal and distal portions of said cannula and said fitting, respectively, with the proximal end



of said fitting being disposed completely with in the recess of said handle and not extending beyond proximal surfaces of the wing portions;
a removable stylet disposed in said cannula and said fitting;
said stylet including a straight solid needle with a bevelled distal end and a turned proximal end, with a cap secured to the proximal end of the needle;
the wing portions of said handle and the cap of said stylet having rounded proximal surfaces for manual comfort;
means for releasably securing said stylet and said handle against relative rotational movement; and
means defining structure secured between said cannula and said fitting within the hub portion of said handle for reinforcement against pushing and twisting forces during insertion of the biopsy needle unit.

4,655,227
EQUIPMENT FOR THE DETECTION OF MECHANICAL INJURIES IN THE LUMBAR SPINE OF A PATIENT, USING A MATHEMATICAL MODEL
Serge Gracovetsky, St-Lambert, Canada, assignor to Diagnospine Research Inc., St-Lambert, Canada
Filed Jun. 6, 1985, Ser. No. 742,036
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—781 **13 Claims**



1. A method for the detection of mechanical injuries in the lumbar spine of a patient and the identification of said injuries, comprising the steps of:
(a) providing a mathematical model of spine which is applicable to the five lumbar vertebrae and to their disks and is capable of calculating the distribution of moments, com-

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pression and shear forces between the ligaments and muscles at the intervertebral joints of a human being as a function of a load to be pulled up and of the spinal geometry and muscle activity of said human being, said model including the pelvis as a supporting base for the entire spine and assuming, as fundamental hypothesis for its calculation, that any healthy person will perform a task in such a way as to substantially minimize and equalize the stress or an approximation thereof at each intervertebral joint;

(b) measuring with a set of surface electrodes the electromyographic (EMG) activities of the erectores and abdominals of a patient in a bilateral and symmetrical manner with respect to the spine of said patient while he is flexing forward in the median plane and pulling up a small load;

(c) simultaneously measuring the angle of flexion α of said patient while he is flexing forward, said angle α being the dihedral angle between a plane passing through the hips and shoulders of the patient and a vertical plane parallel to the frontal plane of said patient;

(d) supplying the measured angle α as variable input to the model and running said model with said input to calculate the EMG activities of the erectores and abdominals that would normally be used by a healthy person to produce the same task;

(e) comparing the calculated EMG activities with the EMG activities measured on the patient with the surface electrodes;

(f) tuning parameters of the model to fit the calculated EMG activities to those measured on the patient until their differences are minimized; and

(g) detecting and identifying the mechanical injuries, if any, that may be present in the lumbar spine of the patient as a function of the amount and type of tuning that was necessary to complete step (f).

4,655,228

ULTRASONIC DIAGNOSIS APPARATUS FOR TISSUE CHARACTERIZATION

Takaki Shimura, Machida; Keiichi Murakami, Kawasaki; Yutaka Igarashi, Yokohama; Akira Shiba, Kawasaki; Hajime Hayashi, Yamato; Hirohide Miwa, Kawasaki; Michitoshi Inoue, Osaka, and Masayuki Matsumoto, Ashiya, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 28, 1984, Ser. No. 675,869
Claims priority, application Japan, Nov. 30, 1983, 58-225666
Int. Cl.⁴ A61B *10/00*
U.S. Cl. 128—660 **14 Claims**



1. An ultrasonic apparatus for use in diagnosis, by transmitting an ultrasonic wave to a region in a body to be observed and by receiving and processing the reflected ultrasonic wave, said body having a plurality of small reflecting bodies dispersely distributed in said region, said apparatus comprising:

ultrasonic means for transmitting said ultrasonic wave to said region and for receiving said reflected ultrasonic wave and for outputting a signal corresponding to said reflected ultrasonic wave;

extracting means for receiving said signal corresponding to said reflected ultrasonic wave, and for extracting at least one particular time section thereof corresponding to reflection of said ultrasonic wave from said region, and for providing a corresponding output; and

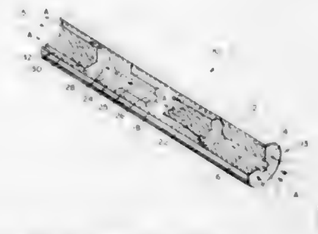
averaging means, receiving as an input the output of said extracting means, for determining an average period of scallopping in the power spectrum of the one particular time section of said reflected ultrasonic wave, said scallopping caused by the small reflecting bodies in said region.

4,655,229

FLAVOR DELIVERY SYSTEM

Andrew J. Sensabaugh, Jr., Winston-Salem, and Henry T. Ridings, Lewisville, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jan. 30, 1984, Ser. No. 575,121
Int. Cl.⁴ A24D *1/00*
U.S. Cl. 131—273 **25 Claims**



24. A flavor delivery system comprising:

an overwrap, tubular in form, having appearance and tactile characteristics of a conventional cigarette, having an intake end and an output end;

an intake filter element, disposed in said intake end, having at least one air passage passing therethrough;

a particulate matter chamber abaft said filter element;

a quantity of particulate matter within said chamber;

a stoppage eliminator adjacent said chamber, generally cylindrical in form, having a raised central portion projecting into said chamber, a body portion bearing against the inner surface of said overwrap, and a flow passage passing longitudinally therethrough, whereby stoppages are precluded and the quantity of particulate matter in said airflow is metered;

a mixing chamber abaft said eliminator; and

a filter element disposed in said output end, having at least one air passage therethrough,

whereby the application of negative pressure at said output end causes a high-velocity stream of air from said intake filter air passage to impinge upon said particulate matter, entraining particulate matter in said airflow.

4,655,230

LOCALIZED LIQUID ADDITIVE APPLICATOR SYSTEM FOR CONTINUOUS CYLINDRICAL PRODUCT

Ronald O. Bryant, Charlotte; William L. Millen, and Robert E. Swander, both of Pineville, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,362
Int. Cl.⁴ A24D *3/06*
U.S. Cl. 131—343 **6 Claims**



1. A filter rod for cigarette filters comprising a cylindrical

bundle of a compacted band of continuous filamentary tow material, and a treating liquid consisting essentially of a plasticizer absorbed into said cylindrical bundle, wherein at least about 60% of the total weight of said treating liquid which is absorbed into said cylindrical bundle is applied on the peripheral surface thereof while not more than 40% of the total weight of said treating liquid is applied uniformly to said band of filamentary tow prior to being compacted into said cylindrical bundle, wherein said treating liquid is present in the filter in a concentration which decreases radially inwardly from the peripheral surface of said cylindrical bundle to the core thereof, and wherein a portion of said peripheral surface of the filter rod is depressed between about 0.5 mm to about 1.0 mm when subjected to a compression load of 2,000 grams.

4,655,231

SNUFF AND PREPARATION THEREOF

Jon P. Ray, and Michael P. Ellis, both of San Antonio, Tex., assignors to Advanced Tobacco Products, Inc., San Antonio, Tex.

Filed Jan. 9, 1984, Ser. No. 569,281
Int. Cl.⁴ A24B *15/16*
U.S. Cl. 131—359 **17 Claims**

8. An improved snuff, useful in the nasal application of nicotine, comprising:

(a) a substantially pure powdered nicotine oxalate salt wherein said salt is present in a concentration of from 3% to 5% by weight of said improved snuff; and

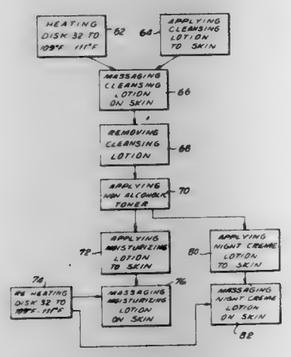
(b) a powdered sugar.

4,655,232

FACIAL TREATMENT AND LOTION KIT

Geoff Ficke, 12241 Laurel Terrace Dr., Studio City, Calif. 91604

Filed Nov. 8, 1984, Ser. No. 641,711
Int. Cl.⁴ A61H *1/00, 23/02*
U.S. Cl. 132—79 A **7 Claims**



1. A method of treating human skin with skin treatment preparations having volatile components, comprising the steps of:

providing a stabilized source of heat, having a closely controlled temperature of approximately 115° F.

providing a heat transfer member having a determined sufficient mass for it to retain a temperature in excess of 106° F. for at least 3.5 minutes when heated to a temperature in the range of 111° F. to 115° F. and then placed in contact with a person's skin having a temperature of approximately 98.6° F.;

heating said heat transfer member by direct thermal conduction from said stable source of heat to a temperature closely approximating the temperature of said stable source of heat, and at least 111° F.; and

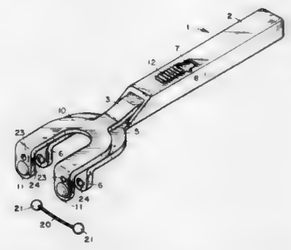
employing said heated heat-transfer member to massage a skin treatment preparation into the skin of a user for a duration of up to 3.5 minutes.

4,655,233

DENTAL FLOSSING TOOL

Patrick E. Laughlin, 1191 Beechwood Dr., Green Bay, Wis. 54303

Filed Nov. 4, 1985, Ser. No. 794,774
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—91 **5 Claims**



1. A tool for the dental flossing of teeth comprising;

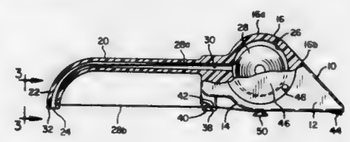
an elongate tool having a bifurcated floss gripping end and a handle end and the floss gripping end is configured so as to receive and securely hold a precut length of floss, the precut length of floss having secured to its ends gripping attachments which permit the precut length of floss to be securely gripped by the floss gripping end of the tool and the tool is provided with opening and closing means for grippers on the floss gripping end of the tool and the tool and the opening and closing means is operable by the use of one hand, and wherein the grippers are provided with hemispherical cavities in each gripping jaw of the two pairs of gripping jaws and the hemispherical cavities are positioned so that the hemispherical cavities open towards each other when the opening and closing means for the grippers is in the open position permitting the positioning between each of the pairs of gripping jaws a spherical gripping attachment and the hemispherical cavities are closed upon the spherical gripping attachment when the opening and closing means is in the closed position so as to permit the jaws to be employed to pick up and securely grasp a precut length of dental floss having spherical gripping attachments secured at each end of the length of dental floss.

4,655,234

DENTAL FLOSS HOLDING TOOL

J. Claude Bowden, P.O. Box 7596, Klamath Falls, Oreg. 97602

Filed Jun. 3, 1985, Ser. No. 740,538
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—92 A **1 Claim**



1. A dental floss holding tool comprising

a plate-like handle arranged to be gripped in the hand, said handle having upper and lower edges, forward and rearward ends, and parallel said walls,

a portion of the lower edge of said handle being flat for lying in the palm of the user's hand and the upper edge being

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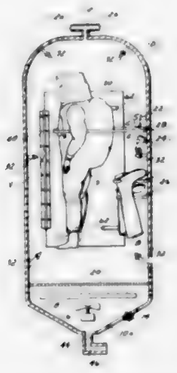
rounded upwardly for a firm cupped engagement by the user's fingers;
a hollow shank projecting from an upper portion of the forward end of said handle in longitudinal alignment with said handle,
said shank having an outer free end,
said outer free end being turned downwardly to a tip end terminating in substantially the plane of the flat lower edge of said handle to form a spanning area between it and said handle;
recess means in said handle arranged to hold a spool of floss;
floss outlet means in said handle communicating between said recess means and said hollow shank for directing floss upwardly into said shank from a spool in the recess;
and releasable anchor means on said tip end and on said body member arranged for engagement by the floss to hold it across said spanning area for flossing the teeth,
said releasable anchor means comprising an anchor post on said tip end and an anchor post on a forward portion of a lower end of said handle,
each of said anchor posts including a peripheral groove extending around said posts in spaced relation from the tip end and a longitudinal slit leading upwardly from said tip end and terminating at said peripheral groove,
said slits being of a dimension to frictionally grip floss forced thereinto whereby the span of floss between said posts is arranged to be held tightly by engagement around said posts in said peripheral grooves and in said slits, and
a second anchor post on the lower edge of said handle spaced rearwardly from the first mentioned post on said body member for further anchored engagement of the floss.

4,655,235

CHEMICAL CONTAMINATION MONITOR

Ralph A. Scott, Jr., 2819 Elsmore St., Fairfax, Va. 22031

Filed Oct. 18, 1984, Ser. No. 661,986
Int. Cl.⁴ B08B *3/02, 5/02, 13/00*
U.S. Cl. 134—99 **11 Claims**



1. A chemical decontamination monitoring system comprising:
a decontamination chamber;
a means for supporting protective clothing suspected of contamination within said chamber;
decontamination solvent spray means for spraying a decontamination solvent onto the protective clothing supported within said chamber;
means for recirculating solvent spray through said decontamination chamber;
means for withdrawing used solvent from the chamber;
means for analyzing the withdrawn used solvent to determine the contaminate content thereof;
means for directing air over the protective clothing;
means for withdrawing the air from the chamber after the air has passed over the protective clothing; and
means for analyzing the air withdrawn from said chamber to determine the contaminate content thereof.

4,655,236

PORTABLE CARPORT

Elizabeth S. Doramé , 8250 E. Rawhide Trail, Tucson, Ariz. 85715, and Gilbert A. Doramé , Tucson, Ariz., assignors to Elizabeth S. Doramé , Tucson, Ariz.

Filed Jul. 2, 1985, Ser. No. 751,059
Int. Cl.⁴ E04H *15/06*
U.S. Cl. 135—88 **9 Claims**



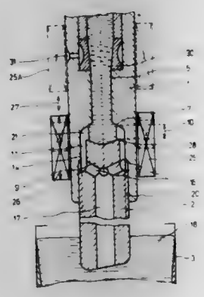
1. A portable carport comprising:
(a) a foldable cover having four corners;
(b) four corner support assemblies for supporting the four corners of said cover above an automobile having four tires, each of said corner support assemblies including
i. first anchoring means for anchoring that corner support assembly to an inner tread surface of one of the tires; and
ii. second anchoring means for anchoring that corner support assembly to an outer tread surface of that tire, the weight of the car on that tire effectively anchoring that corner support assembly and securely supporting of one corner of said cover above the automobile,
wherein each of said corner support assemblies includes a mast connected to the first and second anchoring means of that corner support assembly, and wherein each of said corner support assemblies includes upper anchoring means for anchoring that corner support assembly to an upper portion of one of the tires to maintain a fixed angle between tha mast of that corner support assembly and the plane of the adjacent tire;
wherein said upper anchoring means includes a lateral member, an abutment plate attached to an inner end of said lateral member for abutment against the outer wall of an upper portion of one adjacent tire, and means for rigidly attaching an outer end portion or said lateral member to said mast, and
wherein said upper anchoring means includes a clamping means for extending around the tread of the tire and engaging an inner wall of the upper portion of that tire and pulling the mast toward that tire, urging the abutment plate against the outer wall of the tire.

4,655,237

METHOD FOR REGULATING THE FLOW OF AN ELECTRICALLY CONDUCTIVE FLUID, ESPECIALLY OF A MOLTEN BATH OF METAL IN CONTINUOUS CASTING, AND AN APPARATUS FOR PERFORMING THE METHOD

Hans Gloor, Umiken, and Eduard Müller, Winterthur, both of Switzerland, assignors to Concast Standard AG, Zürich, Switzerland

Filed Feb. 28, 1985, Ser. No. 706,782
Claims priority, application Switzerland, Mar. 7, 1984, 1132/84
Int. Cl.⁴ F15C *1/04*
U.S. Cl. 137—13 **19 Claims**



1. A method for regulating the flow of an electrically conductive liquid, especially molten metal in continuous casting, comprising the steps of:
mechanically inhibiting by means of a refractory insert member installed within a pouring tube the flow of molten metal in the center of a conduit of said pouring tube, wherein at least an outer side of said refractory insert member forms with said pouring tube a substantially annular space, and within an electromagnetically effective length of an electromagnetic field generated by an electromagnetic coil arranged around said pouring tube, said electromagnetically effective length of the electromagnetic field generated by the electromagnetic coil being arranged around the pouring tube at least above the entry side of said annular space; and
allowing annularly constrictive electromagnetic forces capable of radially influencing the flow of molten metal and generated by said electromagnetic field to act upon the molten metal for regulating the flow thereof, said electromagnetic field constricting said electrically conductive liquid to flow subsatntially radially during a portion of its path above the entry side of said annular space and within said electromagnetically effective length.

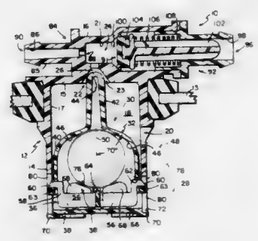
7. An apparatus for regulating the flow of an electrically conductive liquid, comprising:
a pouring tube having a conduit;
said conduit having a central region;
an electromagnetic coil having an electromagnetically effective length arranged coneentrically about said pouring tube for generating an electromagnetic field such that said electromagnetic field interacts with said electrically conductive liquid for producing electromagnetic forces acting substantially radially within said pouring tube and within said electromagnetically effective length;
a refractory insert member mounted in said conduit within said electromagnetically effective length;
said refractory insert member having an upper portion and an outer side and partially obstructing said central region of said conduit of said pouring tube during flow of the electrically conductive liquid at least with said upper portion within said electromagnetically effective length such that said outer side of said upper portion defines a substantially annular space within said pouring tube; and
said electrically conductive liquid regulated by said electromagnetic forces with said electrically conductive liquid flowing substantially radially into said annular space and then through said annular space and on said outer side of said refractory insert member.

4,655,238

ROLL-OVER VALVE

Emil Szlaga, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Filed Mar. 7, 1986, Ser. No. 837,152
Int. Cl.⁴ F16K *17/36*
U.S. Cl. 137—43 **23 Claims**



1. A roll-over valve for use in a vehicle fuel system, the roll-over valve comprising
a hollow valve housing having a longitudinal axis, an inlet for admitting fuel vapors from the vehicle fuel system into the valve housing, and an outlet for discharging the fuel vapors from the valve housing,
a valve member positioned within the hollow valve housing for movement between an outlet-opening position and an outlet-closing position, the valve member having a ball-receiving cup configured to define a first inclined ramp portion,
base means for retaining the valve member within the housing, the base means including a second inclined ramp portion, the base means being coupled to the valve housing to present the second inclined ramp portion in opposing spaced-apart relation to the first inclined ramp portion of the cup to define a ball-receiving space therebetween, and
a ball positioned in the ball-receiving space in substantially camming relation to each of the opposing first and second inclined ramp portions, the ball riding on both ramp portions in a radially-outward direction to move the valve member to its outlet-closing position in response to tilting the valve housing about its longitudinal axis during a vehicle rollover.

4,655,239

WATER-PRESSURE-OPERATED GAS VALVE FOR INSTANTANEOUS GAS WATER HEATER

Takeshi Kato, Aichi, Japan, assignor to Rinnai Corporation, Aichi, Japan

Filed May 23, 1986, Ser. No. 866,627
Claims priority, application Japan, Jun. 19, 1985, 60-91534[U]
Int. Cl.⁴ F23N *1/08*
U.S. Cl. 137—94 **1 Claim**

1. In a water-pressure-operated automatic gas valve of an instantaneous gas water heater which is provided with primary and secondary valves opening and closing a gas passage to a main burner sequentially through the intermediary of a valve rod moving in accordance with the water flow rate passed through the heater, the primary valve being provided so that conduit orifices provided on the top side of the secondary

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valve for conducting the minimum quantity of gas are opened and closed in a snapping manner by the movement of a valve rod through the intermediary of a disk-shaped constant force spring, the improvement characterized in that said secondary valve is constructed as a modulation valve whose opening is varied in accordance with the amount of movement of said valve rod, and comprising:



a first adjusting screw threaded in the top portion of said secondary valve so that it supports said constant force spring whereby the lower surface of said constant force spring is faced with the upper end of said valve rod piercing through said secondary valve, and

an adjusting screw threaded in the primary valve whereby the lower end thereof faces the constant force region of said constant force spring on the top surface thereof.

4,655,240

HYDRAULIC VOLUMETRIC PROPORTIONING VALVE

John A. Flinchum, 9111 White Bluff Rd. #137, Savannah, Chatham County, Ga. 31406

Filed Mar. 28, 1985, Ser. No. 716,846

Int. Cl.[4] G05D *7/01*

U.S. Cl. 137—110 **40 Claims**



1. A hydraulic volumetric proportioning valve, including:

(a) an input;

(b) an output;

(c) a means for varying the rate of fluid flow from said output in response to flow of a predetermined volume of fluid into said input, including:

(i) an initial channel in communication with said input and said output; and

(ii) a metering channel in communication with said input; and

(iii) a means in communication with said metering channel for interrupting flow from said initial channel to said output in response to flow of a predetermined volume of fluid through said metering channel; and

(iv) at least one alternative channel in communication with said input and said output.

4,655,241

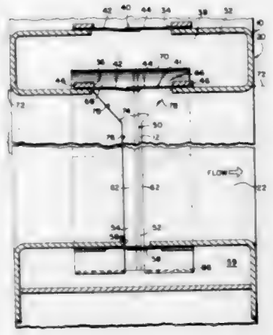
APPARATUS FOR SEALING DAMPERS

Michael R. Neiman, Allentown, Pa., assignor to Damper Design, Inc., Bethlehem, Pa.

Filed Dec. 20, 1985, Ser. No. 811,812

Int. Cl.[4] F16K *3/02, 3/312, 25/00*

U.S. Cl. 137—240 **18 Claims**



1. An apparatus for controlling the flow of a fluid comprising:

(a) a body;

(b) a fluid passageway through said body;

(c) a closure member cooperating with said body for sliding movement between a closed position, wherein said closure member extends into said passageway to restrict the flow of fluid therethrough and an open position, wherein said closure member is withdrawn completely from said passageway, said closure member having a pair of opposed lateral edge regions on each side;

(d) said body having an entry side with an elongated entry aperture through which entry aperture said closure member is movable between the open and closed positions;

(e) said body having a pair of opposed lateral sides with elongated lateral apertures, said lateral edge regions of said closure member extending into said lateral apertures when said closure member is in a position other than said open position;

(f) said entry aperture including an elongated entry seal, which entry seal has a pair of opposite ends and which entry seal includes opposed, cooperating flat entry sealing strips which overlap each other in sealing engagement when said closure member is completely withdrawn from the fluid passageway and which resiliently, sealingly engage said closure member by bending of said sealing strips into a bowed condition when said closure member is in a position other than said open position;

(g) each of said lateral apertures including an elongated lateral seal, each lateral seal including opposed, cooperating, flat, lateral sealing strips which overlap each other in sealing engagement when said closure member is completely withdrawn from the fluid passageway and which resiliently, sealingly engage one of said lateral edge regions of said closure member by bending of said sealing strips into a bowed condition when said closure member is in a position other than said open position;

(h) said body including chamber means outside said fluid passageway, said entry and lateral seals separating said fluid passageway from said chamber means, said chamber means being for receiving pressurized sealing gas, which sealing gas bleeds through said seals to ensure complete sealing of said closure member with respect to the fluid in the fluid passageway;

(i) each lateral seal having a main section located generally in one plane when said closure member is in the open position, each lateral seal also having an end section near said entry seal and a segment in the region of said end section which segment is curved generally in the form of a cylindrical arc, which cylindrical arc has an axis generally parallel to said one plane of said main section of the seal and perpendicular to the length of the seal;

(j) whereby said curvature of said lateral seal stiffens said seal against movement in directions generally normal to said one plane of the seal which, in turn, permits the ends of the entry seal to closely adjoin said lateral seal by allowing said lateral apertures to be widened in the region of the entry seal, the widening of the lateral apertures providing clearance for the entry seal to move into and from curved conditions in close proximity to the adjoining lateral seals to thus reduce leakage of sealing gas at areas where the entry seal and the lateral seals come together.

4,655,242

WATER SEAL DRUM

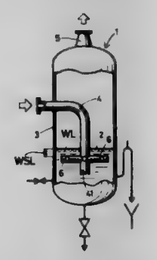
Takeru Hamazaki; Noboru Hashimoto, and Okitsugu Shinobu, all of Yokohama, Japan, assignors to JGC Corporation, Tokyo, Japan

Continuation of Ser. No. 525,434, Aug. 22, 1983, abandoned, which is a continuation of Ser. No. 248,280, Mar. 30, 1981, abandoned. This application Mar. 10, 1986, Ser. No. 838,430

Claims priority, application Japan, Mar. 28, 1980, 55-39854

Int. Cl.[4] F16K *13/00*

U.S. Cl. 137—247.27 **10 Claims**



1. A water seal drum for gas essentially comprising a vessel containing seal water, a gas introducing pipe extending downward from the upper part of the vessel, the lower end of the pipe opening beneath the water level, a gas discharging pipe at the top of the vessel, and means for minimizing sloshing and for uniformly releasing gas bubbles at a horizontal cross-section of the seal water; the means including gas dispersing pipes radially and horizontally arranged about the gas introducing pipe, the gas dispersing pipes having circumferentially arranged nozzles for releasing the gas at a position above the lower end of the gas introducing pipe but beneath the water level, and the nozzles having an open area of the nozzle increasing from the base to the end of the gas dispersing pipes, thereby minimizing sloshing and uniformly releasing gas bubbles at a horizontal cross-section of the seal water.

4,655,243

AUTOMATIC POOL FILLER

Kris Keller, 517 S. Paula Dr., Dunedin, Fla. 33528

Filed Nov. 25, 1985, Ser. No. 801,302

Int. Cl.[4] F16K *31/34*

U.S. Cl. 137—403 **2 Claims**

1. A device that adds water to a swimming pool responsive to the detection of a preselected decrease in the water level thereof, comprising:

a source of water under pressure having an on-off valve continuously set in its on position so that water under pressure is continuously available from said source;

a submerged valve member having a valve chamber and a diaphragm chamber;

an elongate hose member disposed in fluid communication relation between said continuously on source of water under pressure and said valve chamber, said hose member operative to continuously communicate the water under pressure from said source to said valve chamber;

said valve chamber having a normally closed on-off valve means disposed therein, said valve chamber having an inlet in continuous fluid communication with said source of water under pressure via said hose member and having an outlet in continuous fluid communication with the water in said swimming pool;

a valve member positioning means for maintaining said submerged valve member at a preselected depth relative to a preselected desired level of water in said pool;

said valve member positioning means including a first horizontally disposed pipe member, a second vertically disposed pipe member interconnected to said first pipe member by an elbow member, and a stabilizing means being positioned on a surface outside of the pool, said stabilizing means prevents the first pipe member from rolling with respect to the surface outside of the pool;

said elongate hose member being positioned interiorly of said first and second pipe members; said hose member being maintained within said first and second pipe members by a maintaining means to prevent said hose member from moving relative to said first and second pipe members;

said first pipe member overlying the surface outside of said pool;

said on-off valve means being operable by said diaphragm member;

a first opening formed in a first side of said diaphragm chamber to vent a first side of said diaphragm member to atmosphere through said first and second pipe members;

a second opening formed in a second side of said diaphragm chamber to open a second side of said diaphragm member to water in said pool;

and said on-off valve means opening in response to the detection by said diaphragm member of a decrease in the level of the water of said pool, said detection being a function of the difference in pressure between the first and second sides of said diaphragm member which pressure differential is a function of the depth of the diaphragm member in relation to the level of water in said pool;

said on-off valve means returning to its closed position responsive to the level of water in said pool returning to a level where the distance between said level and said diaphragm member is sufficient to restore the diaphragm member to its position which closes said on-off means.

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FLOAT OPERATED VALVE

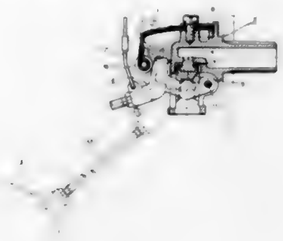
Soo H. Park, 3-557, Mia-Dong, Dobong-ku, Seoul, Rep. of Korea

Filed Dec. 10, 1985, Ser. No. 807,267

Claims priority, application Rep. of Korea, Dec. 12, 1984, 13049/1984

Int. Cl.⁴ F16K *31/26, 31/28, 31/08*

U.S. Cl. 137—412 **13 Claims**



1. A float operated valve, comprising:

a valve body;

a valve operable to restrict the flow of fluid therethrough;

a float responsive to liquid level;

an engagement member connected to said float for movement therewith and pivotally attached to said valve body, said engagement member being moved into operative engagement with said valve in response to said float rising, said engagement member having an outwardly projecting engagement portion; and

a resilient member attached to said valve body, said relient member being separate from said engagement member and positioned to directly disengagably engage said engagement portion as said float rises and apply a sufficient elastic force to said engagement portion to temporarily prevent the movement of said engagement member into operative engagement with said valve, said resilient member disengaging from said engagement portion to release said engagement member for substantially uninhibited movement in response to the buoyant force of said float to permit operative engagement with said valve upon said float exerting a buoyant force on said resilient member directly through said engagement portion which exceeds a predetermined buoyant force, said predetermined buoyant force exceeding the unrestricted buoyant force of said float to thereby hold said valve in a closed state with greater force than the unrestricted force exertable by said float.

4. The float operated valve of claim 1 further including a switch rod connected to said engagement member and connectable to a power source for automatic control of the valve by applying an external force exceeding said predetermined buoyant force to said engagement member to selectively overcome said elastic force.

4,655,245

HYDRAULIC FUSE

Walter G. Gellerson, Yakima, Wash., assignor to Dowty Decoto, Inc., Yakima, Wash.

Filed Jan. 13, 1986, Ser. No. 873,962

Int. Cl.⁴ F16K *21/16*

U.S. Cl. 137—493 **11 Claims**

1. In an hydraulic fuse to monitor the quantity of hydraulic fluid passing through the fuse, and then block such flow when a selected quantity of fluid has passed through the fuse, the combination comprising

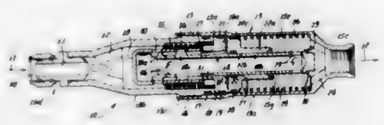
(a) a body structure containing cavity structure,

(b) a primary piston in the cavity structure and movable endwise to control fluid flow through a first port,

(c) a sleeve, and a sleeve guide in the cavity structure, and in the path of fluid flow toward the primary piston,

(d) the sleeve and guide being relatively axially movable, and there being a spring acting to urge one of the sleeve and guide in one axial direction,

(e) and fluid flow control slots formed by the sleeve and sleeve guide to control flow both to said piston for controllably displacing same, and to said first port, and characterized in that:



(i) as the forward flow rate through the fuse reaches a threshold the piston begins said movement toward said first port, and

(ii) as the flow rate increases above said threshold, relative axial movement between the sleeve and guide acts:

to maintain nearly constant, the fluid pressure drop across primary slot means included with said control slots; and

to controllably meter fluid flow to the piston via metering slot means included within said control slots, for displacing said first piston as aforesaid,

(f) whereby the piston is displaced to close said first port after a required quantity of fluid has passed through the fuse.

4,655,246

REGULATED GAS FLOW CONTROL VALVE

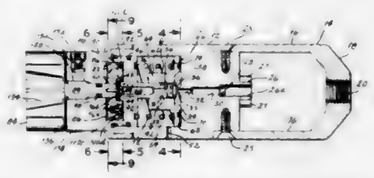
James R. Philpot; Steve R. Pingston, and Leland E. Segetti, all of St. Louis, Mo., assignors to Essex Industries, Inc., St. Louis, Mo.

Division of Ser. No. 537,653, Sep. 30, 1985, Pat. No. 4,572,477.

This application Nov. 12, 1985, Ser. No. 796,803

Int. Cl.⁴ F16K *31/36*

U.S. Cl. 137—505.11 **18 Claims**



1. In a compact, regulated gas flow control apparatus including a body, an inlet at one end of said body for receiving gas at high pressure from a source thereof, regulator means for dropping the high pressure to a low pressure and maintaining the low pressure at a substantially constant delivery value, said regulator means including a valve seat within said valve body, a valve member for movement relative to said valve body, and a piston movable within said body in response to pressure within said valve body for controlling movement of said valve member to provide regulated delivery of the low pressure gas at a substantially constant delivery value, an outlet, and delivery means for delivery of the low pressure gas by said outlet, the improvement comprising an atmospheric vent and pressure relief means separate from said piston and movable relative to said piston for overpressure venting of gas received from said source to atmosphere if received through said inlet at excessive, said pressure relief means comprising a movable guide within said cavity coaxially surrounding and guiding said valve member, said spring interengaging said guide and piston for urging said piston toward one end of said cavity and for urging said guide toward the other end of said cavity.

4,655,247

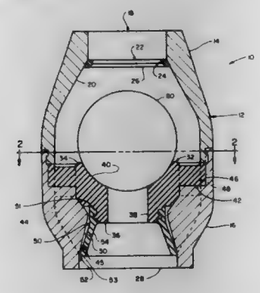
BALL-TYPE CHECK VALVE ASSEMBLY

Lubbert Westra, and Brent J. Lirette, both of Houma, La., assignors to Chromalloy American Corporation, St. Louis, Mo.

Filed Jan. 17, 1986, Ser. No. 820,544

Int. Cl.⁴ F16K *15/04*

U.S. Cl. 137—519.5 **7 Claims**



1. A ball-type check valve assembly for use in a fluid flow line comprising a valve body including an inlet end for directing the flow of fluid from the fluid flow line into an inlet passageway, an outlet end for directing the flow of fluid received from an outlet passageway into the fluid flow line, said outlet passageway being adapted to fluidly communicate with said inlet passageway, a ball retainer cup positioned within the valve body intermediate said inlet end and said outlet end, said ball retainer cup having a passageway extending therethrough providing first means adapted to fluidly communicate said inlet passageway with said outlet passageway, support means adapted to support said ball retainer cup in the position intermediate said inlet end and said outlet end, at least one channel providing second means adapted to fluidly communicate said inlet passageway with said outlet passageway, said channel being adapted to direct the flow of fluid received from said inlet passageway into said outlet passageway at a first location therein spaced from said outlet end, a flexible skirt member having one end portion abutting said ball retainer cup and extending therefrom to another end portion located at a second location within said outlet passageway between said first location and said outlet end, said flexible skirt member having a passageway extending therethrough which is in fluid communication with the passageway extending through said ball retainer cup and having an outside diameter adapted to allow fluid flowing from said channel to flow into and through said outlet passageway, and a ball valve member adapted to be moved between said ball retainer cup and said inlet end.

4,655,248

CHECK VALVE

Donald K. Chalaire, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 16, 1985, Ser. No. 809,368

Int. Cl.⁴ F16K *15/02*

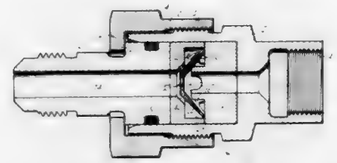
U.S. Cl. 137—528 **8 Claims**

1. A check valve for regulating a high frequency, reversible flowing stream of fluid, comprising:

a valve body defining an internal cavity and having an inlet passage for admitting the forward flowing fluid stream into the cavity and a outlet passage for conducting the admitted forward flowing stream out of the cavity;

a tapered plug, disposed within the cavity and defining an upstream surface of increasing outward transverse displacement with respect to the forward fluid flow direction, the plug being freely longitudinally movable under the influence of the flowing fluid stream and including means for conducting the forward flowing fluid therethrough;

a valve seat, disposed in the housing about the inlet passage for sealingly engaging a portion of the plug surface during periods of attempted reverse fluid flow, the valve seat having a relatively small surface area as compared to the



upstream plug surface disposed transversely outward of the sealingly engaged plug surface portion; and

the valve seat and plug surface portion defining a reduced fluid flow area throat therebetween for locally accelerating the forward flowing fluid relative to the forward flowing fluid velocity downstream of the throat, thereby establishing a static pressure imbalance along the plug for urging the plug toward the valve seat.

4,655,249

ELECTROMAGNETIC VALVE

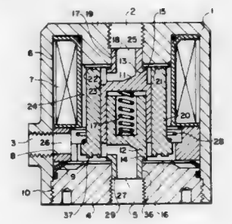
Jean Livet, Geneva, Switzerland, assignor to Honeywell Lucifer SA, Carouge, Switzerland

Filed Apr. 9, 1986, Ser. No. 849,923

Claims priority, application European Pat. Off., Apr. 11, 1985, 85/810159.5

Int. Cl.⁴ F15B *13/044;* **F16K** *31/06*

U.S. Cl. 137—625.5 **6 Claims**



1. A solenoid valve comprising

a body delimiting a chamber,

an orifice in said body,

a movable magnetic core forming a valve plug that can be displaced under the action of a magnetic field produced by an electrical coil,

an electrical coil,

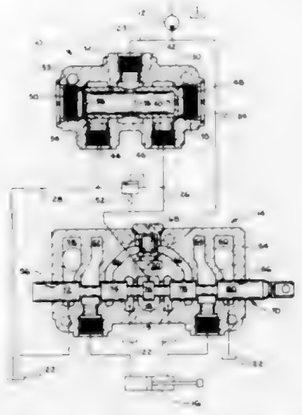
at least one valve seat cooperating with said core to control the passage of a fluid between the said chamber and said orifice, said seat being constituted by a non-magnetic washer with a hardness at least equal to that of its support,

a support for said washer, and

spring means for axially urging said washer against said support, said spring means including a spring and a flanged element subject to said spring, and having a tubular end which is engaged in said body.

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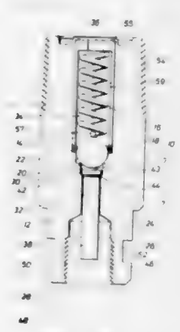
4,655,250
OPEN CENTER UNLOADING VALVE
Alan C. Jackson, Halstead, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed Feb. 3, 1986, Ser. No. 825,622
Int. Cl.[4] F15B *13/08*
U.S. Cl. 137—596.13 **7 Claims**



1. An unloading valve utilized in an open center hydraulic circuit, the circuit including a pump supply at least one motor through at least one conventional open center control valve in a stack, each control valve having an open center neutral passage connected in series to reservoir and a dead end passage passing through each of the control valves in the stack,
a first conduit means connecting the pump to the dead end power passage;
and a second conduit means parallel to the first conduit means connecting the pump to the open center neutral passages;
the unloading valve positioned in the second conduit means comprising a spool means in a bore which splits the intake flow from the pump in two paths regardless of the flow level in a set proportion directing one path to the open center neutral passage and the other path to resevoir, whereby in the neutral positions of the control valves a substantial portion of the pump flow is diverted away from the control valves to increase the flow capacity of the control valves and minimize energy loss in a neutral position.

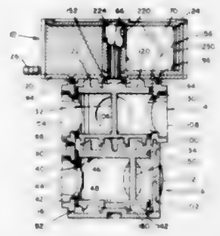
4,655,251
VALVE HAVING HARD AND SOFT SEATS
Spencer M. Nimberger, Houston, Tex., assignor to General Screw Products Company, Houston, Tex.
Continuation of Ser. No. 711,670, Mar. 14, 1985, abandoned. This application Aug. 25, 1986, Ser. No. 899,887
Int. Cl.[4] F16K *15/18*; F16L *29/00*
U.S. Cl. 137—516.29 **20 Claims**

1. A check valve for normally retaining pressurized fluid within an assembly and enabling said pressurized fluid to be vented from said assembly and additional pressurized fluid to be added to said assembly, said check valve including a valve body having interior walls at least partially defining a fluid passageway and a stinger axially movable within said passageway for selectively opening said passageway for fluid flow, said valve further comprising:
a metallic ball member having a uniform sphere diameter;
a metallic seat having a circular edge formed from angled engagement of said interior walls of said valve body for substantially line contact sealing engagement with said ball member under high fluid pressure in said assembly;
a plastic seat for sealing engagement with said ball member under low fluid pressure in said assembly;
a spring member for biasing said metallic ball member towards said plastic seat;
said plastic seat having an inner surface of a diameter approximating said ball member diameter and being positioned for minimizing a radially inward fluid pressure force on said plastic seat when said ball member is forced



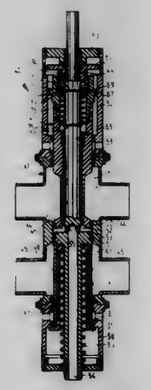
out of engagement with said metallic seat by said movable stinger;
said interior walls defining an annular void between said metallic seat, said plastic seat, and ball member when said ball member is seated on said metallic seat; and
a plastic seat retainer for fixedly positioning said plastic seat within said fluid passageway and having an angled end surface for engagement with said plastic seat for increasing resistance to radially inward movement of said plastic seat when said ball member is forced out of engagement with said metallic seat by said movable stinger.

4,655,252
VALVES
Mark U. Krumhansl, 1811 Beat Twig, Tustin, Calif. 92680
Continuation-in-part of Ser. No. 133,636, Mar. 24, 1980, abandoned. This application Jan. 29, 1981, Ser. No. 229,637
Int. Cl.[4] F16K *11/085, 27/00, 5/04*
U.S. Cl. 137—595 **6 Claims**



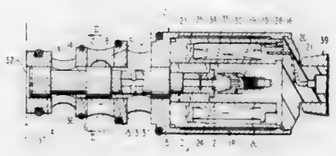
1. A valve comprising, in combination:
a valve body defining a cylindrical valve cavity opening at an upper and a lower annular rim, at least two ports spaced around the periphery of said valve body and each affording communication to said cavity;
a bottom cover having an upper face and a lower face;
means in the form of a set of multilevel conformations alike in form and dimension at the upper face of said bottom cover and at said upper annular rim, and in the form of a set of multilevel conformations formed at the upper face of said bottom cover for closing the lower end of said cavity with said bottom cover; and
a rotatable valve core disposed in said cavity and comprising upper and lower spaced disks having axes substantially coincident with the axis of said cavity and an interconnecting wall extending parallel to the axis of the cavity into engagement, at its edges, with the wall of the cavity whereby, in at least one rotational position, said interconnecting wall forcloses communication through said cavity from one of said ports to another.

4,655,253
SHUT-OFF VALVE
Jan Ourenssna, Sneek, Netherlands, assignor to Appendagefabriek "Hoogeveen" BV, Sneek, Netherlands
Filed Oct. 2, 1984, Ser. No. 656,936
Claims priority, application Netherlands, Oct. 6, 1983, 8303437
Int. Cl.[4] F16K *11/14, 51/00*
U.S. Cl. 137—614.18 **11 Claims**



1. A shut-off valve comprising the combination of a valve housing having opposite end passages and including an enlarged upper chamber and an enlarged lower chamber and ports communicating respectively with said chambers, said housing also including a valving passage between said chambers, said passages all being of substantially the same diameter and a valve body having discrete first and second portions sealingly cooperative with said passages and axially slidable in said housing between a shut-off position in which adjacent parts of the first and second portions project within the valving passage and in circumferentially sealing contact therewithin so that the valving passage is blocked and an open position in which said adjacent parts of the first and second portions are out of the valving passage and out of circumferentially sealing contact therewithin so that said valving passage is unblocked to communicate said chambers, said first and second portions being coaxially aligned, said second portion being hollow to define a conduit extending exteriorly of said housing, said second portion having an opening communicating said conduit with a space between said adjacent parts of said first and second portions, said space being surrounded by and within said valving passage between the circumferential seals between the first and second portions and the valving passage when said valve body is in said closed position thereof to prevent flow between said ports in the event of sealing failure at said valving passage when the valve body is in said closed position thereof.

4,655,254
CONTROL VALVE, IN PARTICULAR AN ELECTROHYDRAULIC CONTROL VALVE
Günther Häfner, Stuttgart; Karl-Ernst Noreikat, Esslingen; Hans-Dieter Schmidt, Wendlingen; Ulrich Letsche, and Bernhard Bauer, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 471,040, Mar. 1, 1983, abandoned. This application Dec. 20, 1985, Ser. No. 810,844
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207393
Int. Cl.[4] F16K *21/00*
U.S. Cl. 137—625.65 **1 Claim**



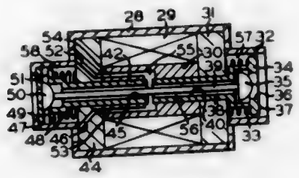
1. A control valve for a diesel engine fuel injection pump comprising
a housing having at least
an inlet bore
a return bore, and
plural control bores,
said inlet bore, return flow bore and control bores being disposed axially with respect to each other,
a slider means having an axis for guided axial movement within the housing, the slider means having at least
a first control edge means disposed axially adjacent the inlet bore and control bores for performing one of communicating or blocking fluid passage between the inlet bore and the control bores,
a second control edge means disposed adjacent the return flow bore and the control bores for performing one of communicating or blocking fuel passage between the return flow bore and the control bores, and
means for actuating said slider means for causing said first and second control edge means to perform said communicating or blocking operations,
leakage line means disposed within said slider means, and
means communicating said leakage line means with said return flow bore,
means for inducing oil to flow between said leakage line means and said return flow bore,
the control bores having axes lying substantially in a single plane at right angles to the axis of the slider means said axes of the control bores lying substantially radially with respect to the axis of the inlet and outlet bores and slider means, surfaces of the plural control bores intersecting at their inner extremities to form a chamber substantially cylindrically shaped and disposed about the slider means.

4,655,255
ELECTROMAGNETICALLY-OPERATED MULTI-WAY VALVE
Konrad Rode, Seelze, Fed. Rep. of Germany, assignor to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany
Filed Jan. 16, 1986, Ser. No. 819,446
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1985, 3501708
Int. Cl.[4] F16K *11/10*
U.S. Cl. 137—627.5 **13 Claims**

1. An electromagnetically-operated multi-way valve, having at least two valve arrangements, comprising:

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(a) a valve housing;
(b) a coil disposed within said housing;
(c) a first armature, operable upon energization of said coil such that, at least one of the at least two valve arrangements can be actuated against a first force exerted by a valve urging means;
(d) said valve urging means, connected to said at least one of the at least two valve arrangements, being effective for holding said at least one valve arrangement in a first position during deenergization of said coil;
(e) a second armature operable uon energization of said coil such that another one of the at least two valve arrangements can be actuated against a second force exerted by a second valve urging means;
(f) said second valve urging means, connected to said another one of the at least two valve arrangements, being effective for holding said another one of the valve arrangements in a first position during deenergization of said coil;



(g) said first armature and said second armature being disposed in opposing relation to one another at opposite first and second ends of said coil such that, said first and second armatures can operate and be activated independent of one another;
(h) such first force and such second force, associated respectively with said valve urging means and said second valve urging means, differing in magnitude such that, said at least one valve arrangement and said another valve arrangement are operated at different times and under different energization conditions of said coil; and
(i) said valve urging means including a first valve spring, and said second valve urging means including a second valve spring, said first valve spring and said second valve spring having different spring constants, thereby effecting such difference in magnitude between such first force and such second force, and requiring different levels of current through said coil to actuate, respectively, said first and said second armatures to overcome such differing spring forces.

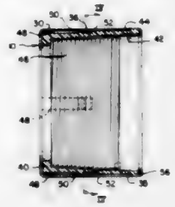
4,655,256

THREADED END PROTECTOR AND COMPONENT

Robert E. Lasota, Aliquippa, and William Haiback, Erie, both of Pa., assignors to Ampco-Pittsburgh Corporation, Pittsburgh, Pa.

Filed Jan. 14, 1985, Ser. No. 691,422
Int. Cl.⁴ F16L *57/00*
U.S. Cl. 138—96 T **8 Claims**

8. In a protector for the threaded end of a generally tubular member, said protector including a plastic sleeve having a threaded portion for threadedly engaging said threaded tubular member and a metal sleeve adapted to be joined coaxially with said plastic sleeve in at least partially overlapping relationship, the improvement comprising:
at least one projection formed on said overlapping portion of said metal sleeve and extending toward said overlapping portion of said plastic sleeve;
a recess formed on said plastic sleeve and adapted to captively receive said projection; and
a channel formed on said plastic sleeve in longitudinal alignment with said recess, said channel adapted to guide said projection toward said recess, said channel terminating in a ramp contoured to facilitate the movement of said projection from within said channel to its captive reception within said recess.

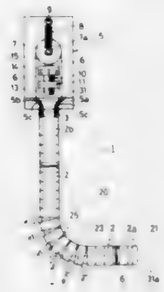


4,655,257

GUIDE TUBE ASSEMBLY FOR INDUSTRIAL ENDOSCOPE

Yoshiyuki Iwashita, Tokyo, Japan, assignor to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan

Filed Nov. 1, 1985, Ser. No. 793,745
Claims priority, application Japan, Mar. 25, 1985, 60-41613[U]
Int. Cl.⁴ A61B *1/00*
U.S. Cl. 138—120 **8 Claims**



1. A guide tube assembly for an industrial endoscope, comprising:
a multiplicity of tube segments including a distal end tube segment and a proximal end tube segment and arranged to form therein a long guide bore, each of said tube segments including said proximal end tube segment having therein at least one pair of communication bores;
a hand actuator connected to said proximal end tube segment, said hand actuator having one end thereof connected to said proximal end tube segment, said hand actuator having mounted thereon a rotatable drum movable along said hand actuator toward and away from said one end thereof, said pair of elongated members having their respective other ends connected to each other to form a loop trained around said drum, said resilient means biasing said drum away from said one end of said hand actuator, said hand actuator including a support pin mounted thereon so as to be slidable along said hand actuator, said drum being mounted on said support pin so as to be rotatable around an axis thereof, said resilient means comprising a coil spring having one end thereof connected to said support pin and the other end connected to said hand actuator;

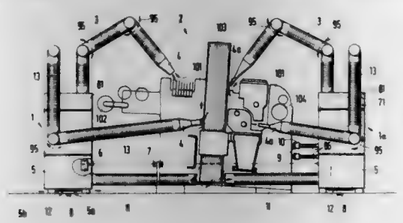
at least one pair of elongated members having their respective one ends fixedly secured to said distal end tube segment, said at least one pair of elongated members respectively extending through said at least one pair of communication bores in each of said tube segments including said proximal end tube segment, to said hand actuator; and
resilient means mounted on said hand actuator for resileintly pulling said elongated members to bias said multiplicity of tube segments so as to bring them into contact with each other.

4,655,258

CLEANING APPARATUS FOR TEXTILE MACHINE

Fritz-Werner Breyer, Frauenfeld, and Wolfgang K. Meyer, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 31, 1986, Ser. No. 825,135
Claims priority, application European Pat. Off., Feb. 20, 1985, 85810068.8
Int. Cl.⁴ D03J *0/1*
U.S. Cl. 139—1 C **10 Claims**



1. In combination,
a plurality of weaving machines; and
a cleaning apparatus for removing dust and fluff from said weaving machines, said apparatus including a powered vehicle movable along said weaving machines, at least one movable arm mounted on said vehicle and having a pneumatic duct therein, a nozzle secured to said arm in communication with said duct, a sensor for receiving a control signal from a selected weaving machine and electronic control means connnected to said sensor to receive and convert a control signal from said selected weaving machine into movements of said arm relative to said selected weaving machine to position said nozzle at a predetermined area of said selected weaving machine for pneumatic removal of dust and fluff from said predetermined area.

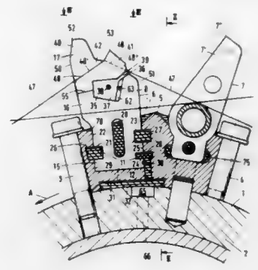
4,655,259

LAMELLA FOR A PICKING COMB OF A WEAVING ROTOR

Alois Steiner, Rieden, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 24, 1986, Ser. No. 843,075
Claims priority, application European Pat. Off., Apr. 2, 1985, 85103966.9
Int. Cl.⁴ D03D *47/30*
U.S. Cl. 139—11 **16 Claims**

1. A lamella for a picking comb of a weaving rotor, said lamella having a unitary structure defining
a weft-guiding part including a picking aperture for passage of a picked weft yarn therethrough; and
a warp-guiding part including a pair of projections extending from a surface to define a passage therebetween for a warp yarn with said surface being disposed to support a warp yarn thereon with the lamella in a top shed position, said projections being peripherally displaced relative to each other with one of said projections being on a leading side of said warp-guiding part and the other of said projections being on a trailing side of said warp-guiding part.

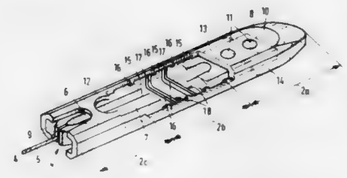


4,655,260

SHUTTLE PROJECTILE FOR A WEAVING MACHINE

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 9, 1986, Ser. No. 849,686
Claims priority, application European Pat. Off., Apr. 27, 1985, 85105182.1
Int. Cl.⁴ D03J *5/06*
U.S. Cl. 139—196.2 **17 Claims**



1. A shuttle projectile for a weaving machine comprising
a weft thread clamp having a yoke at one end and a pair of clamping arms extending from said yoke; and
an elongated housing having an internal cavity receiving said clamp, said housing having a thin-walled flexible section spaced peripherally from said clamping arms at least over a central third of the length of said housing and having at least one internal projection within said flexible section with a support surface slidably contacting and supported on at least one of said clamping arms.

4,655,261

YARN CUTTING SCISSORS DEVICE

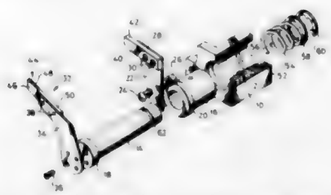
Kouji Takahashi, Tokyo, and Rikio Takahashi, Yokohama, both of Japan, assignors to Takahashi Seimitsu Kogyo Kabushiki Kaisha, Japan

Filed Nov. 13, 1985, Ser. No. 797,582
Claims priority, application Japan, Aug. 17, 1985, 60-125494[U]
Int. Cl.⁴ D03D *49/70*; D05B *65/00*
U.S. Cl. 139—302 **8 Claims**

1. A yarn cutting scissors device comprising:
a support block;
an oscillating shaft supported at said support block so as to be oscillated in the circumferential direction thereof;
a stationary blade coupled to said support block;
spacer means arranged between said support block and said stationary blade to define a suitable gap therebetween;

oscillation means coupled between the stationary blade and spacer means for causing said stationary blade to be oscillated in said gap about said spacer means in the longitudinal direction of said oscillating shaft;

a movable blade fixedly mounted on said oscillating shaft so as to be opposite to said stationary blade and arranged to



carry out the accessible movement with respect to said stationary blade with the oscillation of said oscillating shaft; and

bias means for urging said oscillating shaft against said support block to urge said movable blade against said stationary blade.

4,655,262

REEDS FOR AIR JET LOOMS

Walter Scheffel, Hopfenstr. 22, 8832 Weissenburg, and Bernd W. Scheffel, Munich, both of Fed. Rep. of Germany, assignors to Walter Scheffel, Weissenburg, Fed. Rep. of Germany

Filed Dec. 6, 1985, Ser. No. 806,262

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1984, 3444973

Int. Cl.⁴ D03D *47/28*

U.S. Cl. 139—435 **4 Claims**



1. In a air jet loom provided with shed forming means, a sley mounted on an axis of oscillation and including a reed having a weft inserting channel formed therein; said reed being formed of a plurality of teeth each having a front and a back edge, the front edge having a first region comprising a recessed portion forming said weft inserting channel and a second region forming the weft beat-up area, said second region being spaced further from said axis than said first region; each said recessed portion includes upper and lower side walls connected by a base; a first of said teeth are formed in a first configuration in which said recess is formed at a first depth, a second of said teeth are formed in a second configuration in which said recess is formed at a second and greater depth, said configurations are such that the distance between the front edge and said back edge of said base is less in said first teeth than in said second teeth; said first and second teeth being interdisposed across the width of the reed.

4,655,263

APPARATUS FOR PRESENTING WEFT THREADS TO THE CLAMPS OF GRIPPER RODS IN SHUTTLELESS LOOMS

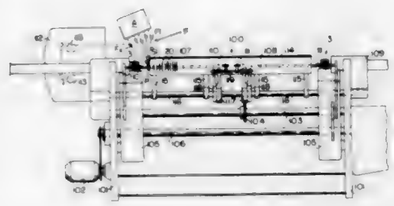
Peter Dornier, Lindau, and Valentin Krumm, Hergensweiler, both of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Mar. 21, 1986, Ser. No. 842,635

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1985, 3512303

Int. Cl.⁴ D03D *47/18*

U.S. Cl. 139—446 **7 Claims**



1. A shuttleless loom apparatus, comprising gripper means (1), thread guide means (F) for presenting a weft thread to said gripper means (1) out of a thread fan containing a number of weft threads, said gripper means inserting the presented thread into a shed in said shuttleless loom, control means (3) for controlling the operation of said gripper means to receive and hold a thread from said thread presenting guide means, and displacement drive means for operating said control means, said displacement drive means comprising drive transmission members (5, 6, 7, 9, 11) for displacing said control means (3) in parallel to a movement direction of said gripper means (1) for adapting a control means displacement to said number of weft threads in said thread fan.

4,655,264

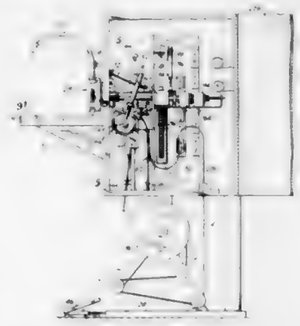
TWIST TYING MACHINE

Gerald G. Dilley, Portland, Oreg., assignor to Ben Clements & Sons, Inc., South Hackensack, N.J.

Division of Ser. No. 545,993, Oct. 27, 1983, Pat. No. 4,559,977. This application Dec. 11, 1985, Ser. No. 807,638

Int. Cl.⁴ B21F *9/02*

U.S. Cl. 140—93.6 **15 Claims**



1. A ribbon feeder device for use in twist tying machines and the like wherein a tie ribbon is moved into an encircling relationship about a product, the device comprising:

chute means for guiding a tie ribbon as the ribbon is moved towards a product;

first feed wheel means extending into tangential rolling contact with a first surface of a tie ribbon in the chute means;

second feed wheel means extending into rolling contact with a second surface of a tie ribbon in the chute means, the first and second feed wheels cooperating to grasp the tie ribbon;

drive shaft means on which the first feed wheel means is rotatably mounted;

one-way clutch means between the first feed wheel means and the drive shaft means, the clutch means responding to rotation of the drive shaft means in one direction to couple rotation of the drive shaft means to the first feed wheel means to advance the ribbon in the chute means, the clutch means responding to rotation of the shaft means in the opposite direction to allow the first feed wheel means to free-wheel relative to the drive shaft means;

friction clutch means between the first feed wheel means and the shaft means for enabling reverse rotation of the first feed wheel means when the drive shaft means rotates in the opposite direction; and

actuator means coupled to the friction clutch means, the actuator means responsive to a control signal when the shaft means is rotating in the opposite direction to actuate the friction clutch means for tightening the ribbon around the product.

4,655,265

METHOD AND APPARATUS FOR DISPENSING PARTICLES INTO A CONTAINER

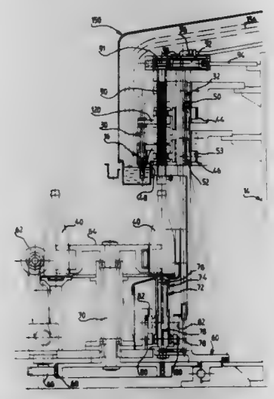
Bruno H. J. Duteurtre; Philippe A. Coulon, both of Epernay, and René M. Goutard, Verrieres le Buisson, all of France, assignors to Champagne Moet & Chandon, France

Filed Sep. 13, 1985, Ser. No. 775,733

Claims priority, application France, Oct. 2, 1984, 84 15129

Int. Cl.⁴ B65B *3/04*

U.S. Cl. 141—9 **10 Claims**



1. A method for metering and transferring, at a high rate, brittle solid particles with a view to introduce the same into a container, such as a bottle, without damaging said particles, which comprises the steps of:

suspending said solid particles in an appropriate liquid;

introducing into the obtained suspension, a metering and transferring device comprising a chamber having a transverse partition wall provided with hole means of a diameter smaller than the particle diameter, said partition wall dividing said chamber into two sections communicating with each other through said hole means, an upper section containing suction and discharge means and a lower section having an opening which is inserted into said suspension;

sucking said suspension by said suction means so that said liquid is sucked up through said hole means into said upper section, and said solid particles are collected and accumulated in said lower section to a level substantially flush with the said opening of said lower section;

displacing said device with the solid particles retained in said lower section towards and above said container; and

discharging said liquid by said discharge means and consequently discharging said solid particles which are carried along with the liquid into the container.

4,655,266

BEVERAGE VENDING MACHINE

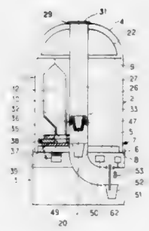
Francois Ciekanski, Villers-les-Nancy, France, assignor to Societe de Fabrication d'Appareils Automatiques et Sirops dite F.A.A.S (S.a.r.l), Maizieres-les-Metz, France

Filed Jul. 26, 1985, Ser. No. 759,417

Claims priority, application France, Jul. 27, 1984, 84 12112

Int. Cl.⁴ B65B *1/04, 3/04*

U.S. Cl. 141—82 **8 Claims**



1. A beverage vending machine comprising, an upper part for containing at least one beverage ingredient receptacle in liquid or solid form from which a beverage is to be formulated, a lower part of the vending machine below the upper part defining a delivery recess for providing access to a dispensed cup containing the formulated beverage, a cup magazine interiorly of the vending machine above the level of the delivery recess for storing individual cups for delivery to a readiness position for receiving a metered amount of said beverage ingredient, a metering slide valve having a valve gate for receiving under control of gravity a given amount of said beverage ingredient for containing the amount received as a metered quantity for delivery into an individual cup at said readiness position, means for actuating said valve gate for delivering the metered quantity of beverage ingredient into cups successively disposed at said readiness position, means for delivering each cup containing said metered quantity into position into said delivery recess, and means for delivering a liquid into said cup while at said delivery recess for a mixture with the beverage ingredient in the individual cup.

4,655,267

HOLDER FOR EMBOSSING ITEMS OF IRREGULAR CROSS-SECTION

Elvin T. Smith, Jr., Bassett, and Robert D. Ramsey, Collinsville, both of Va., assignors to LOF Plastics Inc., Troy, Mich.

Filed Apr. 7, 1986, Ser. No. 849,019

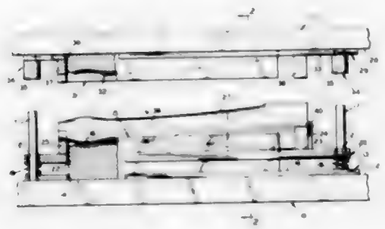
Int. Cl.⁴ B31F *1/07*; B27M *1/00*

U.S. Cl. 144—2 R **20 Claims**

16. In a device for embossing an article, the device including a lower platen carrying a lower embossing die and an upper platen carrying an upper embossing die moveable toward the lower platen to engage an article positioned between the embossing dies, a tool for holding an article in position to be embossed comprising:

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a first pair of spaced apart support blocks extending downwardly from a downwardly facing surface of the upper platen;
a support plate positioned between the platens and having an opening formed therein for receiving the lower embossing die;
biasing means positioned between the lower platen and said support plate for spacing said support plate above the lower platen; and



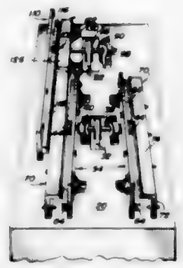
a second pair of spaced apart support blocks extending upwardly from an upwardly facing surface of said support plate, said first and second pairs of support blocks having a generally V-shaped notch formed in each support block for engaging a surface of an article to be embossed whereby, as the upper platen is moved toward the lower platen, said support blocks limit relative movement of an article with respect to the support plate.

4,655,268

VERTICAL CUT WOOD SHAPER

Richard J. Lundblom, 1661 Ashton Dr., Virginia Beach, Va. 23464

Filed Feb. 26, 1986, Ser. No. 833,171
Int. Cl.⁴ B27C *9/02, 5/00*
U.S. Cl. 144—3 R **19 Claims**



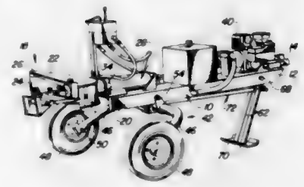
1. A wood shaper comprising a horizontal base, a transverse shaft rotatably mounted on and in horizontal overlying relation to said base drive means rotatably driving said shaft, said shaft having opposed free end portions, each end portion mounting a vertically cutting shaper assembly, a pair of guide fences, one guide fence being positioned transversely of said shaft immediately inward of each shaper assembly, each guide fence including a pair of aligned sections projecting laterally beyond said shaft to each side thereof, means for mounting each guide fence to said base, a pair of workpiece support bars extending longitudinally along each guide fence, one support bar on each section of the guide fence in general alignment with the corresponding shaper assembly to each side thereof, means for mounting each support bar on the corresponding guide fence section, a pair of finger guards, one finger guard being positioned transversely across said shaft immediately outward of each shaper assembly and generally paralleling the corresponding guide fence, and means for mounting each finger guard to said base plate.

4,655,269

PORTABLE LOG SPLITTER

Paul E. Hauser, and Leroy A. Van Roekel, both of Wilton, Iowa, assignors to HWH Corporation, Moscow, Iowa

Filed Jan. 31, 1986, Ser. No. 825,027
Int. Cl.⁴ B27L *7/00*
U.S. Cl. 144—193 A **7 Claims**



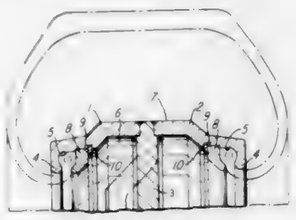
1. In a log-handling machine having an elongated, fore-and-aft frame including front and rear ends, hitch means at the frame front end for releasable connection of the frame to a towing vehicle and log splitter means carried at the frame rear end, the improvement comprising a cranked axle structure adjacent to the frame rear end and including a bight transverse to the frame, right and left arms joined to the bight and extending lengthwise of the frame and right and left ground-engaging wheels journaled respectively on the legs, means mounting the bight on the frame for rocking about a transverse axis for means for rocking the cranked means, raising and lowering the frame rear end, a stand at the frame front end and having an upper end and a ground-engageable lower end for supporting the front end of the frame when the frame is disconnected from the towing vehicle, means mounting the stand at its upper end to the frame front end for selective swinging about a transverse axis, and link means extending between the cranked axle means and the stand and having front and rear ends connected respectively between the stand and the axle means for swinging the stand and rocking the axle means in unison so as to effect raising and lowering of the frame front and rear ends in a substantially level attitude.

4,655,270

WHEEL RIM FOR A PNEUMATIC TIRE

Volker Howind, Wedemark, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Mar. 8, 1985, Ser. No. 709,526
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1984, 3408402
Int. Cl.⁴ B60B *25/00*
U.S. Cl. 152—380 **6 Claims**



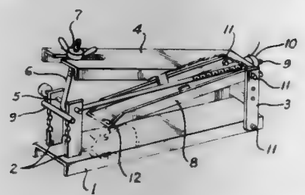
1. A one-piece rim for a vehicle wheel on which a pneumatic tire is to be mounted; said rim having a rim ring, on the two laterally outer sides of which are respective rim flanges, each of which extends essentially radially inwardly; disposed next to, and axially inwardly of, each of said rim flanges, on the radially inner side of said rim ring, there is furthermore a respective seating surface for a tire bead; the improvement therewith which comprises:
a rim ring made of two parts, each of which is provided with one of said rim flanges and one of said seating surfaces;
a respective one-piece clamping ring disposed shiftable axially inwardly of each of said rim flanges before tire mounting for holding a tire bead in position on its seating surface and against its rim flange; each of said clamping rings having an outer diameter which is greater than the inner diameter of the associated rim flange; and
axially shiftable clamping means for fixing each of said clamping rings against a tire bead.

4,655,271

PORTABLE TIRE BEAD BREAKER

Gamaliel Gamez, 832 E. Camile St., Santa Ana, Calif. 92701

Filed Apr. 10, 1986, Ser. No. 850,102
Int. Cl.⁴ B60C *25/06*
U.S. Cl. 157—1.26 **5 Claims**



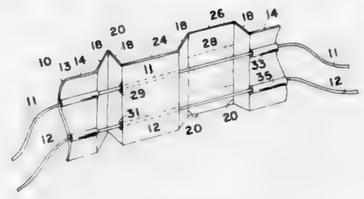
1. Apparatus to break the bead from the rim during removal of rubber tires from mounting wheels, comprising:
a base extending from the center of the wheel radially outward substantially beyond the tire, and
a link pivotally attached to the outer portion of said base, having first pivoting means at its free end, and
an A frame the apex of which is attached to the first pivoting means at the free end of said link, the lower leg of said frame adjacent said base being shorter and having an end shaped to press on the tire bead, and the longer upper leg having an opening near its end, and
a center post fixed to said base extending toward said A frame, having at its free end second and third pivoting means, and
a power screw one end of which engages the second pivoting means, said power screw being capable of passing through the opening in the upper leg of said A frame, and
drive nut means positioned on said power screw beyond the opening, and
an adjustment screw one end of which engages the third pivoting means, the other end passing through an opening in the apex portion of said A frame, and
a second drive nut means on said adjustment screw beyond the apex portion,
whereby a tire on a wheel may be placed on said center post, said adjustment screw may be operated so as to place the lower leg of said A frame on the tire bead, and said power screw operated so as to tilt said A frame toward said base breaking the bead from the rim.

4,655,272

AUTOMATIC DRAPERY PLEATING DEVICE AND METHOD

Letizia Reilly, 4 Ridge Rd., Walpole, Mass. 02081, and Rita Acerra, 112 Orchard St., Millis, Mass. 02054

Filed Jul. 26, 1984, Ser. No. 634,698
Int. Cl.⁴ A47H *13/14, 5/00*
U.S. Cl. 160—348 **19 Claims**



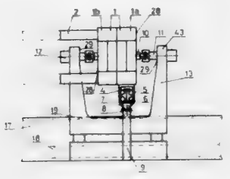
1. An automatic pleat forming strip for creating pleats in drapery, wherein the automatic pleat forming strip comprises:
an elongated strip of stiff material approximately corresponding in length to the horizontal length of a drapery to be pleated, wherein the strip along its length is folded on transverse compressed areas spaced apart and sequenced in a pattern of inward and outward folds to form alternating inwardly folding pleats of two or more panels and outwardly facing single control panels between each pleat;
parallel to the strip on each control panel at least two linear string encasement means for maintaining linear alignment between control panels;
a control string longer than the strip inserted through each aligned series of linear string encasement means on the control panels, so that each end of each string extends beyond each of the two ends of the strip so that pulling each of the two ends of each string draws the control panels together in linear alignment with the pleats folded inwardly;
wherein the drapery material is folded over along a top edge to encompass the strip with the string ends extending beyond two side edges of the drapery; and
wherein the elongated strip is fabricated from a continuous strip of rigid material formed into inherently stiff panels separated by narrow, compressed areas forming inherently flexible transverse folds.

4,655,273

PROCESS OF AND INGOT MOULD CASTING ARRANGEMENT FOR CASTING A MELT

Ivo Henych, and Rudolf Pavlovsky, both of Schaffhausen, Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Aug. 5, 1985, Ser. No. 762,554
Claims priority, application Switzerland, Aug. 8, 1984, 3810/84
Int. Cl.⁴ B22D *5/00, 29/00*
U.S. Cl. 164—323 **7 Claims**



1. Ingot mould casting device for casting a melt in an ingot

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mould comprising several ingot mould units, a casting furnace, and means for transporting said furnace in a first direction, the improvement comprising:

each said ingot mould unit comprising ingot moulds with a stationary ingot mould plate and a movable ingot mould plate;

means for moving each said ingot mould unit from a starting position to a casting position transverse to said first direction on a guideway; and

an upright U-shaped clamp located at said casting position, said clamp having a pair of upstanding legs with a free end at the upper end of each said leg, and at least one ingot mould holding-and-pulling-apart mechanism located at the free ends of said clamp, wherein said mechanism inter-engages said mould plates for opening and closing said mould.

4,655,274

HORIZONTAL MOLD CLAMPING AND VERTICAL INJECTION TYPE DIE CAST MACHINE

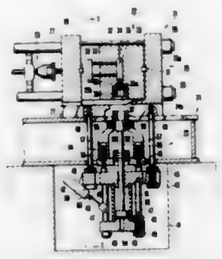
Sadayuki Dansoura, Ube, Japan, assignor to Ube Industries, Ltd., Yamaguchi, Japan

Filed Oct. 21, 1985, Ser. No. 789,807

Claims priority, application Japan, Oct. 26, 1984, 59-161209[U]; Dec. 21, 1984, 59-268449

Int. Cl.⁴ B22D *33/04*; B29C *45/02*

U.S. Cl. 164—341 **5 Claims**



1. In a horizontal mold clamping and vertical injection type die cast machine comprising a stationary metal mold (**30**) secured to a stationary platen (**25**), a movable metal mold (**32**) secured to a movable platen (**28**), means for moving in a horizontal direction said movable platen together with said movable metal mold toward and away from said stationary metal mold and said stationary platen, said movable and stationary metal mold defining a mold cavity (**35**) when said movable and stationary metal molds are clamped together, an injection device disposed under said stationary mold and said movable mold and having an injection cylinder for containing a molten metal to be injected into said mold cavity, and means (**40**) for suspending said injection device from said stationary platen (**25**), the improvement wherein said stationary platen **25** comprises a vertical member (**25***a*) and a horizontal member (**25***b*) which is integrated with said vertical member, said horizontal member extending from a lower end of said vertical member toward said movable platen beneath said stationary metal mold, and said injection device suspending means is suspended from said horizontal member.

4,655,275

TOOL, PARTICULARLY AN INJECTION MOLD

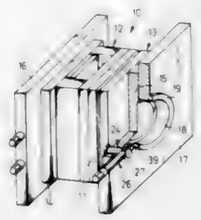
Alois Wörner, Dreitorestrasse 6, D-7580 Bühl-Neusatz, Fed. Rep. of Germany

Filed Dec. 6, 1985, Ser. No. 806,286

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1984, 3444800; Mar. 22, 1985, 3510329

Int. Cl.⁴ B22D *33/00*

U.S. Cl. 164—341 **4 Claims**



1. A tool adapted to be mounted on a machine having two receiving plates, comprising in combination

two tool halves which are movable relative to one another and each of which is mountable on the respective one of the two receiving plates of the machine,

fast clamping plates each mountable on the respective one of the two receiving plates of the machine and extending along a plane,

fast coupling means for rigidly and releasably connecting each of said tool halves with a different one of said fast clamping plates,

said fast coupling means including a plurality of receiving openings provided in said fast clamping plates and each extending substantially perpendicularly to said plane of the respective fast clamping plate, and a plurality of clamping pins which are secured to and extend beyond said tool halves and are received in said receiving openings, each of said clamping pins having a transverse recess extending substantially perpendicularly threto and at least partially bounded by a clamping face, and

locking elements which form-lockingly engage in said transverse recesses,

said fast coupling means further including bearing openings provided in said fast coupling plates and extending substantially perpendicularly to said receiving openings of said clamping pins, so that said locking elements are received in said bearing openings and are disengageable from said transverse recesses of said clamping pins,

each of said clamping pins having a free end and a portion which in a coupling position engages in a respective one of said receiving openings, and is provided with a cone which narrows toward said free end of a respective one of said clamping pins,

each of said receiving openings in said fast clamping plates being provided with a conical portion which is formed to match and to be engaged by said cone of the respective one of said clamping pins, and

each of said locking elements being formed as a rotatably supported locking rod which is received in the respective one of said bearing openings for rotation about an axis and for displacement along an axial direction and is provided with an eccentric clamping cam which in a coupling position engages in said transverse recess of the respective one of said clamping pins and on rotation of the respective locking element clampingly engages said clamping face of the respective one of said transverse recesses.

4,655,276

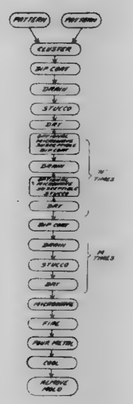
METHOD OF INVESTMENT CASTING EMPLOYING MICROWAVE SUSCEPTIBLE MATERIAL

Charles R. Bird, Colgate, and John M. Mertz, St. Francis, both of Wis., assignors to Stainless Foundry & Engineering, Inc., Milwaukee, Wis.

Filed Jun. 2, 1986, Ser. No. 869,260

Int. Cl.⁴ B22C *1/02, 9/04*

U.S. Cl. 164—519 **27 Claims**



10. A method of making an investment shell mold, said method comprising:

applying a slurry coat of microwave transparent materials to a disposable pattern, said pattern being formed in the shape of the desired final product of the mold;

applying a stucco coat of microwave transparent materials to said pattern;

applying a second slurry coat of microwave transparent materials to said pattern;

applying at least one stucco coat of microwave transparent materials to said pattern, said at least one stucco coat having a small amount of microwave susceptible materials mixed therein;

applying a sufficient number of additional slurry and stucco coats of microwave transparent materials so as to give the resulting mold sufficient strength for the molding process;

and exposing the resulting mold and pattern to microwave energy until said pattern shrinks away from the mold, leaving a gap therebetween.

4,655,277

PROCESS CONTROL FOR PARALLEL HEAT EXCHANGERS

Gary L. Funk; William S. Stewart, and Guy S. Pennington, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 27, 1984, Ser. No. 605,024

Int. Cl.⁴ G05D *23/00*; F28F *27/02*

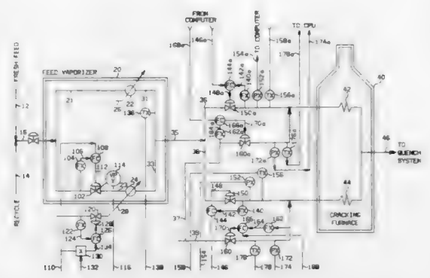
U.S. Cl. 165—1 **11 Claims**

7. A method for operating parallel heat exchangers to preferentially use a more preferred heat exchange medium supplied to one of said heat exchangers, said method comprising:

dividing a feed stream into first and second fluid streams;

passing said first fluid stream in a heat exchange relationship with a more preferred heat exchange medium to yield a first effluent stream;

passing said second fluid stream in a heat exchange relationship with a less preferred heat exchange medium to yield a second effluent stream; and



automatically controlling the flow rates of said second fluid stream and said less preferred heat exchange medium in response to the temperature of only first effluent stream.

4,655,278

HEAT RECIRCULATION APPARATUS AND METHOD

Michael Seguin, Cambridge, Canada, assignor to Cambridge Manufacturing Climate Control Products Inc., Cambridge, Canada

Filed Sep. 27, 1985, Ser. No. 780,837

Int. Cl.⁴ F25B *29/00*; F25D *17/08*

U.S. Cl. 165—2 **13 Claims**



1. The method of simultaneously regulating the temperature of inside air within an inside air space, and ventilating said inside air space with air from an outside air space and comprising the steps of:

passing said air along a predetermined inside air flow path and through a fan and then through an inside heat exchanger downstream of said fan and returning said inside air to said inside air space;

simultaneously passing outside air along an outside air flow path adjacent said inside air flow path, through a fan and then through an outside heat exchanger downstream of said fan, and returning same to said outside air space;

extracting a portion of said inside air from said inside air path between said fan and said heat exchanger, and directing same to said outside air path upstream of said fan for venting to said outside air space through said heat exchanger;

simultaneously extracting a portion of said outside air from said outside air flow path between said fan and said heat exchanger, and directing same to said inside air path up-

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stream of said fan, and thence to said inside air space through said heat exchanger;

continuously passing a heat exchange medium into one of said heat exchangers, and transferring said heat exchange medium from said one heat exchanger to the other of said heat exchangers, via expansion means, whereby to procure transfer of heat from one of said exchanger to the other; and

passing said heat exchanger medium through compressor means and flow control means, to selectively direct said flow of heat exchange medium either to said one of said heat exchangers or to said other of said heat exchangers, whereby to procure transfer of heat from one said heat exchanger to the other selectively.

4,655,279

TEMPERATURE CONTROL SYSTEM WITH PROGRAMMED DEAD-BAND RAMP AND DRIFT FEATURES

Kermit S. Harmon, Jr., 12103 Sea Shore Dr., Houston, Tex. 77072

Division of Ser. No. 539,371, Oct. 5, 1983, Pat. No. 4,557,317, and a continuation-in-part of Ser. No. 236,177, Feb. 20, 1981, abandoned. This application Oct. 15, 1985, Ser. No. 787,751
The portion of the term of this patent subsequent to Dec. 10, 2002, has been disclaimed.
Int. Cl.[4] F25B *13/00*
U.S. Cl. 165—2 **20 Claims**



1. A demand responsive process for controlled heating and cooling of an occupied area of a building for human habitation, said process comprising:

(a) selectively activating a desired initial comfort temperature setting for said occupied area via a random and non-repeating operator input command;

(b) sensing said temperature of said occupied area and providing an output signal functionally related to said temperature within said occupied area;

(c) automatically activating heating and/or cooling units in response to said output signal and said initial comfort temperature setting to maintain said temperature at approximately said desired initial comfort temperature setting during at least a predetermined first period of time;

(d) thereafter automatically altering said desired temperature setting as a function of time and in an energy conserving direction during a second period of time of a duration of at least several hours and at a predetermined temperature ramp rate equal to or less than approximately 1° F. per hour;

(e) automatically activating said heating and/or cooling units in response to said output signal and said altered temperature setting to maintain space temperature at approximately said altered temperature setting during at least said second period of time;

(f) thereafter repeatedly activating a selected comfort temperature setting for said occupied area via additional random and non-repeating operator input commands;

(g) automatically activating said heating and/or cooling units in response to said output signal and said selected comfort temperature setting to maintain said temperature at approximately said selected comfort temperature setting during at least a predetermined third period of time;

(h) thereafter automatically altering said selected comfort temperature setting as a function of time and in an energy conserving direction at a predetermined temperature ramp rate equal to or less than approximately 1° F. per hour;

(i) automatically activating said heating and/or cooling units in response to said output signal and said altered selected temperature setting to maintain said temperature at approximately said altered selected temperature setting; and

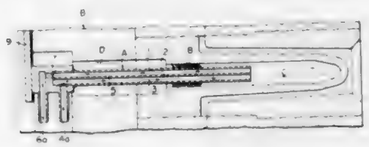
(j) automatically prohibiting alteration of said desired temperature setting and said selected temperature setting beyond a desired final comfort temperature setting.

4,655,280

DIE COOLING PIPE

Katsuhiko Takahashi, Tokorozawa, Japan, assignor to Fuso Keigokin Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 593,513, Mar. 26, 1984, abandoned. This application Apr. 30, 1986, Ser. No. 858,841
Int. Cl.[4] B29F *1/022, 1/08*; B99C *1/06*
U.S. Cl. 165—47 **1 Claim**



1. A die cooling pipe for use with a die having a cooling hole therein, said die cooling pipe comprising

a hollow pipe which includes a sidewall and which defines opposite first and second ends, said second end being uncovered, said hollow pipe also including a water intake hole in said sidewall near the first end thereof,

a single integral baffle which extends axially within said hollow pipe from said first end thereof to said second end thereof, said baffle dividing said hollow pipe into an axial forward water channel and an axial backward water channel, said hollow die pipe and said baffle being integrally formed by extrusion forming,

a water stopper fixedly attached to said first end of said hollow pipe, said water stopper including a main portion, an integral water inlet nozzle extending away from said main portion and an integral water outlet nozzle extending away from said main portion, said water stopper including a water inlet passageway which extends through said water inlet nozzle and communicates with said water intake hole in said sidewall of said hollow pipe and a water outlet passageway which extends through said water outlet nozzle and communicates with said backward water channel in said hollow pipe, and

a seal means extending around the sidewall of said hollow pipe,

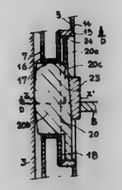
said die cooling pipe being insertable into the cooling hole in said die so that cooling water which has passed through said water inlet passageway, through said water intake hole and along said forward water channel will flow out said second end of said hollow tube and into said cooling hole to cool said die, then flow into and along said backward water channel and through said water outlet passageway.

4,655,281

HEAT EXCHANGER INCORPORATING A TUBE BUNDLE ARRANGED IN A CYLINDRICAL BUNDLE CASING HELD RADIALLY INSIDE AN OUTER CYLINDRICAL CASING

Roger Neybourger, Paris, and Christian Olivier, Chatenoy-le-Royal, both of France, assignors to Framatome & Cie., Courbevoie, France

Filed Apr. 9, 1985, Ser. No. 721,349
Claims priority, application France, Apr. 11, 1984, 84 05719
Int. Cl.[4] F28D *7/00*
U.S. Cl. 165—160 **6 Claims**



1. Heat exchanger incorporating a tube bundle (2) arranged in a cylindrical bundle casing (5) held radially inside an outer cylindrical casing (3) and placed coaxially with the latter, a set of spacer plates (8) arranged transversely relative to the bundle (2) inside the casing (5) and spaced along its length and several sets of supporting components (20, 30) fixed integrally to the bundle casing (5), arranged radially at the level of the spacer plates (8) and each inserted between the outer edge of a spacer plate (8) and the inner surface of the outer casing (3), with interposition of wedging means (23, 33) between the spacer plate (8) and the supporting component (20, 30), in which

(a) the bundle casing (5) incorporates in its wall openings (14) each corresponding to a supporting component (20, 30), openings, cylindrical sleeves (15, 25) being fixed along the edge of said openings and projecting radially into the space between the bundle casing (5) and the outer wall (3) of the heat exchanger; and

(b) each of the supporting components (20, 30) incorporates two cylindrical parts (20*a*, 20*b*-30*a*, 30*b*) having a common axis (XX'), one in extension of the other, including a large-diameter part (20*a*, 30*a*) welded by its outer side surface to the inside of the corresponding sleeve (15, 25) and incorporating a surface for supporting (20*c*, 30*c*) wedging means (23, 33) directed towards the tube bundle (2) and sloping radially relative to the axis XX' of the supporting component (20, 30), and a smaller-diameter part (20*b*, 30*b*) abutting with its end against the inner surface of the outer casing (3) of the heat exchanger.

4,655,282

HEAT EXCHANGER DUCT WITH HEAT EXCHANGE WIRING

Franciscus Roffelsen, Helmond, Netherlands, assignor to Spiro Research B. V., Helmond, Netherlands

Filed Aug. 29, 1984, Ser. No. 645,807
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331186
Int. Cl.[4] F28F *1/14*
U.S. Cl. 165—184 **5 Claims**

1. In a heat exchanger duct comprising an axially elongated core tube having an external surface and an internal surface, heat exchange wiring wound in helical turns around the external surface of said core tube and extendig for substantially the axial length of said core tube and means fixing said heat exchange wiring to said external surface of said core tube, the improvement wherein said heat exchange wiring is so formed that the periphery thereof as seen in cross-section of said core tube extending transversely of the axial direction thereof includes at least two flat zones extending generally circumferentially and lying opposite each other on opposite sides of said



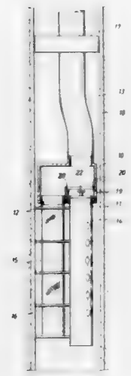
core tube with said flat zones located along the axial length of said core tube.

4,655,283

APPARATUS FOR PERFORATING AND PRODUCING A WELL

John J. Pritchard, Jr., Harvey, La., assignor to Shell Offshore Inc., Houston, Tex.

Filed Jun. 20, 1986, Ser. No. 876,631
Int. Cl.[4] E21B *43/11*
U.S. Cl. 166—55.1 **6 Claims**



1. An apparatus for perforating the casing wall of a well and producing the well, said apparatus comprising:

a pipe string operatively connected to said apparatus for lowering said apparatus into said well casing,

dual flow connector means carried by the lower end of said pipe string and adapted to be in fluid communication therewith, said connector means having two downwardly-directed fluid inlet ports,

perforator means removably secured to said connector means and depending therefrom for closing one port of said connector means, and

screen means fixedly secured to said connector means and depending therefrom for closing the other port of said connector means.

4,655,284

WELL HEAD SHUT-OFF DEVICE

Garry McIlvride, Edmonton, Canada, assignor to Positive Action Tool Western Limited, Calgary, Canada

Filed Feb. 11, 1986, Ser. No. 828,250
Int. Cl.[4] E21B *33/06*
U.S. Cl. 166—84 **18 Claims**

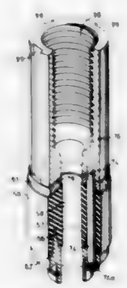
1. A well head shut-off device, comprising:

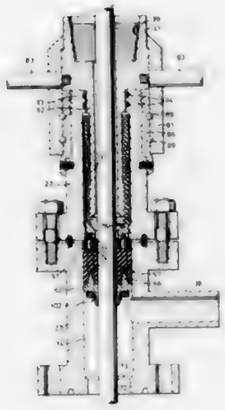
(a) a housing adapted to be connected to the upper end of

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production tubing and having a vertical bore therethrough, a flow conduit communicating with the interior of the bore for collection of liquid flowing into the bore from the production tubing, and a shoulder extending laterally inwardly of the bore at upper and lower portions thereof;

(b) a pack-off member disposed in the bore and comprising a heat resistant resiliently deformable annular sealing element of which the middle opening extends vertically of the bore and is adapted to receive a cylindrical shaft therethrough, and the periphery conforms to the interior of the bore, a rigid face plate on the upper and lower sides of the sealing element, and a rigid expansion member tapering from adjacent one of said face plates vertically toward the interior of the sealing element and being received in a corresponding cavity therein;





(c) an operator member slidable vertically relative to said pack-off member and face plates and having upper and lower abutments facing toward the face plates on the upper and lower side of the sealing element, respectively; and

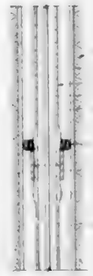
(d) means for reciprocating said operator member between an upper position engaging the upper face plate on the upper shoulder and compressing the sealing element between the upper face plate and the lower face plate retained on the lower abutment, and a lower position engaging the lower face plate on the lower shoulder and compressing the sealing element between the lower face plate and the upper face plate retained on the upper abutment, whereby in each of said positions the sealing element is compressed vertically and the expansion member is driven vertically into said cavity, thereby expanding the sealing element laterally to form a seal between the bore and the cylindrical shaft when inserted therein.

4,655,285

PLUG FOR USE IN HOT OIL TREATMENT OF WELLS HAVING PARAFFIN DEPOSITS AND METHOD OF USE THEREOF

William R. Spitzer, P.O. Box 920677, Houston, Tex. 77292

Filed Mar. 6, 1985, Ser. No. 708,798
Int. Cl.⁴ E21B *33/12, 33/13*
U.S. Cl. 166—250 **17 Claims**



7. A plug for use in the hot oil process of reducing paraffin deposits inside a production tubing string within a casing in a well bore in the earth comprising;

a cylindrical body adapted to be supported on a tubing joint connection of said production tubing string within said casing,

said cylindrical body having an outer diameter sufficiently smaller than the drift diameter of the casing in which it is to be installed to provide an annulus space of a size operable to allow passage of hot oil therethrough at a predetermined rate to provide sufficient time of contact between the hot oil and the exterior surface of the tubing string for maximum heat transfer therebetween, and

pressure relief means on said said hot oil plug for allowing passage of pressurized gases from the annular space below the plug to the annular space above the plug when installed in a well.

12. An improved method of reducing paraffin deposits inside a production tubing string within a casing in an oil or gas well comprising the steps of;

determining the depth below the surface at which precipitation of paraffin wax commences,

installing an annular fluid flow restricting means on the exterior of said production tubing string to form a small annular space between the outer surface of said fluid flow restricting means and the drift diameter of said casing,

locating said fluid flow restricting means within said casing below the point at which precipitation of paraffin wax commences,

pumping hot oil into the annulus between the production tubing string and casing above the fluid flow restricting means and allowing controlled flow of the hot oil past said fluid flow restricting means through said annular space at a predetermined rate to provide sufficient time of contact between the hot oil and the exterior surface of said tubing string for maximum heat transfer therebetween to melt the precipitated paraffin, and

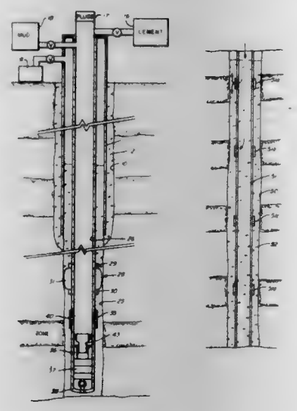
allowing passage of pressurized gases upwardly past said fluid flow restriction means from the annulus below said fluid restricting means to the annulus above said fluid flow restricting means.

4,655,286

METHOD FOR CEMENTING CASING OR LINERS IN AN OIL WELL

Edward T. Wood, Kingwood, Tex., assignor to CTC Corporation, Houston, Tex.

Filed Feb. 19, 1985, Ser. No. 702,588
Int. Cl.⁴ E21B *33/16, 33/27, 34/08*
U.S. Cl. 166—285 **6 Claims**



1. A method for cementing a string of pipe in a borehole traversing earth formations comprising the steps of:

positioning a string of pipe in a borehole where the string of pipe has a plurality of selectively operable pressure responsive communication passages between the interior of the string of pipe and the exterior of the string of pipe in spaced apart locations along the length of the string of pipe so that the communication passages are proximate to earth formations having fluid or gas under pore pressure;

injecting a cement slurry from the earth's surface under pumping pressure through the interior of the string of pipe to move the cement slurry up into the annulus between the string of pipe and the borehole to a desired level in the annulus between the string of pipe and the borehole while maintaining the level of cement slurry in the interior of the string of pipe above the said one location;

discontinuing the pumping pressure when the cement slurry reaches the desired level on the annulus; and

thereafter, opening the communication passages in sequence and providing cement slurry under pressure through the communication passages sufficient to maintain hydrostatic pressure on the cement slurry in the annulus at the location of a communication passage at a pressure higher than pore pressure until the cement has cured for preventing fluid or gas migration in the annulus.

4,655,287

COMPOSITION AND METHOD FOR CORROSION INHIBITION

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 655,797, Oct. 1, 1984, Pat. No. 4,608,191.
This application Jan. 6, 1986, Ser. No. 816,482
Int. Cl.⁴ C23F *11/16*
U.S. Cl. 166—294 **9 Claims**

1. A method for treating metal surfaces of drilling equipment on a well for the recovery of natural fluids from a subterranean reservoir, the method comprising:

(a) injecting into the well the reaction product of,

(1) a first component selected from the groups consisting of:

(a) an epoxy resin substrate bearing a vicinal 1,2-epoxide group having a molecular weight within the range of 200–1500, and having on the average of one or more vicinal epoxide groups per molecule, and

(b) a substrate having a displaceable halogen, with said substrate being chosen from the group consisting of haloethers, haloalcohols or halothioethers; and

(2) a second component comprising:

(a) a beta-hydroxyalkyl monomercaptan containing from 2 to 8 carbon atoms and present in an amount such that said first component will be present in the reaction mixture in an amount of about 0.8 to 1.4 equivalents per equivalents of said second component; said reaction yielding an odorless beta-hydroxythioether said reaction product being present in a hydrocarbon diluent and

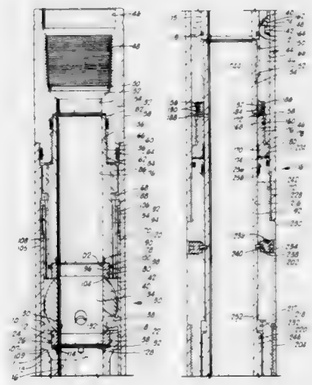
(b) allowing said reaction product to contact the metal surfaces for a time sufficient to form a corrosion-inhibiting film thereon.

4,655,288

LOST-MOTION VALVE ACTUATOR

Wesley J. Burris, II, and Paul D. Ringgenberg, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 3, 1985, Ser. No. 752,210
Int. Cl.⁴ E21B *34/10*
U.S. Cl. 166—319 **1 Claim**



1. A lost-motion valve actuator for a bore closure valve employed in a well bore, comprising:

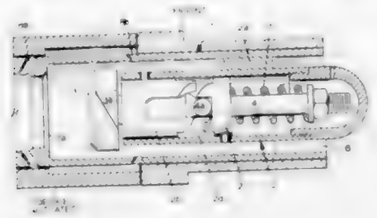
operating connector means adapted to move said bore closure valve between open and closed positions through longitudinal movement of said operating connector means, said operating connector means comprising an operating connector and a connector insert defining a recess therebetween;

locking dog means comprising at least one locking dog received in said recess and spring biasing means adapted to urge said at least one locking dog radially inwardly; and

mandrel means slidably received within said operating connector means and including dog slot means associated therewith, said dog slot means comprising an annular slot on the exterior of said mandrel means adapted to lockingly receive said at least one inwardly biased locking dog when proximate thereto, whereby longitudinal movement of said mandrel means is transmitted to said operating connector means.

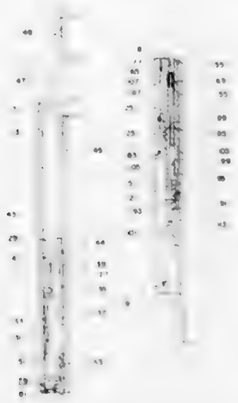
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4,655,289
REMOTE CONTROL SELECTOR VALVE
William N. Schoeffler, Lafayette, La., assignor to Petro-Design, Inc., Youngsville, La.
Filed Oct. 4, 1985, Ser. No. 784,262
Int. Cl.[4] E21B 34/10
U.S. Cl. 166—320 9 Claims



1. In earth borehole operations involving fluid conducting pipe strings in which operators at the earth surface control downhole machinery by actions at the earth surface involving fluid flow rate manipulation, apparatus comprising:
a. a pipe string suspended in an earth borehole;
b. means situated at the earth surface to cause fluid flow and to control the rate of fluid flow through said pipe string;
c. means situated downhole attached to said pipe string responsive to said fluid flow rate to produce an output signal when said flow is caused to exceed a preselected rate;
d. downhole means responsive to said signal to produce a preselected change in the characteristic of said signal in response to a preselected number of times said signal is produced; and
e. actuator means responsive to at least one characteristic of said signal to actuate preselected downhole machine elements attached to said pipe string, said actuator means being non-responsive to at least one other characteristic of said signal.

4,655,290
LATCHING PRODUCTION SEAL ASSEMBLY
Sidney K. Smith, Jr., Huntsville, Tex., assignor to Hughes Tool Company, Houston, Tex.
Filed Dec. 16, 1985, Ser. No. 809,356
Int. Cl.[4] E21B 23/02
U.S. Cl. 166—382 10 Claims



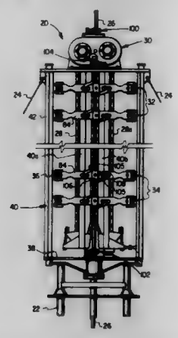
1. A retrievable production seal assembly for sealing within the internal bore of a liner within a well, the liner being of the type which includes a liner setting sleeve with internal threads which are engaged by mating threads of a liner running tool during the installation of the liner within the well bore, the running tool being subsequently retrieved to the well surface prior to inserting the seal assembly, the seal assembly comprising:
a mandrel having an exterior with seal means carried thereon for sealingly engaging the internal bore of the setting sleeve above the setting sleeve threads, the seal means including an external seal region for sealing against the interior of the liner setting sleeve and an internal seal region for sealing against the exterior of the mandrel;
a latch collet carried about the mandrel below the seal means between an upper shoulder and a lower shoulder, the latch collet having a collet body and a plurality of externally threaded collet fingers extending downwardly therefrom which are adapted to engage the setting sleeve threads to secure the seal assembly within the liner; and
a clutch sleeve located between the mandrel and the latch collet, the clutch sleeve having a plurality of radially extending cogs which are adapted to be received between the fingers of the latch collet for transmitting torque between the clutch sleeve and the latch collet.

5. A method of engaging a seal assembly within the internal bore of a liner within a well, the liner being of the type which includes a liner setting sleeve with internal threads which are engaged by mating threads of a liner running tool during the installation of the liner within the well bore, the running tool being subsequently retrieved to the well surface prior to inserting the seal assembly, comprising the steps of:
making up a seal assembly as a part of a tubing string, the seal assembly including a mandrel with upper connecting means for connecting the mandrel within the tubing string and a seal member carried on the mandrel, the seal member including an external seal region for sealing against the interior of the liner setting sleeve and an internal seal region for sealing against the exterior of the mandrel;
installing a latch collet about the mandrel below the seal member, the latch collet having a collet body and a plurality of externally threaded collet fingers extending downwardly therefrom;
engaging the seal assembly within the internal bore of the liner by running the seal assembly into the bore of the liner and stabbing the externally threaded collet fingers into the internal threads of the setting sleeve;
providing cam means engageable between the mandrel and the latch collet for transmitting torque from the mandrel to the latch collet when the tubing string is rotated from the well surface;
lifting the tubing string from the well surface to engage the cam means; and
rotating the tubing string to the right to unthread the latch collet fingers from the internal threads of the setting sleeve to release the seal assembly.

4,655,291
INJECTOR FOR COUPLED PIPE
Don C. Cox, Tarrant County, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Sep. 23, 1985, Ser. No. 778,790
Int. Cl.[4] E21B 19/08
U.S. Cl. 166—385 33 Claims

1. Apparatus for injecting pipe or tubing into a well or withdrawing it therefrom, comprising:
a. frame means; and
b. endless-type chain drive means mounted in said frame means for gripping and moving said pipe or tubing into or out of the well, said chain drive means including:
i. drive chain means including a pair of opposed endless drive chains disposed in a common plane and spaced apart providing a pathway for said pipe or tubing therebetween,

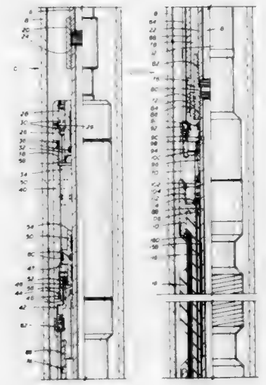
ii. upper and lower pressure beam means in each of said pair of endless drive chains movable toward and away from each other, said upper beam means being spaced above said lower beam means to provide a non-gripping area therebetween, said pressure beams having outwardly extending trunnion means slidably disposed in slots in side plates of said frame means,
iii. friction-reducing roller chain means interposed be-

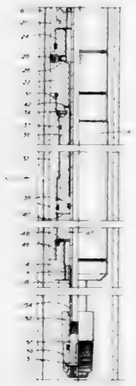


tween said pressure beam means and said drive chain means,
iv. means for independently moving said upper and said lower pressure beam means toward and away from each other to cause said drive chain means to grip said pipe or tubing at upper and lower spaced apart locations and to release such grip at such spaced apart locations, and
v. means for driving said drive chain means to move said pipe or tubing into or out of said well.

4,655,292
STEAM INJECTION PACKER ACTUATOR AND METHOD
Floyd A. Halbardier, Pasadena, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.
Filed Jul. 16, 1986, Ser. No. 886,012
Int. Cl.[4] E21B 23/06, 33/127
U.S. Cl. 166—387 20 Claims

1. Downhole apparatus for controlling fluid pressure in a hydraulic packer actuatable from the surface by injecting fluid at a packer actuating pressure sufficient to set the packer in a subterranean petroleum recovery well subjected to temperature variations, comprising:
said downhole apparatus including a first fluid chamber in fluid communication with the hydraulic packer for housing a portion of the fluid;
closure means for automatically sealing the fluid in the first fluid chamber from downhole fluid exterior to the apparatus;
fluid pressure compensator means including a second variable volume chamber and first movably responsive barrier means separating the first fluid chamber and the second chamber and movably responsive to the varying pressure of the fluid in the first chamber caused by the temperature variations for increasing the volume of the first chamber while decreasing the volume of the second chamber;
accumulator means including a third variable volume chamber for housing a compressible gas and second movable fluid barrier means separating the first fluid chamber and the third chamber and movably responsive to the varying pressure of the fluid in the first chamber caused by the temperature variations for preventing excessive fluid pressure in the first chamber by increasing the volume of the first chamber while compressing the gas in the third chamber; and





pressure release means for releasing fluid pressure from the first chamber to unset the packer.

4,655,293
LIGHT WEIGHT, HIGH STRENGTH REINFORCED METAL HORSESHOE
Charles B. Criner, Taylors, and Jerry A. Winnett, Pendleton, both of S.C., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Sep. 3, 1985, Ser. No. 771,955
Int. Cl.[4] A01L 1/02
U.S. Cl. 168—4 4 Claims

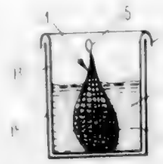
1. A horseshoe comprising aluminum or an alloy thereof having distributed therethrough about 1–40 volume percent of reinforcing ceramic material comprising silicon carbide whiskers.

4,655,294
KIT FOR EXTINGUISHING CHARCOAL FIRES
O'Neal Turner, Jr., 5200 W. Montgomery Ave., Apt. 2B, Philadelphia, Pa. 19131
Filed Feb. 11, 1985, Ser. No. 700,390
Int. Cl.[4] A62C 1/00, 21/00
U.S. Cl. 169—46 6 Claims

4. A method of extinguishing a plurality of charcoal briquets and the like, comprising the steps of:

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(a) laying a flexible metal net having at least two peripheral handles, in a substantially flat position, on the ground,
(b) dumping the charcoal briquets onto the net,
(c) pulling the net up by its handles so as to enclose substantially the charcoal briquets therein,
(d) immersing at least part of the net in a container of water



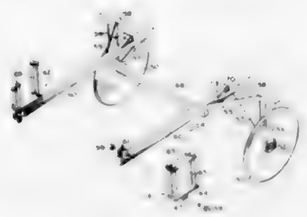
in such a manner that the net does not touch any part of the container, and such that the briquets are immersed in the water,
(e) allowing the briquets to spill out of the net and into the container, and
(f) closing off the end of the container while the briquets and the water remain therein.

4,655,295

TRACTOR AND IMPLEMENT STABILIZER

Billy R. Barnes, Lamesa; Ronny L. Barnes, O'Donnell, both of Tex., and David A. Gary, Box 449, O'Donnell, Tex. 79351, assignors to Ronny R. Barnes and David A. Gary, both of O'Donnell, Tex.

Filed Jul. 12, 1985, Ser. No. 754,619
Int. Cl.[4] A01B *59/041, 49/02, 69/00*
U.S. Cl. 172—26 **3 Claims**



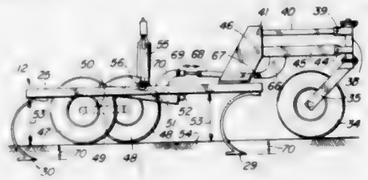
1. Agricultural equipment having
a. a tractor for moving in a direction of draft with
b. rear wheels and
c. front wheels,
d. a tractor frame connecting the front wheels to the rear wheels,
e. large low pressure pneumatic tires on the rear wheels,
f. rear axles having the rear wheels thereon extending from
g. axle housings extending from
h. a transmission housing,
j. a standard three-point rear hitch attached to the transmission housing including
i. lower hitch arms,
ii. upper hitch link and
iii. hydraulically operated lift arms from the tractor to the lower hitch arms;
k. an implement frame attached to the three-point hitch, and
l. agricultural tillage implements on the implement frame;
wherein the improvement comprises:
m. a rigid stabilizer frame including
n. stabilizer arms pivoted to the axle housings by
o. horizontal bolts so as to prevent lateral movement of the stabilizer frame,
p. draft arms pivoted to said stabilizer arms and attached to said tractor frame forward of the rear axles, and
q. connection means between said stabilizer frame and implement frame for
i. drafting the implement frame from the stabilizer frame,
ii. raising and lowering the stabilizer frame by the lift arms, and
iii. preventing lateral movement of the implement frame relative to the stabilizer frame.

4,655,296

FARMING IMPLEMENT WITH WHEEL DEPTH CONTROL

Francois P. Bourgault, and Joseph L. Bourgault, both of Saskatchewan, Canada, assignors to F. P. Bourgault Industries, Ltd., Saskatchewan, Canada

Filed Aug. 15, 1985, Ser. No. 765,946
Claims priority, application Canada, Feb. 15, 1985, 474394
Int. Cl.[4] A01B *63/22*
U.S. Cl. 172—400 **3 Claims**



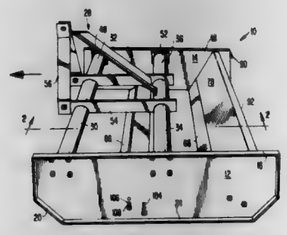
1. A farming implement of the type including a frame section including a frame section carrying a plurality of earth working tools and provided with ground wheel means secured to the frame section for allowing movement thereof in a predetermined direction; towing bar means secured to said frame section at a front end therof for free pivotal movement about a generally horizontal, transverse axis, said ground wheel means including a plurality of ground wheel subassemblies, each ground wheel subassembly comprising, in combination:
(a) front wheel means at the front of the frame section, said front wheel means being connected with a forward end of a longitudinal front suspension arm at a forward end point thereof, the rear end of the front suspension arm being pivotable about a first pivot point formed by first bearing means fixedly secured to the frame section and having a generally horizontal, transverse axis;
(b) rear wheel means connected with a longitudinal rear suspension swing arm at a mounting point located at a first free end thereof, the second end of the swing arm being pivotable about a generally horizontal transverse axis in second bearing means fixedly secured to the frame section;
(c) hydraulic cylinder drive means having one end pivotably connected with the frame section, the other end being pivotably connected with the swing arm at a point on the swing arm disposed between the free end and said second bearing means, to selectively raise or lower same by pivoting it in said second bearing means;
(d) a front bracket fixedly secured to the front suspension arm and extending rearwards thereform and having, at a free end thereof, a forward pivot joint pivotably connected to connecting rod, said forward pivot joint being disposed at a level spaced vertically from the level of said generally horizontal transverse axis of the first bearing means;
(e) a rear bracket fixedly arranged on the swing arm and extending upwardly and forwards therefrom to form at a free end thereof a rear pivotal joint pivotably connected to the connecting rod, said rear pivotal joint being disposed at a level above that of the second bearing means, said second bearing means, said mounting point and said rear pivotal joint defining a first right-angled triangle which is similar to a second right-angled triangle defined by said first bearing means, the forward end point and the forward pivot joint;
(f) the connecting rod having a rear end pivotably conected with the rear pivotal joint and a front end pivtably connected with the forard pivot joint for transmitting the pivotal movement of the swing arm to the front suspension arm such that the lowering of the back end of the swing arm results in the lowering of the forward end of the front suspension arm relative to the frame and vice-versa.

4,655,297

CONVERTIBLE SPREADER GRADER ASSEMBLY

Leverease Bourgeois, Jr., Raceland, La., assignor to Robert P. Chatelain, New Orleans, La.

Continuation-in-part of Ser. No. 571,703, Jan. 18, 1984, Pat. No. 4,572,301, and a continuation-in-part of Ser. No. 571,385, Jan. 18, 1984, abandoned. This application Jan. 15, 1985, Ser. No. 691,629
Int. Cl.[4] E02F *3/76, 3/815*
U.S. Cl. 172—445.1 **29 Claims**



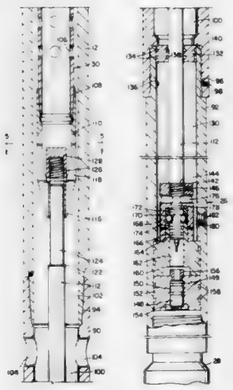
1. A convertible spreader-grader assembly comprising:
a pair of spaced, longitudinal skid sleds adapted to skid on the ground,
an interior framework positioned between said skid sleds,
said framework including first and second spaced lateral rail members,
said first and second rail members each having opposite outer member ends,
a securing means for securing said outer member ends to said skid sleds,
a hitch assembly connected to said framework,
a cutter assembly extending laterally between said skid sleds, said cutter assembly having a cutting blade extending down therefrom at an angle to the ground and adapted to engage the ground when said framework is pulled via said hitch assembly,
an attaching means for attaching opposite end portions of said cutter assembly to said skid sleds,
a pivotal plate extending between said skid sleds and positioned behind said framework, and movable between two positions,
a connecting means for pivotally connecting end portions of said plate to said skid sleds such that said plate can be pivoted between the first position generally horizontal and spaced above the ground and the second more nearly vertical position in which the lower end of said plate is adjacent said cutter assembly, and
said convertible spreader-grader assembly defining a spreader grader when said plate is in said first position whereby earth, soil and the like can pass between said skid sleds and under said plate, and said convertible spreader-grader assembly defining a box scraper when said plate is in said second position such that earth, dirt and the like can be collected between said skid sleds and against said plate as said spreader-grader assembly is pulled via said hitch assembly.

4,655,298

ANNULUS PRESSURE FIRER MECHANISM WITH RELEASABLE FLUID CONDUIT FORCE TRANSMISSION MEANS

Flint R. George, Katy, and David M. Haugen, Houston, both of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 5, 1985, Ser. No. 773,773
Int. Cl.[4] E21B *43/116*
U.S. Cl. 175—4.52 **9 Claims**



1. A system for perforating a well having a casing therein, said well intersecting at least one fluid bearing formation of the earth and having fluid therein, said system comprising:
a first tubing string suspended within said casing in said well;
a perforating gun having a firing mechanism, said gun being suspended on an end of said first tubing string and forming perforations in said casing in said well upon actuation thereof;
means positioned above said perforating gun for dividing an annulus formed between said casing in said well and said first tubing string into upper and lower sections;
means for creating a pressure differential between said upper section of said annulus and the interior of said tubing string;
means in fluid communication with said upper section of said annulus for producing a force in response to said pressure differential; and
a second tubing string positioned in and concentric with said first tubing string, said second tubing string being connected to said force producing means for transmitting said force from said producing means to said firing mechanism for the actuation thereof and the actuation of said perforating gun to form perforations in said casing in said well and having an unobstructed bore therethrough.

4,655,299

ANGLE DEVIATION TOOL

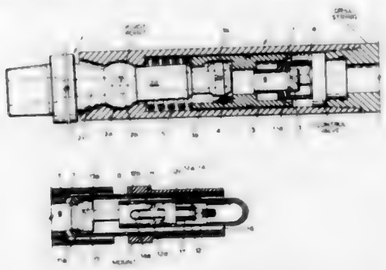
William N. Schoeffler, Lafayette, La., assignor to Petro-Design, Inc., Youngsville, La.

Filed Oct. 4, 1985, Ser. No. 784,261
Int. Cl.[4] E21B *7/08*
U.S. Cl. 175—38 **10 Claims**

1. A drilling assembly usable downhole on fluid conducting drill strings, situated in earth boreholes for selecting straight hole or directional drilling configuration of the downhole assembly by manipulation, at the earth surface, of drilling fluid flow controls, apparatus comprising:
(a) a body with an upper end with connector means to attach to the upwardly continuing drill string, and a lower end with means to attach to the downwardly continuing drill

string, and at least one fluid conducting channel to conduct fluid between said portions of the continuing drill string, each end of said body having an independent longitudinal centerline;

(b) control selector means within said body in communication with said channel responsive to a first preselected number of increases, greater than a preselected amount, of the fluid flow rate through said channel to produce a first output signal, and responsive to a second preselected



number of increases, greater than a preselected amount, of the fluid flow rate through said channel to produce a second output signal;

(c) means at the earth surface to cycle said drilling fluid flow rate between higher and lower flow rates; and

(d) hinge means in said body responsive to said first output signal to cause said centerlines to generally coincide, and responsive to said second output signal to cause said centerlines to produce an effectively bent overall body centerline.

4,655,300

METHOD AND APPARATUS FOR DETECTING WEAR OF A ROTATABLE BIT

Albert P. Davis, Jr., Houston; Mark S. Ramsey, Spring, and Joseph W. Stolle, Wharton, all of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Continuation-in-part of Ser. No. 582,203, Feb. 21, 1984, abandoned. This application Sep. 26, 1985, Ser. No. 781,198

Int. Cl.⁴ E21B *12/02*

U.S. Cl. 175—39 **20 Claims**



1. An apparatus for detecting excessive wear of a drill bit connected to a drill stem which is rotated to drill a wellbore, wherein a pressurized drilling fluid in the drill stem is discharged through at least one port in the drill bit and into the annulus between the drill stem and the wellbore, comprising:

a restricting means connected to the drill bit for reducing the flow of drilling fluid through at least one port;

an abradable sensor connected to the drill bit at a selected location to detect abrasion of the drill bit at said location; and

a tensioned wire connected between said restricting means and said sensor for manipulating said restricting means, when said sensor is activated by abrasion of the drill bit to release the tension in said wire, to reduce the flow of drilling fluid through at least one port of the drill bit.

14. A method for detecting excessive wear of a rotatable drill bit connected to a drill stem which is used to drill a wellbore, said method comprising the steps of:

discharging a pressurized fluid from the drill stem through at least one port in the drill bit body and into the annulus between the drill stem and the wellbore;

activating an abradable sensor connected to the drill bit at a selected location, when the drill bit becomes excessively worn at said location, to release the tension in a wire connected between said sensor and a restricting means;

manipulating said restricting means to reduce the flow of drilling fluid through at least one port; and detecting the increase in drilling fluid pressure.

4,655,301

EXPANSIBLE DRIVE CORE

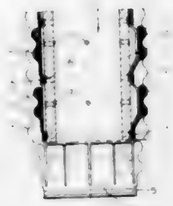
Alexander J. Verstraeten, Kaokkelseist, Belgium, assignor to Funderingstechnieken Verstraeten B.V., Netherlands

Filed Nov. 14, 1985, Ser. No. 797,890

Claims priority, application Netherlands, Nov. 21, 1984, 8403533

Int. Cl.⁴ E21B *7/20*

U.S. Cl. 175—171 **32 Claims**



1. An expansible drive core, which in its contracted state can be accommodated into a thin-walled tube which is to be driven into the ground wherein, prior to the action of driving, the drive core can be expanded so as to be clamped against the inner side of the wall of the thin-walled tube, and after the action of driving the drive core can be contracted for removal from the tube, wherein the drive core comprises:

a metal core body;

an expansion means consisting of an elastic sleeve surrounding the core body, the elastic sleeve being connected circumferentially to the core body at positions spaced above each other;

passages formed in the core body and lying between successive connecting positions of the elastic sleeve, the passages being adapted to supply a pressurized medium from the interior of the core body to spaces between the exterior of the core body and the interior of the elastic sleeve so as to expand the elastic sleeve between its connecting positions; and

reinforcement means serving for the transmission of forces between the core body and the thin-walled tube and consisting of elastic flaps which are disposed externally of the elastic sleeve and are locally connected to the elastic sleeve, the elastic flaps being internally provided with an armouring.

4,655,302

ROTATING COUPLING

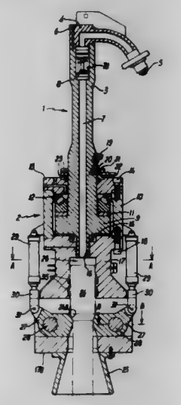
Thomas McCreadie, Montrose, and James B. Mason, Dundee, both of Scotland, assignors to Hughes Tool Company, Houston, Tex.

Filed Sep. 12, 1985, Ser. No. 775,450

Claims priority, application United Kingdom, Sep. 14, 1984, 8423290

Int. Cl.⁴ E21B *17/02*

U.S. Cl. 175—218 **9 Claims**



1. A coupling for use in offshore drilling applications comprising:

an upper body;

a lower body mounted on said upper body;

support means provided on the lower body for lifting drill pipes;

a passage through the coupling for the supply of mud to the drill pipes; and

valve means provided for the control of mud flow through the passage;

a recess formed in a lower portion of said lower body for receiving an upper end portion of a drill pipe;

wherein said passage is in communication with the drill pipe which is releasably retained in the recess by said support means.

4,655,303

DRILL BIT

Warren J. Winters; J. Ford Brett, both of Tulsa, and Tommy M. Warren, Coweta, all of Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 22, 1985, Ser. No. 801,178

Int. Cl.⁴ E21B *10/46, 10/60*

U.S. Cl. 175—329 **5 Claims**

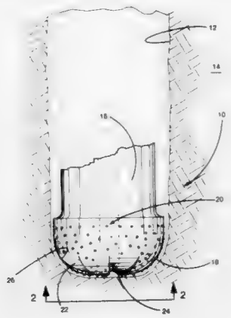
1. A drill bit for use in drilling a bore, comprising:

a body having an upper end adapted for connection to a source of rotary motion and a curved surface formed at a lower end thereof;

a plurality of cutting elements imbedded in and extending above the curved surface, the distance the cutting elements extend above the curved surface decreases with increasing distance from the center of the curved surface;

a port formed in the body for providing fluid therethrough to the curved surface; and

a plurality of fluid courses formed in the curved surface for distributing fluid from the port across the curved surface



in a manner where there is a substantially linear reduction in fluid pressure with increasing distance from the port.

4,655,304

COUNTING IN-LINE SYSTEM

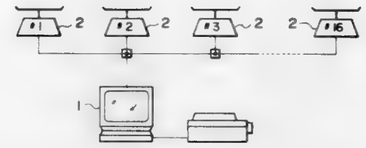
Noriyasu Tajima, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1985, Ser. No. 768,054

Claims priority, application Japan, Aug. 28, 1984, 59-179093; Aug. 28, 1984, 59-179094

Int. Cl.⁴ G01G *23/38, 19/40;* **G06F** *15/20*

U.S. Cl. 177—4 **7 Claims**



1. Counting in-line system, wherein a center machine and a plurality of scales having receipt issuing function are in-line connected to each other, centralized control of transaction data per each weighed article or non-weighed article registered in the scale is performed by said center machine which is selectively changeable between a floating system and a clerk fixed system, said transaction data being controlled in the center machine by the clerk number in the clerk fix system and being controlled by the customer number in the floating system, and print data is supplied from the center machine to the scale on the basis of receipt issuing request from side of the scale so as to issue the customer total receipt.

4,655,305

STRAIN GAGE TYPE PLATFORM SENSOR

Walter E. Jacobson, Meriden, Conn., assignor to Revere Corporation of America, Wallingford, Conn.

Filed Jun. 24, 1985, Ser. No. 747,993

Int. Cl.⁴ G01G *3/14, 3/08;* **G01L** *1/22*

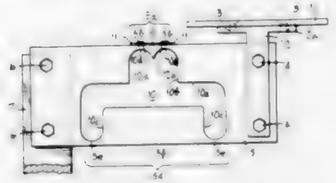
U.S. Cl. 177—211 **7 Claims**

1. Apparatus for sensing a force acting in a predetermined direction but subject to change in location of the center of application of the force, comprising:

a. a member comprising a horizontal platform for receiving said force, said member having substantial extent at right angles to said direction;

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b. an integral cantilever beam having one end attached to a fixed support and an opposite end supporting said member against said force, said beam consisting essentially of said ends and first and second generally parallel horizontally elongated portions of equal horizontal transverse dimension connecting said ends, said first portion being closer to said member than the second, said first portion having a flat upper surface which is the upper surface of the beam



and being spaced above said second portion, said first portion having two flexures formed therein and spaced apart along the length of said first portion, said second portion having two flexures formed therein and spaced apart along the length of said second portion by a distance greater than the space between the flexures in said first portion; and

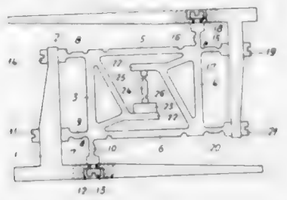
c. strain gage elements attached to the flat upper surface of said first portion at the flexures therein.

4,655,306

MASS-MEASURING AND FORCE-MEASURING DEVICE

Kaspar Saner, Dübendorf, Switzerland, assignor to K-Tron Patent AG, Switzerland

Filed Mar. 20, 1986, Ser. No. 841,955
Claims priority, application European Pat. Off., Mar. 25, 1985, 85810126.4
Int. Cl.⁴ G01G 3/08; G01L 1/22
U.S. Cl. 177—229 **10 Claims**



1. A mass-measuring and force-measuring device comprising a frame (1), a load-bearing component (2), means for guiding the load-bearing component (2) at right angles and parallel, and a measuring system (23 or 28), wherein these means consist of two rigid plates (3, 4) connected to one another by means of two horizontal parallel connecting elements (5, 6) arranged one on top of the other, and one of these plates (4) is connected to the load-bearing component (2) and the other plate (3) is connected to the frame (1), by means of a swivel joint (15 or 7) and a retaining rod (20 or 8; 33, 34, 35; 8, 39) in each case.

4,655,307

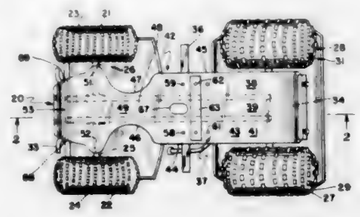
BELLY PAN FOR FOUR WHEEL ALL TERRAIN VEHICLES

Robert Lamoureux, R.F.D. 5, Box 39, Pelham, N.H. 03076

Filed May 6, 1985, Ser. No. 731,104
Int. Cl.⁴ B60R 27/00
U.S. Cl. 180—69.1 **4 Claims**

1. In combination with an elongated, all terrain vehicle having a pair of laterally spaced apart, steerable, front wheels, with axles, an elongated, exposed, under carriage, and a pair of laterally spaced apart drive rear wheels:

an elongated, protective, rubber-like, flexible, belly pan removably affixed to said vehicle, said pan being substantially co-extensive in width with the space between said laterally spaced wheels, having a horizontal, main body extending from said rear wheels forwardly to beyond said



front wheel axles, to cover said exposed undercarriage and having an integral, upwardly curved, front portion extending up the front of said vehicle to a level proximate the level of the axles of said front wheels to form a front bumper; and

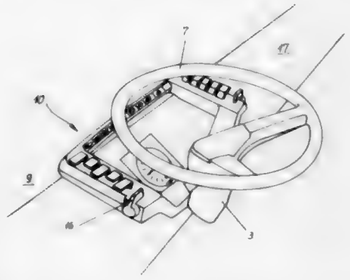
a pair of oppositely disposed, laterally-projecting, integral flaps, each for covering and protecting one of said front wheel axles of said vehicle.

4,655,308

ARRANGEMENT OF STEERING WHEEL AND CONTROL MECHANISMS

Ulrich Kraus; Elmar Egle, and Leonhard Schmude, all of Ulm, Fed. Rep. of Germany, assignors to Iveco Magirus AG, Ulm, Fed. Rep. of Germany

Filed Sep. 19, 1985, Ser. No. 777,944
Int. Cl.⁴ G01D 3/10
U.S. Cl. 180—78 **5 Claims**



1. An arrangement for the steering wheel and control mechanisms of a motor vehicle having a front as well as a speedometer, including only two transverse arms that essentially extend in an inverted V-shaped configuration toward vehicle operator location and approximately in the transverse direction of the vehicle; each of said transverse arms having two ends, one of which is attached to the steering arm below the plane of said steering wheel and near the steering column and the other of which is remote from said steering column; the improvement in combination therewith which comprises:

an essentially U-shaped frame portion which serves for the mounting of said control mechanism in a forward direction and below the steering wheel having only said two transverse arms for facilitating view as to the control mechanisms visible through an open space above and ahead of said two transverse arms; said frame portion

having a base and two arms, with that end of each of the latter remote from said base being fixedly connected to a respective one of said transverse arms at that end thereof remote from said steering column; said frame portion having an interior opening and being disposed in a plane which is approximately parallel to the plane of said steering wheel; said base of said frame portion being disposed between said steering column and the front of the vehicle in a location that results in optimum operating conditions and driver visibility especially also for commercial vehicles, such that said U-shaped frame portion is disposed in a non-disrupting location of the vehicle just below said steering wheel without appreciably affecting line of sight to the front of the vehicle and also the driver has enough free space for leg room so that the control mechanisms can be operated by the driver within easy reach from above as well as from below without accidental actuation from below by an unintentional movement of a knee of the leg of the driver and at the same time the speedometer is visible through the steering wheel as well through the interior opening of said U-shaped frame portion;

said transverse arms and said U-shaped frame portion being in the form of a closed frame member which, when said steering wheel is viewed in plan, has an essentially rectangular shape;

the dimensions of said frame member relative to said steering wheel being such that when the latter is viewed in plan, that portion of said steering wheel directed toward the front of the vehicle is approximately surrounded by said frame member;

said transverse arms being fixedly and integrally formed with said steering arm;

said base of said U-shaped frame portion having a planar, upwardly directed surface which is angled-off relative to the plane of said frame portion in such a way that the angle thereof, in relation to the surface upon which said vehicle is being driven, is greater than the angle of the plane of said steering wheel;

said control mechanisms including monitoring devices disposed on and along said planar, upwardly directed surface, of said base of said U-shaped frame portion;

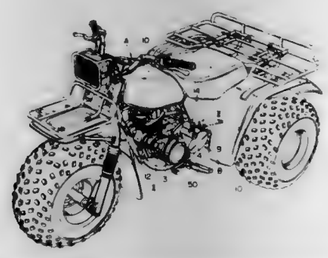
said arms of said frame portion each having a planar, upwardly directed surface, on and along which are disposed further control mechanisms in the form of switch levers, each of which has at least two positions.

4,655,309

GEARBOX ASSEMBLY FOR VEHICLES

Masahiro Imaizumi; Masanori Masumura, both of Saitama; Takeshi Ishikawa, Tokyo, and Eiji Hosoya, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 542,290, Oct. 14, 1983, Pat. No. 4,635,506.
This application Dec. 31, 1985, Ser. No. 814,947
Claims priority, application Japan, Oct. 15, 1982, 57-179778; Oct. 15, 1982, 57-179779
Int. Cl.⁴ B62D 61/08
U.S. Cl. 180—215 **6 Claims**



1. In a three-wheel vehicle having one front wheel, two rear wheels having a rotational axis perpendicular to a longitudinal centerline of said vehicle and acting as driving wheels, a drive shaft for transmitting power to said rear wheels, and an engine disposed between said front wheel and said axis of said rear wheels, said driveshaft lying substantially on said longitudinal centerline, wherein the improvement comprises:

a pedal-operated main gearbox having an input shaft coupled to an output shaft of said engine, said main gearbox being mounted substantially along said longitudinal centerline and to the rear of said engine, said main gearbox having a plurality of forward gears and an output shaft, said input shaft and said output shaft lying substantially perpendicular to said longitudinal centerline; and

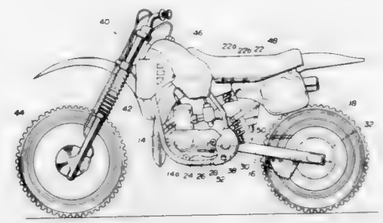
a lever-operated sub gearbox having a plurality of gear-shift steps, said sub gearbox being mounted aside said main gearbox, a main portion of said sub gearbox being displaced relative to said centerline, said sub gearbox having an input shaft lying substantially perpendicular to said centerline and being coupled to an output shaft of said main gearbox, said sub gearbox having an output power shaft for transmitting power to said rear wheels, said output power shaft lying perpendicular to said centerline and being coupled to said drive shaft.

4,655,310

AUTOMOTIVE VEHICLE

Norio Hoshi, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Dec. 30, 1985, Ser. No. 814,542
Claims priority, application Japan, Jan. 12, 1985, 60-3719
Int. Cl.⁴ B62K 25/20
U.S. Cl. 180—219 **5 Claims**



1. An automotive vehicle comprising:

(a) an elongated frame having front and rear ends;

(b) an engine mounted on said frame and including a body having opposite sides spaced from each other transversely of said frame and a rearwardly extending projection portion, a drive shaft mounted on said body for rotation about an axis extending transversely of said frame and having one end extending exteriorly of one of said oppostie sides of said body adjacent to said projection portion, and a drive sprocket mounted on said one end of said shaft for rotation therewith;

(c) front wheel means supported on said frame;

(d) rear wheel means including at least one rear wheel and a driven sprocket fixed to said rear wheel;

(e) rear wheel suspension means comprising a generally horizontally-disposed swing arm extending along the length of said frame and supporting said rear wheel for rotation at the other end of said swing arm, theother end of said swing arm being bifurcated to provide first and second arm portions spaced from each other transversely of said frame;

(f) an endless transmission member extending around and engaged with said drive and driven sprockets for driving said rear wheel upon rotation of said drive sprocket, said transmission member being disposed along the length of said frame;

(g) bearing means mounted on said frame and comprising a mounting shaft extending transversely of said frame through said engine body projection portion, and first and second bearing members mounted for angular movement on said mounting shaft and spaced along the length thereof, said first and second arm portions of said swing arm being mounted respectively on said first and second bearings for allowing said swing arm to be pivoted about said mounting shaft, said first bearing member being disposed transversely outwardly of said one side of said body and said drive sprocket and being in overlapping relation to said drive sprocket in the direction of the length of said frame in such a manner that said other end of said swing arm and said first bearing member will not interfere with said drive sprocket.

4,655,311

REAR WHEEL STEERING DEVICE FOR MOTORCYCLES

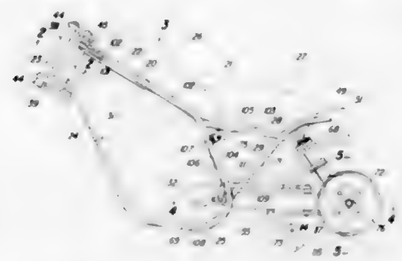
Atsushi Matsuda, Iwata, and Toshiyuki Sato, Fukuroi, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 7, 1986, Ser. No. 827,803

Claims priority, application Japan, Feb. 8, 1985, 60-21803; Feb. 12, 1985, 60-23581

Int. Cl.⁴ B62K *21/00*

U.S. Cl. 180—219 **15 Claims**



1. A vehicle having at least on dirigible front wheel steered by an operator by means of operator control means and at least one rear wheel, the improvement comprising means for supporting said rear wheel for steering movement and positive linkage means for mechanically coupling said front wheel steering mechanism to said rear wheel steering mechanism for simultaneous steering movement comprising to plurality of links pivotally connected to each other, said rear wheel being supported for suspension movement by a trailing arm pivotal about an axis coincident with the pivot axis of one of the link pivotal connections.

11. A motorcycle having one dirigible front wheel steered by an operator and one rear wheel, the improvement comprising means for supporting said rear wheel for steering movement and means for mechanically coupling said front and rear wheels for simultaneous steering movement and for precluding steering of the front wheel by forces exerted on the rear wheel tending to steer it.

4,655,312

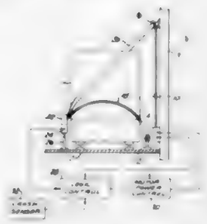
ELECTRICALLY ADJUSTED SAFETY RESTRAINT SYSTEM

Richard L. Frantom, Richmond; William R. Seitz, Birmingham, and Walter F. Datwyler, Jr., Royal Oak, all of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 15, 1985, Ser. No. 787,298

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 180—268 **28 Claims**



1. In an electrically adjusted safety restraint system for restraining an occupant in a vehicle's seat having a seat belt with one end attached to a structural member of the vehicle and the other end attached to a seat belt retractor, wherein the improvement comprises:

an electric motor operatively connected to the retractor for actuating the retractor to retract the seat belt;

switch means associated with the seat belt having a first state signifying that the seat belt is secured about the occupant and a second state signifying the seat belt is not secured about the occupant;

a motor current sensor responsive to said first state for generating a snugged-up signal in response to the motor's current exceeding a predetermined value signifying the seat belt has been snugged up to the seat's occupant with a predetermined force;

logic means for generating a first control signal in response to the state of said switch means, for terminating said first control signal in response to said snugged-up signal and for generating a second control signal in response to the termination of said first control signal; and

motor power control means for providing electrical power to said motor in response to said first control signal for actuating the retractor to snug up the seat belt and to stow the seat belt when the seat belt is not secured about the occupant and in response to said second control signal for actuating the retractor to unreel a length of seat belt to produce a predetermined slack.

4,655,313

VEHICLE SEAT SWITCH

John E. Hicks, Licoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

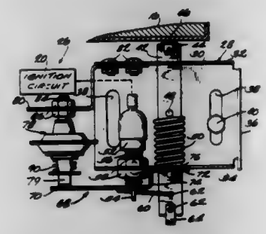
Filed Aug. 26, 1985, Ser. No. 769,486

Int. Cl.⁴ B60K *25/00*

U.S. Cl. 180—273 **25 Claims**

25. A vehicle seat switch apparatus comprising a vertically movable vehicle seat, a frame mounted beneath said vehicle seat, a first member supported by said frame for generally reciprocal vertical movement relative to said frame between upper and lower positions, said first member having an upper end adapted to be contacted by said vehicle seat to move said first member to said lower position in response to downward movement of said seat caused by the weight of a vehicle operator on said seat, means for biasing said first member to said upper position, a switch mounted on said frame and adapted to be connected to an ignition circuit for opening and closing the circuit, said switch including a plunger movable upwardly and downwardly for respectively opening and closing said switch,

and means for closing said switch in response to location of said first member in said lower position and for opening said switch after expiration of a predetermined period of time after said first member moves upwardly from said lower position, said closing and opening means including a resiliently flexible second member having a first end connected to said first member for movement therewith, and an opposite second end connected to said plunger for movement therewith, a dashpot mounted on said frame such that said switch is located intermediate said first member and said dashpot, a third member having a first end pivotally connected to said dashpot so as to



delay upward movement of said third member, an opposite second end extending adjacent said first member, and a central portion extending adjacent said plunger and above said second end of said second member for limiting upward movement of said second end of said second member, means for moving said third member downwardly relative to said frame in response to movement of said first member to said lower position, and a pin extending generally horizontally from said first member beneath said second end of said third member for preventing downward movement of said third member relative to said first member.

4,655,314

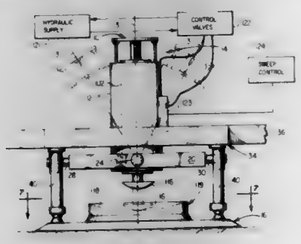
VIBRATORY SEISMIC SOURCE FOR GENERATING COMBINED COMPRESSIONAL AND SHEAR WAVES

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 18, 1986, Ser. No. 830,340

Int. Cl.⁴ G01V *1/02*

U.S. Cl. 181—113 **4 Claims**



1. Apparatus for imparting combined compressional and shear wave seismic vibrations to the earth comprising:

(a) a base plate for coupling vibrational energy into the earth;

(b) a frame;

(c) means for pivotally supporting said frame above said base plate in spaced relation thereto so as to enable limited rotation of said frame about a first rotational axis extending parallel to the plane of said base plate;

(d) a vibrator for providing reciprocal vibrations along a vibratory axis;

(e) means for pivotally supporting said vibrator within said frame such as to enable limited rotation of said vibrator about a second rotational axis perpendicular to said first rotational axis and extending in the plane of said frame;

(f) means for tilting said frame and said vibrator respectively about said first and second rotational axes, until said vibratory axis coincides with a predetermined direction;

(g) means adjustably secured between said frame and said vibrator for thereafter shifting the position of said vibrator in the direction of said vibrating axis so that said vibrator contacts said base plate; and

(h) means for actuating said vibrator in said position of contact so as to transfer vibrational energy to said base plate.

4,655,315

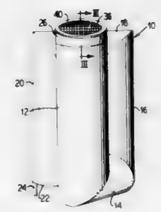
SPEAKER SYSTEM

Robert W. Saville, 340 Linden Ave., Lake Forest, Ill. 60045

Filed Jul. 17, 1985, Ser. No. 755,785

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 181—153 **18 Claims**



1. A speaker system comprising:

a electromagnetic speaker;

a cylindrical stiff hollow tube mounting said speaker,

said cylindrical stiff hollow tube comprising a plurality of serially connected sections, including first and last sections, each connected at an angle to an adjacent section,

the combined mean axial lengths of said sections being approximately one-quarter wavelength of a predetermined low frequency,

said speaker operable to produce high frequencies and low frequencies; and

mounting means mounting said speaker to and facing out of said first end section at one end of said cylindrical tube for emission of the high frequencies from said one end of said tube, and

said last end section having an open end for emission of the low frequencies out of said open end of said cylindrical tube.

4,655,316

ACOUSTIC DIAPHRAGM

Fancher M. Murray, Thousand Oaks, Calif., assignor to JBL Incorporated, Northridge, Calif.

Filed Mar. 13, 1985, Ser. No. 711,549

Int. Cl.⁴ G01K *13/00*

U.S. Cl. 181—164 **26 Claims**

1. An acoustic diaphragm, comprising:

metallic sheet material having a raised pattern formed thereon;

said raised pattern including a plurality of first raised strip elements extending radially from a point on said matallic sheet material and a plurality of second raised strip elements;

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said second raised strip elements including a plurality of pairs of intersecting strip elements, each of said intersecting pairs being positioned between adjacent first raised strip elements.

4,655,317

SOUND DAMPING DEVICE, PREFERABLY FOR REDUCING THE NOISE OF BLOW-OFF VALVES

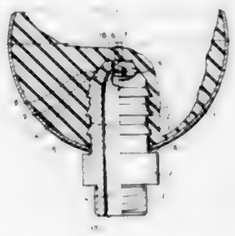
Tibor Kólya, Budapest; Béla Szöke; Károly Kádár, both of Miskolc; György Fóti, Budapest, and Zoltán Gecsei, Miskolc, all of Hungary, assignors to Autóipari Kutató és Fejlesztö Vállalat, Budapest and Északmagyarországi Vegyimüvek, Sajóbábony, both of, Hungary

Filed May 16, 1985, Ser. No. 734,649

Claims priority, application Hungary, May 22, 1984, 1969/84

Int. Cl.⁴ F01N *1/24*

U.S. Cl. 181—257 **11 Claims**



1. In a sound damping device for suppressing the noise generated by a gas stream emitted by a blow-off valve; the device including a body of a porous material traversed by the gas stream; the improvement wherein said body is readily resiliently deformable and has a central axis; a nipple projecting into said body and having a passage oriented coaxially with said axis; said passage having an inlet opening adapted to receive the gas stream from the valve; said nipple further including means for defining a sound suppressing outlet in said passage; said sound suppressing outlet being spaced from said inlet opening and being situated within said body; further comprising an outer layer substantially entirely surrounding said body and being bonded thereto; said outer layer being deformable and being permeable to air.

4,655,318

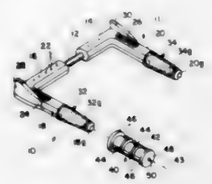
STEP ASSEMBLY

Harry E. Bowen, Portland, Oreg., assignor to H. Bowen Company, Inc., Portland, Oreg.

Filed Oct. 4, 1985, Ser. No. 784,808

Int. Cl.⁴ E06C *9/04*

U.S. Cl. 182—90 **20 Claims**



1. A manhole step assembly comprising:

a substantially U-shaped metal rod; and

a corrosion resistant covering molded about said rod, said covering having a tapered portion formed at the free ends thereof, said tapered portion including multiple non-circumferentially extending projections integral therewith and extending outwardly therefrom, to increase the surface area thereof.

4,655,319

FOLDING LADDER

Gilbert Loix, rue Bourgogne 20, Wihogne, Belgium

Filed Dec. 27, 1985, Ser. No. 814,102

Claims priority, application Belgium, Jan. 18, 1985, 901523; Dec. 11, 1985, 0/215993

Int. Cl.⁴ E06C *9/12*

U.S. Cl. 182—96 **12 Claims**



1. Improvement to emergency ladders folding in one or more vertically successive sections of which each element is made up of two angle-metal uprights arranged with their inside surface opposite one another, of articulated rungs on the said uprights; uprights whose inside faces perpendicular to the plane of the ladder support two longitudinal ribs, situated towards the edge of the wing of the first upright and towards the angle of the second, each rib facing a rib of the other upright and provided, at regular intervals in the longitudinal direction, with facing perforations receiving pivots for articulating the rungs, characterized by the fact that the fixed angle-metal upright, that is the one to be placed on the facade side, comprises, on the one hand, on each side, outside and at the sides, a wing parallel to the plane of the facade; a wing over which are curved on each side, pieces having a notch which engages the end of such lateral wings, characterized by the fact that such lateral wings are shaped so as to be able to position themselves right into the groove (38) of the notch on each

piece (6) which is fixed by means of one or more bolts at a desired point along the length of the respective parallel longitudinal slot(s) (4) with which each wing of a U-piece anchored to the facade is provided; anchoring piece enclosing and holding by its wings the fixed upright (7) by means of notched pieces (35) and, on the other hand, the fact that such said fixed upright (7), between its perpendicular wing on the facade and the adjacent rib, has a double slot (19) inside, of hammerhead shape, into which can be slipped the edges of a flat piece (20) of length identical to that of a ladder section, such said flat piece (20) in each section being made to connect successively one to the other in such manner as to ensure continuity and connection over the whole height of the ladder of the means of keeping it in the folded and unfolded positions, and by successive perforations, make it possible to broach a toothed rail (32) at determinate points and place a release (18) there, for example every 30 cm, points likewise determined on the lateral wing of the fixed upright (7), by successive perforations meant to receive a drilling gauge to effect perforations for fixing the support for the axis of the release.

4,655,320

LADDER MEANS AND METHOD OF PRODUCTION

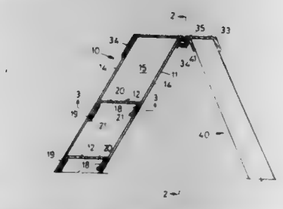
John C. Good, Rosslyn Park, Australia, assignor to Benboid Pty Ltd., Australia

Filed Dec. 10, 1985, Ser. No. 807,340

Claims priority, application Australia, Dec. 14, 1984, PG8586

Int. Cl.⁴ E06C *7/08, 7/50*

U.S. Cl. 182—194 **7 Claims**



1. A ladder comprising a pair of spaced metal stiles, each having a channel shaped cross-section with a web and a pair of flanges, said flanges of each stile directed towards the flanges of the other stile,

a plurality of metal rungs between the stiles, each rung also being of channel section and having a tread portion flanked on each side by a respective rung flange, the tread portion of each said rung defining an acute angle with one said rung flange and an obtuse angle with the other said rung flange, the ends of said rung flanges lying between, and contiguous with inner surfaces of, said stile flanges,

and weld beads joining the outer surface of each said acute angled rung flange to one of the flanges of each respective said stile and the inner surface of each end of each said obtused angled rung flanges to an inner surface of a respective said stile web.

4,655,321

ROPE LADDER WITH MOLDED HARD ELASTOMER STEPS AND METHOD FOR ASSEMBLYING THE LADDER THEREFOR

Robert M. Salvarezza, 110 Braemar Dr., Hillsborough, Calif. 94010

Filed Aug. 29, 1986, Ser. No. 902,185

Int. Cl.⁴ E06C *1/56*

U.S. Cl. 182—196 **13 Claims**

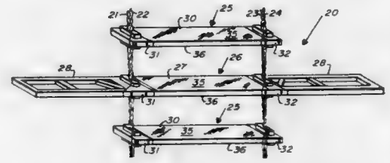
1. A step for a rope ladder of the type having a series of ladder steps and two spaced-apart pairs of ropes, said step including in combination:

a metal step frame having a pair of longitudinal members with upper and lower surfaces and joined by shorter crossing members, and having at each end a pair of aligned metal brackets bridging across the pair of longitudinal members, one on said upper surface and one on said lower surface, each bracket defining a generally rectangular opening, aligned with that of the other of said pair of brackets,

a molded hard elastomer body molded around said frame and having a pair of integral collar portions at each end, each molded around a said bracket, said body having a rope-receiving opening through each collar portion and the body therebetween and in line with the rectangular openings through said brackets, each said rope-receiving opening being shaped and sized for closely confining said pair of ropes,

said body and said frame defining a said step,

said step having a pair of horizontal transverse openings through said step parallel to each other on each side of each said rope-receiving opening, said transverse openings extending transversely through said longitudinal members,



said step being cut on one side only to provide a main step portion and two separate gripping portions, one for each said rope-receiving opening, each gripping portion incorporating a portion of one said longitudinal frame member, a portion of each said bracket of one pair thereof, and a portion of said body, each said gripping portion also including a portion of each said transverse opening,

two nylon tubes extending into each said transverse opening, one for said main step portion at the end opposite said gripping portion and one for each said gripping portion, said tube extending through said longitudinal frame members,

a bolt extending through said two tubes and between them, and

fastening means for each said bolt, for clamping each said gripping portions toward said main step portion when a said pair of said ropes has been inserted in each said rope-receiving opening.

4,655,322

CLAMP FOR SAFETY LEG OF A LADDER, AND LADDER EQUIPPED THEREWITH

Leon R. Mittanck, 433 FM 1456, Bellville, Tex. 77418

Filed Jul. 9, 1986, Ser. No. 860,420

Int. Cl.⁴ E06C *1/20, 7/42, 5/36*

U.S. Cl. 182—172 **5 Claims**

1. A clamp device for engaging the outer face of a leg of a ladder comprising:

(a) paired elongated jaws each comprised of a base panel and an end panel emerging in L-shaped manner from the base panel and extending to a distal extremity having a gripping edge,

(b) hinge means pivotably interconnecting said base panels in a manner to dispose said end panels in facing, substantially parallel relationship, thereby defining a clamping region

(c) paired elongated spreader brackets associated with said base panels exterior to said clamping region in facing relationship about said hinge means, said spreader brackets having upper extremities defining entrance means centered about said hinge means, and having lower extremities spanned by a coil spring serving to draw said brackets together,

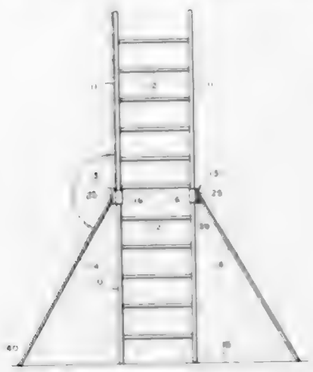
(d) rod holding means pivotably associated with said hinge

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means exterior to said clamping region and between said spreader brackets,

(e) a spreader rod pivotably held at one extremity by said rod holding means in a manner permitting swinging motion of its free extremity in a vertical direction and entrance into said entrance means, whereby,

(f) when said spreader rod is moved downwardly, it enters



said entrance means and bears laterally against said spreader brackets, causing the gripping edges of the end panels of said jaws to anchor upon a ladder leg positioned within said clamping region, and upward movement of the spreader rod out of contact with said spreader brackets permits said coil spring to withdraw said jaws from anchoring engagement with said leg while permitting sliding engagement therewith.

4,655,323

LOCKING DEVICE FOR EXTENSIBLE ELEVATOR SECTIONS

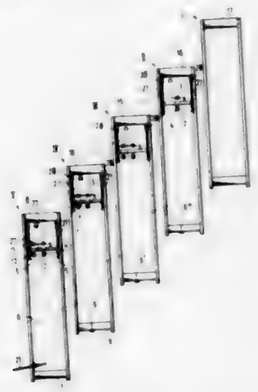
Albert Böcker, Werne, Fed. Rep. of Germany, assignor to GmbH & Co. KG Albert Böcker, Fed. Rep. of Germany

Filed Jan. 3, 1986, Ser. No. 816,132

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1985, 3500876

Int. Cl.⁴ B66F *9/08*; E04H *12/34*

U.S. Cl. 187—1 R **10 Claims**



1. An elevator having a plurality of telescopic sections, a respective cable-actuated locking/unlocking device being provided between each pair of adjacent telescopic sections, wherein each locking/unlocking device includes an actuating cable and two cable guides, the actuating cable passing at least partially around said cable guides, the length of the actuating cable being adjustable by variation of the distance between said cable guides, the variation of the distance between the cable guides of each locking/unlocking device being effected by a respective draw cable which displaces one cable guide in relation to the other cable guide, and wherein the draw cable which effects the variation of the distance between the cable guides of the locking/unlocking device provided between the first (lowermost) and second telescopic sections runs from the lower end of the first telescopic section to the upper end thereof, the draw cable which effects the variation of the distance between the cable guides of each succeeding locking-/unlocking device running from the lower end of the upper telescopic section of the associated pair of telescopic sections to the upper thereof, while, with the exception of the draw cable allocated to the first telescopic section, each draw cable is guided over a further pair of variably-spaced cable guides provided on the lower telescopic section of the associated pair of telescopic sections.

4,655,324

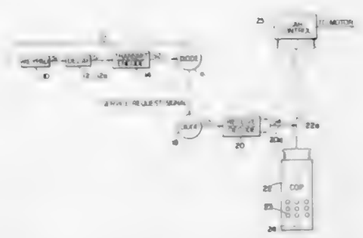
METHOD FOR PRIVATELY CONTROLLING AN ELEVATOR

Gary M. Meguerdichian, Waterbury, and Robert E. Greenstien, Rocky Hill, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Sep. 23, 1985, Ser. No. 778,833

Int. Cl.⁴ B66B *1/46*

U.S. Cl. 187—121 **11 Claims**



1. A method by which elevator passengers control operation of an elevator car controlled by a car control system and having a car-operating panel by which passengers enter car control requests on buttons and switches, characterized by the steps:

entering a car command on a hand-held, wireless transmitting device to cause the transmission of a coded command signal;

receiving the coded command signal through a sensor associated with the elevator cab;

decoding the received coded command signal; and

registering the car command with the car control system.

4,655,325

METHOD AND APPARATUS FOR CONTROLLING ELEVATORS WITH DOUBLE CARS

Joris Schröder, Lucerne; Jiri Kiml, Baillwil, and Fritz Meyer, Kussnacht, all of Switzerland, assignors to Inventio AG, Switzerland

Filed Sep. 12, 1985, Ser. No. 775,171

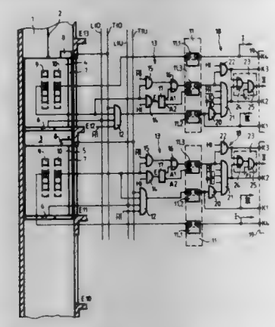
Claims priority, application Switzerland, Oct. 9, 1984, 04857/84

Int. Cl.⁴ B66B *1/18*

U.S. Cl. 187—127 **24 Claims**

1. A control system for the control of elevators with double

cars, formed of two cars arranged in a common cage and serving in each case two adjacent floors, including car call circuits, a car call register, a load measuring device, an automatic door, and a door control circuit associated with each of the cars, where the car calls for travels to floors which lie in the direction of travel ahead of the car are subject to a restriction of operation which differentiates between two call groups, of which the first call group comprises calls for odd numbered floors of the upper car and calls for even numbered floors of the lower car, and the second call group comprises calls for



even numbered floors of the upper car and calls for odd numbered floors of the lower car and where the restriction of operation can be cancelled, the control system comprising:

means responsive to car calls of both call groups entered through car call circuits for storing said car calls in car call registers during the restriction of operation, and means responsive to said stored calls of one of the two call groups and a load measuring device for stopping a car at the associated floors only when during a change in direction of travel of the car a load is detected by a load measuring device associated with the car.

4,655,326

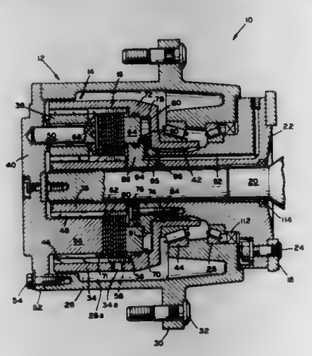
COOLING SYSTEM FOR PLANETARY WHEEL END WITH WET BRAKE

Carl D. Oesenbaugh, Ft. Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 29, 1985, Ser. No. 802,928

Int. Cl.⁴ F16D *65/20, 65/850*

U.S. Cl. 188—18 A **10 Claims**



1. In an axle outer end assembly comprising a stationary axle housing

a non-rotatable spindle connected to said axle housing having a central opening

an input member projecting from said spindle central opening,

an output member surrounding said input member having an inner end rotatably mounted on said spindle and an open outer end and a sump containing a supply of oil,

a planetary drive unit operably connecting said input and output members, said planetary drive unit including a ring gear fixed to said spindle having longitudinally extending internal gear teeth, a sun gear non-rotatably mounted on said input member having longitudinally extending external gear teeth, a plurality of pinion gears having external teeth in meshing engagement with a first portion of said internal and external teeth at one end of said ring and sun gear and a carrier secured to the output member open end rotatably supporting said plurality of pinion gears,

a disc brake operably connecting said ring and sun gears comprising a first plurality of axially movable stationary discs having external teeth engaging a second portion of said internal teeth at the other end of said ring gear, a second plurality of axially movable rotatable discs interleaved between said first discs having internal teeth engaging said external teeth at the other end of said sun gear and a piston operative in a first position to move said discs into frictional contact with one another and into engagement with said carrier whereby said sun gear and output member are restrained against rotation, and operative in a second position to allow said discs to move out of frictional contact with one another whereby said sun gear and output member are rotatable relative to each other, an improvement comprising:

an oil circulation system for supplying oil to said stationary and rotatable brake discs, said oil circulation system comprising

means between said sun gear and rotatable discs defining an axial oil flow path for receiving oil from between said sun and pinion gear teeth,

means on said ring gear for receiving oil from said stationary and rotatable discs and directing said oil to said sump.

4,655,327

IMPELLER TYPE DESCENT SLOWING DEVICE

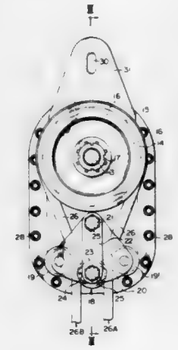
Hisatsugu Tomioka; Tazuo Waki, and Hiroyuki Sugaya, all of Tokyo, Japan, assignors to Lonseal Corporation, Tokyo, Japan

Filed Oct. 31, 1984, Ser. No. 666,764

Claims priority, application Japan, Mar. 15, 1984, 59-50227

Int. Cl.⁴ F16D *57/00*; A62B *1/12*; B66D *3/04*

U.S. Cl. 188—290 **16 Claims**



1. An impeller type descent slowing device comprising:

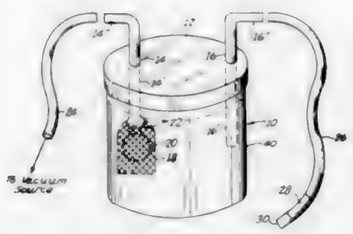
(a) a closed housing having a predetermincd inner volume;

(b) a plurality of gears positioned within said housing;

(c) an impeller positioned within said housing;

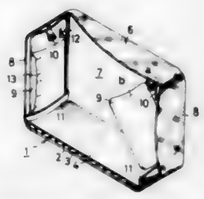
(d) a viscous fluid within said housing comprising means for controlling rotation of said impeller, said viscous fluid comprising a rotation control oil having a viscosity from 100 cps to 500 cps at −20° C.;
(e) an input drive shaft positioned within said housing and a drive shaft pulley fitted about said drive shaft;
(f) a line trained about said drive pulley, said impeller comprising four blades, the ratio of the speed of rotation of said impeller with respect to the speed of rotation of said input driving shaft being greater than 40:1 and less than 50:1, said rotation control oil comprising means for restraining rotation of said impeller to obtain a constant speed of descent for a load when said load is applied to said line, said impeller being rotated via said input drive shaft; and
(g) a stationary pulley and two pendulum pulleys which are rockable in unison, said line extending between respective ones of said pendulum pulleys and said stationary pulley, each said pendulum pulley and said stationary pulley together comprising means for frictionally compressing said line; and
(h) a substantially triangular plate which is pivotably mounted to said housing at a position which is substantially centrally located below said input drive shaft and above said stationary pulley.

4,655,328
HYDRAULIC BRAKE BLEEDING APPARATUS
Robert Tideberg, 121 Post Rd., West Palm Beach, Fla. 33406
Continuation of Ser. No. 429,176, Sep. 30, 1982, abandoned. This application Mar. 7, 1985, Ser. No. 708,990
Int. Cl.⁴ B60T *11/30*
U.S. Cl. 188—352 **2 Claims**



1. A vehicle's hydraulic fluid brake line system bleeding apparatus for removing air trapped within the hydraulic fluid lines, in a vehicle having a braking system with at least one bleed valve and used with an available vacuum source, said apparatus comprising:
a container having an opening;
a lid sealably attachable to said opening of said container;
said lid and said container forming an airtight chamber within said container when said lid is sealably attached to said opening of said container;
said lid including a first conduit means therethrough and a second conduit means therethrough;
said first conduit means having an outer portion connectable to said vacuum source, said first conduit means for transporting air out of said container;
said second conduit means having an outer portion connectable to the bleed valve in the hydraulic fluid lines, said second conduit means for transporting hydraulic fluid and air into said container,
one way air valve means for preventing hydraulic fluid from said second conduit means from escaping from said airtight chamber out through said first conduit when the hydraulic fluid in said container reaches a certain level,
said one way air valve means for passing only air to the vacuum source, said one way air valve means remains open under all other conditions, said one way air valve means including a screen cage with a floatable check ball movable therein from a lower position to a higher position by hydraulic fluid in said chamber.

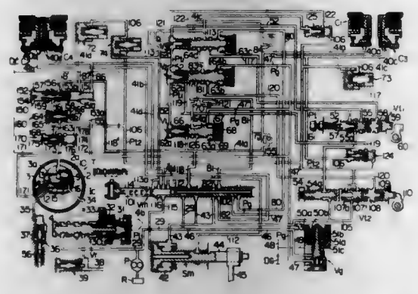
4,655,329
COLLAPSIBLE LUGGAGE
Katsuyoshi Kaneko, Tokyo, Japan, assignor to Maruwa Echo Co. Ltd., Tokyo, Japan
Filed Sep. 27, 1985, Ser. No. 780,955
Claims priority, application Japan, Dec. 13, 1984, 59-188119[U]
Int. Cl.⁴ A45C *7/00, 13/04*
U.S. Cl. 190—107 **2 Claims**



1. Luggage comprising:
a ceiling board having a handle,
a bottom board,
two flexible side faces, each side face interconnecting said ceiling board and said bottom board,
a front face,
a rear face,
a pocket defined at a lowermost portion of each of said two side faces,
two reinforcing inserts adapted to have one end fit within one of said pockets,
first fastening means pivotally mounted adjacent both intersections of said two side faces and said ceiling board,
second fastening means located at an end of each of said two reinforcing inserts opposite to said one end adapted to fit within said pockets,
third fastening means located at both ends of said ceiling board adjacent to said first fastening means, said first fastening means being positionable in two positions, a first position engaged with said third fastening means for use in securing said first fastening means out of the way when folding up of said luggage, and a second position engaged with said second fastening means when said one end of said inserts are located in said pockets for removably mounting said inserts along said two side faces to form said luggage into an operative shape.

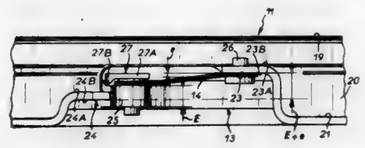
4,655,330
DIRECT-COUPLING CONTROL SYSTEM FOR TORQUE CONVERTER IN AUTOMATIC TRANSMISSION FOR VEHICLES
Masao Nishikawa, Tokyo; Kouji Yamaguchi, Tokorozawa; Yoshimi Sakurai, Tanashi, and Takashi Aoki, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 9, 1984, Ser. No. 608,624
Claims priority, application Japan, May 10, 1983, 58-81180
The portion of the term of this patent subsequent to Jan. 21, 2003, has been disclaimed.
Int. Cl.⁴ B60K *41/22*
U.S. Cl. 192—3.3 **4 Claims**

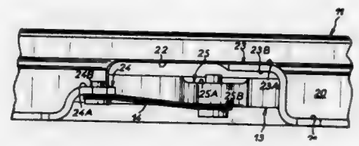
1. In an automatic transmission for a vehicle, comprising a fluid torque converter having an input member and an output member; and an auxiliary transmission having a plurality of stages of gear trains selectively connected to the output member of said torque converter and having frictionally engaging elements engageable upon receipt of hydraulic pressure fed through hydraulic fluid passages;
a direct-coupling clutch and control system for the torque converter, which comprises:
a direct-coupling clutch interposed between the input and output members for mechanically coupling said members together; and a hydraulic pressure source and said direct-coupling clutch for controlling engagement of said clutch.
wherein said control means comprises an oil line, a valve in said oil line having first and second switching positions on opposite ends of the valve for opening said oil line and for temporarily releasing the pressure fed to the direct-coupling clutch at the time of shifting of the valve between the first and second switching positions, said valve being normally urged by a resilient means toward the first position and being urged toward the second position against a force of the resilient means when said valve receives, on a pressure receiving portion of the valve, a part of the hydraulic pressure being fed to said auxiliary transmission for engagement of the gear trains from one gear train stage of said gear train stages to another gear train stage of said gear train stages of said plurality of gear train stages, which part of pressure is fed through oil lines branched off the oil lines feeding hydraulic fluid for engagment of said another gear train stage.



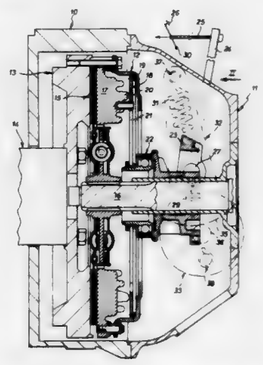
4,655,331
CLUTCH COVER ASSEMBLY
Jacky Naudin, Amieres, France, assignor to Valeo, Paris, France
Filed May 13, 1985, Ser. No. 733,198
Claims priority, application France, May 18, 1984, 84 07741
Int. Cl.⁴ F16D *13/50*
U.S. Cl. 192—70.18 **9 Claims**

1. A clutch cover assembly adapted to rotate about an axis in a specific direction, said clutch cover assembly comprising a hollow cover incorporating an annular endwall, a skirt being formed with openings, each opening being bordered in the circumferential direction by two lugs offset axially and circumferentially from each other including a fixing lug and a retaining lug, said fixing lug disposed axially between said endwall of said cover and said retaining lug, and a flange for attaching said cover to a reaction plate, at least one pressure plate having radially projecting tabs passing through said openings in said skirt, an engagement member adapted to urge said pressure plate in an axial direction away from said endwall of said cover, and axially flexible circumferential straps adapted to couple said pressure plate and said cover rotationally, with provision for relative axial movement therebetween, wherein said tabs and said retaining lugs and said fixing lugs have respective first parallel transverse surfaces facing axially towards said endwall of said cover and respective second parallel transverse surfaces facing axially away from said endwall, each of said circumferential straps having a given configuration and being adapted to be selectively fixed to said fixing lug and said first transverse surface of said pressure plate projecting tab for one direction of rotation of the cover assembly and to said retaining lug and said second transverse surface of said pressure plate projecting tab for an opposite direction of rotation of the cover assembly.





4,655,332
ASSISTED CLUTCH
Jean Herbulot, Francouville, and Gérard Escaillas, Paris, both of France, assignors to Valeo, Paris, France
Filed Feb. 22, 1985, Ser. No. 704,087
Claims priority, application France, Feb. 24, 1984, 84 02880
Int. Cl.⁴ F16D *23/12*
U.S. Cl. 192—70.28 **11 Claims**



1. Clutch comprising at least one friction disk, clutch plates adapted to clamp said at least one friction disk, elastic means acting on a least one of said clutch plates and adapted to urge said clutch plates together so as to clamp said at least one friction disk and thereby engage the clutch, clutch release control means comprising a pedal and adapted to unclamp said at least one friction disk and thereby release the clutch, assistance means for reinforcing the action of said pedal, a combination comprising at least first and second mobile members each of which is adapted to move along a respective path at the same time as the other of said first and second mobile members and proportionately to movement of said control means, and movement transmission means interconnecting said first and second mobile members, said assistance means cooperating with said combination of mobile members, being disposed

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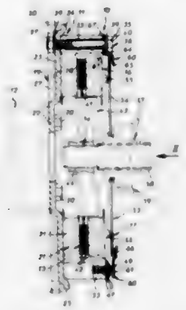
between said first and second mobile members and being operative on said control means according to a predetermined law as a function of the simultaneous but non-identical movements of said first and second mobile members, said control means comprising at least one shaft, a fork fastened to said at least one shaft, a clutch release bearing on which said fork is operative and which is operative on said clutch plates so as to move them apart, a pivot pin for said pedal, a second shaft, and a toothed wheel on said second shaft being fastened to said second mobile member, said first mobile member being fastened to said at least one shaft and meshing with said toothed wheel, said assistance means comprising a spring having respective ends coupled to said first and second mobile members, the arrangement being such that with the clutch engaged said ends of said spring are substantially aligned with said at least one shaft, whereby said spring is charged when the clutchis engaged, a second spring with different characteristics to said first-mentioned spring and acting in opposition thereto, and contributing to aligning said ends of said first-mentioned spring with said at least one shaft when the clutch is engaged, and a toothed idler wheel on said at least one shaft meshing with said second mobile member, and said second spring having its ends respectively coupled to said first mobile member and said toothed idler wheel.

4,655,333

CLUTCH, IN PARTICULAR FOR AUTOMOBILE VEHICLES

Cecilio Martinez-Corral, Madrid, Spain, assignor to Valeo, Paris, France

Filed May 13, 1985, Ser. No. 733,388
Claims priority, application France, May 15, 1984, 84 07467
Int. Cl.⁴ F16D *13/46, 13/60*
U.S. Cl. 192—70.27 **9 Claims**



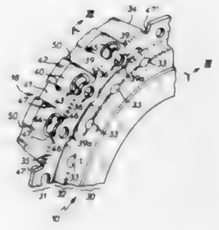
1. Clutch comprising a reaction plate adapted to be constrained to rotate with a first shaft, a friction disk adapted to be constrained to rotate with a second shaft, elastically deformable strips extending tangentially to a circumference of the clutch and fastened at one end to said reaction plate and at the other end to a pressure plate for constraining said pressure plate to rotate with said reaction plate, axially acting elastic means adapted to urge said pressure plate towards said reaction plate, and bearing means fast with said reaction plate in the axial direction on which said axially acting elastic means bear axially, wherein said axially acting elastic means comprise the circumferentially continuous part of a diaphragm spring constituting a Belleville spring and said bearing means comprise a plurality of distinct, circumferentially elongate segments distributed circumferentially around the axis of the clutch and each individually attached to said reaction plate, at least one of said segments extends circumferentially in line with the end by which a corresponding one of said elastically deformable strips is attached to said reaction plate, said reaction plate comprising a first part constituting a support flange by means of which it is adapted to be attached to said first shaft, and a second part constituting the reaction plate proper by means of which it is adapted to cooperate with said friction disk, and each of said segments having a plate which comprises a first circumferential part through which it bears on the reaction plate and a second circumferential part axially offset from and projecting cantilever-fashion from said first circumferential part extending axially over a screw fixing the end of the corresponding elastically deformable strip to the reaction plate.

4,655,334

CLUTCH COVER AND CLUTCH COVER ASSEMBLY

Carlo Valler, Pino Torinese, Italy, assignor to Valeo, Paris, France

Filed Oct. 25, 1985, Ser. No. 791,520
Claims priority, application France, Oct. 26, 1984, 84 16402
Int. Cl.⁴ F16D *13/44*
U.S. Cl. 192—89 B **22 Claims**



1. Clutch cover in one piece for use in an automobile clutch cover assembly comprising, in addition to said cover, at least a pressure plate and adapted for fastening to a reaction plate, said cover comprising, on its periphery, an alternating sequence of radial zones for coupling to said pressure plate and areas for fastening to said reaction plate, wherein said fastening areas each comprise an axial spacer zone aligned with a radial bearing zone, a plurality of holes for fastening members to be passed through and, in the area of the junction between said spacer zone and said bearing zone, a respective bending aperture aligned with each of said holes, said bending apertures are kidney bean shaped and each has a plane or convex border in said annular bearing area around that of said holes with which it is aligned.

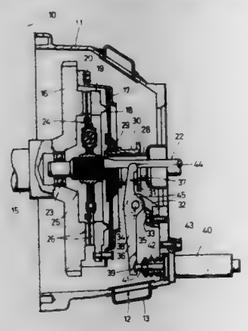
4,655,335

CLUTCH RELEASE MECHANISM

Satoru Maruyamano, and Hisao Ohtani, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 23, 1985, Ser. No. 694,154
Claims priority, application Japan, Jan. 26, 1984, 59-13765
Int. Cl.⁴ F16D *23/12*
U.S. Cl. 192—99 S **6 Claims**

1. A clutch release mechanism comprising a release fork having a pair of forked arms mounted to a bearing hub of a clutch release bearing in a direction perpendicular to an axis of said bearing hub so as to be interlocked with said bearing hub, a fulcrum pin fixed to base portions of said forked arms of said release fork at both ends thereof, a fork support fixed to an inside wall of a clutch housing and having a hook portion for receiving and rotatably supporting said fulcrum pin, and a fork insertion hole formed through a part of said clutch housing,



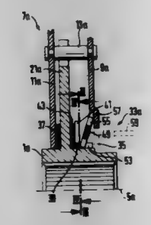
said release fork being adapted to be inserted and removed through said fork insertion hole.

4,655,336

CLUTCH DISC

Manfred Caspar, Oberwerrn; Franz Hartig, Dittelbrunn, and Dagwin Tomm, Kaiserslautern, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Fed. Rep. of Germany

Filed Mar. 15, 1985, Ser. No. 712,369
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 3409868
Int. Cl.⁴ F16D *3/14, 3/66*
U.S. Cl. 192—106.2 **11 Claims**



1. A clutch disc for a motor vehicle friction clutch, comprising:

(a) a hub (1*a*);

(b) a friction lining carrier (7*a*) mounted on the hub (1*a*) rotatably through a limited angle of rotation in relation to the hub (1*a*) about its axis of rotation (5*a*);

(c) a resilient torsional coupling (31) arranged in a torque transmission path between hub (1*a*) and friction lining carrier (7*a*);

(d) at least one torsional vibration friction damper (33*a*) including friction means (43), means (42) for bracing said friction means in the direction of the axis of rotation (5*a*) between disc parts, said friction means (43) having at least two friction face regions with different coefficients of friction, said bracing means providing a constant spring stress between said disc parts; and

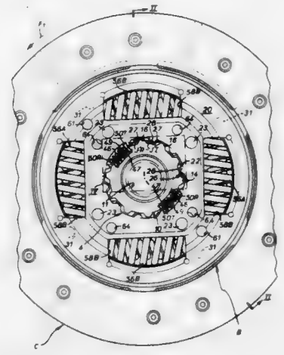
(e) selectively adjustable control means (41) for selectively engaging the friction face regions in a friction-damping operative connection with the disc parts without varying the constant spring stress provided by said bracing means (41).

4,655,337

TORSIONAL DAMPER DEVICE

Roger Carnillet, Birmingham, Mich.; Michel Graton, Paris, and Michel Bacher, Domont, both of France, assignors to VALEO, Paris, France

Filed Aug. 1, 1985, Ser. No. 761,518
Claims priority, application France, Aug. 3, 1984, 84 12291
Int. Cl.⁴ F16D *3/66, 3/14*
U.S. Cl. 192—106.2 **13 Claims**



1. Torsional damper device comprising at least three coaxial parts disposed to rotate relative to one another in pairs within defined limits of relative angular displacement against circumferentially acting elastic means operative circumferentially between them over part at least of such relative angular displacement, wherein a first of said coaxial parts comprises a hub, a second of said coaxial parts comprises at least one transverse annular hub flange around said hub, said device further comprises first meshing means implemented with clearance, disposed between said hub and said at least one hub flange, a third of said coaxial parts comprises at least one transverse annular flange around but free of meshing with said hub, parallel to said at least one hub flange, said second part further comprises at least one transverse annular auxiliary flange around said hub, parallel to and associated with said at least one hub flange, said device further comprises second meshing means implemented with clearance, disposed between said at least one auxiliary flange and said hub, and said first and second meshing means are in alternating arrangement, the overall arrangement of the device being such that for a first circumferential direction of relative angular displacement between said first and second parts said at least one hub flange is operative first whereas for the opposite circumferential direction of relative angular displacement said at least one auxiliary flange is operative first.

4,655,338

BOTTLE UNSCRAMBLER

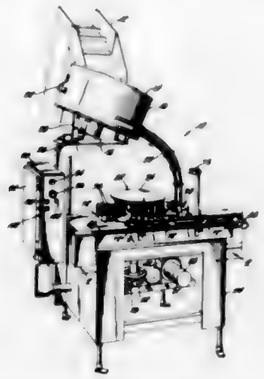
Jay P. Hershey, Kinzers, and Michael A. Ruth, Glenmoore, both of Pa., assignors to Omega Design Corporation, Lionville, Pa.

Filed Nov. 2, 1983, Ser. No. 548,108
Int. Cl.⁴ B65G *47/28*
U.S. Cl. 198—395 **17 Claims**

1. A bottle orienting device, comprising: feed means for delivering bottles of random orientation from a source; a first station for receiving bottles from said feed means, and presenting said bottles in either a top down condition or a bottom down condition as received; bottle transport means for holding each bottle, and including means for transporting said bottle along a predetermined path; ranging sensor means positioned on said path for determining the positioned condition of said bottle, either top or bottom down and to selectively generate a signal when said bottle is in a first preselected condition; first

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rotating means positioned on said path after said sensor means, and operably connected to change the condition of said bottle upon receipt of said signal from said sensor means by rotation about a horizontal axis; second rotation means positioned on said path after said first rotation means, and operably connected to change the rotated positional condition of said bottle to the preselected condition; and second station means for receiving bottles from said bottle transport means, and positioned to discharge said bottles from said device, said bottle transport means including a moveable drive means carrying a



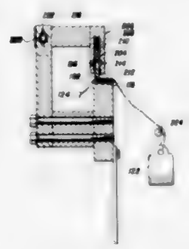
plurality of individual pocket means thereon and positioned to transport said pocket means sequentially from said first station along said predetermined path, each of said individual pocket means including bottle carrying arms for carrying said bottle when said individual pocket means passes said first station and includes condition holding means for holding said bottle in its orientation condition, said first rotationmeans including a sensor responsive deactivation means for contacting said individual pocket means in response to said selectively generated signal to deactivate said condition holding means during change of said condition of said bottle.

4,655,339

CONVEYANCE AND GROUPING OF STRINGED TAGS

Steven J. Lynch, Milford, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Dec. 24, 1984, Ser. No. 685,925
Int. Cl.[4] B65G *47/26*
U.S. Cl. 198—836 **5 Claims**



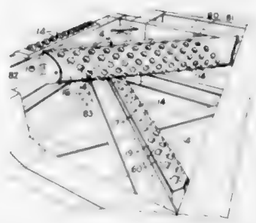
1. Apparatus for grouping strings comprising:
a counter;
drive means responsive to said counter;
an endless conveyor belt responsive to said drive means;
means for maintaining said strings upon said conveyor;
wherein said counter causes said drive means to increase speed at predetermined intervals for a predetermined length of time to separate counted groups of items upon said conveyor; said drive means comprising a first overrunning clutch having an input and an output, a motor coupled to the input of said first overrunning clutch, a drive pulley coupled to the output of said first overrunning clutch operative to move said conveyor, advance means coupled to the output of said first overrunning clutch;
wherein said motor continuously rotates the input of said first overrunning clutch to drive said conveyor;
said advance means periodically rotates the output of said first overrunning clutch at a greater speed then the motor rotates the input of said first overrunning clutch, thereby periodically increasing the speed of said conveyor;
said advance means comprising a rack gear drive, a rack gear responsive to said rack gear drive, a second overrunning clutch having an input mateable with said rack gear and an output coupled to the output of said first overrunning clutch;
wherein said rack gear is driven in a first direction causing the increase in speed of said conveyor, then driven in a second direction in preparation for the next cycle;
whereby the rotation of the output of said second overrunning clutch is not affected by the rotation of the input of said second overrunning clutch as said rack is driven in the second direction.

4,655,340

ANGLE STATIONS IN OR FOR ENDLESS CONVEYOR BELTS

Alan Steel, Glasgow, Scotland, assignor to Anderson Strathclyde PLC, Glasgow, Scotland

Filed Nov. 4, 1983, Ser. No. 548,627
Claims priority, application United Kingdom, Nov. 10, 1982, 8232119
Int. Cl.[4] B65G *15/60*
U.S. Cl. 198—839 **11 Claims**



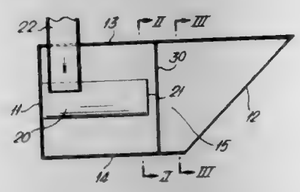
1. An angle station for an endless conveyor belt comprising:
a rectangular framework;
first and second pairs of seatings on the framework, disposed in first and second vertically spaced apart planes;
first and second elongated stationary guide members mounted to said first and second pairs of seatings, respectively, to lie across the framework in vertically spaced relationship, said first and second pairs of seatings being located such that the axes of said guide members are disposed substantially at 90° to one another;
each stationary guide member comprising:
a pair-cylindrical portion of the shape of a major segment of a right-circular cylinder mounted on a rectangular plate which is adapted for attachment to said pairs of seatings, a plurality of openings being formed in the part-cylindrical portion, said openings being substantially rectangular and located such that the intersections of the two diagonals of the openings are relatively interspaced both in parallel rows which extend longitudinally of the respective part-cylindrical portion, and in parallel and helical paths the means of each of which extend diagonally of the development of the part-cylindrical portion, and
a plurality of freely rotatably rollers mounted in and projecting through said openings, such that continuously-changing segments of the curved surfaces of the freely-rotatably rollers project through said openings at an attitude to change the direction of movement of the belt through substantially 90° during passage of the belt about the part-cylindrical portion of the guide member; and
a third pair of seatings provided on the same plane as the first pair and a fourth pair of seatings provided on the same plane as the second pair, each of said third and fourth pairs of seatings being adapted to receive the guide members of the second and first pairs of seatings, respectively, and to support the same with their axes substantially at 90° to one another;
whereby the direction of entry of the conveyor belt into the angle station can be altered from one side of the framework to the opposite side by removal of said first and second guide members from the first and second pairs of seatings, transposition of said guide members, rotation thereof through 180° about their axes and mounting thereof on the fourth and third paris of seatings, respectively.

4,655,341

TRANSFER DEVICE

Sven E. Forslund, Ingarö, Sweden, assignor to PLM AB, Malmo, Sweden

Continuation of Ser. No. 378,384, May 14, 1982, abandoned. This application Apr. 9, 1985, Ser. No. 721,314
Int. Cl.[4] B65G *27/34*
U.S. Cl. 198—771 **19 Claims**



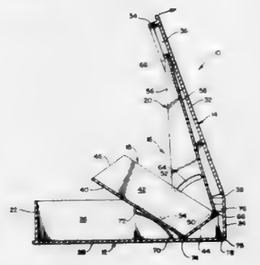
1. A device for receiving and discharging a flow of material consisting of a mixture of pieces of material or fragments of different materials and sizes, said device comprising a vibrating trough including opposite side walls and having a supporting surface with an inlet end for supply of material and a discharge end for discharged of said material as a thick layer, said vibrating trough including protuberance means extending on said supporting surface longitudinally between said side walls, supply means for depositing the material from above onto said protuberance means, said protuberance means transporting the supplied material thereon lengthwise of said trough as said trough vibrates while spreading said supplied material onto said supporting surface such that at the end of the protuberance means the material is formed into a uniformly thick layer which is carried along the supporting surface to said discharge end of the vibrating trough for discharge thereat, said supporting surface being substantially flat and said protuberance means comprising a protuberance extending to a height above the flat supporting surface and having a substantially uniform cross-section over its length to divide the trough into two zones on opposite sides of the protuberance to constitute flow sections for the layer of material bounded laterally on one side by the protuberance, on the other side by a respective side wall and on the bottom by the flat supporting surface such that material deposited on the protuberance spreads out by flowing from the protuberance laterally into the flow sections in said zones and longitudinally therealong to the discharge end, said protuberance being elongated and extending with its substantially uniform cross-section axially along said supporting surface for a portion of the length thereof so as to be spaced from said discharge end so that the material flowing in said zones is combined downstream of the protuberance, said discharge end of said trough having a discharge edge formed by an oblique edge of the flat supporting surface which extends at an oblique angle with respect to the axis of said protuberance and the material is discharged at said discharge end in the form of said uniformly thick layer.

4,655,342

DISC STORAGE CASE

William E. Brauner, Los Altos, Calif.; John G. Tomkinson, Seattle, and Elvind Clausen, Bellingham, both of Wash., assignors to Allsop, Inc., Bellingham, Wash.

Filed May 17, 1985, Ser. No. 735,819
Int. Cl.[4] B65D *5/50*
U.S. Cl. 206—45.18 **13 Claims**



1. A case adapted to contain objects, such as discs, said case having a closed position where said objects are stored within the case, and an open position where the objects are located in an easily accessible position, said case comprising:
a. a base containing member having a front end portion, a rear end portion, two side portions, and a bottom wall;
b. a lid having a rear end portion and a front end portion, said lid being hinge mounted by the rear end portion of the lid to the rear end portion of the base containing member, for angular movement between a down closed position and an open position;
c. a carrying and display assembly comprising:
1. a tray which is adapted to carry said objects and which has a rear tray portion and a forward tray portion and comprises a bottom wall means, rear wall means, and two side wall means, said tray being movable between a stowed position where, with the lid closed, said tray is positioned within said base member, and a display position where said tray extends upwardly from said base member and a front portion of said tray is positioned above said base member;
2. a linkage means having a front end and a rear end, said front end being connected to said lid and movable therewith in a manner that upward angular motion of the lid causes a corresponding upward angular motion of the linkage means, said rear end having an operative connection to the rear portion of the tray which permits relative angular motion about an axis adjacent the rear portion of the tray and comprises limiting means which limits said relative angular motion between the tray and the linkage means within predetermined limits;
d. said carrying and display assembly having a rear bearing portion which, in movement of the tray from said stowed position to said display position, bears against, and obtains support from, the bottom wall of the base member;
e. said tray and said side walls of the base containing member having an operative cam follower and cam track connection, which is responsive to angular motions of the tray

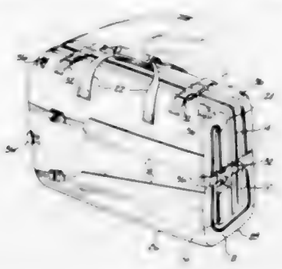
relative to the base containing member in a manner to impart to the rear portion of the tray a forward component of motion as the forward portion of the tray is rotated upwardly relative to the base containing member.

4,655,343

FOLDABLE GARMENT BAG WITH CARRY STRAPS

Michael L. Lane, and Lowell Whitney, both of Arvada, Colo., assignors to Quoin Enterprises, Arvada, Colo.

Filed Jul. 1, 1985, Ser. No. 750,870
Int. Cl.[4] B65D *85/18; A45C 9/00*
U.S. Cl. 206—287.1 **14 Claims**



1. A garment travel bag for holding clothes and accessories while hanging in a vertical fully extended open position and in a closed folded carrying and storage position comprising:

a relatively large size main storage compartment means made of flexible foldable material for receiving relatively large size clothes and having a generally rectangular peripheral configuration with a length and width of sufficient size to receive suit-type clothes and having a main flat outer side wall portion, an upper peripheral outer wall portion, a pair of spaced peripheral outer side wall portions and a bottom peripheral outer wall portion defining a main storage compartment;

a relative large size main cover means made of flexible foldable material for covering and closing said main storage compartment means and being movable between an open position and a closed position relative to said main storage compartment means and having a peripheral size and shape generally corresponding to the size and shape of said main flat outer side wall portion of said main storage compartment means and having a bottommost connecting end portion fixedly associated with said main storage compartment means;

a main compartment closure means mounted along said upper peripheral outer wall portion and said spaced peripheral outer side wall portions of said main storage compartment means and along the periphery of said main cover means for connecting and disconnecting said main cover means to said main storage compartment means in said closed position while enabling movement of said main cover means between said open position and said closed position;

hanger means mounted along said upper peripheral outer wall portion for hanging the garment bag in the vertical fully extended open position;

a relatively small size generally rectangular separate secondary storage compartment means mounted on said main storage compartment means in juxtaposition to said bottom peripheral outer wall portion for storing relatively small size items and having an upper peripheral wall portion extending in generally parallel upwardly spaced relationship to said bottom peripheral end wall portion of said main storage compartment means and a pair of peripheral side wall portions extending generally parallel to and coplanar with said peripheral side wall portions of said main storage compartment means and a bottom peripheral wall portion extending generally parallel to and coplanar with said bottom end wall portion of said main storage compartment means;

a relatively small size cover means for covering said relatively small size storage compartment means and having a size and shape generally corresponding to the size and shape of said secondary storage compartment means and being movable between an open access position and a closed connecting position relative to said secondary relatively small size storage compartment means;

a secondary compartment closure means for connecting said relatively small size cover means to said secondary storage compartment means; and

a plurality of longitudinally spaced transverse parallel fold line means for enabling said garment bag to be folded into a rectangular box-like configuration in the folded carrying and storage position and having opposite outer wall portions formed by spaced portions of said main side wall portion of said main storage compartment means, a bottom wall portion formed by an intermediate portion of said main side wall portion of said main storage compartment means, and an upper wall portion formed by said bottom wall portions of said main compartment means and said secondary compartment means and an intermediate portion of said main side wall portion of main compartment means with said upper peripheral outer wall portion of said main compartment means facing downwardly and being centrally located between said upper, lower and side wall surfaces of said box-like configuration;

holding means for holding the garment bag in the folded carrying and storage position; and

handle-type carrying means for carrying said garment bag by hand in the folded carrying and storage position and being fixed to said main storage compartment means and being positioned and located along said upper surface in the folded carrying and storage position.

4,655,344

APPARATUS FOR STORING RECORDING MEDIA

Peter Ackeret, Kusnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Chur, Switzerland

Filed May 30, 1985, Ser. No. 739,389
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 8416751[U]
Int. Cl.[4] B65D *85/57, 85/672*
U.S. Cl. 206—307 **37 Claims**



1. In apparatus for storing recording media, the apparatus comprising housing means having a first side with at least a first opening therein, the housing first side defining the front of the apparatus, the apparatus also comprising at least a first transport slider means guided for movement in and relative to the housing means through the first side opening thereof, the slider means being arranged to receive a recording medium, the transport slider means being movable between a storage position within the housing means and an outer removal position in which a recording medium placed in the transport slider means can easily be grasped, the apparatus also comprising an ejection spring arrangement which biases the transport slider means into the outer removal position, the apparatus additionally comprising means for automatically locking the transport slider means to the housing means in the storage position of the transport slider means when the transport slider means is pushed inwardly from its removal position, an improved locking mechanism comprising,

catch means for rigidly coupling the slider means to the housing means in the storage position of the slider means, said catch means including a catch element carried by one of the slider and housing means, said catch element being at least in part displaceable relative to the other of said means to selectively lock and unlock the slider means whereby the slider means can move to the removal position under the influence of the ejection spring when unlocked, said catch element being supported against movement relative to said slider means in the direction of the movement of said slider means;

release means for actuating said catch element to cause the unlocking thereof, said release means including a release element which is linearly displaceable generally in the direction of insertion of the transport slider means, said release element extending from the front of the apparatus and being constructed and located to contact said catch element and impart movement to said at least part of said catch element in a direction generally transverse to the direction of movement of the transport slider means to decouple the transport slider means from the housing means; and

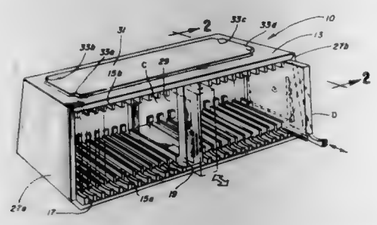
means for resiliently biasing said release element away from said catch element.

4,655,345

COMPACT DISC STORAGE UNIT

Craig D. Drake, 1622 Isett Ave., and Ross A. Jessen, 1566 Washington St., both of Muscatine, Iowa 52761

Filed Nov. 14, 1985, Ser. No. 797,911
Int. Cl.[4] A47B *81/06*
U.S. Cl. 206—309 **7 Claims**



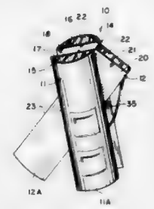
1. A portable storage unit for a plurality of plate-like, compact discs used in electronic systems, said unit comprising: an elongate housing having an interior chamber and defining an opening through which said unit receives said discs; means for separately retaining said plurality of discs in substantially vertical, face to face relation within said chamber, said retaining means secured to said housing; independently adjustable means slidably secured to said housing for supporting said discs and for selectively and independently placing each of said discs in said housing and removing each of said discs from said housing, said adjustable means moving between a first mode in which a portion of said adjustable means projects outward through the opening in said housing where the user may place a disc on said adjustable means or remove a disc from said adjustable means and a second mode in which said disc is substantially contained within said chamber; and an adjustable handle for carrying said unit, said handle spanning said opening for supporting the walls of said unit at the opening and maintaining a constant shape for the opening.

4,655,346

SELF-STANDING GOLF BAG

Orville A. Reinholz, 4899 Campbell Ave., Apt. #1, San Jose, Calif. 95130

Filed Aug. 19, 1985, Ser. No. 766,484
Int. Cl.[4] A63B *55/00, 55/06*
U.S. Cl. 206—315.6 **4 Claims**



1. A golf bag comprising:

three longitudinal sections comprising two outside sections and a center section positioned side-by-side with each section including a plurality of club compartments,

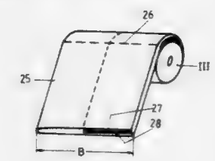
hinge means fixing said sections together at a point intermediate the ends to allow pivoting of the center section out of alignment with the outside sections to form a tripod configuration and allow the bag to stand in the vertical attitude on the bottom ends of said sections.

4,655,347

COLLECTIVE PACK FOR PROTECTIVE COVERINGS CONSISTING OF PLASTIC FOIL, FOR MOTOR-VEHICLE PARTS SUCH AS THE SEATS, STEERING WHEEL, FLOOR OR THE LIKE

Jörg Hora, Friedrich-Ebert-Strasse 105, D-3578 Schwalmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 643,664, Aug. 23, 1984, abandoned. This application Apr. 18, 1986, Ser. No. 854,054
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331171; Nov. 17, 1983, 3341541
Int. Cl.[4] B65B *67/04*
U.S. Cl. 206—390 **11 Claims**



1. Collective pack for protective coverings for vehicle parts, such as the seats, floor, steering wheel and the like, comprising: a substantially long sheet of plastic foil carrying sets of said protective coverings, each set of protective coverings having different coverings corresponding to different parts of a vehicle, said foil having a longitudinal axis; perforations in said foil and transverse to said longitudinal axis, said coverings being severable from one another by said perforations, said coverings being connected to one another in said long sheet of plastic foil transversely to said longitudinal axis; said foil sheet being formed from said protective coverings connected to one another and being folded in at least one longitudinal fold and then rolled on a solid core to form a compact supply roll, said supply roll comprising a dispensing unit, said protective coverings being severable individually in succession from said dispensing unit, two edges of said foil being folded along said longitudinal axis, said one longitudinal fold folding together

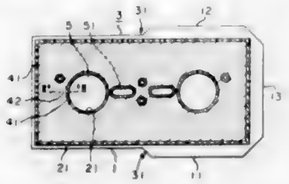
two parts of foil facing each other along said longitudinal axis, said two edges of said foil being folded inwardly within a gap between said folded two parts of foil, said two edges being in contact within said gap, said collective pack of protective coverings comprising different coverings combined in one set for covering different parts of a vehicle to protect the vehicle parts against becoming soiled when the vehicle is placed in a repair shop by providing shop personnel with easy access to the different coverings necessary for protecting the vehicle while under repair.

4,655,348

MAGNETIC RECORDING DISC-JACKET ASSEMBLY

Kenji Takagi, Nagahama, Japan, assignor to Mitsubishi Plastics Industries Limited, Tokyo, Japan

Filed Nov. 14, 1984, Ser. No. 671,196
Claims priority, application Japan, Nov. 24, 1983, 58-221079
Int. Cl.⁴ B65D *85/30*
U.S. Cl. 206—444 **5 Claims**



1. A magnetic recording disc-jacket assembly comprising:
(a) a magnetic recording disc;
(b) a jacket for rotatable accommodation of the disc, the jacket being provided with a central window for receiving a drive shaft of a recording/reproducing apparatus and an elongated head window for receiving a recording/reproducing head of said apparatus; and
(c) a cleaning liner made of fibrous material disposed at each side of the disc, said fibrous material being lined on the inner surface of the jacket and bonded thereto with scattered heat-bonding portions, said liner being provided with a central window and head window corresponding to the respective windows of the jacket, wherein the cleaning liner has heat-pressed portions along the entirety of cut edges for the respective windows of the liner to prevent fraying of the fibrous material, said heat pressed portions being bonded to said jacket only at said scattered heat bonding portions, whereby fraying of said liner is substantially prevented.

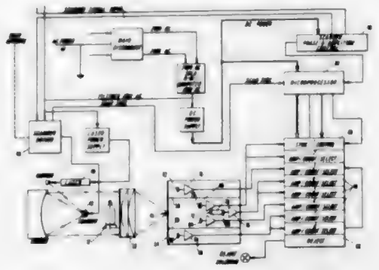
4,655,349

SYSTEM FOR AUTOMATICALLY INSPECTING TRANSPARENT CONTAINERS FOR SIDEWALL AND DIMENSIONAL DEFECTS

James R. Joseph, DuBois; James F. Woodock, Reynoldsville; Allen Lerch; Ronald Chollock, both of DuBois; John Waugaman, Brockway; Glenn Lindberg, Brockport; James R. Wymer, Brookville, and Brad Brennen, St. Marys, all of Pa., assignors to Brockway, Inc., Brockway, Pa.

Filed Dec. 27, 1984, Ser. No. 686,525
Int. Cl.⁴ B07C *5/342*
U.S. Cl. 209—524 **26 Claims**

1. Apparatus for detecting defects in transparent articles, comprising:
means for scanning a beam of light in a first direction a plurality of times so that the scanned beam of light traverses an article during each scan;
means for linearly moving the article and the scanned beam of light relative to one another in a second direction so that the beam traverses different portions of the article on successive scans;
optical means for focussing light passing through the article onto a diffusing screen, said screen being located at the focal length of said optical means;
a plurality of photodetectors disposed adjacent said screen for respectively detecting the intensity of light at different portions of said screen;
threshold detection and counting means connected to said photodetectors for determining the number of times the intensity of light detected by each of said photodetectors crosses respective thresholds;



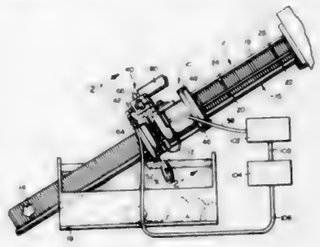
means for synchronizing said threshold detection and counting means with said scanning means so that said determination takes place only during a predetermined portion of each scan as said light beam traverses the article; and
means responsive to said threshold detection and counting means for generating a reject signal when said number of times is at least equal to a predetermined criterion value.

4,655,350

REVERSED END EJECTOR SYSTEM

Wallace W. Mojden, and Andrew E. Mojden, both of Hinsdale, Ill., assignors to Fleetwood Systems, Inc., Countryside, Ill.

Filed Jun. 26, 1987, Ser. No. 749,314
Int. Cl.⁴ B07C *5/00*
U.S. Cl. 209—577 **20 Claims**



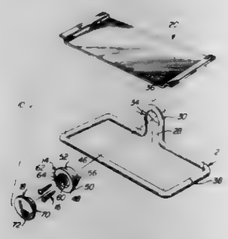
1. A system detecting and ejecting a dissimilar object in a series of otherwise similar objects moving in a substantially continuous fashion along a given path of travel, including a reversely oriented can end in a moving stack of otherwise similarly aligned and nested can ends, said system comprising: optical detection means including light-emitting means positioned for emitting light in a direction generally toward said path of travel and light-detecting means located in a predetermined alignment relative to said path of travel, said optical detection means being responsive to a change in the level of light incident upon said light-detecting means due to the passage of said dissimilar object between the light-emitting means and light-detecting means for producing a control signal; ejector means movable in a predetermined direction relative to said path of travel for ejecting an object from said path of travel; and actuator means operatively coupled with said ejector means and responsive to said control signal for driving said ejector means in said predetermined direction for ejecting said dissimilar object from said path of travel, without interrupting the movement of said objects along said path.

4,655,351

WALL RACK APPARATUS

Pamela Walker, 1834 E. Ball Rd., Anaheim, Calif. 92805

Filed Apr. 7, 1986, Ser. No. 848,777
Int. Cl.⁴ A47F *5/08*
U.S. Cl. 211—88 **14 Claims**



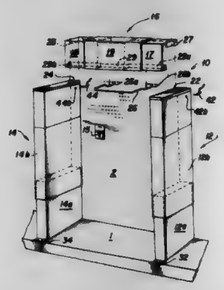
1. Wall rack apparatus which comprises:
a. an open article holding frame having means defining at least one inverted, U-shaped opening in regions of the frame which contact a surface to which the frame is to be mounted;
b. a mounting member shaped to fit into said inverted U-shaped opening of the frame, said member having an outer, frame retaining flange around at least portions of the periphery thereof and having at least one peripherally located key, sized to fit into a mating keyway formed in the frame, said key and keyway being shaped to non-rotatably retain said frame to said mounting member when the mounting member is inserted into said opening and the member is attached to said mounting surface; and,
c. means for attaching said mounting member to said mounting surface.

4,655,352

EXPANDABLE DISPLAY RACK FRAME

Andreas D. Noyes, Fairfield, and Joseph T. Ricci, Bethel, both of Conn., assignors to Duracell Inc., Bethel, Conn.

Filed Feb. 19, 1985, Ser. No. 702,777
Int. Cl.⁴ A47F *5/00*
U.S. Cl. 211—175 **10 Claims**



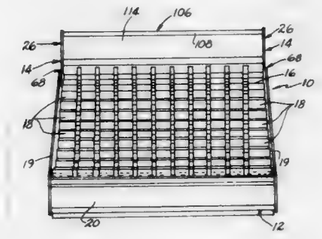
1. An article display rack comprising, in combination, a base, a vertically standing article display member, and an aesthetic frame for said article display member, said frame comprising vertical right and left side members which are substantially parallel to each other and are in close vertical juxtaposition with said article display member, means supporting said right and left side members and said article display member in their respective vertical positions, said frame further comprising a top member positioned between the upper ends of said right and left side members and said base comprising the bottom of said frame, with said top member and said base being substantially parallel to each other, characterized in that said side members are vertically telescopical for vertical expansion and contraction of said frame, and wherein at least one side member is horizontally movable along said base with said top member being horizontally expandable and contractible in the direction of movement of said movable side member, whereby said framing enclosure is maintained for horizontal expansion and contraction of said frame, and means securing said top member to said vertically standing display member.

4,655,353

KNOCK-DOWN MERCHANDISE DISPLAY FIXTURE

John A. Johnson; Edward O. Gandolf, both of Strongsville, and Ronald M. Preksta, Fairview Park, all of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio

Filed Dec. 5, 1984, Ser. No. 678,289
Int. Cl.⁴ A47B *47/00*
U.S. Cl. 211—189 **29 Claims**



1. In a merchandise display fixture comprising a substantially upright primary standard, an extension standard telescopically mounted on the first mentioned standard and having a plurality of spaced apertures therein lengthwise thereof, a pair of gravity latch units mounted on said first mentioned standard on opposite sides of said extension standard, each of said latch units having a latch projection thereon adapted for automatic coaction with a selected one of a confronting series of said apertures, for holding said extension standard from both sides thereof in selected position relative to said first mentioned standard, and means for automatically causing deactivation of said latch units to permit extension of said extension standard relative to said first mentioned standard by lifting upwardly on said extension standard, and upon release of said extension standard from upward movement causing automatic reactivation of said latch unit and receipt of said projection into a confronting one of said apertures, to thus automatically hold said extension standard in newly extended position relative to said first mentioned standard.

4,655,354

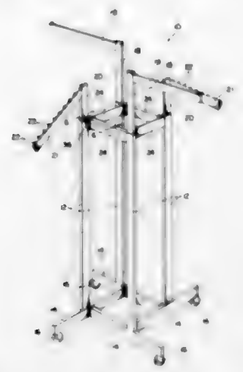
FOLDABLE DISPLAY RACK

Maurice Cohen, 45 Shore Dr. North, Miami, Fla. 33133

Filed Nov. 27, 1985, Ser. No. 803,096
Int. Cl.⁴ A47F *43/00*
U.S. Cl. 211—199 **9 Claims**

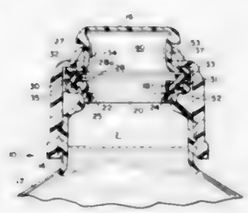
1. An assembled, foldable display rack that is movable to and from an open display position and a folded position without the assembly or disassembly of any of the component parts thereof, comprising a plurality of vertical support members, each of which has a display member located at the upper end thereof and foot member located at the lower end thereof, a horizontal cross member fixed to each of said support members at the

upper end thereof and extending at right angles with respect thereof, each of said cross members including an end that is fixed to a vertical support member and a free end that is located opposite to the fixed end thereof, said free end being pivotally connected to an adjacent cross member in close relation to the fixed end thereof, and a resilient pad mounted in the pivotal free end of each of said cross members, said cross



members being pivotally movable from a folded position wherein said pads are located in nonengaging relation with respect to an adjacent cross member to an open display position wherein each of said pads is disposed in frictional engaging relation with respect to the adjacent cross member to lock said cross members in the open display position, in which position each cross member is disposed at right angles relative to an adjacent cross member.

4,655,355
CONTAINER INCLUDING INNER CLOSURE WITH OPENING PERMITTING FREE LIQUID FLOW
Robert Taroff, Buffalo Grove, Ill.; Cem M. Gokcen, Brundall, England, and Brian Zdeb, Round Lake Park, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Dec. 24, 1984, Ser. No. 685,815
Int. Cl.[4] B65D *1/02*
U.S. Cl. 215—32 **3 Claims**



1. A plastic container comprising:
(a) a body portion;
(b) a neck portion extending from said body portion;
(c) a cover portion closing the neck portion and being of a one-piece construction with said neck portion;
(d) a frangible line of weakness defined between said neck and cover portions to permit selective separation of said cover portion from said neck portion;
(e) a separately formed inner closure mounted in said container and covering said frangile line of weakness, said inner closure including
(i) an annular side wall liquid-sealingly engaged against the surface of said neck portion below said frangible line of weakness,
(ii) a rim portion mounted within said cover portion, from which said inner closure sidewall depends, said rim portion extending outwardly from said side wall, said rim portion including a cylindrical wall portion and an interlocking ring projecting outwardly from said cylindrical wall portion, said interlocking ring including a top ring surface which extends upwardly and outwardly from said wall portion and
(iii) a lower edge of said side wall in said neck portion, said lower edge being virtually free of any inwardly projecting bottom wall depending therefrom, such that fluid may freely flow between the contents volume defined by said body and neck portions and said cover volume defined by said cover portion and said inner closure.

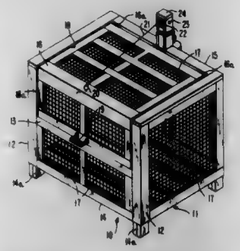
4,655,356
TAMPER INDICATING PACKAGE
Timothy J. Fuchs, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 27, 1986, Ser. No. 845,163
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—230 **2 Claims**



1. A tamper indicating package comprising a container having a neck with an external thread and annular rib,
a closure comprising a base wall and a peripheral skirt having an internal thread engaging the thread on the container,
said closure including a tamper indicating band connected to the free edge of the skirt along a weakened line and having an internal bead adapted to engage said annular rib on the neck of the container below the threads,
said tamper indicating band including raised indicia on the outer surface of the band about the entire periphery of said band which is contrasting to any indicia on the closure such that when the closure is removed from the container and reapplied to the container, the absence of the tamper indicating band will be highly visible and distinguishable indicating that the tamper indicating band has been severed from its attached relationship to the closure.

4,655,357
ALL PURPOSE BIN
Garfield Hampton, Jr., 454 King St., Gary, Ind. 46406
Filed Jan. 21, 1986, Ser. No. 820,630
Int. Cl.[4] B65D *90/00*
U.S. Cl. 220—1.5 **1 Claim**

1. An all purpose bin, comprising, in combination, a three dimensionally rectangular frame including downwardly legs, a wire mesh screen affixed around said frame forming a ventilated enclosure within said frame, an "L"-shaped door pivotally hinged on said frame selectively closing an opening on the top and front side of said enclosure, said door comprising an "L"-shaped frame having wire mesh screen affixed thereto; a handle on a lower edge of the front side of said door, a hollow, upwardly post at the rear of said rectangular frame and a door-lifting mechanism supported on said post; said mechanism comprising an eye affixed on the front edge of the top of said door, one end of a cable attached to said eye, a first pulley supported pivotally free on an upper end of said post, a second pulley supported pivotally free at a lower portion of said post,



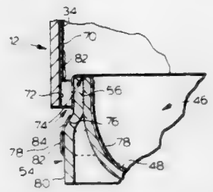
said cable extending around said pullies and a suspended counterweight supported on an opposite end of said cable, and said first pulley being at a raised elevation approximately equal to said door eye when said door is in upwardly pivoted position.

4,655,358
BOTTOM PROFILE
Leslie K. Kaffko, Cary, Ill., assignor to American Can Company, Greenwich, Conn.
Filed Mar. 10, 1981, Ser. No. 242,325
Int. Cl.[4] B65D *7/42*
U.S. Cl. 220—66 **7 Claims**



1. A bottom end closure for a thin wall hollow tubular cylindrical container body such as for containing paint wherein said end closure being formed from a thin disc of metal and adapted to be double seamed to said body and having a series of sections concentrically positioned relative to the center of said disc formed into said closure, disposed radially relative to each other and extending from a planar center panel to a countersink groove associated with a cover hook being that portion of said end for double seaming to the body when the axis of same is aligned with said center and wherein the profile defined by said sections being the improvement to enhance resistance to dynamic loadings caused by flexure of said end closure comprising:
a countersink groove positioned radially inwardly of the cover hook for double seaming,
a bead facing and opening outward of said body and positioned inwardly of said countersink groove for acting to resist flexure by increasing stiffness of the area thereabout;
a transition section located radially inwardly of said bead and being connected thereto and having a sloped inclination outwardly of said body and with an area of 5 to 6 percent of said double seamed end;
an outer sloped section of said end located radially inwardly of said transition section sloped with a uniform frusto conical surface configuration extending toward the axis of said body yet angled outwardly of the interior thereof and more so than said transition section and having an area of about 30 to 40 percent thereof when double seamed,
a flat washer-like section located radially inwardly of said outer sloped section and carried in a plane normal to the body axis with an angularity relative to said outer sloped section in the range of about 5° to 15° and having an area of about one-half the area thereof wherein the portions of said end which thus bound said outer sloped section have greater stiffness and are connected thereto with minimal angularity encouraging flexure across said outer sloped section, and;
a center panel of said end connected to said flat washer-like section for movement of said center panel through planes perpendicular to the axis of said body thereby controlling the dynamic response of said end closure.

4,655,359
PRESSURE TANK CONSTRUCTION FOR CORROSIVE MEDIUM
Donald F. Fairgrieve, Islington, Canada, assignor to Aircleen Engineering Products, Islington, Canada
Filed May 15, 1986, Ser. No. 863,302
Int. Cl.[4] B65D *7/02*
U.S. Cl. 220—67 **21 Claims**



1. In a pressurized steel tank for containing a corrosive medium having a corrosion inhibiting coating on interior surfaces of said tank, said tank comprising a cylindrical steel side wall and first and second ends for securement to and closure of said tank, at least said first end being concave shaped and projecting outwardly of tank interior, said first end being secured to said tank by a connecting means having an annular body portion for controlling effect of welding heat on said corrosion inhibiting coating as previously applied to said tank side wall interior surface and said first end interior surface, a first portion of said annular body portion being connected at a first connection peripherally of said first end and a second portion of said annular body portion being connected at a second connection to a cylindrical end portion of said side wall, one of said first and second portions and corresponding first or second connection being coated with said corrosion inhibiting coating, the other of said first and second portions being a welded connection, said annular body portion controlling temperature to which said coating is heated by spacing said welded connection a predetermined extent from said corrosion inhibiting coating.

4,655,360
NON-SKID CASE
Juhannes Juhanson, 6 Donewen Court, Toronto, Ontario, Canada
Continuation of Ser. No. 949,664, Oct. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 779,703, Mar. 21, 1977, abandoned. This application Nov. 21, 1980, Ser. No. 209,219
Int. Cl.[4] B65D *1/24, 21/02, 25/24*
U.S. Cl. 220—69 **4 Claims**

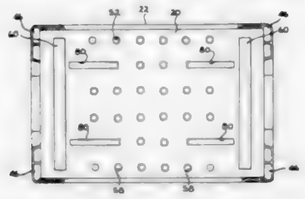
1. In a plurality of injection molded plastic cases resting on substantially flat surfaces, each of said cases comprising a one piece injection molded plastic case enclosure having a bottom panel, first and second side panels and first and second end panels, the ends of said first and second side panels being coupled to the adjacent ends of said first and second end panels and the lower portion of said first and second end panels and said first and second side panels being coupled to respective edges of said bottom panel to form said case enclosure, said case enclosure being of sufficient size and shape to accommodate a plurality of carriers, said carriers each comprised of a

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one piece injection molded polyethylene member having a body adapted to receive a plurality of containers and a handle which extends above the body of said carrier, said body of said carrier being adapted to receive the handle of another carrier for stacking, the improvements comprising:

at least one depression molded in the lower surface of the bottom panel, said at least one depression extending over a substantial portion of a first dimension of said bottom panel, said depression being in the form of a tapered groove having a base region which is substantially larger than a mouth region thereof;

at least one elastic friction member coterminous with said at least one depression to prevent dislodgement therefrom,



said elastic friction member extending below the bottom panel to engage the flat surface on which the case may be resting; and

a plurality of slots in said bottom panel being a size and shape to accommodate the handles of the carriers and aligned with the normal position the carriers are inserted in the case;

whereby a plurality of cases filled with empty carriers can be nested together by inserting the handles of the carriers into the slots of the case placed thereover thereby occupying a smaller volume during shipping and storage and whereby said elastic friction members will not slide on the flat surface whether the containers are empty or filled when subject to transverse or sliding forces.

4,655,361

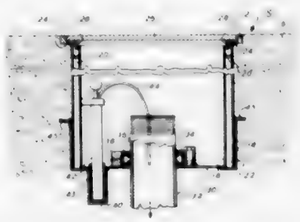
CONTAINMENT TANK

Norvin Q. Clover, and Daniel S. Clover, both of 42 Highland Dr., West Caldwell, N.J. 07006

Filed Jan. 3, 1986, Ser. No. 815,829

Int. Cl.⁴ B65D *25/24*

U.S. Cl. 220—85 F **18 Claims**



1. An auxiliary containment tank for volatile liquids comprising:

an outer enclosure having vertically extending walls adapted to be mounted in the ground and having open ends at the top and bottom;

cover support means secured to said outer enclosure walls at said top open end and having an open area for receiving a cover;

an inner container having vertically extending walls spaced from said outer enclosure walls including an opening at the top end and a transversely extending wall across the bottom end, said outer enclosure walls and cover support means providing a space around said inner container;

means extending across said space for securing said inner container to said outer enclosure and cover support means; and

a cover receivable in said open area of said cover support means over said opening at said top end, said cover having a vertical ring extending downwardly into said space between said outer enclosure and inner container around the outside of said inner container walls and below said opening at said top end of said inner container to prevent leakage of water around said cover into said inner container.

4,655,362

MANIPULATOR FOR COVER CLOSURE MEMBERS

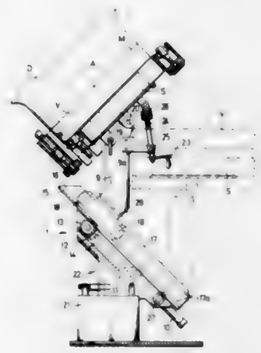
Karl-Heinz Ecker, Erkelenz, and Helmut Henscheumacher, Brachelen, both of Fed. Rep. of Germany, assignors to Wirth Maschinen- und Bohrgerate Fabrik GmbH, Erkelenz, Fed. Rep. of Germany

Filed Apr. 17, 1986, Ser. No. 853,151

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1985, 8511617[U]

Int. Cl.⁴ B65D *43/14*

U.S. Cl. 220—260 **6 Claims**



1. A manipulator for parts which are to be moved during the opening and closure of an orifice provided with a cover and having a central axis, comprising a guide extending parallel to the central axis of the orifice, a support movable along the guide, a driving device for moving the support along the guide, and a path-translating transmission between the driving device and the support.

4,655,363

TAMPERPROOF PLASTIC CONTAINER

Benjamin C. Neat, 11201 Essum Rd., Jefferson Town, Ky. 40299

Division of Ser. No. 688,002, Dec. 31, 1984, Pat. No. 4,548,332.

This application Sep. 25, 1985, Ser. No. 779,870

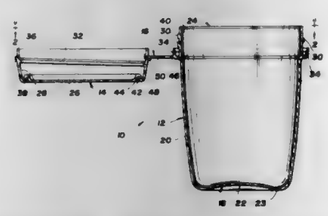
The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.

Int. Cl.⁴ B65D *41/34*

U.S. Cl. 220—268 **10 Claims**

1. A container comprising: a receptacle, a cover, and a tether that are molded from plastic unitary with each other with the receptacle and cover connected by the tether; said receptacle having a lower closed end and also having a round upper end that opens upwardly; locking means on the upper end of the receptacle and the cover; said locking means having locking surfaces that are engaged with each other upon downward cover movement to secure the cover in a closed position on the

receptacle and prevent upward opening movement; the locking surfaces being disengaged from each other upon rotation of the cover with respect to the receptacle to provide opening; the tether having a length that is sufficiently long to permit the initial cover closing and sufficiently short to limit rotation of



the closed cover in order to prevent opening thereof with the tether intact connecting the receptacle and the cover; and the tether being frangible to permit rotation of the cover for opening while also providing a visual indication of such opening to thereby render the container tamperproof.

4,655,364

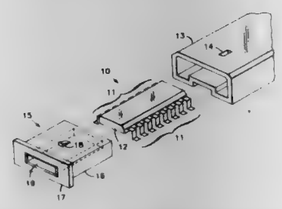
CAP FOR INTEGRATED CIRCUIT SLEEVE

Mavin C. Swapp, and Milo W. Frisbie, both of Mesa, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jan. 3, 1986, Ser. No. 815,851

Int. Cl.⁴ B65D *39/00*

U.S. Cl. 220—307 **5 Claims**



1. An end cap for an integrated circuit sleeve comprising:

a body portion adapted to fit within said sleeve and to prevent integrated circuits from exiting and in thereof, said body portion having a first end adapted to fit within said sleeve, a second end adapted to remain outside said sleeve, and defining a passage extending from said first end to said second end of said body portion.

4,655,365

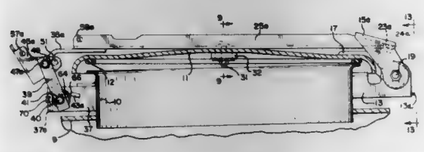
HATCH COVER LOCK

Roy W. Miller, Highland, Ind., assignor to Pullman, Inc., Chicago, Ill.

Filed Dec. 7, 1984, Ser. No. 679,287

Int. Cl.⁴ B65D *43/16, 45/28;* E05B *65/18*

U.S. Cl. 220—314 **23 Claims**



13. A hatch cover arrangement for a lading container having a deck means and a hatch opening in said deck means, the hatch cover arrangement comprising:

a hatch cover adapted to cover the hatch opening;

a hinge structure fixedly associated with the deck means operatively associated with the hatch cover to provide hinged movement thereof with respect to said hatch opening;

a hook-shaped latch engagement member operatively associated with the hatch cover;

said hook shaped latch engagement member comprising a mounting portion operatively associated with the hatch cover, a first portion connected with the mounting portion and extending generally downwardly therefrom, and a second portion connected with the first portion and extending generally laterally therefrom substantially below said mounting portion;

said second portion having a contact surface portion thereon and the contact surface portion and the mounting portion defining a space therebetween;

a latch mounting bracket fixedly associated with the deck means;

link means pivotally connected with the latch mounting bracket;

a latch holder having pivot means connecting with the link means;

a latch member on the latch holder spaced from the pivot means and adapted to engage with the contact surface portion whereby the latch holder may be rotated to seal the hatch cover over the hatch opening and whereby when the latch holder is rotated, unsealing pressure in the lading container will cause the latch engagement member to rise and to rotate the latch holder and latch member into an extended position, retaining the hatch cover and allowing the pressure in the lading container to escape.

4,655,366

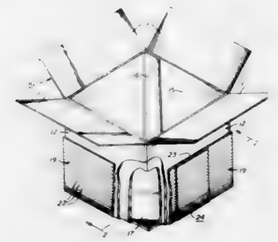
REINFORCED CONTAINER AND METHOD OF MAKING

Harry P. Sykes, Maple Glen, Pa., assignor to Walnut Industries, Inc., Bensalem, Pa.

Continuation-in-part of Ser. No. 736,242, May 20, 1985, abandoned. This application Jun. 6, 1986, Ser. No. 871,370

Int. Cl.⁴ B65D *6/34*

U.S. Cl. 220—441 **19 Claims**



1. A high strength reinforced container comprising in combination,

(a) a corrugated carton having sidewalls, a top closure and a bottom closure,

(b) a wide reinforcing belt having a pair of side edges and a pair of opposite ends, said belt being disposed entirely peripherally around the carton sidewalls and secured thereto, said belt extending upward for a distance from substantially the bottom of said carton, and said belt comprising a nonwoven backing material to which is adhered a parallel array of yarns extending lengthwise of said belt, said yarns being of a type which exhibits minimal elongation under tension, securing means securing the said opposite ends of said belt against relative movement in belt

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loosening directions and wherein said securing means comprises a patch made of the same material as said belt, said patch having upper and lower side edges and being adhesively secured to said belt with the yarns of the patch and belt being disposed in facing relation and sandwiched between the backing material of said belt and patch.

4,655,367

DOUBLE WALL STORAGE TANK FOR LIQUIDS

David T. Palazzo, P.O. Box 290676, Tampa, Fla. 33687

Continuation-in-part of Ser. No. 775,140, Sep. 12, 1985, and a continuation-in-part of Ser. No. 818,258, Jan. 13, 1986. This application Jul. 11, 1986, Ser. No. 884,389
Int. Cl.[4] B65D *87/24*
U.S. Cl. 220—445 6 Claims



1. A double wall tank for the storage of liquids, comprising
a substantially rigid inner tank having means for introducing thereinto and withdrawing therefrom liquids to be stored;
spacing material overlying a substantial portion of the outer surface of said inner tank, said spacing material comprising a flexible sheetlike material having a substantially continuous and generally planar surface with a plurality of projections extending outwardly of said planar surface on at least one side of said material, said material overlying said inner tank outer surface with said projections engaging said inner tank outer surface, whereby is provided for substantially free passage of liquids between said inner tank outer surface and the spacing material planar surface; and
a substantially rigid sheath formed of a material that is substantially liquid tight, said sheath enclosing said inner tank and said spacing material and having at least a portion thereof spaced from said inner tank by said spacing material, whereby is formed a double wall tank having at least a portion of the rigid sheath thereof spaced from the inner tank.

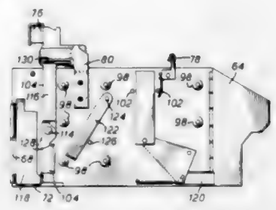
4,655,368

AUTOTELLER EXCHANGEABLE BANKNOTE CASSETTE SYSTEM

Victor E. Bateman, Crawley, England, and Agnelo F. R. Gomes, Novi, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 27, 1985, Ser. No. 716,775
Claims priority, application United Kingdom, Mar. 31, 1984, 8408360
Int. Cl.[4] B67B *7/24*
U.S. Cl. 221—4 22 Claims

16. A system comprising:
an exchangeable cassette for holding a supply of banknotes, said cassette including
opening means for opening a door in said cassette to allow access to said supply of banknotes,
lock means, operable in response to the insertion and turning therein of a predetermined key, for passing from a locked state wherein said lock means is operative to prevent operation of said opening means to an open state wherein said lock means is operative to allow operation of said opening means, and
tilt sensor means, within said cassette, for preventing operation of said opening means when said cassette is not within a predetermined range of angles with respect to a horizontal plane; and



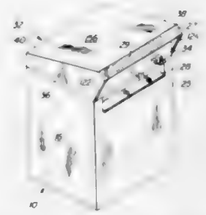
banknote dispenser means for holding said cassette and cooperating with said cassette to prevent external access to the supply of banknotes.

4,655,369

COIN OPERATED VENDING MACHINE FOR DISPENSING SINGLE COPIES OF A NEWSPAPER

Leon Gabriel, 915 S. Madison, LaGrange, Ill. 60625

Continuation-in-part of Ser. No. 330,153, Dec. 14, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 586,210
Int. Cl.[4] B65H *3/22*
U.S. Cl. 221—213 9 Claims



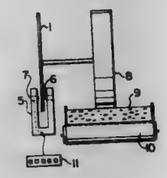
1. In a coin operated newspaper vending machine wherein only one newspaper at a time is vended having a housing, including side walls and a front and rear wall, for stacking newspapers therein between said side walls on a spring loaded plate on which a stack of newspapers is placed and for urging said papers upwardly, an upper section hingedly secured to said housing having side, front and rear walls, a horizontally movable plate in said upper section for delivering one newspaper at a time comprising means for shifting said movable plate forwardly, a portion of said means including a handle extending outwardly of the front wall of said upper section, a shaft positioned on said movable plate, a series of spaced rotary means on said shaft, depending pointed rods on said rotary means, said shaft anchored to said movable plate adjacent to a rear end thereof in a rest position, means on the shaft to partially rotate said shaft to shift said pointed rods into and out of the uppermost paper in the stack upon shifting of said movable plate, a push plate on said movable plate positioned behind said uppermost paper, a coin receiving mechanism having a shiftable coin chute therein, a stationary plate positioned above and forward of said movable plate, a transverse slot in said stationary plate, a bracket on said plate adjacent said slot, a rocker lever pivotally secured to said bracket, one end of said rocker lever removably seated in said slot to prevent forward movement of said movable plate and means associated with said coin chute to raise an end of the rocker arm out of said slot, whereby by pulling the handle forwardly, one newspaper only may be drawn outwardly of said housing.

4,655,370

FEED METER FOR CONVEYED MATERIAL

H. Page Harrison, Edmonton, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Dec. 13, 1984, Ser. No. 681,000
Int. Cl.[4] B67D *5/08*
U.S. Cl. 222—57 4 Claims



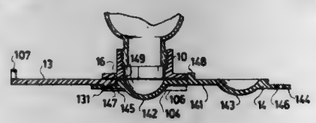
1. A feed meter for determining the feed rate of conveyed material, comprising:
a rotatable encoded disc having concentrically arranged readout elements that vary quantitatively in relation to the radial distance from the center of the disc;
detector means for detecting the readout elements of the encoded disc;
said readout elements having varying radial lengths; and
follower means operatively associated with said discs for rotating the disc in porportion to the velocity of conveyed material and displacing the disc relative to the detector in proportion to the cross-sectional area of material being conveyed such that the number of readout elements detected varies in proportion to the displacement of the disc, wherein the detector provides an output signal representing feed rate.

4,655,371

APPARATUS FOR DISPENSING PARTICULATE MATERIAL

Leslie W. Ingleby, 240 Allan Drive, Swift Current, Saskatchewan, Canada S9H 3A3

Filed Jan. 24, 1986, Ser. No. 822,262
Int. Cl.[4] G01F *11/10*
U.S. Cl. 222—355 10 Claims



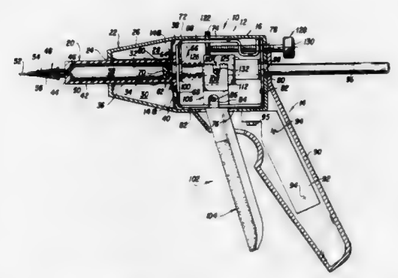
1. Apparatus for dispensing particulate material comprising means defining a container closure portion for containing within a container portion the particulate material, said closure portion defining an opening therein through which said particular material can be discharged, a cover member, slide guide means for receiving said cover member on said closure portion for sliding movement relative thereto so as to move from a first position closing said opening to a second position exposing said opening for discharge of said material, and a measuring member separate from said closure portion, said measuring member having a receptacle portion for receiving and measuring a charge of said particulate material, means for engaging said slide guide means whereby said measuring member can be moved in sliding movement along said slide guide means from a first position spaced from said opening to a second position in which said receptacle part underlies the opening for receiving said charge, and means for releasably engaging said cover member whereby said measuring member can be engaged with said cover member with both members in their respective first positions such that the cover member and the measuring member can be moved commonly along said slide guide means to said second positions thereof, to obtain said charge and back to said first positions to close said opening and allow removal of said measuring member for dispensing said charge.

4,655,372

PAINT DISPENSER

Robert N. Ross, Herndon, Va., and Lippert, Roy O., Orlando, Fla., assignors to The Joy of Painting, Reston, Va.

Filed Sep. 21, 1984, Ser. No. 652,915
Int. Cl.[4] G01F *11/00*
U.S. Cl. 222—391 20 Claims



1. A dispenser for holding a removable, elongate cartridge containing a fluid material and for dispensing the fluid material from the cartridge, the cartridge including a plunger slidable mounted in a container, said dispenser comprising:
a housing having an elongate body and a handle, said body comprising means for removably mounting a fluid material containing cartridge at a forward body end portion;
a rod mounted for axial, forward and rearward movement in said housing body in axial alignment with the cartridge plunger when the cartridge is installed in said body; and
means for axially moving said rod, said rod moving means comprising,
a trigger pivotally mounted to said housing, and
rod engaging means for engaging said rod and moving said rod in the direction of an installed cartridge plunger when said trigger is pivoted in a first direction and for disengaging said rod when said trigger is pivoted in the opposite direction, said rod engaging means comprising a cup shaped member having a recess therein defined by a recess wall and slidably mounted on said rod such that said recess concentrically surrounds said rod, a plurality of balls mounted in said recess such that said balls become interposed between said rod and said recess wall when said trigger is pivoted in said first direction and said member is moved in the direction toward the location for the cartridge plunger, said recess walls being slanted radially inwardly in the rearward axial direction, away from said location for the cartridge plunger.

9. A mechanism for axially advancing an elongate rod comprising:
means for mounting the rod so as to permit axial movement;
rod engaging means for engaging the rod and moving the rod in a first axial direction, comprising:
a cup-shaped member having a recess therein defined by a recess wall and being slidably mountable on the rod such that said recess concentrically surrounds the rod, said recess walls being slanted radially inwardly in a direction opposite to said first direction,
a plurality of balls mounted in said recess such that said balls become interposed between said recess wall and the elongate rod when said rod engaging means is moved in said first axial direction, and
means for moving said rod engaging means in said first axial direction.

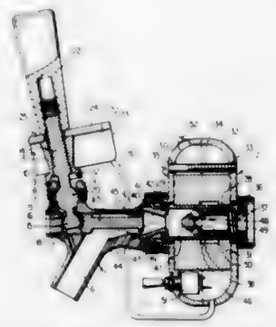
VOL 1077 ISS 1 APR 7 1987 UMI

4,655,373
WATER PITCHER
R. Eric Essen, St. Louis, Mo., assignor to Gateway Plastics, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 319,110, Nov. 9, 1981, Pat. No. 4,492,323. This application Jul. 11, 1984, Ser. No. 629,989
The portion of the term of this patent subsequent to Jan. 8, 2002, has been disclaimed.
Int. Cl.[4] A47G *19/14*
U.S. Cl. 222—465.1 **25 Claims**



1. A pitcher for pouring liquid comprising a container portion having a top opening, said container portion having a ring portion and a replaceable cup portion supported at the top thereof by the ring portion, a lid hinged to the ring portion near the periphery thereof allowing pivoting of the lid between an open position for access to the interior of the container and a closed position over the container opening, said top opening and lid being sized to expose substantially the entire interior of said container portion with the lid open, said pitcher having a spout opening near the periphery of said ring portion on the same side as said hinge for the pouring of the contents therethrough.

4,655,374
DISPENSING APPARATUS VALVE
Alvin Guerette, Laval, Canada, assignor to Controle BVL LTEE, Quebec, Canada
Filed Mar. 19, 1985, Ser. No. 713,670
Int. Cl.[4] B22D *37/00*
U.S. Cl. 222—504 **3 Claims**



1. A liquid control valve for an effervescent liquid comprising a valve seat having a central aperture connecting opposing first and second outwardly diverging interior surfaces, a hollow cylindrical body having an internal bore positioned adjacent and adjoining said valve seat, plunger means positioned in the bore of said cylindrical body having a hollow interior and an open rearwardly disposed portion in communication with effervescent liquid supply means, a generally conical front end on said plunger means adapted to seat against said first outwardly diverging interior surface of said valve seat when the valve is closed, a series of inclined ports extending through said conical front end of the plunger means in communication with said internal bore and ending proximate the interior wall of the cylindrical body to permit communication between the interior of the plunger means and the bore of the hollow cylindrical body, means to inhibit the flow of effervescent liquid beyond said central aperture when the valve is in an open position, said means to inhibit the flow of effervescent liquid comprising a liquid control stem slidably mounted in a cylindrical bore of a housing adjoining said valve seat in opposing relation to said second outwardly diverging surfaces, said liquid control stem having opposing ends having a diameter approximately the same as the diameter of the bore of said housing and a middle portion of lesser diameter than the diameter of said bore of said housing, one end of said stem including an enlarged head portion which is displaced toward and limited in extent by said second outwardly diverging interior surface of said valve seat when the valve is in an open position to inhibit the flow of effervescent liquid beyond said central aperture when said valve is in the open position, and means adapted to move said plunger means both away from and toward said valve seat.

4,655,375
TIE HOLDER
Chris C. Pazeotopoulos, 6306 SW. Capital Hwy., Portland, Oreg. 97201
Filed Aug. 1, 1985, Ser. No. 761,474
Int. Cl.[4] A41D *25/04*
U.S. Cl. 223—85 **20 Claims**

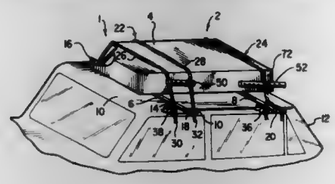


1. A tie holder for securing the depending folds of a four-in-hand necktie comprising, in operative position as attached to an upright wearer's shirt:
- a generally vertically-disposed plate-like button-mounting upper portion having a lower edge and a button thread slit extending generally upwardly from said lower edge; and
- a pin portion disposed below said upper portion, having a proximal end joined to said upper portion, a distal end, and an upper edge disposed generally adjacently and spaced from said lower edge, said upper edge having a protuberance disposed generally opposite and extending toward the opening in said thread slit and said upper edge being of sufficient length to form, in combination with said lower edge, an elongate fold-retaining slit communicating with said thread slit.

4,655,376
TIE DOWN DEVICE AND METHOD
Gilbert R. Darling, Site 31, Box 86, Lantzville, British Columbia, Canada V0R 2H0
Filed Dec. 18, 1985, Ser. No. 810,214
Int. Cl.[4] B60R *9/00*
U.S. Cl. 224—324 **8 Claims**

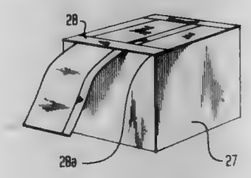
1. A tie down device for securing an object carried on a rack having a first end and a second end, the device comprising:

a braided rope having a length sufficient to loop the rope about the first end of the rack so two adjacent portions of the rope pass over the object and both ends of the rope are below the second end of the rack;
means for securing the two ends of the rope below the second end of the rack;
twisting handle means having two ends for fitting between the adjacent portions of the rope and for twisting portions of the rope about each other by end over end rotation of the twisting handle means to tighten the rope over the object, wherein the twisting handle means has a hollow first part and a second part telescopically received in the first part, the second part being telescopically extendable from the first part to lengthen the twisting handle means and to stop untwisting of the portions of the rope when the twisting handle means is released and at least one end of the twisting handle means contacts the object.



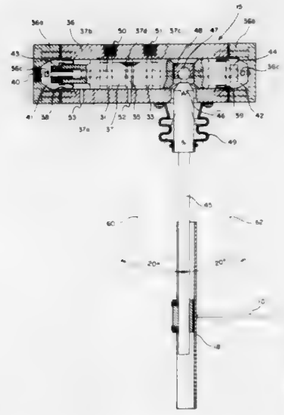
8. A method for securing an object carried on a rack having a first end and a second end, the method comprising the steps of:
forming a braided rope into a loop, extending the loop about the two ends of the rack and over the object so the rope has two adjacent portions over the object, inserting an elongated telescopic twisting handle between the portions of the rope and rotating the twisting handle end over end to twist the two portions of the rope together, thereby tightening the rope over the object, the twisting handle being telescopically shortened to rotate the twisting handle end over end, the twisting handle being telescopically lengthened after the rope is tightened and one end thereof being placed in contact with the object to prevent untwisting of the rope.

4,655,377
APPARATUS FOR DISPENSING PERMANENT WAVE PROCESSING PAPER
Joseph Orangeo, Jr., 54 Venetian Dr., Lake Hopatcong, N.J. 07849; Kenneth Orangeo, and Robert Orangeo, both of 57 Wall St., Rockaway, N.J. 07866
Filed Jul. 31, 1985, Ser. No. 761,034
Int. Cl.[4] B65D *85/672*
U.S. Cl. 225—48 **8 Claims**



1. A kit for dispensing increments of end paper for use in connection with a permanent waving process, which comprises in combination:
- a container comprising a hollow body portion which body portion is closed except for a straight-edged opening at or near the top of said body portion, said opening comprising a cutting edge;
- a continuous cylindrical roll of permanent waving end paper disposed in said container and having one end of said roll extended tangentially to the surface of said roll in partly unrolled relation to said roll, and constructed to extend out of said container and to pass over said straight edge opening in transverse relation to said cutting edge, whereby when manual tension is applied to said end a piece of a desired length is severed from said roll;
- said permanent waving end paper comprising an absorbent paper of high purity cellulose having a wet strength sufficient to withstand a tension of at least about 50 grams applied to each half inch wide strip, and having a porosity characterized by a Filtrona Pressure Drop of between 14.1 and 24.2 millimeters of water.

4,655,378
DIFFERENTIAL PRESSURE BIASED SPOOL TYPE VALVE CONTROLLER FOR A PNEUMATIC DUAL DIAPHRAGM CONTROL SYSTEM
Kenneth S. DuFour, 1700 Phillips Dr., Sanford, N.C. 27330
Division of Ser. No. 634,384, Jul. 25, 1984. This application Jul. 2, 1985, Ser. No. 751,275
Int. Cl.[4] B65H *23/038*; F16K *3/26, 11/07*
U.S. Cl. 226—23 **14 Claims**



1. A spool type controller assembly for controlling and directing air from an air source to either side of a dual diaphragm pneumatic guiding system that is operatively connected to a guide roll for moving and adjusting the guide roll so as to appropriately guide materials such as wire or felt web over the guide roll, said type controller valve comprising:
- A. a valve having a body, a spool having opposite ends movably mounted therein, an air inlet port, a pair of outlet ports, an exhaust port means formed therein with each outlet port being adapted to be communicatively connected to a respective diaphragm of said pneumatic guiding system;
- B. a pair of rolling diaphragms secured across opposite ends of said spool so as to form opposed chambers adjacent each end of said spool and to generally seal the formed opposed chambers from the adjacent areas surrounding said spool;
- C. biasing means operatively associated with said spool for biasing the same towards a selected position within said valve, said biasing means including means for generating a pneumatic differential pressure between the opposed chambers and across said opposite ends of said spool such that because of the presence of the differential pneumatic pressure said spool is biased towards a selected position;
- D. spool actuating means for engaging an edge of said material passing over said guide roll and moving said spool

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back and forth within said valve in response to the lateral shifting of said material as the same passes over said guide roll wherein the movement of said spool, as a result of the lateral movement of said material, results in the guiding system adjusting the position of said guide roll so as to adjust the running angle of the material passing over said guide roll;

E. wherein said spool actuating means includes a pivot arm means directly coupled to said spool for moving said spool back and forth within said valve as said pivot arm means is moved back and forth, said pivot arm means including an inner end movably mounted to said spool and extending therefrom and further including a remote end having a follower secured thereto for engaging the edge of said material passing over said guide roll, such that said pivot arm means actuates and moves said spool back and forth within said valve in response to the lateral shifting of the material passing over said guide roll;

F. said spool and pivot arm adapted to assume a first neutral position and wherein from said neutral position said pivot arm may pivot to second and third extreme positions on each side of said neutral position; and

G. wherein said valve and spool include means for opening said outlet ports and exposing the same to air pressure while closing said exhaust port means in response to said spool and pivot arm assuming said neutral position, thereby preventing the valve from performing unnecessary corrections.

4,655,379

WIRE TRANSPORT CONDUIT

Charles R. Busch, Auburn, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed May 2, 1985, Ser. No. 729,600
Int. Cl.⁴ B21B *39/14*; B65B *20/24, 57/12*
U.S. Cl. 226—110 **1 Claim**



1. Conduit means for carrying a succession of closely spaced, flat wire segments, each having a leading end, being pushed therethrough in a downstream direction at a constant high speed, comprising:

(a) duct means having an internal flat, bottom surface and an upper top wall; and

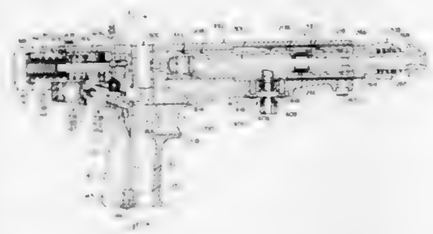
(b) a plurality of fingers disposed above said bottom surface and attached to said top wall, and spaced apart along the length of said duct means, each finger extending downstream toward the bottom surface at an acute angle between about 13.5 and 15° with respect to said bottom surface, and extending substantially across the width of said duct, each finger having a downstream end which extends parallel to said bottom surface and which is spaced from said bottom surface a distance equal to the projected vertical height of the wire segment when the segment is rotated approximately 60° about its longitudinal axis of symmetry so as to contact the wire segment only when the segment moves perpendicularly away from said bottom surface as the segment moves downstream through said duct, said fingers being resiliently movable in a direction substantially perpendicular to said bottom surface, wherein contact between said fingers and the downstream moving wire segment causes the segment to be urged perpendicularly towards said bottom surface and prevents the leading end of each wire segment from buckling of twisting on its side as each segment is push through the conduit.

4,655,380

POWDER-ACTUATED FASTENER-DRIVING TOOL

Harry M. Haytayan, Lincoln, Mass., assignor to Paeutek, Inc., Hudson, N.H.

Continuation of Ser. No. 497,701, May 24, 1983, abandoned.
This application Sep. 25, 1985, Ser. No. 779,879
Int. Cl.⁴ B25C *1/08, 1/10, 1/14*
U.S. Cl. 227—9 **11 Claims**



1. In a powder-actuated fastener-driving tool of the type comprising:

(a) a housing having a first opening therein;

(b) a barrel and cylinder assembly disposed in said first opening and adapted for reciprocal movement in said housing, said barrel and cylinder assembly comprising (1) a hollow barrel, and (2) a hollow cylinder member having a front end and a rear end and first and second longitudinally extending grooves, said barrel being mounted to said cylinder member so that the two members act as a single unit, with said barrel being disposed in the front end of said cylinder member and extending outward therefrom, and further wherein said barrel and cylinder assembly comprises a hand guard that surrounds a portion of said barrel and said cylinder member and is keyed to said barrel so as to permit limited reciprocal movement of the hand guard lengthwise of the barrel, with said hand guard having a substantially cylindrical portion with a slot therein aligned with said first groove;

(c) a piston assembly disposed within said barrel and cylinder assembly and adapted for reciprocal movement therein;

(d) a cylinder stop assembly comprising a cylinder stop housing and projecting stop means yieldably supported by said stop housing, said cylinder stop assembly being mounted to said housing so that said stop means normally extends into said first groove in said cylinder member so as to limit the longitudinal and rotational travel of said barrel and cylinder assembly relative to said housing;

(e) a breech block assembly comprising a breech block having a longitudinally-extending bore and a central chamber, a firing pin yieldably mounted in said breech block assembly so as to be capable of intruding into said central chamber upon the application of a suitable force thereto;

(f) a firing mechanism comprising a firing actuator, movable means slidably supporting said actuator, spring means biasing said actuator and said movable means toward said breech block, latch means releasably locking said actuator to said movable means, and a push rod extending through said breech block bore and contacting said barrel and cylinder assembly so that movement of said barrel and cylinder assembly within said housing toward said breech block will cause said push rod to move said movable means away from said breech block so as to store energy in said spring means, whereby said spring means can act to drive said actuator forward against said firing pin when said latch means is released from said actuator;

(g) trigger means for operating said latch means; and

(h) a cartridge advancing mechanism comprising a cam movable in said second groove, a pawl and a spring, said cartridge advancing mechanism being adapted to advance a strip of cartridges so as to position a cartridge in firing position adjacent said cylinder member and said firing pin as said cylinder and barrel assembly is reciprocated;

the improvement wherein;

said trigger means comprises a release lever, a first pivot pin rotatably supporting said release lever for movement toward and away from said firing mechanism, a torsion spring coupled to said release lever and a second pin so as to yieldably bias said release lever away from said firing mechanism, a trigger, and a trigger push rod releasably engaged with and extending between said trigger and said release lever so as to cause said trigger to force said release lever in a direction to operate said latch means when said trigger is pulled, whereby to cause said firing actuator to propel said firing pin forward to fire a cartridge disposed in line with said cylinder; and

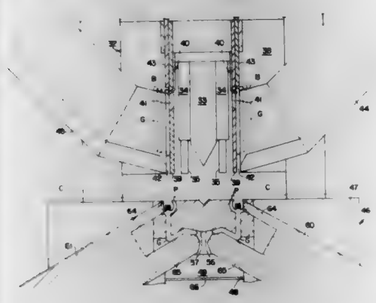
said slot commences at the rear end of said hand guard and terminates short of the rear end of said barrel.

4,655,381

MACHINE FOR AUTOMATICALLY APPLYING HOOKS TO ELASTIC BELTS

Anacleto Fontana, 46, Via Lambro, Lesmo, 20050, Italy

Filed May 16, 1985, Ser. No. 734,723
Claims priority, application Italy, May 16, 1984, 20937 A/84
Int. Cl.⁴ A41H *37/02*
U.S. Cl. 227—15 **18 Claims**



1. A machine for automatically applying hooks to suspension elastic belts used for seats and seat backs, said machine comprising: belt feeding means for feeding at least one continuous belt from a stock coil; a punching unit provided with at least a punch for punching holes in the belt; cutting means for cutting the continuous belt into segments of the desired length, and a unit for applying and shaping hooks and for applying locking bushings to the severed ends of the belts, said unit having means for feeding and positioning said locking bushings in alignment with the belt holes, hook inserting means for picking-up and inserting the hooks into the holes provided in said locking bushings and the holes punched in said elastic belts, and clamping means for clamping said locking bushings about one end of the hook while simultaneously shaping the other hook end.

4,655,382

MATERIALS FOR USE IN FORMING ELECTRONIC INTERCONNECT

Geoffrey B. Wong, Palo Alto, and Arthur W. Lopez, Jr., Redwood City, both of Calif., assignors to Raychem Corp., Menlo Park, Calif.

Filed Nov. 12, 1985, Ser. No. 797,287
Int. Cl.⁴ B23K *35/14*
U.S. Cl. 228—56.3 **10 Claims**

1. A laminate structure having sufficient dimensions and structural stability for holding electrical joint-forming preforms and for accurately placing the preforms on an electronic component and accurately holding the preforms in position during attachment of the preforms to the electronic component comprising:

a layer of paper which is water soluble or water dispersible and which has a coating on at least one side of said paper comprising a water soluble polymer and which has a plurality of apertures therein for receiving and holding said preforms.

4,655,383

METHOD OF REPAIRING HEAT RESISTANT ALLOY PARTS

Jean-Paul Fournes, Dannemois; Jacques Lesgourgues, Corbeil, and Robert Martinou, Bry sur Marne, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, France

Filed May 13, 1985, Ser. No. 733,185
Claims priority, application France, May 17, 1984, 84 07648
Int. Cl.⁴ B23K *25/00*
U.S. Cl. 228—119 **11 Claims**

1. A method for repairing cracked or damaged parts made of a heat resistant nickel, cobalt based alloy having a surface with a contaminated layer of chemical compounds comprising the steps of:

(a) chemically cleaning the surface of the part, said chemical cleaning comprising the steps of:

(i) de-scaling the part;

(ii) rinsing in water bath;

(iii) immersing the part in an alkaline bath to convert oxides on the part into soluble elements;

(iv) rinsing in water bath;

(v) immersing the part in acid pickling bath comprising an aqueous solution of hydrochloric acid, nitric acid, acetic acid, phosphoric acid and a ferric salt to remove the converted oxides; and

(vi) rinsing in water bath;

(b) thermochemically treating the part to clean the cracks and damaged areas of the part by placing it in a semi-permeable enclosure in a hydrogen controlled atmosphere oven and heating it with reaction components to transform the oxides remaining on the part;

(c) depositing a filler metal on the surface and the visible damaged areas of the part, the filler metal being an alloy having at least nickel or cobalt and including a filler element to render the filler metal easily meltable and capable of diffusing into the part;

(d) subjecting the part to a first thermal brazing cycle to fuse the metal filler and wet the surfaces to which it is applied;

(e) depositing a mixture of a base powder and a filler powder on the surface of the part having visible defects, the base powder containing substantially no filler element and the filler powder containing at least nickel or cobalt with a filler element to render it more easily meltable than the alloy of the part and the base powder;

(f) subjecting the part to a second thermal brazing cycle to thoroughly alloy the powder mixture and to wet the surface to which it is applied; and,

(g) subjecting the part to thermal diffusion treatment for a time and at a temperature to insure homogenization of the repaired zone.

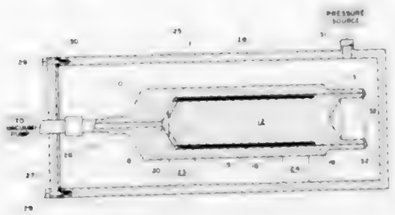
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4,655,384

METHOD OF FABRICATING FIBER-REINFORCED METAL COMPOSITES

Michael A. Rigdon, Manassas, and Clemens F. Zarlippe, Madison Heights, both of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 18, 1985, Ser. No. 789,209
Int. Cl.⁴ B23K *31/00*
U.S. Cl. 228—132 **8 Claims**



1. A method of fabricating a fiber-reinforced metal matrix composite comprising the steps of:
(a) fitting a braided fiber tube over a metallic core;
(b) applying tension to bring the tube into contact with the metallic core;
(c) fixing the tensioned tube in place relative to the core;
(d) mounting a braze foil around the tube;
(e) securing the foil;
(f) inserting the so-assembled assembly of the core, the braided fiber tube and foil into a capsule;
(g) evacuating the capsule;
(h) applying increasing temperature and pressure to the capsule to collapse the capsule onto the assembly, the temperature being below the braze foil flowpoint;
(i) further raising the temperature to induce flow of the braze alloy layer of the braze foil;
(j) maintaining the raised temperature for a short time; and
(k) lowering the temperature to a value below the braze foil flowpoint and maintaining said lower temperature to allow solidification and annealing of the resulting fiber reinforced metal composite.

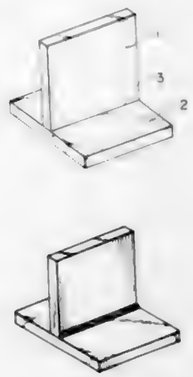
4,655,385

METHOD OF BRAZING AN ALUMINUM MATERIAL

Kenichi Suzuki; Fusayoshi Miura, and Fumio Shimizu, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Jan. 3, 1986, Ser. No. 816,156
Claims priority, application Japan, Jan. 22, 1985, 60-10445
Int. Cl.⁴ B23K *1/00, 31/02*
U.S. Cl. 228—223 **8 Claims**

1. A method of brazing an aluminum material which comprises:
bringing at least a portion (desired for brazing) of an aluminum material into contact with a coating solution containing cesium and fluorine ions to form on the surface of said material a chemically-coated flux layer composed of a material selected from the group consisting of cesium fluoroaluminate and a mixture of cesium fluoroaluminate and aluminum fluoride; and
heating said portion to join said material to another material with a brazing alloy at a temperature lower than the melting point of said aluminum material and higher than that of said brazing alloy.

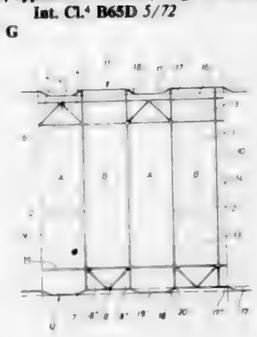


4,655,386

PACKING CONTAINER BLANK AND CONTAINER MADE THEREFROM

Alf Billberg, Oxie, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Continuation of Ser. No. 654,525, Sep. 25, 1984, abandoned, which is a continuation of Ser. No. 404,408, Aug. 2, 1982, abandoned. This application Jan. 2, 1986, Ser. No. 815,756
Claims priority, application Sweden, Aug. 27, 1981, 8105070
Int. Cl.⁴ B65D *5/72*
U.S. Cl. 209—17 G **8 Claims**



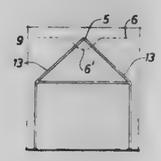
1. A one-piece blank foldable to form a packing container of the type having a gable top with a sealing fin extending along the top, comprising:
a laminated material having an overall rectangular shape with two straight, parallel lateral edges and first and second transverse edges;
said blank provided with four crease lines parallel to said lateral edges and dividing said blank into first, second, third and fourth sections of substantially equal width and a fifth section of reduced width;
two parallel crease lines adjacent the first transverse edge, said parallel crease lines being perpendicular to and extending continuously between the lateral edges of the blank;
wherein the material between the first transverse edge and the parallel crease line more adjacent the first transverse edge form the sealing fin of the packing container;
a single crease line adjacent the second transverse edge, said single crease line being perpendicular to and extending continuously between the lateral edges;
said first section and said third section each having a triangular backfolding panel between said two parallel crease lines;
said second section and said fourth section each having a triangular backfolding panel between said single crease line and said second transverse edge;
said first transverse edge having straight segments parallel to said two crease lines and spaced therefrom;
said straight segments of said first transverse edge located in the second and fourth sections being spaced a greater distance from said parallel crease lines than the straight segments of said first transverse edge located in the first and third sections;
said first transverse edge also having straight sloping transition segments along the first and third sections and between said straight segments;
said second transverse edge having straight segments parallel to said single crease line and spaced therefrom;
said straight segments of said second transverse edge located in the first and third sections being spaced a greater distance from said single crease line than the straight segments of said second transverse edge located in the second and fourth sections;
said second transverse edge also having straight sloping transition segments along the first and third sections and between said straight segments;
said straight and sloping transition segments of the first transverse edge being parallel to and conforming with said straight and sloping transition segments of the second transverse edge such that the first transverse edge of the one-piece blank can be cut from the second transverse edge of an identical one-piece blank with no scrap material being created therebetween;
that portion of the blank between said crease line near the second transverse edge forming the bottom of the container;
and the portion of the blank embracing said two parallel crease lines forming the gable top of the packing container;
wherein said sloping transition segments form a gradual transition in the sealing fin from a quadruple thickness at the bottom of the fin to a double thickness at the top thereof.

4,655,387

PACKING CONTAINER PROVIDED WITH A SINE CURVE TEAR-UP OPENING ARRANGEMENT

Nils O. Magnusson, Löddeköpinge, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Continuation of Ser. No. 575,767, Feb. 1, 1984, abandoned. This application Dec. 13, 1985, Ser. No. 808,366
Claims priority, application Sweden, Feb. 7, 1983, 8300605
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.⁴ B65D *5/74*
U.S. Cl. 229—17 R **1 Claim**



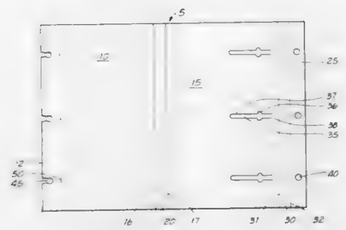
1. A folded paper carton having a parallelpipedic shape comprising a top side, a double-walled triangular lug formed along one edge of said top side and adapted to be folded along said one edge to position the underside of the lug against a side wall of the carton, said lug communicating with the interior of the carton, and being connected to the side wall of the carton, a sealing fin extending from an apex of the lug across the lug and the top side of the carton, the improvement comprising an opening arrangement including a perforation line extending on both sides of a base line of the sealing fin, said perforation line having a pair of straight segments running parallel with one another up to a point situated at approximately half the distance between the tip of the triangular lug and a base line of the lug, each of said pair of straight segments having two straight parts joined together by an arc-shaped part in the absence of any point of discontinuity or break along the perforation line, said perforation line having the continuous arc-shape segment interconnecting said straight segments on both sides of the fin a continuous arc-shape over the edges of the triangular lug at substantially right angles to the edges of the triangular lug, the arc-shaped segment of the perforation line being a whole period of a sine curve, the curve having maximum points where the straight segments of the perforation are joined and a minimum point located on the underside of the triangular lug along a line located in a plane through the sealing fin when in a raised position, said perforation line, upon tearing open the package, crossing the edges of the triangular lug at right angles and providing an enlarged grip portion.

4,655,388

DISKETTE FOLDER WITH STRAP FASTENER

James D. Fleming, Chesterfield, Mo., assignor to Central States Products Company, St. Louis, Mo.

Filed Mar. 3, 1986, Ser. No. 835,734
Int. Cl.⁴ B65D *27/22*
U.S. Cl. 229—45 R **5 Claims**



1. A folder cut from a single piece of material comprising front and back panels, a spine disposed therebetween, a retaining flap, and a spine disposed between said retaining flap and said back panel; a plurality of straps formed integrally with said back panel, each strap being uniformly narrow in width and situated transversely to said spine between said back panel and said retaining flap and having a protuberance located closer to the root of said strap than to the end of said strap, that portion of the strap located between the end of said strap and said protuberance fashioning a tongue; said root of each strap situated uniformly adjacent to the fold line of the spine between said back panel and said retaining flap; said retaining flap having apertures centered on the width of said flap and correlatively spaced to said plurality of straps, said apertures sized slightly smaller than said protuberances of said straps to securely hold said protuberances; said front panel having widely slotted apertures correlatively spaced with said apertures in said retaining flap and said plurality of straps, said widely slotted apertures extending transversely from and communicating with the perpendicular edge of said front panel, and transverse slots adapted to accept said tongues of said plurality of straps in aligned relation to said widely slotted apertures.

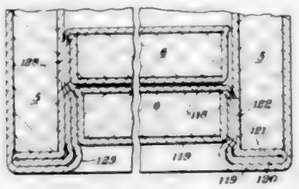
VOL 1077 ISS 1 AP 7 1987 UMI

4,655,389

COLLAPSIBLE CONTAINERS AND METHODS OF MANUFACTURING THE CONTAINERS

Sydney A. Marsh, Brighton, England, assignor to Marshall Cavendish Services Limited, London, England

Filed Jul. 30, 1984, Ser. No. 635,443
Claims priority, application United Kingdom, Aug. 4, 1983, 8321027; Sep. 29, 1983, 8326134
Int. Cl.[4] B65D 5/62, 90/06
U.S. Cl. 229—48 T 23 Claims



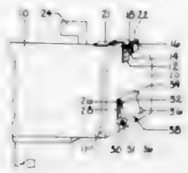
1. A collapsible container, comprising four walls, and a base wall extending generally transversely of and between said four walls when the container is erected, wherein each of said walls is hingedly connected by first flexible hinging means to adjacent ones of said four walls, wherein said base wall comprises first and second flaps, wherein said first flap has a first edge hingedly connected by additional flexible hinging means to a first of said four walls and has a second free edge parallel to said first edge, wherein said second flap has a first edge hingedly connected by further flexible hinging means to a second of said four walls in opposed relation to said first wall and said second flap further has a second edge parallel to said first edge of said second flap, wherein each of said four walls and each of said first and second flaps comprises a board covered on both sides thereof with flexible weldable material, wherein each of said flexible hinging means is comprised of said flexible weldable material, said first and second flaps when extending generally transversely of and between said four walls being in an overlying relationship to each other with said first flap being situated relatively further inwardly of said container than said second flap, and channel-like latching means formed in said flexible weldable material which extends along a face of said first wall to which said first flap is hingedly connected, wherein when in said overlying relationship said second edge of said second flap is detachably latched in said channel-like latching means and the second edge of said first flap operatively rests on said second flap at an area which is at least in close proximity to said first edge of said second flap, and wherein when said first and second flaps are moved from said overlying relationship to positions at least respectively approaching parallelism with said first and second walls said container is enabled to be collapsed.

4,655,390

MAILBOX SIGNAL DEVICE

Elbert T. Martin, 986 W. US 22, Maineville, Ohio 45039

Filed Sep. 8, 1986, Ser. No. 904,455
Int. Cl.[4] B65D 91/00
U.S. Cl. 232—35 9 Claims



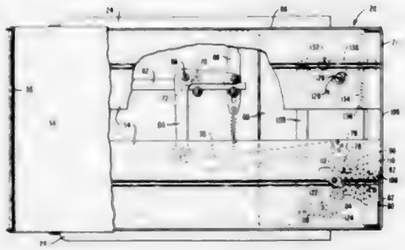
1. A signal device for use on a rural mailbox having a housing open at one end and provided at said open end with a hinged door attached at a lower base of the housing so as to swing from a closed position downwardly to allow access to the interior of the housing, said signal device comprised of (i) a substantially flat base having a roof extending outwardly from the upper front surface of the flat base so as to protect the signal means from rain and snow when in a rest position, a protrusion extending from the front surface so as to prevent a lower flap from contacting the base's flat surface, brackets extending from each side of the flat base's lower front surface and adhesive attached to the flat base's back surface and (ii) lower flap swingably attached- to the brackets so that when the hinged door is in a closed position and the lower flap in a rest position, said lower flap is rotated about its attachment means so as to lean against the protrusion on the flat base and when in a signalling position is rotated about its attachment means so as to hang down in a vertical position.

4,655,391

CONTAINER HAVING TAMPER-INDICATING MEANS

Robert H. Granzow, Miamisburg; Dale L. Placke, Dayton, and Harry L. Howett, Brookville, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 25, 1985, Ser. No. 715,860
Int. Cl.[4] E05G 1/00
U.S. Cl. 232—43.1 9 Claims



1. A tamper indicating container comprising:

a casing having first and second apertures therein;

first door means operatively associated with said first aperture and movable between open and closed positions;

second door means operatively associated with said second aperture and movable between open and closed positions;

means to secure said second door means in closed position and to provide an indication when said second door means has been opened;

means for moving said first door means to open position to enable items to be removed from said container, said first door means being movable to said closed position after a desired number of items have been removed therefrom;

indicator means movable incrementally from an initial position to a maximum count number position to provide an indication of the number of times up to the maximum that the first door means has been opened;

advancing means for advancing said indicator means incrementally each time up to the maximum that said first door means is opened;

interrupt means for preventing the advancing means from advancing the indicator means from the maximum count number position to the initial position by further opening of the first door means, without preventing operation of said means for moving said first door means; and

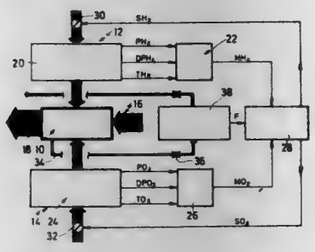
reset means operable when said second door means is opened to disable said interrupt means to permit said indicator means to be reset to said initial position.

4,655,392

STEAM-GENERATOR CONTROL METHOD

Karlheinz Wolfmüller, Eppingen-Adelshofen, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Jun. 28, 1985, Ser. No. 750,535
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1984, 3424314
Int. Cl.[4] F23N 1/00; G05D 23/00
U.S. Cl. 236—15 E 14 Claims



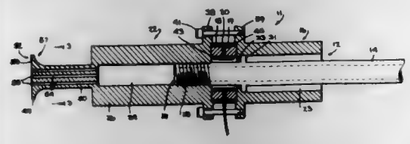
1. A steam-generator control method for controlling the stoichiometric ratio of the mass flows of an oxidant and a fuel supplied for combustion in accordance with the operating condition, wherein the controlled variables for the mass flow of the oxidant as well as for the mass flow of the fuel are determined through the measurement of both mass flows supplied and through their comparison with theoretically preset stoichiometric ratios, measurement errors are continuously determined, by means of a probe, by a combustion gas analysis conducted after the combustion and the measurement errors are used for the correction of the controlled variables, wherein the correction takes place at a time constant that is shorter than the time constant of the dynamic changes of the errors.

4,655,393

HIGH VOLUME ULTRASONIC LIQUID ATOMIZER

Harvey L. Berger, Poughkeepsie, N.Y., assignor to Sonotek Corporation, Poughkeepsie, N.Y.

Continuation of Ser. No. 455,900, Jan. 5, 1983, abandoned. This application Feb. 27, 1986, Ser. No. 834,646
Int. Cl.[4] B05B 3/14
U.S. Cl. 239—102.1 11 Claims



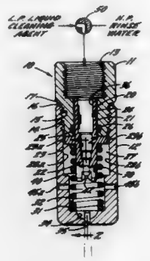
1. In an ultrasonic liquid atomizer a front section comprising a larger section, a stepped, smaller section coupled to the larger section and an enlarged tip coupled to the stepped section, the enlarged tip atomizing surface thereon, a plurality of orifices disposed in the atomizing surface through which liquid is delivered to the atomizing surface, one or more liquid feed passages extending through the stepped section and communicating with the orifices, common rearward passage means for feeding liquid to the liquid feed passages, and a transition in diameter from the stepped section to the enlarged tip along a path defined by the circumference of a circle having a predetermined radius.

4,655,394

DUAL PURPOSE FOAM GENERATING AND HIGH PRESSURE NOZZLE

Gerald P. Ferrazza, Schaumburg, and Pamela R. Huck, Villa Park, both of Ill., assignors to Spraying Systems Co., Wheaton, Ill.

Filed Dec. 19, 1984, Ser. No. 683,648
Int. Cl.[4] B05B 7/00
U.S. Cl. 239—412 6 Claims



6. A dual purpose nozzle for low pressure foam generating and high pressure fluid spraying comprising, in combination, a nozzle body having inlet and outlet portions, means defining a slide chamber and a mixing chamber in said nozzle body, an inner nozzle slidably mounted in said slide chamber and having an internal passageway for communicating fluid from said inlet portion to said outlet portion of said nozzle body, said mixing chamber terminating in an outlet discharge opening and said body having at least one inlet opening therein upstream of said outlet discharge opening for admitting air into said mixing chamber, said inner nozzle having a discharge end with a primary discharge opening therein generally aligned with said outlet discharge opening in said nozzle body, means for biasing said inner nozzle in an upstream direction with said discharge end normally disposed in said mixing chamber such that low pressure fluid entering said mixing chamber from said passageway draws air in through said at least one inlet opening to generate a foam of bubbles and droplets which is sprayed from said outlet discharge opening of said nozzle body, and said inner nozzle being automatically moveable in a downstream direction in said slide chamber against the force of said biasing means in response to the introduction of high pressure fluid in said passageway so that the primary discharge opening of said inner nozzle is located in close proximity to said outlet discharge opening in said nozzle body and fluid is discharged from said outlet discharge opening in the form of a high pressure fluid spray and the flow of air through said at least one inlet opening is substantially blocked.

4,655,395

ADJUSTABLE CONICAL ATOMIZER

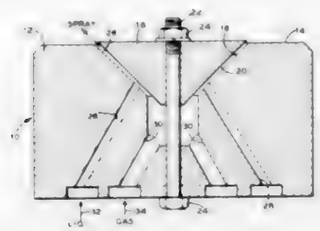
Paul L. Cioffi, Massillon; Thomas S. Donahoe, Alliance, and George R. Keith, Uniontown, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 17, 1984, Ser. No. 600,623
Int. Cl.[4] B05B 7/00
U.S. Cl. 239—427 3 Claims

1. An adjustable conical atomizer for fluids comprising a body having an end face with a conical cavity therein, a plug having a conical side matching the configuration of the conical cavity and positioned with the conical side in the conical cavity, a manually adjustable indexing bolt connected between said plug and said body, means for positioning said plug in respect to said cavity so as to define a mixing space therebetween in the form of a continuous conical annulus and an annular discharge opening from the mixing space in the end face, at least two passages extending through the body for directing a liquid and a gas into the mixing space to produce

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the mixing together and acceleration of the liquid and gas in the mixing space and the discharge of the mixture as a conical spray through the annular discharge opening, and wherein one



of the passages discharges into the mixing space at a location intermediate the inlet and outlet of the cavity and the other one of the passages discharges into the inlet of said cavity.

4,655,396

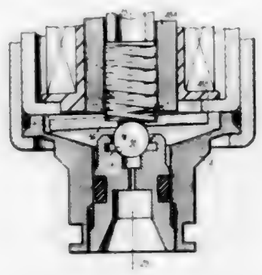
ELECTROMAGNETIC FUEL INJECTOR

Morse N. Taxon, Oak Park, and Gene A. Maguran, West Bloomfield, both of Mich., assignors to United Technologies Diesel Systems, Inc., Springfield, Mass.

Filed Sep. 25, 1985, Ser. No. 780,107

Int. Cl.⁴ F02M *61/20*; B05B *1/30*; F16K *31/02*

U.S. Cl. 239—533.9 **10 Claims**



1. In an electromagnetic fuel injector for an internal combustion engine having a valve axis and including a housing, a flat armature connected to a movable valve element arranged to cooperate with a valve seat, spring means for exerting a force in an axial direction on said armature, an electromagnetic means for exerting a force in an opposite direction on said armature when electrically energized, the improvement comprising:

said armature being generally circular and having a portion contoured to define a pivot axis for pivoting engagement with a stationary portion of said fuel injector, said pivot axis including at least two points defining the endpoints of a chord of said armature; and

means for concentrating the force applied to said armature by said spring means such that the greater axial spring force is applied to the armature to that side of the valve axis remote from said pivot axis thereby to effect pivoting of said armature about said pivot axis.

4,655,397

VORTEX DRIPPER

Moshe Gorney, Kibbutz Naan, Israel, assignor to Naan Mechanical Works, Kibbutz Naan, Israel

Filed Dec. 28, 1984, Ser. No. 687,559

Claims priority, application Israel, Jan. 9, 1984, 70646

Int. Cl.⁴ B05B *15/00*; F15D *0/00*

U.S. Cl. 239—542 **31 Claims**



1. Drip irrigation emitter apparatus comprising:

a water inlet;

a water outlet; and

an elongated flowpath extending in a flowpath direction from said water inlet to said water outlet, said flowpath defining an entrance coupled to said water inlet and extending into a type one vortex region, said type one vortex region extending via an intermediate region into a type two vortex region, said type two vortex region extending via an intermediate region into a type one vortex region, and

wherein said type one vortex region comprises a region including a first rounded concave corner having a first radius of curvature and a first substantially pointed convex vertex to a first side of said first rounded concave corner, the first rounded concave corner extending from the water inelt to the water outlet initially in said flowpath direction and subsequently curving in a direction at least partially against said flowpath direction at the end of the corner closest to the water outlet;

said type two vortex region comprises a second rounded concave corner having a second radius of curvature and a second generally pointed convex vertex to a second side of the second rounded concave corner, the second rounded concave corner extending from the water inlet to the water outlet initially in said flowpath direction and subsequently curving in a direction at least partially against said flowpath direction at the end of the corner closest to the water outlet.

4,655,398

SPRAYING APPARATUS FOR IN SITU FORMATION OF VEHICLE FUEL TANKS

Paul E. Liggett, Wooster, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation of Ser. No. 562,774, Dec. 19, 1983, abandoned. This application Dec. 16, 1985, Ser. No. 808,384

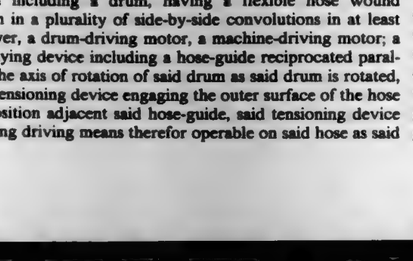
Int. Cl.⁴ B05B *15/08*

U.S. Cl. 239—588 **6 Claims**

1. A nozzle extension unit having an upstream input end and a downstream output end and connected at the upstream input end to a spray gun for dispensing a sprayable polymeric material at pressures of at least 500 psi comprising in combination:

an input connector at the upstream end adapted for attachment to the spray gun and having an axial bore therethrough and an axially positioned filter screen within the bore;

a nozzle tip at the downstream end having roll and yaw axes and comprising (a) an in-line positioned roll axis rotatable high pressure swivel having an input and an output, (b) an in-line positioned yaw axis rotatable high pressure swivel having an input and an output, (c) a connector interconnecting the output of the roll axis swivel to the input of the yaw axis swivel and having an in-line positioned filter screen within its bore, and (d) a spray orifice connected to the output of the yaw axis swivel through a length of



tubing bent at an angle with respect to the nozzle tip roll axis; and

a length of substantially flexible high pressure hose interconnecting the input connector at the upstream end to the input of the roll axis swivel to flexibly extend the nozzle tip a specific distance away from the spray gun;

said combination of flexible hose and roll and yaw axis rotatable swivels providing pitch, roll, and yaw motions to the nozzle tip to simulate wrist and hand motions of an individual using the unit and thus to facilitate spraying of the polymeric material into an enclosed cavity having limited accessibility.

4,655,399

IRRIGATION OR OTHER MACHINE HAVING A ROTATABLE DRUM CARRYING A HOSE OR OTHER FLEXIBLE ELEMENT WOUND THEREON

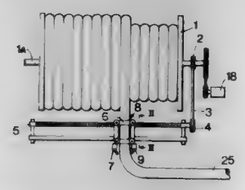
Vernon B. W. Harvey, Tanglewood, Stour Close, Little Canford, Wimborne, Dorset, Great Britain (BH21 7LU)

Filed Mar. 20, 1985, Ser. No. 713,791

Claims priority, application United Kingdom, Mar. 31, 1984, 8408372; Nov. 28, 1984, 8429987

Int. Cl.⁴ B05B *3/18*; B65H *75/34*

U.S. Cl. 239—745 **7 Claims**



1. An irrigation machine which is to be driven along the ground including a drum, having a flexible hose wound thereon in a plurality of side-by-side convolutions in at least one layer, a drum-driving motor, a machine-driving motor; a hose-laying device including a hose-guide reciprocated parallel to the axis of rotation of said drum as said drum is rotated, and a tensioning device engaging the outer surface of the hose at a position adjacent said hose-guide, said tensioning device including driving means therefor operable on said hose as said drum is rotating, thereby to maintain said hose in tension and thereby to prevent the convolutions on said drum from becoming loose on said drum, said tensioning device comprising an endless belt mounted with one run thereof in frictional engagement with said hose and extending lengthwise thereof at a position adjacent said hose-guide, said driving means of said tensioning device engaging said endless belt.

4,655,400

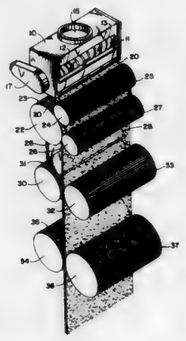
COFFEE GRINDING METHOD

William W. Erb, West Trenton; Ernest R. LaSalle, Spring Lake Heights, and James P. Mahlmann, Princeton Junction, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 29, 1985, Ser. No. 728,427

Int. Cl.⁴ A47J *42/26*; B02C *4/08*

U.S. Cl. 241—29 **1 Claim**



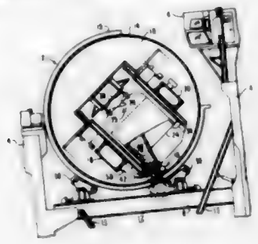
1. A process for subdividing roasted coffee beans with a control of density and particle size distribution at increased rates of production, comprising the steps of passing whole roasted coffee through a powered distributing feeder means located above a cracking head to uniformly distribute the coffee thereacross as a thin curtain of product; feeding the thin curtain at a measured, even feed between oppositely rotating cracking rolls whereby initial size reduction is effected to provide a uniform curtain of cracked beans, care being exercised to not force feed the coffee and to avoid overloading the nip between the rolls and thereby avoid secondary granulation; and thence passing the ground coffee through at least two pairs of granulating rolls in a manner which does not force feed any roll pair and avoids overloading the respective nips to thereby avoid secondary granulation of the coffee, one roll of each roll pair being spring-loaded on one side whereby the coffee is introduced and passes grinding and regrinding roll pairs in a steady curtain to provide a balanced continuous feed through respective nips of the roll pairs, the granulating rolls of each respective roll pair moving linearly at the same speed and the coffee passing directly to the nips between respective grinding and regrinding roll pairs where they are impacted with no compression and shear, the paired granulating rolls in at least one roll pair having lateral horizontal cuts in one roll acting in combination with vertical cuts in the other roll to provide a counter-cutting effect, the ground coffee passing each roll pair with an impact without compaction, the coffee being thus ground and then reground substantially in a thickness no greater than that of a single bean.

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4,655,401
ROTARY CAR DUMPER WITH LUMP BREAKER APPARATUS

Willard Binzen, Gibsonia; Samuel P. Inzana, Washington, both of Pa.; Edward T. Manning, Jr., and Corsel Mahoney, both of Bay Village, Ohio, assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Aug. 22, 1985, Ser. No. 768,495
Int. Cl.[4] B02C *13/286*
U.S. Cl. 241—69 **13 Claims**



1. A rotary car dumper and lump breaker apparatus comprising:
- a rotatable frame comprising a pair of vertically oriented, horizontally spaced end rings connected by elongated girder members to form an open sided cylindrical frame with a horizontal longitudinal axis and having a section of railroad track extending through the frame parallel to said longitudinal axis, said frame including end plates at said end rings enclosing the ends of said cylindrical frame except for an opening through which a railroad car can pass through said frame on said section of track;
- a hopper pit under said cylindrical frame for receiving bulk material carried by said railroad car;
- means for rotating said cylindrical frame on said end rings about said longitudinal axis to discharge bulk material over a top edge of one side of said railroad car into said hopper pit;
- porous barrier means having a plurality of sized openings therein, positioned in the discharge path of the bulk material above the hopper pit; and
- impact means attached to and moveable with the frame of the car dumper and positioned between the end plates thereof; said impact means including motive means to permit selective movement thereof to strikably engage and break lumps of oversized bulk material retained on said porous barrier means during a dumping cycle.

4,655,402
PORTABLE CRUSHING PLANT

Bernard Desourdy, 545 de Normandie Street, Longueuil, Canada J4H 3P6

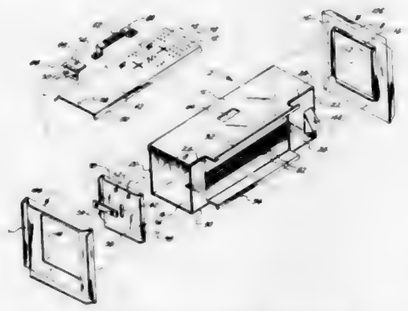
Filed Dec. 24, 1981, Ser. No. 334,305
Int. Cl.[4] B02C *21/02*
U.S. Cl. 241—76 **3 Claims**

1. In a portable crushing plant including a primary crushing unit, a secondary crushing unit, a pair of screening units, and a conveyor-carrying unit, each mounted on wheels and roadable independently of each other, each crushing unit and each screening unit having a higher level material inlet and a lower level material outlet, said conveyor-carrying unit comprising a wheel-mounted elongated horizontal box having side walls, first and second end walls and a top wall, a first straight belt conveyor for carrying crushed material, consisting of an intermediate section and of first and second end sections, said intermediate section being carried by said top wall, longitudinally and horizontally over the same, said first and second end sections pivotally connected to the respective ends of said intermediate section for pivotal movement in a vertical plane between an operative position, each forming an extension of said intermediate section and projecting beyond the respective end walls of said box, and a collapsed inoperative position overlying said intermediate section, and second and third belt conveyors pivotally attached to the side walls of said box for pivotal movement between a collapsed inoperative position extending longitudinally flat against said side walls and an operative position projecting from said side walls in transverse horizontal position and longitudinally upwardly inclined from said first to said second end wall of said box, said second and third belt conveyors, when in operative position, having their lower inlet ends adapted to receive material from the outlet of the respective crushing units operatively positioned adjacent said first end wall of said box, and having their upper outlet ends adapted to discharge material from the respective crushing units into the inlets of the respective screening units operatively positioned in side-by-side relation adjacent said second end wall of said box, and said first conveyor belt, when in operative position, having its inlet end adapted to receive material discharged from the lower outlet of both screening units and having its outlet end adapted to discharge material into the inlet of said secondary crushing unit.

4,655,403
ICE SHAVING MACHINE WITH STABILIZATION MEANS

Ronald R. Sciortino, P.O. Box 15589, New Orleans, La. 70175

Continuation-in-part of Ser. No. 432,189, Nov. 8, 1982, abandoned. This application Apr. 8, 1985, Ser. No. 720,598
Int. Cl.[4] B02C *19/12*
U.S. Cl. 241—92 **1 Claim**

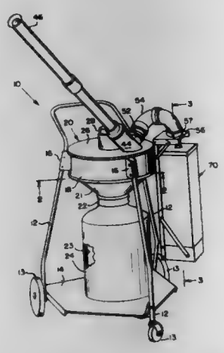


1. A device for producing ice cutings, comprising:
- an inner box comprised of a flat rectangular base held in spaced relationship to a rectangular top by an upright rear wall, the inner box having first and second open opposing ends adjacent the rear wall, and a front wall which is partially open and defines an ice receiving opening having an upper edge and a lower edge;
- an L-shaped flange projecting outwardly from and upwardly over the upper edge of the ice receiving opening;
- an L-shaped flange projecting outwardly from and downwardly below the lower edge of the ice receiving opening;
- an inner plate configured to close the first open end of the inner box, the inner plate being comprised of a flat member with flanges perpendicular to the flat member, the perpendicular flanges fitting flushly against adjacent walls of the inner box, the flat member defining a slot;
- a pressure mechanism hingedly attached to the inner plate, the pressure mechanism comprising an elongated pressure plate attached to the inner plate with a vertical hinge having an axis, said hinge being adjacent a top edge of the inner plate, means for moving the pressure plate around the axis of the vertical hinge, and a plurality of grating members depending downwardly from a bottom face of the pressure plate and being inclined toward a cutter which is mounted adjacently to the second open end, the grating members being arranged in a plurality of parallel rows across at least a part of the pressure plate, the pressure plate being further provided with donwardly sloping flanges along opposing longitudinal edges of the pressure plate for retaining a block of ice beneath the pressure plate while permitting the block of ice to slide toward said cutter;
- a plurality of continuous ice slides on the flat base of the inner box, each ice slide having an upwardly extending tip, the ice slides being substantially perpendicular to said inner plate;
- a square pusher plate in parallel relationship to said inner plate, a bottom edge of the pusher plate being provided with a plurality of bearings which fit in sliding relationship between adjacent ice slides to guide the pusher plate towards the second end, the bearings having a height greater than that of the ice slides to hold the bottom edge of the pusher plate in spaced relationship to the ice slides;
- a pusher arm attached to the pusher plate and extending through the slot in the inner plate;
- an outer box held in spaced relationship around the inner box by first and second spacer members, the first spacer member being comprised of a plate defining an opening and having a first set of flanges which extend from a first face and fit in contiguous relationship with the inner box, and a second set of flanges which extend from a second face and fit in contiguous relationship with an interior of the outer box, the second spacer member being comprised of a plate defining an opening and having a first set of flanges which extend from a first face and fit in contiguous relationship with the inner box, and a second set of flanges which extend from a second face and fit in contiguous relationship with an interior of the outer box, the outer box also being held in spaced relationship to the inner box by the L-shaped flanges projecting outwardly from the top and bottom edges of the ice receiving opening; and
- a cutter disposed adjacently to the second end for cutting the ice as the pusher plate advances the ice into the cutter.

4,655,404
FLUORESCENT LAMP CRUSHER

Joseph W. Deklerow, 37 Lynnhaven Ct., Rochester, N.Y. 14618

Filed Oct. 16, 1981, Ser. No. 312,350
Int. Cl.[4] B02L *19/14*
U.S. Cl. 241—99 **11 Claims**

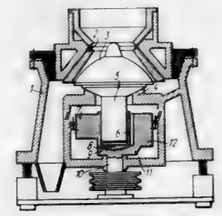


1. In a fluorescent lamp crusher of the type including a housing having an inlet for admitting fluorescent lamps into the housing, and an outlet for allowing crushed lamp particles to drop into a waste collector beneath the housing, and a plurality of crusher members mounted to rotate in said housing adjacent said inlet to strike and crush the lamps entering the housing through said inlet, apparatus for preventing broken glass particles and gas from being blown back out of said inlet during operation of said crusher, the improvement comprising
- a filter cartridge,
- means for releasably connecting said cartridge to an exhaust opening formed in said housing to open on the interior thereof adjacent said inlet in said housing,
- vacuum means connected to said cartridge and said exhaust opening, and operable to draw exhaust air from within said housing successively through said exhaust opening and said filter cartridge, and
- means in said cartridge for removing toxic gas from the exhaust air passing through the cartridge.

4,655,405
INERTIA CONE CRUSHER

Leonid P. Zarogatsky; Nikolai A. Ivanov; Mikhail F. Korolkov; Villi R. Laubgan, and Andrei N. Safronov, all of Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Mekhanicheskoi Obrabotki Poleznykh Iskopaemykh, Leningrad, U.S.S.R.

Filed May 22, 1985, Ser. No. 736,698
Int. Cl.[4] B02C *2/04*
U.S. Cl. 241—215 **4 Claims**



1. An inertia cone crusher comprising:
- a housing;
- an outer cone secured in said housing;
- an inner cone rotatably mounted in said housing concentrically with respect to said outer cone;
- a shaft of said inner cone extending along an axis of symmetry of said inner cone;
- a cylindrical bearing bush mounted on said shaft of said inner cone;
- an unbalanced mass member formed with said cylindrical bearing bush;
- a spherical end thrust bearing defined by said cylindrical bearing bush;
- a drive shaft adapted to be driven by a power motor;
- a crank formed with said drive shaft;
- a spherical support defined by said crank, said spherical support supporting said cylindrical bearing bush by said spherical end thrust bearing;
- a carrier member formed with said crank;
- said unbalanced mass member being radially and circumferentially movable, on said spherical support through said spherical end thrust bearing, relative to said drive shaft and relative to said carrier member;
- said carrier member having vertical end faces for engaging said unbalanced mass member so that during rotation of said drive shaft, said carrier member pushes said unbalanced mass member and said carrier member, at the same time, generates a centrifugal force applied to said housing, and said unbalanced mass member rotating together with said drive shaft also generates a centrifugal force applied to said inner cone, directed opposite to and equal to said centrifugal force generated by said carrier member, to thus cause said inner cone to perform gyratory motion on said spherical support;
- said carrier member comprising a weight unbalanced with respect to the axis of said drive shaft, said weight having

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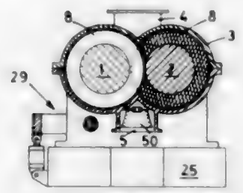
a mass and position such that the static moment of said weight is about equal and opposite to the static moment of said unbalanced mass member.

4,655,406

APPARATUS FOR TREATING CELLULOSE PULP WITH INTERMESHING DISKS AND ASYMMETRICAL GUIDE FINS

Erik F. Eriksson, Johanneshov, Sweden, assignor to Aktiebolaget Frotator, Sweden

Filed Nov. 27, 1984, Ser. No. 675,220
Claims priority, application Sweden, Nov. 30, 1983, 8306615
Int. Cl.⁴ D21D *1/34*; B02C *19/00*
U.S. Cl. 241—261 **8 Claims**



1. Apparatus for treating cellulose pulp having a consistency above the flowage limit, comprising two spaced shafts rotatable in the same axial plane, each shaft carrying means for working said pulp in a working zone, said working means defining respective cylinders of rotation which are in mutually intermeshing engagement to form said working zone and which are driven within a housing enclosing in substantial conformity the space occupied by the intermeshing cylinders of rotation of said working means, a pulp inlet at one longitudinal end of said shafts and a pulp outlet at the other longitudinal end of said shafts, said inlet and outlet communicating with said working zone, said working means comprising a plurality of radially directed axially spaced disk in mutually cooperative positions between said pulp inlet and said pulp outlet for compressive and keading working of said pulp in said working zone between opposed surfaces of mutually intermeshing of said disks, means for rotating said shafts, and means positioned asymmetrically in relation to said opposed surfaces for causing pulp enclosed between said opposed surfaces to move in a direction towards said pulp outlet, said pulp-moving means comprising a plurality of guide fins each extending from an inner surface of said housing adjacent the periphery of each disk on one of said shafts into the interspace between mutually adjacent disks on the other of said shafts, said guide fins diverting the pulp against that side of the disk entering into the opposed disk interspace which is facing said pulp outlet.

4,655,407

OUTSIDE-IN WINDING APPARATUS

Emil B. Rechsteiner, Arlington, Mass., assignor to Isoreg Corporation, Littleton, Mass.

Filed Mar. 18, 1985, Ser. No. 712,675
Int. Cl.⁴ H01F *41/08*; B65H *81/02*
U.S. Cl. 242—4 A **34 Claims**

1. A winding apparatus for winding an element through a form comprising:

means for loading a coil of said element through said form in a first direction to generate layers of said element in said loading coil, said means for loading including drive means for revolving said loading coil and structure for mounting said drive means about the outside of said loading coil and for biasing said drive means inwardly against said loading coil;

means for unwinding said element from its layer in said loading coil and winding it under tension about said form in the opposite direction to wind a final coil; and

releasable retention means responsive to a predetermined tension applied by said element for sequentially releasing successive portions of unwinding layers of said element as it is pair out from said loading coil to wind tightly about



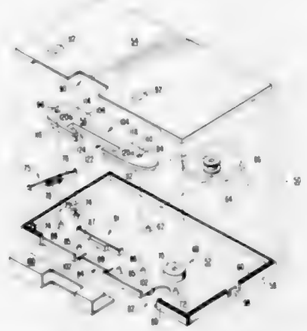
said form in response to an advancing region of maximum tension between the outer periphery of said final coil and the advancing point of separation of said element from the inner periphery of said loading coil, said retention means including structure for mounting said retention means about the inside of said loading coil.

4,655,408

SEPARATE TAPE GUIDE FOR A CONTINUOUS LOOP TAPE CASSETTE

Anthony L. Gelardi, Cape Porpoise; Diane Pruneau, Saco, both of Me., and Richard Rolfe, Madison, Conn., assignors to Shape Inc., Biddeford, Me.

Continuation of Ser. No. 657,667, Oct. 4, 1984, abandoned. This application Mar. 19, 1986, Ser. No. 842,368
Int. Cl.⁴ B65H *20/26*
U.S. Cl. 242—55.19 A **3 Claims**



1. An independent tape guide for a continuous loop tape cassette, comprising:

(a) a substantially planar and elongated top, a substantially planar and elongated bottom disposed substantially parallel to the substantially planar top, a back, a left end with a curved, relatively flat, front surface and a right end with a curved, relatively flat front surface, the curved, relatively flat, front surfaces of the left and right ends being disposed at an angle of approximately 1° relative to the substantially parallel top and bottom surfaces;

(b) a flange formed integrally of the substantially planar top to extend in a coplanar relationship therewith,

wherein the left and right curved, relatively flat, front surfaces of the left and right ends and the flange define a tape guiding surface for tape being guided through the tape cassette; and

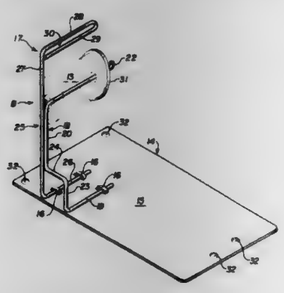
(c) spring means extending between the left and right ends for urging tape being guided along the tape guiding surface against an external tapé player/recorder apparatus.

4,655,409

PAPER SPOOL SUPPORT AND FEEDING MEANS

Lawrence M. Zima, 146 W. Bruceton Rd., Pittsburgh, Pa. 15236

Filed Apr. 2, 1985, Ser. No. 719,222
Int. Cl.⁴ B65H *16/04, 16/10*; B41J *15/04, 29/00*
U.S. Cl. 242—55.2 **12 Claims**



1. In combination, a paper spool support and feeding means and a printer comprising:

a base sheet;

a first wire member having a mounting element, a stanchion at right angles to said mounting element, a first horizontal arm perpendicular to said stanchion terminating in a reentrant elbow and communicating with a second arm, parallel to the said first horizontal arm and spaced-apart therefrom whereby the said first and second horizontal arms present a slit adapted to receive a strip of paper; a second wire member having a mounting element, a first connecting element perpendicular to said mounting element and connected to the said stanchion; a support arm extending perpendicular from the upper end of said connecting element generally parallel to said first horizontal arm;

said mounting elements being secured to said base sheet.

6. In combination, a paper spool support and feeding means and a printer including:

a U-shaped member having generally parllel side members extending perpendicularly from a base, said U-shaped member being secured at its open ends to a mounting element; a transverse rod generally parallel to said base and secured to the said side members to define a paper slit between said transverse rod and said base;

a second member having a generally horizontal support arm connected perpendicularly to a side element, means for mounting said side element to said mounting means;

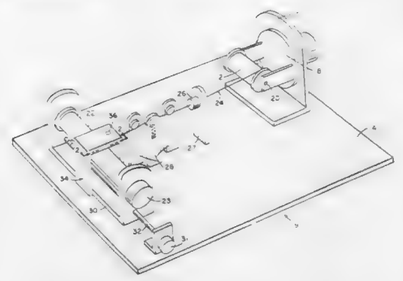
means for engaging said U-shaped member and said second member to form a rigid device which is adapted to receive a spool of paper on said support arm between said side members.

4,655,410

DEVICE FOR CONTROLLING OPTICAL FIBER LAG ANGLE FOR FIBER WOUND ON A BOBBIN

Paul B. Ruffin; J. Gregory Anderson, and Joe S. Hunter, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 23, 1985, Ser. No. 812,591
Int. Cl.⁴ B65H *54/28*
U.S. Cl. 242—158 R **5 Claims**



1. Apparatus for controlling the lag angle of fiber being wound on a bobbin comprising:

a. a first spool having a fiber wound thereon;

b. a second spool rotatably mounted in spaced relation with said first spool for winding optical fiber thereon from said first spool;

c. means for reciprocal movement of said second spool whereby responsive to movement of said second spool in a first direction a layer of fiber is wound thereon and responsive to movement of said spool in a second opposite direction a layer of fiber is wound on said previously wound layer of fiber;

d. a laser stationary mounted spatially to said second spool and disposed for directing a beam of laser energy in the groove between the turns of fiber as said fiber is wound on said second spool; and,

e. detector means mounted with said laser to receive the laser beam reflected from said grooves and for transmitting an electrical signal to said means for movement of said second spool whereby responsive to changes in intensity of said beam received, said speed of movement of said second spool is varied.

4,655,411

MEANS FOR REDUCING SPREAD OF SHOTS IN A WEAPON SYSTEM

Arne Franzén; Kjell Albrektsson, and Jan-Olov Fixell, all of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden

PCT No. PCT/SE84/00097, § 371 Date Nov. 26, 1984, § 102(e) Date Nov. 26, 1984, PCT Pub. No. WO84/03759, PCT Pub. Date Sep. 27, 1984
PCT Filed Mar. 21, 1984, Ser. No. 680,340
Claims priority, application Sweden, Mar. 25, 1983, 8301651
Int. Cl.⁴ F41G *7/00*
U.S. Cl. 244—3.11 **8 Claims**

1. Means for reducing the spread of shots in a weapon system in which the shots are fired from a weapon in a ballistic trajectory from a launching site towards a target comprising means for determining the target position, means for measuring the muzzle velocity of an ammunition unit in response to which the impact point of said ammunition unit is predicted, and drag means for affecting change in the aerodynamic shape of said ammunition unit activated in response to the difference between the actual position of the target and the predicted impact point for braking the velocity of said ammunition unit in order to improve the hit probability, said drag means being normally

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in a first unactivated state in which the air resistance of said ammunition unit is not affected; said drag means being adapted to be brought to a second state defining at least one predetermined braking level; and an actuating device for providing a required pressure to bring said drag means from said first to said second state; wherein said activating device comprises a powder charge.



4,655,412

AIRFOIL HAVING IMPROVED LIFT CAPABILITY

Michael J. Hinkleman, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US84/00071, § 371 Date Jan. 16, 1984, § 102(e) Date Jan. 16, 1984, PCT Pub. No. WO85/03051, PCT Pub. Date Jul. 18, 1985
PCT Filed Jan. 16, 1984, Ser. No. 574,850
Int. Cl.⁴ B64C *3/14*
U.S. Cl. 244—35 R 2 Claims



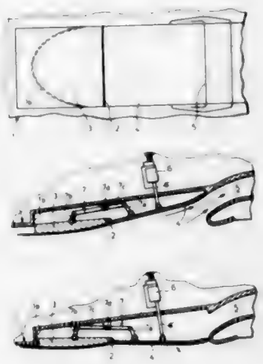
1. An airfoil having improved lift capability, comprising:
a chord extending from a leading edge to a trailing edge of the airfoil;
a first airfoil curve portion having a high curvature around the leading edge, and having curvature decreasing aft along the chord from the leading edge on upper or negative pressure side of the airfoil to a first local minimum value of less than 3 for K times C,
where C is the length of chord and K is the reciprocal of the local radius of curvature;
a second curve portion extending from the first minimum and increasing and then decreasing to a second local minimum within 40% of the chord length;
the starting point of the first portion being below the chord, lower than ordinate value of the leading edge, and being aft of the leading edge by not more than 3% of chord length measured along the chord;
the high curvature at the leading edge having a value for K times C equal to or greater than 35 but less than or equal to 120;
a third curve portion starting at the end of the second portion within 40% of the chord length and extending to the trailing edge of the chord;
the maximum value for K times C in the second portion being greater than one but less than 6;
the second local minimum being at the end of the second portion and the beginning of the third portion;
the value of K times C initially increases from the second local minimum and then decreases before the trailing end of the airfoil;
the value of K times C increases from the second local minimum and the third portion has at least one greater value of K times C relative to the first and second minimums;
the first portion being within 10% of the chord length; and the second portion starting at the aft end of the first portion within 10% of the chord length.

4,655,413

APPARATUS FOR IMPROVING AERODYNAMIC FLOW CONDITIONS AT THE AIR INTAKE OF GAS TURBINE ENGINES

Hans-Peter Gemmler, Munich, and Kurt Lotter, Riemerling, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 704,068
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1984, 3407137
Int. Cl.⁴ B64D *33/02*
U.S. Cl. 244—53 B 10 Claims



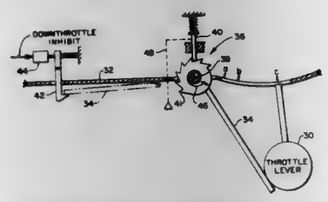
1. An apparatus for improving aerodynamic flow conditions at an air intake facing toward a flight direction for a gas turbine engine especially installed in an aircraft having a fuselage (1), comprising boundry layer deflector means opening toward said flight direction, a recess (1*b*) in said fuselage directly upstream of said air intake, wherein said boundary layer deflector means comprise an upstream edge facing toward said flight direction for peeling a boundary layer away from an air stream flowing into said air intake, said boundary layer deflector means further comprising a downstream end, hinging means (2, 2') for pivotably hinging said boundary layer deflector means exclusively at said downstream end thereof to said fuselage downstream of said air intake, operating means operatively connected to said boundary layer deflector means for moving said boundary layer deflector means into a retracted position in said recess in said fuselage so that the boundary layer deflector means are flush with an outer surface of said fuselage in this retracted position during ground maneuvers, take-off, or low speed flight of said aircraft when said air intake is fully opened, and for moving said boundary layer deflector means into an extended operating position during high speed flight of said aircraft when said air intake is at least partially opened for bypassing a detrimental boundary layer away from said air intake during said high speed flight.

4,655,414

PREVENTING INADVERTENT DOWNTHROTTLING OF THE OPERATIVE ENGINE IN A MULTI-ENGINE AIRCRAFT

Frederick Ebert, Westport; Stephen H. Silder, Monroe, both of Conn., and Michael A. Beims, Smithboro, N.Y., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 6, 1985, Ser. No. 805,682
Int. Cl.⁴ B64D *31/04, 31/06*
U.S. Cl. 244—75 R 4 Claims



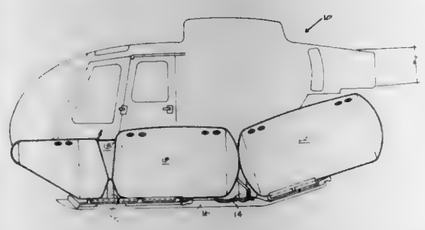
1. Apparatus for preventing inadvertent down-throttling of the operative engine(s) in an aircraft having at least two engines and a throttle lever associated with each engine, comprising:
means for providing a signal indicative of the malfunctioning of a particular engine; and
means for inhibiting movement of the throttle lever(s) associated with the other operative engine(s) in a downthrottle direction only in response to the signal.

4,655,415

HELICOPTER FLOTATION

Ralph A. Miller, Monmouth Beach, and Frank J. Brown, Brick, both of N.J., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jan. 24, 1985, Ser. No. 694,883
Int. Cl.⁴ B64C *25/26*
U.S. Cl. 244—105 24 Claims



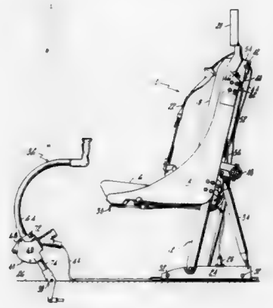
7. Helicopter flotation apparatus comprising:
an elongate structural member including means for removable attachment thereof to a helicopter landing skid, means for securing an inflatable flotation bladder thereto, and means for spacing said flotation bladder apart from and generally above said landing skid;
an inflatable flotation bladder securing to said structural member at said means therefor;
environmentally protective cover means for in a first postion thereof cooperating with said structural member to substantially define an envelope receiving said flotation bladder deflated and folded therewithin; and
an elastomeric aerodynamic end cap at each end of said structural member.

4,655,416

CYCLIC STICK CONSTRUCTION FOR CRASHWORTHY SEAT COCKPIT

Brian L. Carnell, Rocky Hill, and Robert A. Selleck, Trumbull, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 23, 1985, Ser. No. 737,011
Int. Cl.⁴ B64D *25/04*
U.S. Cl. 244—121 7 Claims



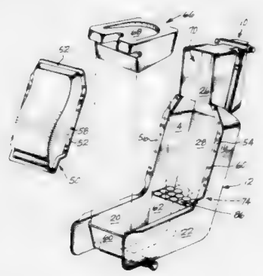
1. A crashworthy cockpit arrangement including a pilot seat and a control stick located forward of the seat and between the pilot's legs, said seat being of the stroking type and capable of downward movement under severe loading, said control stick having means permitting displacement of the upper portion thereof away from the pilot under predetermined conditions, and means initiated by downward movement of said seat to cause said displacement of said stick portion, said initiated means being a pyrotechnic charge.

4,655,417

MOLDED EJECTION SEAT HAVING AN INTEGRATED ROCKET MOTOR ASSEMBLY

Gerald F. Herndon, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1984, Ser. No. 655,892
Int. Cl.⁴ B64D *25/10, 11/06*
U.S. Cl. 244—122 A 16 Claims



1. A molded injection seat having a rocket motor propulsion system integrated with the seat, comprising:
a seat body having upper and lower side walls, a front wall between the lower side walls, and back wall portions extending generally between the upper and lower side walls;
a backrest panel removably secured to the body to form a front thereof and to extend generally between the upper side walls to increase torsional rigidity of the seat struc-

ture by closing a torque box formed with the upper side walls, back wall portions, and the backrest panel;

a rocket motor propulsion system being incorporated within the body below the upper side walls within the lower side walls, generally rearwardly of and below the backrest panel, and generally rearwardly of the occupant sitting area; and

a rocket nozzle being connected to the propulsion system and being fitted generally within the lower back seat periphery and the seat envelope;

the rocket motor propulsion system being integrated into the body as it is being formed;

the rocket motor propulsion system being formed as a consolidated honeycomb-type assembly of pressure vessels which utilize the strength of shared pressure containment walls to reinforce the lower part of the molded seat body and eliminate concentrated rocket thrust load transfer points and create an efficient structure for load transfer and material utilization;

the honeycomb assembly being comprised of a series of individual cylindrical propellant chambers, each chamber being generally adjacent to other chambers; and

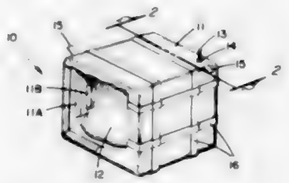
each chamber being interconnected to a manifold connected to the rocket nozzle.

4,655,418

EMERGENCY SUPPLY CONTAINER

Raymond A. Melahn, 625 W. Woodcrest, Fullerton, Calif. 92632

Filed Jul. 13, 1981, Ser. No. 283,023
Int. Cl.⁴ B64D *1/14*
U.S. Cl. 244—138 R **14 Claims**



1. A substantially cubic container for use in air dropping of materials comprising,

an outer casing formed of a relatively light weight rigid material, and

an inner bag of flexible, relatively high tear and puncture resistant material to be stored within said outer casing,

said outer casing comprising a plurality of substantially identical side and end members,

said outer casing formed of a material which is adapted to disintegrate upon impact in order to absorb the impact energy and to protect the inner bag.

4,655,419

VORTEX GENERATOR

Antonius J. van der Hoeven, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

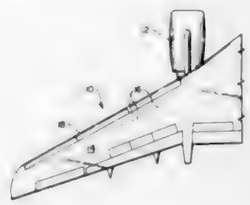
Filed Dec. 31, 1984, Ser. No. 687,647
Int. Cl.⁴ B64C *23/06*
U.S. Cl. 244—199 **20 Claims**

1. A vortex generator adapted to be mounted to a forward surface portion of a substantially continuous aerodynamic lifting surface over which there is an airflow along a flow path from the forward surface portion where boundary layer air is at a generally predetermined thickness, to a rear surface portion of the aerodynamic surface where the airflow has greater tendency to become separated, with said vortex generator being positioned, relative to said lifting surface, to generate a vortex which travels rearwardly over, and adjacent to, said lifting surface to promote attached flow thereover, said vortex generator comprising:

a. a first lower mounting member adapted to be mounted to the forward surface portion of the aerodynamic surface;

b. a second main vortex generating member having a generally planar configuration and adapted to be positioned in a plane having a first substantial vertical alignment component perpendicular to the aerodynamic surface, and a second substantial horizontal alignment component generally aligned with the flow path, but slanted relative to said flow path at an angle at which a desired vortex is generated to energize the airflow adjacent to the rear surface portion, said main vortex generating member comprising:

1. A forward portion having a forward edge portion comprising a substantially linear first forward edge section having a forward lower end positioned adjacent the lifting surface andextending upwardly and rearwardly from said aerodynamic surface and from said



forward lower end, and a second forward edge section which is a substantial rearward continuation of the first section and which extends rearwardly in a continuous convex curve that becomes more horizontal in a rearward direction, said second forward edge section having a forward end which is substantially tangent to a rear end of said first foreward edge section, said first and second forward edge sections each having its entire length extending in a rearward direction from the forward lower end of the first forward edge section,

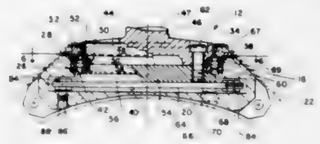
2. a rear portion aerodynamically aligned with, said extending rearwardly from, said forward portion, said rear portion having a rear upper edge portion which is a substantial rearward extension of said second forward edge section and which is substantially horizontally aligned, said rear upper edge portion having a forward end which is substantially tangent to rear end of said second forward edge section.

4,655,420

LOW HEIGHT FIN CONTROL ACTUATOR

Carl M. Spiroff, Granite City, Ill., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 9, 1983, Ser. No. 502,818
Int. Cl.⁴ F42B *15/027*
U.S. Cl. 244—3.24 **3 Claims**



1. A low height control actuator for a missile fin control surface, comprising:

(a) an actuator housing defining a hollow, substantially cylindrically shaped cavity;

(b) single bearing means supported within said cavity for

reacting both radial loads and reversing thrust loads simultaneously resulting from an external mechanical force applied to said missile fin control surface, said bearing means consisting solely of concentric circular outer and inner races defining a pair of confronting annular race surfaces and a single row of a plurality of balls located between said race surfaces and mounting said races for rotation relative to one another;

(c) an annular cap member attached to said housing and defining an opening in said housing to said cavity, said annular cap member retaining said outer race in a fixed position relative to said housing within said cavity whereby said inner race is rotatable relative to said outer race and said housing;

(d) fin mounting means including a disk-shaped base and an integral fin root and fin connected thereto and extending outwardly therefrom for supporting said fin control surface for rotation relative to said housing;

(e) said disk-shaped base disposed within said opening defined by said annular cap member and attached to said inner race for rotation therewith; and

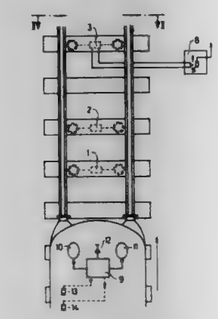
(f) actuating means operatively connected to said disk-shaped base for selectively rotating the same and said inner race and said fin root for controlling the angular position of said fin control surface.

4,655,421

METHOD FOR THE TRANSMISSION OF INFORMATIONS AND/OR INSTRUCTIONS

Walter Jaeger, Bel Bosco, CH-6951 Cureglia, Switzerland

PCT No. PCT/CH84/00022, § 371 Date Oct. 23, 1984, § 102(e) Date Oct. 23, 1984, PCT Pub. No. WO84/03264, PCT Pub. Date Aug. 30, 1984
PCT Filed Feb. 16, 1984, Ser. No. 674,928
Claims priority, application Switzerland, Feb. 21, 1983, 949/83
Int. Cl.⁴ B61L *3/00*
U.S. Cl. 246—167 R **19 Claims**



1. A system for transmitting information commands to a railway vehicle travelling on a railway track, comprising:

at least one ground station located along the railway track;

each said ground station comprising a plurality of passive transponders, electrically independent from each other and spaced apart longitudinally of the track in a predetermined sequence of spacing;

each transponder comprising passive receiving means for receiving electromagnetic oscillations and passive transmitting means electrically connected to said passive receiving means and spaced from the receiving means for retransmitting the received electromagnetic oscillations, all said passive receiving means having the same first geometric relationship to the longitudinal center plane of said railway track and all of said passive transmitting means having a second different geometric relationship to the longitudinal center plane of the track, said two relationships being symmetrical about the longitudinal center plane of said railway tack;

the system further comprising a terminal located on the railway vehicle and comprising at least one transmitter in alignment with said passive receiving means and arranged to transmit electromagnetic oscillations to the passive receiving means of the transponders, and at least one receiver in alignment with said passive transmitting means and arranged to receive the retransmitted electromagnetic oscillations from the passive transmitting means of each transponder as the receiver passes thereby;

whereby the sequence and nature of the signals transponded by said ground station as said railway vehicle travels past said ground station constitutes a code group consisting of individual digits transponded respectively by successive transponders of said ground station;

said code group having information command code meaning and communicating said meaning from said ground station to said railway vehicle; and

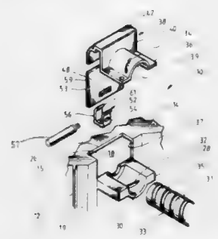
a decoder on said railway vehicle for decoding the information command code thus received by the receiver.

4,655,422

THERMALLY PROTECTED LAMP HOLDER HOUSING FOR USE IN RECESS LIGHTING FIXTURES

Jeffrey C. Kelsall, Roselle, Ill., assignor to Cooper Industries, Houston, Tex.

Filed Oct. 1, 1985, Ser. No. 782,844
Int. Cl.⁴ F16L *5/00*
U.S. Cl. 248—56 **15 Claims**



1. A lamp holder housing for use with flexible conduit, said lamp holder housing comprising:

a body having a peripheral sidewall, a closed end and an open end defining a hollow interior, said closed end adapted to mount a lamp socket, said body further including an access opening into said interior;

flange means extending externally from said peripheral sidewall proximate said access opening defining a first portion of a clamp for receiving the flexible conduit thereagainst;

bracket means defining a second portion of said clamp adapted to co-operate with said first flange means for securing said conduit to said body between said flange means and second portions, said bracket means further defining means extending through said access opening from said second portion into said hollow interior of said body in a predetermined spaced apart relationship with said sidewall, for mounting a thermal protective device adjacent said sidewall.

4,655,423

PLASTIC CLIP WITH INTEGRAL NAIL

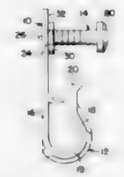
John N. Schavilje, Mt. Prospect, and E. Grant Swick, Bartlett, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 3, 1985, Ser. No. 740,154
Int. Cl.⁴ F16B *21/20*
U.S. Cl. 248—71 **1 Claim**

1. A combined plastic molded one-piece fastener composed

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of a plastic molded drive pin and a plastic molded fastening clip, said clip comprising an elongate rectangular-shaped base member, an integrally formed clip member at one end of said base member having a resilient bowed arm portion, and a mounting aperture formed through said base member at its other end, an integrally formed collar member extending outwardly from one side of said base member and having a central bore aligned with said mounting aperture and of the same diameter as said mounting aperture, said drive pin extending generally perpendicular to said base member and having a pointed end mounted in a pre-driven position within said mounting aperture and said central bore of said collar member



by a frangible connection, the exterior of said collar member having a truncated conical shape with its smaller diameter end formed about said mounting aperture, said frangible connection being formed between the largest diameter portion of said pointed end of said drive pin and the circumferential surface which defines said central bore adjacent the larger diameter end of said truncated conical shaped collar member, the length of said pointed end of said drive pin being greater than the sum of the thickness of said mounting aperture in said rectangular-shaped base member measured from said one side to the opposite side of said base member and the length of said integrally formed collar member so that said pointed end extends beyond said opposite side to said base member.

4,655,424

DEVICE FOR HOLDING ROD

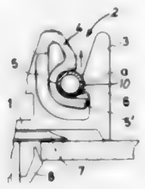
Tsutomu Oshida, Ichikawa, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Nov. 12, 1985, Ser. No. 796,855

Claims priority, application Japan, Nov. 19, 1984, 59-174353[U]

Int. Cl.⁴ F16L *3/10*

U.S. Cl. 248—73 **3 Claims**



1. A device for holding a rod comprising a base plate and one or more holding sections provided on said base plate, each of said holding sections including a rigid member extending upright from said base plate, and an elastic holding member having an upright portion extending from said base plate to an upper end and a folded-back portion extending from said upper end facing and spaced from said rigid member, said folded-back portion having a lower portion formed with a first laterally opening recess facing away from said upright portion and toward said rigid member, said rigid member having a second laterally opening recess confronting said first recess and having a hook portion below said second recess, part of the outer periphery of the rod being received in said recesses, said folded-back portion having a lower end portion extending below and outwardly of said second recess and capable of engaging with said hook portion from below when a rod is disposed in said recesses.

4,655,425

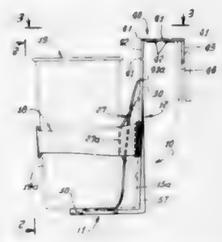
UNIVERSAL CUP HOLDER

Robert S. Wallace, Los Angeles, Calif.; Ian C. Goldey, and Terry L. Nelson, both of 6550 #1, Van Alden St., Reseda, Calif. 91335, assignors to Ian C. Goldey and Terry L. Nelson, both of Reseda, Calif., part interest to each

Filed Nov. 22, 1985, Ser. No. 800,712

Int. Cl.⁴ A47K *1/05*

U.S. Cl. 248—311.2 **6 Claims**



1. In a universal cup holder, the combination comprising
(a) a generally horizontal base to support a cup,
(b) an upright frame attached to the base, whereby the base is part of the frame,
(c) a retainer attached to the frame and extending generally horizontally above the base to retain the cup wall,
(d) a resilient pusher element supported by the frame to engage the cup wall and urge the cup toward the retainer,
(e) and means attached to the frame to attach the holder to a vehicle door,
(f) the retainer being a strap forming a loop,
(g) said pusher extending above and below the level of the strap loop and having hinged attachment to the frame substantially above the level of the loop, whereby the pusher may swing toward and away from the strap loop extent furthest from the frame,
(h) the pusher being vertically bowed toward the strap loop extent furthest from the frame, the lower portion of the pushed extending downwardly below the level of the strap loop, to engage the frame,
(i) the frame having a rear central panel defining a slot toward and away from which the pusher is swingable as accommodated by said hinged attachment,
(j) the frame extending upwardly and having side panels connected to the base, the central panel swingably supporting the pusher,
(k) the retainer being a molded plastic strap having opposite ends engaging and biased by said two side panels which are angled relative to the central panel to direct the strap in loop configuration.

4,655,426

ADJUSTABLE LEG FOR SUPPORTING A TABLE

F. Olaf von Dulong, Nixa, Mo., and Richard W. Herr, Marathon, Fla., assignors to Estec Ltd., Misitonas, Canada

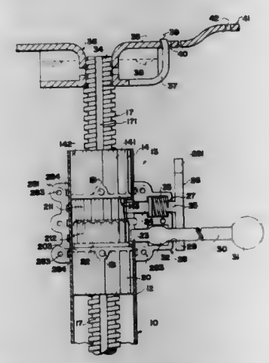
PCT No. PCT/US84/01821, § 371 Date Jun. 24, 1985, § 102(e) Date Jun. 24, 1985, PCT Pub. No. WO85/02242, PCT Pub. Date May 23, 1985

PCT Filed Nov. 7, 1984, Ser. No. 755,323

Claims priority, application United Kingdom, Nov. 7, 1983, 8329695

Int. Cl.⁴ F16M *11/00*

U.S. Cl. 248—405 **8 Claims**



1. A leg for supporting a table top the height of which can be varied comprising a support tube means for mounting substantially vertically, an externally screw threaded rod mounted within the support tube means axially thereof for supporting on an upper end thereof the table top and arranged so as to be axially movable from a retracted position at least partially within the tube means to an extended position to raise said table top, an opening in said tube at a position intermediate the length thereof and extending over a part only of the length thereof, a toothed gear member having peripherally mounted axially extending teeth and mounted within said tube means so as to surround said rod such that the teeth thereof over a part of a peripheral surface thereof are exposed at said opening, said gear member including an internal screw thread for cooperating with said externally screw threaded rod, a first and a second collar means each fixedly mounted within the tube means surrounding the rod and having an external surface in contact with an internal surface of said tube means, said rod having a longitudinal slot for engaging a projection of each of said collar means for preventing rotational movement of said rod relative to said collar means while allowing said axial movement, one of said collar means being mounted above said gear member and the other below said gear member to retain said gear member against axial movement whereby a rotation thereof acts to move said rod axially to said retracted and extended positions, a housing formed in two portions separated longitudinally of the tube means and arranged to clamp around the tube means at said opening, a manually operable lever mounted on said housing and arranged for reciprocation with said housing around an arc in a radial plane of the tube means, means limiting the angular extent of the arc, and a pawl mounted in said housing for reciprocation therewith for engaging said gear member and arranged to drive said gear member in one direction of reciprocation of said housing and to slip relative thereto in an opposed direction of the reciprocation of the housing, said pawl being rotatable about an axis at right angles to the leg through 180° so as to reverse the direction of drive and the direction of slip.

4,655,427

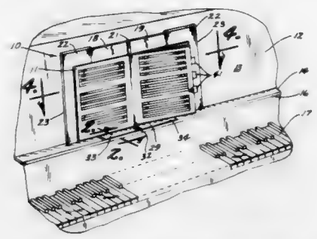
MUSIC PAGE HOLDER AND TURNER

William C. Lamb, 2909 Woodland Ave., Des Moines, Iowa 50312

Continuation-in-part of Ser. No. 681,282, Dec. 13, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 787,163

Int. Cl.⁴ A47G *29/00*

U.S. Cl. 248—460 **6 Claims**



1. A music page holder and turner assembly for holding sheet music, the assembly comprising:
(a) support means adapted to embrace and hold the sheet music in an open manner and with part of the sheet music held together to the left of the viewer, with part of the sheet music held together to the right of the viewer and with part of the sheet music left free and un-embraced between the left and right held music pages, said support means having a backing member foldable centrally thereof and with a bottom edge; and
(b) means provided for stiffening each free page, which stiffening means comprises a transparent envelope for receiving each free page whereby each stiffened page is adapted to rest relatively flat against the held music to the players right or left, the closed edge of said stiffening means disposed outwardly of each free page.

4,655,428

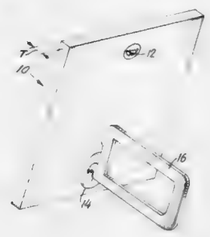
SUPPORT FOR A FRAME, PLAQUE OR THE LIKE

Charles McCrea, P.O. Box 149, Bohemia, N.Y. 11716

Filed Jan. 8, 1986, Ser. No. 817,042

Int. Cl.⁴ A47G *1/16*

U.S. Cl. 248—470 **16 Claims**



1. A structure comprising braceable means adapted for being selectively suspended from a suspending device or supported in standing position on a supporting surface, a receptacle inserted into said braceable means and provided with an opening whereby to enable hookingly engaging and suspending said braceable means, and key means insertable through said opening into said receptacle, said key means including a first section receivable within the receptacle and a second section extending from said receptacle to constitute a brace for said means, said receptacle and key means including cooperating means whereby the key means is rotatable between first and second

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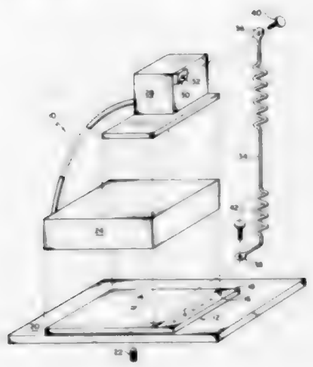
postures in one of which the first section of the key means is insertable into the receptacle for rotation therein and in the other of which the key means is locked in the receptacle with the second section in a position to brace the braceable means in standing position on the supporting surface, and locking means in said receptacle to engage the first section of the key means upon rotation of the latter and to hold the first section and thereby said key means in fixed posture, said receptacle including a wall defining an inner cylindrical bore and said locking means including substantially diametrically opposed pairs of extension on and extending inwardly of said wall.

4,655,429

SECURITY MOUNT

Todd Gaenzle, West Babylon, and William F. Ziedler, Selden, both of N.Y., assignors to Grumman Data Systems Corporation, Bethpage, N.Y.

Filed Oct. 7, 1985, Ser. No. 784,946
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—553 **6 Claims**



1. A security mount for securing at least one computer and at least one piece of peripheral equipment to a surface of the at least one computer, comprising:

a first pad fixedly attached to each of the at least one computer and containing a mounting aperture and a plurality of peripheral apertures;

means for securing said first pad to the surface;

means for fixedly attaching said first pad of each of the at least one computer;

a second pad fixedly attached to each of the at least one piece of peripheral equipment and containing an aperture;

means for fixedly attaching said second pad to each of the at least one piece of peripheral equipment; and

means for securing said second pad attached to each of the at least one piece of peripheral equipment to said first pad so that the at least one computer and the at least one piece of peripheral equipment is secured to the surface.

4,655,430

PASTRY MOULD WITH MOVABLE RIMS

Dolores Weber, and Vincent Weber, both of 257, Chemin de la Garrigue, 83300 Draguignan, France

PCT No. PCT/FR83/00089, § 371 Date Dec. 18, 1984, § 102(e) Date Dec. 18, 1984, PCT Pub. No. WO84/04231, PCT Pub. Date Nov. 8, 1984
PCT Filed May 10, 1983, Ser. No. 694,558
Claims priority, application France, May 4, 1983, 83 07562
Int. Cl.⁴ B29C *33/26*
U.S. Cl. 249—172 **9 Claims**



1. A pastry mould comprising:

(i) a flat base having two upstanding integral tongues thereon at spaced opposed positions adjacent the periphery of the flat base, each said tongue carrying a respective pivot means, and

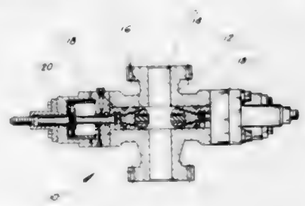
(ii) an enclosing rim in two half portions enclosing a continuous planar portion of said flat base, each said half portion having a pair of ends, each end being connected to a respective one of the tongues by said pivot means thereof, said rim portions each being movable about said pivot means into a position lying against the flat base, and into a position raised away from said base.

4,655,431

RAM-TYPE BLOWOUT PREVENTER

Paul E. Helfer, 7810 Moonmist, Houston, Tex. 77036, and Marvin R. Jones, 414 Flintdale Rd., Houston, Tex. 77024

Continuation of Ser. No. 439,590, Nov. 5, 1982, abandoned. This application Nov. 13, 1985, Ser. No. 798,135
Int. Cl.⁴ E21B *33/06*
U.S. Cl. 251—1.3 **9 Claims**



1. A blowout preventer comprising

a body having a central bore and aligned passages extending outwardly from opposite sides of said bore,

a ram assembly in each of said passages,

each of said ram assemblies including

a ram body having a face seal, a rear surface and seal means coacting with said face seal to isolate the passage behind said ram body from said central bore above said face seal,

pressure responsive means,

a passageway through said ram body from the central bore above said ram body face seal to the rear of said ram body and opening through said rear surface, and

a lost motion connection between between said ram body and said pressure responsive means,

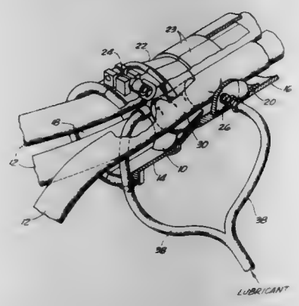
said lost motion connection including valve means for engaging said rear surface of said ram body in surrounding relation to the rear opening of said passageway to open and close said passageway responsive to movement of said lost motion connection whereby when said connection is urged inwwardly said valve means closes said passageway and when said connection is urged outwardly said valve means is moved away from said passageway to establish communication between the passage behind said ram body and said central bore above said face seal.

4,655,432

CABLE DISPENSING METHOD

Harold F. Woodruff, 2340 Avocado Ter., Hacienda Heights, Calif. 91745

Continuation of Ser. No. 154,609, May 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 124,132, Feb. 25, 1980, Pat. No. 4,331,322. This application May 24, 1985, Ser. No. 738,538
Int. Cl.⁴ B65H *59/00*
U.S. Cl. 254—134.3 FT **6 Claims**



1. A method for simultaneously placing at least three separate cables in a duct at least 500 feet long, the cables being at least as long as the duct and at least about 1¼ inches in diameter, the diameter of the cables being at least about equal to the diameter of the duct, the method comprising the steps of:

(a) supporting each of the three cables on its own rotatable reel, the cables each being at least 500 feet long;

(b) placing a guide into the duct, the guide having a body sized to fit within the duct, the body having a plurality of longitudinal channels along its perphery, the channels in cooperation with the internal walls of the duct forming a plurality of spaced apart longitudinally extending cable guide passages, each channel being sufficiently large that a cable can be pulled thorugh each guide passage, the guide having means for continuously introducing a lubricant into each channel at a point located inside of the duct, and in a radially outward direction relative to the longitudinal axis of the duct;

(c) feeding each of the cables simultaneously and separately from the reels into the guide in the duct;

(d) pulling the cables simultaneously through the duct via the guide; and

(e) while feeding and pulling the cables, lubricating the cables, including adjacent surfaces of the cables, by continuously introducing a lubricant through the lubricant introducing means of the guide onto the cables at points located inside of the duct, in radially outward directions relative to the longitudinal axis of the duct.

4,655,433

RISER TENSIONING SYSTEM

George W. Peppel, Arlington, and Paul E. Sullivan, Bedford, both of Tex., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Aug. 20, 1985, Ser. No. 767,349
Int. Cl.⁴ B63B *21/16*; B65H *75/48*; B66D *1/14*; F16F *1/48*
U.S. Cl. 254—364 **8 Claims**



1. A tensioner for exerting a relatively constant predetermined tension on a line securing a marine riser to a floating platform while permitting the line to be payed out and taken in by the tensioner for a predetermined distance as the floating platform moves relative to the marine riser, comprising:

a frame mounted on the floating platform and including a cylindrical portion for rotation about the first axis, a tapered drum having a groove formed therein for receiving the line, the groove extending in an outward spiral away from the first axis from a first end of the groove, the line being secured at a first end to the drum near the radially outermost extent of the groove and being wrapped around the drum in the groove as the line is taken in so that the radial distance between the first axis and the position where the line extends out of the groove decreases as the line is taken in on the drum, the second end of the line being secured to the marine riser;

an elastomeric element having a first and second end and being resiliently deformable in torsion about a torsional axis by rotating one of said ends relative the other end, said elastomeric element being comprised of first, second and third cylindrical elastomeric members, said frame providing a first platform rotatably mounted on the cylindrical portion near the first end for rotation about the first axis and a second platform mounted for rotational motion about the first axis at the opposite end of the cylindrical portion, the first cylindrical elastomeric member being secured at a first end to the drum and at its second end to the second platform, the second cylindrical elastomeric member being secured at a first end to the second platform and and at its second end to the first platform, the third cylindrical elastomeric member being fixed at its first end to the first platform and at its second end to the ring gear, the first, second and third elastomeric members thereby being positioned in series;

means for fixing the first end of the elastomeric element relative to the frame, the second end of the element being fixed to the drum for joint rotation therewith about the first axis, the torsional axis of the elastomeric element coinciding with the first axis;

the outward spiral of the groove being designed so that as the line is payed out and taken in, the predetermined

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tension on the line acting through the varying moment arm between the first axis and the point where the line leaves the groove compensates for variation in the moment exerted as the elastomeric element is deformed in torsion to maintain the predetermined tension on the line; a ring gear mounted on the cylindrical portion at the end of the cylindrical portion opposite the first end for rotation about the first axis, the first end of the elastomeric member being fixed to the ring gear, said ring gear having a ring of gear teeth; and

at least one motor assembly mounted on the frame, said motor assembly comprising a motor having a drive shaft, a pinion mounted on said drive shaft for joint rotation therewith, the teeth of the pinion engaging the teeth on the ring gear, and a motor brake for preventing rotation of the motor shaft, the motor being operable to rotate the ring gear about the first axis to place the elastomeric element in torsion to exert the predetermined tension on the line, the motor then being stopped and the motor brake being applied to prevent rotation of the ring gear.

4,655,434

ENERGY ABSORBING GUARDRAIL TERMINAL

Maurice E. Broostad, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 24, 1986, Ser. No. 855,853
Int. Cl.⁴ A01K *3/00*
U.S. Cl. 256—13.1 **7 Claims**



1. An energy absorbing guardrail terminal comprising,

a plurality of horizontally extending guardrails having overlapping ends,

a plurality of vertical breakaway posts supporting said guardrails,

mounting bolts securing the underlapped rails to the posts,

splice bolts connecting the overlapping ends of adjacent rails, and

a plurality of spaced openings in each rail longitudinally aligned with each of the splice bolts whereby the impact of a vehicle on the upstream end of the rails will shred out the rail material between the spaced openings to absorb the kinetic energy of the impacting vehicle,

means for allowing the first upstream rail to horizontally telescope over the next second adjacent rail, and thereafter the second rail to telescope over the third rail, said first upstream rail is of a lesser gauge thickness than the second rail.

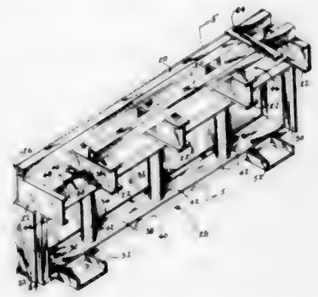
4,655,435

CATTLE GUARD

Daniel Joseph, Jr., and Phil T. Archuletta, both of P.O. Box 67, Ojo Caliente, N. Mex. 87549

Filed Dec. 26, 1984, Ser. No. 686,297
Int. Cl.⁴ A01K *3/00*
U.S. Cl. 256—17 **12 Claims**

1. A base for a cattle guard having a grid for preventing the passage of cattle across the guard, said base comprising: a pair of spaced side members; each of said side members having a side wall with a box-like flange member normal to said side wall and extending into said base; each of said flange members having an upper portion receiving said grid and a lower portion, each of said side members having at least one column positioned between said flange member upper and lower portions, said base having elements extending between said side members for retaining same in the spaced relationship, said



elements comprising channels extending between the lower portions of said side members.

4,655,436

METHOD AND APPARATUS FOR RECOVERING AND REUSING ENERGY FROM A MELTING FURNACE

Thomas W. Williams, 6100 Halifax Ave. South, Edina, Minn. 55424

Filed Dec. 10, 1985, Ser. No. 807,282
Int. Cl.⁴ F27D *13/00*
U.S. Cl. 266—44 **24 Claims**



1. An apparatus for recovering waste heat from a melting furnace and using the same to preheat a subsequent charge comprising:

a first heat exchanger for transferring heat from the effluent gas of said melting furnace to a heat transfer fluid;

a heat storage vessel having a housing defining a heat storage chamber and at least one heat maintenance chamber disposed within said heat storage chamber for maintaining a subsequent charge in a preheated condition;

first conducting means for conducting said heat transfer fluid from said first heat exchanger into said heat storage chamber;

heat transfer means for transferring heat from said heat transfer fluid to a subsequent charge for preheating the same;

second conducting means for conducting said heat transfer fluid from said heat storage chamber to said heat transfer means; and

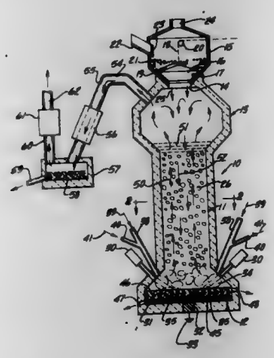
third conducting means for conducting said heat transfer fluid from said heat transfer means to said first heat exchanger.

4,655,437

APPARATUS FOR SIMULTANEOUSLY SEPARATING VOLATILE AND NON-VOLATILE METALS

Leonard Fritz, Romulus; Richard R. Osterberg, Canton; Richard B. Wolanski, Dexter, and Joseph E. Arvay, Trenton, all of Mich., assignors to Huron Valley Steel Corp., Belleville and Fritz Enterprises, Inc., Taylor, both of, Mich.

Division of Ser. No. 729,994, May 3, 1985. This application Feb. 3, 1986, Ser. No. 825,255
Int. Cl.⁴ C22B *4/00*
U.S. Cl. 266—197 **8 Claims**



1. A reactor for simultaneously separating volatile metals, including zinc and lead, and non-volatile metals, including copper, from material containing such metals or metal oxides comprising:

an open-ended, generally vertical shaft having its lower end opening into the top of an enlarged reaction chamber having a floor, and its upper end opening into the bottom of an enlarged, closed upper chamber;

a transferred arc plasma generator arranged within the reaction chamber to produce a plasma arc and a heat producing electron flow;

means for feeding a finely pulverized mixture of metals, which may be in the form of metallic oxides, containing zinc, lead and copper, and carbonaceous material, into the plasma generator heated reaction chamber along with oxygen containing gas for producing a reduction reaction, and wherein the non-volatile metal melts and forms a molten puddle upon the floor and a molten layer of slag is formed upon the puddle, and the volatile metal vaporizes and the vapors flow upwardly through the shaft and into the upper chamber;

means for substantially filling the shaft with a mixture of pieces of metallic bearing materials and of carbonaceous material so that the vapors rise upwardly through the filling;

the upper chamber being heated by the heat energy rising from the reaction chamber and being maintained at a temperature and pressure range sufficient to cause condensation of the lead vapors, but insufficient to condense the zinc vapors, wherein molten lead is condensed in the upper chamber and gravity feeds back down through the shaft and shaft filling to the puddle;

and a duct connected to the upper chamber and to a condenser located outside of the reactor for receiving uncondensed vapors from the upper chamber and condensing such vapors into molten metal;

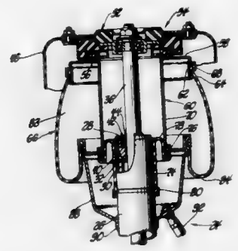
and the lower chamber having taps for periodically removing metal from the puddle and slag from the slag layer.

4,655,438

HYDRAULICALLY DAMPED DUAL SLEEVE AIR SPRING SUSPENSION

David S. Cameron, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1985, Ser. No. 812,835
Int. Cl.⁴ F16F *9/04*
U.S. Cl. 267—8 R **3 Claims**



1. A suspension strut for operatively mounting a road wheel assembly to a vehicle body and for pneumatically suspending the body with respect to the road wheel assembly comprising an elongated support tube having one end connected to said road wheel assembly and extending upwardly therefrom, shock absorber means operatively mounted in said support tube including an oil-filled cylinder tube mounted therein, a piston mounted for reciprocal movement in said cylinder tube and having a piston rod extending upwardly therefrom, an upper piston rod sealing member supported by said cylinder tube which slidably contacts and receives said piston rod to hydraulically seal said cylinder tube, an upper mount having radial inner and outer elastomeric parts, said inner elastomeric part resiliently connecting said piston rod to said vehicle body, a curved carrier having a body disposed around a portion of said piston rod and a top supported adjacent said radial outer elastomeric part of said upper mount for transmitting suspension loads thereto, an inner rolling lobe air sleeve having one end connected to said support tube and the other end connected to the lower end of said carrier, an outer piston fixed to said support tube, an outer rolling lobe air spring formed by an outer elastomeric sleeve having an upper end connected to said top of said carrier and a lower end connected to said outer piston, said outer piston being a profiled cup extending below said outer rolling lobe air spring and cooperating with said sleeves and said carrier to define a pressurized air chamber pneumatically isolated from said sealing member supported by said cylinder tube and from said upper mount.

4,655,439

SHOCK STRUT FOR A VEHICLE

Günther Handke, Euerbach, and Ernst Prozeller, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG

Filed Nov. 4, 1985, Ser. No. 794,759
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1984, 3442108
Int. Cl.⁴ B60G *15/00, 15/06*
U.S. Cl. 267—8 R **12 Claims**

1. A shock strut for a vehicle having a vibration damper and a vehicle support spring, the vibration damper includes an upwardly arranged axially extending generally cylindrically shaped container having an upper and lower end, the lower end of said container arranged to be connected to a wheel carrier, the upper end of said container arranged to have a piston rod extending upwardly therefrom out of the container for connection to the vehicle body, the vehicle support spring is a helical spring, a spring plate extending transversely of the axis of said container and rigidly attached to the container,

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intermediate the upper and lower ends thereof, said spring plate having an upper surface facing toward the upper end of said container and a lower surface facing toward the lower end of said container, a receiving member for said helical spring for preventing the lateral movement of the helical spring in the event of a spring failure is connected to said spring plate, wherein the improvement comprises that said receiving member extends generally in the axial direction of the container and has a lower end with downwardly directed projecting parts with the lower end of said receiving member bearing downwardly on the upper surface of said spring plate, said spring plate having recesses extending downwardly from the upper surface thereof and shaped so that said projecting parts extend into the recesses for securing said receiving member to said spring plate.



4,655,440

APPARATUS FOR CONTROLLING VEHICLE SPRING FIRMNESS

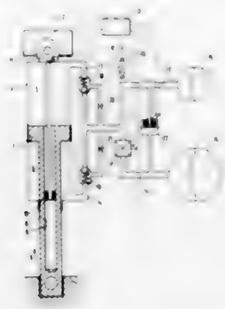
Konrad Eckert, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 12, 1985, Ser. No. 700,840

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414257

Int. Cl.⁴ F16F *5/00*; **B60G** *11/26*, *17/04*

U.S. Cl. 267—64.11 **15 Claims**



1. An apparatus for controlling a spring-type firmness of a road vehicle, comprising a hydraulic load bearing element, a hydraulic control slide valve having a damping cross section of selectable size, said hydraulic control valve arranged to simultaneously monitor a connection between two work chambers of said hydraulic load bearing element and first and second hydropneumatic reservoirs, said hydraulic load bearing element being capable of being expanded into a hydropneumatic spring including said first and second hydropneumatic reservoirs and switching means for selectively switching said control valve to switch fluid from said second hydropneumatic reservoir into or out of action relative to said first reservoir and said hydraulic load bearing element.

4,655,441

DEVICE FOR THE TRANSVERSE AND/OR LONGITUDINAL WORKING OF WOOD WORKPIECES

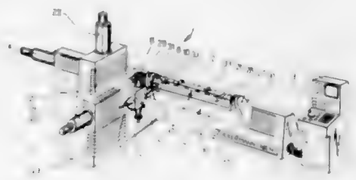
Erich Schmidt, Mauerbach, Austria, assignor to MZW-Maschinenfabrik Zuckermann Gesellschaft m.b.H., Vienna, Austria

Filed Nov. 22, 1985, Ser. No. 800,795

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1985, 8502434[U]

Int. Cl.⁴ A47G *27/04*

U.S. Cl. 269—61 **7 Claims**



1. A device for the transverse and/or longitudinal working of wood workpieces comprising a clamping table which is rotatable or pivotable about at least one axis and which is connected to an output shaft of a servo drive positioned along said axis, an output gear wheel having front and rear tooth flanks and connected via a drive gear to said servo drive and a sprocket wheel rigidly mounted on said output shaft, the sprocket wheel being in engagement with a tension chain exerting a torque on the output shaft in a predetermined rotational direction, one free end of the tension chain being connected to a controllable fluid cylinder so that in any rotational direction of the servo drive and the output shaft, either front or rear tooth flanks of the output gear wheel are constantly in contact with corresponding flanks of said drive gear.

4,655,442

X-Y POSITIONER

Erich Laukenmann, and Hans Bardroff, both of Bad Neustadt, Fed. Rep. of Germany, assignors to Preh Industrieausrustungen GmbH, Bad Neustadt, Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 713,436

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1984, 3410150; Jul. 28, 1984, 3427949

Int. Cl.⁴ B23Q *1/04*

U.S. Cl. 269—73 **5 Claims**

1. An X-Y coordinate positioning device comprising:

a stationary unit for supporting a slide member for movement along a first coordinate axis;

a lengthwise slide member supported for movement along said first coordinate axis by said stationary unit;

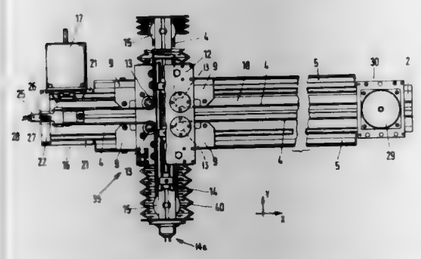
a plurality of direction turning surfaces on said lengthwise slide member;

a cross-slide member supported on said lengthwise slide member for movement along a second coordinate axis normal to said first coordinate axis;

a plurality of direction-reversing guides on the cross-slide member;

first motor-driven linear drive means stationary and coupled with said lengthwise slide member for linearly driving said slide member;

belt means having a pair of ends attached to one end of the stationary unit and being threaded through the lengthwise slide member and said cross-slide member over said plurality of direction turning surfaces and said plurality of direction reversing guides for moving said cross-slide member along the second coordinate axis; and



stepper motor means engaging said belt means for reversibly-driving said cross-slide member along said second axis.

4,655,443

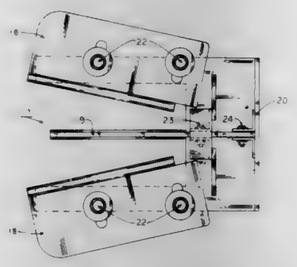
INSULATION HOLDER

Charlie C. Weeks, Rte. 1 Box 595, Franklinville, N.C. 27248

Continuation of Ser. No. 754,223, Jul. 12, 1985, abandoned, which is a continuation of Ser. No. 600,098, Apr. 13, 1984, abandoned. This application Jan. 16, 1986, Ser. No. 819,352

Int. Cl.⁴ B25B *1/00*

U.S. Cl. 269—156 **10 Claims**



1. A device for temporarily holding an electrical insulator having converging jaws whereby the insulator can be urged along the jaws into tight engagement and subsequently removed therefrom without changing the positioning of the jaws comprising: a base, a plurality of jaws joined to said base, a pair of said jaws each having a relatively wide flat top surface and a narrow smooth inner edge, said pair of jaws positioned side-by-side in coplanar relation with said inner edges opposingly positioned for engaging the insulator between said edges, a third jaw, said third jaw positioned below and between said pair of jaws each of said jaws having a pair of adjusting members passing through said jaws, each of said adjusting members defining separate pivot points, whereby said jaws can be angularly adjusted therearound.

4,655,444

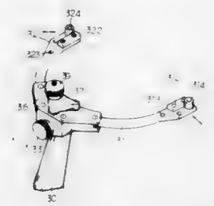
HOLDER FOR STRINGING A RACKET

Chieh-Shan Wang, Kaohsiung, Taiwan, assignor to Exthree Industrial Co., Ltd., Kaohsiung, Taiwan

Filed Apr. 7, 1986, Ser. No. 848,966

Int. Cl.⁴ B25B *5/14*

U.S. Cl. 269—156 **4 Claims**



1. A holder for stringing a racket comprising:

a base having at the top thereof two arc grooves and a central groove positioned between said arc grooves;

an intermediate received in said central groove and having at the two sides thereof two slots which overlap said arc grooves respectively;

a spring received in said central groove;

an adjusting screw having an actuating means screwing through said base, said spring and said intermediate;

two holding arms having at the one ends thereof two lugs respectively which respectively engages in said respective slots and arc grooves;

a mounting plate together with said base for confining said holding arms therebetween in a direction perpendicular to the adjusting screw axis; and

a clamping piece adapted to be controlled by a both-ends-threaded bolt and a nut for being capable of cooperating with said mounting plate for clamping the frame portion of said racket therebetween, so that when said adjusting screw is actuated, said intermediate will be moved against the force of the spring which in turn will simultaneously move said holding arms inwardly.

4,655,445

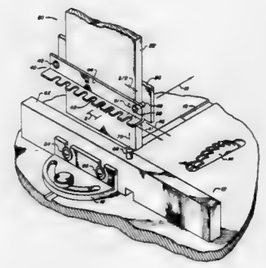
APPARATUS FOR POSITIONING A WORKPIECE WITH RESPECT TO A CUTTING ELEMENT

John B. Morse, 9 Durham St., Boston, Mass. 02115

Filed Jan. 2, 1985, Ser. No. 688,339

Int. Cl.⁴ B23Q *3/06*

U.S. Cl. 269—304 **7 Claims**



1. Apparatus for selectively positioning a workpiece having a planar surface adjacent to a guide on a substantially planar work surface, said guide being adapted for linear relative motion along a reference axis with respect to a cutting element,

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said reference axis being parallel to said work surface, said apparatus including means for selectively positioning said workpiece at selected ones of a plurality of predetermined lateral offsets with respect to said reference axis, comprising:

A. an indexing member including a first planar sheet portion having a plurality of index holes passing completely therethrough establishing a line-of-sight through each of said holes from one side of said portion tothe other, said index holes being disposed along an indexing axis with interhole separations along said indexing axis corresponding to said predetermined lateral offsets,

B. an elongated index pin element extending along a pin axis, said pin element being adapted to fit through each of said index holes and interferingly engage said holes,

C. means for affixing said indexing member to one of said workpiece and said guide, and means for affixing said index pin element to the other of said workpiece and said guide, whereby said workpiece may be positioned adjacent to said indexing member and said guide with said workpiece having the principal plane of said planar workpiece surface angularly offset with respect to said work surface and said pin element extending through and in inteferring engagement with one of said index holes,

wherein said indexing member includes said first planar sheet portion and a second planar sheet portion, said first and second planar sheet portions being elongated in the direction of said indexing axis, said first and second planar sheet portions being offset by substantially ninety degrees and extending from a common axis parallel to said indexing axis, wherein said second portion being adapted for fixture to said workpiece,

wherein said index pin element is adapted for fixture to said guide with said indexing axis being angularly offset with respect to said work surface, wherein said index holes are spaced uniformly along said index axis with an interhole spacing S, and

wherein said second portion includes a plurality of workpiece stop pin holes passing therethrough along axes perpendicular to the principal plane of said second portion, wherein said stop pin holes are spaced apart by S/2 in the direction of said indexing axis and are adapted to permit passage of a stop member therethrough.

4,655,446

STORAGE COMPARTMENT FOR DOCUMENTS

Arnuin Heindke, and Joachim Radtke, both of Villingen-Schwenningen, Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

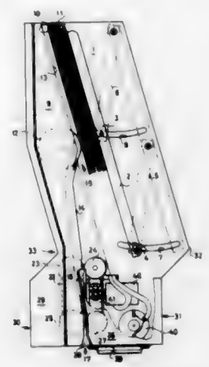
Filed Feb. 8, 1985, Ser. No. 699,668

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404751; Oct. 26, 1984, 3441436

Int. Cl.⁴ B65H *29/22*

U.S. Cl. 271—314 **3 Claims**

1. A storage compartment device for selective use as an individual compartment attachable to a document processing device or for combination with a plurality of identical modules into a sorting device, comprising a base plate, a storage compartment formed on the base plate, means for conveying the documents from an inlet side of the base plate into the storage compartment, the conveying means including drive rollers and pressure rollers, a motor attached to the base plate for driving the drive rollers, the pressure rollers mounted on a rocking lever pivotable between a first position in contact with the drive rollers and a second position swung away from the drive rollers, electromagnetic coupling means for pivoting the pressure rollers between the first and second positions, a housing member mounted on the base plate for housing the motor and coupling means, wherein the electric current supply for the motor and the electromagnetic coupling means is effected through a plug-type member connected to the base plate, the



plug-type member forming the only mechanical connection to the document processing device or sorting device.

4,655,447

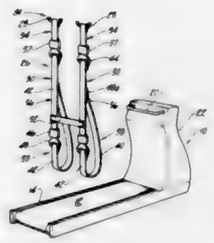
TREADMILL ASSEMBLY

Max M. Dubrinsky, 6324 Rose Blvd., West Bloomfield, Mich. 48033, and Mary S. Edwards, 6478 Rustic Ridge Trail, Grand Blanc, Mich. 48439

Filed Aug. 2, 1985, Ser. No. 761,796

Int. Cl.⁴ A63B *23/06, 1/00*

U.S. Cl. 272—69 **8 Claims**



1. A safety apparatus for use with a motorized treadmill consisting of:

(A) support means positioned over said treadmill; and

(B) a harness suspended from said support means, said harness including two spaced straps with each strap having first, second and third sections;

said first section attached at one end to said support means and at said opposite end to a first quick disconnect;

said second section attached at one end to said first quick disconnect and at said opposite end to a second quick disconnect, said second section being positioned adjacent the back of the user;

said third section attached at one end to said second quick disconnect and fixed at said opposite end to said second section between said first and second quick disconnects; and

catch band means extending between and fixed to said second sections;

whereby, said third section is adapted to pass upwardly under the groin and over the shoulder of the user such that said harness does not support said person during operation of said treadmill but will function in response to collapse of the user while running on the treadmill to catch the user in a seated position and prevent the user from falling off the treadmill.

4,655,448

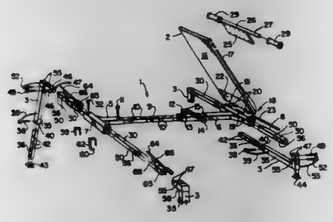
EXERCISE APPARATUS

John Harder, #10 14731 - 34 St., Edmonton, Alberta, Canada

Filed Jun. 3, 1985, Ser. No. 740,729

Int. Cl.⁴ A63B *21/00*

U.S. Cl. 272—144 **3 Claims**



1. An exercise device comprising a main frame and a back portion hingedly attached to said main frame at one end thereof; said main frame comprising first and second T-shaped sections; an extension bar extending between and connecting said T-shaped sections; four leg beams extending outwardly from each end of said first and second T-shaped sections in a direction generally perpendicular to said extension bar whereby two of said four leg beams are connected to said first T-shaped section and extend in opposing directions and other two of said four leg beams are connected to said second T-shaped section and extend in opposing directions; four legs, each leg pivotally attached to one of said leg beam at the end remote from the T-shaped section so that said legs may be pivoted from a closed postion in which the legs lie parallel to and adjacent the leg beams, to an open position in which the legs extend downwardly, generally perpendicular to the leg beams, whereby selectively opening and closing said legs one can vary the height of either the front or the back of the device; means on each leg for locking the legs in said open position; means on each leg beam to hold the legs in said closed position; four flexible rubber bushings positioned on the ends of said legs remote from end connected to said leg beam so that when said legs are locked in said open position, said bushings allow a flush contact with the surface upon which the device is being used; four more flexible rubber bushings positioned on the side of said legs near the end of said legs adjacent the end which is connected to said leg beams so that when said legs are in said closed position said four more bushings make a flush contact with the surface upon which the device is being used; and foot rest portions adjustably attached to said leg beams which extend from said second T-shaped section of said main frame; said back portion further comprising a rigid padded board; hinge means positioned on one end of said board for pivotally attaching said board to said first T-shaped section of said main frame; and handle means attached to other end of said board; said back rest portion extending from said first T-shaped section; whereby one positions one's self on the device by laying on one's back on said back rest portion with one's head positioned near said hinged end and one's feet engaging said foot rest portions and one then can exercise by pushing with one's feet and legs, arching one's back and neck and pulling on said handles with one's arms so that one causes the back rest portion to rise and pivot about said hinged end and thus lifting a portion of one's body.

4,655,449

RACKET HAVING A GRIP MEMBER SPACED FROM THE HANDLE

Terrance H. Chamness, 7979 Westheimer, Y535, Houston, Tex. 77063

Continuation-in-part of Ser. No. 579,770, Feb. 13, 1984, abandoned. This application Sep. 3, 1985, Ser. No. 772,014

Int. Cl.⁴ A63B *49/08*

U.S. Cl. 273—73 J **19 Claims**



19. An improved tennis racket comprising:

(a) a head attached to a handle, and a hollow elongated two hand grip member also attached to said handle;

(b) said grip member having an inner end, an outer end, and a first longitudinal opening extending from said outer end toward said inner end and terminating at a selected distance to receive a portion of said handle such that said grip member is rigidly connected to said handle;

(c) the remaining length of said handle between said connection and said head defining a flexure section;

(d) a second longitudinal opening peripherally larger than said first longitudinal opening and extending from the termination of said first opening towards said inner end so as to define an annular cavity around and along a portion of said flexure section such that said grip member does not contact said handle.

4,655,450

HEAD GRIPPING APPARATUS FOR A NECK EXERCISING MACHINE

Burton L. Rogers, Jr., 541 Caswell Ave., Toledo, Ohio 42609, and Leonard O. Greninger, 7062 Altara Dr., Sylvania, Ohio 43560

Filed Aug. 13, 1984, Ser. No. 639,721

Int. Cl.⁴ A63B *23/00*

U.S. Cl. 272—94 **27 Claims**

1. An apparatus for gripping a head for use, for example, with a neck exercising machine comprising:

a pair of opposed side pads adapted to be selectively moved inwardly toward one another to engage the opposing sides of the head;

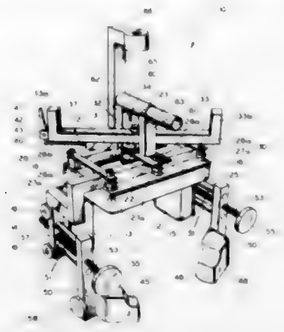
a chin pad carried by each of said side pads and movable inwardly therewith for engaging the opposing sides of the chin of the head;

positioning means connected between each of said side pads and said respective chin pad carried thereby for selectively moving each of said chin pads inwardly and outwardly relative to said respective side pad and for selectively moving each of said chin pads forwardly and rearwardly relative to said respective side pad; and

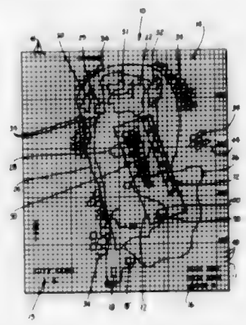
means for selectively simultaneously moving said side pads,

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and said chin pads and said positioning means carried respectively thereby, inwardly so as to engage the opposing sides of the head and chin and grip the head and chin therebetween.

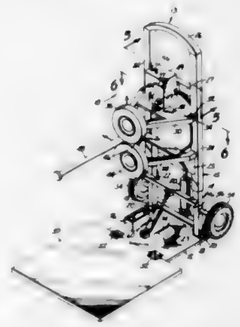


4,655,451
GOLFER'S AID APPARATUS AND METHOD OF USE THEREOF
Peter A. Townsley, Atlanta, Ga., assignor to Omni Concepts, Inc., Atlanta, Ga.
Filed Feb. 13, 1984, Ser. No. 579,579
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—32 H **2 Claims**



1. A golfer's aid apparatus, comprising:
a sheet member having markings disposed thereon comprising a diagram of an actual golf hole to be played by a golfer, said golf hole diagram including markings corresponding to the tee area, fairway, green, hazards and landmarks of said actual golf hole disposed onto orthogonal indicia comprising a plurality of uniformly spaced apart increments of distance according to a selected scale; and
a transparent overlay having a shooting pattern disposed thereon comprising a schematic representation of the ability of said golfer to play each of a defined set of golf clubs,
said shooting pattern defining a plurality of discrete areas provided according to said selected scale, each of such areas being identified by indicia corresponding to the indicia designating said golf clubs and further and corresponding to the average range of distance and average range of dispersion achieved by said golfer upon hitting a predetermined number of golf balls with said designated golf club,
whereby placement of said transparent overlay onto said sheet member in such a manner as to superimpose said shooting pattern of said golfer onto said golf hole diagram provides a visual comparison of said golfer's shooting pattern to said hole diagram, such that said golfer determines the preferred club with which to to play a particular shot by selecting the club corresponding to the club designation of the area disposed immediately above a target area.

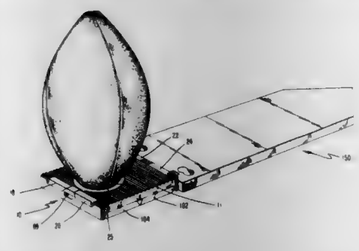
4,655,452
BATTING PRACTICE DEVICE
Eugene W. Huerstel, 10055 - 204th St. North, Forest Lake, Minn. 55025
Filed Jan. 28, 1985, Ser. No. 695,296
Int. Cl.[4] A63B *69/40*
U.S. Cl. 273—26 R **34 Claims**



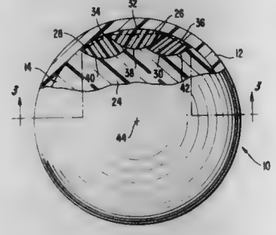
1. A batting practice device including:
a base;
a frame mounted to the base and oriented in a generally vertical position;
first wheel means which is undriven except when contacted by a baseball bat in use having an outer circumference and being mounted with respect to the frame for rotation about an axis generally perpendicular to the frame;
second undriven wheel means which is undriven except when contacted by a baseball bat in use having an outer circumference and being mounted with respect to the frame for rotation about an axis generally perpendicular to the frame;
means for mounting the first and second wheel means to the frame and for allowing relative movement therebetween, the outer circumference of the first wheel means cooperating with the outer circumference of the second wheel means to form an unobstructed nip through which a bat is swung during practice; and
bias means for applying a bias force to urge the outer circumferences of the first and second wheel means together.

4,655,453
ALL-PURPOSE FOOTBALL PLACE KICKING TEE
H. Jay Spiegel, 2112 Whiteoaks Dr., Alexandria, Va. 22306, and Louis R. Groza, 287 Parkway Dr., Berea, Ohio 44017
Continuation-in-part of Ser. No. 546,096, Oct. 27, 1983, abandoned. This application Jul. 10, 1984, Ser. No. 629,429
Int. Cl.[4] A63B *67/00*
U.S. Cl. 273—55 B **43 Claims**

43. A football supporting means comprising a base portion and a recess in said base portion shaped at least partially in general conformance with the shape of the end of an oblate spheroidal football, a lateral opening in said recess, said opening having a depth substantially the same as the depth of said recess adjacent thereto and resilient rib means within said opening cooperating with said recess and resiliently engaging surfaces of said football when said football is placed in said recess to aid in retaining said football therein.

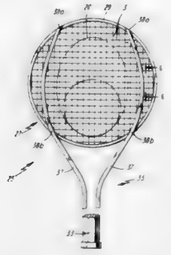


4,655,454
BOWLING BALL
Jay D. Amburgey, 1710 N. Dotsy, Odessa, Tex. 79761
Filed Jan. 13, 1986, Ser. No. 818,328
Int. Cl.[4] A63B *37/10*
U.S. Cl. 273—63 E **12 Claims**



1. A bowling ball comprising:
an outer shell of uniform thickness and having an outer spherical surface; and
a core including a main body and a plurality of weight blocks, said main body and said weight blocks combining to form a solid sphere, said weight blocks being of a uniform size and shape, each of said weight blocks being symmetrical about a center axis thereof, said center axes extending through the center of the ball;
said shell completely encasing said core;
each of said weight blocks having an upper curved surface, said upper curved surfaces having a constant radius from the center of the ball;
each of said weight blocks having a lower surface, said upper and lower surfaces intersecting to form an edge on each said weight block, said lower surfaces being closest to the center of the ball along said center axes, the distance from the center of the ball to the lower surfaces continually increasing from said center axes to said edges;
said weight blocks having a greater density than said main body;
wherein the largest cross sectional area of said blocks perpendicular to said center axes is located at said edges.

4,655,455
SPORTS RACKETS
Shozo Kurusu, 109 Stratford Pl., Charleston, W. Va. 25303
Filed Jun. 5, 1985, Ser. No. 741,212
Int. Cl.[4] A63B *49/02*
U.S. Cl. 273—73 C **6 Claims**



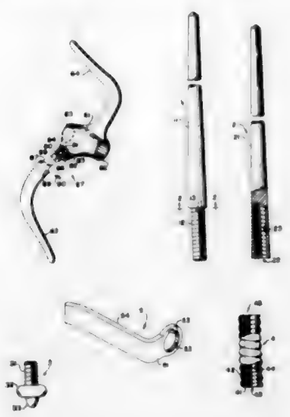
4. A sports racket from playing tennis and the like, comprising a first frame defining a racket head; plural transversely and longitudinally extending strings mounted within and connected to said first frame to form a strung grid having a ball-engaging surface on each face of the strung grid racket; and a second frame connected to said first frame and being formed with a hand grip and first and second frame arms projecting outward from the hand grip, each first and second frame arm respectively having two points of connection with said first frame, the points of connection of each arm located respectively at upper and lower portions of the first frame relative to a plane perpendicular to the plane defined by said strung grid and transverse to the longitudinal axis of the racket; said first and second frame arms, between their respective points of connection with the first frame, each comprising upper and lower frame members extending respectively above and below the plane defined by said strung grid; said first and second frame members, between their respective points of connection with the first frame, being positioned inwardly of the first frame towards said strung grid.

4,655,456
BUDO COMPLEX WEAPON
Yin-Chiao Chen Dai, No. 13, Hsi Chang Rd., Feng-Lung Tsun, Chin-Tung Hsiang, Pingtung Hsien, Taiwan
Filed Jan. 13, 1983, Ser. No. 457,697
Int. Cl.[4] F41B *15/00*
U.S. Cl. 273—84 R **2 Claims**

2. An apparatus kit having a plurality of interconnectable structural elements comprising:
an element having a bar portion (**11**) with a top and bottom bar portion, and a threaded bolt (**12**) extending from the bottom bar portion of said bar portion;
an element having a flange portion (**32**), a threaded bolt portion (**31**) one end of which connects to said flange portion (**32**), and a butt portion (**33**) extending from the rear end of said flange portion;
a hollowed sleeve nut (**4**);
an element having a central section (**61**), said central section having a through hole (**62**), said through hole having a notch on at least one end thereof (**63**), a fixed hook (**64**) extending from one side of said central section (**61**), and an

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adjustable hook (65) mounted on said central section (61); and



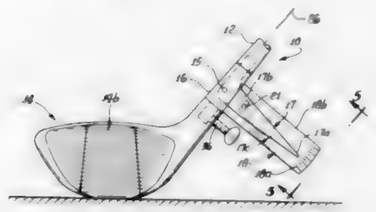
means for locking said movable hook in a predetermined fixed relationship to said central section (61).

4,655,457

SYSTEM TO FIT GOLF CLUB TO GOLFER

Stanley C. Thompson, 2707 S. Fairfax Ave., Culver City, Calif. 90230

Filed Oct. 9, 1985, Ser. No. 785,748
Int. Cl.[4] A63B *53/06*
U.S. Cl. 273—162 R **14 Claims**



1. In a system for fitting a golf club to a user-golfer, and employing a fitting club having a shaft, a handle on the shaft, and a head having a face, the combination comprising

(a) a first pivot on the golf club proximate the head to accomodate adjustment pivoting of the head relative to the shaft, and to a selected angular postion about a first axis extending generally transversely to the shaft,

(b) indicator means associated with said pivot to indicate the extent of said adjustment pivoting,

(c) and including a second pivot on the golf club proximate the head to accomodate adjustment pivoting of the head relative to the shaft and about a second axis extending generally in the direction of ths shaft, and between first and second positions in each of which the head is pivotable about said first axis relative to the shaft, the indicator means operable in one of said head positions to indicate the lie of the head and club, and operable in the other of the head positions to indicate head face angularity relative to the shaft,

(d) said first and second positions being located with 90° angularity therebetween, about an axis extending generally in the direction of the shaft,

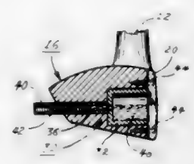
(e) said indicator means including a marker, and an angular indicia carrier located to cause the marker to progressively register with successive of said indicia during said pivoting, one of the marker and carrier carried by the shaft, and the other of said marker and indicia carried by the head.

4,655,458

DYNAMICALLY WEIGHTED GOLF CLUB

Raymond I. Lewandowski, 2426 N. Clybourn Ave., Chicago, Ill. 60614

Filed Dec. 20, 1985, Ser. No. 811,832
Int. Cl.[4] A63B *53/04, 53/06*
U.S. Cl. 273—170 **7 Claims**



1. A golf club comprising:

a shaft having a handle at one end and a club head with a face at the opposite end;

a substantially cylindrical cavity centrally defined longitudinally through said club head perpendicular to the face;

a weighting chamber of controllable weight having a shape substantially similar to and adapted to fit within said cavity and adapted to displacably contain a selected volume of liquid-like material; said chamber including a substantially cylindrical main cavity closed at one end and communicating at the other end with one end of a substantially cylindrical control cavity, said control cavity being open on its other end and having a diameter substantially smaller and a length substantially greater than said main cavity; said chamber further including means provided at the open end of said control cavity for controllably adjusting the internal volume and length of the weighting chamber and hence the extent of possible displacement of the liquid-like material within the chamber; and

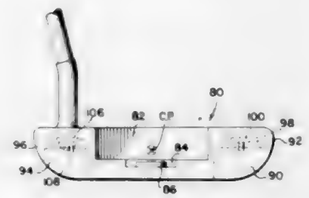
means to rigidly secure said weighting chamber within the cavity in the club head.

4,655,459

GOLF CLUB HEAD

Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204

Filed Dec. 4, 1985, Ser. No. 804,394
Int. Cl.[4] A63B *53/04*
U.S. Cl. 273—171 **4 Claims**



1. A golf club head having a heel, center, toe, upper surface, bottom surface, rear surface, and ball striking face; wherein the improvement comprises:

a mass distribution means, including a first mass adjacent said bottom surface at said center of said golf club head between said heel and said toe, said first mass being further

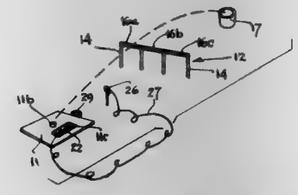
defined by a first cavity in said upper surface located between said heel and said toe and behind said ball striking face and extending downwardly from said upper surface; a second mass adjacent said upper surface in said toe of said club head, said second mass being further defined by a second cavity located in said bottom surface and in said heel of said golf club head and extending upwardly from said bottom surface into said club head; and a third mass adjacent said upper surface in said heel of said club head, said third means being further defined by a third cavity located in said bottom surface and in said toe of said club head and extending upwardly from said bottom surface into said club head, said first mass in said bottom surface being below a plane parallel to said bottom surface and perpendicular to said ball striking face and extending through said center of percussion on said ball striking face; and said second and third masses adjacent said upper surface being above said plane, whereby said masses are concentrated above said center of percussion of the heel and toe locations of said club head and below said center of percussion at the central portion of said club head.

4,655,460

GOLF PRACTICE DEVICE

Doris D. Hambright, 1510 1/2 E. Sycamore, El Segundo, Calif. 90245

Filed Jan. 21, 1986, Ser. No. 820,308
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—185 C **10 Claims**



1. A device for practicing golf driving, pitching, and chipping, comprising

a portable mat having a plurality of simulated turfs and a simulated tee thereon,

a simulated practice golf ball which is substantially lighter than a standard golf ball,

means for tethering said ball, and

fence hurdle means adapted to be spaced from said mat by a predetermined distance, said fence hurdle means being formed by a plurality of separate stake members adapted to be arranged in a line, and a plurality of separate flexible strip means for interconnecting said stake members to form a substantially linear strip running along a line which is a predetermined distance above the level of the mat.

4,655,461

GAME BOARD APPARATUS UTILIZING A LOTTERY PRINCIPLE

Albert Capri, Vincentown, and Samuel C. Capri, Edgewater Park, both of N.J., assignors to Games 'n Things Inc., Vincentown, N.J.

Filed May 21, 1984, Ser. No. 612,610
Int. Cl.[4] A63F *3/00, 3/06;* **A63B** *71/00*
U.S. Cl. 273—249 **11 Claims**

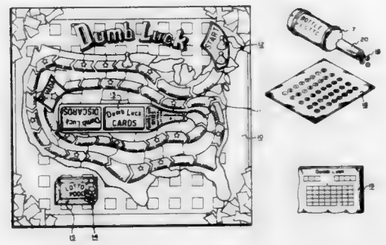
1. Game board apparatus of chance for play by a plurality of players comprising:

a game board having a path of progression formed of a series of stations between a starting station and a finish station;

a plurality of player markers adapted to be positioned and moved from station to station along the path of progression in accordance with the rules of play of the game;

first chance-taking means including a plurality of one of a kind individually unique indicia providing random individual one time selection thereof; and

player indicia selection means permitting each player to individually select a prescribed number of individually



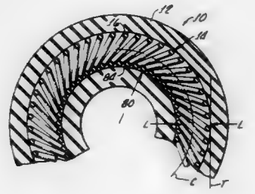
unique indicia whereby repeated play of the first chance-taking means produces a series of randomly selected one of a kind individually unique indicia to ultimately match each of the prescribed number of individual indicia chosen by a given player to produce a condition of winning for that player in the nature of a lottery in accordance with the rules of play of the game.

4,655,462

CANTED COILED SPRING AND SEAL

Peter J. Balsells, 17592 Sherbrook Dr., Tustin, Calif. 92680, assignor to Peter J. Balsells and Joan C. Balsells, both of Tustin, Calif.

Filed Jan. 7, 1985, Ser. No. 689,451
Int. Cl.[4] F16J *15/24;* **F16F** *1/06*
U.S. Cl. 277—164 **23 Claims**



1. A continuous, garter-type coiled spring comprising:

a plurality of coil means, each said coil means being interconnected with one another in a spaced-apart relationship and disposed at a preselected acute angle with a centerline of the coiled spring for causing the coiled spring to exert a force in a loading direction approximately normal to a tangent to the centerline in response to deflection of the coiled spring along said loading direction, said force being generally constant over a preselected range of deflection of the coiled spring along the loading direction.

4,655,463

GASKET ASSEMBLY FOR OIL PAN VALVE COVERS AND THE LIKE

Josefino T. Inciong, Skokie, and Edward S. Widder, Niles, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed Sep. 5, 1986, Ser. No. 903,603
Int. Cl.[4] F16J *15/12*
U.S. Cl. 277—180 **4 Claims**

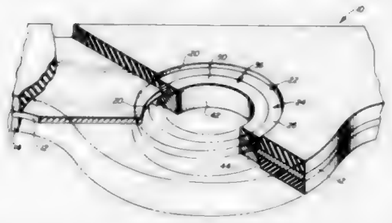
1. A gasket assembly comprising

a main body having a pair of side sections, each comprising

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a self-supporting core member and compressible facings fast with said core member and defining fastener openings through which fasteners are adapted to pass, said core members extending along said side sections of the gasket assembly, said facings and said core providing side sections of a first thickness, and end portions joining said side sections, and

separate compression stoppers in said fastener openings, said compression stoppers being compression and high-temperature resistant, and being secured in said openings in



said main gasket body, said compression stoppers comprising a pair of press-fit annuli together defining a peripheral groove means in which said core member is disposed, thereby to retain said compression stoppers in said fastener openings and in a predetermined relationship to the outer surfaces of said facings, and said compression stoppers being of a second thickness less than said first thickness, whereby when said gasket assembly is disposed to be compressed between elements to be sealed, said compression stoppers limit compression of said gasket assembly to prevent destruction of said gasket assembly.

4,655,464

DRILL CHUCK FOR A HAND-HELD DEVICE

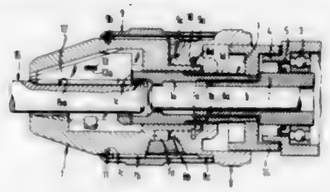
Erwin Masschitz, Germering; Karl-Heinz Gärtner, Schöngaising; Josef Hauger, Olching; Manfred Spieth, Martinsried, all of Fed. Rep. of Germany; Hans-Karl Moser, Tisis, and Jürgen Mündle, Satteins, both of Austria, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed May 21, 1985, Ser. No. 736,473

Claims priority, application Fed. Rep. of Germany, May 21, 1984, 3418881

Int. Cl.⁴ B23B *31/12*

U.S. Cl. 279—64 **10 Claims**



1. Drill chuck for a hand-held device, such as a percussion drill, a drill hammer, for retaining a tool in the device comprising an axially extending tubular chuck member, at least two clamping jaws mounted in said chuck member and being radially displaceable relative to the axis of said chuck member, said chuck member having an axially extending inner edge and an axially extending outer edge with the inner and outer edge being spaced apart in the radial direction, an axially extending first sleeve in general axial alignment with said chuck member, said first sleeve has a first end and a second end and laterally encloses said clamping jaws and has an inside axially extending surface tapered relative to the axis thereof with the radially outer edges of said clamping jaws arranged to contact said tapered surfaces, said first end of said first sleeve arranged to receive a tool shank to be secured in said drill chuck, said first sleeve being axially displaceable and non-rotatable relative to said chuck member, an axially extending second sleeve in general axial alignment with said first sleeve and extending around and disposed in threaded engagement with said chuck member, said second sleeve having a first end and a second end with said first end thereof located adjacent the second end of said first sleeve and with the second end thereof spaced from the first end in the direction opposite to the first end of said first sleeve, gear teeth located adjacent the first end of said second sleeve, a radially inner extending recess in said first sleeve adjacent the second end thereof and said recess being open toward said gear teeth on said second sleeve so that a gear tooth key can be inserted into said recess into meshed engagement with said gear teeth on said second sleeve, an axially extending third sleeve in general axial alignment with said first and second sleeves and positioned radially outwardly from said first and second sleeves, said third sleeve being axially displaceable relative to said first and second sleeves between a first position and a second position, said second sleeve being non-rotatable relative to said first sleeve in the first position of said third sleeve and being rotatable relative to said first sleeve in the second position of said third sleeve.

4,655,465

ICE SKATE

Gaston Schaeffer, Klosters, Switzerland, assignor to Lyle Giffin, Blenheim, Canada

Filed Dec. 2, 1985, Ser. No. 803,602

Int. Cl.⁴ A63C *17/18*

U.S. Cl. 280—11.12 **20 Claims**



1. In an ice skate having a blade secured to a boot with the boot providing lateral support for the ankle of a user and covering the achilles tendon region above a heel receiving portion of said boot, the improvement comprising a weakened area in the achilles tendon region straddling a vertical centerline of said boot and blade, said weakened portion reducing the strength of said boot above said heel receiving portion with respect to both lateral rigidity and forward and rearward flexing of the boot about the ankle, and a reinforcing member covering said weakened portion and secured to said boot to provide additional strength with respect to lateral rigidity at said weakened area, said reinforcing member being modified to accommodate said forward and rearward flexing of said boot about said ankle by means of a series of slits in said reinforcing member extending generally across said achilles tendon region and said weakened area.

4,655,466

CART

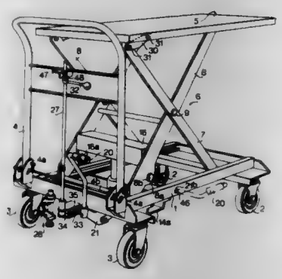
Hiroshi Hanaoka, Tokyo, Japan, assignor to Hanaoka Sharyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 507,714, Jun. 23, 1983, abandoned. This application Jan. 9, 1986, Ser. No. 817,774

Claims priority, application Japan, Mar. 31, 1983, 58-47468[U]

Int. Cl.⁴ B62B *3/02*

U.S. Cl. 280—47.37 R **1 Claim**



1. A cart having a frame, front and rear wheels, and a handle, comprising:

a pair of elevating link mechanisms mounted on said frame, each comprising a pair of arms pivotally connetted to each other at intermediate position thereof;

rollers provided on both ends of each of said arms;

a carrier mounted on said link mechanisms;

guide rails provided on said frame and on the underside of said carrier for guiding said rollers in the fore-and-aft direction;

a hydraulic jack vertically provided on said frame;

a ram receiver engaging with a ram of said hydraulic jack, said ram receiver being supported on two corresponding arms at lower portions thereof and rotatable about a lateral axis;

a pump for supplying liquid to said hydraulic jack;

first means for operating said pump;

second means for connecting upper portions of corresponding two arms with said carrier;

said first means comprises a pedal and a link mechanism, which is operated by operator's foot;

wherein said pedal is removable from said link mechanisn and is adapted to be attached to said frame for transporting the cart.

4,655,467

STEERABLE TORSION AXLE

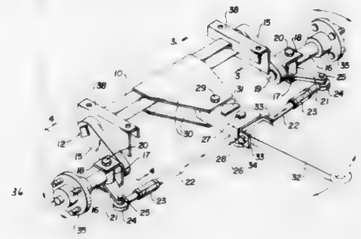
James A. Kitzmiller, New Bremen, and Kevin D. Sell, Wapakoneta, both of Ohio, assignors to Airstream, Inc., Jackson Center, Ohio

Filed Mar. 19, 1985, Ser. No. 713,699

Int. Cl.⁴ B60G *11/22*

U.S. Cl. 280—81 B **5 Claims**

1. A steerable torsion axle comprising a torsion axle assembly having a torsion axle tube member and mounting brackets on the tube member near its opposite ends, torsion shafts and coacting resistance elements disposed within opposite end portions of the tube member. vertically swingable torsion arms secured to said shafts substantially at the ends of the tube member and outwardly of said mounting brackets, steerable wheel spindles on said torsion arms including horizontally swingable steering arms, and a steering linkage means interconnecting the steering arms, said steering linkage means comprising tie rods connected by means of ball swivels to said steering arms, gusset plate means fixed to said torsion axle tube member near the center therof and extending forwardly thereof, a drawbar having a pivotal connection with the tie rods and another pivotal connection with said torsion axle tube member, said another pivotal connection comprising a vertical axis pivot element connecting the rear end of said drawbar with the forward end portion of said gusset plate means, an oversteering



prevention stop element on said drawbar having rearwardly converging edges adapted to engage a frontal transverse edge of said gusset plate means, and a draft tongue connected with said drawbar and extending forwardly of the drawbar and said tie rods.

4,655,468

SPRAY DEFLECTORS FOR VEHICLES

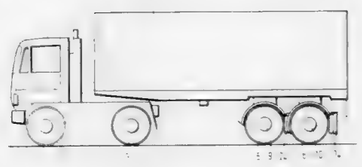
Douglas J. Cunningham, Portsmouth, England, assignor to BSG International Plc., Birmingham, England

Filed Mar. 12, 1986, Ser. No. 839,116

Claims priority, application United Kingdom, Mar. 26, 1985, 8507895

Int. Cl.⁴ B62D *25/16*

U.S. Cl. 280—154.5 R **11 Claims**



1. Apparatus for reducing the amount of water spray produced by a wheel of a motor vehicle, comprising a mudguard extending round an upper part of the wheel, and a water collection chamber abutting the rear bottom edge of the mudguard and having an open front wider thaan the edge of the wheel, a rear wall having its outboard edge nearer to the front of the vehicle than its inboard edge, and an outlet located at the inboard side of the chamber inboard of the inboard edge of the wheel, a first portion of the rear wall bounding the rear edge of the outlet and the chamber having an inboard side wall in front of the outlet oriented at a smaller angle to the direction of travel of the vehicle than the first portion of the rear wall.

4,655,469

BALL CYCLE

Michael J. Whelan, 55-23 31st. Ave., Apt. 3AJ, Woodside, N.Y. 11377

Filed Dec. 23, 1985, Ser. No. 812,806

Int. Cl.⁴ A62H *1/12;* **B62K** *1/00*

U.S. Cl. 280—208 **7 Claims**

1. A ball cycle comprising:

(a) a frame being in a generally vertical elongated position;

(b) a seat carried by said frame for supporting a body of a rider thereon;

(c) a main axle rotatably mounted on said frame;

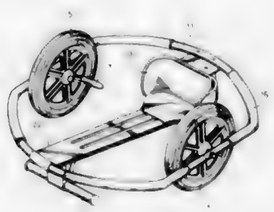
VOL 1077 ISS 1 AP 7 1987 UMI

(d) a pair of large wheels spaced apart and carried on said main axle;
(e) means for driving said large wheels and carried by said frame;
(f) a pair of small rear wheels spaced apart swiveled and rotatably mounted on said frame for stabilizing said cycle;
(g) a small front wheel swiveled and rotatably mounted on said frame in which said cycle can be controlled and



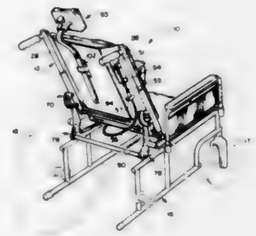
steered by said body of said rider so that hands of said rider are free allowing for a team sport to be played; and
(h) a pair of bumpers, each one of said pair of bumpers placed over each end of said main axle against one of said large wheels to act as a safety device for reducing risk of injury to said rider, each one of said pair of bumpers including a concave rubber member being in the shape of a portion of a ball for cushioning sides of said large wheels.

4,655,470
HAND-PROPELLED WHEELED DEVICE FOR CHILDREN
Shih-Lang Liu, No. 13, Alley 10 Lane 27, Sec. 2, Chung Hsing Rd., Five ku Hsiang, Taipei, Hsien, Taiwan
Filed Apr. 11, 1986, Ser. No. 850,860
Int. Cl.⁴ B62K *1/14*
U.S. Cl. 280—211 **2 Claims**



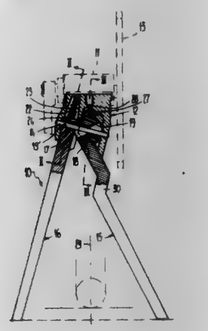
1. A hand-propelled wheeled device comprising:
a substantially circular frame having 2 parallel sides and assembled from a pair of U-shaped tubular pipes, one of said pipes having ends adapted for insertion into ends of said other pipe to form said frame;
a pair of side wheels, each said side wheel being rotatably mounted to said frame inwardly along one of said parallel sides and opposite to the other, each said wheel having a handle mounted thereon for manually rotating said wheel;
fastener means for simultaneously fastening said ends of said U-shaped pipes together and for rotatably mounting said side wheels thereto;
a seat support member having an upper surface, a lower surface, a front end and a back end, said member being mounted to said frame at said front end and said back end and at a position evenly spaced between said two side wheels and parallel thereto;
a footrest secured to said lower surface of said support member at said front end thereof;
a seat disposed on said upper surface of said support member at a position toward said rear end thereof; and
an auxiliary wheel mounted to said lower surface of said support member at said rear end thereof and directly behind said seat.

4,655,471
WHEELCHAIR HAVING ADJUSTABLE BACKREST
Gregory A. Peek, 3900 S. Mariposa St., Englewood, Colo. 80110
Filed Jan. 13, 1986, Ser. No. 817,889
Int. Cl.⁴ B60N *1/06*
U.S. Cl. 280—242 WC **6 Claims**



1. An attachment for the base frame of a wheelchair comprising:
a seat frame having a front end and a rear end;
a back assembly having a top end and a bottom end;
means pivotally connecting the bottom end of said back assembly to said seat frame adjacent its rear end;
said back assembly having a front panel and a rear panel, said rear panel being fixedly attached to said back assembly, said rear panel having a longitudinal axis;
means for permitting reciprocal movement of the front panel of said back assembly along an axis parallel to the longitudinal axis of said rear panel comprising at least one slotted bearing block track and a rail member that matingly slides in said slotted bearing track, said slotted bearing block track being attached to the rear surface of said front panel and said rail member being attached to the front surface of said rear panel; and
means for forcing reciprocal movement of said front panel of said back assembly with respect to said rear panel comprising a bracket attached to the rear surface of said front panel, a coupling member pinned to said bracket, a driven rod member having its one end connected to said coupling and its other end connected to one end of a flexible wire push pull cable, the opposite end of said wire cable being connected to a driven rod member whereby said axial travel of said driver rod member produces the identical amount of axial travel on said driven rod member which in turn produces longitudinal travel of said front panel.

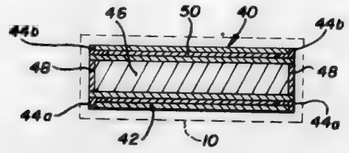
4,655,472
SUPPORT OR KICK STAND FOR TWO-WHEELED VEHICLE
Oskar Pletscher, Marthalen, Switzerland, assignor to Gebrüder Pletscher, Marthalen, Switzerland
Filed Feb. 6, 1984, Ser. No. 577,538
Claims priority, application Switzerland, Feb. 15, 1983, 835/83
Int. Cl.⁴ B62H *1/02*
U.S. Cl. 280—303 **13 Claims**



1. A support stand for a two-wheeled vehicle, comprising;
pivot head means mounted on the vehicle;
two support leg members pivotably mounted in said pivot head means;
said two support leg members being operatively couple with one another so as to perform conjoint pivoting motion;
said two support leg members being movable between a spring-loaded rest position where said two support leg members bear against one another while essentially in a horizontal position and a spring-loaded vehicle support position where said two support leg members are essentially in an upright position and spread apart from one another;
a pivot shaft upon which there is pivotably mounted one of said two support leg members;
a path-dependently effective spreading device for bringing the other support leg member into a spread position during a part of its pivoting motion preceding said vehicle support position of said one support leg member;
said other support leg member being swivelably supported at said pivot shaft for performing a swivel motion in a plane extending substantially through said pivot shaft; and
said other support leg member being provided with an extension operatively coupled with said spreading device.

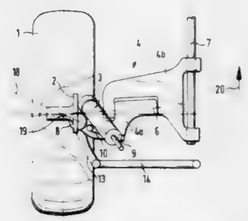
4,655,473
PROCESS OF MANUFACTURING A SKI
Alfred Müller, Lucerne, Switzerland, and Johann Kohler, Pavlik Vienne, Austria, assignor to Realverband, Zug, Switzerland
Continuation of Ser. No. 677,908, Dec. 6, 1984, abandoned, which is a continuation of Ser. No. 501,419, Jun. 6, 1983, abandoned. This application May 27, 1986, Ser. No. 867,622
Claims priority, application Austria, Jun. 7, 1982, 2193/82
Int. Cl.⁴ B29C *45/00, 47/00*; B29D *9/00*; A63C *5/00*
U.S. Cl. 280—610 **26 Claims**

1. A process of manufacturing a laminated composite ski in an enclosed mold, comprising the steps of:
(a) placing into an elongated ski-shaped forming mold a plurality of ski forming components, comprising the tread layer, steel edges, core laminate parts, side walls and top facing layers, said components and said mold defining a major longitudinal axis and a plurality of minor transverse axes perpendicular to the longitudinal axes, and positioned at a plurality of locations along the longitudinal axes including at the ends thereof, these transverse and longitudinal axes defining a series of sideport locations comprising vacuum openings or binder supply openings;
(b) evacuating the mold by providing communication between the mold and a source of vacuum to remove air and any other gases present from the mold through one or more of the vacuum openings located at one or more of the sideport locations at least one of which being defined by the transverse axes;
(c) introducing a binder into the mold through one or more of the sideport locations



(d) introducing a binder into the mold through one or more binder openings in the mold, at least one of the vacuum or binder openings being defined by at least one of the transverse axes, said binder being introduced while maintaining communication with the vacuum source at the same time until the binder completely fills the spaces between each of the component parts of the ski;
(e) curing the binder within the mold;
(f) removing the final ski structure from the mold.
14. The ski made by the process of claim 1.

4,655,474
INDEPENDENT VEHICLE WHEEL SUSPENSION
Wolfgang Sautter, Gräfelfing, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 16, 1986, Ser. No. 852,568
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1985, 3514815
Int. Cl.⁴ B60G *3/00*
U.S. Cl. 280—666 **14 Claims**



1. An independent vehicle wheel suspension, comprising shock absorber strut means, support arm means extending essentially transversely to the vehicle longitudinal axis and pivotally connected at a relatively fixed vehicle part, support joint means operatively connecting the shock absorber strut means with the support arm means, the support arm means being operable to transmit a spring force acting between the relatively fixed vehicle part and the vehicle wheel, the support joint means being constructed as universal joint, an intermediate guide member additionally operatively connecting the shock absorber strut means with the support arm means, said intermediate guide member being operatively connected by means of a universal joint means at least at the support arm means, the line of connection between the universal joint means of the intermediate guide member on the side of the

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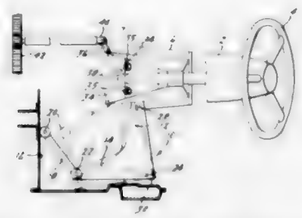
support arm means and the support joint means intersecting with its extension in a point of intersection the line of action of a vertical force acting at the point of contact of the wheel, and the support arm means being subdivided by a hinge joint into a section on the wheel side and into a section on the side of the relatively fixed part and acted upon with spring force, the hinge axis being also directed toward said point of intersection.

4,655,475

STEERING COLUMN FOR A MOTOR VEHICLE

Glenn P. Van Gelderen, W. Bloomfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1985, Ser. No. 782,622
Int. Cl.⁴ B62D *1/18*
U.S. Cl. 280—777 **16 Claims**



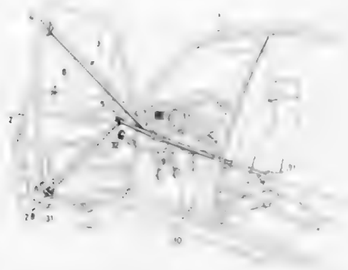
1. A motor vehicle steering column system comprising:
a steering column including a steering wheel;
a mounting structure attached to said steering column and pivoted about an axis generally horizontal to the chassis of said vehicle; and
means interposed between the chassis of said motor vehicle and said mounting structure for rotating said mounting structure in a forward direction when the forward portion of the chassis of said vehicle is displaced rearwardly with respect to said steering column by the force of a collision, whereby said steering column is displaced downwardly.

4,655,476

DOOR ACTUATED SAFETY BELTS

Ferdinando Paludetto, Cesano Boscone, Italy, assignor to Alfa Romeo Auto S.p.A., Naples, Italy

Filed Nov. 27, 1985, Ser. No. 802,254
Claims priority, application Italy, Dec. 3, 1984, 23973/84[U]
Int. Cl.⁴ A62B *35/02*; B60R *21/10*
U.S. Cl. 280—804 **4 Claims**



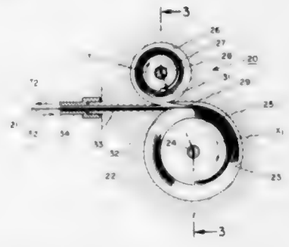
1. Self-positioning device for vehicle safety belts of the passive type, capable of shifting a movable positioning point of the same belt, to the purpose of fastening and of releasing an occupant of a vehicle seat, by means of a vehicle door's shutting and opening stroke, said device being of a type comprising a rack rod having means for rigidly fastening said rack at one of said rack ends on to a vehicle body, and a pinion in meshing engagement with said rack, rotatably supported by an adjacent vehicle door and operatively linked to an amplifier mechanism in its turn operatively linked to the belt and capable of transforming the rotary movement of the pinion into an amplified movement of rectilinear type of the positioning point along a guide diagonally positioned on the vehicle door, characterized in that said rack rod is an annular sector and is partly toothed so as to operate over a portion of the vehicle door's shutting and opening stroke only.

4,655,477

PASSIVE VEHICLE SEAT BELT SYSTEM

Juichiro Takada, 3-12-1 Shinmachi, Setagayaku, Tokyo, Japan

Filed Dec. 20, 1985, Ser. No. 811,947
Claims priority, application Japan, Dec. 24, 1984, 59-194525[U]; May 28, 1985, 60-78539[U]
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—804 **5 Claims**



1. A passive seat belt system for a vehicle having a restraint belt, a flexible transfer tape driven by a drive device in response to opening or closing of the vehicle door, a belt transfer guide connected to the belt and connected to one end of the transfer tape, the guide being movable between restraint and release locations in the vehicle in which it holds the belt in occupant-restraining and occupant-releasing positions, respectively, along a guide rail characterized in that said drive device comprises a flexible drive tape, a first drum having one end of the drive tape and the other end of the transfer tape attached to the outer periphery thereof whereby upon rotation of the drive in one direction both tapes are wound onto the first drum in interleaved relation and upon rotation in the other direction are unwound from the drum, a second drum disposed adjacent the path taken by the transfer tape as it leads away from the first drum and having the other end of the drive tape attached to the outer periphery thereof whereby the drive tape is wound onto the second drum upon rotation thereof in one direction and is unwound upon rotation in the other direction, and drive means for selectively rotating the first and second drums in their respective tape-winding directions.

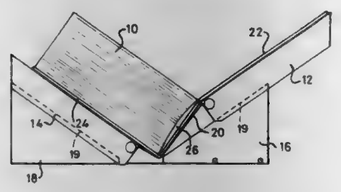
4,655,478

BOOK SUPPORT

Brian R. Malyon, Feltham, England, assignor to The British Library Board, London, England

Filed Aug. 15, 1985, Ser. No. 765,721
Claims priority, application United Kingdom, Sep. 12, 1984, 8422996
Int. Cl.⁴ B42D *3/00*
U.S. Cl. 281—45 **10 Claims**

7. A book support comprising:
a pair of spaced apart ramps, each of the spaced apart ramps having a top surface, aligned along a plane, the planes of the pair of top surfaces intersecting at a vertex to form a V-shape;
at least one track positioned on the top surface of each of the pair of spaced apart ramps, each of at least one track being parallel to the planes of the respective top surfaces;
a pair of platens spaced apart to define a gap, each of the pair of platens slidably mounted in the respective at least one track of each of the pair of spaced apart ramps, whereby the pair of platens can move apart and together to alter the width of the gap; and
a flexible web having a pair of ends, each of the pair of ends mounted to a respective one of the pair of platens.

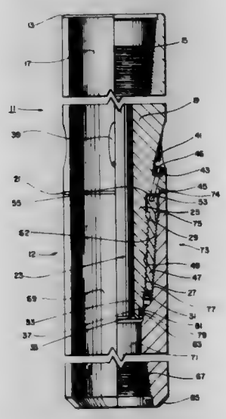


4,655,479

PRE-SET TORQUE LIMITER SUB

Albert P. Farr, Jr., Houston, Tex., assignor to Hughes Tool Company - USA, Houston, Tex.

Continuation-in-part of Ser. No. 573,180, Jan. 23, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 787,580
Int. Cl.⁴ F16L *35/00*
U.S. Cl. 285—18 **5 Claims**



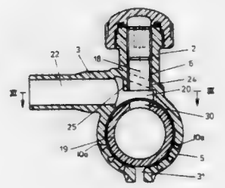
1. A torque limiter sub, comprising:
a box member having a female connection at one end and a makeup shoulder;
a pin member having a male member at one end and a makeup shoulder which contacts the makeup shoulder in the box member;
a selected one of the female connection and the male connection having threads and the other connection having concentric grooves;
a split ring insert, located between the female connection and the male connection, said insert having threads and concentric grooves to mate and mesh with said selected ones of said threads and grooves on the female connection and the male connection to hold the female connection and the male connection against rotation with respect to one another whenever the torque on the sub is below a selected amount, but to allow the female connection and the male connection to rotate with respect to one another, without separating axially, whenever the torque on the sub exceeds the selected amount; and
retention means for holding the insert against rotational movement along the concentric grooves during makeup of the torque limiter sub.

4,655,480

MOLDED TAPPING MEMBER FORMED OF A WELDABLE PLASTICS MATERIAL

Alfred Thalmann, Uhwiesen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Aug. 6, 1985, Ser. No. 762,953
Claims priority, application Switzerland, Aug. 8, 1984, 3811/84
Int. Cl.⁴ F16L *5/00*
U.S. Cl. 285—21 **9 Claims**



1. Molded tapping member formed of a weldable plastic material for connecting at least one branch line to a pipeline formed of a weldable plastic material, comprising an axially extending saddle piece mountable on the pipeline by moving said saddle piece radially relative to the axial direction of the pipeline so that in the mounted position said saddle piece axis extends in generally parallel relation with the pipeline axis, an axially extending tapping connection member connected to said saddle piece with the axis of said tapping connection disposed transversely of the saddle piece axis and said tapping connection member extending outwardly from said saddle piece, an axially extending branch connection connected to and extending outwardly from said saddle piece and from said tapping connection member with the axis of said branch connection extending transversely of the axes of said saddle piece and tapping connection member, a heating wire mat incorporated in said molded tapping member for welding said tapping member to the pipeline, wherein the improvement comprises that said saddle piece has an inside surface arranged closely adjacent to the outside surface of said pipeline when said molded tapping member is mounted on the pipeline and an outside surface, said saddle piece is U-shaped having a bight portion extending in the axial direction of said saddle piece and said bight portion having laterally spaced ends extending in the axial direction of said saddle piece, and a pair of laterally spaced legs extending in the axial direction of said saddle piece and each projecting outwardly from an opposite end of said bight portion in the direction extending generally away from said tapping connection, each said leg being formed of a plurality of partial sections with joints interconnecting said partial sections and said partial sections and joints extending in the axial direction of said saddle piece, and said legs formed by said partial sections and joints being displaceable inwardly against the outside surface of the pipeline, and the axes of said tapping connection member and said branch connection intersect outwardly from the inside surface of said saddle piece.

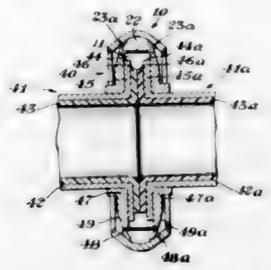
VOL 1077 ISS 1 AP 7 1987 UMI

4,655,481

PIPE ALIGNING AND JOINING

Elton D. Proctor, Saginaw, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 14, 1985, Ser. No. 744,835
Int. Cl.⁴ F16L *9/14, 23/00*
U.S. Cl. 285—24 **7 Claims**



1. An improved split ring "V" clamp, the split ring "V" clamp comprising at least first and second "V" clamp ring portions, the ring portions on assembly in clamping configuration defining a generally circular configuration, the circular configuration having a generally inwardly facing tapering annular groove adapted to receive flange members and as the portions of the split ring "V" clamp are drawn together to thereby force flange members toward each other and provide a desired connection between adjacent conduit member ends, the improvement which comprises providing a pressure deformable generally arcuate insert generally adjacent a flange engaging portion of the inwardly facing annular groove to provide in at least each portion of the split ring "V" clamp an axially extending region extending partially across the annular groove, the pressure deformable insert extending across the annular groove being positioned adjacent a minor diameter of the annular groove by at least two generally radially projecting pressure deformable support members.

4,655,482

TUBE COUPLING DEVICE

William N. Myers, Huntsville, Ala.; Leopold A. Hein, deceased, late of Flintville, and Birgit G. Hein, executor, Sparta, both of Tenn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 692,801, Jan. 18, 1985, abandoned. This application Apr. 10, 1986, Ser. No. 853,361
Int. Cl.⁴ F16L *35/00*
U.S. Cl. 285—81 **26 Claims**



1. A tube coupling assembly comprising:

a first coupling member having a female threaded inner portion and an outer surface comprising a series of discrete engageable surfaces;

a first sleeve having inner surfaces configured to slidably fit over and engage said outer surface of said first coupling and including axially extending first interlocking edge regions about at least a portion of said sleeve;

a second coupling including a male threaded region, an additional threaded region on an end opposite to that of said male threaded region and an outer surface region having a series of discrete and engageable surfaces;

a second sleeve having inner surfaces configured to slidably fit over and engage said engageable surfaces of said second coupling member and including axially extending second interlocking edge regions configured to engage and lock into said first interlocking edge regions of said first sleeve and a plurality of axially directed openings opposite to the interlocking edge regions of said second sleeve; and

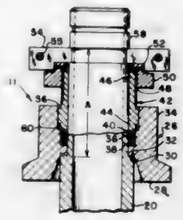
bias means for biasing said sleeves together whereby said interlocking edge regions are interlocked and said coupling members are locked together.

4,655,483

BOUNDARY SEAL FOR VESSEL PENETRATION

Kenneth V. Margotta, Rockville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 14, 1984, Ser. No. 609,919
Int. Cl.⁴ F16L *55/00*
U.S. Cl. 285—169 **7 Claims**



1. A fluid-tight connection between a nozzle and a concentric column supported therein, comprising:

a flange formed on the upper end of said nozzle;

seal means carried on the nozzle flange;

said column disposed within the nozzle and extending above the nozzle flange, having shoulder means above said seal means;

a closure member surrounding the column, having an outwardly flanged lower end bearing upon the seal means, internal shoulder means engaging said shoulder means on the column, an internal support surface above the internal shoulder, and a hub portion extending above the internal shoulder and spaced from said column, thereby defining an annular space above the support surface adapted to receive a generally annular gasket means;

means for drawing the closure member toward the nozzle flange to compress the seal means therebetween;

a generally cylindrical drive unit surrounding the column, including a drive sleeve having a lower end disposed within said annular space, and means rigidly attached to said column, actuation means engaging said rigidly attached means and said drive sleeve for effecting relative axial movement between the drive sleeve and the column;

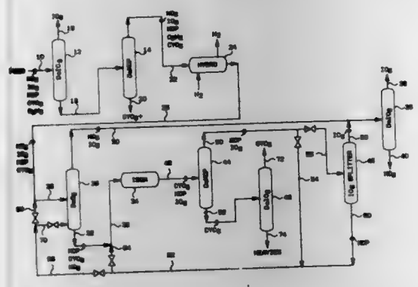
whereby an annular gasket located within said annular space may be compressed against said support surface by said drive sleeve to prevent fluid leakage between said closure member and said column.

4,655,484

ISOMERIZATION PROCESS

William C. Rakiwes, Old Ocean, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 16, 1982, Ser. No. 450,491
Int. Cl.⁴ C07C *5/22*
U.S. Cl. 585—253 **6 Claims**



1. A method for isomerizing a hexanes stream comprising normal hexane, isohexanes, methylcyclopentane and cyclohexane comprising:

(a) fractionating said hexanes stream in a first fractionation step in a manner and under conditions to produce a normal hexane-isohexane rich overhead stream and a methylcyclopentane-cyclohexane rich bottoms stream;

(b) isomerizing said bottoms stream from said first fractionation step in at least one isomerization step in the presence of an isomerization catalyst and under conditions sufficient to maximize the conversion of methylcyclopentane to cyclohexane;

(c) fractionating said overhead stream from said first fractionation step in a second fractionation step, in a manner and under conditions to produce an isohexanes rich overhead stream as a product and a normal hexane rich bottoms stream as a product;

(d) fractionating the effluent from said isomerization step in a first stage of a third fractionation step in a manner and under conditions to produce a cyclohexane rich bottoms stream as a product and a methylcyclopentane-isohexane rich overhead stream;

(e) fractionating said overhead stream from said third fractionation step in a second stage of said third fractionation step to produce an isohexane rich overhead stream and a methylcyclopentane rich bottoms stream;

(f) recycling said bottoms stream from said second stage of said third fractionation step to said first fractionation step; and

(g) passing said overhead stream from said second stage of said third fractionation step to said second fractionation step along with said overhead stream from said first fractionation step.

4,655,485

SEALS FOR USE IN OIL AND GAS WELL PRODUCTION TUBING

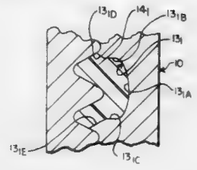
Norman M. Albrecht, Huffman, Tex., and Roy J. Blanchard, Sr., Houma, La., assignors to Tube-Alloy Corporation, Houma, La.

Continuation of Ser. No. 563,936, Dec. 20, 1983, abandoned. This application Feb. 18, 1986, Ser. No. 831,050
Int. Cl.⁴ A16L *25/00*
U.S. Cl. 285—333 **5 Claims**

1. In couplings, and joints, as used in the formation of production tubing for use in sour gas containing hydrogen sulfide environments, where a tubular member containing an inwardly tapered threaded section is provided with a seal inclusive of an annular groove and ring-shaped extrudable generally non-resilient sealing member seated in said groove, said ring-member being extrudable into and confinable within said groove when said couplings, or joints, are made up by threadably connecting therewith a threaded end of pipe, and make-up of said couplings, or joints, produces hoop stresses in the outer walls of said couplings, or joints, adjacent said non-resilient sealing member against which force is applied during make-up.

the improvement wherein,

the bottom face of said annular groove component of said seal is contoured to provide a radius ranging from about $\frac{1}{8}$ inch to about $\frac{1}{4}$ inch, the annular groove is provided with side walls, the side walls of the annular groove are straight and are adjoined to angular sides ranging from about 20° to about 45°, such that the ring-shaped extrudable generally resilient sealing member is extruded into said contour within the bottom face of said annular groove component, and space provided by the angular sides of said annular groove component to reduce hoop stresses within the outer walls of said couplings, or joints, opposite said grooves.

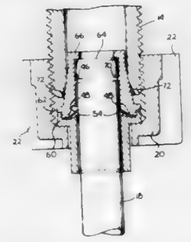


4,655,486

WATER FAUCET INLET LINE CONNECTOR

Matthew Tarnay, Pasadena, and Robert Szemeredi, Tujunga, both of Calif., assignors to Price Pfister, Inc., Pacoima, Calif.

Filed Feb. 7, 1986, Ser. No. 827,252
Int. Cl.⁴ F16L *19/00*
U.S. Cl. 285—340 **23 Claims**



1. An inlet water line connector for connecting an inlet water line having a predetermined outer diameter to the end of a water faucet shank having external threads on the outer cylindrical surface and a tapered internal inlet region larger in diameter than said predetermined outer diameter of the inlet water line, comprising

a body having first and second ends and an opening therethrough, into which first end an inlet water tube of the predetermined outer diameter may be inserted, said body having an outer tapered surface for fitting within and engaging the tapered internal inlet region of a faucet shank, and an internal sealing surface within the portion of said body having said outer tapered surface, said internal sealing surface being a means for fitting over and substantially conforming to the circular periphery of an inlet water line, said body also having a shoulder in the form of an outward directed flange on said body between said

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outer tapered surface and said first end thereof against which said connector may be forced into the internal inlet region of a faucet shank with said outer tapered surface having a force fit with the tapered internal inlet region of the faucet shank,

a unitary spring member within said body having a plurality of integral spring elements projecting inward and angled toward said second end of said body, said spring elements in a free state collectively defining an inner periphery thereof of a diameter less than the predetermined outer diameter of the water line, said spring elements being elastically deflectible further toward said second end by the insertion of a water line therethrough from said first end of said body and to forceably engage the water line to resist withdrawal thereof,

at least the portion of said body having the outer tapered surface and internal sealing surface being fabricated from a deformable material,

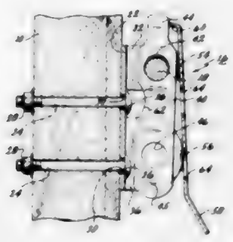
whereby a water line may be pushed into said connector from said first end thereof, said connector may be inserted into said faucet shank with the outer tapered surface of said connector engaging said tapered internal inlet region of said shank and then forced thereinto to force tight engagement of the two tapers to effect a seal therebetween, and to at least locally constrict said body to effect forceful engagement of said internal sealing surface on the periphery of the inlet water line.

4,655,487

GARAGE DOOR BOLT WITH STATIONARY PROTECTIVE COVER

Julius A. Korn, Huntington Beach, and Charles H. Schwartz, Los Angeles, both of Calif., assignors to Korn Enterprises, Lynwood, Calif.

Filed Nov. 4, 1985, Ser. No. 794,657
Int. Cl.⁴ E05C 5/02
U.S. Cl. 292—57 **15 Claims**



1. A sliding bolt with stationary safety cover for mounting on a door and for locking with a padlock having a bale portion, including

a back plate including means for mounting the back plate on the door,

an upper pair of flange members extending outwardly from the back plate and with each upper flange member including a first opening,

a sliding bolt passing through and guided by the first openings in the upper pair of flange members,

a lower pair of flange members extending outwardly from the back plate and with each lower flange member including a second opening for receiving the bale portion of the padlock,

a handle and locking member attached to the sliding bolt and including a first upwardly extending portion forming a handle for sliding the bolt within the first openings in the upper pair of flange members and including a second downwardly extending portion located between the lower pair of flange members,

the handle and locking member having a third opening corresponding to the second openings in the lower pair of flange members and with the third opening in association with either one of the second opening for receiving the bale portion of the padlock to lock the sliding bolt in either of two positions, and

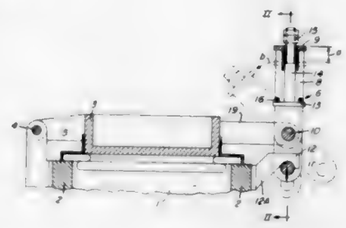
a stationary safety cover attached across the front of and spaced from the back plate to enclose the sliding bolt, the upper and lower pairs of flanges and the downwardly extending portion of the handle and locking member.

4,655,488

SYSTEM FOR LATCHING A LEVELING DOOR

Manfred Friedrichs, Essen, and Michael Bohm, Bochum, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochm, Fed. Rep. of Germany

Filed Sep. 26, 1985, Ser. No. 782,946
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1984, 3438583
Int. Cl.⁴ E05C 5/00, 19/14
U.S. Cl. 292—66 **9 Claims**



1. Apparatus for latching a leveling door to close a leveling rod opening surrounded by a seal in a leveling box at the upper portion of a coke oven door, said apparatus including the combination of:

a U-shaped latching means having a cross web joining together ends of spaced apart side flanges,

a spring plate movable between said flanges in a direction of the length thereof relative to the cross web,

an actuating pin connected to said spring plate for extending through an aperture in the cross web,

a stop member threadedly engaged with an end portion of said actuating pin which projects from the spring plate,

a compression spring extending between said spring plate and said cross web,

a first arm extending from said leveling door,

a first pin for interconnecting said first arm and said spring plate,

a second arm extending from said leveling box,

a second pin for interconnecting said second arm and said side flanges, one of said first and second arms having a locking claw for releasably engaging the pin thereof and the other of said first and second arms being pivotally connected by the pin thereof, and

retaining members directly connected to said spring plate, said retaining members having extended end portions for supporting one of said first and second pins.

4,655,489

FASTENING DEVICE

Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.

Filed Apr. 16, 1985, Ser. No. 723,847
Int. Cl.⁴ E05C 19/02
U.S. Cl. 292—110 **5 Claims**

1. A fastening device for releasably securing two relatively movable members together, comprising:

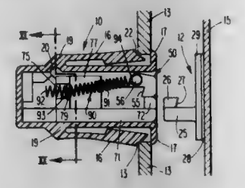
(a) a housing having an opening in the front thereof, a cavity therein, a first fixed socket in the inside of the upper surface thereof, a second fixed socket at a predetermined location forward and below said first socket, and attachment means for affixing said housing to one of said members;

(b) a keeper means for attachment to said other member and having a hooked projection positioned to be inserted within said housing upon relative movement of said members towards one another;

(c) a plunger means positioned within said housing for lateral movement therein in response to the insertion or withdrawal of said keeper means;

(d) a catch member positioned within said housing for reciprocal movement between said first and second fixed sockets and for pivotal movement within said sockets in response to said lateral movement of said plunger means, and having a hook at one end thereof for releasably engaging said inserted keeper means to secure said members together; and

(e) a spring having an extension portion disposed between said catch means and said plunger means and a compression portion disposed between said plunger means and said housing, wherein upon lateral movement of said plunger means the line of direction of said spring is re-directed to impart reciprocal and pivotal movement of said catch means to engage or disengage said inserted keeper means.

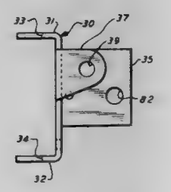


4,655,490

ONE-WAY GATE LATCH

Paulino A. Cacicedo, 5 Tisbury Carriage Dr., Scotch Plains, N.J. 07076

Filed Dec. 23, 1985, Ser. No. 812,331
Int. Cl.⁴ E05C 1/10
U.S. Cl. 292—238 **1 Claim**



1. One-way gate latch for mounting on and pivotal movement with the gate pole of a pivotally mounted gate and for engaging a stationary fence post to latch said gate to said fence post and for permitting said gate to pivot and open in only one direction, comprising:

a generally vertically extending bracket provided at its rearward portion with a plurality of horizontally oriented, vertically spaced apart, outwardly extending first members provided with inwardly extending semi-circular first recesses defined by surfaces provided with teeth for engaging said fence pole in high frictional engagement; provided at its forward portion with a vertically oriented, centrally positioned outwardly extending second member provided with a first aperture extending horizontally therethrough; and provided at its forward portion with a pair of vertically oriented, horizontally spaced apart, outwardly extending third members positioned on either side of and spaced horizontally from said second member, said third members provided with second apertures extending horizontally therethrough; and said bracket for being mounted to said gate pole;

generally semi-annular split latch means mounted on said bracket and including first and second latch members, said latch members provided at their forward portions with inwardly extending second recesses cooperatively providing a generally semi-circular third recess for receiving said fence post; said latch members provided at their rearward portions with a plurality of vertically oriented, horizontally spaced apart, downwardly extending third members provided with third apertures extending therethrough; said first, second and third apertures aligned horizontally;

a generally L-shaped rod including first and second legs, said first leg extending through said first, second and third horizontally aligned apertures and said other leg providing a handle for opening said latch means;

said first latch member for being fixedly secured to said bracket to prevent said gate from pivoting and opening in the direction away from said first latch member;

said second latch member fixedly secured to said first leg of said rod handle for pivotal movement vertically upwardly in response to upward pivotal movement of said second leg to open said latch and permit said gate to open by pivoting in the direction toward said first latch member, and said second latch member mounted on said first leg for pivotal movement vertically downwardly in response to gravity to close said latch; and

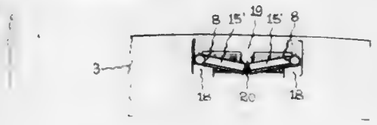
said second latch member provided on its outer side with a generally upwardly and outwardly extending curved portion for engaging said fence post upon closing of said gate to cause said second latch member to pivot vertically upwardly to open said latch.

4,655,491

LUMINAIRE LATCH

Omer E. Murray, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 600,742, Apr. 14, 1984, abandoned. This application May 7, 1986, Ser. No. 860,399
Int. Cl.⁴ E05C 19/14
U.S. Cl. 292—247 **6 Claims**



1. Latching means for detachably connecting a first principal part of a luminaire to a second principal part of a luminaire including in combination:

a latch device having first and second ends;

said first principal part having a strike portion carried therein, said first end of said latch device adapted to engage said strike portion;

said second principal part having a captivating recess carried therein for accommodating said second end of said latch device in a hinged attachment;

said second end of said latch device having at least one deflectable arm, said one arm including a pair of opposed faces;

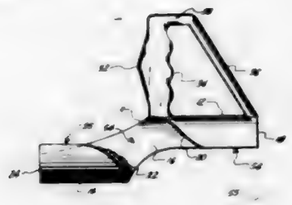
said captivating recess having deflecting means for engaging each of said opposed faces for deflecting said deflectable arm of said second end of said latch device upon insertion of said second end into said recess; and

said recess further including terminus means for preventing withdrawal of said second end from said recess, said terminus means permitting said deflectable arm to return toward its undeflected stance after passing beyond the

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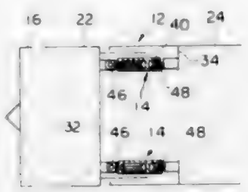
terminus means whereby the second end of said latch device is disposed in an overlapping relationship with said terminus means to permanently captivate said latch device in a hinged attachment to said second principal part.

4,655,492
HIGH PRESSURE HOSE GRIPPER
Gary L. Landry, 819 - 18th St., Lake Charles, La. 70601
Filed Oct. 15, 1985, Ser. No. 787,629
Int. Cl.[4] B65G *7/12*
U.S. Cl. 294—15 10 Claims



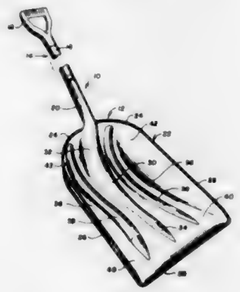
1. A hand held gripper for high pressure hoses comprising:
(a) a saddle having first and second opposed jaws laterally spaced apart from one another and interconnected by a transitional, center offset section and including an interior spiralling bearing surface that extends linearly along and circumferentially about, hose during use, the spiral defining a slot between the spaced jaws through which a section of hose can be inserted; and
(b) a handle rigidly affixed to the saddle which allows an operator, such as a fireman, to grip and support the apparatus and a hose section contained therein.

4,655,493
SHIELD TUNNELING MACHINE
Toshio Sumi, Kodaira, Japan, assignor to Kabushiki Kaisha Iseki Kaihatsu Koki, Tokyo, Japan
Filed Dec. 17, 1985, Ser. No. 810,062
Claims priority, application Japan, Jan. 29, 1985, 60-13500
Int. Cl.[4] E21D *9/08*
U.S. Cl. 299—33 4 Claims



1. A shield tunneling machine comprising:
a shield body provided with a tubular head portion and a tubular tail portion disposed behind the head portion;
a plurality of thrusting jacks for interconnecting said head portion and tail portion and moving said head portion and tail portion to and away from each other;
a cutter head disposed in front of said shield body;
a rotary mechanism for rotating the cutter head; and
a plurality of position-maintaining mechanisms disposed in said shield body and each having a press body capable of projecting outward of the shield body, each of said thrusting jacks include a cylinder having first and second cylinder chambers, a first piston disposed in said first cylinder chamber and movable axially in the direction of said first cylinder chamber, a second piston disposed in said second cylinder chamber and movable axially in the direction of said second cylinder chamber, a first piston rod having one end connected to said first piston and the other end projecting axially in one direction from the first cylinder chamber and a second piston rod having one end connected to said second piston and the other end projecting from said second cylinder chamber in the opposite direction to said first piston rod.

4,655,494
PLASTIC GRAIN SCOOP
Harold O. Eads, Parkersburg, and Rudolph F. Planthaber, Mineral Wells, both of W. Va., assignors to O. Ames Co., Parkersburg, W. Va.
Continuation of Ser. No. 754,084, Jul. 12, 1985, abandoned. This application Jul. 30, 1986, Ser. No. 891,049
Int. Cl.[4] A01B *1/02*
U.S. Cl. 294—49 12 Claims



1. A grain scoop comprising
a molded plastic body including an elongated socket portion open at its rearward end, and a scoop portion integral with said socket portion and extending laterally outwardly and forwardly therefrom,
said socket portion being of closed annular configuration and having a predetermined straight direction of longitudinal extent,
an elongated generally straight handle having a forward end portion fixed within the socket portion of said molded plastic body and extending rearwardly therefrom in the direction of the longitudinal extent of said socket portion,
said scoop portion including scoop defining peripheral edges having rearward sections extending outwardly from opposite sides of said socket portion at positions near the forward end thereof and curving outwardly and forwardly and forward sections extending forwardly from the rearward sections in slightly diverging relation with respect to one another,
said peripheral edges being disposed generally in a single plane which intersects with the elongated extent of said socket portion at an acute angle,
said scoop portion providing a generally straight forward edge extending between the forward ends of said peripheral edges so as to define therewith and with the intervening socket portion the entire periphery of said scoop portion,
said scoop portion providing a central longitudinal corrugation of inverted U-shaped cross-sectional configuration having a rearward section extending downwardly and forwardly from the upper forward section of said socket portion with respect to the direction of longitudinal extent of said socket portion and a forward section extending upwardly and forwardly with respect to the downward and forward extent of said rearward section and along a generally straight path which merges rearwardly with a smooth curving transition with said rearward section,

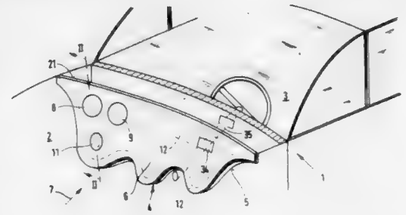
said scoop portion including bottom wall portions extending rearwardly from said forward edge and outwardly from opposite sides of said central corrugation and then upwardly to said peripheral edges,
each of said bottom wall portions having an outer longitudinal corrugation formed therein of inverted U-shaped cross-sectional configuration in generally spaced side-by-side relation to said central corrugation,
said bottom wall portions including forward sections disposed generally in a plane extending at an acute angle with respect to the plane of said peripheral edges and generally concave rearward sections bulging downwardly from the rearward sections of said peripheral edges and from opposite sides of the rearward section of said central corrugation and the forward section of said socket portion,
the angle of the plane of the forward sections of said bottom wall portions with respect to the direction of longitudinal extent of said socket portion and the rearwardly extending handle providing a lift angle when the forward sections of the bottom wall portions are in a horizontal position like that of a metal grain scoop,
the angle of the plane of the peripheral edges with respect to the plane of the forward sections of said bottom wall portion and the extent of the bulging downward concavity of the rearward sections of the bottom wall portions providing a grain holding capacity like that of a metal grain scoop, and
strengthening ribs extending within the U-shaped cross-sectional configuration of said central corrugation and between the lower forward section of said socket portion and within the adjacent concave rearward sections of said bottom wall portions.

4,655,495
LITTER GUN
Wesley W. Naff, Jr., Rte. 1, Box 204, Boones Mill, Va. 24065
Filed Jul. 28, 1986, Ser. No. 889,706
Int. Cl.[4] B08B *1/00*
U.S. Cl. 294—61 6 Claims



1. A litter gun for spearing trash on a spear and thereafter shooting said trash from said spear in response to manual activation of a trigger on said litter gun, said litter gun comprising:
a handle including handgrip for allowing an operator to grip said litter gun with one hand during operation thereof;
an elongated spear having one end portion thereof fixedly attached to said handle with its other end portion extending outwardly away from said handle;
a tubularly-shaped barrel surrounding said elongated spear and being slidably engaged with said handle whereby said barrel has freedom of longitudinal movement relative to said handle and said spear;
a biasing means mounted between said handle and said barrel tending to shove said barrel outwardly, away from said handle toward said other end of said spear;
means for retaining said barrel in engagement with said handle but allowing freedom of longitudinal movement within a range of movement;
a trigger means mounted on said handle for engaging said barrel at a plurality of positions longitudinally located along the length of said barrel for allowing inward longitudinal movement of said barrel relative to said trigger means but engaging said barrel at said plurality of positions for preventing outward longitudinal movement of said barrel;
whereby said litter gun can be manipulated with said one hand so that said spear is driven through a first piece of trash lying on a relatively hard ground surface and as this is done the first piece of trash and said hard ground forces said barrel into said handle only a short distance where it is held by engagement of said trigger means, with said barrel at a first position therealong, with said spear penetrating said ground only a short distance, said litter gun can then be manipulated with said one hand so that said spear is driven through an additional piece of trash lying on said relatively hard surface and as this is done said first piece of trash and said hard ground forces said barrel into said handle an additional short distance where it is held by engagement of said trigger means with said barrel at a second position therealong, with said spear penetrating said ground only a short distance, and said pieces of trash can then be shot from said litter gun by activating said trigger with said one hand to release said barrel to thereby allow said biasing means to sharply shove said barrel which in turn shoves said trash toward the end of said spear, shooting said trash from said spear.

4,655,496
MOTOR VEHICLE NOISE INSULATION
Heinemann Gahlau, Celle; Klaus Wittenmayer, Uetze; Manfred Laubner, Florsheim/Wicker, and Herbert Baumeister, Hochheim, all of Fed. Rep. of Germany, assignors to Dr. Alois Stankiewicz GmbH, Adelheidsdorf, Fed. Rep. of Germany
Filed Nov. 4, 1985, Ser. No. 794,734
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1984, 3440701
Int. Cl.[4] B62D *25/08*
U.S. Cl. 296—39 A 20 Claims



1. A partition for separating an engine compartment subject to low-frequency and high-frequency noise and a passenger compartment of a motor vehicle, which partition comprises (i) a sheet metal wall located between the compartments so as to have one side adjacent the engine compartment and (ii) a covering of noise-insulating material on the side of the wall adjacent the engine compartment, the partition including at areas of high noise levels a convex deformation at an area of low-frequency noise and a concave deformation at an area of high-frequency noise, said wall and said covering being in spaced-apart relationship at said deformations.

4,655,497
FAIRING FOR BICYCLES AND THE LIKE
Gordon L. Mallett, 14985 - 157th Ave., Big Rapids, Mich. 49307
Filed Nov. 30, 1984, Ser. No. 676,865
Int. Cl.[4] B62K *19/48*
U.S. Cl. 296—78.1 19 Claims

1. A fairing for bicycles and the like of the type having a front wheel pivotal about a generally vertical axis, and a handlebar connected with the front wheel for steering the bicycle, said fairing comprising:
(a) a substantially imperforate outer shell, positioned for-

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ward of the bicycle handlebar, and extending upwardly and downwardly therefrom to shield a rider on the bicycle against wind, rain and the like; said outer shell having a generally semi-circular plan shape, with a geometrical center point; and

(b) means for connecting said fairing with one of the front wheel and the handlebar of the bicycle for rotation there-



with as the bicycle is steered; said connecting means retaining said fairing in front of the bicycle, and locating the center point of said outer shell in a generally concentric relationship with the vertical steering axis of the bicycle, thereby substantially alleviating the imposition of undesirable, externally imposed torques on the bicycle handlebar from the force of cross winds and the like acting on said fairing.

4,655,498

SUN VISOR FOR AUTOMOTIVE VEHICLES

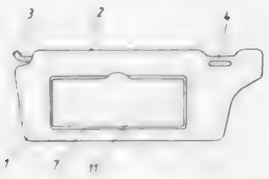
Rudolph Paszaer, Wuppertal, and Joachim Janz, Sindelfingen, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed May 14, 1986, Ser. No. 863,231

Claims priority, application Fed. Rep. of Germany, May 24, 1985, 3518751

Int. Cl.⁴ B60J *3/02*

U.S. Cl. 296—97 H **22 Claims**



1. A sun visor for automotive vehicles having a generally flat body with two opposite main surfaces; a recess in one of the main surfaces including therein a housing;

a cover pivotally supported to the housing, the pivotal support for the cover comprising a first hinge pin supported to the housing and extending generally in the plane of the sun-visor body for enabling the cover to pivot with respect to the one surface of the body; the pivotal connection further comprising a second hinge pin on the cover and extending generally in the plane of the cover for enabling the cover to be pivoted around the second hinge pin with respect to the surface of the body; the first and second hinge pins being separated from each other;

a strap joined to the first and second hinge pins and extending between them; the strap having respective first and second end regions in the vicinity of the first and second hinge pins; the first end region of the strap having first and second detent means at spaced apart locations around the first end region; the second end region of the strap having third and fourth detent means at spaced apart locations around the second end region;

first locking means on the housing for selectively locking to one of the first and second detent means for holding the strap pivoted around the first hinge pin at positions defined by the cooperation between the first locking means and the first and second detent means, wherein the first locking means engages a respective one of the first and second detent means as a function of a respective pivot angle of the strap around the first hinge pin; second locking means on the cover for selectively locking to one of the third and fourth detent means for holding the cover pivoted around the second hinge pin at positions defined by the cooperation between the second locking means and the third and fourth detent means, wherein the second locking means engages a respective one of the third and fourth detent means as a function of the pivot angle of the cover around the second hinge pin.

4,655,499

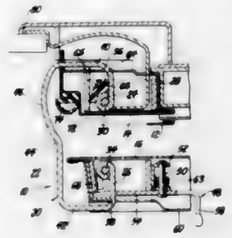
DOOR HINGE FOR VEHICLE

Robert J. Piper, 22494 Ray, Detroit, Mich. 48223

Filed Feb. 22, 1985, Ser. No. 704,483

Int. Cl.⁴ B60J *5/00*; **E05D** *15/28, 11/10, 3/08*

U.S. Cl. 296—146 **38 Claims**



19. A door hinge (**20**) comprising: a bracket member (**22**) having first and second ends (**24,26**); first support means (**28**) for supporting said first end (**24**) from a door frame (**14**), said first support means (**28**) including first connecting means (**30**) for connecting said first end (**24**) for pivoting movement relative to said first support means (**28**); second support means (**32**) for supporting said second end (**26**) from a door (**16**), said second support means (**32**) including second connecting means (**34**) for connecting said second end (**26**) for pivoting movement relative to said second support means (**32**); hinge latching means (**48**) for releasably latching one of said first and second ends (**24,26**) of said bracket member (**22**) from pivoting movement relative to the respective one of said first and second support means (**28,32**), said hinge latching means (**48**) characterized by including a latch member (**48**) mounted on said second support means (**32**) having a locked condition wherein said latch member (**48**) engages said second end (**26**) to prevent pivoting movement of said bracket member (**22**) relative to said second support means (**32**) and an unlocked condition wherein said latch member (**48**) disengages said second end (**26**), said latch member (**48**) being mounted on said second support means (**32**) for pivoting movement relative thereto, said latch member (**48**) including a leg portion (**54**) having a notch (**56**) therein and pivoting to engage said notch (**56**) on said second end (**26**) in the locked condition and to release said notch (**56**) from said second end (**26**) in said unlocked condition, said latch member (**48**) having a further locked condition wherein a boundary of the leg portion (**54**) engages said second end (**26**).

4,655,500

OPENING ROOF FOR MOTOR VEHICLES

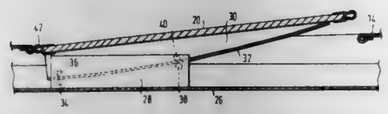
Douglas J. Cunningham, Portsmouth, United Kingdom, assignor to Britax Weathershields Limited, Birmingham, United Kingdom

Filed Nov. 5, 1985, Ser. No. 795,095

Claims priority, application United Kingdom, Nov. 30, 1984, 8430292

Int. Cl.⁴ B60J *7/057, 7/05*

U.S. Cl. 296—223 **8 Claims**



3. An opening roof assembly for a motor vehicle comprising a rigid panel adapted to close an opening in a vehicle roof, a guide track fast with the vehicle roof on a side of the opening below the level of the vehicle roof, and support means comprising a first support member having thereon a flange of arcuate shape having a concave side upwards and a front end lower than a rear end, a second support member having first cam follower means engaging with a first side of the flange and second cam follower means engaging with a second side of the flange to retain the first cam follower means in engagement with the first side of the flange, one of the support members being slidably mounted on the corresponding guide track and the other support member being fast with the underside of the panel, whereby relative moevement between the two support members causes the first support member to pivot relative to the second support member to raise the rear edge of the panel.

4,655,501

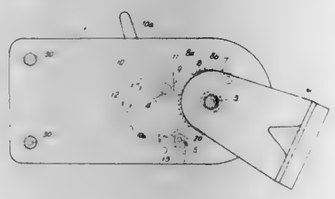
ARMREST OF A SEAT

Yukio Ishigami, Kawasaki; Yoshinori Akiyama, and Haruhumi Terasawa, both of Yokohama, all of Japan, assignors to NHK Spring Co., Ltd. and Ikeda Bussan Co. Ltd., both of Yokohama, Japan, a part interest

Filed Jul. 25, 1985, Ser. No. 758,754

Int. Cl.⁴ A47C *7/54*

U.S. Cl. 297—113 **7 Claims**



1. A seat assembly including an armrest, a backrest and an armrest device for adjusting an angle of the armrest relative to the backrest, said armrest device comprising:

pivot means for pivotally mounting the armrest to the backrest so that the armrest is movable between an upper position and a lower position;

first cam means mounted on the backrest;

ratchet means mounted on the backrest;

pawl means movably mounted on the armrest and urged into engagement with the ratchet means;

operating means interconnected with said pawl means and operable so as to disengage the pawl means from the ratchet means;

second cam means rotatably mounted on the armrest;

connecting means for connecting the second cam means to the pawl means;

said ratchet means acting in engagement with the pawl means to lock the armrest against movement in a first direction from the upper position to the lower position and to allow the armrest to move in a second direction opposite to the first direction;

third cam means having a first cam portion and a second cam portion, said third cam means being rotatably mounted on the armrest and arranged to rotate between a first position and a second position and urged into engagement with the first cam means through disengagement of said pawl means and said ratchet means and pivoting of the armrest, said third cam means engaging the second cam means to maintain the disengagement of the pawl means from the ratchet means;

said first cam means keeping the third cam means disengaged from the second cam means when the armrest is located in each of the upper and lower positions engaging the pawl means with the ratchet means;

in said first position, said first cam means enabling the first cam portion of the third cam means to engage the second cam means when the armrest is initiated to move in said first direction from the upper position to maintain the disengagement of the pawl means from the ratchet means until the armrest reaches the lower position wherein the second cam portion of the third cam is disengaged from the first cam, thereby rotating the first cam portion of the third cam to the second position out of engagement with the second cam and allowing pawl to engage the ratchet so that when the armrest is initiated to move in said second direction from the lower position, the second cam portion of the third cam, in the second position, reengages the first cam thereby allowing the pawl means to remain engaged with the ratchet means,

whereby the armrest is releasably locked in each of different positions of angular inclination.

4,655,502

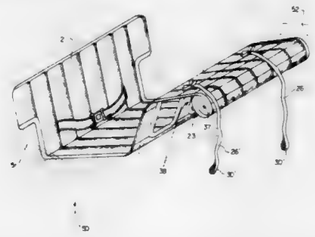
MULTI-ADJUSTABLE CUSHION FOR A SHOPPING CART

Cynthia A. Houllis, 756 Loquat Dr., Tarpon Springs, Fla. 33589

Filed Nov. 29, 1984, Ser. No. 676,325

Int. Cl.⁴ A47C *31/00*

U.S. Cl. 297—229 **1 Claim**



1. A foldable device for use in a shopping cart comprising an elongated first blank of material having a length and a width with inner and outer surfaces and parallel side portions, said side portions terminating in top and bottom end portions, said top end portion further constructed and arranged to have oppositely extending foldable wing areas which extend beyond said width, plural openings in said blank lying in a plane near said bottom end portion, each of said plural openings having a first edge zone positioned adjacent a line extending medially of said length of said blank and said openings being spaced substantially equally from each said parallel side portions, said plural openings further having lower edge areas, planar sheets of cushioning material abutting said inner surface of said first

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blank, said cushioning material further extending at least from said first edge zone of said equally spaced openings to said top end portion of said blank and said cushioning material further extending at least from said lower edge areas of said pair of openings to said bottom end portion of said blank and a second elongated blank of material duplicative of said first blank having inner and outer surfaces, said second elongated blank arranged to be secured to said first blank thereby encompassing said cushioning material to form a foldable seat cushion device having a front wall and a back wall, pocket formed along said back wall extending downwardly from a top edge, said pocket having the same width as said wing areas so that said pocket will adjust to different sized shopping cart upon which it fits, a pair of flap members affixed to said back wall and extending longitudinally thereof from said lower edge of said plural openings toward said bottom end portion, means on said front wall of said foldable seat cushion device arranged for attachment to said flap members on said back wall of said foldable seat cushion device between said plural openings and said bottom end when said bottom end of said foldable seat cushion device is rotated 180°-360° toward said back wall juxtaposed said flap members.

4,655,503

VEHICULAR SEAT

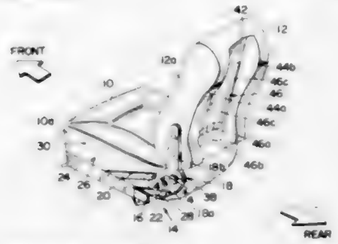
Ken Kamijo, Zushi; Kenzo Shimizu, and Hiroshi Ueno, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Dec. 14, 1984, Ser. No. 682,595

Claims priority, application Japan, Dec. 19, 1983, 58-237872; Dec. 19, 1983, 58-237873; Dec. 19, 1983, 58-237874

Int. Cl.[4] B60N *1/12*; B60R *21/10*

U.S. Cl. 297—238 **29 Claims**



1. A vehicular seat comprising:
a seat cushion;
a seat back;
means for supporting said seat back movably in forward and rear directions relative to said seat cushion;
means for locking said seat back in at least a first position and a second position relative to said seat cushion, a back side of said seat back forming part of a seat for a child in said first position, said first position being located forward of said second position which is located in a rear section of said seat cushion; and
means for restraining the body of said child relative to the back side of said seat back in said first position of said seat back, wherein said restraining means includes means defining on the back side of said seat back a groove within which upper body of said child is supported, and a seat belt assembly connected to the back side of said seat back to restrain the child upper body relative to said seat back.

4,655,504

STACKABLE CHAIR WITH GANGING STRUCTURE

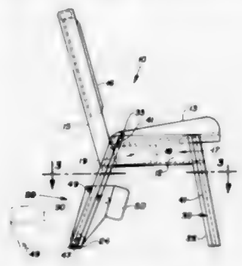
Jay B. Weber, 590 Valley View Dr., New Holland, Pa. 17557

Filed Jul. 29, 1985, Ser. No. 759,867

Int. Cl.[4] A47C *3/04*

U.S. Cl. 297—239 **7 Claims**

1. A chair having a seat portion supported in an elevated position by first and second pairs of legs affixed thereto, each said pair of legs having a front leg and a rear leg defining leg axes inclined from a vertical orientation and disposed in an upwardly converging relationship, each said leg having a support portion and an axially extending integral ganging portion, the ganging portions of corresponding legs of said first and second pairs of legs being oppositely disposed to permit a selective interengagement thereof between adjacent chairs to form a row of interlocked chairs, one of said rear legs being provided with a hole therein, the other of said rear legs having a bayonet joint in the form of an inverted L-shaped groove formed therein to permit the selective attachment of a kneeler member to said chair by pins positionable within said hole and said bayonet joint to enable said kneeler to be pivotally moved between a retracted position and a use position.



4,655,505

PNEUMATICALLY CONTROLLED SEAT FOR VEHICLE

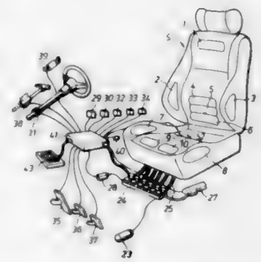
Takayoshi Kashiwamura, and Ryoichi Iwasaki, both of Kawasaki, Japan, assignors to NHK Spring Co., Ltd., Japan

Filed Nov. 18, 1985, Ser. No. 798,896

Claims priority, application Japan, Dec. 13, 1984, 59-264319; Feb. 7, 1985, 60-022497; Apr. 15, 1985, 60-079499; Jun. 20, 1985, 60-134838

Int. Cl.[4] A47C *7/46*; B60N *1/06*

U.S. Cl. 297—284 **12 Claims**



1. A seat for a vehicle which is pneumatically controlled for a desired body pressure distribution of a person seated in the seat, comprising:
a plurality of air bags embedded in a seat;
an air pressure source;
a single first conduit connected to the air pressure source at its one end and branched off into a plurality of second conduits leading to the air bags at its other end;
a plurality of on-off valves provided in each of the respective corresponding second conduits leading to the air bags;
a single only exhaust valve connected to the first conduit at its on end and to the atmosphere at its other end;

a single only pressure sensor provided in the first conduit; and
control means connected to the air pressure source, the on-off valves, the exhaust valve and the pressure sensor, the control means comprising means for storing predetermined air pressure values for the air bags, means for selectively opening and closing the on-off valves and the exhaust valve, and means for preventing the valve opening and closing means from opening the valves according to the result of comparison between the output from the pressure sensor and predetermined air pressure values whereby each of the air bags may be pressurized or depressurized by activiation of the air pressure source or the exhaust valve according to the pressure value determined by the single pressure sensor through sequential activation of the on-off valves for sequential selection of the air bags which are to be pressure controlled.

4,655,506

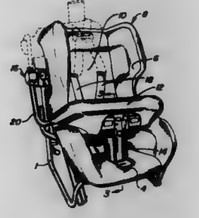
CHILD'S CAR SEAT RESTRAINT SYSTEM

Robert D. Wise, Akron; Robert L. Quinlan, Jr., Barberton; Charles W. Lauro, Akron, and Sidney H. Bradd, Jr., Solon, all of Ohio, assignors to Gerber Products Company, Fremont, Mich.

Filed Feb. 4, 1985, Ser. No. 698,010

Int. Cl.[4] A47D *15/00*

U.S. Cl. 297—467 **4 Claims**



1. A child's car seat restraining system for use with a chair structure having a back and a bottom, comprising:
a shield member which is rigid, comprising: a generally horizontal frontal restraint barrier, a generally vertical and rigid crotch member and a pair of generally L-shaped side arms;
means for engaging a lower end of said crotch member with the bottom of the seat structure; and
means for rotatably mounting each of said side arms of said shield member to either side of the chair back, said mounting means comprising a bolt passing perpendicularly through each said side arm and either side of said chair back, whereby said side arms and said bolts rotate said shield member relative to the chair structure, said mounting means further comprising a slide bracket fixedly mounted to either side of the chair back, each of said slide brackets including an elongated slot having enlarged sections separated by a connecting passage, defining a first and a second shield position, said slots slidably cooperating with said bolts passing through said side arms of said shield member to vary the distance between the chair back and said shield member.

4,655,507

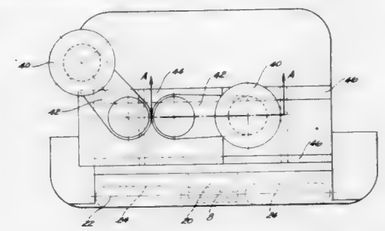
CONTINUOUS MINER

Edward Wechner, Minnamurra, Australia, assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed May 21, 1984, Ser. No. 612,215

Int. Cl.[4] E21C *29/22*

U.S. Cl. 299—33 **12 Claims**



1. A mobile mining machine comprising a crawler chain propelled maneuverable chassis, at least one cutting head mounted on the front of the chassis and capable of both being driven by said machine into a mine face and the cutting along said face transversely across the front of the machine, cutting head including a pair of auger-type cutting drums rotatable about an axis perpendicular to the face, said cutting drums mounted on the cutting head by way of a pair of independent support members for each cutting drum said support members arranged to effect, both horizontal and vertical movement of each cutting drum parallel to the face independently of one another, means for preprogramming the movement of each of said support members to effect cutting of the entire face as said cutter head traverses said face; and conveying means mounted on the chassis arranged to convey mined material from the front of the chassis toward the rear of the chassis.

4,655,508

TOOL COMPONENT

Peter N. Tomlinson, 315 Enford Road, Moodeor, Johannesburg, South Africa

Filed Sep. 5, 1984, Ser. No. 647,630

Claims priority, application South Africa, Sep. 5, 1983, 83/6566

Int. Cl.[4] E21B *10/62*

U.S. Cl. 299—79 **5 Claims**



1. A tool component for use with a holding lug including an upper portion, and comprising:
an axially extending cemented carbide stud defining an axis and including a top recess; and
a component abrasive compact secured within said top recess, extending outward therefrom, and forming an abrasive compact cutting edge or surface;
the stud including

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(i) a bottom portion for connecting the tool component to the upper portion of the holding lug,

(ii) a top conical portion having an outside conical surface sloping downwardly, radially outwardly from the abrasive compact and forming a circumferentially extending shoulder radially projecting outside said abrasive compact, circumferentially completely therearound, to deflect away from the holding lug material cut by the cutting edge or surface, and

(iii) a central portion located between the bottom and top portions of the stud to space top portion from the holding lug to facilitate positioning the upper portion of the holding lug completely inside the space bounded by an imaginary downward continuation of said conical surface.

4,655,509

HYDRAULIC ANTI-SKID APPARATUS FOR AUTOMOTIVE VEHICLES

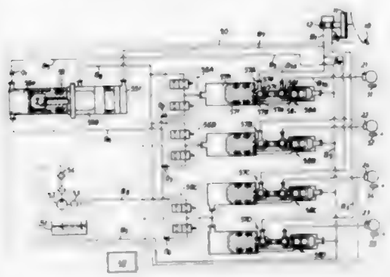
Masamoto Ando; Hiroaki Takeuchi, both of Toyota; Toyohisa Yamada, Aajo; Toshihiko Yamanaka, Toyota; Nobuyasu Nakanishi, Toyota, and Noboru Noguchi, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 781,631, Sep. 30, 1985, abandoned. This application Jun. 11, 1986, Ser. No. 873,849

Claims priority, application Japan, Sep. 29, 1984, 59-204790; Mar. 11, 1985, 60-048534

Int. Cl.[4] B60T *8/02, 8/88, 13/16*

U.S. Cl. 303—10 **13 Claims**



1. A hydraulic anti-skid apparatus for installation in a vehicle braking system between a master cylinder and a wheel brake cylinder, comprising:

a fluid reservoir arranged to store an amount of hydraulic fluid;

a fluid pump connected to said reservoir to produce a hydraulic power pressure;

a cut-off valve disposed within a braking circuit connecting said master cylinder to said wheel brake cylinder;

a bypass valve disposed within a bypass passage of the braking circuit;

first and second pistons respectively arranged to control opening and closing operations of said cut-off valve and said bypass valve, said first and second pistons each being arranged to be applied at one end thereof with a hydraulic braking pressure from said master cylinder and at the other end thereof with the hydraulic power pressure from said fluid pump;

a changeover valve arranged to be activated when a road wheel of the vehicle tends to be locked in braking operation, said changeover valve being adapted to apply the hydraulic power pressure to said first piston in its deactivated condition and to connect said first piston to said fluid reservoir in its activated condition; and

a regulator valve arranged to control the hydraulic power pressure applied to said first and second pistons in accordance with the hydraulic braking pressure applied thereto from said master cylinder;

wherein said regulator valve comprises a booster piston assembly having a small diameter portion applied with the hydraulic power pressure from said fluid pump and a large diameter portion applied with the hydraulic braking pressure from said master cylinder, and an exhaust valve assembled with said booster piston assembly to connect the small diameter portion of said booster piston assembly to said fluid reservoir when the hydraulic power pressure exceeds a predetermined value higher than the hydraulic braking pressure, wherein a check valve is arranged between said fluid pump and said regulator valve to permit the flow of pressurized fluid supplied from said fluid pump to said regulator valve and to block the flow of pressurized fluid from said regulator valve to said fluid pump so that the booster piston assembly of said regulator valve cooperates with said check valve to produce a hydraulic pressure at a higher value than the braking pressure, and wherein flow restriction means is arranged to throttle the flow of pressurized fluid supplied to said first piston through said regulator valve and said changeover valve so as to maintain the hydraulic power pressure acting on said second piston.

4,655,510

SELF-LAPPING TYPE CONTROL VALVE DEVICE

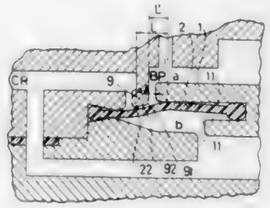
Hideo Tamamori, and Mitsugu Tsunazawa, both of Kobe, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Mar. 11, 1986, Ser. No. 838,646

Claims priority, application Japan, Mar. 11, 1985, 60-35296[U]

Int. Cl.[4] B60T *15/18*

U.S. Cl. 303—40 **5 Claims**



1. A self-lapping control valve device having a piston valve assembly for controlling the fluid pressure effective at a delivery port thereof, comprising:

(a) an opening formed in the body of said control valve device in which said piston valve assembly is operatively-disposed;

(b) said piston valve assembly comprising:

(i) a control piston; and

(ii) an annular diaphragm connected at the inner periphery thereof with said control piston;

(c) an annular recess in said opening of said body in which the outer periphery of said diaphragm is connected to said body, said recess forming an annular rim at the intersection of said recess and said opening in said body;

(d) a control chamber formed on one side of said diaphragm;

(e) a constant pressure chamber formed on the opposite side of said diaphragm;

(f) a passageway in said body having one end open to said control chamber within said recess, and the other end open to said constant pressure chamber to establish fluid pressure communication therebetween;

(g) check valve means operable in response to movement of said control piston for controlling fluid pressure communication between said constant pressure chamber and said control chamber, said check valve means including sealing means for effecting a fluid pressure seal between said diaphragm and said recess at a location therealong intermediate said one end of said passageway and said ridge, whereby said one end of said passageway is isolated from said control chamber when said control piston is moved in one direction in response to a reduction of fluid pressure in said control chamber, and said one end of said passageway is communicated with said control chamber when said control piston is moved in the opposite direction in response to an increase of fluid pressure in said control chamber; and

(h) said diaphragm being further engageable with said rim, when said control piston is moved in said one direction a predetermined distance in response to a predetermined differential of pressure effective between said control chamber and said constant pressure chamber, thereby establishing a first pressure area of said diaphragm subject to said predetermined pressure differential, said first pressure area being defined by the annular area of said diaphragm between the point of engagement thereof with said rim and said control piston, said diaphragm being disengaged from said rim when said piston is moved in said one direction a distance less than said predetermined distance in response to the differential of pressure between said control chamber and said constant pressure chamber being less than said predetermined pressure differential, thereby establishing a second pressure area of said diaphragm subject to said lesser pressure differential, said second pressure area being greater than said first pressure area and defined by the annular area of said diaphragm between said sealing means and the point of engagement with said control piston.

4,655,511

HYDRAULIC BRAKE BOOSTER WITH TRAVEL SIMULATOR AND ASSOCIATED ANTI-SKID BRAKE SYSTEM

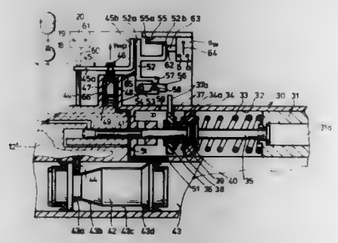
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 695,141

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1984, 3409705

Int. Cl.[4] B60T *8/02, 13/14, 17/18*

U.S. Cl. 303—92 **12 Claims**



1. A brake booster having a travel simulator device comprising a multi-circuit braker booster and an associated anti-skid brake system, a travel simulator, a failure reaction adjusting device, an error signal generation means disposed on said brake booster for generating a failure signal for actuating said failure reaction adjusting device for feedback of failures in the area of the brake booster as well as by an anti-skid brake system, said failure reaction adjusting device includes storage means capable of being switched over into a locking position and which via a following adjusting member intervene arrestingly in a further transmission of a brake signal to a brake valve in the vicinity of the travel simulator device for a predetermined period of time, said travel simulator device includes a piston actuatable by the brake pedal, a travel simulator spring supported on one end of said piston and that another support point for the travel simulator spring is embodied by a guide part supported such that said guide part is slidably displaceable, which on one end supports a fixed brake valve slide and supports a collar-like slide element slidably displaceably, under a separate spring biasing, wherein the event of a disruption in a brake circuit, said collar-like slide element includes an arresting nose which comes into an arresting operative connection with the adjusting member.

4,655,512

BRAKE SYSTEM HAVING A BRAKE BOOSTER

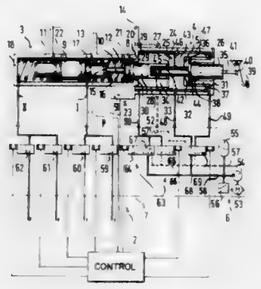
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 17, 1985, Ser. No. 788,320

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1984, 3440972

Int. Cl.[4] B60T *8/10*

U.S. Cl. 303—114 **21 Claims**



2. A brake system comprising a master cylinder, which contains at least one main piston with an associated brake booster, said brake booster includes a booster cylinder, a booster piston and a booster chamber defined by the booster piston and the booster cylinder; a pedal actuated brake valve, actuatable via a brake pedal for directing booster pressure into the booster chamber; a pressure supply device which supplies said pedal-actuated brake valve with fluid pressure; an auxiliary chamber which is located inside the booster cylinder between the booster piston and a wall of said master cylinder and a first line connection from said auxiliary chamber to said pressure supply device; an electrically controllable valve assembly connected to said connection line and to said pressure supply device, a return line leading from said electrically controllable valve assembly to an inlet side of said pressure supply device, a second electrically controllable valve assembly inserted between said pressure supply device and connected to said pedal-actuated brake valve via second and third line connections and via said return line to an inlet side of said pressure supply device, said second electrically controllable valve assembly in its basic position joins the pedal-actuated brake valve with the pressure supply device via said second line connection and upon being electrically switched over into its switching position, separates the pedal-actuated brake valve from the pressure supply device and relieves pressure in the booster chamber via said third line connection and said return line.

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ANTI-SKID HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

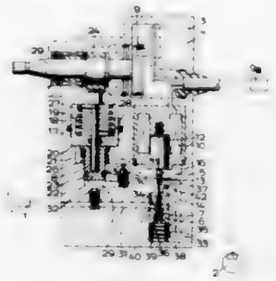
Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Public Limited Company, England

Filed Jul. 1, 1985, Ser. No. 750,883

Claims priority, application United Kingdom, Jul. 4, 1984, 8416991

Int. Cl.⁴ B60T 8/02

U.S. Cl. 303—115 9 Claims



1. An anti-skid hydraulic braking system for vehicles having a wheel and comprising a brake for the wheel, a supply of operating fluid for applying said brake, skid sensing means for sensing the behaviour of said wheel when braked and for emitting skid signals, and a modulator assembly for modulating the supply of operating fluid from said supply to said brake in accordance with a skid signal from said skid sensing means, wherein said modulator assembly comprises a housing incorporating means responsive to a skid signal, a normally open one-way valve through which said operating fluid is supplied to said brake and which is movable from a normally open position into a closed position to isolate said supply from said brake when a skid signal is operative, an expander piston operable in sequence with said one-way valve and movable between an advanced position in which the effective volume of an expansion chamber leading to said brake is at a minimum when said one-way valve is open and a retracted position in which the effective volume of said chamber is increased to relieve the pressure applied to said brake following movement of said one-way valve into said closed position, a pump incorporating a plunger separate from said expander piston and operative to effect re-application of said brake following correction of said skid, and a flow-control regulator valve for controlling the rate of brake re-application following correction of said skid with said one-way valve in said closed position, and wherein a cut-off valve responsive to a skid signal is disposed between said expander chamber and said brake, and said cut-off valve is operable independently of and separately from said expander piston, said cut-off valve co-operating with said one-way valve to hold said one-way valve in an open position when said cut-off valve is in a closed position with said means responsive to a skid signal inoperative.

4,655,514

SOUND REDUCTION FOR TRACKED VEHICLES

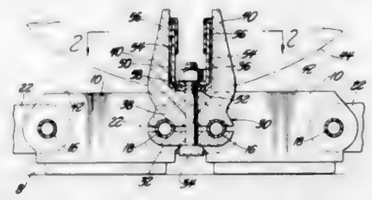
Edward T. Stanley, Centerline, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1986, Ser. No. 841,085

Int. Cl.⁴ B62D 55/20

U.S. Cl. 305—56 5 Claims

1. In an endless terrain-engageable track comprising a multiplicity of track shoes linked together so that adjacent shoes can pivot relative to one another around axes transverse to the direction of track travel; and a centerguide body located on the centerline of the track at each track shoe; each centerguide body comprising a web section and two upstanding prongs spaced along the track centerline for entry into peripheral guidance grooves in roadwheels rolling on the track shoe upper faces: the improvement comprising a U-shaped wall structure carried within the space circumscribed by the prongs to dampen vibrational movements of said prongs; said damper wall structure including a web wall mounted to the web section of the centerguide body, and two upstanding end walls



extending from the web wall along the facing surfaces of the aforementioned prongs; and an elastomeric spacer on the tip area of each upstanding end wall; each elastomeric spacer having extensive facial contact with the adjacent surface of the associated prong; the end walls of the damper wall structure being biased toward the facing surfaces of the prongs whereby the elastomeric spacers have pressure contact with the prong surfaces.

4,655,515

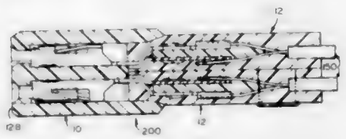
DOUBLE ROW ELECTRICAL CONNECTOR

Wilbur A. Hausher, Jr., New Cumberland, and Joseph L. Lockard, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 12, 1985, Ser. No. 754,784

Int. Cl.⁴ H01R 4/66, 9/11

U.S. Cl. 339—14 R 29 Claims



1. A multi-row electrical connector for signal conductor means and ground conductor means of electrical cable means for use in transmitting electrical signals with high reliability and uniformity, said connector having at least two rows of contact locations comprising signal locations and ground locations in each row which are independently programmable from row to row, comprising:

a plurality of single-row terminal assemblies secured together, each said terminal assembly having at least one ground contact section and a plurality of signal contact sections disposed at preselected locations along a forward end of said terminal assembly and in a single row, said preselected locations corresponding to respective said desired ground and signal locations of said associated row, wherein each said terminal assembly comprises:

(a) a dielectric contact-carrying member;

(b) a plurality of individual terminal means secured to one side of said dielectric contact-carrying member at all contact locations therealong and including a contact section means extending forwardly of said contact-carrying member;

(c) a ground plane means secured to the other side of said contact-carrying member and having at least one tab section means extending forwardly of said contact-carrying member at said at least one preselected ground location, each said at least one tab section means affixed

and electrically connected to a respective one of said individual terminal means rearwardly of the contact section means thereof transforming each said respective ones of said individual terminal means into a ground terminal means;

(d) end portions of electrical cable means having signal conductor means and having ground conductor means associated with respective said signal conductor means, said signal conductor means aligned with respective said desired signal locations;

(e) terminations of said ground conductor means of said electrical cable means to said ground plane means;

(f) terminations of said signal conductor means of said electrical cable means to respective others of said individual terminal means transforming said others into signal terminal means; and

(g) dielectric cover means secured sealingly over said signal and ground terminations and around said individual terminal means and ground plane means rearwardly from said contact sections and around end portions of said electrical cable means,

whereby said ground terminals are locatable in any respective positions along a row of said contact locations of said connector independently of ground locations of any other row thereof in a manner minimizing impedance discontinuity.

4,655,516

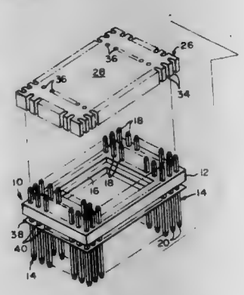
CHIP CARRIER CONNECTOR AND METHOD OF MAKING SAME

David T. Shaffer, and Philip J. Walker, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 20, 1984, Ser. No. 683,896

Int. Cl.⁴ H05K 1/00

U.S. Cl. 339—17 CF 7 Claims



1. A chip carrier connector, comprising:

an array of parallel spaced electrical terminal posts selectively positioned and having upper sections and bottom sections, said upper sections adapted to be electrically connected with respective conductive areas of a ceramic chip carrier, and said bottom sections to be inserted into respective holes in a printed circuit board for electrical connection with respective circuit paths thereof;

a dielectric frame molded to said terminal posts proximate said upper sections thereof;

a ceramic chip carrier having conductive areas within which said upper sections of said terminal posts are secured and electrically connected and adapted to receive a circuit chip therein and having circuit paths extending from said circuit chip to said conductive areas; and

said connector including a dielectric aligning means comprising a dielectric flexible substrate containing no preformed apertures forced over said terminal posts between said upper sections and bottom sections thereof prior to said securing of said chip carrier to said terminal posts, said dielectric aligning means adapted to be movable along said bottom sections of said terminal posts to a position adjacent the ends thereof to align said bottom sections with said respective holes in said printed circuit board for insertion thereinto.

4,655,517

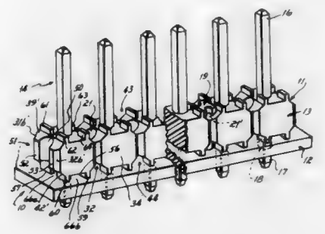
ELECTRICAL CONNECTOR

J. Robert Bryce, Fairport, N.Y., assignor to Crane Electronics, Inc., Cincinnati, Ohio

Filed Feb. 15, 1985, Ser. No. 701,950

Int. Cl.⁴ H01R 9/09

U.S. Cl. 339—17 LC 23 Claims



1. An electrical connector comprising:

an insulator block having a bottom adapted to rest upon a printed circuit board-type substrate placed therebelow, the insulator block having a top spaced above the bottom;

at least one row of electrically conductive pins spaced apart from one another and fixedly secured in the insulator block, each said pin having a first end below the bottom and extending from the insulator block in a first direction generally perpendicularly the bottom for electrical and mechanical connection to a printed circuit board-type substrate;

the insulator block further including (a) a series of holes, a different one of which is located between each pair of adjacent pins in the row of pins, each said hole extending generally in the first direction and adapted to receive therethrough a peg for securing the insulator block to a printed circuit board-type substrate, and (b) a series of notches along the insulator block top, each said notch of the series of notches extending across and through a respective said hole of the series of holes, the holes and notches cooperating to produce planes of weakness spaced apart from one another along the insulator block and through the holes to facilitate breaking the insulator block at desired locations.

4,655,518

BACKPLANE CONNECTOR

Lennart B. Johnson, Milford; William B. Walkup, and Steven F. Laychak, both of Amherst, all of N.H., assignors to Teradyne, Inc., Boston, Mass.

Continuation of Ser. No. 641,915, Aug. 17, 1984, abandoned.

This application Feb. 10, 1986, Ser. No. 828,160

Int. Cl.⁴ H01R 4/66, 9/09

U.S. Cl. 339—17 LC 16 Claims

1. A daughter printed circuit board and backplane assembly comprising

a backplane,

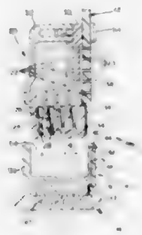
a plurality of daughter printed circuit boards mounted perpendicular to said backplane,

a plurality of first connector elements connected to either said backplane or said daughter boards, each said first connector element including a base of insulating material, a pair of first elongated flat sidewalls of insulating material extending from said base perpendicular to said base and parallel to the daughter boards and to each other and spaced from each other to define a contact region between

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their inwardly directed faces, said contact region being free of insulating material of said first connector element, and a plurality of rows of free standing first contacts extending from said base parallel to said sidewalls along first axes between and parallel to said first sidewalls and said base, said first contacts being male contacts,

a plurality of second connector elements connected to the other of said backplane or daughter boards, each said second connector element including a housing of insulating material having outwardly directed second sidewalls facing and fitted between said first sidewalls and a plurality of second contacts therein arranged in rows parallel to said first and second sidewalls along second axes between and parallel to said first and second sidewalls and aligned with and contacting said first contacts of a respective first



connector element, said second contacts each being female contacts having two opposing contact portions for receiving one of said male contacts between said portions,

a plurality of third contacts being carried by a said first sidewall and having inwardly directed third contact portions,

a plurality of fourth contacts carried by a said second sidewall and having outwardly directed fourth contact portions contacting said third contact portions,

a plurality of fifth contacts, said fifth contacts being integral with said second contacts, said second and fifth contacts being opposite extremities of a single contact member, and

a plurality of sixth contacts, each of said sixth contacts being integral with at least one of said fourth contacts, said fourth and sixth contacts being toward opposite extremities of a single contact member.

4,655,519

ELECTRICAL CONNECTOR FOR INTERCONNECTING ARRAYS OF CONDUCTIVE AREAS

William R. Evans, Clemmons, N.C., and David B. Sinisi, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 16, 1985, Ser. No. 787,855

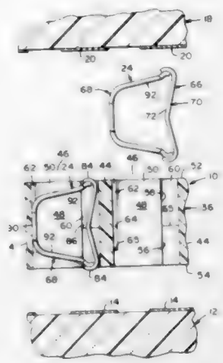
Int. Cl.⁴ H01R *9/09*

U.S. Cl. 339—17 CF **19 Claims**

17. A contact element for positioning in a dielectric housing means having contact element receiving compartment means therein with openings thereto in two opposing surfaces, said contact element to be positioned between and to electrically interconnect conductive means on the surfaces of electrical components, comprising:

a generally U-shaped spring, stamped and formed from resilient conductive material and having diverging cantilever spring arms extending obliquely outwardly from opposing edges of center support means; and

a conductive member comprising a trace of conductive material extending for edge to edge across a flexible substrate of a suitable dielectric material forming a laminate, the edges of said laminate being attached to respective free ends of said spring arms and extending across the space between said cantilever spring arms with opposite ends of said trace being located adjacent respective ones of said openings to electrically engage and interconnect said conductive means on said electrical components when



said spring member and conductive member are disposed in the compartment means.

4,655,520

ELECTRICAL DISTRIBUTION SYSTEM AND CONNECTOR THEREFOR

John H. Cummings, Santa Ana, Calif., assignor to Luma Lighting Industries, Inc., Santa Ana, Calif.

Filed Feb. 11, 1986, Ser. No. 828,761

Int. Cl.⁴ H01R *9/07*

U.S. Cl. 339—21 R **40 Claims**



1. A lighting system comprising:

a channel member having guide means and a generally C-shaped cross-section with an opening;

a flexible cable having a plurality of insulated conductors therein, said cable being retained within said channel member;

a first connector member having means thereon for slidably engaging said guide means and other means for attachment to an electrical fixture;

a second connector member having barb means for piercing the insulation of at least some of said conductors of said cable through the opening of said channel member, and electrical connection means for connection to the electrical fixture, said first and second connector members being configured for coacting engagement for urging said barb means through the insulation of said at least some of said conductors and for retaining said connector members in fixed relation relative to said channel member,

and interengaging cam means on said first and second connector members for driving said second connector member toward said channel member and said cable in response to sliding motion of said first connector member along the length of said channel member.

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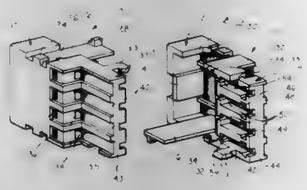
MULTICOMPONENT TELEPHONE BLOCK ACCESS SYSTEM

Stephen M. Thomas, Torrington, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Nov. 15, 1985, Ser. No. 798,860

Int. Cl.⁴ H01R *27/00*

U.S. Cl. 339—31 R **33 Claims**



1. A system for accessing the wiring of a telephone terminal bock of the type having a plurality of electrical connectors extending thereform comprising:

a pair of identical body portion sub-assemblies adapted to be spaced in opposed orientations and then assembled to effect a snap-lock fit and thereby define an access body, each of said body portion sub-assemblies comprising:

a first housing section having opposed front and back surfaces, opposed first and second end surfaces and a side surface communicating with and being transverse to said front, back and first and second end surfaces, the volume between said side surface, front, back and end surfaces defining a recess for receiving electrical wiring;

said first end surface having tab means laterally extending beyond said first end surface, and said second end surface having a first space therein, said tab means being adapted for permanent removal from said first end surface and by such permanent removal forming a second space in said first end surface, said second space being adapted to receive additional component pieces of said system in interlocked attachment to said access body;

said tab means including means for snap-locking onto the first space of another body portion sub-assembly;

said first space including means for snap-locking onto the tab means of said another body portion sub-assembly;

a second housing section connected to and extending from said front surface of said first housing section, said second housing section defining a nose portion terminating at a planar surface and having a plurality of apertures therein, each of said apertures leading to a cavity, each of said cavities being adapted to hold and retain an electrical terminal clip therein.

4,655,522

ELECTRICAL TERMINAL RECEPTACLE

Hoy S. Beck, Jr., Lexington, N.C.; Larry L. Leitzel, Harrisburg, Pa., and John R. Shoemaker, Reidsville, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 24, 1984, Ser. No. 685,673

Int. Cl.⁴ H01R *27/00*

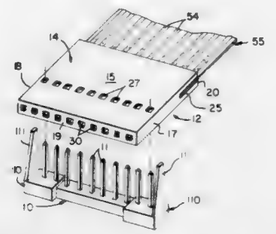
U.S. Cl. 339—32 M **15 Claims**

1. An electrical terminal adapted to electrically interconnect a conductor with a male post, said terminal having three mating orientations and the ability to mate with the post in any one of said three mating orientations, and comprising a metal member which includes:

a pair of elongate, generally flat side beams disposed in a parallel, laterally spaced-apart relationship, and so as to define a lateral direction extending between said side beams, a longitudinal direction which is parallel to the elongate direction of the side beams, and a transverse direction which is perpendicular to the longitudinal direction and to the lateral direction;

integral connection means interconnecting each pair of adjacent ends of the two side beams; and

said side beams each having a contact surface located at a medial location along its length and with the contact



surfaces of the two side beams being laterally aligned with each other and indented inwardly toward each other and such that the area between the two contact surfaces is accessible by a post entering therebetween from at least one longitudinal direction and each of the two opposite transverse directions, and with the inwardly indented contact surfaces presenting converging surfaces to facilitate the entry of the past in each of said directions and to cause said side beams to spring apart and resiliently engage the post upon such entry.

4,655,523

STAND FOR CORDLESS ELECTRIC APPLIANCE

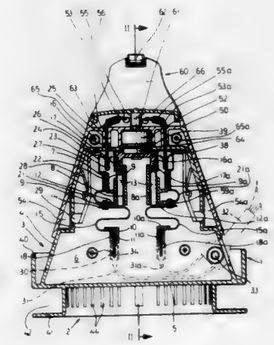
Joachim Rebel, D-Reichenbach/Fils, Fed. Rep. of Germany, assignor to Geka-Werk Reinhold Klein K.G., Fed. Rep. of Germany

Filed Jul. 12, 1985, Ser. No. 754,434

Claims priority, application Fed. Rep. of Germany, May 17, 1985, 3517831

Int. Cl.⁴ H01R *13/44*

U.S. Cl. 339—40 **13 Claims**



1. A stand for a cordless electric appliance, comprising:

a base with a bottom member;

connection means, mounted on said base and extending generally perpendicular to said bottom member, for releasably coupling the cordless appliance to an electrical power source, said connection means having a housing

shaped to receive a molded part of the cordless appliance to a wedge locking connection; and

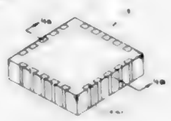
a support means, mounted on said base and spaced by a distance from said housing, for supporting the cordless appliance, said support means including a cylindrical member mounted on a plug projection extending upwardly and unitarily from said bottom member of said base.

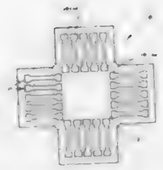
4,655,524

SOLDERLESS CONNECTION APPARATUS

Stephen J. Etzel, Woodstock, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Jan. 7, 1985, Ser. No. 689,471
Int. Cl.⁴ H01R *11/00*
U.S. Cl. 339—59 M **18 Claims**





1. A solderless connector comprising:

flexible circuit sheet means, said circuit sheet means including a nonconductive substrate having an electrically conductive pattern means thereon; and

compressible element means;

said flexible circuit sheet means being wrapped around and secured to said compressible element means to form a top surface and bottom surface, said conductive pattern means being adapted to electrically connect said top surface to said bottom surface.

4,655,525

MEANS FOR RETAINING TERMINALS IN A CONNECTOR

Alexander Hunt, III, Harrisburg, and Dennis E. Smith, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

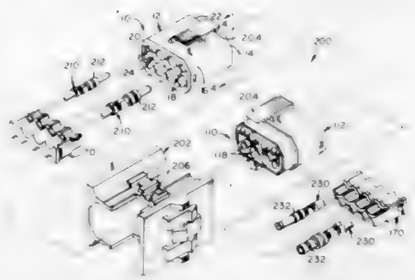
Filed Jul. 3, 1985, Ser. No. 752,327
Int. Cl.⁴ H01R *11/11*
U.S. Cl. 339—63 M **17 Claims**

1. An insert for an electrical connector, said connector having a dielectric housing, at least one terminal-receiving cavity extending axially therethrough and a respective terminal disposed therein, each said respective terminal terminated onto an associated electrical conductor, comprising:

a dielectric body means profiled to be axially received alongside rearward conductor portions in an insert-receiving cavity means in a rearward section of said housing from rearwardly thereof;

means laterally of said body means for securing said body means in said insert-receiving cavity means; and

terminal-engaging stop means on said body means extending outwardly from terminal-proximate surface means thereof for engaging each said terminal rearwardly of a cooperating stop means thereof such that when said body means is



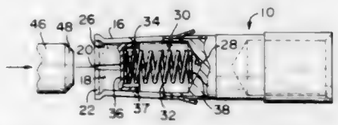
secured in said housing, said terminal-engaging means prevent axially rearward movement of each said terminal.

4,655,526

LIMITED INSERTION FORCE CONTACT TERMINALS AND CONNECTORS

Howard R. Shaffer, Millersburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 646,554, Aug. 31, 1984, Pat. No. 4,591,222. This application Jan. 29, 1986, Ser. No. 823,849
The portion of the term of this patent subsequent to May 27, 2003, has been disclaimed.
Int. Cl.⁴ H01R *13/62*
U.S. Cl. 339—74 R **3 Claims**



1. A passive cam follower means associated with a first electrical article where said first article has a body portion, a mating axis, at least one contact section means capable of being spring biased normally to said mating axis, and a cooperating surface means spaced laterally from said at least one contact section means and associated therewith, where said at least one contact section means has a contact surface for electrical engagement with associated contact surface means of a second electrical article in an axial mating procedure requiring insertion force, wherein:

said passive cam follower means comprises a bracing means, a stop means and a compression means between said bracing means and said stop means;

said compression means has a low compression strength;

said stop means is disposed in stopping engagement axially with respect to said body portion;

said compression means is disposed along the mating axis and is compressible by said second electrical article during said axial mating;

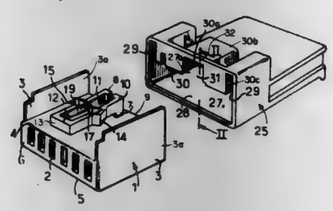
said bracing means is disposed in a position adjacent to and in bracing engagement with said at least one contact section means proximate said contact surface thereof and said cooperating surface means to hold said contact section means substantially in a preselected spring-biased position in relationship to said cooperating surface means when said first electrical article is not in mated engagement with said second electrical article, said position being substantially equivalent to the position of said at least one contact section means when said first article and said second article are fully mated, whereby said mating requires substantially less insertion force.

4,655,527

CONNECTOR APPARATUS

Bertrand Vandame, Villepreux, France, assignor to Precision Mecanique Labinal, Bois d'Arcy, France

Filed Jan. 6, 1986, Ser. No. 816,626
Claims priority, application France, Jan. 14, 1985, 85 00458
Int. Cl.⁴ H01R *13/627*
U.S. Cl. 339—91 R **43 Claims**



1. A fastening device comprising:

(A) a first element, adapted to be connected to a second element, said first element including an elongate member having:

(1) flexible, lateral sides each of which is provided with a boss, each of the bosses having an exterior edge positioned along an intermediate portion of each of said sides; and

(2) an upper surface side provided with a lug located adjacent said bosses; and

(B) a second element, adapted to be connected to said first element, including a hollow member having a front face in the form of an opening bordered by:

(1) opposite side rims, spaced apart by a distance at least as great as the width between said lateral sides of the elongate member but less than the distance between the exterior edges of the bosses, adapted to interact with said bosses, and

(2) an upper rim adapted to interact with said lug to fasten said first element and said second element together when said elongate member is inserted into said hollow member so that the bosses and the lug pass by the rims.

4,655,528

CONNECTOR FOR RIBBON CABLE

James L. Groft, McSherrystown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 679,340, Dec. 4, 1984, abandoned. This application Aug. 2, 1985, Ser. No. 761,990
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 339—99 R **6 Claims**

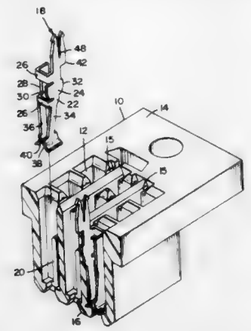
1. An electrical connector for use in establishing electrical connections to the conductors of a flat cable of the type comprising a plurality of conductors held in spaced side-by-side parallel relationship by plastic insulating material, the electrical connector comprising:

a housing member having a mating end and a cable receiving end;

a plurality of terminal passages extending from the mating end through the cable receiving end;

a like plurality of terminals positioned in the passages having cantilever contact engaging members extending from a midsection of the terminals; and

a rib positioned in the passages on a wall thereof, the ribs extend from proximate the mating end toward the cable receiving end, the end of the rib toward the cable receiving end of the passage being tapered, the tapered end of the rib providing diverging surfaces such that as a terminal is inserted into the passage the cantilever contact engaging members engage respective tapered surfaces, forcing the members into the prestressed position to allow for insertion of a matable contact under reduced insertion force, the tapered end of the rib also engaging the bottom



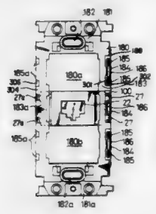
surface of the midsection of the terminal such that a stop position is reached thereby assuring that proper alignment of the terminal is maintained, ensuring a positive electrical connection is established with the matable contact and preventing the terminal from axial movement during insertion of a conductor in the terminal.

4,655,529

JACK FOR TELEPHONE SET

Hideki Yokoyama, Tsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jul. 17, 1985, Ser. No. 755,901
Claims priority, application Japan, Jul. 25, 1984, 59-154501
Int. Cl.⁴ H01R *13/506*
U.S. Cl. 339—122 R **5 Claims**



1. A jack for a telephone set comprising a casing made of an insulating material and including body and cover parts coupled together, said casing having a mounting hole for a plug connected to a cord of said telephone set, a jack body housed within the casing and having contact means contactable with contacts of said plug inserted into said mounting hole, connecting terminals arranged within the casing and connected to said contact means of said jack body, and engaging means provided on the casing for connecting the jack to a mounting frame, said engaging means comprising projections provided on opposing side portions of said casing and extending in opposite laterally outward directions to be engageable in holding holes provided in the mounting frame, said body and cover parts of said casing being coupled together by means of a pair of clamps, said projections being provided on said clamps.

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4,655,530

SNAP-IN MODULE FOR RECEIVER ASSEMBLY

Donald L. Sheets, Waynesboro; Sherwood A. Hoover, Lyndhurst; Ronnie D. Huat, Waynesboro, and Henri T. Burgers, Grottoes, all of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.

Filed Jan. 16, 1986, Ser. No. 819,367
Int. Cl.[4] H02B *1/04*
U.S. Cl. 339—126 R **10 Claims**

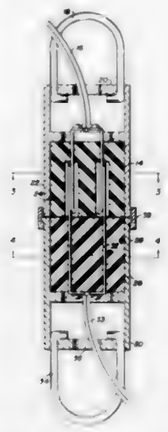


5. A snap-in module for a receiver assembly or the like comprising a rectangular frame having opposite side locator notches and a rear retainer surface, said notches having locking recesses formed therein, and an easily insertable and removable multi-contact module bar for each opposing pair of notches in said frame, a spring-urged releasable locking plunger on each end of the module bar normally projecting somewhat beyond the adjacent end face of the module bar and being retractable to a position flush with the adjacent end face of the module bar to enable removal of the module bar from said frame, and spring means on one side of the module bar near its ends acting across the axes of said plungers and engaging side faces of the notches to urge the module bar into engagement with datum surfaces on said frame.

4,655,531

ELECTRICAL COUPLER

Edward J. Delaney, 119 Aycrigg Ave., Passaic Park, N.J. 07055
Continuation-in-part of Ser. No. 515,774, Jul. 21, 1983, abandoned. This application Sep. 20, 1985, Ser. No. 778,439
Int. Cl.[4] H01R *13/73*
U.S. Cl. 339—135 **6 Claims**



1. An electrical coupler for releasably connecting a hanging lamp by a hanging chain to a ceiling mount of an electrical receptacle, said coupler comprising:

(a) a first housing having an uninterruptible electrical and mechanical connection to a suitable intermediate point of said hanging chain, said point thusly defining upper and lower segments of said hanging chain, said first housing having an upper end facing the ceiling and a lower end disposed oppositely therefrom, said lower end defining an open face of said first housing;

(b) an electrical socket means secured within said open face of said lower end of said first housing, said socket means axially secured within said first housing, said socket means comprising a substantially integral insulative body;

(c) a second housing having an upper end and a lower end, said upper end defining an open face of said second housing, said lower end disposed oppositely therefrom, said open face of said second housing comprising a structure complementary to, and engagable with, said open face of said first housing;

(d) an electrical plug press-fittable into said electrical socket means of said first housing, said plug set within said open upper end of said second housing, said plug comprising a substantially integral insulative body;

(e) electrical mechanical extension means extending axially downward from said plug through the lower end of said second housing to an exit area within said lower end of said second housing, said exit area comprising an electrical and mechanical interface to the lower segment of said hanging chain, to the other end of said lower segment permanently attached to said hanging lamp; and

(f) exterior circumferential securement means for holding said first and second housings together after said electrical socket means and plug are connected,

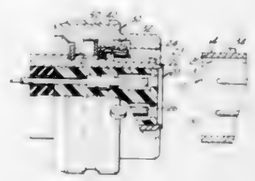
whereby said second housing and its associated plug and extension means constitute a permanent part of said hanging chain which permanent part thereby permits convenient, releasable coupling and decoupling of said lower segment of said hanging chain to said first housing and to its electrical socket means.

4,655,532

CIRCUMFERENTIAL GROUNDING AND SHIELDING RING FOR AN ELECTRICAL CONNECTOR

Frank M. Hillis, Franklin, and Robert W. Brush, Sr., Unadilla, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 6, 1986, Ser. No. 826,534
Int. Cl.[4] H01R *13/648*
U.S. Cl. 339—143 R **5 Claims**



1. An electrical connector comprising a pair of mating electrical members having telescopically assembled conductive shells providing adjacent circumferential surfaces, a continuous groove of predetermined axial dimension in one of said surfaces, a shielding and grounding device mounted in said groove, and retaining means disposed in said groove for non-removeably retaining said shielding device in said groove, said shielding device comprising a ring portion extending substantially continuously around said groove and having an inner and outer edge with the inner edge thereof being disposed in said groove, and a set of fingers being integrally formed with the outer edge thereof and extending axially forward therefrom to deflectable free end portions, the fingers being angularly spaced whereby to describe a set of axial slots and said free end portions of said fingers being adapted to engage the other of said surfaces upon mating, and further characterized by said

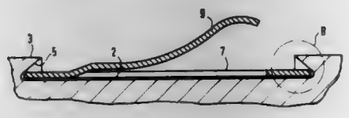
device having a lip extending axially from said ring portion so as to be in contact with said groove and each said slot undergoing approximately a 90° change in direction so as to terminate in the ring portion, and said retaining means pressing the lip radially inward and into contact with the circumferential periphery of said groove and the ring portion axially forward and against a rearwardly facing axial wall defined by the groove.

4,655,533

ELECTRICAL CONNECTOR CONTAINING AN ANNULAR SHIELD AND METHOD OF MANUFACTURE THEREOF

Herbert Haag, Weinstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York,, N.Y.

Filed Jan. 29, 1982, Ser. No. 343,973
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1981, 3103668
Int. Cl.[4] H01R *13/46, 43/04*
U.S. Cl. 339—143 R **7 Claims**



1. An electrical connector member comprising:

a housing having an annular groove formed in the outer surface thereof behind the forward mating end of the housing;

the sidewalls of said groove being undercut to form annular recesses facing each other;

an axially extending recess formed in the outer surface of said housing intersecting said groove;

an annular conductive shield mounted in said groove with its edges extending into said annular recesses whereby said shield is retained in said groove;

said shield being formed from a strip having its opposite ends adjacent to each other;

said shield embodying resilient spring fingers extending outwardly from said groove;

said annular recesses in the sidewalls of said groove forming relatively narrow lips overlying the edges of said shield; and

said axially extending recess being at least as long as the width of said shield and at least as deep as said groove, and intersecting said lips whereby said shield may be installed as a strip tangentially into said groove and annular recesses through said axially extending recess.

6. A method of manufacturing an electrical connector member having an annular conductive shield comprising the steps of:

forming an annular groove in the outer surface of a connector housing;

undercutting the endwalls of said groove;

forming an axially extending recess in the outer surface of said housing intersecting said groove and the undercut portions of the endwalls thereof;

providing a conductive shield strip having resilient spring fingers extending outwardly from one side thereof; and

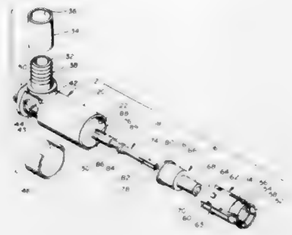
inserting said strip tangentially into said groove through said axially extending recess with said fingers extending outwardly through said groove and until said strip substantially surrounds said housing.

4,655,534

RIGHT ANGLE COAXIAL CONNECTOR

Lloyd C. Stursa, Owatonna, Minn., assignor to E. F. Johnson Company, Waseca, Minn.

Filed Mar. 15, 1985, Ser. No. 712,554
Int. Cl.[4] H01R *17/18*
U.S. Cl. 339—177 R **6 Claims**



1. A coaxial connector plug for mechanically and electrically connecting a coaxial jack and a coaxial cable, said jack and said cable each having spaced apart inner and outer conductors separated by a dielectric member, comprising:

a body portion having a first coupling section with a generally cylindrical inner surface adapted for receiving said coaxial jack and a second coupling section adapted for receiving said coaxial cable;

a generally tubular, coaxial jack receiving receptacle interface received within said first coupling section and adapted for mechanical and electrical connection to said coaxial jack outer conductor;

a generally tubular dielectric element received within said receptacle interface;

a center contact received within said dielectric element, said dielectric element providing electrical isolation between said receptacle interface and said center contact, said center compact adapted for mechanical and electrical connection to said coaxial jack inner conductor,

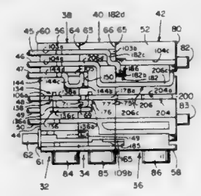
said receptacle interface including a first set of multiple spring leaf barbs oriented generally radially outwardly from said receptacle interface for mechanical and electrical engagement of said receptacle interface with said first coupling section inner surface, and further including a second set of multiple spring leaf barbs oriented generally radially inwardly for mechanical engagement of said receptacle interface with said dielectric element.

4,655,535

JACK MODULE AND JACKFIELD

William J. Kysiak, Brookfield, Ill., assignor to Switchcraft, Inc., Chicago, Ill.

Filed Jun. 3, 1985, Ser. No. 740,441
Int. Cl.[4] H01R *13/50*
U.S. Cl. 339—182 R **4 Claims**



1. A jackfield assembly comprising:

module interconnecting means including a printed circuit board having an array of apertured areas provided with

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respective patterns of through-apertures and printed circuit means disposed on at least one surface of the board for making electrical connections to said through-apertures; and

an array of electrical jack modules conforming to the array of apertured areas, each of the modules including a stacked series of electrical jacks having respective body means provided with respective open-ended bores for receiving therein an electrical jack plug,

each of the modules having aligned with a respective one of said apertured areas of proximal surface having protruding therefrom wire terminal means for extending through the predetermined pattern of through-apertures in the aligned apertured area and electrically connecting to said printed circuit means,

the body means of each of the electrical jacks in said stacked series including respective external side surfaces of dielectric material disposed substantially orthogonal to said proximal surface of the module and provided with respective recess means for receiving therein electrical conductors and with respective electrical switches disposed within the recess means in said external side surfaces, each of said switches comprising a pair of first and second contact members and

electrical shunt means disposed within the recess means in said external side surfaces of two electrical jacks in each of said stacked series and integrally connected to the respective first contact members of said electrical switches therein for electrically connecting the respective first contact members directly on the module and simplifying the electrical connections required of the printed circuit means.

4,655,536

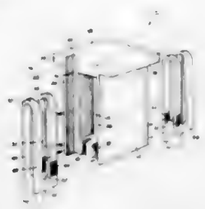
PLUG ARRANGEMENT FOR ELECTRIC CORD SET

Stephen P. Short, Johnston, R.I., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 11, 1985, Ser. No. 786,574

Int. Cl.⁴ H01R *13/502*

U.S. Cl. 339—191 R **8 Claims**



1. An insert for a female electric plug comprising:

a solid generally parallelepipedal body of electrically insulating material, having first and second pairs of opposed side faces, a top face and a bottom face; first and second concave air gap cavities disposed within respective ones of said first pair of opposed side faces of said body and having a pair of slots in each of said first pair of opposed side faces of said body extending from respective ones of said cavities to said bottom face of said body for supporting electrical contact means in cantilever fashion within said air gap cavities;

extensions from respective ones of said second pair of side faces of said body adjacent one of said first pair of opposed side faces of said body projecting adjacent to the sides of one of said cavities and forming generally parallel walls of an open channel along said one of said first pair of opposed side faces for receiving a male plug blade; and

first and second shoulders extending generally perpendicularly from respective ones of said second pair of side faces to form part of said top face whereby said top face has a larger surface area than said bottom face.

4,655,537

COMPLIANT SECTION FOR CIRCUIT BOARD CONTACT ELEMENTS

Howard W. Andrews, Jr., Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 726,212, Apr. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 523,505, Aug. 15, 1983, abandoned. This application Apr. 30, 1986, Ser. No. 858,848

Int. Cl.⁴ H01R *13/42*

U.S. Cl. 339—221 R **3 Claims**



1. An electrical contact element for mechanical and electrical connection with a plated-through hole in a printed circuit board comprising:

a contact section, a tail section and a compliant section disposed therebetween, said compliant section having a pair of spring members joined at both ends to the contact and tail sections, and each having a plurality of segments and inner surfaces, each spring member, prior to being inserted into the plated-through hole, extends outwardly from each other on opposite sides of a first plane containing a longitudinal axis of the electrical contact element and with the inner surfaces being disposed in a second plane perpendicular to the first plane and further only the end-most portions of each spring member extend across the first plane vis-a-vis attachment to the contact and tail sections, said segments of the spring members including:

first segments being attached to the contact section and extending obliquely outwardly from the longitudinal axis and from each other,

second segments being attached at one end to the first segments and extending substantially parallel to the longitudinal axis,

third segments being attached at one end to the second segments and extending obliquely inwardly towards the longitudinal axis and towards each other,

fourth segments being attached at one end to the third segments and extending substantially parallel to the longitudinal, axis and are spaced closer thereto than the second segments; and

fifth segments being attached at one end to the fourth segments and to the tail section and extending obliquely inwardly towards the longitudinal axis and towards each other;

said second, third and fourth segments being spaced from the first plane so that space is provided between the spring members.

4,655,538

TERMINAL CONNECTING DEVICE FOR PULLING-TYPE BREAKER

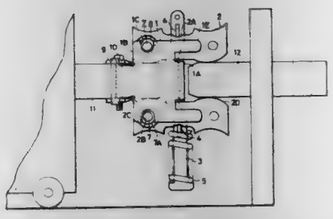
Kiyoshi Eguchi; Takayoshi Ishikawa; Shigemi Tamaru; Yasushi Genba, and Tsutomu Sera, all of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 362,945, Mar. 29, 1982, abandoned. This application Nov. 20, 1985, Ser. No. 825,671

Claims priority, application Japan, Mar. 30, 1981, 56-49136; Mar. 30, 1981, 56-47213

Int. Cl.⁴ H01R *11/22*

U.S. Cl. 339—255 P **10 Claims**



1. A terminal connecting device, comprising: a plurality of contactor pairs arranged with a space therebetween; a frame member having L-shaped bracket portions at either end of a spacer such that said spacer portion is disposed in said space and said frame member is U-shaped overall, said L-shaped bracket portions having recesses in opposite arms of the U-shaped frame member, said recesses opening in opposite directions with respect to each other, shafts extending through holes provided in said contactors, said shafts being supported by said recesses, and means for urging said contactor plates toward one another so as to bear against terminals inserted between said pair of contactors;

said urging means comprising spring holder means inserted between ones of said plural contactors, and spring means connected to said holder and bearing upon a back side of said contactors; and

wedge means inserted in said holder means on an end thereof opposite said spring and bearing upon an opposite back side of said contactors.

4,655,539

HOLOGRAM WRITING APPARATUS AND METHOD

H. John Caulfield, Nagog Woods, and Morton Camac, Lexington, both of Mass., assignors to Aerodyne Products Corporation, North Billerica, Mass.

Continuation-in-part of Ser. No. 485,828, Apr. 18, 1983, Pat. No. 4,498,740. This application Oct. 23, 1984, Ser. No. 664,392

Int. Cl.⁴ G03H *1/10*

U.S. Cl. 350—3.6 **31 Claims**



1. Apparatus for hologram writing comprising

a source of a holographic signal,

a laser,

a modulator adapted to impart signal information from said source to a beam from said laser,

a beam splitter, positioned to receive said beam from said laser, said beam splitter being adapted to split said laser beam into an information beam and a reference beam,

scanning means adapted to scan said laser beam in two coordinates,

means to direct both said reference beam and said information beam to said scanning means,

a holographic medium adapted and positioned to receive a reference beam and an information beam and to form a hologram therefrom,

means to direct said reference beam to said holographic medium, said reference beam thereby scanning across said holographic medium in said two coordinates,

a diffuser element adapted to receive a beam and form therefrom a light beam expanding from the equivalent of a point on said element,

means to direct said information beam from said scanning means to said diffuser element effectively at a point which is scanned across said diffuser element in two coordinates,

means to direct said expanding beam from said diffuser element to said holographic medium, and

means to change the effective distance of separation of the diffuser point source of said expanding beam from said holographic medium, thereby effectively providing scanning of said point source in the third coordinate.

4,655,540

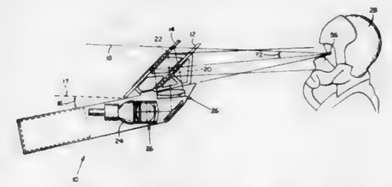
HOLOGRAPHIC OPTICAL DISPLAY SYSTEM WITH OPTIMUM BRIGHTNESS UNIFORMITY

Robert B. Wood, Hillsboro; Jen-Lih Hung, Beaverton, and Norman S. Jee, Portland, all of Oreg., assignors to Flight Dynamics, Inc., Portland, Oreg.

Filed Apr. 23, 1985, Ser. No. 726,125

Int. Cl.⁴ G02B *5/32, 27/14*

U.S. Cl. 350—3.7 **19 Claims**



1. In an optical display system comprising a holographic optical element that has a viewing surface and is operable to superimpose image information on a scene viewed by an observer, the improvement comprising:

a holographic optical element having holographic fringes that define two diffraction efficiency peaks, thereby to provide to the observer a display of the image information with enhanced brightness uniformity across the viewing surface.

4,655,541

HOLOGRAM SCANNER

Kozo Yamazaki, Zama; Fumio Yamagishi, Ebina; Hiroyuki Ikeda, Yokohama; Takefumi Inagaki, Kawasaki; Ichiro Sebata, Tokyo; Shunji Kitagawa, Atsugi; Masayuki Kato, Atsugi, and Toshiyuki Ichikawa, Atsugi, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 28, 1984, Ser. No. 675,870

Claims priority, application Japan, Nov. 30, 1983, 58-224325; May 11, 1984, 59-092979; May 11, 1984, 59-092978; May 29, 1984, 59-107402; May 29, 1984, 59-107385; Jul. 30, 1984, 59-157194; Jul. 30, 1984, 59-157195; Jul. 31, 1984, 59-158691

Int. Cl.⁴ G02B *26/10, 26/08*

U.S. Cl. 350—3.71 **24 Claims**

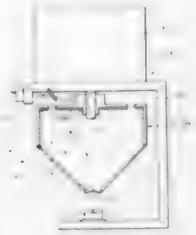
1. A hologram scanner comprising:

a laser source for providing a laser beam;

a rotary body having a rotational axis;

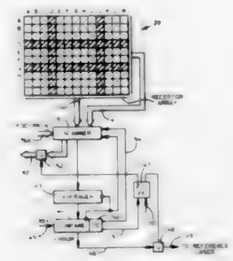
at least one hologram facet arranged on said rotary body for

diffracting said laser beam and for receiving and diffracting the scattered light from said object, said hologram facet being inclined with respect to said rotational axis of said rotary body;
motor means for driving said rotary body; and



an optical detector for detecting the scattered light received and diffracted by said hologram facet,
wherein said rotary body comprises means for converging said scattered light incoming through said hologram facet to lead the light to said optical detector.

4,655,542
OPTICAL SIGNAL PROCESSING ARRANGEMENTS
Roger R. Dube, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 6, 1985, Ser. No. 731,192
Int. Cl.[4] G03H *1/02, 1/16*
U.S. Cl. 350—3.64 **14 Claims**



1. Holographic apparatus comprising means for containing a rectangular array of pixels in rows and columns representing information in the frequency domain including a plurality of spaced-apart rows and columns of bits representing light-related parameters including light-intensity references whereby actual light intensities of pixels in the array can be calibrated.

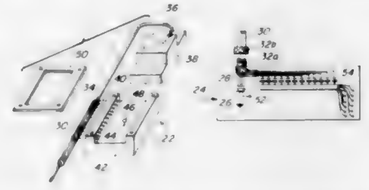
4,655,543
MOUNT FOR ATTACHING AN OPTICAL ELEMENT TO A ROTATING SHAFT
Jean I. Montagu, Brookline, Mass., assignor to General Scanning, Inc., Watertown, Mass.
Filed May 8, 1985, Ser. No. 731,848
Int. Cl.[4] G02B *26/10*
U.S. Cl. 350—6.6 **17 Claims**

1. A mount for attaching an optical element to a rotating shaft with the optical element in a desired orientation with respect to an axis of said shaft and with respect to a beam impinging on said optical element, comprising
a first portion which bears said optical element and is sufficiently rigid to limit dynamic distortion of said optical element,
a clamp portion spaced axially from said first portion for clamping said mount to said shaft, using a force which causes mechanical distortion in said clamp portion, and



a strain decoupling means connecting said first portion to said clamp portion, said strain decoupling means being configured to transmit rotation of said shaft faithfully to said optical element, while isolating said mechanical distortion in said clamp portion from being transmitted axially to said first portion.

4,655,544
ELECTRICAL SHOCK PROOF FIBER OPTIC CONTROL SYSTEM
John J. Galvin, 1731 Fillmore St., Bronx, N.Y. 10460, and Richard L. Miller, 12 Parkside Dr., Dix Hills, N.Y. 11746
Filed Jan. 23, 1985, Ser. No. 694,138
Int. Cl.[4] G02B *6/42*
U.S. Cl. 350—96.20 **4 Claims**

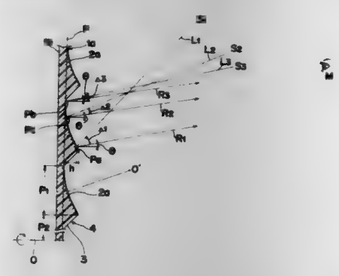


1. An electric shock proof fiber optic control system, comprising in combination:
(a) a light source;
(b) a fiber optic decoder/interface comprising a plurality of n photodetectors each controlling a respective electrical connector;
(c) a fiber optic slide switch comprising a slide and a switch base across which the slide can move; and
(d) a fiber optic bundle having a number of fiber optic strands, one of said strands forming a transmitter strand having an input end receiving light from said light source and an output end embedded in said slide and flush with one side of said slide and passing light in a first direction in said bundle, the other fiber optic strands forming a plurality of n receiver strands each having a respective input end embedded along a straight line in said switch base and a respective output end respectively coupled to one of the photodectors and passing light in an opposing direction in said bundle, whereby a user may select which of said n receiver strands embedded in said switch base receives illumination thereby creating a single-pole-n-throw fiber optic, electrically isolated switch.

4,655,545
GLASS FIBER FOR OPTICAL TRANSMISSION
Toru Yamanishi; Yuji Kameo; Masaaki Yoshida; Masao Yuto, and Chihaya Tanaka, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Tokyo, Japan
Filed Jan. 6, 1984, Ser. No. 568,563
Claims priority, application Japan, Jan. 6, 1983, 58-197
Int. Cl.[4] G02B *6/22*
U.S. Cl. 350—96.34 **9 Claims**

1. A glass fiber for optical transmission comprising a glass fiber having provided thereon a first coating layer of a hardened resin and a second fluorine-containing resin layer formed by extrusion molding, wherein said fluorine-containing resin is selected from the group consisting of tetrafluoroethylene polymers, tetrafluoroethylene-hexafluoropropylene copolymers, ethylene-tetrafluoroethylene copolymers, perfluoroalkoxyethylene-tetrafluoroethylene copolymers, chlorotrifluoroethylene polymers and vinylidene fluoride polymers, and said second layer contains an adsorbable solid powder.

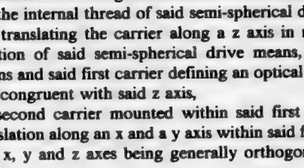
4,655,546
ROTARY INDICATING DEVICE
Chikao Nagasaka, Nagoya; Hiroyuki Kato, Aichi; Hirofumi Ohno, Nagoya, and Shinichi Irifune, Yokkaichi, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Filed Mar. 5, 1984, Ser. No. 586,089
Claims priority, application Japan, Feb. 6, 1984, 59-20365
Int. Cl.[4] G02B *5/136, 5/10*
U.S. Cl. 350—99 **10 Claims**



6. A rotary indicating device which comprises a base member adapted to be rotated about a rotary axis and having an indication surface, said indication surface including an indication region formed thereon and representing a desired image, said indication region comprising a plurality of image elements which respectively consist of reflection faces, said reflection faces respectively being curved at the same radius of curvature and extending in parallel relation to each other; whereby, when the base member rotates at a rotational speed over the predetermined value, an observer located at an appropriate fixed position with respect to the device can continuously receive light rays reflected from the reflection faces of the base member once per rotation to see the desired image as a static image due to the after image phenomenon.

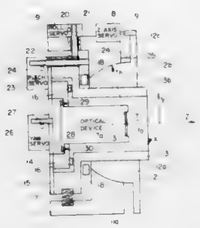
4,655,547
SHAPING OPTICAL PULSES BY AMPLITUDE AND PHASE MASKING
Jonathan P. Heritage, Red Bank, and Andrew M. Weiner, Ocean Township, Monmouth County, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.
Filed Apr. 9, 1985, Ser. No. 721,320
Int. Cl.[4] G02B *27/46, 6/12*
U.S. Cl. 350—162.12 **21 Claims**

1. A pulse shaper to produce an output pulse from an input optical pulse which comprises:
chirping means for chirping the input optical pulse,
a first optical component that spatially disperses the frequency components of the chirped pulse and partially compensates the chirp,
a spatial amplitude and/or phase mask disposed to control



and/or adjust the amplitude and/or phase of the spatially dispersed frequency components, and
a second optical component that returns the masked frequency components substantially to the spatial distribution of the input optical pulse and substantially completes the compensation of the chirp to form the output pulse.

4,655,548
MULTI-DEGREE OF FREEDOM MOUNT
Suey Jue, Hicksville, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Oct. 22, 1984, Ser. No. 663,307
Int. Cl.[4] G02B *7/02*
U.S. Cl. 350—245 **38 Claims**



1. A precision mount having 6 degrees of movement, said mount comprising:
(a) a base member having a semi-spherical receiving surface,
(b) a semi-spherical drive means mounted within said receiving surface, said semi-spherical drive means defining an internal screw thread,
(c) a first carrier having an external screw thread for engaging the internal thread of said semi-spherical drive means and translating the carrier along a z axis in response to rotation of said semi-spherical drive means, said drive means and said first carrier defining an optical axis generally congruent with said z axis,
(d) a second carrier mounted within said first carrier for translation along an x and a y axis within said first carrier, said x, y and z axes being generally orthogonal to each other,
(e) optical means mounted on said second carrier,
(f) means for rotating said first carrier about each of the x, y and z axes to rotate said optical means about each of said axes,
whereby said optical means may be rotated about and translated along each of the x, y and z axes.

4,655,549

AUTOMATIC ANTIDAZZLE SEMITRANSPARENT MIRROR

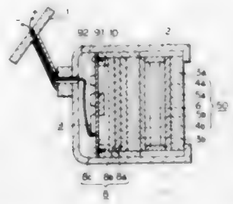
Yasutoshi Suzuki, Ooba; Shinya Ohmi, Aajo; Tsuyoshi Fukada, Nagoya; Hiroshi Itoh, Ooba, and Kanihiko Hara, Nukata, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 22, 1985, Ser. No. 704,401

Claims priority, application Japan, Feb. 27, 1984, 59-35827

Int. Cl.⁴ G02B *17/00*; **G02F** *1/13, 1/133*

U.S. Cl. 350—331 R **7 Claims**



7. A reflection mirror for a vehicle comprising:

a light shielding frame body attached to a vehicle body and having an opening therein;

a glass substrate provided within said frame body;

a thin intermediate film formed on said glass substrate opposite to said opening of said frame body and consisting of one of magnesium difluoride or titanium dioxide;

a thin semitransparent metal film formed on said intermediate film for reflecting and passing therethrough the light incident thereto through said opening of said frame body;

a photo sensor positioned behind said metal film within said frame body for detecting an intensity of light passed through said metal film;

an electric circuit connected to said photo sensor for determining a desired reflectivity of light at said metal film in accordance with the detected intensity of light; and

means provided within said frame body and driven by said electric circuit for adjusting the reflectivity of light to the desired reflectivity determined by said electric circuit.

4,655,550

FERRO-ELECTRIC LIQUID CRYSTAL DISPLAY WITH STEADY STATE VOLTAGE ON FRONT ELECTRODE

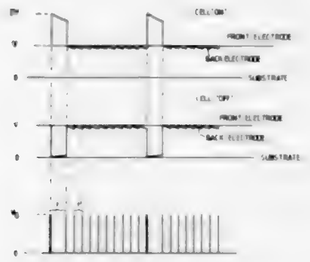
William A. Crossland, Harlow, and Peter J. Ayliffe, Bishops Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,249

Claims priority, application United Kingdom, Oct. 26, 1983, 8328551

Int. Cl.⁴ G02F *1/133*; **G09G** *3/36*

U.S. Cl. 350—332 **11 Claims**



1. A ferro-electric liquid crystal display comprising:

a. a transparent front plate,

b. a transparent front electrode supported by the front plate,

c. a silicon substrate,

d. a plurality of back electrodes supported by the substrate, said back electrodes and said front electrode and said front electrode together defining a plurality of liquid crystal cells,

e. a plurality of row conductors,

f. a plurality of column conductors,

g. a plurality of field effect transistors each having first, second and third electrodes,

h. means for connecting the first electrodes of the transistors to predetermined back electrodes,

i. means for connecting the second electrodes of the transistors of predetermined ones of the row electrodes,

j. means for connecting the third electrodes of the transistors to predetermined ones of the column electrodes, (and)

k. means for applying a steady state voltage to said front electrode,

l. logic means coupled to the row and column electrodes for controlling the transistors and thereby controlling states of said cells by temporarily storing charges on the selected ones of said back electrodes indicative of the last states which the logic means established in the associated cells, said logic means including means for sequentially applying to said row conductors alternating ones of a ground voltage and a voltage twice the voltage of said steady state voltage and means for applying data pulses to said column conductors

m. a ferroelectric liquid crystal material.

4,655,551

LIQUID CRYSTAL DISPLAY WITH CHIP PROJECTING ABOVE AND BELOW FLEXIBLE FILM

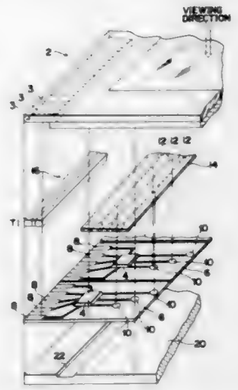
Izumi Washizuka; Masuaki Morino, both of Soraku, and Tamaki Mashiba, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 7, 1985, Ser. No. 689,343

Claims priority, application Japan, Jan. 13, 1984, 59-4960

Int. Cl.⁴ G02F *1/133*; **H01L** *31/08*

U.S. Cl. 350—334 **12 Claims**



1. An arrangement of a liquid crystal display unit comprising:

a display panel having a plurality of terminals;

one or more flexible film assemblies, each said flexible film assembly including,

a flexible film made of electrically non-conductive material, and

an integrated circuit chip bonded within said flexible film, said integrated circuit chip projecting above and below said flexible film; and

means for electrically connecting said integrated circuit chip with said terminals.

4,655,552

FLAT PANEL DISPLAY DEVICE HAVING ON-SCREEN DATA INPUT FUNCTION

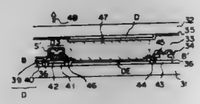
Seigo Togashi; Etsuo Yamamoto; Katsumi Aota; Hiroshi Tanabe; Kanetaka Sekiguchi, and Kazuaki Sorimachi, all of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1985, Ser. No. 712,957

Claims priority, application Japan, Mar. 17, 1984, 59-051671; Mar. 26, 1984, 59-057981

Int. Cl.⁴ G06F *3/02*

U.S. Cl. 350—342 **11 Claims**



1. A flat panel display device having a data input function, comprising:

a display panel having a plurality of first scanning conductors, a plurality of data conductors, and an array of display elements disposed at intersections of said scanning conductors and said data conductors;

first scanning circuit means coupled to said first scanning conductors and data drive circuit means coupled to said data conductors, for driving said display elements to display data;

a plurality of second scanning conductors and a plurality of data output conductors formed on said display panel, said second scanning conductors and data output conductors being positioned to mutually intersect such that at least a first part of said intersections are disposed respectively closely adjacent to corresponding ones of said display elements;

a plurality of photo-sensing elements formed on said display panel, respectively coupled between said intersections of said second scanning conductors and data output conductors, and;

second scanning circuit means coupled to said second scanning conductors and output data processing circuit means coupled to said data output conductors, for sensing changes in electrical characteristics of said photo-sensing elements resulting from selective variation of levels of light incident thereon and interpreting said changes as input data.

4,655,553

HIGH CONTRAST BACK LIT LIQUID CRYSTAL DISPLAY SYSTEM

Herman C. Klein, Los Angeles, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 24, 1984, Ser. No. 686,024

Int. Cl.⁴ G02F *1/13*

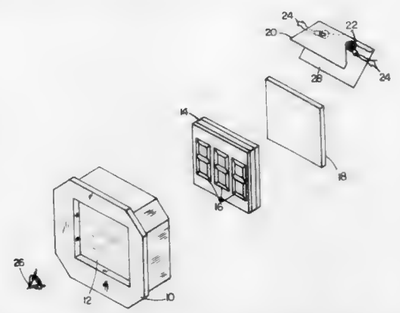
U.S. Cl. 350—345 **5 Claims**

1. A high contrast, back lit liquid crystal display system comprising:

an information-bearing liquid crystal display assembly;

a dimmable incandescent lighting means disposed behind the liquid crystal display relative to a viewer of the system; and

an optical filter element which strongly attenuates radiation in the red portion of the visible light band, disposed in the system between the liquid crystal display assembly and the incandescent lighting means wherein the transmittance of the optical filter element passes greater than 90% of optical radiation shorter than about 5,500 Angstroms and smoothly decreases the transmittance for longer wavelengths to less than about 30% at about 7,000 Angstroms.



4,655,554

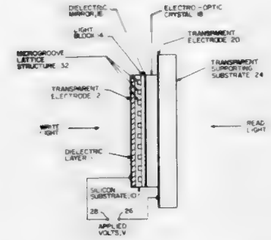
SPATIAL LIGHT MODULATOR HAVING A CAPACITIVELY COUPLED PHOTOCONDUCTOR

David Armitage, Los Altos, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 6, 1985, Ser. No. 708,926

Int. Cl.⁴ G02F *1/135, 1/015, 1/03*

U.S. Cl. 350—386 **7 Claims**



1. A spatial light modulator comprising:

a semiconductor element comprising a semiconductor substrate having a first surface and an opposed second surface, a first transparent metallic electrode, a dielectric layer disposed between said first surface of said semiconductor substrate and a surface of said first transparent metallic electrode, and a charge-confining microgroove lattice structure formed in said second surface of said semiconductor substrate;

a dielectric mirror having a first surface and an opposed second surface, said first surface of said dielectric mirror being adjacent said second surface of said semiconductor substrate;

an electro-optic crystal having a first surface and an opposed second surface, said first surface of said electro-optic crystal being adjacent said second surface of said dielectric mirror;

a second transparent electrode having a first surface and an opposed second surface, said first surface of said second

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transparent electrode being adjacent said second surface of said electro-optic crystal; and

means for applying a voltage pulse between said first transparent electrode and said second transparent electrode.

4,655,555

OBJECTIVE WITH ASPHERIC SURFACES FOR IMAGING MICROZONES

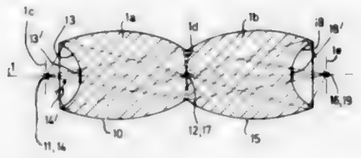
Meinrad Mächler, Ellwangen; Franz Glück; Harry Schlemmer, both of Aalen, and Reinhold Bittner, Mögglingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Nov. 28, 1984, Ser. No. 675,735

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343868

Int. Cl.⁴ G02B *13/18*

U.S. Cl. 350—432 **15 Claims**



1. An objective comprising:

a plurality of optically isotropic aspheric bodies defining a common optical axis and having respective aspherical outer surfaces and having respective first focal points on said axis;

said aspherical outer surfaces defining respective uncoated reflecting surfaces;

first spherical light passage surface means formed on a first one of said bodies and having a center point at least approximately in coincidence with the first focal point of said first body;

second spherical light passage surface means formed on a second one of said bodies and having a center point at least approximately in coincidence with the first focal point of said second body;

said bodies having respective second focal points also disposed on said axis and being at least approximately in coincidence with each other; and,

one of said spherical light passage surface means being a light entry surface and the other one of spherical light passage surface means being a light exit surface.

4,655,556

LENS SYSTEM FOR OPTICAL DISKS

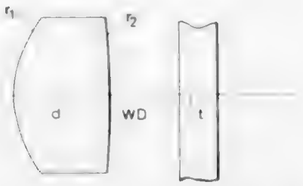
Kazuo Kajitani, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1985, Ser. No. 742,287

Claims priority, application Japan, Jun. 15, 1984, 59-121840

Int. Cl.⁴ G02B *13/18*

U.S. Cl. 350—432 **11 Claims**



1. A lens system for optical disks comprising a single lens element, one surface of said lens element being formed as an aspherical one expressed by the formula shown below wherein the standard radius of curvature of said surface is r, the distance from a point on the lens surface to the tangential plane which is tangential to said surface at the vertex thereof is x, and the distance from said point to the optical axis is y, said lens system being arranged to satisfy the conditions (1) and (2) shown below:

$$x = \frac{y^2/r}{1 + \sqrt{1 - (1 + k)(y/r)^2}} + By^2 + Ey^4 + Fy^6 + Gy^8 + Hy^{10} + Iy^{12} + Jy^{14} + \ldots$$

(1) $0.1 < n-2\ r1/f < 0.5$

(2) $0.25 < d/f < 0.75$

where B, E, F, G, H, I, J, ... respectively represent the 2nd-, 4th-, 6th-, 8th-, 10th-, 12th-, 14th-, ... order coefficients of the aspherical surface, k represents the constant of cone, r1 represents the radius of curvature of the first surface (the standard radius of curvature thereof if aspherical), d represents the thickness of said lens element, n represents the refractive index of said lens element, and f represents the focal length of said lens system.

4,655,557

OBLIQUE VIEWING OPTICAL SYSTEM FOR ENDOSCOPES

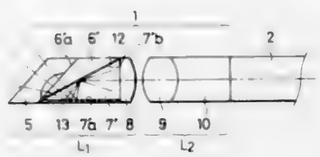
Susumu Takahashi, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1984, Ser. No. 686,924

Claims priority, application Japan, Dec. 28, 1983, 58-245549

Int. Cl.⁴ G02B *23/02, 23/26, 17/00*

U.S. Cl. 350—445 **3 Claims**



1. An oblique viewing optical system for endoscopes comprising a first prism, and a second prism having a first reflecting surface and second reflecting surface to form a visual field direction changing prism, said first prism being so arranged that its entrance surface intersects at right angles with the visual field direction, said second prism being so arranged that the first reflecting surface is parallel with the axis of the endoscope and the second reflecting surface cemented to said first prism through a cementing agent intersects at an acute angle with said axis, and satisfying the below mentioned condition:

$$\left|\cos\left(\frac{\alpha}{2}\right)\right| > \frac{n_C}{n_G} > \left|\cos\left(\frac{3}{2}\alpha\right)\right|$$

where the symbol α represents an angle made by the first reflecting surface of the second prism and the visual field direction, n_C represents a refractive index of the cementing agent and n_G represents a refractive index of the first and second prisms.

4,655,558

REAR FOCUS CONVERSION LENS APPARATUS

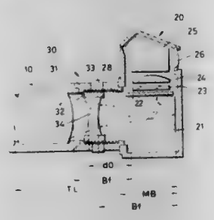
Yoshinari Hamanishi, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Jul. 18, 1984, Ser. No. 632,103

Claims priority, application Japan, Jul. 27, 1983, 58-137375; Oct. 26, 1983, 58-200612

Int. Cl.⁴ G02B *9/12, 9/34, 9/60, 15/02*

U.S. Cl. 350—465 **28 Claims**



1. A rear conversion lens apparatus mounted between an objective lens and a camera body for enlarging the focal length of the composite system of the rear conversion lens and the objective lens more than the focal length of said objective lens, said rear conversion lens apparatus including:

a converter barrel removably mounted between said objective lens and said camera body;

a lens group of negative refractive power movable along the optic axis within said converter barrel;

said lens group of negative refractive power having a forward subgroup and a rearward subgroup, said forward subgroup having a negative meniscus lens disposed most adjacent to the object side and having its convex surface facing the object side and a positive lens disposed on the image side of said negative meniscus lens; and

moving means for moving said lens group of negative refractive power along the optic axis;

focusing to objects at infinity to a short distance being effected by the movement of said negative lens group by said moving means.

4,655,559

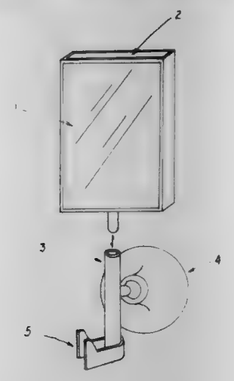
CONDENSATE-FREE GROOMING MIRROR

Daniel R. Odell, 43-23rd Ave. #3, Venice, Calif. 90291

Filed Oct. 28, 1985, Ser. No. 792,111

Int. Cl.⁴ G02B *7/18;* **A45D** *27/22*

U.S. Cl. 350—588 **6 Claims**



1. A liquid heated mirror comprising;

a housing with an open top defining a reservoir;

a reflector on one side wall of said housing;

first connecting means on said housing;

a support including second connecting means mating with said first connecting means;

means on said support for attaching said support to a surface, whereby in a steam filled environment with said reservoir filled with hot water, condensation on said mirror may be prevented, and said housing may be readily removed from said support to fill or empty said reservoir of water.

4,655,560

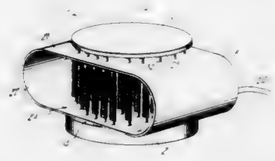
DEMAGNETIZATION COMPENSATED DEFORMABLE MAGNETOSTRICTIVE MIRROR

Walter L. Glomb, Jr., Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 5, 1985, Ser. No. 762,479

Int. Cl.⁴ G02B *7/18, 5/10*

U.S. Cl. 350—611 **5 Claims**



1. A demagnetization compensated deformable magnetostrictive mirror responsive to external signals, comprising:

substrate means having a major surface approximately perpendicular to a deformation axis;

magnetostrictive actuator array means including a plurality of actuators of magnetostrictive material, each of said actuators having excitation means responsive to the external signals for providing a magnetic flux therein producing an extension thereof along a displacement axis aporoximately parallel to said deformation axis, said magnetostrictive actuator array located in register with said substrate means major surface;

magnetic yoke means having continuous inner and outer surfaces positioned between and in contact with said magnetostrictive actuator array and said substrate means for providing a low magnetic reluctance return for said magnetic flux;

faceplate means having opposed reflective and backing surfaces approximately perpendicular to said deformation axis said faceplate means further including interface means affixed to said back surface formed to receive said magnetic yoke means outer surface and disposed thereon in register with said magnetostrictive actuator array.

4,655,561

METHOD OF DRIVING OPTICAL MODULATION DEVICE USING FERROELECTRIC LIQUID CRYSTAL

Junichiro Kanbe; Kazuharu Katagiri, both of Yokohama, and Syuzo Kaneko, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1984, Ser. No. 598,800

Claims priority, application Japan, Apr. 19, 1983, 58-68659; Apr. 19, 1983, 58-68660; Jul. 30, 1983, 58-138707; Jul. 30, 1983, 58-138710; Aug. 4, 1983, 58-142954

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 350—350 S **140 Claims**

1. In a driving method for an optical modulation device having a matrix electrode arrangement comprising a group of scanning electrodes, a group of signal electrodes oppositely spaced from the group of scanning electrodes, and an optical modulation material showing a first stable state and a second

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stable state with respect to an electric field applied thereto interposed between the group of scanning electrodes and the group of signal electrodes,

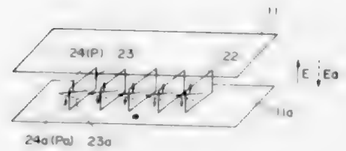
the improvement comprising the steps of:

(a) applying a voltage of one polarity, allowing said optical modulation material to be oriented to a first stable state, between a scanning electrode selected from said group of scanning electrodes and a signal electrode selected from said group of signal electrodes,

(b) applying a voltage of the other polarity, allowing said optical modulation material to be oriented to a second stable state, between a scanning electrode selected from said group of scanning electrodes and a signal electrode which is not selected from said group of signal electrodes, and

(c) applying a voltage, set to a value between a threshold voltage $-V_{th2}$ (for said second stable state) and a threshold voltage V_{th1} (for said first stable state) of said optical modulation material, between a scanning electrode which is not selected from said group of scanning electrodes and said group of signal electrodes.

15. In a driving method for an optical modulation device having a matrix electrode arrangement comprising a group of scanning electrodes, a group of signal electrodes oppositely spaced from said group of scanning electrodes, and an optical



modulation material showing a first stable state and a second stable state depending on an electric field applied interposed between said group of scanning electrodes and said group of signal electrodes,

the improvement comprising:

(a) applying a voltage V_{ON1}, allowing said optical modulation material to be oriented to the first stable state, between a scanning electrode selected from said group of scanning electrodes and a signal electrode selected from said group of signal electrodes,

(b) applying a voltage V_{ON2}, allowing said optical modulation material to be oriented to the second stable state, between a scanning electrode selected from said group of scanning electrodes and a signal electrode which is not selected from said group of signal electrodes,

(c) applying a voltage V_{OFF}, set to a value between a threshold voltage $-V_{th2}$, (for the second stable state) and a threshold voltage V_{th1} (for the first stable state) of said optical modulation material, between a scanning electrode which is not selected from said group of scanning electrodes and said group of signal electrodes, and

(d) having said voltages V_{ON1}, V_{ON2} and V_{OFF} satisfy the following relationships:

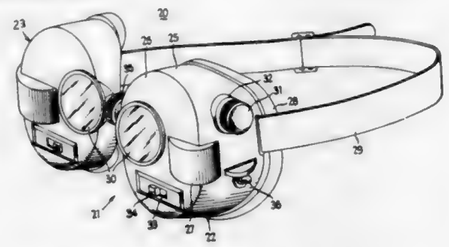
$2V_{OFF}<V_{ON1}$, and $2V_{OFF}<V_{ON2}$.

4,655,562

OBJECTIVE LENS SYSTEM, RELAY LENS SYSTEM, AND EYEPIECE LENS SYSTEM FOR NIGHT-VISION GOGGLES

Melvyn H. Kreitzer, Cincinnati, Ohio, and Ellis I. Betensky, Redding, Conn., assignors to FJW Industries, Inc., Chicago, Ill.

Filed Apr. 15, 1985, Ser. No. 723,117
Int. Cl.⁴ G02B *23/12, 23/02, 9/12*
U.S. Cl. 350—538 **18 Claims**



1. An objective lens system for use in a night vision system, which night vision system includes a bent path through which the incoming light travels, comprising, in combination:

a first negative power group at the first end of the path of travel of the light;

a positive power group spaced from said first negative power group along the path of travel of the light;

a second negative power lens means spaced from said positive power group along the path of travel of the light; means for spacing said positive power group between said first negative power group and said second negative power lens means; and

an entrance located adjacent said first negative power group for admitting the light therethrough to said first negative power group, so that the light travels from said first negative power group to said positive power group and then to said second negative power lens means;

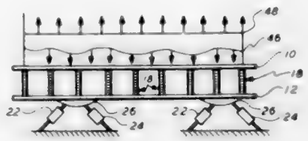
said first negative power group comprising a positive lens and a negative meniscus lens; said positive power group comprising a positive meniscus lens, a doublet lens system, and a bi-convex lens; and said second negative power lens means comprising a negative field flattener lens; said second negative power lens means being mounted such that the axis of the lens thereof is at right angles to the axes of the lenses of said positive power group.

4,655,563

VARIABLE THICKNESS DEFORMABLE MIRROR

Roland L. Plante, Hudson, Mass., and Austin L. McKenney, Amherst, N.H., assignors to Itek Corporation, Lexington, Mass.

Filed Nov. 25, 1985, Ser. No. 801,440
Int. Cl.⁴ G02B *7/18, 5/08*
U.S. Cl. 350—611 **10 Claims**



1. A variable-thickness deformable mirror for correcting aberrations in optical wavefronts comprised of:

a. a flexible top sheet having a reflecting surface on one side thereof;

b. a flexible bottom sheet spaced away from said top sheet;

c. a plurality of electrodistortive actuators located between said top sheet and said bottom sheet, each of said actuators being fastened to said top sheet and to said bottom sheet and being capable of selectively distorting the reflecting surface of said top sheet upon the application of electrical signals to one or more of said actuators;

whereby aberrated optical wavefronts impinging on the reflecting surface of said deformable mirror may have said aberrations removed by the selective deformation of the reflecting surface of said top sheet.

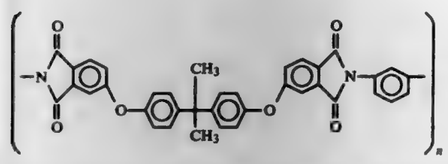
4,655,564

SPECTACLE FRAME AND PARTS THEREOF

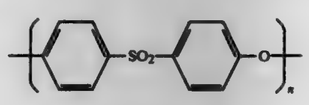
Guenther Czech, Filderstadt, Fed. Rep. of Germany, assignor to Sinaro A.G., Chur, Switzerland

Filed Nov. 5, 1984, Ser. No. 667,966
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1984, 3429074
Int. Cl.⁴ G02C *5/14, 5/02*
U.S. Cl. 351—41 **12 Claims**

1. Spectacle frame and parts thereof of plastic, wherein said spectacle frame and parts thereof are substantially comprised of a polyetherimide which exhibits the following repeating unit:



or is comprised of a polyethersulfone which exhibits the following repeating unit:

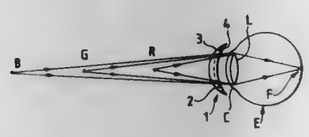


4,655,565

OPHTHALMIC LENSES WITH DIFFRACTIVE POWER

Michael H. Freeman, Denbigh, Wales, assignor to Pilkington P.E. Limited, United Kingdom

Continuation-in-part of Ser. No. 543,257, Oct. 19, 1983, Pat. No. 4,637,697, and a continuation-in-part of Ser. No. 533,993, Sep. 20, 1983, Pat. No. 4,641,934, and a continuation-in-part of Ser. No. 368,362, Apr. 14, 1982, Pat. No. 4,642,112. This application Feb. 13, 1985, Ser. No. 701,134
Claims priority, application United Kingdom, Feb. 23, 1984, 8404817
Int. Cl.⁴ G02C *7/02, 7/04, 7/06*; A61F *2/16*
U.S. Cl. 351—159 **17 Claims**



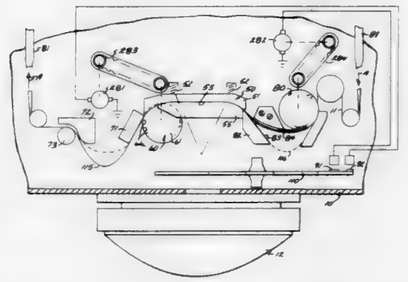
1. An ophthalmic lens having positive diffractive power which introduces negative longitudinal chromatic aberration to an extent that more than counteracts the natural positive longitudinal chromatic aberration of the eye so as to provide in use a residual negative longitudinal chromatic aberration.

4,655,566

LARGE FILM IMAGE FRAME TRANSPORT MECHANISM

Ernst Heiniger, 110 Bahnhofstrasse, Zurich, 8001, Switzerland

Filed Jun. 30, 1986, Ser. No. 880,149
Int. Cl.⁴ G03B *1/48*
U.S. Cl. 352—225 **6 Claims**



1. In a film transport characterized by a first and second storage reel across which a film strip is advanced said film strip having a fundamental waveform of longitudinal elastic deflection, the improvement comprising:

an aperture assembly including a fixed base member having a sliding surface for supporting said film strip said sliding surface being convolved to a wave shape equal or longer than said fundamental wave form; and

a conforming shoe aligned over said sliding surface and urged thereagainst by spring means, the mass and rotary inertia of said shoe and said spring means being selected to combine in first resonances which are less or equal to the frequency of said wave form.

4,655,567

REMOTELY MANIPULATABLE PANNING AND TILTING MOUNT FOR VIDEO CAMERAS AND THE LIKE AND METHOD OF MANIPULATING A CAMERA

John D. Morley, 4821 Westgate St., Bay City, Mich. 48706

Filed Mar. 7, 1986, Ser. No. 837,188
Int. Cl.⁴ G03B *17/00, 21/00*
U.S. Cl. 352—243 **5 Claims**

1. A remotely manipulatable panning and tilting camera assembly for video cameras and the like comprising:

a. a motor housing;

b. vertically extending bearing means supported within the housing;

c. a vertically extending sleeve rotatably supported by said bearing means;

d. first electric motor means supported within said housing and having motor drive transmission mechanism coupled to said sleeve to rotate it selectively in opposite directions;

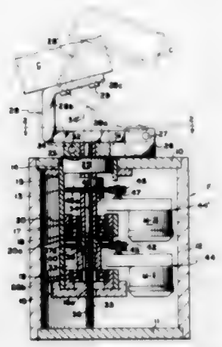
e. a mount base carried by said sleeve for rotation therewith above the housing in a horizontal plane and having a horizontal axis pivot thereon spaced horizontally from said sleeve, said housing having a vertical opening through which said sleeve extends;

f. a camera mount above said mount base having vertically spaced upper and lower portions, the upper portion having camera securing means for releasably securing a camera thereto, the lower portion being pivotally carried by

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said mount base pivot for pivotal swinging movement vertically about said horizontal axis pivot;

g. a threaded shaft received by said sleeve for rotation therein having an upper end extendable vertically up through said sleeve to engage the lower portion of said camera mount and move it upwardly about said axis;



h. nut means, restricted from moving vertically, mounted for rotation relative to said shaft by said housing; and

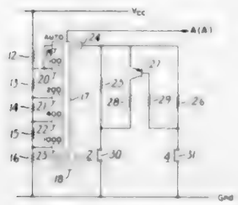
i. second electric motor means supported within the housing energizable independently of said first motor means for driving said nut means selectively in either direction of rotation to move said shaft and swing said camera mount upwardly or permit it to return downwardly.

4,655,568

AUTOMATIC FILM SENSITIVITY SETTING DEVICE FOR CAMERA

Shinji Nagaoka, Yotsukaido, Japan, assignor to Seiko Koki Kabushiki Kaisha, Chiba, Japan

Filed Jan. 29, 1985, Ser. No. 695,896
Claims priority, application Japan, Jan. 30, 1984, 59-11512[U]
Int. Cl.⁴ G03B *7/24*
U.S. Cl. 354—21 **16 Claims**



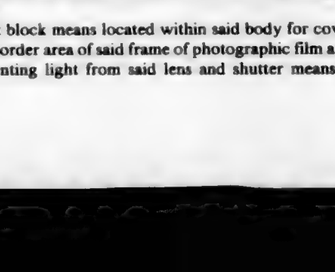
1. An automatic film sensitivity setting device for use with an electronic shutter exposure control circuit which receives in use luminous information and a voltage representative of a film sensitivity index, said device comprising: a voltage division circuit comprised of a plurality of voltage division resistors connected in series across a power source, at least one additional resistor connectable in parallel across some of said voltage division resistors through an electrical contact provided on a film cartridge to indicate a film sensitivity index, a serial connection of a transistor having its emitter and collector electrodes connected in series with a further resistor such that said serial connection is connected across said at least one additional resistor, said transistor becoming conductive by being biased on its base electrode through another electrical contact provided on the film cartridge, selector switch having a common contact, a plurality of contacts connected to nodes of adjoining ones of said voltage division resistors, and another contact connected commonly to said at least one additional resistor and transistor, so that a corresponding divided voltage is selected in a manual setting mode or said at least one additional resistor is coupled to one node of said voltage division circuit in an automatic setting mode, whereby a voltage representative of a film sensitivity is produced on said common contact by manual setting or by automatic setting in accordance with said electrical contacts on the film cartridge.

4,655,569

OPTICAL EYEPIECE ADAPTOR FOR CAMERAS

Scott M. Sims, 10424 Dimple Dell Rd., Sandy, Utah 84092

Filed Dec. 4, 1985, Ser. No. 804,504
Int. Cl.⁴ G03B *29/00*
U.S. Cl. 354—62 **6 Claims**



1. An improved mechanism for rigidly holding the eyepiece of an optical instrument in alignment with the objective lens of a camera, comprising in combination:

a base member threaded externally so as to attach to the filter threads of a camera;

two separable semi-circular members which have means enabling said members to mate together rigidly to form a solid eyepiece-encircling ring which has means so that said ring may be attached securely within the base member.

4,655,570

CAMERA WITH A BORDER IMAGE PRODUCING DEVICE

Hal R. Jaffe, 7121 Rico Cv., Germantown, Tenn. 38138

Filed Oct. 21, 1985, Ser. No. 789,570
Int. Cl.⁴ G03B *17/24*
U.S. Cl. 354—107 **11 Claims**

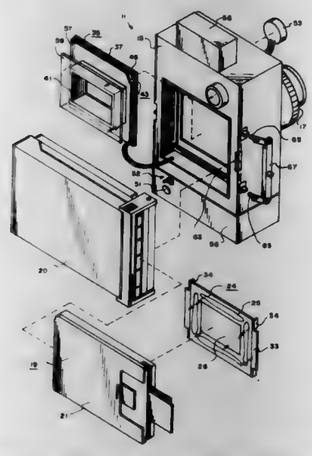
1. A camera for exposing a frame of photographic film, said camera comprising:

(a) a hollow body for holding said frame of photographic film;

(b) lens and shutter means attached to said body for allowing light from a specific photograph image to enter said body;

(c) template means located within said body for covering at least the peripheral edges of said frame of photographic film to divide said frame of photographic film into a border area about the peripheral edges thereof and a photograph area within said border area and for at least partially blocking the passage of light to said border area of said frame of photographic film to expose a specific border image on said border area of said frame of photographic film;

(d) light block means located within said body for covering said border area of said frame of photographic film and for preventing light from said lens and shutter means from passing to said border area of said frame of photographic film; and



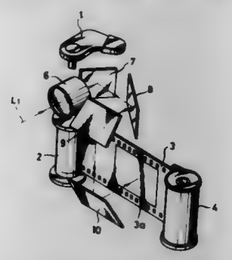
(e) light means located within said body for emitting even light about said border area of said frame of photographic film through said template means.

4,655,571

TELEPHOTO LENS CAMERA

Hiroshi Ohmura; Tsutomu Tanaka, and Kimiaki Nakada, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 9, 1985, Ser. No. 785,746
Claims priority, application Japan, Oct. 17, 1984, 59-155682; Oct. 17, 1984, 59-155683; Dec. 12, 1984, 59-262223; Dec. 12, 1984, 59-262224; Dec. 12, 1984, 59-262225
Int. Cl.⁴ G03B *15/05, 3/00*
U.S. Cl. 354—150 **20 Claims**



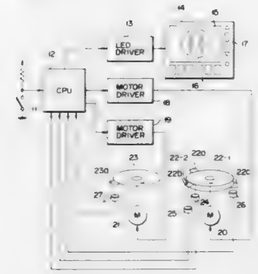
1. In a camera having in a central region an exposure station, at one side a film take-up chamber, and at the other side a patrone-accommodating chamber; the improvement comprising: a first lens disposed in an upper portion of one side of said camera; a first mirror disposed behind said first lens, said mirror being disposed at an angle to said first lens so that light from said first lens reflects from said first mirror toward the center of said camera; a second mirror disposed to the rear of said first lens and to the side of said first mirror and at an angle to said first mirror to reflect said light from said first mirror toward the front of said camera; a third mirror disposed at the front center of said camera to reflect light from said second mirror toward the bottom of said camera; and a fourth mirror disposed below said third mirror and adapted to reflect light from said third mirror rearwardly toward said exposure station.

4,655,572

CAMERA DEVICE FOR ENDOSCOPE

Shinichi Kato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1985, Ser. No. 763,977
Claims priority, application Japan, Aug. 17, 1984, 59-171224
Int. Cl.⁴ G03B *1/18, 1/60, 37/00, 17/00*
U.S. Cl. 354—173.11 **13 Claims**



1. A camera device adapted for use with an endoscope, comprising:

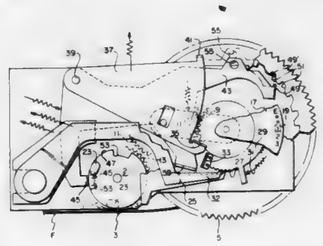
character display means for displaying character data relative to an endoscopic image; a drive section for winding a film and driving a shutter; means for detecting a residual film quantity equivalent to a predetermined number of frames or less, in order to output detection information; means for detecting the film end, in order to output detection information; means for detecting a malfunction of the drive section, in order to output detection information; and means for causing said character display means to display the character data relative to the endoscopic image, when the camera device is functioning normally, and to display the detection information detected by at least one of the detecting means, in the case of malfunctioning of said camera device.

4,655,573

FILM WINDING ERROR PREVENTION APPARATUS

Frederick W. Harvey, Webster, and Daniel M. Pagano, Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 10, 1986, Ser. No. 837,627
Int. Cl.⁴ G03B *1/00, 17/36*
U.S. Cl. 354—213 **6 Claims**



1. An improved photographic camera of the type wherein (a) a take-up spool is rotated to wind a filmstrip onto said spool and (b) a manual wind member is actuated to rotate said take-up spool, and wherein the improvement comprises:

means for performing an initial film winding operation to wind at least a leader portion of the filmstrip onto said take-up spool in response to actuation of said manual wind member; and

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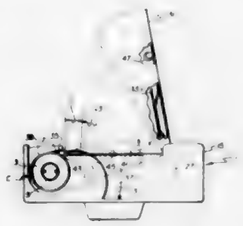
means responsive to film movement during further winding of the filmstrip onto said take-up spool after the initial film winding operation has been completed for engaging said manual wind member to prevent continued actuation of the wind member, but in the event the initial film winding operation cannot be completed because the leader portion has failed to be wound onto said take-up spool allowing said manual wind member to be actuated continuously to alert the photographer of such failure.

4,655,574

DROP-IN LOADING CAMERA

Roger A. Fields, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1986, Ser. No. 818,163
Int. Cl.[4] G03B *1/00, 17/02*
U.S. Cl. 354—288 **5 Claims**



1. An improved photographic camera for use with a film cartridge from which a curled film leader projects, the projecting leader having a relatively short full width section adjacent the cartridge and a relatively long reduced width section separated from the cartridge by the full width section, wherein the camera body is of the type having (a) a loading chamber for receiving the cartridge in an axial direction and (b) an elongate opening for receiving the projecting leader with a longitudinal edge forward as the cartridge is inserted into said loading chamber, and wherein the improvement comprises:

means on said camera body for contacting the forward longitudinal edge of the reduced width section of the projecting leader, previous to that section being received in said elongate opening, to uncurl the reduced width section in response to axial loading of the cartridge into said loading chamber; and

means in said loading chamber for supporting the cartridge to locate the full width section of the projecting leader away from said camera body during axial loading of the cartridge initially into said loading chamber, to prevent the forward longitudinal edge of the full width section of the leader from abutting against said camera body.

4,655,575

APPARATUS FOR TRANSPORTING DISC FILMS

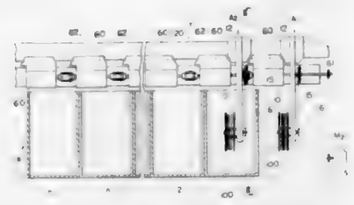
Motoaki Murakami, Wakayama, Japan, assignor to Noritsu Kenkyu Center Co., Ltd., Wakayama, Japan

Filed Mar. 20, 1986, Ser. No. 841,772
Claims priority, application Japan, Mar. 26, 1985, 60-42379[U]
Int. Cl.[4] G03D *3/08*
U.S. Cl. 354—322 **9 Claims**

1. In an apparatus for transporting disc films, said apparatus being incorporated in a developing apparatus which includes a series of treatment liquid baths, the improvement consisting in;

that a movable rail which carries a plurality of hangers is supported by means of a support block which is slidable along a shaft which extends in parallel with the direction of transportation of said hangers and is adapted to turn about said shaft, each of the hangers being provided with a rotational shaft at the lower end thereof for rotatably supporting a plurality of disc films to be treated, and being adapted to slide along said movable rail,

that the support block is operatively connected to a moving member by way of a connecting rod, said moving member being driven by means of a chain-sprocket mechanism which serves to achieve upward movement, lowering movement, forward movement and backward movement of the moving member in such a manner that the disc films carried by the hanger is introduced into the treatment liquid bath and raised up from the latter by turning the support block in the forward direction and then turning it in the backward direction with the aid of the connecting



rod during upward movement and lowering movement of the moving member and the hanger is slidably displaced to the next operative position located above the next treatment liquid bath during forward movement of the moving member while the disc films are raised up above the treatment liquid bath,

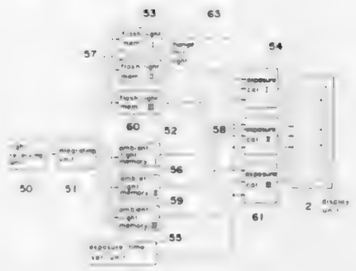
and that a plurality of stoppers are disposed in the spaced relation along the movable rail in order to assure that only the movable rail moves backwardly during backward movement of the moving member while the disc films are immersed in treatment liquid in the next treatment liquid bath.

4,655,576

LIGHT MEASURING DEVICE

Yoshio Yuasa, Osaka; Kazuhiko Naruse, Nabari, and Masahito Inaba, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 1, 1985, Ser. No. 697,711
Claims priority, application Japan, Feb. 2, 1984, 59-17897
Int. Cl.[4] G03B *15/05*
U.S. Cl. 354—415 **35 Claims**



1. A light measuring device for use in flash photography and capable of measuring both preliminary flash light and ambient light to obtain camera exposure information under a mixture of primary flash light and ambient light conditions, comprising:

means for measuring light to produce a first output, with the influence of the preliminary flash light, and a second output, without the influence of the preliminary flash light, with respect to a plurality of selected areas of the object field, respectively including means for integrating the light measuring output during a given period of time including the duration of the preliminary flash light emission to produce the first output and means for obtaining a signal including an information of ambient light intensity excluding the preliminary flash light emission to produce the second output;

a first group of means for storing the first output with respect to the plurality of areas, respectively;

a second group of means for storing the second output with respect to the plurality of areas, respectively;

means for manually setting the exposure time;

means for calculating exposure information with respect to the plurality of areas from the stored first and second outputs for the corresponding areas and the exposure time set by the setting means, and

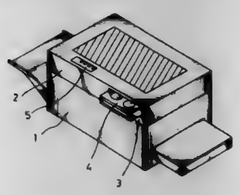
means, responsive to the calculating means, for indicating the exposure information, including means for displaying the exposure information as locations on a visible scale, whereby the differences between the exposure information for the plurality of areas are perceptible as the distances between the locations on the scale with their order of alignment along the scale.

4,655,577

PHOTOCOPIER PERMITTING RECORDING AND EDITING OF DOCUMENTS

Yoshihisa Ikuta, Ikeda, Japan, assignor to Mita Industrial Co., Ltd., Japan

Filed Oct. 28, 1985, Ser. No. 791,821
Claims priority, application Japan, Oct. 30, 1984, 59-164870[U]
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R **8 Claims**



1. A copying apparatus comprising:

control means for providing control signals to control operation of said apparatus;

reading means responsive to a first control signal from said control means for reading an original document;

recording means adapted for loading thereinto of a recording medium, to permit recording of representations of documents thereon and playback of representations recorded thereon, and for unloading of the recording medium therefrom, said recording means responsive to a second control signal from said control means for recording a representation of a document read by said reading means onto a recording medium loaded in said recording means and responsive to a third control signal from said control means for playing back representations recorded on a recording medium loaded in said recording means;

editing means for editing the representation of a document recorded on a recording medium loaded in said recording means to provide an edited representation of the document, the editing being in accordance with editing control signals; and

image-forming means adapted for receipt of copy paper, said image-forming means responsive to a fourth control signal from said control means for forming on a sheet of copy paper an image of an original document read by said reading means and responsive to a fifth control signal from said control means for forming on a sheet of copy paper an image of a document the representation of which is played back from a recording medium loaded in said recording means;

said control means including means for applying editing control signals to said recording means for recording thereof on a recording medium loaded in said recording means; and

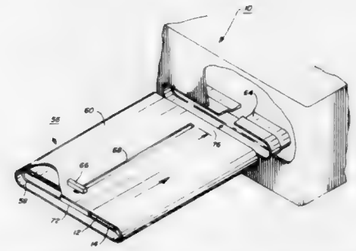
said editing means including means for receiving from said recording means editing control signals played back from a recording medium loaded in said recording means.

4,655,578

REPRODUCING APPARATUS CARTRIDGE MOUNTING ASSEMBLY

Robert L. Kurtz, Fairport, and John F. Whiting, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 24, 1986, Ser. No. 842,957
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R **11 Claims**



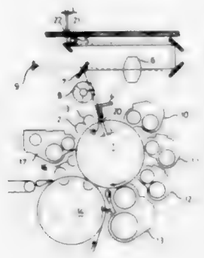
1. An assembly including a processing cartridge removable therefrom for use with and insertion into an electrostatographic reproducing apparatus, said assembly comprising;

a cartridge frame assembly supporting at least one electrostatographic processing unit having at least a portion thereof outwardly exposed relative to the cartridge for performing its processing function when inserted in said reproducing apparatus, said exposed portion being susceptible to deterioration or damage by so being exposed;

a removable rigidly conformable protective sheath like member wrapped around said cartridge and containing said cartridge therein, said sheath like member having around the periphery of one end protecting the insertion end of the cartridge one element of a two element coupling which is engagably mateable with the other element of the two element coupling at the cartridge insertion portion of said reproducing apparatus; and

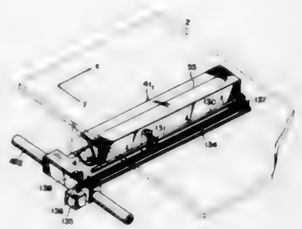
means to slidably urge said cartridge through said sheath into said reproducing machine when said one element of said sheath is engagably mated with said coupling element on said reproducing apparatus, whereby said processing cartridge is inserted in said reproducing apparatus without deterioration or damage.

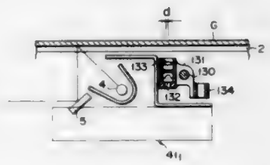
4,655,579
MULTICOLORED IMAGE FORMING APPARATUS
Tsukasa Adachi, Hoya; Satoshi Shinguryo, Kawaguchi; Hideya Furuta, Yokohama; Yoshihiro Sakai, Tokyo; Itsuo Ikeda, Sagamihara, and Katsuo Sakai, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Aug. 23, 1985, Ser. No. 768,955
Claims priority, application Japan, Aug. 30, 1984, 59-130627[U]; Aug. 30, 1984, 59-130628[U]; Aug. 31, 1984, 59-180383
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—4 **24 Claims**



1. A multicolored image forming apparatus comprising:
a light source illuminating an original document to produce a first light beam reflected from an illumination slit position on the document and a second light beam reflected from an image sensor position on the document which is spaced along the document from the illumination slit position by a first selected distance;
a photosensitive member and an exposure optical system forming an image of the first light beam at an exposure slit position on said photosensitive member and forming an image of said second light beam at an eraser illumination position on said photosensitive member, wherein the exposure slit position and the eraser illumination position are spaced from each other along the photosensitive member by a second selected distance which corresponds to the first selected distance and wherein each of the exposure slit position and the eraser illumination position extends along the width of said photosensitive member;
an image sensor extending in the direction of the width of said photosensitive member and receiving at least a portion of said second light beam and providing, in response, a processed output; and
an eraser comprising a light emitting element array extending in the direction of the width of said photosensitive member to selectively illuminate said photosensitive member at said eraser illumination position and means to selectively turn on and off said light emitting elements to selectively erase, in response to said processed output, the image formed on said photosensitive member by said second beam; and
wherein image processing is achieved by illuminating the document by said light source, forming an image on said photosensitive member through said exposure optical system to effect slit exposure while reading the document image by said image sensor, and turning on and off said light emitting elements in said eraser selectively in response to said processed output of said image sensor to erase said photosensitive member;
wherein said light source simultaneously illuminates the image sensor position on the document and said illumination slit position on the document.

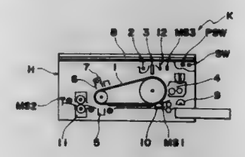
4,655,580
IMAGE FORMING APPARATUS WITH IMAGE FORMING AREA SELECTION
Junji Watanabe, Yokohama, and Hideshi Oushiden, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 6, 1985, Ser. No. 795,436
Claims priority, application Japan, Nov. 6, 1984, 59-233557; Nov. 19, 1984, 59-244115; Mar. 26, 1985, 60-61478
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—7 **20 Claims**

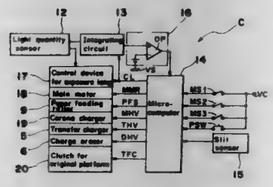




7. An image forming apparatus with image forming area selection, said apparatus comprising:
an original table on which a light-transparent original is set at one end or the other end such that an original image surface selectively faces upward or downward;
light-transmitting means for emitting light transmitting through the original set at said one end such that the original image surface faces upward on said original table while the light is shifted with respect to the original;
erasure area specifying means for specifying an unnecessary portion of the original image surface to specify an erasure area while the light from said light-transmitting means is being shifted;
erasure area storage means for storing position data of the erasure area specified by said erasure area specifying means;
original scanning means, having an optical system moved along said original table, for scanning the original placed at said other end such that the original image surface faces downward;
image forming means for focusing light emitted from said original scanning means and reflected by the original and for developing an image on an image forming medium to form an image;
image erasing means for selectively erasing an image to be formed by said image forming means; and
control means for reading out the position data corresponding to the erasure area from said erasure area storage means at any time during the operation of said image forming means and supplying the position data to said image erasing means.

4,655,581
COPYING APPARATUS
Yoshikado Yamada, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 6, 1985, Ser. No. 741,883
Claims priority, application Japan, Jun. 11, 1984, 59-121008
Int. Cl.⁴ G03G *21/00*
U.S. Cl. 355—14 C **8 Claims**

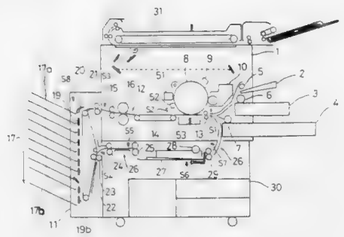


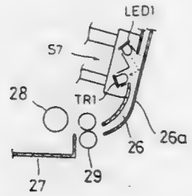


1. A copying apparatus having a photosensitive member receiving a toner image wherein upon transfer of said toner image from said photosensitive member onto a copy paper, said photosensitive member is subjected to charge erasing and cleaning at a developing device, said copying apparatus comprising:
measuring means for measuring an image density of an original document;
decision means for determining whether or not a measurement obtained by said measuring means is larger than a reference value; and
changeover means for switching, on the basis of said determination by said decision means, between either a first process or a second process for subjecting said photosensitive member to a charge erasing operation and a cleaning operation such that said cleaning operation is performed once during one copying cycle in said first process and at least twice during one copying cycle in said second process, respectively.

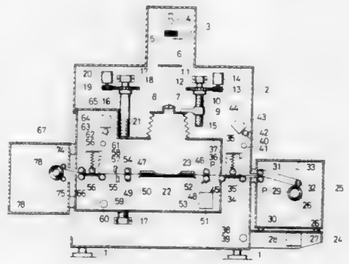
4,655,582
AUTOMATIC DUPLEX ELECTROPHOTOGRAPHIC COPYING MACHINE
Masakiyo Okuda, Kashiwara, and Kazuyuki Ohnishi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 27, 1985, Ser. No. 814,241
Claims priority, application Japan, Dec. 27, 1984, 59-276571
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **2 Claims**

1. An automatic duplex electrophotographic copying machine having a single side copying-related transport passage communicating from a paper supply section through a copying process section to a discharge outlet, a duplex copying-related transport passage located under said single side copying-related transport passage and communicating from the vicinity of said discharge outlet to the vicinity of said paper supply section, an intermediate tray provided in the approximate center of said duplex copying-related transport passage, and a plurality of bins mounted at said discharge outlet to store discharged copy papers, comprising: detection means provided at the paper supplying side of the intermediate tray of said duplex copying-related transport passage to detect the picture image density on a copy paper; and storage bin selection means for delivering a defective copy paper to a particular bin among the plurality of bins when said detection means do not sense any picture image on the copy paper while the copy paper is passing the position of the detection means.





4,655,583
APPARATUS FOR TRANSPORTING A WEB OF PHOTOSENSITIVE MATERIAL IN A PHOTO PRINTER
Makoto Kitai, and Takashi Omori, both of Kyoto, Japan, assignors to Kabushiki Kaisha Shashin Kogyo and Dainippon Screen Mfg. Co., Ltd., both of Kyoto, Japan
Filed Apr. 18, 1986, Ser. No. 853,750
Claims priority, application Japan, May 7, 1985, 60-66542[U]; May 31, 1985, 60-116399
Int. Cl.⁴ G03B *29/00*
U.S. Cl. 355—29 **9 Claims**



1. A photo printer of such a type that a web of photosensitive material is transported in proportion to a magnification ratio to a focusing plane movable along an optical axis, the web is exposed to a photo image, and the thus-exposed web is fed out to a receiving side, comprising:
a first magazine provided at a fixed position and adapted to load the web of the photosensitive material in a rolled form therewithin and to feed the web over a desired length;
moving roller means for transporting the web, which has

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been fed from the first magazine, along a path curved downwardly in a U-shape, the height of the bottom of said U-shaped path being adjustable;

exposure frame means composed in combination of a press pan and a mask frame, which are adapted to hold the web fed through the moving roller means, and movable along the optical axis;

nipping roller means provided in a pair on each of the front and rear sides of the exposure frame means and cooperated to transport the web along the focusing plane;

exhaust feeding means for feeding out the web, which has passed through the exposure frame means, to the receiving side; and

a second magazine for receiving the web fed out from the exhaust feeding means.

4,655,584

SUBSTRATE POSITIONING APPARATUS

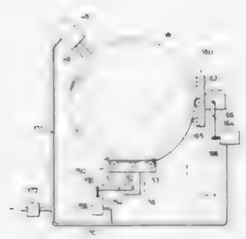
Hiroshi Tanaka; Yukio Kakizaki; Hiromitsu Iwata, all of Yokohama, and Tsuyoshi Naraki, Tokyo, all of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed May 3, 1985, Ser. No. 729,968

Claims priority, application Japan, May 11, 1984, 59-94061; Oct. 25, 1984, 59-224953; Nov. 1, 1984, 59-230634

Int. Cl.⁴ G03B *27/42*; A23G *9/00*

U.S. Cl. 355—53 **21 Claims**



12. An apparatus for positioning at a predetermined position on a plane a disc having a flat portion in the outer periphery thereof, comprising:

stage means;

a holder means disposed on said stage means rotatably about an axis perpendicular to said plane and provided with a supporting surface for supporting said disc on said plane;

said supporting surface having at its periphery at least one cut-away portion whose size is such that when said disc is positioned at said predetermined position at least part of said flat portion protrudes from said supporting surface into said cut-away portion;

a reference member disposed on said stage means to determine a position of the flat portion of said disc;

first drive means for displacing said reference member relative to said holder member between a reference position where said reference member is in contact with said flat portion within said cut-away portion and a position where said reference member is retracted from said reference position; and

second drive means for moving said disc along said plane toward said reference member.

4,655,585

IMAGE FORMING APPARATUS

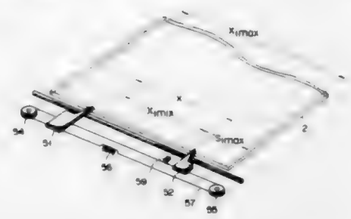
Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 21, 1986, Ser. No. 842,243

Claims priority, application Japan, Apr. 19, 1985, 60-83971; Apr. 27, 1985, 60-91420

Int. Cl.⁴ G03B *27/52*

U.S. Cl. 355—61 **6 Claims**



1. An image forming apparatus comprising:

an original table on which an original document is disposed;

an optical system for optically scanning the original on the original table from one side thereof to the other;

indicating means movable in a direction perpendicular to the scanning direction of the optical system and indicating a range for image formation on the original table, said range varying between minimum and maximum values;

stopper means attached to at least one end portion of a region indicative of the minimum value and adapted to stop the indicating means so as to indicate the minimum value;

drive means for moving the indicating means in accordance with pulses applied thereto; and

pulse output means for delivering the pulses to the drive means, said output means being adapted to deliver a necessary number of pulses for the movement of the indicating means from the minimum-value position to the maximum-value position, thereby causing the indicating means to move to a position abutting the stopper means, in setting the initial position of the indicating means.

4,655,586

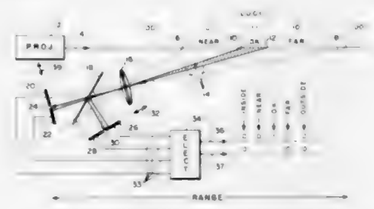
ADJUSTABLE ZONE PROXIMITY SENSOR

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 19, 1984, Ser. No. 594,607

Int. Cl.⁴ G01C *3/00, 5/00*; G03B *3/00*

U.S. Cl. 356—1 **27 Claims**



1. A position sensing device comprising:

sending means for projecting radiation toward a remote object;

a first pair of radiation detectors mounted to receive radiation reflected from the object, a first detector and a second detector of said first pair receiving substantially the same amount of radiation reflected from the object when the object is at a first predetermined range, the first detector of the first pair receiving more radiation reflected from the object than the second detector of the first pair when the object is nearer than the first predetermined range and the second detector of the first pair receiving more radiation reflected from the object than the first detector of the first pair when the object is further than the first predetermined range;

a second pair of radiation detectors mounted to receive radiation reflected from the object, a first detector and a second detector of said second pair receiving substantially the same amount of radiation reflected from the object when the object is at a second predetermined range, the first detector of the second pair receiving more radiation reflected from the object than the second detector of the second pair when the object is nearer than the second predetermined range and the second detector of the second pair receiving more radiation reflected from the object than the first detector of the second pair when the object is further than the second predetermined range; and

sensing means connected to said first and second pair of radiation detectors and operable to produce a first output signal to indicate that the object is between the first and second predetermined ranges.

4,655,587

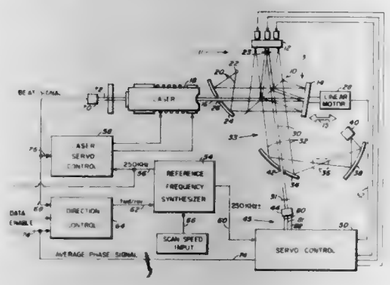
MIRROR SCAN VELOCITY CONTROL

Geert Wijntjes, Belmont, and Michael Hercher, Marblehead, both of Mass., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 472,539, Mar. 5, 1983, abandoned. This application Sep. 25, 1985, Ser. No. 781,185

Int. Cl.⁴ G01J *3/45*; G01B *9/02*

U.S. Cl. 356—346 **16 Claims**



1. A closed loop servo control for controlling the movement of a movable mirror in an interferometer used for spectroscopic measurement, comprising:

first means for producing a heterodyne laser beam through interaction of a laser beam with said movable mirror, having a continuous modulation with a frequency from which movement of said movable mirror may be determined;

second means for producing a reference signal having a frequency characteristic of a desired modulation frequency of said heterodyne laser beam indicating movement of said movable mirror;

third means receiving said heterodyne laser beam produced by said first means, for detecting said modulation frequency of said laser beam to produce an operational signal characteristic of said modulation frequency;

fourth means receiving said reference signal from said second means and said operational signal from said third means, for comparing the phaser between said reference signal and said operational signal and producing an error signal responsive to the difference in phase between said signals with respect to time; and

control means responsive to said error signal for controlling movement of said movable mirror

whereby movement of said movable mirror is controlled, to obtain a heterodyne laser beam having a modulation with a frequency which, when detected by said third means, produces an operational signal which is locked in phase with said reference signal to determine movement of said movable mirror.

4,655,588

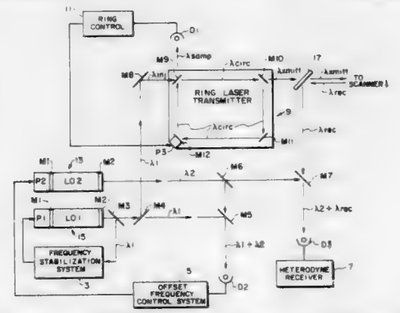
INJECTION CONTROLLED LASER TRANSMITTER WITH TWIN LOCAL OSCILLATORS

Peter P. Chenausky, Avon, and William J. Green, Jr., Vernon, both of Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 25, 1985, Ser. No. 704,816

Int. Cl.⁴ G01C *3/08*; H01S *3/13*

U.S. Cl. 356—5 **6 Claims**



1. A heterodyne CO_2 Doppler radar comprising a frequency-stabilized first local oscillator laser and a second local oscillator laser automatically controlled to operate at a frequency offset from that of said first local oscillator laser by the amount of the desired intermediate frequency of the said radar, said radar further comprising an inherently unstable, high powered CO_2 tansmitter laser which is injection-stabilized for single frequency operation by said first local oscillator laser, said radar further comprising a mixer and heterodyne receiver connected to said mixer, the received target echoes and a portion of the output of said second local oscillator laser being applied to said mixer, and wherein said heterodyne receiver comprises an intermediate frequency channel plus intermediate frequency signal processing circuitry.

4,655,589

APPARATUS FOR AUTOMATIC MEASUREMENT OF STRESS IN A TRANSPARENT BODY BY MEANS OF SCATTERED LIGHT

Massimo Cestaro, and Ciro Paudice, both of Vasto, Italy, assignors to Societa Italiana Vetro-Siv-S.p.A., Chieti, Italy

Filed Feb. 5, 1985, Ser. No. 698,598

Claims priority, application Italy, Feb. 13, 1984, 19582 A/84

Int. Cl.⁴ G01N *21/23*; G01L *1/24*

U.S. Cl. 356—35 **7 Claims**

1. An apparatus for determining and measuring the sign and amplitude of stress present in a glass sheet comprising:

a laser for emitting a polarized light beam along an emitting axis towards the tempered glass sheet, the polarized light beam being polarized in a first plane of polarization;

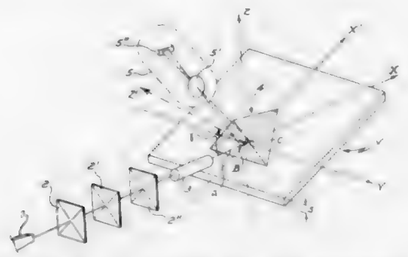
a first quarter-wave plate positioned between said laser and the tempered glass sheet and through which the light beam passes normally thereto, said first quarter-wave plate having axes intersecting said first plane of polarization at angles of 45° relative thereto;

a second quarter-wave plate positioned between said first

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quarter-wave plate and the glass sheet and through which the light beam passing through said first quarter-wave plate passes normally thereto, said second quarter-wave plate having axes intersecting said first plane of polarization at angles of 45° relative thereto, said second quarter-wave plate being rotatable about the emitting axis at increments of 22.5° relative to said first plane of polarization for providing eight different planes of polarization, and means for rotating said second quarter-wave plate about the emitting axis;

a third quarter-wave plate positioned between said second quarter-wave plate and the glass sheet and through which



the light being passed through said second quarter-wave plate passes normally thereto to the tempered glass sheet and is scattered therethrough, said third quarter-wave plate having axes intersecting said first plane of polarization at angles of 45° relative thereto;

an observation system adjacent the glass sheet for detecting the light scattered by the glass sheet and for producing video signals in response to the detection of the scattered light; and

an electronic circuit operatively connected to said observation system for converting said video signals to data corresponding to the sign and amplitude of the stress across the glass sheet.

4,655,590

METHOD OF COALESCING LASER BEAMS

Toshitaka Agano, and Yoshimi Takasaki, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 17, 1984, Ser. No. 641,689

Claims priority, application Japan, Aug. 18, 1983, 58-150658

Int. Cl.⁴ G01B *11/27*

U.S. Cl. 356—72 **7 Claims**

1. A method of coalescing laser beams comprising the steps of:

(i) passing two or more laser beams through two or more respective direction correction means for independently and two-dimensionally adjusting the direction of the respective laser beams,

(ii) merging the laser beams substantially into a single laser beam by an optical merging means,

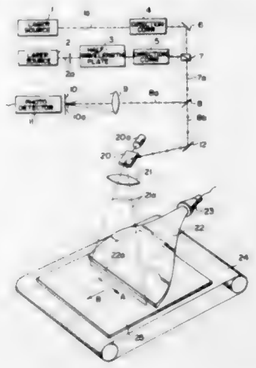
(iii) passing a portion of said merged laser beam through a lens having a positive power and causing it to impinge upon a pinhole positioned at the focal length of said lens,

(iv) detecting the amount of the laser beam passing through said pinhole by a photodetector,

(v) detecting the direction of the laser beams respectively in which the amount of the laser beam passing through said pinhole becomes the maximum by operating said respective direction correction means,

(vi) adjusting the laser beams respectively in said detected direction,

(vii) passing the remaining portion of said merged laser beam through a further lens having a positive power for con-



verging and coalescing the remaining portion of said merged laser beam onto said surface of said object.

4,655,591

PLATFORM ARRANGEMENT WITH MOVABLE MIRRORS, ONE MOVABLE WITH TRACKING MEANS, DIRECTING LIGHT FROM A FIXED LASER SOURCE

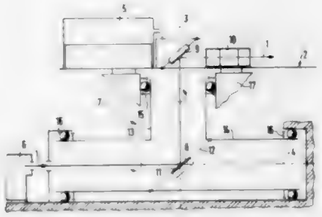
Helmut Kriz, Ruckersdorf, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 609,097, May 10, 1984, abandoned. This application Jan. 27, 1986, Ser. No. 822,955

Claims priority, application Fed. Rep. of Germany, May 21, 1983, 3318686

Int. Cl.⁴ G01C *3/08*; G02B *7/18, 5/08*; F41G *3/00*

U.S. Cl. 356—152 **6 Claims**



1. A platform arrangement for the support of direction-finding and target tracking equipment and for the orientation of laser beams which are movable in space; said platform arrangement including a platform with target tracking and optical equipment; platform support swivel structure; means for pivoting said platform support swivel structure and said platform about a plurality of intersecting axes at predetermined orientations relative to each other; a laser source fixedly supported separately from and in proximity to said platform support swivel structure, said laser source projecting a laser beam into said platform support swivel structure along a first one of said axes which is fixedly oriented relative to said separate laser source; and means in said platform support swivel structure and on said platform for deflecting said laser beam at the intersections of said axes until said laser beam is projection into space along an axis fixedly oriented relative to said platform, said laser beam deflecting means including a projection mirror

mounted on the platform in the laser beam projecting axis which is fixedly oriented relative to the platform.

4,655,592

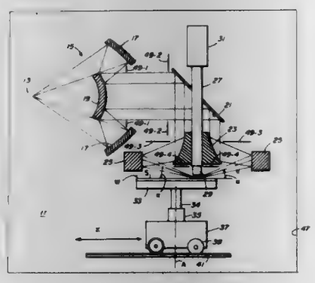
PARTICLE DETECTION METHOD AND APPARATUS

Charly D. Allemand, Newtonville, Mass., assignor to Hamamatsu Systems, Inc., Waltham, Mass.

Filed Dec. 30, 1983, Ser. No. 567,407

Int. Cl.⁴ G01N *21/47*

U.S. Cl. 356—237 **18 Claims**



1. Apparatus for use in detecting particles on the surface of an object comprising:

a. a holder for holding said object,

b. means for generating a collimated beam of light annularly shaped in cross section,

c. first curved front surface reflecting mirror means disposed along the optical axis of said collimated beam for deflecting said collimated beam outward in all directions and converting said collimated beam into a converging beam,

d. second curved front surface reflecting mirror means disposed along the optical axis of said collimated beam in axial alignment with said first front surface reflecting mirror means for directing said light reflected by said first mirror means inward toward said surface from all directions at a small angle whereat said light will strike said surface and come to focus thereon as a spot,

e. a light detector,

f. lens means in axial alignment with said first and second front surface reflecting mirror means for collecting light scattered by any particles on said surface illuminated by said light and imaging said light collected on said light detector, and

g. means for moving said holder relative to said impinging light beam so that the entire surface of said object can be illuminated a spot at a time.

4,655,593

METHOD AND APPARATUS FOR ILLUMINATING A BRAGG CELL

Eckhard Storck, and Michael Stockmann, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 1, 1985, Ser. No. 697,524

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404845

Int. Cl.⁴ G01J *3/00*

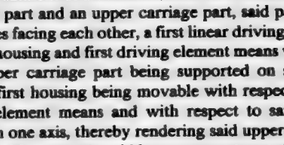
U.S. Cl. 356—300 **2 Claims**

1. A spectral analyzer comprising:

a light source emitting a light beam;

a means for focusing said light beam at a focus;

a Bragg cell illuminated by the focus light beam, said Bragg cell having a leading edge in the direction of propagation of said light beam and positioned such that said focus is disposed in front of said leading edge of said Bragg cell; and



a detector on which light emerging from said Bragg cell is incident.

4,655,594

DISPLACEMENT DEVICE, PARTICULARLY FOR THE PHOTOLITHOGRAPHIC TREATMENT OF A SUBSTRATE

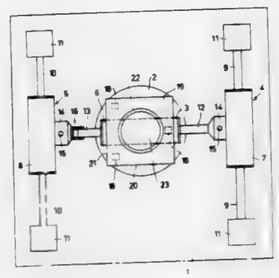
Stefan Wittekoek, and Adrianus G. Bouwer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 547,174, Oct. 31, 1983, abandoned. This application Mar. 11, 1986, Ser. No. 838,894

Claims priority, application Netherlands, Nov. 17, 1982, 8204450

Int. Cl.⁴ G01B *11/27, 9/02*

U.S. Cl. 356—363 **12 Claims**



1. A displacement device for use in an apparatus for photolithographic treatment of a substrate, said device comprising a lower support part and an upper carriage part, said parts having flat surfaces facing each other, a first linear driving member having a first housing and first driving element means with two ends, said upper carriage part being supported on said first housing, said first housing being movable with respect to said first driving element means and with respect to said lower support part in one axis, thereby rendering said upper carriage part movable with respect to said lower support part along said axis, a second linear driving member having a second housing and second driving element means, a third linear driving member having a third housing and third driving element means, said second and third housings being movable with respect to said second and third driving element means respectively and with respect to said lower support part in an axis perpendicular to said one axis, said second and third housings being movable parallel to each other, and connecting means connecting said ends of said first driving element means to said second and third housings and rendering said first housing and said upper carriage movable along said perpendicular axis and rotatable with respect to said lower support part.

4,655,595

ELLIPSOMETRIC METHOD AND APPARATUS FOR STUDYING PHYSICAL PROPERTIES OF THE SURFACE OF A TESTPIECE

Nils A. N. Björk, Tiby; Erland T. Sandström, Mölndal; Johan E. Stenberg, and Lars B. Stiblert, both of Gothenburg, all of Sweden, assignors to SAGAX Instrument AB, Tiby, Sweden

Filed Sep. 19, 1985, Ser. No. 777,646
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1984, 3434575
Int. Cl.[4] G01N *21/21*; G01J *4/00*
U.S. Cl. 356—369 22 Claims



1. Apparatus for studying surface properties of a testpiece surface by means of electromagnetic radiation to obtain a direct point-to-point comparison between the testpiece surface and a reference surface having known properties, said apparatus comprising:

radiation source means for generating radiation along a radiation beam path toward a testpiece,

polarizing means disposed in the radiation beam path upstream of the testpiece for receiving and polarizing said radiation to produce a polarized radiation beam,

said testpiece having a testpiece surface for receiving and reflecting said polarized radiation beam, and

analyzing means disposed in the radiation beam path downstream of the testpiece for extinguishing polarized radiation in said polarized radiation beam reflected by the testpiece,

reference means having a reference surface with reflection characteristics varying in one direction, disposed between the polarizing means and the analyzing means, for receiving and reflecting said polarized radiation beam thereby providing further polarization;

wherein the angles of incidence of the radiation at said reference surface and said testpiece surface are at least substantially identical, and wherein the polarized radiation beam reflected at one of said reference surface and said testpiece surface has a polarization direction which, being parallel to the plane of incidence at said one surface, is perpendicular to the plane of incidence at the other of said reference surface and said testpiece surface;

wherein said reference means enables said direct point-to-point comparison between the reference surface and the testpiece surface to be made while at the same time providing phase-shift compensation, by means of said further polarizing; and

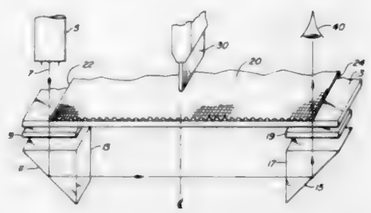
said reference means having two surface portions at the reference surface with different reflection characteristics on their entire surface ranges, at which the radiation is simultaneously reflected, and the two different reflection characteristics of said two surface portions of the reference surface being in substantially symmetrical relationship with respect to those of the testpiece surface to be investigated.

4,655,596

WORKPIECE CENTERING APPARATUS AND METHOD

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Continuation-in-part of Ser. No. 546,564, Oct. 28, 1983, abandoned. This application Jul. 31, 1985, Ser. No. 761,064
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—372 4 Claims



1. An apparatus for centering a workpiece about a predetermined reference line comprising:

a transparent surface, having side edges spaced apart on opposite sides of the reference line by a total distance greater than the width of the workpiece;

a source of light at one side of the transparent surface for illuminating a first edge of the workpiece;

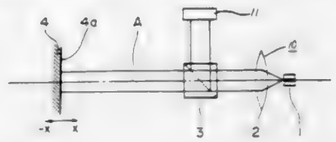
optical means for transmitting an inverted image of the first edge of the workpiece, which is located nearest one side of the transparent surface, to the opposite side of the transparent surface and for displaying said inverted image adjacent a second edge of the workpiece which is opposite to the first edge, whereby manual manipulation of the workpiece about the reference line will cause the second edge to be superimposed and coincident with the displayed image of the first edge, thereby indicating that the workpiece is centered with respect to the reference line.

4,655,597

MICRO-DISPLACEMENT MEASURING APPARATUS USING A SEMICONDUCTOR LASER

Osamu Yamamoto; Sadayoshi Matsui, both of Nara; Haruhisa Takiguchi, Osaka; Hiroshi Hayashi, Kyoto, and Nobuyuki Miyauchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 29, 1985, Ser. No. 739,013
Claims priority, application Japan, Jun. 1, 1984, 59-113619
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—373 3 Claims



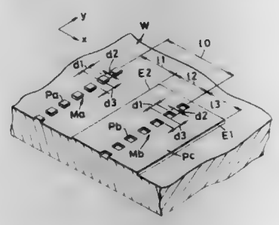
1. A micro-displacement measuring apparatus using a semiconductor laser which comprises: a compound resonator system containing said semiconductor laser, with said compound resonator system being constructed such that light from said laser irradiates an object to be measured and the reflected light therefrom returns to said semiconductor laser; and a light detector means for receiving light from said semiconductor laser and for detecting the number of fluctuations and the level of the optical output of said semiconductor laser to determine the amount of displacement of said object and the direction of displacement of said object, respectively.

4,655,598

POSITION DETECTION METHOD AND APPARATUS

Seiro Murakami, Tokyo; Toshio Matsuura, Koshigaya; Yuji Imai, Tokyo, and Kazuya Ohta, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 18, 1985, Ser. No. 799,262
Claims priority, application Japan, Nov. 26, 1984, 59-249291
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—400 12 Claims



1. A method for detecting a position of a substrate by irradiating positioning patterns on the substrate by a light beam and detecting unique light information generated by the patterns, comprising steps of:

(a) forming first pattern and second pattern at different positions on the substrate,

said first pattern being a diffraction grating having a plurality of grating elements regularly arranged in a second direction crossing to a first direction on the substrate,

said second pattern being a stepped edge spaced from said first pattern and extending in a third direction crossing the first direction;

(b) scanning said first pattern and said second pattern in said first direction with said light beam relatively;

(c) individually detecting first unique light information generated by said first pattern and second unique light information generated by said second pattern; and

(d) detecting the position of said substrate in accordance with said first light information, said second light information and the relative scan position information of said substrate and said light beam.

4,655,599

MASK ALIGNER HAVING A PHOTO-MASK SETTING DEVICE

Naoki Ayata, Machida, and Yasuyoshi Yamada, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1983, Ser. No. 550,097
Claims priority, application Japan, Nov. 15, 1982, 57-200061; Nov. 15, 1982, 57-200062; Nov. 15, 1982, 57-200063; Nov. 15, 1982, 57-200064; Nov. 15, 1982, 57-200065; Nov. 15, 1982, 57-200066
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—401 16 Claims

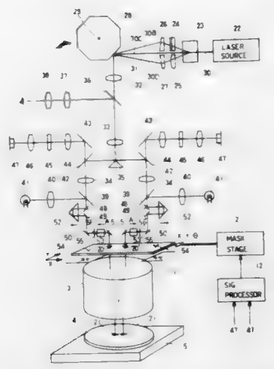
1. An exposure apparatus for exposing a photo-mask to a photosensitive member, comprising:

a photo-mask including a first mark usable to align said photo-mask and a photosensitive member with each other and a second mark usable to align said photo-mask and said exposure apparatus with each other, said second mark having a pattern that is alignable with a pattern of said first mark;

said photosensitve member including a third mark to be associated with said first mark;

mark providing means, connected with said exposure apparatus, for providing a fourth mark to be associated with said second mark; and

optical detection means, movable to be operatively associated with said first and second marks, both for detecting an error in alignment between said first and third marks



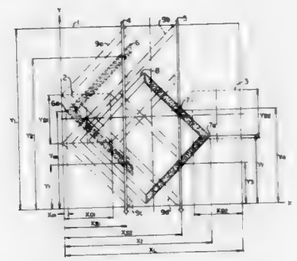
and for detecting an error in alignment between said second and fourth marks.

4,655,600

ALIGNMENT METHOD

Tohru Tanigawa, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 23, 1985, Ser. No. 768,621
Claims priority, application Japan, Aug. 27, 1984, 59-177877
Int. Cl.[4] G01B *11/27*
U.S. Cl. 356—401 9 Claims



1. A method of aligning an object with respect to another object at a reference position comprising the steps of

providing a first object having a first V-shaped mark which moves in correspondence with the position of said first object,

providing a second object having a second V-shaped mark which moves in correspondence with said second object,

detecting the position of said first V-shaped mark by a first straight mark detection line to determine the current position of said first object,

detecting the position of said second V-shaped mark by a second straight mark detection line to determine the current position of said second object,

comparing the results of said steps of detecting positions of said V-shaped marks,

judging from the result of said comparing step whether alignment of said first and second objects has been accomplished, and

moving said first object if alignment of said first and second objects has not been accomplished according to the result of said judging step.

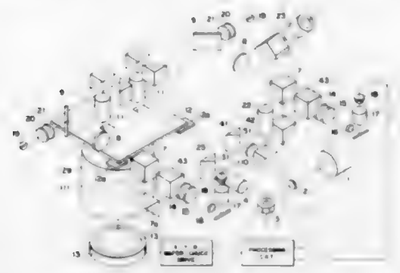
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4,655,601

OBSERVATION DEVICE AND AN ALIGNER USING SAME

Akiyoshi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Nov. 21, 1983, Ser. No. 553,815
Claims priority, application Japan, Dec. 1, 1982, 57-210911
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—401 **7 Claims**



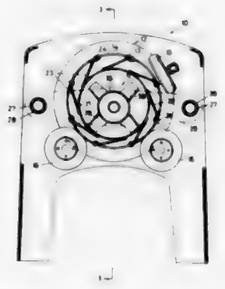
1. An observation device usable with an apparatus for aligning two members having respective alignment marks, wherein a deflecting beam is used to scan the alignment marks, said device comprising:
- a spatial beam splitter for spatially splitting the deflecting beam to provide split scanning beams;
- a first optical system, having an optical path, for directing each of the split scanning beams to the alignment marks to be reflected therefrom, said first optical system including an objective lens;
- a second optical system, having an optical path at least a part of which is not common with said optical path of said first optical system, for receiving the beams reflected by the alignment marks; and
- an image rotator, disposed in only one of said first and second optical systems; said spatial beam splitter also functioning as a view field splitter for combining view fields.

4,655,602

TURBINE MIXER

Robert K. Tomlinson, Woodville, Australia, assignor to Monier Limited, Woodville, Australia

Filed Dec. 19, 1985, Ser. No. 810,508
Claims priority, application Australia, Dec. 20, 1984, PG8647
Int. Cl.⁴ B28C *5/18*
U.S. Cl. 366—56 **11 Claims**



1. A concrete mixer comprising a main frame and a sub-frame,
- an inner rotor carried by the sub-frame and journalled for rotation with respect thereto, and comprising blades radially outstanding from its outer surface,
- a rotary drum assembly carried by the main frame and journalled for rotation with respect thereto, and comprising a flexible member, said inner rotor, its said blades and said drum flexible member all being of elastomeric material,
- guide means guiding the sub-frame for movement with respect to the main frame between a first position wherein the inner rotor is within the drum flexible member with which its blades co-operate in the mixing of concrete, and a second position wherein the inner rotor is withdrawn therefrom,
- first drive means on a said frame coupled to the inner rotor for effecting rotational drive thereof, and second drive means on the main frame coupled to the rotary drum for effecting rotational drive thereof.

4,655,603

PNEUMATIC MIXING APPARATUS FOR BULK MATERIALS AND FILTER APPARATUS THEREFOR

Hans-Günther Palm, Engelskirchen, Fed. Rep. of Germany, assignor to Madaus & Co., Cologne, Fed. Rep. of Germany

Filed Mar. 28, 1985, Ser. No. 716,857
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412000
Int. Cl.⁴ B01F *13/02*
U.S. Cl. 366—107 **5 Claims**



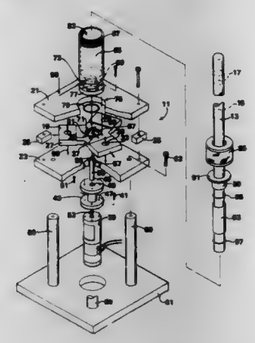
1. Pneumatic mixing apparatus for bulk materials comprising:
- a vessel which has an upper poriton and which has in its upper portion a perforated plate having bores;
- a plurality of cylindrical filter units fastened dependingly from said perforated plate and disposed concentrically with said bores, each filter unit comprising a tube filter and a filter nozzle having two opposed, flaring nozzle portions fastened to said perforated plate coaxially with said tube filter and extending into said tube filter;
- a plurality of reverse cleaning nozzles above said perforated plate and connected to one or more compressed gas lines, said reverse cleaning nozzles pointing coaxially into said filter units and reverse cleaning air being introducible into said filter units through said reverse cleaning nozzles, said reverse cleaning nozzles each comprising two opposite flaring nozzle portions and being disposed at an axial distance from said filter nozzles.

4,655,604

PLANAR OSCILLATORY STIRRING APPARATUS

Martin F. Wolf, San Jose, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 15, 1985, Ser. No. 765,991
Int. Cl.⁴ B01F *11/00*
U.S. Cl. 366—219 **17 Claims**



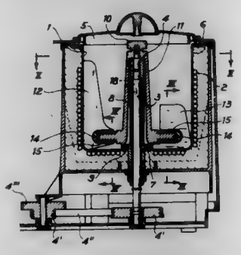
1. An apparatus for stirring comprising:
- a slide plate adapted to be planar oscillated in two orthogonal directions about a central axis,
- said slide plate having central support area uniformly spaced about said central axis,
- a container fixed to said central support area,
- means for oscillating said slide plate about said central axis
- two parallel support plates, one on each side of said slide plate,
- said slide plate having equally spaced extending arms,
- each said arm having air bearing means for supporting said slide plate in a low friction manner between said support plates,
- means for supplying pressurized air to each said air bearing means.

4,655,605

ICE-CREAM MACHINE

Alberto Cipelletti, Guardamiglio, Italy, assignor to Ditta Cipelletti Alberto, Italy

Filed Mar. 5, 1985, Ser. No. 708,244
Claims priority, application Italy, Mar. 6, 1984, 21119[U]
Int. Cl.⁴ B01F *7/18, 15/06*
U.S. Cl. 366—312 **3 Claims**



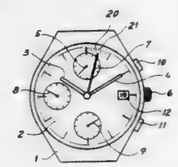
1. An ice-cream machine for family use, of the type comprising a whipping vessel inside which there is provided a stirring element for the mixture to be freezed, said stirring element being actuated by a shaft coaxial to the vessel and comprising a sleeve which is coaxially and dynamically connected to said shaft, as well as one or more mixing blades, wherein at least one blade of the stirrer is mounted by means of a removable coupling on the sleeve, said coupling pivotably connected as to allow small axial and torsional movements of the blade in respect to an axis essentially perpendicular to the sleeve axis.

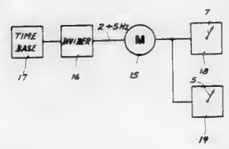
4,655,606

TIMEPIECE COMPRISING AT LEAST ONE CHRONOGRAPH FUNCTION

Urs Giger, Solothurn, Switzerland, assignor to ETA SA Fabriques d'Ebauches, Switzerland

Filed Mar. 12, 1985, Ser. No. 710,803
Claims priority, application Switzerland, Mar. 28, 1984, 1559/84
Int. Cl.⁴ G04F *5/00*
U.S. Cl. 368—160 **6 Claims**





1. A timepiece including an electronic oscillator serving as a time base, a frequency divider and a stepping motor controlling both a time-keeping display and at least one chronograph-hand distinct from said time-keeping display, said chronograph-hand being arranged to respond to a mechanism through operation of which said chronograph-hand may be started, stopped and returned to its initial position, said frequency divider being arranged and adapted to supply the motor with from two to five pulses per second thereby to advance said chronograph-hand two to five steps per second, said stepping motor being the only source of electromotive power for driving said time-keeping display and said chronograph-hand.

4,655,607

HIGH SPEED HOT AIR LEAK SENSOR

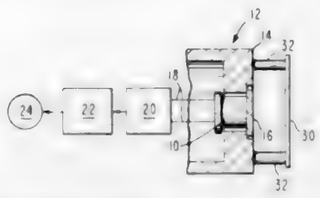
Mark T. Kern, Goleta; Robert J. Cinzori, Santa Barbara, and William D. Fuller, Goleta, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Continuation of Ser. No. 562,799, Dec. 19, 1983, abandoned.
This application Oct. 30, 1985, Ser. No. 793,496
Int. Cl.⁴ G01K *1/16;* **G01N** *25/72*
U.S. Cl. 374—4 **24 Claims**

1. A hot air leak sensor for detecting leaks in ducting within an aircraft fuselage, comprising:
- a housing;
- an infrared detector in the housing and having a predetermined optical field of view, said detector producing a threshold signal level when a thermal energy source of a predetermined strength is within said optical field of view;
- re-radiating means mounted to the housing within the field of view of said detector, said re-radiating means being both partially transparent to incident radiation as well as being capable of absorbing thermal energy and re-radiating the thermal energy to the detector;
- said housing being mounted within the fuselage adjscent the

exterior of the ducting and oriented so that the field of view of the detector is directed to a specific location on the ducting; and

whereby said detector is adapated to generate said threshold signal level whenever the ducting within the field of view of said in infrared detector generates thermal energy of



said predetermined strength due to a hot air leak at the specific location, with said detector being further adapted to also generate said threshold signal level whenever said re-radiating means is heated due to a hot air leak in the ducting upstream of the housing and not in the field of view of said detector.

4,655,608

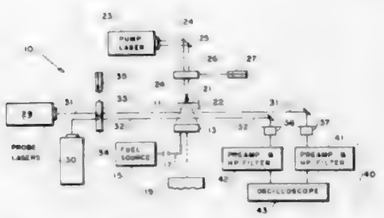
NON-PERTURBING BEAM DEFLECTION SYSTEM AND METHOD FOR HIGH REPETITION RATE TEMPERATURE MEASUREMENT OF COMBUSTION FLAMES

Larry P. Goss, Beavercreek; Dennis F. Grosjean, Kettering; Benjamin Sarka, Jr., Enon; Sigmund W. Kizirnis, Centerville, and Biswa N. Ganguly, Beavercreek, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 24, 1985, Ser. No. 790,714

Int. Cl.⁴ G01L *11/24*

U.S. Cl. 374—119 **13 Claims**



1. A method for determining the temperature of a combustion flame of known composition comprising:

a. supporting a thin wire at a preselected position within said flame, said wire selected to rapidly couple energy to the immediately surrounding gases of said flame when said wire is heated;

b. directing a first pulsed laser beam onto said wire to produce localized heating of said wire and the immediately surrounding gases of said flame whereby a pressure increase in the form of an acoustic pulse is generated within said flame;

c. directing parallel second and third laser beams through said flame in predetermined spaced relationship to each other and to said wire;

d. detecting the respective deflections of said second and third laser beams resulting from interactions thereof with said acoustic pulse;

e. measuring the time difference between respective said deflections of said second and third laser beams to determine the speed of said acoustic pulse through said flame; and

f. determining the temperature of said flame from said speed determination and said predetermined spaced relationship between said second and third laser beams.

4,655,609

METHOD FOR THE MANUFACTURE OF A THERMOMETER AND THERMOMETER

Bernd Alber, Ritter Str. 19, D-7500 Karlsruhe 1, Fed. Rep. of Germany

Division of Ser. No. 708,243, Mar. 5, 1985, abandoned. This application Jan. 29, 1986, Ser. No. 823,675

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1984, 3408799; May 23, 1984, 3419155

Int. Cl.⁴ G01K *1/16*

U.S. Cl. 374—194 **28 Claims**



1. The method of manufacturing a glass thermometer including an inner capillary tube vessel and an outer envelope receptacle vessel and including the following steps, forming a lower end of the heat softened receptacle envelope vessel by means of a mandrel having a predetermined cylindrical shape to provide an inner contour of predetermined shape, and forming the lower end of said capillary probe vessel in a mold having a cylindrical inner surface such that a bulb end is formed to predetermined shape for closely fitting into the cylindrical receptacle contour, said forming in said mold being accomplished at least in part by blowing as the capillary tube is so provided in the mold, and fitting the complementary shaped capillary tube and envelope receptacle together so that the lower ends fit tightly together through a major portion of their surfaces to form a thermometer bulb, said envelope tube being initially closed and then, accompanied by heating to softness, the mandrel being inserted in the closed envelope tube end a distance sufficient to provide an accurately determinable bulb shape.

4,655,610

VACUUM IMPREGNATION OF SINTERED MATERIALS WITH DRY LUBRICANT

Mohammed Y. Al-Jaroudi, Stockholm, Sweden, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1985, Ser. No. 800,881

Claims priority, application Sweden, Feb. 13, 1985, 8500671

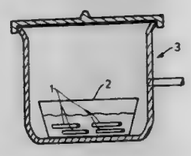
Int. Cl.⁴ B05D *3/02*; F16C *33/02, 33/12*

U.S. Cl. 384—13 **17 Claims**

17. A wear resistant bearing for reducing wear between said bearing and a second bearing part, said wear resistant bearing comprising:

a sintered bearing having a plurality of pores;

a dry lubricant integrally contained within and extending slightly above said pores, said dry lubricant further comprising effective amounts of molybdenum disulphide, graphite and a cured resin, wherein said dry lubricant



constitutes the only contact between said wear resistant bearing and said second bearing part.

4,655,611

BALL SPLINE BEARING ASSEMBLY

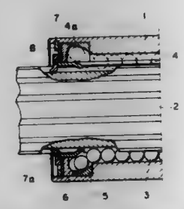
Junji Kondo, Mino, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1985, Ser. No. 814,145

Claims priority, application Japan, Dec. 28, 1984, 59-274857

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 384—45 **4 Claims**



1. A ball spline bearing assembly comprising:

a shaft extending straight over a distance and provided with a plurality of straight inner grooves formed at its outer peripheral surface;

an outer, hollow cylinder through which said shaft extends, said cylinder including a like plurality of straight outer grooves each located opposite to the corresponding one of said plurality of inner grooves thereby defining a straight guide passage by a pair of associated inner and outer grooves;

connecting means provided at each end of said cylinder for connecting two adjacent, associated straight guide passages thereby forming an endless guide path, said connecting means includes a ring-shaped end member upper half and a ring-shaped end member lower half, which are fitted into an end recess formed at each end of said cylinder, said upper half and lower half defining a plurality of connection passages each connecting a pair of associated straight guide passages;

a plurality of balls provided to roll along said endless guide path;

retaining means interposed between said shaft and said cylinder as fixedly attached to said cylinder for retaining said plurality of balls in position; and

whereby alternate ones of either of said inner or outer grooves are deeper than the rest so that the balls are in rolling contact with both of said inner and outer grooves in a set of alternate ones of said straight guide passages but the balls are in rolling contact with either one of said inner and outer grooves in the outer set of alternate ones of said straight guide passages.

4,655,612

BEARING ADJUSTMENT APPARATUS

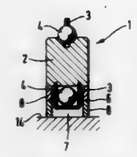
Erich Lunz, Loanerstadt, and Reinhard Schwinghammer, Tuchenbach, both of Fed. Rep. of Germany, assignors to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Feb. 19, 1986, Ser. No. 831,145

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1985, 3509996

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 384—45 **6 Claims**



1. An apparatus for height adjustment of a rolling bearing for longitudinal movement comprising a support body having two straight parallel race sections connected at their ends by two semicircular race sections, said support body being encircled by a guide element for guiding and/or holding rolling bodies in the race section, the rolling bearing being supported by two adjusting wedges moveable relative to each other whose wedge surfaces are inclined opposite to each other in the longitudinal direction of the race, characterized in that support body extends beyond the guide element transverse to the longitudinal race direction and the adjusting wedges having through recesses engaging the guide element and the zones of the support body extending beyond the guide element being supported by lateral faces of the adjusting wedges delimiting the recesses.

4,655,613

LINEAR MOTION ROLLING CONTACT BEARING ASSEMBLY

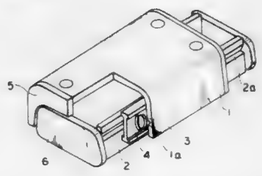
Yasunori Yokota, Ebina, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1985, Ser. No. 778,588

Claims priority, application Japan, Sep. 20, 1984, 59-141570[U]

Int. Cl.⁴ F16C *29/04*

U.S. Cl. 384—49 **6 Claims**



1. A linear motion rolling contact bearing assembly comprising, in combination:

a generally trough-shaped bed extending in a longitudinal direction of said assembly and having a base section and a pair of side wall sections extending from both sides of said base section;

a generally trough-shaped table having a base section and a pair of side wall sections, said table being provided to straddle said bed thereby locating its pair of side wall sections opposed to the pair of side wall sections of said bed;

a plurality of rolling members interposed between said bed

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and said table in rolling contact therewith for providing a relative motion between said table and said bed; and

retaining means for retaining said plurality of rolling members in position, said retaining means including an elongated plate provided with a plurality of holding holes spaced apart from one another and at least one side projection projecting from said plate toward its associated side wall section of said table or bed;

wherein said retaining means includes a plate with a plurality of raised flat surfaces of a given configuration formed integral with said plate and disposed laterally on each side surface of said plate, said raised surfaces being adapted to provide limited resistance to the sliding of said retaining means and said adjacent side wall section of said bed and said table.

4,655,614

BEARING RING FOR DRIVE ASSEMBLY HAVING WIDE ANGLE JOINT AND PROTECTIVE FUNNEL

Wilhelm Schott, Hennef, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

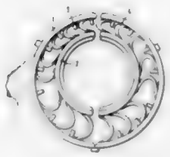
Filed Jan. 13, 1986, Ser. No. 818,254

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1985, 3509128

Int. Cl.⁴ F16C *27/00*

U.S. Cl. 384—220 **3 Claims**





1. A bearing ring for a protective funnel for protecting the wide angle joint associated with a drive assembly for effecting a driving connection between an agricultural implement and a power takeoff shaft of a tractor, with the protective funnel being stationary during operation of the drive shaft and being protected via a bearing from the wide angle joint, said bearing ring comprising:

an outer supporting ring and an inner sliding ring defining an annular space therebetween;

flexible webs connecting said outer supporting ring and said inner sliding ring together;

supporting cams provided on one of said supporting ring and said sliding ring extending radially into said annular space therebetween; and

radial slots provided in two places on said sliding ring and in one place on said supporting ring with three points of intersection being positioned on a joint center line.

4,655,615

WRAPPED CYLINDRICAL BUSH

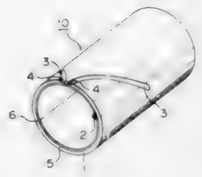
Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

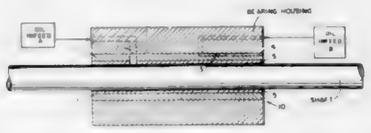
Continuation of Ser. No. 568,006, Jan. 4, 1984, abandoned. This application Aug. 28, 1985, Ser. No. 770,014

Claims priority, application Japan, Apr. 20, 1983, 58-59351[U]

Int. Cl.⁴ F16C *3/14, 33/06*

U.S. Cl. 384—296 **20 Claims**





1. A bearing structure including a wrapped bush having an inner bearing surface and an outer peripheral non-bearing surface, force fitted into an opening of a bearing housing,

means to supply lubricating oil to parts of the bearing structure independent of said bush bearing surface, said means including at least one oil groove formed on the outer non-bearing peripheral surface of said wrapped bush, said at least one oil groove extending on the outer peripheral surface of the wrapped bush at an angle between 0° and 90° relative to a line which is positioned on the outer peripheral surface of said wrapped bush and is in parallel to the axis of said wrapped bush; and

means for supplying lubricating oil to said inner bearing surface in parallel with and independent of said at least one oil groove;

said at least one oil groove being blocked from direct communication with said means for supplying lubricating oil to said inner bearing surface.

4,655,616

COMPUTER DIRECT DISC DRIVE WITH MAGNETICALLY STABILIZED SHAFT

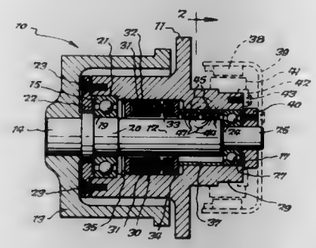
John E. Ducan, Williamsville, N.Y., assignor to Magtrol, Inc., West Seneca, N.Y.

Filed Sep. 25, 1985, Ser. No. 779,924

Int. Cl.⁴ F16C *25/08;* **H02K** *5/16*

U.S. Cl. 384—446 **16 Claims**

1. In a computer disc direct drive having a hub, a shaft fixedly mounting said hub, a housing, a first bearing having a first outer race fixedly mounted in said housing and a first inner race fixedly mounting said shaft, a second bearing having a second inner race fixedly mounted on said shaft in axially spaced relation to said first inner race and having a second outer race, a first clearance between said second outer race and said housing, spring means effectively positioned between said housing and said shaft for transmitting a biasing force to said second outer race, the improvement for maintaining the axis of rotation of said shaft stable comprising magnet means, means for fixedly mounting said magnet means relative to said housing in contiguous space relationship to said shaft, a second clearance between said magnet means and said shaft which is greater than said first clearance, said magnet means producing a magnetic circuit with said shaft and said housing to thereby bias said shaft in a radial direction in the area of said second bearing to thereby cause a portion of said second outer race to abut said housing while said shaft does not contact said magnet means to thereby take up play between said shaft and said housing.



4,655,617

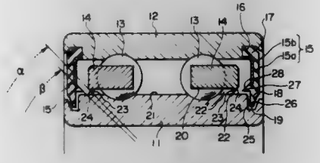
SEALED ROLLING BEARING WITH A FLOW REDUCING GREASE PASSAGE

Hiroyoshi Yasui, and Teruo Yoshida, both of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Oct. 11, 1985, Ser. No. 786,490

Int. Cl.⁴ F16C *33/66*

U.S. Cl. 384—465 **11 Claims**



1. A rolling bearing apparatus comprising:

a plurality of rolling elements;

at least one annular retainer means for positioning and holding said rolling elements equidistant from each other and circumferentially;

an inner and an outer annular race between which said at least one retainer and said plurality of rolling elements are positioned;

at least one seal plate secured to an end of the outer race;

said at least one retainer means including an annular portion at one end thereof having an inner and an outer circumferential surface, an end face opposite said seal plate and an annular projection extending radially from the inner circumferential surface into a space between said annular portion of the retainer means and inner race to form an annular small gap between the projection and the inner race, said projection having an inclined surface extending from said end face opposite said seal plate in a direction away from said seal plate; and

said seal plate including a portion which confronts the inclined surface of said projection and which defines another inclined surface oriented in the same direction as the inclined surface of the projection to form between both inclined surfaces a lubrication induction passage in communication with said small gap.

4,655,618

NEEDLE BEARING AND IN PARTICULAR A NEEDLE SLEEVE HAVING A REINFORCED SEAL

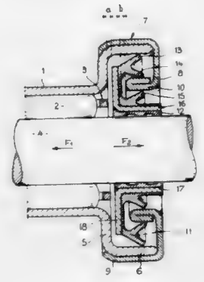
Jean-Denis Labedan, Vierzon, and Gerard Stéphan, Croissy-sur-Seine, both of France, assignors to Nadella, Vierzon, France

Filed Jul. 26, 1985, Ser. No. 759,649

Claims priority, application France, Jul. 30, 1984, 84 12083

Int. Cl.⁴ F16C *33/76;* **F16J** *9/06*

U.S. Cl. 384—486 **7 Claims**



1. A needle bearing comprising: an outer ring, needles mounted in the outer ring, an inner element rotatably mounted in the outer ring and surrounded by the needles, and sealing means disposed at at least one end of the outer ring, said sealing means comprising means defining an annular wall disposed at the end of the outer ring and having an axially extending annular inner surface, an attached member radially and inwardly extending from said annular wall and having at a radially inner end of the attached member an axially extending ledge defining inner and outer axially extending surfaces, and a sealing element composed of an elastomer and including a sleeve portion adapted to receive the inner element of the bearing with a tight fit, the sealing element having three peripheral sealing lips disposed around the sleeve portion, each being in contact with the axially extending annular inner surface of the annular wall, the outer axially extending surface of the ledge and the inner axially extending surface of the ledge respectively, said sealing element being disposed against the ledge, said ledge constituting an abutment for relative axial displacements between the outer ring and said inner element of the bearing.

4,655,619

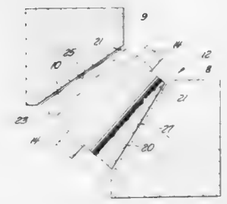
TAPERED ROLLER BEARING

Erwin fGeppert, Oakland County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 26, 1981, Ser. No. 277,477

Int. Cl.⁴ F16C *33/34*

U.S. Cl. 384—567 **1 Claim**



1. In a tapered roller bearing comprising an inner race hav-

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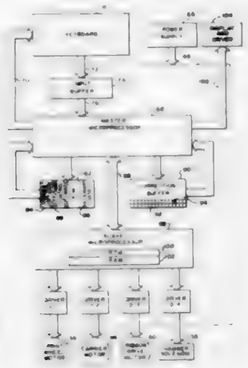
ing a conical bearing surface centered on a central point along the bearing axis, an outer race having a conical bearing surface centered on that same central point, and an array of frustoconical rollers interposed between the inner and outer races: the improvement wherein each roller is hollow along its entire length; the wall thickness of each roller being relatively small at the small end of the roller and being relatively large at the large end of the roller, so that each roller will be stressed substantially uniformly along its entire length during shock loading and resume its ordinary configuration during normal loading, thereby protecting against permenent deformation and fracture; the wall thickness of each roller becoming progressively greater from the small end of the roller to the large end; the change in wall thickness along the roller length being uniform; the roller wall thickness varying according to the cube of the roller diameter.

4,655,620

SPELLING ERROR FINDING FEATURE INCLUDING AN ELECTRONIC SPELLING DICTIONARY

Donald T. Adams, Homer, and R. William Gray, Ithaca, both of N.Y., assignors to SCM Corporation, Cortland, N.Y.

Filed Dec. 26, 1985, Ser. No. 813,350
Int. Cl.[4] B41J *5/30*
U.S. Cl. 400—63 **6 Claims**



1. An error finding system for use in an electronic typewriter having a keyboard including a plurality of character and function keys selectable for issuing unique signals, a platen, a carrier, a printing mechanism including a print hammer supported on the carrier for printing characters at selected print positions on a recording medium supported on the platen, a correction mechanism for erasing previously printed characters from the recording medium, bi-directional feeding means for horizontally moving the carrier relative to the platen, electronic processor means for receiving the unique signals from selected keyboard keys and for controlling functional operation of typewriter mechanisms in accordance to the signals received, an electronic spelling dictionary connected to the processor means, the dictionary being operable to detect spelling errors at print positions in response to printing operations, a correction buffer connected to the processor means, the correction buffer including a plurality of memory registers capable of storing therein character codes representative of the last plurality of printed characters and find pointer means operative in the correction buffer for pointing to a selected one of the plurality of memory registers and the memory register pointed to by the find point means relating to the current print position of the carrier, the error finding system comprising:

means for adding a code signal at a position of a spelling error detected by the dictionary in response to printing operations;

electronic means for finding said code signal added to the position of the spelling error in response to keyboard actuation; and

means for repositioning the print mechanism to align the print hammer with a print position having said code signal from a position beyond the print position of the spelling error in response to said keyboard actuation.

4,655,621

COMBINATORIAL KEYBOARDS WHICH ENCODE CHARACTERS AND A SPACE

Richard Holden, 71, Lyntos Road, Chesham, Buckinghamshire, England

Filed Aug. 21, 1984, Ser. No. 643,007
Claims priority, application United Kingdom, Aug. 23, 1983, 8322579
Int. Cl.[4] B41J *5/06*
U.S. Cl. 400—100 **3 Claims**



1. A keyboard comprising:

a plurality of keys arranged in a left hand group and a right hand group as viewed by an operator, each group including five home keys comprising a thumb key, an index finger key, a middle finger key, a ring finger key and a little finger key; and

wherein each of said left hand group and said right hand group further includes five additional keys comprising an additional thumb key, an additional index finger key, an additional middle finger key, an additional ring finger key, and an additional little finger key disposed adjacent and corresponding to said home thumb key, said home index finger key, said home middle finger key, said home ring finger key, and said home little finger key, respectively;

decoding means for producing a signal representative of one of the vowels A, E, I, O and U in response to operation of one of said thumb key, said index finger key, said middle finger key, said ring finger key, and said little finger key, respectively, of said left hand group,

for producing a signal representative of each one of sixteen consonants in response to simultaneous operation of the home key of said left hand group corresponding to the alphabetically preceding vowel and the respective home key of said right hand group taken in order from the thumb key to the little finger key corresponding to the relative position of the consonant in a string of consecutive consonants following the alphabetically preceding vowel,

for producing a signal representative of each of the other five consonants in response to operation of only a respective single home key of said right hand group; and

for producing a signal representative of a space character accompanied by a signal representative of the vowels A, E, I, O, and U in response to operation of said additional thumb key, said additional index finger key, said additional middle finger key, said additional ring finger key, and said additional little finger key, respectively, of said left hand group,

for producing a signal representative of a space character accompanied by a signal representative of each of the other five consonants in response to operation of only a respective single additional key of said right hand group, and

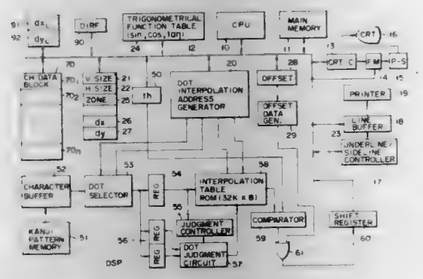
for producing a signal representative of a space character accompanied by a signal representative of each of the sixteen consonants in response to simultaneous operation of the additional key of said left hand group corresponding to the alphabetically preceding vowel and the respective additional key of said right hand group taken in order from said additional thumb key to said additional little finger key corresponding to the relative position of the consonant in the string of consecutive consonants following the alphabetically preceding vowel.

4,655,622

PRINTER CONTROL APPARATUS

Hiroyuki Aoki, Hanno, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 2, 1985, Ser. No. 761,705
Claims priority, application Japan, Aug. 29, 1984, 59-179646; Aug. 29, 1984, 59-179647; Aug. 29, 1984, 59-179650
Int. Cl.[4] B41J *3/10*
U.S. Cl. 400—121 **8 Claims**



1. A printer control apparatus comprising:

modifying means for expanding or modifying a character pattern of a dot matrix form having a predetermined dot number;

means for image-developing the character pattern which is processed by said modifying means, said image-developing means dividing the character pattern into a plurality of zones along a scanning direction and image-developing the divided character pattern for each zone when the number of dots of the processed character pattern along a subscanning direction is larger than that of a line buffer along the subscanning direction;

storage means for storing a zone number to be developed next, a relative distance between a development start position and a printing head position, character code data and attribute data of a character for at least one-line characters;

paper feed control means for detecting a minimum value of the relative distance for the one-line characters stored in said storage means, developing the character patterns corresponding to the minimum value, for feeding a paper sheet by the minimum value when the minimum value is smaller than a preset amount of paper fed which is determined by a line pitch, and for feeding the paper sheet by the preset amount of paper fed when the minimum value is not smaller than the preset amount; and

relative distance updating means for subtracting the amount of paper fed from the relative distance when the paper sheet is fed.

2. A printer control apparatus for use with a printing unit comprising:

modifying means for expanding or modifying a character pattern of a predetermined dot matrix form;

a line buffer unit for storing a character pattern for one line so as to supply the stored character pattern to the printing unit;

means for image-developing in said line buffer unit a character pattern processed by said modifying means, said image-developing means dividing the character pattern into a plurality of zones along a scanning direction and image-developing the divided character pattern for each zone when the number of dots of the processed character pattern along a subscanning direction is larger than that of said line buffer unit along the subscanning direction; and

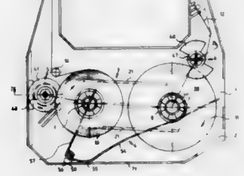
means for selectively omitting a part of the character pattern stored in said line buffer unit and to be supplied to the printing unit when the number of dots of the character pattern image-developed in said line buffer unit exceeds a predetermined number.

4,655,623

INK RIBBON CASSETTE

Karl Gasser, Hallau, Switzerland, assignor to Franz Buttner AG, Egg, Switzerland

Filed Dec. 10, 1985, Ser. No. 807,409
Claims priority, application Switzerland, Dec. 13, 1984, 5935/84
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—208 **13 Claims**



1. An ink ribbon cassette for winding an ink ribbon from a feed spool to a winding spool within the cassette, comprising:

a cover,

a base formed with a guide path for receiving a guide projection;

at least one side wall connecting the cover and base,

a drive roller rotatably supported on the cassette base,

a controlling roller rotatably supported on the cassette base,

a support member having a feed spool sleeve and a winding spool sleeve, said support member formed with the guide projection for sliding in the guide path formed in the cassette base;

a feed spool rotatably mounted on the feed spool sleeve and biased towards and engaging the controlling roller; and

a winding spool rotatably mounted on the winding spool sleeve and biased towards and engaging the drive roller;

the spool sleeves positioned so that when the guide projection of the support member moves within the guide path, the winding spool operatively engages the drive roller and the support member pivots about the guide projection so that when the ribbon is wound from the feed spool to the winding spool the feed spool maintains engagement with the controlling roller.

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4,655,624

INK RIBBON CASSETTE

Hiroatsu Kondo, Zushi; Toshiaki Ozawa, Chiba, and Yasuaki Yamada, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

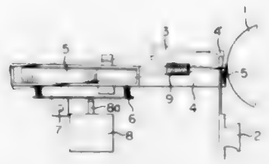
Continuation of Ser. No. 661,271, Oct. 16, 1984, abandoned, which is a continuation of Ser. No. 541,067, Oct. 12, 1983, abandoned, which is a continuation of Ser. No. 462,006, Jan. 28, 1983, Pat. No. 4,494,886, which is a continuation of Ser. No. 242,348, Mar. 10, 1981, abandoned. This application Sep. 20, 1985, Ser. No. 778,294

Claims priority, application Japan, Mar. 17, 1980, 55-33590

The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.

Int. Cl.⁴ B41J *35/28*

U.S. Cl. 400—208 **3 Claims**



1. An ink ribbon cassette that houses an ink ribbon, comprising:

a cassette body having a ribbon guide arm, said cassette body being mountable on a printer for rocking during operation between a first position and a second position;

ribbon-end indicating means on the ink ribbon for indicating the approach of the end of the ink ribbon;

means for rendering the ribbon-end indicating means visible to a detector that is located on the printer entirely outside the periphery of the cassette, said cassette undergoing pivotal movement relative to said detector as the cassette rocks between said first and second positions, said visibility rendering means consisting of only one window in a wall of said ribbon guide arm; and

ribbon-type indicating means formed on said wall of said ribbon guide arm for indicating to the detector which of several types of ink ribbon is in such cassette body, wherein said window and said ribbon-type indicating means are arranged along said wall of said ribbon guide arm in a line substantially perpendicular to the ink ribbon feed direction and are located relative to each other such that said ribbon-end indicating means can be detected by the detector when said cassette body is in the first position and said ribbon-type indicating means can be detected by the same detector when said cassette body is in the second position.

4,655,625

SINGLE STATION PRINTER FOR PRINTING ON PLURAL RECORD MEDIA

Robert A. Brell, Dryden; Alan H. Walker, Barton, and Joseph C. Moro, Ithaca, all of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 16, 1985, Ser. No. 776,728

Int. Cl.⁴ B41J *15/20*

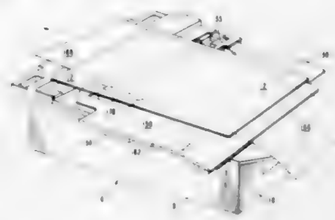
U.S. Cl. 400—605 **14 Claims**

1. A mechanism for providing passageways for a plurality of record materials past a single printing station in a printer haivng a platen and an opposing print head, the mechanism comprising

means including a drive roller and a driven roller for advancing said record materials toward the printing station,

support means pivotally connected to the printer and having a generally horizontal top surface for guiding one of said record materials past the printing station,

separator means connected to said support means and spaced therefrom to provide a passageway for said one of said record materials between the top surface of the support means and the separator means, the separator means extending above the support means in cantilever manner and having a generally horizontal top surface for guiding another of said record materials past the printing station, said support means and said separator means each including a plate member defining a slot therein for receiving



said drive roller, said separator means plate member including guide means thereon spaced to maintain said one of said record materials in a controlled path toward the printing station, and

means for holding the separator means plate member in one position for supporting said another of said record materials and allowing the separator means plate member to be raised from the support means plate member for receiving said one of said record materials.

4,655,626

ELECTRONIC PRINTER EQUIPPED WITH DETECTING DEVICE FOR AN EXCHANGEABLE SHEET SUPPLYING UNIT

Ryota Okazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 25, 1985, Ser. No. 748,643

Claims priority, application Japan, Jun. 25, 1984, 59-130756

Int. Cl.⁴ B41J *11/50*

U.S. Cl. 400—605 **9 Claims**



1. A printer comprising:

printing means capable of printing on a sheet;

automatic sheet setting means for feeding said sheet to said printing means;

actuating switch means adapted to take either a first or second state and for enabling said automatic sheet setting means to operate in said first state;

receiving means adapted to receive first and second sheet-supplying units;

detecting switch means operated by each one of said sheet-supplying units and adapted to take third and fourth states in response to the attachment of said first and second sheet-supplying units, respectively; and

determining means responsive to said actuating switch means and said detecting switch means for determining one of a first condition that said first sheet-supplying unit is attached to said receiving means, a second condition that said second sheet-supplying unit is attached to said receiving means and a third condition that neither of said first and second sheet-supplying units is attached to said receiving means by the combination of the states of said actuating switch means and said detecting switch means.

4,655,627

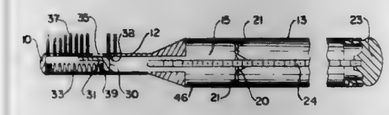
BRUSH WITH SELF-SEALING RESERVOIR HAVING A CONVERTIBLE ACTUATOR

George G. Bradley, 17 Elmora Ave., Elizabeth, N.J. 07202

Filed May 17, 1985, Ser. No. 735,455

Int. Cl.⁴ A46B *11/02*

U.S. Cl. 401—171 **12 Claims**



1. A brush arrangement having a brush head with a plurality of bristles thereon, the brush head further comprising:

reservoir means adapted for storing a fluid, said reservoir means being provided with an end stop and coupled to the brush head whereby said fluid is dispensed in the vicinity of the brush head;

channel means interposed between said reservoir means and the brush head for providing a flow path therebetween for said fluid;

actuator means having a first portion for manipulation by a user, and a second portion for communicating with said fluid in said reservoir means and being displaceable in response to said manipulation of said first portion for applying a pressurizing force which pressurizes said fluid, said pressurizing force being responsive to a displacement of said second portion, said second portion cooperating with said end stop of said reservoir means for reducing a dimension of said second portion whereby a remaining portion thereof having a reduced dimension is urged through a portion of said channel means in response to said manipulation; and

pressure valve means arranged in the vicinity of the brush head and responsive to said pressurizing force applied by said second portion of said actuator means for opening a port whereby an amount of said fluid responsive to said displacement of said second portion of said actuator means is dispensed.

4,655,628

PIVOTAL ATTACHMENT MEANS EMPLOYING A SPRING CLIP

Donald L. Parker, Middletown, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1986, Ser. No. 837,299

Int. Cl.⁴ F16C *11/06*; F16D *1/12*

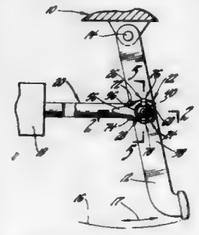
U.S. Cl. 403—163 **3 Claims**

1. Attachment means for attaching a pushrod for pivotal relative movement to an actuating arm moveable in a plane through an arc, said attachment means comprising:

a pin secured to and extending from one side of the actuating arm in a direction perpendicular to the plane of movement of the actuating arm, said pin having a bearing land adjacent the actuating arm, a groove beyond said bearing land away from the actuating arm, and a tapered end extending away from the actuating arm, said tapered end defining a generally frustoconical cam surface of increasing diameter from the outer end thereof toward said groove, said tapered end at said groove defining a first shoulder forming one side wall of said groove and said bearing land defining a second shoulder forming the other side wall of said groove;

a pushrod having one end enlarged and provided with a cross hole therethrough forming an eye of such a diameter as to be received over said pin and fit about said bearing land in pivotal bearing relation;

and a clip having a planar clip body provided with an opening therethrough of such a diameter as to be received over said pin and fit about said bearing land between said pushrod one end and the actuating arm, said clip body having a first finger extending laterally therefrom and adapted to engage the outer end of said pushrod one end to prevent movement of said clip in at least one direction on said pushrod, first and second spring legs extending laterally from said planar clip body generally parallel to said first finger, said first and second legs being on opposite sides of said clip body opening and having outer ends bent so as to approach the axis of said clip body opening to the extent that said outer ends are spaced apart for a distance which is less than the outer diameter of said pin groove first shoulder, and second and third fingers extending laterally



from said planar clip body and generally parallel to said first finger and adapted to receive said pushrod therebetween on the other side of said enlarged one end from said pushrod outer end and to limit movement of said clip along said pushrod toward said pushrod outer end so that said clip body opening is maintained substantially axially aligned with said pushrod cross hole when said clip is installed on said push rod, said first and second legs then acting to resist lateral removal of said clip from said pushrod;

said attachment means being assembled by first installing said clip on said pushrod and then pushing said clip and said pushrod eye onto said pin, said pin tapered end extending through said clip body opening and said cross hole and between said leg outer ends and engaging said leg outer ends in camming relation to resiliently spread said legs apart and then when said leg outer ends have passed said first shoulder said leg outer ends snapping into said groove and holding said pushrod eye and said clip on said pin in operative relation to transmit forces between said pushrod and said actuating arm through said pin.

4,655,629

FLEXURAL PIVOT DEVICE AND METHOD FOR ASSEMBLING SAME

Robert Flaherty, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 19, 1985, Ser. No. 702,769

Int. Cl.⁴ G01C *19/22*; F16F *1/18*

U.S. Cl. 403—291 **4 Claims**

1. A flexural pivot device, comprising:

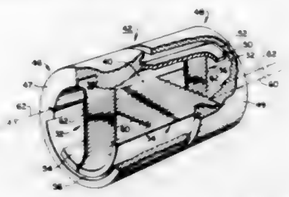
(a) a first, stationary tubular member;

(b) a second, movable tubular member arranged coaxially and partially within the first tubular member for rotational movement relative thereto;

(c) first and second spring members formed from a shape memory alloy into a first, curved configuration in the

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austenitic phase at a first temperature, cooled into the martensitic phase at a second, relatively lower temperature, formed into a second, flat configuration and connected between and within the first and second tubular members coaxially thereof; and



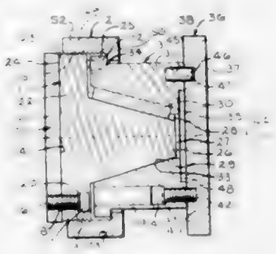
(d) means, operatively connected to the first and second spring members, for selectively recreating the first temperature, returning the first and second spring members to the first, curved configuration in the austenitic phase and rotating the second tubular member relative to the first tubular member.

4,655,630

ROBOT ARM END ADAPTER

Ronald A. Rinehart, Ephrata, Pa., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 31, 1985, Ser. No. 815,159
Int. Cl.[4] B25G *3/00*; F16B *7/18*
U.S. Cl. 403—342 **26 Claims**



1. A device for releasably attaching a first member to a second member comprising:

a collet having a generally conical body truncated at a smaller end and with a radially outwardly extending flange formed at a larger end, said flange including fastening means for attaching said flange to a first member, said fastening means including a face plate having one surface for attachment to the first member and an opposed surface for attachment to said flange, at least one threaded aperture formed in said face plate, at least one aperture formed in said flange, and a bolt extending through said aperture formed in said flange and having a threaded end retained in said threaded aperture for attaching said face plate to said flange;

a holder having a generally cylindrical body with a tapered aperture formed concentric with a longitudinal axis of said cylindrical body, and including fastening means for attaching said body to a second member;

means for releasably connecting said collet to said holder with said generally conical body inserted into said tapered aperture for limiting relative movement of said collet with respect to said holder; and

means contacting said collet and said holder for preventing relative rotation between said collet and said holder about said longitudinal axis.

4,655,631

QUICK CHANGE TOOL HOLDER

James L. Mitchell, Rogers, Ark., assignor to Rogers Tool Works, Inc., Rogers, Ark.

Filed Feb. 8, 1985, Ser. No. 699,529
Int. Cl.[4] B23B *5/22*, *5/34*; F16D *1/00*
U.S. Cl. 403—349 **6 Claims**



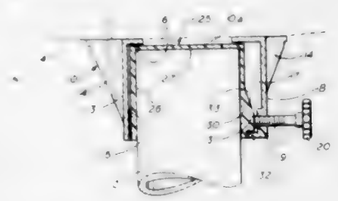
1. A releasable coupling for first and second axially aligned toothed drive members which drivingly connect at an interface plane, said coupling comprising: the first of said drive members having an opening extending coaxially inwardly from a forward end thereof, a locking subassembly received in said opening and having opposed ends with one of said ends being axially spaced from said opening forward end, connecting means for fixedly connecting said locking subassembly to the second of said drive members in generally coaxial relation therewith, a locking ring mounted for axial movement in said opening and including means for releasably fixedly connecting said locking ring to the other end of said locking subassembly, spring means positioned between the forward end of said opening and said locking ring and biasing said locking ring inwardly of said opening to provide the primary force for physically connecting said first and second drive members at said interface plane, and manually operable means for selectively compressing said spring means such that the compression of said spring means disables the primary force physically connecting said drive members and allows release of said locking ring from said locking subassembly other end to permit axial separation of said drive members; said manually operable means including a push ring member threadedly mounted in said opening inwardly of said locking ring for selectively moving said locking ring toward said spring means by rotation of said push ring member.

4,655,632

ATTACHMENT APPARATUS FOR COLUMNAR MEMBER

Don E. Smith, Lufkin, Tex., assignor to Texas Metal Casting Co., Inc., Lufkin, Tex.

Filed Mar. 10, 1986, Ser. No. 838,259
Int. Cl.[4] B25G *3/02*; F16D *1/06*
U.S. Cl. 403—362 **16 Claims**



1. Apparatus for removably attaching an item to a columnar member comprising:

socket means for attachment to said item having a generally cylindrical interior terminating at a circular wall for receiving one end of said columnar member;

bushing means placeable over said one end of said columnar member and receivable by said socket means to provide bearing and anti-galling surfaces between said socket means and said columnar member; and

locking means carried by said socket means engageable with said bushing means for applying radial forces to said bushing means and said columnar member to lock said item to said columnar member;

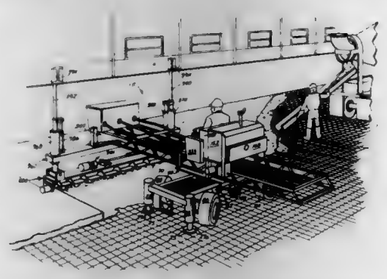
said bushing means comprising a tubular sleeve one end of which is open for receiving said one end of said columnar member and at the opposite end of which is provided a circular wall against which said one end of said columnar member bears when fully received by said bushing means, said tubular sleeve having a pair of longitudinal slits extending from said open end thereof substantially to said circular wall to provide a cantilevered section of said tubular sleeve supported near said circular wall and the free end of which is radially displaceable by said locking means upon application of said radial forces thereby.

4,655,633

SCREEDING APPARATUS AND METHOD

David W. Somero, Wheeler Rd.; Paul J. Somero, Gibbs Rd., both of New Ipswich, N.H. 03071, and Philip J. Queanzi, Atlantic Mine, Mich., assignors to David W. Somero and Paul J. Somero, both of New Ipswich, N.H.

Filed Sep. 23, 1985, Ser. No. 779,258
Int. Cl.[4] E01C *23/07*, *19/26*, *19/40*
U.S. Cl. 404—75 **63 Claims**



1. A self-propelled screeding apparatus for placed and/or poured, uncured concrete or like loose or plastic materials previously placed on the ground or another support surface comprising:

a frame;

propulsion means on said frame for moving said frame over the ground or support surface;

a boom;

boom support means for mounting said boom in cantilevered fashion from said frame;

screed means for spreading and/or smoothing the loose or plastic material; and

screed mounting means for mounting said screed means for movement toward and away from said frame on said boom whereby said screed means may be moved on said boom for spreading and/or smoothing concrete or other material on the ground or other support surface adjacent to said apparatus or may be secured in a predetermined position on said boom for spreading and/or smoothing the material as said apparatus is moved through the material.

46. A method of screeding placed and/or poured, uncured concrete or like material with a screeding vehicle comprising:

propelling the vehicle through the placed and/or poured, uncured concrete or like material such that the support means for supporting the vehicle on the ground or other surface pass directly through the concrete or other material;

screeding the uncured concrete or other material with a screed means mounted on the vehicle for leveling and/or spreading and smoothing the concrete or other material, said screeding occurring behind the vehicle support means by engaging the screed means with the concrete or other material behind the vehicle support means; and

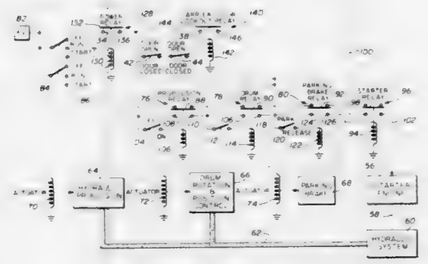
controlling the position of said screed means with respect to a fixed laser beacon reference located external to said vehicle with a control means on said vehicle.

4,655,634

ROAD PLANER CONTROL AND SAFETY SYSTEM

Robert E. Loy, Bucyrus, Ohio, and Donald C. Baldwin, Libertyville, Ill., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 23, 1985, Ser. No. 778,867
Int. Cl.[4] E01C *23/12*
U.S. Cl. 404—84 **13 Claims**



1. A safety feature system for a road planer having an engine for providing operating power, a propulsion motor operated by said engine, a parking brake, and a rotatable planar drum and drum positioning devices operated by said engine, said road planer safety feature system comprising:

a. a hydraulic system coupled to said engine for generating hydraulic power,

b. first, second and third hydraulic actuators coupled between said hydraulic system and said propulsion motor, said parking brake and said planer drum respectively for selectively and separately driving said propulsion motor, actuating said parking brake and rotating and positioning said planer drum,

c. an enclosed housing open at the bottom thereof for carrying said rotatable planer drum,

d. at least one access closure means in said housing for enabling inspection and service of said drum,

e. detection means coupled to and actuated by said at least one access closure means to provide a signal when said access means is not in its normally closed position in said housing, and

f. means coupled to said detection means for utilizing said signal to disable said first, second and third hydraulic actuators when said access closure means is not in its normally closed position in said housing such that said engine continues to provide said operating power while movement of said road planer and rotation of said drum is inhibited.

11. In a safety system for a road planer having an engine, an activatable propulsion motor, a parking brake which can be releaseably set, a rotatable planer drum and drum positioning controls and a drum access closure means having an open position to enable inspection and servicing of said drum, the improvement comprising:

a. means for preventing starting of said engine when said parking brake is released, said drum rotation and position

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controls are energized or said propulsion motor is activated, and

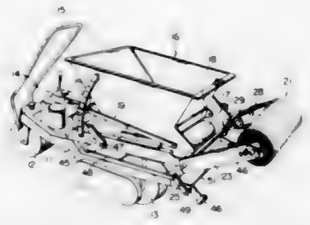
b. electrical means coupled to said engine starting prevention means and to said drum access closure means for allowing said engine to continue to operate after starting while preventing release of said parking brake, rotation and positioning of said drum or operation of said propulsion motor of said drum when said drum access closure means is in said open position.

4,655,635

SAND SCATTERING DEVICE FOR ARTIFICIAL LAWN

Genzo Furukawa, Kobe, Japan, assignor to Sumitomo Goma Kogyo Kabushiki Kaisha, Hyogo, Japan

Filed Apr. 15, 1985, Ser. No. 723,251
Claims priority, application Japan, Apr. 17, 1984, 59-77374
Int. Cl.⁴ E01C *19/20*
U.S. Cl. 404—108 **13 Claims**



1. A device for scattering and evenly packing sand into turf spaces between tufts of filaments of an artificial lawn spread over a base, the device comprising: a truck powered by a drive source for riding over the artificial lawn; a hopper mounted on the truck for storing sand, the hopper having a discharge outlet for discharging sand from the hopper, and regulating means for regulating the quantity of sand discharged through the discharge outlet; conveying means disposed on the truck and extending beneath the hopper discharge outlet for receiving thereon the sand discharged through the discharge outlet and conveying the sand rearwardly in a direction opposite to the advancing direction of the truck and scattering the sand over the artificial lawn; a rotary brush rotationally driven by the drive source and connected to the truck to trail behind the conveying means for brushing the scattered sand into the turf spaces of the artificial lawn; and means for adjustably setting the pressure at which the rotary brush presses against the artificial lawn to thereby enable the rotary brush to evenly pack the sand into the turf spaces.

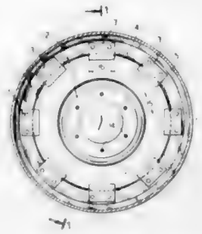
4,655,636

PNEUMATIC INTEGRAL POLYGONAL SUSPENSION FOR VIBRATING TAMPING MACHINES

Domenico Domenighetti, Lugano, Italy, assignor to SIMESA - Societa Italiana Montaggi E Servizi Affini S.p.A., Milan, Italy

Filed May 14, 1985, Ser. No. 733,777
Claims priority, application Italy, Jun. 15, 1984, 21449 A/84
Int. Cl.⁴ E01C *19/28*
U.S. Cl. 404—117 **6 Claims**

1. A fully pneumatic suspension for a vibrating tamping machine comprising: at least one toroid-shaped pneumatic ring having a central rotational axis; rim-shaped inner rigid elements engaged with said ring; and pairs of outer elements, wherein said inner elements are connected with a part of the machine which must be kept free from vibration and said pairs of outer elements are connected with a part of the machine intended to vibrate, and wherein said outer elements, once fixed in position, form a polygonal structure in direct contact with the pneumatic ring, said polygonal structure comprising pairs of outer elements disposed symmetrically on two sides of the pneumatic ring relative to a plane passing transverse to said



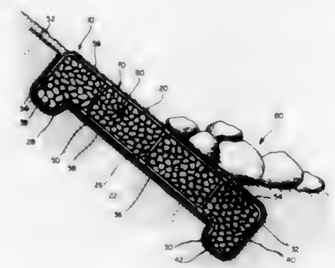
axis and between said pairs of outer elements and which grip said ring when fixed in position.

4,655,637

REVETMENT SYSTEM FOR PREVENTING BLUFF EROSION

Harry J. Vignocchi, 1375 Woodland La., Riverwoods, Ill. 60015

Filed Jun. 19, 1985, Ser. No. 746,999
Int. Cl.⁴ E02B *3/12*
U.S. Cl. 405—17 **26 Claims**



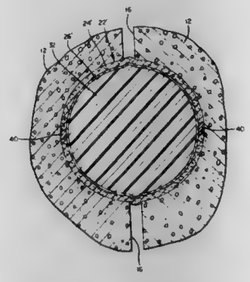
1. A revetment system for preventing shoreline slope erosion due to wave or hydrostatic forces, said system comprising: an elongate, three-dimensional, grid-like frame structure comprised of a plurality of interconnected frame elements; a mesh-like material covering over at least preselected portions of the periphery of said frame structure; said frame structure adapted to be set into the slope such that an upper mesh-like material-covered surface thereof is substantially continuous with the natural contour of the slope; a quantity of aggregate material substantially filling the volume defined within said frame structure, said aggregate material being of a size such that water may move relatively freely therethrough; and a filter fabric liner disposed to overlie the surface of the slope beneath said frame structure, said filter fabric liner being sufficiently porous to allow water to pass therethrough while preventing the movement of solid soil material of the slope therethrough, such that said filter fabric liner and said aggregate material filling said frame structure substantially prevent the buildup of hydrostatic pressure behind said revetment system by allowing the flow of water therethrough while preventing the soil material of the slope from washing therethrough.

4,655,638

WATERSTOP FOR MONOLITH JOINTS AND METHOD

Stephen T. Waring, Kent, Wash., assignor to Gelco Grouting Service, Oreg.

Filed Jun. 12, 1986, Ser. No. 873,783
Int. Cl.⁴ E02B *3/10*
U.S. Cl. 405—107 **5 Claims**



1. A waterstop for sealing a vertical joint between monoliths comprising

an elongated tubular member arranged to be inserted in a hole provided in adjacent monoliths astraddle a joint therebetween,

said tubular member comprising an outer layer of material saturated with a resin capable of bonding to defining walls in the hole,

an inner layer of fluid impermeable material bonded to said outer layer,

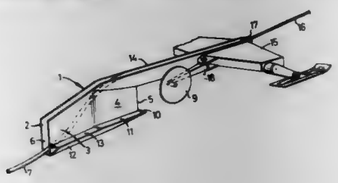
and one or more longitudinal barriers of water impermeable material preventing head water from washing said resin out of the joint during installation.

4,655,639

PLOUGH

Alan R. Reece, Wylam, England, assignor to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 449,615, Dec. 14, 1982, abandoned.
This application Feb. 14, 1985, Ser. No. 701,494
Int. Cl.⁴ E02F *5/10*; **F16L** *1/00*
U.S. Cl. 405—181 **8 Claims**



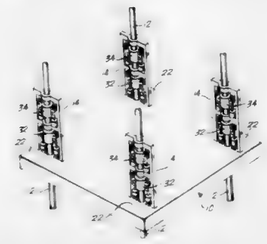
1. A plough for burying cable or pipe which plough comprises a plough body having fixed thereto at least a first and second cutter offset to each other so as to make two spaced apart cuts in a substrate to form a wedge of material and the said second cutter being able to move laterally with respect to the first cutter wherein the said first cutter comprises a substantially vertical portion having a substantially horizontal cutting edge projecting from its lower extremity there being an inclined plane of substantially the same width as the said substantially horizontal cutting edge rising upwards and to the rear of the said cutting edge which width is sufficient to lift the said wedge of material upwards and sideways to form a trench there being a passage through the said plough body down which the cable or pipe is guided into said trench.

4,655,640

ADVANCING MECHANISM AND SYSTEM UTILIZING SAME FOR RAISING AND LOWERING A WORK PLATFORM

Don A. Gillis, Wenatchee, Wash., assignor to Petroleum Structures, Inc., Singapore

Continuation-in-part of Ser. No. 529,358, Sep. 6, 1983, Pat. No. 4,497,591. This application Jan. 24, 1985, Ser. No. 694,333
The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.
Int. Cl.⁴ E02B *17/08*; **B66F** *1/00*
U.S. Cl. 405—198 **14 Claims**



1. An advancing mechanism, comprising:

an elongated guide member, including at least one rack extending along a side thereof, said rack comprising spaced apart tooth elements, with spaces between the tooth elements;

a movable member guided for movement along said guide member;

a pair of spaced apart supports, each carrying means operable for locking the support in position relative to the rack and the elongated guide member, or unlocking the support so that such support can be moved in position relative to the rack and the elongated guide member; and

a separate extendible/retractable hydraulic cylinder interconnected between each said support and the movable member,

whereby a first one of the supports can be locked to the rack, to in that manner hold it in position relative to the rack and the guide member, while at the same time the hydraulic cylinder connected to said first support is extended or retracted to move the movable member in position relative to the first support, and to the same time the second support is unlocked from the rack and the second cylinder is moved to a starting position, so that at the end of the stroke of the first cylinder, the second support can be locked to the rack and the guide member, and the first support unlocked from the rack and the guide member, and then the second cylinder can be operated to advance the movable member and the first cylinder can be returned to a start position.

4,655,641

APPARATUS FOR ALIGNING A PLATFORM DECK AND JACKET

Michael E. Weyler, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Oct. 18, 1985, Ser. No. 789,237
Int. Cl.⁴ E02D *25/00*
U.S. Cl. 405—204 **12 Claims**

1. An apparatus for aligning a superstructure with a substructure that is secured to or resting on the seafloor, said superstructure being carried by a floating vessel, said apparatus comprising:

(a) a plurality of cantilevered springs extending vertically downward from said superstructure; and

(b) a plurality of sockets secured to said substructure, each of said sockets being positioned to receive the lower end of

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one of said cantilevered springs, each of said sockets comprising:

(i) a base;

(ii) a receiving member adapted to receive the lower end of one of said cantilevered springs, said receiving member being secured to said base in a manner which permits said receiving member to tilt in response to lateral



forces applied to said receiving member above its bottom end but which does not permit said receiving member to tilt in response to lateral forces applied to said receiving member at its bottom end; and

(iii) a plurality of resilient members positioned around said receiving member, said resilient members being adapted to apply a restoring force to said receiving member when said receiving member tilts.

4,655,642

ARCTIC STRUCTURE OF COMPOSITE WALL CONSTRUCTION

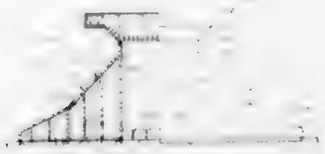
Jai N. Birdy; Brian J. Watt, and Jade Chen, all of Houston, Tex., assignors to Brian Watt Associates, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 563,940, Dec. 28, 1983, Pat. No. 4,537,532. This application Feb. 1, 1985, Ser. No. 697,239

The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.

Int. Cl.⁴ E02D *23/00, 31/00;* **E04B** *5/04*

U.S. Cl. 405—217 **29 Claims**



1. An arctic offshore structure comprising:

a polygonal shaped base;

a sloping outer shell connected to said base forming a frustrum with said base;

bulkhead walls substantially vertical to said base and extending from said base to said sloping outer shell for support thereof;

said sloping outer shell and said bulkhead walls further comprising:

an inner assembly;

an outer assembly aligned substantially parallel to said inner assembly and defining an internal cavity therebetween;

said inner and outer assemblies each comprising:

a skin plate member;

a plurality of stiffeners attached at spaced intervals to said skin plate member and mounted substantially perpendicular to said skin plate member so as to extend partially into the internal cavity; and

a cementitious material substantially filling the internal cavity.

4,655,643

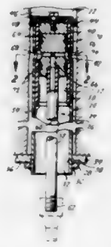
ROCKBOLT AND INSTALLER WAND

William L. Lane, Box 373, Viburnum, Mo. 65566, and Donald L. Lewis, 111 Birch St., Belgrade, Mo. 63622

Continuation-in-part of Ser. No. 582,276, Feb. 22, 1984, and a continuation-in-part of Ser. No. 617,884, Jun. 6, 1984. This application Sep. 10, 1984, Ser. No. 648,963

Int. Cl.⁴ E21D *20/02*

U.S. Cl. 405—260 **17 Claims**



1. A rockbolt for installation in a bore in the roof of an underground excavation to support the roof, the rockbolt comprising:

a sleeve insertable into the bore and having an upper and a lower end;

at least one port in the sleeve near the upper end;

means inside the sleeve near the upper end for engaging a device for supplying hardenable binder material inserted into the sleeve, said engaging means having at least one passage therein communicating with the port to allow binder material to pass from the device through the engaging means and out the port, to encase the sleeve in binder material;

means for engaging the sleeve, near the lower end, to the roof face;

means for engaging the sleeve near the upper end to the rock surrounding the bore and means for tensioning the rockbolt to compress the rock between the upper and lower ends.

4,655,644

BINDER-INJECTING ROCKBOLT

William L. Lane, Box 373, Viburnum, Mo. 65566, and Donald L. Lewis, 111 Birch St., Belgrade, Mo. 63622

Continuation-in-part of Ser. No. 582,276, Feb. 22, 1984. This application Jun. 6, 1984, Ser. No. 617,884

Int. Cl.⁴ E21D *20/02*

U.S. Cl. 405—260 **12 Claims**

1. A rockbolt for installation in a bore in the roof of an underground excavation to support the roof, comprising:

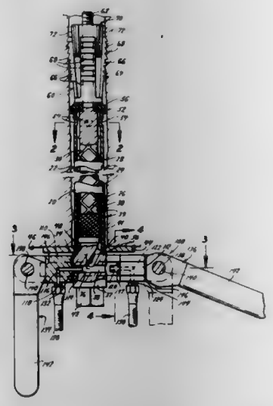
a sleeve for permanent installation in the bore in the roof, the sleeve having an upper and a lower end and having means only in the upper end of the sleeve for defining at least one outlet port in the sleeve;

a central member axially disposed in, and extending substantially the length of the sleeve, and defining an annular chamber in the sleeve;

means for introducing binder material into the annular chamber in the sleeve near the lower end, the binder material traveling upwardly in the annular chamber, out the ports in the upper end of the sleeve, and downwardly between the sleeve and the bore wall;

means for engaging the sleeve near the lower end to the roof face;

means for engaging the sleeve near the upper end to the rock surrounding the bore; and



means for tensioning the rockbolt to compress the rock between the upper and lower ends.

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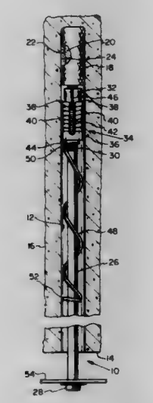
METHOD AND APPARATUS FOR ANCHORING ROOF BOLTS

Edward C. Hipkins, Sr., Oakdale; Frank M. Locotos, Bridgeville, and Joseph D. Comfort, Washington, all of Pa., assignors to H&S Machine & Supply Co., Inc., Corsopolis and F. M. Locotos Co., Inc., McMurry, both of, Pa.

Filed Dec. 31, 1984, Ser. No. 688,038

Int. Cl.⁴ E21D *20/02*

U.S. Cl. 405—261 **6 Claims**



1. In an anchor bolt assembly of the type used in mine roofs and the like in which the anchor bolt assembly is positioned in a bore hole of a rock formation, where the bolt assembly includes an elongated bolt shaft with a head on one end and threads on the other end, and with a mechanical expansion anchor including a spreader on the threaded end, wherein a quick-setting resin cartridge is positioned in the bore hole above the threaded end of the bolt shaft, and wherein the anchor bolt assembly is secured to the rock formation by both the expansion anchor and the quick-setting resin, the improvement comprising a stop connected to the bolt shaft immediately below said expansion anchor and an elongated helical coil having an upper end attached to said stop and positioned external of and surrounding a substantial length along the bolt shaft, said coil having a direction of coil so as to urge resin upwardly toward the threaded end while the spreader moves downwardly and while the bolt shaft is rotated in one continuous direction to achieve mixing of the resin and to secure the mechanical anchor to the rock formation.

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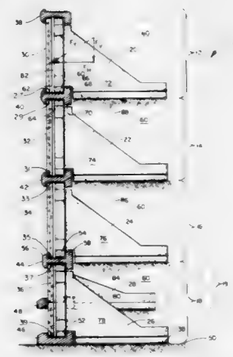
MULTITIERED, RIGID TIEBACK, ESSENTIALLY VERTICAL RETAINING WALL SYSTEM

John W. Babcock, Huntsville, Utah, and Ronald K. Wormus, Fort Collins, Colo., assignors to Stresswall International, Inc., Denver, Colo.

Filed Jun. 16, 1986, Ser. No. 874,425

Int. Cl.⁴ E02D *5/00, 17/00*

U.S. Cl. 405—286 **5 Claims**



1. A multitiered essentially vertical retaining wall system for retaining soil comprising:

grade beam means disposed along a lowermost portion of said retaining wall system;

wall panel means for retaining said soil in response to soil forces having vertical and horizontal components which are generated by said soil acting on said wall panel means, said wall panel means having a standardized predetermined height and width and vertically aligned along a predetermined plane;

rigid tieback means disposed in said soil behind said wall panel means at intervals which vary in accordance with geotechnical conditions independently of said width of said wall panel means;

coupling means horizontally disposed along upper and lower portions of said wall panel means for transferring said horizontal component of said soil forces acting on said wall panels to said tieback means to produce a moment on said tieback means which is resisted by soil forces acting on said tieback means causing said moment to be resolved into said soil to produce soil arching, said coupling means disposed to provide sufficient vertical space between said coupling means and said tieback means and said coupling means and said wall panel means to prevent transference of said moment to adjacent tiers of said multitiered retaining wall system.

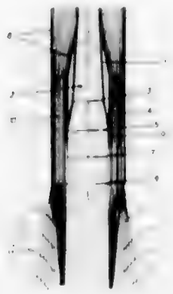
VOL 1077 ISS 1 APR 7 1987 UMI

4,655,647

METHOD AND APPARATUS FOR THE ACCELERATION OF SOLID PARTICLES ENTRAINED IN A CARRIER GAS

André Bock, Luxembourg, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed May 3, 1985, Ser. No. 730,383
Claims priority, application Luxembourg, May 15, 1984, 85363
Int. Cl.[4] B65G *53/42*
U.S. Cl. 406—194 14 Claims



1. A device for accelerating solid particles entrained in a carrier gas through a duct comprising:

an exit section terminating at a first opening in said duct, said exit section diverging at a first angle and defining first nozzle means, said first nozzle means being adapted for connection to a source of gas and solid particles;

nozzle extension means attached to said first opening of said first nozzle means and terminating at a mouth, said nozzle extension means diverging at a second angle, said second angle being greater than said first angle wherein said gas and solid particles flow through said first nozzle means and said nozzle extension means;

second nozzle means surrounding said first nozzle means and said nozzle extension means, said second nozzle means being spaced from said first nozzle means and said nozzle extension means, said second nozzle means defining an annular housing about said first nozzle means and said nozzle extension means, said annular housing terminating at a second opening, and being adapted for connection to a gas source wherein gas flows through said second nozzle means, said annular housing having a first section of substantially constant predetermined cross-section followed by a second section of diverging cross-section followed by a third section of substantially constant cross-section terminating at said mouth of said nozzle extension means, said second nozzle means extending beyond said mouth of said nozzle extension means;

wherein said first nozzle means and said nozzle extension means are isolated from said second nozzle means whereby gas and solid particles flowing through said first nozzle means and nozzle extension means will be isolated from gas flowing through said second nozzle means; and

wherein gas exiting said second opening of said second nozzle means provides a continuous gas screen to the gas and solid particles exiting said mouth of said nozzle extension means.

4,655,648

ROUTER TOOL AND INSERT FOR SAME

Axel H. Hellbergh, Sandviken, Sweden, assignor to Santrade Limited, Lucerne, Switzerland

Filed Feb. 27, 1985, Ser. No. 706,327
Claims priority, application Sweden, Mar. 26, 1984, 8401652
Int. Cl.[4] B23C *5/20*
U.S. Cl. 407—42 9 Claims



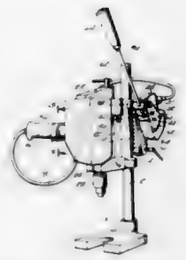
1. A router tool comprising a router body defining a longitudinal axis of rotation and containing at least two generally longitudinally extending chip gullets and at least two generally longitudinally extending cutting edges arranged adjacent said gullets for cutting chips from a workpiece as the router body rotates in a forward direction of rotation, said cutting edges each comprising a generally longitudinally extending row of teeth, each said tooth comprising first and second cutting edge portions converging in said forward direction of rotation to form a sharp tip such that said converging cutting edge portions of each tooth lie in a common plane oriented substantially tangentially with reference to said longitudinal axis, said teeth of one said cutting edge being longitudinally staggered relative to the teeth in another said cutting edge.

4,655,649

DRILL PRESS SWITCH HANDLE

Andrew L. Itzov, Menomonee Falls, and John C. Myers, Oconomowoc, both of Wis., assignors to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Continuation of Ser. No. 717,958, Mar. 29, 1985, abandoned. This application Sep. 9, 1986, Ser. No. 904,869
Int. Cl.[4] B23B *39/12*
U.S. Cl. 408—136 4 Claims



1. A drill stand comprising, a generally vertical column, a carriage mounted on said column for vertical movement, clamp means on said carriage for releasably supporting a power hand drill with the drill bit substantially parallel to said column for releasably supporting a power han drill with the drill bit substantially parallel to said column the power hand drill having an electric power cord,

a housing pivotally mounted on said carriage,

a lever having an inner end connected to said housing and an outer end positioned for manual actuation to pivot said housing relative to said carriage and relative to said column to move said carriage on said column,

an electric power cord connected directly to said housing and having a plug for connection to a power supply,

a switch in said housing and having its input connected to said power cord,

an electric power receptacle mounted in said housing to enable the power cord of a power hand drill to be plugged into the receptable,

said switch having an output connected to said receptacle and said switch being operative when closed to connect said power supply to said receptable and to a power drill plugged into the receptacle,

said switch including a switch actuator biased in the direction in which said switch is open,

and a plunger having approximately the same length as said lever and mounted for movement with said lever and movable inwardly lengthwise of said lever against the bias of said actuator to move said actuator to close said switch with the same hand as used in actuating said outer end of said lever, the bias of said actuator being operative to move said plunger outwardly and to open said switch when manual pressure is removed from the plunger.

4,655,650

SELF-CLEANING HIGH SPEED BORING TOOL

Thomas A. Crawford, and William H. Russell, both of Jackson, Mich., assignors to Unique Industries, Incorporated, Jackson, Mich.

Filed Sep. 26, 1985, Ser. No. 782,948
Int. Cl.[4] B23D *77/02*; B27G *15/00*
U.S. Cl. 408—225 11 Claims

1. A boring tool for enlarging an existing hole in a workpiece having a given diameter wherein the tool and workpiece are relatively rotated in a rotating cutting direction and the tool is axially fed into the workpiece in a forward direction characterized by its ability to rapidly remove metal from deep holes comprising, in combination, an elongated tool body having an axis, a rear shank, a central cutting portion, and a forward chip removal portion forward of said central cutting portion with respect to the direction of axial tool movement during boring, cutting means defined on said central cutting portion, said forward chip removal portion comprising an elongated extension coaxial with said shank and central cutting portion having a transverse dimension less than the given diameter of the hole being enlarged, at least one axially extending spiral flute defined on said extension in communication with said cutting means whereby chips produced by said cutting means are received within said flute, said flute spiralling about said extension in the opposite direction of the tool and workpiece rotating cutting direction whereby the chips removed by said cutting means are displaced forwardly of said cutting means in the forward direction of axial tool movement.

4,655,651

DRILL BIT FOR HAND-HELD DRILLING MACHINES

Josef Hunger, Olching, and Gerhard Rumpp, Inning, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Aug. 8, 1985, Ser. No. 763,811
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1984, 3429419
Int. Cl.[4] B23B *31/06, 51/02*
U.S. Cl. 408—226 5 Claims

1. Drill bit for hand-held drills comprising an axially extending shank, said shank having a free end surface extending transversely of the axial direction thereof and a generally cylindrically shaped axially extending circumferential surface extending from the free end, said shank having at least one first groove formed in and extending in the axial direction of said circumferential surface, said at least first groove being open at the free surface thereof, at least one second groove formed in and extending in the axial direction of said circumferential surface and being spaced in the axial direction of said shank from said free end surface thereof, said at least one second groove being superimposed at least in part on said at least one



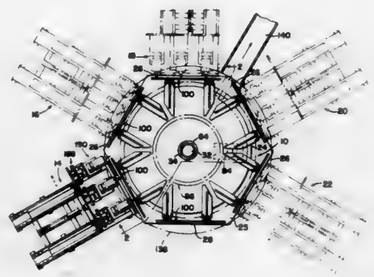
first groove, and said at least one second groove being shaped and sized relative to said at least one first groove so that said at least one second groove forms at least one shoulder surface extending transversely of the axial direction of said shank and facing in the opposite direction from from said free end surface, the cross-sectional area of said first groove extending transversely of the axial direction of said shank is smaller than the cross-sectional area of said second groove extending transversely of the axial direction of said shank.

4,655,652

METHOD OF MULTIPLE STATION DRILLING

Brian D. Schissler, Springfield, Ohio, assignor to The O.S. Kelly Company, Springfield, Ohio

Continuation of Ser. No. 345,503, Feb. 3, 1982, Pat. No. 4,454,645. This application Mar. 22, 1984, Ser. No. 592,179
The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.
Int. Cl.[4] B23B *35/00*
U.S. Cl. 409—132 7 Claims



1. A method for performing a large number of repetitive but variable machining operations on large, plate-like workpieces comprising the steps of:

sequentially loading clean cast workpieces onto a plurality of fixtures mounted on a rotatable turntable at a loading station;

indexing said turntable such that each one of said fixtures is rotated from said loading station successively proximate

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to and in registry with a plurality of machining stations spaced about said turntable, such that said workpieces each face successive ones of said machining station;

positioning a plurality of machining tools at at least one of said machining stations repeatedly and independently of each other to perform a plurality of machining operations on different, noncontiguous areas of said adjacent workpiece; and

sequentially unloading machined workpieces from said fixtures at an unloading station after said turntable has indexed said fixtures into registry with all of said machining stations.

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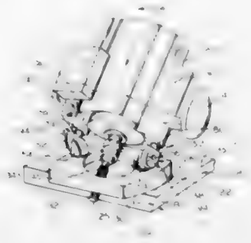
ROUTERS

Robert J. Hall, 400 E. Ohio, Apartment #3603, Chicago, Ill. 60611; Charles H. Karakis, Lincolnwood, and Matt Kielek, Chicago, both of Ill., assignors to Robert J. Hall, Chicago, Ill.

Filed Sep. 19, 1984, Ser. No. 652,001

Int. Cl.⁴ B23C *1/20*

U.S. Cl. 409—182 **8 Claims**



1. A router having a housing with a top and a bottom, said housing including a pair of spaced parallel guideways, a shaft telescopingly received in each of said guideways, a revolving spindle with a cutter on the end, said spindle being located at the bottom of the housing, a face plate associated with the bottom of said housing for defining a plane for supporting said housing, means for coupling said face plate to said housing via a pair of articulated joints, each of said articulated joints including two parts with confronting planes which come together in a face-to-face relationship and a pin means passing through said parts to lock them in selected positions, each of said two joint parts also includes a mounting post, means for mounting one of said posts on said face plate, means for mounting the other of said parts on said housing with said pins of said two joints in axial alignment, said posts which are mounted on said housing being secured to the bottoms of said telescoping shafts, whereby the distance between said face plate and said housing may be adjusted independently of said selection of said angle, means for adjusting the articulated joints to a selected one of many possible angles relating the supporting plane of said face plate with the axis of said spindle, at least one of the possible selected angles being with said spindle extending perpendicular through said face plate and said supporting plane, and means associated with said articulated joints to preserve said selectd angle during a use of said router, said face plate containing a relatively large hole through which said spindle projects with said cutter being positioned beyond said supporting plane, said large hole being positioned so that said cutter lies in a line of sight passing from above the top of said housing, along said housing, and through said large hole so that said cutter may be seen by the operator of the router when at least one of said selected angles is larger than said perpendicular.

4,655,654

ADAPTOR FOR WORKPIECE FIXTURE

Alberto Portas, 49 Wollaston St., Cranston, R.I. 02910

Filed Dec. 16, 1985, Ser. No. 809,772

Int. Cl.⁴ B23D *3/06*

U.S. Cl. 409—220 **3 Claims**



1. An adaptor for securing an elongated workpiece in a workpiece fixture so that the workpiece is adjustably positionable with respect to the fixture comprising:

(a) holding means for holding said workpiece in a fixed orientation with respect thereto wherein it projects outwardly from said holding means, said holding means comprising a first carriage and workpiece clamp means for securing said workpiece on said first carriage; and

(b) means for securing said holding means in said fixture comprising a shaft which extends in substantially the opposite direction from said workpiece in substantially parallel relation thereto, said shaft being receivable in said fixture for attaching said securing means thereto, a first adjustment assembly operative for adjusting the position of said holding means in a first direction which is substantially perpendicular to the extent of said shaft and a second adjustment assembly attached to said first adjustment assembly and operative for adjusting the position of said holding means in a second direction which is substantially perpendicular to both said first direction and said shaft, said first adjustment assembly comprising a mounting block which is attached to said second adjustment assembly, said shaft extending from said second adjustment assembly in substantially the opposite direction from said mounting block and in substantially parallel relation thereto, said mounting block and said first carriage being received in interfitting relation and being slidable with respect to each other along said first direction, and first carriage clamp means for adjustably securing said mounting block and said first carriage in interfitting relation, said first carriage clamp means including screw means engageable with one of said mounting block or said first carriage for adjustably securing said first carriage in various laterally adjusted positions with respect to said mounting block.

4,655,655

TOOL AND WORKPIECE HOLDING ARRANGEMENT FOR MATERIAL REMOVING MACHINING

Horst Schürfeld, Bielefeld, Fed. Rep. of Germany, assignor to Gildemeister DeVlieg System Werkzeuge GmbH, Bielefeld, Fed. Rep. of Germany

Filed Sep. 12, 1985, Ser. No. 775,180

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1984, 3435119

Int. Cl.⁴ B23C *1/00*

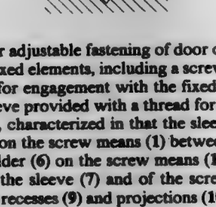
U.S. Cl. 409—232 **17 Claims**

1. A holding arrangement for holding one of a tool and a workpiece during a material-removing machining operation, comprising in combination

a primary holder having a first engagement surface;

a replaceable secondary holder having a second engagement surface which faces said first engagement surface in an assembled position of said secondary holder with said primary holder; and

cooperating force-transmitting means on said first and second engagement surfaces for transmitting fundamentally different respective forces between said primary and secondary holders, said forces including axial bending forces, radial bending forces, and torques, said force-transmitting means including elongated profiled portions provided in a spatially crossing fashion on said first and second engagement surfaces, respectively around, and tangentially to, an unprofiled central region thereof at mutually angularly displaced sides of said unprofiled central region,



said profiled portions having respective flanks extending tangentially to said central region and which engage one another in said assembled position to transmit said forces, and

clamping means for clamping said primary and secondary holders to one another in said assembled position and cooperating with said profiled portions, said profiled portions being constructed so as, for all intents and purposes, to be free of any oscillation when cooperating with said clamping means in said assembled position.

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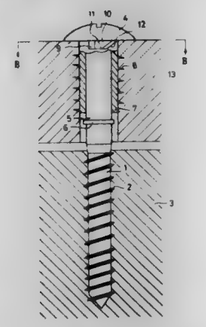
FASTENING DEVICE FOR DOOR OR WINDOW FRAMES

Nils-Arne Jönsson, Brämhult, Sweden, assignor to AB Esve Produkter, Kista, Sweden

Continuation-in-part of Ser. No. 740,907, Jun. 3, 1985, abandoned. This application Aug. 19, 1986, Ser. No. 897,874

Int. Cl.⁴ F16B *21/00, 35/00, 23/00*

U.S. Cl. 411—337 **1 Claim**



1. Device for adjustable fastening of door or window frames or the like to fixed elements, including a screw means provided with a thread for engagement with the fixed element, a screw head and a sleeve provided with a thread for engagement with the frame part, characterized in that the sleeve (7) is displaceably arranged on the screw means (1) between the screw head (4) and a shoulder (6) on the screw means (1), the sides facing each other of the sleeve (7) and of the screw head (4) being provided with recesses (9) and projections (10) respectively, or vice versa which on turning the screw head (4) in one direction by engaging each other drive the sleeve (7), so that is can be screwed into the frame position, whereas on turning in the opposite direction the recesses and the projections glide over sloping surfaces out of engagement with each other so that the screw means (1) can be freely turned in relation to the sleeve (7).

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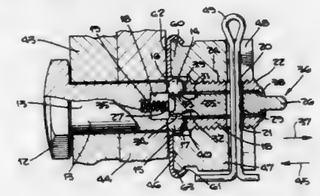
SELF-RETAINING POSITIVE LOCKING BOLT

John A. Duran, 425 Oak Knoll Dr., Glendora, Calif. 91740, assignor to John A. Duran

Filed Dec. 23, 1985, Ser. No. 812,732

Int. Cl.⁴ F16B *21/00*

U.S. Cl. 411—348 **9 Claims**



1. In a self-retaining positive locking bolt having a bolt body with a head at one end and a threaded portion on the outer surface thereof at the other end, a spring biased spindle mounted internally of said bolt body normally biased to a rest position, and detent means associated with both said bolt body and said spindle for selectively extending a detent beyond the outer surface of said bolt body in a first position when said spindle is at its rest position, and extending said detent internally entirely within said bolt body in a second position, the improvement which comprises:

said detent means includes at least one detent trapped in an opening in said bolt body movable between said first and second positions, and said spindle is non-rotatable within said bolt body and axially movable therein and includes a pair of cavities, linearly aligned along the longitudinal axis of said spindle on the outer surface thereof, one of said cavities differing in depth from the other, both of said cavities being adapted to receive said detent therein whereby, when said detent is in said cavity of a lesser depth than the other of said cavities, said detent is in said first position, and when said detent is in said cavity of a greater depth than the other of said cavities, said detent is in said second position, and aligned openings extending through both the threaded portion of said bolt body and said spindle, remote from said first-mentioned opening in said bolt body and said cavities in said spindle, and normal to the central longitudinal axis of said spindle, for receiving a locking pin or the like therein, said aligned openings being oriented with respect to said cavities so that the spindle cannot rotate with respect to said bolt body to thereby maintain said openings in said bold body and said spindle in alignment.

4,655,658

CAPTIVE PANEL FASTENER

Bulent Gulistan, 20568 Pinnacle La., Malibu, Calif. 90265

Filed Jan. 2, 1986, Ser. No. 815,712

Int. Cl.⁴ F16B *43/00*

U.S. Cl. 411—353 **17 Claims**

1. An inexpensive high strength captive panel fastener assembly comprising:

a fastener having a head, shank and a threaded outer end;

said shank having an outer diameter comparable to the outer diameter of the threaded portion of said fastener;

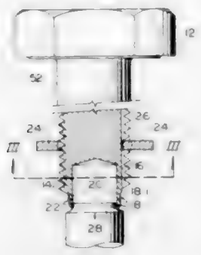
the outer end of said fastener having a central opening;

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the shank of said fastener including said threaded outer end having a plurality of longitudinally extending slots;

a washer having inwardly extending prong means for fitting into said longitudinally extending slots, said washer being relatively inflexible; and

formable end wall means at the outer end of said fastener bolt for blocking the outer ends of said slots and retaining



said washer onto said fastener by preventing said washer prongs from sliding off the end of the fastener, and thereby holding the fastener captive in the desired location said formable end wall means being formed of the same material as, and being integral with the remainder of said fastener, and said formable end wall means being wholly within the profile of the extended pattern of threads of said fastener.

4,655,659

ROOFING FASTENER

Stuart H. Leemke, Rte. 2, Box 288C, Mukwonago, Wis. 53149

Continuation of Ser. No. 636,085, Aug. 1, 1984, abandoned, which is a continuation of Ser. No. 414,932, Sep. 3, 1982, abandoned. This application Dec. 12, 1985, Ser. No. 808,220

Int. Cl.⁴ F16B *15/00*

U.S. Cl. 411—359 **2 Claims**



1. A rotary driven fastener for securing insulation to a roof deck comprising:

an elongated member terminating in a point at a tip end and having a flange like head at its other end, said elongated member having an internal channel extending substantially the entire length of said member and terminating at said flange end in an opening and at said tip end in at least one sidewall opening in said elongated member, said flange end having rotary tool engaging surfaces disposed substantially adjacent to and spaced from said flange end opening so that said fastener may be mated with a rotating tool for the rotation of the fastener during installation of said fastener without obstructing said flange end opening,

a plunger disposed for longitudinal movement in said channel,

at least one flexible barb engageable with said plunger and extending along said channel toward said tip end,

a multi-surface barb-engaging ramp located proximate said tip end and adjacent said sidewall opening, said ramp having a first surface extending downwardly and outwardly toward said sidewall opening, said first surface extending upwardly into said channel at least to a point co-planar with a horizontal plane formed by the upper edge of said sidewall opening and a second surface angularly disposed at the lower end of said first surface so as to extend toward said sidewall opening substantially normal to the longitudinal axis of said elongated member, said second surface providing a deflection surface to engage the bottom surface of said barb and to direct said barb out of said sidewall opening in a direction substantially normal to the longitudinal axis of said elongated member and to effect the engagement of the top surface of said barb with a barb engaging corner at the upper edge of said sidewall opening to produce a frictional drag on said top surface of said barb and cause said barb to curl upwardly as said barb exits said sidewall opening and follow an arcuate path terminating at a point substantially adjacent to the outer surface of said elongated member.

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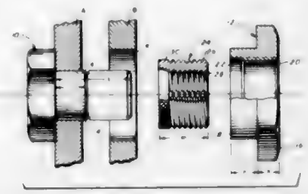
LOW-PROFILE FASTENER

John T. McGlone, Richboro, and Ralph L. McGlboney, Feasterville, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1985, Ser. No. 704,124

Int. Cl.⁴ F16B *35/00, 37/08*

U.S. Cl. 411—366 **1 Claim**



1. A low-profile fastener for securing one member to the exterior surface of another member, the other member having limited interior clearance, comprising:

a housing having an annular neck at one end of length equal to the thickness of the other member and flanged at the other end to form a thin wrench head, said neck formed to slidably insert the entire length thereof in a mounting hole in the other member from the interior surface thereof;

an insert equal to the length of said housing, having an annular boss at one end for swaging into said one end of the said housing, and threadingly engaged in said housing for the remaining length thereof and having internal threads; and

a bolt formed to pass through a mounting hole in the one member from the exterior surface thereof and to threadingly engage said insert the entire threaded length thereof, said bolt having a shank length equal to the combined thickness of the members and said wrench head.

4,655,661

SELF-CUTTING FAST CONSTRUCTION SCREW

Horst Brandt, Weiterstadt, Fed. Rep. of Germany, assignor to Richter-System GmbH & Co. KG, Griesheim, Fed. Rep. of Germany

PCT No. PCT/EP84/00415, § 371 Date Jul. 30, 1985, § 102(e) Date Jul. 30, 1985

PCT Filed Dec. 20, 1984, Ser. No. 762,153

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346704

Int. Cl.⁴ F16B *25/02, 25/10*

U.S. Cl. 411—387 **5 Claims**

1. A self-cutting construction screw for fastening a fiber plate to a metal substructure, said screw comprising a head, a screw shaft extending from said head and carrying at least one helical thread which terminates on said shaft, a conical drill point extending from an end of said shaft situated opposite said head, said drill point converging in a direction away from said



head, and two outwardly projecting frangible cutting edges mounted on said conical drill point for cutting through the fiber plate and breaking off upon impact with the metal substructure, said cutting edges sized to cut to a diameter located between the diameter of the thread core and the outer diameter of the thread.

4,655,662

GRIPPER MECHANISM FOR FEEDING ELONGATE STRIPS

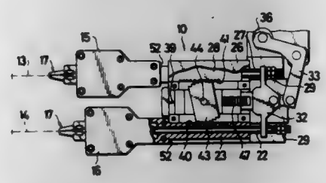
Kelichi Yoshieda, Kurobe; Toshiaki Sodeno, Toyama, and Syuichi Honmoto, Uozu, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 15, 1985, Ser. No. 765,949

Claims priority, application Japan, Aug. 29, 1984, 59-180075

Int. Cl.⁴ B23Q *5/22*

U.S. Cl. 414—14 **5 Claims**



1. A gripper mechanism for feeding a pair of elongate strips, comprising:

(a) a housing movable along a feed path;

(b) a pair of gripper holders supporting a pair of grippers for gripping the strips, respectively;

(c) a pair of sliders joined to said gripper holders, respectively, and slidably disposed in said housing for movement therein, said sliders including first and second racks, respectively;

(d) means on said housing for opening said grippers in response to engagement with a cam on the feed path, said means including resilient means for normally closing said grippers;

(e) a slide block slidably mounted in said slide housing;

(f) a first pinion angularly movably supported on said slide block and held in mesh with said first and second racks, respectively; and

(g) a spring acting between said housing and said slide block for normally urging the slide block in a direction to move said gripper holders into abutment against said housing, whereby said gripper holders can be moved relatively to each other toward and away from said housing.

4,655,663

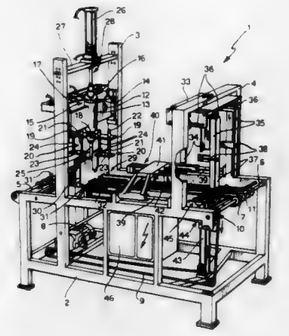
MACHINE FOR STACKING BUNDLES OF SIGNATURES AND LIKE PRODUCTS

Domenico Rosati, Turin, Italy, assignor to R.O.M. S.r.l., Turin, Italy

Filed Nov. 16, 1984, Ser. No. 672,354

Int. Cl.⁴ B65G *57/30*

U.S. Cl. 414—31 **15 Claims**



1. A machine for stacking bundles of signatures and like products supplied in a continuous flow with their backs oriented in the same direction, comprising:

a support frame;

a substantially horizontal endless conveyor supported by the frame and having an input end for supplying the products to be stacked and an output end for unloading the stacked products;

a platform means mounted rotatably on the frame about a vertical axis passing through the conveyor, said platform means also being translatable along the axis between a lowered position of substantial alignment with the plane of the conveyor, and a raised position in which the products on the conveyor can pass beneath the platform means, in order to effect cyclically a raising from the conveyor of a product supplied to the conveyor, rotating the raised product about said axis so as to orient the back of this raised product in a direction diametrically opposed to that of its supply to the conveyor, and the depositing of the product with the oppositely-oriented back on the conveyor;

wherein said platform means provides a horizontal support for said product which supports said product over substantially the entire horizontal plane of said product.

4,655,664

SYSTEM FOR TRANSFERRING WORKPIECES BETWEEN PALLETS AND AT LEAST ONE MACHINE TOOL

Roland Feichtl, Linz; Walter Deisenhammer, Attnang-Puchheim, both of Austria; Eugen Rennstich, Güglingen, Fed. Rep. of Germany, and Klaus Ganglberger, Traun, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jan. 29, 1985, Ser. No. 696,043

Claims priority, application Austria, Feb. 8, 1984, 404/84; Jul. 6, 1984, 2173/84

Int. Cl.⁴ B65G *60/00;* **B66C** *1/66*

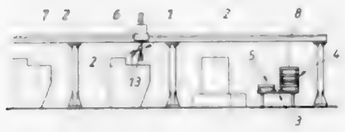
U.S. Cl. 414—32 **2 Claims**

1. A system for transferring workpieces between pallets and at least one machine tool, each pallet having an open-bottomed, upwardly tapering, conical socket opening, a through opening laterally spaced from said socket opening, and a slot extending through said pallet and opening into said socket and through openings, the pallets being formed with a pin-receiving opening adjacent to and eccentric with respect to said

socket opening, and being adapted to carry workpieces to be machined and machined workpieces, which comprises:

a pallet support adapted to support the pallets and including a first station for supporting a first stack consisting of pallets carrying workpieces to be machined, and a second station for supporting a second stack consisting of pallets carrying machined workpieces, and

a loader-unloader for transferring workpieces to be machined from pallets on said pallet support to said one machine tool and for transferring machined workpieces from said one machine tool to pallets on said pallet support, said loader-unloader is operable to lift each of said pallets and to transfer an empty pallet from the top of said



first stack in said first station to said second station, and said loader-unloader includes a lifting arm adapted to assume a vertical position and having a lower end portion comprising a neck, which is narrower than said slot, and an upwardly-tapering, conical pallet-carrying head depending from said neck, said pallet-carrying head being adapted to be moved through said through hole of each of said pallets to the underside thereof and to enter said socket opening from below, said pallet-carrying head having a radial arm adjacent a lower end thereof and carrying a locking pin that is parallel to an axis of said neck of said lifting arm and adapted to enter into said pin-receiving opening to non-rotatably connect said pallet to said pallet-carrying head.

4,655,665

BOBBIN MAGAZINE FOR A TRAVELLING SERVICE DEVICE OF A YARN PROCESSING MACHINE

Andre Lattion, Seuzach, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Feb. 6, 1985, Ser. No. 698,628
Int. Cl.⁴ B65H *67/06*
U.S. Cl. 414—112 **10 Claims**



1. A travelling service arrangement for servicing operating stations of a yarn processing machine, comprising support means; means for guiding said support means for travel in a predetermined trajectory along the operating stations; means for moving said support means in said trajectory into predetermined positions at the operating stations; means for bounding a plurality of compartments each adapted to receive a stick of conical bobbin tubes telescopically nested within one another; means for mounting said bounding means on said support means for movement in a closed path extending in a plane substantially normal to respective longitudinal axes of said compartments and of the sticks received therein, and so that said longitudinal axes extend substantially horizontally and substantially normal to said trajectory; selectively operatable means for removing the respective stick from the associated compartment when the latter is situated at a predetermined location of said path, including means for turning the respective stick after its removal from said associated compartment into a position in which said longitudinal axis thereof is still substantially horizontal but extends substantially parallel to said trajectory; and selectively operatable means for separating individual tubes from the respective stick that has been removed from said associated compartment.

2. A travelling service arrangement for servicing operating stations of a yarn processing machine, comprising a support having an end wall extending along a predetermined plane; means for guiding said support for movement in a predetermined trajectory substantially normal to said predetermined plane along the operating stations; means for moving said support in said trajectory along the operating stations; a bobbin magazine; and means for mounting said bobbin magazine on said support for movement between a first position in which said bobbin magazine extends along and conceals at least a part of said end wall, and a second position in which said bobbin magazine is distant from said part of said end wall and exposes the same while remaining mounted on said support.

4,655,666

EXTRACTION DEVICE, PARTICULARLY FOR SILOS WITH A CIRCULAR FLOOR

Laurence Cantenot, 12 avenue de la Division Leclerc, 92340 Bourg-la-Reine, France

Filed Nov. 20, 1984, Ser. No. 673,397
Claims priority, application France, Nov. 22, 1983, 83 18560
Int. Cl.⁴ B65G *65/46*
U.S. Cl. 414—310 **2 Claims**



1. An extraction device for silos with a circular floor having a central opening in the form of a central funnel, comprising:

a conveyor in a lower position with respect to the floor of the silo,

an endless screw extending from the center of the floor to adjacent the wall of the silo, adapted to sweep angularly over the floor, bringing the product contained in the silo towards said central funnel,

a first motor adapted to drive said screw about its axis,

a central support,

a cross-piece extending across said central opening and fixedly mounted to the floor of the silo for rigidly mounting said central support to the floor of the silo,

a protective cover, generally conical in form, fixed to and resting on said central support, said cover being substantially concentric to said central support, and being positioned so as to overlap said first motor and said central funnel,

a rotating ring supporting said screw and said first motor, said rotating ring being fixed to a housing having an outer sidewall that substantially overlaps said central opening and terminates in the vicinity of said central opening,

a fixed ring on which said rotating ring is mounted to rotate, said fixed ring being fixed to the lower edge of said cover,

roller bearing means interposed between said rotating ring and said fixed ring,

a second motor drivingly connected to said rotating ring for driving said screw horizontally in angular sweeping movement across the floor of the silo,

a radial beam having an upturned V-section and fixedly mounted on one side to the wall of the silo and on the other side to said cover,

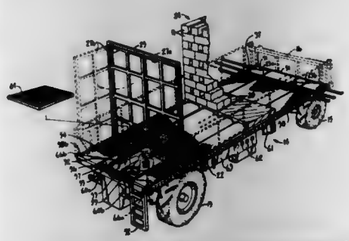
at least one conduit of cooling fluid opening out at one end to the outside of the silo and leading at the other end to the zone constituted by the interior space of said cover, said conduit allowing evacuation of calories emitted by said first and said second motors.

4,655,667

HARVESTING APPARATUS HAVING DETACHABLE WINGS

Bruce E. Plumb, and C. Dal Freeman, both of Salinas, Calif., assignors to Bud Antle, Inc., Salinas, Calif.

Filed Nov. 26, 1984, Ser. No. 675,094
Int. Cl.⁴ B60P *1/52*
U.S. Cl. 414—343 **7 Claims**



1. A harvest vehicle for use as a prime mover for moving harvesting apparatus through a field or as a shuttle vehicle for transporting product from a point of harvest in a field to a point of transport adjacent the field, said vehicle comprising in combination:

a vehicle platform forming a flush, upwardly exposed deck for said vehicle for retaining pallets of harvested product on said deck;

a conveyor mounted flush to the deck of said vehicle for conveying said pallets of harvested product from and over the rear end of the deck of said vehicle across said vehicle and to and over the front end of said vehicle;

an operator station recessed below the deck of said vehicle in said conveyor path to permit said pallets of harvested product to be conveyed over said operator station; and

gathering means for engaging a similar vehicle having a flush deck to enable the flush decks of said harvest vehicles to be engaged end to end at the same level whereby said conveying means can transfer cargo to and from said similar vehicle, said gathering means being located at the forward and rear ends of said harvest vehicle.

4,655,668

PROJECTILE STORAGE RACK WITH GANG LOCK MECHANISM

Ayyala Periasatry, Dover; Richard A. Viahe, Spring Groove, and Henry J. Huber, Reading, all of Pa., assignors to Harsco Corporation, Camp Hill, Pa.

Filed Jan. 24, 1984, Ser. No. 573,414
Int. Cl.⁴ F42B *37/00*
U.S. Cl. 414—417 **16 Claims**

1. A projectile storage rack having a front, a back, a right side, and a left side and comprising:

(a) a plurlity of parallel projectile storage compartments

(b) a plurality of clamping surfaces, each clamping surface associated on a one-to-one basis with one of said storage compartments, each clamping surface movable between:

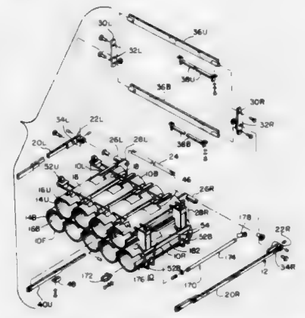
(i) a clamping position in which it is operable to contact and clamp a projectile within its associated storage compartment, and

(ii) a non-clamping position such that projectiles may be freely inserted and removed from the associated storage compartment;

(c) an operator mechanism operable to move more than one of said clamping surfaces between their respective clamping positions and non-clamping positions, said operator mechanism disposable in:

(i) an activation position in which said operator mechanism disposes said more than one clamping surfaces in their clamping positions, and

(ii) an inactivation position in which said operator mechanism disposes said more than one clamping surfaces in



their non-clamping positions, said operator mechanism being lockable in said activation position; and

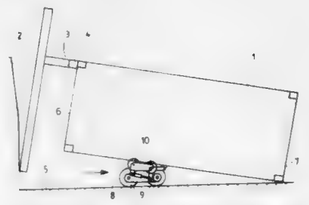
further comprising a plurality of parallel cylindrical tubes extending axially front to back and defining said plurality of projectile storage compartments, said operator mechanism including a plurality of locking bars extending lengthwise front to back, each locking bar pivotably mounted on its front end to at least one associated tube to allow vertical movement of each locking bar at its back end, each clamping surface movable up and down by movement of one of said locking bars; said locking bars are pivotable by operation of said operator mechanism; and wherein said operator mechanism is operable for moving a plurality of clamping surfaces from their clamping positions to their non-clamping positions.

4,655,669

APPARATUS FOR HANDLING UNITARY LOADS

Arjo Anttila; Risto Paloposki, and Keijo Kröger, all of Tampere, Finland, assignors to Valmet Oy, Finland

Filed Jun. 21, 1985, Ser. No. 747,274
Claims priority, application Finland, Jun. 26, 1984, 842569
Int. Cl.⁴ B60P *3/40, 1/64*
U.S. Cl. 414—458 **17 Claims**



1. Apparatus for handling a unitary load resting on a surface, comprising:

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a prime mover comprising a vehicle having an operator compartment;

means provided on said prime mover for engaging and raising an end of the load proximal to said prime mover from the surface on which it rests and so that an end of the load distal from said prime mover remains resting on the surface;

mobile auxiliary means structurally separate from said prime mover for engaging the underside of and supporting the load, said auxiliary means including means for self-propelling the same;

means situated in said operator compartment of said prime mover for controlling movement of said auxiliary means so that when the proximal end of the load is raised by said engaging and raising means of said prime mover with the distal end resting on said surface, said auxiliary means can be moved under the load in a direction towards the distal end thereof to engage the underside of the load and raise the distal end thereof from the surface on which it rests, said auxiliary means thereby supporting the load from its underside for movement; and

means provided on said prime mover for engaging and supporting said auxiliary means when the latter is not supporting a load.

4,655,670

TRANSPORTATION DEVICE

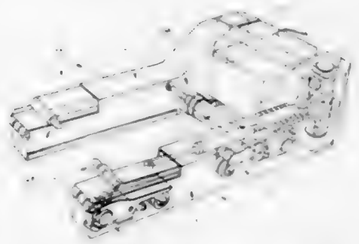
Kjell T. Högberg, Skillingvägen 5, S-902 50 Umeå , and K. Torsten Forsberg, Skillbergsgatan 9, S-124 45 Bandhagen, both of Sweden

Filed Nov. 15, 1984, Ser. No. 671,895

Claims priority, application Sweden, Nov. 17, 1983, 8306344

Int. Cl.⁴ B60P *3/00*

U.S. Cl. 414—458 **14 Claims**



1. A transportation device for picking up and transporting objects, particularly cable drums, and comprising first and second longitudinal frame parts extending parallel to each other in a spaced relationship;

an adjustable transverse frame part extending perpendicularly to said first and said second frame parts and interconnecting them;

each of said first and second frame parts comprising drive means including obliquely positioned ground contact elements adapted to drive the transportation device in any desired direction and means operatively connected to said ground contact elements for driving the same, and lifting means mounted at each of said first and second frame parts and extending into the space between said first and second frame parts for picking up and lifting an object received in the space between said first and second frame parts;

means for displacing at least one of said first and second frame parts relative to the other of said first and second frame parts in a direction parallel to said transverse frame part to adjust the distance between said first and second frame parts to thereby adjust the distance between said lifting means;

and wherein said means for displacing being actuated in response to actuation of the drive means associated with a respective one of said first and second frame parts.

4,655,671

LOADING AND UNLOADING DEVICE

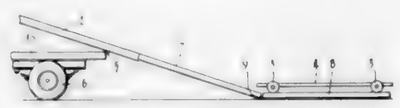
Stephen C. Pratt, 37 Arabana Street, Aranda, Canberra A.C.T. 2614, Australia

Filed Jul. 18, 1984, Ser. No. 631,870

Claims priority, application Australia, Jan. 11, 1984, PG3151

Int. Cl.⁴ B65G *67/02*

U.S. Cl. 414—477 **1 Claim**



1. A device for the transportation, launching and recovering of boats, said device comprising a wheeled first sub-frame having means at the forward end thereof for affixing a towing hitch, a second sub-frame mounted upon said first sub-frame, said second sub-frame pivotally mounted to said first sub-frame about an axis transverse thereto and located adjacent the rear end thereof, a ramp suitably mounted to said second sub-frame to be extendible and retractable thereof in the direction longitudinally of said wheeled first sub-frame, a wheeled cradle assembly mounted upon said second sub-frame to be mobile thereon and on said ramp when expanded in the direction longitudinal of said wheeled first sub-frame, said cradle adapted to support a boat, whereby moving the cradle rearwardly in use causes said second sub-frame and ramp to pivot with the rearward end of the ramp moving downwardly whereby for launching or recovering a boat from or to said cradle, and moving the cradle forwardly after recovery of a boat causes said second sub-frame and ramp to pivot such that the rearward end of the ramp moves upwardly whereby said second sub-frame sits in transport position on said first sub-frame, a rear portion of said ramp being formed of material of reduced weight and being hinged to the portion forwardly thereof whereby to pivot upwardly but not downwardly in relation to the forward portion about a transverse axis so that, in operation, said rear portion can lie flat on a ground suface with the portion forwardly thereof being in inclined position.

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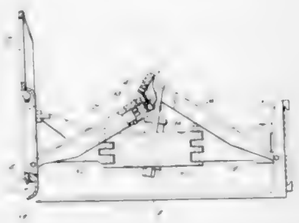
NO CREASE OPTION FOR A LIFT TRUCK ATTACHMENT

Stuart W. Sinclair, Lake Jackson, and Kenneth R. Lane, Houston, both of Tex., assignors to Long Reach Manufacturing Co., Houston, Tex.

Filed Feb. 10, 1986, Ser. No. 827,692

Int. Cl.⁴ B60P *1/02*

U.S. Cl. 414—661 **4 Claims**



1. A push/pull attachment for a lift truck having a no crease option comprising,

a push/pull attachment including platens, a push plate and a push/pull double acting piston and cylinder assembly for extending and retracting the push plate,

a gripper connected to the push plate including a close/open double acting gripper piston and cylinder assembly for closing and gripping or opening and releasing a slip sheet, movable over said platens and

a control circuit for maintaning closed the gripping position on the slip sheet in both directions of the push plate when the push plate is less than fully extended for protecting a load placed on said slip sheet from damage, said circuit including

a first hydraulic push line and second hydraulic pull line connected to the push/pull assembly for alternately acting on the assembly for extending or retracting the push plate,

an operating valve for supplying hydraulic fluid from a hydraulic source to said first and second lines,

said first line and second line connected to the gripper assembly for opening and closing said gripper, respectfully,

a pilot actuated two position hydraulic normally closed valve connected in the first line upstream of the gripper assembly,

said hydraulic valve connected to the push/pull attachment and actuated by said push/pull attachment when the push plate is fully extended thereby opening the two position valve for opening said gripper, and

a check valve in parallel with the two position valve allowing fluid flow from the gripper assembly, but preventing fluid flow to the gripper assembly.

4,655,673

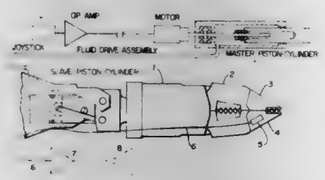
APPARATUS PROVIDING TACTILE FEEDBACK TO OPERATORS OF REMOTELY CONTROLLED MANIPULATORS

Graham S. Hawkes, 12812 Skyline Blvd., Oakland, Calif. 94610, assignor to Graham S. Hawkes and Sylvia A. Earle, both of Oakland, Calif.

Filed May 10, 1983, Ser. No. 493,419

Int. Cl.⁴ B25J *3/00, 15/00*

U.S. Cl. 414—730 **3 Claims**



1. In a combination, a manipulator arm assembly and a tactile feedback apparatus comprising:

(a) a remotely operated manipulator arm having movable portion, a gripping mechanism carried by said movable portion, and a fluid drive assembly coupled to displace said movable portion and said gripping mechanism, said fluid drive assembly being formed for displacement of said movable portion and said gripping mechanism without producing substantial acoustically induced vibration in said arm; and

(b) a tactile feedback apparatus including:

(i) an accelerometer formed to provide an electrical output signal and rigidly mechanically coupled to one of said movable portion and said gripping mechanism sufficiently proximate to said gripping mechanism to enable sensing of contact-induced vibrations occurring in said gripping mechanism upon contact of said gripping mechanism with an object and distinguishing of said contact-induced vibrations from background acoustical noise from said fluid drive assembly and from the medium surrounding said manipulator arm; and

(ii) means coupled to said accelerometer for audibly reproducing said output signal for operator listening.

4,655,674

SAFETY DEVICE FOR AN INDUSTRIAL ROBOT

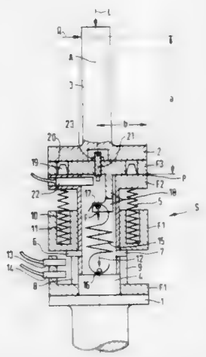
Gerd Kohler, and Rudolf Burger, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 2, 1984, Ser. No. 636,924

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333979

Int. Cl.⁴ B25J *19/00*

U.S. Cl. 414—735 **20 Claims**



1. A device connected between an industrial robot arm and a tool carried thereby, said device protecting the tool from damage by collision forces, said device comprising first means for stopping the robot in response to a predetermined axially applied force to the tool and second means separate from the first means for stopping the robot in response to a predetermined shear force being applied to the tool, said first means including a compression biasing means, a first and second flange being displaceable relative to each other against the compression biasing means, and first switch means for creating a stopping signal in response to the axial movement between said first and second flanges and said second means comprising the second flange, a third flange and connecting means extending therebetween, said connecting means resiliently and elastically holding the second and third flanges together and enabling tilting movement therebetween and said second means including second switch means for creating a stopping signal in response to tilting movement between the second and third flanges.

4,655,675

ARTICULATED ROBOT

Hirotoshi Yasuoka, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1984, Ser. No. 571,970

Claims priority, application Japan, Jan. 18, 1983, 58-6073; Jan. 26, 1983, 58-10903

Int. Cl.⁴ B66C *23/00*

U.S. Cl. 414—735 **14 Claims**

1. An articulated robot comprising:

a fixed stand for supporting a robot body;

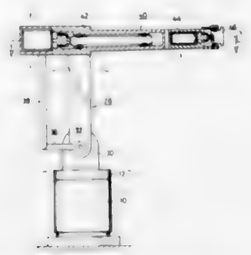
a swivel stand rotatably disposed on said fixed stand;

an upper arm which at one end is rotatably connected to said swivel stand;

a forearm which at one end is rotatably connected to the

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other end of said upper arm, said forearm including a first wrist, a second wrist and a third wrist which are sequentially connected to said upper arm along a central axis of said forearm, said first and second wrists being connected along a first pivot axis about which said first and second wrists relatively rotate, center axes of both of said first and second wrists passing through a first common point on said first pivot axis, said second and third wrists being connected along a second pivot axis about which said second and third wrists relatively rotate, center axes of both of said second and third wrists passing through a second common point on said second pivot axis, and



having a first driving motor mounted in an inner surface of said first wrist for driving said second wrist, a first reduction gear for directly transmitting the driving force of said first driving motor to said second wrist, and a second driving motor mounted in the inner surface of said second wrist for driving said third wrist, a second reduction gear for directly transmitting the driving force of said second driving motor to said third wrist, wherein said first and second driving motors are disposed on the central axis of said forearm; and

an operating part which is connected to said forearm's other end.

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ROBOT INSTALLATION

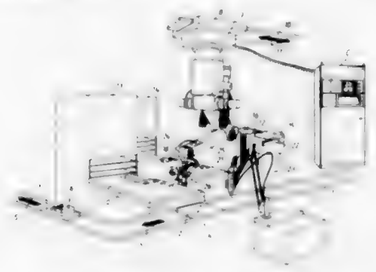
Björn Jananborg, and Mats Landström, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Jul. 10, 1984, Ser. No. 629,481

Claims priority, application Sweden, Jul. 11, 1983, 8303930

Int. Cl.⁴ B25J *9/06*

U.S. Cl. 414—736 **7 Claims**



1. In a robot installation for producing a product from a plurality of different parts by accomplishing a plurality of operations, said robot installation including means forming a product assembly station; a plurality of supply means for supplying a plurality of different parts to different locations near said product assembly station, and a robot for performing said plurality of operations at said product assembly station, said robot including an articulated arm system having an outer arm terminating at a free end, a wrist means having a first rotational axis therethrough rotatably mounted on the free end of said outer arm, a turret head support means mounted on said wrist means, a turret head mounted on said turret head support means to be rotatable about a second rotational axis, a plurality of tools attached to said turret head, rotation means mounted on said turret head support means for rotating said turret head with respect to said turret head support means and around said second rotational axis, such that each of said plurality of tools can be rotated into an operative position, and control means connected to said articulated arm system to control the operation of said rotation means,

the improvement wherein said turrent head comprises a disc having an enlarged annular periphery; wherein each of said plurality of tools includes an attachment means which is mountable on said enlarged annular periphery of said disc and when desired can be manually moved therealong to allow each respective tool to be manually positioned at a desired location around its circumference, each attachment means including locking means which is cooperable with said disc to fixedly position each respective tool around the circumference of said enlarged annular periphery; and wherein said rotation means can rotate said turret head to any arbitrary rotational position relative to said turret head support means.

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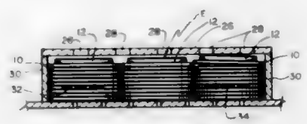
METHOD FOR HANDLING CONTAINER ENDS EN MASSE

Ronald A. Lenhart, Lakewood, Colo., assignor to Precision Metal Fabricators, Inc., Arvada, Colo.

Filed Dec. 16, 1985, Ser. No. 809,038

Int. Cl.⁴ B65G *51/02, 59/10*

U.S. Cl. 414—786 **5 Claims**



3. A method of conveying a mass of nestable disks from an upstream station to a downstream station wherein each disk has a peripheral, planar rolled edge which will tend to cause one unrestricted disk to ride up upon another unrestricted disk when lateral forces urge the disks into contact with each other, each disk having an offset center portion having sufficient depth so that the disks are nestable in a stack, said method comprising the steps of:

nesting the disks in a plurality of stacks of substantially equal height;

air conveying the stacks from the upstream location to the downstream location through a pair of converging side rails to bring the stacks into single file at the downstream end; and

limiting the upward movement of any disk in each stack to an amount less than the nesting depth of the disks.

4,655,678

COMBINED TURBO-MOLECULAR PUMP

Masaharu Miki, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Feb. 22, 1985, Ser. No. 704,384

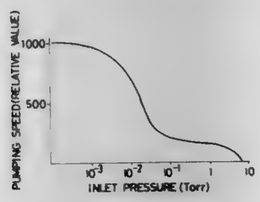
Claims priority, application Japan, Feb. 24, 1984, 59-25390[U]

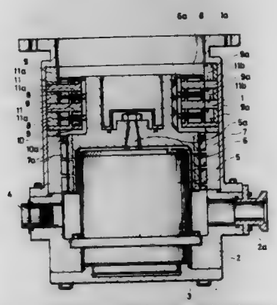
Int. Cl.⁴ F04D *19/04*

U.S. Cl. 415—71 **13 Claims**

1. A combined turbo-molecular pump of the type having rotary circular plates at the inlet port of a rotatable rotor and stationary circular plates being alternatively arranged in layers

at the circumference thereof and a thread-groove disposed either on the rotor or the cylindrical part which surrounds the rotor in the vicinity of the circumference of the outlet side of the rotor, the improvement in that on both surfaces of either said rotary circular plate or said stationary circular plate, there





is provided respectively a spiral groove having the same winding direction, and the circumference of each stationary circular plate communicates through parallel axial passages with the inlet port and each rotary circular plate communicates with said thread-groove on its center side.

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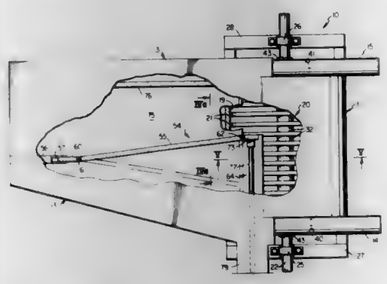
POWER TRANSLATION DEVICE

Jeffrey A. Giacomel, Arlington, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.

Filed May 25, 1983, Ser. No. 497,998

Int. Cl.⁴ F01D *1/36*

U.S. Cl. 415—90 **25 Claims**



1. Rotational apparatus for translating motive energy, comprising:

a housing defining a chamber;

a plurality of mutually spaced disks rotatably mounted within the housing, each of the disks having at least one opening formed therethrough and a peripheral portion spaced radially outwardly from the at least one opening,

a first passageway communicating with the housing chamber at a location adjacent the peripheral portions of the disks;

a second passageway communicating with the housing chamber and with at least one opening formed through the respective disks;

means for rotating the disks and inducing fluid flow through the chamber and through the first and second passageways; and

flow control means mounted in the first passageway, wherein the flow control means comprises means for restricting fluid flow through a selected longitudinal portion of the rotor structure and for permitting fluid flow through the remaining longitudinal portion of the rotor structure extending axially along the rotor structure from the selected longitudinal portion of the rotor structure.

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CONTINUOUS BLADE AXIAL-FLOW FRICTION DRAG PUMP

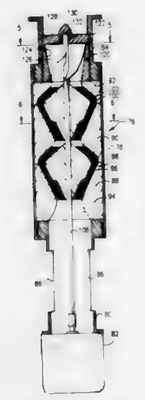
Philip H. Klepesch, 5859 Sagebrush Rd., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 501,362, Jun. 6, 1983, Pat. No. 4,513,887. This application Jul. 29, 1985, Ser. No. 760,318

The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.

Int. Cl.⁴ F01D *5/06*

U.S. Cl. 415—90 **20 Claims**



17. An axial flow frictional impeller fluid pump, said pump comprising:

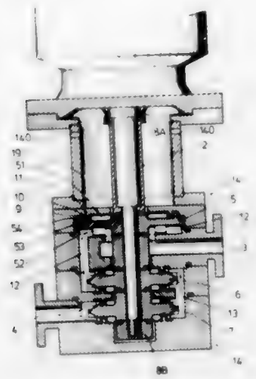
a housing defining an impeller chamber having an axis;

an inlet at one end of said chamber and an outlet at the other end of said chamber;

an impeller rotatably mounted coaxially in said chamber and comprising a plurality of axially extending concentrically mounted diverging inlet shells having an inlet at one end and an outlet at the other end and and a plurality concentrically mounted converging outlet shells mounted coaxially of said inlet shells.

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SEAL-LESS PUMP
Youji Mori, Ichikawa, and Kenichi Satou, Noda, both of Japan, assignors to World Chemical Co., Ltd., Tokyo, Japan
Filed Jan. 14, 1985, Ser. No. 744,725
Claims priority, application Japan, Jul. 26, 1984, 59-155737
Int. Cl.⁴ F03B *13/10*; **F04D** *29/16*
U.S. Cl. 415—100 **6 Claims**



1. A high pressure multi-stage seal-less pump, in which plural impellers are arranged in serial stages within a casing and are supported and driven by a shaft rotatably supported in the casing, comprising;

radial flow ribs integrally provided on an under surface of a first-stage impeller of said plural impellers, said first stage impeller being positioned below an air space of said pump, backside radial ribs provided integrally on an upper surface of said first-stage impeller, said backside ribs defining a circle of larger diameter than a circle defined by said radial flow ribs, a flange formed as an extension of the first-stage impeller, and a protruding ring provided on an upper surface of said flange, a recessed groove provided in said casing at a location opposite said protruding ring, said ring being received with said groove with a constant gap therebetween, said groove intercepting air drawn from said space section and pumped by the rotation of said radial ribs at said gap, said air at said gap and a fluid pumped by said radial flow ribs being maintained in pressure balance.

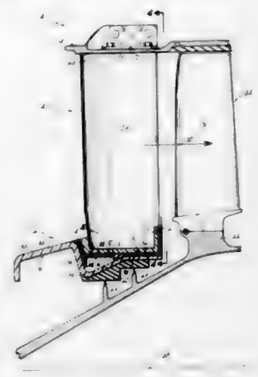
4,655,682
COMPRESSOR STATOR ASSEMBLY HAVING A COMPOSITE INNER DIAMETER SHROUD
Cleon V. Kuaz, West Hartford, and Dennis H. Jones, Somers, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Sep. 30, 1985, Ser. No. 781,606
Int. Cl.⁴ F04D *29/66*
U.S. Cl. 415—119 **15 Claims**

9. A stator assembly for a gas turbine engine, comprising:

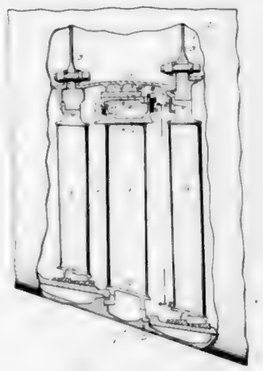
(a) an outer vane support structure;

(b) a circumferential row of vanes, each vane having a radially outer end and inner end, wherein each vane outer end is attached to said outer vane support structure and extends radially inwardly therefrom; and

(c) an inner vane support structure concentric with said outer vane support structure, said inner support structure comprising a one piece inner ring of composite material, having a radially outwardly facing surface and a circumferentially extending, axially facing surface, said inner vane support structure also comprising a plurality of arcuate, circumferentially disposed shroud sections of composite material surrounding and attached to said outwardly facing ring surface and to said axially facing ring surface, wherein each shroud section has axially facing, circumferentially extending forward and rearward end walls and a plurality of circumferentially spaced apart, radially inwardly extending cavities which extend in the axial direction through said rearward end wall, wherein one of said vane inner ends extends into each of said cavities, and each cavity includes damping means for engaging and retaining the vane inner end disposed therein.



4,655,683
STATOR SEAL LAND STRUCTURE
Gary F. Chaplin, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 24, 1984, Ser. No. 686,175
Int. Cl.⁴ F01D *11/02, 9/02*
U.S. Cl. 415—137 **1 Claim**



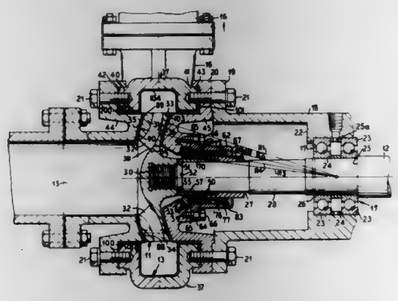
1. A stator assembly of the axial flow, rotary machine type including a plurality of stator vanes extending radially inwardly across a flowpath for working medium gases from a stator case into engagement with an inner shroud supporting a seal land, wherein the improvement comprises:

an inner shroud extending circumferentially about the flowpath and having both a plurality of lugs extending radially inwardly therefrom at one end of the shroud and a flange having a radially oriented surface at the other end of the shroud;

a seal land having a plurality of slots equal in number to and spaced in circumferential alignment with the lugs of the shroud and engaged thereby, and a flange having a radially oriented surface in opposing, abutting relationship to the surface of the shroud; and

a retaining ring affixed to the seal land in a manner axially closing the slots with the lugs extending therethrough and forming, in conjunction with the flange of the seal land, a structure of U-shaped cross section with the legs of the "U" extending radially for stability under changing temperature conditions and whereby the seal land and the inner shroud are free to move radially relative to one another in response to differing thermal conditions.

4,655,684
CENTRIFUGAL PUMP FOR WIDE RANGE OF OPERATING CONDITIONS
Walter D. Haentjens, R.D. No. 1, Box 121, Sugarloaf, Pa. 18249
Filed Aug. 2, 1984, Ser. No. 637,158
Int. Cl.⁴ F04D *29/10*
U.S. Cl. 415—170 A **13 Claims**



1. A cantilever shaft volute pump operable over a wide range of operating conditions, comprising:

a casing forming a pumping chamber,

an inlet into said casing,

an impeller disposed within said casing and coaxial of the center of said inlet,

said casing having a volute interior wall diverging from said inlet,

an outlet from said casing forming a continuation of said volute interior wall and including a tongue extending generally tangentially thereof,

a cantilever drive shaft having a first end extending within said casing coaxial with the axis of said impeller,

said impeller being mounted on said first end of said drive shaft,

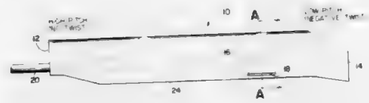
axial thrust bearings spaced axially along said shaft outwardly of said casing and forming a cantilever support for said shaft and said impeller,

said impeller having spaced apart front and rear shrouds and impeller vanes mounted extending between said front and rear shrouds, said front and rear shrouds of said impeller having outer and inner concentric curvilinear faces formed on radii centered at a center of reaction between said drive shaft and said bearings,

front and rear interior walls of said casing having concentric curvilinear surfaces formed on radii centered at the center of reaction,

said impeller being mounted for substantially uniform curvilinear clearance between said front and rear shrouds of said impeller and said respective front and rear interior walls of said casing to accommodate radial excursions of said shaft and said impeller upon variations in pressure on said impeller and said shaft from uniform pressure conditions and to prevent contact between said impeller and said front and rear interior walls of said casing.

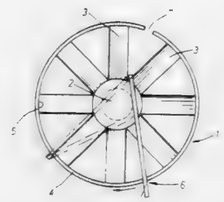
4,655,685
HELICOPTER MAIN ROTOR BLADE HAVING A SHORT SPAN SLOT NEAR THE TIP END
Evan A. Fradenburgh, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 16, 1985, Ser. No. 809,460
Int. Cl.⁴ B64C *27/64*
U.S. Cl. 416—90 A **3 Claims**



1. A helicopter blade having built-in negative twist for enhanced hover performance, comprising:

air ejection means disposed on the blade for ejecting air from the blade and for reducing the negative built-in twist of the blade while maintaining the overall angle of attack of the blade relatively constant.

4,655,686
AIR CONVEYING DEVICE ON A RADIATOR FOR WATER-COOLED INTERNAL COMBUSTION ENGINES
Manfred Nonnenmann, Schwieberdingen; Kurt Hauser, and Hans-Dieter Gohl, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Filed Aug. 19, 1985, Ser. No. 767,050
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431801
Int. Cl.⁴ F04D *29/32, 29/64*
U.S. Cl. 416—189 **12 Claims**



1. An air conveying arrangement for supplying cooling air to a vehicle motor radiator comprising:

rotatably mounted belt drive fan rotor means having peripheral fan shroud means;

said peripheral fan shroud means having at least one drive belt assembly accommodating slot, said slot having a construction allowing said belt to be inserted therethrough and slipped over said fan shroud means for positioning in an operative position without removal of said fan rotor means,

wherein said fan rotor means includes a fan hub means and fan blade means extending between said fan hub means and said fan shroud means;

rotatably mounted fan rotor shaft means fixedly attached to said fan rotor means; and

belt pulley means on said fan rotor shaft means for engaging driving belt means.

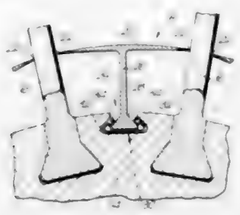
VOL 1077 ISS 1 AP 7 1987 UMI

4,655,687

ROTORS FOR GAS TURBINE ENGINES

John H. M. Atkinson, Derby, England, assignor to Rolls-Royce, London, England

Filed Jan. 29, 1986, Ser. No. 823,649
Claims priority, application United Kingdom, Feb. 20, 1985, 8504358
Int. Cl.[4] F01D 5/22, 5/32
U.S. Cl. 416—193 A 7 Claims



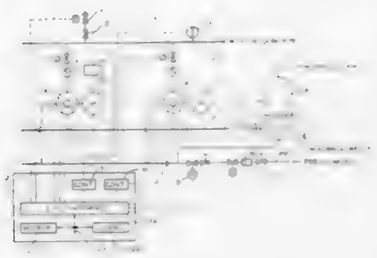
1. A rotor assembly for a gas turbine engine comprising a rotor disc supporting a peripherally arranged plurality of blades, re-entrant grooves being provided in the disc rim which extend through the thickness thereof, one said re-entrant groove being located between each pair of adjacent blades, annulus wall members bridging the space between each pair of adjacent blades, each annulus wall member having a salient foot shaped similarly to the re-entrant grooves and proportioned so as to pass through the neck of a respective re-entrant groove in a direction radially inwardly of the disc and wedges positioned between the opposing walls of cooperating re-entrant grooves and salient feet so as to prevent withdrawal of the feet in a direction radially outwardly of the disc.

4,655,688

CONTROL FOR LIQUID RING VACUUM PUMPS

Heinz Bohn, Ruilstorf; Werner Fink, and Reinhold Luhmann, both of Bardowick, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed May 30, 1985, Ser. No. 739,553
Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420144
Int. Cl.[4] F04B 49/00; F04C 19/00
U.S. Cl. 417—18 42 Claims



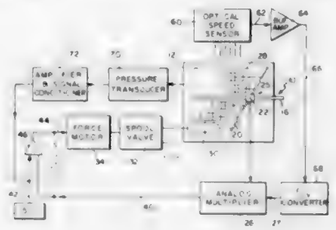
1. A control system comprising:
a suction line;
an exhaust line;
a fresh liquid line;
a liquid ring vacuum pump having a suction input coupled to said suction line, an exhaust output coupled to said exhaust line, a liquid input coupled to said fresh liquid line;
a motor mechanically driving said pump;
one or more sensors connected in said system to measure predetermined parameters within said system;
one or more regulating devices connected in said system to vary one or more respective operative characteristics of said system;
a programmable controller having inputs coupled to said one or more sensors and control signal outputs coupled to said one or more regulating devices and to said motor, said programmable controller having stored chronological and logical functions and being responsive to said stored functions and electrical sensor signals generated by said one or more sensors to control the rotating speed and or power output of said motor and for controlling said regulating devices; and wherein:
the temperature of the liquid ring in said pump is varied within predetermined operating limits stored in said programmable controller to control suction pressure in said suction line.

4,655,689

ELECTRONIC CONTROL SYSTEM FOR A VARIABLE DISPLACEMENT PUMP

Robert C. Westveer, Kalamazoo, and John K. Vandervoort, Richland, both of Mich., assignors to General Signal Corporation, Stamford, Conn.

Filed Sep. 20, 1985, Ser. No. 778,208
Int. Cl.[4] F04B 1/26; F16D 31/02
U.S. Cl. 417—53 19 Claims



1. An electronic control system for a variable displacement pump having a housing, a rotatable cylinder block within said housing having a plurality of pistons reciprocating therein, and a positional displacement determinative element for controlling the output flow rate of the pump, said control system comprising:
means for altering the position of said displacement determinative element so as to change the output flow rate of the pump in response to control signals;
means for producing a signal representative of a desired output flow rate;
means for producing a signal indicative of the actual position of said displacement determinative element;
means for producing a signal indicative of the actual rotational speed of said rotatable cylinder block;
means for combining said signals indicative of the actual position of the displacement determinative element and the actual rotational speed of the cylinder block and for producing a signal representative of the actual output flow rate; and
means for comparing the signals representative of the desired and actual flow rates and for producing an error signal representative of a difference between said rates and for applying said error signal to said means for altering the position of said displacement determinative element so as to change the actual flow rate and cause said error signal to be decreased.

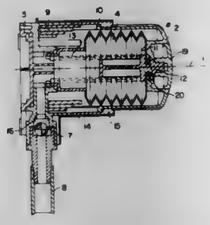
13. A method for measuring and using with a device the output rate of a variable displacement pump having a housing, a rotatable cylinder block within said housing having a plurality of pistons reciprocating therein, and a positional displacement determinative element, comprising the steps of:
a. producing a signal indicative of the actual position of said displacement determinative element;
b. producing a signal indicative of the actual rotational speed of the rotatable cylinder block;
c. combining said signals produced in steps a and b to produce the signal indicative of the actual output flow rate; and
d. providing said signal indicative of the actual output flow rate to said device;
wherein step b includes sensing the passage of marks inscribed on an outer surface of the rotatable cylinder.

4,655,690

BELLOWS PUMP HAVING ADJUSTABLE STOP CAM FOR VARYING THE STROKE

Kay Boedecker, Chieming; Robert Scheurl, Inzell, and Hans-Erwin Strasser, Siegsdorf, all of Fed. Rep. of Germany, assignors to Lang Apparatebau GmbH, Siegsdorf/Obb., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 631,038, Jul. 16, 1984, abandoned. This application Nov. 21, 1985, Ser. No. 800,365
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326250
Int. Cl.[4] F04B 43/00; F01B 19/04
U.S. Cl. 417—53 9 Claims



1. In a mechanically operated bellows pump having a pump body with intake and exit conduits and a flowingly connected central conduit, a bellows circular in cross-section and operatively connected to said central conduit, means for expanding and compressing said bellows, means for connectively positioning one end of said bellows above said central conduit, and valve means for controlling the flow of fluids entering said intake conduit and leaving said exit conduit, so that when said bellows is expanded it sucks fluid in through said intake conduit and holds said fluid within the bellows itself and when said bellows is compressed it forces said fluid out of said exit conduit,
the improvement comprising means for uniformly controlling the amount of fluid displaced by said pump in each expansion and compression cycle, said means comprising at least one adjustable stop cam mounted on said pump body and at least one associated counter-cam connected to the moveable end of said bellows, so that the length of the compression stroke of said bellows is determined by the point at which each said stop cam and counter-cam interacts; said stop cams being an index means comprising at least two sets of ascending steps positioned on said pump body in a concentric notional circle lying outside the periphery of said bellows, each said set being equidistantly spaced from each other about said notional circle, so that each said counter-cam can always interact with only one said step at a time; the moveable end of said bellows being surmounted by an actuation cap which fixedly connects said at least one counter-cam with said moveable end; and wherein a turning lock in the form of a casing is associated with said actuation cap and can only be released by complete removal.

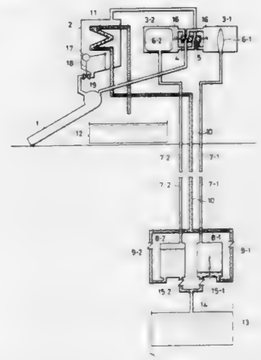
9. A method for metering liquid chemical preparations employing a mechanically operated bellows pump having a pump body with intake and exit conduits and a flowingly connected central conduit, a bellows circular in cross-section and operatively connected to said central conduit, means for expanding and compressing said bellows, means for connectively positioning one end of said bellows above said central conduit, and valve means for controlling the flow of fluids entering said intake conduit and leaving said exit conduit, so that when said bellows is expanded it sucks fluid in through said intake conduit and holds said fluid within the bellows itself and when said bellows is compressed it forces said fluid out of said exit conduit, means for uniformly controlling the amount of fluid displaced by said pump in each expansion and compression cycle, said means comprising at least one adjustable stop cam mounted on said pump body and at least one associated counter-cam connected to the moveable end of said bellows, so that the length of the compression stroke of said bellows is determined by the point at which each said stop cam and counter-cam interacts; said stop cams being an index means comprising at least two sets of ascending steps positioned on said pump body in a concentric notional circle lying outside the periphery of said bellows, each said set being equidistantly spaced from each other about said notional circle, so that each said counter-cam can always interact with only one said step at a time; the moveable end of said bellows being surmounted by an actuation cap which fixedly connects said at least one counter-cam with said moveable end; and wherein a turning lock in the form of a casing is associated with said actuation cap and can only be released by complete removal, said method comprising:
setting said index means to a desired volume to be metered;
locking said turning lock so that said volume cannot be altered without releasing said turning lock; and
compressing and releasing said bellows to discharge and meter said liquid chemical.

4,655,691

TEMPERATURE-DIFFERENCE-ACTUATED PUMP EMPLOYING NONELECTRICAL VALVES

Noriaki Wakao, Kanagawa, Japan, assignor to Nippon Mining Co., Ltd., Japan, a part interest

Continuation of Ser. No. 702,102, Feb. 15, 1985, abandoned. This application Aug. 12, 1986, Ser. No. 895,575
Claims priority, application Japan, Feb. 17, 1984, 59-27192
Int. Cl.[4] F04B 9/00, 47/04
U.S. Cl. 417—122 9 Claims



1. A temperature-difference-actuated pump comprising: a boiler supplied with a working fluid; a condenser; a pump chamber; a pumping element disposed in said pump chamber; means for connecting said pump chamber to a source of a fluid to be pumped and a receiving receptacle in such a manner that repetitive movement of said pumping element pumps said fluid

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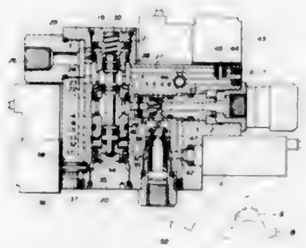
to be pumped from said source to said receptacle; valve means connecting said boiler, condenser and pump chamber to one another for controlling the flow of said working fluid among said boiler, condenser and pump; means for operating said valve means by movement of the pumping element and which respond to pressure changes in said pump chamber; means for automatically controlling the flow of excess condensed working fluid in said condenser into said boiler; and supply of a noncondensable gas operatively disposed with said pumping element and said fluid to be pumped.

4,655,692

EJECTOR PUMP HAVING PRESSURE OPERATED MOTIVE FLUID VALVE AND ELECTROMAGNETIC CHANGE-OVER VALVE

Yoji Ise, Tokyo, Japan, assignor to Myotoku Ltd., Tokyo, Japan

Filed Jan. 10, 1985, Ser. No. 743,096
Claims priority, application Japan, Jan. 20, 1984, 59-92400[U]
Int. Cl.⁴ F04F 5/48
U.S. Cl. 417—187 **2 Claims**



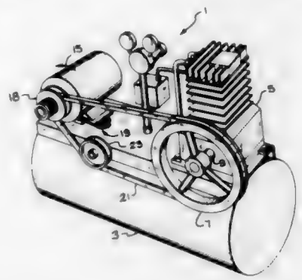
1. An ejector pump comprising:
a pump body having a bore therein, a suction port opening at one side of the pump body and a compressed air inlet port opening at another side of the pump body;
a nozzle block having a nozzle hole;
an ejector block having an ejector hole aligned with the nozzle hole of said nozzle block and fitted together with said nozzle block in the bore of said pump body to form a suction chamber between the nozzle hole of said nozzle block and the ejector hole of said ejector block, said suction chamber communicating with the suction port of said pump body;
a spool valve movably disposed in said pump body and having a pressure chamber at one end portion thereof, said spool valve being movable to provide or prevent communication between the nozzle hole and the compressed air inlet port of said pump body;
an electromagnetic change-over valve disposed outside of said pump body for actuating said spool valve by alternately providing communication between the pressure chamber of said spool valve and the compressed air inlet port of said pump body and between the pressure chamber and the atmosphere;
means defining a passage between said suction chamber and said suction port, and a check valve disposed in said passage to check the flow of air from said suction chamber to said port;
a vacuum switch disposed outside of said pump body and having a pressure sensor communicating with said suction port to control said change-over valve and maintain the vacuum at a predetermined level in any vacuum system connected to said suction port; and
a vacuum-relieving electromagnetic on-off valve disposed outside of said pump body and having a port communicating with said compressed air inlet port and another port communicating with said suction port and being operative to feed said suction port with the compressed air for a predetermined time interval to relieve the vacuum in any system connected to said suction port.

4,655,693

COMPRESSOR APPARATUS

Thomas E. Grime, Temperance, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Oct. 27, 1980, Ser. No. 201,517
Int. Cl.⁴ F04B 49/00
U.S. Cl. 417—212 **2 Claims**



1. Air compressor apparatus comprising:
a constant speed electrical motor, said motor being mounted on a pivotal base;
a variable pitch pulley positioned on the output shaft of said motor;
a compressor positioned in adjacent and spaced apart relationship with said motor;
a drive belt positioned around said variable pitch pulley and extending to said compressor, said belt operatively connecting said motor to said compressor;
an air receiving container for receiving air from said compressor; and
an air cylinder projecting into said air receiving container, said air cylinder having a movable piston and shaft, one end of said shaft extending from said container and being connected to said pivotal base for said motor, said piston and shaft of said air cylinder moving in response to varying pressure in said air receiving container whereby the movement of said piston causes said pivotal base and said motor to move with respect to said compressor, the movement of said motor causing said drive belt to change position in said variable pitch pulley and changing the drive ratio between said motor and said compressor to vary the load on said motor, said motor being moved on said pivotal base to keep said motor operating near the maximum rated load for said motor over the operational range for said air compressor.

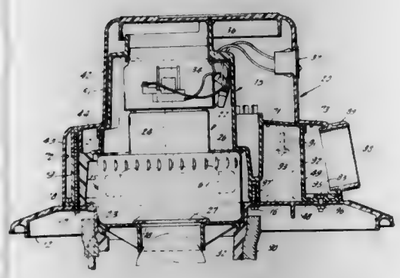
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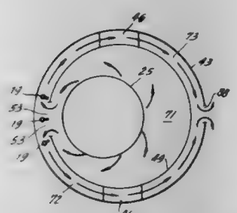
HOUSING ASSEMBLY FOR MOTOR/FAN MEANS OF A WET/DRY VACUUM CLEANER

Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.

Filed Aug. 1, 1985, Ser. No. 761,154
Int. Cl.⁴ F04B 17/00, 35/04
U.S. Cl. 417—423 A **18 Claims**

1. A removable lid assembly for a bypass type vacuum cleaner;
said assembly including an electric motor having a vertical output shaft, a suction producing fan impeller secured to the lower portion of said shaft, a fan housing wherein said impeller rotates, said impeller when rotating drawing suction producing working air upward through an opening in a lower wall of said fan housing and directing said working air radially outward through a sidewall of said fan housing, a casing wherein said motor and fan housing are disposed;
a main chamber defined by a first partition of said casing;
an auxiliary chamber surrounding said first partition and having as its outer boundary a second partition of said casing;
said fan housing being disposed off-center within said main chamber;
means defining diametrically opposed constrictions in said auxiliary chamber that divide the latter into first and second sections;





an exit in said first partition and an outlet in said second petition diametrically opposite side exit;
said working air upon flowing through said exit into said first section dividing and flowing past said constrictions into said second section and toward said outlet from opposite directions;
said means defining the constrictions also defining recesses, each having an open side through which fingers are insertable into said recesses from outside of said casing for gripping said assembly by hand to lift said assembly from a dirt collecting tank on which said assembly is mounted.

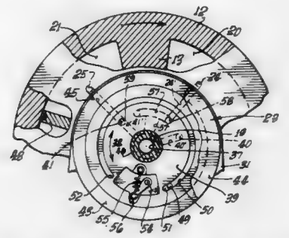
4,655,695

ROTATING FLUID DRIVEN ROTARY ACTUATOR

Friedrich K. Bender, 14557 Chere Dr., Whittier, Calif. 90604

Filed Apr. 1, 1985, Ser. No. 718,647
Int. Cl.⁴ F01C 1/063; F03C 2/02
U.S. Cl. 418—34 **8 Claims**

1. A substantially continuously rotating, fluid driven rotary actuator comprising:
a base;
a rotatable casing having a hollow cylindrical center portion having a partition member extending radially from the interior surface thereof, a first hollow sleeve at an output end thereof, a second hollow sleeve at a valve end thereof, said casing being held by said base by a first bearing affixed to said base and surrounding said first hollow sleeve and by a second bearing affixed to said base and surrounding said second hollow sleeve, at least one of said bearings permitting rotation in a first rotational direction only;
a shaft and vane assembly having a valve end and an output end, said assembly being held by said casing and positioned axially therein and supported by said first and second hollow sleeves, said shaft and vane assembly having a shaft portion which abuts the partition member of said casing and a vane the terminous of which abuts the interior surface of said center portion of the casing creating first and second chambers within said hollow cylindrical center portion, said shaft and vane assembly being held at its valve end by a bearing which permits rotation in a first rotational direction only;
valve means held by said base, said valve means having a



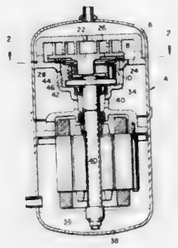
first fluid passageway connected to said first chamber of said hollow cylindrical center portion and a second fluid passageway connected to said second chamber thereof, said valve means having a fluid inlet passageway and a fluid outlet passageway; and
output shaft means supported by a bearing which permits rotation in a second direction only which bearing is held by said first hollow sleeve of said casing and said output shaft also being supported by a bearing which permits rotation in a second direction only which bearing is held by said output end of said shaft portion of said shaft and vane assembly.

4,655,696

ANTI-ROTATION COUPLING FOR A SCROLL MACHINE

Robert E. Utter, Genoa, Wis., assignor to American Standard Inc., New York, N.Y.

Filed Nov. 14, 1985, Ser. No. 797,733
Int. Cl.⁴ F01C 1/04; F16D 3/04
U.S. Cl. 418—55 **20 Claims**



1. In a scroll machien including two generally parallel scroll plates, the facing surfaces of which have attached involute wrap elements that mesh with each other, an apparatus for preventing the relative angular rotation of the scroll plates as one orbits relative to the other, said apparatus comprising a generally annular ring having a plurality of radially extending tabs integrally joined to a circumferential edge of the ring at spaced apart intervals therearound, wherein the edge of at least

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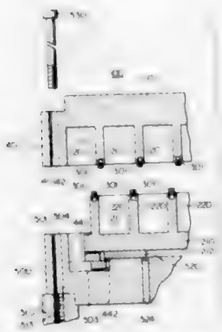
one of said tabs slidingly engages a slot in one of the orbiting scroll plates and the edge of at least one other of the tabs slidingly engages a slot disposed in a stationary portion of the scroll machine.

4,655,697

SCROLL-TYPE APPARATUS WITH GAP ADJUSTMENT MEANS

Toshiyuki Nakamura; Masahiro Sugihara; Tsutomi Inabe; Masahiko Oide; Tadaaki Kimura, and Norihide Kobayashi, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1985, Ser. No. 734,048
Claims priority, application Japan, May 18, 1984, 59-101267
Int. Cl.⁴ F01C *1/04, 19/08*
U.S. Cl. 418—55 **30 Claims**



1. A scroll-type apparatus comprising:
a stationary scroll member having a disc-shaped base plate and a spiral wrap;
a moving scroll member having a disc-shaped base plate and a spiral wrap which is engaged with said stationary scroll member such that the top surface of the spiral wrap of each of said scroll members confronts the top surface of the base plate of the other scroll member;
means for moving said moving scroll so that its center revolves about the center of said stationary scroll;
means for preventing said moving scroll from rotating about its axis when revolving about said stationary scroll; and
gap adjustment means including an element mounted on and extending along the top surface of the spiral wrap of each of said scroll members and guide means for holding the element so as to extend toward the confronting base plate top surface of the other scroll member for providing a gap of a desired size between the element on the top surface of each of the spiral wraps and the top surface of the base plate which it confronts, the guide means allowing the element to be pushed away from the confronting base plate top surface by contact of the element therewith and to be repositioned by such contact to maintain the gap, said gap adjustment means and guide means providing both a radial and tangential non-pressurized seal.

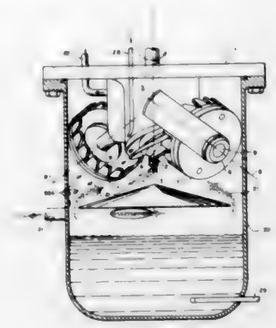
4,655,698

COMPRESSOR-SCAVENGING EDUCTOR SYSTEM

David C. Winyard, Glen Burnie, Md., assignor to The United States of America as represented by the Secretary of the Navy, Bethesda, Md.

Filed Jul. 26, 1985, Ser. No. 759,567
Int. Cl.⁴ F04C *29/02, 29/04*
U.S. Cl. 418—85 **27 Claims**

1. A positive displacement device of the liquid-injected type for varying the pressure of a gas comprising:
a pressure vessel inlet means for providing low pressure gas to the device;
a gas discharge means for allowing the discharge of the high pressure gas from the device;
a liquid injection means for cycling liquid into the device for providing sealing, cooling and lubricating;



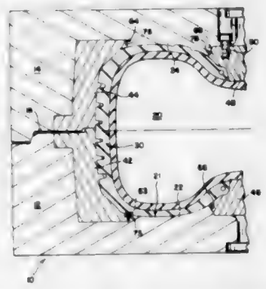
a separator means for separating any liquid from the compressed gas exiting through the gas discharge means;
a scavenging circuit means for collecting cycled injected liquid and recycling said liquid back into the liquid injection means in a controlled manner.

4,655,699

REDUCED FLASH MOLDING APPARATUS

Barry L. Collier, Akron, Ohio, assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio

Filed Mar. 7, 1984, Ser. No. 587,101
Int. Cl.⁴ B29C *33/00*
U.S. Cl. 425—28 R **1 Claim**



1. A tire mold used in curing and forming an elastomeric tire to a predetermined shape, said mold including an internal mold cavity defined by a cavity wall contoured to provide said predetermined shape, said mold comprising a principal mold section having at least one sidewall forming surface portion forming a first part of said cavity wall, a removable mold segment secured to said principal mold section and having a tire tread forming surface forming a second part of said cavity wall adjacent said first part; a removable mold segment secured to said principal mold section and having a tire bead forming surface forming a third part of said cavity wall adjacent said first part, each of said removable mold segments having a portion in mutual contact with a portion of said principal mold section wherein said mutually contacting portions remain in contact upon openings of said mold to remove

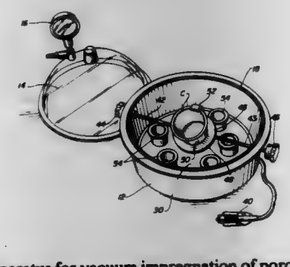
tires after cure and to insert subsequent tires to be cured, said mutually contacting portions creating lineal divisions between said first second, and third parts of said cavity wall, a groove disposed along each of said mutually contacting portions and adjacent each of said lineal divisions, said grooves adapted to recive elastomeric material flowing between said mutually contacting portions during an initial use of said mold such that elastomeric material will fill said grooves and remain to form a barrier to flow of elastomeric material between said first, second and third cavity wall parts during subsequent uses of said mold.

4,655,700

APPARATUS FOR IMPREGNATION OF POROUS SAMPLES FOR MATERIALS EVALUATION

Wase U. Ahmed, Roselle, Ill., assignor to Buehler Ltd., Lake Bluff, Ill.

Filed Nov. 8, 1982, Ser. No. 439,996
Int. Cl.⁴ B29C *39/04, 39/42*
U.S. Cl. 425—73 **5 Claims**



1. Apparatus for vacuum impregnation of porous samples for the purpose of materials evaluation, said apparatus including a vacuum chamber with a base and a removable lid, and a pump for producing a vacuum in the chamber, the improvement comprising apparatus to permit both a plurality of samples and also a supply of impregnating material to be positioned within said vacuum chamber before a vacuum is created therein, said apparatus including, in combination, movable support means in said chamber for supporting a plurality of sample cups containing respective samples to be impregnated, drive means for intermittently moving said support means to a predetermined position, impregnation material container means located within said chamber above said movable support means for pouring a controlled amount of impregnating material to a sample cup positioned below on said support means, said container means comprising a container support tiltably mounted in said chamber above said support means, and control means external to said chamber for controlling the pouring of impregnation material from said container means to said sample cups seriatim, said control means comprising means for tilting said container support to pour encapsulant material from a container mounted on said container support, whereby through intermittent operation of said drive means a plurality of sample cups on said support means may be positioned seriatim beneath said container means to permit use of said control means to pour a controlled amount of impregnation material into said plurality of sample cups to impregnate said samples.

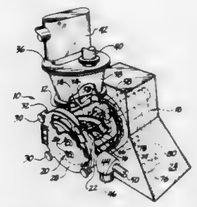
4,655,701

GRANULATING APPARATUS

Nobuharu Moriya, Osaka, Japan, assignor to Fuji Paudal Kabushiki Kaisha, Osaka, Japan

Filed Feb. 19, 1986, Ser. No. 831,365
Int. Cl.⁴ B01J *2/10*
U.S. Cl. 425—222 **25 Claims**

1. Wet-type granulating apparatus for forming powder materials into granules thereof utilizing an agglomerating liquid, said apparatus comprising a granulation vessel having a material charge port and a granule discharge port, an annular stirring rotor rotatably disposed within said vessel for circulating charge material within said vessel, said stirring rotor including a plurality of stirring members arranged thereabout and configured to direct said charge material axially inwardly of said stirring rotor, an impulse rotor rotatably disposed within said vessel within said stirring rotor axially parallel therewith for dispersing charge material outwardly from said impulse rotor within said vessel, said impulse rotor including a plurality of impulse members arranged thereabout and configured to disperse said charge material both radially and axially outwardly



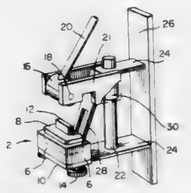
from said impulse rotor, said stirring rotor and said impulse rotor defining an annular granulation work area radially therebetween within said vessel and said impulse rotor and said stirring rotor being cooperative for producing both axial and radial circulation of said charge material to enhance the dispersion thereof within said annular granulation work area, and means for emitting agglomerating liquid into said annular granulation work area in a generally axial direction relative to said stirring rotor and said impulse rotor for impingement of emitted agglomerating liquid directly and essentially only on charge material within said vessel.

4,655,702

PRESS APPARATUS WITH ECCENTRIC CAM FOR COMPACTING WASTE SOAP

Patricia Hodgson, P.O. Box 10, Katrine, Ontario, Canada P0A 1L0

Filed Sep. 3, 1985, Ser. No. 771,711
Int. Cl.⁴ B30B *1/06*
U.S. Cl. 425—318 **10 Claims**



1. A soap press for compressing soap pieces and forming a bar therefrom, comprising a press chamber secured in fixed relation to a shaft, the chamber to receive the soap pieces and formed by sides and removable top and bottom plates, the edges of the top plate being closely circumscribed during operation by the sides of the chamber, the top plate being movable within the chamber in a direction parallel to the sides thereof, and the bottom plate being removably secured across the bottom of the chamber, means to apply pressure to the top plate of said chamber consisting of an eccentric cam supported on a frame and rotatable with respect to the frame about an axis passing through the frame, and binding means rigidly secured to the frame and movably secured to the shaft to maintain the frame at the same relative position on the shaft during each operation of the cam, said binding means being movable along

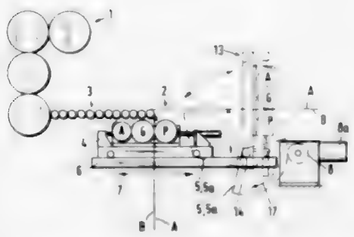
VOL 1077 ISS 1 AP 7 1987 UMI

the shaft from a first position such that the cam is spaced from the top plate allowing for the removal of said top plate to operative positions, progressively lower on the shaft such that the cam comes into contact with the top plate to exert the desired amount of pressure thereon, said cam of a construction and shape such that during operation it bears against a portion of the top plate, and with the binding means maintaining the cam and frame at the same vertical height, movement of the cam effects downward pressure on the top plate and downward movement thereof on the soap pieces within the chamber a distance determined by throw of the cam.

4,655,703
EMBOSSING CALENDER FOR THERMOPLASTICS MATERIAL FILMS

Wolfgang Heise, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 31, 1986, Ser. No. 824,643
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1985, 3506256
Int. Cl.⁴ B29C *43/24*
U.S. Cl. 425—335 **5 Claims**



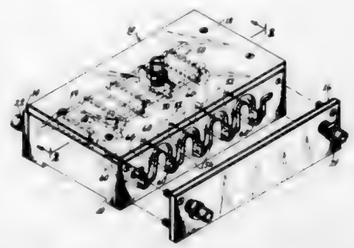
1. An embossing calender for thermoplastics material films comprising frame means and embossing means mounted in said frame means, said embossing means comprising embossing roller means, counter-roller means and auxiliary roller means, said frame including mounting means permitting rotation of each said roller means, said counter-roller means including a resilient external surface, means mounting said frame means to permit displacement of said frame means and said embossing means mounted therein to and from a pivoting station and pivot mounting means for said frame means to permit pivotal movement of said frame means and said embossing means mounted therein at said pivoting station.

4,655,704
COOLING SYSTEM FOR A PLASTIC EXTRUSION CALIBRATING TOOL

Joseph Dekel, 4532 Jubilo Dr., Tarzana, Calif. 91356

Filed Mar. 17, 1986, Ser. No. 840,014
Int. Cl.⁴ B29C *47/12, 47/86, 47/88*
U.S. Cl. 425—461 **9 Claims**

1. A calibrating tool for use with extruded plastic, including
a solid block body member defining an elongated calibrating channel for receiving and supporting the extruded plastic for cooling,
a plurality of openings extending from at least one side of the body member,
a slot formed in the one side of the body for interconnecting the adjacent openings
a plate member for covering the one side of the body member to close the slot to form a fluid path down the slot and into each opening,
a pair of spaced fluid connectors extending through the plate member to form an inlet and outlet for a cooling fluid, and
a plurality of baffles extending from the plate member and with individual ones of the baffles positioned within and extending partially down the length of individual ones of the openings to partition the openings and slot to form a



serpentine fluid path extending down and back along the openings along both sides of the baffle and along the slot between adjacent openings.

4,655,705
POWER GAS BURNER FOR WOOD STOVE

Alan B. Shute, R.R. #2, Box 1006, Stowe, Vt. 05672; Carl W. Sechovsky, 10152 Pirates Trail, Aurora, Ohio 44202, and Richard J. Bazzo, 14139 Pine Forest Dr., Apt. 104, North Royalton, Ohio 44133

Filed Feb. 28, 1986, Ser. No. 834,803
Int. Cl.⁴ F23N *5/00*
U.S. Cl. 431—78 **8 Claims**

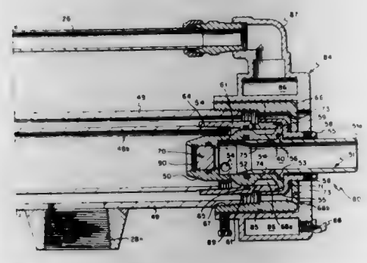


1. A power burner adaptable for use in conjunction with a woodburning stove comprising:
blower means selectively energizable to produce a flow of air;
fuel supply means including a fuel inlet, a delivery conduit and a fuel valve activatable to provide selective fuel communication between said fuel inlet and said conduit;
fuel nozzle means having a first inlet communicating with said air flow, a second inlet communicating with said delivery conduit and a nozzle outlet means for mixing air and fuel and propelling the mixture of air and fuel through said nozzle outlet means along a generally unidirectional exit path;
secondary nozzle means communicating with said air flow for directing a secondary air stream in the vicinity of the mixture in said exit path;
a target spaced from said nozzle outlet means and interposed in the exit path;
heating means spaced from said target to heat said target to a temperature sufficient to ignite the mixture traversing the exit path;
a blast tube surrounding said target and forming an axially extending passageway having an outlet opening; and
electronic control means automatically responsive to an operational condition so that when said condition is satisfied and fuel is supplied to the fuel inlet, said blower means is energized, said fuel valve is activated and said target is heated to combust fuel in said blast tube and propel said combusted fuel toward the outlet opening of said blast tube.

4,655,706
BURNER

Russell I. Bayh, III, Carrollton, Tex., assignor to Otis Engineering Corporation, Carrollton, Tex.

Continuation of Ser. No. 606,618, May 3, 1984, abandoned, which is a division of Ser. No. 424,172, Sep. 27, 1982, abandoned. This application Sep. 13, 1985, Ser. No. 775,824
Int. Cl.⁴ F23C *7/00*
U.S. Cl. 431—187 **7 Claims**

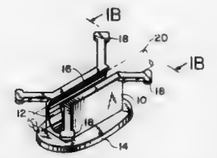


1. A burner for combustion of liquid hydrocarbons comprising:
a. nozzle assembly means having a longitudinal passageway therethrough for receiving a primary fluid from a source exterior to the burner and spraying the primary fluid from the longitudinal passageway such that combustion occurs outside the passageway;
b. a throat means which partially defines the longitudinal passageway;
c. chamber means surrounding the longitudinal passageway for receiving atomizing fluid from a source exterior to the burner;
d. circumferentially arranged port means spaced radially outward from said throat means for directing the atomizing fluid from the chamber means;
e. said port means having their centerlines tapered inwardly and intersecting at a point longitudinally spaced from the outlet end of said throat means to provide a converging spray;
f. said spray diverging as it leaves each port means to form a conical pattern which if not interrupted would intersect the center line of said throat means on both sides of said point;
g. openings between the chamber means and the longitudinal passageway which allows mixing of the atomizing fluid and the primary fluid prior to exiting from the throat means; and
h. the length of the throat means selected to extend into and contact a portion of the spray in the conical pattern formed by the atomizing fluid exiting the chamber means permitting the remainder of the spray to converge on the mixture which exits from the throat means.

4,655,707
LIGHT, CONTINUOUS FORCE ORTHODONTIC APPLIANCE AND METHOD

Daniel Chasanoff, Main St., New City, N.Y. 10956

Filed Mar. 28, 1985, Ser. No. 717,284
Int. Cl.⁴ A61C *7/00*
U.S. Cl. 433—9 **9 Claims**



1. An appliance for correcting malocclusions in teeth which comprises:
(A) An arch wire means, having a round cross section, for connection across a pre-determined dental arch; and
(B) A bracket means, said bracket means having a body with a base, upstanding side walls extending from said base said side wall having projection means extending laterally at an oblique angle from said bracket means so that an elastomeric means may be secured to said bracket means, said upstanding side wall defining within said body a transverse, symmetrically and continuously curved groove, said groove having a slot at its top which extends along the length of said groove, such that when said base of said bracket means is bonded to selected teeth, said arch wire may be placed within said groove to assist said arch wire in maintaining a desired position for guiding said teeth into a pre-selected alignment without torque.

4,655,708
ORTHODONTIC APPLIANCE

Kinya Fujita, 3998-5, Kamariya-cho, Kanazawa-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Mar. 12, 1985, Ser. No. 711,013
Claims priority, application Japan, Dec. 13, 1984, 59-18449[U]
Int. Cl.⁴ A61C *7/00*
U.S. Cl. 433—10 **9 Claims**



1. An orthodontic appliance wherein a plurality of wire holders is affixed, one to a tooth in a dental patient's mouth, and at least one correcting arch wire is engaged with said wire holders for applying corrective forces to irregular teeth, comprising:
a wire holder having a base for affixation to a tooth;
a bracket attached to said base and provided with at least one slot for receiving said arch wire therein, said bracket also being shaped in a first part to be generally normal to the attached tooth, said part having a curved profile; and
an arch wire locking member shaped in substantial portion as a connected pair of thin segments shaped to closely and slidably sandwich and hence be rotatably supported by said curved first part of said bracket, each of said pair of sandwiching members having formed therein a locking slot corresponding in a first open position of said locking

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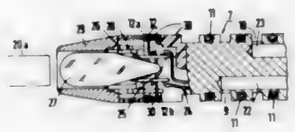
member to said slot in said bracket for placement in or removal of said arch wire in said slot in said bracket and said locking member being rotatable to a second locking position wherein said arch wire becomes securely retained within said slot in said bracket.

4,655,709

COUPLING DEVICE FOR DENTAL HANDPIECES

Ernst O. Floer, Bensheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 7, 1985, Ser. No. 763,426
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1984, 3431052
Int. Cl.⁴ A61C *1/00*
U.S. Cl. 433—29 **12 Claims**



1. In a coupling device for the operationally releasably connection of a connecting part with a coupling member to one of a plurality of differently designed dental devices havng a head part which requires light and at least one fluid agent received in a channel in the dental device, said coupling member having a channel for each fluid agent, being engageable in an acceptance sleeve of the dental device and having a lamp at a free end of the coupling member, said lamp being engaged with a rigidly disposed pair of contacts connected to electrical leads extending through the coupling member and connecting part, and said coupling member and sleeve having coacting means for transferring fluid agent therebetween, the improvement comprising the coupling member containing a contact arrangement including said pair of contacts and two ring contacts, said contact arrangement being connected to the electrical leads, said contact arrangement being designed and disposed in the coupling member with the pair of contacts forming an electrical contact with the lamp being mounted in the coupling member and said ring contacts forming electrical contacts with terminal contacts provided in the acceptance sleeve of the dental device so that either a dental device having an integral lamp with terminal contacts or a dental device having a light conductor for conducting light from the lamp of the coupling member can be alternately coupled onto the member.

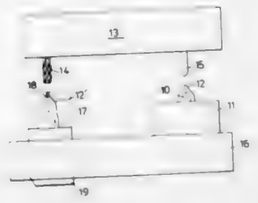
4,655,710

METHOD FOR REPLACING LOST DENTAL SUBSTANCE

Kaut M. G. Andersson, S-830 20 Fåker, and Karl E. M. Andersson, S-834 00 Brunflo, both of Sweden

Filed Nov. 26, 1984, Ser. No. 675,083
Claims priority, application Sweden, Jan. 26, 1984, 8400396
Int. Cl.⁴ A61C *5/10*
U.S. Cl. 433—223 **11 Claims**

1. A method of fabricating a dental prosthesis comprising the steps of:
(a) forming a first replica of residual tooth substance to be repaired;
(b) fixedly positioning said first replica to project above the upper surface of a first holding means;
(c) forming a sleeve-like member covering the outer surface of the portion of said first replica projecting above the upper surface of a first holding means, said sleeve-like member having outer surface contours coinciding with the outer contours of desired tooth replacement;
(d) mechanically copying the outer contours of said sleeve-like member onto a first workpiece removably positioned in a second holding means to form a second replica;
(e) inserting said second replica into a second workpiece to obtain a fixture holding said second replica at a given position therewith;
(f) severing said second replica at a point above the surface of said second workpiece;



(g) removing said sleeve-like member from said first replica;
(h) mechanically copying the outer contours of said first replica onto a third workpiece to form a third replica;
(i) mechanically forming in said second replica with the use of said third replica a cavity having contours corresponding to the outer contours of said third replica; and
(j) removing the thus cavitated second replica from said first workpiece to provide said dental prosthesis.

4,655,711

PLACEMENT ASSEMBLY FOR A DENTAL PIN

Bernard Weissman, New York, N.Y., assignor to Ipco Corporation, White Plains, N.Y.

Filed May 21, 1986, Ser. No. 865,280
Int. Cl.⁴ A61C *5/04*
U.S. Cl. 433—225 **23 Claims**



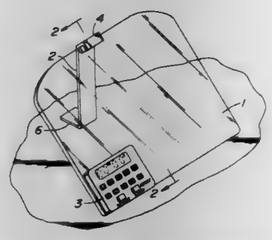
1. A placement assembly for a threaded dental pin, said assembly being receivable in a dental handpiece for insertion of the threaded dental pin into a preformed bore in a tooth, said assembly comprising:
a central elongated manipulating body portion;
a threaded dental pin projecting from an operating end of said body portion;
a shank frangibly coupled to a driving end of said body portion for driving engagement with the dental handpiece to thread said dental pin into the bore, said shank automatically severing from said body portion prior to a final seating of said dental pin;
said body portion including hand manipulation means for the final seating of the dental pin after severance of said shank; and
disengagement means for retaining said dental pin in said operating end during said driving engagement and final seating thereof, and for permitting disengagement of said dental pin from said operating end after said final seating to leave said dental pin inserted in the bore.

4,655,712

DENTAL TRAY LIGHT SHIELD

Theodore P. Croll, 685 South Chubb Dr., Doylestown, Pa. 18901

Filed Aug. 1, 1985, Ser. No. 761,491
Int. Cl.⁴ A61C *19/02*
U.S. Cl. 433—229 **4 Claims**



1. A protective cover for use in the preparation of resin-bonding dental materials, comprising;
(a) coverplate constructed of a transparent material which filters out frequencies of light in the 400–530 nanometer range,
(b) a stand detachably affixed to said coverplate, said stand having a foot, a vertical support portion and a clamp portion, and
(c) a timing device affixed to said coverplate.

4,655,713

DEVICE FOR READING AND WRITING AND THE TEACHING OF LITERACY

Martin M. Weiss, 6345 Daylight Dr., Agoura Hills, Calif. 91301

Continuation-in-part of Ser. No. 586,236, Mar. 5, 1984, abandoned. This application Mar. 15, 1985, Ser. No. 712,126
Int. Cl.⁴ G09B *17/00*
U.S. Cl. 434—178 **17 Claims**



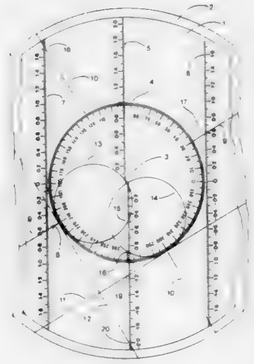
1. A method of teaching reading in which the student is presented with an orthography comprising of the set of letters of the American Alphabet, in combination with a set of non-pictorial short-stroke phonograms, constituting an alphabet adapted to be employed in teaching students, and adult illiterates, to read, said phonograms having an appearance that is readily suggestive of, or readily identifiable with, the sound they are to represent, in that the form the phonograms take is designed to prompt an association in the mind of the reader as to the sound the phonograms represent, without need of rote memorization.

4,655,714

VISUAL AID FOR TEACHING TRIGONOMETRIC FUNCTIONS

Reza Djali, 177, Mount Pleasant, Kingswinford, West Midlands, England DY6 9SS

Filed Apr. 4, 1985, Ser. No. 720,149
Int. Cl.⁴ G09B *23/04*
U.S. Cl. 434—211 **9 Claims**



1. A trigonometric device wherein two planar members are pivotally assembled, the relative rotational movement of said two members enabling simulation of angles, one said member featuring rectilinear scales for secants and cosecants, said two scales being mutually perpendicular, each scale being uniformly calibrated and colinear with the pivot point, the other said member featuring
a straight line as the combined cursor for secants and cosecants, the perpendicular distance of said straight line from the pivot point being equal to one unit of calibration of said rectilinear scales.

4,655,715

COMBINED COORDINATION TRAINER AND BABY BOTTLE HOLDER

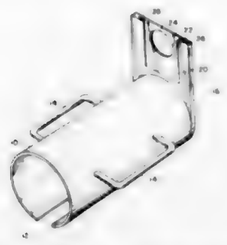
F. Rene Van de Carr, 27225 Calaroga Ave., Hayward, Calif. 94545, and Marc Lehrer, 1466 7th Ave., San Francisco, Calif. 94122

Filed Dec. 6, 1985, Ser. No. 805,863
Int. Cl.⁴ A47D *15/00*
U.S. Cl. 434—258 **4 Claims**

1. A baby trainer enabling an infant to obtain learning feedback while nursing, said trainer including:
a tubular member having first and second ends, said member for securely holding a baby's nursing bottle with the nipple of said bottle extending from the second end of said member;
a pair of handles on said tubular member, said handles extending from each exterior side surface of said tubular member and being substantially parallel with the axis of said member for enabling a baby to hold and move said tubular member; and

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a visual display for supporting a picture slide at the first end of said tubular member, a picture slide in said visual display being observable by a baby nursing a bottle at the second end of said tubular member.



4,655,716

CONTOURED MAMMOGRAPHY PHANTOM WITH SKIN

Marilyn K. Hoevel, Monrovia, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1985, Ser. No. 771,330
Int. Cl.⁴ G09B *23/30*
U.S. Cl. 434—267 **2 Claims**



1. A breast phantom comprising:
a first non-biological tissue substitute having radiographic properties of breast tissue, shaped in the size and contour of an actual breast slightly flattened and positioned for a mammograph, and
a second non-biological tissue substitute having radiographic properties of skin tissue, of a thickness representative of the skin of a breast, covering said first tissue substitute, and
wherein, within said first tissue substitute is formed a target slot into which targets for simulating various sizes, shapes and types of breast masses, fibers and calcifications can be placed.

4,655,717

VEHICULAR SPORTS DEVICE ABLE TO TRAVEL OVER FIRM SURFACES, SOFT SURFACES OR LIQUID SURFACES

Pietro Cartella, Sciolze, Italy, assignor to Tecnoteam S.N.C. di Tardito Dario e Cartella Pietro, Turin, Italy

Filed Dec. 15, 1983, Ser. No. 561,748
Claims priority, application Italy, Dec. 27, 1982, 54134/82[U]
Int. Cl.⁴ B63H *16/20*
U.S. Cl. 440—27 **4 Claims**

1. A seatless pedal-operated vehicular sports device capable of moving over firm surfaces, soft surfaces and liquid surfaces, comprising a seatless frame, a fork having downwardly extending prongs secured for pivotal movement on a forward portion of the frame, the fork having handlebars at its upper end and a front wheel in the form of a closed hollow buoyant cylinder rotatable between its prongs, the frame at its lower rear end rotatably carrying a pedal crank assembly comprising a pair of pedal cranks disposed between and secured rigidly to two rear wheels in the form of closed hollow buoyant cylinders, the parts being so arranged that the user's weight is borne jointly by said pedal crank assembly and said handlebars, platforms having downwardly opening notches that freely detachably receive said pedal cranks, and means for releasably securing said platforms to the feet of a user.



4,655,718

PERSONAL FLOTATION DEVICE WITH AUXILIARY PADS

John H. Lucius, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Oct. 21, 1985, Ser. No. 789,380
Int. Cl.⁴ B63C *9/10*
U.S. Cl. 441—106 **5 Claims**



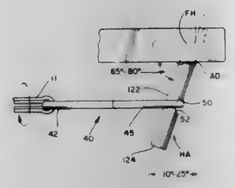
1. A personal flotation device comprising a vest formed from buoyant material and a cover enclosing the buoyant material, the vest having a front, a back, and two sides, each of the sides being provided with an arm opening of sufficient size so that it does not interfere with movement of the upper arm of the wearer, a pair of pads permanently and flexibly attached only to the back of the vest, each of the pads being attached to the back of the vast adjacent one of the arm openings, a front strap attached to each pad, and means for releasably connecting the front straps in front of the vest for maintaining each pad in the lower portion of the arm opening, the attachment between the pads and the back of the vest permitting the pads to hang downwardly away from the arm openings when the front straps are not connected.

4,655,719

DELAYED-RELEASE SUSPENSION DEVICE

Bernard Sunray, c/o R. Kaufman, Jeweler, 400 Northlake Blvd., North Palm Beach, Fla. 33408

Continuation-in-part of Ser. No. 636,864, Aug. 2, 1984, abandoned. This application Oct. 16, 1985, Ser. No. 788,042
Int. Cl.⁴ A63H *27/22*
U.S. Cl. 446—59 **10 Claims**



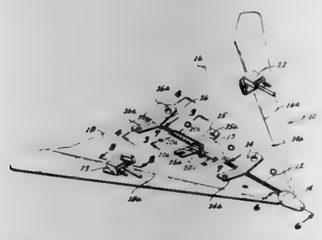
1. A toy aircraft having a rubber band-powered propulsion mechanism and including a fuselage having a longitudinal axis; a substantially straight hanger arm underneath the fuselage, permanently affixed near the front end of said fuselage and inclined toward the rear end thereof at an angle of at least 10° to the vertical; said aircraft further including means for retaining thereon the propulsion means while the rubber band is wound and tensioned and for releasing therefrom the propulsion mechanism upon unwinding and relaxation of the rubber band, the retaining and releasing means including a rigid member for attaching the rubber band to the hanger arm.

4,655,720

TOY GLIDER

Larry H. Reager, Hawaiian Gardens, and Raymond J. Gross, Culver City, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jul. 5, 1985, Ser. No. 752,285
Int. Cl.⁴ A63H *27/00*
U.S. Cl. 446—61 **18 Claims**



1. In a toy glider, the combination comprising:
first and second wing members, each having a longitudinal connecting edge;
a row of recess means in each of said wing members spaced from said longitudinal edge; and
a generally bar-shaped spine member having a length slightly greater than the length of said longitudinal connecting edge and having integrally formed transversely extending rib means having detent means formed therein for engagement with said recess means, said rib means including a plurality of pairs of aligned ribs oppositely extending from the longitudinal centerline of said spine menber, the coaction of said rib means and said recess means receiving said longitudinal edges of said wing members for retaining said wing members on said spine member, said recess means and said rib means being configured, dimensioned and arranged for enabling detachment of a wing member upon impact with an object.

4,655,721

TOY CONSTRUCTION WITH LIGHT EMITTING ELEMENT

Bernard Loomis, New York; Vincent A. Baiera, Brooklyn; Bennie J. Caldwell, Hempstead, and Gary J. Strauss, Mamaroneck, all of N.Y., assignors to Hasbro Bradley, Inc., Pawtucket, R.I.

Filed Mar. 11, 1985, Ser. No. 710,056
Int. Cl.⁴ A63H *33/22*
U.S. Cl. 446—219 **1 Claim**



1. A toy construction comprising:
a. a doll body including a head portion, said head portion having a recessed area in the upper rear portion thereof, having a forwardly facing facial portion, and having a pair of apertures which extend forwardly through said head portion from said recess to said facial portion to define a pair of recessed eye sockets therein; and
b. a light element integrally made of a translucent fluorescent material and comprising a collecting portion having a collecting surface thereon and an emitting portion comprising a pair of emitting elements having emitting surfaces thereon, said collecting portion being disposed in said recessed area so that said collecting surface faces upwardly and rearwardly on said head portion when said head portion is in an upright disposition, said collecting surface being of substantially greater dimension than the combined dimension of said emitting surfaces, said emitting elements extending through said apertures and terminating in said emitting surfaces, said emitting surfaces facing forwardly in said eye sockets but being recessed therein to normally shade said emitting surfaces from a light source positioned above said toy.

4,655,722

WATER SPOUTING INFLATABLE BOP BAG

William J. Baron, New York, and Marie F. Gredel, Middle Village, both of N.Y., assignors to Kid Biz, Inc., New York, N.Y.

Filed Sep. 4, 1985, Ser. No. 772,442
Int. Cl.⁴ A63H *3/06, 13/18;* **B05H** *1/00*
U.S. Cl. 446—226 **7 Claims**

1. A bop bag comprising;
an elongated housing with an upper end and a rounded lower end adapted to rock randomly on a substantially flat surface,
the housing having a diaphragm sealed therein to define an upper gas compartment and a lower ballast compartment,
the housing provided with an air valve for introducing air under pressure into the gas compartment to inflate the bop bag,
the housing provided with a water port for introducing water ballast into the ballast compartment whereby when

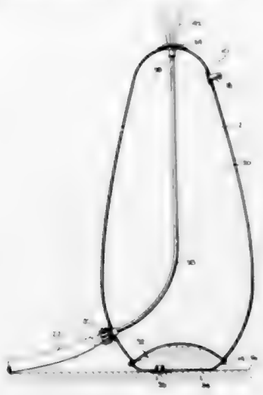
VOL 1077 ISS 1 APR 7 1987 UMI

the inflated bop bag is displaced from an initial stable upright position the weight of the water ballast returns it thereto,

the water port offset from a central axis of the lower end and having a flat plug whereby the bop bag is enabled to rock randomly on a flat surface,

the housing fitted remotely from the upper end with a hose coupling disengageably coupleable to a source of water under pressure and a spray head in the vicinity of the upper end to provide a water spout issuing therefrom so that the water spout changes direction as the bop bag rocks,

a tube in the gas compartment connecting the hose coupling in flow series with the spray head for delivering a flow of the water thereto.



4,655,723

CHILD'S ACTIVITY RING TOY

Gabriel Marnoon, Jr., Los Angeles, and James S. Templeton, Rancho Palos Verdes, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Mar. 18, 1985, Ser. No. 713,140
Int. Cl.⁴ A63H *15/00, 33/00*
U.S. Cl. 446—241 **9 Claims**



1. In an activity toy, the combination comprising:

a generally tubular rod-like member configured to form a ring and having central curvilinear axis, and having along at least a portion thereof a plurality of screw paths circumferentially equally spaced thereon, each of said screw paths being formed of a plurality of outwardly extending thread segments disposed in spaced aligned relation along the axial direction of said ring member, each thread segment of a given screw path being in overlapping relation in the axial direction with a thread segment of an adjacent screw path, said ring member being formed of two ring-like halves of molded plastic joined together with all of said thread segments being fully formed on said halves on either side of the junction of said two halves; and

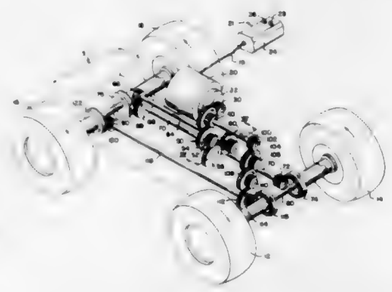
a device having an opening with a plurality of slots formed therein, each of said slots being configured for engagement with one of said thread segments with said portion within said opening for causing rotational movement of said device during travel on said portion of said rod-like member in said axial direction, the overlap of adjacent thread segments of adjacent screw paths being such that at least one slot of said opening of said device is always in engagement with at least one of said thread segments.

4,655,724

TOY VEHICLE AND STEERING AND DRIVE MECHANISM THEREFOR

Nin. Y. Law, Kowloon, Hong Kong, assignor to Soma International Ltd., Kowloon, Hong Kong

Filed Dec. 27, 1985, Ser. No. 813,916
Int. Cl.⁴ A63H *17/385*
U.S. Cl. 446—443 **10 Claims**



1. A toy vehicle and steering and drive mechanism therefor comprising:

(a) a first and second wheel positioned substantially opposite each other;

(b) a reversible electric motor having a drive shaft extending therefrom, the rotational direction of which is responsive to the polarity of an electrical power source connected thereto;

(c) a main drive gear operatively connected to the drive shaft and adapted to rotate in forward and reverse directions depending on the polarity of the power source, said main gear operatively connected to the first wheel whereby reversing the polarity of the power source causes the first wheel to rotate in opposite directions; and

(d) second side drive gear indirectly connected to the main gear by a direction control means positioned, sized and configured so that the second side drive gear always rotates in single direction regardless of the rotational direction of the main gear and the polarity of the power source, said second side drive gear operatively connected to the second wheel whereby operation of the motor in a forward direction causes the first and second wheels to rotate in the same direction and the vehicle to move in a straight line and reversing the polarity of the power source causes the motor to operate in a reverse direction and the first and second wheels to rotate in opposite directions causing the vehicle to turn.

4,655,725

ANIMATED FIGURE TOY

Ronald L. Torres, Pico Rivera, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 11, 1985, Ser. No. 786,558
Int. Cl.⁴ A63H *3/20*
U.S. Cl. 446—246 **5 Claims**



1. In a figure toy, the combination comprising:

an upper torso;

a generally hollow arm member pivotally coupled to said upper torso; means rotatably mounted within said arm member including

(a) connector means adjacent the free end of said arm member,

(b) first and second members interconnected through slip clutch means,

(c) a drive shaft having a pinion gear adjacent one end coacting with a gear surface on a thumbwheel and a bevel gear adjacent the other end coacting with a bevel gear on one of said first and second members;

said thumbwheel rotatably mounted in said upper torso for causing rotation of said rotatable means, said thumbwheel extending partially out from said upper torso through a slot therein and being manually operable, said rotatably mounted means being driven by said thumbwheel by a gear surface on said thumbwheel coacting with said pinion gear; and

an accessory device adapted for coupling to said connector means for rotation thereof in response to actuation of said thumbwheel.

4,655,726

TOY DOLL FIGURE FOR DISPLAYING COLORS

Ryszard J. Brzezinski, Long Beach, and William J. Kelley, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 2, 1985, Ser. No. 782,808
Int. Cl.⁴ A63H *3/00*
U.S. Cl. 446—268 **6 Claims**

1. A toy doll figure for displaying colors comprising:

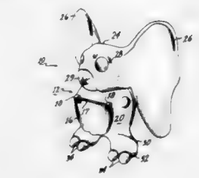
a torso having an opening formed therein;

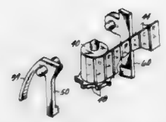
a cylindrically shaped drum member disposed on a vertical axis inside of the torso, said drum member having multiple colored strips positioned in parallel to the longitudinal axis of the drum member such that one of the colored strips is positioned within the opening for viewing from outside the torso;

a flap member pivotally hinged to the torso covering the opening and moveable to open and closed positions;

a rotatable mechanism mounted on the drum member to cause rotation thereof; and

drive means connected to said flap member and engaging said rotatable mechanism, said drive means including a lever member pivotable on a horizontal axis, said lever member having a leaf spring integrally formed therewith, said lever member being urged into engagement with said rotatable mechanism by said leaf spring when said flap member is closed, whereby when said flap member is





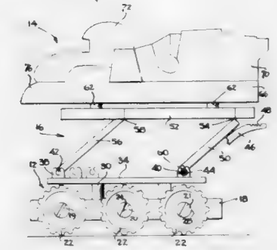
pivoted to open and closed positions said drum member is rotated a predetermined extent to expose a different colored strip on said drum member.

4,655,727

TOY VEHICLE

Gary R. Swisher, Hermosa Beach, and Keith G. Megga, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 15, 1985, Ser. No. 787,546
Int. Cl.⁴ A63H *33/30*
U.S. Cl. 446—470 **5 Claims**



1. A toy vehicle comprising a base portion; a top portion; and means linking the base portion to the top portion for causing the top portion to move to a number of different positions with respect to the base portion, the aforementioned means including a pair of pivoting axles, means for pivotably fixing the axles at selected positions adjacent the base portion, a pair of arms extending from each of the axles, each of the arms having an end, and means for pivotable fixing the ends of the arms extending from each axle to pivot at selected positions adjacent the top portion;

means for securing at least one of the axles in a number of rotational positions;

said means for securing at least one of the axles in a number of rotational positions comprises an exterior surface on the axle having a polygonal cylindrical shape, and a surface conforming to the flats of the shaped exterior surface of the axle affixed to the base portion.

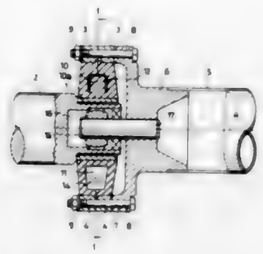
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4,655,728

FLEXIBLE COUPLING FOR ABSORBING AXIAL AND ROTATIONAL IMPACT

Kiyoshi Shimada, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 22, 1985, Ser. No. 725,541
Claims priority, application Japan, Apr. 23, 1984, 59-81657
Int. Cl.⁴ F16D *3/80*
U.S. Cl. 464—28 **9 Claims**



1. A flexible coupling comprising:
an outer tube;
an inner tube located within said outer tube;
a substantially cylindrically shaped elastic body connecting said inner tube and said outer tube in the diametrical direction, said outer tube, inner tube and elastic body having a common central axis;
a drive shaft attached to one of said inner and outer tubes;
a driven shaft attached to the other of said inner and outer tubes, said drive and driven shafts being movable relative to each other in an axial direction due to the elasticity of said elastic body;
a sealed fluid chamber formed circumferentially within said elastic body; and
means for dividing said fluid chamber into first and second circumferentially-extending sections connected by a narrow communication channel and for causing a fluid contained in said first and second sections to flow circumferentially from one to the other through the narrow channel in response to relative rotational movement of said inner and outer tubes, said dividing and flow causing means comprising a protruding member provided in said fluid chamber, said protruding member being integrally attached at a base end to said elastic body on one side of said fluid chamber and being free at its distal end such as to be movable about the central axis in response to relative rotation of said inner and outer tubes and due to resiliency of the elastic body, said protruding member extending radially through said fluid chamber and terminating at its distal end near the opposite side of said fluid chamber to divide the fluid chamber into said first and second sections and to form said narrow communication channel.

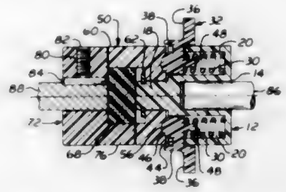
4,655,729

FLEXIBLE CABLE ASSEMBLY

Louis E. Kottke, Adrian, Mich., assignor to Acco Babcock Inc., Fairfield, Conn.

Filed Jun. 28, 1984, Ser. No. 625,601
Int. Cl.⁴ F16C *1/26*
U.S. Cl. 464—58 **16 Claims**

1. A flexible cable assembly comprising:
(a) a power-transmitting core member; and
(b) a tubular casing supporting said core member for movement therein, said casing including
(1) an outer housing, and
(2) an inner plastic tubular-shaped liner having a helical cut along its length to form a helical strip and having radially inwardly extending ribs along its inner wall surface for supporting said core member, said ribs extending substantially longitudinally with respect to the liner and each rib on one side of the helical cut being



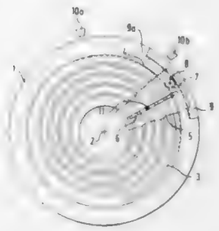
offset circumferentially with respect to the immediately longitudinally adjacent rib on the other side of the helical cut.

4,655,730

AUTOMATIC GEAR BOX

Gerd Küpper, August-Schucken-Bäumer-Str. 16, 4902 Bad Salzuflen 5; Horst Feazl, Pieperweg 84, 4811 Oerlinghausen, and Siegfried Zabinski, Berliner Strasse 9, 4800 Bielefeld 14, all of Fed. Rep. of Germany

Filed Aug. 9, 1985, Ser. No. 764,249
Claims priority, application European Pat. Off., Dec. 28, 1984, 84116442.9
Int. Cl.⁴ F16H *9/10*
U.S. Cl. 474—53 **23 Claims**



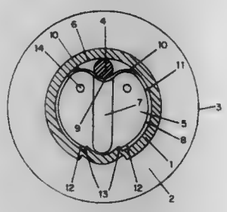
1. A drive device having stepless torque adjustment, wherein:
a drive shaft is rotatably mounted by means of a bearing device;
a first adjusting disc is arranged coaxially with the drive shaft into which adjusting disc is incorporated a spiral-like cutout at least partially around the center of the first adjusting disc;
a second adjusting disc is arranged coaxially with the drive shaft into which second adjusting disc are incorporated through slots which run outwards from the center of the second adjusting disc;
a segmented ring consisting of individual segments is arranged coaxially with the drive shaft, onto an outer periphery of which segmented ring can be placed an endless drive element;
the segments each have extensions which engage both in the spiral-like cutout and in an allocated through slot;
one of the said adjusting discs being driven by the drive shaft; and
the other non-driven adjusting disc being blocked relative to the bearing device by means of a blocking device.

4,655,731

TENSIONING ARRANGEMENT FOR DRIVE BELTS

Armin Olschewski, Schweinfurt, Fed. Rep. of Germany, assignor to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 7, 1985, Ser. No. 742,728
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 8417466[U]
Int. Cl.⁴ F16H *7/12*
U.S. Cl. 474—137 **3 Claims**



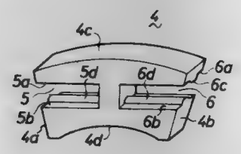
1. In a tensioning arrangement for drive belts comprised of a cup-shaped support mounted to be movable on a clamping bolt diametrically against the force of a spring, the clamping bolt extending through a guide slot in the bottom wall of the cup-shaped support, the spring extending between the bolt and support to urge the support to move in a direction with the bolt abutting one end of the guide slot, and a roller surface rotatably arranged on the support over a bearing, and wherein the spring is comprised of a strip shaped leaf spring stressed in bending, said leaf spring extending in a substantially radial plane with respect to said bolt with the width of said leaf spring extending parallel to the axis of said bolt; the improvement wherein the leaf spring extends in a curved path between said bolt and a given position on said support, said spring being fixed at said given position against relative motion between said spring and said support whereby movement of said bolt relative to said support away from said end of said slot reduces the distance between said bolt and said position on said support and decreases the radius of curvature of at least one region of said leaf spring.

4,655,732

V BELT WITH BLOCKS HAVING LOAD CARRYING ENGAGING MEANS

Takashi Takashima, Izumisano, Japan, assignor to Bando Chemical Industries, Ltd., Hyogo, Japan

Filed Jul. 27, 1984, Ser. No. 634,885
Claims priority, application Japan, Jul. 29, 1983, 58-139895; Feb. 24, 1984, 59-26531[U]; Feb. 24, 1984, 59-26532[U]; Mar. 6, 1984, 59-32567[U]; Mar. 7, 1984, 59-33441[U]; Mar. 12, 1984, 59-35786[U]; Apr. 26, 1984, 59-62548[U]; Apr. 26, 1984, 59-62550[U]; Sep. 9, 1984, 58-139741[U]
Int. Cl.⁴ F16G *1/00, 5/00*
U.S. Cl. 474—201 **18 Claims**



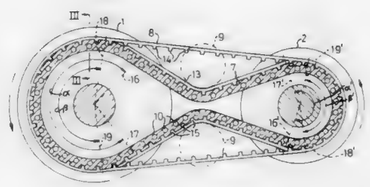
1. A V belt adapted to be wound around at least two pulleys, comprising two endless load carriers and a plurality of blocks which are engaged with said two load carriers substantially immovable in lengthwise direction of belt, said load carriers being elastomeric and having tensile members embedded therein, said tensile members being twisted cords, a woven fabric or sheet-like substance comprising synthetic fibers such as polyamide, polyester, polyaramide or inorganic fiber such as steel fiber, glass fiber, carbon fiber or mix spinning of mix twisting of such fibers, said block being composed of plastics such as thermo-setting resin or thermo-plastic resin or hard rubber and having slanted side surfaces to substantially fit the surface of a groove of said pulley, slots which extend from said slanted surface toward the central part of the block and in which the load carriers are fitted, and said load carrier having an upper surface and a lower surface and said slots providing an upper and lower surface, at least one of said surfaces of said load carriers having a transverse concave or convex part and at least one of said surfaces of said slot having a concave or convex part corresponding to and engageable with said load carrier part, whereby the block and the load carrier are correspondingly engaging each other immovable in lengthwise direction of belt and detachable transverse belt.

4,655,733

ARRANGEMENT FOR TRANSMITTING TORQUE BETWEEN CONICAL PULLEYS IN A TRANSMISSION MECHANISM

Arne Jonsson, Angered, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Oct. 3, 1985, Ser. No. 783,439
Claims priority, application Sweden, Oct. 3, 1984, 8404954
Int. Cl.⁴ F16H *7/00*
U.S. Cl. 474—242 **10 Claims**



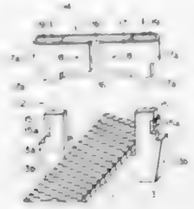
1. An arrangement for transmitting torque between conical pulleys in a transmission mechanism, including an endless first flexible element which extends between the pulleys and which is provided with contact surfaces intended for frictional engagement with conical side surfaces of the pulleys, and a second endless flexible element which extends between the pulleys and surrounds the first flexible element and which is provided on an inner surface thereof with uniformly distributed engagement elements which are in shape-bound engagement with co-acting engagement elements on the first flexible element, the first flexible element having a greater length than the second flexible element so that said first element can be given a greater arc of contact (α) around the pulleys than the arc of contact (β) of the second flexible element, the first flexible element comprising a V-belt having located in uniformed space relationship on an outer surface thereof a plurality of toothed cavities; the second flexible element being a belt having in the inner surface thereof teeth which conform to the tooth cavities of the first flexible element; and transverse metal rods inserted in uniform spaced relationship in the V-belt and having externally of the side surfaces of said belt end whose end surfaces form contact surfaces for contact with the conical surfaces of respective pulleys.

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4,655,734
ENDLESS BELT FOR POWER TRANSMISSION

Susumu Okawa, Numazu; Yasunobu Jufuku; Shigeru Okuwaki, both of Susono; Takayoshi Kondou, Nagoya; Toshiya Endo, Aichi, and Shigenori Nakata, Kariya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 1, 1985, Ser. No. 750,286
Claims priority, application Japan, Jul. 4, 1984, 59-138552
Int. Cl.[4] F16G 1/22
U.S. Cl. 474—242 6 Claims



1. An endless belt for the power transmission, comprising a plurality of block bodies each including a body member formed of a highly rigid material and provided at opposite side portions thereof with inclined surfaces in frictional engagement with pulleys, and a clamp member formed separately of said body member, said plurality of block bodies being arranged in a row and adjacent to one another on a belt-shaped endless carrier formed of fabric in such a manner that said endless carrier is clamped between said body member and said clamp members, said belt-shaped endless carrier formed of fabric being woven by warps disposed in the longitudinal direction and wefts disposed in the widthwise direction, with said wefts restraining said warps,

wherein the clamp member is constituted by a bar and a plate, the plate is bent doubly, the bar is clamped between the double bent portions, and the bar and the plate are integrally connected to each other;

the body member has a block posts erected from opposite sides thereof, block post insertion holes are formed in the plate at opposite sides of the bar in the clamp member, and the block posts are inserted into the block post insertion holes; and

the opposite side portions of the plate are subjected to stakings in a state where the endless carrier is clamped between the body member and the clamp member.

4,655,735
ENDLESS DRIVING BELT

Shiro Sakakibara, Toyokawa; Norio Sobue, Aichi; Yoshinori Miyaishi, Okazaki; Sadahiro Koshiba, and Masahiro Hasebe, both of Anjo, all of Japan, assignors to Aisin-Warner Limited, Japan

Filed Aug. 8, 1985, Ser. No. 763,927
Claims priority, application Japan, Aug. 11, 1984, 59-168060
Int. Cl.[4] S16G 5/00
U.S. Cl. 474—245 7 Claims

1. An endless driving belt of the kind adapted for entrainment between at least two pulleys in a V-belt continuously variable transmission, the endless belt comprising:

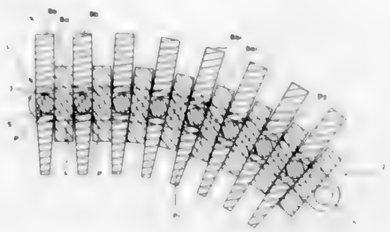
a plurality of links;

means for connecting each link to a next link to enable articulated movement of the links;

a plurality of primary blocks engaging the links and positioned one each between adjacent pins;

a plurality of secondary blocks disposed one each between adjacent primary blocks and radially supported by one of the pins to provide a clearance preventing engagement with the links, the primary and secondary blocks being engageable with one another; and

the secondary blocks having side surfaces for engaging the entrained pulleys and the primary blocks having side surfaces adapted to avoid engagement with the entrained pulleys, radially and outwardly directed driving forces

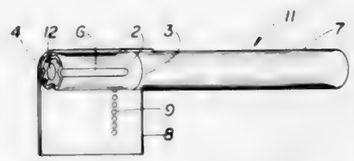


being transmitted from a driving pulley to the secondary blocks and from the secondary blocks to the pins, the links being driven only by nonradially directed forces, whereby the radially and outwardly directed forces transmitted by the driving pulley are transmitted to the pins and not to the links, enhancing durability of the links.

4,655,736
METHOD OF MANUFACTURING A TOBACCO SMOKE FILTER

Charles H. Keith, Charlotte, N.C., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 9, 1984, Ser. No. 670,110
Int. Cl.[4] A24D 3/02
U.S. Cl. 493—43 5 Claims



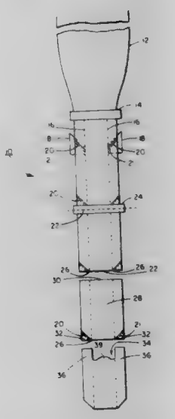
1. A method of manufacturing a tobacco smoke filter comprising:

forming a longitudinally extending porous rod from structually stable, fusible material; cutting said rod to filter unit lengths having opposed inlet and outlet ends; conveying said filter units through endless belts moving at different speeds and spaced to engage the peripheral side of said filter units in a longitudinal path normal to the longitudinal axis of said units past a fusing station adjacent one side of said longitudinal conveying path; and fusing at least one of said ends of each of said filter units in a preselected configuration over at least a portion of the entirety of the cross-sectional area thereof to provide a flow directing baffle to direct smoke flow through the remaining unfused portion of said end as they pass said fusing station.

4,655,737
METHOD FOR PREPARING FLAT-BOTTOM THERMOPLASTIC SACK

Gordon L. Benoit, Macedon, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 24, 1985, Ser. No. 726,570
Int. Cl.[4] B31B 1/64
U.S. Cl. 493—194 9 Claims



1. A method of continuously preparing an at least substantially flat, rectangular-bottom, thermoplastic film sack comprising:

(a) forming a tube of thermoplastic film;

(b) collapsing said tube while simultaneously forming therein two oppositely disposed, parallel gussets;

(c) forming two pairs of diagonal sealed seams over the portions of the tube width corresponding to the gussets along lines diagonal to the length of the tube, the seal pairs of opposite sides being at an angle to one another and the seams of each pair being in registration with one another;

(d) simultaneously or spacially sequentially forming closely parallel to the line of said diagonal sealed seams a preweakened line in said film;

(e) forming a transverse sealed seam across said tube along a line which includes the inboard ends of said pairs of diagonal seams and simultaneously forming a preweakened transverse line closely adjacent and parallel to said transverse sealed seam;

(f) individually separating these structures along said preweakened transverse line and stacking them in registration; and

(g) removing from each corner of the stack all the four double film triangular regions bounded by said preweakened lines parallel to said diagonal seam, said transverse seam and the side edges of said tube.

4,655,738
APPARATUS FOR THE MANUFACTURE OF A TUBULAR CONTAINER SLEEVE

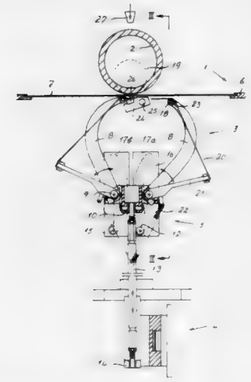
Tage Jansson, Jarfalla, Sweden, assignor to Esselte Pac Aktiebolag, Jarfalla, Sweden

PCT No. PCT/SE84/00320, § 371 Date May 24, 1985, § 102(e) Date May 24, 1985, PCT Pub. No. WO85/01692, PCT Pub. Date Apr. 25, 1985
PCT Filed Sep. 28, 1984, Ser. No. 740,267
Claims priority, application Sweden, Oct. 20, 1983, 83057844
Int. Cl.[4] B31C 1/00; B31B 1/52
U.S. Cl. 493—269 4 Claims

1. Apparatus for the manufacture of tubular container sleeves, each having a rounded cross-section and formed from an initially flat blank of sheet material that has a pair of opposite edge portions, said apparatus comprising a fixed mandrel which has a mandrel axis between a pair of opposite sides thereof and which has said cross-section and is thus adapted to have a blank swept therearound to be formed to said cross-section with its said edge portions adjacent to one another over one of said sides of the mandrel, sealing means at said one side of the mandrel movable towards and from the mandrel for clampwise cooperation with it whereby said edge portions of a blank wrapped around the mandrel are sealed to one another, and a pair of sweeper arms for sweeping a blank around the mandrel, each having an inner end and an outer end, said apparatus being characterized by:

(A) a carrier at the other of said opposite sides of the mandrel, confined to motion in opposite directions towards and from the mandrel through a distance at least equal to the diameter of the mandrel;

(B) shaft means on said carrier, constrained to motion in said opposite directions therewith and to which each sweeper arm is connected at its inner end, said shaft means defining for each sweeper arm a swinging axis parallel to said mandrel axis that is adjacent to the inner end of the sweeper arm and about which its outer end swings while the sweeper arm moves with the carrier through said distance to have its outer end carried to and from each of said sides of the mandrel;



(C) cooperating fixed and movable guide elements for each sweeper arm,

(1) the fixed guide element being fixed in relation to the mandrel,

(2) the movable guide element being spaced from the swinging axis of its sweeper arm and having a connection with its sweeper arm whereby the latter is constrained to swing about its swinging axis in unison with movement of the movable guide element about that axis, and

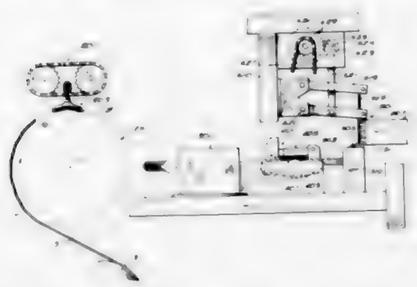
(3) one of said guide elements having an edge portion which is at all times engaged by the other guide element as the carrier moves in said directions and which is so curved that during substantially the final half of the movement of the outer end of the sweeper arm from said other side of the mandrel to said one side thereof said outer end maintains constant engagement, through a blank, against the surface of the mandrel to press successive portions of the blank into contact with the mandrel; and

(D) a sweeper band trained around the outer ends of the sweeper arms and having a portion extending between those outer ends under yielding tension to engage a blank and press successive portions of it into contact with the mandrel as the carrier moves in the direction towards the

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mandrel through substantially the first half of said distance.

4,655,739
GAUZE FOLDING MACHINE
Robert H. Pratt, 7912 N. Beach Dr., Fox Point, Wis. 53217, and Glen R. Blok, Milwaukee, Wis., assignors to Robert H. Pratt, Fox Point, Wis.
Filed Apr. 12, 1984, Ser. No. 599,524
Int. Cl.⁴ B31B *23/14, 23/26;* **B42C** *1/04*
U.S. Cl. 493—357 **18 Claims**



1. An improved apparatus for cutting a continuous web of flexible material withdrawn from a supply source by a drum means mounted in a machine frame for rotation about a drum axis and having a cutting station thereon, and for folding the cut piece of material, wherein the improvement comprises:

a. a rotary inner knife means mounted to the drum means for rotation in unison with the drum means, the rotary inner knife means including at least four inner cutting knives;

b. a rotary outer knife means journalled in the machine frame and rotated in timed relationship with the drum means about a second axis parallel to the drum axis for cooperatively engaging the inner knife means at the cutting station to cut the web, the rotary outer knife means including at least two outer cutting knives that cooperate with alternate inner cutting knives to cut the web at the cutting station, and wherein each outer cutting knife is resiliently fastened within the rotary outer knife means, and wherein each outer cutting knife is formed with a generally planar cutting surface that substantially intersects the drum axis throughout several degrees of rotation as the outer cutting knife rotates through the cutting station;

c. folding means mounted to the drum means for folding the flexible material cut at the cutting station; and

d. guard means mounted to the machine frame above the drum means for holding a cut and folded piece of flexible material on the periphery of said drum means during a predetermined portion of each revolution of the drum means.

4,655,740
AUTOTRANSFUSION APPARATUS
Dieter Rühland, Städtisches Krankenhaus, DE-7700 Singen, Fed. Rep. of Germany
PCT No. PCT/EP85/00396, § 371 Date Mar. 31, 1986, § 102(e) Date Mar. 31, 1986, PCT Pub. No. WO86/01116, PCT Pub. Date Feb. 27, 1986
PCT Filed Aug. 6, 1985, Ser. No. 860,222
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1984, 3429298
Int. Cl.⁴ A61M *1/02, 5/14*
U.S. Cl. 604—4 **17 Claims**

1. An autotransfusion apparatus for blood or similar body fluid, consisting of:

a vacuum-stable container having a bottom part and a cover part, said cover part including an inlet opening for the body fluid, and an outlet opening for the body fluid, a screen covering said outlet opening, said bottom part including an opening connectible with means for producing a gas pressure in the interior of said container;

a membrane impermeable by the body fluid, and deformable by said gas pressure and fastened gas-tight at the edge



between said bottom and cover parts, said membrane divideing the container into a gas-filled bottom chamber and a cover chamber, said cover chamber being sealed from said bottom chamber to receive the body fluid; and

a float buoyant in the body fluid for sealing said outlet opening when said container empties.

4,655,741
BLOOD COMPONENT RESTORATION APPARATUS
Hideo Kamishima, Tokyo, Japan, assignor to Takeo Jyuji, Matsudo, Japan
Filed Aug. 27, 1985, Ser. No. 770,300
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—6 **2 Claims**



1. A blood component restoration apparatus comprising:

an exsanguinating needle;

an exsanguinating tube and a blood component supplying tube, each connected at one end to said exsanguinating needle;

a blood component discharging tube;

an exsanguinating bag connected to the other end of said exsanguinating tube and connected to one end of said blood component discharging tube; and

first and second connecting members respectively on the other, front end of said blood component discharging tube and the other, front end of said blood component supplying tube, said first and said second connecting members thereby being able to be opposed to each other,

each of said first and second connecting members having an end surface with at least two guide pins in one of the thus-opposed end surfaces of said first and said second connecting members, said guide pins then extending in an axial direction of said first and said second connecting members, and at least two guide holes in the other of said opposed end surfaces for receiving respective ones of said guide pins, said guide pins and guide holes being located at

different radial distances from the centers of said end surfaces therewith,

one of said first and second connecting members having a pipe-like portion and the other one of said members having a sleeve-like portion for insertion within the inner peripheral surface of said pipe-like portion,

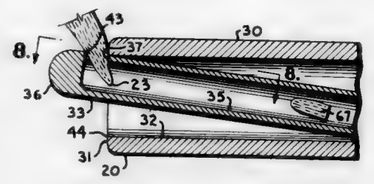
one of said inner peripheral surface of said pipe-like portion and said sleeve-like portion having one of at least one guide groove and at least one guide projection and the other of said portions having the other for slidable contact with each other when said sleeve-like portion is inserted within said inner peripheral surface of said pipe-like portion, the guide groove and guide projection extending in the axial direction of the portions therewith.

4,655,742
PROCESS/APPARATUS FOR THE WITHDRAWAL/RETURN OF BODY FLUIDS
Georges Vantard, Villefontaine, France, assignor to Rhone-Poulenc S.A., Courbevoie, France
Filed Jul. 16, 1984, Ser. No. 631,219
Claims priority, application France, Jul. 13, 1983, 83 11932
Int. Cl.⁴ A61M *37/00*
U.S. Cl. 604—6 **23 Claims**



1. Apparatus for processing body fluids, comprising (i) needle means for withdrawing and returning body fluid from and to a living patient, (ii) a body fluid separating module which comprises a first compartment, a second compartment and a semipermeable membrane disposed between said first and second compartments, said semi-permeable membrane being permeable to a liquid fraction of the body fluid, said second compartment being adapted to receive liquid fraction which permeates through said semi-permeable membrane from said first compartment, (iii) first passage means communicating said needle means (i) with a first end of the first compartment of said separating module (ii), (iv) first pumping means provided at a location along said first passage means for pumping body fluid in either direction through said first passage means, (v) first sensor means for monitoring pressure of the body fluid circulating in said first passage means (iii) at a location between said pumping means (iv) and the first end of the first compartment of said separating module (ii), (vi) second passage means communicating a second end of the first compartment of said separating module (ii) with (vii) flexible container means, (viii) means for collecting from the second compartment liquid fraction received by the second compartment, (ix) second sensor means for monitoring the amount of body fluid withdrawn from the patient, and (x) means for expelling body fluid from said flexible container means (vii) to return at least a portion of body fluid withdrawn to said flexible container means to the patient.

4,655,743
FROG ASPIRATOR
Lawrence L. Hyde, 2900 Baltimore, Suite 650, Kansas City, Mo. 64108
Filed May 6, 1985, Ser. No. 730,803
Int. Cl.⁴ A61B *17/32*
U.S. Cl. 604—22 **3 Claims**



1. An ophthalmic aspiration-irrigation device for use in surgery comprising:

(a) an outer cannula having an internal lumen and a tip at an operative end thereof; said outer cannula tip having an aerture therethrough;

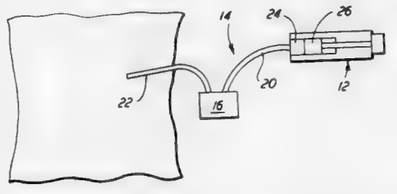
(b) an inner cannula operably positioned within said outer cannula lumen and having an operative end and an internal lumen; said inner cannula being generally axially slidable relative to said outer cannula; said inner cannula being substantially smaller in diameter than an interior of said outer cannula entirely therealong so as to form a channel therebetween; said channel being flow connected to said aperture at said outer cannula tip;

(c) said inner cannula also having a port operably positionable during sliding of said inner cannula with respect to said outer cannula such that said port abrades against said outer cannula operative end;

(d) irrigation means communicating with said channel such that fluid irrigant may be selectively passed through said channel and out said aperture at said outer cannular tip: and

(e) suction means operably cooperating with said inner cannula lumen and being manipulative so as to selectively provide suction to said inner cannula port through said inner cannula lumen.

4,655,744
METHOD FOR DISSOLVING A SOLIDIFIED MASS IN VIVO, AND APPARATUS FOR USE IN SAID METHOD
Johnson L. Thistle, and Patrick E. Caskey, both of Rochester, Minn., assignors to Research Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 773,404, Sep. 6, 1985, which is a continuation-in-part of Ser. No. 649,389, Sep. 11, 1984, which is a continuation-in-part of Ser. No. 559,398, Apr. 10, 1984, Pat. No. 4,500,083. This application Dec. 3, 1985, Ser. No. 804,219
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—28 **14 Claims**



1. A method for dissolving a solidified mass in vivo, comprising:

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introducing a dissolving agent into a localized area of a patient's body;
injecting an agitating fluid into and withdrawing the agitating fluid from the localized body area to stir the dissolving agent therein, wherein a body fluid is withdrawn from the body area with the agitating fluid;
separating the withdrawn body fluid from the withdrawn agitating fluid; and
reintroducing the separated agitating fluid into the localized body area to further stir the dissolving agent therein.

4,655,745
VENTRICULAR CATHETER
Joseph E. Corbett, 2134 Allen Blvd., Apt. 3, Middleton, Wis. 53562
Filed Jul. 29, 1985, Ser. No. 760,168
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—49 **1 Claim**



1. A method for positioning a catheter in the ventricle of a brain comprising the steps of:
forming a burr hole through the skull of the brain into a ventricle of the brain;
inserting a flexible, hollow conduit having inflow and outflow ends with a plurality of apertures formed adjacent the inflow end disposed in fluid flow communication with the hollow interior of the conduit and having an inflatable cuff mounted on the conduit adjacent to the apertures and between the the apertures and the outflow end of the conduit into the ventricle of the brain;
injecting a fluid into the cuff to cause inflation of the cuff;
retracting the conduit after the cuff has been inflated through the bore hole in the brain until resistance is met to indicate that the cuff has engaged the walls of the ventricle of the brain and that the apertures in the conduit are spaced from the walls of the ventricle and the choroid plexus of the brain a sufficient distance to prevent the growth of choroid plexus over the apertures.

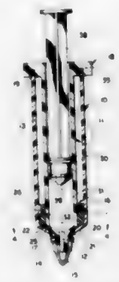
4,655,746
CATHETER DEVICE
John R. Daniels, Pacific Palisades; Erik T. Engelson, Palo Alto, and Garbriel B. Vegh, Danville, all of Calif., assignors to Target Therapeutics, Los Angeles, Calif.
Filed Dec. 2, 1985, Ser. No. 803,816
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—53 **15 Claims**

1. A catheter device for transferring fluid material to or from a selected-length segment of a vessel, comprising, in operative condition:
a first catheter having a tube with distal and proximal ends, an inflatable balloon carried adjacent the distal end of the tube, a channel extending through the tube, and a fluid conduit for supplying fluid to the balloon from the tube's proximal end;
a second catheter having a tube with distal and proximal ends, an inflatable balloon carried adjacent the distal end of the tube, and a fluid conduit for supplying fluid to the balloon from the tube's proximal end, said second-catheter tube and balloon being insertable into and through the first-catheter channel, with such balloon in a deflated condition,;
a fluid passageway formed by an interlumen space between the channel wall in the first catheter and the confronting wall of the tube in the second catheter, and communicating a proximal end region of the first catheter tube with a



region between the two balloons, with such placed operatively in the vessel; and
means associated with the second catheter for guiding the distal end of the second catheter within said first catheter channel, with the second catheter balloon in a deflated condition, and in the vessel region distal to the first catheter balloon.

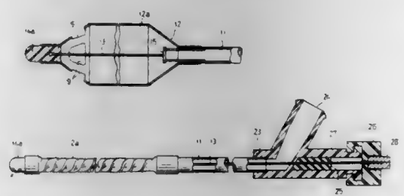
4,655,747
DUAL CHAMBERED SYRINGE
Robert E. Allen, Jr., 2041 Buckingham Ct., Decatur, Ga. 30035
Filed Jan. 30, 1986, Ser. No. 824,125
Int. Cl.⁴ A61M *37/00*
U.S. Cl. 604—89 **7 Claims**



1. A dual chambered syringe comprising an inner barrel defining an inner chamber therein, an outer barrel concentric with said inner barrel and defining an outer chamber between said inner barrel and said outer barrel, a sealing ring at one end of said syringe disposed within said outer chamber and sealing said outer barrel with respect to said inner barrel, a rear plate connecting the opposite end of said outer barrel and said inner barrel, and a plunger received within said inner chamber, said sealing ring defining passage means therein for selectively

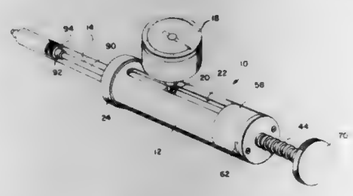
allowing communication between said outer chamber and said inner chamber, said inner barrel defining a hole therethrough selectively alignable with said passage means, said outer barrel and said inner barrel being selectively rotatable with respect to each other for aligning said hole in said inner barrel with said passage means in said sealing ring, said passage means in said sealing ring including a radially extending opening through said sealing ring, a groove extending longitudinally of said sealing ring from said radially extending opening, the arrangement being such that said groove connects said outer chamber with said radially extending opening and said radially extending opening selectively connects said groove with said hole in said inner barrel.

4,655,748
CANNULA FOR INFUSION OF FLUID
Sadahiko Mushika, Tokyo, Japan, assignor to Aisin Seiki Kabushikikaisha, Aichi, Japan
Filed Sep. 4, 1985, Ser. No. 772,534
Claims priority, application Japan, Sep. 4, 1984, 59-185051
Int. Cl.⁴ A61M *29/00*
U.S. Cl. 604—96 **7 Claims**



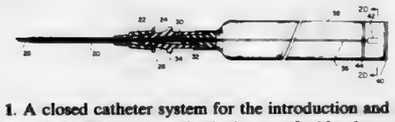
1. A cannula for the infusion of fluid comprising a pipe having a leading end adapted to be inserted into a blood vessel within a body and a trailing end adapted to be connected to blood supply means exteriorly of the body for supplying blood into the blood vessel, a flexible, expandable, tubular membrane member having an opening at each end and a central portion adapted to have a greater diameter than the diameter of said pipe upon expansion, one end of said flexible membrane member being secured to the leading end of said pipe, an end insert secured in the other end of said flexible membrane member, a flexible core member having one end joined to said end insert and extending through said flexible membrane member into said pipe and a fluid passage opening formed in at least one of said end insert and said flexible membrane member for providing communication between the interior of said flexible membrane member and the interior of the blood vessel.

4,655,749
ANGIOPLASTY PRESSURE CONTROLLER
Eugene A. Fischione, 216 Red Oak Dr., Pittsburgh, Pa. 15239
Filed Sep. 30, 1985, Ser. No. 781,746
Int. Cl.⁴ A61M *5/315, 29/02*
U.S. Cl. 604—98 **5 Claims**



1. An angioplasty pressure controller comprising:
(A) a hollow elongated housing adapted to fixedly receive a syringe barrel at one end thereof;
(B) a pressure cylinder slidingly disposed in said housing, a piston disposed in said cylinder, said cylinder and piston defining a pressure chamber filled with a fluid, and a pressure gauge mounted on said cylinder to extend out of said housing and operatively communicating with said chamber;
(C) a connecting rod fixed, at one end, to one end of said cylinder and extending out of said one end of said housing into said syringe barrel to be affixed to a syringe plunger tip;
(D) a drive screw fixed at one end to said cylinder piston extending through the other end of said housing and mounted for rotational and axial movement therein.

4,655,750
CLOSED SYSTEM CATHETER WITH GUIDE WIRE
Vincent L. Vaillancourt, Livingston, N.J., assignor to Manresa, Inc., Hillsdale, N.J.
Filed Nov. 22, 1985, Ser. No. 800,817
The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.
Int. Cl.⁴ A61M *5/18*
U.S. Cl. 604—165 **27 Claims**



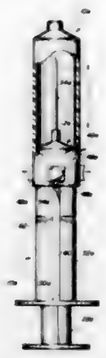
1. A closed catheter system for the introduction and placement of a flexible catheter in the lumen of a blood vessel and using the advancement of a wire into said lumen to guide the flexible catheter as said catheter is advanced and positioned in said lumen, said closed catheter system including:
(a) hollow needle of a determined length and having a sharpened entering end and an exit end;
(b) a hub axially secured and mounted to said needle and positioned at a selected distance from the sharpened end of said needle, this hub having a skirt portion providing an interior cavity which is open to the rear thereof, this hub having a contoured forward end;
(c) a flexible catheter formed with a through bore and slideable on and along the outer diameter of the needle, said catheter having an entering end sized to be easily inserted with the needle into the lumen of the vessel and with the other end of said flexible catheter attached to a hub adapted to be removably mounted on the contoured forward end of the needle hub;
(d) a centering plug within the needle hub with means for retaining said centering plug within the interior cavity of the needle hub, this centering plug having a through guideway positioned and terminating so the exit end of said guideway is substantially in alignment with the bore of the needle;
(e) a wire positioned and sized so as to be slide fit in the bore of the needle, said wire disposed to be advanced by manipulation to and through said guideway and bore of the needle, and as the wire is advanced and exits the sharpened entering end of the needle, this wire is caused to follow the lumen path of the blood vessel, and
(f) a lay-flat tube enclosure providing an envelope having a distal end sealed to at least partially encapsulate and restrain this distal end of the wire, this enclosure attached at its other end to the guide assembly and providing therewith a sealed enclosure of the wire.

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4,655,751
LIQUID DISPENSING AND RECEIVING SYRINGE

John T. Harbaugh, 4407 Babcock Ave., Studio City, Calif. 91604

Filed Feb. 14, 1986, Ser. No. 829,330
Int. Cl.[4] A61M 5/32
U.S. Cl. 604—198 14 Claims



1. An improved liquid receiving and dispensing syringe, said syringe comprising, in combination:

(a) an elongated container open at its front and rear ends and containing sidewalls defining a generally central cavity adapted to hold a dispensible liquid;

(b) an elongated needle containing a central longitudinal liquid-dispensing passageway extending thoughout the length thereof, said needle being the front end of said container and extending forwardly therefrom, said needle being in communication with said container cavity for delivery of liquid therefrom and thereinto;

(c) the plunger slideably disposed in said cavity extending rearwardly from the rear end of said container and adapted to force liquid forwardly from said cavity out through said needle, and to such liquid into said cavity; and

(d) a protective shell connected to, slideably disposed around and normally spaced outwardly from said container sidewalls, and movable between a first rear position exposing said needle and a second front position concealing said needle to prevent inadvertent injury by contact with said needle and to facilitate disposal of said syringe,

(e) wherein spacer means are secured to at least one of the inner surface of said shell and the outer surface of said container to facilitate at least one of the functions of releasably locking said shell in at least one of said first and second positions and sliding said shell between said first and second positions,

(f) wherein said spacer means comprises a plurality of inwardly directed ears projecting from the inner surface of said shell,

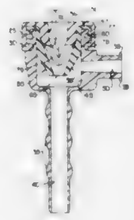
(g) said container having a plurality of retaining pockets on the outside surface thereof near both the front end and the rear end of said container,

(h) said ears being releasably receivable within said retaining pockets within the outer surface of said container, whereby said ears are positioned within the pockets at the rear end of the container when the needle is not covered by said shell, and whereby said ears are positioned within the pockets at the front end of said container when the needle is covered by said shell, such ears and pockets serving to inter-lock the container and the shell to prevent relative movement thereof.

4,655,752
SURGICAL CANNULA

George P. Honkanen, N. Scituate; John C. Strahan, Arlington, and Philip R. Lichtman, Newton, all of Mass., assignors to Acufex Microsurgical, Inc., Norwood, Mass.

Continuation of Ser. No. 544,552, Oct. 24, 1983, abandoned.
This application Apr. 7, 1986, Ser. No. 849,173
Int. Cl.[4] A61M 5/00
U.S. Cl. 604—256 11 Claims



1. A surgical cannula comprising:

a hollow housing;

a first seal member; and

a second seal member;

said housing having a top end, a bottom end, and a side wall defining an interior passageway extending from said top end to said bottom end;

said first seal member being hollow and conically tapered and having a top end with a relatively large top end opening and a bottom end with a relatively small bottom end opening, said first seal member being formed from a soft elastomeric material and being disposed in said interior passageway so that its bottom end is directed towards said bottom end of said housing, with said bottom end of said first seal member being disposed within and spaced from said side wall;

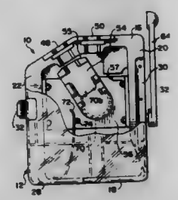
said second seal member being cup shaped and having an open top end and a conically tapered bottom end, said second seal member being formed from a soft elastomeric material and being disposed in said interior passageway so taht its bottom end is directed towards said bottom end of said housing, with said bottom end of said second seal member being disposed within and spaced from said side wall so as to define a continuous annular gap therebetween, and said second seal member having at least one slit in said bottom end which allows said seal member to expand radially at said bottom end into said annular gap and towards said side walls so as to form a variable size opening at said slit;

whereby (a) when an instrument is inserted into said housing via said top end, said instrument can pass through said first and second seal members into proximity with a surgical site beneath said bottom end of said housing, and fluid entering said interior passageway via said bottom end of said housing will force said first seal member to close around said instrument and form a tight seal therewith so that no fluid can flow out said top end of said housing, and (b) when no instrument is inserted into said housing, fluid entering said interior opening via said bottom end of said housing will force the bottom end of said second seal to contract in the region of said at least one slit and thereby form a tight seal so that no fluid can exit said housing via said top end thereof.

4,655,753
CONNECTION DEVICE

Marc C. Bellotti, Winnetka, and William J. Schnell, Libertyville, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 27, 1985, Ser. No. 802,787
Int. Cl.[4] A61M 5/00
U.S. Cl. 604—283 23 Claims



1. A device for sequentially uncoupling two mating connectors and then forming a new coupling between one of the connectors and another mating connector, said device comprising

a housing,

a first holder on said housing for carrying a first connector,

a second holder on said housing for carrying a second connector,

a third holder on said housing for carrying a third connector which mates with either of the first or second connectors, said third holder being movable between an advanced position adjacent to said first and second holders and a retracted position spaced away from said first and second holders,

first means for normally biasing said third holder toward a first position in operative alignment with said first holder when said third holder is in said advanced position so that the first and third connectors can be carried in said first and third holders in a coupled relationship,

second means operative in response to movement of said third holder from said advanced position toward said retracted position for uncoupling the first connector carried in said first holder from said third connector carried in said third holder and for moving said third holder against the action of said first means into a second position in operative alignment with said second holder so that, when said third holder is in said retracted position, the third connector carried in said third holder is positioned in a spaced apart and operatively aligned relationship with the second connector carried in said second holder, and

third means operative in response to movement of said third holder from said retracted position toward said advanced position for maintaining said third holder against the action of said first means in said second position to couple the second connector carried in said second holder with the third connector carried in said third holder and for automatically returning said third holder to said first position upon removal of the now-coupled second and third connectors from said respective holders.

4,655,754
VACUUM WOUND DRAINAGE SYSTEM AND LIPIDS BAFFLE THEREFOR

James W. Richmond, Kalamazoo; Robert G. Tice, Portage, and William M. Booth, III, Paw Paw, all of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Nov. 9, 1984, Ser. No. 670,177
Int. Cl.[4] A61M 1/00
U.S. Cl. 604—323 18 Claims

1. A continuous vacuum wound drainage system, comprising:

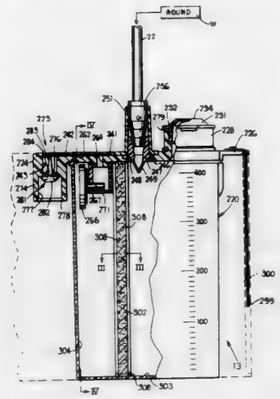
a drain reservoir capable of being evacuated to a subatmospheric pressure;

wound connection means for connecting said drain reservoir to a wound and therewith for vacuum draining fluids from the wound;

vacuum source connecting means for connecting said drain reservoir to a vacuum source and therewith for providing the subatmospheric pressure in said drain reservoir;

hydrophobic filter means permitting gas flow therethrough but blocking flow of liquid therethrough from said drain reservoir to said vacuum source connecting means for attaining the subatmospheric pressure in a reservoir by said vacuum source while avoiding contamination of a vacuum source by liquid from said drain reservoir;

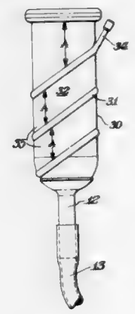
baffle means constructed for preventing fatty substances from flowing therethrough, said wound connecting means and said hydrophobic filter means communicating with respective first and second spaces within said drain reservoir, said baffle means defining said first and second spaces.



4,655,755
EXTERNAL CATHETER

Lillian Ruffini, 210 Harmony Rd., West Grove, Pa. 19390

Continuation-in-part of Ser. No. 618,913, Jun. 8, 1984, abandoned. This application Oct., 1985, Ser. No. 790,098
Int. Cl.[4] A61F 5/44
U.S. Cl. 604—352 2 Claims



1. A unitary penile catheter of a annular tubular form comprised of inner and outer sheaths and a air supply stem, said outer sheath and inner sheath having a coaxial tube means for attachment to a drainage tube, said inner sheath formed of a

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flexible elastic material and forming an expandible and contractible annular airtight compartment when air is supplied and removed from said compartment, said inner sheath having an inside and outside surface, said outside surface of said inner sheath having a helically wound airtight tubing sealed thereto along its length in which said tubing and inner sheath have an engagement area that maintains an even pressure of the inner sheath along its length on the penis, said air supply stem means providing a duct to provide air in said air tight helical tubing, whereby changes in the size of the engaged penis is accommodated by radial enlargement of the inner sheath or reduction size of the penis by collapsing of said inner sheath.

4,655,756

TREATED NON-WOVEN MATERIAL

David M. Fawkes, Marple, England, assignor to Imperial Chemical Industries PLC, London, England

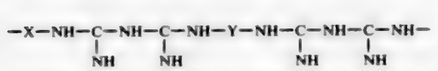
Filed Sep. 3, 1985, Ser. No. 771,881

Claims priority, application United Kingdom, Aug. 31, 1984, 8422070

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—360 **9 Claims**

1. A non-woven material treated with a linear polymeric biguanide in which the recurring unit is of the formula:



wherein X and Y, which may be the same or different, represent bridging groups in which the total number of carbon atoms in X and Y taken together, directly interposed between the pairs of nitrogen atoms linked thereby, is from 10 to 16, or the salt thereof with an acid.

4,655,757

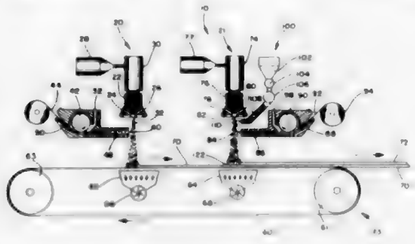
SELECTIVE LAYERING OF SUPERABSORBENTS IN MELTBLOWN SUBSTRATES

Timothy M. McFarland, Neenah, and Theodore B. Lang, Menasha, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 602,993, Apr. 23, 1984, Pat. No. 4,604,313. This application Feb. 28, 1986, Ser. No. 835,009

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—366 **4 Claims**



1. An absorbent dressing comprising an impervious polymer backing sheet, a pervious body-side liner, and an absorbent core located between said pervious liner and said impervious backing wherein said absorbent material comprises a layered nonwoven fabric-like material having a unique combination of strength, absorbency and hand, said material comprising:

A. at least one normal absorbent layer of a gas-formed matrix of thermoplastic polymeric meltblown microfibers and a multiplicity of individualized and gas-formed staple fibers disposed throughout said matrix of microfibers and engaging at least some of said microfibers from each other to space the microfibers apart from each other, said staple fibers being interconnected by and held captive within said matrix of microfibers by mechanical entanglement of said microfibers with said staple fibers, the mechanical entanglement and interconnection of said microfibers and staple fibers forming a coherent integrated fibrous structure, and

B. at least one highly-absorbent layer integrally connected to said normal absorbent and highly-absorbent layer comprising a gas-formed matrix of thermoplastic polymeric meltblown microfibers and a multiplicity of individualized and gas-formed staple fibers and superabsorbent particles disposed throughout said matrix of microfibers and engaging at least some of said microfibers to space the microfibers apart from each other, said staple fibers and said superabsorbent being interconnected by and held captive within said matrix of microfibers by mechanical entanglement of said microfibers with said staple fibers and said superabsorbent particles, the mechanical entanglement and interconnection of said microfibers and staple fibers and said superabsorbent particles forming a coherent integrated fibrous structure.

4,655,758

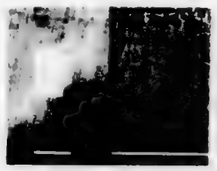
MICROBIAL POLYSACCHARIDE ARTICLES AND METHODS OF PRODUCTION

David F. Ring, Skillman; Wilson Nashed, North Brunswick, and Thurman Dow, Somerville, all of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Continuation-in-part of Ser. No. 450,324, Dec. 16, 1982, Pat. No. 4,588,400. This application Jun. 27, 1985, Ser. No. 749,914

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—374 **23 Claims**



1. A self-supporting, laminar polysaccharide structure constituted by (a) densified, interconnected laminae that merge into one another and define channels therebetween and (b) polysaccharide microfibrils situated within the defined channels and connected to the laminae.

4,655,759

REDUCED LEAKAGE MENSTRUAL PAD WITH BUILT-IN FOLD LINES

Alice Y. Romans-Hess, Fremont; Frederick M. Guenther, Oshkosh, and Lenore S. Ryan, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

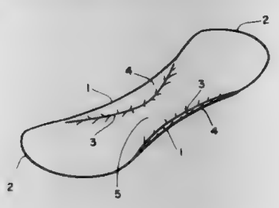
Filed Sep. 19, 1985, Ser. No. 777,887

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—385 R **6 Claims**

1. A samitary napkin comprising a flexible, fluid impermeable backing sheet, a layer of absorbent material on said backing sheet and a fluid permeable cover having embossed in the absorbent on the user side face surface thereof a pair of embosed channels, said embossed channels located on each side of the longitudinal axis of said sanitary napkin with each of the neds of said embossed channels spaced apart from the edge of said sanitary napkin at least ½ inch, said channels in use being

spaced apart from the napkin wearer's body and allowing said napkin edges to fold upward at said embossed channels to form



an occlusive volume between said napkin and the wearer's body.

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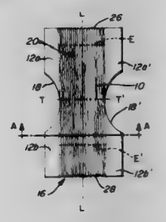
ELASTICIZED GARMENT AND METHOD OF MAKING THE SAME

Michael T. Morman, Alpharetta, Ga., and Tony J. Wisneski, Kimberly, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 30, 1985, Ser. No. 760,438

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—385 A **23 Claims**



1. A garment comprising a medial section disposed between transversely opposed side sections, the medial section having a gathered crotch portion and the garment being comprised of a gatherable first layer having an elastic second layer stretch-bonded thereto to overlie at least the crotch portion of the garment to define an elasticized, gathered portion of the garment.

4,655,761

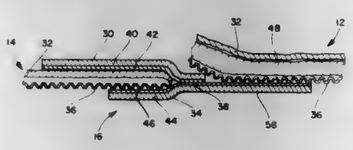
DISPOSABLE DIAPER WITH REFASTENABLE TAPE SYSTEM

Herbert E. Grube; Michael A. Sciaraffa, both of Outagamie County; Mark L. Kaspar, and Leonard M. Kaczmarzyk, both of Winnebago County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 6, 1984, Ser. No. 637,929

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—389 **14 Claims**



1. A refastenable garment comprising moisture-impermeable embossed backing sheet and a refastenable pressure-sensitive adhesive fastening tape wherein:

(1) said fastening tape comprises:
- a polypropylene polymer having a matte finished outer surface,
- a smooth inner adhesive-coated surface,
- a caliper thickness of about 3.5 to about 5.0 mils,
- a static shear of greater than 100 minutes for a one-quarter inch square of tape supporting a 500 gram weight at about 100 degrees F., and

(2) said embossed backing sheet comprises:
- a film thickness of about 1.2 to about 1.7 gauge,
- a caliper thickness of about 2 to about 3 mils,
- a film tensile strength in the cross-machine direction of between about 800 and about 950 grams per inch, and

(3) said tape and said backing have:
- a 180 degrees peel of between about 400 and about 575 grams per inch at a 300 mm/min peel speed,
- a 180 degrees peel of between about 200 grams per inch and about 400 grams per inch at a peel speed of about 1000 mm/min.

4,655,762

AMBULATORY DIALYSIS SYSTEM AND CONNECTOR

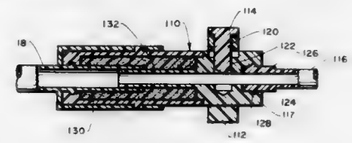
Phillip P. Rogers, 27 Horseshoe La., Rolling Hills Estates, Calif. 90274

Continuation-in-part of Ser. No. 431,333, Sep. 30, 1982, Pat. No. 4,551,146, which is a continuation-in-part of Ser. No. 157,268, Jun. 9, 1980, Pat. No. 4,354,490. This application May 2, 1983, Ser. No. 490,978

The portion of the term of this patent subsequent to Oct. 19, 2002, has been disclaimed.

Int. Cl.⁴ A61F *2/60, 2/62*

U.S. Cl. 604—403 **16 Claims**



1. A peritoneal dialysis fluid connecting device comprising:
- a connecting tube end;
- an open ended cylinder means surrounding said connecting tube end;
- absorbent packing material substantially filling said cylinder means around said connecting tube end;
- said absorbent packing material being saturated with a disinfectant solution;
- means for closing and sealing the open end of said cylinder and said connecting tube end.

4,655,763

TESTING AND DISPENSING APPARATUS FOR AN ENTERAL FEEDING SYSTEM

ALexander R. Malcolm, Dudley, and David M. Gessner, Worcester, both of Mass., assignors to Nutrapack, Inc., Worcester, Mass.

Filed Apr. 30, 1984, Ser. No. 605,584

Int. Cl.⁴ A61J *3/00;* A61M *5/00*

U.S. Cl. 604—404 **7 Claims**

1. An enteral feeding system, comprising an aseptically packaged container of a low acid liquid nutritional, a testing and dispensing apparatus including dispensing means for dispensing the liquid nutritional from the container, said dispensing means being a tubular element defining a bore extending axially therethrough, said tubular element including a first end having a pointed tip to puncture the container in order to gain access to the interior thereof and a second end having a connector, and indicating means for indicating the pH of the liquid nutritional and hence whether the liquid nutritional has

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spoiled, said indicating means being an elongate member which is slidably received in said bore of said tubular element such that said elongate member is removably associated with said tubular element, whereby said elongate member can be inserted into the container together with said tubular element and then withdrawn from the container by removing said elongate member from said tubular member, said elongate member including a first end having a pH indicator positioned in said first end of said tubular element, whereby said pH indicator may be exposed to the contents of the container when said tubular element and said elongate member are inserted



into the container as a unit, and a second end extending outwardly from said second end of said tubular element and having a gripping handle to remove said elongate member from said bore of said tubular element, whereby said pH indicator can be viewed to provide a visual indication of the pH of the liquid nutritional and hence whether the liquid nutritional has spoiled, and withdrawing means connected to said connector of said tubular element for withdrawing the liquid nutritional from the container through said tubular element after said elongate member has been removed from said tubular element to provide a visual indication as to whether the liquid nutritional has spoiled.

4,655,764

MEDICAL NEEDLE ASSEMBLY AND MEDICAL DEVICE INCORPORATING THE SAME

Isao Sato, Yamanashi, Japan, assignor to Terumo Corporation, Tokyo, Japan

Continuation of Ser. No. 587,237, Mar. 7, 1984, abandoned. This application Aug. 22, 1986, Ser. No. 899,786

Claims priority, application Japan, Mar. 11, 1983, 58-40299

Int. Cl.⁴ A61B *19/00*

U.S. Cl. 604—408 **2 Claims**



1. A medical needle assembly:

a hollow needle having a pointed tip and a base;

a hub having a base and a tip end for supporting the base of said hollow needle so that the tip of said hollow needle projects from the tip end of said hub, the base of said hub being connectable to a section of tubing to communicate the tubing with the interior of said hollow needle; and

a protector including a hollow body having a base and a tip end, and a lumen that extends continuously from the base to the tip end of said hollow body, said hollow body being attached at its base to the tip end of said hub to sealingly enclose that portion of the hollow needle that projects from said hub, and being connected at its tip end to one end of said second section of tubing to communicate said second section of tubing with said continuous lumen of said protector,

said hub and said protector both being made of polyvinyl chloride, and

an adhesive at the area of attachment of said base of said hollow body to said tip end of said hub to secure said hollow body to said hub, said adhesive being a plasticized vinyl chloride polymer paste resin, said adhesive being applied as a sol comprising 100 parts by weight of a polyvinyl chloride paste resin in which a vinyl chloride polymer powder is dispersed and suspended in a plasticizer to a solids content of 25 to 50% by weight, and 50 to 350 parts by weight of a plasticizer,

wherein a thin-walled weak point for the separation of said hub and said protector is provided near to but outside the periphery of the area of hub and protector attachment, and wherein the thin-walled weak point is a notch that is V-shaped in axial cross section and said V-shaped notch has an angle of inclusion of from about 50° to about 90°.

4,655,765

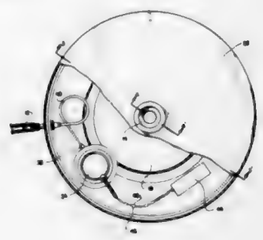
FITTING WITH PRESTRESSED SEPTUM

William G. Swift, Fountain Valley, Calif., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Jun. 1, 1984, Ser. No. 616,338

Int. Cl.⁴ A61M *7/00*

U.S. Cl. 604—891 **9 Claims**



1. A septum fitting comprising:

a housing having an open end and at least one passageway through the wall of said housing, said passageway being located adjacent the opposite end;

a guide member secured in the open end of said housing and having a central aperture that extends between external and internal faces, the internal face of said guide member having a central extension that surrounds said aperture;

a septum that is located in said housing longitudinally adjacent said guide member and contacting the internal face of said guide member; and

an annular band that is located in said housing longitudinally adjacent said septum, said annular band having first and second end faces and an aperture that extends therebetween and that is generally aligned with the central aperture of said guide member, said annular band having a ring extension on said first end face that circumscribes said aperture and that contacts said septum, the ring extension of said annular band cooperating with the central extension of said guide member to compress the septum therebetween.

4,655,766

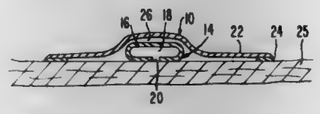
FLUID IMBIBING PUMP WITH SELF-REGULATING SKIN PATCH

Felix Theeuwes, and James B. Eckenhoff, both of Los Altos, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 761,740, Aug. 1, 1985, abandoned, which is a continuation of Ser. No. 450,887, Dec. 20, 1982, abandoned. This application Apr. 17, 1986, Ser. No. 853,262

Int. Cl.⁴ A61K *9/00*

U.S. Cl. 604—896 **39 Claims**



1. A medical device for delivering a therapeutic agent through an area of skin at a predetermined rate for an extended period of time comprising in combination:

(a) a fluid impermeable, skin contacting member configured to enclose a predetermined area of skin within its periphery and to form a fluid receiving volume between said member and said area of skin, said predetermined area of skin being selected to be capable of absorbing said agent at a rate greater than said predetermined rate,

(b) fluid imbibing pump means for delivering therapeutic agent onto said predetermined area of skin upon exposure to an actuating fluid external to said pump means, said pump means establishing said predetermined rate and comprising a housing:

(i) formed at least in part from actuating fluid permeable material,

(ii) containing said therapeutic agent, and

(iii) provided with outlet means for discharging said therapeutic agent and;

(c) means for maintaining said device on the skin for said extended period of time with said predetermined area of skin confined within said member;

whereby the rate at which said therapeutic agent is delivered to the predetermined area of skin will be lower than the rate at which said predetermined area of skin is capable of absorbing said agent throughout said extended period of time and the rate of delivery of said agent through the skin is maintained at said predetermined rate.

4,655,767

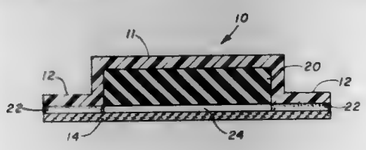
TRANSDERMAL DRUG DELIVERY DEVICES WITH AMINE-RESISTANT SILICONE ADHESIVES

John T. Woodard, Midland, and Virgil L. Metevia, Saginaw, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 665,803, Oct. 29, 1984, abandoned. This application Sep. 26, 1985, Ser. No. 780,505

Int. Cl.⁴ A61F *13/02;* **A61J** *1/00*

U.S. Cl. 604—896 **52 Claims**



1. In a transdermal drug delivery device for the controlled transdermal delivery of a drug comprising a container having a controlled drug delivery means associated therewith, said container being adapted to hold said drug delivery means in close proximity to the skin of a wearer, said device having a biocompatible silicone pressure-sensitive adhesive layer thereon for maintaining contact between said container and the skin of a wearer, the improvement which comprises the combination of an amino-functional drug to be delivered from said drug delivery means and a biocompatible silicone pressure-sensitive adhesive layer which has been deposited from a silicone pressure-sensitive adhesive composition containing silicon-bonded hydroxyl radicals which comprises a combination of (A) from 40 to 70 inclusive parts by weight of at least one benzene-soluble resionous copolymer containing silicon-bonded hydroxyl radicals and consisting essentially of triorganosiloxy units of the formula $R_3SiO_{\frac{1}{2}}$ and tetrafunctional siloxy units of the formula $SiO_{4/2}$ in a ratio of about 0.6 to 0.9 triorganosiloxy units for each tetrafunctional siloxy unit present in the copolymer and (B) from 30 to 60 parts by weight of at least one polydiorganosiloxane consisting essentially of ARSiO units terminated with endblocking $TRASiO_{\frac{1}{2}}$ units, each said polydiorganosiloxane having a viscosity of from 100 centipoise to 30,000,000 centipoise at 25° C. where each T is R— or X—, which composition has been chemically treated with at least one chemical treating agent that is reactive to silicon-bonded hydroxyl groups to reduce the silicon-bonded hydroxyl content of the composition to a sufficient degree to thereby render said adhesive layer more resistant to the loss of tack and instant adherence to the skin caused by said amino-functional drug, wherein each R is a monovalent organic radical selected from the group consisting of hydrocarbon radicals of from 1 to 6 inclusive carbon atoms, each X radical is selected from the group consisting of HO—, H— and R'O— radicals, each R' is an alkyl radical of from 1 to 4 inclusive carbon atoms, and each A radical is selected from the group consisting of R— and halohydrocarbon radicals of from 1 to 6 inclusive carbon atoms.

27. A method of preserving the instant adherence to the skin of a wearer of a transdermal drug delivery device for the controlled transdermal delivery of an amino-functional drug wherein said device is maintained in contact with the skin by a skin-contacting silicone pressure-sensitive adhesive layer, said method comprising providing said device with a silicone pressure-sensitive adhesive layer which has been deposited from a silicone pressure-sensitive adhesive composition which consists essentially of a silicone pressure-sensitive adhesive composition containing silicon-bonded hydroxyl radicals which comprises a combination of (A) from 40 to 70 inclusive parts by weight of at least one benzene-soluble resinous copolymer containing silicon-bonded hydroxyl radicals and consisting essentially of triorganosiloxy units of the formula $R_3SiO_{\frac{1}{2}}$ and tetrafunctional siloxy units of the formula $SiO_{4/2}$ in a ratio of about 0.6 to 0.9 triorganosiloxy units for each tetrafunctional siloxy unit present in the copolymer and (B) from 30 to 60 parts by weight of at least one polydiorganosiloxane consisting essentially of ARSiO units terminated with endblocking $TRASiO_{\frac{1}{2}}$ units, each polydiorganosiloxane having a viscosity of from 100 centipoise to 30,000,000 centipose at 25° C. where each T is R— or X—, which composition has been chemically treated with at least one chemical treating agent that is reactive to silicon-bonded hydroxyl groups to reduce the silicon-bonded hydroxyl content of the composition to a sufficient degree to thereby render said adhesive layer more resistant to the loss of tack and instant adherence to the skin caused by said amino-functional drug, wherein R is a monovalent organic radical selected from the group consisting of hydrocarbon radicals of from 1 to 6 inclusive atoms, each X radical is selected from the group consisting of HO—, H— and R'O—radicals, each R' is an alkyl radical of from 1 to 4 inclusive carbon atoms, and each A radical is selected from the group consisting of R— and halohydrocarbon radicals of from 1 to 6 inclusive carbon atoms.

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4,655,768

BANDAGE FOR SUSTAINED DELIVERY OF DRUGS

Nelda M. Marocki, Plainfield, N.J., and Gary A. Avalon, Painesville, Ohio, assignors to Avery International Corporation, Pasadena, Calif.

Continuation of Ser. No. 628,577, Jul. 6, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 788,086
Int. Cl.[4] A61K *9/00*
U.S. Cl. 604—897 30 Claims



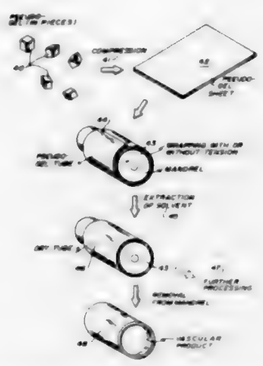
1. A bandage for transdermal or topical administration of a drug to the wearer thereof comprising:
- a liquid-impermeable backing sheet;
- a solid pure drug pellet constituted by compressed solid water-soluble drug powder positioned on said backing sheet;
- a layer of pressure-sensitive adhesive covering said drug pellet and backing sheet so that all upraised surfaces of said pellet are encased by said adhesive and said pellet makes no physical contact with the wearer during administration of the drug, whereby said adhesive remains in physical contact with the wearer and the drug is administered through said adhesive to the wearer's skin.

4,655,769

ULTRA-HIGH-MOLECULAR-WEIGHT POLYETHYLENE PRODUCTS INCLUDING VASCULAR PROSTHESIS DEVICES AND METHODS RELATING THERETO AND EMPLOYING PSEUDO-GEL STATES

Anagnostis E. Zachariades, 65 Glengarry Way, Hillsborough, Calif. 94010

Continuation-in-part of Ser. No. 664,244, Oct. 24, 1984, abandoned. This application Dec. 18, 1985, Ser. No. 811,015
Int. Cl.[4] A61F *2/06*; C08J *9/28*; B29C *43/00*, *55/22*
U.S. Cl. 623—1 37 Claims



1. A tube of ultra-high-molecular-weight polyethylene semi-crystalline morphology useful for vascular prostheses and having a Young's modulus of at least 3 GPa obtained by wrapping an ultra-high-molecular-weight polyethylene pseudo-gel on a mandrel, extracting the solvent with more volatile solvent and evaporating volatile solvent.

4,655,770

SURFACE PASSIVATED INTRAOCULAR LENS

Amitava Gupta, and Robert L. Van Oedel, both of Pasadena, Calif., assignors to Ioptex, Inc., Azusa, Calif.

Filed Jan. 6, 1985, Ser. No. 741,758
Int. Cl.[4] A61F *2/14*
U.S. Cl. 623—1 45 Claims

1. An intraocular lens comprising a lens formed from polymethyl methacrylate and having an outer surface layer defined by a relatively inert fluorocarbon chemically bonded with respect to the lens

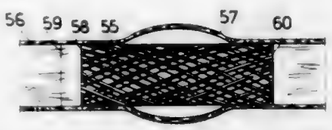
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4,655,771

PROSTHESIS COMPRISING AN EXPANSIBLE OR CONTRACTILE TUBULAR BODY

Hans I. Wallsten, Deneens, Switzerland, assignor to Shepherd Patents S.A., Delemont, Switzerland

PCT No. PCT/SE83/00131, § 371 Date Dec. 7, 1983, § 102(e) Date Dec. 7, 1983, PCT Pub. No. WO83/03752, PCT Pub. Date Nov. 10, 1983
PCT Filed Apr. 11, 1983, Ser. No. 571,549
Claims priority, application Sweden, Apr. 30, 1982, 8202739
Int. Cl.[4] A61F *2/06*
U.S. Cl. 623—1 12 Claims



1. An implantation device for complete insertion and implantation of a prosthesis in a body vessel comprising in combination:
- (a) the prosthesis having a radially and axially flexible, elastic tubular body with a predetermined diameter that is variable under axial movement of ends of the body relative to each other and which is composed of a plurality of individually rigid but flexible and elastic thread elements each of which extends in helix configuration along the center line of the body as a common axis, the flexible and elastic elements defining radially self-expanding body, said body provided by a first number of elements having a common direction of winding but be axially displaced relative to each other and crossing a second number of elements also axially displaced relative to each other but having an opposite direction of winding, the crossing of the first and second elements defining at least an obtuse angle; and
- (b) load applying means placing said tubular body in a reduced diameter state prior to the insertion, said load applying means removed from said body after said insertion of the tubular body so as to permit said tubular body to radially self-expand in the vessel.

4,655,772

CARDIAC VALVULAR PROSTHESIS

Holga E. T. De Liotta, and Domingo S. Liotta, both of 3 de Febrero 2025, Buenos Aires, Argentina

Filed May 28, 1985, Ser. No. 738,222
Claims priority, application Argentina, Sep. 19, 1984, 298006
Int. Cl.[4] A61F *2/24*
U.S. Cl. 623—2 13 Claims

1. A mechanical-type, bivalve cardiac valvular prosthesis comprising:
- a support ring defining a central opening passing therethrough;
- a pair of relatively rigid leaflets disposed generally within said central opening, each of said leaflets having a diametrical straight edge and a curved edge; and

means for pivotably supporting said pair of leaflets on said support ring to permit said leaflets to move between an open position, in which said leaflets are disposed generally parallel to the longitudinal axis of said support ring so that said central opening is substantially open and divided by said leaflets into two semi-circular areas disposed on either side of a generally rectangular central area, and a closed position, in which said opening is substantially blocked by said leaflets contacting each other substantially diametrically along their straight central edges, and contacting said support ring only along their curved edges, said



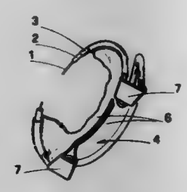
means comprising a pair of spaced apart parallel pivot suports for each of said leaflets, said pivot supports each being rigidly joined at one end to said ring, and each having an opposite, generally semicircular hook-shaped, free end on which the leaflet associated therewith is mounted in a free floating manner so that said leaflets are freely and independently pivotable about a virtual axis parallel to said diametrical straight edges thereof and passing through the zone of the center of curvature of said hook-shaped ends of said pivot supports.

4,655,773

BICUSPID VALVE PROSTHESIS FOR AN AURICULO-VENTRICULAR CARDIAC APERTURE

Gino Grassi, Sesto Fiorentino, Italy, assignor to GE. SV. IN. S.r.l., Italy

Filed Jun. 20, 1985, Ser. No. 746,970
Claims priority, application Italy, Sep. 21, 1984, 3578 A/84
Int. Cl.[4] A61F *2/24*
U.S. Cl. 623—2 4 Claims



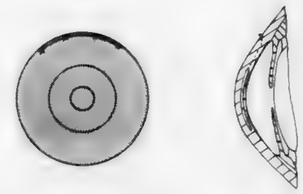
1. A bicuspid valve prosthesis for an auriculoventricular cardiac aperture comprising:
- a bio-compatible material stent having a substantially ellipsoidal basic loop shape and two prongs which depart perpendicularly from a greater diameter of the ellipsoidal basic loop, said prongs being sloped inwardly of the stent; and
- a moving valve part formed from a single piece of biocompatible material, the moving valve part having a cut out formed in the center thereof and being sutured to the stent, said single piece including two cusps adapted to operate simultaneously for opening and closing movements of the valve, and suspenders mounted on the prongs for supporting the cusps.

4,655,774

INTRA-CORNEAL IMPLANT FOR CORRECTION OF ANIRIDIA

D. Peter Choyce, 9 Drake Road, Westcliff on Sea, Essex SS0 8LR, United Kingdom

Filed Mar. 19, 1986, Ser. No. 841,264
Claims priority, application United Kingdom, Jan. 3, 1986, 8600079
Int. Cl.[4] A61F *2/14*
U.S. Cl. 623—5 3 Claims



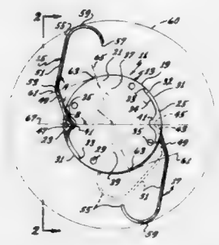
1. An intra-corneal implant for correction of aniridia which comprises an opaque disc having a part spherical surface and a central clear portion, the disc being formed of a clinically inert, autoclavable thermoplastic material selected from the group comprising polysulphones, polyethersulphones and polyarylsulphones.

4,655,775

INTRAOCULAR LENS WITH RIDGES

Thomas J. Clasby, III, Laguna Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 26, 1984, Ser. No. 665,040
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 13 Claims



1. An intraocular lens for implantation in the posterior chamber of the eye, said intraocular lens comprising:
- an optic having a posterior surface, a periphery and first and second ridges adjacent the periphery and projecting generally posteriorly from the posterior surface;
- each of said first and second ridges having opposite ends, said first and second ridges being circumferentially spaced to define first and second openings between the ridges;
- fixation means mounted on the optic for at least assisting in retaining the optic in the posterior chamber with the ridges in contact with the posterior capsule of the capsular bag to space the posterior surface of the optic from the posterior capsule;
- said ridges being sufficiently short and being spaced apart sufficiently so that they can act as runners to facilitate insertion of the intraocular lens into the eye; and
- said ridges being essentially flush with portions of the periphery of the optic, respectively, where said ridges meet such portions of the periphery.

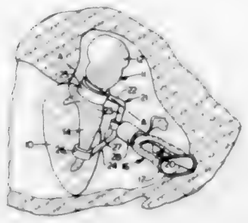
VOL 1077 ISS 1 APR 7 1987 UMI

4,655,776

PROSTHESES FOR OSSICULAR RECONSTRUCTION

S. George Lesinski, Cincinnati, Ohio, assignor to Oto Enterprises, Inc., Cincinnati, Ohio

Filed Jan. 12, 1984, Ser. No. 570,089
Int. Cl.[4] A61F 2/18
U.S. Cl. 623—10 10 Claims



1. A prosthesis for attachment to a host malleus or to a homograft malleus and tympanic membrane when the host malleus is absent, said prosthesis comprising an elongated lever member substituted for the natural incus when the natural incus is absent which collects sound from the tympanic membrane, said elongated lever member having a first linear portion and a second linear portion joined at one end to an end of said first linear portion, said portions being substantially at right angles to one another, and a third linear portion extending at an obtuse angle to said second linear portion at the end thereof remote from said first linear portion; means for attachment of one free end of said lever member to the neck of the malleus at the axis of rotation of the malleus and means for attachment of the other free end of said lever member to the manubrium of the malleus adjacent its umbo whereby to retain the natural cantilever effect of the tympanic membrane as a collecting lever of the manubrium.

4,655,777

METHOD OF PRODUCING BIODEGRADABLE PROSTHESIS AND PRODUCTS THEREFROM

Richard L. Dunn, and Robert A. Casper, both of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Filed Dec. 19, 1983, Ser. No. 563,191
Int. Cl.[4] A61F 1/00
U.S. Cl. 623—16 11 Claims

1. A method of producing a totally biodegradable prosthesis or implant comprising the steps of

(a) encasing an effective amount of fibers selected from the group consisting of calcium phosphate, and calcium aluminate in a matrix of a polymer selected from the group consisting of polyglycolide, poly(DL-lactide), poly(L-lactide), polycaprolactone, polydioxanone, polyesteramides, copolyoxalates, polycarbonate, poly(glutamic-co-leucine) and blends, copolymers and terpolymers thereof to form a composite; and

(b) forming said composite to the desired shape.

4,655,778

JOINT PROSTHESIS

James B. Koeneman, Mesa, Ariz., assignor to Harrington Arthritis Research Center, Phoenix, Ariz.

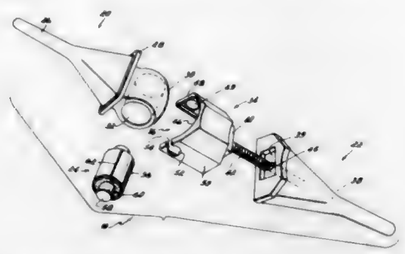
Filed Aug. 12, 1985, Ser. No. 764,558
Int. Cl.[4] A61F 2/42
U.S. Cl. 623—21 9 Claims

1. A joint prosthesis for replacing the joint between at least two skeletal members, comprising:

a first joint component having a stem portion adapted to mount to one of said skeletal members;

a second joint component having a stem portion adapted to mount to at least one of said other skeletal members;

a hinging element including a hollow cylinder having an inside surface and an outside surface, and a section of resilient material mounted to said inside surface of said cylinder;



means for pivotally mounting said first joint component to said outside surface of said hollow cylinder;

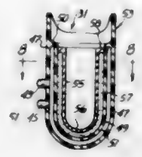
means for mounting said second joint component to said section of resilient material, said first joint component being pivotal relative to said second joint component to permit articulation of one skeletal member relative to at least one other skeletal member.

4,655,779

AIR SYSTEM PROSTHESIS FOR AMPUTEES

Christopher S. Janowiak, 320 N. Washington, Ypsilanti, Mich. 48197

Filed Oct. 31, 1985, Ser. No. 793,217
Int. Cl.[4] A61F 2/80
U.S. Cl. 623—37 5 Claims



1. An insert unit for use with a prosthesis, said prosthesis having a hollow body of a predetermined cross sectional shape including stiff peripheral walls and a cup shaped concave partition defining with said walls an elongated first socket for receipt of said insert unit, said insert unit comprising:

a first member shaped substantially complimentarily to said socket having a concave bottom portion and continuous peripheral side walls, said bottom portion being supportably mounted upon said partition and said side walls frictionally engaging the peripheral walls of said socket;

a second member spaced inwardly of said first member having a base and continuous upstanding walls, said upstanding walls of said second member and said side walls of said first member being hermetically sealed to define a first continuous chamber between said first and second members, said first chamber containing air; and

a third member spaced inwardly of said second member forming an elongated second socket for receipt of a human stump, said second socket having a continuous wall and base, said wall being hermetically sealed, adjacent the open end of said second socket, to said upstanding wall of said second member defining a sealed second continuous chamber therebetween, said second chamber containing liquid.

4,655,780

ENCAPSULATED BLEACH PARTICLES COATED WITH A MIXTURE OF C_{16}–C_{18} AND C_{12}–C_{14} FATTY ACID SOAPS

Kil Whan Chun, Wyckoff, N.J.; David J. Lang, Ossining, N.Y., and Edward Santos, Guttenberg, N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 31, 1985, Ser. No. 815,423
Int. Cl.[4] C11D 3/395, 11/00; B05D 1/02
U.S. Cl. 8—108.1 20 Claims

1. Hard spherical bleaching particles whose composition is an intimately dispersed agglomerated mixture comprising:

(i) from about 1 to 80% by weight of an oxidizing material having at least one reactive chlorine or bromine in its molecular structure;

(ii) from about 1 to 80% by weight of an inorganic diluent salt;

(iii) from about 0.5 to 60% by weight of a binder with melting point 85° to 120° F.; and

(iv) from about 5 to 50% by weight of a coating covering a core mixture of elements (i) through (iii) consisting essentially of a mixture of from about 70 to about 85% by weight of alkali metal C_{16}–C_{18} fatty acid soap and from about 15 to about 30% by weight of C_{12}–C_{14} alkali metal fatty acid soap.

11. A method for bleaching substrates comprising applying the hard spherical bleaching particles of claim 1 suspended in an aqueous medium to said substrate.

4,655,781

STABLE BLEACHING COMPOSITIONS

Chung-Lu Hsieh, San Ramon; Stephen B. Kong, Alameda; Dale S. Steichen, and Harold R. Wheeler, both of Livermore, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Jul. 2, 1984, Ser. No. 626,825
Int. Cl.[4] D06L 3/02, 3/04; C11D 3/395
U.S. Cl. 8—111 25 Claims

1. A substantially nonaqueous stable peroxyacid bleach composition comprising:

(a) an amount of a surface active peroxyacid sufficient to produce 1–100 ppm A.O. in aqueous solution, which tends to undergo extremely rapid solution decomposition in aqueous solution; and

(b) an amount of at least one surfactant sufficient to produce 1–10,000 ppm surfactant in aqueous solution in order to form a mixed micelle with the peroxyacid;

wherein said aqueous solution contains a commercial laundry detergent in a concentration of about 0.1 to 3.0 grams/liter.

4,655,782

BLEACH COMPOSITION OF DETERGENT BASE POWDER AND AGGLOMERATED MANGANESE-ALLUMINOSILICATE CATALYST HAVING PHOSPHATE SALT DISTRIBUTED THEREBETWEEN

Elizabeth J. McCallion, Hasbrouck Heights, N.J.; William Karpasiewicz, Floral Park, N.Y., and Charles F. Irwin, Randolph, N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 6, 1985, Ser. No. 805,531
Int. Cl.[4] C11D 3/04, 3/12, 3/395; D06L 3/02
U.S. Cl. 8—111 20 Claims

1. A bleaching composition comprising:

(a) from about 1 to 20% of a bleach catalyst in aggregate form, exclusive of any peroxy compound precursor within the aggregate, comprising:

(i) from 0.5 to 95% of a manganese (II) cation adsorbed onto an aluminosilicate support material, said support having an average diameter size of about 2 to 10 microns, the ratio of manganese (II) cation to aluminosilicate support material ranging from about 1:1000 to 1:10;

(ii) from about 10 to 80% of a phosphate salt selected from the group consisting of tripolyphosphate, orthophosphate, pyrophosphate and mixtures thereof; and

(iii) from about 0.1 to 40% of a binder, the amount based on a dry solids weight content of the total aggregate, said binder being different from said phosphate salt;

wherein at least 75% of said aggregates have a diameter ranging from at least 250 to about 2000 microns, said catalyst also leaving undissolved less than 5% particles of diameter 125 microns or higher when dispersed in water for two minutes at pH 10 and 40° C., and wherein neither the aggregates nor their components have a pH of more than 10;

(b) a base detergent powder comprising:

(i) from about 1 to 80% of a phosphate salt; and

(ii) from 0.5 to 50% of a peroxy compound.

17. A method for bleaching a substrate comprising placing the substrate into water and treating with the composition of claim 1.

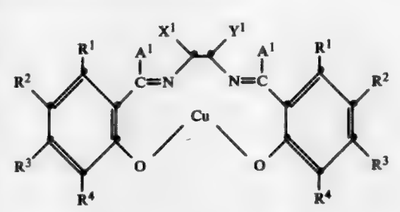
4,655,783

PROCESS FOR PHOTOCHEMICAL STABILIZATION OF NON-DYED AND DYED POLYAMIDE FIBRE MATERIAL AND MIXTURES THEREOF

Gerhard Reinert, Allschwil; Helmut Huber-Emden, Schönenbuch, both of Switzerland, and Gerhard Back, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 12, 1985, Ser. No. 797,098
Claims priority, application Switzerland, May 9, 1985, 1975/85
Int. Cl.[4] D06M 9/00; D06P 5/02, 3/82
U.S. Cl. 8—115.66 8 Claims

1. A process for photochemical stabilisation of polyamide fibre material or a mixture thereof with another fibre material, which comprises treating the polyamide fibre material with a copper complex of the formula



(1)

in which A^1 is hydrogen or C^1–C^3-alkyl, R^1, R^2, R^3 and R^4 are each hydrogen, halogen, hydroxyl, hydroxyalkyl, alkyl, alkoxy, alkyoxyalkoxy, alkoxyalkoxyalkoxy, carboxymethoxy, alkylamino, dialkylamino, $—SO_2NH_2$, $—SO_2NHR$ or $—SO_2NR^2$, in which R is alkyl or alkoxyalkyl and alkyl or alkoxy is in each case to be understood as a group with 1–4 C atoms, or R^1 and R^2 or R^2 and R^3 or R^3 and R^4, together with the C atoms to which they are bonded, form a benzene radical, and X^1 and Y^1 are each hydrogen, C_1–C_4-alkyl or an aromatic radical, or X^1 and Y^1, together with the C atoms to which they are bonded, form a cycloaliphatic radical with 5–7 C atoms.

4,655,784

METHOD OF PRINTING CARPET TILES

Zafar Rahman, Simpsonville, S.C., assignor to Bigelow-Sanford, Inc., Greenville, S.C.

Filed May 24, 1985, Ser. No. 738,168
Int. Cl.[4] D06B 5/22; B41F 15/10
U.S. Cl. 8—148 16 Claims

1. A method of accurate and precise coloring of individual, pre-cut, backed carpet tiles, said method comprising:

moving an individual, pre-cut carpet tile having a tufted

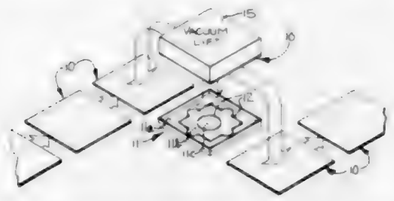
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carpet face and a fluid-impermeable resilient backing into a predetermined position of registration;

mechanically segregating the entire carpet face into predetermined portions, all of which portions are mechanically separated from one another along the entirety of the lengths of the tufts thereof from said fluid-impermeable resilient backing to the face ends of said tufts;

adding predetermined amounts of relatively high viscosity fluid colorant to one or more of the segragated portions of the carpet tile;

exerting an amount of pressure on said carpet tile and on said fluid colorant in said designated segregated portions sufficient to cause the colorant to impregnate the entirety of the lengths of the tufts while limited enough to prevent the colorant from migrating out of the segregated portion or portions of the carpet tile; and



correlating said movement, said segregation, said addition of fluid colorant and said exertion of pressure to cause said fluid colorant to throughly impregnate said tufts in each of said predetermined portions along substantially the entire length of said tufts while preventing said fluid colorant from migrating substantially past said ends of said tufts or from migrating substantially horizontally along said backing.

4,655,785

PROCESS FOR PHOTOCHEMICAL STABILIZATION OF POLYAMIDE AND POLYURETHANE FIBER MATERIALS WITH METAL COMPLEX COMPOUNDS

Gerhard Reinert, Allschwil, Switzerland; Gerhard Back, Lörrach, Fed. Rep. of Germany, and Helmut Huber-Emden, Schönenbuch, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 21, 1985, Ser. No. 736,927

Claims priority, application Switzerland, May 22, 1984, 2509/84

Int. Cl.⁴ D06P *1/64, 3/24;* **D06M** *13/50*

U.S. Cl. 8—442 **9 Claims**

1. A process for the photochemical stabilization of undyed or dyed polyamide or polyurethane fiber material which comprises treating said material with a water-soluble copper, manganese or nickel complex of a tetradentrate bisazomethine, an acylhydrazone a semicarbazone or a thiosemicarbazone of an aromatic aldehyde or ketone, said complex containing at least one sulfo group.

4,655,786

PROCESS FOR DYEING HYDROPHOBIC FIBRE MATERIAL WITH DISPERSE DYE AND SURFACTANT

Josef Navratil, Basel, and Heinz Abel, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 8, 1984, Ser. No. 669,415

Claims priority, application Switzerland, Nov. 15, 1983, 6138/83

Int. Cl.⁴ C09B *67/38;* **D06P** *1/16, 5/20*

U.S. Cl. 8—475 **16 Claims**

1. A process for dyeing hydrophobic fiber material under HT conditions with at least one unformulated disperse dye in an aqueous liquor, which process comprises:

(a-1) dissolving in a dissolution vessel at least one unformulated disperse dye in water containing a solubilizingly or dispersingly effective amount of surfactant or surfactant mixture selected from the group consisting of anionic surfactants, cationic surfactants and mixtures of nonionic and anionic surfactants, each surfactant or mixture having a hydrotropic action on the disperse dye or dyes, the dissolution being carried out at a temperature of from 70° C. to 100° C.; and

(b-1) feeding the dye solution into a dyeing apparatus which contains substrate and water heated to 70° to 100° C.; or

(a-2) dissolving in a dissolution vessel at least one unformulated disperse dye in water containing a solubilizingly or dispersingly effective amount of surfactant or surfactant mixture selected from the group consisting of anionic surfactants, cationic surfactants and mixtures of nonionic and anionic surfactants, each surfactant or mixture having a hydrotropic action on the disperse dye or dyes, the dissolution being carried out under pressure at a temperature greater than 100° C.; and

(b-2) feeding the dye solution into a closed dyeing apparatus which contains substrate and water heated to a temperature of from 100° C. to 150° C.; and

c. adjusting the temperature of the dye liquor, if necessary, to the dyeing temperature; and

d. dyeing the substrate in the temperature range of from 120° to 150° C. with continuous circulation of the dye liquor.

4,655,787

DEPOSITION PROCESSES: INCORPORATING SOLVENT DYE INTO ELECTROPHORETIC RESIN ON METAL SURFACE

Stanley Reaton, Peakridge, England, assignor to Albright & Wilson Limited, Warley, England

Filed May 7, 1985, Ser. No. 731,526

Claims priority, application United Kingdom, May 10, 1984, 8411890

Int. Cl.⁴ C25D *13/06;* **B05D** *3/10;* **C09D** *5/44*

U.S. Cl. 8—522 **27 Claims**

1. A process for the deposition of a film of an electrophoretic resin upon the surface of a metal substrate which comprises the steps of

(i) electrophoretically depositing from a bath comprising water, a water miscible organic solvent and an anaphoretic or cataphoretic resin, a film of the resin upon the surface of the metal substrate

(ii) immersing said film in a solution of a solvent dye in a solvent medium comprising water, a water miscible organic solvent and a hydrotrope, the amount of said solvent dye dissolved in said solvent medium being sufficient for the absorption into the resin film of sufficient dye to impart the desired colouration to the resin film, the amount of said hydrotrope and said solvent being (a) sufficient so that said amount of such solvent dye will dissolve in the solvent medium, and (b) such that said desired coloration is imparted to said resin film while immersed in said solvent medium without significant damage to the resin film and

(iii) curing the resin.

4,655,788

SECURITY FIBERS AND OTHER MATERIALS MADE LUMINESCENT BY A DYEING PROCESS, PROCESSES FOR THEIR MANUFACTURE AND THEIR APPLICATIONS

Michel Jalon, 19, Ave. du General LeClerc, Paris, France

Filed Jun. 20, 1985, Ser. No. 746,671

Claims priority, application France, Jun. 22, 1984, 84 09807

Int. Cl.⁴ C09B *69/10*

U.S. Cl. 8—648 **18 Claims**

1. A process for the manufacture of luminescent materials comprising:

(a) immersing a dyeable material in a liquid bath comprising

(i) at least one luminescent rare-earth chelate, (ii) at least one solvent in which the rare-earth chelate is soluble and in an amount sufficient to dissolve the chelate and (iii) at least one diluent in which the chelate is insoluble or poorly soluble, the diluent being miscible with the solvent;

(b) removing at least a part of the solvent from the bath, the diluent being present in an amount sufficient to maintain the rare-earth chelate soluble in the bath; and

(c) thereafter withdrawing the material from the liquid in the bath and drying it to obtain a material dyed with the luminescent chelate.

4,655,789

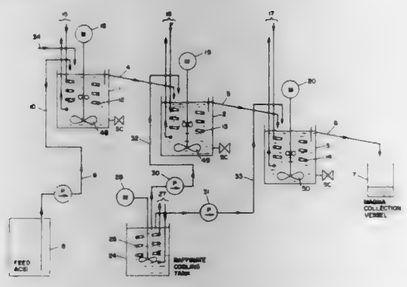
PHOSPHORIC ACID CRYSTALLIZATION PROCESS

Tadeusz K. Wiewiorowski; Phillip D. Mollere; Vivian C. Astley, and David M. Dyer, all of New Orleans, La., assignors to Freeport Research and Engineering Company, New Orleans, La.

Filed May 8, 1985, Ser. No. 731,971

Int. Cl.⁴ B01D *9/02*

U.S. Cl. 23—297 **15 Claims**



1. A method for purifying phosphoric acid containing impurities which interfere with crystallization, comprising;

(i) adding to a vessel an aqueous solution of said impure phosphoric acid having a concentration such that, when cooled to a temperature between −10° C. and +25° C., said solution will be supersaturated with respect to $H_3PO_4.\frac{1}{2}H_2O$, in which vessel said phosphoric acid solution is maintained at a temperature at which it is supersaturated with respect to $H_3PO_4.\frac{1}{2}H_2O$, and dispersing seed crystals of relatively pure orthophosphoric acid hemihydrate in said impure acid in an amount of at least 2% by weight of said impure phosphoric acid, and at a rate effective to substantially prevent said phosphoric acid from becoming a viscous, inseparable mass;

(ii) maintaining said phosphoric acid and seed crystals of orthophosphoric acid hemihydrate in said vessel at a temperature below supersaturation temperature for an nominal residence time sufficient to form a magma of crystallized $H_3PO_4.\frac{1}{2}H_2O$, having an average crystal size larger than that of the seed crystals and a liquid phase mother liquor containing the bulk of the impurities while controlling the temperature within said vessel to substantially prevent the occurrence of a viscous, inseparable mass; and

(iii) thereafter withdrawing said magma and separating said crystallized orthophosphoric acid hemihydrate from said liquid phase mother liquor.

4,655,790

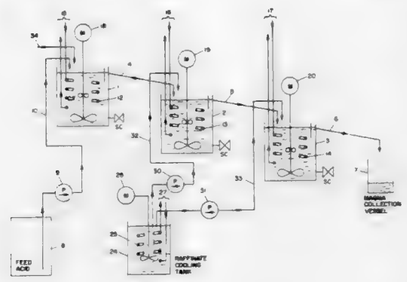
PHOSPHORIC ACID CRYSTALLIZATION PROCESS

Tadeusz K. Wiewiorowski, and Vivian C. Astley, both of New Orleans, La., assignors to Freeport Research and Development Company, New York, N.Y.

Filed May 8, 1985, Ser. No. 731,970

Int. Cl.⁴ B01D *9/02*

U.S. Cl. 23—299 **5 Claims**



1. In a method for crystallizing phosphoric acid comprising

(i) adding to a crystallizing vessel a phosphoric acid feed having a P_2O_5 concentration of at least about 50% by weight but not in excess of about 66% by weight maintaining it in said vessel at a temperature at which it is supersaturated with respect to orthophosphoric acid hemihydrate and dispersing seed crystals of orthophosphoric acid hemihydrate in said acid in an amount of at least 2% by weight of the phosphoric acid, and at a rate, effective to substantially prevent said phosphoric acid from becoming a viscous, inseparable mass;

(ii) maintaining at least a portion of said phosphoric acid and seed crystals of orthophosphoric acid hemihydrate under agitation for a residence time sufficient to form a magma of crystallized orthophosphoric acid hemihydrate having an average crystal size larger than that of the seed crystals and a liquid phase mother liquor raffinate containing the bulk of the impurities while controlling the temperature of said magma to substantially prevent the occurence of a viscous, inseparable mass; and

(iii) thereafter withdrawing said magma and separating said crystallized orthophosphoric acid hemihydrate from said liquid phase mother liquor raffinate,

the improvement comprising recycling a sufficient portion of said raffinate to the crystallization step to maintain the solids content of the magma in said crystallizing vessel below 40% by weight.

4,655,791

APPARATUS AND METHOD TO ACHIEVE GASIFICATION OF BARK AND THE LIKE

Fayette G. Atwood, Solon, Me. 04979

Filed Mar. 22, 1985, Ser. No. 714,885

Int. Cl.⁴ C10J *3/32*

U.S. Cl. 48—851 **11 Claims**

1. A system to achieve gasification of bark pieces, that comprises:

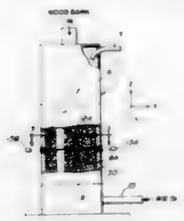
a vessel to receive the bark pieces which are introduced at an upper region of the vessel and are burned at a lower region below said upper region, which bark pieces settle from the upper region downward to the lower region in the course of burning, which bark pieces tend to bridge as they settle to leave a bypass hole in the bulk thereof;

means to effect combustion of the bark pieces at said lower region;

a reciprocating chain mechanism comprising a pair of chains oriented across the vessel and interconnected such that

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when one chain of the pair moves transversely across the vessel in one direction the other chain of the pair moves transversely across the vessel in the opposite direction, the reciprocating movement of the chains serving to apply



angular impelling forces on the bark pieces whereby the individual pieces thereof are turned through angles, first in one direction and then in the other direction, to disrupt said bridging.

4,655,792

PARTIAL OXIDATION PROCESS

Richard V. Kessler, Wappingers Falls, and Mitri S. Najjar, New Windsor, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 12, 1984, Ser. No. 680,724
Int. Cl.⁴ C10J *3/00, 3/46, 3/66*
U.S. Cl. 48—197 R **15 Claims**

1. A process for the production of gaseous mixtures comprising H_2+CO comprising:

(1) mixing an ash fusion temperature reducing agent comprising a comminuted ore having a particle size of ASTM E-11 Standard Sieve Designation in the range of about 0.1–210 microns with at least one material selected from the group consisting of a pumpable ash-containing liquid hydrocarbonaceous material and ash-containing petroleum coke; wherein the ash from said liquid hydrocarbonaceous material or petroleum coke principally comprises the oxides of Ni, V, and Fe along with a minor amount of the oxides selected from the group consisting of Si, Al, Ca, Ti, Cr, and mixtures thereof; where the weight ratio of ash fusion temperature reducing agent to ash produced in (2) is in the range of about 0.5 to 10, and wherein said comminuted ash fusion temperature reducing agent principally comprises monoclinic amphibole and/or pyroxene minerals in which the following elements are present principally as silicate compounds in weight percent (basis ore): iron in the range of about 5–55, calcium in the range of about 1–10, silicon in the range of about 4–25, magnesium in the range of about 1–10, and aluminum in the range of about 0.25–5.0;

(2) reacting said mixture from (1) at a temperature in the range of about 2100° F. to 2700° F. and a pressure in the range of about 1 to 200 atmospheres in a free-flow refractory lined partial oxidation reaction zone with a free-oxygen containing gas in the presence of a temperature moderator to produce a hot raw effluent gas stream comprising H_2+CO along with molten ash having a reduced ash fusion temperature; and

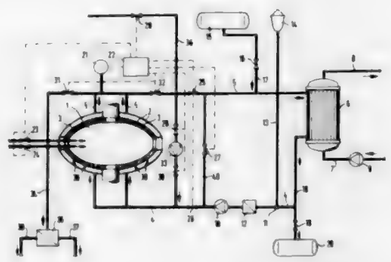
(3) separating said molten ash from said hot raw effluent gas stream.

4,655,793

METHOD FOR OPERATING A COAL GASIFIER

Hans C. Pohl, Witten, Fed. Rep. of Germany, assignor to Krupp Koppers GmbH, Essen, Fed. Rep. of Germany

Filed May 17, 1985, Ser. No. 735,552
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1984, 3431392
Int. Cl.⁴ C10J *3/72, 3/80*
U.S. Cl. 48—210 **2 Claims**



1. A method for safely operating a gasifier during coal gasification wherein coal and gasifying agents are supplied to said gasifier which operates at temperatures from 1200° to 1600° C. and under pressures from 1 to 3 bar, the method comprising the steps of using pressurized heat-carrying oil in a cooling system for cooling of the coal gasifier by passing said heat-carrying oil through a cooling jacket of the gasifier; providing a heat exchanger externally of the coal gasifier and connecting the heat exchanger with the cooling jacket of said coal gasifier; conveying the heat-carrying oil having a temperature from 300° to 350° C. from the cooling jacket of said gasifier to the heat exchanger wherein the heat-carrying oil is cooled down to from 240° to 270° C. and a medium pressure vapor is produced, recycling the heat-carrying oil from the heat exchanger into the cooling jacket of the coal gasifier; continually measuring the pressure of the heat-carrying oil after having passed through said cooling jacket and interrupting the supply of coal and gasifying agents to the gasifier and the passage of said heat-carrying oil to said cooling jacket if the measured pressure of the heat-carrying oil falls by about 2 bar below a predetermined pressure and passing water or steam to the cooling jacket until the gasifier is safely shutdown.

4,655,794

LIQUID CLEANER CONTAINING VIABLE MICROORGANISMS

Ray O. Richardson, Virginia Beach, Va.; Anthony F. Bromirski, Spartanburg, S.C., and Lois T. Davis, Salem, Va., assignors to Sybron Chemicals Holdings Inc., Birmingham, N.J.

Filed Mar. 20, 1986, Ser. No. 841,926
Int. Cl.⁴ B24D *3/00*
U.S. Cl. 51—293 **12 Claims**

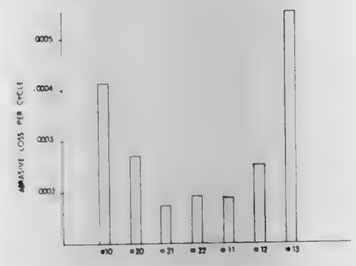
1. A cleaning composition which comprises a stable suspension of abrasive particles with at least one material selected from the group consisting of hydrophobic silica, alumina, silica, and diatomaceous earth and viable microorganisms in an amount effective to degrade and promote the degregation of sanitary waste, in a water solution containing a detergent.

4,655,795

ABRASIVE TOOL FOR HONING

William H. Bleecker, Union Lake, and William G. Corley, Dearborn Heights, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Feb. 28, 1983, Ser. No. 470,129
Int. Cl.⁴ B24D *3/02*
U.S. Cl. 51—309 **4 Claims**



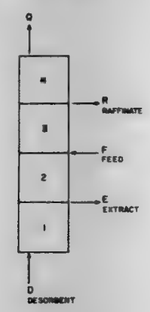
1. An abrasive tool comprising a metal bond alloy of copper, tin and optionally cobalt, titanium carbide particulate present in the bond alloy in an amount from about 5 to about 10 weight percent of the total metal alloy weight and other abrasive particles in the bond alloy.

4,655,796

CONTINUOUS SORPTION PROCESS

James C. Pirkle, Jr., Lebanon, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 30, 1983, Ser. No. 537,850
Int. Cl.⁴ B01D *53/12*
U.S. Cl. 55—3 **10 Claims**



1. A continuous process for separating the components of a feedstream wherein at least one component is selectively adsorbed by contact with a bed of magnetizable adsorbent particles comprising:

continuously contacting the feedstream with the bed of adsorbent particles utilizing a simulated countercurrent flow system wherein the streams flow upward through a desorption zone, a rectification zone, and an adsorption zone, each zone being serially and circularly interconnected and divided into a plurality of interconnected sections, each section containing the bed of adsorbent particles, with the points of introduction and withdrawal of the streams into and from the sections being simultaneously and periodically shifted to simulate countercurrent flow;

fludizing the bed of adsorbent particles by contacting the adsorbent with a fluid flowing in an ascending manner against the force of gravity, the bed of adsorbent particles being maintained in a stationary position;

applying a magnetic field to the bed of adsorbent particles at a strength sufficient to suppress solids backmixing and fluid bypassing and to preserve staging; and

desorbing the adsorbed components with a stream of desorbent introduced into the bed of adsorbent particles and withdrawing separated streams of more adsorbed and relatively lesser adsorbed components.

4,655,797

FINE SCREEN AND FINE SCREEN STACK, THEIR USE AND PROCESS FOR THE MANUFACTURE OF FINE SCREENS

Nicolas Iniotakis, Jülich; Claus-Benedict von der Deckea, Aachen; Werner Fröhling, Düren; Jochen Schoeller, Stürtzstrasse 25, D-5160 Düren, and Hermann Grossman, Neuenburg-Arnbach, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich and Jochen Schoeller, Düren, both of, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 649,044
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1983, 33323453
Int. Cl.⁴ B01D *53/22*
U.S. Cl. 55—16 **22 Claims**

1. A method of cleaning a waste gas by catalytic action which includes passing the gas through a fine metal screen on which at least two different metal catalysts have been deposited by at least one of galvanic and chemical metal deposit and wherein said at least two different metal catalysts are disposed, at least partially, one adjacent the other.

10. A fine screen stack comprising a plurality of layers of metal fabric on which at least one coating is formed by galvanic deposit;

said coated metal fabric having mesh openings of a mesh width of less than two microns;

said metal fabric having an inner portion within said mesh openings and at least one outer portion on opposing outer surfaces thereof;

said metal fabric having at least one metal coating being deposited on said at least one outer portion of at least one of said outer surfaces of said metal fabric;

said at least one galvanically deposited metal coating forming membranes extending from said at least one outer portion of said metal fabric to restrict said mesh openings of said metal fabric by forming openings substantially smaller than said mesh openings of said metal fabric and being less than two microns in width; and

said layers of coated metal fabric being positioned in adjacent relationship to form a stack.

4,655,798

PROCESS FOR REMOVING ACETYLENE FROM A C_2-STREAM

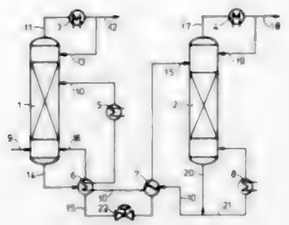
Siegfried Ruch, Dormagen; Karl-Heinz Hagen, Leverkusen, and Klaus-Peter Hambrock, Pulheim, all of Fed. Rep. of Germany, assignors to EC Erdölchemie GmbH, Cologne-Worringen, Fed. Rep. of Germany

Filed Apr. 3, 1985, Ser. No. 719,194
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3413898
Int. Cl.⁴ B01D *53/14*
U.S. Cl. 55—64 **15 Claims**

1. In a process for removing acetylene from a crude C_2-stream by introducing the same into an absorption column and therein introducing an absorbent at a point above the point at which said crude C_2-stream is introduced and therein absorb-

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ing acetylene in said absorbent, the improvement wherein a stream consisting of liquid C_2 which is substantially acetylene



free is fed into the absorption column between the feed points of the crude C_2-stream and for the absorbent.

4,655,799

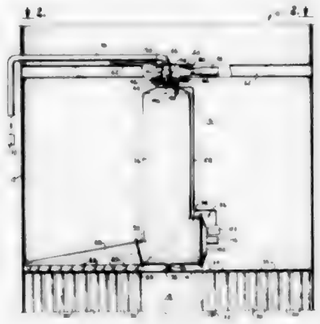
PULSE CLEANING SYSTEM FOR DUST FILTERS

Michael A. Bosworth, Nemaha, Kans.; Richard L. Adams, Clay, Mo., and Bruce Wheaton, Hennepin, Minn., assignors to MAC Equipment, Inc., Sabetha, Kans.

Continuation of Ser. No. 698,686, Feb. 6, 1985, abandoned. This application Jul. 14, 1986, Ser. No. 885,237

Int. Cl.⁴ B01D *46/04*

U.S. Cl. 55—273 **16 Claims**



1. In gas filtering apparatus having dirty and clean air chambers separated by a generally horizontal partition presenting a plurality of openings each provided with a filter bag, an improved bag cleaning arrangement comprising:

an upright air accumulator tank for receiving and accumulating a supply of air under pressure;

means for mounting said tank in the clean gas chamber for rotation about a substantially vertical axis;

drive means for rotating said tank about said axis;

means for supplying air under pressure to said tank as same is rotating;

a substantially horizontal air distribution arm extending from said tank and rotating therewith in a path carrying said arm over the partition said tank providing the sole source of air flow to said arm;

a plurality of outlets spaced along said arm for discharging air therefrom in pulses, each outlet being located to successively align with openings in the partition as said arm rotates;

valve means for controlling the flow of air from said tank into said arm; and

valve control means for intermittently opening and closing said valve means to allow air from the tank to enter the arm in a pulse each time said valve means is opened and to allow air to accumulate in the tank during the intervals said valve means is closed, whereby air in the tank flows into said arm and discharges in pulses through said outlets and into the filter bags to dislodge dust therefrom each time said valve means is opened.

4,655,800

WASTE GAS EXHAUST SYSTEM FOR VACUUM PROCESS APPARATUS

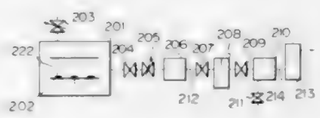
Tsutomu Tsukada; Ishao Ashaishi; Tatsunori Koizumi, and Kouji Ikeda, all of Fuchu, Japan, assignors to Anelva Corporation, Tokyo, Japan

Filed Mar. 21, 1985, Ser. No. 714,302

Claims priority, application Japan, Mar. 21, 1984, 59-53894

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—195 **8 Claims**



1. An exhaust system for vacuum process apparatus using chlorine-containing gases for treating a substrate in a vacuum which includes a booster pump and an auxiliary pump located downstream of said booster pump comprising:

means for filling a chamber of the auxiliary pump on the air exhaust side thereof with an inert gas at a pressure above atmospheric pressure; and

a dry adsorption column capable of adsorbing the chlorine-containing gases, said adsorption column having a gas inlet connected to an air exhaust pipe of the auxiliary pump and an outlet for gases communicating with the atmosphere.

4,655,801

AIR DRYER UNIT

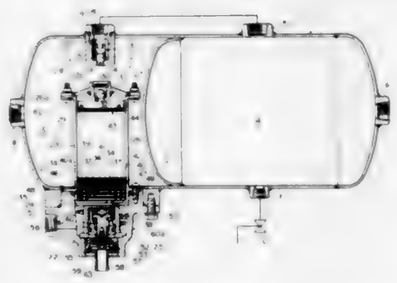
Katsumi Kojima, Yokosuka, and Yuzo Ichishita, Yokohama, both of Japan, assignors to Nippon Air Brake Co., Ltd., Japan

Filed Aug. 15, 1985, Ser. No. 766,105

Claims priority, application Japan, Aug. 21, 1984, 59-126809[U]

Int. Cl.⁴ B01D *39/02*

U.S. Cl. 55—218 **5 Claims**



1. An air dryer unit adapted for use in a pneumatic circuit of a vehicle, comprising:

(a) an air storage tank including an elongated hollow body of a one-piece construction which is disposed horizontally, having a partition wall disposed therewithin to divide the interior of said tank body into a first chamber and a second chamber in an air-tight manner, said second chamber having an outlet connectable to a pneumatic circuit, and an opening being formed at the bottom of the tank body and surrounded by an annular base, said annular base being fixed to the bottom wall of the tank;

(b) an air dryer device comprising a dryer including a tubular dryer housing containing a desiccant and extending through said opening into said first chamber, and a hollow cover member detachably coupled to said dryer housing to cover that portion of said dryer housing extending outwardly through said opening, said cover member being detachably coupled to an outer surface of said tank body and having an inlet connectable to an air compressor, said cover member having at its upper portion a tubular portion which defines a central bore, the tubular portion being fit into said annular base wherein tubular housing of the dryer is received in the central bore of the cover member at a lower end thereof, one ene of said tubular dryer housing communicating with said first chamber while the other end communicates with said cover member, and compressed air from said air compressor being introduced into said inlet and passed through said cover member and said tubular dryer housing into said first chamber;

(c) means for communicating said first chamber with said second chamber for flowing the compressed air from said first chamber to said second chamber; and

(d) a check valve associated with said communicating means to prevent a backflow of the compressed air from said second chamber to said first chamber.

4,655,802

HEAT EXCHANGER FOR A FURNACE USING HEAT OF EXHAUST GAS

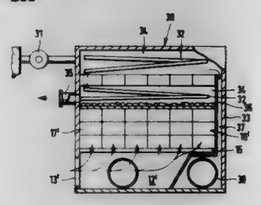
Alfons Jaumann, Haus Nr. 98, 7450 Hechingen-Bechtoldsweiler, Fed. Rep. of Germany

Filed Apr. 16, 1984, Ser. No. 601,151

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314757

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—208 **20 Claims**



1. A heat exchanger for a furnace using sulfur-containing fuel, comprising a housing having an inlet for feeding hot exhaust gas into the housing and an outlet for discharging the exhaust gas from the housing; said housing including passages for passing a fluid medium therethrough, said fluid medium receiving heat from the exhaust gas and conducting said heat; at least one interchangeable heat storage insert positioned in said housing for storing and yielding heat received from the exhaust gas; said inlet being connected to an exhaust gas source and having a cross-sectional area, said heat storage insert being assembled of a plurality of individual blocks combined into a structural system and comprised, at least at surfaces thereof loaded with the exhaust gas, of a material which absorbs sulfur compounds are relatively low temperatures, said insert having a plurality of through passages for passing the exhaust gas therethrough, said through passages having a total cross-section area which is greater than the cross-sectional area of said inlet, said insert being positioned in said housing below said passages with the fluid medium receiving heat from the exhaust gas and before said passages in the direction of passing of the hot exhaust gas in said housing.

4,655,803

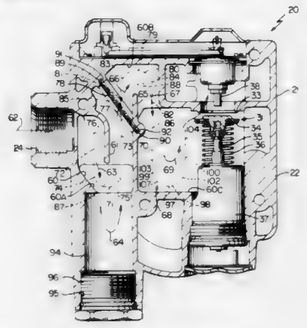
BURNER CONTROL DEVICE AND METHOD OF MAKING THE SAME

Jay R. Katchka, Cypress, and Richard W. McKinney, Lakewood, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 20, 1985, Ser. No. 767,722

Int. Cl.⁴ B01D *50/00*

U.S. Cl. 55—322 **10 Claims**



1. In a control device for supplying fuel to a burner means, said device comprising a housing means having an inlet means for being interconnected to a source of fuel and having an outlet means for being interconnected to said burner means, control valve means carried by said housing means for connecting said inlet means to said outlet means when said control valve means is in an open condition thereof, and passage defining means carried by said housing means and leading from said inlet means to said control valve means, the improvement wherein said passage defining means has means that is adapted to cause said fuel to serially flow through a first substantially U-shaped path and a second substantially U-shaped path and a third substantially U-shaped path between said inlet means and said control valve means, said first and third U-shaped paths each normally facing substantially vertically upwardly and said second U-shaped path normally facing substantially vertically downwardly and being disposed between said first and second U-shaped paths, said means of said passage defining means causing said first U-shaped path to have a yoke portion and a pair of legs respectively connected to the ends of said yoke portion and respectively having free ends remote from said yoke portion, said yoke portion normally being below said legs with said legs extending substantially vertically upwardly from said yoke portion, said inlet means interconnecting with one of said legs at said free end thereof, and a screen means disposed across the other of said legs at said free end thereof.

4,655,804

HOPPER GAS DISTRIBUTION SYSTEM

Mark R. Kercheval, Hanover, and Lawrence W. Fickus, Baltimore, both of Md., assignors to Enviroamental Elemeats Corp., Baltimore, Md.

Filed Dec. 11, 1985, Ser. No. 807,700

Int. Cl.⁴ B01D *50/00*

U.S. Cl. 55—324 **19 Claims**

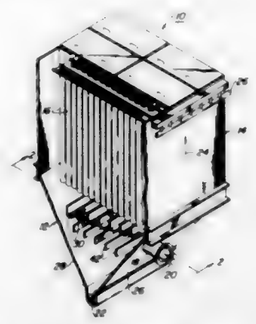
1. In a baghouse having a plurality of filter bags disposed therein, the improvement comprising a hopper gas distribution system for passing particulate laden gas around or into said filter bags and comprising:

(a) a hopper housing coupled to said baghouse and in fluid communication with said filter bags;

(b) an inlet conduit coupled to said hopper housing for supplying said particulate laden gas into said hopper housing in a longitudinal direction;

(c) means within said hopper housing and adjacent said inlet

conduit for redirecting flow of said supplied particulate laden gas in a first direction around or into said plurality of filter bags; and,



(d) means for blocking flow of said particulate laden gas in a second direction within said hopper housing, said means for blocking flow being located below said inlet conduit and said means for redirecting flow of said supplied particulate laden gas.

4,655,805

FILTER, ESPECIALLY AIR FILTER

Anders Krantz, Söderala, Sweden, assignor to Industriell Arbetshygien i Söderhamn AB, Söderhamn, Sweden

PCT No. PCT/SE85/00093, § 371 Date Oct. 25, 1985, § 102(e) Date Oct. 25, 1985, PCT Pub. No. WO85/04115, PCT Pub. Date Sep. 26, 1985
PCT Filed Feb. 27, 1985, Ser. No. 800,128
Int. Cl.[4] B01D *46/04*
U.S. Cl. 55—298 10 Claims



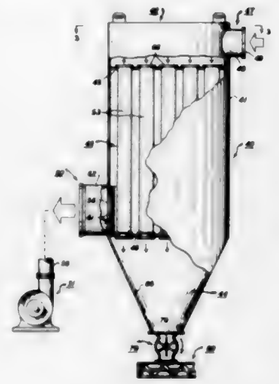
1. In a filter of the type comprising at least one filtering wall which has a front face and a rear face and which is normally permeated by the medium to be purified in a direction from the front face towards the rear face such that the pollutants entrained are separated at the front face of the filtering wall and adhere to said front face and the purified medium is allowed to pass through the wall, the flow of medium through said wall being reversible in order to remove said separated, adhering, pollutants from the front face of the filtering wall so as to clean said wall, the improvement wherein the front face of the filtering wall is equipped with a plurality of strip-shaped elastic cover elements which are moveable relative to the filtering wall and adapted upon reversal of the flow of medium, by elastic deformation under the action of said flow, to be removed wholly or partly from the wall while working said separated, adhering pollutants in order to facilitate the removal thereof from said front face of said filtering wall.

4,655,806

DUST SEPARATOR

Thomas E. Bowersox, Phoenix, N.Y., assignor to Griffin Environmental Company, Inc., Syracuse, N.Y.

Filed Dec. 23, 1985, Ser. No. 812,133
Int. Cl.[4] B01D *46/02*
U.S. Cl. 55—341 NT 18 Claims



1. Apparatus for separating particulate materials having a high concentration of dust from an air stream that includes a cylindrical vertically disposed housing having an air distributor in the top section thereof, a settling chamber in the bottom section thereof and a tube compartment between the distributor and the settling chamber, an upper tube sheet separating the distributor from the tube compartment, a lower tube sheet separating the settling chamber from the tube compartment, a series of air permeable filter tubes connected between the tube sheets, air inlet means connected to the distributor for admitting air containing a particulate material into the housing, an air discharge opening in the lower part of the bag compartment that is connected to a blower means for drawing air from the distributor through the walls of the air permeable tubes whereby air entrained materials are captured on the inside of the tubes and directed downwardly into the settling chamber, and a perforated flow-control baffle mounted in front of the air discharge opening so that a portion of the discharge air passes through the perforations and the remainder passes around the baffle.

4,655,807

MATERIAL FOR GAS SEPARATING MEMBRANE

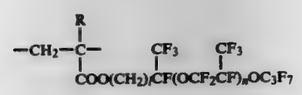
Akira Ohsuori, Ibaraki; Nobuyuki Tomihashi, Takatsuki; Hiroshi Inukai, Settsu, and Naoaki Izutani, Takatsuki, all of Japan, assignors to Daikin Kogyo Co., Ltd., Japan

Continuation of Ser. No. 676,389, Nov. 29, 1984, abandoned.
This application Feb. 18, 1986, Ser. No. 829,868
Claims priority, application Japan, Nov. 29, 1983, 58-226617
Int. Cl.[4] B01D *39/00*
U.S. Cl. 55—522 6 Claims

1. In a method of separating oxygen from air with a gas separating membrane, the improvement wherein the gas separating membrane is one which has high permeability coefficient for oxygen and high separation coefficient, and which is prepared from a fluorine-containing acrylate or methacrylate polymer comprising:

(i) 70 to 100% by weight of a structural unit represented by the formula

(a)



wherein R is —H or —CH_3, l is an interger of from 1 to 3 and n is 0 or an interger of from 1 to 5, and/or a structural unit represented by the formula

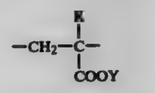
(b)



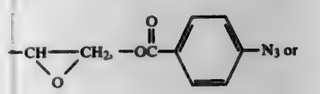
wherein R is as defined above, X^1 is —H or —OH, X^2 is —H, —F or —$CF(CF_3)_2$, p and q are each 0 or 1, and r is an interger of from 1 to 10, and

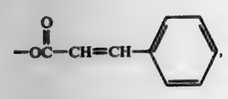
(ii) 0 to 30% by weight of a structural unit represented by the formula

(c)



wherein R is as defined above, and Y is —H or a group represented by —$(CH_2)_sY^1$ (wherein Y^1 is —COOH, —OH,





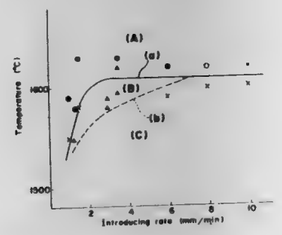
and s is an interger of from 1 to 5).

4,655,808

METHOD FOR PRODUCING GLASS PREFORM FOR OPTICAL FIBER

Michihisa Kyoto; Yoichi Ishiguro; Hiroshi Kawauchi, and Gotaro Tanaka, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 25, 1985, Ser. No. 748,560
Claims priority, application Japan, Aug. 17, 1984, 59-170469
Int. Cl.[4] C03C *25/02*; C03B *37/075*
U.S. Cl. 65—3.12 7 Claims



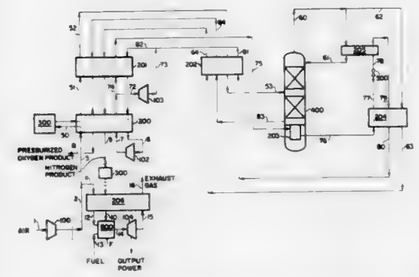
1. A method for producing a glass preform comprising flame hydrolyzing a glass raw material in an oxyhydrogen flame to form glass fine particles of quartz,
depositing the glass fine particles on a seed member to produce a solid or hollow cylindrical soot preform at least a part of which contains at least 15% by weight GeO_2, and heating and sintering the soot preform by introducing it in an atmosphere comprising an inert gas at least a part of which is kept at a temperature not lower than 1,600° C. at an introducing rate not smaller than 3 mm/min.

4,655,809

AIR SEPARATION PROCESS WITH SINGLE DISTILLATION COLUMN WITH SEGREGATED HEAT PUMP CYCLE

Thirthahalli A. Shenoy, Whitehall, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 10, 1986, Ser. No. 818,416
Int. Cl.[4] F25J *3/00*
U.S. Cl. 62—18 12 Claims



1. In a process for separating high purity pressurized oxygen from air in a pressurized, single distillation column wherein an air feed stream is compressed, water and carbon dioxide are removed from said air feed stream, said air stream is cooled and then introduced into an intermediate point of said distillation column; a gaseous nitrogen product stream is removed, at pressure, from the top of said distillation column as an overhead product stream; and a liquid phase oxygen product is removed, at pressure, from the bottom of the column, the improvement comprising providing reboil and reflux duty for said column with a segregated heat pump cycle comprising:

(a) compressing a segregated heat pump fluid in a compressor;

(b) cooling said compressed, segregated heat pump fluid against warming nitrogen and oxygen product streams;

(c) splitting said cooled, compressed, segregated heat pump fluid into a first portion and a second portion;

(d) heat exchanging said first portion against the liquid phase of the bottom of the distillation column to at least partially condense said first portion and reboil the liquid phase;

(e) cooling said partially condensed first portion against the warming nitrogen product stream;

(f) expanding the cooled, partially condensed first portion;

(g) heat exchanging the expanded, cooled, partially condensed first portion against the overhead of the distillation column to control the reflux of the column;

(h) heat exchanging said first portion from step (g) to recover refrigeration value;

(i) expanding said second portion generated in step (c);

(j) combining said first portion from step (h) and said expanded second portion to form a combined segregated heat pump compressor feed;

(k) heat exchanging said combined segregated heat pump compressor feed to recover refrigeration value; and

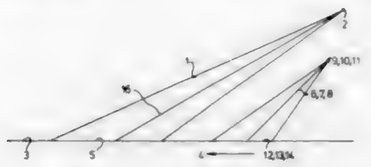
(l) feeding said combined compressor feed from step (k) to the compressor of step (a).

4,655,810

COATING HOT GLASS WITH METALS OR METAL COMPOUNDS, ESPECIALLY OXIDES

Albert Van Caster, Charleroi; Robert Terwes, Thiméon, and Robert Van Lostheim, Loverval, all of Belgium, assignors to Glaverbel, Brussels, Belgium

Continuation-in-part of Ser. No. 620,265, Jun. 13, 1984, abandoned. This application Feb. 25, 1986, Ser. No. 834,119
Claims priority, application United Kingdom, Jun. 17, 1983, 8316532
Int. Cl.[4] C03C *17/00, 17/10*
U.S. Cl. 65—60.4 28 Claims



1. A process of forming a metal or metal compound coating on a face of a freshly formed ribbon of hot glass as it advances in a forward direction along a path through a coating station, comprising the steps of: (a) spraying said face with a material from which said coating is formed on said face by directing at least one stream of droplets of said material downwardly and in the direction of the advance of said glass ribbon towards the glass ribbon and repeatedly displacing said at least one stream transversely of said path so that said ribbon face is scanned by said at least one stream, said at least one stream of droplets having a rear half and having a stream trajectory with a top portion and a bottom portion, said at least one stream of droplets additionally having a central axis which makes an angle of between 20° and 40° with the glass ribbon, said droplets being sprayed by imparting to them a mean velocity which is at least sonic velocity; (b) continuously discharging gas into the atmosphere behind said at least one stream of droplets so as to maintain a forwardly directed flow of gas which envelops the rear half of said at least one stream of droplets, at least at the bottom portion of the stream trajectory, and which sweeps past the sides of such at least one stream; and (c) then removing the flow of gas which envelopes the rear half of said at least on stream of droplets away from adjacent the ribbon, with the flow of gas entraining material which has rebounded from said glass ribbon face when said droplet stream impinges on said glass ribbon face.

4,655,811

CONDUCTIVE COATING TREATMENT OF GLASS SHEET BENDING PROCESS

Lowell E. Bitter, Holland, Mich., assignor to Donnelly Corporation, Holland, Mich.

Filed Dec. 23, 1985, Ser. No. 813,558
Int. Cl.[4] C23C *15/00*; C03B *23/023*
U.S. Cl. 65—60.51 18 Claims



1. A method for forming a curved, electrically conductive glass member comprising:

coating a flat piece of glass with an indium-tin oxide coating;

applying a layer of carbonaceous material on top of said indium-tin oxide coating;

bending said glass member with heat while minimizing exposure of said carbonaceous layer to oxygen, whereby crazing of said indium-tin oxide coating is minimized.

4,655,812

ELECTRIC HEATING OF GLASS FOREHEARTH

John F. Blumenfeld, Simsbury, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 16, 1985, Ser. No. 776,630
Int. Cl.[4] C03B *5/235*
U.S. Cl. 65—346 15 Claims



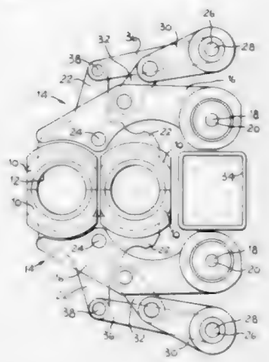
1. A forehearth for the conveyance of molten glass having at least one cooling zone, said cooling zone including a trough for carrying a stream of molten glass and a roof over said trough, said roof defining in the space below said roof a central channel over the central portion of said stream of molten glass and side channel over respective side portions of said stream of glass, said central and side channels having different spacings between the glass line and roof, and said roof having in the area over each of said side channels electric heating elements, said elements being capable of generating sufficient heat to cause radiation of heat to said molten glass in the area below said elements.

4,655,813

MOULD OPENING AND CLOSING MECHANISM FOR A GLASSWARE FORMING MACHINE

Hermann H. Nebelung, Zurich, Switzerland, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Mar. 5, 1986, Ser. No. 836,773
Claims priority, application United Kingdom, Mar. 19, 1985, 8507077
Int. Cl.[4] C03B *11/06*
U.S. Cl. 65—359 9 Claims



1. A mould opening and closing mechanism for a glassware forming machine operable to move opposed mould portions

between a mould-closed position, in which the opposed mould portions engage one another and co-operate in defining a mould cavity, and a mould-open position in which the opposed mould portions are separated from one another, the mechanism comprising two mould support arrangements, each mould support arrangement comprising a supporting arm mounted for movement about a first vertical axis defined by a pivot pin mounted so that the axis remains stationary, and a mould portion support mounted on the supporting arm for pivoting movement about a second vertical axis which moves with the supporting arm, the mould portion support being arranged to support one or more mould portions so that opposed mould portions can be supported one on each mould portion support, the mechanism also comprising drive means operable to pivot the supporting arms of the support arrangements to move mould portions supported by the mould portion supports between their mould-open and mould-closed positions, wherein the first vertical axes of the two supporting arms are spaced from one another, and each mould support arrangement also comprises a link connected at one end portion thereof to the mould portion support for pivoting movement about a third vertical axis which moves with the mould portion support and connected at an opposite end portion thereof to a vertical shaft for pivoting movement about a fourth vertical axis defined by the shaft which is mounted so that the axis remains stationary, the first, second, third and fourth axes being arranged at the corners of a parallelogram.

4,655,814

WATERWAYS TREATMENT COMPOSITION AND METHOD

Bobby R. Simpson, 10072 Trask, Garden Grove, Calif. 92643

Filed Jun. 7, 1985, Ser. No. 742,535
Int. Cl.[4] A01N *63/00*; C12N *9/00*; C07G *17/00*; C02F *1/68*
U.S. Cl. 71—67 25 Claims

1. A composition for the treatment of waterways, said composition comprising:

a water-soluble violet dye to permit the substantial transmission of the ultraviolet fraction of ambient solar light and to reduce the transmission into the waterway of the fraction of solar light of longer wavelength than ultraviolet so as to kill at least some of the cryptogamia in the waterway; and

an enzyme for digesting killed cryptogamia in the waterway.

4,655,815

ADMIXTURES OF 2-BROMO-2-BROMOMETHYLGLUTARONITRILE AND A FORMALDEHYDE DONOR

John A. Jakubowski, Piscataway, N.J., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1985, Ser. No. 716,414
Int. Cl.[4] A01N *37/34*
U.S. Cl. 71—67 9 Claims

1. A synergistic antimicrobial admixture comprising an antimicrobial effective amount of:

(a) 2-bromo-2-bromoethylglutaronitrile and

(b) a formaldehyde donor, wherein the weight ratio of (a):(b) ranges from about 1:2.5 to about 5:1.

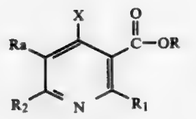
4,655,816

HERBICIDAL 2-TRIFLUOROMETHYL 3-PYRIDINE CARBOXYLIC ACID DERIVATIVES

Len F. Lee, St. Charles, and Maria L. Miller, Manchester, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 668,928, Nov. 6, 1984, abandoned. This application Aug. 27, 1985, Ser. No. 768,660
Int. Cl.[4] A01N *57/16, 43/40*; C07D *213/80, 401/12*
U.S. Cl. 71—86 36 Claims

1. A compound represented by the formula



wherein:

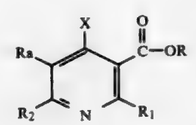
R is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, haloalkyl, haloalkenyl, and a cation; P1 R_1 is trifluoromethyl;

R_2 is selected from fluorinated methyl, chlorofluorinated methyl, and fluorinated ethyl radicals;

Ra is selected from hydrogen and lower alkyl radicals; and

X is $—OR_3$ in which R_3 is selected from hydrogen, lower alkyl, lower alkenyl, lower alkynyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylalkyl, haloalkyl, substituted or unsubstituted phenyl, substituted or unsubstituted phenylalkyl, dialkoxyphosphinyl, phenylsulfonyl, lower alkylcarbonyl, lower C_3–C_6 cycloalkylcarbonyl, pyrrolidinylcarbonyl, lower haloalkylcarbonyl, substituted or unsubstituted phenylcarbonyl, substituted or unsubstituted phenylalkylcarbonyl, substituted or unsubstituted phenoxyacetyl, substituted or substituted phenyl carbonyl methyl, carboalkoxymethyl. lower (dialkylamino)thioxo, lower dialkylaminocarbonyl, N-substituted or unsubstituted phenyl-N-alkylaminocarbonyl, lower alkoxyphosphinothioyl, and a cation, where in each foregoing occurrence of substituted phenyl the substituents are selected from the group consisting of halogens, nitro, lower alkyl, lower alkoxy, lower haloalkyl, lower haloalkoxy, and carbalkoxyalkoxy groups.

15. A herbicidal composition containing a carrier and an effective amount of a compound represented by the generic formula



wherein:

R is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, haloalkyl, haloalkenyl, and a cation;

R_1 is trifluoromethyl;

R_2 is selected from fluorinated methyl, chlorofluorinated methyl, and fluorinated ethyl radicals;

Ra is selected from hydrogen and lower alkyl radicals; and

X is $—OR_3$ in which R_3 is selected from lower alkyl, lower alkenyl, lower alkynyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylalkyl, haloalkyl, substituted or unsubstituted phenyl, substituted or unsubstituted phenylalkyl, dialkoxyphosphinyl, phenylsulfonyl, lower alkylcarbonyl, lower C_3–C_6 cycloalkylcarbonyl, pyrrolidinylcarbonyl, lower haloalkylcarbonyl, substituted or unsubstituted phenylcarbonyl, substituted or unsubstituted phenylalkylcarbonyl, substituted or unsubstituted phenoxyacetyl, substituted or unsubstituted phenyl carbonylmethyl, carboalkoxymethyl, lower (dialkylamino)thioxo, lower dialkylaminocarbonyl, N-substituted or unsubstituted phenyl-N-alkylaminocarbonyl, lower alkoxyphosphinothioyl, and a cation, where in each foregoing occurrence of substituted phenyl the substituents are selected from the group consisting of halogens, nitro, lower alkyl, lower alkoxy, lower haloalkyl, lower haloalkoxy, and carbalkoxyalkoxy groups provided that when X is ethoxy, and R_2 is CF_3, Ra is not hydrogen, and when X is isopropoxy, Ra is not lower alkyl and R is not methyl, and further provided that X is not nitrophenoxy.

4,655,817

HERBICIDAL ORTHO-HETEROCYCLIC PYRAZOLESULFONAMIDES

Mark E. Thompson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 671,072, Nov. 13, 1984, abandoned. This application Jul. 22, 1985, Ser. No. 756,538

Int. Cl.[4] **C07D** *405/14, 417/14, 419/14;* **A01N** *47/36*

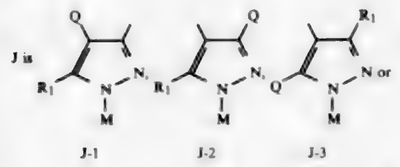
U.S. Cl. 71—90 **48 Claims**

1. A compound of the formula:

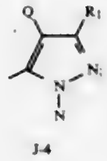


I

wherein



J-1 J-2 J-3



J-4

W_1 is O or S;

R is H or CH_3;

R_1 is H, C_1–C_3 alkyl, C_1–C_3 haloalkyl, halogen, nitro, C_1–C_3 alkoxy, $SO_2NR^IR^{II}$, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, amino, C_1–C_3 alkylsulfonyl, CO_2R^{III}, C_1–C_3 haloalkoxy, C_1–C_3 haloalkylthio, CH_2CN, CH_2OCH_3 or CH_2SCH_3;

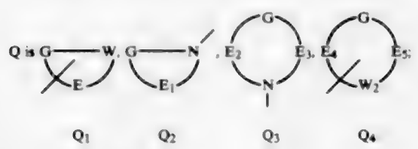
R^I is H, C_1–C_4 alkyl, C_2–C_3 cyanoalkyl, methoxy or ethoxy;

R^{II} is H, C_1–C_4 alkyl or C_3–C_4 alkenyl; or

R^I and R^{II} may be taken together as $-(CH_2)_3-$, $-(CH_2)_4-$, $-(CH_2)_5-$ or $-CH_2CH_2OCH_2CH_2-$;

R^{III} is C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_2–C_4 haloalkyl, C_2—C_3 cyanoalkyl, C_5–C_6 cycloalkyl, C_4—C_7 cycloalkylalkyl or C_2–C_4 alkoxyalkyl;

M is H, C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, phenyl, phenyl substituted with Cl, NO_2, CH_3 or OCH_3, C_2–C_3 alkoxycarbonyl, C_1–C_3 alkylsulfonyl or $SO_2NR_4R_5$;



Q_1 Q_2 Q_3 Q_4

G is C=O or SO_2;

W is O, S, CHR_2 or NR_3;

W_2 is O, S, SO_2, CHR_2 or NR_3;

R_2 is H, C_{1-C2} alkyl, Cl, F or Br;

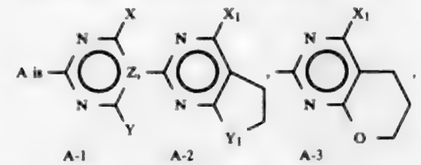
R_3 is H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkoxyalkyl, C_2–C_4 cyanoalkyl, C_3–C_4 alkenyl or C_3–C_4 alkynyl;

E and E_1 are independently C_3–C_4 alkylene, C_3–C_4 alkenylene or C_4 alkenyldienyl;

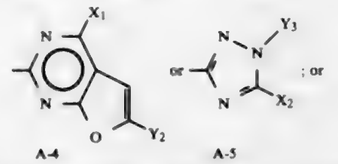
E_2 and E_4 are independently C_1–C_2 alkylene or C_2 alkenylene;

E_3 and E_5 independently are C_2–C_3 alkylene or C_2–C_3 alkenylene; and

E, E_1, E_2, E_3, E_4 and E_5 may optionally be substituted by 1–4 groups selected from C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkenyl, OH, halogen or C_1–C_4 haloalkoxy; further, when W is O, CHR_2 or NR_3, one of the carbon atoms of E may be in the form of a carbonyl group, and when W_2 is O, CHR_2 or NR_3, one of the carbon atoms of E_4 or E_5 may be in the form of a carbonyl group, provided that said carbonyl groups are not bonded directly to G;

A is 

A-1 A-2 A-3

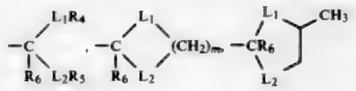


A-4

A-5

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino;

Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl, C_1–C_4 haloalkyl, C_3–C_5 cycloalkyl, C_2–C_4 alkynyl, C(O)R_6,



or $N(OCH_3)CH_3$;

m is 2 or 3;

L_1 and L_2 are independently O or S;

R_4 and R_5 are independently C_1–C_2 alkyl;

R_6 is H or CH_3;

Z is CH;

Y_1 is O or CH_2;

X_1 is CH_3, OCH_3, OC_2H_5 or OCF_2H;

Y_2 is H or CH_3;

X_2 is CH_3, OCH_3 or SCH_3; and

Y_3 is CH_3, CH_2Ch_3 or CH_2CF_3;

and their agriculturally suitable salts; provided that

a. when G is SO_2, then W is O, CHR_2 or NR_3;

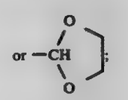
b. when E_2 or E_4 is C_2 alkylene or C_2 alkenylene then E_3 or E_5 is C_2 alkylene or C_2 alkenylene;

c. when X is Cl, F, Br or I, then Y is OCH_3, OC_2H_5, $N(OCH_3)CH_3$, $NHCH_3$, $N(CH_3)_2$ or OCF_2H;

d. when M is other than H, alkyl, alkenyl, alkynyl or phenyl, optionally substituted, then R_1 is H, alkyl, haloalkyl or halogen;

e. when the total number of carbon atoms of X and Y is greater than four, then the number of carbons of R_1 is less than or equal to two and the number of carbons of Q is less than or equal to eight; and

f. when W_1 is S, then R is H, A is A-1, and Y is CH_3, OCH_3, OC_2H_5, CH_2OCh_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$



;

4,655,818

3-ACYL SUBSTITUTED DERIVATIVES OF 2- OR 4-THIAZOLIDINE-CARBOXYLIC ACID HAVING A PHYTO GROWTH REGULATING AND BIOSTIMULATING ACTION

Ottorino Palla, Crema; Franco Gozzo, S.Donato Milanese, and Marco Radice, Corsico, all of Italy, assignors to Montedison S.p.A., Milan, Italy

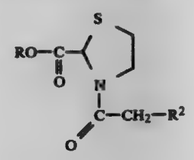
Continuation of Ser. No. 477,441, Mar. 21, 1983, abandoned. This application Mar. 19, 1985, Ser. No. 713,690

Claims priority, application Italy, Mar. 22, 1982, 20306 A/82

Int. Cl.[4] **C07D** *277/06;* **A01N** *43/78*

U.S. Cl. 71—90 **4 Claims**

1. A compound having the formula:



in which:

R is selected from the group consisting of the hydrogen atom and C_1–C_4 alkyl;

R^2 is selected from the group consisting of napthyl, indolyl and phenoxy groups, said groups substituted by 1 to 3 substituents selected from the group consisting of halogen atoms, alkyl and alkoxy groups having 1 to 4 carbon atoms, phenoxy and pyridyloxy groups, phenoxy and pyridyloxy groups substituted by substituents selected from the group consisting of 1 to 3 halogen atoms, C_1–C_4 alkyl groups, and C_1–C_4 haloalkyl groups, said compound being characterized in that it is useful in agriculture and floriculture as both as phytogrowth regulator and biostimulant.

4,655,819

QUINOXALINYLOXY PHENOXY PROPRIONIC ACID DERIVATIVES AS SELECTIVE HERBICIDES

Alexander Serban, Doncaster; Keith G. Watson, Box Hill North, and Grame J. Farquharson, Reservoir, all of Australia, assignors to ICI Australia Limited, Victoria, Australia

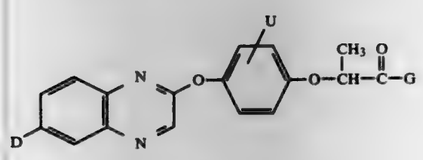
Filed Dec. 24, 1981, Ser. No. 334,384

Claims priority, application Australia, Jul. 17, 1979, PD9617; Apr. 11, 1980, PE3093; Jan. 12, 1981, PE7201

Int. Cl.[4] **A01N** *43/60;* **C07D** *241/52, 241/44*

U.S. Cl. 71—92 **9 Claims**

1. A compound of formula I



I

or a salt thereof wherein:

D is chosen from the group consisting of fluorine and chlorine;

U is fluorine substituted in the 2-position of the benzene ring; and

G is chosen from the group consisting of hydroxy, C_1 to C_6 alkoxy, C_2 to C_6 alkenyloxy, C_2 to C_6 alkynyloxy, cyclohexyloxy and the group OM wherein M is an alkali metal ion.

7. A process for selectively controlling the growth of monocotyledonous weeds in dicotyledonous crops which process comprises applying to said crop, or to the growth medium of said crop, a compound as defined according to claim 1 in an amount sufficient to severely damage or kill the weeds but insufficient to substantially damage the crop.

4,655,820

TRIAZOLE ALKANOLS HAVING FUNGICIDAL AND PLANT GROWTH REGULATING PROPERTIES

Paul A. Worthington, Maidenhead; Patrick J. Crowley, Crowthorne, and Michael B. Gravestock, Stockport, all of England, assignors to Imperial Chemical Industries Plc, London, England

Division of Ser. No. 503,545, Jun. 13, 1983. This application Feb. 28, 1985, Ser. No. 706,947

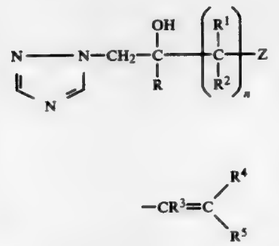
Claims priority, application United Kingdom, Jun. 14, 1982, 8217191; Jan. 21, 1983, 8301677

Int. Cl.[4] **A01N** *43/653;* **C07D** *249/08*

U.S. Cl. 71—92 **5 Claims**

1. A compound of the formula:

(Formula I)



wherein R^3, R^4 and R^5 are hydrogen, halogen, hydroxy and lower alkyl, at least one of R^3, R^4 and R^5 being halogen.

4. A method of combating fungi, which comprises applying to a plant, to seed of a plant, or to the locus of the plant or seed, a compound, as claimed in claim 1.

5. A method of regulating plant growth, which comprises applying to the plant, to seed of a plant or to the locus of a plant or seed, a compound as claimed in claim 1.

4,655,821

ALKYL SULFONYL SULFONAMIDES

George Levitt, Wilmington, Del., and Anthony D. Wolf, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

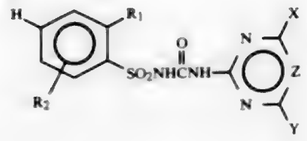
Division of Ser. No. 511,471, Jul. 8, 1983, Pat. No. 4,543,120, which is a continuation-in-part of Ser. No. 407,645, Aug. 12, 1982, abandoned. This application Jul. 12, 1985, Ser. No. 754,141

Int. Cl.[4] **C07D** *239/42, 239/48;* **A01N** *47/36*

U.S. Cl. 71—92 **19 Claims**

1. A compound of the formula

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wherein
R_1 is $S(O)_nR_3$;
R_2 is H, F, Cl, Br, CH_3, OCH_3, CF_3 or NO_2;
R_3 is C_1–C_4 alkyl, C_3–C_4 alkenyl or cyclopropylmethyl;
n is 0, 1 or 2;
X is CH_3, C_2H_5, CH_3O, C_2H_5O, CH_2OCH_3 or Cl;
Y is Cl, F, Br, NH_2, $NHCH_3$ or $N(CH_3)_2$; and
Z is CH;
and their agriculturally suitable salts; provided that
(1) when R_3 is C_3–C_4 alkenyl, then Y is NH_2, $NHCH_3$ or $N(CH_3)_2$;
(2) when R_3 is C_1–C_2 alkyl and Y is Cl or Br, then X is other than CH_3 or OCH_3;
(3) when R_3 is C_1–C_2 alkyl and Y is NH_2 or $NHCH_3$, then X is other than Cl, CH_2CH_3 or CH_2OCH_3;
(4) when Y is Cl, F or Br, then X is CH_3, OCH_3 or OCH_2CH_3; and
(5) when X is Cl, then Y is $N(CH_3)_2$.

4,655,822
HERBICIDAL SULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

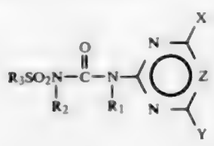
Continuation of Ser. No. 424,477, Sep. 27, 1982, abandoned, which is a continuation-in-part of Ser. No. 187,174, Sep. 15, 1980, abandoned, which is a continuation of Ser. No. 840,167, Oct. 6, 1977, Pat. No. 4,257,802. This application Nov. 15, 1984, Ser. No. 671,875

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.[4] **A01N** *47/36*; **C07D** *239/42*

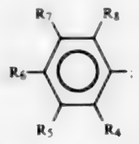
U.S. Cl. 71—92 **29 Claims**

1. A compound of the formula:



(I)

wherein
R_1 is H, alkyl of one to three carbon atoms or $—OCH_3$;
R_2 is H or alkyl of one to three carbon atoms;
R_3 is



R_7 is hydrogen, fluorine, chlorine, bromine, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, nitro, CF_3, CH_3S or CH_3CH_2S;
R_4 is $R_9S(O)_n$;
R_5, R_6 and R_8 are independently hyrogen, fluorine, chlorine, bromine, methyl or methoxy;
R_9 is C_1–C_4 alkyl;
X is $—CH_3$, $—CH_2CH_3$, alkoxy of one to three carbons, CF_3, $CH_3S—$, $CH_3OCH_2—$ or $CH_3OCH_2CH_2O—$;
Y is CH_3 or OCH_3;
Z is CH; and
n is 0, 1 or 2;
and their agriculturally suitable salts; provided that:
(a) R_1 and R_2 may not simultaneously be hydrogen;
(b) when R_6 is other than H, then R_5, R_7 and R_8 must be hydrogen;
(c) when n is 1, then R_7 is other than CH_3S or CH_3CH_2S, and X is other than CH_3S;
(d) when R_6 is H and R_5, R_7 and R_8 are other than H, then R_5, R_7 and R_8 must either be Cl or CH_3; and
(e) when R_9 is C_1–C_2 alkyl, then n is 1 or 2.

4,655,823
HERBICIDAL SULFONAMIDES

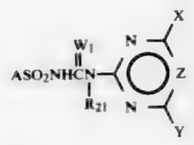
Rafael Shapiro, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 723,450, Apr. 15, 1985, which is a continuation of Ser. No. 543,835, Oct. 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 434,038, Oct. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 328,018, Dec. 7, 1981, abandoned. This application May 15, 1985, Ser. No. 734,331

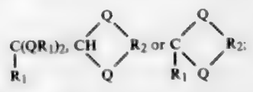
Int. Cl.[4] **A01N** *43/66*; **C07D** *251/46*

U.S. Cl. 71—93 **27 Claims**

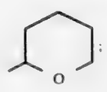
1. A compound of the formula:



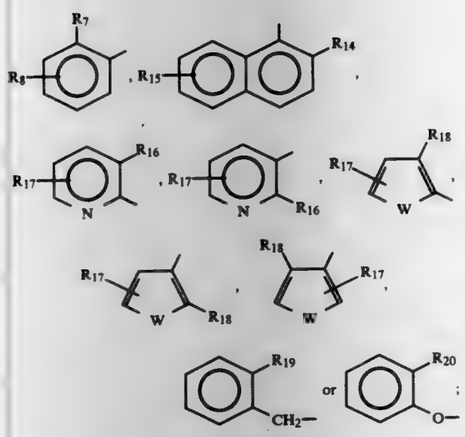
wherein
X is CH_3, OCH_3, C_2H_5 or OC_2H_5;
Z is N;
Y is CH_2OR, $CH_2S(O)_mR_1$, $CH(QR_1)_2$, $R_1CHS(O)_mR_1$,



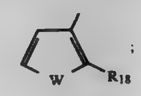
R is H, $C(O)R_3$, CO_2R_4, $C(O)NR_5R_6$ or



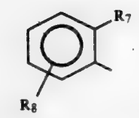
R_1 is C_1–C_2 alkyl;
R_2 is $—CH_2CH_2—$, $—CH(CH_3)CH_2—$ or $—CH_2CH_2CH_2—$;
R_3 is C_1–C_3 alkyl;
R_4 is C_1–C_3 alkyl;
R_5 is H or CH_3;
R_6 is C_1–C_3 alkyl;
Q is O or S;
m is 0, 1 or 2;
A is



R_7 is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, F, Cl, I, Br, NO_2, CF_3, CO_2R_9, $SO_2NR_{10}R_{11}$, $SO_2N(OCH_3)CH_3$, OSO_2R_{12}, $S(O)_nR_{13}$, LCF_3, $LCHF_2$, LCF_2CF_2H, CH_2Cl, $CHCl_2$, CH_2OCH_3 or $CH_2OCH_2CH_3$;
R_8 is H, F, Cl, Br, CF_3, NO_2, C_1–C_3 alkyl C_1–C_3 alkoxy, OCF_2H or SCF_2H;
R_9 is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, CH_2CH_2Cl or $CH_2CH=CH_2$;
R_{10} and R_{11} are independently C_1–C_3 alkyl;
R_{12} is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, $CH_2CH_2CH_2OCH_3$ or C_1–C_4 alkyl substituted with 1–3 atoms of F, Cl or Br;
R_{13} is C_1–C_4 alkyl or $CH_2CH=CH_2$;
n is 0 or 2;
L is O, S or SO_2;
R_{14} is H, CH_3, OCH_3, F, Cl, Br, NO_2, $SO_2N(CH_3)_2$, OSO_2R_1 or $S(O)_nR_1$;
R_{15} is H, Cl, Br, CH_3, OCH_3 or NO_2;
R_{16} is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, F, Cl, Br, CF_3, CO_2R_9, $SO_2NR_{10}R_{11}$, $SO_2N(OCH_3)CH_3$ or $S(O)_nR_{13}$;
R_{17} is H, F, Cl, Br, CH_3 or OCH_3;
W is O or S;
W_1 is O or S;
R_{18} is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, F, Cl, Br, NO_2, CO_2R_9, $SO_2NR_{10}R_{11}$, $SO_2N(OCH_3)CH_3$ or $S(O)_nR_{13}$;
R_{19} is Cl, NO_2, CF_3, CO_2R_9, $SO_2N(OCH_3)CH_3$, $SO_2NR_{10}R_{11}$, OSO_2R_{12}, $S(O)_nR_{13}$, C_1–C_3 alkyl, or C_1–C_3 alkoxy optionally substituted with 1–5 atoms of Cl or F;
R_{20} is Cl, NO_2, CF_3, CO_2R_9, $SO_2N(OCH_3)CH_3$, C_1–C_3 alkyl, OSO_2R_{12} or C_1–C_3 alkoxy optionally substituted with 1–5 atoms of Cl or F;
R_{21} is H or CH_3;
and their agriculturally suitable salts; provided that
(1) the total number of carbon atoms of R_{10} and R_{11} is less than or equal to 4;
(2) when W is O, then R_{18} is H, Cl, Br, CH_3 or CO_2R_9;
(3) when W is O and R_{18} is H, Cl, Br, or CH_3, then A is



and
(4) when W_1 is S, then R_{21} is H and A is



19. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,655,824
CERTAIN TRIFLUOROMETHOXY-PHENOXY-PYRIDINES HAVING HERBICIDAL ACTIVITY

Rudolf Mengel; Ludwig Schröder, both of Ingelheim; Werner Stransky, Gau-Algesheim; Gerbert Linden, Ingelheim, and Sigmund Lust, Darmstadt, all of Fed. Rep. of Germany, assignors to Celamerck GmbH & Co. KG, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 462,150, Jan. 31, 1983, abandoned. This application Jun. 13, 1984, Ser. No. 620,120

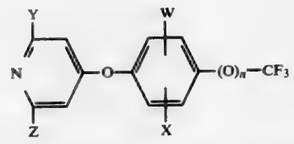
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1982, 3205150

The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.

Int. Cl.[4] **C07D** *213/64*; **A01N** *43/40*

U.S. Cl. 71—94 **7 Claims**

1. A compound of the formula



(I)

wherein
W and X are each hydrogen, fluorine, chlorine, bromine, iodine, nitro, alkyl of 1 to 4 carbon atoms, fluoro-substituted alkyl of 1 to 4 carbon atoms or chloro-substituted alkyl of 1 to 4 carbon atoms;
Y is hydrogen, fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms, fluoro-substituted alkyl of 1 to 4 carbon atoms or chloro-substituted alkyl of 1 to 4 carbon atoms;
Z is fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms, fluoro-substituted alkyl of 1 to 4 carbon atoms, chloro-substituted alkyl of 1 to 4 carbon atoms, —COOH or —COO—(alkyl of 1 to 4 carbon atoms); and n is 1;
or, when Z is —COOH, an alkali or alkaline earth metal salt thereof.

7. The method of killing weeds, which comprises contacting said weeds with an effective herbicidal amount of a compound of claim 1.

4,655,825
METAL POWDER AND SPONGE AND PROCESSES FOR THE PRODUCTION THEREOF

Robert A. Hard, Oley, Pa., and Joseph A. Megy, Corvallis, Oreg., assignors to Occidental Research Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 439,801, Nov. 8, 1982, Pat. No. 4,470,847, and a continuation-in-part of Ser. No. 626,672, Jul. 2, 1984. This application Sep. 10, 1984, Ser. No. 648,736

Int. Cl.[4] **B22F** *9/00*

U.S. Cl. 75—0.5 B **52 Claims**

1. A powder metal consisting essentially of a Zinc Soluble

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Metal-Based Metal particles of less than 30 mesh having less than about 50 PPM by weight halide, an internal porosity of



from about 5% to about 40% by volume, and the powder comprising angular shaped particles.

4,655,826

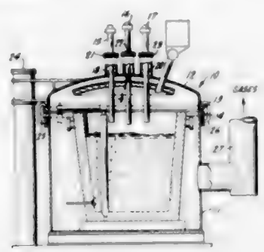
METHOD FOR POST-MELTING TREATMENT OF MOLTEN STEEL

Charles W. Finkl, Evanston, Ill., assignor to A. Finkl & Sons Co., Chicago, Ill.

Continuation of Ser. No. 697,361, Feb. 1, 1985, abandoned. This application May 1, 1986, Ser. No. 859,851

Int. Cl.⁴ C21C *5/52, 7/10*

U.S. Cl. 75—10.66 **12 Claims**



1. In a method of refining molten steel following melting the steps of

isolating molten steel from contact with ambient atmosphere whereby contact with the ambient atmosphere and the molten steel is precluded, and

while maintaining said molten steel isolated from the ambient atmosphere,

moving portions of the molten steel which are remote from the surface up to the surface in a manner which exposes said portions of the molten steel to the atmosphere above the surface and

adding heat to the portions of the molten steel at the surface from a heating arc located above the surface of the molten steel.

4,655,827

PROCESS FOR THE REDUCTION OF FLUORIDES OF SILICON, TITANIUM, ZIRCONIUM OR URANIUM

Angel Sanjurjo, 15010 Penitencia Creek Rd., San Jose, Calif. 95132, and Kenneth M. Sancier, 561 Berkeley Ave., Menlo Park, Calif. 94025

Filed Jul. 24, 1985, Ser. No. 758,594

Int. Cl.⁴ C22B *34/10, 60/02;* **C01B** *3/00;* **C01D** *3/00*

U.S. Cl. 75—84.4 **11 Claims**

1. A process for the production of silicon, titanium, zirconium or uranium which comprises:

(a) reacting silicon tetrafluoride, titanium tetrafluoride, zirconium tetrafluoride, uranium tetrafluoride or uranium hexafluoride with elemental sodium to obtain a mixture of silicon titanium, zirconium or uranium and sodium fluoride;

(b) adding an aqueous solution of an alkaline earth metal chloride;

(c) allowing the sodium fluoride to react with the alkaline earth metal chloride to form a slurry comprising an insoluble alkaline earth metal fluoride and silicon, titanium, zirconium or uranium in a solution of sodium chloride;

(d) separating the silicon, titanium, zirconium or uranium from said slurry;

(e) separating the alkaline earth metal fluoride from said slurry; and

(f) electrolytically reducing the sodium chloride to obtain pure sodium metal.

4,655,828

SEPARATION OF METALLIC LITHIUM

Stephen F. Yates, Arlington Heights, Ill., and Kim L. Johnson, Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 20, 1985, Ser. No. 811,562

Int. Cl.⁴ C01D *15/00;* **C22B** *26/12*

U.S. Cl. 75—97 A **13 Claims**

1. A process for the separation of metallic lithium from a mixture of metallic lithium and lithium salts which process comprises contacting said mixture of metallic lithium and lithium salts with a solution comprising a Lewis acid dissolved in a polar solvent at a temperature and for a time sufficient to effect solubilization of said lithium salts in said solution and subsequently separating and recovering said solubilized lithium salts from non-solubilized metallic lithium, said lithium salts being selected from the group consisting of lithium sulfide and lithium fluoride, said Lewis acid being selected from the group consisting of boron trifluoride, aluminum chloride, boron trichloride, antimony pentachloride, boron triiodide, aluminum iodide, tin tetrachloride, titanium tetrachloride, silicon tetrachloride and aluminum bromide, and said polar solvent being selected from the group consisting of dialkoxyalkanes, N,N-dimethylformamide, propylene carbonate, tetrahydrofuran and acetonitrile.

4,655,829

METAL RECOVERY PROCESS

Joseph B. Cushman, King County, Wash., assignor to CSS Management Corp., Baring, Wash.

Continuation of Ser. No. 607,010, May 3, 1984, abandoned. This application Sep. 11, 1985, Ser. No. 776,981

Int. Cl.⁴ C22B *3/00*

U.S. Cl. 75—101 R **27 Claims**

1. A hydrometallurgical process for separating metals from an arsenic sulfide are without forming soluble arsenic compounds or toxic arsenic vapors, comprising the steps of:

(a) preparing a slurry of ore having a total metal content of As and Sb in a molar ratio with the total metal content of Cu, Pb, and Zn, such that the molar ratio of As and Sb to Cu, Pb and Zn is in the range of between about 60:40 to 40:60, the slurry including other metals from an arsenic sulfide ore and CaCl2 in excess of the stoichiometric ratio of the total metal content of the slurry to Cl;

(b) heating the slurry;

(c) aerating the heated slurry to form a solution of metals and a waste solid containing As, Sb, and Fe without forming any soluble As or Sb compounds;

(d) separating the solution of metals from the waste solid; and

(e) extracting the metals from the solution of metals.

4,655,830

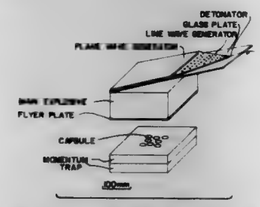
HIGH DENSITY COMPACTS

Tomotsu Akashi, 1219 Apache, and Akira Sawaoka, 511 Mesa Loop, both of Socorro, N. Mex. 87801

Filed Jun. 21, 1985, Ser. No. 747,558

Int. Cl.⁴ C22C *29/12*

U.S. Cl. 75—233 **11 Claims**



1. An improved process for forming compacts of powders of ceramics, cermets and other high hardness materials which comprises applying explosive shock with exothermic sintering of such powders.

4,655,831

METHOD OF STABILIZING A STEEL MAKING SLAG

Kunihiko Ishizaka, Chiba; Fumio Sudo, Tokyo; Akira Seki, Funabashi, and Yoshio Aso, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe and Kawatetsu Mining Co., Ltd., Tokyo, both of, Japan

Filed Mar. 7, 1986, Ser. No. 837,609

Int. Cl.⁴ C21B *5/04*

U.S. Cl. 75—257 **1 Claim**

1. A method of stabilizing a steel making molten slag composed substantially of dicalcium silicate comprising the step of adding a boron-containing mineral to the slag to prevent the powdering of the slag during cooling, said boron-containing mineral being selected from the group consisting of borax, kernite, colemanite and soda colemanite and containing crystal water is an amount of 4 to 12% by weight.

4,655,832

BLAST MATERIAL FOR MECHANICAL PLATING AND CONTINUOUS MECHANICAL PLATING USING THE SAME

Shigeru Omori; Masatsugu Watanabe, and Fumio Oboshi, all of Okayama, Japan, assignors to Dowa Iron Powder Co., Ltd., Japan

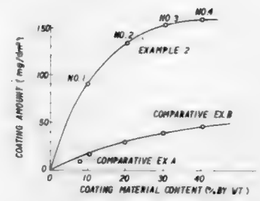
Filed Jul. 11, 1985, Ser. No. 753,879

Claims priority, application Japan, Jul. 30, 1984, 59-157341

Int. Cl.⁴ C23C *24/04;* **B05D** *7/14;* **C22C** *38/16*

U.S. Cl. 106—1.18 **10 Claims**

1. A blast material for mechanically plating a metallic part, said blast material comprising a mixture of 60–90% by weight of steel shot material and 10–40% by weight of an iron-zinc alloy coating powder, wherein said coating powder comprises 2.5–50% by weight of Fe, not more than 5% by weight of one or more of Al, Cu, Sn, Mg and Si, the balance being Zn, said



alloy coating powder having a maximum particle size of about 0.4 mm and an average hardness of 140–450 Hv.

4,655,833

ELECTROLESS COPPER PLATING BATH AND IMPROVED STABILITY

William J. Amelio, Binghamton; Peter G. Bartolotta, Endicott; Voya Markovich, Endwell, and Ralph E. Parsons, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 611,278, May 17, 1984, abandoned. This application Oct. 9, 1985, Ser. No. 785,044

Int. Cl.⁴ C23C *3/02*

U.S. Cl. 106—1.23 **20 Claims**

1. An electroless copper plating bath of improved stability which comprises:

A. cupric ion source in an amount of about 3 to about 15 grams per liter calculated as cupric sulfate;

B. a reducing agent for the cupric ion source in an amount of about 0.7 to about 7 grams per liter;

C. a complexing agent for the cupric ion in an amount of about 20 to 50 grams per liter; and

D. about 1 part per billion to about 1,000 parts per billion of a cationic polymer from acrylamide or methacrylamide, or both.

4,655,834

RECORDING PROCESS

Masahiro Haruta, Funabashi; Masatsune Kobayashi, and Tokuya Ohta, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 490,732, May 2, 1983, abandoned. This application Aug. 1, 1985, Ser. No. 761,502

Claims priority, application Japan, Mar. 5, 1983, 58-35254

Int. Cl.⁴ C09D *11/02*

U.S. Cl. 106—20 **13 Claims**

1. A process for ink jet recording comprising

(a) selecting a recording liquid such that the total number of colonies in an Ames test thereof is not more than 4 times that of a control test using sterilized water; and

(b) ejecting onto a recording medium droplets of a recording liquid having a colorant in amounts necessary for image formation, water and a water-miscible organic solvent.

4,655,835
PROCESS FOR EVALUATING THE SOLUBILITY OF A COLORANT

Masahiro Haruta, Funabashi; Masatsune Kobayashi, and Tokuya Ohta, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 490,732, May 2, 1983, abandoned. This application Aug. 8, 1985, Ser. No. 763,878
Claims priority, application Japan, Mar. 5, 1983, 58-35254
Int. Cl.[4] C09D *11/02*
U.S. Cl. 106—20 14 Claims

1. Process for evaluating the solubility of a colorant in a recording liquid and the solution stability of the recording liquid having a predetermined composition, including a colorant in amounts necessary to image formation, water and a water-miscible organic solvent comprising:
(a) conducting an Ames test on said recording liquid;
(b) comparing the test results with a control liquid using sterilized water; and
(c) determining the total number of colonies in said Ames test thereof which, to pass said evaluation, should not exceed four times that of the control liquid using sterilized water.

6. A process for preparing a recording liquid comprising: a colorant and a liquid medium, said liquid medium containing water and a water-miscible organic solvent, said process comprising the steps of (i) purifying said colorant; (ii) dissolving said purified colorant into said liquid medium to form a recording liquid (iii) conducting an Ames test on said recording liquid and (iv) selecting the recording liquid, providing that the total number of colonies in the Ames test thereof is not more than four times that of a control test using sterilized water.

4,655,836
NONSLIP PRINTING INK COMPOSITIONS

Manfred Drawert, Froendenberg, and Horst Krase, Hamm, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed May 13, 1985, Ser. No. 732,923
Claims priority, application Fed. Rep. of Germany, May 29, 1984, 3420009
Int. Cl.[4] C09D *11/10*
U.S. Cl. 106—26 12 Claims



1. A nonslip coating composition comprising
(1) a compound known in the art as a printing ink binder and selected from the group consisting of
(a) alcohol soluble nitrocellulose,
(b) a co-solvent soluble polymide resin,
(c) an alcohol soluble polyamide resin, and
(2) from 5 to 70 percent, by weight of said compound, of an antislip agent which is a condensation product formed between an acid component and an amine component in an equivalence ratio from 1.5:1 to 2:1, said acid component being a polymerized fatty acid and said amine component comprising at least one diprimary ether diamine.

4,655,837
BUILDING MATERIAL AND MANUFACTURE THEREOF

Slosson B. Jong, 20722 Hunter La., Huntington Beach, Calif. 92646

Filed Apr. 26, 1985, Ser. No. 727,794
Int. Cl.[4] C04B *35/16*; C09D *1/02*
U.S. Cl. 106—76 19 Claims

1. The method of producing a cement product that comprises:
forming a composition consisting essentially of the following ingredients in about the proportions set forth below, by weight, intermixed with water in an amount rendering the composition moldable:

Portland Cement	70 to 94 parts
Gypsum	10 to 30 parts
Sodium Hydroxide	1 to 3 parts
Sodium Silicate Solution (saturated)	150 to 275 parts
Particles of a metal or metals selected from the group consisting of aluminum and zinc	½ to 1½ parts
An Acidic Ingredient	2 to 5 parts

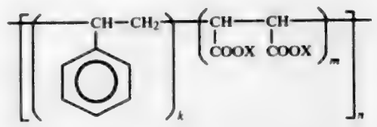
shaping the composition to a desired configuration; and drying the composition to a hardened porous condition.

4,655,838
CEMENT ADDITIVE COMPOSITION

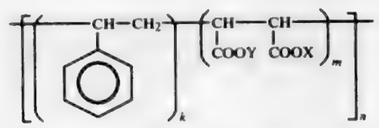
Yasuharu Koga; Fumitada Yamamoto, both of Tokuyama, and Hideharu Shimokawa, Funabashi, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1985, Ser. No. 769,566
Claims priority, application Japan, Sep. 27, 1984, 59-200592; Nov. 13, 1984, 59-237484
Int. Cl.[4] C04B *7/35*
U.S. Cl. 106—90 18 Claims

1. Cement additive composition for lastingly improving the flowability of a cement-based mixture which comprises:
(a) 100 parts by weight of a saponified product of a copolymer of styrene and maleic acid of the formula



wherein X is sodium, potassium or calcium or an ammonium group, K is a positive integer of 1 to 5, m is a positive integer of 1 to 3 and n is a positive integer of 4 to 10, or a saponified product of a half ester of a copolymer of styrene and maleic anhydride of the formula



wherein Y is R or ROR', and R and R' are each an alkyl group or a cycloalkyl group; and
(b) from 5 to 900 parts by weight of at least one flowability-improving agent selected from the group consisting of a salt of a condensation product of naphthalene sulfonic acid with formaldehyde, salt of a condensation product of an alkylnaphthalene sulfonic acid with formaldehyde, salt of a condensation product of naphthalene sulfonic acid and an alkylnaphthalene sulfonic acid with formaldehyde, salt of a condensation product of naphthalene sulfonic acid and lignin sulfonic acid with formaldehyde, salt of lignin sulfonic acid, sulfonated condensation product of melamine with formaldehyde, saponified product of a sulfonated copolymer of styrene and maleic acid, salt of a condensation product of a sulfonated creosote oil with formaldehyde and salt of a condensation product of a sulfonated heavy aromatic hydrocarbon oil with formaldehyde.

4,655,839
LANDFILLABLE COMPOSITION FROM IRON CHLORIDE WASTE TREATMENT IN MOLTEN SALT

Tze Chao, Newark, Del., and Jack K. Nyquist, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

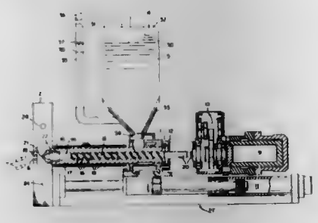
Division of Ser. No. 529,622, Sep. 6, 1983, Pat. No. 4,532,113, which is a continuation-in-part of Ser. No. 498,470, May 26, 1983, abandoned. This application Jan. 17, 1985, Ser. No. 692,411
Int. Cl.[4] B09B *1/00*; C01F *11/06*; C22B *1/00*; E02B *7/06*
U.S. Cl. 106—105 2 Claims

1. A solid, water impervious, landfillable composition consisting essentially of $CaCl_2.xH_2O$ where x is an average of from 3–6 and FeO_y where y is from 1.0–1.5 and the weight ratio of $Cacl_2.xH_2O$ (calculated as $CaCl_2.2H_2O$)/FeO_y is from 1/9–4/1.

4,655,840
HYDROPHILIC POLYMER COMPOSITIONS FOR INJECTION MOLDING

Fritz Wittwer, Lupsingen, and Ivan Tomka, Zollikon, both of Switzerland, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 362,177, Mar. 26, 1982, abandoned. This application Feb. 5, 1985, Ser. No. 698,264
Int. Cl.[4] C09D *3/04*; C08L *89/00*; B29B *7/00*
U.S. Cl. 106—126 17 Claims



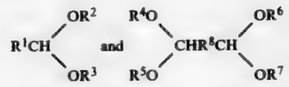
1. A molded hydrophilic gelatin-water containing shaped article of manufacture wherein the water content is in the range of from about 5% to about 25% by weight of the hydrophilic gelatin, said shaped article being formed directly:
(a) from a hydrophilic gelatin-water solution at temperature in the range of from 50° C. to about 190° C. and elevated pressures, wherein the water content was maintained in the range of about 5 to 25% by weight of the hydrophilic gelatin;
(b) by reducing the temperature of said hydrophilic gelatin-water solution during molding to below the glass transition temperature of said hydrophilic gelatin; whereby said molded article exhibits a self sustaining shape and negligible reversible elastic deformation of the hydrophilic gelatin.

4,655,841
HARDENER COMPOSITION

Robert F. Gerhardt, Dix Hills, N.Y., assignor to Ulano Corporation, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 568,097, Jan. 4, 1984, abandoned. This application Apr. 9, 1985, Ser. No. 721,475
Int. Cl.[4] C08L *29/04*; C09K *3/00*
U.S. Cl. 106—287.23 12 Claims

1. A stable hardener composition, for organic polymeric films carrying polar groups such as hydroxyl, sulfhydryl, carboxy, carboxamide, carbo alkoxy or acetoxy, which hardener composition comprises an alkanol solution containing about 5 to 80% by weight of an acyclic or alicyclic acetal of an aliphatic or aromatic mono- or polyaldehyde selected from a group consisting of



wherein R^1 is hydrogen or a cyclic or acyclic alkane, alkene or arene having 1–7 carbon atoms, R^8 is a divalent cyclic or acyclic alkane, alkene or arene having 1–6 carbon atoms, and R^2–R^7 are the same or different cyclic or acyclic alkanes or alkenes having 1–6 carbon atoms and trioxane and 2,5-dimethoxy-tetrahydrofurane, from 0 to about 2% by weight of water, and from about 1 to 30% by weight of amount of said acetal of a strong Bronsted or Lewis acid, said alkanol being a primary alcohol having from 1 to 6 carbon atoms and said acetal having 3 to 32 carbon atoms.

4,655,842
VERMICULITE DISPERSIONS AND METHOD OF PREPARING SAME

Chia-Chih Ou, and Julie C. Yang, both of Lexington, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Aug. 12, 1985, Ser. No. 764,910
Int. Cl.[4] C04B *14/00*
U.S. Cl. 106—288 B 22 Claims

1. A process for preparing aqueous vermiculite dispersions comprising the steps of:
treating vermiculite crystals with citrate anion and a cation which promotes swelling of said crystals in a direction normal to the main cleavage plane of said crystals during immersion in water subsequent to said treatment;
immersing the treated crystals in water;
permitting the immersed crystals to swell; and
subjecting the resultant swollen crystals while immersed in water to a shearing force to delaminate the vermiculite crystal and form a suspension of delaminated vermiculite platelets.

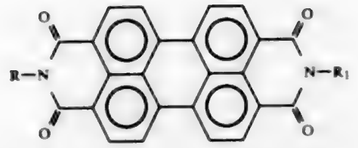
4,655,843
SILANE DIIMIDIC TETRACARBOXYLIC PERYLENE DYES AND COMPOSITE PIGMENTS

Antonio Marraccini; Filippo M. Carlini; Giorgio Bottaccio; Antonio Pasquale, and Giorgio Maranzana, all of Novara, Italy, assignors to Montedison S.p.A., Milan, Italy

Division of Ser. No. 663,166, Oct. 22, 1984, Pat. No. 4,613,667. This application Mar. 12, 1986, Ser. No. 839,031
Claims priority, application Italy, Oct. 28, 1983, 23501 A/83
Int. Cl.[4] C09C *3/08*
U.S. Cl. 106—308 B 6 Claims

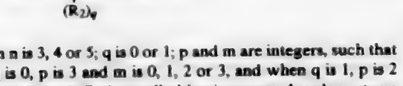
1. A silane composite pigment consisting essentially of a heterocyclic compound having at most one silane group and having the formula:

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(I)

in which R is the residue of a silane group of formula:



(II)

wherein n is 3, 4 or 5; q is 0 or 1; p and m are integers, such that when q is 0, p is 3 and m is 0, 1, 2 or 3, and when q is 1, p is 2 and m is 0, 1 or 2; R_2 is an alkyl having up to 4 carbon atoms or a phenyl; R_3 is an alkoxyl having up to 2 carbon atoms; R_1 may be the same as R or may be an alkyl having up to 6 carbon atoms; a cycloalkyl, a phenyl optionally substituted by one or more halogens or alkyl or alkoxyl groups containing up to 6 carbon atoms, grafted onto a solid inorganic support.

4,655,844

PROCESS FOR PRODUCING AZO PIGMENTS

Ryuso Ueno; Shigeru Itoh; Shine Fujimoto, all of Nishinomiya; Yumiko Komatsu, Takarazuka, and Hiroaki Tsuchiya, Kobe, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

Filed Feb. 10, 1986, Ser. No. 827,447

Claims priority, application Japan, Feb. 8, 1985, 60-21845; Dec. 13, 1985, 60-279136; Dec. 13, 1985, 60-279137

Int. Cl.⁴ C04B *11/00*

U.S. Cl. 106—309 **4 Claims**

1. A process for producing an azo pigment, which comprises coupling an aromatic diazonium compound with 3-hydroxy-2-naphthoic acid and at least one bis-naphthylmethane, and optionally, laking the resulting pigment.

4,655,845

PROCESS FOR PREPARING ORGANIC PIGMENTS HAVING EXCELLENT APPLICATION PROPERTIES

Ernst Spietschka, Idstein, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 29, 1985, Ser. No. 770,698

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1984, 3432319

Int. Cl.⁴ C04B *14/00*

U.S. Cl. 106—309 **4 Claims**

1. A process for preparing organic pigments having excellent application properties, which comprises treating finely divided crude pigments of the anthanthrone, pyranthrone, isoviolanthrone, azo, quinacridone, flavanthrone, indanthrone, naphthaldazine, indigo, thioindigo, tetracarboximide, dioxazine, isoindolinone, perylene, anthrapyrimidine, acylanthraquinone, dianthraquinonyl, azoanthraquinone, azomethineanthraquinone or phthalocyanine series at temperatures of 0° C. to 100° C., with acid esters of polyphosphoric acid and a primary, secondary or tertiary alkanol of 1 to 8 carbon atoms, a glycol, glycol ether or phenol, then hydrolyzing the polyphosphate ester used, heating the resultant aqueous mixture to temperatures of 20° C. to 150° C., and isolating the pigment in conventional manner.

4,655,846

METHOD OF PRESSURE PULSE CLEANING A TUBE BUNDLE HEAT EXCHANGER

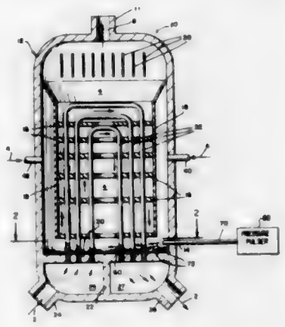
Terry D. Scharton, Santa Monica, and George B. Taylor, Culver City, both of Calif., assignors to Anco Engineers, Inc., Culver City, Calif.

Continuation of Ser. No. 486,352, Apr. 19, 1983, abandoned. This application Jun. 6, 1985, Ser. No. 742,134

The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.

Int. Cl.⁴ B08B *3/12, 5/00, 9/02*

U.S. Cl. 134—1 **80 Claims**



1. A method of removing the products of corrosion, oxidation, sedimentation and comparable chemical reactions collectively known as sludge which settle on the bottom of a tube bundle heat exchanger and form a pile of sludge, the tube bundle heat exchanger characterized by a tube bundle heat exchanger wall and a thick metal plate known as a tube sheet near the lower portion of the tube bundle heat exchanger wall's interior surface, the tube sheet serving to support the lower ends of a multiplicity of heat exchanger tubes within the tube bundle heat exchanger, the tube bundle heat exchanger wall further comprising a multiplicity of small holes known as hand holes, manways, drain lines and vents, located around its circumference and above the tube sheet, the method of removing the pile of sludge which settles on the tube sheet comprising:

a. locating at least one air-gun type pressure pulse shock wave source outside the tube bundle heat exchanger so as to be able to introduce pressure pulse shock waves through one or more of the multiplicity of hand holes, manways, drain lines and vents;

b. filling said tube bundle heat exchanger with a liquid to a level above said pile of sludge;

c. activating the at least one air-gun type pressure pulse shock wave source to generate a repetitive series of explosive transient shock waves into said liquid and from said liquid into said pile of sludge such that the explosive transient shock waves and resultant liquid motion serve to agitate and loosen the sludge;

d. continuing the generation of repetitive, explosive, transient shock waves which are generated with pressure between approximately 50 pounds per square inch and 5000 pounds per square inch which result in energy predominantly in the frequency range between 1 Hertz and 1000 Hertz for each pulse to create transient shock waves which produce a pressure level of approximately 1/100th to 100 Bars in the liquid of Pressure at 1 meter;

e. continuing the shock wave impact for approximately 1 to 24 hours whereby the impact of the repetitive explosive transient shock waves and resultant liquid motion serves to mechanically agitate and move the sludge in the liquid; and

f. draining the liquid from the heat exchanger and removing said at least one air-gun type pressure pulse shock wave source.

4,655,847

CLEANING METHOD

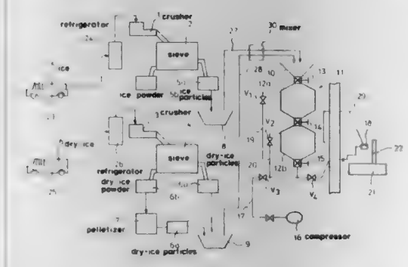
Tsuyoshi Ichinoseki, (Yoshizawa Jutaku E-206) No. 844-2, Yoshizawa-cho; Hirobumi Kato, (Hyakujuen Jutaku D-302) No. 2617-2, Motoyoshida-cho, both of Mito-shi, Ibaragi-ken; Shuji Miyahara, No. 517-4, Kamoshida-cho, Midori-ku, Yokohama-shi, Kanagawa-ken, and Harumi Kimuro, No. 4-12-14, Sasage, Konan-ku, Yokohama-shi, Kanagawa-ken, all of Japan

Filed Jul. 17, 1984, Ser. No. 631,722

Claims priority, application Japan, Sep. 1, 1983, 58-161139; Sep. 27, 1983, 58-178784

Int. Cl.⁴ B08B *7/00*

U.S. Cl. 134—7 **1 Claim**



1. A cleaning method comprising: blasting a mixture of abrasive dry-ice particles and abrasive ice particles against an object to be cleaned.

4,655,848

HGCDTE EPITAXIALLY GROWN ON CRYSTALLINE SUPPORT

Robert E. Kay, Newport Beach; Hakchill Chun, Corona del Mar; Fred Ju, Huntington Beach, and Burton A. Bray, Laguna Niguel, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Aug. 26, 1985, Ser. No. 769,816

Int. Cl.⁴ H01L *21/38, 21/36*

U.S. Cl. 148—1.5 **6 Claims**

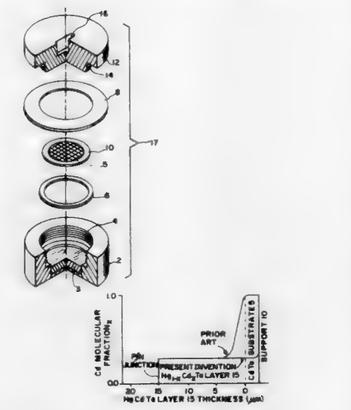
1. A method for epitaxially growing a layer of HgCdTe onto a crystalline support, comprising the steps of:

epitaxially growing a CdTe substrate to a thickness of between 1 micron and 5 microns onto the support;

spacing a HgTe source between 0.1 mm and 10 mm apart from the CdTe;

performing a growth step in which the HgTe and CdTe are heated within a growth temperature range of between 500° C. and 625° C. for a growth time of between 5 minutes and 4 hours; and

performing an interdiffusion step in which the HgTe and CdTe are cooled within an interdiffusion temperature range of between 400° C. and 500° C. for an interdiffusion time of between 1 hour and 16 hours.



4,655,849

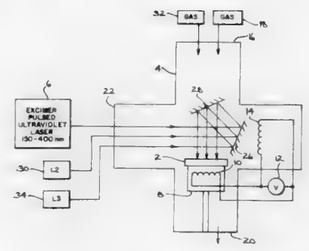
SEMICONDUCTOR PROCESSING TECHNIQUE FOR GENERATING DANGLING SURFACE BONDS AND GROWING EPITAXIAL LAYER BY EXCIMER LASER

Steven R. Schachameyer, Whitefish Bay; James A. Benjamin, Waukesha; John B. Pardee, Milwaukee, all of Wis., and Lyle O. Hoppie, Birmingham, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 22, 1985, Ser. No. 737,223

Int. Cl.⁴ H01L *21/265;* **B05D** *5/12*

U.S. Cl. 148—1.5 **13 Claims**



1. A method for enhancing deposition and bonding of single crystalline silicon on a silicon-containing substrate at temperatures ranging from room temperature to about 400° C., comprising:

providing a chamber capable of receiving silicon-containing gas;

placing a silicon-containing wafer substrate in said chamber;

introducing silicon-containing gas into said chamber; and

introducing excimer pulsed ultraviolet laser radiation into said chamber at a first wavelength to resonantly react with said substrate to cleave surface silicon-silicon bonds and create dangling bonds, and at a second wavelength to photochemically break bonds of said gas at a designated wavelength to epitaxially grow single crystalline silicon on said substrate, bonding with said dangling bonds, without thermally driven pyrolytic deposition.

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4,655,850

METHOD OF FORMING MONOCRYSTALLINE THIN FILMS BY PARALLEL BEAM SCANNING OF BELT SHAPED REFRACTORY METAL FILM ON AMORPHOUS OR POLYCRYSTALLINE LAYER

Seizo Kakimoto, Tenri; Jun Kudo, and Masayoshi Koba, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 1, 1985, Ser. No. 750,263
Claims priority, application Japan, Jul. 2, 1984, 59-137583
Int. Cl.⁴ H01L *21/263, 21/208;* B05D *3/06*
U.S. Cl. 148—1.5 **6 Claims**





1. A method of manufacturing semiconductor devices, in which a monocrystalline thin film is formed by melting and recrystallizing either amorphous or polycrystalline thin film via annealing by radiation of energy beams of a specific diameter wherein the manufacturing method comprises the steps of:

forming a belt-shaped high melting point metal film featuring a large electron-absorbent function having a width narrower than the diameter of said radiated energy beams on either an amorphous or polycrystalline thin film having an insulator coating made of either SiO_2 or Si_3N_4 interpositioned between said thin film and said metal film; and

beam scanning in parallel with said belt, by means of radiating energy beams, onto the said belt-shaped high-melting point metal film, thereby generating a nucleus in a limited area beneath said belt-shaped thin film at the moment said film-covered amorphous or polycrystalline area melts and recrystallizes so that said recrystallized area grows into a monocrystalline configuration.

4,655,851

SIMULTANEOUS CARBURIZING AND BORONIZING OF EARTH BORING DRILL BITS

Peter J. Loos, Pearland, Tex., assignor to Hughes Tool Company-USA, Houston, Tex.

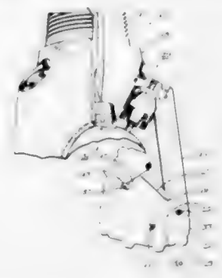
Filed Jun. 11, 1985, Ser. No. 743,449
Int. Cl.⁴ C21D *1/48, 1/56, 9/22;* C23C *9/00*
U.S. Cl. 148—6 **7 Claims**

1. A method of manufacturing an earth boring drill bit of the type having a bearing pin extending from a head section of the drill bit for rotatably mounting a cutter, the bearing pin having a seal region adjacent the base thereof and a primary friction bearing region extending outwardly therefrom, comprising the steps of:

isolating and applying a pack carburizing mixture to the seal region of the bearing pin;

applying a pack boronizing mixture to the remaining primary friction bearing region of the bearing pin;

carburizing the seal region of the bearing pin by heating the bearing pin in a furnace at a time and temperature to produce a carburized case of selected depth while simultaneously boronizing the remaining primary friction bearing region to produce a boronized case of selected depth by



heating the entire pin in the furnace in a single step operation.

4,655,852

METHOD OF MAKING ALUMINIZED STRENGTHENED STEEL

Anthony T. Rallis, 5507 Beechwood, Midland, Tex. 79707

Continuation-in-part of Ser. No. 672,176, Nov. 19, 1984, abandoned, which is a continuation of Ser. No. 501,260, Jun. 6, 1983, abandoned. This application Aug. 16, 1985, Ser. No. 766,604
Int. Cl.⁴ C23C *22/70*
U.S. Cl. 148—6.11 **6 Claims**

1. A method of making an article of strengthened steel comprising a combination of metallurgical processes coordinated in such a manner as to make an inexpensive ferrous article with high yield strength together with enhanced corrosion resistance especially for use as a tool downhole in oil and gas wells, the method comprising the steps of:

(a) providing a ferrous article which is made of carbon or alloy steel having an alloying equivalent composition of from 0.43 weight percent to 0.93 weight percent of the sum of the carbon content and one tenth of the sum of the content of boron, chromium, manganese, molybdenum, nickel, silicon, and vanadium, where the alloy composition is uniformly distributed throughout the metallurgical structure;

(b) strengthening the said ferrous article by a heat treating process consisting of heating the article to a temperature above 1341° F. to within the austenitizing temperature range of the carbon or alloy steel for a period of 15 minutes or longer in order to transform sufficiently the metallurgical structure to face-centered cubic austenite and then further subsequently cooling rapidly to below 600° F. in order to transform the face-centered austenite structure to body-centered tetragonal martensite thereby hardening the ferrous article to a minimum of 30 Rockwell C and further comprising tempering the martensitic structure by reheating in order to reduce residual cooling stresses and toughen the ferrous article, but where the tempering temperature is still maintained below 1341° F. in order to avoid over-tempering retransformation of the martensitic tetragonal structure to face-centered cubic austenite;

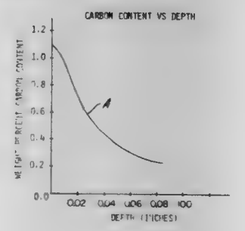
(c) aluminizing the strengthened ferrous article by applying aluminum to its surface and simultaneously or thereafter heating said to a temperature in the range of from 1000° F. to below 1341° F. to prevent retransforming the body-centered tetragonal martensite structure to face-centered cubic austenite structure, for a period of more than 5 minutes in order to sufficiently cause interdiffusion of the applied aluminum and the iron in the ferrous article and in order to further metallurgically cause to transform the surface and subsurface of the ferrous article to form an intermetallic layer composed of an alloy of essentially aluminum and iron which is from 0.002 inch to 0.027 inch in thickness and where the aluminizing process is carried out without reducing the yield strength of the steel below 60,000 psi.

4,655,853

METHOD FOR MAKING POWDER METAL FORGING PREFORMS OF HIGH-STRENGTH FERROUS-BASE ALLOYS

Larry E. Byrnes, Brighton, and Jon T. Gabrielsen, Ann Arbor, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 406,658, Aug. 9, 1982, abandoned. This application Apr. 18, 1985, Ser. No. 724,498
Int. Cl.⁴ B22F *3/00*
U.S. Cl. 148—16.5 **10 Claims**





1. A method for simultaneously sintering and carburizing a pre-alloyed, ferrous-base, powder metal forging preform characterized by the steps of:

providing a porous preform comprised of a type AISI 4600 series steel alloy comprising a base carbon content between 0.15 and 0.25 weight percent, said preform having a density of at least about 6.2 gm/cm^3, preheating the preform in the preheat zone of a continuous furnace for a period of no more than about 10 minutes and substantially no longer than is required to burn off lubricants and to induce rapid heating of the preform to a temperature in the austenitic range which approaches sintering/carburizing temperature,

simultaneously sintering and carburizing the preform in the hot zone of the furnace in a carburizing atmosphere having a carbon potential greater than the desired surface carbon content (i) at a temperature substantially within the range of about 1550° F. to below 2000° F. and above the solubility temperature of carbon in austenitic iron, (ii) at the carbon potential of the atmosphere and (iii) for a period of time sufficient to reduce oxides to a level less than 1000 ppm O_2 and to produce a final case carbon gradient in the preform which begins at a surface carbon content approximately equal to the desired case carbon content and decreases relatively constantly to a depth of about 0.020 inches,

cooling the preform in a first cooling zone of the furnace at a rate rapid enough to begin transformation of the austenitic phase in the case thereby freezing the final case carbon gradient at levels obtained at the end of the hot zone of the furnace,

controlling the total time that the preform is at temperatures in the austenitic temperature range to 35 minutes or less, and

further cooling the preform in a second cooling zone of the furnace to a temperature below about 500° F.,

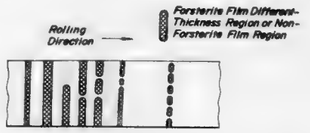
whereby a sintered and case carburized preform is produced in minimum time at temperatures above the austenitic temperature and at a maximum temperature less than about 2000° F.

4,655,854

GRAIN-ORIENTED SILICON STEEL SHEET HAVING A LOW IRON LOSS FREE FROM DETERIORATION DUE TO STRESS-RELIEF ANNEALING AND A METHOD OF PRODUCING THE SAME

Ujihiro Nishiike; Michiro Komatsubara; Yoshiaki Iida, and Isao Matoba, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Oct. 22, 1984, Ser. No. 663,385
Claims priority, application Japan, Oct. 27, 1983, 201279/83; Oct. 27, 1983, 201280/83
Int. Cl.⁴ H01F *1/04*
U.S. Cl. 148—111 **5 Claims**



1. In a method of producing a grain-oriented silicon steel sheet having a low iron loss free from deterioration due to stress-relief annealing, wherein a hot rolled sheet produced from a steel slab, containing about 2.0–4.0% by weight of Si, through a hot rolling is subjected to one cold rolling or two or more cold rollings with an intermediate annealing between them to produce a cold rolled sheet having a final gauge, the cold rolled sheet is subjected to a decarburization primary recrystallization annealing, an annealing separator consisting mainly of MgO is applied to the surface of the decarburized and primarily recrystallized steel sheet, and the thus treated steel sheet is subjected to a final annealing to form a forsterite film on the steel sheet surface, the improvement comprising forming a forsterite film locally having regions, which have a thickness different from that of the remaining regions in the film, by a process wherein a water-repelling substance for an annealing separator slurry is locally adhered to the surface of the decarburized and primarily recrystallized steel sheet in an amount of not more than 0.1 g/m^2 before the application of the annealing separator.

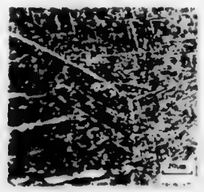
VOL 1077 ISS 1 AP 7 1987 UMI

4,655,855

METHOD FOR REFINING MICROSTRUCTURES OF PREALLOYED TITANIUM POWDER COMPACTED ARTICLES

Lev Levin, Haifa, Israel; Russell G. Vogt; Daniel Eylon, both of Dayton, Ohio, and Francis H. Froes, Xenia, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 25, 1985, Ser. No. 758,926
Int. Cl.[4] C22F *1/02*
U.S. Cl. 148—20.3 **7 Claims**



1. A method for improving the microstructure of a powder compacted article made by powder metallurgy of titanium alloy powder which comprises, in combination, the steps of:
a. beta-solution heat treating said article at a temperature approximately equal to the beta-transus temperature of said alloy;
b. cooling said article at a rate in excess of air cooling to room temperature;
c. hydrogenating said article at a temperature in the approximate range of 50 to 96% of said beta-transus temperature; and
d. dehydrogenating said article at a temperature in the approximate range of 50 to 96% of said beta-transus temperature.

4,655,856
Patent Not Issued For This Number

4,655,857

NI-CR TYPE ALLOY MATERIAL

Tsuyoshi Masumoto, No. 8-22, Kamisugi 3-chome, Sendai-shi, Miyagi; Akihisa Inoue, Miyagi, and Hiroyuki Tomioka, Kyoto, all of Japan, assignors to Tsuyoshi Masumoto and Unitika Ltd., both of, Japan

Filed Mar. 8, 1983, Ser. No. 473,403
Claims priority, application Japan, Mar. 8, 1982, 57-36225
Int. Cl.[4] C22C *19/05*
U.S. Cl. 148—423 **8 Claims**

1. A Ni-Cr type alloy material which has an excellent cold workability and shows a low electrical resistance temperature coefficient over a wide temperature range from room temperature through elevated temperatures and a high degree of electrical resistance, consisting essentially of:
Cr in an amount of 10 to 50 atom%;
at least one element selected from the group consisting of Al and Si in an amount of from 5 to 25 atom%; and
substantially pure Ni in an amount within the range of 25 to 85 atom%,
said Ni-Cr type alloy material being formed of a supersaturated solid solution possessing a face-centered cubic structure.

4,655,858

BURNING RATE ENHANCEMENT OF SOLID PROPELLANTS BY MEANS OF METAL/OXIDANT AGGLOMERATES

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 17, 1979, Ser. No. 31,110
Int. Cl.[4] C06B *45/10*
U.S. Cl. 149—19.92 **4 Claims**

1. A method for preparing a solid propellant with increased burning rate achieved by incorporating from about 1 to about 5 weight percent of metal/oxidant agglomerates into an uncured solid propellant formulation and curing the solid propellant formulation having said agglomerates intimately dispersed therein to form a solid propellant grain, said method comprising:
(i) providing metal/oxidant agglomerate formulation ingredients comprised of about 23 weight percent of ammonium perchlorate of about 1 micrometer weight-median-diameter, of about 23 weight percent of ammonium perchlorate of about 3 micrometer weight-median-diameter, of about 48 weight percent of a spheroidal shaped metal selected from the metals consisting of aluminum, boron, and titanium of about 50 micrometer weight-median-diameter, of about 4 percent of hydroxyl-terminated polybutadiene prepolymer which contains an effective amount of about 0.5–0.1 weight percent of isophorone diisocyanate as a crosslinking agent, and an amount of about 2 weight percent total additives selected from a carboranyl burning rate enhancer, triphenylbismuthine as an ammonium perchlorate decomposition accelerator, and iron oxide;
(ii) introducing an excess amount of a fluorinated and/or chlorinated hydrocarbon solvent into a container and then introducing said metal/oxidant agglomerate formulation ingredients into said solvent in which said metal/oxidant agglomerate formulation ingredients are insoluble, said container provided with stirring means to form a slurry and said container provided with pressure reducing means to permit operation under reduced pressure;
(iii) mixing said metal/oxidant agglomerate formulation ingredients to form a slurry and continue said mixing for about 15 minutes at ambient temperature to form agglomerates as said metal/oxidant agglomerate formulation ingredients are slurred in said fluorinated and/or chlorinated hydrocarbon solvent;
(iv) increasing the temperature of said slurry and said agglomerate formulation ingredients to about 135 degrees Fahrenheit to accomplish final agglomerate formation, subsequently removing said solvent, and then continuing said mixing within said container under reduced pressure to remove any residual of said solvent remaining after said final agglomerate formation;
(v) removing said metal/oxidant agglomerates from said container and then curing said metal/oxidant agglomerates at 150–170 degrees Fahrenheit for about 24 hours;
(vi) screening said cured metal/oxidant agglomerates into different mesh sizes from which a selection is made of a desired effective mesh size for adding to an uncured propellant formulation;
(vii) adding from about 1 to about 5 weight percent of said metal/oxidant agglomerates to an uncured propellant formulation, said uncured propellant formulation comprised of about 34 weight percent of ammonium perchlorate of about 1 micrometer weight-median-diameter, of about 34 weight percent of ammonium perchlorate of about 3 micrometer weight-median diameter, of about 16 weight percent of spheroidal aluminum of about 50 micrometer weight-median-diameter, of about 14 weight percent of hydroxyl-terminated polybutadiene prepolymer which contains an effective amount of about 0.5–1.0 weight percent isophorone diisocyanate as a crosslinking agent, and an amount of about 2 weight percent total additive selected from a carboranyl burning rate enhancer, triphenylbismuthine as an ammonium perchlorate decomposition accelerater, and iron oxide; and,
(viii) curing said uncured propellant formulation having said agglomerates intimately dispersed therein to form a solid propellant grain.

4,655,859

AZIDO-BASED PROPELLANTS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 21, 1980, Ser. No. 153,818
Int. Cl.[4] C06B *45/10*
U.S. Cl. 149—19.2 **2 Claims**

1. An azido-based solid propellant composition having an improved burning rate comprising: a high energy plasticizer of tris-1,2,3[bis(1,2-difluoroamino)ethoxy]propane in an amount from about 24 to about 30 weight percent of said propellant composition; a curative and crosslinking agent of 4,5-epoxycyclohexylmethyl 4'5'-epoxycyclohexylcarboxylate in an amount from about 0.75 to about 1.5 weight percent of said propellant composition; a carboranyl burning rate catalyst of carboranylmethyl propionate in an amount from about 2 to about 6 weight percent of said propellant composition; graphite linters of about 100 micrometers lengths in an amount from about 1 to about 3 weight percent of said propellant composition; aluminum powder in an amount from about 10 to about 12 weight percent of said propellant composition; aluminum flake in an amount from about 0.5 to about 2 weight percent of said propellant composition; ammonium perchlorate of about 0.9 micrometer diameter in an amount from about 46 to about 52 weight percent of said composition; a processing aid of lecithin in an amount from about 0.1 to about 0.2 weight percent of said propellant composition; and a binder of 2-azidoethyl acrylate-acrylic acid copolymer in an amount from about 3 to about 8 weight percent of said propellant composition.

4,655,860

A PROCESSING METHOD FOR INCREASING PROPELLANT BURNING RATE

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 1, 1983, Ser. No. 484,105
Int. Cl.[4] C06B *21/00, 45/10*
U.S. Cl. 149—19.92 **1 Claim**

1. A processing method comprising milling in a roller mill, a propellant composition paste comprised of about 9.7 weight percent of a hydroxyl-terminated polybutadiene prepolymer binder system with an antioxidant content of about 0.1% to about 0.6% of polybutadiene polymer, and of an isophorone diisocyanate curing agent content of about 0.5% to about 2.0% of polybutadiene polymer; isophthaloyl bis-1-(2-methylaziridine) of about 0.3 weight percent; dioctyl adipate of about 2.0 weight percent; fluid-energy mill-ground ammonium perchlorate of about 86.0 weight percent; aluminum powder of about 1.0 weight percent; and iron oxide of about 1.0 weight percent; and improving the burning rate and mechanical properties of the propellant composition as compared with using a sigma blade mixer to mix a like propellant composition paste, said improvement in burning rate being increased from about 1.6 inches per second to about 2.8 inches per second at about 2000 psi, said mechanical property of stress being increased from about 145 to about 245 psi, said mechanical property of strain at maximum stress being increased from about 40 to about 45%, and said mechanical property of modulus being increased from about 290 to about 950 psi.

4,655,861

PROCESS FOR PRODUCING MOLDINGS WITH DEFORMABLE DECORATIVE SURFACE

Günter H. Kiss, Willdenowstrasse 20, D-1000 Berlin 45, Fed. Rep. of Germany

Filed Nov. 27, 1984, Ser. No. 675,199
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1983, 3343330
Int. Cl.[4] B32B *5/06, 5/20*
U.S. Cl. 156—62.2 **4 Claims**



1. A process for producing a molding having a detachable protective layer, a thermoplastically deformable decorative sheeting releasably attached to the protective layer, a foamable adhesive layer attached to the decorative layer opposed to the protective layer and a non-woven fibrous mat attached to the foamable adhesive layer comprising the steps of:
drawing the protective layer off from a first reel;
drawing the thermoplastically deformable decorative sheeting off from a second reel;
releasably laminating the protective layer to the decorative sheeting;
conveying the laminate past a foamable adhesive depositing device while dispensing the foamable adhesive into engagement with the decorative sheeting, the decorative sheeting forming a supporting sheet therefrom;
admixing cellulose-containing fibers, thermoplastic individual fibers and at least one binder to form a fibrous material;
introducing the fibrous material onto the side of the decorative sheeting carrying the adhesive foam;
compressing the fibrous material to a mat fleece whose entire surface is connected to the foamable adhesive to form a composite mat;

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shaping the composite mat by at least one hot molding step, the hot molding step employing a variable temperature mold having a low temperature zone which comes in contact with the thermoplastically deformable decorative sheeting and higher temperature zone which contacts the fibrous material.

3. The process according to claim 1, wherein a further thermoplastically deformable backing layer is firmly adhered to the fibrous mat on the side opposite to the decorative sheeting.

4,655,862

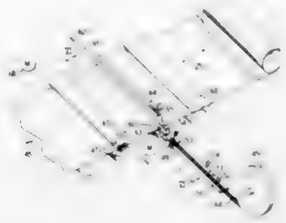
METHOD OF AND MEANS FOR MAKING RECLOSABLE BAGS AND METHOD THEREFOR

Paul B. Christoff, Lisle, Ill., and Steven Ausnit, New York, N.Y., assignors to Minigrip, Incorporated, Orangeburg, N.Y.

Division of Ser. No. 574,878, Jan. 30, 1984, Pat. No. 4,617,683. This application Mar. 7, 1986, Ser. No. 837,161

Int. Cl.⁴ B29D *5/00*

U.S. Cl. 156—66 **23 Claims**



1. A method of making a reclosable bag having a body with top and bottom ends and confronting walls, comprising:

forming said bag walls from web material having the longitudinal formation axis of the material extending between said top and bottom ends of the bag body;

and securing extruded resiliently flexible plastic profiled reclosable fastener strip means to said bag walls at one end of the bag body and lengthwise across said longitudinal formation axis of the web material.

4,655,863

LOOM FOR CARPETS, TAPESTRY, AND THE LIKE AND METHOD OF USING

Miguel V. Franco, P.O. Box 99, Sunol, Calif. 94586

Filed Feb. 12, 1986, Ser. No. 828,834

Int. Cl.⁴ D04H *11/00*

U.S. Cl. 156—72 **34 Claims**



1. A power loom for making carpets, tapestry and the like, when fed by suitable strands of yarn and an adhesively coated jute, including in combination:

a stationary, cylindrical mandrel having a base, an upper end, and a cylindrical outer surface,

a rotatable annular table surrounding said mandrel and adjacent to said mandrel's upper end,

drive means for rotating said annular table around said mandrel,

guide means for guiding each strand of yarn down vertically between said mandrel and said annular table,

a continuous circumferential series of substantially identical loom stations mounted in succession on said annular table, each said station having a pressure blade assembly, a guiding hook, and a cutter assembly, and

jute feed means for feeding a jute in split cylindrical form downwardly around and with an inner surface against said mandrel, said jute having an adhesively coated outer surface,

each said hook comprising means for engaging a series of successive strands passing down from said guide means and at each loom station, feeding them one at a time to a said pressure blade assembly as said annular table rotates,

each said pressure blade assembly including pressure means for forcing each strand against said jute and adhering it there to said jute's outer surface, and

each said cutter assembly comprising cutting means for severing each said strand at a desired pile height, all as said annular table rotates.

30. A method for making carpets, tapestry and the like, by combining a long strip of jute with suitable strands of yarn, including the steps of:

coating one surface of said jute with an adhesive,

forming said jute into a split cylinder with the adhesive coated surface facing outwardly,

supporting the non-adhesive side of said jute,

rotating an annular table continuously around said jute, while advancing said jute perpendicularly to said table, said table having a continuous circumferential series of substantially identical loom stations mounted in succession therearound on said annular table, each said station having a pressure plate assembly, a guiding hook, and a cutter assembly,

guiding a multiplicity of yarn strands in between said jute and said annular table,

engaging each said strand with a said hook and feeding the strands one at a time at each said station to a said pressure blade assembly while said annular table rotates,

forcing each strand at each said pressure blade assembly against said jute and adhering it there to said jute's outer surface, and

cutting off said strand by said cutter blade assembly at a desired pile height, all while rotating said annular table.

4,655,864

DIELECTRIC COMPOSITIONS AND METHOD OF FORMING A MULTILAYER INTERCONNECTION USING SAME

Joseph R. Rellick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 25, 1985, Ser. No. 715,970

Int. Cl.⁴ B32B *31/06*

U.S. Cl. 156—89 **5 Claims**

1. A castable dielectric composition comprising

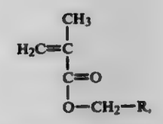
(1) An admixture of finely divided inorganic solids comprising

a. 40–70% vol. noncrystallizable glass having a softening point (T_s) of at least 500° C. and a viscosity (n) of 1×10^6 poises or less at 825°–1025° C.; and

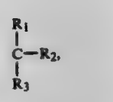
b. 60–30% vol. of a mixture of refractory oxides comprising 1–59% vol. Al_2O_3 and 59–1% volume of a secondary refractory selected from α-quartz, $CaZrO_3$ or fused silica being 20% vol., basis total inorganic solids, the admixture of inorganic solids being dispersed in

(2) An organic medium comprising a solution of

c. a polymeric binder selected from poly(α-methyl styrene) and polymers of methacrylates corresponding to the formula:



in which R is selected from —H and



in which (1) R_1, R_2 and R_3 are independently selected from —H, alkyl, alkaryl and aralkyl groups and (2) no more than one of R_1, R_2 and R_3 is —H, the glass transition temperature of the polymer, including any plasticizer therein, is −30° to +20° C., and

d. volatile nonaqueous organic solvent, the volume of organic medium being 30–55% of the volume of the dispersed inorganic solids a. and b.

4,655,865

METHOD FOR SPLICING SUCCESSIVE WEB ROLLS TO FEED A WEB INTO A ROTARY PRESS OR THE LIKE

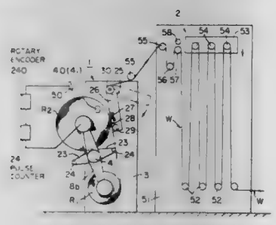
Yoshiki Nozaka, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 520,317, Aug. 4, 1983, Pat. No. 4,543,152. This application Jul. 12, 1985, Ser. No. 754,296

Claims priority, application Japan, Aug. 9, 1982, 57-138135

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—157 **8 Claims**



1. A method for splicing successive web rolls to feed a continuous web of paper or like material into a web consuming or processing machine comprising:

(a) rotatably mounting old and new web rolls on opposite ends of a pair of roll holder arms medially pivoted for joint rotation;

(b) delivering the web from the old web roll to the web consuming or processing machine via a web storage mechanism while the roll holder arms are held in a first preassigned angular position, the web storage mechanism storing therein a prescribed length of the web from the old web roll;

(c) revolving the roll holder arms from the first preassigned angular position to a second preassigned angular position, with the result that the web from the old web roll travels closer to the periphery of the new web roll than when the roll holder arms are in the first preassigned angular position;

(d) pivoting a splicer mechanism relative to the pair of roll holder arms from a retracted position away from the pair of roll holder arms to a working position toward the surface of the new web roll;

(e) revolving the new web roll relative to the roll holder arms through a required angle to bring an adhesive region on a leading end of the new web roll to a third preassigned angular position adjacent the old web traveling past the new web roll;

(f) stopping the new web roll in the third preassigned angular position;

(g) arresting the rotation of the old web roll relative to the roll holder arms to stop the web delivery therefrom while the old web is fed from the web storage mechanism to the web consuming or processing machine;

(h) pressing the stopped old web against the adhesive region on the stopped new web roll while the web is fed from the web storage mechanism to the web consuming or processing machine;

(i) cutting off an excess length of the old web behind the adhesive region on the new web roll immediately after the pressing of the old web against the adhesive region;

(j) starting the delivery of the web from the new web roll while the splicer mechanism is pivoted from the working position to the retracted position.

4,655,866

DEVICE FOR THERMAL PROTECTION FROM ABLATION AND VIBRATIONS AND MANUFACTURING METHOD

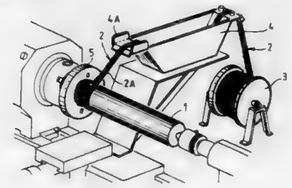
Christiane Ferrier, Essonne, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Aug. 9, 1985, Ser. No. 764,068

Claims priority, application France, Aug. 14, 1984, 84 12782

Int. Cl.⁴ B32B *1/00*

U.S. Cl. 156—192 **20 Claims**



1. A thermal protection device for protecting hollow structures of a monotonous evolutive cross-section intended to be submitted to high temperature ablative flow in the presence of vibrations, of the type formed by a layer of insulating polymerized resin forming a binder and containing an armature therein, said armature being a fringed meshing comprising a meshed portion submitted to said ablative flow thereon and fringes directed in a predetermined orientation relative to the direction of said flow toward the structure surface to be protected.

4,655,867

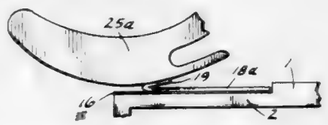
METHOD FOR AFFIXING NON-SLIP STRIPS TO GARMENT HANGERS

Abraham H. Berkovits, 4824 N. Berkley Blvd., Milwaukee, Wis. 53217

Filed May 6, 1985, Ser. No. 730,847

Int. Cl.⁴ B44C *1/16;* **B32B** *31/00*

U.S. Cl. 156—234 **7 Claims**



1. A method for affixing non-slip strips to the upper edge of

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the shoulder members of a garment hanger which comprises the steps of supporting a plurality of resilient, adhesive-backed, non-slip strips removably adhered to a backing with a holder, resiliently engaging a shoulder member upper edge with one of said non-slip strips, lifting a leading edge of the strip from said backing with said shoulder member and curling said strip back while drawing said shoulder member upper edge along said strip to simultaneously remove said strip from said backing and affix it to said shoulder member upper edge.

4,655,868

TOP CLOTH FOR ARTICLES OF CLOTHING AS WELL AS A MANUFACTURING PROCESS AND TRANSFER UNIT FOR IT

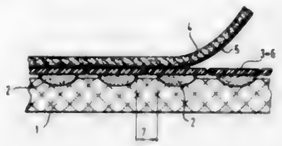
Josef Hefele, Grifeifing, Fed. Rep. of Germany, assignor to Kaeser Textilwerke GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 24, 1984, Ser. No. 644,025

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1983, 3330866

Int. Cl.⁴ B32B *31/00, 7/14, 7/06;* **B44C** *1/16*

U.S. Cl. 156—238 **17 Claims**



1. Process for the manufacture of a top cloth, especially of a top cloth having a one-sided patterned coating for its stabilization, wherein the coating consists of a lower adhesive layer of patterned, hot-sealable plastics elements which are not interconnected in the plane of the adhesive layer and which adhere to the rear of the top cloth and an upper covering layer adhering to the adhesive layer wherein said upper covering layer consists of a non-hot-sealable material, comprising the steps of covering a layer carrier, e.g. siliconized paper on its substrate side with a continuous, patternless base layer extending over this substrate side and which layer carrier is adhered only slightly thereto and consists of substantially non-hot-sealable material, in that then a patterned adhesive layer of hot-sealable plastic is applied thereon, the thus coated layer carrier being applied as a transfer unit with its raster patterned adhesive layer downwards on the rear of said top cloth, while using pressure and heat to soften the adhesive layer and to affix it securely on said top cloth, withdrawing the layer from the base layer forming the covering layer on the top cloth in its areas projecting in patterned form on the adhesive layer, and the continuous layer after being transferred to the top cloth being broken and detached in those areas where it is not located over the raster of the adhesive layer from the top cloth with sharp contours to form a raster shaped covering layer whose raster is seated exactly on the raster of said adhesive layer.

4,655,869

METHOD AND APPARATUS FOR MAKING EXPANDED WOOD VENEER PRODUCTS

Stephen J. Tellman, Bullet Hole Rd., Patterson, N.Y. 12563, and Oscar Selber, 8 Collier Dr. W., Carmel, N.Y. 10512

Continuation of Ser. No. 358,708, Mar. 16, 1982, abandoned, which is a continuation of Ser. No. 176,280, Aug. 8, 1980, abandoned. This application Jan. 10, 1983, Ser. No. 457,008

Int. Cl.⁴ B32B *31/18*

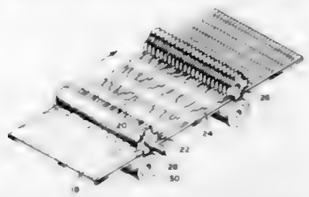
U.S. Cl. 156—252 **9 Claims**

1. A method of forming an expanded sheet of wood veneer, said method comprising the steps of:

(a) providing a sheet of wood veneer;

(b) providing cutting means having a plurality of cutting blades thereon; and

(c) forming a plurality of initial finite incisions in said veneer with said cutting means, said incisions extending completely through the entire thickness of said veneer and



being elongated in in the general direction of the grain of said veneer, and subsequently continuing progressively in the cross grain direction of said veneer to form additional similar incisions whereby said veneer is free to expand in the cross grain direction until substantially the entirety of said veneer has been incised.

4,655,870

METHOD AND APPARATUS FOR GLUEING AND PREHEATING CORRUGATED BOARD

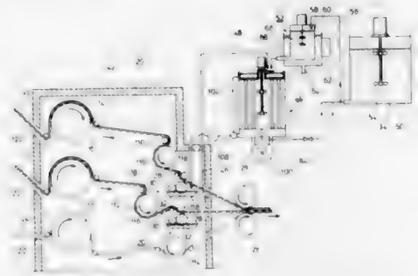
Kazuo Mori, Kyoto, and Eiichi Isowa, Aichi, both of Japan, assignors to Isowa Industry Company, Ltd., Aichi, Japan

Filed Feb. 20, 1985, Ser. No. 703,488

Claims priority, application Japan, Feb. 20, 1984, 59-30899

Int. Cl.⁴ B32B *31/08, 31/12, 31/26*

U.S. Cl. 156—285 **20 Claims**



2. A method for glueing corrugated board, comprising the steps of:

providing a closed, heat-insulating chamber;

heating a glue to a predetermined temperature;

disposing a glue pan within said heat-insulating chamber;

supplying said heated glue to said glue pan disposed within said heat-insulated chamber;

feeding a corrugated core sheet and a liner into said heat-insulated chamber;

providing preheater devices, within said heat-insulating chamber at predetermined locations along the feed path of said corrugated core sheet and said liner, for pre-heating said corrugated core sheet and said liner, and for generating waste heat which serves as the sole source of heat within said heat-insulating chamber for heating the interior space of said heat-insulating chamber to a predetermined temperature so as to maintain said corrugated core sheet and said liner, as well as said heated glue disposed within said glue pan, in a heated state;

applying said heated glue to ridge portions of said corrugated core sheet;

quickly heating said glue on said ridge portions of said corrugated core sheet by blasting hot steam thereagainst at a location which is disposed outside and immediately downstream of said heat-insulating chamber; and

bonding together said corrugated core sheet and said liner at a location immediately downstream of said hot steam blasting location.

4,655,871

DEVICE FOR FEEDING REVENUE STAMPS ON A CIGARETTE PACKING MACHINE

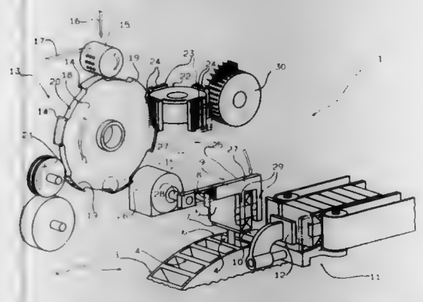
Riccardo Mattei, and Alessandro Minarelli, both of Bologna, Italy, assignors to G.D Societa' per Azioni, Bologna, Italy

Filed Jun. 9, 1986, Ser. No. 872,206

Claims priority, application Italy, Jun. 14, 1985, 3465 A/85

Int. Cl.⁴ B65C *1/06*

U.S. Cl. 156—484 **7 Claims**



1. A device (13) for feeding revenue stamps (14) on a cigarette packing machine (1), whereby each packet (5) coming off a wrapping unit (2) is fed along a given unloading route (9), characterised by the fact that it comprises means (18) for feeding the said stamps (14) successively and in step-by-step manner along a given supply route; gumming means (21) located along the said supply route; an output roller (22) mounted for step-by-step rotation about an axis perpendicular to the said unloading route (9), the said output roller (22) presenting a number of peripheral pockets (23), each designed to move, together with the said output roller (22), between a loading position, wherein the said supply route extends through the said pocket (23), and an unloading position, wherein the said pocket (23) is arranged perpendicular to the said unloading route (9); and a stamp (14) withdrawal member (25) designed to move between a withdrawal position, facing one of the said pockets (23), and a release position, substantially on the said unloading route (9).

4,655,872

WELDING APPARATUS WITH INTEGRAL FRAME ASSEMBLY

Walter Neumüller, Hauptstrasse 71, A-2434 Mannersdorf, and Friedrich Liebl, Corethgasse 25, A-2434 Gotzendorf, both of Austria

Filed Oct. 28, 1985, Ser. No. 792,031

Claims priority, application Austria, Nov. 13, 1984, 3584/84

Int. Cl.⁴ B32B *31/08*

U.S. Cl. 156—499 **7 Claims**

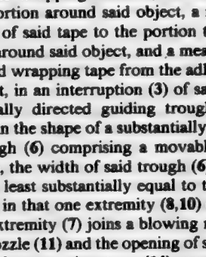
1. A welding apparatus for welding together overlapping ends of two lengths of thermoplastic synthetic resin sheets at a welding station, which comprises

(a) a wedge-shaped heating device for softening the thermoplastic synthetic resin along the overlapping sheet ends, the heating device being arranged ahead of the welding station in an operating direction and being displaceable in said direction,

(b) a frame comprised of

(1) two parallel frame parts, each frame part having two ends and extending in a respective plane, the planes intersecting along a line defined by one of the ends of the two frame parts,

(2) a part connecting the two frame parts, the connecting part being rigidly affixed to the one end of one of the frame parts and the one end of the other frame part being pivotally connected with the connecting part, the connecting part extending along said line, and



(3) a spring means biasing the other frame part for pivoting towards the plane of the one frame part, and

(c) two oppositely disposed, motor-driven pressure rollers pressable against each other by said spring means and having axes extending parallel to the connecting part, one of the rollers being mounted on the other end of the one frame part and the other roller being mounted on the other end of the other frame part.

4,655,873

DEVICE FOR APPLYING A WRAPPING TAPE AROUND AN OBJECT

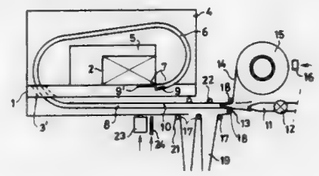
Pieter J. Oly, Wormer, Netherlands, assignor to Sollas Holland, B.V., Wormer, Netherlands

Filed Feb. 10, 1986, Ser. No. 827,811

Claims priority, application Netherlands, Feb. 26, 1985, 8500540

Int. Cl.⁴ B31F *5/00*

U.S. Cl. 156—502 **11 Claims**



1. A device for applying a wrapping tape around an object, comprising a table for supporting the object to be wrapped, a supply means for the wrapping material, means for applying the supplied tape portion around said object, a means for adhering the free end of said tape to the portion thereof which has been tightened around said object, and a means for cutting the remainder of said wrapping tape from the adhered portion, characterised in that, in an interruption (3) of said table (1), a substantially vertically directed guiding trough (6) for the wrapping tape (14) in the shape of a substantially closed ring is provided, said trough (6) comprising a movable portion for opening said trough, the width of said trough (6) being, in the closed condition, at least substantially equal to the width of a wrapping tape (14), in that one extremity (8,10) of this trough (6) near the other extremity (7) joins a blowing nozzle (11), in that between said nozzle (11) and the opening of said trough (6) a passage (13) for the wrapping tape (14) provided by said supply (18) is situated, in that, at the side of said passage (13) remote from the supply side (15), a container (19; 27) for a

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buffer storage is provided, the total length of the tape portion in the filled buffer storage (19) being at least equal to the maximally required tape length, in that, near the inner end (7) of said trough, a clamp (9) for the free end (21) of a tape (14), as well as means (23, 24) for attaching and cutting said tape (14) are provided, in that near said buffer storage container (19) means (22; 25; 30, 31) are provided for leading back a tape portion laid around said object for tightening the same, in that means (16; 26, 28, 29) are provided for retaining the tape portion situated at the supply side, and in that means are provided for controlling a sequence of operations, comprising: retaining the supply portion of the tape (14), delivering an air flow through said nozzle (11) so as to lead a rolling loop (20) of said tape (14) through the closed trough (6), said tape portion being pulled from said buffer storage (19) until its free end (21) has reached the other extremity (7) of said trough (6), actuating said clamp (9) at this extremity (7) for retaining said tape end (21), opening the movable trough portion for releasing said tape (14), tightening said tape (14) around said object (2) while partly filling the buffer storage (19, 32), attaching said tape (14), further filling the buffer storage (19) from the supply after releasing the locking thereof, and cutting off the attached tape portion from the portion received in the buffer storage (19).

4,655,874

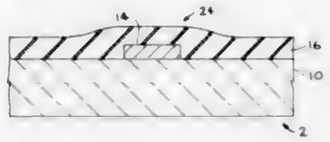
PROCESS FOR SMOOTHING A NON-PLANAR SURFACE

Steven Marks, San Antonio, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 26, 1985, Ser. No. 759,625

Int. Cl.⁴ B44C *1/22;* **C03C** *15/00, 25/06;* **B29C** *17/08*

U.S. Cl. 156—643 **9 Claims**



1. An improvement in the process of planarizing an integrated circuit structure in which an etchable photoresist layer is applied over an etchable layer to be planarized on an integrated circuit structure followed by dry etching of both layers by exposure of the structure to a high energy beam which comprises exposing the photoresist material to light prior to said etching by said high energy source whereby the surface of the planarized layer beneath the photoresist layer will be smooth after said high energy etching and removal of the photoresist.

4,655,875

ION IMPLANTATION PROCESS

Yasuo Wada, Bunkyo; Masao Tamura, Tokorozawa; Nobuyoshi Natsuaki, Higashiyamato, and Kiyonori Ohyu, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

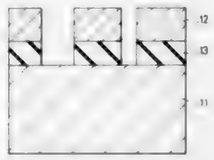
Filed Mar. 4, 1986, Ser. No. 836,233

Claims priority, application Japan, Mar. 4, 1985, 60-41116; Oct. 23, 1985, 60-235150

Int. Cl.⁴ B44C *1/22;* **C23C** *1/02;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **10 Claims**

1. An ion implantation process comprising the steps of forming a stacked film of a second film formed from an amorphous material and a first film formed from a metal having a large mass number on a substrate to be ion-implanted, selectively removing a desired portion(s) of at least said first film to form



an opening(s), and implanting ions with an energy of about 500 keV or more through said opening(s) in said substrate.

4,655,876

METHOD FOR FABRICATING A MASTER RECORDING DISC

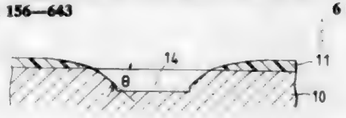
Noboru Kawai; Toshiro Abe, both of Tokyo, and Kei Murata, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 11, 1985, Ser. No. 753,755

Claims priority, application Japan, Jul. 14, 1984, 59-145272

Int. Cl.⁴ B44C *1/22;* **C03C** *15/06, 25/06*

U.S. Cl. 156—643 **6 Claims**



1. A method for fabricating a master recording disc comprising:

(a) forming a photoresist layer on a glass substrate to form a master blank;

(b) revolving said master blank;

(c) directing a laser beam onto the surface of the revolving photoresist layer, said laser beam being modulated in intensity with a signal to be reproduced so that a series of optically excited regions is formed in track turns in said photoresist layer;

(d) removing said optically excited regions to form a series of pits in said photoresist layer;

(e) sputtering said master blank with an etchant gas until the pits in the photoresist layer extend through and beyond the boundary surface of the photoresist layer and the glass substrate to a desired depth from said boundary surface and pits having side walls tapered in a direction away from said boundary surface are formed in said substrate; and

(f) removing said photoresist layer which remains on said glass substrate.

4,655,877

ABSORBENT WEB STRUCTURE

Koji Horimoto, and Yoshinori Morita, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 644,669, Aug. 28, 1984, abandoned, which is a continuation of Ser. No. 398,709, Jul. 15, 1982, abandoned. This application Dec. 23, 1985, Ser. No. 814,165

Int. Cl.⁴ D21H *5/20*

U.S. Cl. 162—146 **4 Claims**

1. An absorbent web structure obtained by a dry sheet forming process composed of a mixutre of 5 to 50% by weight of short fibers of a thermoplastic resin rendered hydrophilic with a surface acting agent and 95 to 50% by weight by cellulosic fibers, said thermoplastic short fibers being melt-bonded to impart self-supporting property to the web structure; characterized in that

(i) said thermoplastic short fibers are composed of flash-spun fibers of an olefin resin and are rendered hydrophilic by forming an aqueous slurry of the fibers containing a nonionic surface-active agent and then dehydrating the slurry at a temperature of the slurry of not more than about 50° C., and

(ii) said nonionic surface-active agent has (a) an HLB value of from 2 to 20 and (b) a melting point equal to, or higher than, the temperature of the slurry at the time of the dehydrating treatment in (i) above, and

(iii) the time required for water absorption, as determined by J. TAPPI testing methods of said absorbent web structure, is 5 seconds or less after melt-bonding treatment at 140° C. for 5 minutes.

4,655,878

METHOD OF REGULATING FUEL SUPPLY RATE FOR HEATING A COKE OVEN

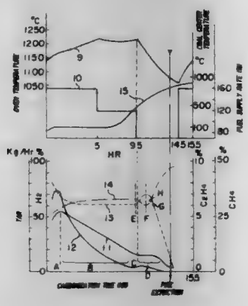
Yoshio Yoshino; Koji Tsuchihashi; Yoshihiro Omae; Kenzo Tsujikawa; Takashi Takaoka, all of Kita-Kyushu, and Yukio Yamaguchi, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Nov. 7, 1984, Ser. No. 668,930

Claims priority, application Japan, Nov. 7, 1983, 58-208869; Nov. 7, 1983, 58-208870; Nov. 7, 1983, 58-208871; Nov. 7, 1983, 58-208872; Nov. 7, 1983, 58-208873; Nov. 7, 1983, 58-208874; Feb. 14, 1984, 59-25641

Int. Cl.⁴ C10B *21/10, 21/20*

U.S. Cl. 201—1 **9 Claims**



1. In a method of regulating fuel supply rate in the coking of coal in a coke oven, which generates coke oven gas including ethylene, tar, hydrogen and methane, by a programmed heating technique in which there is at least one period in which there is a substantial reduction in the rate of fuel supplied during the coking process, the improvement wherein the programmed heating technique comprises:

(A) initially preparing a standard curve for the change with time of the ethylene concentration or the tar concentration in the gas discharged during the coking of a given coal in a coke oven, based on a statistical analysis of experimental data obtained from operating conditions of the coke oven and conditions of the feed coal;

(B) coking a batch of said given coal in said oven heated by combustion of a supply of fuel and continuously measuring the ethylene concentration or the tar concentration in the coke oven gas generated during the coking step; and

(C) controlling the fuel supply rate during step (B) by reference to the standard curve prepared in step (A) so that the difference between the ethylene concentration or the tar concentration continuously determined in step (B) and the ethylene concentration or the tar concentration exhibited by said standard curve is constantly minimized, thereby achieving an economical regulation of the fuel supply rate.

4,655,879

GLYCEROL DISTILLATION PROCESS

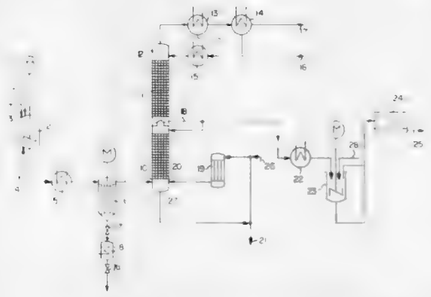
Rolf Brockmann, Langenfeld; Lutz Jeromin, Hilden; Wilhelm Johannisbauer, Erkrath; Helmut Meyer, Duesseldorf-Benrath; Otto Michel, Langenfeld, and Juergen Plachenka, Mettmann, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 664,902

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1983, 3339051

Int. Cl.⁴ B01D *3/34, 1/22*

U.S. Cl. 203—37 **3 Claims**



1. A process for the purification of crude glycerol derived from the transesterification, hydrolysis, and saponification of naturally occurring fats and oils, comprising

(a) alkalizing crude glycerol containing up to 10% by weight of water without predrying and chemical prepurificaton by mixing with an aqueous alkali hydroxide solution for about 1 hour at about 90°–100° C., followed by the addition of about 10 N/m^3 of air per cubic meter of said crude glycerol;

(b) distilling the alkalized mixture at about 165°–180° C. and about 10–20 mbar and discharging high boiling constituents for additional distillation;

(c) passing the vapors generated by said distillation into a lower part of a packing column and flowing said vapors upward through said column, said column containing low-pressure-loss plates having a pressure loss of at most 1 mbar/theoretical separation stage at an air velocity of 2 m/s and having at least seven theoretical separation stages;

(d) partially first condensing the vapors from said column at about 80°–90° C. under a head pressure of about 5–10 mbars, and second condensing the remaining vapors at about 20°–30° C., so that the second condensate corresponds to approximately 1% of the quantity of crude glycerol;

(e) cooling the first condensate by about 30°–50° C. and returning same to the head of said column;

(f) continuously removing a main product from said column as a liquid sidestream at a point approximately ⅓ of the height of said column, and returning a partial stream thereof to said column beneath the point of removal;

(g) cooling the remaining non-returned portion of said main product to about 80°–90° C.; adding about 0.1 to 0.3% by weight of activated charcoal to the said non-returned portion as a bleaching agent and stirring under nitrogen for about 15 to 30 mintures while at about 80°–90° C.; and then removing said bleaching agent;

(h) drawing off bottom product from the column sump, evaporating said bottom product at temperatures of about 150°–180° C., and returning vapor generated thereby to said sump,

(i) continuously removing a partial stream of about 1% of

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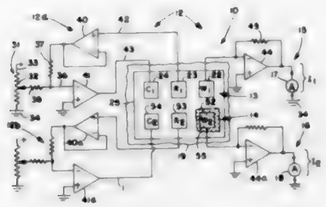
the quantity of glycerol being processed from said bottom product before it is evaporated.

4,655,880

APPARATUS AND METHOD FOR SENSING SPECIES, SUBSTANCES AND SUBSTRATES USING OXIDASE

Chung-Chiun Liu, Cleveland Heights, Ohio, assignor to Case Western Reserve University, Cleveland, Ohio

Filed Aug. 1, 1983, Ser. No. 519,071
Int. Cl.⁴ G01N *27/48*
U.S. Cl. 204—1 T **24 Claims**



24. A method for messuring the concentration of a substance, species or substrate in the presence of a corresponding oxidase, comprising inserting a pair of potentiostat operating electrode systems directly into an electrolyte containing the substrate, species, or substrate of unknown concentration, and while said pair of potentiostat operating electrode systems are in such electrolyte, energizing the electrode systems to produce a first electric current representing the background concentration of an electrochemically active species and a second electric current representative of such background concentration as diminished by the consumption of the electrochemically active species by reaction with the substance, species or substrate in the presence of the oxidase, each of the systems including a respective working electrode, and further comprising immobilizing oxidase material on only one of the working electrodes, and said energizing comprising using plural working electrode portions of each of the working electrodes to induce reactions in proximity thereto and summing the currents developed at the respective working electrode portions.

4,655,881

BRUSH PLATING METHOD FOR CONNECTOR TERMINALS

Junichi Tezuka, and Yasuto Murata, both of Kanagawa, Japan, assignors to Electroplating Engineers of Japan, Limited, Tokyo, Japan

Filed Apr. 16, 1986, Ser. No. 852,675
Claims priority, application Japan, Apr. 26, 1985, 60-89016
Int. Cl.⁴ C25D *5/02*
U.S. Cl. 204—15 **4 Claims**



1. A method for brush plating of fork-like connector terminals formed in a manner of comb teeth and spaced apart a predetermined distance from each other on a continuous strip member, each of said connector terminals having at its forked end part small-area portions to be plated opposing to each other with a gap therebetween, wherein:

said fork-like connector terminals are moved along a pass line under guidance so that the forked end part won't swerve from a predetermined passageway; and

a plating brush positioned in alignment with the predetermined passageway of said forked end part is moved into and out of or through said gap in such a way that said brush contacts only said small-area portions to be plated, opposing to each other with the gap therebetween, so as to effect plating of said portions alone, said plating brush having its insoluble anode surface coated with a liquid retaining material to which the plating solution can be always supplied according to the need, the whole body of said brush being designed to have a width corresponding to said gap.

4,655,882

PROCESS FOR MANUFACTURING ZINC-SILICA COMPOSITE PLATED STEEL

Minoru Hiramatsu, Kurashiki; Hitoshi Kawasaki, Kasaoka, and Fumio Kusano, Okayama, all of Japan, assignors to Okayama-Ken, Okayama, Japan

Filed Dec. 13, 1985, Ser. No. 808,888
Claims priority, application Japan, Dec. 15, 1984, 59-264836
Int. Cl.⁴ C25D *15/00*
U.S. Cl. 204—16 **5 Claims**

1. A process for manufacturing zinc-silica composite plated steel, wherein, upon the galvanization of steel, an electrolyzation is performed in a galvanization bath into which is added fine grains of silica and cationic surface active agent having cationic property, then, a coupling treatment is carried out through the use of silane coupling agent, whereby plated steel with a rough surface suitable for bonding coatings thereto is provided.

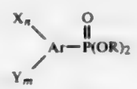
4,655,883

PROCESS FOR THE PREPARATION OF PHOSPHONIC ACID ESTERS

Winfried Farnung, Münster, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 614,874
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3319795
Int. Cl.⁴ C25C *1/00*
U.S. Cl. 204—59 F **5 Claims**

1. A process for the preparation of phosphonic acid esters of formula I



(I)

in which Ar is phenyl, a binuclear or polynuclear aromatic radical, cycloheptatrienyl, furyl or pyridyl;

X is (C_1–C_{18})-alkyl or (C_1–C_6)-alkoxy which is unsubstituted or substituted by cyano, phenyl, naphthyl, benzyloxy, phenoxy, benzoxazolyloxy, benzthiazolyloxy, quinoxalinyloxy, quinolinyloxy, pyridyloxy, naphthoxy, phenylmercapto and naphthylmercapto, wherein the aromatic or heteroaromatic radicals are unsubstituted or substituted by one to three Y substituents, (C_1–C_4)-alkyl, phenylcarbonylamino, (C_1–C_6)-alkylcarbonylamino, (C_1–C_6)-alkylmercapto, (C_1–C_4)-alkoxy-(C_1–C_4)-alkyl, (C_1–C_4)-alkoxycarbonylamino, (C_1–C_4)-alkoxycarbonyloxy, (C_1–C_4)-alkoxycarbonyl-(C_1–C_4)-alkoxy, mono-(C_1–C_4)-alkylaminocarbonyloxy, di-(C_1–C_4)-alkylaminocarbonyloxy or phenylaminocarbonyloxy, or two X radicals, ortho to each other, which form a ring having three or four carbon atoms, in which two non-adjacent carbon atoms can be replaced by oxygen, and in which said ring is unsubstituted, monosubstituted or disubstituted by (C_1–C_4)-alkyl;

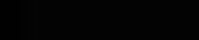
Y is halogen, (C_1–C_4)-alkoxycarbonyl, (C_1–C_4)-alkylcarbonyl, nitro, nitroso, cyano, (C_1–C_4)-alkylsulfonyl, phenylsulfonyl, (C_1–C_4)-alkoxysulfonyl, phenoxysulfonyl, di-[(C_1–C_4)-alkoxy]-phosphinyl, di-[(C_1–C_4)-alkyl]-phosphinyl, [O-(C_1–C_4)-alkoxy-O-(C_1–C_4)-alkyl]-phosphinyl or (C_1–C_4)-alkyl which is substituted by one to six halogen atoms, formyl or amidosulfonyl which is unsubstituted or substituted in the amino radical by one to two (C_1–C_4)-alkyl radicals or by a phenyl radical;

R is (C_1–C_6)-alkyl;

n is 1, 2 or 3; and

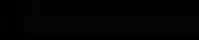
m is 0, 1, 2 or 3,

which comprises subjecting a compound of the formula II



(II)

to anodic oxidation in an undivided electrolytic cell in the presence of a compound of the formula III



(III)

and a (C_1–C_4)-alkanol.

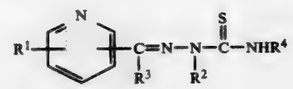
4,655,885

SURFACE-MODIFIED ELECTRODE AND ITS USE IN A BIOELECTROCHEMICAL PROCESS

Hugh A. O. Hill; Cumnor Hill; David J. Page, Margate; Nicholas J. Walton, New Hinksey, and David Whitford, Kidlington, all of England, assignors to National Research Development Corporation, London, United Kingdom

Filed Jan. 10, 1986, Ser. No. 817,570
Claims priority, application United Kingdom, Jan. 11, 1985, 8500729
Int. Cl.⁴ C25B *3/02, 11/06;* H01M *4/96*
U.S. Cl. 204—72 **7 Claims**

1. An electrode having a surface modified with a (pyridinylmethylene)hydrazinecarbothioamide, hereinafter termed "PHMC", or a derivative thereof of formula



(1)

wherein:

the pyridine ring shown is substituted in the 2-, 3 or 4-position by the (methylene)hydrazinecarbothioamide group shown;

R^1 represents hydrogen atom(s) or one or two methyl or ethyl groups in the 2-,3- or 4-position (when the said position is not substituted by the (methylene)hydrazinecarbothioamide group shown);

R^2 represents a hydrogen atom or a methyl group;

R^3 represents a hydrogen atom or a methyl group; and

R^4 represents a hydrogen atom or a methyl group.

4,655,884

NICKEL PLATING OF REFRACTORY METALS

Stanley Hills, Cherry Hill, N.J., and James K. Landon, Pottstown, Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Aug. 19, 1985, Ser. No. 767,384
Int. Cl.⁴ C25D *5/38*
U.S. Cl. 204—321 **31 Claims**

1. An improved method of depositing nickel on a clean clear refractory metal surface to form a multilayer article, comprising:

(a) etching the surface;

(b) rinsing the etched surface;

(c) applying a first layer of nickel on the etched surface by electroplating means;

(d) again rinsing the surface;

(e) applying a second layer of nickel on the first layer of nickel by electroplating means; and

(f) heating the article once after plating has been completed in the absence of air for a period of time sufficient to cause intermetallic bonding between nickel and the refractory metal.

4,655,886

ION EXCHANGE MEMBRANE CELL AND ELECTROLYSIS WITH USE THEREOF

Yoshio Oda; Takeshi Morimoto, and Kohji Suzuki, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 205,567, Nov. 10, 1980, and a continuation-in-part of Ser. No. 355,312, Mar. 5, 1982. This application May 24, 1982, Ser. No. 381,745
Int. Cl.⁴ C25B *1/14*
U.S. Cl. 204—98 **20 Claims**

1. In an ion exchange membrane cell which comprises an anode, a cathode, and an anode compartment and a cathode compartment partitioned by an ion exchange membrane, an improvement characterized in that said ion exchange membrane is a cation exchange membrane having a gas and liquid permeable porous non-electrode layer on at least one side thereof and said cation exchange membrane is a membrane of a fluorinated cation exchanger having carboxylic acid groups as its ion exchange groups and with its ion exchange capacity being varied in the direction of its thickness.

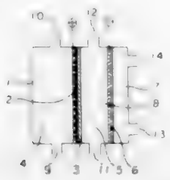
VOL 1077 ISS 1 AP 7 1987 UMI

4,655,887

PROCESS FOR ELECTROLYZING AQUEOUS SOLUTION OF ALKALI METAL CHLORIDE

Yoshio Oda; Takeshi Morimoto, and Kohji Suzuki, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,632
Claims priority, application Japan, Aug. 28, 1980, 55-117695
Int. Cl.⁴ C25B *1/14*
U.S. Cl. 204—98 9 Claims



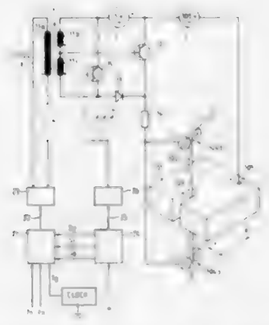
1. A process for electrolyzing an aqueous solution of an alkali metal chloride which comprises feeding sad aqueous solution of an alkali metal chloride into an anode compartment and feeding an oxygen-containing gas in a cathode compartment in an ion exchange membrane cell comprising said anode compartment and said cathode compartment formed by partitioning an anode and a cathode with an ion exchange membrane to which a gas and liquid permeable porous layer made of inorganic particles having no anodic activity and a thickness thinner than the thickness of said ion exchange membrane is bonded on the anode side of said exchange membrane and said cathode is an oxygen-reducing depolarizing cathode.

4,655,888

METHOD AND APPARATUS FOR THE ELECTROEROSIVE WORKING OF WORKPIECES

Beat Kilcher, Arcegno; Ernst Bühler, Losone, and Gideon Levy, Orselina, all of Switzerland, assignors to AG fur industrielle Elektronik AGIE Losone b. Locarno, Losone, Switzerland

Filed May 10, 1985, Ser. No. 733,296
Claims priority, application Switzerland, May 11, 1984, 2351/84
Int. Cl.⁴ B23H *1/02, 3/02, 7/04, 7/14*
U.S. Cl. 204—129.43 12 Claims



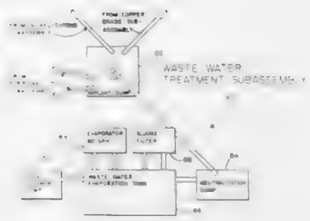
1. For the electroerosive working of a conductive workpiece by a tool electrode in an electroerosive plant including a pulse generator having a plurality of selectively operable power switching circuits arranged in parallel to a work gap formed between the tool electrode and the workpiece, a method for generating machining pulses applied to the work gap comprising the steps of storing a set of manifestations indicative of the desired shape and occurrence of machining pulses for each of a plurality of machining conditions; selecting one of said sets of manifestations in consideration of the actual machining conditions; generating a pulse train of clock pulses at a fundamental frequency; forming the pulse train into temporally spaced groups of control pulses in accordance with said selected set of manifestations; applying said control pulses to the power switching circuits; and rendering operable select ones of the power switching circuits in consideration of said selected set of manifestations to establish the amplitude of the current supplied to the work gap.

4,655,889

ELECTROPLATING SYSTEM WITH WASTE WATER TREATMENT

Dominic Tenace, 15980 Grand Ave., #M-9, Lake Elsinore, Calif. 92330, and Donald M. Hutchison, Moreno Valley, Calif., assignors to Dominic Tenace, Lake Elsinore, Calif.

Filed Oct. 11, 1985, Ser. No. 786,472
Int. Cl.⁴ C02F *1/46*
U.S. Cl. 204—149 5 Claims



5. An improved method for electroplating, the method comprising the following steps:

(a) providing at least one electroplating tank for plating parts;

(b) providing at least one water rinse tank in the vicinity of said electroplating tank;

(c) transferring plated parts from said rinse tank to said electroplating tank;

(d) providing a source of uncontaminated water positioned adjacent said rinse tank;

(e) rinsing said plated parts while removing said plated parts from said rinse tank;

(f) inserting substantially uncontaminated water into said rinse tank for reducing the contamination level of said rinse tank;

(g) transferring overflow water from said rinse tank to said electroplating tank for decreasing the contamination level of said electroplating tank;

(h) providing an evaporator in fluid communication with said electroplating tank; and

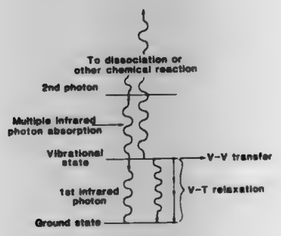
(i) transferring contaminated effluent from said electroplating tank to said evaporator for disposal of said electroplating tank effluent without access to public sewers.

4,655,890

LASER ISOTOPE SEPARATION BY MULTIPLE PHOTON ABSORPTION

C. Paul Robinson; Stephen D. Rockwood; Reed J. Jensen; John L. Lyman, and Jack P. Aldridge; III, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 354,417, Mar. 3, 1982, abandoned, which is a continuation of Ser. No. 913,635, Jun. 8, 1978, abandoned, which is a continuation of Ser. No. 810,545, Jun. 27, 1977, abandoned, which is a continuation of Ser. No. 570,924, Apr. 22, 1975, Pat. No. 4,049,515. This application Feb. 8, 1985, Ser. No. 699,237
Int. Cl.⁴ B01D *59/34*
U.S. Cl. 204—157.22 5 Claims



1. A method for separating isotopes of an element, said method comprising the steps of:

a. irradiating a mixture of molecules containing the element, and a scavenger species of fewer than five times the number of said molecules containing the element, with a first infrared laser radiation having a first wavelength which lies in close coincidence with the transition from the ground rotation-vibrational level of those of said molecules which contain the isotopic variant of the element which is to be separated and the next highest rotation-vibration level having vibrational excitation, said first infrared laser radiation having an intensity sufficient to selectively induce multiple photon absorption of said first wavelength laser radiation by those of said molecules which contain the isotopic variant of the element which is to be separated;

b. simultaneously irradiating said molecules containing the element with a second infrared laser radiation having a second wavelength chosen to selectively excite said molecules which have selectively absorbed said first electromagnetic radiation by the absorption of at least one photon of said second wavelength laser radiation, whereby said molecules which have selectively absorbed said first wavelength laser radiation are excited to sufficiently high rotation-vibration levels of the ground electronic state such that said selectively excited molecules undergo chemical reaction while molecules containing other isotopic variants of the element remain substantially in their lower rotation-vibration levels and consequently substantially unreactive; and

c. separating the product of said chemical reaction of said selectively excited molecules from said unreacted molecules.

4,655,891

PROCESS FOR THE PHOTOCHEMICAL DEHYDROGENATION OF ALCOHOLS WITH SEMICONDUCTOR POWDER SUSPENSIONS

Michael D. Ward, South Euclid; James F. Brazdil, Jr., Mayfield Village, and Robert K. Grasselli, Aurora, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 22, 1984, Ser. No. 643,151
Int. Cl.⁴ B01J *19/12*
U.S. Cl. 204—157.93 24 Claims

1. A process for the photochemical dehydrogenation of primary and secondary alchols comprising the steps of:

forming a suspension of a semiconductor powder and a redox couple in the alcohol, said semiconductor powder having the general formula $A_xB_yC_z$ where A is selected from Bi, Sn, Pt, Pd, Cu, Fe, W, V, Sb, Mo, Ru or Ag and mixtures thereof; B is Te, Sb, Ti, Cd, Mo, W or V and mixtures thereof; C is O or S; x equals 0.1 to 5; y equals 1 to 3; and z is a number necessary to satisfy the other elements,

wherein said semiconductor powder is optionally metallized by an element selected from Pt, Pd, Cu or Ag and said redox couple contains an A element as a separate component of said suspension which is introduced by addition of a salt thereof to said suspension; and

photochemically activating said suspension in the presence of an oxidant with illumination having an energy at least equal to the band gap of said semiconductor powder.

4,655,892

OXYGEN SENSOR AND PROCESS FOR PRODUCING SAME

Kozo Satta; Hideo Hasegawa, and Mareo Kimura, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jul. 24, 1985, Ser. No. 758,376
Claims priority, application Japan, Jul. 24, 1984, 59-153775
Int. Cl.⁴ C23C *14/18;* B05D *5/00, 3/02;* G01N *27/46*
U.S. Cl. 204—192.15 9 Claims



1. In a process for producing an oxygen sensor having a first electrode formed on that side of a solid electrolyte body which is faced to a gas to be detected and a second electrode formed on the other side of the solid electrolyte body, the improvement comprising the steps of:

forming a first electrode metal layer made of a mixture of platinum and at least one rhodium and palladium directly on that surface of the solid electrolyte body where the first electrode is to be formed, and subjecting the first electrode metal layer to oxidation and then to reduction to allow said rhodium and/or palladium in said mixture to be concentrated and overlaid on said platinum to produce a dual structure in the first electrode of a platinum layer overlaid with a layer of concentrated rhodium and/or palladium.

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4,655,893

CUBIC BORON NITRIDE PREPARATION UTILIZING A BORON AND NITROGEN BEARING GAS

Harry A. Beale, Columbus, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 464,302, Feb. 7, 1983, abandoned. This application Sep. 12, 1983, Ser. No. 531,119
The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.
Int. Cl.⁴ C23C *14/34*
U.S. Cl. 204—192.15 **11 Claims**

1. A method for depositing cubic boron nitride on a substrate, comprising the steps of:
(a) heating a supported substrate in a vacuum;
(b) supplying metal vapors from a metals source by a process of reactive evaporation or reactive sputtering or arc discharge into a zone between said substrate and the metals source, said source consisting of one or more metals selected from the group consisting of the elements chromium, nickel, cobalt, aluminum and manganese;
(c) introducing nitrogen and boron containing gas selected from the group consisting of borazene, a mixture of diborane and nitrogen, and a mixture of boron trichloride and ammonia into said zone;
(d) generating an electrical field in said zone for ionizing the metal vapors and gas atoms in the zone; and
(e) maintaining an electrically negative bias impressed on said substrate depending upon the process employed in step (b) and in accordance with the following schedule:

Process	Bias Voltage
Reactive Evaporation (Electron Beam)	−500 to −1000 volts
Reactive Sputtering (DC)	−200 to −3000 volts
Reactive Sputtering (RF)	−100 to −3000 volts
Reactive Sputtering (Magnetron)	−500 to −3000 volts
Arc Discharge	−20 to −2000 volts

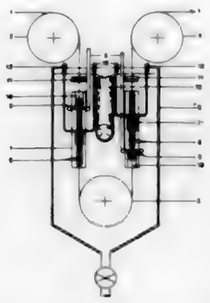
whereby cubic boron nitride is deposited on the surface of said substrate.

4,655,894

APPARATUS FOR THE CONTINUOUS ELECTRODEPOSITION OF METALS AT HIGH CURRENT DENSITY IN VERTICAL CELLS

Maurizio Podrini, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Division of Ser. No. 756,093, Jul. 17, 1985. This application Apr. 10, 1986, Ser. No. 850,117
Claims priority, application Italy, Jul. 24, 1984, 48617 A/84
Int. Cl.⁴ C25D *17/00*
U.S. Cl. 204—206 **2 Claims**



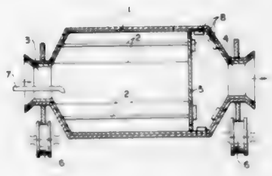
1. Apparatus for the continuous electrodeposition of metals at high current density on metal strip in vertical cells, wherein the strip to be coated runs down a descending stretch and then up an ascending one in each of the treatment units and travels, in each stretch, through at least one electrolytic cell containing an electrolyte; the improvement comprising means for creating a partial vacuum in each cells by educting a flow of said electrolyte at one end of each cell in a vertical direction away from the cell, whereby the electrolyte for electrodeposition is forced to pass through each cell turbulently and vertically, the direction of flow of said electrolyte in the descending stretch being opposite that in the ascending one.

4,655,895

APPARATUS FOR PURIFYING EFFLUENTS AND LIQUIDS

Vitaly A. Feofanov; Boris V. Pilat; Larisa P. Zhdanovich; Anatoly G. Romanenko; Boris S. Lukhanin; Oleg V. Donets, and Valery P. Korobochkin, all of Alma-Ata, U.S.S.R., assignors to Gosudarstvenny Nauchno-Issledovatelsky I Proektny Institut PO Obogascheniju Rud Tsvetnykh Metallov "Kazmekhanobr", Alma-Ata, U.S.S.R.

Division of Ser. No. 433,234, Oct. 7, 1982, Pat. No. 4,525,254. This application Apr. 3, 1985, Ser. No. 719,288
Int. Cl.⁴ C02F *1/46*
U.S. Cl. 204—213 **17 Claims**



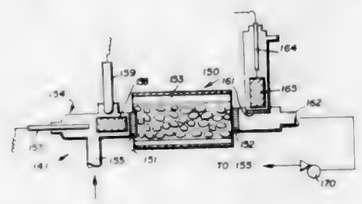
1. An apparatus for electrolytically purifying liquids by precipitating contaminants therefrom, said apparatus having at least one cathode and at least one anode and in which no current is applied from an external source, comprising a rotatable drum containing a mixture of pieces of anode and pieces of cathode material, said anode material having a more positive potential than the cathode material, said pieces of anode and cathode material being in variable contact with each other; an inlet opening in said drum to admit said liquids being treated and pieces of anode and cathode material to the interior thereof, and an outlet opening to discharge the treated liquid and the precipitated contaminants.

4,655,896

APPARATUS FOR FERRIC ION TREATMENT FOR REMOVAL OF ASH-FORMING MINERAL MATTER FROM COAL

Roe-Hoan Yoon, and A. Dilo Paul, both of c/o VPI, Dept. of Mining, Blacksburg, Va. 24061-2899

Filed Jan. 8, 1986, Ser. No. 817,144
Int. Cl.⁴ C10L *9/02*; C25B *3/00, 15/08*
U.S. Cl. 204—263 **6 Claims**



1. A reactor comprising:

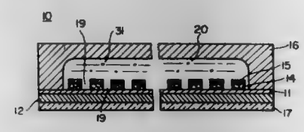
a container having first and second open ends and adapted to be packed with particles;
a porous diaphragm disposed at each of said first and second open ends of said container;
an inlet chamber operatively connected to said first open end of said container, said inlet chamber including a working electrode, a reference electrode, a counter electrode behind another diaphragm, and a fluid inlet;
an outlet operatively connected to said second open end of said container through which electrolyte solution is transferred back to the inlet chamber; and
means for supplying an electrical potential to said electrodes.

4,655,897

ELECTROPHORETIC DISPLAY PANELS AND ASSOCIATED METHODS

Frank J. DiSanto, North Hills, and Denis A. Krusos, Lloyd Harbor, both of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,571
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 204—299 R **14 Claims**



1. Electrophoretic display apparatus comprising:
a glass planar member having an etched layer of indium-tin-oxide coated on a surface thereof to form a transparent member, said layer of indium-tin-oxide etched to form a vertical line pattern in the form of a plurality of vertical conductive lines on said surface, each of said vertical conductive lines having a given width and length and separated one from the other to form a vertical line pattern in the form of a grid of lines in the Y direction, each of said lines having a predetermined area of intersection manifested by an insulative material secured to said lines, a plurality of horizontal conductive lines positioned over said areas of intersection and directed transverse to said vertical lines to form a grid of lines in the X direction, each horizontal line separated from intersected vertical lines by said insulative material, with well depressions formed between said intersections;
a top transparent planar member positioned above said planar member and spaced therefrom, with the space between said members filled with an electrophoretic dispersion, means for biasing said X grid with respect to said Y grid to cause electrophoretic particles in said dispersion to migrate from said well areas to said top planar member according to said bias as applied to an intersection between said X and Y grid structure.

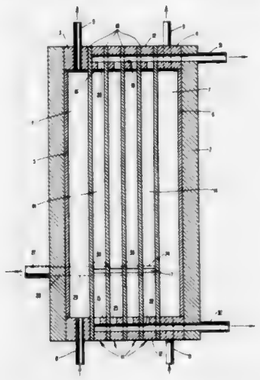
4,655,898

ELECTROPHORETIC FRACTIONATION APPARATUS

Marie-Andree Poulhes, Sainte-Genevieve; Jean-Pierre Lafaille, Saint-Orens; Jacques Pourrat, Toulouse, and Victor Sanchez, Ramonville Saint-Agne, all of France, assignors to Rhone-Poulenc Recherches, Courbevoie, France

Continuation of Ser. No. 762,846, Aug. 6, 1985, abandoned. This application Jan. 26, 1986, Ser. No. 880,949
Claims priority, application France, Aug. 6, 1984, 84 12579
Int. Cl.⁴ B01D *13/02*
U.S. Cl. 204—299 R **17 Claims**

1. Electrophoretic fractionation apparatus adopted for separating solutions containing diverse substances dissolved therein, comprising (i) a pair of opposed end plates, (ii) a pair of opposed electrodes, (iii) a pair of opposed frame members, (iv) at least two spaced membranes, said frame members, electrodes and membranes defining open electrode compartments between said end plates, and said frame members comprising inlet and outlet means for introducing and withdrawing an ionic solution into and from the central region of said electrode compartments, and (iv) at least one fractionation plate disposed between said at least two membranes, the plate having a greater length than width, and each said fractionation plate (v) comprising (1) at least one elongate slit extending along the



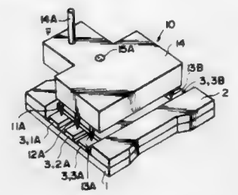
length of the plate and through the thickness thereof and said slit defining, together with two of said spaced membranes, at least one solution fractionation chamber, (2) means for introducing solution to be fractionated into said at least one fractionation chamber, (3) means for withdrawing one fraction of fractionated solution from one end region of said fractionation chamber, and (4) means for withdrawing another fraction of fractionated solution from another end region of said fractionation chamber.

4,655,899

PROBE ASSEMBLY FOR AN APPARATUS FOR MEASURING IONIC ACTIVITY

Yoshio Saito, Asaka, and Osamu Seshimoto, Tokorozawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 20, 1985, Ser. No. 703,396
Claims priority, application Japan, Feb. 21, 1984, 59-31082
Int. Cl.⁴ G01N *27/46*
U.S. Cl. 204—412 **5 Claims**



1. An apparatus for measuring the potential difference of each pair of ion-selective solid state electrodes of a slide ionic activity measuring device wherein each of said electrodes has a terminal exposed from at least either of the upper and lower surfaces of said ionic activity measuring device, said apparatus comprising at least two pairs of probes which are vertically movable and are arranged so as to simultaneously come into contact with the respective terminals of said electrodes; an electric impedance lowering means; and a relay for switchably connecting any one pair of said probes to the electric impedance lowering means.

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4,655,900

METHOD FOR TREATING ELECTRODES AND IMPROVED ELECTROCHEMICAL CELL

Radhakrishna M. Neti, Brea, and John N. Harman, III, Placentia, both of Calif., assignors to Beckman Industrial Corporation, La Habra, Calif.

Filed Mar. 10, 1986, Ser. No. 837,802
Int. Cl.[4] G01N *27/46*; B05D *3/02*
U.S. Cl. 204—415 **14 Claims**



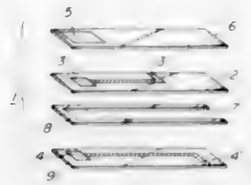
1. In an electrochemical cell including an electrochemically inert body defining an electrolyte reservoir and having porous membrane sealed openings, an electrolyte disposed in said body and at least a first and second electrode disposed in said body, said first electrode being disposed adjacent to and in non-contacting relationship with one of said membrane sealed openings and having a working surface for contacting a test gas permeating said porous membrane, the improvement comprising having at least the working surface of at least said first electrode treated by coating with a suspension comprising a catalyst metal and polytetrafluoroethylene in an aqueous oligosaccharide solution and heating said working surface below the sintering temperature of said polytetrafluoroethylene to thermally convert said oligosaccharide in the presence of the catalyst metal and to drive off said conversion products thereby to increase the signal strength of said electrode so treated.

4,655,901

OXYGEN SENSOR ELEMENT

Syuzo Mase, Ama, and Shigeo Soejima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jul. 30, 1984, Ser. No. 635,914
Claims priority, application Japan, Aug. 9, 1983, 58-144477
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—426 **9 Claims**



1. An oxygen sensor element, comprising a first planar solid electrolyte having a first side surface and a second side surface, wherein a measuring electrode is mounted on said first side surface thereof, a second planar solid electrolyte having a first side surface and a second side surface, wherein the first side surface of the second planar solid electrolyte is in electrochemical contact with the second side surface of said first planar solid electrolyte, said second side surface of said first electrolyte being opposite from said first side surface of said first electrolyte, a gap portion located between said second side surface of said first planar solid electrolyte and said first side surface of said second planar solid electrolyte, said gap portion for carrying a reference substance, and a reference electrode mounted on said first side surface of said second planar solid electrolyte at a position facing said first planar solid electrolyte across said gap portion, said measuring electrode and said reference electrode forming an oxygen concentration cell for detecting the concentration of oxygen which communicates with said measuring electrode, such that said second side surface of said first planar solid electrolyte and said second side surface of said second planar solid electrolyte do not have any electrodes disposed thereon.

,655,902

OPTICALLY ANISOTROPIC CARBONACEOUS PITCH

Takayuki Izumi, Oi; Tsutomu Naito, Saitama; Masao Shinya, Oi, and Tomio Nomura, Higashi-Matsuyama, all of Japan, assignors to Tonen Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 412,321, Aug. 27, 1982, Pat. No. 4,601,813.
This application Sep. 3, 1985, Ser. No. 772,069
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.[4] C01C *3/00*; D01F *9/12, 9/20*
U.S. Cl. 208—22 **5 Claims**

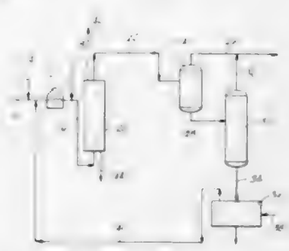
1. An optically anisotropic carbonaceous pitch having a sufficiently low melt-spinning temperature characterized in that said pitch contains the optically anisotropic phase within the range of from 80% to 100%, has the softening point within the range of 230° C. to 320° C. and the number-average molecular weight within the range of from about 900 to about 1,500, contains molecules having a molecular weight of up to 600 within the range of from 30 mol% to 60 mol%, molecules having a molecular weight of at least 1,500 within the range of from 15 mol% to 35 mol% and molecules having a molecular weight within the range of from 600 to 1,500 within the range of from 20 mol% to 50 mol% and has the maximum molecular weight of up to 30,000.

4,655,903

RECYCLE OF UNCONVERTED HYDROCRACKED RESIDUAL TO HYDROCRACKER AFTER REMOVAL OF UNSTABLE POLYNUCLEAR HYDROCARBONS

Georgette Rahbe, Los Teques, Edo Miranda; Roger Marzin, San Antonia de los Altos; Ivan Cavicchioli, Caracas, and Julio Krasuk, Los Teques, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed May 20, 1985, Ser. No. 735,694
Int. Cl.[4] C10G *37/00*
U.S. Cl. 208—96 **13 Claims**



1. A process for upgrading unconverted residuals by the removal of degraded unstable polynuclear hydrocarbons and recycling said uprgraded residual to the hydrocracker so as to increase liquid yields while at the same time decrease fouling of the hydrocracker and preheater upstream of said hydrocracker comprising feeding a heavy crude feedstock to a hydrocracking reactor; hydrocracking said heavy crude feedstock in said reactor under the following conditions: pressure about between 500 to 4000 psi, LHSV of about between 0.1 to 2 HR^{-1}, hydrogen-crude ratio of about between 3,000 to 30,000 SCF/B and temperature of about between 770° to 900° F. wherein an effluent overhead is produced; feeding said effluent to a hot separator; treating said effluent in said hot separator wherein a light hydrocarbon stream and a slurry hydrocracked product residual are produced; feeding said slurry hydrocracked product residual to a separator; mixing a solvent selected from the group consisting of kerosenes, naphthas, butanes, pentanes, hexanes, heptanes, octanes and mixtures thereof with said hydrocracked residual in a ratio of from about 0.5/1 to 10/1 by volume in said separator so as to reduce the viscosity of said hydrocracked residual and thereby increase the incompatibility of the polynuclear hydrocarbons in said hydrocracked residual allowing for efficient separation of the polynuclear hydrocarbons; separating out the polynuclear hydrocarbons from said hydrocracked residual so as to produce an upgraded hydrocracked solvent rich residual substantially free of said polynuclear hydrocarbons; and recycling only said upgraded hydrocracked solvent rich residual substantially free of said polynuclear hydrocarbons to a preheater and thereafter to said hydrocracking reactor for further treatment.

4,655,904

THERMAL CRACKING PROCESS FOR SELECTIVELY PRODUCING OLEFINS AND AROMATIC HYDROCARBONS FROM HYDROCARBONS

Toshiro Okamoto, Tokyo, and Michio Ohshima, Hiroshima, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,428
Claims priority, application Japan, Jun. 17, 1983, 58-109059
Int. Cl.[4] C10G *9/38*
U.S. Cl. 208—129 **5 Claims**

1. A thermal cracking process for selectively producing olefins and aromatic hydrocarbons which comprises the steps of:

(a) burning a hydrocarbon with oxygen in the presence of steam to give a hot gas of from 1300° to 3000° C. comprising steam;

(b) feeding the hot gas to a reaction zone to create higher and lower temperature sections in the reaction zone;

(c) feeding a starting heavy hydrocarbon comprising hydrocarbon components having boiling points above 350° C. to the higher temperature section of the reaction zone under conditions of temperature not lower than 1000° C., a pressure of not higher than 100 kg/cm^2g, and for a residence time of 5 to 20 milliseconds to thermally crack said hydrocarbon components;

(d) feeding a light hydrocarbon comprising hydrocarbon components having boiling points lower than 350° C. to the lower temperature section of the reaction zone so as to thermally crack said light hydrocarbon under conditions of temperature at the outlet of the reactor of no lower than 650° C., a pressure not higher 100 kg/cm^2g, and a residence time ranging from 5 to 1000 milliseconds; and

(e) quenching the resulting product.

4,655,905

PROCESS FOR CATALYTIC HYDROTREATMENT OF HEAVY HYDROCARBONS, IN FIXED OR MOVING BED, WITH INJECTION OF A METAL COMPOUND INTO THE CHARGE

Jean-Claude Piumail, Nasterre; Jean-Francois Le Page, Rueil Malmaison, and Pierre Giuliani, Grenoble, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Oct. 24, 1985, Ser. No. 791,002
Claims priority, application France, Oct. 24, 1984, 84 16255
Int. Cl.[4] C10G *45/04, 45/60, 17/00*
U.S. Cl. 208—216 R **13 Claims**

1. In a process for the hydrotreatment of a heavy hydrocarbon charge by contact with at least one fixed or moving bed of heterogeneous catalyst, said catalyst containing an alumina carrier and at least one group VB, VIB or VIII metal or metal compound, said alumina carrier having a pore volume of 0.85 to 2 cm^3/g and a specific surface of 80 to 250 g^{-1},

the improvement comprising introducing into the hydrocarbon charge an amount of hydrogen sufficient for the hydrotreatment reaction, preheating resultant mixture of hydrogen and hydrocarbon charge to a temperature of at least 330° C. and subsequently introducing either continuously or periodically into the hydrocarbon charge 10–1500 p.p.m. by weight of metal of at least one halide, oxyhalide, oxide, polyacid or polyacid salt of at least one group VB, VIB or VIII metal, before passing said charge through the catalyst bed.

4,655,906

HYDROTREATING PROCESS EMPLOYING A NOVEL CATALYTIC COMPOSITION

Geir Bjornson; Douglas D. Klendworth; Lloyd E. Gardner, and Floyd E. Farha, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 2, 1986, Ser. No. 858,772
Int. Cl.[4] C10G *45/08*
U.S. Cl. 208—217 **15 Claims**

1. A process for hydrotreating a substantially liquid hydrocarbon-containing feed stream, which also contains organic sulfur compounds, organic nitrogen compounds and organic oxygen compounds, said process comprising the step of contacting said hydrocarbon-containing feed stream with hydrogen in the presence of a catalyst composition consisting essentially of

(a) alumina,

(b) zinc titanate,

(c) at least one compound of molybdenum,

(d) at least one compound selected from the group consisting of nickel compounds and cobalt compounds, and

(e) at least one compound of rhenium,

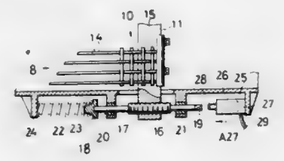
under such hydrotreating conditions as to obtain a hydrocarbon-containing product stream having reduced levels of sulfur, nitrogen and oxygen.

4,655,907

TENSIONING APPARATUS FOR A WIRE NET IN A VIBRATION SIEVING MACHINE

Seiya Ando, Mitaka, Japan, assignor to Kabushiki Kaisha Ando Screen Seisakusho, Tokyo, Japan

Filed Feb. 15, 1985, Ser. No. 702,143
Claims priority, application Japan, Jul. 31, 1984, 59-117338[U]
Int. Cl.[4] B07B *1/49*; B21F *33/00*
U.S. Cl. 209—404 **3 Claims**



1. In a machine for sieving materials having a wire mesh screen and a base frame, means for supporting said screen, said means comprising: first and second screen anchor members secured to opposite ends of said screen and supported on said base frame; said first anchor member having support means for supporting it on said base frame including a shaft secured to

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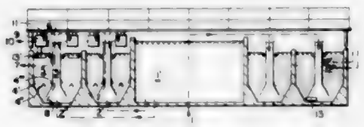
said first anchor member and slideably mounted to said base frame for reciprocal sliding movement; a compression spring means having one end seated against said base frame and its other end seated against one end of said shaft for urging said first and second anchor members apart to tension said screen; a plunger and means to move said plunger mounted on said base frame and said plunger being substantially aligned with the other end of said shaft whereby upon activation of said means to move said plunger, said plunger will move and impact said other end of said shaft; compressing said spring and releasing the tension of said screen.

4,655,908

DEVICE FOR CLEANING LIQUIDS IN SAND FILTERS

Gillis Fraenäs, Trängsund, Sweden, assignor to Stubinen Utreckling AB, Stockholm, Sweden

Filed Sep. 11, 1985, Ser. No. 774,739
Int. Cl.⁴ B01D *23/24*
U.S. Cl. 210—87 **4 Claims**



1. Up-stream sand filter for deep filtration of liquids to clean the liquids comprising a feeder channel (3), a sand filter bed (5) in the form of at least one ring-shaped element arranged on either side of said feeder channel, a continuously rotating travelling bridge (11), devices (8) suspended in said bridge for the take-up of sand, multi-stage cleaning devices (9) for cleaning the sand taken up by said suspended devices (8) and returning the cleaned sand to upper surfaces of said sand filter beds, a scraper unit (13') for smoothing out a respective sand filter bed incorporated in the bridge, a chamber (1) from which liquid to be filtered is introduced into said sand filter beds, means for feeding liquid to be filtered from said chamber directly or via the feeder channel to each respective sand filter bed, distribution troughs (4',4'',4''') in each respective sand filter bed to which liquid to be filtered is fed by said feeding means, a trough (6) in each respective sand filter bed for collecting clean water, an outlet (7) in each respective sand filter bed for discharging clean water, and perforated probes (12'12'') inserted in each respective sand filter bed to monitor circulation and cleaning of the liquid.

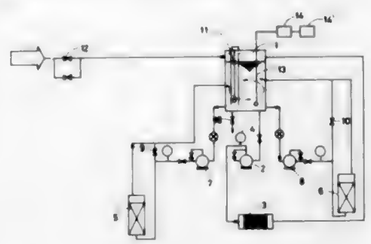
4,655,909

WATER-DEIONIZING SYSTEM

Nobuo Furuno, Amagasaki, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Filed Dec. 18, 1984, Ser. No. 682,872
Claims priority, application Japan, Dec. 20, 1983, 58-241357
Int. Cl.⁴ C02F *1/42*
U.S. Cl. 210—90 **13 Claims**

1. A batch-wise water-deionizing system comprising:
- a reservoir for receiving a batch of water to be deionized;
- a first anionic ion-exchanger unit capable of removing the anions from said batch of water;
- a second cationic ion-exchanger unit capable of removing the cations from said batch of water;
- closed-loop flow path means for circulating water from said reservoir through said first ion-exchanger unit, through said second ion-exchanger unit and back to said reservoir; and means associated with said flow path means for pumping said batch of water repeatedly therethrough,



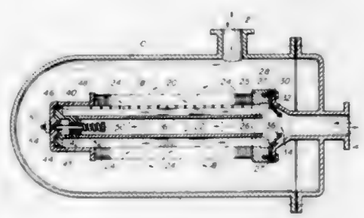
said first and second ion-exchanger units being positioned in said flow path so that the batch of water pumped thereto flows upwardly therethrough.

4,655,910

LIQUID FILTERING DEVICE

Elhanan Tabor, Carmiel, Israel, assignor to AR-KAL Plastics Products Beit Zera (1973), Israel

Filed Apr. 4, 1986, Ser. No. 848,308
Claims priority, application Israel, Apr. 15, 1985, 74908; Oct. 4, 1985, 76570
Int. Cl.⁴ B01D *29/02*
U.S. Cl. 210—107 **14 Claims**



1. A liquid filtering device, particularly for irrigation water installations of the type comprising a housing with an inlet port and an outlet port and a cylindrical filter member installed within the housing so that water flowing from the inlet to the outlet enters the filter member in a radial direction and discharges interiorly in an axial direction, and vice-versa during a reversed, filter flushing flow of water from the outlet to the inlet, the device being characterised by—
- an enclosed, centrally located chamber defined by a wall distantly extending inside of and along the filter member;
- a series of nozzles associated with the wall so that water under pressure in the chamber is discharged in jet forms;
- valve means responsive to the reversed flow, to direct the flushing water into the chamber;
- a fixed member at one side, and a displaceable member at the other side of the filter member;
- means for urging the displaceable member against the filter member to clamp same between the displaceable and the fixed members; and
- pressure responsive means operatively associated with the displaceable member urging means,

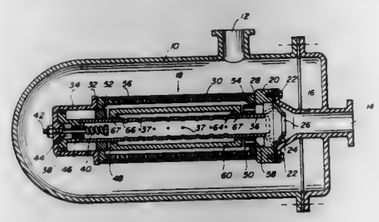
the arrangement being such that upon reverse of flow and a water pressure built within the chamber, the displaceable member is moved away from the filter member loosening the clamping engagement thereof and the water jets are sprayed to rinse the filter member.

4,655,911

LIQUID FILTER WITH REVERSE FLOW RINSING OPERATION

Elhanan Tabor, Carmiel, Israel, assignor to AR-KAL Plastics Products Beit Zera (1973), Israel

Filed Apr. 4, 1986, Ser. No. 848,312
Claims priority, application Israel, Nov. 3, 1985, 76917
Int. Cl.⁴ B01D *29/02*
U.S. Cl. 210—107 **10 Claims**



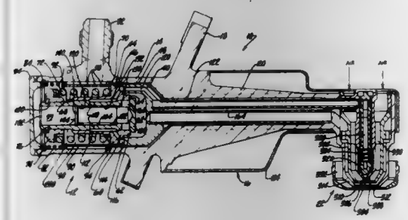
1. A liquid filtering device, particularly for water irrigation installations, comprising a housing with inlet and outlet ports, a filter assembly within the housing, which comprises a filter member of a hollow elongated cylindrical configuration and a support member about which the filter member is adapted to spin during reverse, flushing liquid flow from the outlet to the inlet of the housing, characterized by a rotatable sprinkler member provided in an annular space between the outer surface of the support member and the inner surface of the filter member, and by valve means for feeding the liquid from the outlet to the sprinkle member, causing the latter to rotate and spray liquid jets therearound against the said inner surface of the filter member.

4,655,912

FLUID VALVE ASSEMBLY

Jerome R. Bradley, Sterling Heights, and Gregory F. Long, Canton, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 3, 1985, Ser. No. 771,867
Int. Cl.⁴ F02C *7/22*
U.S. Cl. 210—133 **8 Claims**



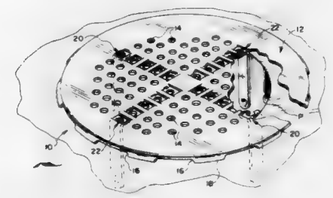
1. A fluid valve assembly comprising a valve housing means having a fluid inlet means, a hollow valve means movably disposed in said housing means and having a longitudinal bore means therein receiving fluid from said inlet means, said valve means having first fluid passage means in fluid flow relation with said bore means and second fluid passage means in fluid flow relation with said bore means, fluid filter means in said bore means carried on and movable with said valve means and positioned for filtering fluid flowing to said first fluid passage means and exposed for fluid washing action of debris or foreign matter therefrom by increased fluid flow in said bore means when the valve means is actuated, first fluid discharge means on said housing means in fluid flow relation with said first fluid passage means, second fluid discharge means on said housing means in fluid flow relation with said second fluid passage means for receiving and discharging said increased fluid flow and debris or foreign matter from said bore means when said valve means is actuated, and means for actuating the valve means to provide increased fluid flow from said bore means.

4,655,913

ADJUSTABLE DRAIN COVER

Donald J. Boersma, 18610 John St., Country Club Hills, Ill. 60477

Filed Apr. 22, 1985, Ser. No. 725,914
Int. Cl.⁴ B01D *35/02*
U.S. Cl. 210—163 **16 Claims**



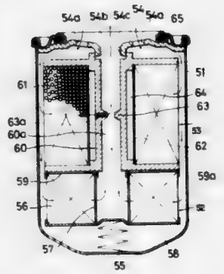
1. A drain cover comprising:
- a disc having drainage openings formed therein;
- a plurality of separable mounting means associated with the disc for operationally mounting the drain cover on a drain pipe; and
- connector means on said disc for releasably connecting said mounting means to said disc,
- said connector means being arranged to provide adjustable selective positioning of said mounting means whereby said drain cover is operationally installable on drain pipes of varying diameters.

4,655,914

METHOD AND APPARATUS FOR FILTERING IMPURITIES OUT OF FLUID

Yoneji Wada, Tokyo, Japan, assignor to Origin Company Limited, Gifu, Japan

Filed Nov. 26, 1984, Ser. No. 674,768
Claims priority, application Japan, Nov. 2, 1984, 59-231938
Int. Cl.⁴ B01D *35/02*
U.S. Cl. 210—168 **10 Claims**



1. An apparatus for use in an internal combustion engine for removing impurities contained in a lubrication oil by filtration comprising
- an inlet means into which the lubrication oil to be filtered is supplied;
- a low density filter having an inlet coupled with said inlet means and an outlet;

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a high density filter having an inlet coupled with said inlet means and an outlet;

wherein said inlet means and said low and high density filters are installed in a common housing which may be detachably secured to an engine block, said housing further including an outlet means;

said low and high density filters comprising ring shaped filtering elements arranged one on the other along a longitudinal axis of the hosuing and including a centrally disposed conduit means which provdes communication between the outlets of the high and low density filters and the outlet of said housing,

a flow restrictor means coupled with the outlet of the low density filter for generating a reduced pressure at the outlet side of said low density filter due to an increased speed of flow of lubrication oil which has passed from said low density filter through said flow restrictor means, said flow restrictor means positioned within said centrally disposed conduit means; and

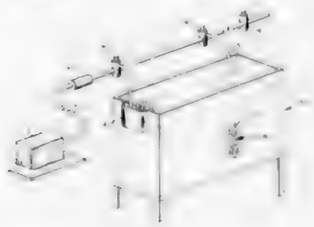
means for coupling the outlet of the high density filter with the outlet of the low density filter in a manner such that the reduced pressure generated by said flow restrictor means is applied to the outlet of the high density filter to draw lubrication oil supplied into the inlet means into the high density filter.

4,655,915

AIR STONE

Joseph S. Carpinone, 71 Katherine St., Port Jefferson Station, N.Y. 11776

Filed Oct. 4, 1985, Ser. No. 784,504
Int. Cl.⁴ E04H *3/16, 3/20*
U.S. Cl. 210—169 **4 Claims**



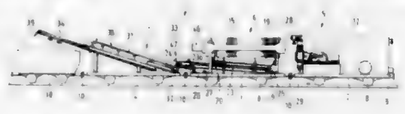
1. An air stone for use in combination with an aquarium containing water for receiving air and diffusing said air in the form of bubbles within said water for aeration thereof, said air stone comprising a stack of annular discs on a tube with an inlet for receiving said air under pressure at the upper end thereof and having a lower end, means closing off said lower end of said tube, a stationary stop means mounted on said tube adjacent said inlet said tube having openings for the discharge of said air in said tube between said stop means and said lower end, said stack of annular disks stacked on said tube between said stop means and said lower end, and a removable nut and screw means mounted adjacent said lower end for clamping said disks up against said stop means and adjusting the clamping force so that said air under pressure escapes from said tube out of said holes through the spaces between said disks into said water in the form of a cloud of bubbles to aerate said water, said nut and screw means permitting convenient removal of said disks from said lower end of said tube for cleaning.

4,655,916

MOBILE SLUDGE HANDLING APPARATUS

Josef Schlesiger, Mürlenbach, Fed. Rep. of Germany, assignor to Feluwa Schlesiger & Co. KG, Fed. Rep. of Germany

Filed Jun. 13, 1985, Ser. No. 744,322
Int. Cl.⁴ B01D *35/00*
U.S. Cl. 210—173 **13 Claims**



1. An apparatus for treating sludge comprising in successive order:

(a) a container vehicle, a filter unit vehicle and a conveyor vehicle,

(b) said container vehicle including a container for receiving sludge, means for agitating the sludge in said container, and pump means for pumping said sludge from said container to said filter unit vehicle,

(c) said filter unit vehicle including filter installation means in the form of a chamber filter press for receiving the sludge from said pump means and for making filter cakes therefrom, said filter unit vehicle further including chopper means beneath said chamber filter press for receiving and crushing said filter cakes, said filter unit vehicle further including first conveyor means beneath said chopper means for conveying the crushed filter cake to said conveyor vehicle,

(d) and said conveyor vehicle including second conveyor means for receiving the crushed filter cakes from said first conveyor means and further conveying the crushed filter cakes.

4,655,917

MODULAR LIQUID CHROMATOGRAPHY COLUMN APPARATUS

Carl L. Shackelford, San Pablo, and Kenneth Rainin, Piedmont, both of Calif., assignors to Rainin Instrument Co., Emeryville, Calif.

Filed Aug. 19, 1985, Ser. No. 766,578
The portion of the term of this patent subsequent to Nov. 5, 2003, has been disclaimed.
Int. Cl.⁴ B01N *15/08*
U.S. Cl. 210—198.2 **18 Claims**



1. A high pressure modular liquid chromatography column utilizing material for separating constituents comprising:

a. a tube filled with the material for separating constituents, said tube having a first end portion, a second end portion and an inside wall; said inside wall connecting said first and second end portions;

b. means for enclosing said first end portion of said tube, said enclosing means for said first end portion of said tube including a passage therethrough which communicates with the material within said tube, said first enclosing means having at least a part within said tube and being movable within said tube;

c. means for enclosing said second end portion of said tube, said enclosing means for said second portion of said tube including a passage therethrough communicating with the material within said tube, said second enclosing means having at least a part within said tube, said material being positioned between said first and second enclosing means;

d. means for circumferentially high pressure sealing a portion of said first and second end portions of said tube, said high pressure sealing being effected between said parts of first and second enclosing means within said first and second tubes respectively, and said inside wall of said tube; and

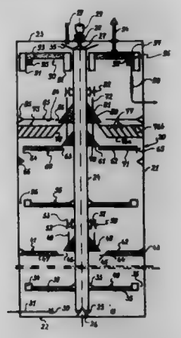
e. means for retaining said parts of said first and second enclosing means within said tube.

4,655,918

APPARATUS FOR CLEANING WASTE WATER

Bastiaan B. Eertink, Land Van Kessel 7, 5971 DH Grubbenvorst, Netherlands

Division of Ser. No. 355,567, Feb. 18, 1982, Pat. No. 4,505,820. This application Feb. 25, 1985, Ser. No. 704,610
Claims priority, application Netherlands, Aug. 20, 1980, 8004724
Int. Cl.⁴ C02F *11/02;* **B01D** *21/28*
U.S. Cl. 210—199 **36 Claims**



1. Apparatus for microbiologically cleaning waste water, comprising a vertically elongate reaction container, plural horizontally extended partition wall means respectively spaced apart vertically in said container and dividing the space therein into superposed, substantially separate yet hydrostatically communicating chambers including a plurality of reactor chambers and a separation chamber above-said reactor chambers, means for supplying waste water into said container, means for removing treated waste water from an uppermost chamber of said container, means for introducing oxygen gas into the waste water in a lower of said reactor chambers and means for removing gas from an upper of said chambers, said partition wall means forming downwardly open horizontally extended pockets for collecting gas from and holding bodies of collected gas in contact with underlying bodies of waste water; and pipe means extending vertically through a plurality of said reactor chambers for conducting waste water between regions of said container space respectively above and below said plurality of chambers in a stream separate from the waste water in those chambers;

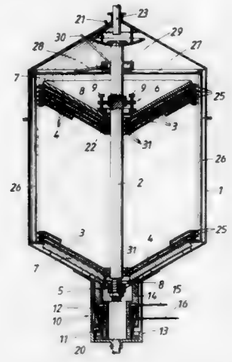
at least one of said partition wall means comprising a substantially imperforate wall fixed to and extending outward and downward from said pipe means and forming a said downwardly open gas collecting pocket at its underside and at least one gas siphoning tube extending from an open end thereof disposed in said pocket to an upper end thereof opening into the reactor chamber overlying said imperforate wall.

4,655,919

FLUID FILTER DEVICE

Helmut Schafft, Kellerweg 23, D-7074 Mögglingen, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,097
Claims priority, application Austria, Feb. 11, 1982, 506/82
Int. Cl.⁴ B01D *25/02*
U.S. Cl. 210—236 **10 Claims**



1. In a filter for filtering a solids-laden fluid, comprising;

an upright cylindrical pressure vessel,

a plurality of vertically spaced apart partitions contained in said pressure vessel, and

a substantially particulate filtering material forming a plurality of layers, each of said layers being disposed between two adjacent ones of said partitions,

the improvement comprising;

each of said layers comprising a pre-shaped filtering package consisting of particles of said filtering material enclosed by a sheath which is impermeable to said filtering material and is permeable to said solids-laden fluid,

each of said filtering packages being engaged at its top and bottom by two of said partitions, at least one of said partitions being impermeable to filtrate and the two partitions and said filtering package being constructed and arranged so as to define passages for a supply of solids-laden fluid to, and for a draining of filtrate from, said filtering package, and

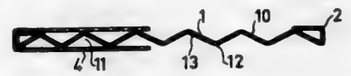
pressure-applying means for holding the filter material particles immovably in each of said pre-shaped filtering packages under an at least substantially constant pressure between said partitions engaging said filtering packages at their tops and bottoms.

4,655,920

ROTATING DISC FILTER

Samuel Ragnegard, Hedemora, Sweden, assignor to AB Hedemora Verkstader, Sweden

Continuation of Ser. No. 577,913, Feb. 7, 1984, abandoned. This application May 10, 1985, Ser. No. 732,807
Claims priority, application Sweden, Feb. 10, 1983, 8300697
Int. Cl.⁴ B01D *33/02*
U.S. Cl. 210—331 **2 Claims**



1. A rotating disc filter for dewatering a suspension comprising a shaft and a plurality of disc sectors having a plurality of

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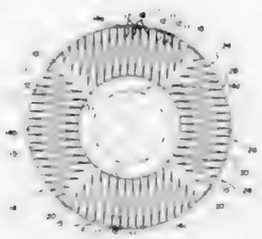
internal radially extending filtrate channels for conveying and discharging filtrate to the shaft, said channels being defined by a fitted cloth through which dewatering takes place and folded means having saddles and troughs, said saddles forming support for said filter cloth said folded means consisting of only one corrugated disc element, and said corrugations being shaped to form filtrate channels having an increasing height towards said shaft and wherein the ratio of the area of the filter cloth to the volume of the filtrate channels is at least about 20 dm^2/dm^3.

4,655,921

FILTER ELEMENT

Etsuo Fujimoto, Yokohama, Japan, assignor to Tokyo Roki Co., Ltd., Kanagawa, Japan

Filed Feb. 25, 1985, Ser. No. 705,128
Claims priority, application Japan, Jul. 3, 1984, 59-99600[U]
Int. Cl.⁴ B01D *29/06*
U.S. Cl. 210—489 **9 Claims**



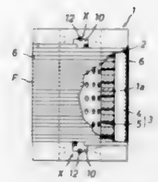
1. A filter element comprising:
a pair of end plates arranged in a parallel relation with respect to each other; and
a filter paper folded so as to form a large number of rectangular-shaped sections continuously connected with respect to each other through ridge portions and disposed between said end plates in the erected state to form a generally hollow cylinder, said hollow cylinder being defined between an outer periphery along which outer ridge portions of said rectangular-shaped sections are arranged, and an inner periphery, said hollow cylinder being divided into at least four portion areas by virtual planes extending in the radial direction thereof, said rectangular-shaped sections in each of said portion areas comprising at least first and second alternating variant length groups and being arranged such that every other sections are maintained in a parallel relation with predetermined spaces therebetween, the rectangular shaped sections in said first group having a substantially uniform length in the radial direction and having inner ridge portions arranged along said inner periphery, and the rectangular-shaped sections in said second group varying the length toward the adjacent portion area and including inner ridge portions substantially aligned with said virtual plane.

4,655,922

WIRE LOCKING STRUCTURE FOR A FILTER DEVICE

Koichi Arai, Kanagawa, Japan, assignor to Arai Machinery Corporation, Japan

Continuation of Ser. No. 638,659, Aug. 7, 1984, Pat. No. 4,569,763. This application Nov. 19, 1985, Ser. No. 799,445
Claims priority, application Japan, Aug. 15, 1983, 58-148033
The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.
Int. Cl.⁴ E03B *3/18*
U.S. Cl. 210—497.1 **3 Claims**



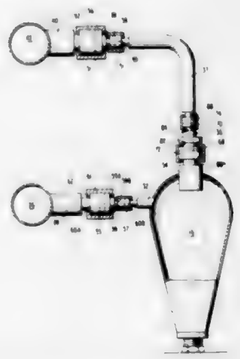
1. A wire locking structure for a filter device, comprising:
a cylinder body having a plurality of passages formed on an outer circumference thereof, said plurality of passages communicating with a cavity of said cylinder;
a screw thread portion formed on said outer circumference containing screw bottoms;
a wire wrapped around said screw thread by inserting said wire towards said screw bottoms of said screw thread portion;
a recess in said cylinder body for an end portion of said wire;
an insert member for said recess including a cutaway portion for receiving an end portion of said wire; and
bolt means to secure said insert member within said recess.

4,655,923

DESILTER APPARATUS INCLUDING ADAPTOR MEMBERS FOR ACCOMMODATING CONNECTION OF CYCLONE SEPARATORS OF ANY DIAMETER TO MANIFOLD CONDUITS HAVING INVARIANT DIAMETERS

Vincent D. Leone, P.O. Box 420438, Houston, Tex. 77042

Filed May 23, 1985, Ser. No. 737,132
Int. Cl.⁴ B04C *5/26*
U.S. Cl. 210—512.2 **17 Claims**



1. An industrial desilter system comprising:
a manifold having a tubular inflow conduit with branching supply pipes communicatively connected therewith, a tubular cleansed fluid outflow conduit with branching return pipes connected therewith and a solid matter discharge conduit, the branching supply pipes, and the branching return pipes having walls defining invariant fluid-passages;
a plurality of cyclone separators for cleansing fluids, each of said cylcone separators including an inflow portion for connecting with a corresponding branching supply pipe, an outflow portion for connecting with a corresponding branching return pipe and a discharge portion for connecting to the solid matter discharge conduit, said inflow and outflow portions of said cyclone separators defining invariant fluid-passages, at least one of said cyclone separators having an inflow portion with a fluid-passage different from the fluid-passage of the corresponding branching supply pipe, whereby said inflow portion of said at least one separator is not directly connectable to its corresponding supply pipe, and an outflow portion with a fluid-passage different from the fluid-passage of the corresponding branching return pipe, whereby said outflow portion of said at least one separator is not directly connectable to its corresponding return pipe, said different fluid-passages preventing direct fluid-tight connection between said at least one cyclone separator and the corresponding branching pipes of the manifold;
and a set of adaptor members adapting said at least one cyclone separator to connection with its corresponding branching supply and return pipes on the manifold, said adaptor members including
at least one first tubular adaptor member, being of singular construction for connecting said at least one separator to its corresponding branching supply pipe, each said first adaptor member having radially larger and radially smaller end portions, one of said end portions having a fluid-passage substantially the same as said fluid-passage of said inflow portion of said at least one cyclone separator and the other of said end portions having a fluid-passage substantially the same as the fluid-passage of the corresponding branching supply pipe for said at least one separator, each said first adaptor member abutting between said inflow portion and the supply pipe, to provide fluid-tight communications therebetween, and
at least one second adaptor member, being of singular construction for connecting said outflow portion of said at least one cyclone separator to its corresponding branching return pipe, each said second adaptor member having radially larger and radially smaller end portions, one of said end portions having a fluid-passage substantially the same as said fluid-passage of said outflow portion of said at least one cyclone separator, each said second adaptor member abutting said outflow portion to provide fluid-tight communication between said outflow portion and the return pipe.

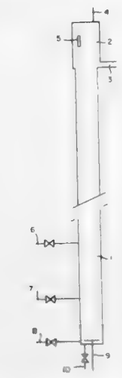
4,655,924

PROCESS FOR PREPARING BIOMASS ATTACHED TO A CARRIER

Joseph J. Heijnen, The Hague, Netherlands, assignor to Gist-Brocades N.V., Delft, Netherlands

Continuation of Ser. No. 461,635, Jan. 27, 1983, Pat. No. 4,560,479, which is a continuation-in-part of Ser. No. 182,068, Aug. 28, 1980, abandoned. This application Sep. 30, 1985, Ser. No. 782,060
Claims priority, application Netherlands, Nov. 7, 1979, 7908138
The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.
Int. Cl.⁴ C02F *3/06, 3/28*; C12P *5/02*
U.S. Cl. 210—603 **19 Claims**

1. In a process for the start up and operation of fluidized bed reactors for the production and maintenance of well-adhering biomass attached to carrier particles capable of decomposing contaminants without sludge production in waste water containing both well-adhering and non-adhering microorganisms wherein granular carrier particles of at least 0.1 mm and with a specific gravity of 2 to 5 g/ml are contacted in a reaction space with a continuous upwardly flowing stream of waste water containing both well-adhering and non-adhering microorganisms and nutrients for the growth of the microorganisms in an adhering layer until a sufficiently thick, well-adhering layer of mircroorganims is formed on the carrier, the improvement comprising maintaining the residence time of the waste water in the reaction space lower than the reciprocal maximum



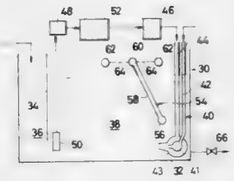
growth rate of the microorganisms on carrier particles while generating in the waste water in the reaction space sufficient shear forces caused by liquid motion and circulation and caused by gas bubbles only thereby washing out of the reaction space all non-adhering microorganisms by the passage of waste water through the reaction space while the thickness of the well-adhering layer remains constant on the carrier which remains in the reaction space.

4,655,925

ACTIVATED SLUDGE METHOD

Shin-ichi Tabata, Funabashi; Tomio Suzaki, Tokyo; Youichi Hamamoto, Tokyo; Noboru Hayakawa, Tokyo, and Kaoru Watanabe, Tokyo, all of Japan, assignors to Nishihara Environmental Sanitation Research Corporation Limited, Tokyo, Japan

Filed Jan. 18, 1985, Ser. No. 692,839
Claims priority, application Japan, Jan. 20, 1984, 59-7250; Feb. 10, 1984, 59-21814
Int. Cl.⁴ C02F *3/30*
U.S. Cl. 210—605 **8 Claims**



1. A method of removing nitrogen and phosphorus from waste water by using activated sludge including aerobic bacteria and changing alternately operational modes in a treatment basin, in accordance with a time schedule, which comprises the steps of:
adding the waste water continuously and gradually into a mixed liquor in a treatment basin which consists of the waste water and the sludge;
agitating the mixed liquor in said treatment basin during continuous and gradual adding of the waste water until it

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presents an anoxic condition and a succeeding anaerobic condition so that denitrification is caused in the anoxic condition and phosphorus is then released from the sludge in the anaerobic condition;

aerating the mixed liquor in the aerobic condition during the continuous and gradual adding of the waste water into the mixed liquor in the aerobic condition so that nitrification is accomplished while phosphorus is ingested by the sludge;

repeating a cycle consisting of said agitating and aerating steps at least two times so that each cycle is finished within two hours, the ratio of the agitating time to the aerating time being between one to one and five to one;

settling the agitated and aerated mixed liquor for separating it into a supernatant liquid and the sludge; and

discharging the supernatant liquid as an effluent and reusing the settled sludge for the treatment of waste water.

4,655,926

PROCESS OF TREATING EFFLUENT FROM A PULP OR PAPERMAKING OPERATION

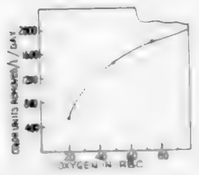
Hou-min Chang; Thomas W. Joyce, both of Raleigh, N.C., and Thomas K. Kirk, Madison, Wis., assignors to North Carolina State University, Raleigh, N.C.

Filed May 29, 1984, Ser. No. 614,981

The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.

Int. Cl.⁴ C02F *3/34*

U.S. Cl. 210—611 **11 Claims**



1. A process of treating effluent from a pulp or paper-making operation to improve the environmental character thereof comprising the steps of

(a) providing a white-rot fungus which is in a secondary metabolic state,

(b) immersung the white-rot fungus in the effluent for a time period sufficient for the fungus to decolorize the effluent while

(c) adding to the effluent being treated at least one member of the class consisting of nutrient nitrogen, nutrient minerals and a detergent, said at least one member being supplied in an amount sufficient to prolong the life of the white rot fungus and to increase the efficacy thereof but insufficient to cause the fungus to depart from its second metabolic state, and while at least periodically

(d) exposing the white rot fungus to oxygen.

4,655,927

SEPARATING OIL EMULSIONS

Douglas L. Ford, Eastwood, Australia, assignor to Memtec Limited, New South Wales, Australia

Filed Jul. 8, 1985, Ser. No. 758,709

Claims priority, application Australia, Nov. 7, 1983, PG2239

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—639 **8 Claims**

1. A method of separating water from an oil emulsion which contains a surface active agent comprising the steps of:

(i) adding to said oil emulsion a hydrophilic colloid corresponding to the chemical ionic classification of said surface active agent and of the nature and in an amount effective to reduce the effective pore size as the surface tension falls in the presence of the surface active agent in the oil emulsion of a cross-flow ultra-filter containing a polymeric porous membrane which is used to separate said water from the oil emulsion, and,

(ii) passing the emulsion and hydrophilic colloid through said cross-flow ultra-filter containing a polymeric porous membrane.

4,655,928

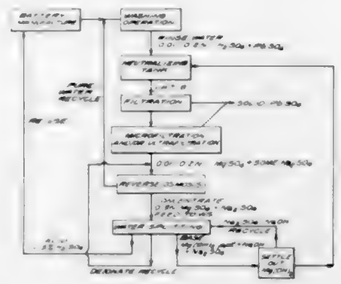
MEMBRANE PROCESSES FOR METAL RECOVERY AND POLLUTION CONTROL IN METAL PROCESS INDUSTRIES

Everett C. Milton, White Bear Lake, Minn., and Harry P. Gregor, New York, N.Y., assignors to GNB Incorporated, Mendota Heights, Minn.

Filed Oct. 18, 1983, Ser. No. 543,191

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—651 **19 Claims**



5. A closed process for treating an aqueous effluent stream which contains a precipitatable material and at least one of an acid and a base, said process, in which all streams produced therein are recycled, comprising:

(a) precipitating with a precipitating base the precipitatable material in such quantities that a significant amount of the acid is not precipitated;

(b) removing the precipitated, precipitatable material, thereby producing an aqueous stream;

(c) treating the aqueous stream by reverse osmosis, thereby producing a relatively pure water stream and a concentrated aqueous stream;

(d) recycling the relatively pure water stream into the process from which the effluent evolved;

(e) treating the concentrated aqueous stream by water splitting wherein a neutral salt is added to the base stream produced therein, thereby producing acid, base, and deionate streams, said base stream containing the precipitating base of step (a) and the neutral salt;

(f) recycling the acid stream to the process from which the effluent stream evolved;

(g) separating the precipitating base from the base stream, thereby producing a base stream containing the neutral salt;

(h) recycling the base stream to the water splitting step (e);

(i) recycling the precipitating base to the precipitating step (a); and

(j) recycling the deionate stream directly to the reverse osmosis step (c),

whereby most of the precipitatable material is extracted from the effluent in a relatively concentrated solid form.

4,655,929

PROCESS FOR PROCESSING WASTE SOLUTION CONTAINING AMMONIUM IONS AND FLUORIDE IONS

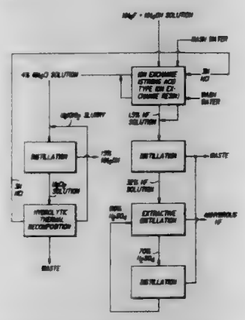
Hiroshi Tanaka, Saitama, and Toshiaki Kikuchi, Tokyo, both of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1985, Ser. No. 718,373

Claims priority, application Japan, Apr. 5, 1984, 59-066751

Int. Cl.⁴ C02F *1/04, 1/42*

U.S. Cl. 210—664 **4 Claims**



1. A closed-system process for recycling of a waste solution containing ammonium ions and fluoride ions comprising the steps of:

separating ammonium ions by ion exchange adsorption with a strong acid type ion exchange resin;

recovering hydrogen fluoride by extractive distillation with addition of concentrated sulfuric acid;

concentrating the remaining diluted sulfuric acid and recycling it to said extractive distillation step;

regenerating said ion exchange resin which adsorbed ammonium ions with an aqueous solution of hydrochloric acid and reusing said resin from which ammonium ions have been removed for said adsorption of ammonium ions;

recovering ammonia water from the remaining aqueous solution of ammonium chloride by distilling said aqueous solution of ammonium chloride with addition of magnesium hydroxide;

recovering hydrochloric acid and magnesium hydroxide from the remaining solution containing magnesium chloride by hydrolytic thermal decomposition of said magnesium chloride; and

recycling said hydochloric acid to said ion exchange resin regeneration step and recycling said magnesium hydroxide to said step of distilling ammonia water from said ammonium chloride solution.

4,655,930

PROCESS FOR THE REMOVAL OF ELEMENTAL OXYGEN BY MEANS OF A REDUCING AGENT IN A COOLANT CIRCULATING IN ONE OR MORE CLOSED CIRCULATIONS, AND APPARATUS FOR THE REMOVAL OF ELEMENTAL OXYGEN

Albert Kuhn, Ennetbaden, and Reinhard Müller, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

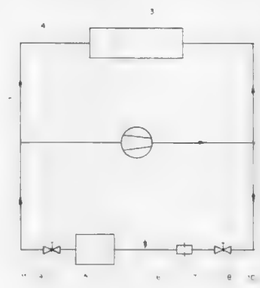
Filed Jan. 29, 1986, Ser. No. 823,664

Claims priority, application Switzerland, Feb. 5, 1985, 511/85

Int. Cl.⁴ B01D *15/04*

U.S. Cl. 210—668 **6 Claims**

1. Process for the removal of elemental oxygen and salt from a liquid coolant circulating in one or more closed circulation, comprising the sequential steps of (a) branching off continuously or intermittently a secondary circulation from the main circulation, (b) introducing a reducing agent capable of removing oxygen from the liquid coolant into said secondary circulation, (c) passing said liquid coolant in the secondary circulation containing said reducing agent directly into an ion-exchanger



mixed-bed filter, and (d) returning the liquid coolant after passage through the ion-exchanger mixed-bed filter to the main circulation, whereby salt and oxygen are simultaneously removed from the system.

4,655,931

WASTE WATER TREATING AGENT AND METHOD FOR PRODUCING THE SAME

Joji Kawamoto, 5-1, 2-chome, Kotobuki-cho, Naka-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed May 21, 1985, Ser. No. 736,925

Claims priority, application Japan, Apr. 18, 1985, 60-81332

Int. Cl.⁴ B01D *15/00*; B01J *20/12*; C02F *1/28*

U.S. Cl. 210—679 **8 Claims**

5. A method of treating waste water comprising:

(a) adding to waste water a waste water treating agent formed from a nucleus of colloidal particles of montmorillonite with sodium or potassium salts of fatty acids oriented and adsorbed on the periphery of the colloidal particles,

(b) agitating the waste water and waste water treating agent mixture for a sufficient time in order to allow any surface active agents present in the waste water to be adsorbed in the colloidal particles by association force, and thereby

(c) removing the surface active agent from the waste water.

4,655,932

METHOD AND APPARATUS FOR THE DISINTEGRATION AND DESTRUCTION OF HAZARDOUS AND TOXIC SLUDGE MATERIALS

Don Roslonski, 38 Fairview Ave., Brick Town, N.J. 08723

Filed Feb. 10, 1986, Ser. No. 827,417

Int. Cl.⁴ C02F *1/48*

U.S. Cl. 210—709 **14 Claims**

1. A process for the complete dewatering of sludge containing hazardous and toxic materials and stabilization of pathogens, microorganisms and disintegration of the resulting solids and volume reduction of same which comprises:

(a) measuring the conductivity of said sludge;

(b) blending said sludge and a predetermined amount of electrolyte in a blending chamber;

(c) transporting said sludge and electrolyte through a connecting means to a filter unit;

(d) dewatering said sludge and electrolyte in said filter unit;

(e) transporting said sludge and electrolyte from said filter unit to a rolling mill;

(f) rolling said sludge and electrolyte into a filter cake of desired thickness;

(g) measuring the conductivity of said filter cake;

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(h) transporting said filter cake into a disintegration chamber;
(i) subjecting said filter cake in said disintegration chamber to an automatically-adjustable source of electrical energy reducing said filter cake to particulate solids;
(j) pulverizing said particulate solids;
(k) simultaneously recording the data of step (g) and communicating said data to steps (b) and (i).

4,655,933

SYSTEM OF IONIZED OXYGEN ALLOTROPE GAS WATER PURIFICATION AND METHOD AND APPARATUS THEREFOR

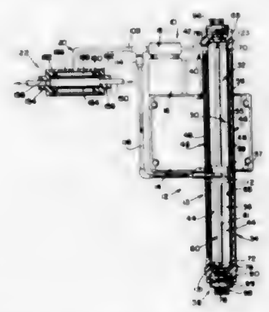
Dennis E. J. Johnson, and Scott J. Johnson, both of 1025 Garfield Ave., Aurora, Ill. 60506

Division of Ser. No. 678,635, Dec. 6, 1984, Pat. No. 4,563,286, which is a continuation-in-part of Ser. No. 599,626, Apr. 12, 1984, abandoned, which is a continuation of Ser. No. 403,801, Aug. 5, 1982, abandoned, which is a continuation-in-part of Ser. No. 363,254, Apr. 1, 1982, abandoned. This application Nov. 25, 1985, Ser. No. 801,599

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.[4] B01J *19/12*; C02F *1/72, 1/78*

U.S. Cl. 210—721 **17 Claims**



1. The method of treating a flow stream of ambient air to convert atmospheric oxygen in same to ionized oxygen oxidant gas that remains in the air flow stream, which method comprises:
establishing a gas flow path for the air flow stream and a cocurrent energy couple within the air flow stream path that includes multiple magnetic lines of force enveloped in ultraviolet wave length electron-volt emissions,
continuously passing the ambient air flow stream from an ambient air source through the gas flow path including said couple to convert, at the couple, the atmospheric oxygen in the flow stream into magnetically activated oxygen and ionized oxygen in multivalent ion form whereby to form the oxidant gas of the air flow stream, while simultaneously passing the atmospheric nitrogen of the flow stream through the couple free from chemical change,
and continuously passing the flow stream, including the converted atmospheric oxygen in gaseous form, from the gas flow path.

2. The method of water purification treatment which includes the steps of claim 1 and thereafter,
diffusing the flow stream into the water to be treated,
whereby the resulting oxidant gas ions are dispersed into and among the water molecules, of the water, and therein release free electrons into the water that are electrostatically attracted to foreign material in the water, to effect, using the converted atmospheric oxygen, purification of the water and thereby enhancing agglommeration of colloidal solids therein for settling out therefrom, oxidizing the foreign material remaining in the wster, and stabilizing and buffering of the water pH.

4,655,934

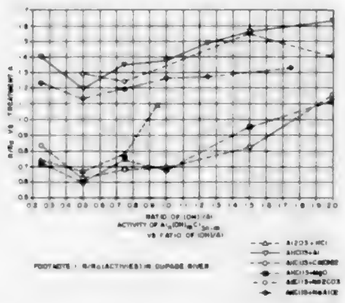
DIMERIC ALUMINUM COMPOUNDS AND THEIR USE

Gerard R. Rose, Park Ridge, and John R. Hurlock, Hickory Hills, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Sep. 12, 1985, Ser. No. 775,452

Int. Cl.[4] C02F *1/56*

U.S. Cl. 210—728 **9 Claims**



1. A method of clarifying waters containing turbidity causing components and having an alkalinity of at least 115 ppm, calculated as $CaCO_3$, which comprises:
a. Adding thereto, to form a treated water, an effective amount for the purpose of clarifying said waters of a low-basicity polynuclear aluminum species with a basicity ranging between about 8.3% up to 33% and having the formula:

$$Al_n(OH)_mZ_{3n-m}$$

wherein, n is at least 1.0
Z is a halide chosen from the group chloride, bromide, iodide, and mixtures thereof, and
wherein the ratio of m/n ranges between about 0.25 to about 1.0 and at least 25 mole percent of the polynuclear aluminum species above has n equal to 2.0, and then,
b. Allowing sufficient time to form and build a floc dispersed in the treated water, which floc contains turbidity causing components, and then,
c. Phase separating the floc from the treated waters to obtain clarified water.

4,655,935

DETOXIFICATION OF WASTE WATER FROM DITHIOCARBAMATE MANUFACTURE

Jan A. Wijn, Hendrik Ido Ambacht, and Peter Kool, Westvoorne, both of Netherlands, assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 21, 1985, Ser. No. 789,584

Int. Cl.[4] C02F *1/70*

U.S. Cl. 210—750 **11 Claims**

1. A process for detoxifying waste water containing dithiocarbamates and sulfur-containing decomposition products thereof from the manufacture of salts of dithiocarbamic acid comprising (i) acidifying said waste water to a pH ranging between about 2 and about 3, and (ii) passing a gas through the acidified waste water at a rate sufficient to promote expulsion of gases formed from the decomposition of the dithiocarbamic acid salt.

4,655,936

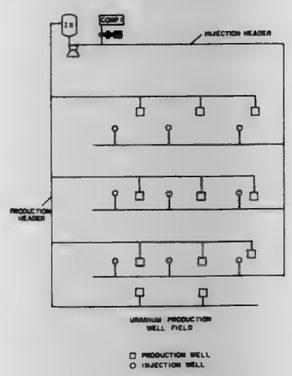
MICROBIOLOGICAL CONTROL IN URANIUM PROCESSING

Terry L. Stuebner, San Antonio, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Sep. 19, 1985, Ser. No. 777,807

Int. Cl.[4] C02F *1/50*

U.S. Cl. 210—764 **1 Claim**



1. A method of improving the recovery of U_3O_8 from circulating aqueous leach fluids used to extract uranium from its ores in underground uranium fields, which fields are made up of a series of injection and producing wells, which aqueous fluids are contaminated by suspended and dissolved inorganic iron compounds caused by the presence of anerobic and aerobic bacteria, which comprises treating such aqueous leach fluids with at least 0.1 ppm of a mixture of 75% of 5-chloro-2-methyl-4-isothiazolin-3-one and 25% 2-methyl-4-isothiazolin-3-one.

4,655,937

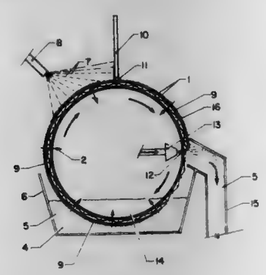
ROTARY DRUM VACUUM FILTER FOR EASILY ERODED CAKES

David C. Headrix, Lake Jackson, Tex., assignor to BASF Corporation, Wyandotte, Mich.

Continuation of Ser. No. 594,501, Mar. 29, 1984, abandoned. This application Mar. 25, 1985, Ser. No. 715,688

Int. Cl.[4] B01D *33/08, 33/36*

U.S. Cl. 210—772 **16 Claims**



7. An improved process for rinsing an easily erodable cake formed on a filter medium of a rotary drum vacuum filter, the process of rinsing the cake formed on the filter medium of the rotary drum vacuum filter partially submerged within a suspension including spray rinsing the cake formed on the filter medium, wherein the improvement comprises:
blocking a portion of the spray rinse with a spray blocking means, the blocking means being both positioned above the cake surface and separated from the cake surface, the blocking means being separated from the cake surface by a maximum of one half inch.

4,655,938

PROCESS AND CONTRIVANCE FOR THE REGENERATION OF LUBRICATING OILS

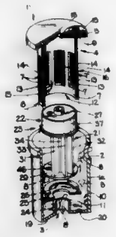
Guglielmo Fragola, Turin, Italy, assignor to RE.MAC.UT., S.p.A. and Giorgio Costa, both of Turin, Italy, part interest to each

Continuation-in-part of Ser. No. 384,429, Jun. 2, 1982, abandoned. This application Feb. 27, 1985, Ser. No. 705,994

Claims priority, application Italy, Jun. 3, 1981, 67760 A/81

Int. Cl.[4] B01D *29/38*

U.S. Cl. 210—798 **5 Claims**



1. A process for treating a lubricating oil and occludent sludge particles in order to eliminate said sludge particles formed because of oil aging, the process being carried out continuously on flowing lubricating oil during operation of an internal combustion engine, comprising:
a first step, in which flowing oil from the engine is passed, under a first pressure, through a filtering surface having meshes of relatively small size;
a second step, in which said flowing oil is subdivided into a first and a second portion having pre-established rates of flow, said first portion having a rate of flow not lower than 10% of the rate of flowing oil from the engine;
a third step, in which said first portion is backflushed through a section of said filtering surface, in counterflow to the direction of flow in said first step and at a pre-established second pressure, said second pressure being at least 2 Kg/cm^2 higher than said first pressure of said flowing oil from the engine, the second of said two portions being passed back into said internal combustion engine; and
a fourth step, in which a plurality of adjacent sections forming said filtering surface are successively back flushed by said first portion; said second and third steps being performed continuously and simultaneously, and the mesh size of the filtering surface being chosen in view of said back flushing pressure and rate of flow of said first portion in such a manner that, during said first and third steps, said sludge particles are subjected to a shear rate capable of impeding the formation of deposits on the filtering surface and breaking and mixing continuously said sludge particles.

4,655,939

LOCOMOTIVE OIL FILTER

Donald Moser, Midlothian, Va., assignor to James River Corporation, Richmond, Va.

Filed Oct. 9, 1985, Ser. No. 785,651

Int. Cl.[4] B01D *29/04*

U.S. Cl. 210—799 **10 Claims**

1. A locomotive lube oil filter comprised of means for filtering lube oil sufficient for locomotive engine use without filter swelling or plugging due to water in the lube oil, including a

filter medium having a substantial portion of lignin-containing fiber pulp derived from the disc refining of wood chips having a lignin content of at least about 10 percent under steam pressures in the range of about 90 psig to about 120 psig, at temperatures in the range of from about 330° F. to about 350° F., and using energy levels in the range of from about 8 to about 35 HPD/ADT.

7. A process comprising filtration locomotive lube oil sufficient for locomotive use by:

(i) providing a locomotive lube oil filter and

(ii) passing the lube oil without swelling or plugging due to water in the lube oil through a filter medium having a substantial portion of lignin-containing fiber pulp derived from the disc refining of wood chips having a lignin content of at least 10 percent under steampressures in the rangeof about 90 psig to aout 120 psig, at temperatures i the rane of about 330° F. to about 350° F., and using energy levels in the range of about 8 to about 35 HPD/ADT.

4,655,940

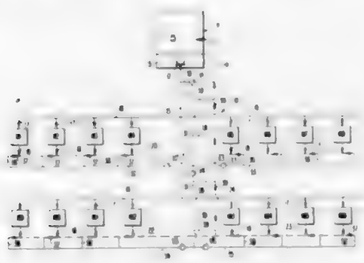
CENTRAL COOLANT SYSTEM WITH INTERMITTENT WASTE FLUSHING

Eugene H. Harms, Perrysberg, Ohio, assignor to Henry Filters, Inc., Bowling Green, Ohio

Filed Feb. 13, 1986, Ser. No. 828,787

Int. Cl.⁴ F01M *1/10, 11/02*

U.S. Cl. 210—805 **9 Claims**



2. In a method of operating a central coolant system for a plurality of machining stations at which machining waste is generated, the system including pump means for supplying clean coolant from a filtration apparatus to the respective stations, the stations being arranged in a plurality of groups and each group of stations having an individual collection flume through which dirty coolant flows to a common return flume for return to the filtration apparatus, the improvement comprising the steps of:

(1) continuously supplying coolant from said pump means to the machining stations for flow back to the filtration apparatus at a flow rate insufficient to flush machining waste from said stations through the flumes, the machining waste accumulating in the flumes; and

(2) periodically flowing additional coolant from the pump means to the collection flumes of each group of machining stations, in turn, to flush any accumulated machining waste from the collection flume for that group for flow through the common return flume to the filtration apparatus.

4,655,941

METHOD OF PREPARING MIXED ELECTROLYTE POWDER FOR BICARBONATE DIALYSIS AND POWDER MIXTURE FORMED

Takeshi Suzuki, Tokushima, Japan, assignor to Tomita Pharmaceutical Corp., Ltd., Japan

PCT No. PCT/JP84/00042, § 371 Date Oct. 1, 1985, § 102(e) Date Oct. 1, 1985, PCT Pub. No. WO85/03435, PCT Pub. Date Aug. 15, 1985

PCT Filed Jan. 13, 1984, Ser. No. 789,965

Int. Cl.⁴ C09K *3/00;* **B01D** *13/00*

U.S. Cl. 252—1 **8 Claims**

1. A method of producing a mixed electrolyte powder having an electrolyte ion composition suited for use in preparing a dialyzing fluid for perfusing artificial kidney systems for bicarbonate dialysis, which method comprises

a step of pulverizing the whole or part of sodium chloride, which is one of the components of the above powder, in a micronizer to a microfine powder having a particle size of about 20–30 μm and adding thereto 2–4 percent by weight of glacial acetic acid by spraying, whereby a microfine powder of sodium chloride acidified with acetic acid is obtained,

a step of dissolving other components constituting the above mixed powder and, if any, the remaining portion of sodium chloride in warm water and spray-drying the solution using a spray nozzle or disk atomizer to a microfine powder having a particle size of about 20–100 μm, and

a step of mixing both the microfine powders obtained in the above steps together.

8. A mixed electrolyte powder for bicarbonate dialysis as produced by the method of claim 1.

4,655,942

CONTROLLED RELEASE DISPERSANT FOR CLAY-THICKENED, WATER-BASED DRILLING FLUIDS

Joseph J. Dickert, Jr., Yardley, Pa., and Israel J. Heilweil, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,550

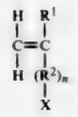
Int. Cl.⁴ C09K *7/02*

U.S. Cl. 252—8.5 **21 Claims**

1. A clay-thickened, water-based drilling fluid comprising:

(a) an aqueous clay dispersion; and

(b) a dispersing amount of a polymer crosslinked through Sn^{++} cation, said polymer prior to crosslinking possessing an average molecular weight of from 2,500 to about 1,000,000 and being derived from the polymerization of at least 60 weight percent of ethylenically unsaturated monomer units of the structural formula:



wherein R^1 is hydrogen, a phenyl group or an alkyl group of from 1 to 3 carbon atoms; R^2 is a straight or branched chain alkylene group of from about 1 to about 12 carbon atoms or an arylene group of from 6 to about 12 carbon atoms; n is 0 or 1; and X is $—NR^3COR^4$ in which R^3 and R^4 each is the same or different and is hydrogen or alkyl of from 1 to about 6 carbon atoms, —COOY′ in which Y′ is hydrogen or an alkali metal or —CONHZ in which Z is the group $—R^5SO_3Y$ in which R^5 is a straight or branched chain alkylene group of from 1 to 12 carbon atoms and Y is hydrogen or an alkali metal, said drilling fluid being stable at down hole temperatures encountered in deep drilling gas and oil recovery operations.

4,655,943

THICKENERS HAVING TWO IONIC COMPONENTS AND USE THEREOF IN AQUEOUS COMPOSITIONS

Lyle F. Elmquist, St. Paul; Warren W. Howland, Champlin, and Curtis L. Karl, Minneapolis, all of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Dec. 14, 1984, Ser. No. 681,530

Int. Cl.⁴ E21B *43/26;* **C08F** *8/42*

U.S. Cl. 252—8.551 **19 Claims**

1. A thickened aqueous composition having a pH of between about 5 and about 9 comprising:

(a) a thickening amount of a homopolymer having a molecular weight of about 50,000 to about 5,000,000 and having as the recurring structural unit:

$$—[CH_2—CH(C(O)NH—R—SO_3M)]—$$

wherein R is a divalent hydrocarbon radical and M is a hydrogen atom, an ammonium group, or an alkali metal; and

(b) a polyvalent metal cross-linking agent comprised of a metal in the +3, +4, +5 or +6 oxidation state at a concentration sufficient to increase the viscosity of the aqueous composition; and

(c) water,

wherein the relative proportions by weight of the polymer to the polyvalent metal cross-linking agent, is in the range of from about 400:1 to about 10:1.

4,655,944

SLIDING AND BEARING MATERIAL HAVING SUPERIOR WEAR RESISTING PROPERTY

Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Continuation of Ser. No. 554,472, Nov. 22, 1983, abandoned. This application Oct. 23, 1985, Ser. No. 790,760

Claims priority, application Japan, Dec. 3, 1982, 57-211277

Int. Cl.⁴ C10M *147/02, 147/04*

U.S. Cl. 252—12.2 **16 Claims**

1. A sliding and bearing material having a superior wear resisting property, consisting of:

backing metal;

an intermediate layer joined to said backing metal;

a porous metallic layer joined to said intermediate layer; and

a substance with which said porous layer is impregnated or impregnated-and-coated, said substance being one selected from the following mixtures (A), (B) and (C);

(A) a first sintered mixture consisting of 0.1 to 45 vol % of one composition selected from a group consisting of tetrafluoroethylene-ethylene copolymer resin and fluoroethylene propylene ether resin, and the balance substantially polytetrafluoroethylene;

(B) a second sintered mixture consisting essentially of 0.1 to 45 vol % in total of at least two compositions selected from a group consisting of tetrafluoroetheylene-perfluoroalkylvinyl ether copolymer resin, tetrafluoroethylene-ethylene copolymer resin, and fluoroethylene propylene ether resin, and the balance substantially polytetrafluoroethylene; and

(C) a third sintered mixture consisting essentially of 0.1 to 40 vol % of at least one composition selected from a group consisting of tetrafluorotheylene-perfluoroalkylvinyl ether copolymer resin, tetrafluoroethylene-ethylene copolymer resin, and fluoroethylene propylene ether resin; 0.1 to 35 vol % of at least one composition selected from a group consisting of a low-melting point solid lubricant, fibrous materials and ceramics and the balance substantially polytetrafluoroethylene, the total of contents of the compositions other than polytetrafluoroethylene being in a range between 0.2 and 70 vol %.

4,655,945

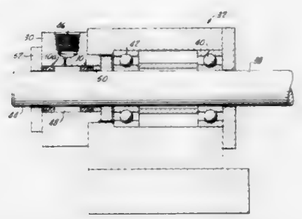
BEARING SEAL AND METHOD OF MANUFACTURE

Peter J. Balsells, 17592 Sherbrook Dr., Tustin, Calif. 92680, assignor to Peter J. Balsells and Joan C. Balsells, both of Tustin, Calif.

Filed Jan. 28, 1986, Ser. No. 823,254

Int. Cl.⁴ C10M *147/02*

U.S. Cl. 252—124 **20 Claims**



1. A method for the manufacture of a bearing seal comprising:

coating a filler with a copolymer of hexafluoroisobutylene and vinylidene fluoride, said copolymer comprising about 10 to about 52 mol percent 3,3,3,-trifluoro-2-trifluoromethyl propene and correspondingly about 90 to about 48 percent 1,1-difluoroethylene;

heating the coated filler to bond the copolymer of hexafluoroisobutylene and vinylidene fluoride to the filler and thereafter cooling the coated filler;

pulverizing the coated cooled filler;

adding the pulverized filler coated with copolymer of hexafluoroisobutylene and vinylidene fluoride to polytetrafluoroethylene, said polytetrafluoroethylene having a particle size greater than about 25 microns;

mixing the combined filler coated with the copolymer of hexafluoroisobutylene and vinylidene fluoride and polytetrafluoroethylene into a uniform blend thereof; and,

compacting and heating the blend into a preselected shape.

4,655,946

SEA WATER RESISTANT TURBO OIL

Stephen J. Metro, Middletown, and Dale D. Carr, Morristown, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Nov. 7, 1985, Ser. No. 795,825

Int. Cl.⁴ C10M *137/08*

U.S. Cl. 252—32.5 **19 Claims**

1. A lubricating oil composition comprising:

A. a base oil;

B. an alkylphenol;

C. a salicylate salt;

D. polyisobutylene succinic acid/amine reaction product;

E. phosphate salt of an amine; and,

F. a naphthenate;

the total concentration of the alkylphenol, salicylate salt and polyisobutylene succinic acid/amine reaction product being in the range of between about 0.005 and about 1.5 wt %, the phosphate salt of an amine being present in an amount ranging between about 0.01 and about 2 wt %, and the naphthenate concentration ranging between about 0.006 and about 0.6 wt %.

4,655,947

METALWORKING WITH A TRIMETHYLOLALKANE ESTER LUBRICANT

Mei-Yuan Tsai, and Joseph T. Laemmle, both of Murrysville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 23, 1986, Ser. No. 888,488
Int. Cl.⁴ C10M *173/00, 129/70*
U.S. Cl. 252—49.5 **20 Claims**

1. A metalworking lubricant composition comprising:
(a) about 50–99 wt % mineral oil, and
(b) about 1–50 wt % of a trimethylolalkane ester having the formula $CH_3(CH_2)_nC(CH_2OCOR)_3$, wherein n=2–18 and R=$CH_3$, CH_2CH_3, or $CH_2CH_2CH_3$.

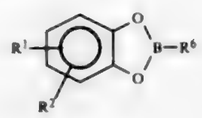
4,655,948

GREASE COMPOSITIONS CONTAINING BORATED CATECHOL COMPOUNDS AND HYDROXY-CONTAINING SOAP THICKENERS

John P. Donec, Sewell; Andrew G. Horodysky, Cherry Hill, and John A. Keller, Jr., Pitman, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 27, 1985, Ser. No. 769,837
Int. Cl.⁴ C10M *125/26*
U.S. Cl. 252—49.6 **19 Claims**

1. A grease composition comprising a lubricating component, between about 3 and about 20 percent by weight of a hydroxy-containing thickener and between about 0.5 and about 10 percent by weight of a borated catechol compound having the structure:



where R^1 and R^2 are each hydrogen or a C_1–C_{40} hydrocarbon radical and R^6 is
(1) a C_1–C_{40} hydrocarbon radical which can contain additionally oxygen, nitrogen, sulfur or boron;
(2) an NR^3 group where R^3 is a C_1–C_{40} hydrocarbon group which can contain additionally oxygen, sulfur or nitrogen atoms;
(3) an OR^4 group where R^4 is a C_1–C_{40} hydrocarbon group which can contain additionally oxygen, sulfur or nitrogen atoms; or
(4) an OR^5 group where R^5 is boron, or a catechol, ester or hydroxyl-containing moiety.

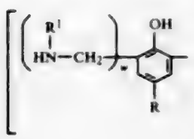
4,655,949

LUBRICATING OIL COMPOSITIONS CONTAINING ORGANOMETALLIC ADDITIVES

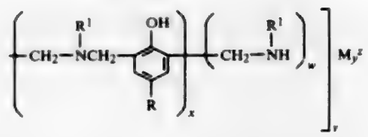
James F. Landry, LaHabra; Michael C. Croudace, Huntington Beach; Harry P. Ott, Jr., LaHabra, and Sidney Y. Shen, Hacienda Heights, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 24, 1985, Ser. No. 726,804
Int. Cl.⁴ C16M *133/00*
U.S. Cl. 252—51.5 R **35 Claims**

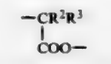
1. A lubricating oil composition comprising an organometallic additive represented by the general formula:



-continued



wherein M is selected from the group consisting of members of Groups I, Ib and VIII of the Periodic System of Elements; R^1 is selected from the group consisting of radicals represented by the formula



wherein R^2 is selected from the group consisting of hydrogen, hydrocarbyl radicals and heteroatom-substituted hydrocarbyl radicals wherein said heteroatoms are selected from the group consisting of halogen, oxygen, sulfur, nitrogen and phosphorus atoms; R^3 is selected from the group consisting of hydrogen and lower alkyl radicals; R is selected from the group consisting of hydrocarbyl radicals and hetero atom-substituted derivatives thereof wherein said heteroatoms are selected from the group consisting of halogen, oxygen, sulfur, nitrogen and phosphorus atoms; and v, w x, y and z are integers, except that when x is 0 at least one w is 1; dissolved in a lubricating oil.

4,655,950

FOAMED CAST ACOUSTICAL MATERIAL AND METHOD

Christopher P. Michalek, Lake Zurich, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jan. 7, 1985, Ser. No. 689,333
Int. Cl.⁴ C08J *9/30, 5/08;* **E04B** *1/86*
U.S. Cl. 252—62 **15 Claims**

12. A lightweight cast mineral wool acoustical tile consisting essentially of the dried solids of a major weight proportion of mineral wool and starch binder, and about 3%–8% by weight of protein extract of soya flour based on the weight of starch.

4,655,951

COOLANT

Masayuki Hanazaki; Noriyuki Harada, and Kaoru Shimada, all of Shizuoka, Japan, assignors to Nippon Light Metal Company Limited, Tokyo, Japan

Filed Mar. 6, 1986, Ser. No. 837,033
Int. Cl.⁴ C09K *5/06*
U.S. Cl. 252—70 **7 Claims**

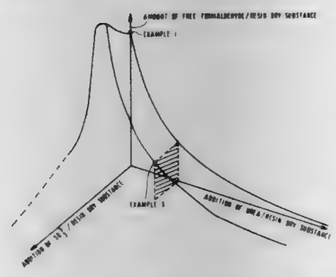
1. An anti-corrosive coolant having an eutectic melting point of about −8.5° C. to about −10.0° C. and characterized by bubbling prevention stability that prevents deformation of aluminum vessels in which it is confined, consisting essentially of an aqueous solution of potassium hydrogencarbonate in amounts of from about 16 to 18% by weight and from about 1.0 to 20.0% by weight of a polyhydric alcohol further containing a saccharide and 0.01 to 0.05% by weight of a corrosion inhibitor.

4,655,952

DETERGENT AND METHOD FOR PRODUCING THE SAME

Otto Mesmer, Wuppertal; Wolfgang Polligkeit, Ennepetal; Ernst-Uwe Schiffer, Wuppertal; Wolfgang Tröger, Pulheim/-Stommeln, and Andreas Wolter, Wülfrath, all of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Feb. 26, 1985, Ser. No. 705,680
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 3434817
Int. Cl.⁴ C08G *12/12;* **C08J** *9/40;* **C09K** *3/22;* **C11D** *3/37*
U.S. Cl. 252—88 **4 Claims**



1. Method for producing a detergent for textile surfaces such as textile floor coverings, comprising:
a pulverized, porous carrier material which includes a foamed, plastified urea-formaldehyde resin foam enriched with detergent so that the finished product with respect to the carrier material has a weight per unit volume of 60 kg/m³ and an apparent density of 50 to 150 grams/liter, the carrier material having a granular size of between 0.01 and 12 mm; and
a water containing surfactant and adhering to the carrier material, the water being stored in the carrier material in a completely homogeneous manner with a share of maximally 80% by weight referred to the weight of the carrier material, the detergent resulting from a mixture of the carrier material with a highly concentrated aqueous cleaning solution, the method comprising the steps of:
foaming about 56 parts by weight of a surfactant comprising about 3 parts by weight of an aqueous solution of about 30% phosphoric acid and about 10% alkylnapthalene sulfonate, and about 53 parts by weight of water with air; and,
adding thereto a mixture containing about 91.5 parts by weight of an aqueous solution of a pre-condensed urea-formaldehyde resin and a mixture comprising about 19.5 parts by weight of water, about 4.4 parts by weight of urea, about 0.027 parts by weight of sulfite and about 0.06 by weight of bentonite.

4. Detergent for textile surfaces such as textile floor coverings comprising:
a pulverized, porous carrier material which comprises a foamed, plastified urea-formaldehyde resin foam enriched with detergent so that the finished product with respect to the carrier material has a weight per unit volume of 60 kg/m³ and an apparent density of 50 to 150 grams/liter, the carrier material having a granular size of between 0.01 and 12 mm;
a water containing surfactant and adhering internally to the carrier material, the water being stored in the carrier material in a completely homogeneous manner with a share of maximally 80% by weight referred to the weight of the carrier material; said foam being prepared by foaming about 56 parts by weight of a surfactant containing about 3 parts by weight of an aqueous solution of about 30% phosphoric acid and about 10% alkylnaphthalene sulfonate, and about 53 parts by weight of water with air, adding thereto a mixture containing about 91.5 parts by weight of an aqueous solution of a pre-condensed urea-formaldehyde resin and a mixture of about 19.5 parts by weight of water, about 4.4 parts by weight of urea, about 0.027 parts by weight of sulfite and about 0.06 by weight of bentonite; and, the detergent resulting from a mixture of the carrier material with a highly concentrated aqueous cleaning solution.

4,655,953

DETERGENT BLEACH COMPOSITIONS

John Oakes, Winsford, Great Britain, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 5, 1984, Ser. No. 678,320
Claims priority, application United Kingdom, Dec. 6, 1983, 8332486
Int. Cl.⁴ C11D *3/39, 3/08*
U.S. Cl. 252—99 **5 Claims**

1. Alkaline built laundry detergent bleach composition comprising:
(a) from 1 to 50% by weight of an anionic surface active agent;
(b) from 5 to 50% by weight of a peroxide compound bleach, which liberates hydrogen peroxide in aqueous solution;
(c) a manganese compound which delivers manganese (II) ions in aqueous solution in an amount from 0.002 to 1.5% by weight of manganese (II); and
(d) from 2 to 60% by weight of sodium sesquisilicate and/or sodium metasilicate,
said composition having a solution pH of from 9.5 to 13.

4,655,954

LOW PHOSPHATE OR PHOSPHATE FREE NONAQUEOUS LIQUID NONIONIC LAUNDRY DETERGENT COMPOSITION AND METHOD OF USE

Guy Broze, Grace-Hollogne; Danielle Bastin, Soumagne; Leo Laitem, Orp-Jauche, and Trazollah Ouhadi, Liege, all of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 20, 1985, Ser. No. 767,570
Int. Cl.⁴ C11D *1/74, 3/37, 3/39*
U.S. Cl. 252—102 **20 Claims**

15. A phosphate detergent builder free nonaqueous liquid heavy duty laundry detergent composition which comprises
Nonionic surfactant in an amount of about: 30–45%
A polycarboxylic acid Terminated surfactant in an amount of about: 2–18%
Sodium salt of polyacetal carboxylic acid in an amount of about: 5–22%
C_{16} to C_{18} alkanol ester of phosphoric acid in an amount of about: 0.1–0.9%
Sodium perborate monohydrate bleaching agent in an amount of about: 7–22%
Tetraacetylethylene diamine (TAED) bleach activator in an amount of about: 4–22%.

4,655,955

COMPOSITION CONTAINING FODDER YEAST WASTE FOR SIMULTANEOUS SCOURING OF METAL SURFACES FROM CORROSION PRODUCTS, SCALE & SCORIA

Dimka I. Jetcheva, Bl.31-8, Komplex Mladost-I; Todor M. Todorov, Bl.305-1 Komplex Mladost-III, and Nedyalka M. Stoichkova, Bl.316-1, Komplex Mladost-III, all of Sofia, Bulgaria

Filed Jan. 21, 1986, Ser. No. 820,932
Claims priority, application Bulgaria, Jan. 25, 1985, 68469
Int. Cl.⁴ C11D *7/54*
U.S. Cl. 252—105 **4 Claims**

1. A composition for simultaneously scouring metal surfaces

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from corrosion products, scale, scoria, which consists essentially of a waste product from manufacture of fodder yeast, citric acid, ammonium citrate, aqueous solution of sodium gluconate, sulphonated ricinic oil, inorganic acid in the following weight ratios:

waste product from fodder yeast: 60 to 95%
citric acid: 2 to 6%
ammonium citrate: 0.1 to 10%
sulphonated ricinic oil: 0.0 to 4.0%
aqueous solution of sodium gluconate: 0.0 to 20%
inorganic acid: 0.0 to 15%.

4,655,956

AZEOTROPE-LIKE COMPOSITIONS OF TRICHLOROTRIFLUOROETHANE, METHANOL, NITROMETHANE AND HEXANE

Rajat S. Basu; David P. Wilson, both of Williamsville; Earl A. E. Lund, West Seneca; Hang T. Pham, North Tonawanda, and John K. Bonner, Kenmore, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 2, 1985, Ser. No. 782,776
Int. Cl.⁴ C11D *7/50;* **C23G** *5/024, 5/028, 5/032*
U.S. Cl. 252—153 **17 Claims**

1. Azeotrope-like compositions comprising from about 84.3 to about 93.8 weight percent 1,1,2-trichloro-1,2,2-trifluoroethane, from about 5.6 to about 6.6 weight percent methanol, from about 0.05 to about 0.8 weight percent nitromethane, and from about 0.1 to about 8.7 weight percent hexane.

12. The method of cleaning a solid surface which comprises treating said surface with an azeotrope-like composition as defined in claim 1.

4,655,957

CONTACT LENS CLEANING COMPOSITION WITH POLYMERIC BEADS

Richard C. Chromecek, Goshen, Conn.; Lai Ogunbiyi, Fairport, N.Y.; Thomas M. Riedhammer, Rochester, N.Y., and Francis X. Smith, Walworth, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 624,440, Jun. 25, 1984, abandoned. This application Apr. 28, 1986, Ser. No. 859,183
Int. Cl.⁴ C11O *7/26;* **A61K** *7/00*
U.S. Cl. 252—174.23 **6 Claims**

1. An aqueous suspension for cleaning deposits from contact lenses and other articles comprising one or more surfactants selected from the group consisting of nonionic or amphoteric surfactants and 0.001 to 25 weight percent of a bead shaped particulate hydrophilic cross-linked vinyl-type homopolymer or copolymer selected from the group consisting of poly(hydroxyalkyl methacrylate), poly(hydroxyalkyl acrylate), and poly N-vinyl lactam or mixtures thereof.

4,655,958

LIQUID-WATER DISPLACEMENT COMPOSITION OF A CHLOROFLUOROCARBON COMPOUND AND A PHOSPHATE SALT SURFACTANT

Alfred K. Jaag, Millwood, and Edward D. Weil, Hastings-on-Hudson, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 670,445, Nov. 13, 1984. This application Jan. 7, 1986, Ser. No. 817,764
Int. Cl.⁴ C09K *3/00*
U.S. Cl. 252—194 **4 Claims**

1. A liquid-water displacement composition consisting essentially of a normally liquid chlorofluorocarbon compound and, as a surfactant, a tetraalkylammonium salt of an aryl acid phosphate or alkyl substituted aryl acid phosphate wherein the tetraalkylammonium moiety has two or three C_6–C_{18} alkyl groups and one or two C_1–C_2 alkyl groups.

4,655,959

PREPARATION OF NON-FLAMMABLE AEROSOL PROPELLANT MICROEMULSION SYSTEM

Howard R. Stopper, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 508,643, Jun. 28, 1983, Pat. No. 4,536,323. This application Jul. 1, 1985, Ser. No. 749,962
The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.
Int. Cl.⁴ C09K *3/30*
U.S. Cl. 252—305 **10 Claims**

1. A method for preparing a propellant composition suitable for delivering an aerosol from an aerosol dispenser, said aerosol being characterized by its suppressed flammability, the method comprising the steps of filling a container with a mixture comprising by weight of the total weight of the composition from about 23 to about 35% of a water-immiscible liquid which is a solvent for the propellant, from about 15 to about 25% water, and from about 3 to about 20% of a mixed surfactant system of at least one primary surfactant and at least one secondary surfactant, and pressurizing the container with at least about 30% by weight of the total weight of the composition of at least one normally gaseous flammable propellant, whereby an oil-in-water microemulsion is formable by shaking, the at least one propellant being dissolved in the water-immiscible liquid to form microdroplets constituting the dispersed oil phase, the microdroplets being separated from the continuous water phase by the mixed surfactant system.

4,655,960

FOAM INHIBITORS FOR AQUEOUS SYNTHETIC RESIN COMPOSITIONS

Juan C. Wuhrmann, Duesseldorf; Heinz Mueller, Wuppertal; Karl-Dieter Brands; Adolf Asbeck, both of Duesseldorf, and Jochen Heidrich, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 2, 1985, Ser. No. 688,225
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1984, 3400014
Int. Cl.⁴ B01D *17/00, 19/04*
U.S. Cl. 252—321 **15 Claims**

1. A foam inhibiting agent comprising

(A) from about 70 to about 98% by weight of either

(i) a mineral oil liquid at room temperature, or

(ii) a mixture of a mineral oil liquid at room temperature and at least one alcohol of the formula:

$$R^1-CH_2-CH_2-\underset{\displaystyle R^2}{\underset{|}{CH}}-CH_2-OH \qquad (I)$$

in which R^1 and R^2 can be the same or different and represent C_4–C_{16} alkyl radicals, and wherein the total number of carbon atoms in the alcohol is between 16 and 30,

(B) from about 0.2 to about 5% by weight of at least one microcrystalline paraffin wax having a melting point of from about 60 to about 95° C.,

(C) from about 0.5 to about 20% by weight of at least one hard paraffin having a melting point of from about 40 to about 60° C.,

(D) from about 0.05 to about 5% by weight of hydrophobized finely divided silica, and

(E) from 0 to about 10% by weight of a soft paraffin having a melting point of from about 32° to about 42° C.

4,655,961

FOAM INHIBITORS FOR AQUEOUS DISPERSIONS AND SOLUTIONS OF SYNTHETIC RESINS

Juan C. Wuhrmann, Duesseldorf; Heinz Mueller, Wuppertal; Karl-Dieter Brands; Adolf Asbeck, both of Duesseldorf, and Jochen Heidrich, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 2, 1985, Ser. No. 688,227
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1984, 3400009
Int. Cl.⁴ B01D *17/00, 19/04*
U.S. Cl. 252—321 **16 Claims**

1. A foam inhibiting agent comprising

(A) from about 70 to about 98% by weight of an organic carrier material which is liquid at room temperature, and which is an alcohol of the formula:

$$R^1-CH_2-CH_2-\underset{\displaystyle R^2}{\underset{|}{CH}}-CH_2-OH \qquad (I)$$

in which R^1 and R^2 can be the same or different and represent C_4–C_{16} alkyl radicals, and wherein the total number of carbon atoms in the alcohol is between 16 and 30,

(B) from about 0.5 to about 20% by weight of a hard paraffin having a melting point of from about 40° to about 60° C.,

(C) from about 0.05 to about 5% by weight of hydrophobized finely divided silica,

(D) from 0 to about 5% by weight of a microcrystalline paraffin wax, and

(E) from 0 to about 10% by weight of a soft paraffin having a melting point of from about 32° to about 42° C.

4,655,962

BLOWING AGENT COMPOSITION

Donald G. Rowland, Woodbridge, Conn.; Byron A. Hunter, Alpine, and Lee D. Hansen, Orem, both of Utah, assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Mar. 25, 1986, Ser. No. 825,401
Int. Cl.⁴ C08J *9/10;* **C09K** *3/00*
U.S. Cl. 252—350 **19 Claims**

1. A blowing agent composition comprising: (i) azodicarbonamide; (ii) at least one member selected from the group consisting of zinc oxide and zinc carbonate; and (iii) at least one member selected from the group consisting of zinc salts of C_1–C_6 organic acids, and C_1–C_6 carboxamides.

4,655,963

ELECTROCONDUCTIVE RESIN COMPOSITION USING FLUORINE-CONTAINING GRAFT COPOLYMER

Yasufumi Koga, Tokorozawa; Shinji Ogasawara, Kamifukuoka, and Kazuhiko Maeda, Tokyo, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Nov. 13, 1985, Ser. No. 797,462
Claims priority, application Japan, Nov. 14, 1984, 59-238235
Int. Cl.⁴ H01B *1/06*
U.S. Cl. 252—511 **9 Claims**

1. An electroconductive resin composition comprising:

99 to 80 parts by weight of a fluorine-containing graft copolymer, which is obtained by graft copolymerization of a fluorine-containing monomer having crystalline structure with a fluorine-containing elastomeric copolymer having peroxy bonds that decompose at the graft copolymerization stage; and

1 to 20 parts by weight of carbon black which is substantially uniformly dispersed in said graft copolymer, said carbon black being not smaller than 500 m^2/g in specific surface area and not less than 250 ml/100 g in oil absorption for dibutyl phthalate.

4,655,964

CONDUCTIVE NYLON MOLDING MATERIALS

Rolf Steinberger, Schifferstadt; Johannes Schlag, Ludwigshafen; Karl Schlichting, Bobenheim-Roxheim; Erhard Seiler, Ludwigshafen; Sibylle Von Tomkewitsch, Poecking, and Hans-Friedrich Schmidt, Eurasburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 11, 1985, Ser. No. 754,013
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1984, 3425628
Int. Cl.⁴ H01B *1/06*
U.S. Cl. 252—511 **7 Claims**

1. A conductive molding material containing

(A) from 29 to 76% by weight of one or more linear thermoplastic nylons,

(B) from 20 to 50% by weight of finely divided calcined kaolin or finely divided calcium metasilicate and mixtures thereof, which are coated with organosilanes as coupling agents,

(C) from 4 to 6% by weight of conductive carbon black having a BET specific surface area >900 m^2/g and a DBP absorption >300 ml/100 g and, if required,

(D) from 0 to 15% by weight of conventional additives in effective amounts,

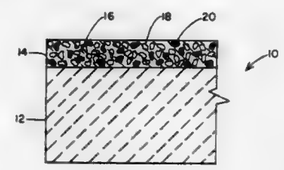
the percentages of A to D summing to 100.

4,655,965

BASE METAL RESISTIVE PAINTS

Charles C. Y. Kuo, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Feb. 25, 1985, Ser. No. 705,233
Int. Cl.⁴ H01B *1/06*
U.S. Cl. 252—518 **9 Claims**



1. A thick film base metal resistor paint for screening and firing onto a substrate to form a resistor with a controlled temperature coefficient of resistance within ±300 ppm/°C. which comprises:

a mixture of 75 to 95 percent glass frit with a melting temperature of less than 800° C., well blended with from 5 to 25 percent of a tantalum oxide, the mixture melted and reground to form a tantala glass frit therefrom;

a tin oxide in the ratio of 75 to 80 percent tin oxide to 20 to 25 percent tantala glass frit; and

a screening agent selected to be substantially vaporized during firing, wherein the resistor paint made therefrom is suitable for screening and firing in an inert atmosphere at a peak temperature of 900° C.±20° C.

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4,655,966

PROCESS FOR THE PREPARATION OF AN ANTIMONY OXIDE-DOPED TIN OXIDE PIGMENT WITH IMPROVED ELECTRICAL CONDUCTIVITY PROPERTIES, AND WHITE AND TINTED CONDUCTIVE PAINTS CONTAINING THIS PIGMENT WHICH ARE USEFUL FOR THE REMOVAL OF ELECTROSTATIC CHARGES

Jean-Claude Guillaumon, Aygrevives; Louis J. C. Blet, Corron-sac, and Francoise M. J. B. Guerard, La Tour du Crieu, all of France, assignors to Centre National d'Etudes Spatiales et Master Peintures, Paris, France

Filed Aug. 1, 1985, Ser. No. 761,506
Claims priority, application France, Aug. 2, 1984, 84 12240
Int. Cl.⁴ H01B *1/06*
U.S. Cl. 252—518 **5 Claims**

1. A process for producing an antimony oxide-doped tin oxide pigment comprising the steps of intimately mixing 1.25 to 10 parts by weight of antimony oxide powder present as Sb_2O_3 with 100 parts by weight of tin oxide powder present as SnO_2, and thereafter firing the resultant mixture at a temperature in the range of from 900° to 950° C., to provide an oxide-doped tin oxide pigment having a white to off-white color and a surface electrical resistance not exceeding 20 ohms/square.

4,655,967

ELECTRICALLY CONDUCTIVE TITANATE DERIVATIVE AND PROCESS FOR PREPARING THE SAME

Takuo Morimoto, Kyoto; Kihachiro Nishiuchi, Tokushima; Kenichi Wada, Tokushima; Masayoshi Sazne, Tokushima, and Yukiya Hareyama, Tokushima, all of Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

Filed Jun. 12, 1985, Ser. No. 743,744
Claims priority, application Japan, Jun. 12, 1984, 59-121044
Int. Cl.⁴ H01B *1/06*
U.S. Cl. 252—520 **7 Claims**

1. An electrically conductive titanate of the formula:

$$M_xO.n(Ti_{1-z}L_zO_{2-p})$$

wherein M is alkali metal, n is an integer of 1 to 10, x is 1 or 2, L is at least one element of group (V) of the periodic table other than nitrogen, p is a number of $0 \leqq p < 2$, and z is a number of $0 < z \leqq \frac{1}{4}$, said element being introduced in an amount of 0.01 to 50 mole% based on one atom of titanium.

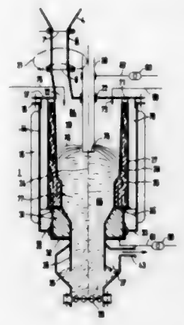
4,655,968

METHOD AND FURNACE FOR REMOVING TOXIC, ESPECIALLY RADIOACTIVE WASTES

Horst Queiser, Bruchköbel; Siegfried Meininger, Altenstadt, and Karl-Heinz Kleinschroth, Frankfurt, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Nov. 9, 1984, Ser. No. 670,373
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 3341748
Int. Cl.⁴ G21F *9/32, 9/08*; F23B *5/04*
U.S. Cl. 252—632 **5 Claims**

1. Method for treating toxic and in particular, radioactive wastes containing oxidizable components to form from such toxic waste feed solids residue of a reduced volume compared to the volume of solids in the waste feed, which solids residue carry with them the toxic constituents in the feed waste, and also to produce from the toxic waste feed a separate gaseous products substantially free of toxic constituents which comprises; subjecting the feed toxic waste containing oxidizable components to degasification in a first temperature zone of 200° to 400° C. in an electrically heated furnace, passing the degassed wastes from the first temperature zone into a second temperature zone in the furnace at above 800° C., passing gases from the first temperature zone into the second temperature zone in intimate contact with the wastes therein, subjecting the waste in the second zone to pyrolysis and reaction with the gases therein to gasify a material portion of the wastes leaving a reduced volume of residual solids containing the toxic con-



stituents, discharging the residual solids, and separately discharging the gaseous products from the second temperature zone and burning said gaseous products outside the furnace with oxygen.

4,655,969

CHEMILUMINESCENT SYSTEMS

Herbert P. Richter, 705 Sydnor; Ronald A. Henry, 329 Perdew, and Joseph H. Johnson, 201 S. Locust, all of Ridgecrest, Calif. 93555

Filed Apr. 3, 1985, Ser. No. 719,788
Int. Cl.⁴ C09K *11/00*; G08B *9/00*
U.S. Cl. 252—700 **2 Claims**

1. In a method for producing light in low temperature systems operating at temperatures of about −32° C. having the steps of bringing a hydrogen peroxide component containing a catalyst and an oxalate ester-fluorescer component together and allowing said components to react to produce said light, the improvement comprising in utilizing within said oxalate ester-fluorescer component a di-substituted fluorescer at a concentration of about 0.0075M selected from the group consisting of 1,4-substituted 9,10-bis(phenylethynyl) anthracene derivatives substituted with electron donating substituents selected from the group consisting of methyl, ethyl, propyl, isopropyl and t-butyl alkyl groups as well as methoxy, ethoxy, propoxy, isopropoxy and t-butoxy alkoxy groups.

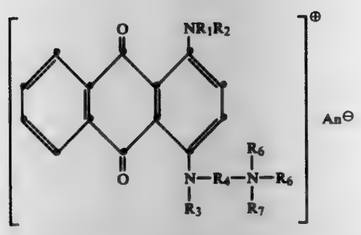
4,655,970

PROCESS FOR THE MANUFACTURE OF ANTHRAQUINONE COMPOUNDS

Martin Priester, Dornach, and Peter Loew, Münchenstein, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

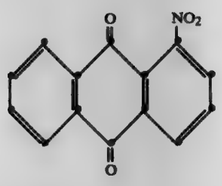
Continuation of Ser. No. 516,671, Jul. 26, 1983, abandoned, which is a continuation of Ser. No. 425,593, Sep. 23, 1983, abandoned, which is a division of Ser. No. 115,815, Jan. 28, 1980, Pat. No. 4,393,007, which is a continuation of Ser. No. 946,281, Sep. 25, 1978, abandoned, which is a continuation of Ser. No. 812,284, Jul. 1, 1977, abandoned. This application Sep. 19, 1984, Ser. No. 652,422
Claims priority, application Switzerland, Jul. 7, 1976, 8701/76; Jul. 7, 1976, 8702/76
The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.
Int. Cl.⁴ C07C *97/24*
U.S. Cl. 260—378 **10 Claims**

1. A process for the manufacture of a quaternized anthraquinone of the formula

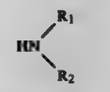


wherein each of R_1 and R_2 independently represents hydrogen, alkyl or cycloalkyl, R_3 represents hydrogen or alkyl, R_4 represents alkylene or cycloalkylene, R_5 and R_6 represents alkyl, aryl or aralkyl, R_7 represents alkyl, aralkyl, aryl or cycloalkyl, and An represents an anion, which process comprises the steps of

(1) reacting in an aprotic solvent at a temperature of 80° to 150° C., an alpha-nitro-anthraquinone (A) of the formula



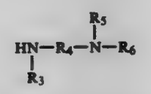
with an amine of the formula



to give 1-aminoanthraquinone (B), wherein R_1 and R_2 have the meaning given above,

(2) halogenating said compound (B) by diluting the reaction mixture with a protic solvent and introducing a bromine/-methanol mixture at −20° to +70° C. to give 1-amino-4-bromo-anthraquinone (C),

(3) condensing said compound (C) after neutralization with a diamine of the formula



at 60° to 100° C. in the presence of a heavy metal salt to give 1,4-diamino anthraquinone (D), where R_3, R_4, R_5, R_6 and R_7 have the meaning given above, and

(4) subsequently quaternizing said compound (D) to give the corresponding quaternized anthraquinone, and carrying out the reaction step (3), in a mixture of the aprotic and protic solvents of steps (1) and (2), in one single operation without isolation of the intermediate (D), wherein the aprotic solvent of step (1) is a chlorinated hydrocarbon, toluene, a xylene, chlorobenzene, or a dichlorobenzene, and the protic solvent of step (2) is a lower aliphatic alcohol.

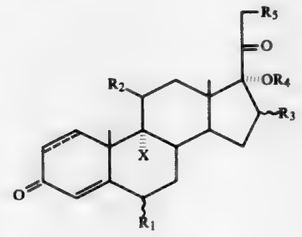
4,655,971

NOVEL PROCESS FOR THE PREPARATION OF STEROIDAL ESTERS

Philip R. Page, Parede, and William Heggie, Barreiro, both of Portugal, assignors to Pluricheмie Anstalt, Liechtenstein

Continuation-in-part of Ser. No. 402,548, Jul. 28, 1982, abandoned. This application Aug. 16, 1984, Ser. No. 641,267
Claims priority, application Portugal, Aug. 4, 1981, 73479; Oct. 22, 1981, 73864
Int. Cl.⁴ C07J *17/00*
U.S. Cl. 260—397.45 **25 Claims**

1. A process for the preparation of corticosteroid esters of the formula



(I)

in which

- - - - signifies that a double bond can be present;

X is hydrogen, chlorine or fluorine;

R_1 is hydrogen, fluorine, chlorine or methyl, which may be either α or β;

R_2 is halogen, oxo, or hydroxyl;

R_3 is hydrogen, α-methyl or β-methyl; or R_2 and X jointly from an epoxide group;

R_4 is an acyl group of the formula RCO, in which R is one of the following:

(i) an alkyl group containing 1 to 16 carbon atoms, whether straight-chained, branched or cyclic;

(ii) an aralkyl group of 7 to 8 carbon atoms;

(iii) a phenyl group;

R_5 is hydroxyl or R_6; where

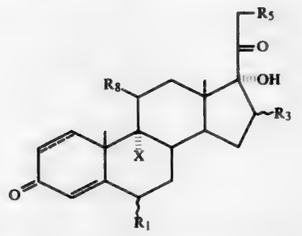
R_6 is hydrogen, one or two halogen atom substituents or OR_7, where R_7 is an acyl group of the formula R'CO in which R', which can be identical or different to R in the same molecule, is one of the following:

(i) an alkyl group of 1 to 16 carbon atoms, whether straight-chained, branched or cyclic;

(ii) an aralkyl group of 7 to 8 carbon atoms; or

(iii) a phenyl group;

which comprises esterifying a compound of the formula



(III)

wherein X, R_1R_3 and R_5 are as defined above, and

R_8 is trihaloacetate, halogen or oxo, or jointly forms an epoxide group with X;

at the 17-position only, or at the 17- and 21-positions when R_5 in formula III is hydroxyl, the said esterification being carried out with the anhydride of the acid containing the group desired to enter at the 17-position, or at the 17- and 21-positions,

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together with a pair of strong acids, and eliminating any 11-trihaloacetate substituent present, to form a compound of formula I.

4,655,972

CATALYTIC PREPARATION OF CARBONAMIDES

Teunis Elkelboom; John A. Rand, both of Gouda, and Pieter M. van Dijk, Schoonhoven, all of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Jul. 3, 1984, Ser. No. 627,616
Claims priority, application Netherlands, Jul. 4, 1983, 8302367; Jul. 18, 1983, 8302561
Int. Cl.⁴ C07C *103/133*
U.S. Cl. 260—404 10 Claims

1. A process for the preparation of carbonamides by conversion of carboxylic acids containing 10–44 carbon atoms with ammonia in the presence of a metallic compound as a catalyst, characterized in that the carboxylic acid is converted with ammonia in the presence of a solid catalyst consisting essentially of an insoluble hydrated dioxide of an element of Group IVa, IVb or Va of the Periodic Table which reduces the conversion time and which is removable from the reaction mixture by filtration.

4,655,973

CONJUGATED POLYPRENYLCARBOXYLIC ACIDS AND THEIR DERIVATIVES

Isao Yamatsu, Kawaguchi; Yuichi Inai, Tokyo; Shinya Abe, Nakamura; Takeshi Suzuki, Abiko; Yoshikazu Suzuki, Ichinomiya; Osamu Tagaya, Gifu; Kouichi Suzuki, Kakamigahara; Kouichi Abe, Fuchu, and Kouji Yamada, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed May 6, 1981, Ser. No. 260,869
Claims priority, application Japan, Dec. 24, 1980, 55-182115
Int. Cl.⁴ C07C *103/133, 103/58*
U.S. Cl. 260—404 6 Claims

1. A compound having the formula:



in which each of n and m is 0, 1 or 2, n+m is 1 or 2, A is



and R is a hydroxyl group, a lower alkoxy group of



wherein each of R_1 and R_2 represents a hydrogen atom, a lower alkyl group, or an aryl group; provided that R is



if A is



n is 1 and m is 0.

4,655,974

MANUFACTURE OF PHENYL ESTERS

Anil B. Goel, 373 Eastworth Ct., Worthington, Ohio 43085, and Robert A. Grimm, 1810 Ivanhoe Ct., Columbus, Ohio 43220

Continuation-in-part of Ser. No. 348,561, Feb. 2, 1982. This application Apr. 4, 1984, Ser. No. 717,713
The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.
Int. Cl.⁴ C07C *67/00*; C09F *5/08, 7/10*
U.S. Cl. 260—410 8 Claims

1. An oxidation process for the manufacture of phenyl esters consisting essentially of contacting a reaction mixture of benzene, a mono or poly-carboxylic acid having 6 or more carbon atoms and molecular oxygen in the liquid phase at a temperature in the range of 100° to 300° C. with a catalyst consisting of a palladium carboxylate and an antimony carboxylate wherein the benzene is added continuously to the reaction mixture and the water formed in the process is removed continuously from the reaction mixture as the phenyl ester is formed.

4,655,975

SOLID CHELATING POLY(CARBOXYLATE AND/OR SULFONATE)PEROXYHYDRATE BLEACHES

Karel A. J. Snoble, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

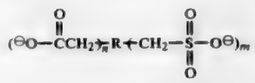
Filed Jan. 27, 1986, Ser. No. 822,992
Int. Cl.⁴ C01B *15/055*; C07C *59/305, 143/04*; D06L *3/02*
U.S. Cl. 260—503 20 Claims

1. A solid poly(carboxylate and/or sulfonate) peroxyhydrate comprising a poly(carboxylate and/or sulfonate) salt containing an organic anion and one or more cations, said organic anion having two or more carboxylate and/or sulfonate moieties joined by a moiety in which (a) each pair of carboxylate and/or sulfonate moieties are separated by a polyvalent radical containing one or more moieties independently selected from the group —O—, —S— and



and (b) each carboxylate and/or sulfonate moiety is bonded to a carbon atom which is bonded to at least one hydrogen atom such that a solid poly(carboxylate and/or sulfonate) peroxyhydrate can be formed.

5. The solid poly(carboxylate and/or sulfonate) peroxyhydrate of claim 1 in which the solid poly(carboxylate and/or sulfonate) peroxyhydrate is of the formula



in hich R is a n+m-valent hydrocarbon radical provided that each chain between carboxylate and/or sulfonate moieties is interrupted by one or more moieties independently selected from the group —O—, —S— and

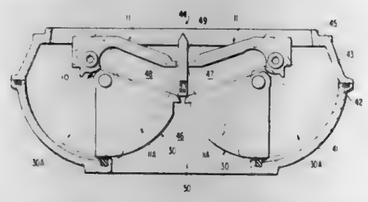


4,655,976

CARBURETOR COMPONENTS AND CARBURETOR

Horace J. Buttner, 1501 Palos Verdes Dr. North, Harbor City, Calif. 90710

Continuation of Ser. No. 17,667, Mar. 5, 1979, abandoned, which is a continuation of Ser. No. 865,078, Dec. 27, 1977, abandoned.
This application Apr. 27, 1981, Ser. No. 258,172
Int. Cl.⁴ F02M *9/08*
U.S. Cl. 261—44.2 56 Claims



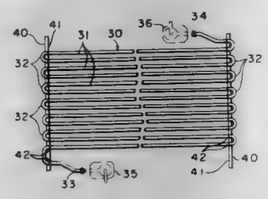
1. In a carburetor comprising a body defining an induction passage having upstream air valve means and downstream throttle means therein, the air valve means providing for delivery of fuel to the induction passage and having an air valve member normally biased towards a closed position but moveable between said closed position and an open position in response to varying air flow through the induction passage, the improvement which comprises: the throttle means being mounted on shaft means extending along at least one side of the induction passage, and including an upstream surface portion extending from the shaft means towards the opposite side of the induction passage, and being inclined downstream when viewed in its closed position; and orifices being formed in the surface of the air valve member for discharging fuel into the induction passage, the orifices communicating with connecting means for connecting the orifices to a source of fuel.

4,655,977

CLOSED TYPE HEAT EXCHANGER FOR AN EVAPORATION TYPE COOLING TOWER

Jujiro Komiya, Hatano; Yuji Kikuchi, and Katsuaki Suzuki, both of Fujisawa, all of Japan, assignors to Shinwa Sangyo Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1985, Ser. No. 785,401
Claims priority, application Japan, Jan. 29, 1985, 60-14791; Jan. 29, 1985, 60-14792
Int. Cl.⁴ B01F *3/04*
U.S. Cl. 261—153 6 Claims



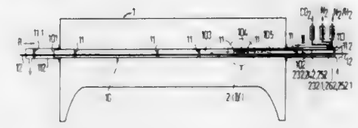
1. A closed type heat exchanger for an evaporation type cooling tower, said closed type heat exchanger comprising:
(a) a plurality of spaced, parallel linear tubes;
(b) a plurality of U-shaped bent tubes joining adjacent ones of said plurality of spaced, parallel linear tubes to form a heat exchanger coil unit substantially in the shape of a planar, rectangular prism having two opposing sides;
(c) two elongated spacers made of an electrically insulative material, each one of said two elongated spacers comprising an elongated planar wall and two parallel legs projecting outwardly of said coil unit from opposite side edges of said elongated planar wall to form a channel, said elongated planar wall having a plurality of apertures therethrough sized, shaped, and positioned to receive and to support a corresponding one of said plurality of spaced, parallel linear tubes, one of said two elongated spacers being located at each opposing side of said coil unit;
(d) two elongated spacer receiving members, each one of said two elongated spacer receiving members comprising an elongated planar wall, two parallel legs projecting inwardly of said coil unit from opposite side edges of said elongated planar wall, and two lips, one of said two lips projecting inwardly and toward the other one of said two lips from opposite side edges of said two parallel legs, each one of said spacer receiving members forming an enclosure sized, shaped, and positioned to receive and to support a corresponding one of said two elongated spacers; and
(e) two elongated supporting frame members, each one of said two elongated supporting frame members comprising a first elongated wall in planar contact with but overlapping on both sides said elongated planar wall of a corresponding one of said two elongated spacer receiving members, a second elongated wall projecting inwardly of said coil unit from one side edges of said first elongated planar wall, said second elongated wall being parallel to but spaced from one of said two parallel legs of said corresponding one of said two elongated spacer receiving members, and a lip projecting inwardly toward, and being at least approximately coplanar with, but not contacting, the lip on said one of said two parallel legs of said corresponding one of said two elongated spacer receiving members.

4,655,978

METHOD AND TUNNEL FURNACE FOR SINTERING BLANKS

Helmut Assmann, Dormitz; Wolfgang Dörr; Georg Maier, both of Herzogenaurach, and Martin Peehs, Bubenreuth, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

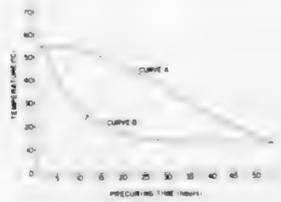
Filed Mar. 23, 1984, Ser. No. 592,869
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310789
Int. Cl.⁴ G21C *21/00*; F27B *14/00*; F27D *19/00*
U.S. Cl. 264—0.5 1 Claim



1. Method for sintering oxidic nuclear fuel blanks into oxidic nuclear fuel pellets, which comprises, moving the blanks in the form of a single layer column of abutting blanks through a muffle of a tunnel furnace wherein the blanks are sintered, pushing the blanks which are bare and without transport boats through the muffle on a stationary guiding device which goes through the muffle and protrudes therefrom at least on the input side, determining the length of the blanks within the muffle at a distance from the exit opening of the muffle and controlling at least one process parameter of the following process parameters: running speed, temperature profile and partial oxygen pressure in dependence on said length according to an empirically determined relationship between the process parameter and the length of the blanks, which is valid for blanks with defined input characteristics of at least one of the following: composition, density and dimension, such that the characteristic of the completely sintered fuel pellets lies in a predetermined reference value range.

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4,655,979
PROCESS FOR PRODUCTION OF CELLULAR CONCRETE
Seta Nakano, Tokyo, and Masaaki Ozawa, Niiza, both of Japan, assignors to Misawa Home Kabushiki Kaisha, Tokyo, Japan
Filed May 6, 1985, Ser. No. 730,745
Claims priority, application Japan, Nov. 2, 1984, 59-231831
Int. Cl.⁴ B28B *1/50, 5/00;* **C04B** *7/32, 22/10*
U.S. Cl. 264—42 **3 Claims**



1. In a process for producing cellular concrete which comprises mixing (A) an aqueous slurry of a cement compound comprising calcium silicate as a main hydraulic mineral component, (B) an aqueous slurry of a rapid-hardening cement compound comprising a calcium aluminate as a main hydraulic mineral component, (C) a setting retarder, and (D) an aqueous foamed liquid to obtain a foamed slurry, and (D) an aqueous foamed liquid to obtain a foamed slurry (E) of a rapid-hardening cement compound having an apparent specific gravity of 0.4 to 1.2, casting the resulting mixture in a mold, and subjecting the resulting molded article, after demolding, to high-temperature and high pressure hydrothermal curing to produce a cellular concrete article, the improvement which comprises conducting the process under the following conditions (1) through (4):

(1) the setting retarder (C) is at least one member selected from the group consisting of (a) an alkali metal citrate, (b) an alkali metal tartarate, (c) citric acid and an alkali metal carbonate or bicarbonate, and (d) tartaric acid and an alkali metal carbonate or bicarbonate;

(2) the amount of setting retarder is such that strength sufficient for demolding without deformation is developed in 20 to 120 minutes after pouring the foamed slurry (e) into the mold, and the product is then demolded;

(3) the resulting demolded article is subjected to precuring which comprises maintaining it in a warm wet state under atmospheric pressure under the conditions of temperature and period of time corresponding to the region surrounded by the curves A and B in the attached drawing, whereby at least a part of the initial strength dependent upon the hydration of the calcium aluminate from the slurry (B) in the molded article is replaced by the strength imparted by the hydration of the hydraulic cement compound from the slurry (A); and

(4) the molded article is then subjected to high-temperature and high-pressure hydrothermal curing at 150° to 190° C.

4,655,980
PROCESS OF MAKING COLLAGEN MEMBRANES FOR MEDICAL USE
George Chu, Sunnyvale, Calif., assignor to Collagen Corporation, Palo Alto, Calif.
Division of Ser. No. 685,350, Dec. 24, 1984, Pat. No. 4,600,533. This application Mar. 13, 1986, Ser. No. 839,793
Int. Cl.⁴ B29B *7/84*
U.S. Cl. 264—102 **9 Claims**

1. A process for preparing a collagen membranous material, which process comprises:

mechanically disrupting a collagen gel matrix,

centrifuging the disrupted matrix at about 13,000×g for about one half-hour,

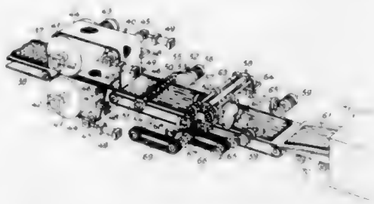
homogenizing the resulting precipitate into a paste,



casting the paste, and

drying the cast paste at a temperature less than 37° C.

4,655,981
METHOD OF PRODUCING A PLATE WITH A DECORATIVE PATTERN IN ITS SURFACE
Jens P. Nielsen, Storvorde, and Johan C. Gregersen, Bagsvaerd, both of Denmark, assignors to Dansk Eternit-Fabrik A/S, Aalborg, Denmark
Filed May 7, 1985, Ser. No. 731,678
Claims priority, application Denmark, May 9, 1984, 2309/84
Int. Cl.⁴ B28B *11/08, 3/22*
U.S. Cl. 264—162 **11 Claims**



1. A method of producing a decorative pattern on the surface of a layer of material in a soft, plastic condition, said method comprising whipping said layer surface by the free end portions of a plurality of flexible thread-like members which are slung against the surface in a non-uniform manner and without abrading the surface, so as to make random depressions therein, and subsequently hardening said layer of material.

4,655,982
METHOD FOR THE CONTINUOUS PRODUCTION OF PLATES OF FIBRE REINFORCED CONCRETE
Adolf Meyer, Leimen-Lingental; Helmut Steinegger, Leimen; Ulrich Pachow, Neubeuern, and Manfred Pfeifer, Zuzenhausen, all of Fed. Rep. of Germany, assignors to Heidelberger Zement AG, Heidelberg, Fed. Rep. of Germany
Filed Aug. 7, 1985, Ser. No. 763,183
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1984, 3431143
Int. Cl.⁴ B28B *1/10, 1/52, 5/02, 11/00*
U.S. Cl. 264—166 **18 Claims**

1. A method for the continuous production of a shaped body of a fibre-reinforced hydraulically setting mass, comprising the consecutive steps of

(a) continuously moving a substrate on a continuously moving belt,

(b) applying a continuously moving layer of a predetermined thickness of the hydraulically setting mass on the continuously moving substrate, the layer having a width defined between two lateral edges,

(c) cutting fibres into a multiplicity of fibre cuttings and distributing the fibre cuttings in a dosed quantity over the surface of the continuously moving layer of the hydraulically setting mass,

(d) working and pressing the distributed fibre cuttings into the mass with a tool extending over the entire width of the layer and simultaneously compressing the mass while the layer of the hydraulically setting mass continuously moves, and

(e) permitting the mass to set until the shaped body is produced.

4,655,983
PISTON RINGS AND THEIR MANUFACTURE
Jonathan D. Philby, Rugby, England, assignor to AE PLC, Warwickshire, England
Filed Aug. 12, 1985, Ser. No. 764,574
Claims priority, application United Kingdom, Aug. 13, 1984, 8420545
Int. Cl.⁴ B28B *3/06;* **B23P** *15/06*
U.S. Cl. 264—297.1 **3 Claims**





1. A method of manufacturing a piston ring from a plastics material, comprising:

moulding from said plastics material an upper generally annular part having no re-entrants and spaced ends defining therebetween a gap, said annular part defining an axis,

providing on said upper annular part in said moulding step a surface lying in a plane normal to said axis of said upper generally annular part,

providing on said upper generally annular part in said moulding step, an outer surface which is inclined relatively to said axis,

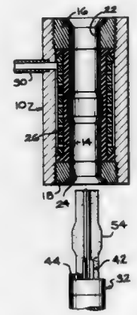
moulding from said plastics material a lower generally annular part having no re-entrants and spaced ends defining therebetween a gap, said lower annular part defining an axis,

providing on said lower annular part in said moulding step a surface lying in a plane normal to said axis of said lower generally annular part,

providing on said lower generally annular part in said moulding step, an outer surface which is inclined relatively to said axis,

placing said surface of said upper generally annular part and said surface of said lower generally annular part in contact with one another to form together a piston ring, said inclined outer surface of the upper generally annular part and said inclined outer surface of the lower generally annular part forming together a re-entrant.

4,655,984
METHOD OF AND APPARATUS FOR ISOSTATICALLY PRESSING A BODY FROM PARTICULATE MATERIAL
Jonathan W. Hinton, E. Amherst, N.Y.; Donald S. Pratt, Birmingham, and Edward J. Gehart, Washington, both of Mich., assignors to Champion Spark Plug Company, Toledo, Ohio
Filed Oct. 15, 1984, Ser. No. 660,669
Int. Cl.⁴ B28B *7/06*
U.S. Cl. 264—314 **8 Claims**



1. A method of forming a body having an interior bore and a notch in the exterior surface thereof radially spaced from said bore, said body being formed from particulate material by isostatically pressing the particulate material in a mold cavity, comprising the steps of:

(a) providing an elongated elastic mold with a cavity and first and second openings,

(b) providing a rigid mold closure and core holder member to which a resilient notch defining bar and a rigid core are attached,

(c) closing said first mold opening with said closure and holder member so that said bar is adjacent said mold and extends laterally and longitudinally partially along a wall of said mold cavity and said core extends longitudinally into said mold cavity in a radially spaced apart relationship with said bar,

(d) filling said mold cavity with particulate material,

(e) closing said second mold opening,

(f) applying isostatic force to said elastic mold to displace said mold and said bar radially inwardly, thereby compacting said particulate material into a body with a bore therein and with a notch in the exterior surface thereof and having the particulate material between the notch and the bore uniformly compacted with the remainder of the body, and

(g) removing said body from said mold cavity.

4,655,985
METHOD FOR MANUFACTURING DECORATIVE PANELS
Jean-Michel Rambaud, deceased, late of Saint-Jorioz, and by Jacques Autour, legal representative, Annecy, both of France, assignors to Patrick Rambaud, Boulogne, France
Continuation of PCT FR 83/00262, filed Dec. 27, 1983, published as WO 84/02480 Jul. 5, 1984
Filed Aug. 24, 1984, Ser. No. 644,461
Claims priority, application France, Dec. 28, 1982, 82 21947
Int. Cl.⁴ B29C *51/42;* **B05D** *3/02, 3/12, 5/00*
U.S. Cl. 264—320 **30 Claims**

1. A method for manufacturing a decorative panel which comprises:

dulling one face of a support of transparent material to enhance the adhesion of a lacquer thereon;

applying a layer of a primary transparent varnish which is conducive to good adhesion of said lacquer over the entire dulled face of the support;

applying over at least part of the surface of the transparent

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varnish a powder of metal and/or metal oxide particles in a fine suspension in a volatile liquid carrier;

applying at least one coat of said lacquer, which is not miscible with said liquid carrier, as an outer colored coating such that said lacquer thrusts back said liquid carrier at point locations to reach said layer of a primary transparent varnish and adhere thereto to thereby provide a decorative panel having both the particles and lacquer visible through the thickness of the transparent support.

4,655,986

BLOW MOLDED TUBING WITH SPECIAL HOLES AND METHOD OF MAKING SAME

Liggett A. Cothran, Clyde; Edward L. Morgan, Ashville, both of N.C.; Robert E. Stevens, Kettering, Ohio; Homer N. Holden, Sylva, and R. Neal Easley, Waynesville, both of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Dec. 3, 1984, Ser. No. 677,626
Int. Cl.⁴ F16L *11/11*
U.S. Cl. 264—508 **16 Claims**



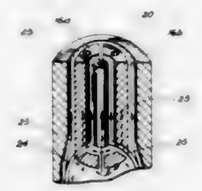
1. In a method of making irrigation or drainage perforated tubing utilizing a blow molding apparatus comprising the steps of blow molding said tubing and cutting said perforations therein, the improvement comprising during the blow molding step, molding hollow-walled protuberances on the outer surface of said tubing, severing said hollow-walled protuberances to form said perforations utilizing a rotating circular cutter and after said severing step, further processing said said tubing utilizing said perforations as keys to keep said tubing on track.

4,655,987

METHOD AND APPARATUS FOR EXTRUDING TUBULAR ARTICLES HAVING SEVERAL CONDUITS

Guillermo Zertuche, 161 Av. Mazatlan, Mexico D. F., Mexico

Filed Oct. 12, 1982, Ser. No. 433,713
Int. Cl.⁴ B29C *47/26*
U.S. Cl. 264—563 **4 Claims**



1. A method of extruding a continuous multi-conduit tubular shape having an outer wall and inner walls forming separate conduits, which comprises: feeding extrudable material in a fluid state under suitable pressure through a confining die into a nozzle comprising a core located within said confining die and having a plurality of interconnected recesses; supplying air or other gas under ambient pressure to inner conduits in said core; forcing said extrudable material into said recesses so as to shape thereby a continuous flow of material into a multi-conduit pipe, said die closing in on said nozzle core at a base end thereof so as to form a considerably reduced gap therebetween whereby the material is forced into said recesses, said material adopting the shape of said interconnecting recesses so as to define thereby the inner conduits of the extruded tubular shape and said confining die and core defining the outer wall terminal with said inner walls; and extruding said shaped material as a continuous multiconduit tubular shape with integral outer wall and inner walls.

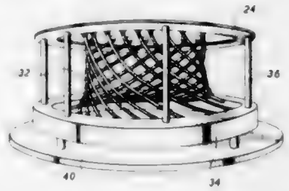
3. A nozzle comprising an outer confining die; a nozzle core which comprises separately made parts which can be assembled into final form and disassembled for cleaning purposes, whereby said nozzle core may be assembled together combining variously-shaped parts for extruding tubular shapes having any desired inner and outer shape and wall thickness, said nozzle core having inner recesses forming one variously-shaped chamber for receiving extrudable material in a fluid state, said recesses extending parallel to one another throughout the nozzle, said recesses defining inner walls of an integral tubular shape, and said nozzle core further having inner conduits for passage of air or other gas, said confining die closing in on said nozzle core at a base end thereof forming a considerably reduced gap therebetween so as to force the extrudable material into said recesses; and means for supplying air or other gas under ambient pressure to said inner conduits in said core.

4,655,988

METHOD AND AN APPARATUS FOR COOLING AND GUIDING THERMOPLASTIC SYNTHETIC RESIN FILMS

Jitsumi Shinmoto, Yokohama, and Takeo Taguchi, Tokyo, both of Japan, assignors to Tomi Machinery Manufacturing Co., Ltd., Yokohama, Japan

Filed Sep. 12, 1985, Ser. No. 775,223
Int. Cl.⁴ B29C *47/90*
U.S. Cl. 264—566 **3 Claims**



1. A method of cooling and guiding a continuous tubular thermoplastic synthetic resin film comprising the step of passing the film continuously through a cooling and guiding sleeve having air intake ports distributed throughout the interior of the sleeve, while applying suction to each of the intake ports to draw air into the ports, and balancing the amount of suction applied to the various intake ports to maintain the tubular film centered in the sleeve so as to prevent the tubular film from coming into contact with the sleeve.

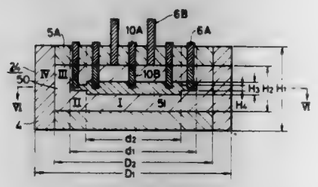
2. Apparatus for cooling and guiding a continuous tubular thermoplastic synthetic resin film, comprising a sleeve for cooling and guiding a tubular film passing through the sleeve, which sleeve has air intake ports distributed throughout the interior of the sleeve, means for applying suction to each of the intake ports to draw air into the ports, and valve means for balancing the amount of suction applied to the various intake ports to maintain the tubular film centered in the sleeve so as to prevent the tubular film from coming into contact with the sleeve.

4,655,989

FAST BREEDER

Katsuyuki Kawashima, Hitachi, and Kotaro Inoue, Tokai, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,293
Claims priority, application Japan, Jun. 2, 1981, 56-85180
Int. Cl.⁴ G21C *1/02*
U.S. Cl. 376—173 **23 Claims**



1. A fast breeder reactor comprising: a driver core region having a fissile substance enriched and allowing liquid metal acting as a coolant to flow therethrough; an external blanket region surrounding the outer periphery of said driver core region and containing a fertile substance; only one internal blanket region containing a fertile substance and disposed so as to extend horizontally within said driver core region and be surrounded by said driver core region; a control rod made of a neutron absorbing substance and adapted to be inserted downward into said driver core region and through said internal blanket region for adjusting the power of a reactor; a control rod made of a neutron absorbing substance and adapted to be inserted downward into said driver core region for stopping the reactor; a first control rod driver for operating the reactor power adjusting control rod; and a second control rod driver for operating the reactor stopping control rod,

wherein a macroscopic neutron absorbing cross-section of a lower portion of said reactor power adjusting control rod is made smaller than a macroscopic neutron absorbing cross-section of an upper portion of the same, the neutron absorbing substance in the upper and lower portions being the same neutron absorbing substance, and the upper and lower portions having different densities of the neutron absorbing substance, and wherein the macroscopic neutron absorbing cross-section of said reactor stopping control rod is made uniform in the axial direction.

4,655,990

FUEL ASSEMBLIES FOR NUCLEAR REACTORS

Joseph Leclercq, Saint Didier, France, assignor to Commissariat A L'Energie Atomique, Paris and Framatome, Courbevoi, both of, France

Filed Mar. 11, 1981, Ser. No. 242,454
Claims priority, application France, Mar. 26, 1980, 80 06695
Int. Cl.⁴ G21C *7/20*
U.S. Cl. 376—225 **2 Claims**

1. In a light water nuclear reactor incorporating guide tubes for the fuel assemblies of said nuclear reactors, said assemblies being immersed in operation in the cooling water of the core of such a reactor, the guide tubes being of the type made from zircaloy and fixed at their two ends respectively to an upper end part and a lower end part made from stainless steel or Inconel and which incorporate devices for braking the fall of the control rods which they house during the rapid shutdown of the reactor, the improvement wherein said braking devices comprise means for restricting the diameter of the guide tubes comprising for each guide tube a zircaloy inner sleeve spot welded to the said guide tube and whose internal diameter permits the passage, with a calibrated clearance, of the corresponding control rod, the sleeve being distributed over an area of the lower portion of each guide tube, representing approximately 1/7 of its height and associated with orifices in the actual guide tubes to produce the progressive hydraulic absorption of the end of the fall of the control rods and wherein each guide tube of the fuel assembly is fixed to the upper end



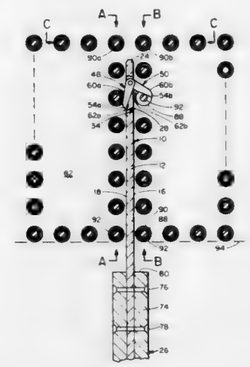
part by means of a conical end bore in which it is axially locked by means of a stainless steel plug fixed in the end part.

4,655,991

DETECTOR FOR FUEL ASSEMBLY

Edward S. Walker, Westchester, Ohio, assignor to General Electric Company, San Jose, Calif.

Filed Oct. 18, 1984, Ser. No. 662,148
Int. Cl.⁴ G21C *17/00*
U.S. Cl. 376—245 **7 Claims**



1. An apparatus for detecting the absence of a spring element from among a fuel bundle for a nuclear reactor comprising a plurality of dimensionally similar grouped fuel rod elements mutually spaced in a predetermined array;

said apparatus comprising:

a probe adapted to be guided along rows of said array;

said probe including at least one pawl capable of moving between a retracted and an extended position;

means for biasing said pawl toward said extended position, said biasing means adapted to urge said pawl into contact with said grouped fuel rod elements during probing along said rows; and

said probe being dimensional with respect to said spaced fuel rod elements to allow said pawl to assume said extended position only at a location where a spring element is missing;

whereby said probe is locked at said location against with-

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drawal from said array to indicate the absence of said missing spring element.

4,655,992

REMOTE TEMPERATURE MEASUREMENT

James A. McKnight; Iain D. Macleod, both of Altrincham, and Eric J. Burton, Chesterton, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 24, 1985, Ser. No. 694,231

Claims priority, application United Kingdom, Feb. 3, 1984, 8402920

Int. Cl.⁴ G21C *17/02*; G01K *11/24*

U.S. Cl. 376—247 **4 Claims**



1. A method of measuring coolant fluid temperatures, said fluid emerging from outlets of an array of generally parallel fuel/breeder sub-assembly wrappers forming a core of a nuclear reactor, said method comprising projecting a beam of pulsed ultrasound transversely across the core at glancing incidence to said outlets of the wrappers and scanning said beam in a direction perpendicular to the beam direction whereby the beam propagates across the wrapper outlets in the array and undergoes reflection at diametrically-opposed edge portions of each of a plurality of said outlets located in different zones of the array, detecting echo signals produced as a result of such reflections, recording the timing of the echo signals with respect to pulsing of the beam, analysing the echo signals to relate them with the edge portions of respective wrapper outlets, and translating the timings of the so related echo signals into a temperature value for the coolant fluid emerging from the respective wrapper outlet.

4,655,993

METHOD AND APPARATUS FOR LOCATING DEFECTIVE FUEL ROD CLADDING TUBES OF WATER-COOLED NUCLEAR REACTORS

Rainer Scharpenberg, Waldmichelbach, Fed. Rep. of Germany, assignor to Brown Boveri Reaktor GmbH, Mannheim, Fed. Rep. of Germany

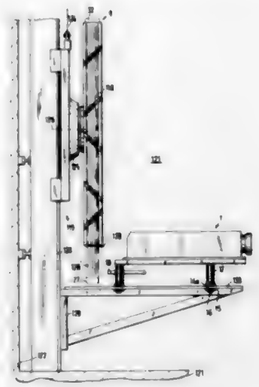
Filed Jul. 23, 1984, Ser. No. 633,408

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337084

Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—252 **16 Claims**

5. Apparatus for locating defective fuel rod cladding tubes of a water-cooled nuclear reactor within fuel rod bundles combined to form complete fuel assemblies, the fuel assemblies being disposed in fuel assembly storage racks in a water-filled fuel assembly storage pit having a given water level, and the fuel assemblies having bases, comprising a mooring, a plurality of pins connected to said mooring and matchable to the dimensions of the upper surface of a storage rack for securing said mooring, a centering receptacle with a variable centering dimension disposed on said mooring for contacting the base of the fuel assembly on two opposite sides thereof, a carriage movable on said mooring between two positions, a manipulator disposed on said carriage, said manipulator having a supporting base plate and a cover hood defining a water proof space therebetween below the given water level, driving elements disposed in said water proof space, means connected to said driving elements and passing through said base plate for converting linear motion of said driving elements into rotary motion, probes disposed directly in the water of the storage pit and connected to said motion converting means, and at least



one ultrasonic test head disposed on each of said probes for insertion between the cladding tubes.

4,655,994

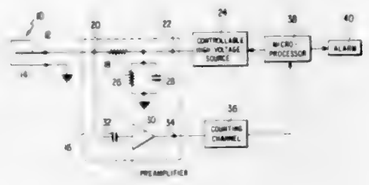
METHOD FOR DETERMINING THE OPERABILITY OF A SOURCE RANGE DETECTOR

Lesley Greenberg, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1983, Ser. No. 567,447

Int. Cl.⁴ G21C *17/00*

U.S. Cl. 376—254 **8 Claims**



1. A method of determining the operability of a source range detector which is only operable in the source range of a nuclear reactor and which is located adjacent such a nuclear reactor, said source range detector registering a count corresponding to the neutrons emitted by the reactor when said reactor is operating within said source range and a predetermined operating voltage is applied across the electrodes of said detector, said detector being subject to destruction when said reactor power level is above the source range and said predetermined voltage is applied across its electrodes, said method comprising the steps of:

(a) operating said reactor at a power level above said source range;

(b) applying a voltage across the electrodes of said detector which does not cause said detector to register a neutron count;

(c) gradually increasing the magnitude of the voltage across the electrodes of said detector until said detector registers a neutron count;

(d) reducing the voltage across the electrodes of said detector; and

(e) replacing said detector if a neutron count is not registered in step (c) at a voltage having a magnitude about said predetermined operating voltage magnitude.

4,655,995

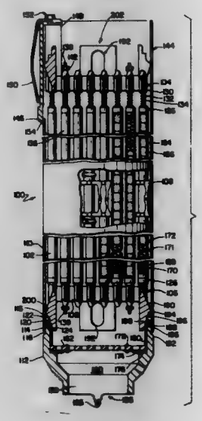
REVERSIBLE BWR FUEL ASSEMBLY AND METHOD OF USING SAME

Thomas R. Freeman, New Alexandria; John F. Wilson, Murrysville, and Ronald P. Knott, North Huntingdon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 11, 1984, Ser. No. 609,252

Int. Cl.⁴ G21C *19/00*

U.S. Cl. 376—267 **15 Claims**



1. A nuclear fuel assembly comprising:

(a) a flow channel;

(b) a lower nozzle assembly structurally attached to said flow channel to form therewith an external envelope;

(c) an invertible fuel bundle adapted to be inserted into said envelope, said fuel bundle comprising a plurality of elongated fuel rods held in a spaced lateral array between top and bottom tie plates, each of said top and bottom tie plates being substantially identical and having means for supporting said fuel bundle within said envelope in either of two mututally inverted vertical orientations whereby the orientation of the fuel bundle in a flow channel may be reversed during burn-up operation.

4,655,996

EAST NEUTRON REACTOR HAVING A STORAGE STRUCTURE INDEPENDENT OF THE CORE STRUCTURE

Robert Artaud, Aix-en-Provence; Michel Aubert, Manosque, and Charley Renaux, Jouques, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

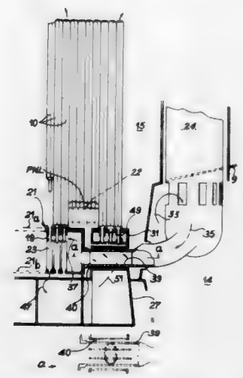
Filed Oct. 6, 1983, Ser. No. 539,393

Claims priority, application France, Oct. 7, 1982, 82 16808

Int. Cl.⁴ G21C *19/00*

U.S. Cl. 376—272 **7 Claims**

1. A fast neutron nuclear reactor, which comprises a vessel containing a liquid cooling metal, a core immersed in this metal, the vessel having a flooring on which rests a structure for the core, said core being constituted by a juxtapositioning of assemblies fixed into the structure, the liquid cooling metal circulating in an upwards manner in the core, the liquid metal being called "cold liquid metal" before its circulation in the core and "hot liquid metal" after it has passed into the latter, wherein it comprises a fuel element storage structure, which is independent of the core structure and is arranged concentrically with respect to the latter and rests on the flooring, the core structure and the independent storage structure each comprising upper and lower perforated plates and stays, each stay having an inner cylindrical through housing for receiving a foot of a fuel assembly, said stays being fitted in the plates, relative labyrinth upper and lower sealing means provided between the foot of said assembly and said stay, said relative sealing means letting leaks go through them, the plates of said core structure determining a volume which is communicated with a volume underneath said lower plate, so that the leaks



which take place through said lower labyrinth sealing means feed the volume underneath the lower plate with cold liquid metal and, then, the fuel assemblies of the independent core structure.

4,655,997

NUCLEAR REACTOR CONSTRUCTIONS

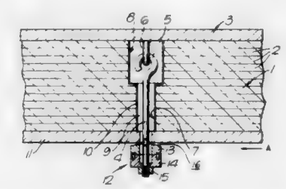
Garth J. Aspden, Bolton, England, assignor to National Nuclear Corporation Limited, London, England

Filed Nov. 25, 1983, Ser. No. 555,012

Claims priority, application United Kingdom, Dec. 3, 1982, 8234508

Int. Cl.⁴ G21C *9/00*

U.S. Cl. 376—289 **3 Claims**



1. In a nuclear reactor having a roof, depending hangers supported at upper ends thereof from said roof by hook and eye type connections to allow two dimensional movement of the hangers, and thermal insulation located under the roof and defining apertures through which the hangers extend to support said insulation, wherein the improvement comprises, each hanger comprising a rigid tie-rod having a said hook and eye type connection at its upper end, a support assembly at a lower end of each tie-rod, said assembly comprising a first element about the tie-rod and defining a first one dimensional ridge at the upper end of the first element, which first ridge engages the underside of the insulation to support the insulation and being pivotal on the insulation, a second element about the tie-rod and below the first element, a second one dimensional ridge at the upper end of the second element for allowing relative pivotal movement between the first element and the second element, means for aligning the first element and the second element such that the first ridge and the second ridge are aligned at substantially 90° with respect to each other, and

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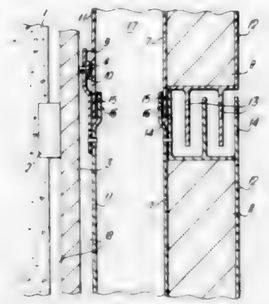
securing means for retaining the first element and the second element on the tie-rod.

4,655,998

LIQUID METAL COOLED NUCLEAR RECTOR CONSTRUCTIONS

Garth J. Aspden, Bolton, and Keith F. Allbeson, Altrincham, both of England, assignors to National Nuclear Corporation Limited, London, England

Filed Nov. 25, 1983, Ser. No. 555,011
Claims priority, application United Kingdom, Dec. 3, 1982, 8234494
Int. Cl.⁴ G21C *9/00*
U.S. Cl. 376—290 **8 Claims**



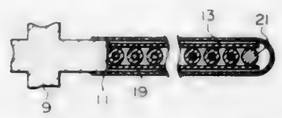
1. A liquid metal cooled nuclear reactor comprising a nuclear fuel assembly housed in a coolant-containing primary vessel which is housed within a concrete containment vault and having thermal insulation interposed between the vessel and the vault, the improvement comprising: said thermal insulation consisting of a plurality of adjoining units, metal structure secured to and projecting from the concrete of the vault and from which each thermal insulation unit is hung, each said unit including a pack of thermal insulating material, each unit also including a contained void co-extensive with said pack, said void being situated between said pack of thermal insulating material and the concrete, and means connecting the void of each unit to the void of at least one adjoining unit so as to form continuous ducting for a fluid coolant.

4,655,999

CONTROL ROD FOR NUCLEAR REACTOR

Hiromi Maruyama, Katsuta, and Tadahiro Ohnishi, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,727
Claims priority, application Japan, Jun. 22, 1983, 58-110775
Int. Cl.⁴ G21C *7/10*
U.S. Cl. 376—333 **16 Claims**



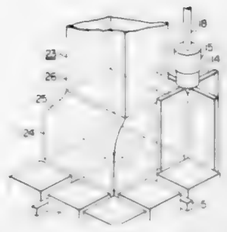
1. A control rod for a nuclear reactor comprising a central supporting member which extends in an axial direction of said control rod; sheaths which are arranged in the shape of a cross in a radial direction and which are mounted on said central supporting member; a plurality of neutron absorbing rods which are received in said each sheath and which are arrayed in a row in the radial direction; a lower supporting member which is disposed under said sheaths and which supports said neutron absorbing rods; at least one neutron absorbing hafnium sheet which is located between an inner wall of said each sheath and said row of neutron absorbing rods so as to absorb some of neutrons directed toward said neutron absorbing rods; and an upper supporting member which is mounted on said sheaths and said central supporting members.

4,656,000

NUCLEAR REACTOR

Mikio Sakurai, Mito; Shiro Nakamura, Hitachi; Takao Igarashi, Hitachi, and Koki Yamauchi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 344,222, Jan. 28, 1982, abandoned. This application Nov. 20, 1984, Ser. No. 673,365
Claims priority, application Japan, Feb. 2, 1981, 56-12941
Int. Cl.⁴ G21C *15/02*
U.S. Cl. 376—352 **17 Claims**



1. A nuclear reactor having a reactor vessel for being supplied with a coolant, a reactor core disposed in said reactor vessel, a plurality of adjacent fuel assemblies spaced from one another in said reactor core, a plurality of control rods arranged for being inserted into spaces between preselected adjacent fuel assemblies, and a plurality of control rod driving devices installed on said reactor vessel for driving said control rods, a two-phase coolant flow being discharged from said fuel assemblies, characterized by means for preventing the two-phase coolant flow from contacting and control rods, said preventing means including a plurality of adjacent tubular coolant passage members spaced from one another and being disposed above said fuel assemblies so as to partially surround each control rod in the partially inserted position, said tubular coolant passage members extending upwardly so that the two-phase coolant flow discharged from said fuel assemblies is introduced only into said tubular coolant passage members, said tubular coolant passage members being provided with a cross section which decreases in the upward direction, each tubular coolant passage member covering a predetermined number of adjacent fuel assemblies, said control rods being arranged for insertion into the spaces between the preselected adjacent fuel assemblies through the spaces formed between said adjacent tubular coolant passage members.

4,656,001

DEVICE FOR THE HOMOGENEOUS MIXING OF LIQUIDS FLOWING AT DIFFERENT TEMPERATURES

Gérard Roger, Hargeville, and Jean J. Marsault, Arnouit en Yvelines, both of France, assignors to Stein Industrie Societe Anonyme, Velizy Villacoublay, France

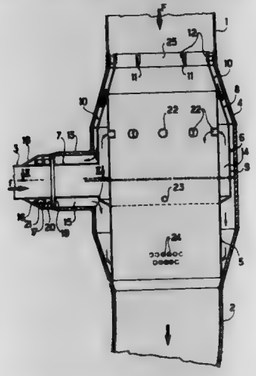
Continuation of Ser. No. 352,005, Feb. 24, 1982, abandoned. This application Apr. 5, 1985, Ser. No. 719,645
Claims priority, application France, Feb. 24, 1981, 81 03633
Int. Cl.⁴ G21C *15/12*; B01F *13/00*
U.S. Cl. 376—405 **11 Claims**

1. A device for the homogeneous mixing of liquids flowing at different temperatures, said device comprising:

(a) a member having a first inlet adapted to be connected to a first inlet tube through which liquid at a first temperature enters said member, a second inlet adapted to be connected to a second inlet tube through which liquid at a second temperature enters said member, and an outlet adapted to be connected to an outlet tube through which the liquid which entered said member through said first and second inlets exits said member;

(b) an envelope disposed in said member, the upstream end of said envelope being mounted in the first inlet of said member by means which permit relative movement between said envelope and said member in the direction of the liquid flow, said envelope being inwardly spaced from said member so as to define a first annular channel between said member and said envelope, said first annular channel being open to the flow of liquid at the upstream and downstream ends thereof;

(c) a pipe disposed in said envelope and said member, said pipe defining a first annular space between said envelope and said pipe and a second annular space between said member downstream of said envelope and said pipe, said second annular space being in fluid communication with said first annular channel, the exterior surface of said pipe being sealingly engaged to the inner surface of said envelope downstream of the upstream end of said envelope, being sealingly engaged to the inner surface of said envelope at the downstream end of said envelope, and being sealingly engaged to the inner surface of said member



adjacent the outlet of said member, said pipe being open to the flow of liquid at the upstream and downstream ends thereof;

(d) a connecting tube sealingly connected to said envelope and to said member adjacent to the second inlet of said member, said connecting tube providing a path of fluid communication from the second inlet of said member to said first annular space, said connecting tube being inwardly spaced from said member so as to define a second annular channel between said member and said connecting tube, said second annular channel being in fluid communication with said first annular channel and with said second annular space;

(e) a first plurality of openings in said pipe adjacent to its upstream end and upstream of the confluence of said connecting tube with said first annular space, said first plurality of openings being spaced around the periphery of said pipe and providing paths of fluid communication between said first annular space and the interior of said pipe;

(f) a second plurality of openings in said pipe adjacent its downstream end and spaced around the periphery thereof providing paths of fluid communication between said second annular space and the interior of said pipe; and

(g) baffle means disposed in said second annular channel to create a static zone in said second annular channel for the liquid which enters it from said first annular channel;

(h) said member, said envelope, and said pipe being sized so that the major part of the flow of the liquid from the first inlet tube passes through said pipe and a minor part of the liquid from the first inlet tube flows through said first annular channel, into said second annular channel and said second annular space, and from said second annular space back into said pipe through said second plurality of openings in said pipe,

whereby:

(i) the major part of the liquid at the first temperature flows through said pipe and exits said member through the outlet of said member;

(j) the liquid at the second temperature flows through said connecting tube into said first annular space and from there flows upstream along the exterior surface of said pipe and through said first plurality of openings into the inside of said pipe; and

(k) a minor part of the liquid at the first temperature flows through said first annular channel, from which some of it flows into the static zone in said second annular channel and some of it flows into said second annular space, and the liquid in said second annular space flows through said second plurality of openings into the inside of said pipe and exits said member through the outlet of said member.

11. A device as recited in claim 1 wherein:

(a) said liquids are liquid sodium metal and

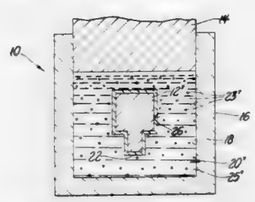
(b) the device is adapted for use in a nuclear power plant.

4,656,002

SELF-SEALING FLUID DIE

James R. Lizenby; Kevin J. Lizenby, both of Traverse City, and L. James Barnard, Williamsburg, all of Mich., assignors to ROC-Tec, Inc., Traverse City, Mich.

Filed Oct. 3, 1985, Ser. No. 783,555
Int. Cl.⁴ B22F *1/00*
U.S. Cl. 419—10 **15 Claims**



1. An assembly (10) for consolidating a preformed body (12) from a powder material of metallic and nonmetallic compositions and combinations thereof to form a densified compact (12') of a predetermined density, said assembly (10) comprising; an outer container mass (20) capable of fluidity in response to predetermined forces and temperatures and which is porous to the flow of gases therethrough at lesser temperatures and forces than said predetermined forces and temperatures; and characterized by an internal medium (22) encapsulating the preformed body (12) within said container mass (20) for melting at said lesser temperatures to form a liquid barrier to gas flow therethrough.

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4,656,003

COPPER ALLOY AND PRODUCTION OF THE SAME

Motohisa Miyafuji; Yasuhiro Nakashima, both of Yamaguchi; Satoru Katayama, Fukuoka; Takashi Matsui, Yamaguchi; Hidekazu Harada, Funabashi, and Youji Yaki, Yamaguchi, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 11, 1985, Ser. No. 786,482
Claims priority, application Japan, Oct. 20, 1984, 59-221015; Nov. 24, 1984, 59-248400
Int. Cl.[4] C22C *9/06*
U.S. Cl. 420—473 4 Claims

1. A copper alloy which consists essentially of 1.0 to 3.5 wt% of Ni, 0.2 to 0.9 wt% of Si, 0.02 to 1.0 wt% of Mn, 0.1 to 5.0 wt% of Zn, 0.1 to 2.0 wt% of Sn, 0.001 to 0.01 wt% of Mg, and 0.001 to 0.01 wt% of at least one member selected from the group consisting of Cr, Ti, and Zr, with the remainder being substantially Cu.

4,656,004

MEDICAL HEAT EXCHANGE

Rodger L. Stewart, Lafayette, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Filed May 17, 1985, Ser. No. 735,332
Int. Cl.[4] A61M *1/14, 1/34;* F28D *7/04;* F28F *1/10*
U.S. Cl. 422—46 4 Claims



1. A heat exchanger comprising
a housing having a continuous outer housing wall,
a coaxial continuous inner housing wall having the same shape as said outer housing wall and spaced inward of said outer housing wall to define a constant width axial flowpath chamber therebetween, and
a conduit wrapped around said inner housing wall in said flowpath chamber between said outer housing wall and said inner housing wall,
said conduit having a cross sectional configuration including a length smaller in a first direction transverse to said inner and outer walls than in a second longitudinal direction relative to said inner and outer walls,
said conduit including corrugations extending generally in said axial flowpath direction.

4,656,005

PROTECTIVE PRODUCTS FOR TREATING FRESH CONCRETE OR MORTAR TO PREVENT EXCESSIVE EVAPORATION, PROCESS FOR PREPARING SUCH PRODUCTS, AND TREATED FRESH CONCRETE OR MORTAR

René Arpin, Lyons, France, assignor to Rhone-Poulenc Specialities Chimiques, France

Continuation of Ser. No. 472,221, Mar. 4, 1983, abandoned. This application Nov. 15, 1985, Ser. No. 798,160
Claims priority, application France, Mar. 9, 1982, 82 03899
Int. Cl.[4] B01J *11/18;* A23L *1/00*
U.S. Cl. 422—43 23 Claims

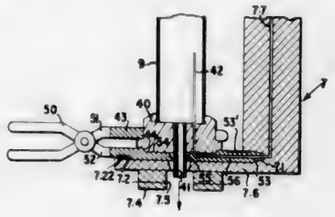
1. A protective product for fresh concrete or mortar consisting essentially of a mixture of:
(a) an aqueous dispersion A of a film-forming synthetic polymer having little or no permeability to water vapor and being compatible with fresh concrete or mortar; with
(b) at least one coagulant for said film-forming synthetic polymer when in the presence of calcium ions, said coagulant being insoluble in water in the presence of calcium ions and being introduced in the form of one or more of (1) an aqueous or aqueous-alcoholic solution, or (2) an admixture with an aqueous wax emulsion, or (3) an admixture with an aqueous dispersion B of a synthetic polymer having little or no permeability to water vapor, said aqueous dispersion B being prepared by polymerization in the presence of said coagulant, said mixture forming a peelable film after application to fresh concrete or mortar.

4,656,006

APPARATUS FOR DISTRIBUTION AND PREPARATION OF SAMPLES FROM PRIMARY VESSELS

Gerd Assmann, and Horst-Dietrich Helb, both of Münster/Westfalen, Fed. Rep. of Germany, assignors to Boehringer Ingelheim Zentrale GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 518,075, Jul. 28, 1985, abandoned, which is a division of Ser. No. 300,929, Sep. 10, 1981, Pat. No. 4,413,060. This application Dec. 11, 1985, Ser. No. 809,835
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035340
Int. Cl.[4] G01N *35/04*
U.S. Cl. 422—63 7 Claims



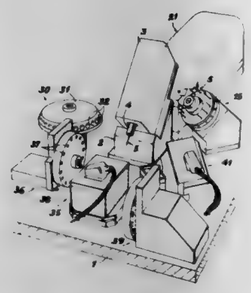
1. An apparatus for sampling and distributing liquid material which comprises:
a plurality of primary vessels containing liquid sample material, each said primary vessel having a vertical longitudinal axis and an open upper end;
support means for holding said primary vessels such that said open ends are upwardly positioned;
a closure means engaging each said open end, each closure means comprising a pourer means and an air flow aperture means;
carrier means having vertically arranged clamping means to fixedly engage the closure means of one of said primary vessels, said clamping means having separate passage means for respectively communicating with said pourer means and said air flow aperture means of said closure means, said carrier means further having means for rotating said primary vessel 108° about an axis that is perpendicular to the longitudinal axis of said primary vessel so that said open end points downwardly;
diluter means to convey air to said primary vessel engaged by said clamping means, said diluter means being in fluid communication with said primary vessel through one of said separate passage means in said clamping means in response to a control means, the diluter means being adapted to evacuate air from said primary vessel until surface tension of liquid sample material therein prevents further outflow;
means for holding and containing a plurality of secondary vessels into which predetermined quantities of liquid sample material are to be deposited, said carrier means further having means for positioning one of said primary vessels above a respective secondary vessel; and
means for transferring liquid sample material from said primary vessel to said secondary vessel through said pourer means.

4,656,007

PROGRAMMABLE AUTOMATIC MEANS FOR THE DEPOSITION IN A PRECISE POSITION OF A MINUTE, PRECISE QUANTITY OF LIQUID ON AN ANALYTICAL SUPPORT

Marc Douchy, Gif sur Yvette; Pierre Lohez, Paris; Jean-Guy Malecot, Longjumeau, and Gilbert Retali, Colombes, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 24, 1985, Ser. No. 779,578
Claims priority, application France, Oct. 1, 1984, 84 15048
Int. Cl.[4] G01N *35/04*
U.S. Cl. 422—64 3 Claims



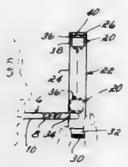
1. A programmable automatic means for carrying out the deposition of a precise position on an analytical support of a minute, precise quantity of liquid, wherein it comprises in combination:
a main support provided with displacement means enabling said support to successively occupy at least five positions,
a piston syringe having a piston, is mounted on the main support and provided with means for displacing said syringe relative to said main support, said piston syringe having means for gripping one end of a hollow solution sampling needle and means for displacing the piston
a distributor for holding a plurality of hollow sampling needles provided with means for successively presenting each needle at a first location corresponding to a first position of the syringe-holder support, said hollow needle distributor having a plurality of hollow needles, each hollows needle having a length slightly exceeding a predetermined length,
a cutting device placed in a second position corresponding to a second position of the syringe-holder support for cutting a needle held by said syringe end gripping means to a predetermined length when the syringe holder support is placed in its second position,
a solution sample distributor having several recesses provided with means for successively presenting each recess at a third location corresponding to a third position of the syringe-holder support, each recess serving to receive a solution sample prior to a complete operating cycle of the automatic means,
an analytical support holder provided with displacement means enabling it to occupy three positions, whereof a second position corresponds to a fourth position of the syringe-holder support,
a means for gripping the analytical supports and a means for extracting the analytical supports,
a new analytical support distributor having a plurality of recesses, provided with means for successively presenting each analytical support at a location corresponding to a first position of said analytical support holder, each recess serving to receive a new analytical support before a complete operating cycle of the automatic means,
a receiver for analytical supports following sample deposition having several recesses, provided with means for successively presenting each recess at a location corresponding to a third position of said analytical support holder, each recess of the receiver being left free prior to a complete operating cycle of the automatic means,
a used needle extractor, placed at a location corresponding to a fifth position of the syringe-holder support, and
control means for actuating and controlling said mainsupport, piston syringe and hollow needle gripper, said hollow needle distributor, said cutting device, said sample distributor, said analytical support holder, gripper, distributor and receiver, and said needle extractor whereby samples are accurately transferred for analysis.

4,656,008

ALCOHOL BREATH TESTING DEVICE

Jesse F. Gump, Maineville, Ohio, assignor to Alcolert Inc., Ohio

Continuation-in-part of Ser. No. 505,772, Jun. 20, 1983, abandoned. This application Oct. 5, 1984, Ser. No. 658,118
Int. Cl.[4] G01N *21/78*
U.S. Cl. 422—86 3 Claims



1. A device for detecting the concentration of alcohol in a human breath sample, comprising:
an air chamber having a bottom, comprising a removable bottom member, and a top and at least one sidewall therebetween, said air chamber having a first aperture located in said at least one sidewall near said bottom and a second aperture located in said top whereby breath air may pass through the air chamber;
a conduit removably stored within said air chamber and removable through said air chamber bottom, said conduit having a first forward end and a second rearward end, said rearward end removably, operably connectable to said air chamber being receivable in said first aperture, said forward end receivable in a human's mouth to permit breath air to be coupled directly from the human through said conduit and into said air chamber when said conduit is operably connected to said air chamber;
a chemical material positioned within said conduit which, as breath air passes therethrough, changes color linearly

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from one end of the material spaced forwardly in the conduit towards an end of the material spaced rearwardly in the conduit as the concentration of alcohol passed therethrough increases;

indicia on said conduit which cooperate with said chemical material to indicate, after use, the concentration of alcohol in said breath air;

said air chamber including therein an air float movable, by breath air coupled into said air chamber, between a first position spaced near said bottom and a second, operative position whereat a portion of the air float contacts said top of said air chamber, said air float, said top of said air chamber, said second aperture and said at least one side-wall cooperating, when said air float is in said operative position, to define means for limiting velocity of said breath air to a predetermined velocity when the human blows breath air through said conduit with sufficient exertion to otherwise exceed said predetermined velocity.

4,656,009

REACTION SUPPORT INCORPORATING MULTIPLE RECIPIENTS FOR TESTING LIQUID DOSES

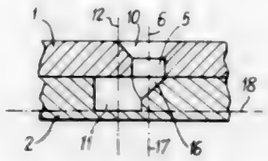
Alain C. A. Bessjaas, Bobigny, France, assignor to Le Materiel Biomedical, Paris, France

Continuation of Ser. No. 402,354, Jul. 27, 1982, abandoned. This application Sep. 27, 1984, Ser. No. 655,352

Claims priority, application France, Aug. 5, 1981, 81 15163

Int. Cl.⁴ G01N *21/07*

U.S. Cl. 422—102 **4 Claims**



1. A reaction support rotor comprising first and second transparent discs, said first transparent disc having a plurality of radial arrays of through-holes located therein and being fixedly superimposed on said second transparent disc, said second transparent disc having a plurality of radial arrays of bores therein, which bores partially extend into said second transparent disc to define enclosed compartments therein, each radial array of bores in said second transparent disc being disposed below and in alignment with a respective radial array of through-holes in said first transparent disc such that in each radial array of bores and its respective radial array of through-holes, each bore has its own corresponding through-hole and is positioned radially outward therefrom and each bore has only one through-hole corresponding thereto, said second transparent disc further comprising communication means connecting each bore with its corresponding through-hole, said communication means comprising means defining inclined passageways.

4,656,010

DEVICE FOR PRODUCING OZONE

Ortwin Leitzke, Kaartz, and Ewald Wolf, Karben, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

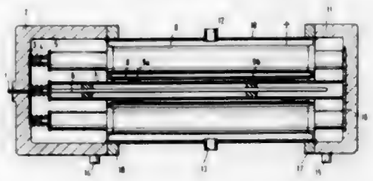
Filed Apr. 26, 1985, Ser. No. 727,548

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3422909

Int. Cl.⁴ B01J *19/08*

U.S. Cl. 422—186.18 **9 Claims**

1. In a device for producing ozone from oxygen or oxygen containing gas by means of static electrical discharge in a space through which the gas flows, which space is essentially formed by a tubular outer electrode and a voltage carrying inner electrode surrounded by the outer electrode whereby a dielectric which separates the electrodes is installed in this space, the improvement being in that said inner electrode consists of a



plurality of metal wires, and that ratio of the diameter of said outer electrode to the diameter of said inner electrode being greater than 2.

4,656,011

PROCESS OF TREATING NUCLEAR FUEL

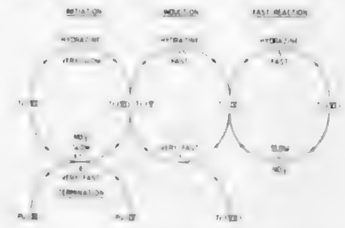
John Garraway, Cockermouth, and Peter D. Wilson, Seascale, both of England, assignors to British Nuclear Fuel plc, Cheshire, England

Filed Feb. 5, 1985, Ser. No. 698,415

Claims priority, application United Kingdom, Feb. 13, 1984, 8403724

Int. Cl.⁴ B01D *11/04*; C01G *56/00*; G21F *9/06*

U.S. Cl. 423—10 **7 Claims**



1. In a process of treating irradiated nuclear fuel to effect separation of uranium, plutonium, other higher actinides, and fission products, in which after treatment with nitric acid and solvent extraction with tributyl phosphate in odourless kerosene the solvent phase is backwashed and tetravalent and hexavelent plutonium are reduced, in the presence of a reductant, to the trivalent form which after a second solvent extraction step remains in the aqueous raffinate whilst uranium goes into the solvent phase, the improvement wherein the reductant is selected from the group consisting of hydrazine, and hydrazine plus tetravalent uranium nitrate, and wherein the reduction step is is catalysed by a catalyst selected from the group consisting of technetium in the tetravalent form, and technetium in the tetravalent form plus technetium in at least one or more higher valency states.

4,656,012

PROCESS FOR THE RECOVERY OF URANIUM FROM PHOSPHORIC ACID SOLUTIONS

El aïd Jdid, Vaudoeuvre-les-Nancy; Pierre Blazy, Nancy; Jacques Bessiere, Goudreville; Jean C. Tracez, Sceaux, and Philippe Haicour, Paris, all of France, assignors to Ceca S.A., Villacoublay, France

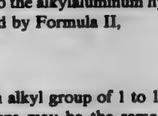
Continuation of Ser. No. 546,853, Oct. 31, 1983, abandoned. This application Jun. 5, 1985, Ser. No. 741,214

Claims priority, application France, Oct. 29, 1982, 82 18142

Int. Cl.⁴ C01G *43/00*

U.S. Cl. 423—11 **13 Claims**

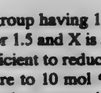
1. A non-solvent extraction process for the recovery of uranium from a concentrated phosphoric acid solution comprising complexing the uranium with a complexing amount of a polyphosphonic acid complexing agent of the formula:



(I)

wherein:

(A_n) is an n-valent hydrocarbon group that can contain heteroatoms such as N, O, P,



is a phosphonic acid group present in sufficient numbers to satisfy the n valences of the A_n moiety,

Z is H or an aliphatic group of from 1 to 24 carbon atoms,

n is an integer greater than 1, and separating the complex formed directly from the concentrated acid solution by ionic flotation, whereby gaseous bubbles are passed through said acid solution and a foam containing said complex collects on the surface thereof.

4,656,013

PROCESS FOR PRODUCING GERMANES

Athuhiko Hisi; Kazuo Wakimura, and Masao Tanaka, all of Osaka, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Japan

Filed Oct. 11, 1985, Ser. No. 786,568

Int. Cl.⁴ C01G *17/00*

U.S. Cl. 423—99 **1 Claim**

1. In a process for the production of germanes by reduction of germanium halide with alkylaluminum hydride, the improvement which comprises using as said alkylaluminum hydride a mixture comprising an alkylaluminum hydride represented by Formula I.

$$R_2^1AlH \qquad I$$

wherein R^1 is an alkyl group of 1 to 10 carbon atoms and the two alkyl groups may be the same or different and 20 to 300 mol % relative to the alkylaluminum hydride of a trialkylaluminum represented by Formula II,

$$R_3^2Al \qquad II$$

wherein R^2 is an alkyl group of 1 to 10 carbon atoms and the three alkyl groups may be the same or different, to which mixture an amount of alkylaluminum halide represented by the general Formula III,

$$AlR_n^3X_{3-n} \qquad III$$

wherein R^3 is an alkyl group having 1 to 10 carbon atoms, n is a number equal to 0, 1 or 1.5 and X is a halogen atom has been added in an amount sufficient to reduce the content of trialkylaluminum in said mixture to 10 mol % or less relative to the alkylaluminum hydride by converting trialkylaluminum to dialkylaluminum monohalide, said mixture containing the dialkylaluminum monohalide being used for the reduction reaction without separating the dialkylaluminum monohalide from said mixture.

4,656,014

PROCESS FOR REDUCING THE NO_x CONTENT IN WASTE GASES

Friedrich Wolstein, Essen, Fed. Rep. of Germany, assignor to Uhde GmbH, Dortmund, Fed. Rep. of Germany

PCT No. PCT/DE84/00142, § 371 Date Feb. 20, 1985, § 102(e) Date Feb. 20, 1985, PCT Pub. No. WO85/00300, PCT Pub. Date Jan. 31, 1985

PCT Filed Jul. 11, 1984, Ser. No. 711,467

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1983, 3325041; Feb. 17, 1984, 3405650

Int. Cl.⁴ C01B *21/00*; B01J *8/00*

U.S. Cl. 423—235 **6 Claims**

1. In a process for reducing the NO_x content of waste gases from power plants operated with fossil fuel by means of a catalytic reduction of the NO_x gases using a washable catalyst, wherein the reduction is carried out using a reducing effective amount of unsaturated hydrocarbons at a temperature equal to or less than 180° C., the improvement which comprises obtaining all of the unsaturated hydrocarbons used for the reduction directly from the waste gas stream.

4,656,015

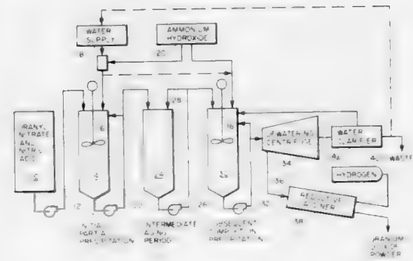
CONTINUOUS PROCESS FOR THE PRODUCTION OF POWDERED URANIUM DIOXIDE FROM URANYL NITRATE

Larry A. Divins, and Harold L. Runion, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Sep. 17, 1984, Ser. No. 651,585

Int. Cl.⁴ C01G *43/025*

U.S. Cl. 423—261 **28 Claims**



1. A method of producing uranium dioxide powder for the fabrication of nuclear fuel from acidic solutions containing uranyl nitrate, comprising the sequence of steps of:

(a) continuously reacting an acidic aqueous solution of uranyl nitrate with ammonium hydroxide added in less than stoichiometric amount for complete uranium precipitation, neutralizing any free acid and precipitating a portion of the uranium content of the solution as ammonium uranate solids;

(b) continuously aging the product resulting from reacting the uranyl nitrate of the solution with less than a stoichiometric amount of ammonium hydroxide, including the precipitated ammonium uranate solids while maintaining said solids substantially suspended in the medium of the aqueous solution;

(c) thereafter continuously reacting the aged product comprising uranyl nitrate and precipitated ammonium uranate with additional added ammonium hydroxide in amount at least sufficient to complete the preciptitation of the uranium of the solution as ammonium uranate solids;

(d) dewatering said precipitated ammonium uranate solids; and

(e) calcining said dewatered ammonium uranate solids in a reducing atmosphere and thereby converting said ammonium uranate to uranium dioxide powder.

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4,656,016

SILICA-BASED SYNTHETIC MATERIALS CONTAINING BORON IN THE CRYSTAL LATTICE AND PROCESSES FOR THEIR PREPARATION

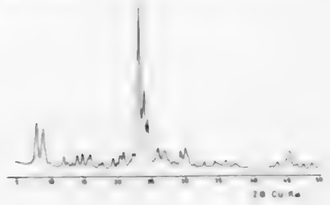
Marco Taramasso; Giovanni Manara; Vittorio Fattore, and Bruno Notari, all of San Donato Milanese, Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 535,361, Sep. 23, 1983, abandoned, which is a continuation of Ser. No. 258,716, Apr. 27, 1981, abandoned, which is a continuation of Ser. No. 46,923, Jun. 8, 1979, abandoned. This application Oct. 18, 1984, Ser. No. 662,523

Claims priority, application Italy, Jun. 22, 1978, 22844 A/78; May 14, 1979, 22638 A/79

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—277 **7 Claims**



1. A synthetic, silica-based crystalline material consisting essentially of crystalline silica modified through the introduction of boron into the crystalline latice as a replacement element for silicon said material being represented by the general formula:

$$aR_2O{\cdot}bC_{2/n}O{\cdot}B_2O_3XSiO_2$$

wherein R is tetramethylammonium; C is a cation selected from the group consisting of H^+ and NH_4^+ or metal having a valence equal to n; a is 0–1; b is 0–1; x is a number from 8–30 said silica based crystalline material having the following X-ray diffraction lines and relative intensity;

d (A)	Relative Intensity
8.82	M
8.25	S
6.52	M
6.12	M
5.61	MW
5.32	W
4.42	MW
4.27	MW
4.09	MW
4.02	MW
3.92	MW
3.83	M
3.47	W
3.42	W
3.27	MW
2.88	W
2.74	W
2.47	W.

2. A synthetic, silica based crystalline material consisting essentially of crystalline silica modified through the introduction of boron into the crystalline latice as a replacement element for silicon said material being represented by the general formula:

$$aR_2O{\cdot}bC_{2/n}O{\cdot}B_2O_3XSiO_2$$

wherein R is tetraethylammonium; C is a cation selected from the group consisting of H^+ and $NH4^+$ or a metal having a valence equal to n; a is 0–1; b is 0–1; x is a number from 5–50 having the following x-diffraction lines and relative intensity;

d(A)	Relative Intensity
11.23	S
6.52	W
5.98	W
4.08	MW
3.90	S
3.46	MW
3.26	MW
3.05	W
2.98	MW
2.65	W
2.05	W.

3. A method for preparing a synthetic, silica-based boron modified material selected from the group consisting of crystalline silica modified through the introduction of boron into the crystalline latice as a replacement element for silicon said material being represented by the general formula:

$$aR_2O{\cdot}bC_{2/n}O{\cdot}B_2O_3XSiO_2$$

wherein R is tetramethylammonium; C is a cation selected from the group consisting of H^+ and $NH4^+$ or a metal having a valence equal to n; a is 0–1; b is 0–1; x is a number from 8–30 said silica based crystalline material having the following x-ray diffraction lines and relative intensity;

d (A)	Relative Intensity
8.82	M
8.25	S
6.52	M
6.12	M
5.61	MW
5.32	W
4.42	MW
4.27	MW
4.09	MW
4.02	MW
3.92	MW
3.83	M
3.47	W
3.42	W
3.27	MW
2.88	W
2.74	W
2.47	W.

or by the general formula:

$$aR_2O{\cdot}bC_{2/n}O{\cdot}B_2O_3XSiO_2$$

wherein R is tetraethylammonium; C is a cation selected from the group consisting of H+ and NH4+ or a metal having a valence equal to n; a is 0–1; b is 0–1; x is a number from 5–50 having the following x-diffraction lines and relative intensity;

d(A)	Relative Intensity
11.23	S
6.52	W
5.98	W
4.08	MW
3.90	S
3.46	MW
3.26	MW
3.05	W
2.98	MW
2.65	W
2.05	W.

said method characterized in that it comprises the steps of

reacting, in an aqueous, alcoholic, or hydroalcoholic solution, a derivative of silicon and a derivative of a modifying element selected from the group consisting of the oxides, hydroxides, alkoxy derivatives, salts, and halides of boron with a substance having a clathrating effect that is selected from the group consisting of tetramethylammonium hydroxide and tetraethylammonium, hydroxide, adding one or more mineralizing agents selected from the group consisting of the alkaline metal hydroxides and halides in order to encourage crystalization and crystalizing the mixture in an enclosure for a period of from a few hours to a number of days at a temperature of 145°–150°, cooling the mixture and, upon collection on a filter and thereafter washing, drying and firing in air the resultant composition at a temperature between 300° C. and 700° for a time of from 2 hours to 24 hours, washing with distilled water brought to a boil and containing dissolved therein an ammonium salt, and finally firing again at the same temperature and for the same time specified above.

4,656,017

PYRIDINE PHOSPHONITRILIC HALIDE TRIMER PROCESS

Harry R. Allcock, State College, Pa.; S. James Stinnett, Baton Rouge, La.; Joseph B. Tedder, Jr., Baton Rouge, La., and J. Robert Adams, Jr., Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jul. 19, 1985, Ser. No. 756,799

Int. Cl.⁴ C01B *25/10*

U.S. Cl. 423—300 **20 Claims**

17. A process for making cyclic phosphonitrilic halide, said process comprising

(A) forming a mixture of ammonium halide and phosphorus pentahalide in an inert liquid reaction medium,

(B) mixing the composition of step (A) with at least 0.75 moles per mole of phosphorus pentahalide of a nitrogenous base selected from pyridine, substituted pyridines and mixtures thereof at a temeperature such that said nitrgoenuous base will react with said phosphorus pentahalide to form a complex but below the temperature at which said complex will react with said ammonium halide, and

(C) heating the complex of step (B) to a higher temperature which will initiate the reaction of said complex with said ammonium halide to form mainly cyclic phosphonitrilic halide trimer.

4,656,018

CYCLIC PHOSPHONITRILIC HALIDE PROCESS

Gerald M. Sulzer; Joseph B. Tedder, Jr.; J. Robert Adams, Jr., and Matthew K. Juneau, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 18, 1985, Ser. No. 798,910

Int. Cl.⁴ C01B *25/10*

U.S. Cl. 423—300 **42 Claims**

31. In a process for making cyclic phosphonitrilic halide containing mainly trimer by reacting ammonium halide and phosphorus pentahalide, the improvement of conducting said reacting from the start in a reaction medium comprising a hydrogen halide complex of a nitrogen base selected from pyridine, substituted pyridines or mixtures thereof.

4,656,019

PRODUCTION OF PHASE II SODIUM TRIPOLYPHOSPHATE

Paul L. Hensler, Lawrence, Kans.; Frederick J. Kelso; Gary E. Wolfe, both of Trenton, N.J., and Peter H. Zeh, Fremont, Calif., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 25, 1985, Ser. No. 791,253

Int. Cl.⁴ C01B *15/16, 25/26*

U.S. Cl. 423—315 **12 Claims**

1. In a method of producing sodium tripolyphosphate wherein an aqueous feed liquor supplied to a spray dryer from a feed tank, comprising sodium orthophosphate, sodium pyrophosphate or a mixture thereof, is spray dried from spray nozzles in the spray dryer at a temperature below 450° C., the improvement which comprises introduction with the feed liquor a minor but effective amount of a crystalline Phase II sodium tripolyphosphate seed, whereby the concentration of Phase II material in the sodium tripolyphosphate product is at least 90% by weight.

4,656,020

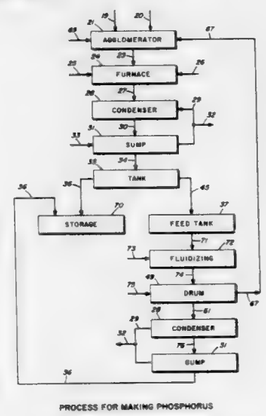
PRODUCTION OF PHOSPHORUS AND PHOSPHORIC ACID

James C. Barber, Florence, Ala., assignor to James C. Barber and Associates, Inc., Florence, Ala.

Division of Ser. No. 728,620, Apr. 29, 1985, Pat. No. 4,608,241, which is a continuation-in-part of Ser. No. 503,099, Jun. 10, 1983, Pat. No. 4,619,819, which is a division of Ser. No. 428,840, Sep. 30, 1982, Pat. No. 4,451,277, which is a continuation-in-part of Ser. No. 301,378, Sep. 11, 1981, Pat. No. 4,383,840, which is a division of Ser. No. 223,122, Jan. 7, 1981, Pat. No. 4,372,929. This application Aug. 7, 1985, Ser. No. 763,288

Int. Cl.⁴ C01B *25/01*

U.S. Cl. 423—322 **23 Claims**



PROCESS FOR MAKING PHOSPHORUS

1. A process for the production of phosphorus, said process comprised of the following steps:

(a) agglomerating phosphate ore by tumbling with a binder formed by reacting acidic phosphorus compounds with alkaline substances;

(b) smelting agglomerated phosphate ore in step (a) with reducing carbon and silica in a submerged-arc electric furnace to generate a mixture of gases;

(c) cooling gases in step (b) by contacting said gases with water;

(d) collecting a mixture of phosphorus, phosphorus sludge, and water from step (c) in a sump;

(e) separating the water from the mixture of phosphorus and phosphorus sludge in the sump of step (d);

(f) recycling the water from step (e) to step (c);

(g) bleeding off a stream of water from step (f);

(h) adding the bleedoff stream in step (g) to first- and second-stage reactors in the process for the production of orthophosphate suspension fertilizer;

(i) pumping the mixture of phosphorus and phosphorus sludge in step (e) to a tank having a submerged pump in a well and separating the phosphorus from phosphorus sludge by pumping out the bottom layer through a sight glass;

(j) pumping the phosphorus separated in step (i) to product storage;

(k) pumping the phosphorus sludge separated in step (i) comprising volatile and non-volatile components to a feed tank;
(l) treating the phosphorus sludge in step (k) to decrease viscosity and stickiness;
(m) distilling the phosphorus sludge in step (l) in a still to vaporize phosphorus and water and thereby separate the volatile materials from the nonvolatile residue;
(n) recycling the residue from step (m) to step (a);
(o) cooling the gases in step (m) by contacting said gases with water;
(p) collecting a mixture of phosphorus and water in a sump;
(q) recycling the water from step (p) to step (o);
(r) bleeding off a stream of water containing phosphorus from step (q); and
(s) pumping phosphorus in step (r) to product storage.

4,656,021

METHOD FOR THE PRODUCTION OF SILICON

Yasuo Tanabe, Tokyo, and Minoru Tamura, Kamakabe, both of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Apr. 22, 1986, Ser. No. 854,525
Claims priority, application Japan, Jun. 17, 1985, 60-131578
Int. Cl.⁴ C01B *33/02*
U.S. Cl. 423—350 **5 Claims**



1. A method for producing silicon which consists of combusting a mixture consisting essentially of silane, containing up to 4% by volume of hydrogen, and chlorine in an inert gas atmosphere to generate a flame, thereby precipitating crystals of silicon.

4,656,022

PROCESS FOR PRODUCING PITCH CARBON FIBERS

Seiichi Uemura, Tokyo; Takao Hirose, Kamakura; Yoshio Sohda, Kawasaki; Takayoshi Sakamoto, Hiratsuka, and Kenji Katoh, Kawasaki, all of Japan, assignors to Nippon Oil Company, Limited, Japan

Filed Jan. 17, 1986, Ser. No. 820,431
Claims priority, application Japan, Jan. 18, 1985, 60-5851
Int. Cl.⁴ D01C *5/08*; D01F *9/12*
U.S. Cl. 423—447.2 **4 Claims**

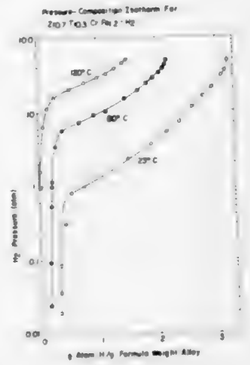
1. In the process for producing pitch carbon fibers by melt-spinning a carbonaceous pitch, and infusiblizing the resulting pitch fibers followed by carbonization and, additionally as needed, graphitization, the improvement which comprises subjecting the pitch fibers to infusiblization treatment following application of a dimethyl polysiloxane having a viscosity at 5° C. in the range between 0.5 and 500 cSt, then removing said dimethyl polysiloxane by washing, and subjecting the infusiblized fibers to application of a dimethyl polysiloxane having a viscosity at 25° C. in the range between 12,000 and 1,000,000 cSt prior to the carbonization.

4,656,023

HYPERSTOICHIOMETRIC ZIRCONIUM-TITANIUM-CHROMIUM IRON ALLOYS

William E. Wallace, Pittsburgh, Pa., and Gui-Yu Yu, Nanjing, China, assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 14, 1985, Ser. No. 744,681
Int. Cl.⁴ C01B *6/00*; C22C *30/00*
U.S. Cl. 423—644 **8 Claims**



1. A quaternary alloy of the formula:

$$Zr_{1-x}Ti_xCrFe_y$$

wherein x has a value in a range from 0.1 to 0.3, and y has a value in a range from 1.2 to 1.4, and their hydrides.

4,656,024

GALENICAL ADMINISTRATION FORM OF METOCLOPRAMIDE, METHOD FOR ITS PREPARATION AND MEDICAMENT COMPRISING THE NEW FORM

Claude Laruelle, Avenue Bellevue, 06270 Villeneuve-Loubet, France

PCT No. PCT/FR81/00134, § 371 Date Jun. 23, 1982, § 102(e) Date Jun. 23, 1982, PCT Pub. No. WO82/01468, PCT Pub. Date May 13, 1982
Continuation of Ser. No. 395,019, Jun. 23, 1983, abandoned. This PCT application Oct. 22, 1981, Ser. No. 607,401
Claims priority, application France, Oct. 28, 1980, 80 23028
Int. Cl.⁴ A61K *9/24, 9/28*
U.S. Cl. 424—497 **1 Claim**

1. In a slow-release pharmaceutical composition having a pharmaceutical coated on an inert core material of from 40–80% saccharose and from 10–40% starch, based on the weight of the total composition, to form a spherical coated granule, the coated granule being covered with a semipermeable membrane of methacrylic polymer which progressively releases the pharmaceutical on contact with gastric medium, the improvement wherein comprising:
metoclopramide in an amount of 20 mg, as said pharmaceutical, said metoclopramide being in a first layer, said first layer being 1 to 20% by weight metoclopramide, 0.01% to 0.5% by weight stearic acid, form 5% to 15% by weight talc, and from 2% to 10% by weight dessicating silica, said first layer being coated on the inert core material; and
further sequential layers of shellac and methacrylate polymer as the semipermeable membrane, the shellac layer being 1–10% by weight of the total composition.

4,656,025

QUANTITATIVE SCREENING ASSAY OF TUMOR GLOBULIN FROM GASTRIC JUICE

Emmanuel Deutsch, 469 Beacon St., Boston, Mass. 02115

Filed Apr. 19, 1985, Ser. No. 725,246
Int. Cl.⁴ G01N *33/53*
U.S. Cl. 424—7.1 **2 Claims**

1. A process for the assay of cancerous gastric juice in a human patient comprising:
(1) collecting a fasting gastric juice sample from a patient through a tube by first discarding the fasting sample and collecting about 25–50 ml of a further gastric juice sample to which alkali is added to raise the pH above 7 and inactivate pepsin;
(2) dialyzing the gastric juice against 0.005 molar Tris buffer to remove interfering substances;
(3) fractionating the dialyzed material in a beaded agarose chromatographic column having diethylaminoethyl groups covalently attached whereby the gastric juice associated cancer proteins are absorbed to the column and impurities are removed in a first fraction which is discarded;
(4) removing the concentrated gastric juice associated protein by adding a buffered solution of 0.02 molar K_2HPO_4 in which an increase in concentration of NaCl of 0.1 molar up to 0.2 molar is added whereby a concentrated fraction is removed;
(5) dialyzing the concentrated fraction with 0.02 molar K_2HPO_4 and 0.1 molar NaCl; and
(6) performing an ELISA test using Avidin-Biotin and horseradish peroxidase in the presence of 5-aminosalicylic as the chromogen substrate to obtain a value of IgG based upon the amount of protein present in the sample, a value of IgG varying from 2.5 nanograms per mg of protein up to 33 nanograms per mg of globulin protein indicating an immunoglobulin G level which is presumptively diagnostic of gastric cancer.

4,656,026

MAGNETIC RESONANCE (MR) IMAGE ENHANCEMENT COMPOUNDS FOR SPECIFIC AREAS OF THE BRAIN

Jeffrey A. Coffman, and Charles F. Barfknecht, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Filed Dec. 10, 1984, Ser. No. 680,058
Int. Cl.⁴ A61K *49/00*; A61B *5/05, 6/00*
U.S. Cl. 424—9 **14 Claims**

1. A method of soft tissue imaging especially adapted for localized tissue areas such as brain tissue receptor sites, comprising:
administering to a patient a spin label image enhancer covalently bonded to a non-toxic ligand which is known to bind to certain regionally specific drug receptor sites; and thereafter,
obtaining measurements of the resulting magnetic resonance signal and assessing signal alterations to thereby diagnose the regional tissue area;
said ligand being selected from the group consisting of agonists and antagonists of benzodiazepine receptors, GABA receptors, dopamine receptors, adrenergic receptors, serotonergic receptors, histaminic receptors, excitatory amino acid receptors, opiate receptors, peptidergic receptors, cholinergic receptors;
said spin label enhancer being a compound which will covalently bond to said ligand and which will at the same time retain its spin label functionally without interferring with the legand's regional functionality.

4,656,027

PHARMACEUTICAL MIXTURE

Rolf I. Sjöovist, Gnesta, Sweden, assignor to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Continuation-in-part of Ser. No. 383,148, May 28, 1982, abandoned. This application Nov. 2, 1984, Ser. No. 668,168
Claims priority, application Sweden, Jun. 18, 1981, 8103843
Int. Cl.⁴ A61K *9/22, 9/36, 9/52, 9/62*
U.S. Cl. 424—495 **11 Claims**

1. A method for preparing a dry powder for use as a pharmaceutical preparation which comprises mixing a pharmaceutically acceptable basic substance selected from the group consisting of sodium bicarbonate, disodium mono hydrogenphosphate, dipotassium hydrogenphosphate, trisodium citrate, magnesium dihydroxide and trizma with a bad tasting drug, said drug being in a form insoluble at high pH, and said basic substance being present in a mole ratio of basic substance to drug of 0.2–10, and encapsulating the mixture in a material consisting essentially of a water insoluble polymer selected from the group consisting of ethylcellulose, polyvinyl acetate, polyvinyl chloride and a copolymer of dimethylaminoethyl methacrylate and methyl methacrylate, wherein the encapsulated material is present in an amount that allows bioavailability and which in combination with the basic substance is sufficient to mask the taste of the drug.

4,656,028

ENCAPSULATED ANTACID

Robert C. Cuca, Edwardsville, Ill., assignor to Norcliff Thayer Inc., St. Louis, Mo.

Filed Jun. 24, 1986, Ser. No. 877,793
Int. Cl.⁴ A61K *33/10, 9/48*
U.S. Cl. 424—37 **11 Claims**

1. An antacid in unit dosage form, which comprises a soft gelatin capsule containing an effective amount of a pourable and pumpable antacid suspension, which comprises from about 60 to about 70%, by weight, based on the weight of the suspension, of calcium carbonate particles suspended in a pharmaceutically acceptable non-aqueous liquid carrier compatible with gelatin and containing less than about 5% by weight of water, based on the weight of the liquid carrier, said calcium carbonate particles containing more than about 50%, by weight, of particles in the range of from about 1 to about 10 microns, based on the weight of said particles, said calcium carbonate particles being irregularly shaped and having a plurality of edges formed by the intersection of substantially planar surfaces.

4,656,029

COSMETIC COMPOSITION CONTAINING ALOESIN AS AN AGENT FOR PROTECTION AGAINST SUNLIGHT AND ITS USE FOR SKIN AND HAIR PROTECTION

Jean F. Grollier, Paris; Gerard Lang, Saint Gratien; Serge Forestier, Claye-Souilly, and Georges Rosenbaum, Asnières, all of France, assignors to L'Oreal, Paris, France

Filed Apr. 9, 1985, Ser. No. 721,424
Claims priority, application Luxembourg, Apr. 17, 1984, 85320
Int. Cl.⁴ A61K *7/06, 7/42, 7/44, 7/135*
U.S. Cl. 424—47 **9 Claims**

1. A cosmetic sunscreening composition for protecting hair and skin against sunlight, which comprises an effective UV-B absorbing quantity of pure aloesin or of an aloe extract containing at least 40% of aloesin and less than 5% of barbaloin, in a cosmetically acceptable medium, wherein pure aloesin or aloe extract filters out the UV-B rays of wavelengths between 280 and 320 nm.

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4,656,030

SURFACE-ACTIVE OLIGMERS, A PROCESS FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Soailly, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 285,422, Jul. 20, 1981, Pat. No. 4,430,250. This application Dec. 2, 1983, Ser. No. 557,212
Claims priority, application Luxembourg, Jul. 21, 1980, 82646
Int. Cl.[4] A61K *7/06, 7/42, 7/44, 7/135*
U.S. Cl. 424—47 5 Claims

1. A surface-active random oligomer having the formula

$$R_1—O+C_2H_3(Z)—O]_{\overline{n}}H$$

wherein

R_1 represents a linear or branched, saturated or unsaturated aliphatic hydrocarbon radical, a cycloaliphatic radical, an aromatic radical or an alkyl aromatic radical, containing up to 30 carbon atoms,

Z represents (i) a group having the formula, $R_2—C_2H_3(A)—O]_{\overline{m}}CH_2—$, or (ii) a mixture of (i) and A, wherein

A represents a non-ionic, cationic, anionic or zwitterionic group,

R_2 represents a linear or branched, saturated or unsaturated aliphatic hydrocarbon radical, a cycloaliphatic radical, an aromatic radical or an alkyl aromatic radical, containing 8 to 30 carbon atoms,

$\overline{n}$ represents an average statistical value ranging from 1 to 20, and

$\overline{m}$ represents an average statistical value ranging from 0.5 to 10.

4,656,031

DENTIFRICE COMPOSITIONS

Roger M. Lane, Merseyside; Derek M. C. Hall, Cheshire; Charles A. Saxton, Merseyside, and Franciscus J. G. van der Ouderaa, Cheshire, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed May 7, 1985, Ser. No. 731,224
Claims priority, application United Kingdom, May 9, 1984, 8411731
Int. Cl.[4] A61K *9/16*
U.S. Cl. 424—49 22 Claims

1. A dentifrice composition, selected from the group consisting of a toothpaste, dental cream, or dental gel, effective to inhibit the growth of dental plaque comprising

a surfactuant;

a particulate abrasive agent in an amount of between about 5 and 60% by weight of the dentifrice composition;

water in an amount between about 25 and 60% by weight of the dentifrice excluding insoluble solids; and

an anti-plaque agent consisting of an effective amount of a substantially water-insoluble non-cationic antimicrobial agent or mixture thereof with a zinc salt having a water solubility greater than 2×10^{-4} per 100 g of water at 25° C. and pH7,

characterized in that there is present in the dentifrice composition a lamellar liquid crystal surfactant phase having a lamellar spacing of less than 6.0 nm in an amount of at least about 0.2% by weight of the dentifrice composition, the lamellar spacing and percentage weight of the lamellar liquid crystal surfactant phase being measured after a centrifugation separation procedure, said separation procedure comprising:

(1) sufficient centrifugation to separate the dentifrice composition into its main phases including a liquid portion; followed by

(2) sufficient ultracentrifugation of the liquid portion so that the liquid portion separates into layers and there is no substantial change in the volumes of the separated layers of the liquid portion, the lamellar liquid crystal surfactant phase being present as one of the separated layers of the liquid portion.

4,656,032

SEXUAL ATTRACTING MIXTURES FOR *COSSUS COSSUS* (LEPIDOPTERA)

Emilio Arsura; Amedeo Capizzi; Giorgio Cassani; Pia Spinelli, all of Milan, and Cristina Tonini, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 23, 1981, Ser. No. 333,924
Claims priority, application Italy, Dec. 30, 1980, 26993 A/80
Int. Cl.[4] A01N *25/00*
U.S. Cl. 424—84 15 Claims

1. An attracting mixture for the males of species *Cossus cossus* containing (a) the compound (Z)-5-dodecen-1-yl-acetate and (b) at least one compound selected from the group consisting of (Z)-3-decen-1-yl acetate, (Z)-3-dodecen-1-yl-acetate and (E)-5-dodecen-1-yl-acetate, the compounds (b) being present in the mixture in a ratio by weight of 1:1 to 1:9 in respect to the (Z)-5-dodecen-1-yl-acetate.

4,656,033

ISOLATED, SOLUBLE IMMUNOGEN AGAINST *SCHISTOSOMA MANSONI* AND A METHOD OF VACCINATION EMPLOYING SAME

Stephanie L. James, and Alan Sher, both of Rockville, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 5, 1985, Ser. No. 741,600
Int. Cl.[4] A61K *39/062*
U.S. Cl. 424—88 3 Claims

1. A method of inducing protective immunity against *Schistosoma mansoni* parasitic infection in a host comprising intradermally administering to said host an immunogenic amount of isolated, membrane-free, soluble parasite fraction and a bacterial adjuvant selected from the group consisting of *Myovacterium bovis*, strain bacille Calmette Guerin and *Bordetella pertussis*.

4,656,034

ABSORPTION ENHANCING AGENTS

Stanley J. Sarnoff, Bethesda, Md., assignor to Survival Technology, Inc., Bethesda, Md.

Filed May 20, 1985, Ser. No. 735,734
Int. Cl.[4] A61K *37/50*
U.S. Cl. 424—94 67 Claims

1. In a method of administering a scavenger of oxygen free radicals generated at the time of reperfusion and diminishing myocardium damage to a mammal, the improvement comprising increasing the absorption of the scavenger in the blood by substantially simultaneouly intramuscularly administering the scavenger and an amount of scavenger absorption enhancing agent effective to increase the absorption of the scavenger.

4,656,035

METHOD OF SEPARATING BLOOD PLATELETS

Pankaj Gangaly, Memphis, Tenn., assignor to University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Dec. 21, 1984, Ser. No. 685,245
Int. Cl.[4] A61K *35/14*
U.S. Cl. 424—101 13 Claims

1. A method of separating young blood platelets from a mixture of young and old blood platelets comprising:

(a) adding a sufficient amount of lectin to cause agglutination of blood platelets to a mixture of young and old blood platelets;

(b) allowing the blood platelet mixture and lectin to agglutinate;

(c) isolating the agglutinated young blood platelets from the old blood platelets; and

(d) removing the lectin from said agglutinated young blood platelets.

4,656,036

ANTIBIOTICS TEJERAMYCIN AND PRODUCTION THEREOF

Kenneth E. Wilson, Westfield, and Sheldon B. Zimmerman, Springfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 446,154, Dec. 2, 1982, abandoned. This application Jan. 11, 1985, Ser. No. 690,715
Int. Cl.[4] A61K *35/74*; C12P *1/06*
U.S. Cl. 424—115 5 Claims

1. The antibiotic complex produced by the controlled aerobic fermentation of a strain of *Streptomyces griseus* selected from ATCC No. 39208 or 39209 in an assimilable aqueous nutrient medium until a sufficient amount of said antibiotic is accumulated for isolation.

4,656,037

SPF-100 AND PROCESS FOR THE PREPARATION THEREOF

Shigezo Udaka, Aichi; Hideo Ueyama, Hyogo; Junichi Taniguchi, Osaka, and Keiji Adachi, Hyogo, all of Japan, assignors to Udaka, Shigezo, Aichi; Furukawa Keikchiro, Tokyo and Shikibo Ltd., Osaka, all of, Japan

Continuation-in-part of Ser. No. 631,774, Jul. 17, 1984, abandoned. This application Jun. 19, 1985, Ser. No. 746,514
Claims priority, application Japan, Aug. 1, 1983, 58-139384; Aug. 1, 1983, 58-139385; Apr. 13, 1984, 59-072865; Apr. 13, 1984, 59-072866
Int. Cl.[4] A61K *35/74*; C12P *1/04*
U.S. Cl. 424—118 2 Claims

1. A substance called SPF-100 recovered from a culture broth of *Streptococcus pyogenes* and having the following physicochemical properties:

(1) Elemental analysis
C: 46.42 to 43.69%, H: 5.94 to 4.85%, N: 11.42 to 9.50%, O: 33.82 to 39.69% and Ash: 2.40 to 2.27%

(2) Molecular weight
Approximately 500 to 25,000 as determined by gel filtration

(3) Decomposition point
It turns to brown at 160° C. and to black at 200° C. and decomposes

(4) Specific rotation
$[\alpha]_D^{20}=+45.0°$ (c=1.00)

(5) Ultraviolet absorption spectrum
FIG. 1 shows an ultraviolet spectrum of a 0.1% aqueous solution, which is characterized by the absorptions at 257, 265, 280, 287 and 325 nm

(6) Infrared absorption spectrum
FIG. 2 shows an infrared absorption spectrum

(7) Solubility in solvents
It is soluble in water, partly soluble in methanol and ethanol and hardly or not soluble in solvents including n-butanol, isobutanol, n-propanol, n-hexane, chloroform, acetone, methyl isobutyl ketone and ethyl ether

(8) Acidity
The pH value of a 1.0% aqueous solution is 6.5

(9) Form
Pale yellow powder

(10) Color reactions
ninhydrin reaction: +,
biuret reaction: +,
Molisch reaction: −,
Dische reaction: −,
anthrone reaction: − and
cysteine sulfate reaction: −

(11) Stability
It can be stabilized by adding L-cysteine, dithiothreitol (DTT), glycerol, albumin, globulin, α- and β-cyclodextrine, $(NH_4)_2SO_4$, common salt or the like.

4,656,038

ANIMAL REPELLENT AND METHOD OF MANUFACTURE OF SAME

Clarence L. Baugh, Lubbock, Tex., assignor to BioGenesis Laboratories, Inc., San Antonio, Tex.

Filed Feb. 11, 1985, Ser. No. 700,406
Int. Cl.[4] A01N *43/64, 59/02*
U.S. Cl. 424—164 25 Claims

1. A composition of matter for the repelling of animals comprising the mixture of:

an ionic form of a metal, said metal being selected from the group consisting of selenium, arsenic, gold, silver, tellurium and mercury;

a soil having a plurality of metallic metal metabolizing organisms included therein, said soil having been extracted from the earth;

a nutrient for said metallic metabolizing organisms; and

water.

4,656,039

LAYERED CHEWING GUM WITH MOISTURE IMPERVIOUS OUTER LAYER

Gilbert Weiss, Stamford, Conn.; Ronald P. D'Amelia, Hicksville, N.Y.; Richard A. Reggio, Yorktown Heights, N.Y., and Stephen H. Wolf, Rye, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jul. 11, 1985, Ser. No. 754,363
Int. Cl.[4] A23G *3/30*
U.S. Cl. 426—5 22 Claims

1. A chewing gum product comprising at least one outer layer of gum base rich material which is essentially devoid of moisture sensitive components and which substantially to completely encloses a solid core structure comprising one or more moisture sensitive materials.

4,656,040

PROCESS FOR PREPARING AN ALL GRAIN, ENZYME-SACCHARIFIED CEREAL AND PRODUCT PRODUCED

Charles V. Fulger, Millwood, and Ernest K. Gum, Granit Springs, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,986
The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.
Int. Cl.[4] A23L *1/10*
U.S. Cl. 426—18 15 Claims

1. A process for preparing an all-grain enzyme-saccharified, ready-to-eat cereal from an endosperm fraction and a bran fraction, or a germ fraction or combination bran and germ fractions which comprises:

(a) processing the endosperm fraction by:

(i) milling to a particle size less than 2 millimeters,

(ii) forming a slurry containing from 15 to 60% by weight of said milled endosperm,

(iii) cooking the milled endosperm until substantially all the starch is gelatinized, and

(iv) enzymatically hydrolyzing from 15 to 75% by weight of said processed endosperm to form soluble sacharides such that the ready-to-eat cereal contains from 7.5 parts sucrose-equivalent sweetness up to 50 parts sucrose-equivalent sweetness;

(b) adding to said hydrolyzed endosperm a matrix forming ingredient which is either a modified bran fraction, a toasted ground germ fraction or combination of these two ingredients thereby forming cereal dough; and

(c) obtaining a ready-to-eat cereal from said cereal dough.

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4,656,041

PROCESS FOR PREPARING HEAT RESISTANT MILK PROTEIN HAVING GOOD PROCESSABILITY

Naoki Yagi, Saitu; Kwang Y. Kim, Osaka, and Tarushige Nakaji, Yao, all of Japan, assignors to Minaminihon Rakuno Kyodo Kabushiki Kaisha, Miyazaki, Japan

Filed Aug. 27, 1985, Ser. No. 769,738
Claims priority, application Japan, Sep. 5, 1984, 59-187186
Int. Cl.[4] A23J 3/02
U.S. Cl. 426—276 6 Claims

1. A process for preparing a heat resistant milk protein having excellent processability which comprises subjecting an aqueous solution or dispersion containing casein and 0.1–20 parts by weight of an acidic polysaccharide per 100 parts of casein to a heat treatment at pH of 7.5–10.5 and at a temperature of 70°–130° C. for at least 5 minutes, shaping the resultant product, and then soaking and treating the product in an aqueous solution containing a multivalent metallic compound in an amount of at least 10 mM as a multivalent metal for a time effective to impart heat resistance and shape retention.

4,656,042

METHOD FOR SEPARATELY PACKAGING FOOD COMPONENTS

Pierre Rialer, Allée des 4 aous, 95160 Montmorency, France

Division of Ser. No. 468,970, Feb. 23, 1983, abandoned. This application Aug. 29, 1985, Ser. No. 771,144
Claims priority, application France, Mar. 3, 1982, 82 03513
Int. Cl.[4] B65B 47/02, 55/14, 7/28, 29/00
U.S. Cl. 426—396 5 Claims



1. A method of separately packaging two components of a food product comprising:
(a) continuously forming a plurality of unconnected pots and advancing and filling the pots with a first component of the food product;
(b) continuously forming a plurality of connected trays having side walls from an advancing thermosplastic strip such that the thermoplastic strip is not severed between said trays and providing an annular rib within each tray, each said annular rib spaced from the side walls of each of said trays and having an inner periphery defined by the annular rib of sufficient size to receive and surround a formed pot;
(c) advancing said strip and each formed tray and filling each tray about the outer periphery of the rib between said rib and said sidewall with a second component of the food product;
(d) covering each filled pot by continuously advancing a continuous cover strip such that the plurality of pots are positioned on and sealed to said cover strip in a position such that each pot is capable of being disposed within the inner periphery of the annular rib of each of said trays;
(e) advancing in synchronism the cover strip and each filled, sealed pot and each tray such that each filled, sealed pot becomes positioned within the inner periphery of the annular rib of each filled tray;
(f) sealing the cover strip to each of the trays to form a plurality of sealed containers; and
(g) severing each container from the thermoplastic strip and from the cover strip and trimming waste from the sealed containers.

4,656,043

PEROXIDE-CONTAINING CONDITIONING SHAMPOO

Geoffrey R. Hawkins, Cheshire, and Oksana A. Kowcz, Monroe, both of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Sep. 13, 1985, Ser. No. 775,682
Int. Cl.[4] A61K 7/06, 7/42, 7/44
U.S. Cl. 424—70 4 Claims

1. A stable aqueous hair conditioning shampoo composition comprising from about 2 to about 2.5 percent of active hydrogen peroxide, at least about 3 percent by weight of sodium lauryl ether sulfate as the sole anionic surfactant, at least about 5 percent by weight of a nonionic surfactant component, a sufficient amount of an acid component to provide the composition with a pH of from about 3 to about 4, and an effective hair conditioning amount of a hair conditioning component, said acid component and said conditioning component being compatible with said peroxide.

4,656,044

SOYBEAN MILK-CONTAINING ALCOHOLIC BEVERAGES

Naotsugu Sugimoto, Kyoto; Kazutoshi Torii, Ootsu; Yuka Tanahashi, Ootsu; Hideo Morita, Ootsu; Yuzo Watanabe, Muko; Kohei Yamamoto, Osaka, and Teisuke Kainuma, Kyoto, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Filed Aug. 1, 1985, Ser. No. 761,396
Claims priority, application Japan, Aug. 9, 1984, 59-165741
Int. Cl.[4] C12G 3/00; A23L 1/36
U.S. Cl. 426—592 2 Claims

1. A soybean milk-containing alcoholic beverage producing no precipitates, wherein said beverage contains (1) 1 to 15% (w/v) of at least one soybean milk product selected from the group consisting of fermented soybean milk and acid soybean milk, (2) 3 to 16% (v/v), as alcohol, of drinking alcohol and (3) 0.08 to 1.00% (w/v) of high methoxylpectin.

4,656,045

FAT CONTAINING DIGLYCERIDES

Janos Bodor, The Hague, and Jan Van Heteren, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 16, 1985, Ser. No. 755,523
Claims priority, application United Kingdom, Jul. 17, 1984, 8418154
Int. Cl.[4] A23D 3/00, 5/00
U.S. Cl. 426—601 18 Claims

1. An edible fat composition comprising one or more diglycerides or a mixture of one or more diglycerides and one or more monoglycerides, wherein:
(a) the ratio of diglyceride to saturated monoglyceride exceeds 8:1 and the ratio of diglyceride to unsaturated monoglyceride exceeds 5:1;
(b) the diglycerides are present in a proportion ranging from 5 to 30 wt. % based on the total amount of fat;
(c) the level of saturated fatty acid residues having a chain length varying from 16 to 22 C-atoms in said diglycerides does not exceed 45% based on the weight of the fatty acid residues of said diglycerides.

4,656,046

PROCESS FOR PREPARING MILK PROTEIN RESISTANT TO ACIDS AND BASES

Naoki Yagi, Saita; Kwang Y. Kim, Osaka, and Tarushige Nakaji, Yao, all of Japan, assignors to Minaminihon Rakuno Kyodo Kabushiki Kaisha, Miyazaki, Japan

Filed Aug. 27, 1985, Ser. No. 769,871
Claims priority, application Japan, Apr. 1, 1985, 60-069625
Int. Cl.[4] A23J 3/02
U.S. Cl. 426—657 5 Claims

1. A process for preparing a milk protein resistant to acids and bases which comprises subjecting an aqueous solution or dispersion containing casein and 0.5–30 parts by weight of an acidic polysaccharide per 100 parts of casein to a heat treatment at pH of 7.3–10.5 and at a temperature of 70° C.–130° C. for at least 3 minutes.

4,656,047

RAPID METHOD FOR CELL BLOCK PREPARATION

Lanbrecht P. Kok, and Mathilde E. Boon, both of Achterde Hor 2, 9304 Ta Lieveren, both of Netherlands

Filed Mar. 6, 1986, Ser. No. 836,939
Int. Cl.[4] A01N 1/00
U.S. Cl. 427—2 25 Claims

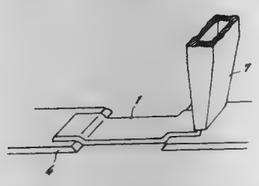
1. A method for preparing cell blocks from fixed cell specimens, said method comprising:
exposing the fixed cell specimen to microwave radiation in the presence of a low molecular weight alcohol whereby the specimen is dehydrated; and
exposing the dehydrated cell specimen to microwave radiation in the presence of a melted wax whereby the specimen is impregnated with wax to form the cell block.

4,656,048

METHOD OF FORMING THICK FILM CIRCUIT PATTERNS WITH A SUFFICIENTLY WIDE AND UNIFORMLY THICK STRIP

Shinichi Kadoi; Akira Kabeshita, and Syuichi Murakami, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 562,818, Dec. 15, 1983, abandoned. This application Nov. 27, 1985, Ser. No. 802,950
Claims priority, application Japan, Dec. 16, 1982, 57-221433; Dec. 20, 1982, 57-224307
Int. Cl.[4] H05K 3/12
U.S. Cl. 427—8 7 Claims



1. A method of forming a thick film circuit pattern comprising the steps of moving a nozzle having a rectangular slit opening above the surface of a substrate with the elongation of the slit opening being oriented at an angle to the direction of movement of the nozzle, the dimension of said rectangular slit opening in the direction of movement being in the range from 0.03 millimeters to 0.3 millimeters, and forcing a paste in said nozzle downward with pressurized air through said slit opening onto the substrate so that the paste is ejected at a speed lower than the speed at which said nozzle is moved for forming on said substrate a film of said paste having a thickness smaller than said dimension of said slit opening.

4,656,049

METHOD AND APPARATUS FOR THE PROPER QUANTIZED APPLICATION OF A MOLD RELEASE AGENT ONTO A MOLD SURFACE

Vincent H. Noto, San Diego, Calif., assignor to General Dynamics Corp. Space Systems Division, San Diego, Calif.

Filed Mar. 10, 1986, Ser. No. 837,995
Int. Cl.[4] B05C 11/00; B05D 3/06; B44D 1/20; G01N 21/64
U.S. Cl. 427—10 18 Claims

1. A method of measuring the amount of release agent applied to the surface of a mold comprising the steps of,
placing a known amount of tracer material in the release agent,
applying said release agent including said tracer material onto said surface,



measuring the concentration of tracer material on said surface as an indication of the amount and distribution of the release agent on said surface.

4,656,050

METHOD OF PRODUCING ELECTRONIC COMPONENTS UTILIZING CURED VINYL AND/OR ACETYLENE TERMINATED COPOLYMERS

Constance J. Arapa, Wappingers Falls; Steven M. Kandetzke, Fishkill, and Mark A. Takacs, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 556,734, Nov. 30, 1983, abandoned. This application Mar. 11, 1986, Ser. No. 839,449
The portion of the term of this patent subsequent to Mar. 31, 2004, has been disclaimed.
Int. Cl.[4] B05D 5/12
U.S. Cl. 427—12 25 Claims

15. A method of forming multilevel metallurgy on a substrate comprising an integrated circuit device, comprising:
(a) applying a coating to the surface of the substrate comprising the integrated circuit device thereby filling and substantially planarizing the substrate surface, using a composition containing a polymerizable oligomer selected from the group consisting of polyamic acids, the corresponding polyamic esters, the corresponding polyisoimides, and mixtures thereof, wherein the polymerizable oligomer is vinyl and/or acetylenic end-capped;
(b) curing the composition to form a three-dimensional imidized layer thereof,
(c) forming via openings in the imidized layer extending to conductive portions of the integrated circuit device; and
(d) forming a conductive pattern on the imidized layer and in the via openings to at least one of the underlaying conductive portions of the integrated circuit device.

19. The method of claim 15 wherein the curing is accomplished using a catalytic cure.

20. The method of claim 19 wherein the curing is accomplished using radiation to initiate catalyst activity.

4,656,051

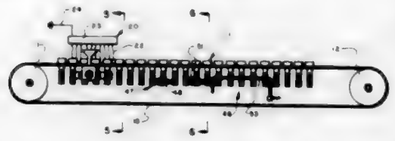
METHOD FOR ELECTROSTATIC COATING THREADED FASTENERS WITH A THERMOPLASTIC RESIN

Paul E. Wojcik, 201 W. Highland Rd., Northfield, Ohio 44067

Filed Sep. 16, 1985, Ser. No. 776,422
Int. Cl.[4] B05D 1/06
U.S. Cl. 427—33 18 Claims

1. A method for electrostatic coating a threaded fastener with a thermoplastic resin extending around a predetermined circumferential portion of a threaded portion of the fastener, including the steps of:

(a) moving a threaded fastener along a predetermined path having a spray zone and a heating zone;
(b) polarizing the fastener at the spray zone;
(c) polarizing a stream of powdered resin to an opposite polarity than the fastener and directing the resin towards a threaded portion of said fastener,
(d) applying the polarized powdered resin from a single spray station to said threaded portion,



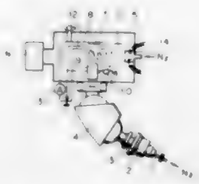
(e) forming a coating of powdered resin on the threaded portion about a predetermined circumferential portion of the threaded end extending from 180 degrees to 360 degrees, wherein the threaded fastener is a bolt having a shank and a head, and wherein the bolt is suspended by the head between a spaced pair of endless horizontal moving belts, and
(f) moving both of said belts at the same linear speed.

4,656,052

PROCESS FOR PRODUCTION OF HIGH-HARDNESS BORON NITRIDE FILM

Mamoru Satou, Kawasaki, and Kohichi Yamaguchi, Kagoshima, both of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Feb. 12, 1985, Ser. No. 700,697
Claims priority, application Japan, Feb. 13, 1984, 59-23017; Feb. 29, 1984, 59-36137; Jul. 24, 1984, 59-154767; Dec. 29, 1984, 59-278644
Int. Cl.⁴ B05D *3/06*
U.S. Cl. 427—38 **21 Claims**



1. A process for the production of a high-hardness boron nitride film, which comprises vacuum-depositing a boron component on a substrate from a boron-containing vacuum deposition source and simultaneously irradiating the substrate with an ion seed comprising at least nitrogen from an ion-generating source for generating said ion seed, to form boron nitride on the substrate, wherein the atomic ratio (B/N) between boron and nitrogen supplied from the vacuum deposition source and the ion seed is adjusted within a range of from 4 to 25, the ion acceleration energy of the ion seed is adjusted to 5 to 100 KeV per atom of the ion seed, and vacuum deposition and irradiation are carried out in an atmosphere of a nitrogen atom or nitrogen compound activated at an energy level lower than that of the ion seed.

4,656,053

METHOD FOR PRODUCING ORTHODONTIC DEVICES AND APPLIANCES

Michael Angrick, Berlin; Ulrich Trantwein, and Kurt Lenz, both of Wehrheim, all of Fed. Rep. of Germany, assignors to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 697,776, Feb. 4, 1985, Pat. No. 4,568,558. This application Sep. 19, 1985, Ser. No. 777,835
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1984, 3404904
The portion of the term of this patent subsequent to Feb. 4, 2003, has been disclaimed.
Int. Cl.⁴ B05D *3/06;* **A01N** *1/02*
U.S. Cl. 427—53.1 **13 Claims**

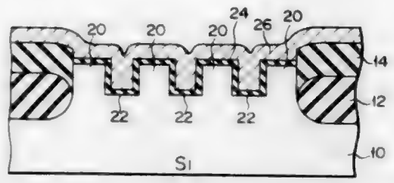
1. A method for producing orthodontic devices and appliances by building up a plurality of resin layers on a plaster cast comprising
applying a first thin layer of a composition comprising a diurethanedimethacrylate prepared from 2,2,4-trimethylhexamethylenediisocyanate and 2-hydroxyethylmethacrylate, and a photopolymerization catalyst to the plaster cast and briefly exposing said thin layer to light whereby said thin layer is partially polymerized,
successively applying at least one additional thin layer on said first thin layer and partially polymerizing each successive thin layer by brief exposure to light until the layer thickness and shape desired for the device or appliance are attained, and
exposing said shaped partially polymerized material to light to completely polymerize said shaped material.

4,656,054

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE INVOLVING A CAPACITOR

Tomoyasu Inoue, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 4, 1985, Ser. No. 707,809
Claims priority, application Japan, Aug. 16, 1984, 59-169971
Int. Cl.⁴ B05D *5/12*
U.S. Cl. 427—81 **13 Claims**



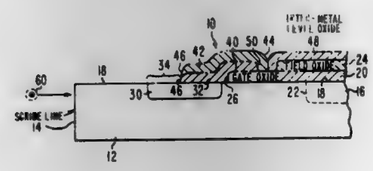
1. A method for manufacturing a semiconductor device having a capacitor, comprising the steps of:
(a) forming an insulation film having at least one opening of a predetermined pattern on a capacitor formation area of a semiconductor substrate, said opening reaching the surface of the semiconductor substrate to expose the corresponding surface portion of the semiconductor substrate;
(b) selectively burying a semiconductor layer in the bottom surface of at least one of said openings where the surface of the semiconductor substrate is exposed;
(c) removing said insulation film to form a recessed region on the surface of the semiconductor substrate; and
(d) forming a capacitor electrode on the capacitor formation area of the semiconductor substrate with a gate insulation film therebetween.

4,656,055

DOUBLE LEVEL METAL EDGE SEAL FOR A SEMICONDUCTOR DEVICE

Robert A. Dwyer, Readington Township, Hunterdon County, N.J., assignor to RCA Corporation, Princeton, N.J.

Division of Ser. No. 679,589, Dec. 7, 1984, abandoned. This application Apr. 18, 1986, Ser. No. 854,692
Int. Cl.⁴ H01L *21/88*
U.S. Cl. 427—89 **7 Claims**



1. A method of making an edge seal for trapping mobile ions in a semiconductor chip including a semiconductor body containing an integrated circuit, said body having a major surface comprising a central portion and a peripheral portion completely surrounding said central portion, said integrated circuit being in a region of said body directly under said central portion, comprising the steps of:
(a) forming a highly doped region in said body extending downwardly from only said peripheral portion of said surface, said region completely surrounding and being spaced from said region containing said integrated circuit;
(b) forming a layer of insulating material on said central portion of said surface and on only an adjacent part of said peripheral portion of said surface;
(c) forming a first metal layer on another part of said peripheral portion of said surface in ohmic contact with part of said highly doped region, completely surrounding said central portion, and in electrical contact with said integrated circuit;
(d) forming a second metal layer only on and in both substantial registry and electrical contact with said first metal layer.

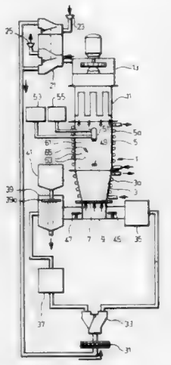
4,656,056

PROCESS OF TREATING A PARTICULATE MATERIAL AND APPARATUS FOR IMPLEMENTING THE PROCESS

Hans Leuenberger, Pfeffingen, Switzerland, assignor to Glatt Maschinen-und Apparatebau AG, Pratteln, Switzerland

Filed May 17, 1985, Ser. No. 735,265
Claims priority, application Switzerland, May 19, 1984, 2483/84
Int. Cl.⁴ B05D *1/00*
U.S. Cl. 427—213 **24 Claims**

1. A process of treating a particulate material, in which the particles are subjected to motion, in a space, gas is passed through the particles and the vapor of a wetting agent destined to wet the particles is added to the gas at least during a certain time interval, so that at least one zone of the space containing the particles will contain a mixture of gas and wetting agent vapor, wherein the particles are cooled below the dew point temperature which the mixture of gas and wetting agent vapor has at least at the time before its contact with the particles and before it wets the particles by condensing wetting agent vapor, in which the space containing the particles is closed off from the surroundings, wherein the wetting agent vapor is intermixed with the gas before the gas is introduced into said space, the wetting agent being at the most incompletely saturated at the time the mixture of gas and wetting agent enters said space, and wherein a colder gas destined to cool the particles is passed through at least one zone of the said space, the temperature of said colder gas being lower than the temperature of the mixture of gas and wetting agent vapor and than said dew point temperature.



4,656,057

MICROBIOCIDAL ARTICLE FOR AQUEOUS SYSTEMS

David R. Amick, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 518,237, Jul. 28, 1983, Pat. No. 4,552,752, which is a continuation-in-part of Ser. No. 462,242, Jan. 31, 1983, abandoned, which is a continuation-in-part of Ser. No. 422,056, Sep. 23, 1982, abandoned. This application Jul. 17, 1985, Ser. No. 755,768
Int. Cl.⁴ B05D *5/00*
U.S. Cl. 427—245 **9 Claims**

1. In a method for safening the use of microbiocidal compositions which comprises placing said compositions in a sealed porous membrane article prepared from a hydrophobic material having a thickness of from about 0.5 mil to about 10 mils and having a pore size smaller than the effective particle size of the solid microbiocidal composition contained sealed therein; the particulate solid microbiocidal composition comprising:
(i) an aqueous solution containing about 0.1 to 70 weight %, based on total weight of said composition, of at least one water-soluble microbiocidal compound blended with and absorbed into;
(ii) about 99.9 to 30 weight %, based on total weight of said composition, of an inert, finely-divided water-insoluble solid carrier material:
the improvement wherein the porous membrane is selected from hydrophobic film-forming materials having a solubility parameter less than 12.5.

4,656,058

PAINT SHIELDS AND PAINTING METHODS

William C. Stark, 306 S. Almansor St., Alhambra, Calif. 91801

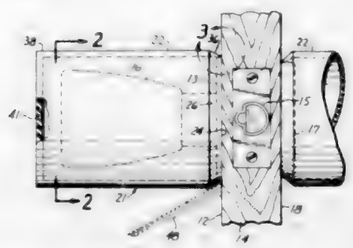
Continuation-in-part of Ser. No. 176,390, Aug. 8, 1980, abandoned, and a continuation-in-part of Ser. No. 495,300, May 16, 1983, and a continuation-in-part of Ser. No. 571,582, Jan. 17, 1984, abandoned. This application Aug. 9, 1985, Ser. No. 764,743
Int. Cl.⁴ B05C *11/16;* **B05D** *1/32, 5/00*
U.S. Cl. 427—282 **55 Claims**

1. In a method of applying paint to any surface surrounding raised circular objects having different diameters,
the improvement comprising in combination the steps of:
providing apart from said objects a self-supporting paint shield having at an end thereof an opening for receiving said objects, said opening being provided by an annular

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elastic lip tapering toward said opening for accommodating any of said objects;

shielding any of said objects with said paint shield by pushing said annular elastic lip onto any of said raised objects thereby expanding said annular elastic lip at said opening in diameter to any of said different diameters and exerting



with said pushed elastic lip a gripping action supporting said paint shield on any of said objects;

applying paint to the surface adjacent the latter object and exclusive of the latter shielded object; and

elastically returning said annular lip to an initial diameter at said opening upon removal of said paint shield from any of said objects.

4,656,059

WET SPRAY BOOTH TREATING AGENT AND METHOD FOR TREATMENT THEREWITH

Keisuke Mizuno, Yokohama; Eiichiro Kondou, Tokyo; Kenji Tahara, Atsugi, and Ayako Sekikawa, Hadano, all of Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

Filed Oct. 30, 1985, Ser. No. 793,026

Claims priority, application Japan, Nov. 1, 1984, 59-230647

Int. Cl.⁴ B05D *1/40, 3/12*

U.S. Cl. 427—345 **13 Claims**

1. A method for the treatment of the circulating water collecting surplus paint in a wet spray booth, which method is characterized by the addition of melamine-aldehyde acid colloid solution.

4,656,060

ARSENICAL CREOSOTE WOOD PRESERVATIVES

John Krzyzewski, 66 Ashburn Drive, Nepean, Ontario, K2E 6N3, Canada

Continuation of Ser. No. 502,378, Jun. 8, 1983, abandoned. This application Jun. 17, 1985, Ser. No. 744,900

Claims priority, application Canada, Sep. 28, 1982, 412325

Int. Cl.⁴ C09D *5/14;* **B05D** *3/02*

U.S. Cl. 427—397 **11 Claims**

1. A stable, homogeneous, aqueous solution for application to wood surfaces, said stable, aqueous solution consisting essentially of:

(A) creosote;

(B) a preservative component which is selected from the group consisting of

(i) a normally water-insoluble salt selected from the group consisting of zinc arsenate, zinc arsenite, copper arsenate and copper arsenite and mixtures thereof;

(ii) an ammonia-soluble salt selected from the group consisting of copper borate, zinc borate, and mixtures thereof, and copper chromate, zinc chromate, and mixtures thereof;

(iii) an ammonia-dispersible organometallic compound selected from the group consisting of copper naphthenate, zinc naphthenate and mixtures thereof, copper-8-quinolinolate, zinc-8-quinolinolate and mixtures thereof, and tributyltin oxide;

and, with either (i), (ii) or (iii)

(iv) sufficient aqueous ammonia, in a concentration of about 1 to about 28% by weight NH_3 to solubilize said salt (i) or to dissolve said salt (ii) or to disperse said compound (iii); and

(C) solvent for said compounds (A) and (B), said solvent being selected from the group consisting of fuel oil, pole treating oil, kerosene, tie-treating oil, waste crank oil, and a petroleum distillate; said solvent (C) being present in a sufficient amount, of about 13% to 80% by volume of the total aqueous solution, and said creosote (A) being present in an amount of from 7% to about 70% by volume of the total aqueous solution, thereby to provide said stable, homogeneous aqueous solution;

said aqueous solution being capable of providing a creosote-treated wood surface which may be painted.

4,656,061

HIGH SOLIDS COATING COMPOSITIONS BASED ON FATTY POLYOLS

Edward D. DiDomenico, Jr., Anoka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 620,641, Jun. 14, 1984, abandoned. This application Mar. 26, 1985, Ser. No. 716,276

Int. Cl.⁴ B05D *3/02;* **C08G** *12/12*

U.S. Cl. 427—385.5 **10 Claims**

1. A composition of matter which is a mixture of at least one methylolamino compound and at least one fatty polyol of the formula:

$$R^1\text{—}((R^2\text{—}O)\text{—}CH\text{—}CH\text{—}(O\text{—}R^3))\text{—}R^4\text{—}O\text{—}R^5$$

wherein:

R^1 is a monovalent hydrocarbon radical having from 2 to 14 carbon atoms;

R^2 and R^3 are individually selected from the group of hydrogen, hydroxyl-substituted alkyl radicals, hydroxyl-substituted alkoxyalkyl radicals and hydroxyl-substituted poly(oxyalkylene) radicals, provided that each radical contains from 2 to 32 carbon atoms and from 1 to 9 hydroxyl substituents and, provided further, that at least on of R^2 and R^3 is other than hydrogen;

R^4 is a divalent hydrocarbon radical having from 4 to 14 carbon atoms provided that the sum of the carbon atoms in R^1 and R^4 must be from 10 to 24; and

R^5 is selected from the group of hydrogen, hydroxyl-substituted alkyl radicals, hydroxyl-substituted alkoxyalkyl radicals, hydroxyl-substituted poly(oxyalkylene) radicals, provided that each hydroxyl-substituted radical contains from 2 to 32 carbon atoms and from 1 to 9 hydroxyl substituents, and acyl radicals having the structural formula;

$$OC\text{—}R^6\text{—}((R^7\text{—}O)\text{—}CH\text{—}CH\text{—}(O\text{—}R^8))\text{—}R^9$$

wherein:

R^6 is a divalent hydrocarbon radical having from 3 to 13 carbon atoms;

R^7 and R^8 are individually selected from the group of hydrogen, hydroxyl-substituted alkyl radicals, hydroxyl-substituted alkoxyalkyl radicals and hydroxyl-substituted poly(oxyalkylene) radicals, provided that each radical contains from 2 to 32 carbon atoms and from 1 to 9 hydroxyl substituents and, provided further, that at least one of R^7 and R^8 is other than hydrogen; and

R^9 is a monovalent hydrocarbon radical having from 2 to 14 carbon atoms provided that the sum of the carbon atoms in R^6 and R^9 must be from 9 to 23.

9. A process for preparing a coating which comprises:

(a) mixing the composition of claim 1 with an acid catalyst to form a coating mixture,

(b) applying the coating mixture to a substrate, and

(c) curing the coating mixture on the substrate by heating the coated substrate to a sufficient temperature for a time sufficient to cure the coating mixture.

4,656,062

SELF-HEALING BENTONITE SHEET MATERIAL COMPOSITE ARTICLE

Todd D. Harriett, Chicago, Ill., assignor to American Colloid Company, Skokie, Ill.

Continuation-in-part of Ser. No. 604,990, Apr. 27, 1984, Pat. No. 4,534,926, which is a continuation-in-part of Ser. No. 443,225, Nov. 22, 1982, Pat. No. 4,534,925. This application Nov. 29, 1984, Ser. No. 676,279

Int. Cl.⁴ C08K *3/34;* **B32B** *9/06, 13/04*

U.S. Cl. 427—397.8 **18 Claims**

1. A multi-layer article of manufacture comprising a first layer of flexible sheet or web material; and a second layer, adhered to said first layer, consisting essentially of a water-swellable bentonite clay in an amount of 50% to 80% by weight of the second layer; polypropene, polybutene or mixtures thereof in an amount of 16% to 65% by weight of the second layer; and an elastomer, having at least 500% elongation, in an amount of 2% to 10% by weight of the second layer.

4,656,063

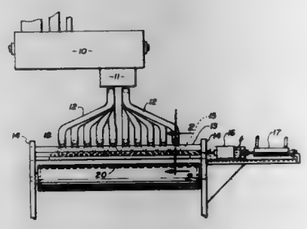
CURTAIN COATING METHOD

Harry F. Long, 2511 Chestnut View Dr., Lancaster, Pa. 17603; Donald J. Misselhorn, 1061 Sherry La., and Michael Tomchany, 2781 Old Orchard Rd., both of Lancaster, Pa. 17601

Division of Ser. No. 769,695, Aug. 27, 1985. This application Jan. 9, 1986, Ser. No. 874,449

Int. Cl.⁴ B05D *1/30*

U.S. Cl. 427—420 **3 Claims**



1. A process for curtain coating a foaming composition, said process comprising the steps of

selecting components suitable to provide a foamed phosphate ceramic material, said components comprising calcium silicate, a metal oxide, phosphoric acid and a foaming agent;

passing said components through a curtain coater comprising

(1) mixing means comprising expulsion means to expel a foamable composition from said mixing means, said components being mixed to provide said foamable composition,

(2) a distributor comprising a plurality of conveying tubes, said distributor being adapted to receive said composition from said mixing means, and

(3) homogenization means connected to said conveying tubes, said homogenization means comprising a manifold comprising interfacing zones, a longitudinal exit slot in the bottom of said manifold and a rotating and longitudinally oscillating agitator means disposed longitudinally in said manifold between said zones and said slot; and

depositing said foamable composition on a selected substrate.

4,656,064

DECORATIVE BOW-FORMING RIBBON ASSEMBLY

Peter S. C. Cheng, 5 Ross St., Toronto, Ontario, Canada M5T 1Z8

Filed Jan. 27, 1986, Ser. No. 879,569

Int. Cl.⁴ D04D *7/10*

U.S. Cl. 428—4 **10 Claims**



1. A bow-forming ribbon assembly, comprising:

(a) a longitudinally-extending decorative flexible ribbon having a central longitudinal axis;

(b) a plurality of bending zones spaced apart at intervals lengthwise of the ribbon, and extending along bending axes generally transversely across the ribbon at angles of inclination relative to the central axis, each inclination angle being different, and of opposite slope, from that of the adjacent preceding inclination angle;

(c) a plurality of pairs of apertures, one pair for each bending zone, arranged at intervals lengthwise of the ribbon, each pair having one aperture at one side of a respective bending zone and offset along a transverse direction perpendicular to the longitudinal axis, and another aperture at an opposite side of the respective bending zone and offset along an opposite transverse direction perpendicular to the longitudinal axis; and

(d) a longitudinally-extending drawstring running freely through the apertures and extending in a generally perpendicular direction between each pair of apertures across each bending zone to bend the ribbon about each bending axis during forming of a bow.

4,656,065

BARK CAMOUFLAGE CLOTH AND OUTER GARMENTS

Thomas R. Yacovella, Utica, N.Y., assignor to Utica Duxbak Corporation, Utica, N.Y.

Filed Jan. 17, 1986, Ser. No. 820,412

Int. Cl.⁴ F41H *3/00*

U.S. Cl. 428—17 **13 Claims**

1. Camouflage material configured to mimic the rough bark of a tree or trees, the material having thereon a camouflage pattern that includes rough appearing, highly elongated vertical ribs of a first color positioned on either side of a centrally disposed vertical plane a plurality of vertical channels of a second color which is darker than the first color interspersed between said vertical ribs, dark vertical shadow edge markings

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along one side edge of each of said vertical ribs, said shadow edge markings being along the one side edge of each rib that



faces the vertical plane whereby the ribs give the appearance of bark extending about a tree trunk.

4,656,066

APPARATUS AND METHOD FOR SEALING CAPSULES

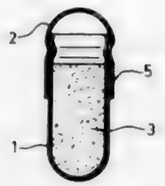
Fritz Wittwer, Lupsingen, Switzerland, assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 451,580, Dec. 20, 1982, abandoned, and Ser. No. 468,022, Feb. 18, 1983, Pat. No. 4,539,060. This application Feb. 22, 1984, Ser. No. 582,364

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.⁴ B32B *1/08*

U.S. Cl. 428—35 **22 Claims**



1. A method for hermetically sealing capsules having coaxial cap and body parts which overlap when telescopically joined, comprising the steps of:

a. contacting the capsules with denaturation melting-point depression mixture comprising about 20% to about 98% of an aliphatic monohydric alcohol having from one to four carbon atoms which may be substituted by one alkoxy group having one or two carbon atoms, or mixtures thereof, and about 2% to about 80% of water;

b. removing the denaturation melting-point depression mixture from exposed surfaces of said capsules by air driving at a temperature of about 20° to about 32° C.; and

c. sealing the capsules at a temperature of from about 40° C. to about 140° C. using hot air whereby the capsules are hermetically sealed.

9. A capsule sealed by the method of claim 1.

4,656,067

FLUSH TRAY MANUFACTURED BY ROTATIONAL MOLDING

Lloyd E. Yetter, P.O. Box 97, Colchester, Ill. 62326

Filed Jan. 26, 1984, Ser. No. 625,785

Int. Cl.⁴ B28B *1/02;* **B32B** *3/30*

U.S. Cl. 428—35 **31 Claims**

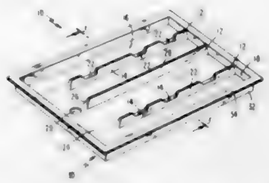
1. A plastic flush tray having a substantially horizontal interior portion, said interior portion having:

a drain opening;

a plurality of ribs projecting upwardly from the horizontal interior portion for channeling flushing fluids to said drain opening; and

said interior portion being sloped downwardly towards said drain opening further to channel the fluids to the opening;

wherein said tray is a large article of manufacture, formed from a plastic material by a rotational molding process utilizing a mold,



said tray having a substantially uniform plastic thickness formed during said rotational molding process by providing a uniform distribution of plastic throughout the mold,

said ribs including openings formed by openings in said mold for permitting said plastic material to flow therethrough during said rotational molding process, thereby to provide said uniform distribution of plastic throughout the mold and to provide said uniform plastic thickness prior to solidification of the plastic.

4,656,068

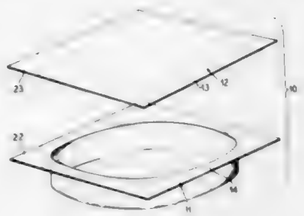
PELLABLE SEAL PACKAGE

Charles D. Raines, Columbus, Ga., assignor to Plicon Corporation, Columbus, Ga.

Continuation-in-part of Ser. No. 564,831, Dec. 23, 1983, abandoned. This application Jul. 2, 1985, Ser. No. 750,252

Int. Cl.⁴ B27N *5/02*

U.S. Cl. 428—35 **10 Claims**



1. A heat sealable, peelable seal package having walls defined by sheet members and having at least one region where a first wall portion overlies a second wall portion in adjacent relationship, said overlying portions being heat sealable together and thereafter being separatable by peeling, the surface of said first wall portion so adjacent said second wall portion being comprised of an ethylene acid copolymer, and the surface of said second wall portion so adjacent said first wall portion being comprised of a polyblend of polyethylene and ethylene vinyl acetate copolymer, said polyblend being comprised on a 100 weight percent basis of from about 99 to 67 weight percent of said polyethylene, and, correspondingly, from about 1 to 33 weight percent of said ethylene vinyl acetate copolymer.

4,656,069

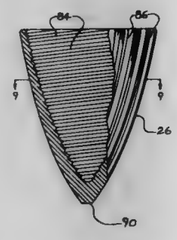
STRUCTURES COMPRISED OF FIBER REINFORCED PLASTIC

G. Robert Traut, S. Killingly, Conn., assignor to Rogers Corporation, Rogers, Conn.

Division of Ser. No. 342,057, Jan. 25, 1982, Pat. No. 4,623,505, which is a continuation-in-part of Ser. No. 263,191, May 13, 1981, Pat. No. 4,615,859. This application Aug. 5, 1985, Ser. No. 762,694

Int. Cl.⁴ H01Q *1/40*

U.S. Cl. 428—35 **8 Claims**



1. A unitary structure, said structure having an axis and comprising:

a tip portion, said tip portion being symmetrical with respect to the axis of the unitary structure and being continuous;

a tubular portion extending from and integral with said tip portion, said tubular portion being coaxial with said tip portion and terminating at an annular surface having an exterior diameter greater than the maximum diameter of said tip portion;

said tip and tubular portions having internal and external surfaces and being comprised of a fiber filled polymeric composite, the majority of the fibers comprising said composite being oriented in planes which are perpendicular to lines normal to the average contour of the interior surface of the unitary structure; and

grooves being formed on at least one of the internal or external surfaces of said tip and tubular portions, sai grooves reducing microwave reflection.

4,656,070

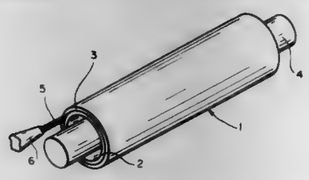
COEXTRUDED RECOVERABLE ARTICLES

David D. Nyberg, Sunnyvale; Rong J. Chang, and Lester T. Toy, both of Fremont, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 648,116, Sep. 6, 1984, abandoned, and Ser. No. 648,117, Sep. 6, 1984, abandoned. This application Dec. 5, 1985, Ser. No. 805,498

Int. Cl.⁴ F16L *9/14;* **B32B** *31/00*

U.S. Cl. 428—36 **55 Claims**



1. A shrinkable tubular article comprising:

(1) a tubular inner member comprising an elastomeric material which is held under tension in a radially expanded configuration; and

(2) a tubular outer restraining means comprising a blend of a relatively rigid thermoplastic material and a segmented copolymer having at least one segment compatible with the thermoplastic material and at least one segment compatible with the elastomeric material;

the inner surface of the restraining means being directly secured to the outer surface of said inner member by a bond whose peel strength is at least about 2 pounds per linear inch at 21° C., said bond being sufficiently weakenable by the application of a solvent to allow the inner member to pull away from the restraining means and to return to or toward its unexpanded configuration.

35. A shrinkable tubular article comprising:

(1) a tubular inner member comprising an elastomeric material which is held under tension in a radially expanded configuration; and

(2) a tubular outer restraining means comprising a blend of: (a) a relatively rigid thermoplastic material; (b) a tackifier; and (c) a segmented copolymer having at least one segment compatible with the thermoplastic material and at least one segment compatible with the elastomeric material;

the inner surface of the restraining means being directly secured to the outer surface of said inner member by a bond whose peel strength at about 60° C. is at least about 2 pounds per linear inch, said bond being sufficiently weakenable by the application of a solvent to allow the inner member to pull away from the restraining means and to return to or toward its unexpanded configuration.

4,656,071

CERAMIC BODIES HAVING A PLURALITY OF STRESS ZONES

Anil V. Virkar, Salt Lake City, Utah, assignor to Ceramatec, Inc., Salt Lake City, Utah and The Dow Chemical Co., Midland, Mich.

Filed Oct. 29, 1984, Ser. No. 665,912

Int. Cl.⁴ B32B *17/06;* **B05D** *3/02;* **F16L** *9/10*

U.S. Cl. 428—36 **21 Claims**

1. A green crystalline ceramic body having at least two compositional zones comprising:

a first substantially continuous compositional layer composed of sinterable ceramic particles; and

a second substantially continuous compositional layer substantially coextensive and contiguous with said first layer, said second layer composed of sinterable ceramic particles wherein at least a portion of the ceramic particles in said second layer are of a composition different from that of the first layer whereby the particles of the second layer, upon sintering and cooling, tend to assume a greater bulk volume than the particles of the first layer, thereby occasioning a compressive stress in said second layer and a tensile stress in said first layer.

4,656,072

RETROREFLECTIVE MATERIAL FOR PROVIDING A COLORED DECORATIVE EFFECT IN VISIBLE LIGHT

Joseph W. Coburn, Jr., Lakewood, and Trudy J. Bryson, Allentown, both of N.J., assignors to Coburn Corporation, Lakewood, N.J.

Continuation-in-part of Ser. No. 745,801, Jun. 17, 1985, abandoned, which is a continuation of Ser. No. 513,652, Jul. 14, 1983, abandoned. This application Oct. 24, 1985, Ser. No. 790,877

Int. Cl.⁴ B32B *23/02;* **D02G** *3/00*

U.S. Cl. 428—40 **9 Claims**

1. A retroreflective article of manufacture providing a colored decorative effect in visible light comprising, in combination, a set of adhesively joined layers comprising:

a top layer of substantially transparent predetermined material;

a retroreflective surface disposed beneath said top layer providing retroreflective effects;

a lower opposed layer of colored predetermined material underlying the top layer;

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wherein said layers are heat sealed together adhesively, the materials forming the colored layer and the top layer causing the retroreflective effects of the retroreflective surface to be cancelled along the edges thus formed by the heat sealing, these edges lying along the periphery and in any desired location intermediate the peripheral edges,



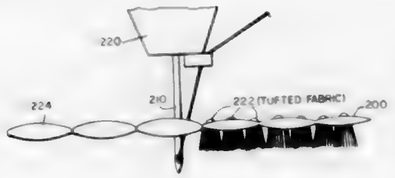
making said lower layer of colored predetermined material become visible through said sealed portion of said top layer providing a colored decorative effect in visible light which effectively cancels the retroreflective effects of the retroreflective surface along any edges formed by the heat sealing.

4,656,073

FABRICS MADE OF HOLLOW MONOFILAMENTS

Francis T. Harris, Millersville, Md., assignor to Ametek, Inc., Odenton, Md.

Filed Apr. 4, 1986, Ser. No. 848,853
Int. Cl.[4] B32B 3/02
U.S. Cl. 428—85 11 Claims



1. In a woven fabric comprising warp yarns running longitudinally and fill yarns running transversely, the improvement wherein at least some of said yarns consist of flexible generally uniform elongated hollow monofilament bristles formed of synthetic plastic, and which are at least partially compressed during weaving to provide an at least partially flattened, substantially untwisted bristle cross-section.

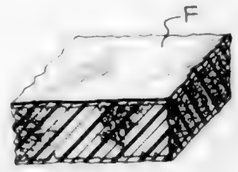
4,656,074

EXTRUDED CLOSED CELL THERMOPLASTIC FOAM

Kenneth E. Conley, Matthews, N.C., and Thomas E. Stull, Rosaca, Ga., assignors to Collins & Aikman Corporation, New York, N.Y.

Filed Apr. 9, 1985, Ser. No. 721,203
Int. Cl.[4] B32B 3/02
U.S. Cl. 428—95 10 Claims

1. An extruded chemically post-blown resilient non-cross-linked closed cell thermoplastic foam comprising a blend of chlorinated polyethylene and at least one other thermoplastic polymer selected from the group consisting of polyurethane, polyamide, styrenic and olefin resins, the amount of chlorinated polyethylene, by weight, being from 0.025 to 0.5 parts



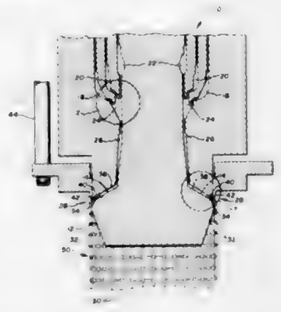
per part of said at least one thermoplastic polymer, and said foam having a substantially uniform size closed cell structure.

4,656,075

PLASTIC NET COMPOSED OF CO-EXTRUDED COMPOSITE STRANDS

Richard C. Mudge, Minneapolis, Minn., assignor to Leucadia, Inc., New York, N.Y.

Filed Mar. 27, 1984, Ser. No. 593,829
Int. Cl.[1] B32B 5/12
U.S. Cl. 428—110 14 Claims



1. In a net product comprised of a network of intersecting extruded polymeric strands, the improvement comprising the provision of composite strands in the network, the composite strands each being comprised of a middle layer of a first polymeric material sandwiched between two outer, generally oppositely disposed layers of a second polymeric material, the outer layers being bonded to the middle layer by fusion adhesion and coextrusion of the strands.

4,656,076

SELF-ALIGNED RECESSED GATE PROCESS

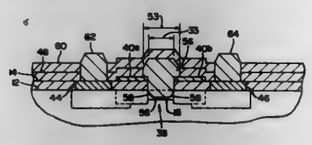
William A. Vetanes, Hillsboro; Kimberly R. Gleason, Portland, and Irene G. Beers, Tigard, all of Oreg., assignors to Triquint Semiconductors, Inc., Beaverton, Oreg.

Filed Apr. 26, 1985, Ser. No. 727,484
Int. Cl.[4] B32B 3/10; G03C 5/00; H01L 21/00
U.S. Cl. 428—137 20 Claims

1. A self-aligned gate process for fabricating an integrated circuit device comprising:
providing a substrate having a reference surface, the substrate being composed of a material etchable by a first etchant;
implanting ions to form an active device region within the substrate extending to a first predetermined depth below said surface;
masking the reference surface over the active device region with an ion-opaque, removable first mask layer;

forming a pair of spaced-apart openings in the mask within the active device region;
implanting ions through the pair of openings into the active device region to form a pair of self-aligned implant regions spaced apart about a gap having a first length defined by the spacing of the openings;
depositing a dielectric layer through the mask openings onto the substrate so as to cover the self-aligned implant regions, the dielectric layer being composed of a first dielectric material resistant to said first etchant;
removing the first mask layer and any of the said dielectric material deposited thereon while leaving two spaced-apart patches of the dielectric material covering the self-aligned implant regions and aligned therewith;
masking the reference surface and the two patches of dielectric material with a second mask layer;
forming an opening in the second mask layer in a location and of a second length encompassing at least a portion of said gap and overlapping an adjoining portion of at least one of the two patches;
etching the substrate material through the opening in the second mask to form a recess in said active region having a second predetermined depth less than said first depth and a length at said reference surface that is defined by the gap between the two patches of dielectric material; and
depositing a gate conductor material through the opening in the second mask to form a gate having a gate contact in contact with the substrate material within the gap, the gate contact having a maximum length defined by said recess.

9. A gallium arsenide (GaAs) integrated circuit gate structure, comprising:
a GaAs substrate having a reference surface;



a first region within the substrate doped to a first dopant concentration and a first depth;
a second region, adjoining the first region within the substrate, doped to a second dopant concentration greater than the first concentration and defining a dopant gradient boundary extending depthwise into the substrate from the reference surface;
a dielectric layer covering a portion of the substrate surface including the second doped region and having an edge aligned with said dopant gradient boundary;
means defining a channel aligned with said edge and recessed depthwise into the substrate in the first doped region to a second depth less than the first depth; and
conductive gate material filling the channel;
the channel having a sidewall aligned at the reference surface with the edge of the dielectric layer and with the dopant gradient boundary.

12. A self-aligned gate process for making integrated circuits, comprising
providing a semi-insulating substrate having a reference surface;
doping a first defined area of the substrate to a first dopant concentration and a first depth;
doping a pair of second defined areas of the substrate overlapping the first defined area and spaced apart therein at a first spacing, to a second concentration and a second depth that are greater than the concentration and depth of doping in the first area;
doping a pair of third defined areas of the substrate, overlapping the second areas within the first area and spaced apart therein to define inward boundaries at a second spacing less than the first spacing, to a third concentration intermediate the first and second concentration and a depth intermediate the first and second depth;
depositing a dielectric layer atop the substrate, solely over the third areas so as to define two dielectric patches having a gap between them which is aligned with said inward boundaries;
masking the substrate with a mask layer and forming an opening in the mask layer encompassing at least a portion of said gap; and
depositing a conductive gate material through the opening to form a gate contact within the gap.

16. A self-aligned gate process for making integrated circuits, comprising:
providing a semi-insulating substrate having a reference surface;
depositing a first dielectric layer over said surface;
applying a layer of photoresist over the first dielectric layer and forming a pair of closely spaced apart openings extending through the photoresist to expose a surface portion of the first dielectric layer through said openings;
implanting ions through the photoresist openings into the substrate to define two implanted regions having implant boundaries substantially aligned with said openings and spaced apart to define a gap between the regions;
depositing a second dielectric layer on the photoresist and within the openings atop the surface portion of the first dielectric layer exposed therein;
removing the layer of photoresist, thereby removing the second dielectric layer deposited thereon and leaving a pair of areas of the second dielectric layer atop the first dielectric layer extending over the pair of implanted regions and having dielectric boundaries spaced closely apart in alignment with said implant boundaries to define a gap in accordance with the spacing of the openings; and
etching within said gap with a first predetermined etchant selectively to remove the first dielectric layer and thereby expose a portion of the substrate bounded by the boundaries of said second dielectric layer; and
depositing a conductive gate material within the gap and the recess to form a gate contact;
the second dielectric layer being composed of a material which is non-etchable by the first etchant so that the gate contact is aligned with the implant boundaries in accordance with the closely-spaced-apart openings in the photoresist.

4,656,077

PRESSURE-SENSITIVE ADHESIVE TAPE HAVING A SUBSTANTIALLY TACK-FREE SURFACE

Franklin C. Larimore, Shoreview, and Robert A. Sinclair, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 15, 1985, Ser. No. 712,277
Int. Cl.[4] B32B 3/00; C09J 7/02
U.S. Cl. 428—156 20 Claims



1. Pressure-sensitive adhesive tape, the adhesive layer of which comprises a polymer of which carboxyl groups originally comprise at least about 3.1% of the weight, the polymer along one broad surface of the layer having tiny spaced mounds at which the polymer has been crosslinked between

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carboxyl groups by polyvalent cations in a nonaqueous medium while leaving the spacings between the mounds uncrosslinked and tacky.

4,656,078

KEY TOP WITH AN IDENTIFICATION LEGEND

Hideo Goto; Takeo Hosoe, and Toshinori Oda, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 585,226, Feb. 28, 1984, abandoned. This application Sep. 23, 1985, Ser. No. 778,744
Claims priority, application Japan, Mar. 18, 1983, 58-46620
Int. Cl.[4] B32B *3/18, 5/16*
U.S. Cl. 428—204 7 Claims



1. A key top of a key, comprising:
a base member having a top face on which a legend identifying said key is printed;
a transparent protective layer of substantially uniform thickness covering at least an area of said top face of the base member in which said legend is disposed, said protective layer being made of a mixture of a transparent base material, and a transparent finely particulate material of visible-light reflecting size mixed with said transparent base material, said finely particulate material being different in refractive index from said base material and having a substantially uniform distribution throughout entire thickness of said protective layer.

4,656,079

REVERSIBLE OPTICAL INFORMATION RECORDING MEDIUM

Noboru Yamada, Hirakata; Eiji Ohno, Neyagawa, and Kunio Kimura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 12, 1985, Ser. No. 743,801
Claims priority, application Japan, Jun. 15, 1984, 59-123001; Jun. 15, 1984, 59-123002; Jun. 15, 1984, 59-123003; Jun. 15, 1984, 59-123004; Jun. 21, 1984, 59-127970
Int. Cl.[4] B32B *15/04*; G01D *15/14, 15/34*
U.S. Cl. 428—209 14 Claims



1. A reversible optical information recording medium having a substrate and a thin film formed on said subtrate, wherein said thin film is made of a material of a ternary system essentially consisting of Te, O and Au, and further containing one element selected from the group consisting of Ge and Se, wherein when said selected one element is Ge then the composition ratio of Te, Ge and Au in said thin film falls within a region which is defined by points A, B, C and D in FIG. 10, while when said selected one element is Se then the ratios of numbers of atoms of Te, O to the sum of numbers of atoms of Au and Se fall within a region defined by points P, S, T and W in FIG. 24, the ratio of Au to Se($r = Au/Se$) satisfying the condition of $\frac{1}{4} \leqq r \leqq 5$.

4,656,080

WATERPROOF COMPOSITE SHEET MATERIAL

Shigeru Takahashi, Ibaraki; Makoto Tanaka, Toyonaka, and Kunio Tanaka, Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sep. 4, 1985, Ser. No. 772,318
Claims priority, application Japan, Sep. 7, 1984, 59-186484; Sep. 10, 1984, 59-188110
Int. Cl.[4] B32B *7/00*
U.S. Cl. 428—215 16 Claims

1. A waterproof composite sheet material comprising:
a water-repellent substrate consisting of a fibrous sheet impregnated with a water-repellent material and
waterproof thermoplastic resin film layers firmly bonded to both the surfaces of the water-repellent substrate with waterproof bonding material layers.

4,656,081

SMOOTH NONWOVEN SHEET

Katsutoshi Ando, and Nishiura Eiichi, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 24, 1984, Ser. No. 603,308
Claims priority, application Japan, Apr. 25, 1983, 58-71451
Int. Cl.[4] B32B *5/02*
U.S. Cl. 428—233 14 Claims



1. A smooth nonwoven sheet having lengthwise and transverse directions, said sheet being composed mainly of fine fibers which are individually distributed substantially throughout the sheet and mainly oriented in the lengthwise direction; and said sheet also including yarn-like fiber bundles of entanglements of said fine fibers which are oriented also in the lengthwise direction of said sheet, further characterized in that the ratio of fiber bundles to fibers on one surface of the sheet is greater than the ratio of fiber bundles to fibers on the other surface of the sheet.

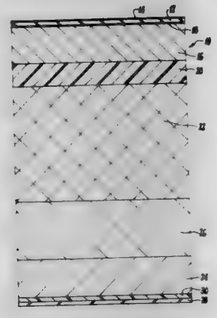
4,656,082

LAMINATE MATERIAL WITH FIBROUS INNER LAYER

Stanley A. Goodacre, Pennant Hills, and Anthony E. Blaubaum, Balwyn, both of Australia, assignors to ACI Australia Limited, Victoria, Australia

Filed Aug. 28, 1985, Ser. No. 770,395
Claims priority, application Australia, Sep. 5, 1984, PG6959
Int. Cl.[4] B32B *7/00*
U.S. Cl. 428—248 20 Claims

1. A laminate material suitable for use in place of a safety mesh used in construction of roofing, the laminate having at least one inner layer comprising fibrous material adhesively bonded to each of the next adjacent layers; with each next adjacent layer being paper or metal foil, the laminate having at least one layer of paper, with at least one outermost layer being metal foil; said inner layer comprising fibrous material having



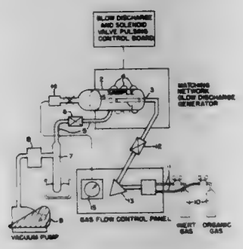
a density of from about 30 to about 50 g/m^2 and comprising fibers of from about 30 to about 150 tex.

4,656,083

PLASMA GAS DISCHARGE TREATMENT FOR IMPROVING THE BIOCOMPATIBILITY OF BIOMATERIALS

Allan S. Hoffman; Andrew Garfinkle; Buddy D. Ratner, all of King County, Wash., and Stephen R. Hanson, San Diego County, Calif., assignors to Washington Research Foundation, Seattle, Wash.

Continuation of Ser. No. 519,383, Aug. 1, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 709,990
Int. Cl.[4] B05D *3/06*
U.S. Cl. 428—265 15 Claims



1. A method of making a vascular prosthesis from a polymeric substrate material whose surface exposed to blood is treated to render it both thrombi- and emboli-resistant over extended periods of time, comprising:
exposing the surface of the substrate material to be exposed to blood to plasma gas discharge in the presence of a fluorinated hydrocarbon gas, whereby deposition occurs on said material, in the presence of the plasma gas discharge, forming a thin, covalently bound deposition on the surface of the material of a fluorocarbon polymer with short chain-length fluorocarbon polymer side or end groups without otherwise changing the mechanical behavior of the material or its surface texture.

8. A surface modified vascular graft material whose treated surface, when exposed to blood, is both thrombi- and emboli-resistant over extended periods of time, comprising:
a fabric of polyethylene terephthalate material having a thin, covalently bonded coating on the surface thereof composed principally of a fluorocarbon polymer with short chain-length fluorocarbon side or end groups resulting from an electric glow discharge polymerization process conducted in a fluorinated hydrocarbon gaseous atmosphere.

4,656,084

AQUEOUS SIZE COMPOSITION WITH PH REGULATOR

Richard A. McCoy, Columbus; Walter L. Reitter, Heath, and Phra D. Lyle, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 274,966, Jun. 16, 1981, abandoned. This application Jul. 29, 1983, Ser. No. 517,739
Int. Cl.[4] B32B *7/00*; B05D *3/02*
U.S. Cl. 428—266 8 Claims

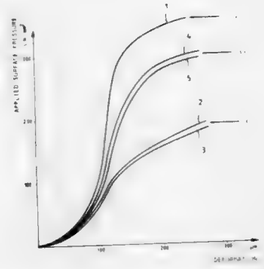
1. An aqueous sizing composition for glass fibers which consists of a film-forming polymer in the form of an epoxy resin which is a diglycidyl ether of an epichlorohydrin-bisphenol A condensate and has an epoxy equivalent weight of about 250, a lubricant, an epoxy coupling agent and a pH regulator, said coupling agent comprising (i) a first organosilane having an epoxy group non-hydrolyzably linked to a silicon atom and at least two groups each of which is joined by a readily hydrolyzable bond to a silicon atom, or a hydrolysis product thereof, and (ii) a second organosilane having an acrylyl or methacrylyl group non-hydrolyzably linked to a silicon atom and at least two groups each of which is joined by a readily hydrolyzable bond to a silicon atom, or a hydrolysis product thereof, wherein each of said organosilanes is substantially devoid of halogen substitution in the non-hydrolyzable portion thereof, said pH regulator being present in an amount sufficient to impart to the composition a pH within the range of from about 3 to about 4.

4,656,085

IMPREGNATED SOFT, FLAT GASKET AND MANUFACTURING METHOD

Heribert Bechen, Cologne; Franz-Josef Giesen, Odenthal; Klaus Lönne, and Klaus-Peter Majewski, both of Burscheid, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

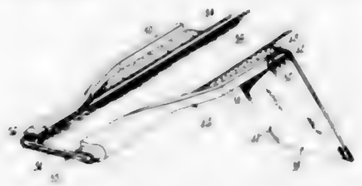
Filed Aug. 23, 1985, Ser. No. 768,851
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1984, 3431633
Int. Cl.[4] B32B *27/00*; F16J *15/12*
U.S. Cl. 428—290 17 Claims



1. In an impregnated, soft, flat sealing gasket, including a fiber mat formed of a material selected from the group consisting of organic fibers, inorganic fibers, synthetic fibers and mixtures thereof, and a binder; said gasket further including an at least partly cross-linked impregnating agent, the improvement wherein said fiber mat contains from 3 to 15% by weight relative to the impregnated fiber mat of a duromer synthetic resin uniformly distributed therein, whereby said gasket has a higher yield point under applied surface pressure than that for a corresponding but duromer synthetic resin-free gasket.

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4,656,086
CLOTH COVERED PINCH WELT AND METHOD FOR MAKING SAME
Daniel W. Bowers, Otsego, and Donald L. Wisner, Portage, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Jul. 21, 1986, Ser. No. 887,508
Int. Cl.[4] B32B *3/26, 7/04;* B29D *7/00;* B29C *67/00*
U.S. Cl. 428—309.9 13 Claims



6. A cloth covered pinch welt comprising a flexible, thermoplastic polymeric substrate extruded about a reinforcing member, a layer of flexible open cell foam material partially imbedded into the polymeric substrate, said foam covered with a layer of cloth.

4,656,087
DIELECTRIC IMAGING SHEET THROUGH ELIMINATION OF MOISTURE INDUCED IMAGE DEFECTS
Ronald P. Lubianez, Fitchburg, and Everett W. Bennett, Easthampton, both of Mass., assignors to James River Graphics, South Hadley, Mass.
Filed Jan. 10, 1986, Ser. No. 817,663
Int. Cl.[4] B32B *5/16;* G03G *13/00*
U.S. Cl. 428—323 24 Claims

1. A dielectric sheet useful in electrographic imaging, wherein the improvement comprises the sheet having a particulate solid in the dielectric coating, with the particulate solid having been treated with an acyloxy or an amine terminated polysiloxane.

4,656,088
MAGNETIC RECORDING MEDIUM
Fumihiro Tokunaga; Takamitsu Asai, and Masaaki Fujiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 23, 1985, Ser. No. 768,608
Claims priority, application Japan, Aug. 23, 1984, 59-175531
Int. Cl.[4] G11B *5/708*
U.S. Cl. 428—323 16 Claims

1. A magnetic recording medium comprising a nonmagnetic support having provided thereon a magnetic layer comprising a binder and a magnetic powder, wherein said magnetic layer comprises as an additional component powder of an oxide represented by the formula:

$$M\text{-}1_xM\text{-}2_xO_{2+x}$$

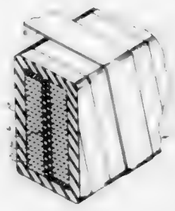
wherein M-1 represents at least one member selected from the group consisting of barium, strontium, lead and calcium; M-2 represents at least one member selected from the group consisting of titanium, zirconium and tin; aand x represents a number satisfying the formula $0 \leqq x \leqq 0.9$, the powder has an average particle size of not more than 0.5 μm, the powder is present in an amount of from 0.1 to 20 parts by weight per 100 parts by weight of the magnetic powder and the powder exhibits electrical conductivity, has satisfactory dispersibility, has moderate hardness and is capable of imparting moderate head wearability to a magnetic layer.

4,656,089
MAGNETIC RECORDING MEDIUM
Yoshisobu Ninomiya; Masakazu Muroyama; Masayoshi Sugiyama, and Akira Hashimoto, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 8, 1985, Ser. No. 785,555
Claims priority, application Japan, Oct. 9, 1984, 59-211650
Int. Cl.[4] G11B *5/70*
U.S. Cl. 428—327 6 Claims

1. A magnetic recording medium comprising a non-magnetic base and a magnetic layer containing magnetic powder and a binder attached to said base, said magnetic layer having dispersed therein spherical small sized particles of a benzoguanamine-formaldehyde resin or a benzoguanamine-melamine-formaldehyde resin, the particle size of said resin being in the range from 0.1 to 3 microns.

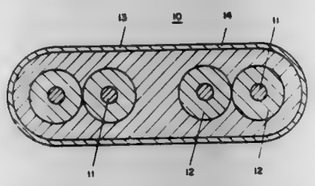
3. A magnetic recording medium comprising a non-magnetic base and a magnetic layer containing magnetic powder attached to said base, said magnetic powder having a specific surface area of at least 30 m^2/g, said magnetic layer having dispersed therein spherical particles of a benzoguanamine-formaldehyde resin or a benzoguanamine-melamine-formaldehyde resin, said resin having a particle size of from 0.1 to 3 microns, said particles being present in an amount of from 1 to 10 parts by weight for 100 parts by weight of magnetic powder.

4,656,090
LOW VISCOSITY EPOXY RESIN COMPOSITIONS
Mark Markovitz, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 658,102, Oct. 5, 1984, Pat. No. 4,603,182.
This application Feb. 25, 1986, Ser. No. 833,303
Int. Cl.[4] B32B *27/38;* D02G *3/00*
U.S. Cl. 428—364 2 Claims



1. An article of manufacture comprising an elongated conductor, a tape wrapped on said conductor, said tape being impregnated with a thermosetting resin composition having superior thermal stability consisting essentially of between about 50% and about 95% of 1,2 epoxy resin having at least two epoxide groups per molecule, between about 3% and about 33% of a reactive diluent selected from the group consisting of styrene, alpha-methyl styrene, an isomer or mixture of isomers of vinyl toluene, of t-butyl styrene, of divinyl benzene, and of diisopropenyl benzene, and mixtures thereof, and small but effective amount of phenolic accelerator and a labile halogen-free catalytic hardener.

4,656,091
INSULATING MATERIAL FOR TELEPHONE CORDS AND TELEPHONE CORDS INCORPORATING SAME
Jae H. Choi, Warren Township, Marion County, Ind.; William M. Kanotz, Baldwin, and William C. Vesperman, Bel Air, both of Md., assignors to AT&T Technologies, Inc., Berkeley Heights and Bell Telephone Laboratories Inc., Murray Hill, both of, N.J.
Division of Ser. No. 666,640, Oct. 31, 1984, Pat. No. 4,592,955.
This application Jan. 27, 1986, Ser. No. 822,331
Int. Cl.[4] B32B *9/00, 27/00;* G02B *6/44;* H01B *7/00*
U.S. Cl. 428—383 10 Claims



1. A telephone cord comprising a plurality of insulated conductors and an insulating jacket thereover wherein the conductor insulation comprises an extruded blend of a styrene-ethylenebutylene-styrene copolymer with a mixture of low melt index and high melt index polypropylenes.

4,656,092
TARGET SHOOTING CAPSULES
Frederic E. Hamaa, Clearwater, and Keith E. Schmoke, Safety Harbor, both of Fla., assignors to R. P. Scherer Corporation, Troy, Mich.
Filed Oct. 15, 1985, Ser. No. 787,508
Int. Cl.[4] B41M *5/00*
U.S. Cl. 428—402.2 9 Claims

1. A target shooting capsule comprising a substantially spherical, nontoxic, soft elastic gelatin capsule having a dry wall thickness of about 0.004 inches to about 0.013 inches, having a diameter of about 0.16 inches to about 0.265 inches, and containing about 0.03 cc to about 0.12 cc of a water washable, nontoxic dye fill material.

4,656,093
MAGNETIC RECORDING MEDIA
August Lehner, Roedersheim-Gronau; Albert Kohl, Dirmstein; Hermann Roller, Ludwigshafen; Werner Balz, Limburgerhof; Eerhard Koester, Frankenthal, and Friedrich Sommermann, Kehl, all of Fed. Rep. of Germany, assignors to Basf Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 24, 1984, Ser. No. 685,321
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1983, 3347531
Int. Cl.[4] G11B *5/71*
U.S. Cl. 428—403 3 Claims

1. In a magnetic recording medium in which at least one firmly adhering magnetizable layer based on magnetic material finely dispersed in a polymeric binder, at least one lubricant and conventional additives, is applied to a non-magnetic base, the improvement which comprises using as the lubricant a mixture of (a) zinc stearate, which is rendered hydrophilic by means of a precoating treatment with an agent which consists of an alkyl chain and a hydrophilic group selected from the group consisting of alkyl benzenesulfonates where alkyl is of 10 to 22 carbon atoms, polyethers which are esterfied with fatty alcohols of 12 to 15 carbon atoms, alkylbetains where alkyl is of 14 to 20 carbon atoms, mono-, di- or triesters of phosphoric acid, and monoalcohols of 12 to 15 carbon atoms, which agent is present in an amount of from 5 to 40% by weight, (b) an electrolyte in an amount of not more than 10% by weight based on the hydrophilic zinc stearate and (c) stearylamide.

4,656,094
NOVEL MULTI-LAYER ARTICLES
Shinji Kojima, Yokohama; Hirokazu Suzuki, Kawasaki, and Yuichi Orikasa, Tokyo, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan
Filed Jul. 12, 1985, Ser. No. 754,520
Claims priority, application Japan, Jul. 16, 1984, 59-145975
Int. Cl.[4] B32B *27/36;* B65D *65/40*
U.S. Cl. 428—412 8 Claims

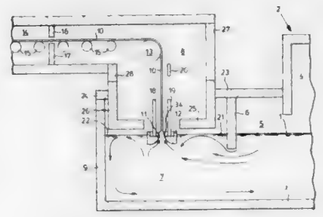
1. A multi-layer laminate article which comprises at least two layers including a polyester resin layer and a layer of an epoxy group-containing olefin polymer or an olefin polymer composition comprising the epoxy group-containing olefin polymer, the epoxy group-containing olefin polymer being a copolymer containing an unsaturated glycidyl group containing monomer in the main chain prepared by subjecting 50–99.95 wt% of ethylene, 0.05–50 wt.% of an unsaturated glycidyl group-containing monomer and up to 49.95% wt.% of an ethylenically unsaturated monomer to polymerization.

4,656,095
ABLATIVE COMPOSITION
Lawrence E. McAllister, Dayton, and John E. Hill, Jr., Biddeford, both of Me., assignors to Fiber Materials, Inc., Biddeford, Me.
Filed May 31, 1984, Ser. No. 615,586
Int. Cl.[4] C08K *3/18*
U.S. Cl. 428—413 8 Claims

1. In a coating composition suitable for application to a substrate for curing thereon to form an ablative coating, which composition includes a reactive resin mixture of an epoxy resin and a polysulfide resin in which said epoxy resin makes up at least 25% by weight of the total resin content, said reactive mixture being self-curing to provide a tough, adherent coating which forms a char when exposed to an ablative/erosion environment; an amine curing agent for curing said reactive mixture; and a mixture of finely divided inorganic materials providing a source of one or more Lewis acids and being capable of forming a glassy reaction product to stabilize said char; the improvement wherein

said composition includes short pre-ox fibers which retain their fibrous structure during formation of said char.

4,656,096
MANUFACTURE OF DRAWN SHEET GLASS
Adrianus Geppaard, Mol, Belgium, assignor to Glaverbel, Brussels, Belgium
Continuation of Ser. No. 517,209, Jul. 25, 1983, abandoned. This application Dec. 2, 1985, Ser. No. 803,778
Claims priority, application United Kingdom, Jul. 30, 1982, 8222083
Int. Cl.[4] C03B *15/06*
U.S. Cl. 428—426 26 Claims



1. A sheet glass manufacturing process comprising: supply-

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ing molten glass from a glass melting tank furnace, where the molten glass is produced, to a drawing tank having an upstream end wall at the end of the drawing tank directed toward the tank furnace and a downstream end wall at the end of the drawing tank directed away from the tank furnace; positioning a refractory device provided with an elongated slot having a longitudinal center line in the drawing tank so that the refractory device is partially immersed in molten glass in the drawing tank to a sufficient depth such that the top of the slot is below the level of the surface of the molten glass in the drawing tank for causing molten glass to be forced upwardly through and out of the slot by hydrostatic pressure, and the longitudinal center line is spaced from each end wall, the refractory device further having a rim extending around the periphery of the device, spaced laterally from the slot, and projecting upwardly from the level of the top of the slot to a height above the level of the surface of the molten glass in the drawing tank, to form a region surrounding the top of the slot which is free of molten glass; and drawing molten glass upwardly in the form of a continuous ribbon from glass which has been forced out of the slot and into a drawing chamber located above the drawing tank; wherein the tank is dimensioned and the refractory device is located such that the longitudinal center line of the elongated slot is spaced by a distance of at least 550 mm from each end wall of the drawing tank and, during said step of drawing, a free glass surface is maintained in the drawing tank between the refractory device and each of the end walls of the tank, and the tank is so dimensioned that the glass surface to each side of the refractory device is at least 350 mm long measured in a direction normal to the plane of the upwardly drawn ribbon.

12. Sheet glass produced by a process according to claim 1.

15. A sheet glass manufacturing plant comprising: a glass melting tank furnace for producing molten glass; a drawing tank connected to the furnace to receive a continuous supply of molten glass therefrom, said drawing tank having an upstream end wall at the end of said drawing tank directed toward said furnace and a downstream end wall at the end of said drawing tank remote from said furnace; a drawing chamber disposed above said drawing tank; a refractory device provided with an elongated slot having a longitudinal center line, said device being disposed in said drawing tank to be partially immersed in molten glass in said tank to a sufficient depth such that the top of said slot is below the level of the surface of molten glass in said drawing tank and so that molten glass is forced upwardly through said slot by hydrostatic pressure, said refractory device further having a rim extending around the periphery of said device, spaced laterally from said slot, and projecting upwardly from the level of the top of said slot to a height which will be above the level of the surface of the molten glass in said drawing tank when said refractory device is partially immersed in the molten glass, to form a region surrounding the top of the slot which is free of molten glass when molten glass is being drawn upwardly in the form of a continuous ribbon; and means from drawing molten glass upwardly in the form of a continuous ribbon from said slot into said drawing chamber; wherein said drawing tank is dimensioned and said refractory device is located such that the longitudinal center line of said slot is spaced by a distance of at least 550 mm from each said end wall of said drawing tank, and said refractory device is spaced from each of said upstream and downstream end walls by a distance of at least 350 mm.

4,656,097

POST TREATMENT OF PHOSPHATED METAL SURFACES BY ORGANIC TITANATES

William J. Claffey, 15174 Hook Hollow Rd., Novelty, Ohio 44072, and Alan J. Reid, 13345 County Line Rd., Gates Mills, Ohio 44040

Filed Aug. 19, 1985, Ser. No. 766,917
Int. Cl.[4] B32B *15/04*
U.S. Cl. 428—457 19 Claims

5. A method of treating phosphated metal surfaces to provide a durable rust-inhibiting coating comprising the steps of

(a) treating a phosphated metal surface with an aqueous solution of a water-soluble organic titanium chelate which forms a water-insoluble titanium deposit on the phosphated metal surface, and

(b) depositing on the titanium chelate treated phosphated metal surface,

(i) a siccative organic coating, or

(ii) a corrosion-inhibiting film of oil, or

(iii) a siccative organic coating followed by a corrosion-inhibiting film of oil.

4,656,098

LAMINATE EXCELLENT IN SURFACE GLOSS AND SURFACE HARNESS, AND PREPARATION PROCESS AND USE THEREOF

Katsuyoshi Yonekura; Akira Uchiyama, and Akira Matsuda, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 11, 1984, Ser. No. 680,644
Claims priority, application Japan, Dec. 14, 1983, 58-234350; Dec. 6, 1984, 59-256405
Int. Cl.[4] B32B *27/08*
U.S. Cl. 428—517 14 Claims

1. A laminate excellent in surface gloss and scratch resistance, which comprises a thermoplastic elastomer layer composed mainly of a composition comprising a polyolefin and an olefinic copolymer elastomer, at least one of which is partially crosslinked, and a layer of a partially neutralized ionomer resin or 1-olefin/(meth)acrylic acid copolymer resin having free carboxyl groups, both the layers being tightly bonded to each other and wherein up to 60% of the carboxyl groups of the partially neutralized ionomer resin are bonded to an alkali metal ion and/or an ion of a metal of the Group II of the Periodic Table.

4,656,099

CORROSION, EROSION AND WEAR RESISTANT ALLOY STRUCTURES AND METHOD THEREFOR

George K. Sievers, 1110 Kenwood St., Burbank, Calif. 91505

Division of Ser. No. 376,107, May 7, 1982, Pat. No. 4,439,470, Continuation-in-part of Ser. No. 207,246, Nov. 17, 1980, Pat. No. 4,352,840. This application Sep. 6, 1983, Ser. No. 513,224
Int. Cl.[4] C23C *12/00, 10/52*
U.S. Cl. 428—610 16 Claims

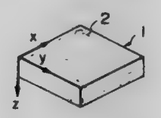
1. Cobalt, nickel or iron base alloy structure having a diffusion coating, said coating comprising a ternary or quaternary alloy of aluminum, base metal and rhodium, platinum or palladium effective to improve the corrosion resistance properties of said structure, and distributed within said coating an interdispersed phase of discrete particulate matter in an amount effective to improve the erosion and wear properties of said structure without reducing the corrosion resistance imparted by said ternary alloy, said particulate matter being selected from tungsten, tantalum, molybdenum, zirconium, titanium, hafnium, yttrium, chromium, tungsten carbide, tantalum carbide, zirconium carbide, titanium carbide, chromium carbide, molybdenum disilicide, and silicon nitride.

4,656,100

FIBER REINFORCED MATERIAL WITH MATRIX METAL CONTAINING COPPER AND REINFORCING FIBERS CONTAINING ALUMINA

Tadashi Dohnomoto, and Yoshitaka Takahashi, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 16, 1985, Ser. No. 723,759
Claims priority, application Japan, Jun. 20, 1984, 59-127127
Int. Cl.[4] H01F *1/00*
U.S. Cl. 428—611 13 Claims



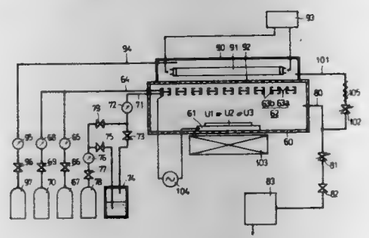
1. An electrical sliding contact element for transmitting electrical power between itself and a mating member under mutual sliding surface contact therebetween, comprising a composite material which is composed essentially of a matrix metal which is copper or an alloy thereof, and a reinforcing fiber material which is a collection of alumina-silica type short fibers arranged, as viewed in an X-Y-Z coordinate frame having a Z axis extending substantially parallel with a contact surface of said sliding surface contact, so as substantially to align randomly in planes layered in parallel to the X-Y plane of said X-Y-Z coordinate frame, said fibers including alumina in about 40% by weight or more, non-fibrous particles included in said collection of fibers amounting to about 7% by weight or less, the total amount of non-fibrous particles with a diameter greater than or equal to about 150 microns being less than or equal to about 1% by weight, and with the volume portion of said short fiber material being from about 0.5% to about 30%.

4,656,101

ELECTRONIC DEVICE WITH A PROTECTIVE FILM

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1985, Ser. No. 795,917
Claims priority, application Japan, Nov. 7, 1984, 59-234387; Dec. 13, 1984, 59-263281
Int. Cl.[4] H01L *23/48, 29/00*
U.S. Cl. 428—620 2 Claims



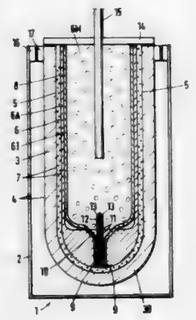
1. An electronic device which has a structure in which at least one electronic element including an insulating film or covered with a protecting film is formed on a substrate, the insulating or protecting film consisting principally of aluminum nitride.

4,656,102

ELECTROCHEMICAL STORAGE CELL

Dieter Hasenauer, Weinheim, and Franz Lenz, Neulussheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Dec. 4, 1985, Ser. No. 805,281
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1984, 3444917
Int. Cl.[4] H01M *10/39*
U.S. Cl. 429—104 3 Claims



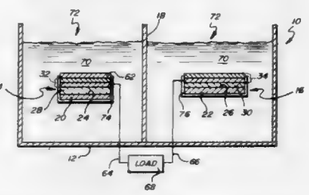
1. Electrochemical storage cell based on sodium and sulfur comprising an anode space and a cathode space which are separated from each other by a cup-shaped solid electrolyte, a safety container for sodium arranged within the solid electrolyte, a hole in the safety container which is in communication with the interior of the solid electrolyte and provided with a flow resistance formed by a screw with an external thread, which screw is screwed into the hole of the safety container, said screw having a through hole which extends in its longitudinal axis and into which through hole a notched pin is inserted having in its outside surface at least three notches which are spaced from each other and extend parallel to the longitudinal axis of the notched pin.

4,656,103

LIQUID JUNCTION PHOTOELECTRODES USING AMORPHOUS SILICON-BASED THIN FILM SEMICONDUCTOR

Benjamin Reichman, Birmingham; Gao Liang, Detroit, and Krishna Sapru, Troy, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 467,501, Feb. 18, 1983, abandoned. This application May 20, 1985, Ser. No. 736,433
Int. Cl.[4] H01M *6/36;* C25B *1/02*
U.S. Cl. 429—111 16 Claims



1. A photoelectrochemical cell for the conversion of sunlight into electrical energy for the production of hydrogen gas comprising:

a cell having an interior space therein, said space divided by a membrane positioned in said space to form an anode compartment and a cathode compartment within said cell;

an electrolyte without an added redox couple in said anode compartment and in said cathode compartment;

a photocathode positioned in said cathode compartment with at least a portion in contact with said electrolyte;

an electrode positioned in said anode compartment with at least a portion in contact with said electrolyte;

said photocathode being a photoelectrode and including a substrate having a deposition surface, an electrically conductive lead, and a thin film amorphous silicon semiconductor alloy body deposited on the substrate having at least a first and a second layer, the first layer being adjacent the substrate being p+ type and including a p type dopant at a concentration of about 10^{23} atoms/cm^3 and adapted to be coupled to the electrically conductive lead, said semiconductor alloy body having enhanced resistance to photocorrosion while operating in the absence of an added redox coupled in said electrolyte; and

means for impinging photons upon said photoelectrode wherein sunlight will be converted into energy usable as electricity or a fuel.

3. The cell as defined in claim 1, wherein said cell further includes an electrical load electrically coupled to said electrodes wherein sunlight is converted into electrical energy.

4,656,104

SEALING GASKET FOR ELECTROCHEMICAL CELLS

Gary R. Tucholski, Parma Heights, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 399,900, Mar. 19, 1982. This application Dec. 23, 1985, Ser. No. 814,163

Int. Cl.[4] H01M *2/08*

U.S. Cl. 429—185 **5 Claims**



1. In a sealed miniature cell comprising a container having a base, upright sidewall and an open end; an electrolyte, a cathode, an anode and a separator being disposed within said container and wherein said separator electrically insulates said cathode from said anode; a cell cover disposed and secured at the open end of said container with a sealing gasket between said container and said cover; the improvement wherein the cross-sectional area of the gasket in the plane containing the center axis of said sealing gasket and perpendicular to the base of said sealing gasket has a uniform cross-section and wherein said sealing gasket comprises a substantially upright annular sidewall having an inner surface, an outer surface, a top surface and an inwardly disposed flange at the base of said sidewall, said sidewall having a non-uniform thickness wherein said inner surface is linearly tapered above the intersection of said inner surface and said flange such that the bottom width of said sidewall is larger than the top width of said sidewall; an upper portion of said sealing gasket and container sidewall being crimped such that said upper portion of said sealing gasket is compressed between the peripheral edge of said cell cover and said upper portion of said container sidewall such that the uppermost bent over portion of said container sidewall is substantially parallel to said container base, and said uppermost bent over portion being disposed below the top surface of said cell cover.

4,656,105

IODINE CELL

Sadao Kobayashi; Hiroshi Sakawa, and Sadaaki Yamamoto, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

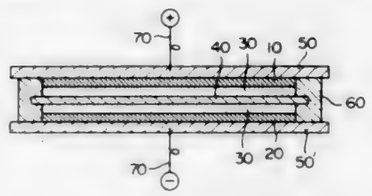
PCT No. PCT/JP84/00416, § 371 Date Apr. 17, 1985, § 102(e) Date Apr. 17, 1985, PCT Pub. No. WO85/01155, PCT Pub. Date Mar. 14, 1985

PCT Filed Aug. 30, 1984, Ser. No. 726,907

Claims priority, application Japan, Aug. 30, 1983, 58-157142; Aug. 30, 1983, 58-157143; Sep. 20, 1983, 58-172250; Jan. 5, 1984, 59-76; Jan. 5, 1984, 59-77

Int. Cl.[4] H01M *10/36*

U.S. Cl. 429—192 **9 Claims**



1. Secondary cell comprising a negative electrode, a positive electrode, an electrolyte solution and a cation exchange membrane between said electrodes; said positive electrode comprising a positive electrode material of a complex adduct of iodine and a polymer or a composition comprising said polymer and iodine dispersed in said polymer, said positive electrode material having a carbon dispersed therein.

4,656,106

METHOD OF PREPARING A MULTICOLORED HOLOGRAPHIC IMAGE

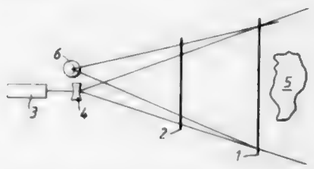
David B. Holland, Wilmslow, and Glenn P. Wood, Hale, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 15, 1985, Ser. No. 787,353

Claims priority, application United Kingdom, Oct. 26, 1984, 8427102; Dec. 21, 1984, 8432328

Int. Cl.[4] G03C *1/04, 5/00, 5/04*

U.S. Cl. 430—2 **10 Claims**



1. A method of preparing a silver halide sensitised multicolored hologram having interference fringes generally parallel to the substrate which comprises effecting an imagewise photographic exposure using actinic light, effecting a holographic exposure using laser light wherein the reference beam enters the holographic material from the opposite side to the object beam, of the holographic material, the photographic exposure and the holographic exposure being either sequential or simultaneous, there being an overlap of the photographic exposure and the holographic exposure, developing the holographic material using a silver halide developing agent and then shrinking the silver halide binder by removal of silver content either in those areas of the material which have been most light exposed or in those areas of the material which have been least light exposed.

4,656,107

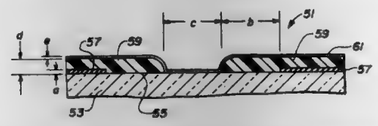
PHOTOGRAPHIC PRINTING PLATE FOR USE IN A VACUUM PRINTING FRAME

John J. Moscony; Thomas J. Michielutti, both of Lancaster, and Charles M. Wetzel, Lititz, all of Pa., assignors to RCA Corporation, Princeton, N.J.

Division of Ser. No. 507,547, Jun. 24, 1983, Pat. No. 4,588,696. This application Dec. 23, 1985, Ser. No. 812,051

Int. Cl.[4] G03F *1/00*

U.S. Cl. 430—5 **7 Claims**



1. A photographic printing plate for use in a vacuum printing frame comprising an optically-transparent support plate having two opposed major surfaces and an optically-opaque master pattern on one of said major surfaces, said master pattern including an opaque layer of material having a substantially uniform thickness in the range of about 0.5±0.2 micrometers, said plate including a coating of islands of light-transmitting rubbery material over opaque portions of said master pattern on said one major surface, said islands being separated from each other in the non-opaque portions of said master pattern to provide continuous paths therebetween.

4,656,108

PATTERNED FILM OF THIOCARBONYL FLUORIDE POLYMER

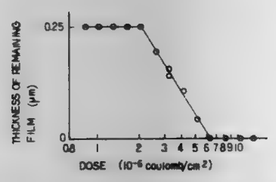
Takaomi Satokawa, Takatsuki; Tsuneo Fujii, Suita, and Takayuki Deguchi, Ibaraki, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 551,514, Nov. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 392,079, Jun. 25, 1982, abandoned. This application Jun. 20, 1985, Ser. No. 746,932

Claims priority, application Japan, Jun. 30, 1981, 56-102726

Int. Cl.[4] G03C *3/00*

U.S. Cl. 430—18 **4 Claims**



1. A resist pattern consisting essentially of a patterned film of a thiocarbonyl fluoride polymer having a thickness of 0.1 to 5 μm provided on a substrate, said thiocarbonyl fluoride polymer comprising recurring units of the formula (I)



(I)

and being selected from the group consisting of poly(thiocarbonyl fluoride) and copolymers of thiocarbonyl fluoride with ethylenically unsaturated compounds, said thiocarbonyl fluoride polymer having a molecular weight of 5,000 to 500,000, and said patterned film being prepared by forming a film of said thiocarbonyl fluoride polymer on the substrate, irradiating the film in a pattern with ionizing radiation and developing the irradiated film with an organic solvent.

4,656,109

LAYERED SOLID STATE COLOR PHOTOSENSITIVE DEVICE

Masakazu Ueno, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 19, 1985, Ser. No. 777,506

Claims priority, application Japan, Sep. 19, 1984, 59-195988

Int. Cl.[4] G01J *3/50*

U.S. Cl. 430—46 **6 Claims**

1. A color photosensitive device comprising:

a transparent substrate; and

a photoelectric conversion device mounted on said substrate. said device comprising a first transparent conductive film laminated on a surface on said substrate, a first photoelectric conversion layer laminated on said first transparent conductive film, a second transparent conductive film laminated on said first photoelectric conversion layer, a second photoelectric conversion layer laminated on said second transparent conductive film, a third transparent conductive film laminated on said second photoelectric conversion layer, a third photoelectric conversion layer laminated on said third transparent conductive film, and an electrode formed on said third photoelectric conversion layer, wherein the thickness of said second photoelectric conversion layer is greater than the thickness of said first photoelectric conversion layer and less than the thickness of said third photoelectric conversion layer for creating said second photoelectric conversion layer having a light absorption coefficient sensitive to a wavelength which is greater than a wavelength to which a light absorption coefficient of said first photoelectric conversion layer is sensitive and less than a wavelength to which a light absorption coefficient of said first photoelectric conversion layer is sensitive and less than a wavelength to which a light absorption coefficient of said third photoelectric conversion layer is sensitive.

4,656,110

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER HAVING A PHOTOCONDUCTIVE LAYER OF AN AMORPHOUS MATERIAL

Mutsuki Yamazaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 23, 1985, Ser. No. 779,065

Claims priority, application Japan, Oct. 24, 1984, 59-221962

Int. Cl.[4] G03G *5/082*

U.S. Cl. 430—57 **12 Claims**

1. An electrophotographic photosensitive member comprising:

(a) an electroconductive substrate;

(b) a barrier layer, provided on said substrate and comprised of amorphous hydrogenated silicon carbide doped with an atom of Group III-A or V-A in the Periodic Table as an impurity, for blocking injection of carriers from said substrate;

(c) a photoconductive layer, provided on said barrier layer and comprised of amorphous hydrogenated silicon carbide doped with an atom of Group III-A or V-A in the Periodic Table as an impurity, for generating photocarriers by light exposure; and

(d) a covering layer, provided on said photoconductive layer and comprised of amorphous hydrogenated silicon carbide doped with an atom of Group III-A or V-A in the Periodic Table as an impurity, for retaining charges which may be neutralized by photocarriers generated in said photoconductive layers thereon.

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4,656,111

PRESSURE-FIXABLE TONER COMPRISING COMBINATION OF A COMPOUND HAVING HYDROCARBON CHAIN AND A COMPOUND HAVING AMINO GROUP

Katsutoshi Wakamiya, Yokohama; Toru Matsumoto, Tokyo, and Masuo Yamazaki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 598,915, Apr. 10, 1984, abandoned. This application Jan. 22, 1985, Ser. No. 693,468
Claims priority, application Japan, Apr. 12, 1983, 58-63931; Jul. 7, 1983, 58-124026; Jul. 7, 1983, 58-124027
Int. Cl.⁴ G03C 9/00, 13/20
U.S. Cl. 430—109 **32 Claims**

1. A pressure-fixable toner, comprising a compound A of C_{12} or more than C_{12} having an aliphatic saturated hydrocarbon chain of C_{12} or more than C_{12} and an amine compound B_1 having an alkyl group or an alkylene group of C_{10} to C_{31}, said amine compound B_1 being added in an amount of 0.01 to 3.0 weight % based on said compound A and said compound A being compatible with said Compound B_1.

4,656,112

TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGES

Yoji Kawagishi, Yawata; Shinichi Narita, Kawachinagano; Takashi Kiria, Osaka, and Kenji Uomoto, Takatsuki, all of Japan, assignors to Orient Chemical Industries, Ltd., Japan

Filed Sep. 12, 1985, Ser. No. 775,485
Claims priority, application Japan, Sep. 12, 1984, 59-191117
Int. Cl.⁴ G03G 9/08
U.S. Cl. 430—110 **13 Claims**

1. A toner for developing electrostatic latent images characterized in that the toner comprises as a charge control agent a zinc complex compound of a hydroxy-naphthoic acid having or not having a substituent.

4,656,113

DYE COMPOSITION AND USE THEREOF

Tetsuya Ohshima; Hisashi Senshu; Takeshi Matsuyama; Yoji Kawagishi; Takao Andoh, and Takashi Kirya, all of Osaka, Japan, assignors to Nippon Gosei Kagaku Kogyo KK and Orient Chemical Industries, Ltd., both of, Japan

Division of Ser. No. 654,204, Sep. 24, 1984, Pat. No. 4,568,624. This application Sep. 19, 1985, Ser. No. 777,671
Claims priority, application Japan, Sep. 22, 1983, 58-175823
Int. Cl.⁴ G03G 9/08
U.S. Cl. 430—137 **7 Claims**

1. A dye composition prepared by polymerizing an unsaturated monomer in the presence of a quinoneimine dye and an azo initiator in amounts expressed by $x \geqq 5$ and $y \geqq 0.33x^{1.2}$ wherein x is the amount of the quinoneimine dye in % by weight based on the unsaturated monomer, and y is the amount of the azo initiator in % by weight based on the unsaturated monomer.

4,656,114

PRESENSITIZED COLOR-PROOFING DIAZO RESIN SHEET WITH ACRYLIC THERMAL ADHESIVE LAYER

Barbara M. Cederberg, St. Paul, and Arlene K. Musser, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 619,000, Jun. 11, 1984, abandoned. This application Aug. 9, 1985, Ser. No. 764,246
Int. Cl.⁴ G03C 1/90, 1/76, 7/00, 11/12
U.S. Cl. 430—160 **22 Claims**

1. A presensitized color-proofing sheet comprising a carrier sheet having a release surface, a continuous color coating of pigmented organophilic hydrophobic water-insoluble resinous polymer softenable and/or partially dissolvable in a solvent developing medium, said color coating being in intimate clinging engagement with but not adhesively bonded to said release surface, a light-sensitive diazo resin soluble in said solvent developing medium directly associated with said color coating, said direct association being at least one of the following:

(a) the incorporation of said diazo resin in the color coating to form a single layer; and

(b) the incorporation of said diazo resin in a layer separate but contiguous to the color coating layer,

a continuous, water-insoluble, transparent, colorless barrier layer bonded on one surface over said color coating and said diazo resin, said barrier layer being insoluble in said solvent developing medium, the diazo resin becoming insolubilized and firmly bonding said color layer to said barrier layer in the light-struck areas upon light exposure of said sheet, the color layer and diazo resin being readily removable from said barrier layer in areas not light exposed and over said barrier layer a thermally-laminable adhesive layer comprising a layer of at least one acrylic polymer or copolymer which is laminable at a temperature between 100° and 150° C. at a pressure of 0.29 kg/cm^2 in 10 seconds, non-tacky at room temperature, will not discolor or alter its optical density by as much as 0.05 optical density units when exposed to sufficient ultraviolet radiation having a majority of the radiation distributed over the range of 350 and 450 nm to enable an image to be developed from activation of the diazo resin and have no ingredients capable of migrating through said barrier layer and desensitizing said diazo resin, discoloring said pigment, or distorting the optical properties of the other layers.

4,656,115

EMULSION POLYMERIZATION OF METHACRYLONITRILE IN THE PRESENCE OF A CATIONIC EMULSIFIER AS A VEHICLE FOR VESICULAR PHOTOGRAPHY

Ahmad Arfaei, Holyoke, and Everett W. Bennett, Longmeadow, both of Mass., assignors to James River Graphics, Inc., South Hadley, Mass.

Continuation of Ser. No. 474,057, Mar. 10, 1983, abandoned. This application Nov. 22, 1985, Ser. No. 800,108
Int. Cl.⁴ G03C 1/52, 1/60
U.S. Cl. 430—170 **3 Claims**

1. A light sensitive vesicular material comprising a film support and a coating therefor, the continuous phase of said coating comprising:

(a) a copolymer of methacrylonitrile and a photospeed-enhancing amount less than 5 weight percent of a second monomer which is methacrylamidopropyltrimethylammonium chloride, said copolymer being prepared by emulsion polymerization in the presence of a cationic surfactant, or

(b) a blend of the polymer of a polymer of methacrylonitrile prepared by emulsion polymerization in the presence of a cationic emulsifier or the copolymer of (a) with a photospeed-enhancing amount less than 5 weight percent of a polymer or copolymer of a vinyl ester which would be incompatible with said polymer or copolymer of methacrylonitrile; and

an effective gas-producing amount of a photosensitive solid agent substantially uniformly dispersed within said coating, which agent is capable of decomposing to produce nitrogen gas upon exposure to light.

2. A light sensitive vesicular material comprising a film support and a coating therefor, the continuous phase of said coating comprising:

(a) a copolymer of methacrylonitrile and a photospeed-enhancing amount less than 5 weight percent of a second monomer which is vinyl acetate, said copolymer being prepared by emulsion polymerization in the presence of a cationic surfactant, or

(b) a blend of the polymer of a polymer of methacrylonitrile prepared by emulsion polymerization in the presence of a cationic emulsifier or the copolymer of (a) with a photospeed-enhancing amount less than 5 weight percent of a polymer or copolymer of vinyl acetate which would be incompatible with said polymer or copolymer of methacrylonitrile; and

an effective gas-producing amount of a photosensitive solid agent substantially uniformly dispersed within said coating, which agent is capable of decomposing to produce nitrogen gas upon exposure to light.

3. A light sensitive vesicular material comprising a film support and a coating therefor, the continuous phase of said coating comprising:

(a) a copolymer of methacrylonitrile and a photospeed-enhancing amount less than 5 weight percent of a second monomer which is a cationic water soluble monomer or a vinyl ester, a homopolymer of the second monomer being a polymer which would be incompatible with polymethacrylonitrile, said copolymer being prepared by emulsion polymerization in the presence of a cationic surfactant, or

(b) a blend of the polymer of a polymer of methacrylonitrile prepared by emulsion polymerization in the presence of a cationic emulsifier or the copolymer of (a) with a photospeed-enhancing amount less than 5 weight percent of a copolymer of vinyl acetate and vinyl chloride which would be incompatible with said polymer or copolymer of methacrylonitrile; and

an effective gas-producing amount of a photosensitive solid agent substantially uniformly dispersed within said coating, which agent is capable of decomposing to produce nitrogen gas upon exposure to light.

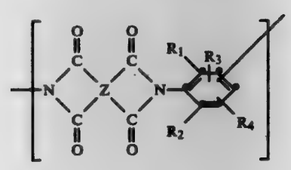
4,656,116

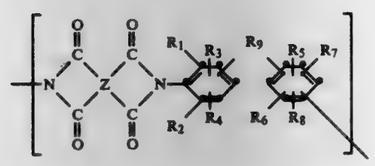
RADIATION-SENSITIVE COATING COMPOSITION

Ottmar Rohde, Basel, and Josef Pfeifer, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

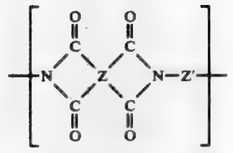
Filed Oct. 4, 1984, Ser. No. 657,868
Claims priority, application Switzerland, Oct. 12, 1983, 5572/83
Int. Cl.⁴ G03C 1/71, 1/52
U.S. Cl. 430—197 **19 Claims**

1. A radiation sensitive polymeric coating composition consisting essentially of (a) an organic solvent, and dissolved therein as the active radiation-sensitive component system, (b) from 80.0 to 99.9%, by weight of the component system, of a homopolyimide or copolyimide which essentially comprises 50 to 100 mol % of recurring structural elements of the formulae Ia and/or B



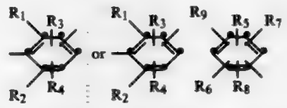


and 50 to 0 mol % of recurring structural elements of the formula II



(II)

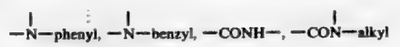
and (c) from 0.1 to 20.0%, by weight of the component system, of at least one organic chromophoric polyazide in which the azide groups are bonded to aromatic hydrocarbon radicals either directly or via an SO_2 group, the four carbonyl groups in the formula Ia, Ib and II being bonded to different carbon atoms and any two carbonyl groups being in ortho- or peri-position relative to each other, Z being a tetravalent radical which contains at least one aromatic ring, Z' being a divalent organic radical which differs from the groups of the formulae



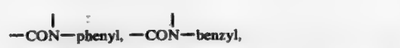
and is selected from among aromatic, alkylaromatic, aliphatic, cycloaliphatic and heterocyclic radicals, combinations thereof and radicals having oxygen-, sulfur-, nitrogen-, silicone- or phosphorus-containing bridge groups, R_1 and R_2, independently of each other, each being alkyl having 1–4 C atoms, R_3, R_4, R_5, R_6, R_7 and R_8, independently of one another, each being hydrogen, or alkyl having 1–4 C atoms and R_9 being a direct bond, —O—, —S—, —SO—, —S—S—, —SO_2—, —CO—, —COO—, —NH—,



alkyl having 1–6 C atoms in the alkyl,

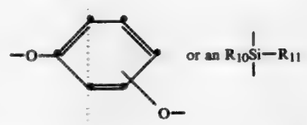


(Ia) having 1–6 C atoms in the alkyl,



a linear or branched alkylene group having 1–3 C atoms, alkylidene having 2–12 C atoms, cycloalkylidene having 5–6 ring carbon atoms, phenylene,

(Ib)



group in which R_{10} and R_{11} are each alkyl or alkoxy having 1–6 C atoms each, phenyl, benzyl, phenyloxy or benzyloxy.

VOL 1077 ISS 1 AP 7 1987 UMI

4,656,117

AZO AND AZOMETHINE DYE DEVELOPERS

Efthimios Chinoporos, Belmont; Elbert M. Idelson, West Newton, and Patrick F. King, Needham, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

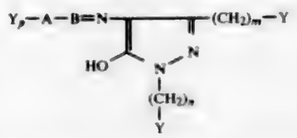
Filed May 3, 1982, Ser. No. 374,277

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.⁴ G03C *1/40, 5/54, 7/26*

U.S. Cl. 430—225 **10 Claims**

5. A diffusion transfer film unit comprising a first support and a second support, at least one of said supports being transparent; a plurality of layers including at least one photosensitive silver halide emulsion layer associated with a dye developer layer carried on one of said supports; an image receiving layer carried on one of said supports; a rupturable container releasably holding a processing composition adapted, when distributed between a pair of predetermined layers carried by said supports, to develop said photosensitive silver halide emulsion layers and provide a diffusion transfer image in said image receiving layer, means providing a white light-reflecting layer between said image-receiving layer and said silver halide emulsion layer(s) to mask said silver halide emulsion layer(s) after development thereof and to provide a white background for a diffusion transfer image formed in said image receiving layer, said diffusion transfer image being viewable through said transparent support; said supports and the layers carried thereon being held in fixed relationship with said photosensitive silver halide emulsion layer(s) being photoexposable through said transparent support, one of said dye developer layer(s) comprising a dye developer which is represented by the formula



wherein A is a radical of benzene or naphthalene; B is —N— or —CH; Y is a silver halide developing substituent; m and n are the same or different and each is an integer of from 1 to 6; and p is 0, 1 or 2.

4,656,118

INFORMATION RECORDING MEDIUM USING LASER BEAM

Shinichiro Ohara; Yohsuke Takahashi; Kyoichi Narso, and Fumiaki Shinozaki, all of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Aug. 30, 1985, Ser. No. 771,192

Claims priority, application Japan, Aug. 30, 1984, 59-182014

Int. Cl.⁴ G03C *1/80;* **G01D** *15/10, 15/14*

U.S. Cl. 430—272 **14 Claims**



1. An information recording medium comprising, in order:
a glass substrate; a layer for preventing diffusion of alkali metal ions and alkaline earth metal ions from the substrate; a thermal barrier layer, and an information recording layer for writing and/or reading information by means of laser beam.

2. The information recording medium as claimed in claim 1, wherein the layer for preventing diffusion of alkali metal ions and alkaline earth metal ions from the substrate comprises a polymer having a hydrophilic group and/or maleic anhydride group.

8. The information recording medium as claimed in claim 1, wherein the recording layer comprises a combination of a metal or semi-metal and a compound of metal or semimetal selected from the group consisting of sulfide, oxide, halide, boride, silicide, carbide and nitride of metal or semi-metal.

4,656,119

METHOD OF MANUFACTURING X-RAY RESIST

Frithjof Asmussen, Berlin; Wolfgang Gaenzler, Darmstadt, and Winfried Wunderlich, Rossdorf, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt and Max-Planck-Gesellschaft Zur Foerderund der Wissenschaften, Goettingen, both of, Fed. Rep. of Germany

Filed Nov. 27, 1985, Ser. No. 802,450

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1984, 3446074

Int. Cl.⁴ G03C *5/00*

U.S. Cl. 430—327 **9 Claims**

1. A method of producing X-ray resist with etching patterns, said method comprising:
(a) using a copolymer of methacrylic acid and methacrylonitrile in a weight ratio of between 75:25 and 50:50 wt. % having a molecular weight less than 700,000 for coating a support to form a film;
(b) thermally treating the said film at a temperature of 120° C. to 150° C. before X-ray irradiation until a solvent-free uncrosslinked film is obtained;
(c) exposing said solvent free uncrosslinked film to X-ray irradiation in a desired pattern;
(d) tempering the said film after the X-ray irradiation for 15–30 min at a temperature in the range of 140°–170° C.; and
(e) developing the said film with a solvent system L comprising water or an organic solvent which contains oxygen in the form of a hydroxyl group, an ether group or an ester group.

4,656,120

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Tadao Sugimoto, and Hideo Ikeda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 564,647, Dec. 22, 1983, abandoned. This application Aug. 5, 1986, Ser. No. 894,701

Claims priority, application Japan, Dec. 27, 1982, 57-234652

Int. Cl.⁴ G03C *1/02*

U.S. Cl. 430—434 **18 Claims**

1. A negative silver halide photographic light-sensitive material comprising a support having provided thereon at least one silver halide emulsion layer and a surface protective layer covering the silver halide emulsion layer, wherein the silver halide emulsion layer includes a light-sensitive surface latent image silver halide emulsion and an inside fogged silver halide emulsion, the inside fogged silver halide emulsion having a smaller average grain size than that of the surface latent image silver halide emulsion and the surface latent image silver halide emulsion containing tabular silver bromide or silver iodobromide grains having a silver iodide content of 0 to 10 mol% and a grain diameter which is 5 times or more the grain thickness.

4,656,121

OPTICAL INFORMATION RECORDING MEDIUM

Tsutomu Sato; Masaakira Umehara; Michiharu Abe; Hideaki Oba, and Yutaka Ueda, all of Yokohama, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

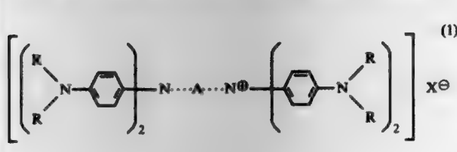
Filed Feb. 6, 1985, Ser. No. 698,701

Claims priority, application Japan, Feb. 6, 1984, 59-18222; May 10, 1984, 59-91922

Int. Cl.⁴ G03C *1/72;* **G11B** *7/24*

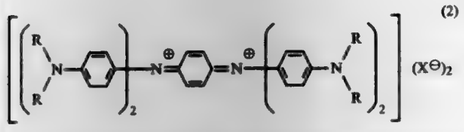
U.S. Cl. 430—495 **18 Claims**

1. An optical information recording medium comprising a substrate and an organic thin film recording layer containing a polymethine colorant having a polymethine chain, in admixture with a compound selected from the group consisting of



(1)

and



(2)

wherein R represents hydrogen or lower alkyl; X represents an acid anion; and A represents



wherein n is 1 or 2; all the aromatic rings being substituted or unsubstituted with a substituent selected from the group consisting of lower alkyl, lower alkoxy, halogen and hydroxyl, the amount of said colorant and said compound being in sufficient quantity amount to enable the medium to have information recorded in said layer upon irradiation of the medium with laser light.

4,656,122

REVERSAL PHOTOGRAPHIC ELEMENTS CONTAINING TABULAR GRAIN EMULSIONS

Allan F. Sowinski, Rochester, and David C. Shuman, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 698,053, Feb. 4, 1985, abandoned. This application Jan. 27, 1986, Ser. No. 822,516

Int. Cl.⁴ G03C *1/02, 7/00*

U.S. Cl. 430—505 **21 Claims**

1. A photographic element capable of forming a reversal image comprising
a support and,
coated on said support, at least one image recording emulsion layer comprised of
a dispersing medium and
a blend of
radiation sensitive tabular silver haloiodide grains having a thickness of less than 0.5 μm and an average aspect ratio of greater than 8:1 accounting for at least 35 percent of the total grain projected area of said emulsion layer and
a second grain population present in a concentration sufficient to increase speed and contrast, said second grain population being incapable of forming a latent image extending the exposure latitude imparted to said emulsion layer by said tabular grains, having an average diameter less than that of said tabular grains and less than 0.5 μm, consisting essentially of a silver salt more soluble than silver iodide, and containing less iodide than said tabular grains.

4,656,123

SILVER HALIDE LIGHT-SENSITIVE MATERIAL COMPRISING A FOGGANT-RELEASING COUPLER AND A NON-DEVELOPABLE SILVER HALIDE LAYER BETWEEN COLOR-SENSITIVE EMULSION LAYERS

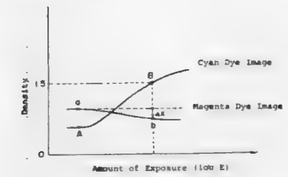
Keiji Mihayashi, and Hidetoshi Kobayashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 25, 1985, Ser. No. 695,132

Claims priority, application Japan, Jan. 25, 1984, 59-11745

Int. Cl.⁴ G03C *1/46, 1/00, 1/08, 7/32*

U.S. Cl. 430—543 **19 Claims**



1. A silver halide light-sensitive material comprising a support having provided thereon at least two silver halide emulsion layers differing in color sensitivity, at least one of said emulsion layers containing at least one compound capable of releasing a fogging agent, a development accelerator, or a precursor thereof in proportion to the amount of silver developed upon development processing, wherein a layer containing silver halide grains which are not substantially developed by the development processing of said light-sensitive material is provided between said two emulsion layers differing in color sensitivity.

4,656,124

HEAT-DEVELOPABLE COLOR PHOTO-SENSITIVE MATERIAL

Tawara Komamura, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Japan

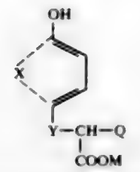
Filed Aug. 30, 1985, Ser. No. 770,998

Claims priority, application Japan, Aug. 31, 1984, 59-182507

Int. Cl.⁴ G03C *1/02, 1/40*

U.S. Cl. 430—548 **10 Claims**

1. In a heat-developable color photo-sensitive material comprising a support bearing thereon a photographic component layer containing at least a photo-sensitive halide, a reducing agent, a binder and a dye-providing material; said heat-developable photo-sensitive material characterized in that at least one of said dye-providing materials is a polymer having a repetition unit being derived from a monomer represented by the Formula [I] below;
Formula [I]



wherein X represents a group of atoms required for forming a benzene ring or a naphthalene ring which is allowed to have a substituent; Y represents an oxygen atom or a sulfur atom; Q represents an ethylene unsaturated group or a group having an ethylene unsaturated group and M represents a hydrogen atom, an ammonium group or a monovalent metal atom.

4,656,125

PHOTOGRAPHIC RECORDING MATERIAL

Günter Renner, Bergisch Gladbach, and Werner Liebe, Leverkusen, both of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

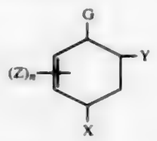
Filed Sep. 16, 1985, Ser. No. 776,677

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435443

Int. Cl.⁴ G03C *1/40*

U.S. Cl. 430—551 **1 Claim**

1. A color photographic recording material comprising at least one silver halide emulsion layer and a color coupler associated therewith, comprising, in a silver halide emulsion layer or in a light insensitive layer of binder adjacent thereto, a combination of a yellow coupler and a compound corresponding to the general formula I:



wherein

G represents a hydroxyl group or an alkali labile precursor group of a hydroxyl group,

X represents an alkyl, alkoxy carbonyl, carbamoyl, sulphamoyl, alkyl sulfonyl or aryl sulphonyl group which is a substituent which is not split off under the conditions of chromogenic development,

Y represents a group corresponding to one of the following formula:

O-alkyl,

SO_2-NR^1-R^2,

CO-NR^1-R^2,

NR^1-CO-R^3, or

NR^1-SO_2-R^3

R^1 = hydrogen or alkyl,

R^2 = alkyl, aralkyl or aryl, and

R^3 = alkoxy, aroxy, alkylamino, arylamino or a group as indicated for R^2;

Z represents hydrogen, alkyl, halogen or acylamino; and

n represents 1 or 2.

4,656,126

HEAT-DEVELOPABLE COLOR LIGHT-SENSITIVE MATERIAL

Masatoshi Kato, and Hiroshi Kitaguchi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

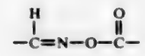
Filed Mar. 14, 1985, Ser. No. 711,885

Claims priority, application Japan, Mar. 14, 1984, 59-48305

Int. Cl.⁴ G03C *1/40, 1/06*

U.S. Cl. 430—559 **18 Claims**

1. A heat-developable color light-sensitive material comprising a support having thereon at least (1) a light-sensitive silver halide emulsion, (2) a dye providing substance which releases a dye having a different diffusibility from that of the dye providing substance in correspondence or countercorrespondence to the light-sensitive silver halide when the light-sensitive silver halide is reduced under high temperature conditions, and (3) an organic acid precursor containing a structural moiety bonded to carbon atoms that is represented by formula (I), and wherein said organic acid precursor is present in an amount effective to provide an image having a high S/N ratio and high density.



(I)

4,656,127

METHOD OF DETECTING MUTATIONS IN DNA AND RNA

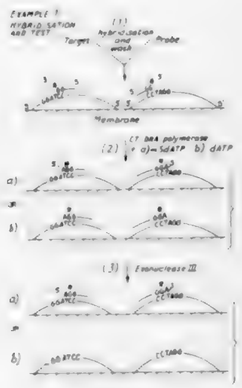
Christopher R. Mundy, Buckinghamshire, England, assignor to Amersham International plc., Buckinghamshire, England

Filed Apr. 23, 1984, Ser. No. 602,720

Claims priority, application United Kingdom, Apr. 22, 1983, 8311018

Int. Cl.⁴ C12Q *1/68*; C12N *15/00*

U.S. Cl. 435—6 **14 Claims**



1. A method of detecting a mutation of a specific nucleotide base in a target nucleic acid chain by providing a linear probe complementary to a part of the nucleic acid chain extending in one direction from the specific base,

(a) hybridizing the probe to the target to form a nucleic acid hybrid, whereby one end of the probe becomes hybridized to the nucleic acid chain substantially adjacent the specific base,

(b) admixing with the hybrid a nucleotide derivative, under conditions appropriate for probe extension, so as to cause the nucleotide derivative to join on to the end of the probe only if the specific base in the target is, or is not, the mutation to be detected, a probe carrying said nucleotide derivative being resistant to digestion under particular conditions, wherein one of the probe and the nucleotide derivative is labelled,

(c) subjecting the hybrid to digestion by an exonuclease enzyme under the said conditions whereby the double-stranded portion thereof is progressively digested starting at the said end of the probe unless the end has had said nucleotide derivative joined to it,

(d) removing portions of the probe which are no longer hybridized to the nucleic acid chain,

(e) and using the presence or absence of the probe remaining after digestion to detect a mutation of the specific nucleotide base in the target.

4,656,128

MODIFIED ALKALINE PHOSPHATASE

Jan F. Chlebowski, and Catherine H. Roberts, both of Richmond, Va., assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 692,969, Jan. 21, 1985. This application Apr. 18, 1985, Ser. No. 724,750

Int. Cl.⁴ G01N *33/54*; C12Q *1/42, 21/00*; C12P *19/30, 19/32*; C12R *1/19*

U.S. Cl. 435—7 **14 Claims**

1. A proteolytically modified alkaline phosphatase wherein said modification results in the removal of a polypeptide fragment from the NH_2 terminus of said phosphatase and wherein said polypeptide fragment contains 10 or 11 amino acids and wherein said phosphatase has been proteolytically modified by a protease selected from the group consisting of pronase K, and prolidase.

4,656,129

ASSAY FOR A LIGAND BY USE OF SUPPORTED BINDER AND SAC LYSING AGENT

Daniel B. Wagner, Raleigh, N.C., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 16, 1984, Ser. No. 641,462

Int. Cl.⁴ G01N *33/53, 33/566, 33/543*

U.S. Cl. 435—7 **20 Claims**

1. An assay for an analyte in a sample, comprising:

contacting a solid support with both tracer and analyte in a sample, said solid support prior to the contacting having supported thereon both a sac lysing agent and a binder for at least the analyte, said tracer comprising a ligand coupled to sacs having a detectable marker, said contacting producing a bound tracer phase and a free tracer phase, said bound tracer phase coming into contact with supported sac lysing agent to release detectable marker by lysing of sacs of bound tracer; and determining marker released from the sacs as a measure of analyte.

4,656,130

COLLAGEN COATED CELL GROWTH PLATES

Shmuel Shoshan, Jerusalem, Israel, assignor to Yissum Research Development Company, The Hebrew University of Jerusalem, Israel

Filed Mar. 14, 1985, Ser. No. 711,528

Int. Cl.⁴ C12Q *1/24*; C12M *3/02*

U.S. Cl. 435—30 **10 Claims**

4. A method of preparing a storage stable, collagen coated cell growth plate comprising:

A. forming a suspension which consists essentially of collagen fibrils;

B. dispensing the resultant biologically active collagen suspension onto a plate; and

C. evaporating the aqueous phase of said suspension to form the cell growth medium.

4,656,131

METHOD FOR PRODUCING INTERFERONS

Kazuaki Kitano, Sakai, and Shigeru Fujimoto, Ikeda, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 26, 1984, Ser. No. 674,598

Claims priority, application Japan, Nov. 30, 1983, 58-227750

Int. Cl.⁴ C12P *21/00*

U.S. Cl. 435—68 **15 Claims**

1. A method for producing interferon which comprises cultivating an *E. coli* carrying an expression vector with a structural gene of interferon inserted therein in a chemically defined medium containing L-glutamic acid in a concentration of about 0.1 to about 10 g/liter and an iron ion source in a concentration of about 10^{-5} to about 10^{-3} mole/liter and recovering interferon from the culture.

4,656,132

METHOD OF IMPROVING THE YIELD OF HETEROLOGOUS PROTEIN PRODUCED BY CULTIVATING RECOMBINANT BACTERIA

Arie Ben-Bassat, Concord; Glenn Dorin, San Rafael; Keith Bauer, Oakland, and Leo Lin, Fremont, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed Mar. 28, 1984, Ser. No. 594,250

Int. Cl.⁴ C12P *21/00*; C12N *15/00*

U.S. Cl. 435—68 **10 Claims**

1. In a method of improving the yield of heterologous proteins selected from the group consisting of proteins having IFN-alpha activity, IFN-beta activity, IFN-gamma activity, colony stimulating factor (CSF) activity, tumor necrosis factor activity, interleukin (IL-1, IL-2, or IL-3) activity and lymphotoxin activity, produced by cultivating recombinant *E. coli* in a liquid nutrient medium, the improvement comprising:

supplementing the medium with a composition that supports bacterial growth during the terminal portion of the cultivation, said composition being selected from the group consisting of from about 0.5% to 5% (v/v) of ethanol; from about 0.5 to 5% (w/v) of a mixture of amino acids, and mixtures thereof, wherein said composition is added to the medium when the cellular density of the culture (as measured in optical density (OD) units by a spectrophotometer at 680 nm) is at least about 2 OD units.

4,656,133

METHOD FOR ENZYMATIC SYNTHESIS OF ISOTOPICALLY LABELED CARBOHYDRATES

Warren J. Gour, Richardson, Tex., assignor to Board of Regents, University of Texas System, Austin, Tex.

Filed Sep. 29, 1983, Ser. No. 537,721

Int. Cl.⁴ C12P *19/00, 19/02*; C12N *9/04, 9/12*

U.S. Cl. 435—72 **10 Claims**

1. A method for preparing an isotopically labeled carbohydrate comprising:

(a) incubating isotopically labeled pyruvate with a reaction mixture comprising adenosine triphosphate, phospho(enol)pyruvate synthetase, adenylate kinase, phosphocreatine, creatine kinase, enolase, phosphoglycerate mutase, phosphoglycerate kinase, B-NADH, glyceraldehyde phosphate dehydrogenase and aldolase to produce isotopically labeled carbohydrate said labeled pyruvate having an isotopic label at a position to result in the particular isotopically labeled carbohydrate being prepared and

(b) isolating the isotopically labeled carbohydrate by chromatographic procedures.

4,656,134

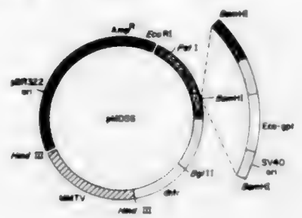
GENE AMPLIFICATION IN EUKARYOTIC CELLS

Gordon M. Ringold, Palo Alto, Calif., assignor to Board of Trustees of Leland Stanford Jr. University, Stanford, Calif.

Continuation of Ser. No. 338,704, Jan. 11, 1982, abandoned. This application Apr. 12, 1985, Ser. No. 722,745

Int. Cl.[4] C12P *19/34, 21/00, 21/02;* C12N *15/00, 5/00, 1/00;* C07H *21/04*

U.S. Cl. 435—91 9 Claims



1. A method for obtaining multiple repetitive copies of a DNA sequence of interest comprising a structural gene as continuous repetitive units which comprises:

transforming a eukaryotic auxotrophic host cell with DNA units, said DNA units comprising:

(1) an amplifiable structural gene complementing said auxotrophic host cell and capable of amplification upon growth of said host cell under conditions selective for prototrophy;

(2) joined to said amplifiable structural gene, said DNA sequence of interest; and

(3) individual regulator signals recognized by said host cell for transcription and translation of said structural gene and DNA sequence of interest, to produce transformant cells; and

growing said transformant cells under selective conditions for said amplifiable gene;

selecting viable cells; and

growing in a nutrient medium said viable cells under increasingly more stringent selective conditions;

whereby said amplifiable gene and DNA sequence of interest are amplified into multiple copies as continuous repetitive units and are expressed by said host cell.

4,656,135

PROCESS FOR PRODUCING L-ISOLEUCINE BY FERMENTATION

Takayasu Tsuchida, Tokoboma; Noboru Otsuka, and Hiroshi Sonoda, both of Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jul. 1, 1985, Ser. No. 750,289

Claims priority, application Japan, Jun. 29, 1984, 59-134460; Jun. 29, 1984, 59-134461

Int. Cl.[4] C12P *13/06*

U.S. Cl. 435—116 8 Claims

1. A process for producing L-isoleucine, which comprises culturing a microorganism belonging to a genus selected from the group consisting of Brevibacterium and Corynebacterium, wherein said microorganism has a resistance to lysine substituted with a methyl group in the β, δ, γ, or ϵ position or α-ketomalonic acid resistance and wherein said microorganism is also capable of producing L-isoleucine in a liquid medium, and obtaining accumulated L-isoleucine from said medium.

4,656,136

METHOD FOR PRODUCING L-ASPARTIC ACID

Masahiko Kisumi, Kobe, and Tsutomu Takagi, Toyonaka, both of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Mar. 20, 1984, Ser. No. 591,532

Claims priority, application Japan, Mar. 31, 1983, 58-57229

Int. Cl.[4] C12N *1/20;* C12P *13/20*

U.S. Cl. 435—253 5 Claims

1. A microorganism of the genus Serratia containing a hybrid plasmid prepared by joining of a plasmid with a deoxyribonucleic acid carrying the gene for aspartase which is obtained from a microorganism of the genus Serratia.

4,656,137

METHOD OF PROCESSING ANIMAL CARTILAGE

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Lescarden Inc, New York, N.Y.

Filed Sep. 12, 1985, Ser. No. 775,492

Int. Cl.[4] C07G *17/00;* A61K *35/32*

U.S. Cl. 435—267 4 Claims

1. A method of preparing finely divided cartilage powder from raw cartilage comprising:

isolating raw cartilage from an animal body;

granulating the raw cartilage into granules having an average size of from about 4 to 8 mm diameter;

freeze drying the granules until the moisture content of the granules falls below 3.0%; and

milling the granules to an average size of from about 40 to 70μ mm diameter.

4,656,138

FERMENTER

Jury V. Redikultsev; Leonid A. Litvinenko; Taisia S. Chermenskaya; Svetlana B. Petrikevich, and Mikhail G. Maximov, all of Moskovskaya, U.S.S.R., assignors to Institut Biokhimii I Fiziologii Mikroorganizmov, Moskovskoi, U.S.S.R.

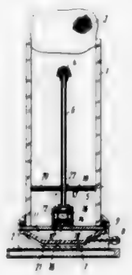
PCT No. PCT/SU83/00009, § 371 Date Jun. 4, 1984, § 102(e) Date Jun. 4, 1984, PCT Pub. No. WO84/01582, PCT Pub. Date Apr. 26, 1984

PCT Filed Apr. 29, 1983, Ser. No. 618,679

Claims priority, application U.S.S.R., Oct. 10, 1982, 3494601

Int. Cl.[4] C12M *1/06*

U.S. Cl. 435—314 4 Claims



1. A fermenter comprising a container with an inlet having secured therein a bacterial air filter and provided with a heat-transfer jacket, the container having accommodated therein an aerator and a stirring unit in the form of a vertical circulation tube and a membrane underlying its lower end and connected to a control drive, characterized in that a rigid partition wall (9) is disposed between the membrane (7) and the lower end of the circulation tube (6), this rigid partition wall (9) being provided with a through hole (10) offset relative to the center thereof and defining with the membrane (7) a closed volume (11), the aerator (4) and the stirring unit (5) being made in the form of an integrated assembly secured on the partition wall (9) and having a chamber (12) for distribution of liquid and gas flows and separated in terms of height by two non-return valves (13, 14) into three cavities (15, 16, 17) of which the cavity (16) lying between the valves communicates with the hole (10) made in the rigid partition wall (9), the cavity (15) underlying the valves communicating with a liquid zone of the container (1), and the cavity (17) overlying the valves communicating with the interior of the circulation tube (6) the upper end of which is extended toward a gas zone of the container (1).

4,656,139

METHOD FOR PREPARING CELLS FOR BLOOD ANALYSIS

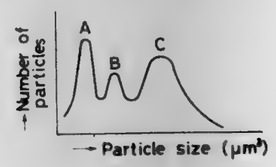
Noriaki Matsuda, Kakogawa, and Etsuro Shinkai, Akashi, both of Japan, assignors to Toa Medical Electronics Co., Ltd., Kobe, Japan

Division of Ser. No. 653,861, Sep. 24, 1984, Pat. No. 4,617,275. This application Jun. 30, 1986, Ser. No. 880,049

Claims priority, application Japan, Sep. 29, 1983, 58-183995

Int. Cl.[4] G01N *31/00*

U.S. Cl. 436—17 1 Claim



1. A method for preparing cells for blood analysis comprising the stpes of:

diluting a blood sample with a diluent comprising boric acid buffer solution, ethylenediaminetetraacetic acid and (2-pyridylthio-1-oxide) sodium, and

treating the diluted blood with a lysing reagent comprising dodecyltrimethylammonium chloride; citric acid; and

at least one member selected from the group consisting of tetradecyltrimethylammonium bromide and hexadecyltrimethylammonium chloride.

4,656,140

METHOD FOR A MEASUREMENT OF ALCOHOL CONCENTRATION IN ACETIC ACID FERMENTING BROTH

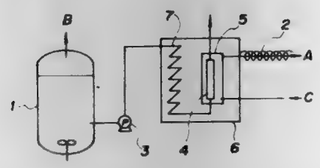
Mikio Yamada; Masahiro Mizuno; Yoshinori Tsukamoto, and Koki Yamada, all of Handa, Japan, assignors to Nakano Vinegar Co., Ltd., Handa, Japan

Filed Nov. 8, 1984, Ser. No. 669,761

Claims priority, application Japan, Nov. 18, 1983, 58-216218

Int. Cl.[4] B01D *15/08;* C12P *7/54;* G01N *1/00, 1/22*

U.S. Cl. 436—131 13 Claims



1. A method for continuously measuring the ethanol concentration of an acetic acid fermentation broth which contains ethanol and acetic acid as volatile components which comprises

(a) contacting one side of a water-repellant gas permeable membrane with said fermentation broth so that said volatile components diffuse through to the other side of said gas permeable membrane and carrying said diffused volatile components from said gas permeable membrane as a sample gas;

(b) passing said sample gas through an absorption column packed with granular soda-lime at a temperature of between 80° C. and 250° C. whereby said acetic acid is absorbed by said soda lime and the remainder of said sample gas containing said ethanol exits from said absorption column;

(c) passing the sample gas which has passed through said absorption column to a gas sensor for measuring the ethanol content of said gas by outputting an electrical signal which correlates to the ethanol content of said sample gas; and

(d) determining the ethanol content of said sample gas in response to the electrical output signal from said gas sensor.

4,656,141

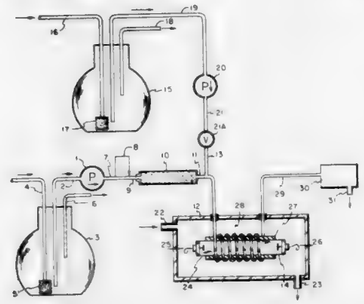
HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY PROCESS AND APPARATUS AND COMPOSITION OF MATTER THEREFOR

John W. Birks, Boulder, Colo., and Mitchell S. Gandelman, Newington, Conn., assignors to University Patents, Inc., Westport, Conn.

Filed Sep. 27, 1983, Ser. No. 536,096

Int. Cl.[4] G01N *21/75, 30/02, 33/00*

U.S. Cl. 436—172 11 Claims



1. Process for detecting a substantially non-fluorescing organic compound containing at least one carbon-hydrogen bond having a dissociation energy less than 100 kcal./mol. in solution in a substantially non-fluorescent carrier liquid, which comprises: (1) dissolving in said carrier liquid containing said organic compound an effective amount, as fluorogenic reactant for said compound, of a non-fluorescent quionone which is photochemically reducible to a fluorescent hydroquinone by reaction with said organic compound under ultraviolet light; (2) irradiating the resulting solution with ultraviolet light for a time sufficiently long and with sufficient energy to reduce at least a portion of said quinone to a hydroquinone by photochemical reaction with said non-fluorescent organic compound but not so long as to degrade said hydroquinone to a non-fluorescent derivative; and (3) further irradiating said reduced solution with one of ultraviolet or visible light under conditions insufficient to cause degradation of said hydroquinone to a nonfluorescent derivative thereby causing the solution to fluoresce whereby said organic compound is detected.

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4,656,142

ORGANOMETALLIC COMPLEXES OF ESTROGENS AND THEIR APPLICATION TO THE DETERMINATION OF HORMONE RECEPTORS

Gérard Jaouen; Anne Vessieres, both of La Haye les Roses, and Sidon Top, Evry, all of France, assignors to Centre National de la Recherche Scientifique, France

Filed Sep. 20, 1983, Ser. No. 534,093
Claims priority, application France, Sep. 23, 1982, 82 16024
Int. Cl.⁴ G01N *33/566*; A61K *31/56*
U.S. Cl. 436—501 12 Claims

1. A process for determining hormone receptors comprising the steps of:

(1) contacting samples carrying specific receptors with an estrogen complex which comprises an estrogen or an estrogen derivative complexed with an organometallic compound containing at least one free carbonyl ligand, said estrogen complex containing at least one free hydroxyl radical and no free phenolic hydroxyl radical in the alpha-position to the site where the organometallic compound is attached; and

(2) determining the presence of said compound attached to said receptor by using spectography by means of their band having a frequency in the range of 1860 to 2000 cm^{-1}.

4,656,143

HETEROGENEOUS BINDING ASSAY

Terence S. Baker, 70, Welley Road, Wraysbury, Staines, Middlesex TW19 5EP; Stephen R. Abbott, 28, Kingfisher Drive, Woodley, Reading, RG5 3LG; John G. Simpson, 1, Woodhurst Lane, Emmbrook, Wokingham, Berkshire; John F. Wright, 9, Selcourt Close, Woodley, Reading, RG5 3AS, and Michael J. Powell, 89 Aysgarth Park, Holyport, Maidenhead, Berkshire, SL6 2HQ, all of England

Filed Mar. 15, 1984, Ser. No. 611,351
Claims priority, application United Kingdom, Mar. 15, 1983, 8307154
Int. Cl.⁴ G01N *33/552, 33/546, 33/537*
U.S. Cl. 436—527 4 Claims

1. In a heterogeneous binding assay in which a liquid component and a granular particulate solid phase are incubated together for a predetermined period of time, the improvement wherein the density of the liquid component is maintained substantially equal to the density of the granular particulate solid phase by the addition of a density modifying medium having a density greater than the density of the granular particulate solid phase and wherein the density of the liquid component is reduced upon expiry of the predetermined period of time to allow the granular particulate solid phase to separate under the influence of gravity by diluting the liquid component and density modifying medium mixture with a liquid of lower density than the mixture.

4,656,144

IMMUNOPARTICLES AND PROCESS FOR PREPARING SAME

Shintaro Honda, and Yasuo Murao, both of Kamakura, Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Continuation of Ser. No. 328,087, Dec. 7, 1981, abandoned. This application Jul. 22, 1985, Ser. No. 757,761
Claims priority, application Japan, Dec. 9, 1980, 55-172563; Dec. 9, 1980, 55-172564
The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.
Int. Cl.⁴ G01N *33/546*
U.S. Cl. 436—534 5 Claims

1. A process for preparing immunoparticles, comprising polymerizing at least one monomer selected from the group consisting of glycidyl acrylate and glycidyl methacrylate in a medium in which said monomer is soluble but in which the polymer produced is not soluble, said medium being selected from the group consisting of ethyl acetate, n-propyl acetate, isopropyl acetate, butyl acetates, ethyl propionate, n-propyl propionate, isopropyl propionate, butyl propionates, methyl ethyl ketone, methyl n-propyl ketone, methyl isopropyl ketone, methyl butyl ketones, benzene, toluene, o-xylene, m-xylene, p-xylene and carbon tetrachloride, thereby precipitating a fine particulate polymer having an average particle diameter in the range of from 0.03 to 10 μm, and then reacting said fine particulate polymer with an immunochemical having an amino group.

4,656,145

ZIRCONIA TYPE BLACK DECORATIVE ARTICLE AND PROCESS FOR PRODUCTION THEREOF

Kazunori Sorai, Sendai, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Dec. 23, 1983, Ser. No. 564,694
Claims priority, application Japan, Dec. 25, 1982, 57-231174; Oct. 25, 1983, 58-200552
Int. Cl.⁴ C04B *35/48*
U.S. Cl. 501—86 13 Claims

1. A process for the production of a zirconia type black decorative article comprising:

forming a molded body comprisng a matrix composed mainly of zirconia and at least one stabilizer selected from the group consisting of Y_2O_3, MgO, CeO_2 and CaO and further comprising a blackening component in an amount of from 0.001% to 1% by weight of said body selected from a group consisting of zirconium carbide, carbon or a reduction product of zirconia in an amount of 0.001% to 1% by weight;

firing said molded body at a temperature of 1400° C. to 1600° C. in a non-oxidizing, atmosphere thereby forming a black sintered body; and

polishing a surface of said sintered body to a mirror-like finish.

4,656,146

ABRASION RESISTANT REFRACTORY COMPOSITION

Paul E. Schlett, Succasunna; John R. Peterson, Randolph, both of N.J.; James A. Caprio, and Thomas R. Kleeb, both of Pittsburgh, Pa., assignors to Exxon Research & Eng. Co., N.J. and Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 24, 1985, Ser. No. 748,261
Int. Cl.⁴ C04B *35/14, 35/44*
U.S. Cl. 501—124 14 Claims

1. A refractory composition consisting essentially of: (A) about 40 to about 96 weight percent amorphous silica; (B) about 2 to about 50 weight percent −65 mesh calcined refractory aggregate having a density of at least about 140 lb/ft^3; and (C) about 2 to about 40 weight percent calcium aluminate cement.

4,656,147

METHOD FOR RECOVERING DENITRATING CATALYST FOR AMMONIA CATALYTIC REDUCTION

Kozo Iida; Tsuneo Nagano; Naruo Yokoyama; Yoshiaki Obayashi, and Shigeaki Mitsuoka, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1985, Ser. No. 719,304
Claims priority, application Japan, Apr. 5, 1984, 59-66794; Apr. 5, 1984, 59-66795; Apr. 5, 1984, 59-66796; Apr. 5, 1984, 59-66799
Int. Cl.⁴ B01J *21/20, 38/66, 38/60, 8/00*
U.S. Cl. 502—26 5 Claims

1. A method for recovering a denitrating catalyst for ammonia catalytic reduction consisting essentially of treating a TiO_2-containing denitrating catalyst of reduced catalytic activity for ammonia catalytic reduction with at least one agent selected from the group consisting of aqueous sulfuric acid, aqueous ammonium hydrogen sulfate, aqueous sulfamic acid and mixture thereof for sufficient time and calcining said catalyst at a temperature ranging from 300° to 650° C. to replenish said catalyst with a sulfur content.

2. The method according to claim 1 of treating said catalyst by impregnating or spraying with an aqueous sulfuric acid solution and then calcining said catalyst.

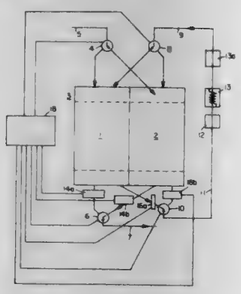
5. A method for recovering a denitrating catalyst for ammonia catalytic reduction consisting essentially of treating a TiO_2-containing denitrating catalyst of reduced catalytic activity for ammonia catalytic reductrion by washing with water, and then feeding SO_2 gas to said catalyst prior to feeding exhaust gas thereto or introducing said SO_2 gas into initially fed exhaust gas while drying the water washed catalyst.

4,656,148

METHOD FOR THE REACTIVATION OF A CATALYST USED FOR REMOVAL OF NITROGEN OXIDES

Hans-Eugen Bühler, Königstein; Hermann Stein, Taunusstein; Blagoje Levkov; Hartmut Kaiser, both of Wiesbaden; Horst Kalfa, Idstein, and Daniel Grimm, Schlangenbad-Bärstadt, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Weisbaden, Fed. Rep. of Germany

Filed Aug. 22, 1985, Ser. No. 768,417
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1984, 3430887
Int. Cl.⁴ B01J *38/04, 23/94*; B01D *53/36*; C01B *21/00*
U.S. Cl. 502—34 16 Claims



1. A method for reactivation of a catalyst which had been at least partially deactivated when used in removal of oxides of nitrogen from an exhaust gas, said catalyst comprising an iron-containing material, said iron-containing material being chosen from a member of the group consisting essentially of magnetite, hematite, siderite, chromium ore, iron pyrite, sinter, iron ore pellets, slag, red mud, Sydvarange iron ore concentrate, manganese ore, Lake iron ore, Konrad ore, and mixtures of the members of this group;

said method comprising the steps of:

stopping said flow of exhaust gas across said catalyst which has at least partially lost catalytic activity; and

flowing heated carbon monoxide gas which has been heated to a temperature of about 500° C. over said at least partially deactivated catalyst;

whereby at least a part of said carbon monoxide breaks down into carbon dioxide and carbon, thereby causing at least a part of an outermost inactive surface of said catalyst to break off and to expose active catalyst surface.

5. The method for the reactivation of a catalyst according to claim 1 wherein said flowing said heated carbon monoxide over said catalyst continues for about four hours to about eight hours.

16. A method for reactivation of a catalyst which had been at least partially deactivated when used in removal of oxides of nitrogen from an exhaust gas, said catalyst comprising an iron-containing material used in a process of producing steel, said iron-containing material being chosen from a member of the group consisting essentially of magnetite, hematite, siderite, chromium ore, iron pyrite, sinter, iron ore pellets, slag, red mud, Sydvarange iron ore concentrate, manganese ore, Lake iron ore, Konrad ore and mixtures of the members of this group;

said method comprising the steps of:

switching said exhaust gas from a first chamber having said catalyst therein to a second chamber having a reactivated catalyst therein; and

flowing heated carbon monoxide gas, which has been heated to a temperature of about 500° C., over said at least partially deactivated catalyst in said first chamber;

whereby at least a part of said carbon monoxide, in said first chamber, breaks down into carbon dioixde and carbon, thereby causing at least a part of the outermost inactive surface of said catalyst in said first chamber to break off to expose active catalyst surface;

turning off said flow of heated carbon monoxide to said first chamber after a predetermined length of time whereby at least a portion of said catalyst in said first chamber is reactivated;

holding said first chamber in preparation for introduction of said exhaust gas; then

determining when said catalyst in said second chamber loses activity;

switching said exhaust gas from said second chamber having said catalyst therein to said first chamber;

flowing heated carbon monoxide gas which has been heated to a temperature of about 500° C. into said second chamber;

whereby at least a part of said carbon monoxide in said second chamber breaks down into carbon dioixde and carbon, thereby causing at least a part of the outermost inactive surface of said catalyst in said second chamber to break off to expose active catalyst surface;

turning off said flow of heated carbon monoxide to said second chamber after a predetermined length of time whereby at least a portion of said catalyst in said second chamber is reactivated;

holding said second chamber in preparation for introduction of said exhaust gas; and

repeating the above steps.

4,656,149

PROCESS FOR THE ACTIVATION OF SILICEOUS CATALYSTS

Pierre A. Jacobs, Gooik; Mia Tielen, Lubbeek, and Jan B. Uytterhoeven, Louvain, all of Belgium, assignors to Katholieke Universiteit Leuven, Belgium

Filed Oct. 29, 1985, Ser. No. 792,403
Claims priority, application Luxembourg, Oct. 29, 1984, 85614
Int. Cl.⁴ B01J *20/18, 29/28, 37/22*
U.S. Cl. 502—35 8 Claims

1. A process for activating and introducing aluminum into the framework of catalysts selected from the group consisting of zeolites with a high silica content, organosilicates, crystalline polymorphous silicas and zeolites deactivated by treatment with water vapor, in which a catalyst of this type is treated thermally with aluminum chloride and an hydrohalic acid, the improvement comprising reacting the catalyst with aluminum chloride and hydrogen chloride, both in gaseous phase, at a temperature between about 150° and 600° C. in the same reactor and then removing any excess of gaseous hydrogen chloride by means of an inert gas.

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4,656,150

TREATMENT OF SERICITIC CLAYS TO PRODUCE AN ADSORBENT, ABSORBENT PRODUCT

Francis de Buda, Santa Barbara, Calif., assignor to John A. Stephens, Santa Barbara, Calif.

Filed Dec. 16, 1983, Ser. No. 562,425
Int. Cl.[4] B01J 20/12, 20/30
U.S. Cl. 502—83 4 Claims

1. A process for treating sericitic clay particles containing alumina and amorphous silica containing oil contaminant so as to produce an adsorbent, absorbent inorganic product which comprises:

said clay particles are of −325 mesh standard Tyler screen size,

removing said alumina from said particles by leaching then with a sulfuric acid solution containing from about 50 to about 90% by weight of sulfuric acid in an amount from about 3.6 to about 4.4 volumes of said acid pervolume of said particles for a period of from about 24 to about 72 hours at a temperature of from about 18° C. to about 40° C. to form a salt of the acid which dissolves in the leach solution,

separating the so treated particles from said mineral solution,

washing the particles separated from said acid solution in water prio to removing oil contaminant from said particles,

removing oil contaminant material from the so treated particles by contacting then with a solvent composition selected from the group consisting of organic solvents and solvent mixtures and mixtures of water and a water miscible solvent and solvent mixtures under such conditions that the oil contaminant passes into solution in said liquid composition,

separating the so treated particles from said liquid composition,

removing said amorphous silica from said particles by leaching them with a caustic soda solution containing from about 100 to about 150% by weight of the stoichmetric amount of soda required to form sodium metasilicate from the amorphous silica present in said particles,

separating the so treated particles from said caustic solution by boiling said particles in said caustic solution until substantially all of the amorphous silica present has reacted so as to recover separated adsorbent, absorbent particles and a sodium silicate solution.

4,656,151

INTERMETALLIC COMPOUND

Javan Shelly, Cincinnati, and Louis J. Rekers, Wyoming, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jul. 15, 1985, Ser. No. 754,885
Int. Cl.[4] C08F 4/64
U.S. Cl. 502—113 11 Claims

6. A catalyst system comprising:

(A) an intermetallic compound formed by

(a) mixing a compound having the structural formula $R(R')Mg$, where R and R' are the same or different and are hydrocarbyl of 1 to 10 carbon atoms with a compound having the structural formula $R^1_mSi(OR^2)_nX_{4-(m+n)}$ where R^1 and R^2 are the same of different and are alkyl having from 1 to 10 carbon atoms, phenyl, alkaryl having from 7 to 10 carbon atoms or alkenyl having from 2 to 10 carbon atoms; X is halogen; n is an integer of 1 to 4; and m is 0 or an integer of 1 to 3, wherein a product is formed;

(b) mixing the product of step (a) with a metal-containing compound, the metal of said metal-containing compound being a metal of Group IVb or Vb of the Periodic Table of the Elements, wherein a product is formed; and

(c) reacting the product of step (b) with a compound, said compound containing at least one halogen atom and an atom selected from the group consisting of zirconium, vanadium, boron, silicon, titanium and aluminum, whereby an intermetallic compound is formed; and

(B) an organometallic compound.

4,656,152

CATALYST FOR PRODUCING LOWER ALCOHOLS

Jerome W. Rathke, Bolingbrook; Robert J. Klingler, Woodridge, and John J. Heiberger, Glen Ellyn, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 26, 1983, Ser. No. 535,463
Int. Cl.[4] B01J 31/04
U.S. Cl. 502—170 6 Claims

1. A catalyst combination for the reaction of carbon monoxide and water to produce lower alcohols, said catalyst combination comprising a lead heteropolyatomic salt in mixture with a metal formate or a precursor to a metal formate said heteropolyatomic salt is a salt of lead and a polyatomic oxygenate.

4,656,153

ACTIVE CARBON CONTAINING A DISPERSION OF A METAL COMPONENT AND METHOD FOR MAKING SAME

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 28, 1983, Ser. No. 470,487
Int. Cl.[4] B01J 27/20, 21/18
U.S. Cl. 502—182 17 Claims

1. A method for forming a substantially uniform dispersion of a metal or metal-containing material in a high surface area, porous active carbon matrix, comprising:

forming a carbon precursor which contains the metal by the chemical reaction in solution of (1) a soluble salt of an aromatic carboxylic or sulfonic acid or of a phenol or thiol and (2) a soluble cation of a transition metal or metal from Groups IIIA, IVA or VA of the Periodic Table or a soluble cationic complex of such metal cation;

precipitating and drying the metal-containing carbon precursor;

forming a uniform powdered mixture of the metal-containing carbon precursor and inorganic solids comprising an alkali metal hydroxide;

pyrolyzing the powdered mixture in an inert atmosphere by raising the temperature of the powdered mixture at a rate of at least 35° C. per minute to a temperature in the range of from about 400° C. to about 980° C. to form the carbon matrix having the metal or metal-containing material substantially uniformly dispersed therein; and

separating unreacted inorganic material and inorganic reaction products, other than the dispersed metal or metal-containing material, from the carbon matrix to form the high surface area, porous carbon matrix end product.

4,656,154

POTASSIUM CARBONATE WITH CARBON SUPPORTS AND CATALYSTS WITH ELEMENTAL ALKALI METAL

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Division of Ser. No. 747,747, Jun. 24, 1985, Pat. No. 4,595,787.
This application Feb. 3, 1986, Ser. No. 825,165
Int. Cl.[4] B01J 27/232, 23/74, 23/72, 23/02
U.S. Cl. 502—185 8 Claims

5. A catalyst support consisting essentially of:

potassium carbonate having a minimum particle size of about 300 microns, a crush strength of at least about 5 pounds and 0.09 to 9 wt. % of at least one carbonaceous compound selected from the group consisting of:

carbon black,

charcoal,

amorphous graphite, and

crystallite graphite; wherein said wt. % is based on the total weight of potassium carbonate and carbonaceous compound; and wherein the concentration of said carbonaceous compound is substantially less at the surface of said support than in the interior portions thereof.

6. A catalyst composition consisting essentially of the catalyst support of claim 5 and 0.1 to 20 wt. % of at least one elemental alkali metal, wherein said wt. % is based on the total weight of said catalyst composition.

7. A catalyst composition in accordance with claim 6 further consisting essentially of at least one component selected from the group consisting of:

elemental cobalt,

elemental copper, and

finely divided stainless steel.

4,656,155

REDUCIBLE METAL OXIDE COMPOSITIONS CONTAINING ZIRCONIUM OXIDE, YTTRIUM OXIDE AND AN ALKALI METAL COMPONENT

Jack Y. Josefowicz, Westlake Village, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 25, 1985, Ser. No. 759,005
Int. Cl.[4] B01J 21/06, 23/02, 23/34
U.S. Cl. 502—324 6 Claims

1. A catalyst composition comprising:

(a) at least one reducible metal oxide, which oxide produces higher hydrocarbons and water when contacted with a hydrocarbon at synthesizing conditions;

(b) an alkali metal component;

(c) oxide of zirconium; and

(d) oxide of yttrium,

said composition being further characterized by the substantial absence of catalytically effective Ni, Rh, Pd, Ag, Os, Ir, Pt, and Au.

4,656,156

ADSORBENT AND SUBSTRATE PRODUCTS AND METHOD OF PRODUCING SAME

Chanakya Misra, Plum Borough, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 21, 1986, Ser. No. 820,166
Int. Cl.[4] B01J 21/04, 21/10
U.S. Cl. 502—415 15 Claims

1. A composition useful as an adsorbent or substrate comprising about 20%–80% by weight hydrotalcite mixed with about 80%–20% by weight activated alumina, wherein said composition has been activated by heating the hydrotalcite to a temperature of about 500°–600° C. or after mixing with the activated alumina.

4,656,157

MOLDED CATALYST FOR REACTIONS CARRIED OUT UNDER HETEROGENEOUS CATALYSIS

Friedbert Hofmann, Neuhofen; Richard Krabetz, Kirchheim, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 2, 1985, Ser. No. 803,638
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1984, 3445289
Int. Cl.[4] B01J 35/02
U.S. Cl. 502—439 2 Claims

1. A molded catalyst which is suitable for reactions carried out under heterogeneous catalysis and consists of a catalytically active material shaped into a hollow cylinder or of an inert carrier which is shaped into a hollow cylinder and on which a catalytically active material is applied, the external diameter of the hollow cylinder being from 3 to 20 mm, the internal diameter being from 0.1 to 0.7 times the external diameter and the length being from 0.2 times to twice the external diameter, wherein the end faces of the hollow cylinder are curved convexly, the radius of curvature being from 0.4 to 5 times the external diameter.

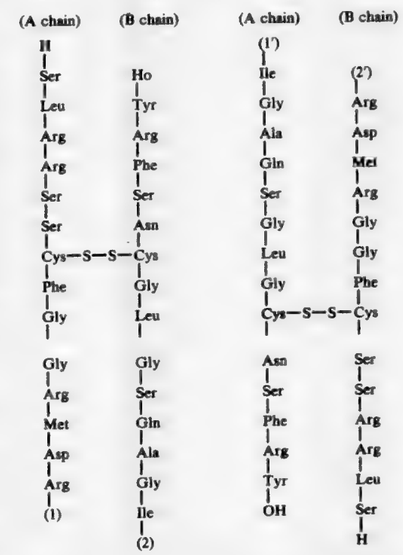
4,656,158

PEPTIDE, AND PRODUCTION AND USE THEREOF

Hisayuki Matsuo, 6653, Ooaza-Kihara, Kiyotake-cho, Miyazaki-gun, Miyazaki-ken, and Kenji Kangawa, Miyazaki, both of Japan, assignors to Suntory Limited and Hisayuki Matsuo, both of, Japan

Filed Feb. 27, 1985, Ser. No. 706,382
Claims priority, application Japan, Mar. 2, 1984, 59-38817
Int. Cl.[4] A61K 37/02; C07K 7/10, 3/24
U.S. Cl. 514—12 17 Claims

1. A peptide β-hANP having the following formula:



wherein (1) and (1'), are directly bonded and (2) and (2') are directly bonded; Asp represents L-aspartic acid, Asn represents L-asparagine, Ala represents L-alanine, Arg represents L-arginine, Ile represents L-isoleucine, Gly represents glycine, Gln represents L-glutamine, Cys represents together with —S— ½ L-cystine, Ser represents L-serine, Tyr represents L-tyrosine, Phe represents L-phenylalanine, Met represents L-methionine, and Leu represents L-leucine; and the peptide chain A has an amino-terminal at the left end and a carboxy-terminal at the right end, and the peptide chain B has an amino-terminal at the right end and a carboxy-terminal at the left end, or an acid addition salt thereof.

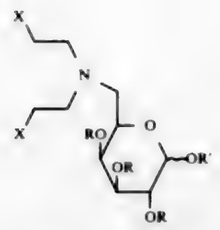
4,656,159

GALACTOSE-C-6 NITROGEN MUSTARD COMPOUNDS AND THEIR USES

Eugene McPherson, Forestville, Md., and Philip S. Schein, Bryn-Mawr, Pa., assignors to Georgetown University, Washington, D.C.

Filed Oct. 31, 1984, Ser. No. 666,904
Int. Cl.[4] A61K 31/70; C07H 5/06
U.S. Cl. 514—25 18 Claims

1. A compound of the formula



wherein X is halogen; each R independently represents H, a C_1–C_4 alkyl group, a C_2–C_4 alkanoyl group, a phosphate group, or a sulfate, sulfonate, or benzoate group with the proviso that no more than one sulfate, sulfonate, or benzoate group is present in said compound; and R' represents R or a carbohydrate residue derived from a carbohydrate having the formula R'OH with the proviso that R' and the R on C-2 or both R groups on C-3 and C-4 together can represent an isopropylidene group, or a pharmaceutically acceptable salt thereof.

14. A method of selectively suppressing cell division in hydrophylic tissue over lypophylic tissue, which comprises: administering to a mammal an amount of a compound of claim 1 sufficient to suppress cell division in a hydrophylic tissue.

4,656,160

AMINOGLYCOSIDE DERIVATIVES

Takao Takaya, Kawanishi; Nobuyoshi Yasuda, Nishinomiya; Hideo Tsutsumi, Yubigaoka, and Keiji Matsuda, Takatsuki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Nov. 18, 1985, Ser. No. 799,110

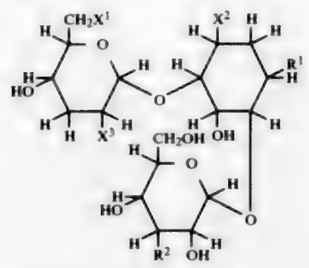
Claims priority, application Japan, Nov. 29, 1984, 59-253720

The portion of the term of this patent subsequent to Jan. 15, 2001, has been disclaimed.

Int. Cl.[4] A61K *31/71;* **C07H** *15/234*

U.S. Cl. 514—41 **5 Claims**

1. Aminoglycoside derivatives of the formula :



wherein

R^1 is C_{8-24} alkanoylamino,

R^2 is amino or protected amino, and

X^1, X^2 and X^3 are each amino or acylamino, and pharmaceutically acceptable salts thereof.

5. A method for treating herpes simplex virus comprising administering an antiviral effective amount of the aminoglycoside of claim 1 to a host in need of such treatment.

4,656,161

INCREASING THE ENTERAL ABSORBABILITY OF HEPARIN OR HEPARINOIDS

Dieter Herr, Altrip, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,619

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1983, 3331009

Int. Cl.[4] A61K *31/725*

U.S. Cl. 514—56 **4 Claims**

1. A method of preventing thrombosis and for inhibiting blood coagulation in a patient which comprises: orally administering to the patient an effective amount of a composition which consists essentially of heparin having a molecular weight of from 1,200 to about 30,000 as the active agent, at least about 0.2 part by weight of a physiologically tolerated non-ionic surfactant per part by weight of heparin and a pharmaceutically acceptable carrier and/or diluent said surfactant prepared by reacting ethylene oxide with a fatty alcohol or an alkylphenol.

4,656,162

METHOD FOR CONTROLLING SANITARY AND AGRICULTURAL PESTS

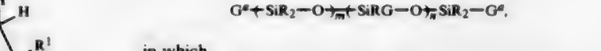
Koichi Itoh, and Yoshiaki Nishimura, both of Tokyo, Japan, assignors to Shin-Etsu Chemical Co., Ltd.

Filed Nov. 13, 1984, Ser. No. 670,743

Int. Cl.[4] A01N *55/00*

U.S. Cl. 514—63 **2 Claims**

1. A method for controlling insects which comprises applying an insecticidally effective amount of an organosilicon compound of the formula

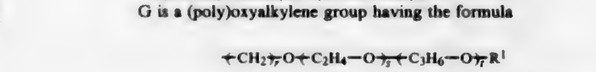


in which

m and n are zero or a positive integer,

R may be the same or different and is a hydrogen atom, a hydroxy group or a monovalent hydrocarbyl group, wherein at least one of the groups R is a monovalent hydrocarbyl group selected from the group consisting of alkyl, cycloalkyl, alkenyl, aryl, and aralkyl,

G is a (poly)oxyalkylene group having the formula



in which R1 is a hydrogen atom, a monovalent hydrocarbyl group selected from the group consisting of alkyl, cycloalkyl, alkenyl, aryl and aralkyl, or an acyl group, and r, s and t are zero or a positive integer, wherein s and t are not simultaneously equal to zero, and

G^a is the same group as R or G, and at least one of the groups denoted by G^a is G when n is equal to zero, directly to the insects or a site infested with the insects.

4,656,163

COMPOSITIONS AND METHODS OF COMBATING PESTS EMPLOYING SULPHENIC ACID AMIDES IN COMBINATION WITH KNOWN NEMATICIDES OR INSECTICIDES

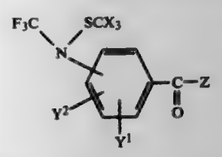
John Anderson; Bernhard Homeyer, both of Leverkusen; Engelbert Kühle, Bergisch-Gladbach; Hans Scheinpflug, Leverkusen, all of Fed. Rep. of Germany; Walter M. Zeck, and Donald E. Simonet, both of Vero Beach, Fla., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany and Mobay Corporation, Pittsburgh, Pa.

Division of Ser. No. 701,476, Feb. 14, 1985, Pat. No. 4,603,214. This application Nov. 14, 1985, Ser. No. 798,216

Int. Cl.[4] A01N *37/02, 37/10, 37/12, 37/34, 37/44, 43/08, 47/10, 53/00, 55/02, 57/00, 57/10, 57/18*

U.S. Cl. 514—84 **6 Claims**

1. A nematicidal or insecticidal composition comprising a nematicidally or insecticidally effective amount of a known nematode or insecticide and a duration prolonging effective amount of a sulphenic acid amide of the formula



in which

X each independently is fluoroine or chlorine,

Y^1 and Y^2 each independently is hydrogen, halogen, alkyl, alkoxy, halogenalkyl or NO_2,

Z is $—OR^1$ or —OM,

R^1 is alkyl, alkenyl or alkinyl optionally substituted by halogen, cyano, alkoxy, alkylthio or alkoxyalkoxy, and

M is ammonium or one equivalent of an alkali metal, alkaline earth metal or copper, zinc, manganese, nickel or iron cation.

4,656,164

O-(SUBSTITUTED ALLYLIC) DITHIOPHOSPHONATE INSECTICIDES

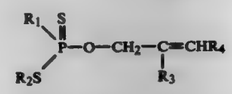
Charles G. Chavdarian, Martinez, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 8, 1985, Ser. No. 763,571

Int. Cl.[4] A01N *57/04;* **C07F** *9/40*

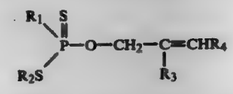
U.S. Cl. 514—134 **23 Claims**

1. A method of controlling insects applying to said insects or to a locus at which control is desired an insecticidally effective amount of a compound having the formula



in which R_1 is methyl or ethyl; R_2 is C_1–C_6 alkyl; R_3 is hydrogen, halogen or methyl; and R_4 is hydrogen, methyl or phenyl; or R_3 and R_4 taken together form a tetramethylene chain; provided that R_3 and R_4 are not both hydrogen.

8. A compound having the formula



in which R_1 is methyl or ethyl; R_2 is C_1–C_6 alkyl; R_3 is hydrogen, halogen or methyl; and R_4 is hydrogen, methyl or phenyl; or R_3 and R_4 taken together form a tetramethylene chain; provided that R_3 and R_4 are not both hydrogen.

4,656,165

AMINOMETHYL PENEM COMPOUNDS

Marc Lang, Rixheim, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,887

Claims priority, application Switzerland, Sep. 2, 1983, 4831/83; May 22, 1984, 2510/84

Int. Cl.[4] C07D *499/00;* **A61K** *31/425*

U.S. Cl. 514—192 **5 Claims**

1. (5R,6S)-2-aminomethyl-6-hydroxymethyl-2-penem-3-carboxylic acid and pharmaceutically acceptable salts thereof in substantially pure form

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4,656,166

ANTIBIOTIC COMPOUNDS DERIVED FROM CEPHALOSPORINS, PROCESS FOR THEIR PRODUCTION AND PHARMACEUTICAL COMPOSITIONS

Ali Salhi, Saint-Gely-du-Fesc, and Dominique Olliero, Montpellier, both of France, assignors to Sanofi, Paris, France

Filed May 22, 1984, Ser. No. 612,896

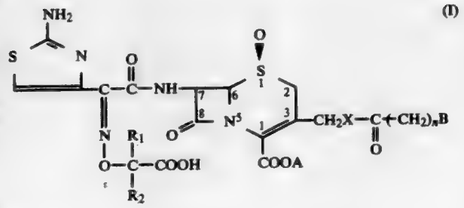
Claims priority, application France, May 27, 1983, 83 08862

Int. Cl.[4] C07D *501/34, 501/36;* **A61K** *31/545*

U.S. Cl. 514—202 **4 Claims**

1. Cephalosporin compounds of the formula:

(I)



in which:

the COOA group at the 4 position is an acid radical, or an alkali or alkaline-earth metal salt or an amino acid or amine salt, or an ester radical easily hydrolyzable or metabolically labile and pharmaceutically acceptable,

X denotes an oxygen atom or a sulfur atom,

n is zero or 1,

R_1 and R_2 each denote, independently, hydrogen or a lower alkyl group, or

R_1 and R_2 taken together with the carbon atom to which they are linked form a cyclobutyl or cyclopentyl nucleus,

B is the residue of a primary or secondary amine selected from the group consisting of

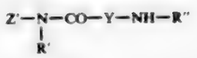
Z—NH—R where Z is a straight or branched chain alkylene group having from 2 to 7 carbon atoms, optionally interrupted by a sulfur atom and optionally substituted by a hydroxyl, thiol, methylthio, amino acetamido, carbamoyl, phenyl, hydroxyphenyl or imidazoyl group, a cyclopentylidene or cyclohexylidene group,

R represents a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms,

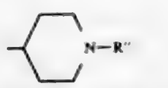
Z'—Alk—NH—R where Z' represents a 1,2-phenylene or 1,3-phenylene or 1,4-phenylene group optionally substituted by a halogen atom or by 1 or 2 methoxy groups or by 1, 2 or 3 methyl groups or Z' represents a 1,2-cyclohexylene, 1,3-cyclohexylene or 1,4-cyclohexylene group,

Alk represents a straight or branched alkyl group having from 1 to 3 carbon atoms,

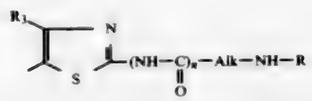
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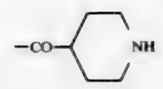
where Z' is as defined above,
Y denotes an alkyl $(CH_2)_m$ group in which m=0, 1, 2, 3 or 4, or a branched alkyl group having 2 or 3 carbon atoms or Y with NH—R'' constitutes a ring



R' and R'', identical or different, having the same meaning as that given for R above,
Z''—NH—R where Z'' is a 1,3-cyclohexylene or 1,4-cyclohexylene group and R is as previously defined,



where R_3 represents a hydrogen atom or a methyl group, n=0 or 1 and Alk and R are as previously defined,
a 2-piperidyl, 3-piperidyl or 4-piperidyl group optionally substituted on the nitrogen atom by a —CO—Alk—NH_2 or a



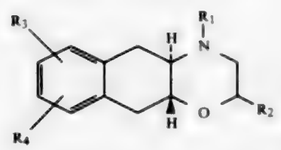
group where Alk is as previously defined,
and the salts of said compounds with pharmaceutically acceptable acids.

4,656,167
NAPHTHOXAZINES AND THEIR USE AS PSYCHOSTIMULATING AND ANTIDEPRESSANT AGENTS

Joachim Nozulak, Hartheim, Fed. Rep. of Germany, and Rudolf K. A. Giger, Riehen, Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Continuation of Ser. No. 743,511, Jun. 11, 1985, abandoned. This application Apr. 11, 1986, Ser. No. 850,999
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1984, 3421729; Mar. 8, 1985, 3508263
Int. Cl.[4] A61K *31/535;* **C07D** *265/34*
U.S. Cl. 514—227 **17 Claims**

1. A compound which is of formula I



I

wherein
R_1 and R_2 independently are hydrogen or (C_{1-4})alkyl,
R_3 is hydroxy or (C_{1-4})alkoxy and
R_4 is (C_{1-4})alkylthio, (C_{1-4})alkylsulfoxide, (C_{1-4})alkylsulfone, chlorine, bromine, iodine or trifluromethyl,
in free base or acid addition salt form.

16. A method of stimulating the central nervous system or increasing vigilance in a subject in need of such treatment, which comprises administering a therapeutically effective amount of a compound of claim 1 in pharmaceutically acceptable form.

4,656,168
(3-ARALKYLAMINO-2-OR-PROPOXY)HETEROCYCLIC COMPOUNDS IN METHOD OF EFFECTING BRONCHODILATION

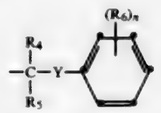
Joseph G. Atkinson, Montreal, Canada; John J. Baldwin, Gwynedd Valley, and David E. McClure, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 350,922, Feb. 22, 1982, Pat. No. 4,442,094, which is a division of Ser. No. 219,725, Dec. 23, 1980, Pat. No. 4,349,673. This application Oct. 13, 1983, Ser. No. 541,807
Int. Cl.[4] A61K *31/535*
U.S. Cl. 514—234 **1 Claim**

1. A method of effecting bronchodilation in a patient in need of such treatment which comprises administering to such patient a bronchodilative amount of a compound having the formula



individual isomers and pharmaceutically acceptable salts thereof wherein
R_1 is $—OCH_2—CHOR_2—CH_2—NHR_3$
wherein
R_2 is H or —C(O)—L wherein L is phenyl or C_1–C_5 alkyl; and
R_3 is



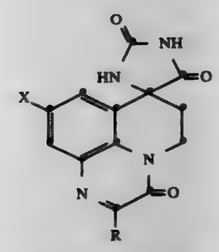
wherein R_4 and R_5 are independently selected from H and C_1–C_3 alkyl, Y is $—CH_2—$, $—(CH_2)_2—$ or $—CH_2O—$, R_6 is H, OH, OCH_3, halogen, C_1–C_3 alkyl or $—O—CH_2—O—$, and n is 1 or 2.

4,656,169
TETRACYCLIC SPIRO-HYDANTOIN ALDOSE REDUCTASE INHIBITORS AND COMPOSITIONS

Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

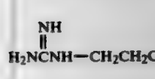
PCT No. PCT/US84/01290, § 371 Date Apr. 10, 1986, § 102(e) Date Apr. 10, 1986, PCT Pub. No. WO86/01107, PCT Pub. Date Feb. 27, 1986
PCT Filed Aug. 14, 1984, Ser. No. 854,588
Int. Cl.[4] A61K *31/495, 31/535;* **C07D** *487/20*
U.S. Cl. 514—235 **5 Claims**

1. A biologically-active tetracyclic spiro hydantoin derivative having the general formula:

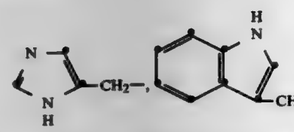


(I)

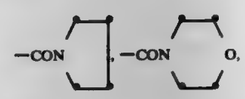
and the pharmaceutically-acceptable acid addition salts thereof; wherein
X is hydrogen, fluorine, chlorine or methyl; and R is hydrogen, $(C_1–C_9)$alkyl, $(C_2–C_9)$alkenyl, $(C_5–C_7)$cycloalkyl, benzyl, 4-hydroxybenzyl, pyridyl, $HSCH_2—$, $CH_3SCH_2—$, $CH_3SCH_2CH_2—$, $FCH_2—$, $HOCH_2—$, $CH_3CH(OH)—$, $CH_3CH(OH)CH_2—$, $HOOCCH_2—$, $HOOCCH_2CH_2—$, $H_2NCOCH_2—$, $H_2NCOCH_2CH_2—$, $H_2NCH_2CH_2CH_2CH_2—$,



$H_2NCNH—CH_2CH_2CH_2—$,



$—COOC_2H_5$, $—CONH_2$, $—CONH(CH_2)_2OH$, —CONH cyclohexyl, —CONH-nBu, $—CONH(CH_2)_3$ $N(CH_3)_2$, $—CON(C_2H_5)_2$,



phenyl or substituted phenyl wherein the substituent is chlorine, fluorine, bromine, hydroxy, methyl, methoxy, trifluoromethyl, $—COCH_3$, $—N(CH_3)_2$, $—SCH_3$, $—SOCH_3$, $—SO_2CH_3$, —COOH, $—CONH_2$, $—COOCH_3$ or —CON Alk, wherein Alk is lower alkyl having 1 to 6 carbon atoms.

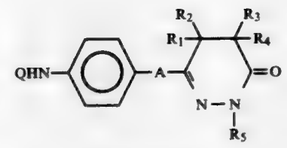
5. A pharmaceutical composition for the treatment of diabetes complications comprising a pharmaceuticallyeffective amount of a compound according to claim 1 in admixture with a pharmaceutically-acceptable carrier.

4,656,170
N-[4-[2-(1,4,5,6-TETRAHYDRO-4-METHYL-6-OXO-3-PYRIDAZINYL)ETHENYL]PHENYL]ACETAMIDE AND RELATED COMPOUNDS

Ila Sircar, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 28, 1985, Ser. No. 737,741
Int. Cl.[4] A61K *31/50;* **C07D** *237/04, 237/14*
U.S. Cl. 514—247 **9 Claims**

1. A compound of the formula



I

wherein Q is H or COR_6 wherein R_6 is lower alkyl of from one to four carbons inclusive or aryl; R_1, R_2, R_3, R_4, and R_5 are each independently hydrogen, lower alkyl or R_2 and R_3 when taken together may form a single bond such that a double bond is formed between the carbons to which R_2 and R_3 are attached; A is alkylene of one to four carbon atoms or alkenylene of two to four carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

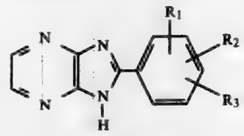
6. A pharmaceutical composition for increasing cardiac contractility, treating thrombosis, or lowering blood pressure comprising a cardiotonic, antithrombotic, or hypotensive effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable carrier.

4,656,171
2-PHENYL-IMIDAZO-PYRAZINES, USEFUL AS CARDIOTONICS

Volkhard Austel; Norbert Hanel, both of Biberach; Joachim Heider, Warthausen; Manfred Reiffen, Biberach; Jacobus C. A. Van Meel, Biberach, and Willi Diederen, Biberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed Nov. 27, 1984, Ser. No. 675,299
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346640
Int. Cl.[4] A61K *31/495;* **C07D** *471/02*
U.S. Cl. 514—250 **5 Claims**

1. A compound of the formula



wherein
R_1 is methanesulfonyloxy, aminosulfonyl, methylaminosulfonyl or dimethylaminosulfonyl;
R_2 is methoxy; and
R_3 is hydrogen or methoxy;
a tautomer thereof; or a non-toxic, pharmacologically acceptable acid addition salt thereof.

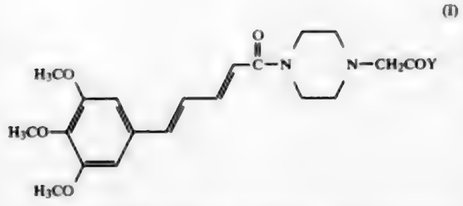
4. The method of treating cardiac insufficiency in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective cardiotonic amount of a compound of claim 1.

4,656,172
1-[5-(3,4,5-TRIMETHOXY PHENYL)-2,4-PENTADIENOYL]-4-(SUBSTITUTED CARBONYLMETHYL)-PIPERAZINES HAVING VASODILATING ACTIVITY

Toshio Wakabayashi, Tama; Takahiro Kumosaka, Kawasaki, and Yasushi Suwabe, Tokyo, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1985, Ser. No. 776,625
Claims priority, application Japan, Sep. 17, 1984, 59-194253
Int. Cl.[4] A61K *31/505;* **C07D** *403/00*
U.S. Cl. 514—252 **7 Claims**

1. A piperazine compound represented by the formula



(I)

wherein Y represents pyrrolidyl group or a lower alkylamino group.

5. A vasodilating method for vascular disorders which comprises administering mammals an effective dose of a piperazine compound having the formula (I) according to claim 1.

4,656,173

ANTIPSYCHOTIC BENZISOTHIAZOLE S-OXIDE COMPOUND

Joseph P. Yevich, Newburgh, and Walter G. Lobeck, Jr., Evansville, both of Ind., assignors to Bristol-Myers Company, New York, N.Y.

Filed Apr. 24, 1985, Ser. No. 726,449
Int. Cl.⁴ A61K *31/495*; C07D *417/14*
U.S. Cl. 514—253 **3 Claims**

1. The compound 8-[4-[4-(1-oxo-1,2-benzisothiazol-3-yl)-1-piperazinyl]butyl]-8-azaspiro[4.5]decane-7,9-dione and its pharmaceutically acceptable acid addition salts.

2. The method for ameliorating a psychotic state in a mammal comprising administration to said mammal of an effective antipsychotic amount of 8-[4-[4-(1-oxo-1,2-benzisothiazol-3-yl)-1-piperazinyl]butyl]-8-azaspiro[4.5]decane-7,9-dione or a pharmaceutically acceptable acid addition salt thereof.

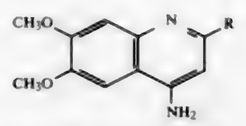
4,656,174

QUINOLINE THERAPEUTIC AGENTS

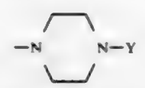
Simon F. Campbell, and John D. Hardstone, both of Deal, England, assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 19, 1983, Ser. No. 515,095
Claims priority, application United Kingdom, Jul. 24, 1982, 8221457
Int. Cl.⁴ A61K *31/495*; C07D *401/04*
U.S. Cl. 514—254 **7 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof, where R is a group of the formula:



wherein Y is —COR¹ and R¹ is C_1–C_6 alkyl, aralkyl having up to ten carbon atoms in the nuclear ring with up to four carbon atoms in the alkyl moiety, C_3–C_6 cycloalkyl, (C_3–C_6 cycloalkyl)methyl, aryl having up to ten carbon atoms in the nuclear ring, styryl, quinolyl, furyl, tetrahydrofuryl, 1,4-benzodioxan-2-yl, chroman-2-yl or 5-methylthio-1,3,4-oxadiazol-2-yl, and each aryl group is naphthyl, phenyl or ring-substituted phenyl having up to two substituents each selected from halo, CF_3, C_1–C_4 alkyl or C_1–C_4 alkoxy or one substituent which is methylenedioxy.

7. A method for lowering blood pressure in the treatment of a hypertensive subject, which comprises administering to said subject an effective blood pressure lowering amount of a compound as claimed in claim 1.

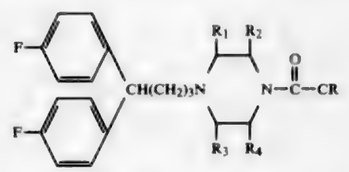
4,656,175

METHOD OF TREATING AGGRESSIVE BEHAVIOR AND PSYCHOTIC CONDITIONS EMPLOYING 1-PIPERAZINOCARBOXYLATES

Anders K. Björk, Björred, and Erik G. Christensson, Lund, both of Sweden, assignors to AB Ferrosan, Sweden

Division of Ser. No. 519,761, Jul. 28, 1983 filed as PCT SE 82/00408 on Nov. 30, 1982, published as WO 83/01950, Jun. 9, 1983, Pat. No. 4,624,953. This application Jul. 11, 1985, Ser. No. 754,343
Claims priority, application Sweden, Dec. 2, 1981, 8107201
Int. Cl.⁴ A61K *31/495*; C07D *241/04*
U.S. Cl. 514—255 **4 Claims**

1. A method for the treatment of aggresive behavior and psychotic conditions in human beings and animals comprising administering to said human beings and animals in need of such treatment an effective amount of a compound having the general formula



I

wherein R is alkyl straight or branch chained having from 1 to 10 carbon atoms, cycloalkyl having from 3 to 8 carbon atoms, aralkyl having from 7 to 9 carbon atoms or phenyl unsubstituted or substituted by one to three F, Cl, Br, lower alkyl having from 1 to 5 carbon atoms, lower alkoxy having from 1 to 5 carbon atoms, alkylenedioxy having from 1 to 3 carbon atoms, —CF_3 or —CN substituents, R_1–R_4 are independently H, CH_3, C_2H_5 with cis or trans configuration provided that only two of them are other than hydrogen, and pharmaceutically acceptable salts thereof.

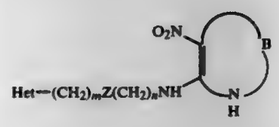
4,656,176

2-THIAZOLYL, OXAZOLYL, TRIAZOLYL AND THIADIAZOLYL ALKYLAMINO-3-NITRO-HETEROCYCLIC COMPOUNDS

Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to SmithKline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 488,466, Apr. 25, 1983, Pat. No. 4,525,477, which is a division of Ser. No. 326,877, Dec. 2, 1981, Pat. No. 4,405,624, which is a division of Ser. No. 159,525, Jun. 16, 1980, Pat. No. 4,324,789, which is a division of Ser. No. 43,785, May 30, 1979, Pat. No. 4,238,493. This application Mar. 21, 1985, Ser. No. 714,335
Claims priority, application United Kingdom, May 30, 1978, 24116/78
Int. Cl.⁴ C07D *401/12*; A61K *31/505*
U.S. Cl. 514—256 **5 Claims**

1. A compound represented by Structure 1:



Structure 1

in which

Het is selected from the group consisting of thiazole, isothiazole, oxazole, isoxazole, 1,2,4-triazole, 1,2,5-thiadiazole and 1,3,4-thiadiazole rings, such rings being unsubstituted or substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy, lower alkoxy or amino, and furyl and thienyl rings each substituted by a group R^1R^2N—A where R^1 and R^2, which can be the same or different, are each hydrogen, lower alkyl, C_3–C_6 cycloalkyl, lower alkenyl, aryl lower alkyl, lower alkyl substituted by lower alkoxy, (lower alkyl)amino or di(lower alkyl)amino, or R^1 and R^2 together with the nitrogen atom to which they are attached form pyrrolidino or piperidino ring, and A is straight or branched C_1–C_6 alkanediyl group;

Z is sulphur, methylene or oxygen;

m is 0, 1 or 2 and n is 2 or 3 provided that m+n is 3 or 4; and

B is a 1,2-ethanediyl (—CH_2—CH_2—), or 1,3-propanediyl (—$CH_2CH_2CH_2$—) group, which group is unsubstituted or substituted with one lower alkyl, aryl, aryl lowr alkyl or heteroaryl lower alkyl groups, "aryl" being phenyl unsubstituted or substituted by lower alkyl, lower alkoxy or halogen; and "heteroaryl" being 2-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl, unsubstituted or substituted by lower alkyl or lower alkoxy or B is a 2-aza-1,3-propanediyl group (—$CH_2NR^3CH_2$— where R^3 is lower alkyl, aryl, aryl lower alkyl or heteroaryl lower alkyl, provided that when B is 1,2-ethanediyl or 1,3-propanediyl, Het is 1,2,4-triazole, 1,2,5-thiadiazole or 1,3,4-thiadiazole, or a pharmaceutically acceptable acid addition salt thereof.

4,656,177

ANALGESIC AND ANTI-INFLAMMATORY COMPOSITIONS COMPRISING CAFFEINE AND METHODS OF USING SAME

Abraham Sunshine, New York; Eugene M. Laska, Larchmont, and Carole E. Siegel, Mamaroneck, all of N.Y., assignors to Analgesic Associates, Larchmont, N.Y.

Division of Ser. No. 643,196, Aug. 22, 1984, Pat. No. 4,587,249, which is a division of Ser. No. 474,358, Mar. 11, 1983, Pat. No. 4,486,436, which is a continuation of Ser. No. 400,597, Jul. 22, 1982, abandoned. This application Mar. 17, 1986, Ser. No. 839,986
Int. Cl.⁴ A61U *31/40, 31/52*
U.S. Cl. 514—264 **24 Claims**

1. A method for eliciting an onset hastened and enhanced analgesic or anti-inflammatory response in a mammal, comprising administering to said mammal a pharmaceutical composition comprising:

(a) an analgesically and anti-inflammatorily effective amount of a non-steroidal anti-inflammatory drug comprising an acetic acid derivative or a pharmaceutically acceptable salt thereof selected from tolmetin and indomethacin; and

(b) an amount of caffeine sufficient to hasten the onset of and enhance the analgesic or anti-inflammatory response.

4,656,178

PHARMACEUTICAL COMPOSITION POSSESSING ANTIARRHYTHMIC EFFECT

Sabir J. Junusov, ulitsa Timiryazeva, 18; Marat S. Junusov, ulitsa Muminova, 7, kv. 19; Vladimir A. Telnov, ulitsa Muminova, ½, kv. 52; Farkhad N. Dzhagangirov, mikroraion Akhmed-Danish, 3a, kv. 11, all of Tashkent; Fakhritdin Satritdinov, Kalininsky raion kolkhoz imeni M.I. Kalinina, Tashkentskaya oblast, and Karimzhan Taizhanov, ulitsa Muminova, 10, kv. 58, Tashkent, all of U.S.S.R.

Continuation of Ser. No. 528,600, Sep. 1, 1983, abandoned. This application Apr. 24, 1985, Ser. No. 726,283
Int. Cl.⁴ A61K *31/44*
U.S. Cl. 514—279 **4 Claims**

1. A method for the treatment of heart rhythm disturbances of both ventricular and supraventricular origin accompanying ischemic heart disease, myocardial infarctions and cardiomyopathy, which comprises administering to a subject in need of such treatment, a pharmaceutical composition containing in single dose form, from about 0.03 to about 1 mg/kg of body weight of lappaconitine hydrobromide and a pharmaceutically acceptable carrier.

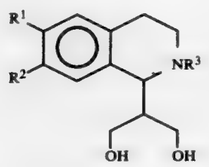
4,656,179

ISOQUINOLINE DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Gabor Bernáth; Jenö Kòbor; Ferenc Fülöp, all of Szeged; Elemér Ezer, Budapest; Gyorgy Hajós, Budapest; Eva Palosi, Budapest; László Denes, Budapest, and László Szporny, Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Filed Oct. 25, 1984, Ser. No. 664,842
Claims priority, application Hungary, Oct. 25, 1983, 3651/83
Int. Cl.⁴ A61K *31/47*; C07D *217/16*
U.S. Cl. 514—307 **3 Claims**

1. Compound of the formula (I)



(I)

wherein

R^1 and R^2 represent hydroxyl or alkoxy having from 1 to 6 carbon atoms,

R^3 is hydrogen or a single electron pair,

and the dotted line represents an optional double bond,

and pharmaceutically acceptable salts thereof.

3. A pharmaceutical composition having neuroleptic and anticonvulsive activities which comprises: an effective amount of at least one compound of the formula (I) of claim 1, or a pharmaceutically acceptable salt thereof, in admixture with conventional pharmaceutical carriers and/or diluents.

4,656,180

DIAMINE DERIVATIVES AND PHARMACEUTICAL PREPARATIONS CONTAINING THESE COMPOUNDS

Stefan Postius, Nürnberg; Rolf Herter, Schwabach; Peter Mörsdorf, Cadolzburg; Helmut Schickaneder, Eckental; Istvan Szelenyi, Schwaig, and Kurt H. Ahrens, Nürnberg, all of Fed. Rep. of Germany, assignors to Ludwig Heumann & Co., GmbH, Fed. Rep. of Germany

Filed Mar. 5, 1985, Ser. No. 708,239

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1984, 3408327

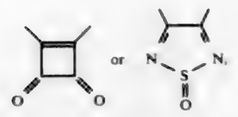
Int. Cl.⁴ A61K *31/34;* **C07D** *401/14*

U.S. Cl. 514—316 **11 Claims**

1. A compound of the formula

$$R^1R^2N-(CH_2)_m-Q-A-NH-R-NH-B-Q'-(CH_2)_nNR^3R^4$$

wherein m and n have, independently of one another, the value 0 or 1, R^1, R^2, R^3 and R^4, which may be identical or different, each represent hydrogen, C_{1-10}-alkyl, C_{5-6}-cycloalkyl, amino, lower alkylamino or di-lower alkylamino or R^1 and R^2 and/or R^3 and R^4 represent, together with the nitrogen atom attached thereto, a pyrrolidine, methylpyrolidine, morpholine, thiomorpholine, piperidine, methylpiperidine, N-methylpiperazine, homopiperidine, heptamethyleneimino or octamethyleneimino ring, or R^3 and R^4 together represent the group $(NH_2)_2C=$ or, when m has the value 0, R^1 and R^2 may together represent the group $(NH_2)_2C=$, Q and Q' denote, independently of one another, a furan, thiophene, thiazole or benzene ring, A and B represent, independently of one another, a group $O-(CH_2)_q$, $O-CH_2-CHOH-CH_2$ or $CH_2-X-CH_2-Y-(CH_2)_p$, q has the value 2, 3 or 4, X represents a sulphur or oxygen atom or the group CHOH, Y represents a single bond or the group CHOH, p has the value 1 or 2 and R represents the ring system



and the physiologically acceptable salts and hydrates thereof.

11. A histamine antagonist pharmaceutical preparation, characterised in that it contains a histamine antagonist effective amount of a compound according to one of the claims 1 to 9 and 10 together with an inert, pharmaceutically acceptable excipient or diluent.

4,656,181

NEW ESTERS OF 1,4-DIHYDROPYRIDINES, PROCESSES FOR THE PREPARATION OF THE NEW ESTERS, AND MEDICAMENTS CONTAINING THE SAME

Carlos E. Sunkel; Miguel Faus de Casa-Juana, both of Madrid, Spain; Peter R. Statkow, Geneva, and Danielle Straumann, Martigny, both of Switzerland, assignors to Cermol S.A., Geneva, Switzerland

PCT No. PCT/CH 83/00128, § 371 Date Jul 20, 1987, § 102(e) Date Jul. 20, 1987, PCT Pub. No. WO 84/02132, PCT Pub. Date Jun. 7, 1984

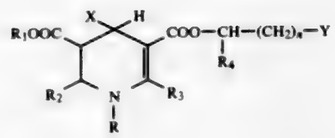
PCT filed Jul. 20, 1984, Ser. No. 637,216

Claims priority, application Switzerland, Nov. 24, 1982, 6858/82

Int. Cl.⁴ A61K *31/455;* **C07D** *211/90, 405/12*

U.S. Cl. 514—336 **5 Claims**

1. A compound selected from the group consisting of esters of 1,4-dihydropyridine having the following formula



in which:

R is hydrogen, or a saturated or an unsaturated hydrocarbon radical,

R_2 and R_3, which can be identical or different, are hydrogen or a straight alkyl group,

R_4 is hydrogen or a straight alkyl chain,

n is a number equaling 0, 1, 2 or 3,

X is a phenyl radical which can have one to three substituents independently selected from the group consisting of nitro, cyano, azido, alkoxy, alkyl, hydroxy, alkanoyloxy, carbalkoxy, amino, alkanoylamino, alkylamino, $S(O)_m$-alkyl, where m equals 0, 1 or 2, trifluoromethyl or halo

R_1 is a straight or branched, saturated, unsaturated or cyclic hydrocarbon radical which can be interrupted by one or two atoms of oxygen or sulfur and which can be substituted by one or two hydroxy groups; R_1 can also designate the $-CH-(CH_2)_nY$ group;

Y is a group of formula $-OOC-R_6$, or $-R-R_6$ where R_6 is an alkanoylamino phenyl group or Y is tetrahydrofuryl;

and salts thereof.

4. A pharmaceutical composition for the treatment of atheroma, which comprises at least one ester of dihydropyridine according to claim 1, in an amount effective to exert an antiatheromic effect, together with a pharmaceutically acceptable diluent or carrier.

4,656,182

SUBSTITUTED TRANS-1,2-DIAMINOCYCLOHEXYL AMIDE COMPOUNDS

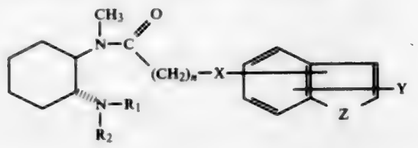
David Horwell, Foxton, England, assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 558,731, Dec. 6, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 669,922

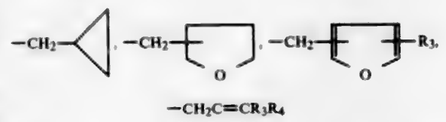
Int. Cl.⁴ C07D *333/58;* **A61K** *31/38*

U.S. Cl. 514—324 **9 Claims**

1. A compound having the structural formula

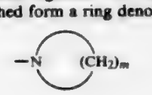


where R_1 is methyl and R_2 is hydrogen, alkyl of from one to six carbon atoms,



$-CH_2C=CR_3R_4$

where R_3 and R_4 are independently hydrogen or methyl; or where R_1 and R_2 taken together with the nitrogen atom to which they are attached form a ring denoted by



where m is an integer of from three to eight; where n is an integer of from zero to six; X is oxygen, sulfur, $-CHR_5$ where R_5 is hydrogen, alkyl of from one to six carbon atoms, or phenyl; or NR_6 where R_6 is hydrogen or alkyl of from one to six carbon atoms; where Y is hydrogen, fluorine, chlorine, alkyl of from one to six carbon atoms, or phenyl; and Z is sulfur, or an N^1-oxide thereof; and the pharmaceutically acceptable acid addition salts thereof.

4,656,183

PESTICIDAL OXALYL DIANILIDES

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany; Jozef Drabek, Oberwil, and Rainer Neumann, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

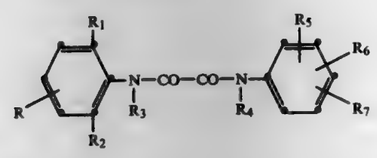
Filed Aug. 27, 1984, Ser. No. 644,463

Claims priority, application Switzerland, Aug. 26, 1983, 4670/83; Mar. 27, 1984, 1525/84

Int. Cl.⁴ C07D *213/64;* **A01N** *43/40*

U.S. Cl. 514—346 **24 Claims**

1. A compound of the formula



wherein

R is hydrogen, halogen, C_1–C_4alkyl, methoxy, ethoxy, C_1–C_2-fluoroalkoxy containing 1 to 5 fluorine atoms,

R_1 is hydrogen, halogen, methyl, methoxy, ethoxy, C_1–C_2-fluoroalkoxy containing 1 to 5 fluorine atoms, C_1–C_3alkylthio or cyano,

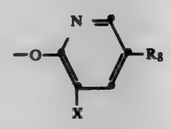
R_2 is hydrogen, halogen, methyl or methoxy,

R_3 and R_4 are each independently hydrogen or methyl,

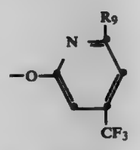
R_5 is hydrogen, halogen, methyl, acetyl or trifluoromethyl,

R_6 is hydrogen, halogen, methyl, trifluoromethyl or carbalkoxy containing 1 to 4 carbon atoms in the alkyl moiety, and

R_7 is the

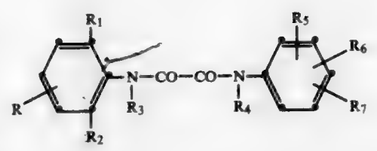


radical, in which R_8 is hydrogen, chlorine, trifluoromethyl or a perhalogenated ethyl radical and X is hydrogen or chlorine; or is the



radical, in which R_9 is hydrogen, chlorine, bromine, methoxy or ethoxy.

23. A method of controlling insects, which comprises applying to said insects, or any of their various development stages, or their loci thereof, with a pesticidally effective amount of a compound of the formula



wherein

R is hydrogen, halogen, C_1–C_4alkyl, methoxy, ethoxy, C_1–C_2-fluoroalkoxy containing 1 to 5 fluorine atoms,

R_1 is hydrogen, halogen, methyl, methoxy, ethoxy, C_1–C_2-fluoroalkoxy containing 1 to 5 fluorine atoms, C_1–C_3alkylthio or cyano,

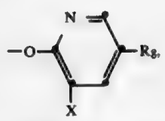
R_2 is hydrogen, halogen, methyl or methoxy,

R_3 and R_4 are each independently hydrogen or methyl,

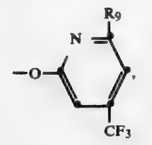
R_5 is hydrogen, halogen, methyl, acetyl or trifluoromethyl,

R_6 is hydrogen, halogen, methyl, trifluoromethyl or carbalkoxy containing 1 to 4 carbon atoms in the alkyl moiety, and

R_7 is the



radical, in which R_8 is hydrogen, chlorine, trifluoromethyl or a perhalogenated ethyl radical and X is hydrogen or chlorine; or is the



radical, in which R_9 is hydrogen, chlorine, bromine, methoxy or ethoxy.

4,656,184

2-(N-SUBSTITUTED HYDRAZONE), THIAZOLES USEFUL AS ANTI-INFLAMMATORIES

Claude Coquelet, 113 Rue des Lilas, 34980 Saint Gely du Fesc; Chantal Bertez, Rue des Etats du Languedoc Résidence "Le Languedoc" Batiment A4, 34000 Montpellier; Claude Boune, 12 bis Avenue Aristide Briand, 94360 Bry-sur-Marne, and Daniel Sincholles, 343 Avenue de la Trémoulette, 34980 Saint-Clement, all of France

PCT No. PCT/FR83/00126, § 371 Date Feb. 7, 1984, § 102(e) Date Feb. 7, 1984, PCT Pub. No. WO84/00007, PCT Pub. Date Jan. 5, 1984

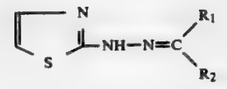
PCT Filed Jun. 17, 1983, Ser. No. 589,114

Claims priority, application France, Jun. 18, 1982, 82 10687

Int. Cl.⁴ A61K *31/425;* **C07D** *277/50*

U.S. Cl. 514—370 **7 Claims**

1. A compound selected from the group consisting of compounds of the formula:



in which:

R_1 is selected from hydrogen, C_{1-6}alkyl, C_{5-7}cycloalkyl,

hydroxy, C_{1-6}alkoxy, amino, (C_{1-6}amino, carboxy and carboxy C_{1-6}alkyl,

R_2 is selected from thienyl, furyl, 1-imidazolyl-(C_{1-10}alkyl), and carboxy (C_{1-6}alkyl) thienyl, and pharmaceutically acceptable acid addition salts thereof.

7. Process for the treatment of inflammatory phenomena, which comprises administering to a human in need thereof an effective amount of a compund as claimed in claim 1, said amount being effective to inhibit said inflammatory phenomena.

4,656,185

7-OXABICYCLOHEPTANE SUBSTITUTED AMINOALKYL AMIDE PROSTAGLANDIN ANALOGS

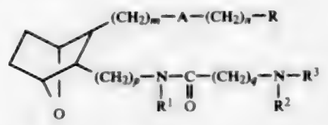
Steven E. Hall, Ewing Township, Mercer County, and Masumi Nakano, Hopewell, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 5, 1985, Ser. No. 804,729

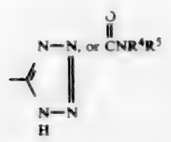
Int. Cl.[4] C07D *493/08, 405/14;* **A01K** *31/34, 31/41*

U.S. Cl. 514—382 **16 Claims**

1. A compound having the structure



including all stereoisomers thereof, wherein m is 0 to 4; A is —CH=CH— or —CH_2—CH_2—; n is 1 to 5; R is CO_2H, CO_2alkyl, CO_2alkali metal, CO_2polyhydroxyamine salt, —CH_2OH,



wherein R^4 and R^5 are the same or different and are H, lower alkyl, hydroxy, lower alkoxy or aryl at least one of R^4 and R^5 being other than hydroxy and lower alkoxy; p is 1 to 4; R^1 is H or lower alkyl; q is 1 to 12; R^2 and R^3 may be the same or different and are H, lower alkyl, lower alkenyl containing 2 to 12 carbons, lower alkynyl containing 2 to 12 carbons, aryl, arylalkyl, lower alkoxy, aralkyloxy, cycloalkyl or cycloalkylalkyl, wherein lower alkyl or alkyl alone or as part of another group contains 1 to 12 carbons and is unsubstituted or is substituted with halo, CF_3, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl, alkylcycloalkyl, hydroxy, alkylamino, alkanoylamino, arylcarbonylamino, nitro, cyano, thiol or alkylthio;

aryl alone or as part of another group contains 6 to 10 carbons in the ring portion and is unsubstituted or is substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens, 1 or 2 hydroxy groups, 1 or 2 lower alkoxy groups, 1 or 2 alkylamino groups, 1 or 2 alkanoylamino groups, 1 or 2 arylcarbonylamino groups, 1 or 2 amino groups, 1 or 2 nitro groups, 1 or 2 cyano groups, 1 or 2 thiol groups, and/or 1 or 2 alkylthio groups; and

cycloalkyl alone or as part of another group contains 3 to 12 carbons and is unsubstituted or is substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups, 1 or 2 lower alkoxy groups, 1 or 2 hydroxyl groups, 1 or 2 alkylamino groups, 1 or 2 alkanoylamino groups, 1 or 2 arylcarbonylamino groups, 1 or 2 amino groups, 1 or 2 nitro groups, 1 or 2 cyano groups, 1 or 2 thiol groups and/or 1 or 2 alkylthio groups.

4,656,186

TETRAPYRROLE THERAPEUTIC AGENTS

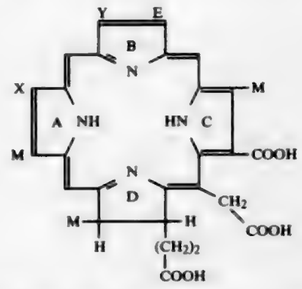
Jerry C. Bommer, Ogden, and Bruce F. Burnham, Logan, both of Utah, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1985, Ser. No. 728,785

Int. Cl.[4] A61K *43/30;* **C07D** *487/22*

U.S. Cl. 514—410 **14 Claims**

1. A fluorescent mono, di or polyamide of an amino acid containing one carboxy group and a tetrapyrrole compound of the formula:



said amide being formed between the amino group of the amino acid and at least one of the carboxy moieties attached to said tetrapyrrole, wherein;

X=H, vinyl, ethyl, acetyl or formyl;

Y=methyl or formyl;

M=methyl; and

E=ethyl

and pharmaceutically-acceptable salts thereof.

14. A pharmaceutical composition comprising an effective therapeutic amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,656,187

TREATMENT OF MAMMARY CANCER

Larry J. Black, and James A. Clemens, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 289,360, Aug. 3, 1981, abandoned. This application Dec. 1, 1983, Ser. No. 556,875

Int. Cl.[4] A61K *31/40, 31/135*

U.S. Cl. 514—422 **2 Claims**

1. A method of inhibiting the growth of estrogen-dependent mammary cancers comprising administering to a patient in need of such treatment about 20 mg./kg./day of a first compound which is 6-hydroxy-2-(4-hydroxyphenyl)-3-[4-(2-pyrrolidinoethoxy)benzoyl]benzo[b]thiophene, and about 5 mg./kg./day of a second compound which is tamoxifen.

4,656,188

ACE INHIBITORS IN MACULAR DEGENERATION

Daniel F. Veber, Ambler, and John J. Baldwin, Gwynedd Valley, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 9, 1985, Ser. No. 785,925

Int. Cl.[4] A61K *31/195, 31/40, 31/27, 31/505*

U.S. Cl. 514—423 **5 Claims**

1. A method of treating senile macular degeneration which comprises the administration to a patient in need of such treatment of 5 to 500 mg per day of an angiotensin converting enzyme inhibitor selected from the group consisting of enalapril, enalaprilat, lisinopril, captopril, ranipril, perindopril, zofenopril, quinapril, pentoapril, cilazapril, pivopril, fosenopril, indoapril, indalapril, phenacein, fentiapril, alacepril, perindopril, mugenic acid, ancovenin, CI 925, CGS 14824a, CGS 14831, WY 44221, CI 928, SQ 28853, SQ 27786, CGS 16617, MC 838, and K 26.

4,656,189

ANTI-JUVENILE HORMONES

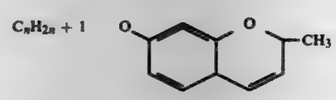
William S. Bowers, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 613,991, Sep. 17, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 739,886

Int. Cl.[4] A01N *43/16;* **C07D** *309/22*

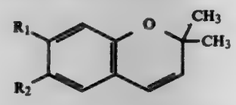
U.S. Cl. 514—456 **13 Claims**

1. A method of treating an insect to inhibit the juvenile hormone activity in said insect and thereby effect insect control which comprises contacting an insect with an active chromene compound which is an anti-juvenile hormone having the nucleus:



wherein n is an integer from about 1 to 6 in an amount effective to inhibit the effects of juvenile hormone.

13. A compound having the formula



in which R_1 is 2-propynoxy and R_2 is hydrogen.

4,656,190

INDENE DERIVATIVES AND THEIR USE AS PAF-ANTAGONISTS

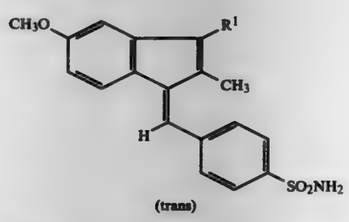
Tsung-Ying Shen, Westfield; Shu S. Yang, Bridgewater, and San-Bao Hwang, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 14, 1983, Ser. No. 550,839

Int. Cl.[4] C07D *257/04*

U.S. Cl. 514—529 **9 Claims**

1. A compound of formula:



(trans)

wherein R^1 is

(a) CH_2COOCH_3

(b) CH_2CH_2OH

(c) $CH_2CH_2OCH_3$

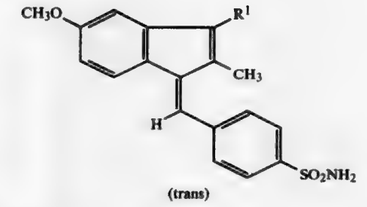
(d) $CH_2CH_2SCH_3$

(e) $CH_2CHSC_2H_5$

(f) $CH_2CH_2SC_6H_5$

(g) $CH_2CH_2SOCH_3$.

3. A method for treating a PAF-mediated disease comprising the administration to a mammalian species in need of such treatment a therapeutically effective amount of a compound of formula:



(trans)

wherein R^1 is

(a) CH_2COOCH_3

(b) CH_2CH_2OH

(c) $CH_2CH_2OCH_3$

(d) $CH_2CH_2SCH_3$

(e) $CH_2CHSC_2H_5$

(f) $CH_2CH_2SC_6H_5$

(g) $CH_2CH_2SOCH_3$.

4,656,191

PHARMACEUTICAL COMPOSITION COMPRISING L-CARNITINE FOR THE TREATMENT OF IMPAIRED CARDIAC FUNCTION

Ottorino Fanelli, Rome, Italy, assignor to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Continuation of Ser. No. 558,563, Dec. 5, 1983, abandoned, which is a continuation of Ser. No. 187,654, Sep. 16, 1980, abandoned. This application Jun. 12, 1985, Ser. No. 743,762

Claims priority, application Italy, Sep. 21, 1979, 50332 A/79

Int. Cl.[4] A61K *31/205*

U.S. Cl. 514—556 **4 Claims**

1. A therapeutical method for the treatment of patients affected by arrhythmic syndromes and congestive heart failure, characterized by the fact of administering to said patients, via the oral or parenteral route, a pharmaceutical composition comprising an effective amount of L-carnitine substantially free of D-carnitine.

4,656,192

TROPOLONE DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND THE USE THEREOF AS ANTI-TUMOR AGENTS

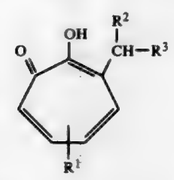
Masatoshi Yamato, Okayama, Japan, assignor to Meet Corporation, Japan

Filed Jun. 14, 1984, Ser. No. 620,473

Int. Cl.[4] A61K *31/12, 31/135;* **C07C** *49/607, 101/34*

U.S. Cl. 514—564 **3 Claims**

1. A tropolone derivative of the general formula:



(I)

wherein

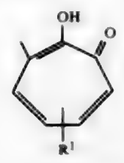
R^1 represents hydrogen or alkyl of 1 to 5 carbon atoms;

R^2 represents alkyl of 3 to 5 carbon atoms; aryl of 6 to 20 carbon atoms, unsubstituted or substituted by a substituent selected from the group consisting of hydroxy, alkoxy of 1 to 8 carbon atoms, alkyl of 1 to 5 carbon atoms, halogen, dimethylamino, diethylamino and carboxyl; aralkyl of 7 to 20 carbon atoms; and

R^3 represents alkoxy of 1 to 8 carbon atoms; aryl of 6 to 20

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carbon atoms, unsubstituted or substituted by a said substituent; or



and pharmaceutically acceptable metal complex salts thereof.

2. A pharmaceutical composition for the treatment of humans or non-human animals having a tumor, which comprises an anti-tumor effective amount of the compound according to claim 1, in combination with a pharmaceutically acceptable carrier.

4,656,193

BENZOYLUREA COMPOUNDS, AND INSECTICIDAL AND ACARICIDAL COMPOSITIONS COMPRISING SAME

Marius S. Brouwer; Arnoldus C. Grosscurt, and Roelof van Hes, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

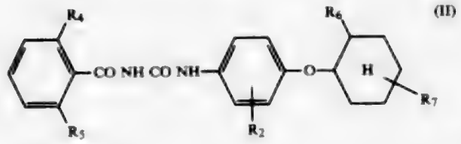
Continuation-in-part of Ser. No. 572,142, Jan. 19, 1984. This application Sep. 20, 1985, Ser. No. 778,433

Claims priority, application Netherlands, Jan. 24, 1983, 8300239

Int. Cl.⁴ C07C 127/22; A01N 47/34

U.S. Cl. 514—594 **9 Claims**

1. Compounds of the formula



(II)

wherein

R_2 is a hydrogen atom or represents 1 or 2 substituents selected from the group consisting of chlorine, methyl and trifluoromethyl,

R_4 is a halogen atom or a methyl group,

R_5 is a hydrogen atom or a halogen atom,

R_6 is an alkyl or alkenyl group having 1–4 or 2–4 carbon atoms respectively, and

R_7 is a hydrogen atom or an alkyl or alkenyl group having 1–4 or 2–4 carbon atoms respectively, or wherein

R_6 and R_7 together with the cyclohexyl ring to which they are attached form a 2-bornyl or a 2-adamantyl group.

4,656,194

AZULENE DERIVATIVES AND THEIR USE AS HYPOCHOLESTEROLEMICS

Masaharu Yasunami; Kabei Takase, both of Sendai; Akira Shinji; Toru Mimura, both of Kawasaki; Kazio Torii, Tokyo; Takashi Kobayashi, Yokohama; Masaru Okutsu, Yamato, and Takashi Meguro, Zushi, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

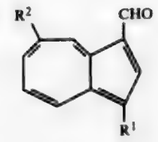
Filed Oct. 9, 1985, Ser. No. 785,713

Claims priority, application Japan, Oct. 17, 1984, 59-218123

Int. Cl.⁴ A61K 31/11; C07C 13/52, 47/40

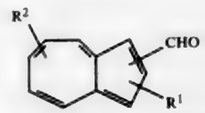
U.S. Cl. 514—693 **8 Claims**

1. An azulene derivative represented by the following formula



wherein R^1 and R^2 are the same or different and are each C_1–C_{12} alkyl or C_2–C_{12} alkenyl.

7. A hypocholesterolemic composition containing an azulene derivative represented by the formula



wherein Rand R^2 are the same or different and are selected from the group consisting of hydrogen, C_1–C_{12} alkyl groups and C_2–C_{12} alkenyl groups, a physiologically acceptable salt of said derivative, or a mixturer thereof, admixed with a physiologically acceptable vehicle, carrier, excipient or binder, wherein said derivative is contained in said composition in an amount sufficient to exert a hypocholesterolemic effect on a mammal.

4,656,195

ETHYLENE OXIDE ADDUCTS, METHOD OF PRODUCING SAME AND COSMETICS AND OINTMENTS CONTAINING SAME

Yoshio Tamai; Fumito Yamamoto, both of Nakajyo; Manzo Shiono; Koichi Kaneshira, both of Kurashiki; Hiroshi Ozasa, Ageo, and Kaoru Nomoto, Kitakawabe, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

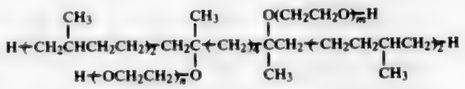
Filed Oct. 8, 1985, Ser. No. 785,551

Claims priority, application Japan, Oct. 12, 1984, 59-214979

Int. Cl.⁴ A61K 7/00; C07C 43/11

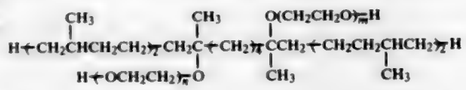
U.S. Cl. 514—772 **4 Claims**

1. An ethylene oxide adduct of the formula



wherein the means value of the sum of m and n falls within the range of 10 to 200, inclusive.

3. A cosmetic or ointment which contains a cosmetically effective amount of an ethylene oxide adduct of the formula



wherein the mean value of the sum of m and n falls within the range of 10 to 200, inclusive and water, at least one oleaginous substance or mixtures thereof.

4,656,196

PROCESS FOR PREPARING IN SITU RETICULATED POLYURETHANE FOAM

David J. Kelly, Chadds Ford, and Paul J. Cacciatore, Chester, both of Pa., assignors to Scotfoam Corporation, Eddystone, Pa.

Division of Ser. No. 817,456, Jan. 9, 1986. This application Sep. 8, 1986, Ser. No. 904,287

Int. Cl.⁴ C08J 9/14, 9/38

U.S. Cl. 521—52 **14 Claims**

1. A reticulated open-cell polyurethane foam produced in situ from the reaction of a polyester/polyether polyol mixture with an aromatic polyisocyanate having a ratio of isocyanate moieties to aromatic moieties of about 2:1 in the presence of a catalyst and a blowing agent wherein said polyol mixture comprises:

(a) 80 to 95 parts by weight of the mixture of a polyester polyol and

(b) 20 to 5 parts by weight of polyoxypropylene polyether polyol or a mixed poly(oxyethylene/oxypropylene) polyether polyol, having at least one polymer of ethylenically unsaturated monomers dispersed therein

and a stabilizing surfactant for polyether polyurethane foam.

4,656,197

PRE-FOAMED PARTICLES OF POLYETHYLENE RESIN

Shohei Yoshimura, Tomioka; Toru Yamaguchi; Masahiro Hashiba, both of Utsunomiya, and Masato Kanbe, Hiratsuka, all of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed Aug. 20, 1986, Ser. No. 898,225

Int. Cl.⁴ C08J 9/16, 9/22

U.S. Cl. 521—56 **7 Claims**

1. Pre-foamed particles of a polyethylene resin, characterized in that said polyethylene resin has been formed by cross-linking a linear super-low density polyethylene having a density of 0.880–0.914 g/cm³ and a melt flow rate of 0.01–10 g/10 minutes and the gel content of the pre-foamed particles is 0.06–45%.

4,656,198

POLYIMIDE FOAMS AND METHODS OF MAKING SAME

Garson P. Shulman, Torrance, and Chris C. L. Fung, Valencia, both of Calif., assignors to RMB Products, Simi Valley, Calif.

Division of Ser. No. 819,712, Jan. 16, 1986. This application Jul. 7, 1986, Ser. No. 882,538

Int. Cl.⁴ C08J 9/22, 9/24

U.S. Cl. 521—56 **1 Claim**

1. The process of preparing high density (15 to 30 /b/cubic ft) foam panels by foaming 0.25 to 0.5 mm diameter particles of the composition produced by the reaction of 3,3',4,4'-benzophenonetetracarboxylic dianhydride, an amino acid selected from the group consisting of glycine or beta-alamine, 2-propanol, 4,4'-diaminodiphenyl methane in the presence a 2-methoxyethanol plasticizer alone, or mixed with the methylenedianiline monoimide dialkyl ester of benzophenonetetracarboxylic acid in a closed mold.

4,656,199

PROCESS FOR THE PRODUCTION OF MATTE, NON-BLOCKING, THIN-WALLED MOLDED ARTICLES FROM LINEAR THERMOPLASTIC POLYURETHANE ELASOTOMERS CONTAINING POLYADDUCTS AND THEIR USE

Georg Niederdellmann, Dormagen; Wilhelm Goyert, Cologne; Bernd Quiring, Leverkusen, and Hans Wagner, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 30, 1986, Ser. No. 824,337

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1985, 3504671

Int. Cl.⁴ C08G 18/14

U.S. Cl. 521—79 **10 Claims**

1. A process for the production of a matte, non-blocking, thin-walled molded article, film or tube a polyurethane elastomer based on

(A) a dispersion comprising

(Ab) a relatively high molecular weight, high melting polyisocyanate polyaddition product dispersed in

(Aa) a relatively high molecular weight, polyfunctional compound containing isocyanate reactive groups with Zerewitinoff-active hydrogen atoms and having a molecular weight of 400 to about 10,000 and a melting point below 60° C.,

(B) a chain lengthening agent with a molecular weight of 18 to 399 containing two Zerewitinoff-active hydrogen atoms and

(C) a diisocyanate, wherein

(I) said polyurethane elastomer is thermoplastically processible, has a substantially linear structure and is prepared at a molar ratio of isocyanate groups to the sum of all of the groups containing Zerewitinoff-active hydrogen atoms of about 0.95 to 1.05,

(II) component (Ab) comprises a high melting polyisocyanate polyaddition product based on (α) a low molecular compound having a molecular weight of 18 to 399 and containing at least two Zerewitinoff-active hydrogen atoms and

(B) an organic di- and/or polyisocyanate in a molar ratio of isocyanate groups to isocyanate reactive groups having Zerewitinoff-active hydrogen atoms of about 0.8:1 to 1.3:1, contained in th relatively high molecular weight, bifunctional compound (Aa) in the form of a finely divided dispersion having an average particle size of about 0.01 to 25 μm, the dispersed polyaddition product (Ab) having a melting point above about 220° C., and its dispersion in component (Aa) being stable and remaining finely divided up to a temperature at least 15 degrees Centigrade higher than the processing temperature of the polyurethane elastomer without decomposing or dissolving, the polyadduct (Ab) being used in a quantity of about 0.66 to 15% by weight, based on the polyurethane elastomer containing the polyadduct, and

(III) converting said polyurethane elastomer by an extrusion, film blowing or calendering process at a processing temperature above about 110° C. into a thin-walled, matte, molded article, film or tube having a wall thickness below about 2 mm, in which the polyadduct (Ab) is finely divided and homogeneously distributed within the thin-walled molded article.

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4,656,200

PHOSPHONIC ACID SALTS AS FLAME RETARDANTS FOR POLYURETHANES AND POLYISOCYANURATES

Brian G. Clubley, Wilmslow; Richard J. Dellar, Altrincham; David L. Buzzard, Woodford, and Norman Richardson, Middleton, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 14, 1985, Ser. No. 691,311

Claims priority, application United Kingdom, Jan. 14, 1984, 8401003; Mar. 20, 1984, 8407226; Jul. 9, 1984, 8417462; Aug. 3, 1984, 8419791

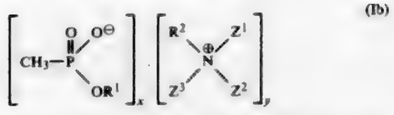
Int. Cl.[4] C08G 18/14; C08K 5/53

U.S. Cl. 521—108 **1 Claim**

1. A rigid polyurethane or polyisocyanurate prepared from a reaction mixture comprising active hydrogen compounds and polyisocyanates and a flame retardant amount of an amine salt of the formula Ia and/or Ib



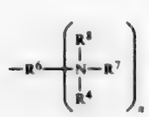
(Ia)



(Ib)

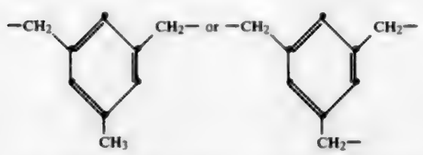
wherein x and y are integers such that the number of negative and positive charges are the same, R^1 is hydrogen, methyl or a negative charge, R^2 is hydrogen or methyl,

R^3 is a C_2–C_4 alkyl group substituted by 1–3 hydroxyl groups, which may be substituted by an oxyalkylene chain, these being not more than one hydroxyl group on any one carbon atom, R^4 and R^5 may be the same or different and may be a group as defined for R^3, or hydrogen, a C_1–C_4 alkyl group, a phenyl group, a benzyl group, or a phenyl or benzyl group substituted on the aromatic ring by an alkyl group of 1–12 carbon atoms, a hydroxyl group, which may be substituted by an oxyalkylene chain, and/or 1–3 halogen atoms, or R^5 is a group of the formula II



(II)

wherein R^6 is an alkylene group of 2–4 carbon atoms, a phenylene group, a xylylene group, a diphenyl methane group or is a group of the formula

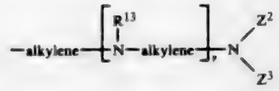


in which aromatic rings in a group R^6 may be substituted by an alkyl group of 1–12 carbon atoms, a hydroxyl group, which may be substituted by an oxyalkylene chain, and/or 1–3 halogen atoms, and R^7 is hydrogen or methyl, in which cases the nitrogen atom carries a positive charge, or R^7 is absent; R^8 is hydrogen or a group as defined for R^3 and n is 1 or 2;

or R^4 and R^5 may be joined to form, with the nitrogen, 5 or 6 membered heterocyclic ring, optionally containing an oxygen atom; and Z^1, Z^2 and Z^3 are the same or different and represent hydrogen, a C_1–C_{12} straight or branched chain alkyl group, a C_3–C_{12} straight or branched chain alkenyl group, a C_3–C_{12} straight or branched chain alkynyl group, a C_4–C_{12} cycloalkyl group, a phenyl or naphthyl group which may be substituted by a C_1–C_4 straight or branched chain alkyl group, a C_1–C_4 alkoxy group, amino, methylamino, halogen or nitro, or a C_7–C_{12} aralkyl group.

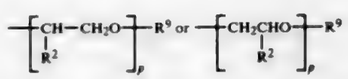
or Z^2 and Z^3 together with the nitrogen atom to which they are attached form a saturated or unsaturated 3–7 membered ring system which may optionally contain another hetero atom, and the ring system is optionally substituted by a C_1–C_4 straight or branched chain alkyl group, a C_1–C_4 alkoxy group, amino, methylamino, a C_1–C_4 aminoalkyl group, halogen or nitro;

or Z^1 and Z^2 and Z^3 together with the nitrogen atom to which they are attached form an 8–12 membered bicyclic ring optionally containing another hetero atom, or Z^1 is a group of the formula



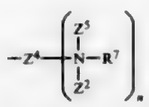
wherein alkylene is a group containing 2 to 12 carbon atoms, v is O or an integer from 1 to 5, R^{13} is hydrogen or C_1–C_{16} straight or branched chain alkyl group, and Z^2 and Z^3 are as defined above;

or Z^1 is a group of the formula



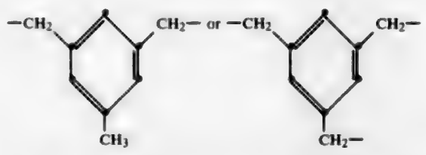
in which R^2 is as defined above, R^9 is a C_1–C_{12} alkyl group and p is an integer from 1–10, preferably from 1–4;

or Z^3 is a group of the formula IIa



(IIa)

wherein Z^4 is an alkylene group of 2–12 carbon atoms, a phenylene group, a xylylene group, a diphenyl methane group or is a group of the formula



in which aromatic rings in a group Z^4 may be substituted by an alkyl group of 1–2 carbon atoms, hydroxyl and/or 1–3 halogen atoms, and R^7 is a hydrogen or methyl, in which cases the nitrogen atom carries a positive charge, or R^7 is absent; Z^5 is hydrogen or a group as defined for Z^1 and n is 1 or 2; or Z^2 may be joined to form, with the nitrogen, a 3 to 7 membered heterocyclic ring, optionally containing another hetero atom.

4,656,201

S-TRIAZINE-RADICAL-CONTAINING POLYETHER POLYOL MIXTURES, PROCESS FOR THEIR PREPARATION AND THEIR USE

Matthias Marx, Bad Durkheim, and Joachim Jaehme, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 25, 1985, Ser. No. 715,351

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412082

Int. Cl.[4] C08G 18/14, 18/50

U.S. Cl. 521—166 **13 Claims**

1. An s-triazine-radical-containing polyether polyol mixture having a functionality of from 2 to 6 and a hydroxyl number of from 210 to 640, prepared by the process of oxyalkylating a solvent-free initiator selected from the group consisting of polyamino-1,3,5-triazines, and polyamino-1,3,5-triazines in admixture with a co-initiator selected from the group consisting of

(a) aliphatic and cycloaliphatic alkanols containing from 2 to 18 carbon atoms and having a hydroxyl functionality of from 2 to 6,

(b) water, and

(c) mixtures of (a) and (b), wherein said oxyalkylation is performed in the absence of catalysts and inert polar solvents.

6. A process for the preparation of s-triazine-radical-containing polyether polyol compositions by the addition polymerization of alkylene oxides onto a solvent-free initiator mixture comprising oxyalkylating an initiator selected from the group consisting of polyamino-1,3,5-triazines, and polyamino-1,3,5-triazines in admixture with a co-initiator selected from the group consisting of

(a) aliphatic and cycloaliphatic alkanols containing from 2 to 18 carbon atoms and having a hydroxyl functionality of from 2 to 6,

(b) water, and

(c) mixtures of (a) and (b), wherein said oxyalkylation is performed in the absence of catalysts and inert polar solvents and wherein the resulting polyether polyol mixture has a hydroxyl number of from 210 to 640 and a functionality of from 2 to 6.

11. In a polymer formed by the polyisocyanate polyaddition process wherein polyisocyanates are reacted with active hydrogen containing compounds selected from polyols, chain extenders, and cross-linking agents, in the presence of suitable catalysts, blowing agents, auxiliaries and additives, the improvement comprising employing as a polyol component, the composition of claim 1.

4,656,202

ACRYLATED CELLULOSIC FURNITURE COATINGS

Dale L. Nason; Neil A. Wilson, both of Louisville, Ky., and Richard L. Gray, Columbus, Ohio, assignors to Reliance Universal, Inc., Louisville, Ky.

Filed Aug. 28, 1985, Ser. No. 770,638

Int. Cl.[4] C08F 2/50, 26/02; C08B 3/18

U.S. Cl. 522—89 **10 Claims**

1. An ultraviolet curable coating composition comprising about 50 to about 85 percent by weight of an acrylated cellulosic compound prepared by reacting an isocyanato acrylate with an hydroxyl containing cellulose acetate carboxylate such that after said reaction essentially no free isocyanate groups are present; about 15 to about 45 percent by weight of an acrylated oligomer; about 0.1 to about 10 percent by weight of an ultraviolet initiator and sufficient solvent to render the coating handleable under application conditions.

4,656,203

FRICTION MATERIALS AND THEIR MANUFACTURE

Euan Parker, Smithville, Tenn., assignor to Turner & Newall Plc, Manchester, England

Filed Mar. 4, 1985, Ser. No. 707,565

Claims priority, application United Kingdom, Oct. 20, 1984, 8426601

Int. Cl.[4] C08J 5/14; C08K 7/02; C08L 61/06; F16D 69/00

U.S. Cl. 523—155 **23 Claims**



1. A non-asbestos dry-running clutch facing comprising reinforcing fibers embedded in a matrix of binder material, in which specific gravity of the facing is not greater than 1.4 and the actual density of the facing is at least 60% but less than 72% of the theoretical density of the facing.

12. A method for manufacturing a non-asbestos dry running clutch facing which comprises the steps of:

(1) mixing together reinforcing fibers and curable binder material and, optionally, friction and wear modifiers;

(2) forming the mixture of step (1) into a preform in the approximate shape of a clutch facing;

(3) heating and pressing the preform to compress it without completely curing the binder material and consolidate the preform to an actual density is at least 60% but less than 72% of the theoretical density; and thereafter

(4) completely curing the binder under conditions of pressure such as to avoid any substantial further change in actual density.

4,656,204

PROCESS FOR USE OF DRAG REDUCTION AGENT IN A HYDROCARBON LIQUID

Ilan Duvdevani, Leonia; Robert D. Landberg; Ralph M. Kowalik, both of Bridgewater, and Dennis G. Peiffer, East Brunswick, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Nov. 2, 1983, Ser. No. 547,929

Int. Cl.[4] B05D 5/08

U.S. Cl. 523—175 **16 Claims**

1. A process for preparing a drag reduction agent for a hydrocarbon liquid flowing through a conduit which comprises the steps of:

(a) forming a first solution of a sulfonated polymer in a first hydrocarbon solvent;

(b) forming a second solution of a styrene vinyl pyridine copolymer in a second hydrocarbon solvent;

(c) injecting said first solution of said sulfonated polymer through a port in said conduit; and

(d) injecting said second solution of said styrene vinyl copolymer through a second port in said conduit into said mixture of said sulfonated polymer and said hydrocarbon liquid flowing in said conduit to form a polymer complex of said sulfonated polymer and said styrene vinyl pyridine within said hydrocarbon liquid.

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4,656,205
MANUFACTURE OF POLYMERIC BEADS
John R. Walker, Halifax, and John R. Stockwell, Bradford, both of United Kingdom, assignors to Allied Colloids Ltd., England
Filed Nov. 23, 1984, Ser. No. 673,975
Claims priority, application United Kingdom, Nov. 25, 1983, 8331546; Aug. 10, 1984, 8420397
Int. Cl.[4] C08F 2/20
U.S. Cl. 523—201 16 Claims

1. A method of making beads that comprise a polymeric matrix formed from lipophilic polymerisable material and up to 40% of other polymerisable material and containing a substantially water insoluble lipophilic compound that will provide slow release of the lipophilic compound, or a reagent that can be liberated from the compound, into a fluid environment, and in which the lipophilic compound is insoluble in the polymerisable material at 25° C. and has a melting point greater than 25° C., the method comprising forming a homogeneous blend of the lipophilic compound in the polymerisable material in the substantial absence of nonpolymerisable solvent for said compound and at an elevated temperature greater than 25° C. at which the lipophilic compound is soluble in the lipophilic polymerisable material, and subjecting the blend to bead polymerisation while the blend is dispersed as a substantially stable dispersion of beads in an aqueous medium containing a hydrophilic polymerisation stabilizer.

4,656,206
THERMOPLASTIC POLYMER COMPOSITIONS
Moira A. Carter, Stourbridge, England, assignor to BIP Chemicals Limited, Manchester, England
Filed Dec. 16, 1985, Ser. No. 809,269
Claims priority, application United Kingdom, Dec. 20, 1984, 8432213; Mar. 21, 1985, 8507425
Int. Cl.[4] C08L 67/02; C08J 3/20
U.S. Cl. 523—351 10 Claims

1. A pigmented thermoplastic polymer masterbatch composition comprising a polyester having a melting point above 200° C. based on polyethylene terephthalate repeating units, a second solid polymer capable of plasticising said polyester and having a melting point in the range of 50° C. to 120° C., and at least 20 parts by weight of pigment per hundred parts by weight of composition, the amount of said second polymer being sufficient to facilitate wetting out of the pigment in the polymer composition.

4,656,207
EPOXY THERMOSETS HAVING IMPROVED TOUGHNESS
Harold Jabloner; Brian J. Swetlin, and Sung G. Cha, all of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.
Filed Feb. 19, 1985, Ser. No. 702,518
Int. Cl.[4] C08L 63/00; C08K 3/04; C08G 59/50
U.S. Cl. 523—400 20 Claims

1. A thermoset comprising a crosslinked epoxy resin matrix with a fracture toughness, K_{IC}, of at least 1.0 MPam$^{\frac{1}{2}}$, a Tg of at least 125° C. and comprising a glassy discontinuous phase dispersed in a glassy continuous phase that continues throughout said resin matrix, said discontinuous phase constituting at least about 35 volume % of the total volume of said discontinuous and continuous phases.

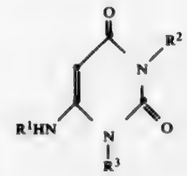
4,656,208
THERMOSETTING EPOXY RESIN COMPOSITIONS AND THERMOSETS THEREFROM
Sung G. Cha; Harold Jabloner, and Brian J. Swetlin, all of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of Ser. No. 702,518, Feb. 19, 1985. This application Apr. 17, 1985, Ser. No. 724,133
Int. Cl.[4] C08L 63/00; C08K 3/04; C08G 59/50
U.S. Cl. 523—400 22 Claims

1. A thermosetting epoxy resin composition comprising: (a) a polyepoxide component having on average more than one epoxide group per molecule and a glass transition temperature below about 50° C., (b) an amount of an amine hardener having a molecular weight below 750 sufficient to provide from 0.8 to 1.5 equivalents of active hydrogen atoms per one equivalent of epoxide groups in the composition, and (c) from 20 to 50% by weight of the composition of an aromatic oligomer having a number average molecular weight between about 2,000 and about 10,000, a glass transition temperature between about 125° C. and 250° C. and at least 1.4 functional groups which are reactive with (a) or (b), or (a) and (b) under curing conditions for the composition.

4,656,209
CHLORINATED THERMOPLASTICS STABILIZED WITH AMINOURACILS
Wolfgang Wehner, Zwingenberg, and Hermann O. Wirth, Bensheim, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 17, 1982, Ser. No. 378,540
Claims priority, application Switzerland, May 26, 1982, 3440/82
Int. Cl.[4] C08K 5/34
U.S. Cl. 524—87 10 Claims

1. A thermoplastic moulding composition based on a vinyl chloride polymer, which composition contains 0.1 to 5% by weight of an aminouracil of the formula

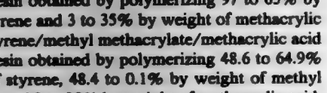
(I)



wherein R^1 is hydrogen, and R^2 and R^3 are C_2–C_4alkyl.

4,656,210
STABILIZED POLYVINYL CHLORIDE MOLDING COMPOSITIONS
Werner Erwied, Langenfeld; Horst Upadek, Erkrath, and Bernd Wegemund, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
PCT No. PCT/EP84/00261, § 371 Date May 3, 1985, § 102(e) Date May 3, 1985, PCT Pub. No. WO85/01054, PCT Pub. Date Mar. 14, 1985
PCT Filed Aug. 30, 1984, Ser. No. 732,102
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1983, 3331967
Int. Cl.[4] C08K 5/41
U.S. Cl. 524—167 25 Claims

1. A stabilized polymeric molding composition consisting essentially of:
a polymer which is polyvinyl chloride;
a primary stabilizer which is at least one metal soap, aromatic metal carboxylate, metal phenolate, or organotin compound, present in at least a minimal stabilizer-effective amount; and
a costabilizer present in at least an amount effective to increase the stabilizing effect of said primary stabilizer, consisting essentially of at least one sulfonyl compound of the formula:



in which R is a C_{1-18}-alkyl, a C_{5-6}-cycloalkyl, a phenyl, a C_{7-11}-alkylphenyl, or X—CO—CH_2 wherein X is NH_2 or OM and M is lithium, sodium, or potassium.

4,656,211
CURABLE RESIN COMPOSITIONS AND THEIR USE
Kohji Nasu, Nishinomiya, and Fumihiro Doura, Sakai, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 783,627, Oct. 3, 1985, abandoned. This application Jul. 10, 1986, Ser. No. 885,393
Claims priority, application Japan, Oct. 5, 1984, 59-210196; Aug. 23, 1985, 60-186141
Int. Cl.[4] C08G 18/80
U.S. Cl. 524—196 8 Claims

1. A curable resin composition which comprises (1) a copolymer composed of an aminoalkyl acrylate and/or aminoalkyl methacrylate and an ethylenically unsaturated monomer and (2) a blocked polyisocyanate compound with an alcohol-based blocking agent and/or a lactum-based blocking agent formulated therein.

4,656,212
THERMOPLASTIC RESIN COMPOSITION
Atsushi Hosoda, Chiba; Tadao Satoh, and Takehisa Mizuno, both of Ichihara, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan
Filed Jan. 15, 1986, Ser. No. 819,034
Claims priority, application Japan, Jan. 16, 1985, 60-4038
Int. Cl.[4] C08K 5/24
U.S. Cl. 524—269 12 Claims

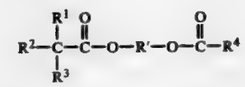
1. A thermoplastic resin composition comprising as essential ingredients
(A) 10 to 90 parts by weight of a styrene-methacrylic acid copolymer resin selected from a styrene/methacrylic acid copolymer resin obtained by polymerizing 97 to 65% by weight of styrene and 3 to 35% by weight of methacrylic acid and a styrene/methyl methacrylate/methacrylic acid copolymer resin obtained by polymerizing 48.6 to 64.9% by weight of styrene, 48.4 to 0.1% by weight of methyl methacrylate and 3 to 35% by weight of methacrylic acid,
(B) 90 to 10 parts by weight of a graft copolymer resin obtained by polymerizing 70 to 20% by weight of methyl methacrylate or a monomeric mixture composed of from less than 100 to 20% by weight of methyl methacrylate and from more than 0 to 80% by weight of styrene in the presence of 30 to 80% by weight of a rubbery polymer, and
(C) 0.001 to 0.2% by weight as silicon, based on the total weight of (A) and (B), of an organopolysiloxane.

4,656,213
ACRYLIC HOT MELT PRESSURE SENSITIVE ADHESIVE COMPOUNDS
James A. Schlademan, Stow, Ohio, assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Oct. 26, 1984, Ser. No. 665,235
Int. Cl.[4] C08L 51/06
U.S. Cl. 524—272 6 Claims

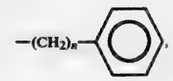
1. A pressure-sensitive hot melt adhesive composition consisting essentially of:
(a) 40 to 80% by weight of a thermoplastic graft copolymer of (i) 10 to 40% by weight, based on a graft copolymer, of a macromolecular monomer consisting of poly(vinyl aromatic monomer) made by polymerization of vinyl aromatic monomer with an alkyllithium initiator to a poly(vinyl aromatic monomer) of number average molecular weight between 5000 and 50,000 capped with an alkylene oxide and subsequently reacted with acryloyl or methacryloyl chloride to form terminal acrylate or methacrylate groups, and (ii) 60 to 90% by weight, based on graft copolymer, of one more monomers selected from the group consisting of acrylic acid, acrylamide, methacrylic acid, methacrylamide, and alkyl acrylates having 1 to 10 carbon atoms in the alkyl groups;
(b) 10 to 45% by weight of a tackifier resin incompatible with the poly(vinyl aromatic monomer) blocks of the graft copolymer and compatible with the acrulate blocks of the graft copolymer; and
(c) 0 to 15% by weight of a plasticizing oil.

4,656,214
STAIN RESISTANT PLASTICIZERS AND COMPOSITIONS
Edward J. Wickson, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 661,425, Oct. 16, 1984, abandoned. This application Mar. 21, 1986, Ser. No. 842,205
Int. Cl.[4] C08K 5/09, 5/10, 5/12; C07C 69/76
U.S. Cl. 524—287 48 Claims

1. Compounds of the formula:



wherein R^1 and R^2 are the same or different and are independently selected from the group consisting of alkyl of from 1 to 4 carbon atoms, R^3 is hydrogen or alkyl of from 1 to 6 carbon atoms, R′ is divalent alkylene of from 2 to 8 carbon atoms and R^5 is a member selected from the group consisting of phenyl, mono-, di- or tri-alkyl-substituted phenyl having a total of from 7 to 12 carbon atoms and



wherein "n" is an integer of from 1 to 6, with the proviso that said compound contains a total of from 16 to 19 carbon atoms per molecule, and with the further proviso that when R^1, R^2 and R^3 contain a total of 2 carbon atoms and R′ contains a total of 8 carbon atoms, then R′ must comprise a straight chain alkylene or a mono- or di-alkyl substituted divalent alkylene group, and mixtures thereof.

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4,656,215

ETHER CONTAINING MIXTURES IN FLEXIBLE PVC

Jean A. A. Hanin, Rixensart, and Pierre E. Verrier, Brussels, both of Belgium, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 27, 1985, Ser. No. 803,085
Claims priority, application United Kingdom, Nov. 30, 1984, 8430224
Int. Cl.[4] C08K 5/06
U.S. Cl. 524—376 23 Claims

1. A method of regulating viscosity and improving low temperature performance of flexible polyvinyl chloride compositions which comprises incorporating in said compositions an effective amount of a hydroformylation-coproduct mixture comprising ether, ether-alcohol and acetal components and being selected from the group consisting of (a) the bottoms product obtained by hydrogenation and subsequent distillation of the crude product derived from the catalytic hydroformylation of a C_6–C_{12} olefinic feedstock with synthesis gas, and (b) the ether rich derivative obtained by subjecting such bottoms product to catalytic steam cracking at a temperature of from 260°–380° C. using as catalyst an active metal oxide or pseudo metal oxide.

4,656,216

THERMOPLASTICALLY PROCESSABLE POLYVINYL ALCOHOL COMPOSITIONS, PROCESS FOR THEIR PREPARATION, AND FILMS AND MOLDINGS PREPARED FROM THEM

Albrecht Müller, and Wolfgang Zimmermann, both of Hoechst Aktiengesellschaft, P.O. Box 80 03 20, D-6230 Frankfurt am Main 80, Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 714,045
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1984, 3410241
Int. Cl.[4] C08L 29/04, 39/00; C08K 5/05; C11D 17/00
U.S. Cl. 524—381 17 Claims

1. A granular polyvinyl alcohol composition which can be processed by thermoplastic means into films and moldings soluble in cold water, and which comprises as essential components (a) a polyvinyl alcohol soluble in cold water, (b) water and a polyhydric aliphatic alcohol having a boiling point above 250° C. as a plasticizer and (c) a water-soluble polymer or copolymer which is composed to the extent of at least 70% by weight of monomer units which are carboxylic acid amides at least monosubstituted on the amido nitrogen.

4,656,217

REACTIVE POLYMER, METHOD FOR MANUFACTURING THEREOF AND USE THEREOF

Shiro Sugiura, Nishinomiya; Yoshikuni Mori, Settsu; Masatoshi Yoshida, Saita, and Ryoichi Oshizumi, Ibaragi, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed May 25, 1984, Ser. No. 614,467
Claims priority, application Japan, May 31, 1983, 58-94994; May 31, 1983, 58-94995
Int. Cl.[4] C08J 3/28; C08K 3/20; C08L 67/00
U.S. Cl. 524—430 43 Claims

1. A reactive polymer containing at least one radically polymerizable unsaturated group obtained by causing (A) a polymer containing free carboxylic groups in an acid equivalent of 0.01 to 5 milliequivalent/g to react with (B) for 0.05 to 1.2 mole of an unsaturated aziridine compound possessing one azirdinyl group and at least one radically polymerizable unsaturated group in the molecular unit thereof per 1.0 mole of free carboxylic group of said polymer under esterification conditions to form esters between said free carboxylic groups and said aziridine groups.

4,656,218

ADHESIVE COPOLYMER MICROSPHERES-CONTAINING AQUEOUS SUSPENSION AND METHOD FOR PRODUCING THE SAME

Toru Kinoshita, Tokyo, Japan, assignor to Sanyo Kokusaku Pulp Co., Ltd. and Saiden Chemical Industry Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 699,554, Feb. 8, 1985. This application Jun. 4, 1986, Ser. No. 873,433
Int. Cl.[4] C08F 2/16
U.S. Cl. 524—460 3 Claims

1. A method preparing an aqueous suspension comprising the steps of:

(1) aqueous suspension polymerizing 100 parts by weight of the following monomer ingredients comprising (a), (b) and (c) in the presence of a protective colloid comprising casein as a main ingredient:

(a) from 70 to 99.9 percent by weight of at least one monomer selected from the group consisting of alkyl acrylate esters and alkyl methacrylate esters, in which said alkyl moiety has 4–12 carbon atoms,

(b) from 0.1 to 10 percent by weight of at least one α-monoolefin carboxylic acid, and

(c) from 0 to 29.9 percent by weight of at least one monomer other than the foregoing (a) and (b), selected from the group consisting of acrylates and methacrylates to form an aqueous suspension containing adhesive copolymer microspheres having an average diameter of 10–100μ, and then

(2) polymerizing in the suspension 20–300 parts by weight of at least one monomer selected from the group consisting of acrylates and methacrylates to form polymerized microparticles having an average diameter of 0.1–4μ.

4,656,219

RUBBER MEMBER HAVING OIL RESISTANCE AND RESISTANCE TO DETERIORATION

Motofumi Oyama, Yokosuka; Toshiharu Hosda, Kamakura, and Yoichiro Kubo, Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 638,543, Aug. 7, 1984, abandoned, which is a continuation of Ser. No. 479,730, Mar. 28, 1983, abandoned. This application Nov. 27, 1985, Ser. No. 802,084
Claims priority, application Japan, Mar. 27, 1982, 57-49521
Int. Cl.[4] C08K 5/01
U.S. Cl. 524—481 9 Claims

1. A method of providing rubber articles, at least the surface of which is in contact with polyolefin oil or lubricating oil containing polyolefin oil, which can withstand long-term use in contact with said polyolefin oil or said lubricating oil, comprising forming the rubber article from a vulcanized product of a random copolymer rubber comprising

(1) 20 to 60% by weight of units derived from an unsaturated nitrile,

(2) 0 to 30% by weight of units derived from a conjugated diene, and

(3) 80 to 10% by weight of

(i) units resulting from the hydrogenation of units derived from a conjugated diene, or

(ii) a mixture of the units (i) and units derived from an ethylenically unsaturated monomer selected from the group consisting of acrylic acid, alkyl acrylate, and alkoxyalkyl acrylate, and allowing the vulcanized product to come into contact with the polyolefin oil or lubricating oil containing polyolefin oil for an extended period of at least about 35 days.

4,656,220

THERMOPLASTIC COMPOSITIONS BASED ON POLYPHENYLENE ETHERS AND POLYOCTENYLENES, AND METHOD OF MANUFACTURING SAME

Hans Jadamus, Marl; Wilfried Ribbing, Dorsten; Roland Feinauer, and Wolfgang Schafer, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Oct. 4, 1985, Ser. No. 784,509
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1984, 3436780; May 22, 1985, 3518277
Int. Cl.[4] C08L 71/04
U.S. Cl. 524—502 17 Claims

1. A thermoplastic composition, comprising:

(A) 100 parts by wt. of a polyphenylene ether; and,

(B) 2–40 parts by wt. of a polyoctenylene prepared by ring-opening, ring expanding or both ring opening and ring expanding polymerization of cyclooctene.

4,656,221

COMPOSITION FOR CONCEALING GRAZE MARKS ON TRANSPARENT GLASS BOTTLE

Akitsugu Kurita; Kazou Maruyama, both of Ohta; Akira Okusa, and Haruo Hayashi, both of Matsudo, all of Japan, assignors to Toshiba Silicone Co., Ltd. and Asahi Breweries Ltd., both of Tokyo, Japan

Filed Jun. 14, 1985, Ser. No. 745,345
Claims priority, application Japan, Jun. 20, 1984, 59-126689
Int. Cl.[4] C08L 83/10; C08K 5/24
U.S. Cl. 524—731 11 Claims

1. An emulsion composition for concealing graze marks on transparent glass bottles comprising;

(A) 100 parts by weight of polydiorganosiloxane having a viscosity of 10 to 100,000 cSt at 25° C. in which 15 to 60 mole percent of the organo groups bonded to silicon atoms are organo groups selected from the group consisting of phenyl and aralkyl,

(B) 1 to 100 parts by weight of film-forming polyorganosiloxane comprising;

(1) two or more straight-chain diorganosiloxane portions comprising at least 10 diorganosiloxane units, and

(2) one or more cross-linking portions formed by the reaction of an amino group bonded to a silicon atom through at least one carbon atom and zero or at least one nitrogen atom bonded indirectly to the silicon atom, with an epoxy group bonded to another silicon atom through at least one carbon atom and zero or at least one oxygen atom bonded indirectly to said another silicon atom, wherein the amount of Part (2) in Component (B) is 0.1 to 30% by weight,

(C) 1 to 30% by weight of a cationic surfactant or a surfactant mixture of the cationic surfactant and a nonionic surfactant based on the total amount of Components (A) and (B),

(D) 60–1,000% by weight of water based on the total amount of Components (A) and (B),

said composition being effective to form a film having refractive index of 1.47 to 1.54 on the surfaces of glass bottles.

4,656,222

PREPARATION OF HIGH MOLECULAR WEIGHT POLYACRYLATES BY INVERSE EMULSION POLYMERIZATION

Charles A. DeFazio, Union, N.Y., assignor to Celanese Corporation, Corpus Christi, Tex.

Filed May 16, 1985, Ser. No. 734,521
Int. Cl.[4] C08F 2/32, 20/06
U.S. Cl. 524—801 4 Claims

1. A method for the manufacture of polymers of acrylic acid containing from 0% to 80% acrylamide which comprises:

a. admixing the acrylic acid and acrylamide in a purified hydrocarbon solvent and non-ionic surfactant;

b. slightly over-neutralizing the acrylic acid by the addition of an aqueous solution of an alkali metal hydroxide or ammonium hydroxide to provide an emulsion with a water to hydrocarbon ration of between about 0.70 and 0.90;

c. displacing the air and oxygen in the over-neutralized solution of (b);

d. adding sufficient acrylic acid to provide a salt to acid ratio of from about 90:10 to about 99.9:0.1;

e. allowing polymerization to occur at below 50° C. in the absence of a catalyst.

4,656,223

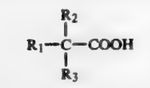
PROCESS FOR THE PRODUCTION OF MODIFIED POLYISOCYANATES, THE COMPOUNDS OBTAINABLE BY THIS PROCESS AND THEIR USE IN POLYURETHANE LACQUERS

Klaus König, Leverkusen; Josef Pedain, Cologne, and Helmut Woynar, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 8, 1985, Ser. No. 796,129
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1984, 3443342
Int. Cl.[4] C08G 18/34
U.S. Cl. 524—871 9 Claims

1. A process for the production of modified organic polyisocyanates containing urethane, carboxylic acid anhydride and biuret groups which comprises reacting excess quantities of an organic diisocyanate with a modifying agent at a temperature of about 20° to 160° C., said modifying agent comprising

(a) a hydroxycarboxylic acid corresponding to the formula



wherein

R_1 represents an optionally branched C_1–C_8 alkyl radical containing a primary or secondary alcoholic hydroxyl group as substituent,

R_2 represents an optionally branched C_1–C_8 alkyl radical optionally containing a primary or secondary alcoholic hydroxyl group as substituent and

R_3 represents an optionally branched, unsubstituted C_1–C_{14} alkyl radical,

the sum of the carbon atoms in the radicals R_1, R_2 and R_3 amounting to between 3 and 20

and, optionally

(b) water, wherein the molar ratio of (a) to (b) is about 0.02:1 to 1:0 and the ratio of moles of starting diisocyanate to total moles of modifying agent (a) and (b) is between about 3:1 and 24:1.

4,656,224

RADIOPAQUE THERMOSET POLYMER

Eric R. Larsen, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 728,411, Apr. 29, 1985, abandoned. This application Jun. 23, 1986, Ser. No. 878,508
Int. Cl.[4] C08L 67/06
U.S. Cl. 525—40 12 Claims

1. A composition consisting essentially of a thermoset polymer prepared by copolymerizing a solution of an iodine containing crosslinkable unsaturated polyester resin dissolved in a vinyl monomer; wherein said unsaturated polyester resin is prepared by reacting pentaerythritol diiodohydrin and a mixture of at least one aliphatic unsaturated dicarboxylic acid, its anhydride, or its acid chloride having from 4 to 5 carbon atoms in the molecule and an aromatic dicarboxylic acid selected

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from the group consisting of phthalic acid and hydrogenated phthalic acid, their anhydrides, or their acid chlorides, in which mixture the molar ratio of aliphatic acid to aromatic acid is from 3:1 to 1:2.

4,656,225

POLYCARBONATE RESIN BLENDS EXHIBITING IMPROVED RESISTANCE TO STRESS CRAZING AND CRACKING

Omar M. Boutni, Mt. Vernon, Ind., and Ping Y. Liu, Naperville, Ill., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 23, 1985, Ser. No. 812,352
Int. Cl.⁴ C08L 69/00
U.S. Cl. 525—67 **19 Claims**

1. A resin composition exhibiting improved resistance to environmental stress crazing and cracking comprising:

(i) a blend containing at least one aromatic carbonate resin and at least one ethylene-propylene-non-conjugated-diene interpolymer grafted with the homopolymer or copolymer of monoethylenically unsaturated monomers having a phenyl, carbonyl or cyano group attached to a vinylic carbon atom; and

(ii) an amount effective to improve the resistance to environmental stress crazing and cracking of said blend of at least one multiphase interpolymer of a first elastomeric phase comprising an acrylic rubber and a rigid thermoplastic final phase.

4,656,226

ACRYLIC PIGMENT DISPERSANTS MADE BY GROUP TRANSFER POLYMERIZATION

Clyde S. Hutchins, Arlington, Tenn., and Arthur C. Shor, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 30, 1985, Ser. No. 782,257
Int. Cl.⁴ C08L 53/00
U.S. Cl. 525—93 **12 Claims**

1. A composition suitable for use as a dispersant having an A segment and a B segment bonded together to form a block copolymer, the A segment consisting essentially of polymerized methacrylic monomer units and the B segment consisting essentially of polymerized monomer units selected from the group consisting of acrylic and methacrylic groups,

the monomer units of said A segment, when homopolymerized, having a polarity which is higher than the polarity of the monomer units of said B segment when homopolymerized, said A segment being bonded to one or more polar groups selected from the group consisting of

aromatic carboxylic acids,

aliphatic carboxylic acids which have at least one functional group which increases the polarity of the reaction product of the A segment with the aliphatic carboxylic acid,

ammonia and primary, secondary and tertiary aliphatic amines,

primary aromatic amines,

ketones which are subsequently hydrolyzed to diols,

orthophosphoric acid,

phosphorus pentoxide, and

anhydrous hydrohalogen acid,

wherein said block copolymer is made by group transfer polymerization techniques at 0° C. or higher.

4,656,227

THERMOPLASTIC MOULDING COMPOSITIONS BASED ON POLYALKYLENE TEREPHTHALATE, POLYCARBONATE AND ADDITIONAL POLYMER AND A PROCESS FOR THE PRODUCTION THEREOF

Christian Lindner, Cologne; Karl-Heinz Ott, Leverkusen; Werner Nouvertné, Krefeld, and Peter R. Müller, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 8, 1985, Ser. No. 731,931
Claims priority, application Fed. Rep. of Germany, May 19, 1985, 3418750
Int. Cl.⁴ C08F 8/00
U.S. Cl. 525—133 **6 Claims**

1. Thermoplastic moulding compositions comprising:

A. from 1 to 99 parts by weight of polyalkylene terephthalate,

B. 1 to 99 parts by weight of aromatic polycarbonate and

C. from 1 to 30 parts by weight of additional polymer,

characterised in that the polymer C consists of at least one polymer having a glass transition temperature below −20° C. and, based on the moulding compositions A+B+C, of from 0.015 to 0.8% by weight fluorinated polyolefin and is obtained by mutual coagulation by mixing together the aqueous dispersions of the fluorinated polyolefin and the polymer having a glass transition temperature below −20° C.

4,656,228

POLYAMIDES HAVING HIGH NOTCHED IMPACT STRENGTH AND HIGH FLUIDITY IN THE MOLTEN STATE

Wolfgang Richter; Hans-Josef Buysch; Bert Brassat, all of Krefeld; Josef Merten, Korschenbroich, and Heinrich Haupt, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 731,053, May 6, 1985, abandoned, which is a continuation of Ser. No. 647,451, Sep. 5, 1984, abandoned. This application Dec. 30, 1985, Ser. No. 814,671
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 3333723
Int. Cl.⁴ C08L 69/00
U.S. Cl. 525—433 **7 Claims**

1. An unfilled, unreinforced thermoplastic moulding compound obtained from

(I) 98 to 70% by weight of a partially crystalline polyamide; and

(II) 2 to 30% by weight of an aliphatic polycarbonate urethane substantially unbranched in the carbon chain, prepared from polyhexamethylene carbonate diol or a mixture thereof with an oligo- or polyalkylene glycol having 4 to 100 carbon atoms and from 1,6-diisocyanathohexane.

4,656,229

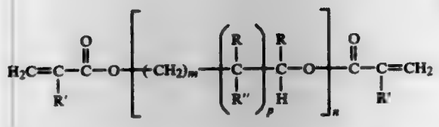
ANAEROBIC ADHESIVE COMPOSITIONS

Wen B. Chiao, Bridgewater, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Dec. 2, 1985, Ser. No. 804,968
Int. Cl.⁴ C08L 61/20
U.S. Cl. 525—518 **15 Claims**

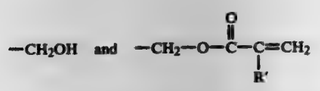
1. An anaerobic curing adhesive composition comprising in combination (a) a first part comprising free radical polymerizable acrylic or substituted acrylic monomer(s) and diaryl iodonium salt in an amount sufficient to intiate polymerization of said monomer(s), and in contact therewith (b) a second part activator comprising an aldehyde-amine condensation product, wherein the acrylic or substituted acrylic monomer of the first part is a member of the group consisting of compounds of the formula:

(a)



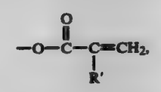
wherein

R is selected from the group consisting of hydrogen methyl, ethyl,



R′ is selected from the group consisting of hydrogen, chlorine, methyl, and ethyl,

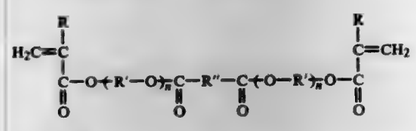
R″ is selected from the group consisting of hydrogen, hydroxy, and



m is an integer from 1 to 8,

n is an integer from 1 to 20, and p is 0 or 1;

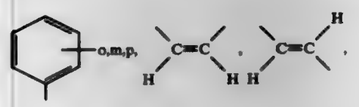
(b)

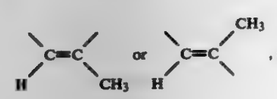


wherein

R represents hydrogen, chlorine, methyl or ethyl,

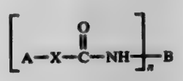
R′ represents alkylene with 2–6 carbon atoms, R′ represents $(CH_2)_m$ in which m is an integer of from 0 to 8,





n represents an integer of from 1 to 4;

(c)



wherein

X is selected from the group consisting of



and

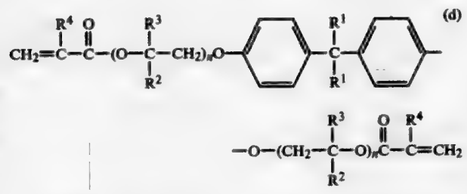
R is a member selected from the group consisting of hydrogen and lower alkyl of 1 to 7 carbon atoms;

A represents the organic residue of an active hydrogen containing acrylic ester wherein the active hydrogen has been removed, the ester being hydroxy or amino substituted on the alkyl portion thereof and the methyl, ethyl and chlorine homologs thereof;

n is an integer from 1 to 6 inclusive; and

B is a mono- or polyvalent organic radical selected from the group consisting of alkyl, alkylene, alkenyl, cycloalkyl, cycloalkylene, aryl, aralkyl, alkaryl, poly(oxyalkylene), poly (carboalkoxyalkylene), and heterocyclic radicals both substituted and unsubstituted;

(d)



where

R^1 is methyl, ethyl, carboxyl or hydrogen;

R^2 is hydrogen, methyl or ethyl;

R^3 is hydrogen, methyl or hydroxyl;

R^4 is hydrogen, chlorine, methyl or ethyl and

n is an integer of from 0 to 8; and

(e) monofunctional acrylate and methacrylate esters and the hydroxy, amide, cyano, chloro, and silane substituted derivatives thereof.

4,656,230

HYDROGENATION PROCESS

Yen-Shin Shyr; Rex L. Bobsein, and Marvin M. Johnson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 12, 1985, Ser. No. 754,388
Int. Cl.⁴ C08F 8/04
U.S. Cl. 525—338 **9 Claims**

1. In a process for the solution hydrogenation of olefinically unsaturated compounds chosen from the group consisting of copolymers of diene monomer with mono- or polyvinyl substituted aromatic compounds with gaseous or dissolved hydrogen in the presence of supported heterogeneous solid particulate hydrogenation catalysts comprising a solid particulate support selected from refractory inorganic oxides and at least one metal selected from Group VIII metals, manganese, chromium, copper, tin, zinc, silver and mixtures thereof, the improvement for substantially preventing and reducing the rate of catalyst deactivation due to contaminants present in the hydrogenation feed solution which comprises carrying out hydrogenation in the presence of an amount of at least one lower alkanol sufficient to inhibit catalyst poisoning.

VOL 1077 ISS 1 AP 7 1987 UMI

4,656,231

ARYLENE SULFIDE POLYMERIZATION; ARYLENE SULFIDE POLYMER TREATED WITH AROMATIC COMPOUND HAVING MORE THAN 2 HALOGEN SUBSTITUENTS; PROCESSED PRODUCT THEREOF

Dale O. Tiemann, and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 324,304, Nov. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 261,863, May 8, 1981, Pat. No. 4,350,810, which is a division of Ser. No. 66,584, Aug. 14, 1979, Pat. No. 4,282,347. This application May 2, 1983, Ser. No. 490,607

Int. Cl.⁴ C08G 75/14

U.S. Cl. 525—537 9 Claims

1. A process comprising:

(a) contacting under polymerization conditions for a time sufficient to form an arylene sulfide polymer a reaction mixture comprising:

(1) at least one p-dihalobenzene;

(2) at least one alkali metal sulfide;

(3) at least one organic amide;

(4) water in an amount of about 1.0 mole to about 2.4 moles per mole of alkali metal sulfide, said amount including water of hydration; and

(5) at least one alkali metal carboxylate;

(b) contacting with said arylene sulfide polymer formed in said reaction mixture, under polymerization conditions, an amount of polyhaloaromatic compound having more than 2 halogen substituents per molecule sufficient to produce branched arylene sulfide polymer and for a time up to about 75 minutes before entering upon termination of the polymerization process said time sufficient to produce branched polymer;

(c) contacting said arylene sulfide polymer formed in said reaction mixture with carbon dioxide in an amount sufficient to stabilize said arylene sulfide polymer to thermal degradation and for a time of up to about 1 hour before termination of the polymerization process;

(d) recovering said branched arylene sulfide polymer from the reaction mixture; and

(e) further processing said recovered branched arylene sulfide polymer by a method selected from the group consisting of molding, extruding a film, extruding a sheet and preparing a coating composition.

4,656,232

METHOD FOR PRODUCTION OF POLYMER

Masashi Nakaki, Ibaraki; Katsumi Terawaki, Himeji; Tadao Shimomura, Toyonaka, and Kazumasa Kimura, Osaka, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Nov. 18, 1985, Ser. No. 799,025

Claims priority, application Japan, Nov. 21, 1984, 59-244545

Int. Cl.⁴ C08F 2/16

U.S. Cl. 526—88 7 Claims

1. In a method for the production of a polymer from an aqueous solution of a corresponding α, β-ethylenically unsaturated monomer, the step of effecting substantial removal of dissolved oxygen from said aqueous monomer solution before said aqueous monomer solution reaches the site of polymerization, which comprises forwarding said aqueous monomer solution and an inert gas each in the form of a continuous flow toward the site of polymerization, spouting either of said two fluids through a nozzle parallelly into the flow of the other fluid thereby creating forced contact between said aqueous monomer solution and said inert gas.

4,656,233

"LIVING" POLYMERS AND CHAIN TRANSFER-REGULATED POLYMERIZATION PROCESS

Walter R. Hertler, Kennett Square, Pa., and Dotsevi Y. Sogah, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 676,099, Nov. 29, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 786,101

Int. Cl.⁴ C08F 4/44

U.S. Cl. 526—190 30 Claims

1. Chain transfer agent-regulated process comprising:

(a) contacting under polymerizing conditions at least one polar, acrylic or maleimide monomer with (i) a tetracoordinate organosilicon, organotin or organogermanium polymerization initiator having at least one initiating site, and (ii) a co-catalyst which is a source of bifluoride, fluoride, cyanide, or azide ions or which is a suitable oxyanion, Lewis acid or nonanionic Lewis base, to produce "living" polymer having an organosilicon, organotin or organogermanium moiety, from the initiator, at the "living" ends of the polymer;

(b) contacting "living" polymer produced in the process and having an organosilicon, organotin or organogermanium moiety at the "living" ends with a chain transfer agent which is a carbon acid having a pKa in the range of $18 < pKa < 25$ and which contains at least one reactive hydrogen atom which terminates the growth of "living" polymer, so as to terminate the growth of at least some of the "living" polymer and to form a polymerization initiator having at least one initiating site and consisting of the organosilicon, organotin or organogermanium moiety of the "living" polymer and the residue of the chain transfer agent; and

(c) contacting under polymerizing conditions at least one polar, acrylic or maleimide monomer with co-catalyst (ii) and the polymerization initiator formed in step (b) to produce "living polymer having an organosilicon, organotin or organogermanium moiety from the initiator, at the "living" ends of the polymer.

4,656,234

DIELECTRIC FILM FOR CAPACITOR AND PROCESS FOR PRODUCING SAME

Naohiro Murayama, Fukushima; Haruko Kakutani, Chiba; Toshiya Mizuno, Fukushima; Kenichi Nakamura, Fukushima, and Syuji Terasaki, Fukushima, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 536,896, Sep. 28, 1983, abandoned. This application Nov. 6, 1984, Ser. No. 668,654

Claims priority, application Japan, Oct. 1, 1982, 57-173634

Int. Cl.⁴ C08F 14/22

U.S. Cl. 526—255 9 Claims

1. A dielectric film comprising vinylidene fluoride polymer comprising at least about 70 mole percent vinylidene fluoride monomer units;

said polymer having crystalline regions comprising in major proportion alpha-form crystal structure;

said crystalline regions having a degree of orientation, π, of the molecular axes in the direction substantially parallel to the film surface of from about 0.8 to about 1.0;

said vinylidene fluoride polymer having an inherent viscosity of from about 0.8 to about 1.8 dl/g as a solution thereof in dimethylformamide at a concentration of 0.4 g/dl at 30° C.;

said film exhibiting substantially no heat shrinkage when heated from room temperature to a temperature just below the melting point of the polymer.

4,656,235

SILOXANE-CONTAINING POLYIMIDE COATINGS FOR ELECTRONIC DEVICES

Giuliana C. Tesoro, Dobbs Ferry; Vinod R. Sastri, Brooklyn, both of N.Y., and Subash C. Narang, Menlo Park, Calif., assignors to Polytechnic Institute of New York, Brooklyn, N.Y.

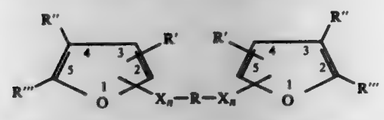
Filed Sep. 5, 1985, Ser. No. 772,785

Int. Cl.⁴ C08F 122/40

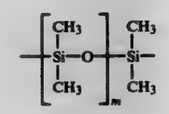
U.S. Cl. 526—262 10 Claims

1. A method for preparing silicon-containing polyimide useful as conformal coatings, comprising polymerizing in a Diels-Alder reaction

(a) a reactive diene that is a symmetrical siloxane-containing bis-furan derivative of the general formula:

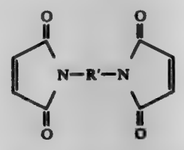


wherein X_n is a divalent bridging group linked through position 2 or 3 of the furan rings, where n is 0 or 1, each R′, R″ and R‴ is hydrogen or a hydrocarbon radical of 1 to 6 carbon atoms, and R is a polydimethyl siloxane segment of the general formula:



where m is 1–10, and

(b) a bis-maleimide dienophile of the general formula:



wherein R′ is a divalent group of four (4) or more carbon atoms.

4,656,236

TERPOLYMERS HAVING THE CHARACTER OF HYDROGELS

Slavko Hudecek; Iva Hudeckova; Jaroslava Otoupalová, and Pavel Cefelín, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Czechoslovakia

Filed Jan. 28, 1986, Ser. No. 823,371

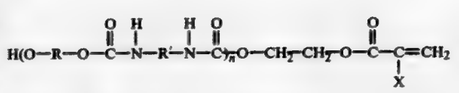
Claims priority, application Czechoslovakia, Jan. 28, 1985, 569-85

Int. Cl.⁴ C08F 26/08

U.S. Cl. 526—264 3 Claims

1. A terpolymer capable of forming a hydrogel made by polymerizing

(1) from about 5 to about 20 weight percent of an oligourethane having a terminal double bond and an average molecular weight of about 1200 to about 3000, of the general formula



wherein R is a diol residue, R′ is a diisocyanate residue, X is H or CH_3, and n is an integer selected from the group consisting of those integers which result in a molecular weight for the oligourethane within the range of about 1200 to abut 3000;

(2) from about 5 to about 60 weight percent of a monomer selected from the group consisting of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl acrylate, and 2-hydroxypropyl methacrylate; and

(3) from about 30 to about 90 weight percent of N-vinylpyrrolidone.

4,656,237

HIGH SOLIDS ACRYLIC COATING SYSTEMS

Robert J. Weber, Jr., Belle Mead, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 547,015, Oct. 31, 1983, Pat. No. 4,524,183. This application Jan. 24, 1985, Ser. No. 694,234

Int. Cl.⁴ C08F 120/26; C07C 69/52

U.S. Cl. 526—320 1 Claim

1. The low molecular weight, hydroxyl-containing acrylic polymer prepared by contacting one or more acrylic or methacrylic acid alkyl esters at least one of which is an hydroxyalkyl ester of acrylic or methacrylic acid with an anionic polymerization initiator in an inert solvent at a temperature of about 15° to about 20° C. wherein the alkyl groups contain 1 to about 6 carbons and the initiator concentration is greater than about 5 mole % based on the total monomer charge and then quenching the polymerization reaction.

4,656,238

SOLUBLE POLYIMIDE-SILOXANE PRECURSOR, PROCESS FOR PRODUCING SAME, AND CROSS-LINKED POLYIMIDE-SILOXANE

Kouichi Kuninune, Ichiharashi; Yoshiya Kutsuzawa, Yokohamashi, and Shiro Konotsune, Yokosukashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Sep. 24, 1985, Ser. No. 779,433

Claims priority, application Japan, Feb. 11, 1984, 59-230428

Int. Cl.⁴ C08G 77/54

U.S. Cl. 528—26 5 Claims

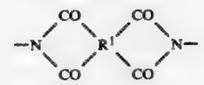
1. A soluble polyimide-siloxane precursor having an imide-amic acid chain part expressed by the formula (1)

$$—R^3—(I)—R^2—(I)]_nR^3— \quad (1)$$

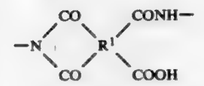
bonded by a bonding structure expressed by the formula (5)

$$—SiR^4{}_{3-m}Y^1{}_{m-1}—O—SiR^4{}_{3-m}Y^1{}_{m-1}— \quad (5)$$

wherein said (I)s in the number of n+1 represent independently either one of constituting units expressed by the following formulas (2), (3) and (4):

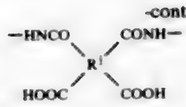


(2)



(3)

-continued



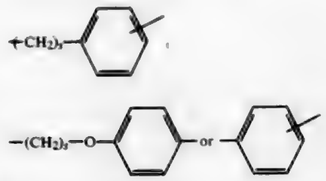
(4)

wherein

R^1 represents a tetravalent carbocyclic aromatic group;

R^2 represents an aliphatic group of 2 to 12 carbon atoms, an alicyclic group of 4 to 30 carbon atoms, an arylaliphatic group of 6 to 30 carbon atoms or a carbocyclic aryl group of 6 to 30 carbon atoms;

R^3s independently represent $-(CH_2)_s-$,



wherein

s represent an integer of 1 to 4;

n is defined later;

R^4s independently represent an alkyl group of 1 to 6 carbon atoms, phenyl group or an alkyl-substituted phenyl group of 7 to 12 carbon atoms;

Y^1s independently represent an alkoxy group, acetoxy group, halogen atom, hydroxyl group, $(-O-)_{\frac{1}{2}}$ or a group expresaed by the following formula (6)

$$R^5R^6R^7Si-O- \quad (6)$$

wherein R^5, R^6 and R^7 independently represent an alkyl group of 1 to 6 carbon atoms, phenyl group or an alkyl-substituted phenyl group of 7 to 12 carbon atoms; and

ms independently represent an integer of $1 \leqq m \leqq 3$;

said soluble polyimide-siloxane precursor further being terminated by a group expressed by the following formula (7):

$$Y^2{}_mR^4{}_{3-m}Si- \quad (7)$$

wherein Y^2s independently represent an alkoxy group, acetoxy group, halogen atom, hydroxyl group or a group expressed by said formula (6); R^4 and m are as defined in said formula (5);

and having a percentage imidization T of 50 to 100%, this T being defined in terms of the whole of the molecule by the following equation (8):

$$T = \frac{(2W + P) \times 100}{2W + 2P + 2Q} \ (\%) \quad (8)$$

wherein

W: the total number of constituting units expressed by said formula (2);

P: the total number of constituting units expressed by said formula (3) and

Q: the total number of constituting units expressed by said formula (4);

and also having a relation expressed by the following expression (9):

$$0.1 \leqq \frac{D^1}{B^1 + D^1} \quad (9)$$

wherein

B^1: the total number of R^2s, and

D^1: the total number of R^3s;

and further having an inherent viscosity of 0.05 to 5 dl/g as measured in a concentration of 0.5 g/dl in N-methyl-2-pyrrolidone at a temperature of 30±0.01° C.;

said n being an integer defined so as to give an inherent viscosity of said soluble polyimide-siloxane precursor of 0.05 to 5 dl/g.

4,656,239

PROCESS FOR THE PREPARATION OF PHENOL FORMALDEHYDE RESOLE RESINS

Phillip A. Waitkus, and Bohumir Lepeska, both of Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Filed Mar. 27, 1986, Ser. No. 844,544

Int. Cl.⁴ C08G 8/08, 8/10

U.S. Cl. 528—140 **26 Claims**

1. The process of producing a phenolic-formaldehyde resol resin in which the volume of the reaction mass is maintained at 60–80 percent of the volume of the reaction vessel comprising the steps of:

(a) filling a reaction vessel to 60–80 percent of the volume of said vessel with a phenolic compound;

(b) maintaining said phenolic compound at a temperature of 60°–100° C. and a reduced pressure of 11–26 inches of mercury;

(c) feeding into said heated phenolic compound an aqueous solution containing 35–60 percent by weight of formaldehyde and reacting said formaldehyde with said phenolic compound in the presence of an alkaline catalyst, the rate of feeding said formaldehyde solution being such that the amount of water being thus added is substantially equal to the amount of water being removed therefrom by distillation and thereby keep the volume of the reaction mass at 60–90 percent of the volume of the reaction vessel.

4,656,240

ELECTRICALLY CONDUCTIVE POLYMER BASED ON POLYAZOMETHINE AND PROCESS FOR PREPARING SAME FROM DIKETONE AND DIAMINE

Furio Bossi, and Cornelio Caldo, both of Terni, Italy, assignors to Montedison, S.p.A., Milan, Italy

Filed Dec. 19, 1984, Ser. No. 683,488

Claims priority, application Italy, Dec. 22, 1983, 24321 A/83

Int. Cl.⁴ C08G 73/00

U.S. Cl. 528—229 **11 Claims**

1. A polyazomethine having high electrical conductivity and obtained by polycondensation of a diketone with an aromatic diamine of formula: $H_2N-AR-CH_2-Ar-NH_2$, in which Ar is an arylene group selected from the group consisting of arylene radicals and alkyl-substituted arylene radicals, to produce a polyazomethine having methylene groups, and by subsequent oxidation of at least part of the methylene groups to carbonyl groups.

4,656,241

METHOD FOR PRODUCING POLYBUTYLENE TEREPHTHALATE

Hiroshi Iida, Matsuyama; Kunihiro Azuma, Ehime, and Masahiko Hayashi, Iyo, all of Japan, assignors to Toray Industries Incorporated, Japan

Filed Jan. 13, 1986, Ser. No. 818,224

Claims priority, application Japan, Jan. 14, 1985, 60-3262

Int. Cl.⁴ C08G 63/04, 63/34

U.S. Cl. 528—279 **6 Claims**

1. A method for producing polybutylene terephthalate comprising reacting, in a batch process, at a pressure in the range of between 100 and 730 mm Hg, a dicarboxylic acid component containing terephthalic acid as the main constituent directly with a glycol component containing 1,4-butanediol as the main

constituent, said reaction characterized by the presence of 0.4 to 1.3 moles of 1,4-butanediol per mole of terephthalic acid at the initiation of the reaction and further characterized by the further addition of 1,4-butamediol during said reaction such that the total amount of 1,4-butanediol utilized in said reaction is in the range of between 1.05 and 2.0 moles per mole of terephthalic acid, said reaction ocurring in the presence of an esterification catalyst selected from the group consisting of titanium compounds, tin compounds and mixtures thereof whereby an esterification reaction product is formed; and subjecting said esterification reaction product to a polycondensation reaction.

4,656,242

POLY(ESTER-AMIDE) COMPOSITIONS

Dale G. Swan, St. Louis Park, and Jerry C. Hansen, Bloomington, both of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Jun. 7, 1985, Ser. No. 742,254

Int. Cl.⁴ C08G 63/54

U.S. Cl. 528—295.3 **10 Claims**

1. A poly(ester-amide) composition which comprises the product of polymerization of

(a) from about 10 to 80 equivalent percent of a polymeric fatty acid and

(b) from about 20 to 90 equivalent percent of a dicarboxylic acid,

with a substantially equivalent amount of

(c) from about 40 to 90 equivalent percent of an organic diamine and

(d) from about 10 to 60 equivalent percent of a diol

wherein the amount of the reactants are selected and adjusted so as to provide a polymer containing from about 20 to 60 percent by weight of ester segments, the remainder of said segments being amide.

4,656,243

NEW POLYESTER POLYOLS AND THEIR USE AS POLYOL COMPONENT IN TWO-COMPONENT POLYURETHANE LACQUERS

Josef Pedain, Cologne; Klaus König, and Manfred Schönfelder, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 24, 1985, Ser. No. 737,603

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1984, 3421122

Int. Cl.⁴ C08G 63/16

U.S. Cl. 528—302 **4 Claims**

1. A polyester polyol having a hydroxyl number range of about 80 to 250 and which is reaction product of

(a) 54–58 mol-% of a polyol component comprising (i) about 70 to 90 mol-% of hexane-1,6-diol and (ii) about 10 to 30 mol-% of at least one higher hydric alcohol selected from the group consisting of trimethylolpropane, glycerol, pentaerythritol and mixtures of these polyols, and

(b) 42–46 mol-% of a dicarboxylic acid component comprising (iii) about 50 to 80 mol-% of isophthalic acid, (iv) about 20 to 30 mol-% of at least one dicarboxylic acid of the formula $HOOC-(CH_2)_n-COOH$, wherein n is an integer from 2 to 8, and (v) up to about 20 mol-% of at least one dicarboxylic acid or at least one dicarboxylic acid anhydride selected from the group consisting of terephthalic acid, phthalic acid, phthalic acid anhydride, tetrahydrophthalic acid, tetrahydrophthalic acid anhydride, hexahydrophthalic acid and hexahydrophthalic acid anhydride.

4,656,244

METHOD FOR THE MANUFACTURE OF POLYIMIDAZOLE AND POLYIMIDAZOPYRROLONE PRECURSORS

Hellmut Ahne, Röttenbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 27, 1985, Ser. No. 716,675

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 3411706

Int. Cl.⁴ C08G 73/18, 73/20

U.S. Cl. 528—336 **9 Claims**

1. A method for manufacturing an oligomeric or polymeric radiation-reactive precursor of a polyimidazole, comprising reacting, in the presence of a carbodiimide, an aromatic or heterocyclic or aromatic-heterocyclic tetraamino compound with an olefinically unsaturated monocarboxylic acid and a dicarboxylic acid.

4,656,245

FUNCTIONAL ELASTOMER

Shinzo Kohjiya; Shinzo Yamashita, both of Kyoto; Masahiro Irie, Osaka; Yoshitaka Osawa, Osaka, and Takafumi Uemiya, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 7, 1986, Ser. No. 836,863

Claims priority, application Japan, Mar. 8, 1985, 60-46847

Int. Cl.⁴ C08G 65/26

U.S. Cl. 528—405 **9 Claims**

1. A functional elastomer in which a viologen unit is introduced into a principal polymeric chain through cationic polymerization by using a bifunctional initiator, said elastomer being represented by the formula



wherein X represents polyether and A represents an anion.

4,656,246

POLYETHEROXY-SUBSTITUTED POLYPHOSPHAZENE PURIFICATION

Suse-Chen Chang; Joseph B. Tedder, Jr., and J. Robert Adams, Jr., all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Mar. 17, 1986, Ser. No. 840,096

Int. Cl.⁴ C08G 79/04

U.S. Cl. 528—499 **16 Claims**

1. A process for purifying an impure polyetheroxy-substituted polyphosphazene, said process comprising

(a) dissolving said impure polyphosphazene in water at a temperature at which said polyphosphazene is water-soluble,

(b) heating the resulting water solution to a higher temperature at which at least part of said polyetheroxy-substituted polyphosphazene precipitates, and

(c) recovering the purified polyetheroxy-substituted polyphosphazene precipitate.

4,656,247

EFFECTIVE HORMONAL PEPTIDES: D-3-QA1 6-LHRH

Karl Folkers, Austin, Tex.; Xu Jie-Cheng, Shanghai, China, and Cyril Y. Bowers, New Orleans, La., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Apr. 26, 1985, Ser. No. 727,710

Int. Cl.⁴ C07K 7/20

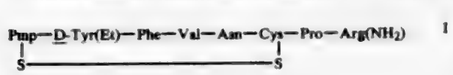
U.S. Cl. 530—313 **4 Claims**

1. pyroGlu-His-Trp-Ser-Tyr-D-3-Qal-Leu-Arg-Pro-Gly-NH_2.

VOL 1077 ISS 1 AP 7 1987 UMI

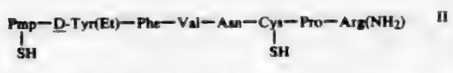
4,656,248
CUPRIC OXIDATION OF 1,6-DIMERCAPTO-CONTAINING PEPTIDES
Suresh M. Kalbag, Cupertino, and Paul J. Voelker, Sunnyvale, both of Calif., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.
Filed Apr. 23, 1985, Ser. No. 726,433
Int. Cl.[4] C07K 7/16
U.S. Cl. 530—315 7 Claims

1. In the process of preparing a compound of the formula:



I

by oxidation of a compound of the formula:



II

or an acid addition salt thereof, the improvement comprising carrying out said oxidation in the presence of a copper II salt in a solvent system in which compound (II) and the copper II salt are substantially soluble and which is not chemically reactive with either compound II or the copper II salt.

4,656,249
PEPTIDES WITH RELAXIN ACTIVITY
Geoffrey W. Tregear, Hawthorn, Australia; Yu-cang Du, Shanghai, China, and Hugh D. Niall, Elwood, Australia, assignors to Howard Florey Institute of Experimental Physiology and Medicine, Melbourne, Australia
Filed Jun. 10, 1982, Ser. No. 387,131
Int. Cl.[4] C07K 7/10
U.S. Cl. 530—324 23 Claims

1. A synthetic porcine relaxin analogue selected from the group consisting of synthetic porcine relaxin analogues consisting of one of the following combinations of peptide chains: A (1-22) and B[GLU[1]](1-28); A (1-22) and B[acetyl GLU[1]](1-28); A (1-22) and B (1-25); Nle[2]A (1-22) and B[GLU[1]](1-28); SNle[2]A (1-22) and B[acetyl GLU[1]](1-28); Nle[2]A (1-22) and B (1-25); A (1-22) and B (1-28)NH_2; A (1-22) and B (1-23)NH_2; A (1-22) and B[N-acetyl](4-23)NH_2; A (4-22) and B[acetyl GLU[1]](1-28); A (4-22) and B (1-25); S (4-22) and B (1-23)NH_2; and A (4-22) and B[N-acetyl](4-23)NH_2.

4,656,250
[NLE[8], NLE[18], TYR[34] OR PHE[34]]-H-PTH PEPTIDE DERIVATIVES
Kaoru Morita; Shigeo Katsuragi, and Toshiharu Noda, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan
Filed Aug. 6, 1984, Ser. No. 637,735
Claims priority, application Japan, Aug. 5, 1983, 58-144016; Jul. 13, 1984, 59-144114
Int. Cl.[4] C07K 7/10; A61K 43/00; G01N 33/534
U.S. Cl. 530—324 2 Claims

1. A peptide of the formula

H—Ser—Val—Ser—Glu—Ile—Gln—Leu—Nle—His—Asn—
Leu—Gly—Lys—His—Leu—Asn—Ser—Nle—Glu—Arg—Val—
Glu—Trp—Leu—Arg—Lys—Lys—Leu—Gln—Asp—Val—His—
Asn—A—NH_2

wherein A is Tyr or Phe, or a pharmaceutically acceptable salt thereof.

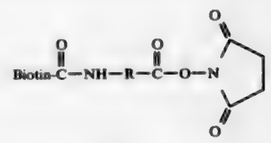
4,656,251
RAPID SEPARATION OF *DIROFILARIA IMMITIS* IMMUNE COMPLEXES
Larry D. Mosier, Creve Coeur, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.
Filed Jan. 28, 1985, Ser. No. 695,576
Int. Cl.[4] C07K 3/12; G01N 33/564
U.S. Cl. 530—387 7 Claims

1. A method for the rapid separation of *Dirofilaria immitis* immune complexes in a sample of blood or bodily fluid from an animal infected with *Dirofilaria immitis* comprising the steps of
(a) lowering the pH of said sample to below approximately 3.0 to effect the separation of circulating parasite antigens of *Dirofilaria immitis* from antibodies therefor in said sample;
(b) heating said sample to a temperature within the range of approximately 56° C. to 90° C. for a sufficient period of time to denature the separated antibodies so that said denatured antibodies cannot significantly recombine with said antigens to again form immune complexes; and
(c) increasing the pH of the resulting sample to within the range of approximately 7 to 8 to produce a sample which may be assayed for the presence of circulating parasite antigens of *Dirofilaria immitis* without interference from said separated antibodies.

4,656,252
AMIDOBIOTIN COMPOUNDS USEFUL IN A AVIDIN-BIOTIN MULTIPLE LAYERING PROCESS
Roger W. Giese, 56 Oakland Ave., Quincy, Mass. 02170
Continuation-in-part of Ser. No. 532,036, Sep. 14, 1983, Pat. No. 4,478,914, which is a continuation of Ser. No. 272,297, Jun. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 114,898, Jan. 24, 1980, Pat. No. 4,282,287. This application Jun. 4, 1984, Ser. No. 616,851
Int. Cl.[4] C07K 17/06; C12N 11/06; C07D 495/04
U.S. Cl. 530—350 9 Claims

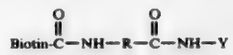


1. An amidobiotin compound having the formula:



wherein
R is an alkyl group containing 1–12 carbon atoms, a phenylene group, an alkyl-substituent phenylene group, or an alicyclic group containing 5–6 carbon atoms.

4. An amidobiotin compound having the formula:



wherein

R is an alkyl group containing 1–12 carbon atoms, a phenylene group, an alkyl-substituted phenylene group, or an alicyclic group containing 5–6 carbon atoms; and
Y is a proteinaceous macromolecule.

4,656,253
MONOCLONAL ANTIBODIES AGAINST ALVEOLAR SURFACTANT PROTEIN
John Lewicki, Sunnyvale, Calif., assignor to California Biotechology, Inc., Mountain View, Calif.
Continuation-in-part of Ser. No. 665,018, Oct. 26, 1984, Pat. No. 4,562,003. This application Oct. 11, 1985, Ser. No. 786,739
The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.
Int. Cl.[4] A61K 39/395; C12N 5/00; C12P 21/00; C12Q 1/00
U.S. Cl. 530—387 15 Claims

1. A hybridoma specific against human alveolar surfactant protein (ASP) which is prepared by fusing an immortalizing cell line with spleen cells derived from a mammal immunized with purified non-human ASP and screened for anti-ASP activity against non-human ASP.

4,656,254
METHOD OF PREPARING ALPHA-1-PROTEINASE INHIBITOR AND ANTITHROMBIN III
Michael A. Shearer, Suisun; Pamela K. Sasagawa, Emeryville, and Ronald H. Hein, Walnut Creek, all of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Dec. 2, 1985, Ser. No. 803,184
Int. Cl.[4] C07K 3/28, 3/20, 15/06
U.S. Cl. 530—393 18 Claims

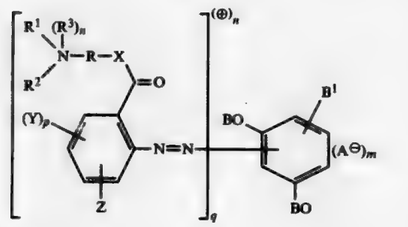
1. A method for separating one of alpha-1-proteinase inhibitor and antithrombin-III from an aqueous solution of plasma proteins containing at least one of alpha-1-proteinase inhibitor and antithrombin-III which comprises the steps of:
(a) providing a solution of the group of blood plasma and blood plasma fraction containing at least one of alpha-1-proteinase inhibitor and antithrombin-III dissolved in from 20 to 100 volumes of physiologically compatible buffer solution per weight of the one of the plasma and plasma fraction used;
(b) adjusting the pH of the resulting solution from step (a) to from 9.0 to 11.0; and
(c) separating at least one of the alpha-1-proteinase inhibitor and antithrombin-III from the solution from step (b) by contacting the solution from step (b) with one of a precipitating agent and an adsorbing agent.

4,656,255
PROTEIN RECOVERY
James E. Seely, Mundelein, Ill., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.
Filed Sep. 9, 1985, Ser. No. 773,671
Int. Cl.[4] C07K 3/28, 3/22
U.S. Cl. 530—412 20 Claims

1. In a process for recovering pure, biologically active protein from inclusion bodies produced in transformant microorganisms, wherein inclusion body proteins are solubilized in a denaturing agent, renatured by removal of the denaturing agent and purified by column chromatography, the improvements comprising:
(a) isolating insoluble protein aggregates from the chromatography column effluent;
(b) resolubilizing the isolated protein aggregates in a buffer solution containing a denaturing agent;
(c) dialyzing the solution of resolubilized protein aggregates against a buffer solution containing a weaker denaturing agent to partially renature the protein; and
(d) dialyzing the solution of partially renatured protein against a denaturant-free buffer solution to produce a solution of biologically active protein.

4,656,256
BENZOAZORESORCINOL DYES CONTAINING A QUATERNIZED AMINOALKYLENE OXYCARBONYL GROUP
Horst Colberg, Schifferstadt; Hans-Juergen Degen, Lorsch, and Johannes P. Dix, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed May 16, 1985, Ser. No. 734,560
Claims priority, application Fed. Rep. of Germany, May 19, 1984, 3418672
Int. Cl.[4] C09B 29/01, 29/033, 29/12, 44/06
U.S. Cl. 534—605 18 Claims

1. A compound of the formula



wherein:
Y is chlorine or bromine;
Z is hydrogen, chlorine, bromine, a sulfonic ester of the formula $—SO_2O—R^{11}—NR^{12}R^{13}$ where R^{11} is a branched or a linear C_{1-4} alkylene, and R^{12} and R^{13} are each independently C_{1-4} alkyl or $NR^{12}R^{13}$ is $N(CH_2CH_2)_2O$; or Z is nitro, unsubstituted sulfamyl or a substituted sulfamyl of the formula $—SO_2N—R^{14}R^{15}$, where R^{14} and R^{15} are each independently hydrogen, C_{1-4} alkyl, phenyl or $—CH_2CH_2OH$; X is oxygen or $—NR^4—$, where R^4 is methyl, ethyl or C_2H_4OH;
R is C_{2-10} alkylene, C_{2-10} alkylene interrupted by oxygen, or C_{2-10} alkylene interrupted by



or $—NR^5—$ where R^5 is hydrogen or C_{1-4} alkyl;
m=1 or 2;
n=0 or 1;
p=0, 1 or 2;
q=1 or 2;
R^1 and R^2 are each independently hydrogen, C_{1-14} unsubstituted alkyl, C_{1-14} alkyl substituted by N-cycloalkylamino, N,N-di-C_1–C_5-alkylamino, hydroxyl or C_1–C_8-alkoxy, or R^1 and R^2 are each independently allyl, methallyl, C_5–C_8-cycloalkyl, or C_1–C_8 aralkyl; or NR^1R^2 is pyrrolidine, piperidine, morpholine, piperazine, or pyrrolidine, piperidine, morpholine or piperazine substituted at nitrogen by methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, s-butyl, 2-hydroxyethyl, 2-aminoethyl, 2-hydroxypropyl, 3-hydroxypropyl, 2-aminopropyl or 3-aminopropyl, or NR^1R^2 is imidazole, or imidazole substituted at the 2- or 4-position by C_{1-4} alkyl, or N-3-(C_1–C_{12})-alkyl imidazole, vinylimidazole or vinylimidazole substituted at the 2- or 4-position by C_1–C_4 alkyl;
R^3 is hydrogen, C_1–C_4-alkyl, C_2–C_4-hydroxy-alkyl, benzyl; or
X—R—$N(R^3)_nR_1R_2$ is piperazine, 4-methylpiperazine, 4-ethylpiperazine, 4-hydroxyethylpiperazine, or 4-(2'-aminoethyl)piperazine
or $N(R^3)_nR_1R_2$ is



B is hydrogen or C_1–C_4-alkyl;
B^1 is hydrogen, hydroxyl, C_1–C_4-alkoxy or C_1–C_4-alkyl; and
A^- is chloride, bromide, bisulfate, sulfate, nitrate, phosphate, hydrogen phosphate, dihydrogen phosphate, carbonate, bicarbonate, tetrachlorozincate, aminosulfonate, methylsulfonate, methylsulfate, ethylsulfate, formate, acetate, hydroxyacetate, aminoacetate, methoxyacetate, propionate, lactate, maleate, malonate, citrate, benzoate, phthalate, benzenesulfonate, toluenesulfonate, oleate or dodecylbenzenesulfonate.

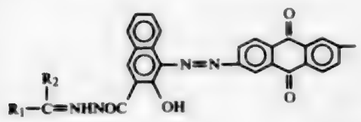
4,656,257

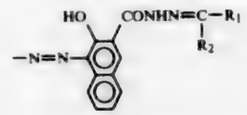
DISAZO COMPOUND HAVING AN ANTHRAQUINONE NUCLEUS

Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 536,924, Sep. 28, 1983, Pat. No. 4,537,844. This application Jun. 20, 1985, Ser. No. 747,150
Claims priority, application Japan, Oct. 8, 1982, 57-177419; Jan. 12, 1983, 58-2310
Int. Cl.[4] C09B *35/033, 35/03, 35/031, 56/12*
U.S. Cl. 534—654 **10 Claims**

1. A disazo compound having the formula





wherein R_1 and R_2 are the same or different and each stands for hydrogen; alkyl having 1 to 4 carbon atoms; a first radical selected from the first group consisting of benzyl, phenetyl, phenyl, naphthyl, anthryl, pyrenyl, anthraquinonyl, thienyl, furyl, pyridyl and carbazolyl; a second substituted radical in which said first radical is substituted with alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, halogen, cyano, nitro or dialkylamino having from 2 to 8 carbon atoms; or R_1 and R_2 together with the carbon atom to which they are attached form a first ring selected from the second group consisting of hexylidene, pentylidene, benzopentylidene and dibenzopentylidene, or a second substituted ring in which said first ring is substituted with alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, halogen, cyano, nitro or dialkylamino having from 2 to 8 carbon atoms.

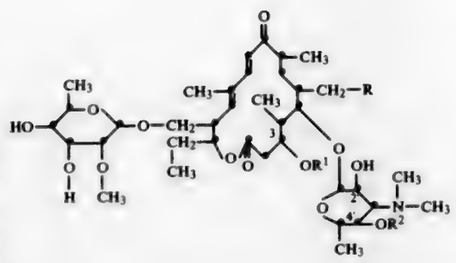
4,656,258

MACROCIN DERIVATIVES

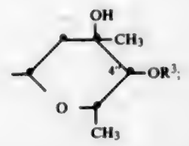
Jan R. Turner, Carmel; Veronica M. Krupinski, Greenwood; David S. Fukuda, Brownsburg, and Richard H. Baltz, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 471,628, Mar. 3, 1983, Pat. No. 4,559,301. This application Jun. 11, 1985, Ser. No. 743,243
Int. Cl.[4] C07H *17/08*
U.S. Cl. 536—7.1 **12 Claims**

1. A compound of the formula



wherein
R is formyl or hydroxymethyl;
R^1 is hydrogen, acetyl or propionyl;
R^2 is hydrogen or



and
R^3 is hydrogen, acetyl, propionyl, n-butyryl or isovaleryl; provided that one of R^1 or R^3 must be other than hydrogen; and the acid addition salts thereof.

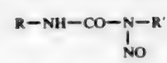
4,656,259

METHOD FOR PREPARING N-ALKYL-N'-GLYCOSYL-N-NITROSOUREA

Vitaly A. Afanasiev, and Zhenis A. Dzhamanbaev, both of Frunze, U.S.S.R., assignors to Institut Organicheskoy Khimii Akademii Nauk Kirgizskoi, Frunze, U.S.S.R.

Continuation of Ser. No. 509,031, Jun. 29, 1983, abandoned. This application Aug. 26, 1985, Ser. No. 769,760
Int. Cl.[4] C07H *1/00*
U.S. Cl. 536—22 **7 Claims**

1. A method for preparing an N-alkyl-N'-glycosyl-N-nitrosourea of the formula:



(I)

wherein the nitrosourea is substituted at the first glycoside center and wherein R is glycosyl,
R' is a lower alkyl; comprising reacting a non-protected monosaccharide with an alkylurea of the formula:



(II)

wherein R' is a lower alkyl,
in the presence of nitroaniline and a mineral acid in an organic medium, followed by nitrosation of the reaction product.

4,656,260

CYCLIC PYRAZOLO C-NUCLEOSIDE COMPOUND AND PROCESS FOR PREPARING THE SAME

Tetsuzo Kato, and Nobuya Katagiri, both of Sendai, Japan, assignors to Kanto Ishi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1984, Ser. No. 686,998
Int. Cl.[4] C07H *7/06*
U.S. Cl. 536—55 **7 Claims**

1. 3-(β-D-ribofranosyl)pyrazolo[3,4-e][1,3]oxazine-5,7-dione.

4,656,261

LIPOPROTEIN ADSORBENT FOR USE IN EXTRACORPOREAL CIRCULATION TREATMENT AND PROCESS FOR PREPARING THEREOF

Shigeo Furuyoshi, Kobe, and Nobutaka Tani, Minoo, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 21, 1985, Ser. No. 789,537
Claims priority, application Japan, Oct. 31, 1984, 59-231012; May 23, 1985, 60-110775
Int. Cl.[4] C08G *18/10*
U.S. Cl. 536—59 **1 Claim**

1. A process for preparing a lipoprotein adsorbent for use in extracorporeal circulation treatment which comprises forming a water-insoluble porous hard gel which has an exclusion limit value from 10^6 to 10^9 measured by using globular proteins and comprises a polymer having hydroxy group in at least a part of the molecule, followed by directly converting hydroxy groups on the surface of said gel to sulfates.

4,656,262

7-METHOXY CEPHALOSPORIN DERIVATIVE

Takashi Osono, Tokyo; Yoshihiko Oka; Shunichi Watanabe, both of Saitama; Takeshi Saito, Tokyo; Hiroshi Gushima; Keisuke Murakami, both of Saitama; Isao Takahashi, Tokyo; Hiroshi Yamaguchi, Saitama; Toshio Sasaki, Tokyo; Kiyoshi Sasaki; Shuichi Takamura, both of Saitama, and Toshiaki Miyoshi, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 660,254, Oct. 12, 1984, abandoned, which is a continuation of Ser. No. 359,765, Mar. 19, 1982, abandoned, which is a division of Ser. No. 160,193, Jun. 17, 1980, abandoned, which is a continuation of Ser. No. 940,370, Sep. 7, 1978, abandoned, which is a continuation of Ser. No. 754,007, Dec. 27, 1976, abandoned. This application Dec. 13, 1985, Ser. No. 808,680
Claims priority, application Japan, Dec. 25, 1975, 50-155646; Jul. 26, 1976, 51-88770
Int. Cl.[4] C07D *501/28;* **A61K** *31/545*
U.S. Cl. 540—221 **1 Claim**

1. 7-(5-amino-5-carboxy-valeramido)-3-(1-methyl-1H-tetrazol-5-yl)thiomethyl-7-methoxy-Δ^3-cephem-4-carboxylic acid.

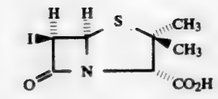
4,656,263

6-β-SUBSTITUTED PENICILLANIC ACID COMPOUND FREE OF THE 6-α-EPIMER

Michael S. Kellogg, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 483,921, Apr. 11, 1983, Pat. No. 4,517,126, which is a continuation of Ser. No. 96,832, Nov. 23, 1979, Pat. No. 4,397,783, which is a continuation-in-part of Ser. No. 17,809, Mar. 5, 1979, abandoned. This application May 4, 1984, Ser. No. 607,006
The portion of the term of this patent subsequent to May 21, 2002, has been disclaimed.
Int. Cl.[4] C07D *499/00;* **A61K** *31/425*
U.S. Cl. 540—310 **1 Claim**

1. A 6-beta-iodo compound of the formula



or a pharmaceutically acceptable base salt thereof, substantially free of the 6-alpha epimer.

4,656,264

BICYCLIC AZETIDINONE INTERMEDIATES

Shigeru Torii, Akaiwa; Hideo Tanaka; Junzo Nogami, both of Okayama; Michio Sasaoka, Itano; Norio Saito, Itano, and Takashi Shiroi, Itano, all of Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

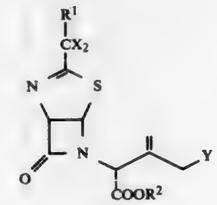
PCT No. PCT/JP83/00315, § 371 Date May 22, 1984, § 102(e) Date May 22, 1984, PCT Pub. No. WO84/01152, PCT Pub. Date Mar. 29, 1984
Continuation of Ser. No. 619,141, May 22, 1984, abandoned. This PCT application Sep. 24, 1983, Ser. No. 869,811
Claims priority, application Japan, Sep. 24, 1982, 57-167051
Int. Cl.[4] C07D *513/04, 501/30, 501/42, 501/52*
U.S. Cl. 540—353 **16 Claims**

1. An azetidinone compound of the formula

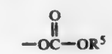


wherein:
R^1 is selected from the group consisting of phenyl, tolyl, xylyl, p-chlorophenyl, p-bromophenyl, p-nitrophenyl and p-methoxyphenyl,
R^2 is a carboxyl-protecting group,
X is hydrogen or chlorine, and
Y is $—ONO_2$.

4. An azetidinone compound of the formula



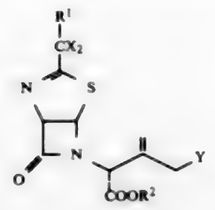
wherein:
R^1 is selected from the group consisting of phenyl, tolyl, xylyl, p-chlorophenyl, p-bromophenyl, p-nitrophenyl and p-methoxyphenyl,
R^2 is a carboxyl-protecting group,
X is hydrogen or chlorine, and
Y is



wherein R^5 is a halogen-substituted lower alkyl group.

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7. An azetidinone compound of the formula

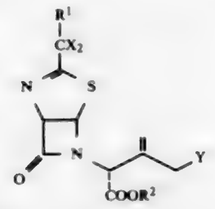


wherein:
R^1 is selected from the group consisting of phenyl, tolyl, xylyl, p-chlorophenyl, p-bromophenyl, p-nitrophenyl and p-methoxyphenyl,
R^2 is a carboxyl-protecting group,
X is hydrogen or chlorine, and
Y is

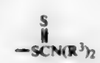


wherein R^3 is a lower alkyl.

10. An azetidinone compound of the formula

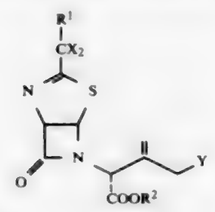


wherein:
R^1 is selected from the group consisting of phenyl, tolyl, xylyl, p-chlorophenyl, p-bromophenyl, p-nitrophenyl and p-methoxyphenyl,
R^2 is a carboxyl-protecting group,
X is hydrogen or chlorine, and
Y is



wherein R^3 is a lower alkyl.

13. An azetidinone compound of the formula



wherein:
R^1 is selected from the group consisting of phenyl, tolyl, xylyl, p-chlorophenyl, p-bromophenyl, p-nitrophenyl and p-methoxyphenyl,
R^2 is a carboxyl-protecting group,
X is hydrogen or chlorine, and
Y is $-SR^4$ wherein R^4 is a 5-member aromatic heterocyclic residue containing at least one heteroatom selected from the group consisting of sulfur and nitrogen, said 5-member aromatic heterocyclic residue optionally having at least one substituent selected from the group consisting of methyl and phenyl.

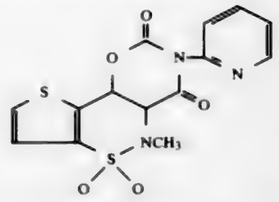
4,656,265

CYCLIC PRODRUGS OF ANTIINFLAMMATORY OXICAMS

Joseph G. Lombardino, Niantic, and Anthony Marfat, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

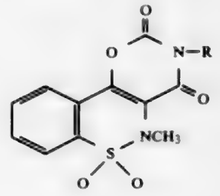
Filed Jun. 21, 1984, Ser. No. 623,251
Int. Cl.[4] C07D *413/14, 417/14*
U.S. Cl. 544—33 **7 Claims**

1. The compound of the formula

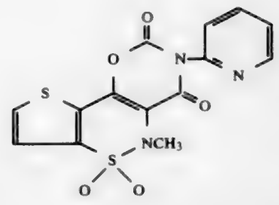


or a pharmaceutically acceptable acid addition salt thereof.

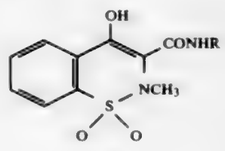
2. A process for preparation of a compound of the formula



or

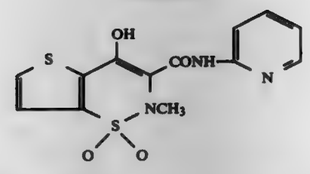


wherein R is 2-pyridyl, 6-chloro-2-pyridyl, 6-methyl-2-pyridyl or 5-methylisoxazol-3-yl, which comprises reacting a compound of the formula



or

-continued



with at least an equimolar amount of a compound of the formula R^1COCl where R^1 is Cl, (C_1–C_4)alkoxy, phenoxy, benzyloxy or trichloromethoxy in the presence of a reaction inert organic solvent and one to two molar equivalents of an acid binding agent at a temperature of from −70° to 50° C.

4,656,266

PROCESS FOR PREPARING N-POLYTHIODIMORPHOLINES

Angelo Bergomi, Akron, and James J. Tazuma, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 728,915, Apr. 30, 1985, Pat. No. 4,632,988. This application Sep. 2, 1986, Ser. No. 902,836
Int. Cl.[4] C07D *295/22*
U.S. Cl. 544—85 **4 Claims**

1. A process for the preparation of N-polythiodimorpholine wherein morpholine and elemental sulfur in an alcohol mixture are oxidized with N-chloromorpholine to yield N-polythiodimorpholines.

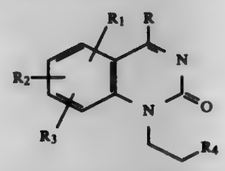
4,656,267

SUBSTITUTED 2(1H)-QUINAZOLINONE-1-ALKANOIC ACIDS AND ESTERS

Victor T. Bandurco, Bridgewater; Seymour D. Levine, North Brunswick, both of N.J.; Dennis M. Mulvey, New Hope, and Alfonso J. Tobia, Doylestown, both of Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation-in-part of Ser. No. 537,233, Sep. 29, 1983, Pat. No. 4,555,571. This application Jul. 2, 1984, Ser. No. 627,138
The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.
Int. Cl.[4] C07D *413/04, 403/04, 239/80*
U.S. Cl. 544—119 **1 Claim**

1. A compound of the formula



wherein R is hydrogen or lower alkyl; R_1 is hydrogen, lower alkyl, lower alkoxy, morpholine, methyl piperazino, hydroxy, alkoxyacrbonyloxy wherein the alkoxy group has 1–4 carbon atoms, alkylamino wherin the alkyl group has 1–4 carbon atoms, halo, ureido, alkylthio wherein the alkyl group has 1–4 carbon atoms, aklyl sulfinyl wherein the alkyl group has 1–4 carbon atoms and alkanoyloxy having 2–5 carbon atoms; R_2 is hydrogen, lower alkoxy, alkoxycarbonyloxy wherein the alkoxy group has 1–4 carbon atoms, hydroxy, alkylamino wherein the alkyl group has 1–4 carbon atoms and alkanoyloxy having 2–5 carbon atoms; R_3 is hydrogen, hydroxy and lower alkoxy; and R_4 is carboxy and carboalkoxy wherein the alkoxy group has 1–3 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof, provided that R_1, R_2 and R_3 are not simultaneously hydrogen and when R_1 or R_2 or R_3 is hydrogen the remaining substituents are not hydroxy.

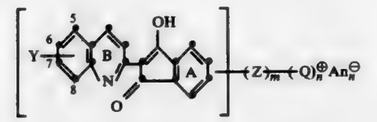
4,656,268

BENZOQUINOPHTHALONE QUATERNARY AMMONIUM SALT DERIVATIVES

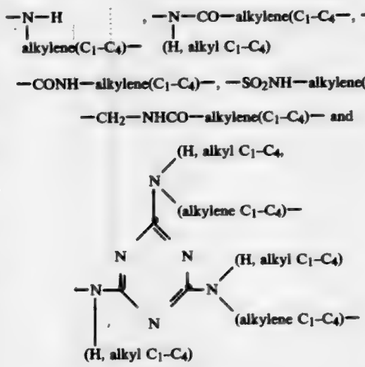
Jean-Marie Adam, Rosenau, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 672,869, Nov. 19, 1984, Pat. No. 4,588,811, which is a continuation of Ser. No. 471,555, Mar. 3, 1983, abandoned. This application Oct. 18, 1985, Ser. No. 788,811
Claims priority, application Switzerland, Mar. 10, 1982, 1474/82
Int. Cl.[4] C07D *401/12, 413/12, 401/14*
U.S. Cl. 544—126 **9 Claims**

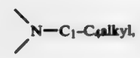
1. A quinophthalone compound of the formula



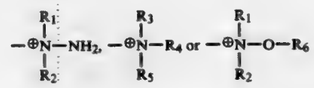
wherein
Y is a benzene ring which is annularly-linked in the 5/6 or 7/8 positions, said benzene ring being unsubstituted or substituted by OH, C_1–C_4—alkyl or halogen,
Z is a polyvalent bridge member selected from the group consisting of



wherein each of the alkyl and alkylene groups appearing in said members is unsubstituted or is further substituted by OH, halogen, NH_2 or

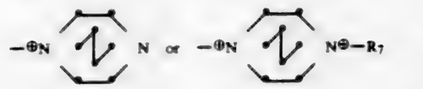


Q is a cationic radical of the formula



in which R_1 to R_6 independently of one another are each C_1–C_4 alkyl which is unsubstituted or substituted by OH, NH_2, —$N(C_1$–C_4alkyl)$_2$ or phenyl, or R_1 and R_2 or R_3 and

R_4 together with the N atom form in each case the morpholine, pyrrolidine, piperidine, piperazine, imidazole or triazole ring; or R_3 and R_4 and R_5 together form the pyridinium ring which is unsubstituted or substituted by C_1–C_4—alkyl, or form a triethylenediamine ring of the formula



wherein R_7 is C_1–C_4—alkyl which is unsubstituted or substituted by $-NH_2$, $-NH-C_1-C_4-$alkyl or $-N(-C_1-C_4-alkyl)_2$,
m is 1 or 2,
n is 1 or 2, and
An is an anion;
and wherein the nucleus A is unsubstituted or is substituted by halogen, straight or branched chain C_1–C_4 alkyl, NO_2, NH_2, NHCO—C_1–C_4alkyl, COO—C_1–C_4alkyl, C_1–C_4alkoxy, S—C_1–C_4alkyl, SO_2—C_1–C_4alkyl, NHCO—phenyl, COO—phenyl, phenoxy, thiophenoxy or SO_2—phenyl and the nulceus B is unsubstituted or is substituted by halogen, straight or branched chain C_1–C_4 alkyl, OH, C_1–C_4alkoxy, phenoxy, NH—C_1–C_4alkyl, NH—phenyl, S—C_1–C_4alkyl, thiophenoxy, SO_2—C_1–C_4alkyl, SO_2—phenyl, COO—C_1–C_4alkyl, or COO—phenyl.

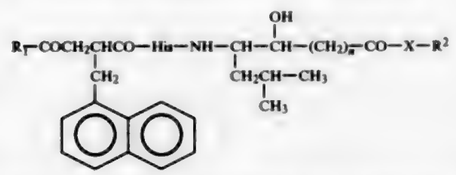
4,656,269

HISTIDINE DERIVATIVES

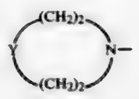
Kinji Iizuka; Tetsuhide Kamijo; Tetsuhiro Kubota, all of Nagano; Kenji Akahane, Tokyo; Hideaki Umeyama, Chiba, and Yoshiaki Kiso, Osaka, all of Japan, assignors to Kissei Pharmaceutical Co., Ltd., Nagano, Japan

Filed Apr. 15, 1986, Ser. No. 852,260
Claims priority, application Japan, Apr. 15, 1985, 60-79726
Int. Cl.⁴ C07D *233/64, 413/12*
U.S. Cl. 544—139 **17 Claims**

1. An amino acid derivative represented by formula (I)



wherein R^1 represents a monoalkylamino group having 1 to 3 carbon atoms, a dialkylamino group having 2 to 6 carbon atoms, or



in which Y represents a chemical bond, an oxygen atom or a methylene group, His represents an L-histidyl group, n represents 0 or 1, X represents an oxygen atom or —NH—, R^2 represents a straight or branched-chain alkyl group having 1 to 7 carbon atoms; or a pharmaceutically acceptable salt thereof.

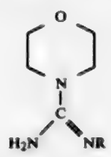
4,656,270

PROCESS FOR PRODUCING GUANIDINES SUCH AS LINOGLIRIDE

Cynthia A. Maryanoff, Solebury Township, Bucks County; James N. Plampin, Roslyn, and Robin C. Stanzione, West Chester, all of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

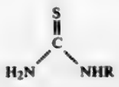
Filed Mar. 15, 1985, Ser. No. 711,948
Int. Cl.⁴ C07D *295/12, 413/12*
U.S. Cl. 544—148 **11 Claims**

1. A method for the synthesis of an N-aryl-1-morpholinecarboximidamide of the following formula (III):



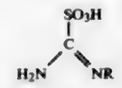
(III)

wherein R is phenyl, methylenedioxyphenyl, phenyl substituted with from 1 to 3 substitutents each selected from the group consisting of halo, loweralkyl and loweralkoxy or phenyl substituted with a member selected from the group consisting of dimethylamino, methylethylamino, diethylamino, loweralkanoylamino, loweralkylthio, trifluoromethyl, hydroxy, benzyloxy, loweralkanoyloxy, loweralkanoyl and nitro which comprises the steps of:
(a) oxidizing an N-arylthiourea of the following formula (II):



(II)

with hydrogen peroxide in the presence of $Na_2MoO_4.2H_2O$ in the following two stages:
(i) during addition of the hydrogen peroxide at a temperature of about 0° to 15° C.; and
(ii) after addition of the hydrogen peroxide at a temperature of above 15° to about 80° C.
to produce a N-arylformamidinesulfonic acid of the following formula (I):



(I)

and
(b) reacting the acid of formula (I) with morpholine.

4,656,271

PROCESS FOR PRODUCING CYANURIC ACID FROM UREA HYDROHALIDES

John A. Wojtowicz, Cheshire, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Feb. 21, 1986, Ser. No. 831,753
Int. Cl.⁴ C07D *251/32*
U.S. Cl. 544—192 **20 Claims**

1. A process for producing cyanuric acid which comprises:
(a) feeding a urea hydrohalide compound to a pyrolysis zone,
(b) pyrolyzing the urea hydrohalide compound to produce a solid reaction mixture of cyanuric acid and an ammonium halide,
(c) vaporizing the ammonium halide from the solid reaction mixture to form a gaseous mixture containing ammonia and a hydrogen halide while simultaneously removing the gaseous mixture from the pyrolysis zone, and
(d) recovering cyanuric acid substantially free of the ammonium halide.

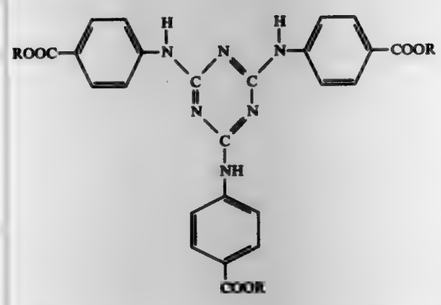
4,656,272

PREPARATION OF S-TRIAZINE DERIVATIVES

Roland Martin, Ludwigshafen, and Lothar Jaeitschke, Kleinniedesheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 24, 1986, Ser. No. 855,383
Claims priority, application Fed. Rep. of Germany, May 24, 1985, 3518670
Int. Cl.⁴ C07D *251/70*
U.S. Cl. 544—197 **3 Claims**

1. A process for the preparation of an s-triazine derivative of the formula (I)



I

where R is alkyl of 6 to 12 carbon atoms, by reacting a cyanuric halide with a p-aminobenzoate which contains, as the ester alcohol radical, alkyl of 6 to 12 carbon atoms, wherein the cyanuric halide is reacted with the p-aminobenzoate in a molar ratio of 1:3 at from 100° to 250° C. in, as the solvent, an ester of a branched alkanoic acid of 6 to 10 carbon atoms with a saturated aliphatic alcohol of 10 to 20 carbon atoms or with, if appropriate, a mixture of such alcohols.

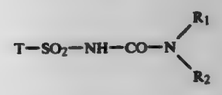
4,656,273

PROCESS FOR PRODUCING SULFONYLUREAS

Werner Töpfl, Dornach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

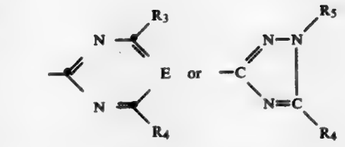
Continuation-in-part of Ser. No. 629,134, Jul. 9, 1984, abandoned. This application Dec. 16, 1985, Ser. No. 809,462
Int. Cl.⁴ C07D *251/16, 251/42, 239/69, 249/12*
U.S. Cl. 544—211 **18 Claims**

1. A process for producing a sulfonylurea of formula I

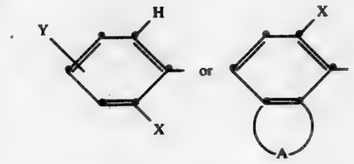


(I)

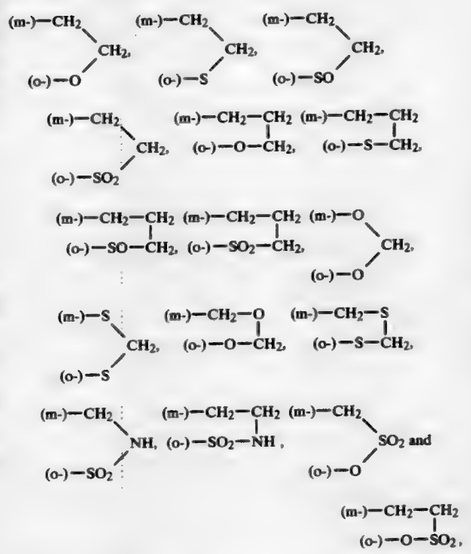
wherein
R_1 is hydrogen or C_1–C_4-alkyl,
R_2 is



E is =N or =CH—,
R_3 is C_1–C_4-alkyl, alkoxy or halogen
R_4 is C_1–C_4-alkyl, C_3–C_6-cycloalkyl, C_1C_4-alkoxy, halogen, C_1–C_4alkoxy-C_1–C_4-alkyl, halo-C_1–C_4-alkyl or halo-C_1–C_4-alkoxy,
R_5 is hydrogen or C_1–C_4-alkyl,
T is



Y is hydrogen or halogen,
X is hydrogen, halogen, nitro, C_1–C_4-alkyl, halo-C_1–C_4-alkyl, C_2–C_4-alkenyl, halo-C_2–C_4-alkenyl, C_2–C_4-alkynyl, C_1–C_4-alkoxy, halo-C_1–C_4-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsufinyl, C_1–C_4-alkylsulfonyl, halo-C_1–C_4-alkylthio, C_1–C_4-alkylsulfonyloxy, phenyl, unsubstituted phenylsulfonyloxy or phenylsulfonyloxy mono- or poly-substituted by C_1–C_4-alkyl, or is C_1–C_4-dialkylsulfamoyl, and
A is an unsubstituted bridge member which has 3 or 4 atoms and which contains 1 or 2 hetero atoms, selected from the group consisting of



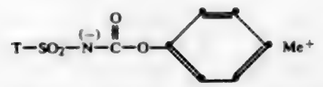
wherein (m-) and (o-) designate the metal and ortho positions relative to the sulfonylurea group on the aromatic ring to

which said bridge member is fused, said process comprising the steps of reacting a sulfonamide of formula II

$$T-SO_2-NH_2 \quad (II)$$

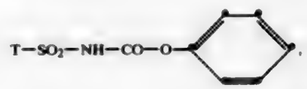
with diphenyl carbonate in the presence of a base, in the absence of water, in an aprotic solvent at 0°–30° C., to form a salt of a phenyl carbamate of formula III

(III)



wherein Me^+ is a cation of sodium or of potassium or of a tertiary amine, subsequently, without isolating the phenyl carbamate salt of formula III adding sufficient anhydrous acid thereto to convert this salt into the free phenyl carbamate of formula IIIa

(IIIa)



and reacting the phenyl carbamate of formula IIIa further with an amine of formula IV

(IV)



at 20°–150° C., to give the sulfonylurea of formula I.

4,656,274

POLYFLUORINATED SUBSTITUTED TRICYCLIC QUINOLINE MONO AND DIOXO ANTIFUNGAL AGENTS AND PROCESS FOR THEIR PREPARATION

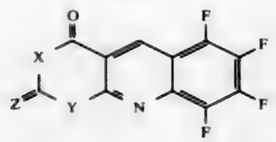
Jack B. Jiang, Wilmington, Del., and David Isaacson, East Brunswick, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Feb. 12, 1985, Ser. No. 701,008

Int. Cl.[4] C07D *471/04, 219/06*

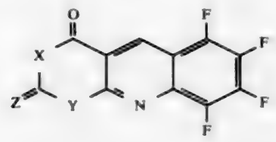
U.S. Cl. 544—250 **6 Claims**

1. A compound of the formula:

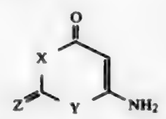


wherein X and Y are methylene or —NR
wherein R is lower alkyl, Z is oxo, thioxo, imino or $—(R_1)_2$
wherein R_1 is lower alkyl.

4. The process for preparing a compound of the formula:



which comprises reacting pentafluorobenzaldehyde with an enaminone of the formula:



in an organic acid, wherein X and Y are methylene or —NR wherein R is lower alkyl, Z is oxo, thioxo, imino or $—(R_1)_2$ wherein R_1 is lower alkyl.

4,656,275

PREPARATION OF RIBOFLAVIN, AND 4,5-DIMETHYL-N-(D)-RIBITYL-2-(O-ALKOXY-PHENYLAZO)-ANILINE INTERMEDIATES

Hansgeorg Ernst; Heinz Eckhardt, both of Ludwigshafen, and Joachim Paust, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 3, 1985, Ser. No. 730,056

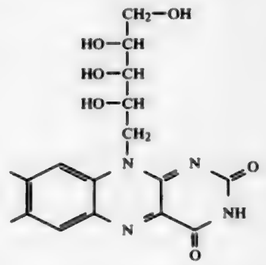
Claims priority, application Fed. Rep. of Germany, May 15, 1984, 3417944

Int. Cl.[4] C07D *575/14*; C07C *107/06*

U.S. Cl. 544—251 **4 Claims**

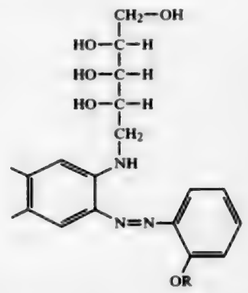
1. An improved process for the preparation of riboflavin of the formula I

(I)



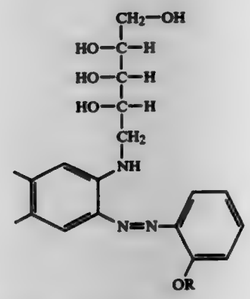
wherein a 4,5-dimethyl-N-(D)-ribityl-2-(o-alkoxyphenylazo)-aniline of the formula IIa

(IIa)



where R is alkyl of 1 to 4 carbon atoms, is reacted with barbituric acid in the presence of an acidic condensing agent in an organic solvent.

2. A 4,5-dimethyl-N-(D)-ribityl-2-(o-alkoxyphenylazo)-aniline of the formula IIa



where R is alkyl of 1 to 4 carbon atoms.

4,656,276

QUINOXALINE ADDUCTS USEFUL AS ANTHELMINTICS

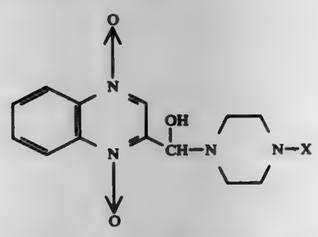
Vernon V. Young, Terre Haute, and David R. Bright, West Terre Haute, both of Ind., assignors to Angus Chemical Company, Northbrook, Ill.

Division of Ser. No. 716,506, Mar. 25, 1985, which is a continuation of Ser. No. 329,446, Dec. 10, 1981, abandoned, which is a division of Ser. No. 176,168, Aug. 7, 1980, Pat. No. 4,348,389. This application May 1, 1986, Ser. No. 858,585

Int. Cl.[4] C07D *403/06, 417/06, 413/06, 403/14*

U.S. Cl. 544—353 **6 Claims**

1. A compound of the formula



wherein X is $—CH_3$, $—CON(C_2H_5)_2$, $—CON(CH_3)_2$, $—CH_2CH_2OH$, or $—COOCH_2CH_3$.

4,656,277

WATER-SOLUBLE CATIONIC QUATERNARY AMMONIUM MONOMERS

Dodd W. Fong, Naperville, and David J. Kowalski, LaGrange Park, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 15, 1984, Ser. No. 621,338

Int. Cl.[4] C08F *8/10, 20/60*

U.S. Cl. 544—399 **3 Claims**

1. The methyl chloride or dimethyl sulfate quaternary ammonium salt of 1-methacryloyl-4-methyl piperazine.

4,656,278

ISOQUINOLINE DERIVATIVES AND THEIR PREPARATION

Guy Rousey, Montigny-le-Bretonneux, and Didier Legroux, Domont, both of France, assignors to Synthelabo, Paris, France

Filed May 14, 1985, Ser. No. 733,928

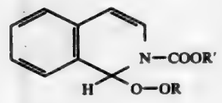
Claims priority, application France, May 15, 1984, 84 07465

Int. Cl.[4] C07D *217/24*

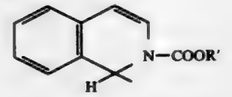
U.S. Cl. 546—140 **4 Claims**

1. Isoquinoline derivatives of the formula (I)

(I)



in which R is a group selected from t-butyl and groups of the formula



and R′ is selected from methyl and ethyl.

4. A process for the preparation of 1(2H)-isoquinolone from compounds of formula (I), as defined in claim 1, comprising:

treating said isoquinoline derivative of formula (I) with a base in a solvent.

4,656,279

PROCESS FOR PRODUCTION OF DECAHYDROISOQUINOLINE

Hiroshi Okazaki, Munakata; Makito Soeda, Ongamachi; Hiromu Wada, Nishinomiya, and Kiyotaka Onishi, Osaka, all of Japan, assignors to Nippon Steel Chemical Co., Ltd. and Iwatani Industrial Gases Corp., both of Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 685,090

Int. Cl.[4] C07D *217/02*

U.S. Cl. 546—150 **12 Claims**

1. A process for the production of decahydroisoquinoline by the hydrogenation of isoquinoline or partially hydrogenated isoquinoline in the presence of a ruthenium catalyst at a reaction temperature of 110° C. to 230° C. under a hydrogen pressure of at least 10 kg/cm^2-G.

4,656,280

RADIOIODINATED DOPAMINE RECEPTOR LIGAND

Russell K. Garlick, Townsend, Mass., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 7, 1984, Ser. No. 587,061

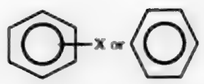
Int. Cl.[4] C07D *471/10*; C09K *11/04*; G01N *33/567*

U.S. Cl. 546—20 **7 Claims**

1. A process for the manufacture of a radioiodinated dopamine receptor ligand comprising admixing

(i) a compound of the formula 1-oxo-2-R_1-3-R_2-4-R_3-8-R_4-triaza spiro(4,5)decane where R_1 and R_2 are hydrogen or lower alkyl; R_4 is $Z(CH_2)n$ where n is a positive integer from 0 to 4, Z is selected from 3-(4-fluorobenzoyl); 3-benzoyl; 4-oxo-4-(2-thienyl); 3-(4-chlorobenzoyl); 2-(1,4-benzodioxanyl); benzyl; 4-methyl-benzyl; 3-cyano-3,3-diphenyl; 2-methylbenzyl; and 4-fluorobenzyl; and where R_3 is

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where X is a member of the group consisting of OH, NH_2, NHR_5 or $N(R_6)_2$ (where R_5 and R_6 are lower alkyl), N_3, $NHCOCH_3$ and OCH_3;

(ii) thallium tri-chloride; and

(iii) a substantially carrier-free radioisotope of iodine at a temperature and for a time sufficient to allow formation of the radioiodinated form of (i).

6. A radioiodinated dopamine receptor ligand produced by the process of claim 1 which has substantially all dopamine receptor binding activity retained.

4,656,281

IMIDAZO QUINOLINE COMPOUNDS USEFUL AS ANTI-ALLERGY AGENTS

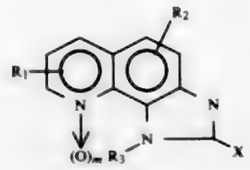
John H. Musser, Malvern, Pa., and Richard E. Brown, East Hanover, N.J., assignors to USV Pharmaceutical Corp., Tuckahoe, N.Y.

Division of Ser. No. 476,673, Mar. 18, 1983, which is a continuation-in-part of Ser. No. 362,712, Mar. 29, 1982. This application May 8, 1985, Ser. No. 731,689

Int. Cl.⁴ C07D *471/04*

U.S. Cl. 546—82 **5 Claims**

1. A quinoline compound of the formula



and salts thereof, wherein

R_1 and R_2 are independently hydrogen, lower alkyl, halo, trifluoromethyl, amino, lower alkyl amino, cyano, lower alkynyl, phenyl, phenyl-lower alkyl, lower alkenyl, nitro, lower alkyl sulfinyl, lower alkyl sulfonyl, lower alkoxy-carbonyl, carboxyl, lower alkoxy, lower alkanoyl, or lower alkenoyl;

M is 0 or 1;

R_3 is hydrogen, lower alkyl, alkenyl, alkynyl, phenyl, phenyl-lower alkyl, alkylaminoalkyl, aminoalkyl or carboxy-alkyl; and

X is cyano, formyloximino, tetrazolyl, carbalkoxyalkyl, carboxyalkyl, or $COOR_4$ in which the R_4 group is hydrogen, alkyl or an alkyl substituted by an alkoxy or amino group.

4,656,282

PREPARATION OF SUBSTITUTED PIPERIDINES

Walter Himmele, Walldorf; Walter-Wieland Wiersdorff, Mutterstadt, and Marco Thyes, Ladwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ladwigshafen, Fed. Rep. of Germany

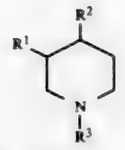
Filed Nov. 4, 1985, Ser. No. 794,744

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1984, 3441929

Int. Cl.⁴ C07D *211/12, 211/14, 217/02, 217/04*

U.S. Cl. 546—150 **15 Claims**

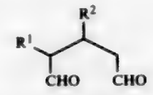
1. A process for the preparation of a piperidine which is substituted in the 3- and 4-position and is of the formula



(I)

where R^1 and R^2 are identical or different and are each straight-chain or branched alkyl, cycloalkyl, aryl or aralkyl, or may be bonded to one another to form a 5-membered or 6-membered ring, or one of the radicals R^1 or R^2 may be hydrogen, and R^3 is C_1–C_4-alkyl or hydrogen, which process comprises:

reacting (a) a glutardialdehyde which is substituted in the 2- and/or 3-position and is of the formula



(II)

where R^1 and R^2 have the above meanings, is reacted with (b) ammonia or a primary amine of 1 to 4 carbon atoms and (c) hydrogen, at elevated temperatures and under superatmospheric pressure and in the presence of a hydrogenation catalyst selected from the group consisting of the metals nickel and cobalt and compounds of said metals.

4,656,283

ALKYL ESTERS OF SUBSTITUTED 2-METHYL-3-QUINOLINECARBOXYLIC ACID AND QUINOLINE-2,3-DICARBOXYLIC ACID

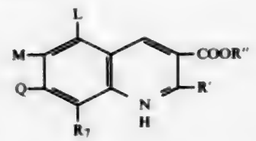
Robert F. Doehner, Jr., East Windsor, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 381,815, May 25, 1982, abandoned, which is a continuation-in-part of Ser. No. 489,401, May 5, 1983, abandoned. This application Feb. 4, 1985, Ser. No. 698,192

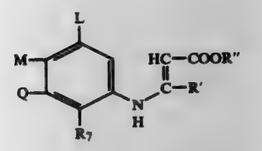
Int. Cl.⁴ C07D *215/48, 215/59*

U.S. Cl. 546—170 **6 Claims**

1. A method for the preparation of a compound having the structure:



wherein R' is CH_3 or COOR''; R'' is C_1–C_4 alkyl; L, M, Q and R_7 are each H, halogen (Cl, Br, F or I); C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfonyl, halo(C_1–C_4)alkyl, NO_2, CN, phenyl, phenoxy, difluoromethoxy, loweralkylamino, chlorophenyl or phenoxy substituted with one Cl, CF_3, NO_2 or CH_3 group, with the proviso that only one of L, M, Q or R_7, may represent a substituent other than hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy; comprising, reacting a compound having the structure:



wherein L, M, Q, R_7, R' and R'' are as described above, with an approximately equimolar amount of an immonium salt having the structure:

$$Cl—CH=N^{\oplus}—(R''')_{2\text{-}a}$$

where R''' is C_1–C_4 alkyl or when taken jointly with the nitrogen forms a 5 or 6 member ring and a is $PO_2Cl_2^{\ominus}$ or $Cl^{\ominus}$ in the presence of a hydrocarbon solvent, a chlorinated hydrocarbon solvent, or mixtures thereof at a temperature between 40° to 110° C.

4,656,284

PROCESS FOR PREPARING N-METHYL 2- OR 4-PYRIDONES

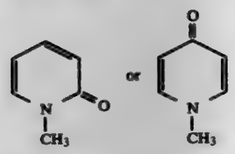
James M. Renga, and Pen-Chung Wang, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 284,035, Jul. 17, 1981, abandoned. This application Jun. 2, 1983, Ser. No. 500,605

Int. Cl.⁴ C07D *211/86*

U.S. Cl. 546—290 **5 Claims**

1. A process for preparing N-methyl pyridone compounds corresponding to the formula:



optionally ring-substituted with up to three unreactive moieties, said unreactive moieties being inert in the methylation reaction with trichloroacetate and selected from the group consisting of lower alkyl, lower alkoxy, halo, cyano, nitro, trifluoromethyl, aralkyl and phenoxy provided that at most only two such moieties are cyano, nitro or aralkyl moieties comprising contacting 2-hydroxypyridine, 4-hydroxypyridine or a non-nitrogen-substituted derivative thereof substituted with up to three unreactive moieties selected from the group consisting of lower alkyl, lower alkoxy, halo, cyano, nitro, trifluoromethyl, aralkyl and phenoxy provided that at most only two such moieties are cyano, nitro or aralkyl moieties with trichloroacetate, in the presence of a catalytic amount of an initiator selected from the group consisting of basic catalysts and quaternary ammonium or phosphonium salts at a temperature from about 100° C. to about 180° C.

4,656,285

COMPOUND 2-ACETAMIDOMETHYL-6-METHOXY-PYRIDINE

William R. Brosa, Maplewood, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 551,967, Nov. 15, 1983, Pat. No. 4,555,573. This application Sep. 6, 1985, Ser. No. 773,203

Int. Cl.⁴ C07D *213/75*

U.S. Cl. 546—291 **1 Claim**

1. The compound 2-acetamidomethyl-6-methoxypyridine.

4,656,286

AMINOETHANETHIOL AND THIAZOLIDINE COMPOUNDS

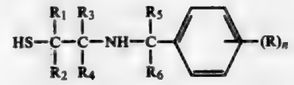
Paul T. MacGregor, Lexington, and Myron S. Simon, West Newton, both of Mass., assignors to Polaroid Corporation, Patent Dept., Cambridge, Mass.

Continuation of Ser. No. 644,913, Aug. 27, 1984, abandoned. This application May 23, 1986, Ser. No. 866,782

Int. Cl.⁴ C07D *277/04*; C07C *149/273, 149/253*

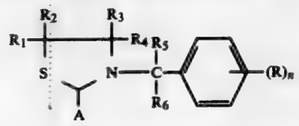
U.S. Cl. 548—146 **4 Claims**

1. A compound represented by the formula



wherein R is —$COOR_7$, —$CONHR_7$, —OH, —SO_3H or —SO_3R_8; R_1, R_2, R_3, R_4, R_5 and R_6 each independently is hydrogen or alkyl having from 1 to 6 carbon atoms; R_7 is hydrogen or alkyl having from 1 to 6 carbon atoms; R_8 is an alkali metal; and n is 2 or 3; and the salts thereof.

3. A compound represented by the formula



wherein A is hydrogen, alkyl having from 1 to 6 carbon atoms, phenyl, naphthyl, benzyl or phenethyl; R is —$COOR_7$, —$CONHR_7$, —OH, —SO_3H, or —SO_3R_8; R_1, R_2, R_3, R_4, R_5 and R_6 each independently is hydrogen or alkyl having from 1 to 6 carbon atoms; R_7 is hydrogen or alkyl having from 1 to 6 carbon atoms; R_8 is an alkali metal; and n is 2 or 3; and the salts thereof.

4,656,287

AMINOTHIAZOLE INTERMEDIATE FOR A CEPHALOSPORIN

Hiroyuki Imaizumi, Toyama; Takihiro Inaba, Namerikawa; Seishi Morita; Ryuko Takeno, both of Toyama; Yoshiharu Murotani; Hirohiko Fukuda, both of Toyama; Junichi Yoshida; Kiyoshi Tanaka, both of Toyama; Shuntaro Takano, and Isamu Saikawa, both of Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

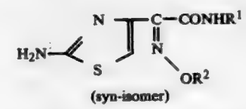
Division of Ser. No. 655,457, Sep. 28, 1984. This application Jul. 11, 1985, Ser. No. 753,942

Claims priority, application Japan, May 25, 1984, 59-104759; Sep. 17, 1984, 59-192635

Int. Cl.⁴ C07D *277/38*

U.S. Cl. 548—194 **1 Claim**

1. A compound represented by the formula [II]:



[II]

(syn-isomer)

wherein R^1 is a hydrogen atom and R^2 is a lower alkyl group.

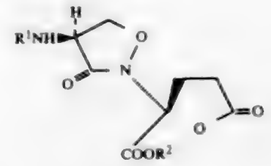
4,656,288

ANTIBIOTICS, THEIR PRODUCTION AND USE

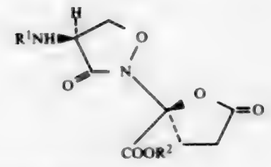
Hideo Ono, Kobe; Yukimasa Nozaki, Ikeda, and Setsuo Harada, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 20, 1985, Ser. No. 714,084
Claims priority, application Japan, Mar. 29, 1984, PCT/JP84/00150; Apr. 27, 1984, PCT/JP84/00222; Nov. 29, 1984, PCT/JP84/00568; Feb. 28, 1985, PCT/JP85/00095
Int. Cl.[4] C07D *261/02*; A61K *31/42*
U.S. Cl. 548—244 4 Claims

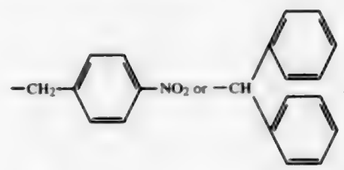
1. A compound of the formula:



or



wherein R^1 is H or CH_3CO—, R^2 is H,



or its salts.

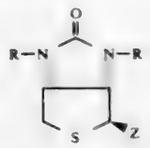
4,656,289

1,3-DIBENZYL-4-HALOHEXAHYDRO-1H-THIENO[3,4-D]IMIDAZOL-2(3H)-ONE INTERMEDIATES

Hans A. Bates, Stony Brook, and Stuart Rosenblum, West Hempstead, both of N.Y., assignors to The Research Foundation of State Univ. of New York, Albany, N.Y.

Filed Oct. 25, 1984, Ser. No. 664,505
Int. Cl.[4] C07D *495/04*
U.S. Cl. 548—303 2 Claims

1. A compound of formula



wherein R is benzyl and Z is halo.

4,656,290

PROCESS FOR PREPARING THIO, DITHIO OR CARBONYL COMPOUNDS

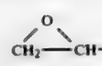
István Káldor, Göd; András Szász, Budapest; Ilona Vegh, Budapest; József Heizer, Budapest, and Eva Benedek Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Jan. 16, 1985, Ser. No. 691,972
Claims priority, application Hungary, Nov. 27, 1984, 154/84
Int. Cl.[4] C07D *235/32*
U.S. Cl. 548—306 21 Claims

1. A process for the preparation of a compound of the Formula I

$$R—X—R^1 \quad (I)$$

wherein X is dithio; R and R^1 are identical and each represents hydrogen, hydroxy; or straight or branched chain C_{1-12} alkyl or C_{2-12} alkenyl optionally bearing one or more hydroxy, carboxy, C_{1-6} alkoxycarbonyl, amino, acetylamino, nitro, C_{1-6} alkylamino, C_{1-6} alkoxy,



C_{5-7} cycloalkyl optionally substituted by one or more hydroxy groups and/or halogeno substituents; C_{7-10} aralkyl; phenyl or naphthyl optionally bearing one or more C_{1-4} alkyl, nitro and-/or halogeno substituents; a 5- or 6-membered heterocycle containing 1–3 nitrogen atoms, optionally fused with a benzene ring and optionally bearing one or more identical or different substituents; alpha-halogeno-substituted C_{7-10} aralkyl or a group of the Formula $—(CH_2)_n—Hal$, wherein n is 1–6 which comprises reducing a compound of the Formula II

$$R—A \quad (II)$$

wherein A is chlorosulfonyl with a sulfur compound comprising sulfur which is of the (+)4 oxidation degree and is converted into the (+)6 oxidation degree during the process or with a sulfur compound which is decomposed in acidic medium to a compound of the latter oxidation degree in the presence of a catalytic amount but not more than 0.5 mole—related to 1 mole of the starting material of the Formula II—of elemental iodine or a compound capable of delivering hydrogen iodide in acidic medium or a compound which can be reduced to hydrogen iodide in acidic medium with the sulfur compound used.

4,656,291

PROCESS FOR PRODUCING AMIDINE SULFONIC ACIDS

Cynthia A. Maryanoff, Solebury Township, Bucks County; James N. Plampin, Roslyn, and Robin C. Stanzione, Wayne, all of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 711,948, Mar. 15, 1985. This application May 28, 1986, Ser. No. 868,231
Int. Cl.[4] C07C *139/00*; C07D *233/42*
U.S. Cl. 548—351 32 Claims

1. A method for the synthesis of an amidine sulfonic acid which comprises oxidizing a thiourea with hydrogen peroxide in the presence of $Na_2MoO_4.2H_2O$ in the following two stages:
   (i) during addition of the hydrogen peroxide at a temperature of about 0° to 15° C.; and
   (ii) after addition of the hydrogen peroxide at a temperature of above 15° to about 80° C.

4,656,292

2,3-DIMETHYLMALEIMIDO-ALKYL HALOACETATES

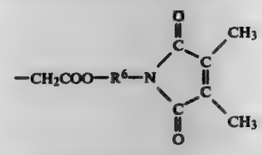
Martin Roth, Giffers, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 492,853, May 9, 1983, Pat. No. 4,544,621.
This application Jun. 17, 1985, Ser. No. 745,748
Int. Cl.[4] C07D *207/448*
U.S. Cl. 548—548 5 Claims

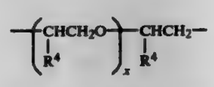
1. A compound of formula VII

$$D—Z \quad (VII)$$

wherein Z is chloro or bromo, and
D is a maleimidyl radical of the formula



wherein R^6 is alkylene containing 2 to 12 carbon atoms or is



where x is an integer from 1 to 6, and R^4 is hydrogen or methyl.

4,656,293

PROCESS FOR PREPARING ORGANIC CHLOROPHOSPHANES

Hans-Jerg Kleiner, Kronberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 670,149, Nov. 9, 1984, abandoned. This application Jan. 9, 1986, Ser. No. 817,180
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3340995
Int. Cl.[4] C07D *333/00*; C07F *9/02*
U.S. Cl. 549—6 6 Claims

1. A process for preparing an organic chlorophosphane, which consists essentially of reacting, at a temperature of from about 60° to about 150° C., an organic phosphorus oxychloride of the formula I



(I)

in which
R^1 is chlorine or an aliphatic radical, and
R^2 is an aromatic or heterocyclic radical, with a trialkylphosphane of the formula II

$$(R^3)_3P \quad (II)$$

in which R^3 is an aliphatic radical.

4,656,294

POLYGLYCIDYL ETHERS AND A PROCESS FOR PRODUCING THE SAME

Kaoru Kanayama, Ibaraki, Japan, assignor to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1984, Ser. No. 630,817
Claims priority, application Japan, Jul. 15, 1983, 58-128992; Jun. 11, 1984, 59-119612
Int. Cl.[4] C07D *319/00*
U.S. Cl. 549—335 11 Claims

1. A polyglycidyl ether which is produced by reacting a mixture of 4-oxy-3-methoxybenzaldehyde and 4-oxybenzaldehyde in a molar ratio of 5/95 to 95/5 with pentaerythritol to give a bisphenol having a spiroacetal ring, and further reacting the bisphenol thus produced with epihalohydrin or β-methylepihalohydrin.

4,656,295

METHOD OF ISOLATING MACROCYCLIC POLYETHERS

Norbert Gamon, Emmerting, Fed. Rep. of Germany, assignor to Consortium fur Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 6, 1985, Ser. No. 742,033
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1984, 3435017
Int. Cl.[4] C07D *323/00*
U.S. Cl. 549—352 3 Claims

1. A process for the isolation of macrocyclic polyethers from open-chained polyglycols in a mixture, comprising the step of: extracting macrocyclic polyethers from said mixture by extraction with saturated hydrocarbons in the presence of, at least, 10% by weight ethylene glycol based on the weight of the macrocyclic polyethers and open-chained polyglycols in said mixture.

4,656,296

NOVEL COMPOUNDS AND THEIR USE AS INSOLUBILIZERS FOR BINDERS FOR PAPER COATING COMPOSITIONS

William C. Floyd, Chester, S.C., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Jun. 1, 1983, Ser. No. 500,283
Int. Cl.[4] C07D *319/12*
U.S. Cl. 549—379 5 Claims

1. An insolubilizer for binders for paper coating compositions which comprises the hemiacetal product of the reaction of glyoxal with a polyol containing at least a third hydroxyl group.

4,656,297

COPRODUCTION OF BUTANEDIOL AND TETRAHYDROFURAN AND THEIR SUBSEQUENT SEPARATION FROM THE REACTION PRODUCT MIXTURE

Jay K. Kouba, Downers Grove, and Robert B. Snyder, Naperville, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 710,016, Mar. 11, 1985, Pat. No. 4,613,707. This application Feb. 18, 1986, Ser. No. 830,706
Int. Cl.[4] C07D *307/08*; C07C *27/06*
U.S. Cl. 549—508 13 Claims

1. A process of producing a mixture comprising tetrahydrofuran and 1,4-butanediol wherein the mole ratio of tetrahydrofuran to 1,4-butanediol is from about 0.02 to about 0.50, said process comprising reacting dimethylsuccinate with hydrogen in the presence of a copper chromite catalyst at a temperature from about 170° C. to about 220° C.

5. A process of producing a mixture comprising tetrahydrofuran and 1,4-butanediol wherein the mole ratio of tetrahydrofuran to 1,4-butanediol is greater than 0.50 up to about 10, said process comprising reacting dimethylsuccinate with hydrogen

in the presence of a copper chromite catalyst at a temperature from about 220° to about 350° C.

4,656,298

SUBSTITUTED PROPANE-PHOSPHONOUS ACID COMPOUNDS

John G. Dingwall, St. Pantaleon; Josef Ehrenfreund, Allschwil, both of Switzerland; Roger G. Hall, Chorlton-cum Hardy, and James Jack, Stockport, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

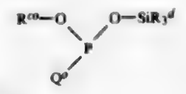
Filed Oct. 15, 1985, Ser. No. 787,300

Claims priority, application United Kingdom, Oct. 12, 1984, 8425872

Int. Cl.⁴ C07F *7/08, 9/48*; A61K *31/13, 31/185*

U.S. Cl. 556—12 **5 Claims**

1. A compound of the formula



VI

wherein Q^o is a protecting group of the formulae

$$-CH(OR^a)(OR^b) \text{ or } -C(C_{1\text{-}4}\text{ alkyl})(OR^a)(OR^b)$$

in which R^a and R^b are each $C_{1\text{-}4}$ alkyl; R^{co} is $C_{1\text{-}4}$ alkyl; and each R^d is independently $C_{1\text{-}6}$ alkyl, R^{co} and R^d being the same or different.

4,656,299

SUBSTITUTED CYCLOPENTADIENYL COBALT COMPLEXES AND SYNTHESIS OF PYRIDINE HOMOLOGUES BY MEANS OF THE COMPLEXES

Chiyuki Fujii, Yamato, and Seiichi Watanabe, Niigata, both of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Chiyoda and Rikagaku Kenkyusyo, Wakoh, both of, Japan

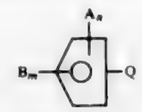
Continuation of Ser. No. 547,712, Nov. 1, 1983, abandoned. This application Jan. 13, 1986, Ser. No. 818,065

Claims priority, application Japan, Nov. 6, 1982, 57-193951; Jan. 9, 1983, 58-101721; Jan. 9, 1983, 58-101722

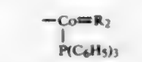
Int. Cl.⁴ C07F *15/06*

U.S. Cl. 556—22 **8 Claims**

1. A complex of an electron attracting group-substituted η^5-cyclopentadienylcobalt comprising a polyene or an acetylene, which is represented by the general formula



wherein A is a C_1–C_4 alkyl group or a phenyl group, n is an integer of from 0 to 2, B is an alkoxycarbonyl group in which the alkoxy moiety contains from 1 to 3 carbon atoms or a C_1–C_4 acyl group, m is an integer of 1 or 2, and Q is $-Co{=}R_1$ where R_1 is a η^4 C_4–C_{12} polyene having from 2 to 4 double bonds, which is unsubstituted or substituted by from 1 to 4 substituents selected from the group consisting of a C_1–C_4 alkyl group, a C_1–C_4 alkoxycarbonyl group, a phenyl group, a cyano group and a cyanomethylene group and which forms a coordinate bond with the cobalt atom at its diene portion, provided R_1 excludes a polyene composed solely of an aromatic ring,



where R_2 is an organic residue of a metallo-cyclic cyclopentadiene composed of two molecules of an acetylene which may be unsubstituted or substituted by from 1 to 4 substituents selected from the group consisting of a C_1–C_4 alkyl group, a C_1–C_4 alkoxycarbonyl group, a phenyl group and a cyano group,



where R_3 is an acetylene which is substituted by one or two substituents selected from the group consisting of a C_1–C_4 alkyl group, a C_1–C_4 alkoxycarbonyl group, a phenyl group and a cyano group and which forms a coordinate bond with the cobalt atom at its triple bond portion.

4,656,300

PROCESS FOR A THERMAL TREATMENT OF A POLYSILAZANE CONTAINING ≡SIH GROUPS AND ≡SI—NH— GROUPS

Jean-Jacques Lebrun, Caluire, and Hugues Porte, Lyons, both of France, assignors to Rhone Poulenc Specialites Chimiques, France

Filed Jan. 25, 1986, Ser. No. 878,261

Claims priority, application France, Jan. 26, 1985, 85 10034

Int. Cl.⁴ C67F *7/10*

U.S. Cl. 556—412 **19 Claims**

1. A process for the treatment of a polysilazane comprising the step of thermally treating at least one polysilazane at a temperature of from about 40° C. to 220° C., the polysilazane comprising on average at least two ≡SiH groups and at least two



groups per molecule.

4,656,301

DIRECT CATALYTIC SYNTHESIS OF DIMETHYLDICHLOROSILANE FROM METHYL CHLORIDE AND SILICON

Christian Prud'Homme, Lyons, and Gerard Simon, Roussillon, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Sep. 28, 1984, Ser. No. 655,729

Claims priority, application France, Sep. 28, 1983, 83 15401

Int. Cl.⁴ C07F *7/16*

U.S. Cl. 556—472 **28 Claims**

1. A process for the direct preparation of dimethyldichlorosilane from methyl chloride and silicon, comprising reacting methyl chloride with a solid contact mass comprising silicon and a catalytically effective amount of a catalyst which includes (1) elemental copper or a copper compound, (2) from about 30 to 1,000 ppm (calculated as metallic tin and/or antimony) of at least one of the metals tin and antimony, or at least one compound of at least one of the metals tin and antimony, and (3) from about 0.05 to 4% by weight (calculated as cesium metal) of cesium or a cesium compound, or admixture of cesium with up to 90% by weight of the admixture of one of the alkali metals lithium, sodium, potassium, rubidium or a compound of said alkali metals, the amounts of said components (2) and (3) being based upon the total weight of said solid contact mass.

4,656,302

TRIS-(3-HYDROXY-4,6-DI-T-ALKYLPHENYL) PHOSPHITES

Hans Dressler, Mouroeville, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1985, Ser. No. 709,658

Int. Cl.⁴ C07F *9/145*

U.S. Cl. 558—194 **1 Claim**

1. The compound tris-(3-hydroxy-4,6-di-t-butylphenyl)-phosphite.

4,656,303

NOVEL RESOLUTION METHOD OF RACEMIC MIXTURE

Masayasu Kuroso, Nagoya; Takafumi Iida, Kasugai; Katsuhiro Hayashi, Kakamigahara, and Kunio Yagi, Nagoya, all of Japan, assignors to Institute of Applied Biochemistry, Gifu, Japan

Filed Oct. 23, 1984, Ser. No. 663,923

Claims priority, application Japan, Jan. 20, 1984, 59-7259

Int. Cl.⁴ C07C *121/43*

U.S. Cl. 558—354 **10 Claims**

1. A method for resolving 2-(RS)-3-cyano-2-hydroxypropyl-trimethyl-ammonium hydroxide, which comprises

(1) mixing the racemic starting material with an optically active acid as a resolving agent in a solvent and concentrating the solution to dryness to form a mixture of two diastereomer salts;

(2) mixing the racemic starting material with another acid which is different from the above resolving agent and concentrating the solution to dryness to form another mixture of two salts;

(3) combining the four salts obtained from said two steps and dissolving the same in a hot resolving solvent;

(4) seeding the resulting solution with crystals of the most crystallizable salt among the four salts;

(5) cooling the above solution and crystallizing the crystals of the desired 2-(R) or 2-(S)-3-cyano-2-hydroxypropyl-trimethylammonium salt through an exchange reaction between counter ions; and

(6) collecting the crystals obtained from step 5 by filtration.

4,656,304

ASPARTAME SYNTHESIS

Ernesto Oppici, Milan; Franco Dallatomasina, Segrate, and Pietro Giardino, Milan, all of Italy, assignors to Farmaitalia Carlo Erba S.p.A., Milan, Italy

Filed May 25, 1984, Ser. No. 614,150

Claims priority, application United Kingdom, May 31, 1983, 8314907

Int. Cl.⁴ C07C *101/02*

U.S. Cl. 560—41 **6 Claims**

1. In a process for the purification of N-L-α-aspartyl-L-phenylalanine L-methyl ester, from a mixture of α- and β-isomers obtained by reacting N-protected-L-aspartic anhydride with L-phenylalanine methyl ester in a mixture of either ethyl acetate or dichloroethane and acetic acid, the improvement which comprises treating said dissolved mixture with 85% phosphoric acid and a lower alkyl alcohol, thereby precipitating the sparingly soluble aspartame phosphate, collecting the same by filtration, dissolving the aspartame phosphate in water and subsequently neutralizing the aspartame phosphate with an inorganic base, thereby generating the purified aspartame in a yield of about 73–90% based on the N-protected aspartame, and wherein the amount of phosphoric acid used is from 1.2 to 5 moles per mole of N-protected aspartame to be deformylated, and wherein the reaction is carried out at a temperature from room temperature to 60° C., for a period of from 4 to 12 hours.

4,656,305

CHALCONE DERIVATIVES

Anthony E. Vanstone, Whitton; Graham K. Maile, and Lynn K. Nalbantoglu, both of London, all of England, assignors to Biorex Laboratories, Limited, London, England

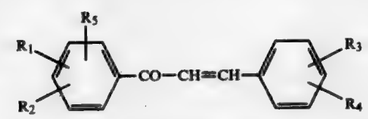
Filed Oct. 18, 1985, Ser. No. 789,277

Claims priority, application United Kingdom, Oct. 19, 1984, 8426424

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—54 **13 Claims**

1. A chalcone derivative of the general formulae:



(IIa)

wherein R_1 is a carboxyalkoxy radical, R_2 is an unsaturated, straight-chained or branched aliphatic hydrocarbonyloxy radical, R_3 is a hydrogen atom, a hydroxyl group or an alkoxy radical, R_4 is a carboxyalkoxy or carboxyalkylcarbonyloxyalkyl radical or a carboxylic acid group and R_5 is a hydrogen or halogen atom; and the nontoxic inorganic and organic salts of those compounds containing at least one carboxylic acid or sulphonic acid group.

4,656,306

PREPARATION PROCESS OF CINNAMATE ESTER

Usaji Takaki, Fujisawa; Isamu Sudo, and Toshio Matsuhisa, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 2, 1985, Ser. No. 803,162

Claims priority, application Japan, Dec. 10, 1984, 59-259253

Int. Cl.⁴ C07C *69/76, 51/14*

U.S. Cl. 560—104 **5 Claims**

1. Process for preparing a corresponding cinnamate ester by the reaction of a styrene compound, carbon monoxide, an alcohol and oxygen by using a main catalyst composed of (a) a platinum group metal or a compound thereof and (b) a copper or iron compound and in the presence of a promoter, wherein the concentration of the metal of components (a) is controlled at 5.5×10^{-4} gram atom/liter or less in the liquid reaction mixture and further the ratio of components (b) to the metal of components (a) is maintained at 50 moles/gram atom or greater so as to carry out the reaction, said promoter being a compound of at least one metal selected from Groups 4A, 7A, 8A (the iron group only), 1B and 2B of the periodic table published by International Union of Pure and Applied Chemistry, or an organic acid salt of aluminum, or a hydroxide, carbonate or organic acid salt of an alkali metal or alkaline earth metal, or a tertiary amine.

4,656,307

DERIVATIVE OF BRENDANE AND PROCESS FOR PREPARING THE SAME

Yoshihiro Kobori, Fujisawa, and Tetsuya Takezono, Yokohama, both of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1985, Ser. No. 755,241

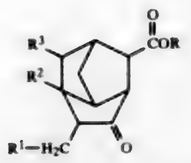
Claims priority, application Japan, Aug. 3, 1984, 59-162861

Int. Cl.⁴ C07C *69/757, 61/12*

U.S. Cl. 560—117 **1 Claim**

1. A derivative of brendane represented by the following formula of:

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[I]

wherein R is a hydrogen atom or a hydrocarbon group selected from the group consisting of methyl, ethyl, n-propyl, isopropyl, sec-butyl, n-pentyl, n-hexyl and cyclohexyl groups, and R^1 to R^3 each represent a hydrogen atom or a methyl group.

4,656,308

ETHERS OF ACRYLAMIDOGLYCOLIC ACID AND ESTERS

Peter J. Schirmann, Fairfield; Werner J. Blank, Wilton, and Girish G. Parekh, all of Fairfield, Conn.

Continuation of Ser. No. 556,077, Dec. 1, 1983, abandoned, which is a continuation of Ser. No. 346,329, Feb. 5, 1982, abandoned, which is a continuation of Ser. No. 148,105, May 9, 1980, abandoned, which is a division of Ser. No. 43,522, May 29, 1979, abandoned. This application Sep. 5, 1985, Ser. No. 772,592

Int. Cl.⁴ C07C 103/66

U.S. Cl. 560—170 3 Claims

1. An alkyl acrylamidoglycolate alkyl ether wherein the alkyl groups are the same or different and have 1–8 carbon atoms.

4,656,309

PREPARATION OF ALPHA-PIVALOYL-SUBSTITUTED ACETIC ACID ESTERS

Roger A. Sheldon, and Hendricus J. Heijnen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

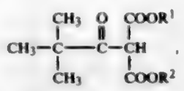
Filed Oct. 29, 1981, Ser. No. 316,200

Claims priority, application United Kingdom, Nov. 7, 1980, 8035846

Int. Cl.⁴ C07C 69/716

U.S. Cl. 560—174 10 Claims

1. A process for the preparation of alpha-pivaloyl-substituted acetic acid esters, which comprises steps for (a) reacting at a temperature in the range from about 15° to 100° C. a pivaloyl malonic acid ester of the formula



where R^1 and R^2 each individually represents an alkyl, aryl, alkaryl, or aralkyl group optionally substituted by one or more halogen atoms or alkoxy groups, with a base selected from the group consisting of alkali metal alkoxides and compounds of the formula MXY, wherein M is alkaline earth metal, X is an alkoxy group, and Y is either an alkoxy group or a halogen atom, and (b) acidifying the resulting reaction mixture.

4,656,310

SUBSTITUTED TRIARYLPHOSPHONIUM DERIVATIVES

Werner Boling, Basel; Rudolf Ruegg, Bottmingen, and Gottlieb Ryser, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

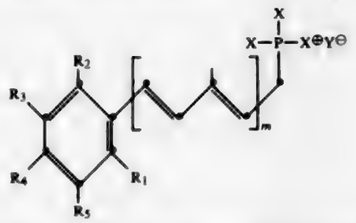
Division of Ser. No. 417,013, Sep. 13, 1982, Pat. No. 4,532,555, which is a division of Ser. No. 173,517, Jul. 30, 1980, Pat. No. 4,319,048, which is a division of Ser. No. 37,270, May 9, 1979, Pat. No. 4,224,244, which is a division of Ser. No. 903,438, May 8, 1978, abandoned, which is a division of Ser. No. 714,170, Aug. 13, 1976, Pat. No. 4,105,681, which is a continuation-in-part of Ser. No. 601,148, Aug. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 454,007, Mar. 22, 1974, abandoned. This application May 13, 1985, Ser. No. 733,443

Claims priority, application Switzerland, Mar. 30, 1973, 4603/73; Feb. 7, 1975, 1547/75

Int. Cl.⁴ C07F 9/54

U.S. Cl. 568—9 6 Claims

1. A compound of the formula:



wherein m is an integer from 0 to 1; R_1 and R_2 are lower alkyl; R_3 is halogen, amino, lower alkylamino, or lower alkanoylamino; R_4 is hydrogen, lower alkyl, lower alkenyl, lower alkoxy, lower alkenyloxy, nitro, amino, lower alkylamino, or lower alkanoylamino; and R_5 is hydrogen, halogen, lower alkyl, lower alkenyl, lower alkoxy, lower alkenyloxy, nitro, amino, lower alkylamino, or lower alkanoylamino; with the proviso that when R_3 or R_5 is halogen, R_4 is other than a lower alkoxy; X is aryl; and Y is an anion of an inorganic or organic acid.

4,656,311

PROCESS FOR PREPARING HYDROXYLATED AROMATIC COMPOUNDS

Michel Desbois, Rillieux La Pape, France, assignor to Rhone-Poulenc Specialites Chimiques, France

Filed Jul. 21, 1986, Ser. No. 887,565

Claims priority, application France, Jul. 26, 1985, 85 11437

Int. Cl.⁴ C07C 39/24

U.S. Cl. 568—775 10 Claims

1. A process for preparing a hydroxylated aromatic compound of the formula (I)

$$Y_n—Ar—(OH)_p \quad (I)$$

in which Y is selected from the group consisting of trifluoromethyl, trifluoromethoxy and trifluoromethylthio radicals, Ar is a mono- or polycyclic aromatic radical which may contain at least one substituent in addition to Y and (OH) and wherein said additional substituent may link said Y moiety to said Ar moiety, n is an integer equal to 0, 1 or 2, and p is an integer equal to 1 or 2, comprising the step of reacting a fluoroformate or chloroformate of the formula (II)

$$Z_n—Ar—(OCOX)_p \quad (II)$$

in which p and n have the same meaning as above, Z is selected from the group consisting of trihalomethyl, trihalomethoxy and trihalomethylthio radicals, Ar is a mono- or polycyclic aromatic radical which may contain at least one substituent other than Z and (OCOX) and wherein said other substituent may link said Ar moiety to said Z moiety, and X denotes chlorine or fluorine, with liquid hydrofluoric acid.

4,656,312

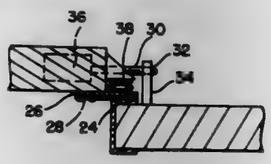
COPLANAR RF DOOR SEAL

Orville B. Mallott, 30430 8th S.W., Federal Way, Wash. 98003

Filed Jun. 29, 1984, Ser. No. 626,331

Int. Cl.⁴ H05K 9/00

U.S. Cl. 174—35 GC 1 Claim



1. A door leaf and frame assembly for a room that is shielded against leakage of electromagnetic radiation when the door leaf is in its closed position comprising:

a. a rectangular door leaf;

b. a door frame on which said door leaf is mounted, the door frame on one side of the door leaf and defining a rectangular passage opening; the door frame having a sealing surface portion which opposes the borders of said door leaf all the way around the passage opening;

c. a first series of rectangular cantilevered flexible metal sheets consisting of at least four coplanar individual metal sheets, the first series of metal sheets located at the borders of said door leaf all the way around said door leaf with a vertically aligned sheet adjacent to a horizontally aligned sheet and forming a seam therebetween in each of the four corners of the border of said door leaf, the first series of flexible metal sheets closest to said door frame and capable of aligning with the sealing surface portion of said door frame when said door leaf is closed;

d. a second series of at least four rectangular coplanar cantilevered flexible metal sheets, the second series of flexible metal sheets shaped as said first series of flexible metal sheets, the second series of flexible metal sheets adjacent to said first series of flexible metal sheets and so arranged as to overlap the seams made by said first series of flexible metal sheets, including any horizontal seams of said first series of flexible metal sheets being overlapped by vertical metal sheets of said second series of flexible metal sheets at the corners of said door frame and said door leaf, and any vertical seams of said first series of flexible metal sheets being overlapped by horizontal sheets of said second series of flexible metal sheets at the corners of said door frame and said door leaf to minimize electromagnetic leakage through said door leaf and said door frame when said door leaf is closed; and

e. holding means to hold said series of flexible metal sheets in contact with the sealing surface portion of said door frame when said door leaf is closed.

4,656,313

EMI/EMP ELECTRICAL CABLE PENETRATION SEAL

Rogers A. Moore, Afton; Joseph R. O'Brien, Tulsa, and David O. Brown, Claremore, all of Okla., assignors to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 563,188, Dec. 19, 1983, abandoned. This application Jan. 23, 1986, Ser. No. 824,293

Int. Cl.⁴ H05K 9/00

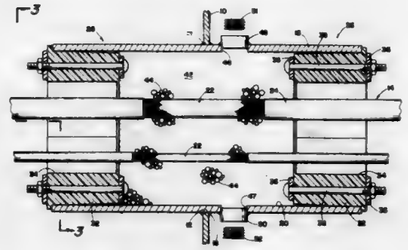
U.S. Cl. 174—35 R 7 Claims

1. For use in providing transit of a cable or cables through an opening in a bulkhead, each of the cables having sheathing including an electrically conductive shield which is exposed at least in the area where the cable passes through the bulkhead, the bulkhead including an electrically conductive shield for the environment encompassed by the bulkhead, a system for retarding the transmission of electromagnetic interferences (EMI) and electromagnetic pulses (EMP) through the opening comprising:

an integral housing of uniform internal cross-sectional configuration and of conductive material receivable in the opening in a bulkhead, the housing having a cable receiving passageway therethrough;

means for electrically engaging said housing with a bulkhead electrically conductive shield around the full external perimeter of said housing;

means of removably and sealably closing each end of said cable receiving passageway providing a cavity area within said housing passageway intermediate the closed ends



providing means for receiving at least one shielded cable therethrough having at least a portion of its conductive shield exposed to the interior of the cavity area;

electrically conductive material selected from the group consisting of electrically conductive powder, granules, pellets, grease, liquid or a mixture thereof; and

said electrically conductive material filling said housing cavity area and electrically communicating the conductive shield of each cable received therein with said housing wherein said housing has at least one opening therethrough intersecting said passageway providing means for depositing said electrically conductive material therein.

4,656,314

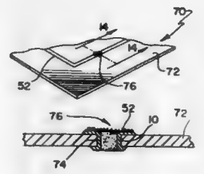
PRINTED CIRCUIT

David Durand, Portsmouth, R.I., assignor to Industrial Science Associates, East Providence, R.I.

Division of Ser. No. 508,000, Jun. 27, 1983, abandoned, which is a division of Ser. No. 346,941, Feb. 8, 1982, Pat. No. 4,401,686. This application Oct. 21, 1985, Ser. No. 789,713

Int. Cl.⁴ H05K 3/14

U.S. Cl. 174—68.5 24 Claims



1. An electrically conductive circuit board comprising:

an at least partially translucent substrate;

a first layer of substantially metal-free hardened material comprising an ultraviolet reactive ink bonded to portions of said substrate; and

a second, electrically conductive layer formed on said first layer by depositing metallic particles onto said first layer subsequent to partial curing and prior to full curing of said material.

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4,656,315
CONNECTOR ASSEMBLY WITH RESINOUS MATERIAL SECURING ELECTRICAL CABLE

Peter Rathmachers, Blieskastel, and Bernd Donner, Saarbrücken, both of Fed. Rep. of Germany, assignors to Schaller Automation Industrielle Automationstechnik KG, Lieskastel, Fed. Rep. of Germany

Filed May 23, 1983, Ser. No. 497,015
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 8217204[U]
Int. Cl.⁴ H02G *15/013*
U.S. Cl. 194—74 R 14 Claims

1. In a connector assembly for securing, to the housing of an electrical device, an electrical cable having a cable jacket, the connector assembly including resinous material and a portion of the cable imbedded in the resinous material at least for protecting the electrical device against external influences such as moisture,

the improvement wherein the cable jacket is provided at the imbedded portion of the electrical cable with an annular groove filled with the resinous material, said cable jacket having an annular surface defining at least a portion of said groove, said annular surface having a rough texture.

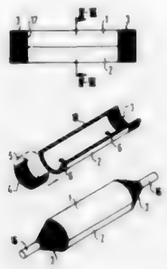
12. In a connector assembly for securing, to the housing of an electrical device, an electrical cable having a cable jacket, the connector assembly including resinous material and a portion of the cable imbedded in the resinous material at least for protecting the eletrical device against external influences such as moisture,

the improvement wherein the cable jacket is provided at the imbedded portion of the electrical cable with an annular groove filled with the resinous material, said groove having, in a plane oriented parallel to the longitudinal dimension of said cable, a cross section substantially in the shape of a circular segment, said groove being defined by an annular surface having in cross section a multiplicity of teeth.

4,656,316
SPLICE PROTECTIVE INSERT FOR CABLE SLEEVES

Hans-Juergen Meltsch, Schwerte-Ergste, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 23, 1985, Ser. No. 790,554
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1984, 3441311
Int. Cl.⁴ H02G *15/06*
U.S. Cl. 174—92 14 Claims



1. A cable splice protective insert for cable sleeves of shrinkable material comprising:

A central portion having first and second cylindrical halfshells of rigid supportive material including elements for joining said halfshells;

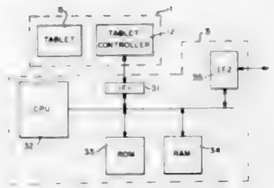
deformable side-part means for diametric reduction bonded to at least one of said halfshells at the cable introduction ends of the open faces of said cylindrical halfshells; such that said side-part means disposed on said halfshell includes a corrugation in the longitudinal direction of said cable splice protective insert; and

permeation barrier means along the length of said halfshells.

4,656,317
HANDWRITTEN CHARACTER INPUT DEVICE

Shinji Tsugei, and Shigeki Iguchi, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1985, Ser. No. 697,223
Claims priority, application Japan, Feb. 8, 1984, 59-16943[U]
Int. Cl.⁴ G06K *9/10*
U.S. Cl. 178—18 3 Claims



1. A device for input of handwritten information comprising

an input means which includes a tablet and a controller means for detecting and outputting information handwritten in specified areas on said tablet,

itemized memory means having memory areas for storing information according to categories,

a loading means for causing output information from said input means to be stored in said memory areas according to categories of said output information, said loading means including means to add numbers sequentially entered through said input means,

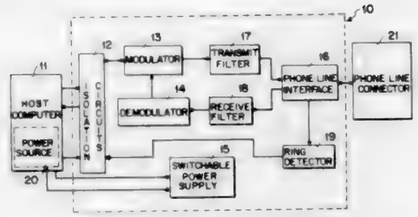
a formating sheet adapted to be placed on said tablet and to define said specified areas thereon, and

a pen which contains an exciting coil and is adapted to be used for writing information on said tablet, said tablet being of an electromagnetic induction type containing loop coils.

4,656,318
MODEM WITH POWER-OFF RING DETECTION

Harold B. Noyes, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 9, 1985, Ser. No. 732,525
Int. Cl.⁴ H04M *11/00*
U.S. Cl. 379—93 4 Claims



1. A modem for modulating digital data from a computer for transmission over telephone lines, demodulating data received over the telephone lines for input to the computer, and monitoring the telephone lines to detect an incoming call, using substantially no power from the host computer while monitoring the telephone lines to detect an incoming call, said modem comprising:

modulating and demodulating circuits;

a switchable power supply capable of being remotely switched on and off by a signal from the computer, said switchable power supply, when switched on, drawing power from the computer's power source for the modem and, when switched off, drawing substantially no power from the computer's power source;

isolator circuits for coupling the modem to the computer to permit exchange of command and data signals between the computer and the modem, and for preventing power leakage from the computer to the modem when the switchable power supply is switched off;

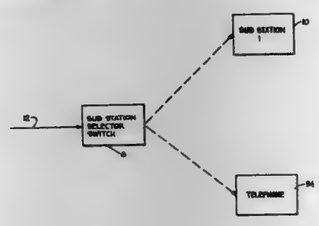
a telephone interface circuit for coupling the modulating and demodulating circuits to the telephone lines to permit exchange of data signals between the telephone lines and the modulating and demodulating circuits, said interface circuit including means for isolating the modulating and demodulating circuits from the telephone lines; and

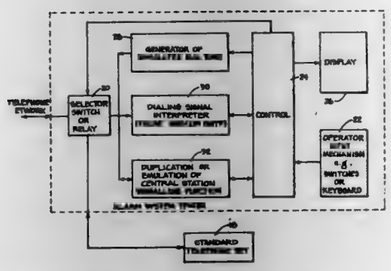
a ring detector circuit connected to the telephone interface circuit and responsive to the ring signal of an incoming telephone call to produce an output signal for indicating the presence of the incoming call to the computer, said ring detector circuit being operable for detecting incoming calls, but drawing substantially no power from the computer's power source, while the switchable power supply is switched off.

4,656,319
ALARM SYSTEM TESTER

Theodore Bially, Sudbury, Mass., assignor to Lifeline Systems, Inc., Watertown, Mass.

Filed May 21, 1985, Ser. No. 736,557
Int. Cl.⁴ H04M *11/04, 1/24*
U.S. Cl. 379—29 12 Claims





9. Method for testing an alarm system comprising the steps of:

establishing a telephone communication between an alarm system tester and a selected subscriber station;

activating an alarm system tester for receipt of signals on said telephone network;

activating an alarm at a selected subscriber station;

producing a first control signal at said alarm system tester and applying said first control signal to said telephone network;

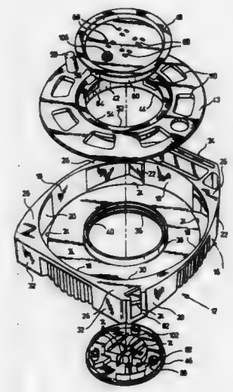
receiving said first control signal at said subscriber station and in response thereto producing signals representative of a predetermined telephone number and applying such signals to said telephone network;

receiving said telephone signals from said subscriber station representative of said predetermined telephone number at said alarm system tester and producing output signals representative of said received signals.

4,656,320
CORD REEL

William H. Maddock, Markham, Canada, assignor to Noma Inc., Scarborough, Canada

Filed Feb. 21, 1984, Ser. No. 581,731
Int. Cl.⁴ H02G *11/02*
U.S. Cl. 191—12.4 8 Claims



1. An extension cord reel comprising:

a housing;

a hub mounted from said housing for rotation about its axis;

an extension cord reelable on said hub for storage thereon;

said cord being operable when at least partially stored on said hub;

first and second cover plates closing the axial ends of said hub, at least one said cover plate having a skirt wall depending therefrom, said cover plates and skirt wall together defining a compartment within said hub;

a convenience receptacle mounted from the first said cover plate within said compartment, said convenience receptacle including electrodes electrically connected to said cord, and supporting structure for retaining said electrodes in position, said supporting structure being essentially open at the side thereof facing said second cover plate.

4,656,321
THREE POSITION SWITCH AND SWITCHING DEVICE FOR A MAGNETIC-TAPE-CASSETTE APPARATUS

Henricus M. Ruyten, Wetzlar, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1985, Ser. No. 692,002
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1984, 3401645
Int. Cl.⁴ H01H *9/20*
U.S. Cl. 200—50 C 15 Claims

10. An electrical switch comprising:

a housing,

at least first and second switching contacts mounted to the housing,

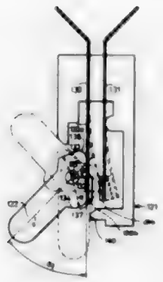
a switching lever mounted to the housing for pivoting about a pivotal axis between a center off position, a stable closed

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position and an unstable closed position, said closed positions being on respective opposite sides of said center position,

means for establishing electrical connection between said first and second contacts in response solely to the position of the switching lever, arranged such that in the center position said contacts are disconnected from each other, and in said stable closed position electrical connection is established between said contacts, and

means for applying a spring biasing force to said lever in a direction dependent on the lever position, arranged such that during movement of the lever from the center to the stable closed position the lever is first biased toward the center position, and the lever then passes a dead-center position and thereafter is biased toward the stable closed position,



characterized in that said means for establishing includes a first nose and a second nose, said noses forming parts of said lever,

in said lever dead-center position said direction of the spring biasing force is aligned with said first nose and said pivotal axis,

when the lever is between said center position and said unstable closed position, and while said lever is in said unstable closed position, said means for applying applies biasing force via said second nose to bias the lever toward the center off position,

said means for establishing establishes direct electrical connection between said first and second contacts when the lever is in said unstable closed position, and

said switch further comprises means for preventing pivoting of said lever past said unstable closed position.

4,656,322

ELECTRICAL SWITCHING DEVICE

Charles R. Patoa, New Brighton, and Lawrence B. St. Clair, Beaver, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1986, Ser. No. 817,361
Int. Cl.⁴ H01H *9/20*
U.S. Cl. 200—50 A **6 Claims**

1. An electrical switching device having an arrangement to minimize inadvertent turning ON and comprising:

an enclosure containing a switch having a switch handle;

a rotatable switch shaft coupled to the switch handle with an outer shaft portion extending outside the enclosure;

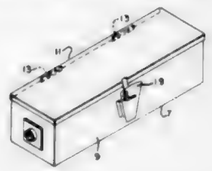
an operating handle joined to the outer portion of the shaft for manual rotation of the shaft;

a guard for the handle disposed over a first portion of the handle and attached to the enclosure, the operating handle also having a second portion extending out from the guard to enable manual operation of the handle;

an operating handle slide slidably mounted and retained on the handle facing the guard, the interlock handle slide having a tab extending away from the handle and extending through an opening in the handle guard;

the handle guard having an opening including a generally arcuate configuration with a first arcuate slot portion on a first radius in relation to the shaft and a second arcuate slot portion on a second radius less than the first radius in relation to the shaft with a shoulder portion interconnecting the first and second arcuate slot portions;

slide spring means interconnecting the handle and the interlock handle slide for normally, in the absence of manual



force, biasing the slide in a direction toward one of the first and second arcuate slot portions;

the switch having the OFF position when the operating handle is turned so that the tab of the interlock handle slide is in one of the first arcuate slot portions of the handle guard opening; and

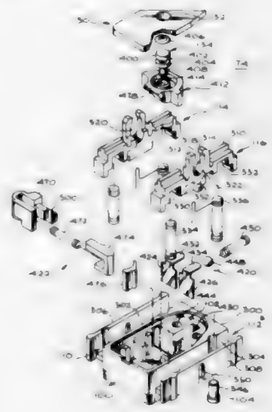
the switch having the ON position when the operating handle is turned so the tab of the interlock handle slide is in the other of the second arcuate slot portion of the handle guard opening.

4,656,323

PUSH BUTTON ELECTRIC SWITCH

Mark S. Schlosser, Seattle, Wash., assignor to Bell Industries, Inc., Redmond, Wash.

Filed May 13, 1985, Ser. No. 733,709
Int. Cl.⁴ H01H *13/26, 5/00*
U.S. Cl. 200—68.1 **5 Claims**



1. A low profile push button electric switch assembly comprising:

first and second conductive contacts;

an actuator mounted for reciprocal linear displacement along a first axis from a quiescent position through an active position to an end position;

means responsive to said actuator reaching said active position for electrically connecting said first and second contacts; and

tactile feedback means coupled to said actuator for imposing on said actuator an increasing reaction force for a first increment of actuator displacement between said quiescent position and said active position and a decreasing reaction force for a second increment of actuator displacement between said active position and said end position;

said tactile feedback means including:

a rocker arm supported for pivotal movement between first and second states about a rocker axis extending parallel to said first axis;

a pusher member bearing against said rocker arm; and

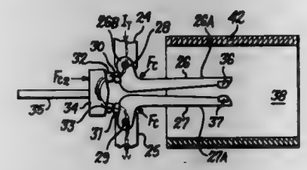
means coupling said actuator to said pusher member for forcing said rocker arm to said first state during said first increment of actuator displacement and to said second state during said second increment of actuator displacement.

4,656,324

CURRENT LIMITING CIRCUIT INTERRUPTER

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Mar. 14, 1986, Ser. No. 839,491
Int. Cl.⁴ H01H *33/12, 33/18*
U.S. Cl. 200—146 R **10 Claims**



1. A current limiting circuit interrupter comprising:

a pair of movable contact arms, each having a main contact near one end and an arcing contact at an opposite end;

a bridging contact carrier having a pair of bridging contacts oppositely adjacent said main contacts; and

contact bias means operatively connected with said bridging contact carrier to hold said bridging contacts and said main contacts in electrical connection while holding said arcing contacts out of electrical connection when said bridging contact carrier is in a first position and for moving said arcing contacts into electrical connection when said contact carrier is in a second position and for separating said bridging contacts from said main contacts when said contact carrier is in a third position.

4,656,325

MICROWAVE HEATING PACKAGE AND METHOD

Richard M. Keefer, 630 Bolivar Street, Peterborough, Ontario, Canada (K9J 4S2)

Filed Oct. 19, 1984, Ser. No. 662,992
Claims priority, application Canada, Feb. 15, 1984, 447471
Int. Cl.⁴ H05B *6/64*
U.S. Cl. 219—10.55 E **25 Claims**



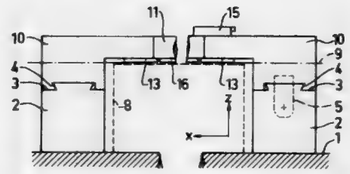
1. A package containing an article of foodstuff, said foodstuff having a top surface, said foodstuff being capable of being heated in a microwave oven which produces microwave energy at a frequency of 2450 MHz., comprising a foodstuff holding pan, said pan having a bottom, side walls and an open top and a non-relecting energy cover for said pan, said cover having a dielectric constant greater than 10 and being spaced from the top surface of the foodstuff a distance of about 0.8 to 2 cm., so that the dielectric constant of the cover and the spacing of the cover above the foodstuff permit the passage of said microwave energy through the cover into the package while interfering with reflected microwave energy within the package, thereby retaining and concentrating the microwave energy within the package.

4,656,326

REFERENCE SYSTEM AT A WIRE ELECTRIC DISCHARGE MACHINE

Börje K. H. Ramsbro, Djursholm, Sweden, assignor to 3R Management AB, Vallingby, Sweden

Filed Mar. 6, 1985, Ser. No. 708,820
Claims priority, application Sweden, Mar. 23, 1984, 8401635
Int. Cl.⁴ B23H *7/02;* B23Q *3/02*
U.S. Cl. 219—69 R **9 Claims**



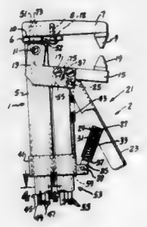
1. A reference system for fixing a workpiece to a wire electric discharge machine, said electric discharge machine including a work table and a vertical working range, said reference system comprising base reference elements defining a base reference system unambiguously related to a coordinate system of the machine and mounted on the work table thereby forming a base reference surface, said base reference surface defining a plane located on a level above the work table below the vertical working range, and comprising positive stops to form references in the x and y coordinate directions of the plane, said reference system further comprising a secondary reference system comprising fixed separate reference parts for mounting on the base reference elements to define a fixed predetermined level within the vertical working range.

4,656,327

SPOT WELDER WITH ELECTRODE CLAMP

Paul A. Wilcox, 2209 S. 109th St., West Allis, Wis. 53227

Filed Aug. 23, 1985, Ser. No. 768,844
Int. Cl.⁴ B23K *11/10*
U.S. Cl. 219—86.21 **5 Claims**



1. A hand-held electric welding assembly for welding work pieces comprising:

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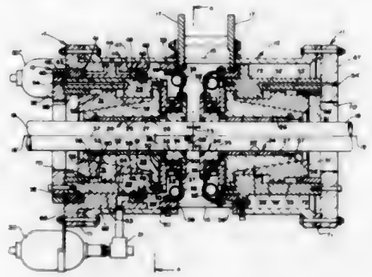
a. a hollow frame member having first and second ends;
b. a fixed jaw having a first end fastened at generally right angles to the first end of the hollow frame member and a second end bearing a first electrode;
c. a sleeve fastened to the second end of the hollow frame member;
d. an arm pivotally attached to the first end of the hollow frame member, the arm bearing a second electrode;
e. toggle means connected to the arm and to the sleeve for pivoting the arm to swing the second electrode into and out of operational engagement with the work piece and the first electrode;
f. a first multi-conductor insulated electrical cable affixed to the fixed jaw first end and passing through the hollow frame member; and
g. a second multi-conductor insulated electrical cable affixed to the arm and lying parallel to and adjacent the hollow frame member and passing loosely through the sleeve,
so that moving the arm by the toggle means causes the second electrical cable to slide relative to the first electrical cable.

4,656,328

WELDING FIXTURE

James M. Weldon; Theodore A. Anastoos; Raymond C. Zowarka, and William F. Weldon, all of Austin, Tex., assignors to Parker Kinetic Designs, Inc., Austin, Tex.

Filed Nov. 26, 1984, Ser. No. 674,843
Int. Cl.⁴ B23K *11/02, 11/26*
U.S. Cl. 219—104 **36 Claims**



1. A welding fixture for butt welding a first workpiece to a second workpiece, comprising:
a main frame; a first gripping member for engaging and releasably holding a first workpiece; first support means affixed to said main frame for supporting said first gripping member;
a second gripping member for engaging and releasably holding a second workpiece; second support mens movably mounted respective to said main frame for supporting said second gripping member and for moving said second gripping member towards said first gripping member;
first and second electrical contact means for releasably engaging a first and second workpiece, means providing a source of currect for said first and second contact means; means by which said first electrical contact means is mounted to said first support means, means by which said second electrical contact means is mounted to said second support means;
said first and said second gripping members, respectively, each include a plurality of slip segments mounted in radially spaced relationship respective to a first and second workpiece, respectively, to be received therewithin; said slip segments of each gripping member can move towards one another and into engagement with a workpiece that may be positioned therewithin;
whereby, spaced first and second workpieces, respectively, can be received within said first and second gripping members, respectively, said electrical contact means moved into engagement with the workpieces so that current flows therethrough, the first and second support means moved towards one another to thereby move the workpieces into abutting engagement, and weld the workpieces together.

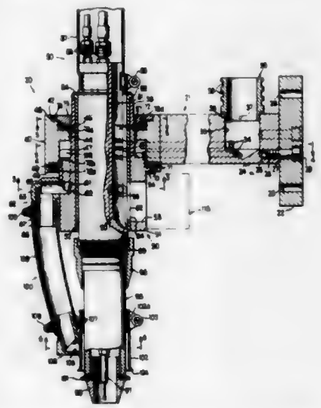
36. Method of butt welding workpieces together, comprising the steps of:
(1) arranging the workpieces in spaced, confronting relationship;
(2) engaging each workpiece with a slip means;
(3) engaging each workpiece with an electrical contact means;
(4) providing the electrical contact means with a plurality of individual contact areas to form an effective plurality of leading edge contacts respective to the workpiece;
(5) moving one of the slip means towards the other slip means to cause the confronting workpieces to abuttingly engage one another, supplying current through the contact means to allow the workpieces to become welded together;
(6) carrying out step (5) by initially bringing the workpieces into abutting relationship with a relatively small force to enable a large I^2R drop to occur across the confronting faces of the workpieces, and thereby heat the workpieces; and, thereafter, moving the slip means with a relatively large force to forge the heated workpieces together;
(7) discontinuing the current flow through the contact means, releasing the butt welded workpieces from the contact means and the slip means, and removing the butt welded workpieces from the contact means and slip means.

4,656,329

ROTATABLE MOUNT PROVIDING COMMUNICATION BETWEEN MOUNTED DEVICE AND ASSOCIATED UTILITIES

Delford A. Moerke, 1020 Shady Oak Dr., North Mankato, Minn. 56001

Filed Sep. 10, 1984, Ser. No. 648,965
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—136 **19 Claims**



13. A rotatable docking mount for arc welding apparatus adapted to be supplied with utilities such as welding potential, arc shielding gas, cooling fluid and consumable wire electrode, said docking mount comprising in combination: a support having a cylindrical aperture therethrough, a cylindrical housing coaxially receivable in said aperture in a mounting position

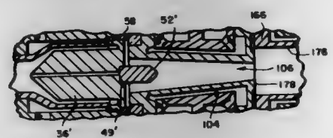
for rotation with respect to said support, means retaining said housing against axial movement from said mounting position with respect to said support, said housing having an axial bore therethrough, a docking body freely receivable axially in said bore and having utilities passages therethrough, said docking body being provided at one end thereof with connecting means communicating with said passages and adapted for connection to associated utilities delivery means, said docking body being provided at the other end thereof with coupling means for accommodating quick manual mounting and demounting of associated welding apparatus and providing the associated utilities thereto.

4,656,330

PLASMA JET TORCH HAVING CONVERGING ANODE AND GAS VORTEX IN ITS NOZZLE FOR ARC CONSTRICTION

John W. Poole, Bow, Concord, N.H., assignor to Plasma Materials, Manchester, N.H.

Continuation-in-part of Ser. No. 626,454, Jun. 29, 1984, Pat. No. 4,570,048. This application Oct. 10, 1985, Ser. No. 786,210
Int. Cl.⁴ B23K *15/00*
U.S. Cl. 219—121 PR **9 Claims**



1. A plasma jet torch comprising a first nozzle-type anode having an entrance end and an exit end and an axial bore which converges uniformly from said entrance end to said exit end, a second nozzle-type anode positioned collinearly to the first anode at said exit end thereof, said second anode having a bore which is appreciably larger in diameter than said first anode bore at said exit end so that there is a sharp knife-edge transition between the two bores, said anode bores forming an arc passageway having a longitudinal axis, a cathode mounted on said axis and having a portion extending adjacent to said first anode entrance end, means for introducing a strong swirl of working gas into said arc passageway at a location therein adjacent to said first anode entrance end, the general plane of which swirl is perpendicular to said axis and means for applying a direct current voltage between said cathode and said second anode so that said torch can operate in a nontransferred arc mode.

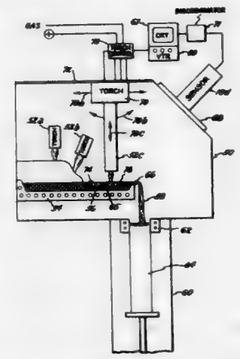
4,656,331

INFRARED SENSOR FOR THE CONTROL OF PLASMA-JET SPRAY COATING AND ELECTRIC ARE HEATING PROCESSES

Robert D. Lillquist, Schenectady, N.Y.; Richard G. Menzies, Wyoming, and Richard W. Lober, Cincinnati, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 442,542, Nov. 18, 1982, which is a continuation-in-part of Ser. No. 371,704, Apr. 26, 1982, Pat. No. 4,484,059. This application Mar. 11, 1985, Ser. No. 710,765
Int. Cl.⁴ B23K *15/00*
U.S. Cl. 219—121 PL **8 Claims**

1. A plasma spray jet apparatus for coating a specimen, said apparatus comprising:
a plasma spray gun having a nozzle through which particles and gas are ejected;
a vacuum housing in which said specimen and at least said spray gun nozzle are disposed; and
focussing means for receiving infrared radiation from the vicinity of said plasma spray jet;
infrared detection means for producing electrical signals in response to the intensity of infrared radiation impinging upon said detection means;
filter means disposed in the optical path between said detection means and said focussing means, said filter selectively



passing infrared radiation having a wavelength greater than about 3 microns; and
means to control said spray gun in response to said electrical signals from said infrared detection means.

4,656,332

USE OF THE LASER WELDING PROCESS FOR AND METHOD OF MANUFACTURING OF WELDED CONSTRUCTION PARTS FOR EXHAUST INSTALLATIONS

Heinz Gross, Dortmund; Manfred Gerber; Rolf Krebs, both of Hamm, and Friedhelm Retzlaff, Kamen-Methler, all of Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Eberhardstrasse, Fed. Rep. of Germany

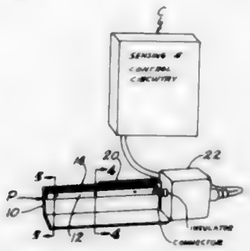
Filed Dec. 2, 1985, Ser. No. 803,399
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1984, 3446280
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 LD **6 Claims**



1. Use of the laser welding process for manufacturing tubular construction units with a straight bead for exhaust installations with a welding seam 0.8 times smaller and a weld expansion 0.2 times smaller than the thickness of the tube wall, which construction units are subsequently subjected to critical changes of shape and which are corrosion- and heat-proof, said units being manufactured at a welding speed greater than 5 m/min, with the band edges being pressed together at the maximum 0.1N/mm^2, and austenitic or ferritic CR-steel being used as working material.

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4,656,333
THIN PROFILE SNOW, SLEET AND MOISTURE SENSING DETECTOR
John P. Murphy, 37508 Grove Ave., Willoughby, Ohio 44092
Filed Dec. 28, 1984, Ser. No. 687,123
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—209 17 Claims



1. A moisture sensing probe comprising; a pair of elongated electrodes disposed in spaced generally parallel relation and spaced apart horizontally a very small predetermined distance to detect a drop of water or minute amount of moisture bridging the gap therebetween, said electrodes being positioned in side-by-side generally parallel relation whereby each electrode has a moisture sensing edge exposed upwardly, said probe including means for supporting said probe on a support and positioning said edges above the level of such support, said edges in conjunction with said means providing a minimum and very narrow top exposed surface of the probe without substantial adjacent upwardly facing supporting areas, to attempt to prevent debris from accumulating on top of the probe and between said electrodes, and blinding the probe.

4,656,334
BED WARMER WITH A BODY TEMPERATURE SENSOR FOR STOPPING A HIGHER PRESET TEMPERATURE
Shinichi Endo, Yamatokoriyama; Kunio Kimata, Tsuzuki; Hideho Shimoda, Yamatokoriyama, and Kunio Ogita, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 29, 1985, Ser. No. 738,970
Claims priority, application Japan, Jun. 6, 1984, 59-115986
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—212 7 Claims



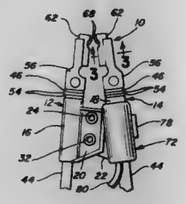
1. A bed warmer comprising:
a warmer body;
heater means provided on said warmer body;
first detector means for detecting a temperature of said warmer body;
setting means for setting a temperature value of said warmer body;
control means for controlling the supply of power to said heater means so that the temperature of said warmer body detected by said first detector means becomes the temperature value set by said setting means; and,
second detector means for detecting a temperature of a human body to indicate the presence of a human body in proximity to said second detector;
said control means including a high temperature holding means for setting said heater means to provide an initial high temperature when power is first supplied to the bed warmer, and release means for releasing the high temperature of said heater means set by said high temperature holding means when said second detector means detects the presence of a human body.

4,656,335
START-UP CONTROL SYSTEM AND VESSEL FOR LMFBR
Oliver W. Durrant, Akron; Chandrasekhara R. Kakarala, Clinton, both of Ohio, and Sheldon W. Mandel, Galesburg, Ill., assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed May 16, 1983, Ser. No. 495,190
Int. Cl.[4] F22B *1/28, 27/16*
U.S. Cl. 219—271 6 Claims



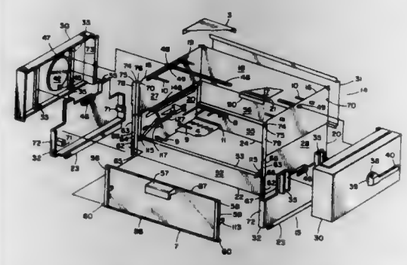
1. A start-up vessel for a start-up system suitable for liquid metal fast breeder reactors comprising:
a lower bulb defining a lower space;
an upper bulb defining an upper space;
a mid-section of a cross-sectional diameter less than that of said lower and upper bulbs, defining a mid-space and connected between said upper and lower bulbs;
heating means associated with said lower bulb for heating water in said lower space;
at least one inlet conduit connection connected to said vessel for admitting feed water to said lower space to be heated by said heating means to produce steam;
at least one outlet conduit connection connected to said vessel for discharging steam;
an auxiliary feed water line connected through said upper bulb having at least one nozzle at the end thereof for spraying feed water into said upper space; and
a main steam inlet connection connected to said upper bulb for heating said auxiliary feed water to produce steam.

4,656,336
ELECTRIC WORK-IN-CIRCUIT METAL-BONDING HEATING TOOL
Stephen D. Goodey, 7 Kaydon Dr., Decatur, Ill. 62521
Filed Mar. 20, 1986, Ser. No. 841,871
Int. Cl.[4] H05B *3/02*; B23K *3/04, 9/28*
U.S. Cl. 219—234 3 Claims



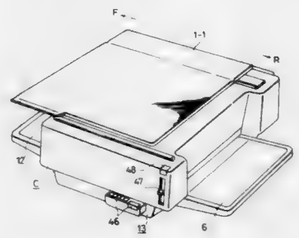
1. A low-voltage, high-ampeage, work-in-circuit metal bonding tool comprising a pair of elongated handles of rigid electrically insulating material, each of said handles having a hollow hand-grip portion open at each end and an external radially extending web, said webs being pivotally joined to each other to form a hinge between a proximal end and a distal end of the handles for permitting the distal ends to move toward and away from each other, a power supply cable entering the proximal end of each said hand-grip portion, a rigid solid conductor bar within each said handgrip portion and electrically joined therein to said cable, said conductor bar extending out from said hand-grip portion at the distal end thereof, an annular external flange on said conductor bars in spaced relationship to the distal ends of said hand-grip portions, an axial electrically insulating sleeve with.n each said grip portion between said conductor bar and said hand-grip portion, annular thermal insulating means between each said flange and the distal end of each said hand-grip portion, a mounting peg on the distal end of each of said bars and an electrode assembly detachably mounted on each said mounting peg and including a member adapted to make electrical contact with a metal workpiece to be heated, and a spring in cooperating relation to said hinge to urge the distal ends of said handles toward each other.

4,656,337
TOASTER OVEN
Paul A. Lastofka, Aurora, Colo., and M. James Wondergem, West Bend, Wis., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Oct. 30, 1985, Ser. No. 791,411
Int. Cl.[4] A47J *37/06*; F24C *7/10*
U.S. Cl. 219—386 20 Claims



1. An oven having variable spacial volume, comprising box-like structure having a first oven portion including a first endwall, a first rear wall, and first sidewalls, and having a second oven portion including a second endwall, a second rear wall adjacent to said first rear wall, and second sidewalls, said first oven portion and said second oven portion together forming a cooking chamber having a front opening, a food support rack carried by said structure within said cooking chamber, said structure being adapted to be telescopingly movable along an oven axis through said first oven portion and said second oven portion to a compact position in which said cooking chamber is of a first volume and said front opening is of a first size, and to an expanded position in which said cooking chamber is of a larger second volume and said front opening is of a larger second size, means for selectively moving said structure to said compact position and said expanded position, and a door carried by said structure, said door having a first door shoulder and an opposed second door shoulder and said structure having a first oven shoulder adjacent to said first door shoulder and an opposed second oven shoulder adjacent to said second door shoulder, said door being pivotable about a pivot between an open position to allow access to said cooking chamber and a closed position to cover said front opening, said door and said pivot being movable between a first closed position corresponding to said compact position of said structure and a second closed position corresponding to said expanded position of said structure, in each of said compact and expanded positions said door being secured in place on said structure from substantial movement parallel to said oven axis.

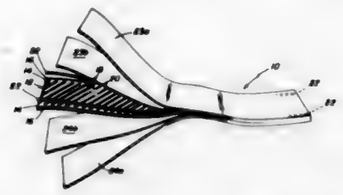
4,656,338
RECORDING APPARATUS
Toshiaki Yagasaki, Hino; Kouki Kuroda, Tokyo, and Tsuneki Inuzuka, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 18, 1983, Ser. No. 524,397
Claims priority, application Japan, Aug. 23, 1982, 57-145830; Jan. 28, 1983, 58-13551; Jan. 28, 1983, 58-13552
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—497 17 Claims



1. A temperature control apparatus for heating means, comprising:
temperature detecting means for detecting the temperature of said heating means;
means for detecting the zero-cross points of an AC power supply of said apparatus and generating corresponding zero-cross pulses; and
control means for controlling said heating means in response to the temperature detected by said temperature detecting means to keep said heating means at a predetermined temperature;
wherein said control means, upon first turn-on of said heating means, selects one of a plurality of preset values of a timee, in response to the detected temperature, for determining the duration of power supply to said heating means, and wherein said control means controls said heating means in response to said zero-cross pulses and the detected temperature without utilizing said timer when a temperature of said heating means is near the predetermined temperature.

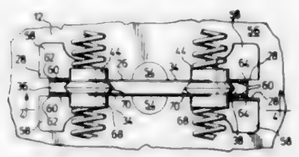
VOL 1077 ISS 1 AP 7 1987 UMI

4,656,339
ELECTRICAL RESISTANCE HEATER
Frederick G. J. Grise, Osterville, Mass., assignor to Flexwatt Corporation, Canton, Mass.
Division of Ser. No. 295,000, Aug. 21, 1981, Pat. No. 4,485,297, which is a continuation-in-part of Ser. No. 181,974, Aug. 28, 1980, abandoned. This application Nov. 26, 1984, Ser. No. 674,698
Int. Cl.[4] H05B 3/34
U.S. Cl. 219—528 9 Claims



1. An electrical heating device comprising:
a substrate having an electrically insulating surface,
a semi-conductor pattern carried on said surface, said pattern comprising a mixture of conductive particles in a binder,
an organic plastic sheet overlying said surface and said pattern, and
a pair of planar conductors electrically engaging said semi-conductor pattern,
said device being characterized in that
said semi-conductor pattern includes a pair of spaced-apart conductor connection portions and a plurality of elongated heating portions extending between and electrically connected to said conductor connection portions,
said semi-conductor pattern is arranged such that elongated portions of said substrate that are free from said semi-conductor pattern are provided between adjacent ones of said heating portions,
said organic plastic sheet is in face-to-face engagement with and is bonded to said elongated portions of said substrate that are free from said semi-conductor pattern, and
each of said conductors overlies and is in face-to-face engagement with a respective one of said conductor connection portions.

4,656,340
HEATER COIL MOUNTING
Robert M. St. Louis, St. Leonard, Quebec, Canada, assignor to Camco Inc., Mississauga, Ontario, Canada
Filed Apr. 30, 1985, Ser. No. 729,044
Claims priority, application Canada, Oct. 12, 1984, 465325
Int. Cl.[4] H05B 3/06
U.S. Cl. 219—532 11 Claims



1. A heater element assembly comprising:
an electric heating element;
insulating means surrounding portions of the electric heating element;
a bracket having opposing ends, first seat portions formed at each of the opposing ends of said bracket, each of said seat portions having an opening for receiving the insulating means for mounting the electric heating element; and,
a wall on which said bracket is mounted, a plurality of tab means projecting from said wall, there being at least one said tab means adjacent each of said opposing ends of said bracket, second seat portions on said tab means, each of said second seat portions engaging said insulating means and cooperating with a corresponding adjacent one of said first seat portions on said bracket to secure said insulating means in the heater element assembly and means for securing said bracket to said wall.

4,656,341
POSTAGE METER PRINTHEAD ASSEMBLY
Ward J. Paya, Pacheco, Calif., and Onal W. Niesl, Mosier, Oreg., assignors to f.m.e. Corporation, Hayward, Calif.
Filed Nov. 6, 1985, Ser. No. 795,671
Int. Cl.[4] G06F 1/00
U.S. Cl. 235—101 43 Claims



1. A printhead assembly for use in a meter having a meter enclosure, a base supporting a main shaft assembly and a stepper motor drive, the stepper motor drive positioning value rods carried by the shaft assembly according to the value to be printhead, the printhead assembly comprising:
a value module;
a dater/slogan module;
means for mounting the value module to an outer end of the main shaft assembly for rotation therewith,
a printhead cover assembly mounted to the base for at least partially covering the printhead and the value module mounting means to substantially prevent user access to the value module;
means for positioning the dater/slogan module and value module in a chosen relative orientation; and
means for mounting the dater/slogan module to the main shaft assembly outer end so the dater/slogan module is removable from the main shaft module with the printhead cover assembly mounted to the base.

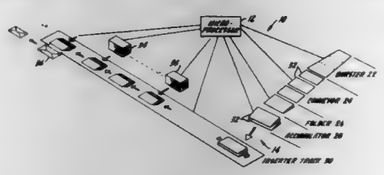
4,656,342
METHOD AND APPARATUS FOR AUTHORIZING THE HOLDER OF A PORTABLE OBJECT SUCH AS A CARD TO GAIN ACCESS TO AT LEAST ONE SERVICE PROVIDED BY AT LEAST ONE AUTHORIZING ENTITY
Michel Ugon, Maurepas, France, assignor to Cii Honeywell Bull(Societe Anonyme), Paris, France
Continuation of Ser. No. 572,080, Jan. 19, 1984, abandoned. This application Jan. 21, 1986, Ser. No. 820,586
Claims priority, application France, Jan. 20, 1983, 83 00884
Int. Cl.[4] G06F 15/30
U.S. Cl. 235—379 15 Claims

1. A method of authorizing the holder of a portable card to gain access with the card to services provided by different authorizing entities, each authorizing entity providing a different service, and the card having data storing means, the method comprising preliminarily defining the different authorizing entities to which the holder of the card can gain access to obtain services; chaining the different authorizing entities in a predetermined order of dependency beginning with a first one of the authorizing entities such that each authorizing entity, except said first one, depends in said predetermined order from at least one other authorizing entity; identifying each authorizing entity by an authorizing datum of a predetermined format which includes at least a first datum identifying such



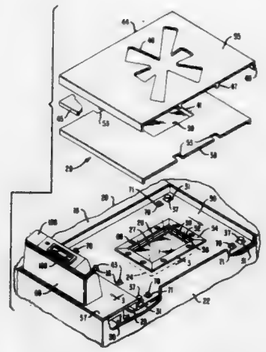
authorizing entity and a second datum which identifies the authorizing entity from which such authorizing entity depends in the chained order of dependency; and verifying, upon the holder requesting access to services provided by one of said authorizing entities which were previously unauthorized to the holder, that the authorizing datum of the authorizing entity from which the one requested authorizing entity depends has previously been written in the data storing means of the card.

4,656,343
METHOD AND APPARATUS FOR PROCESSING DOCUMENTS
Rudolf Gerritsen, R.R. 1, Box 24A, Kingston, Ill. 60145, and Charles Kent, 4 Barr Rd., Rte. 1, Hampshire, Ill. 60140
Filed Aug. 1, 1985, Ser. No. 761,150
Int. Cl.[4] G06K 7/10
U.S. Cl. 235—454 14 Claims



1. A system for identifying and sequentially arranging a plurality of coded documents traveling in a stream in an apparatus for processing and serially dispensing discrete groups of documents, comprising
a. a source of coded documents,
b. means for conveying documents individually from said source to a document release position,
c. first scanner means along said conveying means positioned to determine the presence of a document,
d. second scanner means associated with said first scanner means to read code from said document,
e. processor means to store code read from each document,
f. a retention gate at said document release position, said retention gate being positionable at one of two orientations comprising a document hold orientation and a document release orientation,
g. third scanner means at said retention gate to determine the presence of a document at said gate, and
h. a document accumulator spaced downstream from said document release position, said accumulator including
i. an accumulation gate, and
ii. fourth scanner means to determine the presence of a document at said accumulation gate.

4,656,344
INTEGRATED SCALE AND OPTICAL SCANNER
Barry M. Mergenthaler, Cambridge; Ronald J. King, New Concord; Laszlo I. Kovats, deceased, late of Byesville; James H. Taylor, administrator, Dayton, and Richard E. Cone, Cambridge, all of Ohio, assignors to NCR Corporation, Dayton, Ohio
Filed Mar. 4, 1985, Ser. No. 707,916
Int. Cl.[4] G06K 7/10
U.S. Cl. 235—462 8 Claims



1. A checkout system for checking merchandise items having a coded label affixed thereto identifying the merchandise item comprising:
a checkout counter having a first top surface for supporting a merchandise item thereon;
a cover assembly positioned on an end portion of the checkout counter having a second top surface coplanar with the first top surface of the checkout counter, said second top surface having an aperture therein;
optical scanning means positioned in the end portion of the checkout counter adjacent said cover assembly for projecting scanning light beams through said aperture for scanning a coded label on the merchandise item and generating first data signals identifying the merchanise item;
a first support member mounted on the end portion of the counter between the cover assembly and the optical scanning means;
a first window member mounted in said first support member in registry with the optical scanning means and said aperture for enabling the scanning light beams of the optical scanning means to be projected through said aperture;
signal generating means including a load beam cell which includes a first cantilever support member secured to said first support member and a second cantilever member secured to said first cantilever support member;
a second support member secured to said second cantilever support member and engaging said cover assembly;
strain gauge means secured to said cantilever support member for generating signals in accordance with the moving of said cover assembly whereby the positioning of a merchandise item on the cover assembly results in the moving of the first and second cantilever support members enabling the strain gauge means to output second data signals representing the weight of the merchandise items;
processing means connected to said optical scanning means and said signal generating means for generating third data signals representing the price of the purchased merchandise items in response to receiving the first and second data signals; and
display means controlled by said processing means for displaying the price of the purchased merchandise item in response to the generation of said third data signals.

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4,656,345

BAR CODE READING APPARATUS

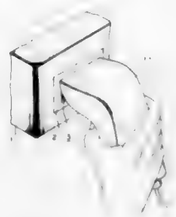
Yukuo Kurimoto, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1985, Ser. No. 774,926

Claims priority, application Japan, Sep. 27, 1984, 59-202343; Sep. 27, 1984, 59-202344

Int. Cl.⁴ G06K *7/10*

U.S. Cl. 235—472 **10 Claims**



1. A bar code reading apparatus comprising:

reading means for optically reading a bar code and generating an output data corresponding to said bar code;

mode selecting means for selectively setting either one of first and second modes;

memory means; and

data processing means which, when the first mode is designated by said mode selecting means, stores the output data from said reading means into said memory means and which, when the second mode is set by said mode selecting means, stores the inverted data of the output data from said reading means into said memory means, and thereby making a bar code data in accordance with the content of said memory means.

4,656,346

SYSTEM FOR OPTICALLY READING AND ANNOTATING TEXT ON A DATA CARD

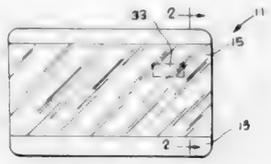
Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 673,572, Nov. 21, 1984, Pat. No. 4,544,835, which is a continuation-in-part of Ser. No. 566,966, Dec. 29, 1983, Pat. No. 4,500,777, which is a continuation-in-part of Ser. No. 492,691, May 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 283,833, Feb. 27, 1981, abandoned. This application Apr. 9, 1985, Ser. No. 721,384

The portion of the term of this patent subsequent to Sep. 2, 2003, has been disclaimed.

Int. Cl.⁴ G06K *13/07*

U.S. Cl. 235—487 **13 Claims**



1. A system for reading and recording information on a double sided data card comprising,

a wallet-size card having a first strip of optical contrast direct-read-after-write recording material thereon capable of recording of machine readable information thereon, said first strip adapted for recording of subsequent sequential data, and a second strip of reflective optical data storage material thereon having pre-recorded machine readable information thereon, said second strip being read only,

a writing beam means disposed in writing relation with respect to said first strip for writing sequential data thereon,

a first light detector means disposed in reading relation to said first strip for reading sequential data,

a reading beam means disposed in reading relation with respect to said second strip for shining reading light on said second strip,

a second light detector means disposed in reading relation to said second strip for reading said prerecorded information, and

means providing relative motion between the first and second beams and the card for reading and writing said information on the card.

4,656,347

DIFFRACTION GRATING POSITION ADJUSTER USING A GRATING AND A REFLECTOR

Atsunobu Use; Makoto Iki; Nobuyuki Takeuchi, and Kimiyoshi Deguchi, all of Kanagawa, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jan. 28, 1985, Ser. No. 695,698

Claims priority, application Japan, Jan. 30, 1984, 59-14692; Sep. 26, 1984, 59-199433; Dec. 3, 1984, 59-254242; Jan. 21, 1985, 06-8694

Int. Cl.⁴ G01B *11/02*; G01N *21/86*

U.S. Cl. 250—201 **25 Claims**



1. A method of adjusting a relative positional relationship between two objects using a diffraction grating, wherein a first diffraction grating is arranged on a first object located to oppose a second object, a reflecting surface is arranged at a position on said second object such that said reflecting surface is aligned in reflecting relationship with said first diffraction grating, and wherein said method includes the steps of irradiating said first diffraction grating with a radiation beam of coherent light or quasimonochromatic light, measuring a gap between the first and second objects and setting said gap in accordance with a change in intensity of diffracted light components from said first diffraction grating.

4,656,348

OPTICAL HEAD

Hideo Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 9, 1984, Ser. No. 598,434

Claims priority, application Japan, Apr. 12, 1983, 58-64092; Jun. 30, 1983, 58-119388

The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.

Int. Cl.⁴ G01J *1/36*; G11B *7/00*

U.S. Cl. 250—201 **8 Claims**

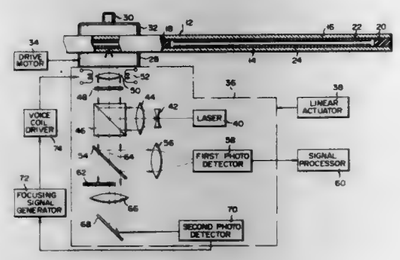
1. An optical head for focusing a light beam on a light-reflecting surface, comprising:

means for generating a light beam;

means for transferring the light beam;

objective lens means for converting the transferred light beam into a convergent light beam with a beam waist, projecting the light beam on the light-reflecting surface and converging the light beam reflected from the light-reflecting surface, said objective lens means having a convergent point and an inherent maximum defocusing allowance of $\pm\delta c$ with reference to said convergent point;

means for deflecting the light beam from the objective lens means, depending on the distance between the objective lens means and the light-reflecting surface;



converging means, having a converging point, for converging the light beam from the deflecting means into the convergent point of the converging means in a focusing state; and

photodetector having first and second photo sensitive regions and a photo insensitive region defined therebetween, said photodetector being disposed to cause a part of a beam spot to be formed on one of the photosensitive regions by the light beam projected on the photodetector when the objective lens is defocused on the photodetector when the objective lens is over the maximum defocusing allowance $\pm\delta c$.

4,656,349

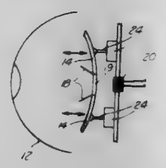
OPTICAL SCANNING DEVICE FOR A MISSILE AND THE LIKE

George T. Pinson; Ralph R. Reinhold, and Roland L. Finley, all of Huntsville, Ala., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 14, 1984, Ser. No. 671,414

Int. Cl.⁴ G01J *1/20*

U.S. Cl. 250—203 R **3 Claims**



1. An optical scanning device for a missile and the like, said device comprising:

a primary reflector movably mounted on said missile and disposed for receiving a target signal;

a secondary reflector mounted on said missile and disposed to receive a signal from said primary reflector;

means fixed to said missile for selectively moving said primary reflector relative to said secondary reflector;

detector means mounted on said missile for receiving a signal from said secondary reflector; and

electronic means mounted in said missile for controlling said moving means to selectively generate a plurality of scanning patterns and controlling said missile to selectively track a target.

4,656,350

OPTO-ELECTRONIC SELECTOR HAVING A PLURALITY OF OPTICAL SIGNAL INLETS

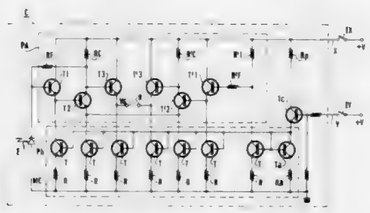
Philippe Faugeras, Boulogne Billancourt, and Daniel Tribet, Epinay sur Orge, both of France, assignors to Compagnie Industrielle Des Telecommunications CIT-Alcatel, France

Filed Jun. 13, 1985, Ser. No. 744,356

Claims priority, application France, Jun. 15, 1984, 84 09414

Int. Cl.⁴ H01J *40/14*

U.S. Cl. 250—209 **4 Claims**



1. An opto-electronic selector having a plurality of optical signal inlets and an electrical signal outlet, said selector comprising:

matrix-addressed photodetectors having individual optical signal inlets which constitute respective optical signal inlets to the selector and individual electrical signal outlets connected in common to the electrical signal outlet from the selector; and

a plurality of individual amplifiers having differential amplification stages following said photodetectors, each of said amplifiers being powered at a constant voltage from a voltage source by means of a matrix line selector, and at constant current from a current source proper to each said amplifier and switched on by means of a matrix column selector.

4,656,351

METHOD AND APPARATUS FOR CONTROLLING A LOAD

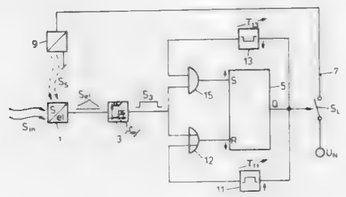
Anton Reichlin, and Marcel Zöblin, both of Winterthur, Switzerland, assignors to Marcel Zublin, Switzerland

Filed Dec. 14, 1984, Ser. No. 681,953

Claims priority, application Switzerland, Jun. 5, 1984, 2726/84

Int. Cl.⁴ G01V *9/04*

U.S. Cl. 250—221 **35 Claims**



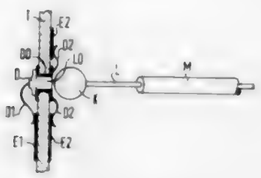
1. Apparatus for automatically controlling the operative condition of a load comprising:

switch means connected to said load for selectively controlling the operative state thereof;

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sensor means for sensing a condition and generating signals defining a presence of said condition;
means responsive to signals generated by said sensor means for causing said switch means to place said load in energized and de-energized states, said load generating, in changing from at least one of said energized and de-energized states, energy capable of influencing said sensor means in sensing said condition; and
means for inhibiting said means responsive for a selected time interval beginning simultaneously with a change from at least one of said energized and de-energized states of said load.

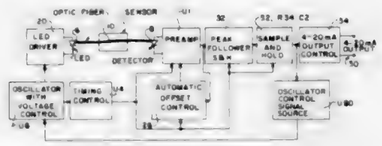
4,656,352
OPTOELECTRONIC TRANSDUCER
Michael Langenwalter, Stockdorf, and Lothar Spitter, Ananweiler, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 3, 1985, Ser. No. 771,738
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1984, 3435013
Int. Cl.⁴ H01J *5/16*
U.S. Cl. 250—227 **10 Claims**



10. An optoelectronic transducer for converting light waves to electrical voltage or current, or electrical voltage or current to light, the transduer comprising:
(a) a fiber optic system including a glass fiber;
(b) a support on which is fastened an optoelectronic structural element with at least first and second electrical leads; and
(c) a hole through the support, the optically active point of the structural element being directed toward the fiber optic system through the hole;
wherein the hole wall has a metallic coating which consists of a section of the first lead of the structural element, said first lead being adapted for conducting high-frequency signals, wherein the support is an insulator plate on which a semiconductor chip having a hole therein is fastened to a surface away from the structural element such that the hole in the support is aligned with the hole in the semiconductor chip.

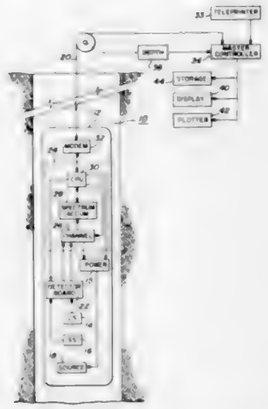
4,656,353
VARIABLE PULSE RATE LED ELECTRONICS FOR A FIBER OPTIC VORTEX SHEDDING FLOWMETER
William L. Thompson, Moutville, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Jan. 21, 1986, Ser. No. 820,769
Int. Cl.⁴ G01F *1/32*; **G01D** *5/34*
U.S. Cl. 250—231 R **6 Claims**

5. An apparatus for processing a sensor signal from a light detector at one end of an optic fiber which signal is modulated between maximum and minimum levels by the optic fiber, the optic fiber receiving light in pulses from a light emitter, comprising:
a preamp connected to the light detector for amplifying the sensor signal, the preamp having high and low current modes of operation with a high bandwidth in its high current mode;
clamping means connected to an output of said preamp for clamping the amplified sensor signal at an average level between positive and negative saturation levels for said preamp, as a signal ground, said clamping means having a long time constant with respect to changes in the modulated sensor signal so that rapid changes in the sensor signal pass;
drive signal generating means for generating a drive signal having a frequency which is dependent on a sampled and held signal, said drive signal means being connected to the light emitter for lighting the light emitter in pulses;
peak-following sample and hold means connected to said clamping means for generating a peak-following sample



and hold signal which follows peaks of the signal passed by said clamping means;
low-pass filter means connected to said peak-following sample and hold means for filtering out a frequency component of said drive signal from said peak-following sample and hold signal, said low-pass filter means generating said sampled and held signal for said drive signal means; and
current control means connected to said low-pass filter means for receiving said sampled and held signal and generating a current signal corresponding to said sensor signal.

4,656,354
METHOD FOR INDUCED GAMMA RAY LOGGING
Russel R. Randall, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 10, 1985, Ser. No. 722,101
Int. Cl.⁴ G01V *5/10*
U.S. Cl. 250—256 **25 Claims**



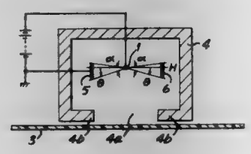
1. In a nuclear well logging operation, a method for indicating the presence of gas in a fluid filled zone of a subsurface earth formation, comprising the steps of:
cyclically irradiating said subsurface earth formation with bursts of high energy neutrons;
detecting for one or more burst cycles the impingement of gamma radiation upon a first gamma radiation detector means during and between each of said bursts;
determining a first parameter indicative of the count of detected impingements of primarily inelastic gamma radiation upon said first detector means;
determining a second parameter indicative of the count of detected impingements of primarily capture gamma radiation upon said first detector means; and
comparing said first and second parameters to determine said presence of gas.

4,656,355
CORONA TREATMENT APPARATUS
Ernest H. Pfaff, 1549 Woodvale Ave., Deerfield, Ill. 60015
Filed Jun. 24, 1985, Ser. No. 747,911
Int. Cl.⁴ H01T *19/00*
U.S. Cl. 250—325 **15 Claims**



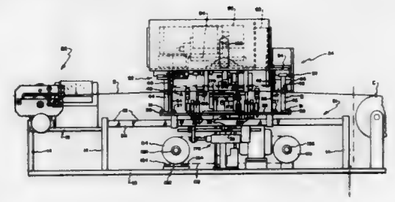
1. An electrode arrangement for corona treatment of coated conductive materials, comprising
a. an elongated, tubular dielectric open to and maintained internally at atmospheric pressure,
b. a single electrode helically wound about the exterior of said dielectric, said electrode having spaced coils,
c. means securing said electrode to said dielectric, and
d. means for connecting one end of said electrode to a source of high voltage, high frequency power to produce corona irradiation of said coated conductive material.

4,656,356
DEVICE FOR CHARGING ELECTROPHOTOGRAPHIC APPARATUS
Akira Yoda; Masamichi Sato, and Shuichi Ohtsuka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 31, 1983, Ser. No. 546,920
Claims priority, application Japan, Oct. 30, 1982, 57-190942
Int. Cl.⁴ G03G *15/02*
U.S. Cl. 250—326 **6 Claims**



1. A charging device for an electrophotographic apparatus comprising a corona wire disposed in a charging chamber in parallel relation with an electrophotographic film and opposite the center of an opening of said chamber to electrostatically charge in a stationary state the electrophotosensitive surface of said film, a pair of electrodes disposed in parallel with both the surface of said electrophotographic film and on both sides of said corona wire in a plane substantially coextensive with the axis of said corona wire, said electrodes being so disposed that an imaginary line connecting their lower portions with said corona wire makes an angle of ±30° or less with respect to a plane containing said corona wire, and a subtending angle defined between the lower portions of the electrodes, the upper portions of the electrodes and the corona wire is less than about 10°; said electrodes being grounded and cooperating with said corona wire for generating corona ions, electrically insulating means projecting inwardly of said opening and facing said electrophotosensitive film so that said insulating means can be brought substantially in contact with said electrophotosenaitive film during charging; the inner periphery of the opening of said charging chamber being provided with a conductive member thereby facilitating application of a bias potential to said conductive member which is substantially equivalent to the surface potential of said electrophotographic film.

4,656,357
APPARATUS FOR MEASURING COATING THICKNESS
Jerry J. Spongr, Tonawanda, and Byron E. Sawyer, North Tonawanda, both of N.Y., assignors to Twin City International, Inc., Amherst, N.Y.
Filed Apr. 16, 1985, Ser. No. 723,885
Int. Cl.⁴ G01N *23/223*
U.S. Cl. 250—359.1 **16 Claims**



1. An improved apparatus for measuring the thickness of a coating on a strip of material, which strip moves along a predetermined generally linear path initially past a first location and then past a second location; said apparatus comprising:
a frame,
a shuttle mounted on said frame for movement between the first and second locations;
engaging means carried by said shuttle and capable of engaging the moving strip to cause the shuttle to be moved from the first location to the second location;
drive means on said frame and capable of moving said shuttle from the second location to the first location;
measuring means having at least a portion mounted on the shuttle and capable of measuring the thickness of the coating on the strip of material when the shuttle is being moved from the first location to the second location, said portion of the measuring means being held from movement towards and away from the strip of material during measuring;
support means mounted on said shuttle and capable of supporting the strip of material when the shuttle is being moved from the first location to the second location, said support means having a support surface engaged by said strip of material during measuring; and
adjusting means on said shuttle and capable of moving the entire support surface towards and away from said portion of the measuring means to establish a spaced-apart predetermined measuring distance between said portion of the measuring means and the coating on a specific portion of the strip of material.

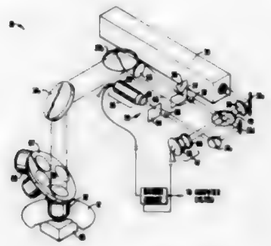
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4,656,358

LASER-BASED WAFER MEASURING SYSTEM

William G. Divens; William B. Cole, both of Mountain View; Michael W. Leitner, Sunnyvale, and David A. Blau, Los Altos, all of Calif., assignors to Optoscan Corporation, Mountain View, Calif.

Filed Mar. 12, 1985, Ser. No. 711,122
Int. Cl.[4] G01N *21/55*; G01B *11/04*
U.S. Cl. 250—372 20 Claims



1. Apparatus for making a measurement of a feature on a sample surface, comprising:

a high numerical aperture objective transmissive to ultraviolet light;

a laser operable to produce an ultraviolet laser beam;

an ultraviolet detector operable to produce a signal representative of the intensity of the ultraviolet light impinging thereon;

first beam transport means for directing at least a portion of said ultraviolet laser beam to said objective, said first beam transport means and said objective operating together to provide a focused beam spot; and

second beam transport means for directing ultraviolet light that emanates from the location of said focused beam spot and subsequently passes through said objective to said ultraviolet detector, said second beam transport means including means for substantially preventing ultraviolet light that emanates from points displaced from the location of said focused beam spot from reaching said ultraviolet detector;

wherein, when said ultraviolet laser is operated and the sample is registered with said focused beam spot on the sample surface and the axis of said objective perpendicular to the sample surface, said ultraviolet detector provides a signal representative of the ultraviolet light reflected from the sample surface.

4,656,359

SCINTILLATION CRYSTAL FOR A RADIATION DETECTOR

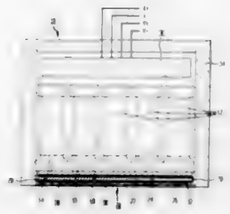
Dennis E. Persyk, Barrington, and Everett W. Stoub, Villa Park, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Continuation of Ser. No. 549,865, Nov. 9, 1983, abandoned. This application Mar. 10, 1986, Ser. No. 838,879
Int. Cl.[4] G01J *1/58*; G01N *21/64, 23/38*; G01T *1/00*
U.S. Cl. 250—486.1 24 Claims

1. A scintillation crystal for a radiation detector, comprising:

(a) a first layer of a crystal material which has a high energy resolution; and

(b) a second layer of a different crystal material, said second layer being located on top of said first layer and being thin with respect thereto, the second layer protecting the first



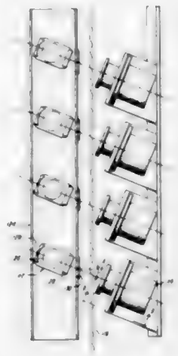
layer against breakage and making a negligable contribution to the scintillation properties of the first layer.

4,656,360

OPTICAL SENSING SYSTEM FOR DETERMINING THE ORIENTATION OF WEFT THREADS IN A WIDE VARIETY OF FABRICS

Edward L. Maddox, Lexington, Mass., and Thomas E. Pitts, Warren, R.I., assignors to SW Industries, Inc., Providence, R.I.

Filed Oct. 19, 1984, Ser. No. 662,701
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.[4] G01N *21/86*
U.S. Cl. 250—571 4 Claims



1. In a system for sensing the angular orientation of weft threads in a web that is moving in a first direction, said system including a light source that directs a beam of light onto the web and optical means for forming an image of the weft threads generated by transmitted light from said light source, the improvement comprising:

a sensor array disposed to receive said transmitted light image on a face thereof, said face including a plurality of elongated narrow photosensitive areas that are aligned along non-parallel lines intersecting a common point, each of said areas generating an electrical signal that is responsive to the total intensity of said transmitted light incident upon it, the width of each of said areas being approximately equal to the image of the thread projected onto said array so that the movement of said weft threads, past said array, which are substantially aligned with one of said areas produces a detectable degree of modulation of said electrical signal, and

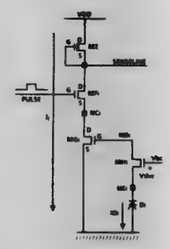
means for fixing said light source and said sensor array so that said light beam emanating from said light source forms a light path connecting said light source and said sensor array with the angle of incidence of said light beam with respect to said web being at a fixed angle of between 15° and 35°.

4,656,361

NMOS DIGITAL IMAGING CIRCUIT

Harry J. McIntyre, Los Angeles, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1985, Ser. No. 781,572
Int. Cl.[4] H04N *3/14*
U.S. Cl. 250—578 6 Claims



1. An nMOS digital imaging circuit for a light sensor wherein current is sensed rather than charge, the improvement comprising:

a voltage supply (VDD),

a first transistor (M2), said voltage supply coupled to the input of said transistor,

a sense line coupled to the output of said first transistor,

a second transistor (MGi), said sense line coupled to the input of said second transistor, and the output of said second transistor coupled to ground potential,

photosensitive means (Di) coupled to the bias input of said second transistor and to ground potential, such that when light is impinged upon said photosensitive means the voltage upon the bias input of said second transistor decreases in accordance with the amount of light impinged on said photosensitive means, said bias operating to limit the current flowing through said second transistor to thereby allow the voltage on said sense line to increase in relation to said amount of impinged light,

a third transistor (MFi) between said sense line and said second transistor, said third transistor responsive to an addressing pulse to allow any of said current to flow from said sense line to said second transistor, and

a fourth transistor (MHi) between said photosensitive means and the bias input to said second transistor for amplifying the voltage generated by said photosensitive means as applied to the bias input to said second transistor, said first, second, third, and fourth transistors, and said photosensitive means comprising a sensing cell.

4,656,362

BLADE PITCH ANGLE CONTROL FOR LARGE WIND TURBINES

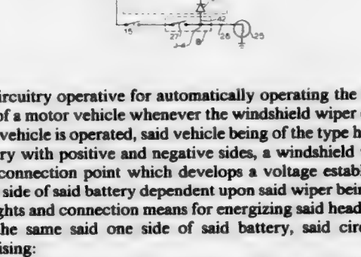
Kermit I. Harner, Windsor; Frank R. Nielsen, East Windsor, and Robert Sherman, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 440,122, Nov. 8, 1982, abandoned. This application Apr. 16, 1985, Ser. No. 722,767
Int. Cl.[4] F03D *7/04*
U.S. Cl. 290—44 5 Claims

1. In a blade pitch angle control system for a wind turbine-generator comprising a rotor having a plurality of variable pitch airfoil blades fixed thereto and driving an electric generator through a drive train, said blade pitch angle control system including control means providing a reference signal indicative of desired blade pitch angle at less than rated wind speed conditions, said control means being characterized by:

means providing an output signal indicative of actual wind turbine output;

means providing a frequency signal indicative of rotational frequency of said wind turbine; and



signal processing means responsive to said output and frequency signals for continuously providing a minimum allowable blade pitch angle reference signal based on the aerodynamic performance capabilities of said airfoil blades and corresponding to attainment by said wind turbine of said output at less than rated wind velocity and at an optimal power ratio.

4,656,363

CIRCUITRY FOR CONTROLLING AUTOMOBILE HEADLIGHTS FROM WINDSHIELD WIPERS

Bruce T. Carter, Rte. 1, Box 76, Rougemont, N.C. 27572, and Henry A. Isley, Rte. 1, Box 316C, Creedmoor, N.C. 27522

Filed Feb. 11, 1985, Ser. No. 700,476
Int. Cl.[4] H02G *3/00*
U.S. Cl. 307—10 LS 11 Claims

1. Circuitry operative for automatically operating the headlights of a motor vehicle whenever the windshield wiper of the motor vehicle is operated, said vehicle being of the type having a battery with positive and negative sides, a windshield wiper and a connection point which develops a voltage established by one side of said battery dependent upon said wiper being on, headlights and connection means for energizing said headlights from the same said one side of said battery, said circuitry comprising:

(a) first circuit means for detecting said wiper connection point voltage and providing a control voltage upon activation of said windshield wiper, said first circuit means including an NPN transistor, the base of said NPN transistor being connected to said connection point, the collector of said NPN transistor being connected to said one side of said battery, and the emitter of said NPN transistor being connected to the opposite side of said battery;

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(b) second circuit means connected to said first circuit means including power switching means responsive to said control voltage, said second circuit means being connected between said one side of said battery and said headlight connection means so that a closed circuit between said one side of said battery through said headlights to the opposite side of said battery exists for at least as long as said control voltage is detected by said second circuit means; and

(c) a capacitative circuit connected to said first circuit means, said capacitative circuit being connected to be charged by said connection point voltage upon the activation of said windshield wiper to provide a second control voltage to said second circuit means upon said windshield wiper being turned off for so long as is required for said capacitative circuit to discharge to thereby maintain said headlights on for an equal corresponding length of time.

4,656,364

ANTENNA SWITCHING CIRCUIT FOR A DIVERSITY RECEIVING SYSTEM AND BRANCHING CIRCUIT WITH A SIGNAL ATTENUATION OPERATION

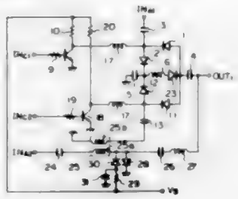
Tomohiro Yokogawa; Nobuo Kondo, and Hideki Iwasaki, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 10, 1985, Ser. No. 753,458

Claims priority, application Japan, Jul. 10, 1984, 59-143064; Aug. 14, 1984, 59-124280[U]

Int. Cl.⁴ H02J *17/00*

U.S. Cl. 307—112 **3 Claims**



1. An antenna switching circuit comprising:

at least two antenna input terminals and an output terminal;

a first series circuit having series connected first and second unidirectional switching elements arranged in a same direction, a connection point of said first and second unidirectional switching elements being ac-connected to one of said at least two antenna input terminals;

a second series circuit connected in parallel with said first series circuit and having series connected third and fourth unidirectional switching elements arranged in said same direction, a connection point of said third and fourth unidirectional switching elements being ac-connected to the other one of said at least two antenna input terminals;

a third series circuit connected in parallel with said first and second series circuits and having a first coil and a fifth unidirectional switching element connected in series with each other, a terminal of said third series circuit being ac-connected to said output terminal and an ac potential level of said other terminal of said third series circuit being made equal to a reference level; and

a bias current supply means for supplying a bias current in a desired direction across said connection point of said first and second unidirectional switching elements and said connection point of said third and fourth unidirectional switching elements, wherein said fifth unidirectional switching element of third series circuit is arranged in a direction for permitting a flow of said bias current.

4,656,365

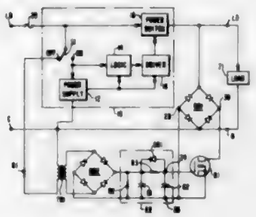
SOLID STATE POWER CONTROLLER LEAKAGE CURRENT SHUNT CIRCUIT

William W. Billings, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 12, 1985, Ser. No. 755,136

Int. Cl.⁴ H01H *3/26;* **H02H** *9/00*

U.S. Cl. 307—140 **9 Claims**



1. A control circuit comprising:

switching means having a first impedance in an ON state and a second impedance in an OFF state, wherein said second impedance is higher than said first impedance;

control means for turning said switching means on or off;

means for connecting said switching means electrically in series between a power input terminal and a first load output terminal;

a shunt circuit electrically connected between said first load output terminal and a second load terminal, for shunting leakage current from said switching means when said switching means is in said OFF state; and

operating means associated with said control means for rendering said shunt circuit operative in response to a control signal following a transition of said switching means from an ON state to an OFF state, and for rendering said shunt circuit inoperative in response to said control signal prior to a transition of said switching means from an OFF state to an ON state.

4,656,366

CONTROL CIRCUITRY USING TWO BRANCH CIRCUITS FOR HIGH VOLTAGE SOLID-STATE SWITCHES

James A. Davis, Glen Ellyn; William F. MacPherson, Winfield Township, DuPage County; Harry E. Mussman, Glen Ellyn, all of Ill., and Peter W. Shackle, Bridgewater, N.J., assignors to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 107,777, Dec. 28, 1979, abandoned. This application Feb. 24, 1982, Ser. No. 351,911

Int. Cl.⁴ H03K *17/60*

U.S. Cl. 307—252 A **7 Claims**

1. In combination:

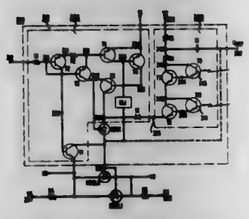
a first switching device and a second switching device, each said device comprising a semiconductor body having a bulk portion which is of relatively high resistivity and of a first conductivity type, a first region of the first conductivity type and of relatively low resistivity, and second and third regions of a second conductivity type opposite that of the first conductivity type and of relatively low resistivity, the first and third regions being connected to separate output terminals of the switching device, the second region being coupled to a control terminal of the switching device, and the first, second, and third regions being mutually separated by portions of the bulk of the semiconductor body;

said second switching device having essentially same electrical characteristics as the first switching device, said second switching device being coupled to the first switching device and being used to provide control of the first switching device;

means coupled to the second switching device for aiding in selectively switching off the first switching device, said means comprising first and second branch circuits;

the first branch circuit being adapted to selectively allow up to a preselected current level to flow therethrough and to flow into or out of the control terminal of the first switching device;





the second branch circuit being adapted to substantially inhibit current flow therethrough if the level of current flow through the first branch circuit is less than the preselected current level; and

the second branch circuit being further adapted to allow a greater current level than the preselected level to flow therethrough and to flow into or out of the control terminal of the first switching device if, and only if, the current flowing through the first branch circuit reaches the preselected level.

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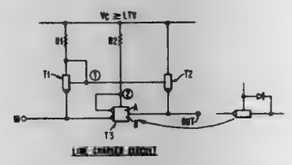
SPEED UP OF UP-GOING TRANSITION OF TTL OR DTL CIRCUITS UNDER HIGH CAPACITIVE LOAD

Edward F. Calicem, Hyde Park; Philip E. Pritzlaff, Jr., Highland, both of N.Y.; Helmut Schettler, Dettenhausen, Fed. Rep. of Germany, and Kenneth A. Van Goor, Salt Point, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1985, Ser. No. 789,250

Int. Cl.⁴ H03K *3/01, 3/26, 3/33, 17/16*

U.S. Cl. 307—270 **5 Claims**



1. In an integrated circuit chip, said integrated circuit chip comprising:

at least first and second binary logic circuits, each of said at least first and second binary logic circuits having an input and an output;

a highly capacitive load circuit, said load circuit having an input;

said integrated circuit chip being characterized by the inclusion of a speedup circuit coupled between a common connection of said outputs of said at least first and second binary logic circuits and said highly capacitive load, said speed-up circuit comprising;

first, second, third and fourth transistors, each of said first, second, third and fourth transistors having an emitter, base and collector,

said collector of said first transistor, said base of said first transistor and said base of said second transistor connected in common,

a first resistor connected between a source of potential and said collector of said first transistor,

a second resistor connected between said source of potential and a common connection of said emitter of said third transistor, said base of said third transistor and said base of said fourth transistor,

said collector of said second transistor connected to said source of potential,

said emitter of said first transistor and said emitter of said fourth transistor connected in common to said outputs of said at least first and second binary logic circuits, and

said emitter of said second transistor, said collector of said third transistor and said collector of said fourth transistor connected in common to said input of said highly capacitive load.

4,656,368

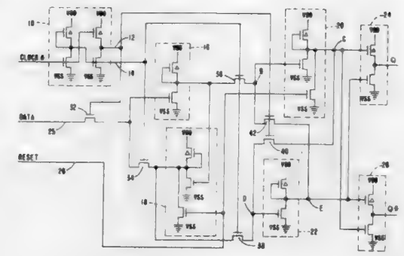
HIGH SPEED MASTER-SLAVE FLIP-FLOP

Craig C. McCombs, and Richard D. Farris, both of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 13, 1985, Ser. No. 775,928

Int. Cl.⁴ H03K *3/284*

U.S. Cl. 307—272 A **4 Claims**



1. A flip-flop comprising:

clock means having an input for receiving a clock signal, a clock output having a high state when the clock signal is high and a low state when the clock signal is low, and an inverted clock output having a low state when the clock signal is high and a high state when the clock signal is low;

a master section having a data input for receiving a data signal, a latching means connected to said clock means for latching the state of the data signal, a master output for providing the state latched by said latching means and an inverted master output for providing the complement of the state latched by said latching means, said latching means comprises a first master section inverter having an input connected to the data input of said master section and an output connected to said inverted master output, a second master section inverter having an input connected to the output of said first master section inverter and an output connected to the input of said first master section inverter and the master output, and a pass transistor connected between the output of said second master section inverter and the input of said first master section inverter and controlled by the state on said inverted clock output for turning off when the state is low and turning on when the state on the inverted clock output is high;

a slave section having a first slave input connected to said master output, a second inverted slave input connected to

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said inverted master output, a slave output for providing the state of the latched data signal, and an inverted slave output for providing the inverted state of the latched data signal;

cross coupling means in said slave section and controlled by said clock output such that said slave output is connected to said first slave input and said second inverted slave output is connected to said inverted slave input when the state of said clock output is high, and said slave output and said inverted slave output are not connected to said first slave input and said second inverted slave input when said clock signal is low; and

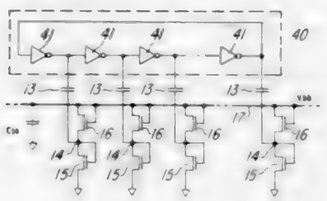
isolation means between said master section and said slave section and controlled by said inverted clock output such that said master section is disconnected from said slave section when there is a low state on said inverted clock output, and said master section is connected to said slave section when there is a high state on said inverted clock output.

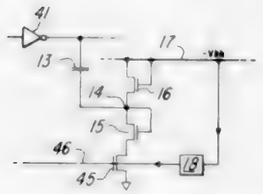
4,656,369

RING OSCILLATOR SUBSTRATE BIAS GENERATOR WITH PRECHARGE VOLTAGE FEEDBACK CONTROL

Perry W. Lou, Sugar Land, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 17, 1984, Ser. No. 651,401
Int. Cl.⁴ H03B *5/24*
U.S. Cl. 307—297 **15 Claims**





1. A substrate bias generator circuit comprising:

an oscillator having a plurality of stages,

a plurality of charge pump circuits, each charge pump circuit including a capacitor and a pair of MOS transistors connected as diodes, each charge pump circuit having an input separately coupled to receive the output of one stage of said oscillator, and having an output coupled to the substrate, and

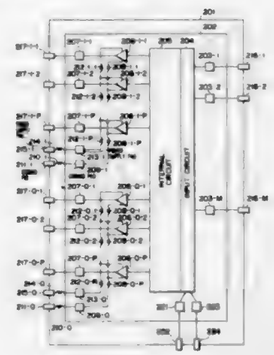
means for controlling the voltage to which said capacitor is charged.

4,656,370

INTEGRATED CIRCUIT WITH DIVIDED POWER SUPPLY WIRING

Akira Kasuma, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 24, 1984, Ser. No. 634,028
Claims priority, application Japan, Jul. 28, 1983, 58-138311
Int. Cl.⁴ H01L *23/50*
U.S. Cl. 307—303 **5 Claims**



1. An integrated circuit with divided power supply wiring, comprising:

a plurality of sets of power lines, each of said sets being formed of a power supply line and a ground line;

a plurality of groups of integrated circuit output circuit elements formed in the integrated circuit, each of said groups being respectively coupled to one of said power line sets; and

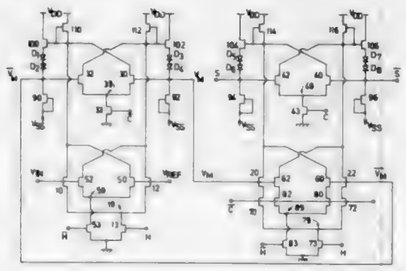
an input circuit containing a plurality of integrated circuit input circuit elements formed in the integrated circuit, said input circuit being coupled to a power line sets coupled to said groups.

4,656,371

CLOCKED COMPARATOR

Michel J. M. Binet, Creteil, and Thierry Ducourant, Crosne, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1985, Ser. No. 793,606
Claims priority, application France, Nov. 9, 1984, 84 17095
Int. Cl.⁴ H03K *5/153, 5/24;* **H03M** *1/36*
U.S. Cl. 307—362 **9 Claims**



1. A clocked voltage comparator formed by means of transistors which each have a control electrode, a first main electrode and a second main electrode, which comparator comprises:

a comparison stage for comparing an analog input voltage V_{IN} with an analog reference voltage V_{REF} and supplying the result of this comparison in the form of an intermediate signal V_M and its complement $V_{\overline{M}}$, which stage comprises two transistors (10 and 12) connected as a first differential pair, the input voltage V_{IN} and the reference voltage V_{REF} being applied to the respective control electrodes of said transistors, whose first main electrodes are connected to a common terminal (19) for applying a bias current and whose second main electrodes are each coupled to a first direct voltage supply terminal V_{DD} via a load (110, 112) and supply the intermediate signal V_M and its complement $V_{\overline{M}}$ respectively;

an amplifier stage for amplifying the logic states of the intermediate signal, which stage comprises two transistors (20, 22) connected as a second differential pair, whose respective control electrodes receive said intermediate signal V_M and its complement $V_{\overline{M}}$, whose first main electrodes receive a bias current and whose secured main electrodes are each coupled to the first d.c. supply terminal via a load (114, 116) and supply the digital output signal S of the comparator and its complement $\overline{S}$;

a first latching stage and a second latching stage coupled to the comparison stage and the amplifier stage respectively, for generating and latching logic states in conformity with the output signals from the comparison stage and the amplifier stage, which first latching stage comprises two transistors (30 and 32) arranged as a third differential pair forming a bistable latch, the intermediate signal V_M and its complement $V_{\overline{M}}$ being applied to the respective control electrodes of said first latching-stage transistors, whose first main electrodes are connected to a common terminal (39) for applying a bias current and whose second main electrodes are cross-coupled to the second main electrodes of the transistors of the comparison stage, and which second latching stage comprises two transistors (40 and 42) arranged as a fourth differential pair forming a bistable latch, the digital output signal S from the amplifier stage and its complement $\overline{S}$ being applied to the respective control electrodes of said second latching-stage transistors, whose first main electrodes are connected to a common terminal (49) for applying a bias current and whose second main electrodes are cross-coupled to the second main electrodes of the transistors of the amplifier stage, characterized in that it also comprises:

a second comparison stage adapted to provide compensation for the hysteresis of the first comparison stage, which second comparison stage comprises two transistors (52 and 50) arranged as a fifth differential pair, the input voltage and the reference voltage being applied to the respective control electrodes of said transistors, whose first main electrodes are connected to a common terminal (59) for applying a bias voltage and whose second main electrodes are cross-coupled to the second main electrodes of the transistors of the first comparison stage,

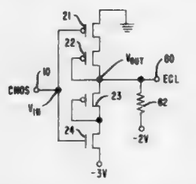
a second amplifier stage adapted to eliminate the phase indeterminacy of the logic states of the intermediate signal, which second amplifier stage comprises two transistors (62 and 60) arranged as a sixth differential pair, the intermediate signal and its complement being applied to the respective control electrodes of said transistors, whose first main electrodes serve for applying a bias current and whose second main electrodes are cross-coupled to the second main electrodes of the transistors of the first amplifier stage, in that the bias currents for the first differential pair and the fifth differential pair are such that the first comparison stage and the second comparison stage operate alternately, in that the bias currents for the second differential pair and the sixth differential pair are such that the first amplifier stage and the second amplifier stage operate alternately, in that the bias currents for the third differential pair and the fourth differential pair are such that the first latching stage and the second latching stage operate alternately, and in that the bias currents for the amplifier stages operate said amplifier stages in phase with the comparison stages and with the first latching stage.

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CMOS TO ECL INTERFACE CIRCUIT

Mehdi H. Sani, La Jolla, and Donald G. Tipon, San Diego, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 25, 1985, Ser. No. 801,548
Int. Cl.⁴ H03K *19/092, 19/094, 19/20;* **G06F** *7/38*
U.S. Cl. 307—475 **3 Claims**



1. A CMOS to ECL interface circuit comprising:

an input terminal and an output terminal;

a termination resistor for coupling a first power source to said output terminal;

a first, second, and third field effect transistor of first conductivity type, each having gate, source and drain electrodes, the drain and gate electrodes of said second field effect transistor connected to said output terminal;

the source electrode of said first field effect transistor connect able to a reference potential, the drain electrode of said first field effect transistor connected to the source electrode of said second field effect transistor;

a fourth field effect transistor of second conductivity type, having, gate, source and drain electrodes;

the gate electrodes of said first and said fourth field effect transistors connected to said input terminal; and

the drain electrode of said fourth field effect transistor connected to the gate and source electrodes of said third field effect transistor, the source of said fourth field effect transistor connectable to a second power source,

the source electrode of said third field effect transistor is connected to said output terminal.

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HIGH-SPEED VOLTAGE LEVEL SHIFT CIRCUIT

Dora Plus, Borough of South Bound Brook, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 26, 1984, Ser. No. 674,845
Int. Cl.⁴ H03K *17/10, 17/687, 19/094, 3/027*
U.S. Cl. 307—475 **10 Claims**

1. The combination comprising:

first and second power terminals for the application thereto of first and second different operating voltages, respectively;

a first node for the application thereto of signals varying in amplitude between said first and said second operating voltages;

first, second and third transistors, each transistor having a conduction path and a control electrode for controlling the conductivity of said conduction path;

a second node for the production thereat of an output signal;

means connecting the control electrodes of said first and third transistors to said first node;

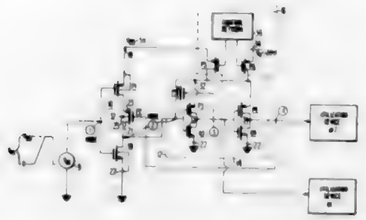
means connecting the conduction path of said third transistor between said second node and said first power terminal;

means connecting the conduction paths of said first and

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second transistors in series between said second node and said second power terminal; and

means responsive to the signal produced at said second node for generating a delayed negative feedback signal and for applying said delayed negative feedback signal to the control electrode of said second transistor for:



(a) turning-it-off and preventing current flow therethrough after the voltage at said second node is at, close to, or greater than, the voltage applied to said second power terminal; and

(b) turning-it-on and enabling current conduction therethrough after the voltage at said second node is at, or close to, the voltage at said first power terminal.

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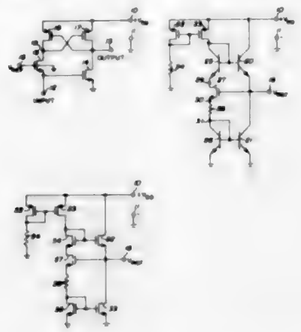
CMOS LOW-POWER TTL-COMPATIBLE INPUT BUFFER

A. Karl Rapp, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 17, 1985, Ser. No. 745,094

Int. Cl.[4] H03K *3/286, 3/353, 17/04, 17/687*

U.S. Cl. 307—475 **8 Claims**



1. A CMOS buffer amplifier circuit having first and second supply rails connectable to a source of operating power, an input terminal connectable to a source of logic signals and an output terminal for producing an inverted version of said logic signals, said circuit comprising:

a first IGFET having a source coupled to said second supply rail, a gate coupled to said input terminal and a drain coupled to said output terminal;

a second IGFET of the same conductivity type at the first IGFET, having a source coupled to said input terminal, a gate coupled to a source of reference potential and a drain; and

third and fourth complementary IGFET's having their sources coupled to said first supply rail, their drains coupled respectively to said first and second IGFET's and their gates cross coupled to the opposite drains to create a latching load configuration.

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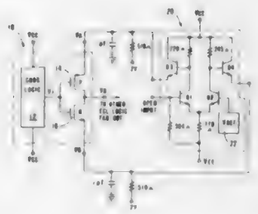
TEMPERATURE COMPENSATED CMOS TO ECL TRANSLATOR

Donald K. Lauffer, Poway, and Ikuo J. Sanwo, San Marcos, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 16, 1985, Ser. No. 809,108

Int. Cl.[4] H03K *17/14*

U.S. Cl. 307—475 **10 Claims**



1. A temperature compensated CMOS to ECL interfacing circuit comprising:

a CMOS circuit means for providing CMOS logic level output signals;

an interfacing circuit means for receiving said CMOS logic level output signals and for translating said output signals to ECL logic level signals for application to serviced ECL circuits, said interfacing circuit means also having a pair of supply voltage terminals; and

an ECL circuit means positioned in the same temperature environment as the serviced ECL circuits which receive the ECL logic level signals from said interfacing circuit means, said ECL circuit means coupled to said pair of supply voltage terminals of said interfacing circuit means to provide voltages the levels of which track temperature.

4,656,376

MOTOR-COMPRESSOR UNIT WITH OFFSET STARTING TORQUE

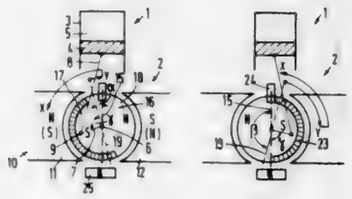
Jorgen Hyldal, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jun. 2, 1986, Ser. No. 869,215

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1985, 3521526

Int. Cl.[4] H02P *6/02*

U.S. Cl. 310—41 **5 Claims**



1. A motor-compressor unit, comprising, a piston-cylinder unit including a piston and a cylinder with a piston space therebetween and having a compressor center line, a two pole DC rotor-stator unit comprising a rotor and a stator of which one has permanent magnetic poles and the other has excitable poles, said rotor and stator having neutral lines with said neutral line of said stator forming a first angle with said compressor center line, control circuit means for changing the polarities of said excitable poles in response to the angular position of said rotor, a shaft for said rotor having an eccentric for driving said piston forming a second angle with said neutral line of said rotor, and means for providing said first and second angles so that the sum thereof is on the order of thirty degrees as an aid to the starting operation thereof.

4,656,377

TACHOGENERATOR HAVING A MAGNETORESISTANCE STATOR COIL

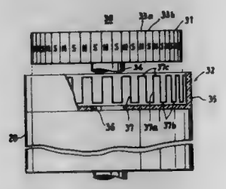
Naoki Akiyama, Kanagawa; Kenichi Kitamura, and Eiichi Kotake, both of Fujieda, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Jan. 28, 1985, Ser. No. 695,816

Claims priority, application Japan, Jan. 30, 1984, 59-14922; Jan. 19, 1985, 60-6165[U]

Int. Cl.[4] G01B *7/24;* **H01L** *43/08;* **H02K** *11/00*

U.S. Cl. 310—68 R **13 Claims**



1. A tachogenerator comprising:

a rotor member having an axis, a stator member coaxial with the axis of the rotor member;

one of said members having multiple equiangularly spaced-apart, alternately oppositely magnetized pole faces lying along a first path coaxial with the axis in a first surface; and

the other member comprising an electrically insulative stationary support having a second surface opposed to said first surface, and a coil of magnetoresistance material formed on said second surface, said coil being arranged on said second surface along a second path extending concentric with said axis over an arc of at least 180 degrees in a spatially periodic structure having multiple angularly spaced-apart lateral components connected in series with intermediate longitudinal components, the lateral components and the multiple pole faces being arranged so that the lateral components cut flux from the pole faces as the rotor turns about the axis.

4,656,378

MOTOR STATOR AND CONNECTOR FOR MAKING CONNECTIONS TO STATOR WINDINGS

Charles G. Atherton, Mechanicsburg, and John C. Swartz, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 12, 1985, Ser. No. 796,677

Int. Cl.[4] H02K *11/00*

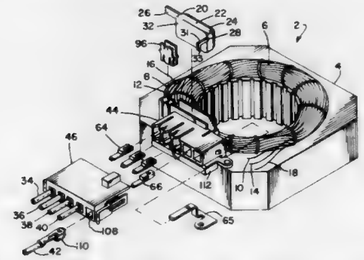
U.S. Cl. 310—71 **7 Claims**

1. An electric motor assembly comprising a stator, at least two coil windings on the stator and a motor protector, the protector comprising a prismatic body having first and second protector terminal tabs extending therefrom, the windings having at least four winding ends, one of the winding ends being connected to the first protector tab, at least three of the winding ends and the second protector tab being connected to individual lead wires, the assembly being characterized in that:

a stator connector is provided which is matable with a complementary connector, the stator connector comprising an insulating housing having a mating face, a rear face, oppositely facing endwalls, the housing being mounted on one surface of the stator with the first sidewall against the one surface of the stator, with the rear face adjacent to a portion of the windings, and with the mating face directed outwardly and away from the stator,

at least four cavities extend into the mating face, each of the cavities having a connector terminal therein, the connector terminals each having a matable contact portion which is adjacent to the mating face and which is matable with a complementary matable contact portion, at least three of the connector terminals having a winding end connection portion, the fourth connector terminal having a tab receptacle portion, the at least three winding ends extending to the at least three connector terminals and being connected to the winding end connecting portions thereof,

a protector pocket is provided which is integral with the rear face of the housing proximate to one of the endwalls, an additional cavity is provided which is integral with the housing adjacent to the one endwall and beside the protector pocket, the additional cavity having an additional terminal therein which has a tab receptacle portion and a winding end connecting portion, the protector being in the protector pocket with the first protector tab extending into the additional cavity and into the tab receptacle portion of the additional terminal, the one winding end extending into the additional cavity and connected to the winding end connecting portion of the additional terminal,



the second protector tab extending from the protector body past the rear face and into the cavity containing the fourth connector terminal, the second protector tab extending into the tab receptacle portion of the fourth connector terminal, whereby

the individual lead wires can be connected to complementary terminals in the complementary connector and upon mating the complementary connector with the stator connector, the lead wires will be properly connected to the winding ends and the second protector tab.

4,656,379

HYBRID EXCITED GENERATOR WITH FLUX CONTROL OF CONSEQUENT-POLE ROTOR

Frederick B. McCarty, San Pedro, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 18, 1985, Ser. No. 810,968

Int. Cl.[4] H02K *19/12*

U.S. Cl. 310—181 **34 Claims**

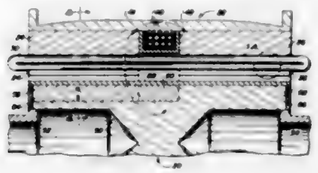
1. An electrical machine, comprising:

a rotor having a plurality of poles, said poles including alternate high reluctance permanent magnet poles and low reluctance consequent ferromagnetic poles;

a stator assembly having a polyphase winding thereon;

a control coil mounted on said stator assembly for generating a control flux proportional to direct current supplied

to said control coil, said control flux entering the stator assembly over the entire axial length thereof; and



a ferromagnetic frame for completing the path of said control flux generated by said control coil.

4,656,380

COMMUTATOR WITH WINDING CONNECTION SEGMENTS HAVING CUTTING EDGES

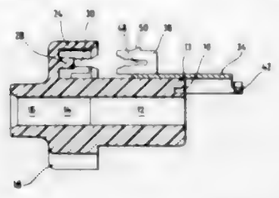
Georg Strobl, Repulse Bay, Hong Kong, assignor to Johnson Electric Industrial Manufactory, Chaiwan, Hong Kong

Continuation-in-part of Ser. No. 690,161, Jan. 11, 1985, Pat. No. 4,584,498, which is a continuation-in-part of Ser. No. 526,152, Aug. 24, 1983, abandoned. This application Mar. 7, 1986, Ser. No. 837,301

Claims priority, application United Kingdom, Oct. 11, 1982, 8229952

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—236 **16 Claims**



1. An armature comprising a winding having connector portions coated with insulation, a body having a commutator segment support and a housing section, and three or more commutator segments seated on said segment support and respectively connected to connector portions of said winding, in which:

said housing section includes three or more housings which are respectively formed with housing recesses for said commutator segments and with means for positioning said connector portions of said winding relative to each housing recess;

each said commutator segment comprising an integral terminal disposed within one of said housing recesses;

said terminal of each said commutator segment being provided with two cutting edges for cutting insulation on said connector portion positioned relative to said housing recess receiving said terminal, and a slot which straddles and grips said connector portion positioned relative to said receiving housing recesses;

said commutator segment support, said housing recess, said connector portions, said terminals, said cutting edges and said slots are arranged so that said each commutator segment can be positioned on said body with a single translational movement, parallel to an axis of the slot in the terminal, in which said commutator segment is moved relative to said segment support and, at the same time, said cutting edges strip said insulation from the connection portion positioned relative to said housing and said slot establishes and maintains electrical contact by insulation displacement; and

maintaining means for maintaining each of said commutator segments in intimate contact with said commutator segment support.

4,656,381

MAGNETIC POLE STRUCTURE HAVING ATERNATE POLES EXTENDING FROM A POINT OF BASES, FOR A ROTARY ELECTRIC MACHINE

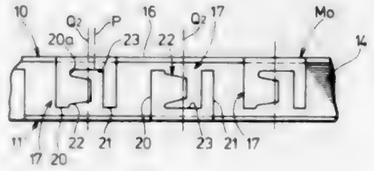
Fumito Komatsu, 1632-12, Nomura, Ooaza Hirooka, Shiojiri-shi, Nagano-ken, Japan

Filed Apr. 23, 1985, Ser. No. 726,257

Claims priority, application Japan, Apr. 25, 1984, 59-85038; Jun. 14, 1984, 59-122339; Nov. 2, 1984, 59-232171; Dec. 21, 1984, 59-271221; Dec. 27, 1984, 59-278130

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—257 **20 Claims**



1. In a magnetic pole structure for a rotary electric machine, including an armature having a pair of base board sections with a concentrically wound coil mounted therebetween and a plurality of magnetic pole sections extending from the edge of each of said base board section over the outer circular face of said coil and radially spaced therefrom, said pole sections extending over said coil alternately from said base board sections, and a field magnet surrounding said armature; the improvement wherein each said magnetic pole section is divided into first and second magnetic pole pieces spaced from one another in the circumferential direction of said coil, one of said magnetic pole pieces having an extended section extending circumferentially of said coil from the respective pole piece to provide substantially peak attractive torque between the magnet and pole sections when the magnetic pole centers of the pole sections coincide with the magnetic pole centers of the field magnet, whereby said attractive torque with no current passing through the coil slightly exceeds the startup load torque when the magnetic pole centers of the magnetic pole sections coincide with the magnetic pole centers of the field magnet.

4,656,382

END WINDING BRACING SYSTEM FOR GAS-COOLED ROTORS OF LARGE GENERATORS

William G. Moore, Winter Springs; Warren W. Jones, Geneva, and John C. Larse, Orlando, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 27, 1985, Ser. No. 802,561

Int. Cl.⁴ H02K *3/46*

U.S. Cl. 310—270 **4 Claims**

1. A dynamoelectric machine comprising:

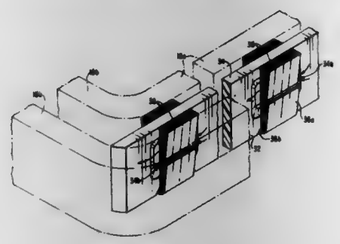
a stator having a stator core and a stator winding;

a rotor core on a shaft mounted for rotation within said stator, a rotor winding on said rotor core with a plurality of end turns extending beyond each axial extremity of said rotor core, portions of said end turns extending substantially axially and parallel to each other;

a substantially cylindrical retaining ring disposed over said end turns;

an end winding bracing system for supporting said end turns and for allowing axial ventilation between said axial and parallel portions of said end turns, said bracing system

comprising an axial block between and parallel to an adjacent pair of said end turn portions, said axial block having an opening substantially orthogonal to the axial direction, and a pair of support blocks, arranged on opposite sides of said opening of said axial block and supporting said axial block in relation to said adjacent pair of said end



turn portions, said pair of support blocks being substantially centrally located in relation to said opening and partially covering said opening while allowing axial flow of a gas coolant in a flow path over lateral surfaces of said axial block, into said opening under said support blocks, and out of said opening after the axial termination of said support blocks.

4,656,383

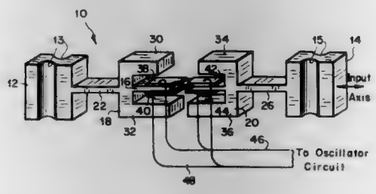
VIBRATING BEAM FORCE TRANSDUCER WITH SINGLE ISOLATOR SPRING

William C. Albert, Parsippany, N.J., assignor to The Singer Company-Kearfott Division, Little Falls, N.J.

Filed Feb. 14, 1986, Ser. No. 829,728

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—321 **18 Claims**



1. An apparatus comprising:

a single vibratory member having a longitudinal axis, said vibratory member being adapted to vibrate in a plane including said longitudinal axis;

means associated with said vibratory member to maintain vibration thereof at a characteristic frequency;

a supporting element secured to each end of said vibratory member and extending in both directions transversely of said longitudinal axis of said vibratory member;

a pair of end mounts;

two isolator springs each having a longitudinal axis, one of said isolator springs extending between one of said end mounts and one of said supporting elements, the other of said isolator springs extending between the other of said end mounts and the other of said supporting elements, said isolator springs transmitting axial forces from said end mounts to said vibratory member along the longitudinal axis thereof; and

a pair of isolator masses secured to each of said supporting elements, one at each end thereof respectively, said isolator masses being symmetrically disposed with respect to said vibratory member and one isolator mass of each pair of isolator masses being different in size and mass from the other isolator mass of the respective isolator mass pairs, said isolator springs and masses being effective to cancel the force and moment restraints produced at said end mounts whereby energy losses from said vibrating member may be prevented.

4,656,384

ULTRASONIC DETECTION SENSOR IN HYBRID STRUCTURE WITH APPERTAINING ELECTRONIC CIRCUIT

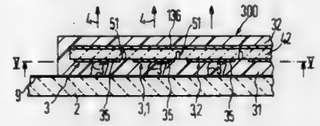
Valentin Magori, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 18, 1985, Ser. No. 788,875

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1984, 3439168

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—334 **20 Claims**



1. An ultrasonic detection sensor, particularly for use in liquids, comprising:

a thick film substrate plate as a hard acoustic mass forming a backing;

a thick film electrical circuit formed on said substrate and including connection terminals;

at least one layered ultrasonic transducer formed of alternating thick film layers including at least one thick film applied layer of piezo ceramic and at least two thick film applied layers of plastic material alternating with said at least one piezo ceramic layer, said plastic material having a specific gravity of less than 2, one of said plastic thick film layers forming an outside surface of said transducer and an opposing one of said plastic thick film layers being secured to said substrate.

4,656,385

HOUSING HAVING GROOVES THEREIN FOR MOUNTING A PIEZOELECTRIC LADDER FILTER

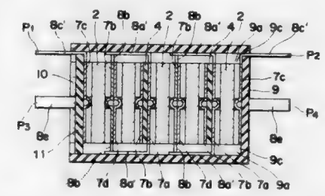
Yasuhiro Tanaka, Ishikawa, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Apr. 16, 1985, Ser. No. 724,631

Claims priority, application Japan, Apr. 17, 1984, 59-57120

Int. Cl.⁴ H03H *9/10*

U.S. Cl. 310—348 **3 Claims**



1. A filter of the ladder type comprising:

a casing in the shape of an elongated/hollow body having a longitudinal axis and an inner surface and having an aperture opening out of one axial end face and at least two grooves on the inner surface at at least two different positions around the inner periphery thereof which extend in a direction parallel to the longitudinal axis;

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at least one elongated terminal strip in the bottom of one of the grooves and extending along substantially the entire length of the one groove and having at least one end extending out of said casing;

a plurality of piezoelectric devices and a plurality of terminal plates positioned in said casing in a stack extending in the direction of said longitudinal axis and the stack having end terminal plates, the plates in the stack being in a predetermined order for forming with each other a ladder type filter, at least a part of the total number of said terminal plates having terminal tips integral therewith and projecting laterally therefrom in substantially the same plane as said terminal plates, the terminal tips on said part of the total number of said terminal plates extending into said one groove and being in firm electrical contact with said elongated terminal strip, the terminal tips on some of the remainder of said terminal plates extending into a groove other than said one groove and at least some of the terminal tips on said some of the remainder of said terminal plates having longitudinally extending terminal portions thereon extending along said other groove and with which the terminal tips on predetermined ones of said remainder of said terminal plates are in firm electric contact for forming the ladder type filter, and one of the terminal tips on each of the two end terminal plates in said stack having longitudinally extending terminal portions thereon in a groove other than said one groove and extending out of said casing; and

a seal means sealing up said aperture.

4,656,386

R LAMP HAVING AN IMPROVED DOME PORTION FOR INCREASING THE USEFUL LIGHT OUTPUT

Daniel M. Bloom, Euclid; Joseph A. Baccilli, Cleveland Hts., and Yilmaz C. Beisetepe, Euclid, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 13, 1985, Ser. No. 711,328
Int. Cl.[4] F21V *7/09*; H01K *1/26, 1/28*
U.S. Cl. 313—113 12 Claims



1. A reflector lamp comprising:

(a) an electrically conductive base;

(b) a finite light source having a geometric center and rigidly affixed to an electrically insulated stem which is connected to said electrically conductive base;

(c) a concave reflector having a focal point at which the geometric center of the light source is approximately located, said concave reflector comprising;

(c_1) a primary reflective section having a parabolic shape, a focal point, a predetermined length and a predetermined maximum diameter (D) between its outermost curved portions; said primary reflective section being contoured so as to be affixed to said electrically conductive base;

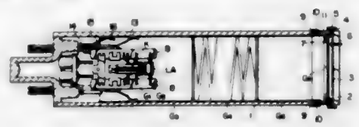
(d) a light-transmissive dome section joined to the front portion of said primary reflective section, said dome section having at least three portions each with a predetermined radius, said dome section having a predetermined height (H) which is proportional to the predetermined diameter (D) of the reflective section by a ratio which is less than 0.24 but greater than about 0.15.

4,656,387

CATHODE RAY TUBE HAVING A ZIG-ZAG SHAPED DEFLECTION ELECTRODE

Shoji Araki, and Shinichi Numata, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,399
Claims priority, application Japan, Aug. 29, 1983, 58-157646
Int. Cl.[4] H01J *29/62, 29/74, 31/38*
U.S. Cl. 313—389 1 Claim



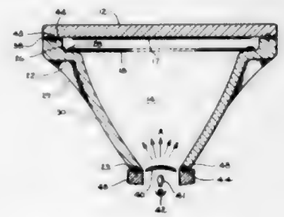
1. A cathode ray tube comprising an envelope, an electron gun having a beam limiting aperture, a first electrode, a second electrode, a third electrode, a mesh electrode, and a target, said first, second and third electrodes constituting electrostatic lens system to perform focusing of electron beam, said second electrode being a deflection electrode of arrow or zig-zag patterns to perform deflection of the electron beam, wherein if distance between said beam limiting aperture and said mesh electrode is l, length of said second electrode is made ($\frac{1}{2}l-1/10$ l) to ($\frac{1}{2}l+1/10$ l), and distance between said beam limiting aperture and the center of said second electrode is made ($\frac{1}{2}l-\frac{1}{4}l$) to $\frac{1}{4}l$, and wherein the length l is in the range of 2ϕ to 4ϕ where ϕ is the inner diameter of said first, second and third electrodes and for ϕ equal two third inches, l being not greater than two and two-thirds inches.

4,656,388

TENSED MASK COLOR CATHODE RAY TUBE AND MASK SUPPORT FRAME THEREFORE

Paul Strauss, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed May 17, 1985, Ser. No. 735,887
Int. Cl.[4] H01J *29/81*
U.S. Cl. 313—402 4 Claims



1. An integral support frame for a flat or cylindrical panel cathode ray tube adapted to support a tensed mask within the tube in precise, spaced relationship to the inner surface of the panel of the cathode ray tube, said frame comprising:

a radially outwardly and axially forwardly extending flange means for joining to the periphery of said panel;

shelf means extending radially inwardly from said flange means and providing a support surface for the edges of said tensed mask; and

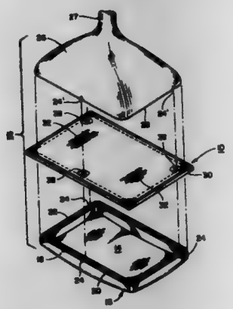
skirt means forming an integral structure with said flange means and extending axially rearwardly from said shelf means, and including a seal surface for joining to a short bell-shaped funnel portion of said tube, said frame forming a major portion of the tube envelope, said skirt means lending stiffness to said support frame to enable said support frame to resist distortion by the tension in said tensed mask.

4,656,389

TENSED MASK CATHODE RAY TUBE

Kazimir Palac, Carpentersville, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Division of Ser. No. 538,003, Sep. 30, 1983, abandoned. This application Oct. 25, 1985, Ser. No. 791,177
Int. Cl.[4] H01J *29/07, 29/10, 9/227*
U.S. Cl. 313—402 13 Claims



1. A color selection electrode assembly utilizable for screening a pattern of luminescent primary color elemental phosphor areas upon the target surface of an envelope section for a color cathode ray tube, and which is thereafter, frit sealable between said envelope section and a funnel section of said tube to permit selective excitation of said primary color phosphor areas by a scanning electron beam, said envelope section having registration affording means and being formed of a material having a predetermined temperature coefficient of expansion, said electrode assembly comprising:

a severable auxiliary mount defining a central opening of sufficient span to enable said mount to surround the periphery of said envelope section, formed of a material having a temperature coefficient of expansion greater than that of said envelope section;

indexing means, cooperable with said registration affording means, detachably affixed to said mount; and

a planar foil, having a predetermined pattern of apertures, secured to said mount and having a temperature coefficient of expansion not greater than that of said mount;

whereby said indexing means affixed to said mount upon cooperation with said registration affording means of said envelope section permits repeated precise registrations between said apertured foil and said envelope section to facilitate screening said pattern, as well as to facilitate mating of said electrode assembly to said envelope section.

4,656,390

COLOR PICTURE TUBE DEVICE

Kunio Fukuda, Fukaya, and Taketoshi Shimoma, Isesaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 8, 1985, Ser. No. 731,903
Claims priority, application Japan, May 10, 1984, 59-91792; Nov. 21, 1984, 59-244613
Int. Cl.[4] H01J *29/51*
U.S. Cl. 313—409 8 Claims

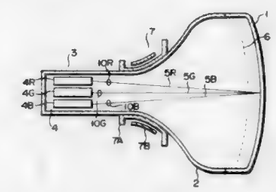
1. A color picture tube device comprising:

a tube envelope including a neck section, a panel section and a funnel section formed between said neck section and said panel section, said tube envelope having an axis;

an in-line type electron gun having a cathode and received in said neck section, said electron gun being arranged to emit a center electron beam and two side electron beams toward said panel section;

a deflection unit which is arranged around said neck and funnel sections and which includes first deflection coil means for deflecting electron beams toward a first deflection direction defined in and parallel to a plane including the three electron beams, and second deflection coil means for deflecting the electron beams along a second deflection direction perpendicular to the first deflection direction and the plane including the three electron beams; and

means for controlling a magnetic field in said neck section, located in said neck section, and made of a magnetic



member with high permeability, and for substantially matching sizes of resters which are defined by the three electron beams respectively, said controlling means including first magnetic field control menns for increasing a raster size of the center electron beam at least in the second deflection direction to shape the raster of the center electron beam into a barrel shape, and second magnetic field control means for decreasing the raster size of the center electron beam relative to a raster size of the side beams to shape the raster of the center electron beam into a pin cushion shape, said first and second magnetic field control measn being located between said deflection unit and said cathode of said electron gun and being spaced by a predetermined distance from each other along the axis of said tube envelope, and the second magnetic field control means being arranged closer to the cathode than the first magnetic field control means.

4,656,391

COLOR CATHODE RAY TUBE IN-LINE ELECTRON GUN FOCUSING ELECTRODE WITH OVERLAPPING TAPERED APERTURES ENLARGED FOR BEAM SPOT SHAPING, AND GUN STRUCTURES INCORPORATING SAME

Donald L. Say, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

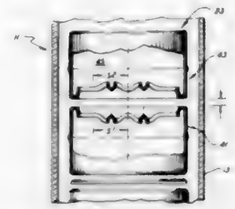
Filed Dec. 12, 1984, Ser. No. 681,039
The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.
Int. Cl.[4] H01J *29/62*
U.S. Cl. 313—414 21 Claims

1. A low potential lensing structure for an in-line electron gun structure for a color cathode ray tube comprising:

an electrode, having three in-line tapered apertures of substantially truncated volumetric configuration having substantially parallel axes of symmetry, each aperture having beam-exiting front and smaller dimensioned beam-entering rear openings, the front openings lying in a forward aperture plane and being generally circular and the front and rear openings separated by sloping sidewalls, a portion of the sidewall of each aperture intersecting with a portion of the sidewall of an adjacent aperture to form an inwardly sloping arcuate wall along the region of intersection; the axes of symmetry of said apertures in said electrode lying substantially in the in-line plane;

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characterized in that the smaller openings of the apertures are enlarged, whereby the lensing field asymmetry caused



by such enlargement substantially balances the lensing field asymmetry caused by the arcuate walls.

4,656,392

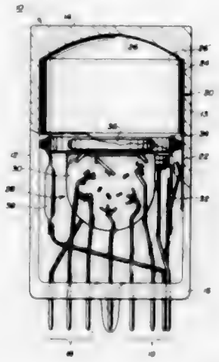
ELECTRON DISCHARGE DEVICE HAVING A THERMIONIC EMISSION-REDUCTION COATING

Richard D. Faulkner, and Robert E. McHose, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 28, 1983, Ser. No. 546,478

Int. Cl.⁴ H01J *43/18*

U.S. Cl. 313—533 **6 Claims**



2. In a photomultiplier tube comprising an evacuated envelope having a faceplate and a sidewall, said faceplate and said sidewall each having an interior surface,

an alkali-antimonide photoemissive cathode on said interior surfaces of said faceplate and of said sidewall, and

an electron multiplier assembly spaced from said photoemissive cathode on said faceplate, the improvement comprising

a thermionic emission-reduction coating disposed on said interior surface of said sidewall alloyed with the alkali-antimonide constituents of said photoemissive cathode overlying said coating, thereby forming a layer having reduced thermionic emission wherein said thermionic emission-reduction coating is selected from the group consisting of indium and indium oxide.

4,656,393

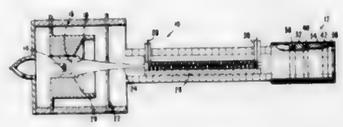
METAL-TO-CERAMIC BUTT SEAL WITH IMPROVED MECHANICAL PROPERTIES

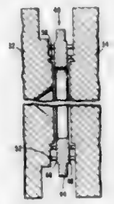
Kurt Amboss, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 15, 1984, Ser. No. 660,686

Int. Cl.⁴ H01J *23/02*

U.S. Cl. 315—5.38 **16 Claims**





1. A seal comprising:

a ceramic insulator having a surface;

a metal electrode;

a first seal member and at least one protruding abutment forming a second seal member, said first seal member protruding outward from said metal electrode and contacting said surface of said ceramic insulator and being hermetically sealed to both said electrode and said ceramic insulator, and each said protruding abutment being disposed radially outward from said first seal member, protruding outward from saaid metal electrode and contacting said surface of said ceramic insulator and being attached to said metal electrode and brazed to said ceramic insulator, each said protruding abutment being positioned with respect to said first seal member so as to divide stress loads therebetween.

4,656,394

PARTICLE ACCELERATOR WITH FREQUENCY CORRECTION

Claude Perraudin, Meudon, France, assignor to C.G.R. MeV, Buc, France

Filed Oct. 4, 1985, Ser. No. 784,560

Claims priority, application France, Oct. 12, 1984, 84 15701

Int. Cl.⁴ H01J *25/10*; **H03L** *7/00*

U.S. Cl. 315—5.41 **8 Claims**

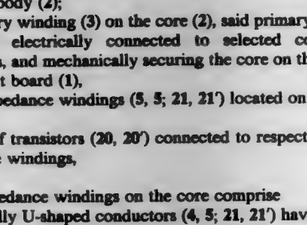
1. In a particle accelerator with frequency correction, comprising:

at least one resonant cavity defining a given tuning frequency,

an ultra high frequency generator delivering an incident wave of adjustable frequency,

a wave guide, by means of which said incident wave is applied to said resonant cavity,

a frequency corrector device comprising a first and second coupling means connected respectively to a first and to a second diode and further comprising a comparison and control means delivering an error signal for frequency controlling said generator as a function of an amplitude difference between the signals delivered by said diodes, said coupling means are non directional couplers each taking directly from said wave guide a fraction of a standing wave and said first and second non directional couplers are disposed along said wave guide, on each side thereof and at the same distance from a point where there



exists a minimum of said standing wave when the frequency of the incident wave is equal to said tuning frequency.

4,656,395

ACCESSORY CIRCUIT STRUCTURE FOR A LOW-PRESSURE DISCHARGE LAMP, TYPICALLY FLUORESCENT LAMP

Hans-Jürgen Filhurich, Munich, and Erhard Rasch, Ottobrunn, both of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft fur elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Sep. 23, 1985, Ser. No. 779,245

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1984, 3437527

Int. Cl.⁴ H01J *7/44*

U.S. Cl. 315—57 **6 Claims**

1. Accessory circuit structure for a fluorescent lamp (24) having

a printed circuit board (1) formed with conductive tracks thereon;

a lamp operating circuit including circuit components for operating the lamp (24) having a transformer including a core body (2);

a primary winding (3) on the core (2), said primary winding being electrically connected to selected conductive tracks, and mechanically securing the core on the printed circuit board (1),

two impedance windings (5, 5; 21, 21') located on the core; and

a pair of transistors (20, 20') connected to respective impedance windings,

wherein

the impedance windings on the core comprise

essentially U-shaped conductors (4, 5; 21, 21') having a pair of legs and at least in part surrounding the core;

a solder connection (7) on the printed circuit board connecting terminal ends of the legs of the U-shaped wire to conductive tracks on the printed circuit board; and

wherein the impedance windings include ohmic resistors (8) and terminal leads (9, 10) extending from the ohmic resistors, one of the legs of the U-shaped conductor being formed by the ohmic resistors, and the bend of the U and the other conductor being formed by a terminal wire of the resistor.

4,656,396

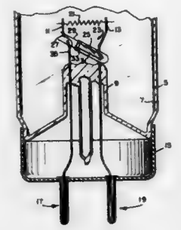
FLUORESCENT LAMP CIRCUIT BREAKER WITH LOW CONTACT RESISTANCE

Emery G. Audesse, Beverly, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Aug. 5, 1983, Ser. No. 520,862

Int. Cl.⁴ H01J *7/44, 13/46, 19/78, 29/96*

U.S. Cl. 315—73 **5 Claims**



1. A circuit breaker comprising a sealed glass bottle, a thermally-sensitive bimetal within said bottle, a pair of electrical conductors sealed into and passing through said glass bottle and an electrically-conductive by-pass element meltable in response to a short duration high voltage pulse potential shunting said pair of electrical conductors within said bottle, said electrical conductors formed of "Dumet" wire plated with an electrically conductive metal with one of said electrical conductors attached to said bimetal and the other electrical conductor electrically contacting said bimetal at room temperature and separated therefrom at temperatures higher than room temperature whereby formation of insulative oxides on said electrical conductors during glass bottle sealing is reduced.

4. A rapid-start fluorescent lamp comprising a glass envelope having a phosphor-coated inner wall surface, a pair of spaced electrodes sealed into said glass envelope, a pair of electrically conductive leads sealed into and passing through said glass envelope and a circuit breaker disposed within said envelope with said circuit breaker having a sealed glass bottle, a pair of electrical conductors sealed into and passing through said bottle, said electrical conductors formed of Dumet wire and plated with a metal selected from the group consisting of nickel, platinum and rhodium with one of said pair of electrical conductors attached to said bimetal and the other one contacting said bimetal at room temperature and separated therefrom at temperatures higher than room temperature.

4,656,397

METHOD AND APPARATUS FOR CONTROLLING FLASH TUBE DISCHARGE

George D. Chappell; Jerry B. West, both of DeSoto, and Robert B. Wilson, Ovilla, all of Tex., assignors to Simplec Manufacturing Company, Inc., Dallas, Tex.

Filed Mar. 4, 1985, Ser. No. 708,009

Int. Cl.⁴ H05B *37/00*

U.S. Cl. 315—241 S **32 Claims**

1. A circuit for firing a strobe light flash tube, comprising:

electronic clock means for generating a first output pulse train having a modulated pulse width and a second output pulse train having said modulated pulse width,

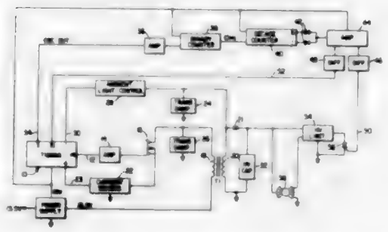
a transformer having a primary winding and a secondary winding having an electrical energy output,

an FET switch connected between said electronic clock means and said transformer, said FET receiving said first output pulse train and producing a rapidly changing input current in said primary winding,

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firing capacitor storage means connected between said secondary winding and said flash tube for storing said electrical energy output by said secondary winding,

pulse counter means connected to said electronic clock means for receiving said second output pulse train, said pulse counter means producing control pulses at selected intervals, and



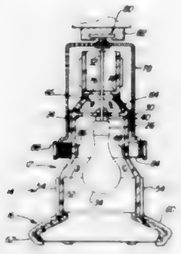
control means connected between said pulse counter means and said flash tube to receive said control pulses, said control means providing trigger pulses to said flash tube to enable said stored electrical energy to discharge through said flash tube.

4,656,398

LIGHTING ASSEMBLY

Anthony J. Michael, 4205 Adobe Dr., Tallahassee, Fla. 32303, and James E. Nelson, 515 W. Beechdale, Union Lake, Mich. 48085

Filed Dec. 2, 1985, Ser. No. 803,302
Int. Cl.⁴ F21V *23/00*; F21S *1/04*
U.S. Cl. 315—293 **21 Claims**



1. A lighting assembly comprising:

A. a hollow, elongated housing open at one end and adapted to be supported at its other end;

B. means within said housing for mounting a lightbulb socket adjacent said other end generally on the central longitudinal axis of said housing and extending within said housing toward said one open end;

C. a plurality of light element assemblies arranged on the exterior of said housing; and

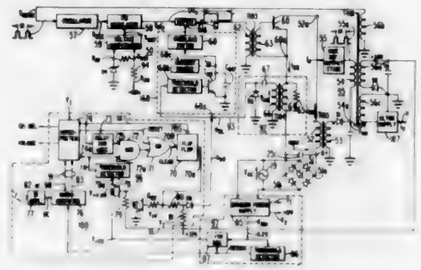
D. means for selectively energizing each of said light element assemblies in a manner to cause the assemblies to selectively emit a plurality of different colored lighting effects.

4,656,399

TELEVISION POWER SUPPLY TURN-ON PROTECTION CIRCUIT

William J. Tustin, Indianapolis, Ind., and Michael P. French, Huntsville, Ala., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 29, 1985, Ser. No. 728,661
Int. Cl.⁴ H01J *29/70*
U.S. Cl. 315—411 **5 Claims**



1. A television supply source with a fault protection comprising:

a power supply that selectively operates in a power-up mode and in a shut-down mode, for generating in said power-up mode a normal operating level of a first supply voltage, wherein when said power supply is in said shut-down mode the level of said first supply voltage is lower than in said power-up mode, said power supply being responsive to power-up and shutdown control signals, respectively, for assuming said power-up and shut-down modes when said power-up and shutdown control signals are asserted, respectively;

means for asserting said power-up control signal;

a delay unit responsive to said power-up control signal for delaying said power-up control signal by a first interval having a predetermined length immediately following the time in which said power-up control signal is asserted to assert at the end of said first interval, a delayed power-up control signal that, in normal operation sequence, occurs after said first supply voltage is inside a predetermined normal operation voltage range;

a detector responsive to said first supply voltage for generating an output signal when the level of said first supply voltage is outside said predetermined normal operation voltage range; and

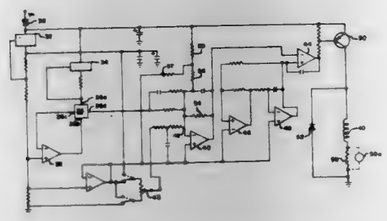
means responsive to both the delayed power-up control signal from said delay unit and said detector output signal for generating at an output terminal said shutdown control signal to cause said power supply to assume said shutdown mode when, at the end of said first interval, said first supply voltage is outside said predetermined normal operation voltage range, such that prior to the end time of said first interval, the signal at said output terminal is prevented from affecting said first supply voltage.

4,656,400

VARIABLE RELUCTANCE ACTUATORS HAVING IMPROVED CONSTANT FORCE CONTROL AND POSITION-SENSING FEATURES

Robert M. Pailthorp; Joseph J. Stupak, Jr., both of Portland, and Randall B. Elliott, Beaverton, all of Oreg., assignors to Synektron Corporation, Portland, Oreg.

Filed Jul. 8, 1985, Ser. No. 752,956
Int. Cl.⁴ H02K *41/00*
U.S. Cl. 318—135 **7 Claims**



1. A variable reluctance actuator, comprising:

(a) coil means for producing a magnetic field in response to an electrical current therein;

(b) actuator means, at least a portion of which comprises magnetic material magnetically coupled to said coil means by a magnetic circuit, for producing mechanical force in response to the effect of magnetic flux on said portion, said portion of said actuator means and said coil means being mounted for movement relative to each other;

(c) sensor means, magnetically coupled to said coil means by said magnetic circuit, for sensing the magnitude of the instantaneous magnetic flux density produced by said coil means at a location in said circuit and producing an electrical signal in response thereto, and means for producing an excitation current in said sensor means, said electrical signal being proportional to the product of said excitation current and said instantaneous magnetic flux density sensed by said sensor means at said location; and

(d) means for sensing the magnitude of the current in said coil means and variably controlling said excitation current of said sensor means in response thereto so as to cause said electrical signal to be proportional to the magnitude of the current in said coil means.

4,656,401

LOAD DRIVE APPARATUS

Hisakazu Ninomiya; Hiroyuki Tomita, both of Funabashi; Jyun Mochizuki, Yokohama, and Kazuyuki Nakagawa, Itikawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Keiyo Engineering Co., Ltd., both of, Japan

Filed Mar. 4, 1985, Ser. No. 707,500
Claims priority, application Japan, Mar. 5, 1984, 59-40333
Int. Cl.⁴ H02P *7/28*
U.S. Cl. 318—329 **13 Claims**

1. A load driving apparatus comprising:

an electric motor for driving a load;

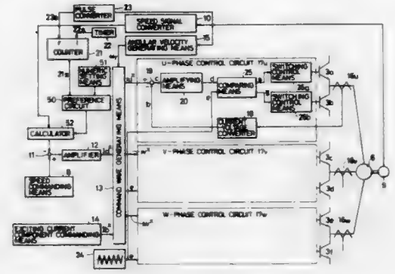
pulse generating means for generating pulses having a frequency corresponding to the revolution speed of the electric motor;

analog signal generating means for providing an analog signal corresponding to the frequency of the output pulses of the pulse generating means;

speed commanding means for providing a speed command signal commanding the revolution speed of the electric motor;

energizing means for receiving a difference signal corresponding to the difference between the output analog signal of the analog signal generating means and the speed command signal of the speed commanding means and for energizing the electric motor so that the revolution speed of the electric motor is regulated in accordance with the difference signal; and

control means for controlling the energizing means so that



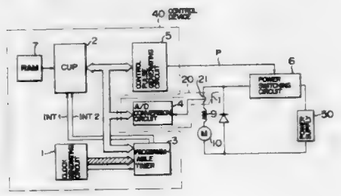
the magnitude of the output signal of the energizing means increases gradually in a period between two successive output pulses of the pulse generating means when the electric motor is operated at a low revolution speed.

4,656,402

ELECTRIC MOTOR CONTROL APPARATUS

Takayoshi Nishikawa, Chiryu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 10, 1986, Ser. No. 827,722
Claims priority, application Japan, Feb. 13, 1985, 60-25499
Int. Cl.⁴ H02P *5/16*
U.S. Cl. 318—341 **10 Claims**



1. An electric motor control apparatus in which a load current modulated in a pulse form and flowing in an electric motor is detected, and said load current is controlled by varying a pulse width of said load current so that an average value of said load current follows a command value, said electric motor control apparatus comprising:

switching means for modulating a direct current supplied to said electric motor from a DC power supply in said pulse form;

a current detector for detecting said load current flowing in said electric motor;

an average load current detecting means for detecting the average value of said load current by inputting from said current detector the load current at a time point after said switching means is rendered conductive and after the lapse of a predetermined time which varies in accordance an "on" time of said switching means, and by assuming said inputted load current as the average value of said load current to be detected;

an "on" time calculating means for determining the "on" time of said switching means in the next period based on the average value of said load current detected by said average load current detecting section and the command value; and

a switching control means for on-off controlling said switch-

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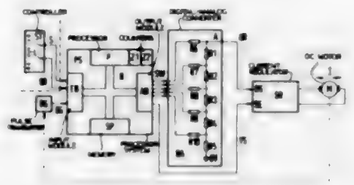
ing means in accordance with a commanded period and the "on" time calculated by said "on" time calculating means.

4,656,403

DIGITAL SPEED CONTROL CIRCUIT FOR A DC MOTOR

Gerhard Treffer, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 25, 1986, Ser. No. 832,674
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1985, 3510244
Int. Cl.⁴ H02P *5/16*
U.S. Cl. 318—341 **3 Claims**



1. A speed control circuit for a DC motor having an armature, comprising:

a pulse transmitter connected to and driven by the motor to produce a binary speed signal proportional to motor speed;

evaluation and control means connected to said pulse transmitter, including storage means storing a reference value corresponding to a reference speed, and operable during constant speed of the motor to generate a first control signal as an output signal representing the difference between the pulse width of the binary speed signal and the stored reference value, the first control signal representing a desired current value and desired current direction through the armature;

said storage means further storing reference values representing pluralities of the pulses of the binary speed signal, and said evaluation and control means operable during acceleration and deceleration to generate a second control signal as an output signal representing the difference between the pulse duration of the binary speed signal and a stored path-dependent reference value representing the plurality of pulses of the binary speed signal;

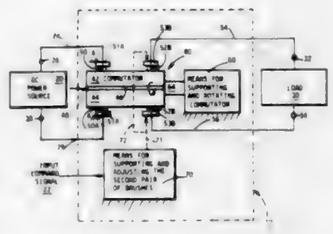
switching means connected between said evaluation and control means and the motor and operable in response to the output signals of said evaluation and control means to set the current and current direction through the armature of the motor, the output signal comprising a control word and an operational sign signal, and said switching means comprising a digital-to-analog converter connected to said evaluation and control means to receive said control word and form a reference voltage, and a current regulator connected between said digital-to-analog converter and the motor and connected to receive the operational sign signal, said current regulator responsive to the reference voltage and the operational sign signal to set the current value and current direction for the motor.

4,656,404

TURBINE-DIVEN LINEAR CONTROLLER FOR ELECTROMECHANICAL DEVICE AND METHOD

John F. Klinchurch, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 14, 1985, Ser. No. 701,893
Int. Cl.⁴ H02K *13/00*; H02P *5/44*
U.S. Cl. 318—558 **16 Claims**



1. An apparatus for generating and linearly controlling a periodic bipolar drive signal from a DC power source having supply voltage and reference terminals in response to an input command signal to drive an electromechanical device, said apparatus comprising:

a base;

a rotatable cylindrical commutator having a centered axis of rotation comprising complementary first and second half-cylinder sections having conductive exterior surfaces electrically isolated from each other;

a first pair of diametrically opposed conductive brushes fixed in angular position comprising a first brush connected to said supply voltage terminal and a second brush connected to said reference terminal for electrically connecting said DC power source to said commutator;

a second pair of diametrically opposed conductive brushes adjustable in angular position connected to said electromechanical device for electrically connecting said commutator to said electromechanical device;

means attached to said base insulatively supporting said first pair of brushes in contact with said exterior surface of said commutator sections;

means attached to said base insulatively supporting said second pair of brushes in contact with said exterior surface of said commutator sections and for adjustably setting the angular position of said second pair of brushes relative to said first pair of brushes in linear response to said input command signal; and

means coupled to said commutator for supporting and rotating said commutator at a rotational frequency equal to one-half the desired frequency of said bipolar drive signal;

said commutator commutating bipolar drive signals of twice the commutator rotational frequency to said electromechanical device wherein the average polarized current is linearly related to the difference in angular position of said second pair of brushes relative to said first pair of brushes.

4,656,405

TAPPING MACHINING METHOD

Nobuyuki Kiya, and Motoaki Yoshino, both of Tokyo, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP85/00044, § 371 Date Oct. 1, 1985, § 102(e) Date Oct. 1, 1985, PCT Pub. No. WO85/03468, PCT Pub. Date Aug. 15, 1985
PCT Filed Feb. 4, 1985, Ser. No. 795,937
Claims priority, application Japan, Feb. 3, 1984, 59-018083
Int. Cl.⁴ G05B *19/24*
U.S. Cl. 318—571 **6 Claims**

1. A tapping machining method comprising the steps of:

(a) subjecting a workpiece to a predetermined thread cutting operation by performing a pulse distribution calculation based on pulses of a frequency proportional to a rotational velocity of a spindle and on a pitch of a screw;

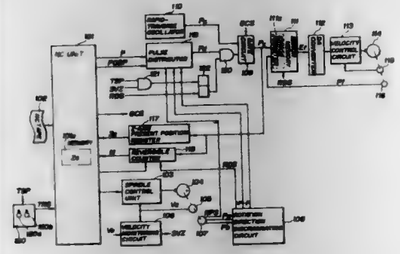
(b) applying pulses obtained by the pulse distribution calculation to a servo circuit to move a tapping tool in the depth direction;

(c) continuing the pulse distribution calculation without pause and generating a spindle rotation reverse command when the tapping tool arrives at a commanded depth;

(d) moving the tapping tool in the depth direction by the distributed pulses obtained by the pulse distribution calculation of said step (c) while the spindle is rotating in a forward direction due to inertia;

(e) executing the following step after the spindle is rotated in the reverse direction:

continuing the pulse distribution calculation based on pulses of a frequency proportional to a reverse rotation velocity and on the pitch of the screw, and withdrawing the tapping tool from the workpiece by moving the tapping tool in the withdrawal direction in accordance with the pulses obtained from the continued pulse distribution calculation.

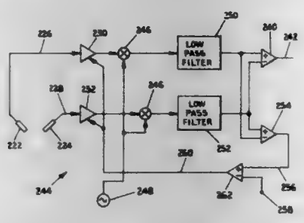


4,656,406

ELECTRIC FIELD GUIDANCE SYSTEM FOR AUTOMATED VEHICLES

Robert W. Houskamp, Grand Rapids, Mich., assignor to Litton Automation Systems, Inc., Zeeland, Mich.

Filed Sep. 20, 1985, Ser. No. 778,523
Int. Cl.⁴ G05D *1/00*
U.S. Cl. 318—587 **8 Claims**



1. An automated vehicle guidance system having one or more self-propelled vehicles adapted to follow a predetermined guidepath having path signal generating means for generating signals on said guidepath, and wherein each of said vehicles includes guidepath sensing means for sensing the position of the guidepath with respect to the vehicle, signal generating means connected to said sensing means for generating an intelligence signal representative of the position of the vehicle with respect to the guidepath, and control means for steering the vehicle in response to the intelligence signal generated by the signal generating means so as to maintain a given position of the vehicle with respect to the guidepath as the vehicle moves therealong, the improvement wherein:

the path signal generating means comprises means for exciting the guidepath with an AC voltage signal referenced to an earth ground;

the guidepath sensing means comprises electric field sensing means for sensing the strength of the electric field resulting from the voltage signal; and

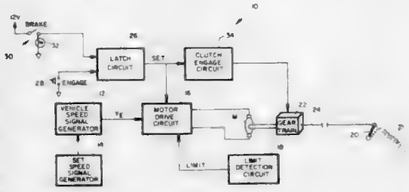
the signal generating means is connected to the electric field sensing means and is responsive to the sensed strength of the electric field for generating the intelligence signal.

4,656,407

ELECTRIC MOTOR SERVO CONTROL SYSTEM AND METHOD

Charles F. Burney, Orland, Calif., assignor to A.R.A. Manufacturing Company of Delware, Inc., Grand Prairie, Tex.

Filed Jun. 14, 1985, Ser. No. 745,303
Int. Cl.⁴ G05G *5/00*
U.S. Cl. 318—626 **7 Claims**



1. In a system for maintaining the speed of a vehicle at a predetermined constant rate by controlling rotation of an electro-servo motor that is coupled to an element moveable between at least two positions by the servo motor for controlling the fuel-air mixture of the vehicle, the servo motor being responsive to a control current produced by a motor drive circuit to move the element, means for interrupting the servo motor operation when the element is relatively immoveable, comprising:

element position indicating means operably coupled to said element for providing a signal having a value which varies with the position of said element;

first circuit means for providing a first reference signal having a value representing when said element reaches a first extreme travel position, and for providing a second reference signal having a value representing when said element reaches a second extreme position of travel;

first comparator means operatively coupled to said element position indicating means and said first circuit means for comparing the value of the signal produced by said element position indicating means to said first reference signal and for providing a signal indicating whether the value of said signal from said element position indicating means exceeds the value of said first reference signal;

second comparator means operatively coupled to said element position indicating means and said first circuit means for comparing said signal from said element position indicating means to said second reference signal and for providing a signal indicating whether the value of said signal from said element position indicating means drops below the value of said second reference signal;

second circuit means operably connecting said first and second comparator means to said motor drive circuit for terminating current flow to said servo motor in the event the signal from said first or second comparator means indicates said element has reached either the first or second extreme position of travel.

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4,656,408

XY-SURFACE DRIVE HAVING LIMITED ϕ-ROTATION AND Z-MOVEMENT

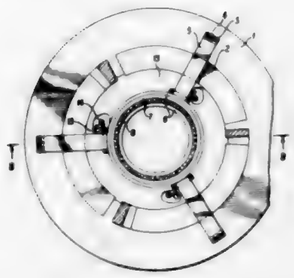
Hans-Juergen Furchert, Ilmenau, German Democratic Rep., assignor to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Filed Nov. 21, 1984, Ser. No. 673,957

Claims priority, application German Democratic Rep., Nov. 30, 1983, 2573036

Int. Cl.⁴ G05B 1/06

U.S. Cl. 318—653 **3 Claims**



1. In an xy-surface drive having limited ϕ-rotation and z-movement, comprising a magnet system positioned on a base plate, mechanically connected coils mounted to pass through the working-airgaps of the magnet system, graticule means being fastened on the coils, and mechanical guidance means for the movement are fastened on the base plate and connected to a deflectable object support plate guided in z-direction, the improvement wherein three box coils are mounted to extend radially between and affixed to a central ferromagnetic U-profile ring and a larger diameter non-ferromagnetic ring-shaped element, each said coil passing through the working air-gap of a separate segment of a three-part magnet ring segment system of magnets extending circumferentially, the ring-shaped element supporting therein a plate spring which is fixedly connected at its inner edge to object support means which partially allows beams to pass therethrough, a ring-shaped coil being affixed to the plate spring and extending into a working air-gap of a magnet system defined by a magnet ring affixed to one arm of the U-profile ring and the other arm of the central ferromagnetic U-profile ring.

4,656,409

ELECTROMAGNETIC SERVO UNIT

Yasuo Shimizu, Tochigi, Japan, assignor to Honda Gikeu Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1985, Ser. No. 746,829

Claims priority, application Japan, Jun. 22, 1984, 59-129582; Jun. 22, 1984, 59-129584; Jun. 22, 1984, 59-129585; Jun. 22, 1984, 59-129586

Int. Cl.⁴ G05D 17/00

U.S. Cl. 318—689 **12 Claims**

1. An electromagnetic servo unit comprising:

an outer casing;

a first shaft and a second shaft both rotatably supported by said casing;

an electric motor having an armature coaxially and rotatably arranged around said second shaft and a field arranged inside said casing;

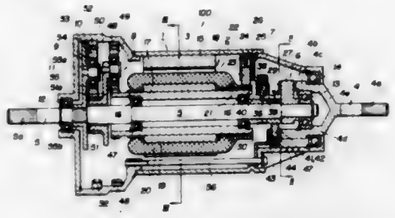
torque detecting means for detecting torque applied to either of said first shaft and said second shaft;

control means arranged inside said casing, for receiving a detection signal from said torque detecting means, and for controlling operation of said electric motor in accordance therewith; and

a transmission mechanism for transmitting rotary force of said armature of said electric motor,

wherein:

said torque detecting means is arranged inside said casing; and



said first shaft and said second shaft are mutually actuatably connected to each other within said casing through said torque detecting means.

4,656,410

CONSTRUCTION OF SINGLE-PHASE ELECTRIC ROTATING MACHINE

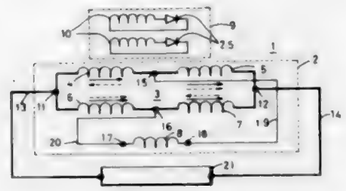
Fukuo Saibata, No. 8-go, 3-ban, 2-chome, Taiden, Akashi-city, Hyogo-prefecture, Japan (673)

Filed Aug. 12, 1985, Ser. No. 764,725

Claims priority, application Japan, Aug. 9, 1984, 59-167208; Jan. 28, 1985, 60-15045; May 25, 1985, 60-113000

Int. Cl.⁴ H02P 7/36

U.S. Cl. 318—718 **20 Claims**



1. A single-phase electric rotating machine arrangement which comprises in combination:

an electric rotating machine having a stator provided with a main armature winding in which the load current flows and with an exciting winding for supplying the main armature winding with the exciting current, and having a rotor provided with a rotor winding;

two outside electric terminals for the said electric rotating machine which lie respectively in points connected with the both ends of the said main armature winding of the said stator of the said electric rotating machine;

external circuit wires which are respectively, electrically connected with the said outside electric terminals for the said electric rotating machine, so that the load current may flow in the main armature winding through the external circuit wires;

at least four winding circuits which compose the said main armature winding in such a bridge circuit way as can be formed by connecting one set of series-connected two winding circuits in parallel with another set of series-connected two winding circuits, in the circuit between the said two outside electric terminals;

at least two intermediate electric terminals for the said main armature winding which lie respectively in each intermediate points of the said two sets of series-connected two winding circuits;

electric terminals for the said exciting winding in the said stator of the electric rotating machine; and

electric wires connecting between the said intermediate electric terminals for the main armature winding and the said electric terminals for the said exciting winding, so that the main armature winding may be supplied with the exciting current from the exciting winding through the said two intermediate electric terminals for the said main armature winding.

4,656,411

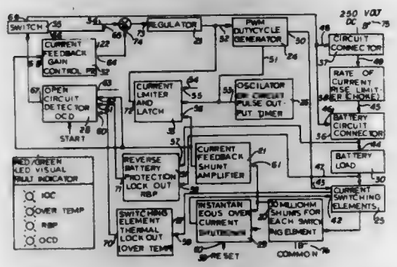
DC CURRENT CONTROLLER FOR HYDROSET BATTERY ELECTRODE ELECTROFORMATION

Daniel P. Carlson, 10034 Plum Rd., Erie, Pa. 16510

Filed Nov. 13, 1984, Ser. No. 671,113

Int. Cl.⁴ H01M 10/44

U.S. Cl. 320—16 **37 Claims**



1. A controller for forming hydroset batteries having no internal voltage comprising:

a pulse width modulated duty cycle generator (24),

a source of direct current (75–76),

connecting means for connecting said source of direct current to a group of hydroset batteries (30),

said group (30) comprising batteries connected in series with one another forming a load,

said connecting means comprising:

a circuit connector (37),

a rate of rise limiter (38),

a battery circuit connector (36),

current switching means (25),

shunt means (20),

said pulse width modulated duty cycle generator being responsive to current flow through said current switching means (25),

said circuit connector (37), said rate of rise limiter (38), said battery circuit connector (36), said current switching means (25) and said shunt means (20) being connected in series with each other and adapted to be connected in series with said battery group (30) to be electroformed into said batteries whereby said current through said battery load is substantially constant,

said pulse width modulated duty cycle generator (24) being connected to said current switching means (25) and controlling current flow through said current switching means (25).

4,656,412

FERRORESONANT FLUX COUPLED BATTERY CHARGER

Colonel W. T. McLyman, Lakewood, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jul. 8, 1985, Ser. No. 753,023

Int. Cl.⁴ H02J 7/04; G05F 3/06

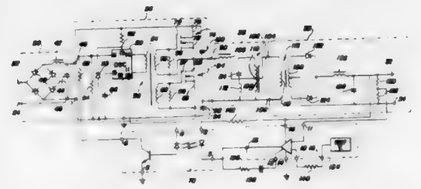
U.S. Cl. 320—39 **17 Claims**

7. In a circuit for providing charging current to a battery or the like from an AC source, the combination which comprises:

(a) first rectifier means adapted to be connected to the AC source for providing a DC output voltage;

(b) high-frequency converter means having an input connected to the first rectifier means, and an output, the high-frequency converter means being arranged to convert the DC output voltage from the first rectifier means into an AC output voltage having a frequency within a predetermined range;

(c) ferroresonant means having an input connected to the output of the high frequency converter means, and an output, the ferroresonant means including a non-linear saturable core transformer connected across the output thereof, a resonating capacitor and a first linear inductor connected in series across the saturable core transformer and a second linear inductor connected in series between the input of the ferroresonant means and the saturable core transformer, the saturable core transformer being arranged to saturate when the output voltage from the high frequency converter means reches less than its peak value, the voltage level at which saturation takes place being dependent upon the frequency of the output voltage from the high-frequency converter means, the values of the resonating capacitor, the second linear inductor and



the saturable core transformer being chosen to provide resonance at the frequency of the AC output voltage from the high-frequency converter means, the value of the first inductor being chosen to cause the resonating capacitor and first inductor to resonate at the third harmonic of the output voltage from the high-frequency converter means;

(d) second rectifier means having an input connected to the output of the ferroresonant means, and an output for providing charging current, the second linear inductor being arranged to present a highly reactive load across the output of the high-frequency converter means in the event of a short across the output of the second rectifier means to render the charging circuit short-circuit proof;

(e) means coupled to one of said ferroresonant means and second rectifier means for comparing a voltage representative of the output voltage from the second rectifier means with a predetermined value and for generating an error signal representative of the difference in the values; and

(f) means responsive to the error signal and coupled to the high frequency converter means for controlling the frequency of the AC output voltage from the high-frequency converter means to reduce the error signal.

4,656,413

STABILIZED CONTROL SYSTEM AND METHOD FOR COUPLING AN INDUCTION GENERATOR TO AC POWER MAINS

Frank J. Bourbeau, 5411 Toltec Dr., Santa Barbara, Calif. 93111

Filed Jun. 19, 1986, Ser. No. 876,122

Int. Cl.⁴ H02P 9/00

U.S. Cl. 322—47 **34 Claims**

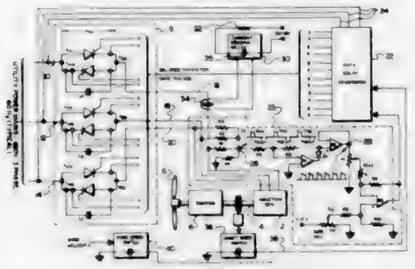
1. A controller for stabilized coupling of an induction generator to an alternating current (AC) power mains, comprising:

switching means electrically connecting the power mains to the generator to transmit power therebetween, said switching means being adapted to switch on for current

conduction between the AC power line and the generator in response to a gating signal, and to switch off in response to a lack of current flow,

adjustable control means connected to provide a gating signal to the switching means after a predetermined initial gate delay angle during each half cycle of the AC power mains voltage,

means for sensing the switching means blocking voltage, and



feedback means responsive to the sensed blocking voltage for adjusting the control means to progressively increase the gate delay angle as the generator power factor angle approaches the gate delay angle, the gate delay angle increasing at a lesser rate than the increase in power factor angle to stabilize transitions between motoring and generating modes of operation.

4,656,414

EFFICIENT SWITCH DRIVE CIRCUIT

Jeffery L. Morud, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 18, 1985, Ser. No. 789,198

Int. Cl.⁴ G05F *1/46*

U.S. Cl. 323—289 **14 Claims**



1. A control node driving circuit for driving a control node of an output switching device, the control node driving circuit receiving a control signal which exhibits an active state wherein the control signal commands activation of the output switching device and current flows at a first voltage relative to a common potential, the control node driving circuit comprising:

a terminal adapted to receive the control signal;

means, coupled to said terminal, for initiating activation of the switching device utilizing control signal current;

means, coupled between said terminal and the control node of the output switching device for retarding control signal current flow while the control signal remains active;

a current source for providing a steady state current at a second voltage being less than the first voltage; and

means, coupled to said current source and to the control node of the output switching device, for driving the control node of the output switching device utilizing current from said current source.

4,656,415

CIRCUIT FOR GENERATING A REFERENCE VOLTAGE WHICH IS INDEPENDENT OF TEMPERATURE AND SUPPLY VOLTAGE

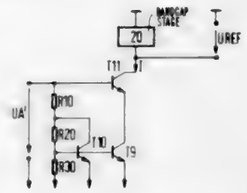
Dieter Draxelmayr, Villach, Austria, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 18, 1985, Ser. No. 725,010

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1984, 3415010

Int. Cl.⁴ G05F *3/30*

U.S. Cl. 323—314 **13 Claims**



1. Circuit for generating a reference voltage which is independent of temperature and supply voltage, comprising a bandgap stage supplying the reference voltage, a first circuit receiving the supply voltage and generating an output voltage being substantially free of variations in the supply voltage, and a second circuit connected to said first circuit and driven by said output voltage, said second circuit being connected to said bandgap stage for supplying a current to said bandgap stage having a characteristic for compensating and eliminating temperature dependencies in said bandgap stage.

4,656,416

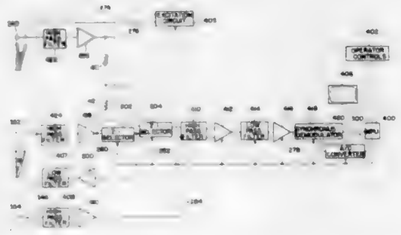
METHOD AND APPARATUS FOR LOCATING SHORT CIRCUITS

Laurence C. Brasfield, Mercer Island, Wash., assignor to Applied Microsystems Corporation, Redmond, Wash.

Filed Aug. 3, 1984, Ser. No. 637,426

Int. Cl.⁴ G01R *31/08*

U.S. Cl. 324—52 **14 Claims**



1. A non-contact method for locating a second circuit which is shorted to a first circuit, such as those that may be present on printed circuit boards, which comprises the steps of:

a. applying an alternating current signal of a relatively high frequency and low voltage between the first circuit and an extensive reference circuit to induce a signal in the second circuit;

b. detecting the field created nearby the circuits by scanning over the circuits at a distance with a high impedance field sensitive probe in order to detect the field developed in response to the applied signal;

c. comparing the response detected by the probe to the applied signal in order to provide an output representative of the relative potential of the field detected by the probe; and

d. providing an indication of the relative value of the field detected by the probe, in response to the result of the comparison, whereby a potential detected by the probe in the second circuit which should not be connected to the first circuit indicates that the second circuit is shorted to the first circuit.

4,656,417

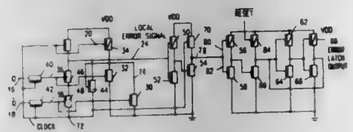
TEST CIRCUIT FOR DIFFERENTIAL CASCODE VOLTAGE SWITCH

Edward S. Kirkpatrick, Crotos-on-Hudson; Eric P. Kronstadt, Hartsdale; Robert K. Montoye, Peekskill, and Winfried W. Wilcke, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 29, 1985, Ser. No. 759,804

Int. Cl.⁴ G01R *31/28*

U.S. Cl. 324—73 R **7 Claims**



1. A testing circuit for a differential cascode voltage switch system for producing an error signal on an error line in response to an invalid signal condition on a pair of Q and $\overline{Q}$ switch lines having Q and $\overline{Q}$ signals thereon from said switch system, comprising first error detection means for producing a first (local) error signal including,

a C-clock input signal lead responsive to a C-clock signal from said switch system being tested,

first and second decoupling pass transistor devices respectively connected to said Q and $\overline{Q}$ lines from said switch being tested, and to said C-clock input signal lead,

a NOR circuit including first, second and third devices, said first and second NOR circuit devices respectively connected to the outputs of said first and second pass transistor devices and said third NOR circuit device being connected to said C-clock signal lead, said NOR circuit functioning to detect when said Q and $\overline{Q}$ signals from said first and second pass transistor devices are at a given (invalid) signal level, and for producing a first level (local) error signal when said Q and $\overline{Q}$ signals and said C-clock signal are at given signal levels,

and a (local) error signal output lead connected to said NOR circuit.

4,656,418

MOLDED CLAMP-TYPE AMMETER PROBE

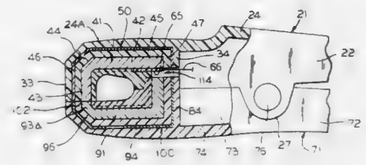
John T. Boston, Wauwatosa, and Larry D. Pacetti, Kenosha, both of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Jan. 27, 1986, Ser. No. 822,789

Int. Cl.⁴ G01R *19/15*

U.S. Cl. 324—127 **14 Claims**

1. A clamping ammeter probe comprising: two opposed jaws interconnected for pivotal movement between open and closed conditions, each of said jaws including a magnetic core unit disposed between substantially magnetically impermeable inner and outer segments and unitary with each, each of said magnetic core units including a magnetic core segment and a magnetic shield segment and a substantially magnetically impermeable intermediate segment therebetween and unitary with said core segment, in each of said jaws said intermediate segment cooperating with said inner segment to substantially encompass said magnetic core segment except for two spaced-apart exposed surface portions thereof, in each of said jaws said intermediate segment cooperating with said outer segment to substantially encompass said magnetic shield segment except for two spaced-apart exposed surface portions thereof, said magnetic core segments cooperating when said jaws are disposed in the closed condition thereof to form a magnetic core path for encircling an associated conductor with the exposed surface portion of one core segment disposed in facing relationship respectively with the exposed surface portions of the other core segment, said shield segments cooperating when said jaws are disposed in the closed condition thereof to form a magnetic shield path for substantially encompassing said magnetic core path with the exposed surface portions of one of said shield segments being respectively disposed in facing relationship with the exposed surface portions of the other of said shield segments.



4,656,419

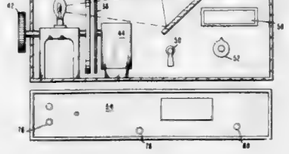
SIMPLIFIED SOLAR CELL MATERIAL TESTER

George F. J. Garlick, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 20, 1984, Ser. No. 652,554

Int. Cl.⁴ G01R *31/26*

U.S. Cl. 324—158 D **7 Claims**



5. A method for testing quality of photovoltaic semiconductor material having a thickness of less than one minority carrier diffusion length, for use as solar cells, by determining the minority carrier diffusion length, comprising the steps of:

preparing a thin slice of semiconductor material by polishing one side thereof, and preparing the other side thereof with a predetermined surface finish;

coupling to both sides of said thin slice of semiconductor material with electrodes;

directing light having a first predetermined wavelength onto the polished surface of said slice;

measuring a first photovoltage developed at said electrodes while light at said first wavelength is applied to said slice;

directing light having a second different predetermined wavelength onto said slice;

adjusting the light intensity so that the photovoltage developed at said electrodes while light at said second wavelength is applied to said slice is substantially the same as said first photovoltage at said first wavelength;

measuring a second intensity of illumination applied to said slice at said second wavelength;

determining the ratio of the light intensity at one of said first

and second wavelengths relative to the light intensity at the other of said first and second wavelengths; and

ascertaining the minority carrier diffusion length from said ratio.

4,656,420

METHOD AND CIRCUIT ARRANGEMENTS FOR DETECTING AND EVALUATING FAULTS IN RECORDING MEDIA HAVING DIGITAL SIGNALS RECORDED ON ONE OR MORE TRACKS

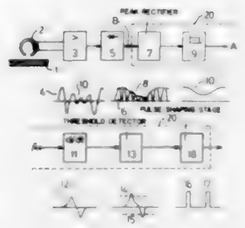
Peter Felleisen, Lampertheim; Arfbert Krug, Achern, and Peter Grossbans, Offenbach, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,385

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1982, 3238077

Int. Cl.⁴ G01R *33/12;* **G11B** *27/36*

U.S. Cl. 324—212 **10 Claims**



5. A circuit arrangement for detecting and evaluating drop-outs in recording media, particularly magnetic data recording media, having digital signals recorded on at least one track, comprising a read circuit having, in the following order, a read amplifier, a rectifier for rectifying the amplified read signal, a peak rectifier, a low-pass filter for smoothing the signal processed in the peak rectifier, a differentiating circuit for producing a differentiated signal, and a threshold detector for the purpose of detecting and evaluating drop-ins.

4,656,421

MAGNETIC FIELD SENSORS

Stafford M. Ellis, West Sussex, and Donald R. C. Price, Maidstone, both of England, assignors to GEC Avionics Limited, England

Filed Sep. 18, 1985, Ser. No. 777,175

Claims priority, application United Kingdom, Sep. 24, 1984, 8424132

Int. Cl.⁴ G01R *33/032;* **G01B** *9/02*

U.S. Cl. 324—244 **5 Claims**



1. A magnetic field sensor comprising an arcuate element comprising two superimposed elongate strips of material, the magnetostrictive constant along the longitudinal axis of one of the strips being greater than that of the other strip; and means for attaching an optical fibre along a chord of the element such that a variation in applied magnetic field in the plane containing the arc of the element gives rise to a variation in the curvature of the element so as to produce a variation in the strain in the fibre wherein the variation in the curvature of the element is indicative of the applied magnetic field.

4,656,422

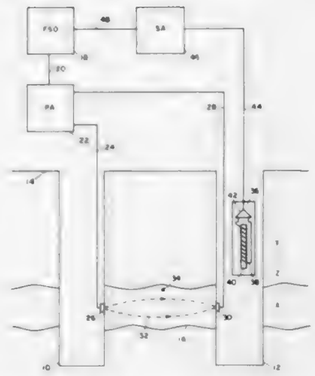
OIL WELL LOGGING TOOLS MEASURING PARAMAGNETIC LOGGING EFFECT FOR USE IN OPEN BOREHOLES AND CASED WELL BORES

William B. Vail, III, Bothell, and Paul B. Schwinberg, Seattle, both of Wash., assignors to ParaMagnetic Logging, Inc., Bothell, Wash.

Continuation-in-part of Ser. No. 387,198, Jun. 10, 1982, Pat. No. 4,528,508. This application Apr. 8, 1985, Ser. No. 720,943

Int. Cl.⁴ G01R *33/08*

U.S. Cl. 324—303 **43 Claims**



1. Apparatus for remote detection and volumetric measurement of at least a portion of a petroleum reservoir in a geological formation having a borehole extending into the formation in the vicinity of the petroleum reservoir,

means for causing A.C. current at a frequency substantially equal to the Larmor frequency of the nucleons within the formation to flow through the formation whereby an A.C. magnetic field is applied to a portion of the formation to place that portion of the petroleum reservoir into a state of nuclear magnetic resonance which therefore causes a change in the paramagnetism of the formation thereby resulting in a change in the earth's magnetic field in the vicinity of said portion of the petroleum reservoir, said means comprising means in the borehole for conducting current into the formation and means spaced from said means for receiving current flowing through the portion of the formation, and

means for simultaneously measuring the resulting change in the earth's magnetic field in the vicinity of said portion of the formation to provide an indication of the presence or abscence of petroleum and other fluids such as water within said portion of the formation.

4,656,423

NUCLEAR MAGNETIC RESONANCE DIAGNOSTIC APPARATUS

Hiroshi Sugimoto, Tochigi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 4, 1983, Ser. No. 548,771

Claims priority, application Japan, Nov. 8, 1982, 57-196483

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 **8 Claims**

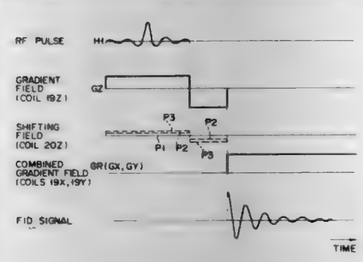
1. An apparatus for examining an object by nuclear magnetic resonance comprising:

magnet means for applying to the object a static magnetic field along an axis thereof;

gradient coil means arranged along said axis, for applying to said object a first symmetric gradient magnetic field that in conjunction with said static magnetic field gives a predetermined constant magnetic field in a substantially two-dimensional plane of said object perpendicular to said axis, and for applying to said plane at least a second symmetric gradient magnetic field perpendicular to said first gradient magnetic field for defining a line within said plane along which nuclear magnetic resonance signals are read out;

probe head coil means for applying RF pulses to said plane to excite nuclei therein, and for detecting nuclear magnetic resonance signals derived from said line;

shifting coil means, arranged along said axis and disposed adjacent to and independent from said gradient coil means



for superimposing an additional asymmetric gradient magnetic field parallel to and on said first gradient magnetic field independently of generation of said first magnetic gradient to shift said plane of predetermined constant magnetic field intensity in a direction perpendicular to said plane; and

reconstruction means for receiving said nuclear magnetic resonance signals and for reconstructing a computerized tomographic image for a plane selected by the cooperation of said additional magnetic field with said first gradient magnetic field.

4,656,424

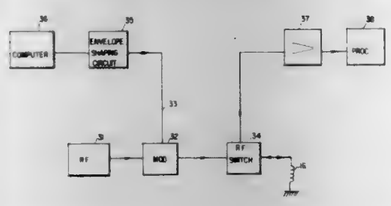
APPARATUS AND METHODS FOR SELECTIVE EXCITATION

Yuval Tsur; Tomas Duby, and Saul Stokar, all of c/o Elscint Ltd. P.O.B. 5258, Haifa 31051, Israel

Filed Nov. 7, 1984, Ser. No. 668,945

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 **14 Claims**



1. A method of selectively exciting sections of objects undergoing NMR imaging, said method comprising the steps of:

generating a static magnetic field parallel to a first axis of three axes orthogonal system,

providing a magnetic field gradient to said static magnetic field to generate magnetic fields of predetermined strength in cross sectional slices of said object,

applying a magnetic field rotating at a Larmor frequency in a selected one of said slices, and

shaping said rotating magnetic field with an envelope described by the sum of a sinc function and a cosine function to excite slices in the object with rectangular cross sections.

4,656,425

METHOD TO ELIMINATE THE EFFECTS OF MAGNETIC FIELD INHOMOGENEITIES IN NMR IMAGING AND APPARATUS THEREFOR

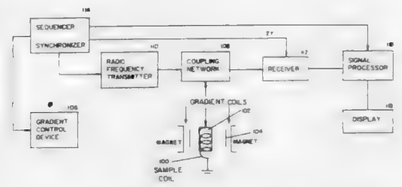
Peter Bendel, Rishon Le Zion, Israel, assignor to Yeda Research and Development Co., Rehovot, Israel

Filed Apr. 9, 1984, Ser. No. 598,237

Claims priority, application Israel, Apr. 10, 1983, 68344

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 **2 Claims**



1. NMR imaging apparatus comprising:

means for applying a linear magnetic field gradient to a sample;

means for varying the magnetic field gradient in a predetermined manner;

means for providing r.f. excitation pulses to said sample;

means for obtaining an NMR signal based on the linear magnetic field gradient;

means for storing the NMR signal;

means for reconstructing an NMR image from the stored NMR signal; and

display means for displaying the reconstructed NMR image,

wherein the means for obtaining an NMR signal includes means for obtaining the NMR signal at times when cancellation of the signal component dependent on magnetic field inhomogeneities occurs,

and wherein said means for providing excitation signal pulses to said sample is operative to provide excitation signal pulses whose onset corresponds with the change in sign of the magnetic field gradient provided by said means for varying the magnetic field.

4,656,426

NUCLEAR MAGNETIC RESONANCE DATA PROCESSING METHOD

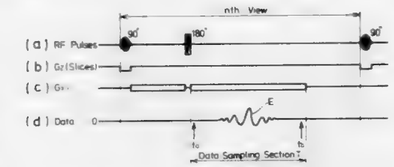
Noriaki Yamada; Kazuya Hoshino; Tadashi Sugiyama, and Hiroyuki Matsuura, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation and Yokogawa Medical Systems, Limited, both of Tokyo, Japan

Filed Dec. 6, 1985, Ser. No. 806,038

Claims priority, application Japan, Dec. 18, 1984, 59-266774

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—309 **1 Claim**

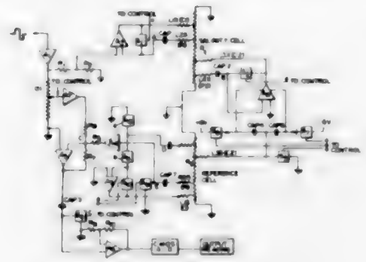


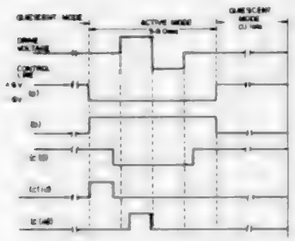
1. A nuclear magnetic resonance data processing method for use with a nuclear magnetic resonance tomograph having an echo method used in connection therewith, said method comprising the steps of

measuring signals at various times slots positioned before and after the peak of an echo signal and containing substantially none of the echo signal;

introducing the measured signals as offset data; and
determining the offset of said echo signal by an approximation using said offset data, said offset being subtracted from said echo signal, thereby to process offset correction of said echo signal.

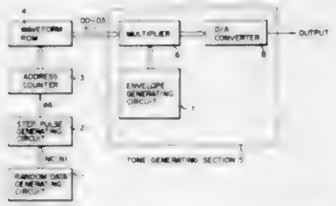
4,656,427
LIQUID CONDUCTIVITY MEASURING CIRCUIT
Thomas M. Dauphinee, 36 Avenue Road, Ottawa, Canada K1S 0N9
Filed Jan. 24, 1986, Ser. No. 822,256
Claims priority, application Canada, Feb. 5, 1985, 473595
Int. Cl.[4] G01N 27/02
U.S. Cl. 324—444 **6 Claims**





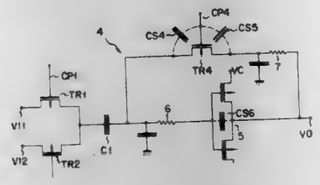
1. A liquid conductivity measuring circuit for use a four electrode conductivity cell having two potential electrodes (P1 and P2) and two current electrodes (C1 and C2) positioned in the cell in spaced relation in the sequence (C1, P1,C2,P2) comprising:
(a) a first operational amplifier having its output connected to C1 and its inputs connected via an isolating capacitor to P1 and via a buffer amplifier and a voltage setting resistance to a source of square-wave voltage,
(b) a first switch connected across the first operational amplifier between its output and noninverting input,
(c) a reference resistance connected at one end to current electrode C2 and having current and potential tapping points,
(d) a second operational amplifier having its inputs connected to ground and via an isolating capacitor to P2 and its output connected to the reference resistance such as to control the current through the reference resistor to maintain electrode P2 at a constant potential,
(e) a second switch connected across the second operational amplifier between its output and non-inverting input,
(f) readout means for measuring the voltage across appropriate points of the reference resistor,
(g) said first and second switches when closed defining a quiescent mode of operation in which the electrode voltages and amplifier outputs are maintained at ground potential so that the only loads on the power supply are the quiescent currents of the operational amplifiers and the readout means and when open, an active mode in which the voltage between the potential electrodes of the cell is controlled by the first operational amplifier to bear a fixed relation to a square-wave driving voltage by supplying current to electrode C1,
(h) said readout means adapted to measure, on initiation of a single or small number of square-wave voltage cycles in a period short enough that no significant change of polarization of the potential electrodes can occur, the voltage between the positive and the negative half cycles or the change from zero to either half cycle of the voltage across the resistor, said measurement being a function of the current through the reference resistor and conductivity cell and therefore a measure of the conductivity of the liquid in or passing through the cell.

4,656,428
DISTORTED WAVEFORM SIGNAL GENERATOR
Tomohiro Ishikawa, Kawagoe, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed May 21, 1985, Ser. No. 736,444
Claims priority, application Japan, May 30, 1984, 59-108685
Int. Cl.[4] G10H 7/00, 1/02
U.S. Cl. 328—14 **8 Claims**



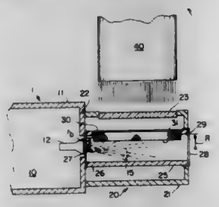
1. A distorted waveform signal generator, comprising:
random data generating means for successively generating random data containing random values, said random data generating means including:
a shift register containing a plurality of bits which includes at least a least significant bit (LSB) and a most significant bit (MSB); and
an exclusive OR gate with input terminals coupled to two of said bits of said shift register, an output of the exclusive OR gate coupled to the LSB of said shift register, and certain bits of said shift register are provided as said random data;
step signal generating means coupled to said shift register for generating a step signal the period of which randomly varies according to said random data;
address counting means coupled to said step signal generating means and arranged to be driven stepwise by said step signal to deliver an output signal;
waveform data memory means arranged to be addressed by the output signal of said address counting means to output sequentially waveform data which determines amplitude of a waveform; and
waveform signal generating means coupled to said waveform data memory means for generating a waveform signal the amplitude of which randomly changes according to the waveform data output from said memory means.

4,656,429
VOLTAGE COMPARISON CIRCUIT WITH RIPPLE COMPONENT ELIMINATION
Eiji Masuda, Kawasaki, and Kenji Matsuo, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jan. 5, 1983, Ser. No. 455,797
Claims priority, application Japan, Jan. 14, 1982, 57-4730
Int. Cl.[4] H03K 5/22; H03F 3/16; H03B 1/00
U.S. Cl. 328—149 **1 Claim**



1. An amplification circuit comprising:
a signal input terminal and signal output terminal;
amplifying means having input and output terminals and including a CMOS inverter having MOS transistors of different channel types, said output terminal being coupled to said signal output terminal;
at least one switching MOS transistor whose current path is connected between said signal input terminal and said output terminal of said amplifying means and whose gate is connected to receive a clock signal to set an operation point of said amplifying means; and
a first low-pass filter connected between said switching MOS transistor and said input terminal of said amplifying means;
a second low-pass filter connected between said switching transistor and said output terminal of said amplifying means; and
wherein each of said first and second low-pass filters includes a CR filter comprising a semiconductor substrate, an impurity layer functioning as resistance means and capacitance means, said impurity layer having a conductivity type opposite to that of said semiconductor substrate and being formed in a surface area of said semiconductor substrate.

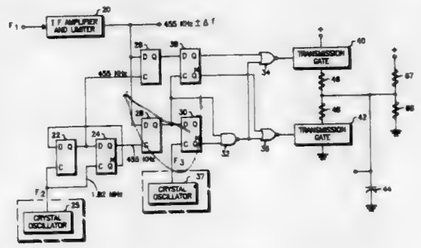
4,656,430
SHORT RISE TIME INTENSE ELECTRON BEAM GENERATOR
Craig L. Olson, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 16, 1984, Ser. No. 590,317
Int. Cl.[4] H01J 29/70
U.S. Cl. 328—229 **10 Claims**



1. A generator for producing an intense relativistic electron beam having a short current rise time, said generator comprising:
means for generating an intense relativistic input electron beam having a radius r_b, an injected beam current I_e, a density n_b and a long rise time;
a short, cylindrical, electrically conductive drift tube of radius R greater than r_b and a length greater than about 2.4(R), said tube including:
an input end for receiving said input beam;
a cavity containing a working gas at a low enough pressure to prevent the input beam from propagating through said working gas before t_s, the time at which said working gas has been ionized by said input beam to a plasma density equal to N_b, said beam being dispersed within said cavity and the space charge limiting current I_l being less than I_e; and
an output end for passing an intense relativistic output electron beam having a short rise time; and
ionizing means for simultaneously and suddenly ionizing the entire volume of said working gas in said drift tube up to a plasma density equal to n_b after said input beam has been generated and before t_s, thereby generating said output beam.

10. A method of generating an intense relativistic electron beam having a short current rise time comprising the steps of:
generating an intense relativistic input electron beam having a radius r_b, an injected beam current I_e, a density n_b and a long rise time into a cavity containing a working gas at a low enough pressure to prevent the input beam from propagating through said working gas before t_s, the time at which said working gas has been ionized by said input beam to a plasma density equal to N_b, said beam being dispersed within said cavity and the space charge limiting current I_l being less than I_e; and
simultaneously and suddenly ionizing the entire volume of said working gas in said cavity up to a plasma density equal to n_b after said input beam has been generated and before t_s, thereby generating an output beam.

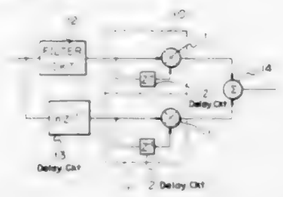
4,656,431
DIGITAL FREQUENCY DISCRIMINATOR
Ronald H. Chapman, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 6, 1986, Ser. No. 836,921
Int. Cl.[4] H03D 3/00; H03K 9/06
U.S. Cl. 329—50 **26 Claims**



26. A method of digital discrimination, comprising:
receiving an incoming signal;
generating a reference signal;
generating a first and second difference signal, each corresponding to the frequency difference between said reference signal and said incoming signal, but having offset phases;
generating a direction signal from said first and second difference signals, said direction signal indicating if the incoming signal frequency is greater than or less than the reference signal frequency;
generating pulses relating to the difference in frequency between the reference signal and the incoming signal; and
recovering modulation from said generated pulses and said direction signal.

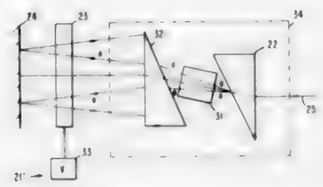
VOL 1077 ISS 1 AP 7 1987 UMI

4,656,432
FM DETECTOR WITH IMPROVED DISTORTION AND GAIN CHARACTERISTICS
Sunitaka Matsumura, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 24, 1985, Ser. No. 791,164
Claims priority, application Japan, Oct. 25, 1984, 59-224344
Int. Cl.⁴ H03D *3/04, 3/06*
U.S. Cl. 329—107 **14 Claims**



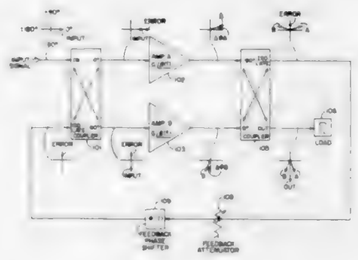
1. An FM detector for detecting an input FM signal comprising:
a transforming means for effecting a Hilbert transformation of the input FM signal;
a first detection means for detecting an output signal of said transforming means;
a second detection means for detecting the input FM signal; and
a combining circuit means for combining said output signals of said first and second detection means, to provide a detector output signal.

4,656,433
LASER AMPLIFIER BUFFER
James D. Franklin, Los Angeles, and Donald R. Dewhirst, Torrance, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Aug. 19, 1982, Ser. No. 409,477
Int. Cl.⁴ H01S *3/11, 3/00*
U.S. Cl. 330—4.3 **1 Claim**



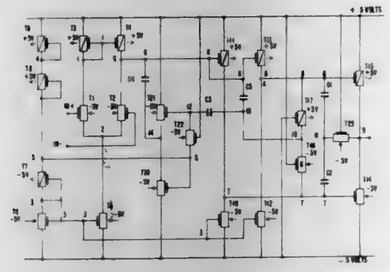
1. An electro-optic switch capable of operating as a laser amplifier buffer or a laser oscillator Q-switch comprising:
a first wedge of birefringent material disposed along an optical path for receiving laser energy which is parallel to the optical axis of said switch having arbitrary polarization and angularly separating the laser energy into two orthogonal polarization components;
an electro-optical polarization switch disposed along the optical path for transmitting the two polarization components without change when no voltage is applied thereto, said polarization switch rotating the polarization of the two polarization components by 90° for a double pass when a quarter-wave voltage is applied to said polarization switch;
a plane mirror disposed along the optical path for reflecting the polarization components transmitted by said polarization switch back through said polarization switch, said mirror being aligned such that the normal thereto bisects the angle between the angularly separated polarization components;
a second wedge of birefringent material disposed along said optical path between said first wedge and said electro-optic switch, said second wedge being inverted with respect to said first wedge; and
a polarization rotator disposed along the optical path between said wedges for rotating the polarization of energy passing therethrough by 90°.

4,656,434
RF POWER AMPLIFIER WITH LOAD MISMATCH COMPENSATION
John R. Selin, Stow, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Feb. 3, 1986, Ser. No. 825,418
Int. Cl.⁴ H03F *3/60, 3/68*
U.S. Cl. 330—84 **5 Claims**



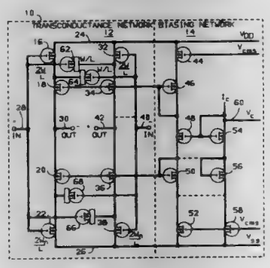
4. An apparatus for amplifying a radio frequency signal applied to a mismatched output load, comprising:
first quadrature coupling means having an input port connected to receive the radio frequency signal to be amplified, an isolate port, a 0° output port, and a −90° output port, for coupling the radio frequency signal in quadrature to the 0° and −90° output ports and for coupling signals from the isolate port in quadrature to the 0° and −90° output ports, wherein corresponding signals on the input port and the −90° output port are in quadrature, and corresponding signals on the isolate port and the 0° output port are in quadrature;
first amplifying means, having a gain G and an insertion phase $\beta(f)$, for amplifying signals from the 0° output port;
second amplifying means, having essentially the same gain and insertion phase as the first amplifying means, for amplifying signals from the −90° output port;
second quadrature coupling means, having a 0° input port, a −90° input port, an output port, and an isolate port, the −90° input port coupled to the output of the first amplifying means, the 0° input port coupled to the output of the second amplifying means, the output port coupling to the mismatched output load, for combining in quadrature signals from the 0° and −90° input ports to the output port and combining in quadrature signals from the 0° and −90° input ports to the isolate port, wherein corresponding signals on the −90° input port and the output port are in quadrature and corresponding signals on the 0° input port and the isolate port are in quadrature; and
means for phase-pushing, having an input coupled to the isolate port of the second quadrature coupling means and an output coupled to the isolate port of the first quadrature coupling means, for compensating for the phase-pulling effect of the load mismatch to the amplifiers.

4,656,435
CONSTANT BIASING CIRCUIT AND OPERATIONAL AMPLIFIER USING SAID CIRCUIT
Jean-Christophe Czarnink, Saint Paul de Vence, and Rene Diot, Castries, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1985, Ser. No. 812,416
Claims priority, application European Pat. Off., Dec. 28, 1984, 84430047.5
Int. Cl.⁴ H03F *3/30, 3/45*
U.S. Cl. 330—253 **12 Claims**



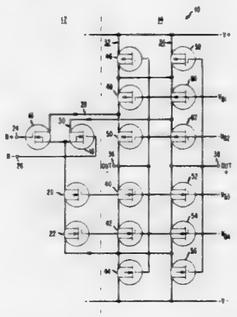
1. A constant biasing circuit for maintaining a constant difference of potential between first and second circuit nodes each at an independently floating voltage level, said constant biasing circuit comprising
an output circuit having first and second devices, said first device having a control electrode connected to said first node and said second device having a control electrode connected to said second node, and
a symmetrical circuit having at least two series connected complementary transistor devices disposed between said nodes, and having gates connected to opposite polarity voltages.

4,656,436
CMOS TRANSCONDUCTANCE CIRCUIT WITH TRIODE MODE INPUT
Veikko R. Saari, Spring Lake Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 31, 1985, Ser. No. 815,238
Int. Cl.⁴ H03F *3/45, 3/16*
U.S. Cl. 330—253 **9 Claims**



6. A field-effect transistor differential transconductance circuit having first and second polarity signal branches, each branch comprising:
a first conductivity type input transistor and a first conductivity type cascode transistor respectively connected in tandem between a first polarity voltage supply node and an output node, and
a second conductivity type input transistor and a second conductivity type cascode transistor respectively connected in tandem between a second polarity voltage supply node and the output node,
the gates of the input transistors being connected together to form an input node,
the geometries of all the transistors and the gate bias voltages of the cascode transistors of the branch being chosen to force the input transistors to operate in the triode mode, and
biasing means for generating equal bias voltages at the gates of the like conductivity type cascode transistors of the branches.

4,656,437
CMOS OPERATIONAL AMPLIFIER WITH IMPROVED COMMON-MODE REJECTION
Veikko R. Saari, Spring Lake Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 27, 1985, Ser. No. 814,204
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—253 **4 Claims**

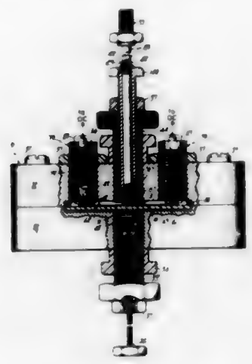


1. A complementary field-effect transistor circuit of the type including a differential input stage and an amplifying stage, the amplifying stage comprising:
a first signal branch having a current source connected between an amplifier and the drain of a first triode mode common mode suppression feedback transistor of a first conduction channel conductivity type which has its source connected to a first polarity supply voltage node, the gate of the first feedback transistor being connected to the output node of the amplifier, the input of the amplifier being connected to a first node of the input stage, and
a second signal branch having a current source connected between an amplifier and the drain of a first triode mode common mode suppression feedback transistor of a first conduction channel conductivity type which has its source connected to the first polarity supply voltage node, the gate of the first feedback transistor being connected to the output node of the amplifier, the input of the amplifier being connected to a second output node of the input stage, and the drain of the second branch first feedback transistor being connected to the drain of the first branch first feedback transistor,
WHEREIN THE IMPROVEMENT COMPRISES:
a second triode mode common mode suppression feedback transistor of a second conduction channel conductivity type in each of the first and the second signal branches connected between a current source and a second polarity supply voltage node, the gates of the second feedback transistors being connected to the output nodes of the amplifiers of their respective signal branches, the drains of the first feedback transistors being connected together and

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to the source side of a current source transistor of the input stage.

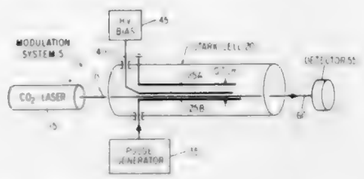
4,656,438
POWER COMBINING CAVITY
Samuel Levinson, Norwalk, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Mar. 19, 1984, Ser. No. 590,935
Int. Cl.⁴ H03F 3/60
U.S. Cl. 330—287 **4 Claims**



1. A microwave power combining device comprising:
a cylindrical chamber (40) having an axis;
a disc-like dielectric substrate (41) disposed coaxially within the chamber (40) and having an upper surface (42) and a lower surface (43);
a first conductive surface (62) disposed on the upper surface (42) of the substrate (41) and centered about the axis;
a second conductive surface (61) in the form of a ring disposed about the first conductive surface (62) on the upper surface (42) of the substrate (41), and centered about the axis;
input/output means (35) for connecting to a source of microwave energy; and
coupling means (131) disposed normal to the axis for coupling microwave energy between the input/output means (35) and the conductive surface (62);
wherein the first conductive surface (62) includes a plurality of legs (65) extending towards the second conductive surface (61) interior the second conductive surface (61) at regularly spaced intervals with respect to the second conductive surface (61) corresponding to an integral multiple of half wavelengths of the microwave energy; and
further comprising a first plurality of negative resistance means (73) disposed about the second conductive surface (61) exterior the second conductive surface (61) at regularly spaced intervals opposite the legs (65), and capacitively coupled to the second conductive surface (61) for amplifying the power level in the second conductive surface (61).

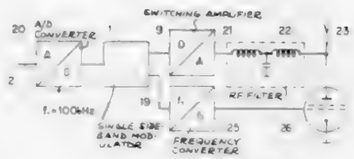
4,656,439
SYSTEM FOR NANOSECOND MODULATION OF AN INFRARED LASER BEAM BY COHERENT STARK SWITCHING
John E. Wessel, 544 First St., Manhattan Beach, Calif. 90266
Filed Sep. 12, 1983, Ser. No. 531,319
Int. Cl.⁴ H01S 3/00
U.S. Cl. 332—7.51 **8 Claims**

1. A modulation system for space satellite communication, comprising:
(a) first means for outputting at a predetermined level a bias signal having an electric field;
(b) second means for outputting at a predetermined frequency a coherent infrared beam having an electric field;
(c) Stark cell means having a gas with a predetermined molecular frequency, and operative to receive the electric field of the bias signal from said first outputting means for exciting the molecular frequency of the gas to be in resonance with the frequency of the coherent infrared beam from said second outputting means;



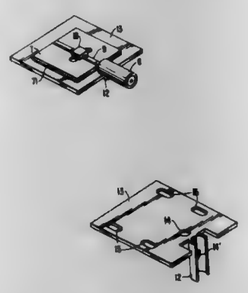
(d) third means for outputting an electrical pulse to said Stark cell means for shifting the excited molecular frequency of the gas molecules of said Stark cell means coherently, to be out of resonance with the laser beam, in order to generate an electric field for heterodyne beating with the electric field of the coherent infrared beam from said second outputting means; and
(e) a detection means with a response speed adequate to resolve the modulated infrared beam.

4,656,440
SINGLE-SIDEBAND MODULATOR AND BROADCAST TRANSMITTER
Max Gautschi, Zürich, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Jan. 30, 1986, Ser. No. 824,091
Claims priority, application Switzerland, Feb. 14, 1985, 671/85
Int. Cl.⁴ H03C 1/60
U.S. Cl. 332—45 **12 Claims**



1. Single-sideband modulation method, comprising the steps of:
(a) deriving m component signals phase-shifted by 360°/m from a modulating input signal, where m>2 and is an integral number;
(b) vectorially adding the component signals to form a sum vector having a value which represents a modulator amplitude signal; and
(c) cyclically sampling all m component signals with a clock frequency which is an integral amplitude of a carrier frequency to produce a sampling signal used for phase modulation.

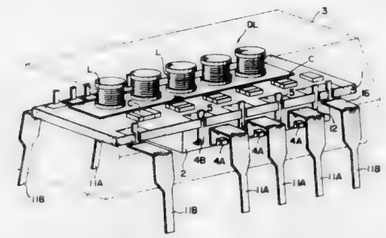
4,656,441
COAXIAL LINE-TO-MICROSTRIP LINE TRANSITION DEVICE
Hiroshi Takahashi, Neyagawa; Tomoki Uwano, Hirakata; Takashi Machida, Kadoma, and Hirokazu Kitamura, Ogaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 1, 1984, Ser. No. 636,665
Claims priority, application Japan, Aug. 1, 1983, 58-141340
Int. Cl.⁴ H01P 1/00, 5/08
U.S. Cl. 333—33 **14 Claims**



1. A coaxial line-to-microstrip line transition device, comprising:
a coaxial line having an inner conductor and having an outer conductor having a cylindrical outer surface;
a dielectric substrate having a flat electrically conductive earth layer on one surface thereof;
a microstrip line mounted on a surface of said dielectric substrate opposite said one surface; and
conductive connection means for electrically connecting said outer conductor with said earth layer, said means including a semi-cylindrical plate of inner diameter equal to the outer diameter of said outer surface of said outer conductor, in flush contact at its inner surface with said outer surface of said outer conductor, and a flat plate, connected to said semi-cylindrical plate, in flush contact at a flat surface thereof with said earth layer, the axis of said semi-cylindrical plate being generally perpendicular to said surface of said flat plate.

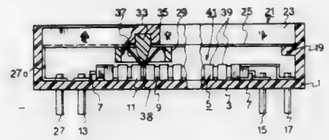
4,656,442
HYBRID CIRCUIT DEVICE
Yasunitsu Hayakawa, Urawa, Japan, assignor to Toko, Inc., Tokyo, Japan
Filed Feb. 13, 1985, Ser. No. 701,211
Claims priority, application Japan, Feb. 27, 1984, 59-27081[U]; Feb. 27, 1984, 59-27082[U]; Feb. 27, 1984, 59-27083[U]
Int. Cl.⁴ H03H 7/32; H01K 1/14
U.S. Cl. 333—140 **9 Claims**

1. A hybrid circuit device comprising:
a flat package incorporating an aintegrated circuit therein;
a further circuit comprising a plurality of coils and a plurality of capacitors;
a dielectric base plate supporting said further circuit, said base plate being disposed on said flat package and having opposed side portions for engagement with terminals of said flat package;
first, upwardly bent, terminals extending out of said flat package and electrically components of said further circuit to components of said integrated circuit at the side portions of said base plate;
second terminals extending out of said flat package;
first separate external terminals electrically connected to said second terminals of said flat package respectively;
second separate external terminals electrically connected to the side portions of said base plate;
said first separate external terminals and said second separate external terminals having horizontal portions extending outwardly from a side of said flat package and lying substantially in a common plane, said plane being located between said base plate and said second terminals the horizontal portion of each of said first separate external terminals being physically spaced apart from said second terminals, and extending to a vertical portion contiguous



to said flat package which is bent downwardly to electrically engage with one of said second terminals;
said first and second separate external terminals being downwardly bent in such a manner as to extend out in two opposing rows to form a dual in-line package holding said flat package therebetween; and
encapsulation surrounding said base plate and said flat package, with an end portion of each of said first and second separate external terminals being exposed through said encapsulation.

4,656,443
VARIABLE DISTRIBUTED CONSTANT DELAY LINE HAVING MOVABLE SLIDER CONTACT
Kazuo Kameya, Tsurugashima, Japan, assignor to Elmec Corporation, Saitama, Japan
Filed Jan. 10, 1985, Ser. No. 690,182
Claims priority, application Japan, Jan. 13, 1984, 59-5369
Int. Cl.⁴ H03H 7/30
U.S. Cl. 333—156 **4 Claims**



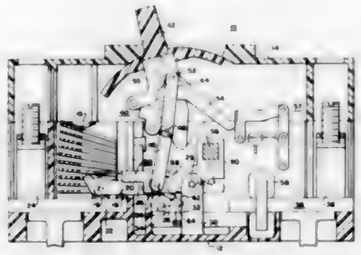
1. A variable distributed constant delay line comprising a transmission line comprising an electroconductive path and a ground plate which is disposed in an opposing relationship to said electroconductive path and a dielectric body interposed therebetween, a fixed contact array consisting of fixed contacts provided at predetermined intervals along the electroconductive path, and a movable contact which may be slid along and which contacts said fixed contacts of said fixed contact array;
wherein said movable contact contacts one of said fixed contacts in said fixed contact array in a first position and contacts two neighboring ones of said fixed contacts in said fixed contact array in a second position, so that as said movable contact is slid along said fixed contact array its position alternates between said first position and said second position, forming a short circuit in said second position which causes a signal sent from the one of said fixed contacts to reflect back and forth between the one of said fixed contact and one of said neighboring contacts.

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4,656,444
CIRCUIT BREAKER WITH FORCE GENERATING SHUNT

Jere L. McKee, Scott Twp., Lawrence County; Glenn R. Thomas, Brighton Township, Beaver County; Charles E. Haugh, Daugherty Twp., Beaver County, and Lance Gula, Aliquippa, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 16, 1985, Ser. No. 766,303
Int. Cl.[4] H01H *77/10*
U.S. Cl. 335—16 **5 Claims**



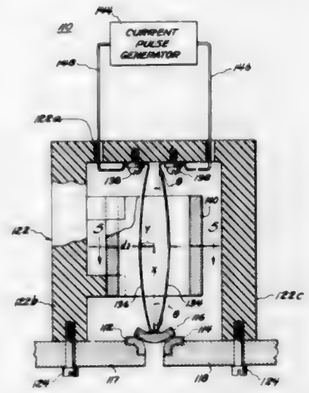
1. A circuit breaker comprising:
an electrically insulating housing supporting a line conductor and a load conductor;
a circuit breaker structure within the housing and between the conductors and comprising first and second separable contacts operable between open and closed positions;
a releasable mechanism movable when released to a tripped position to effect automatic opening of the contacts and comprising a trip device for tripping the releasable mechanism when a predetermined current overload effects deflection of the device from a latched position;
carrying means carrying the first contact and including a switch arm and a contact arm, the switch arm being pivotally mounted at a first pivot for movement between open and closed positions of the contacts;
the contact arm mounting the first contact and being pivotally mounted at a second pivot on the switch arm;
the second contact being mounted on one of the line and load conductors;
a flexible shunt electrically connected between the other of the line and load conductors and the contact arm on the side of the second pivot opposite the first contact;
the flexible shunt comprising turned-back shunt portions spaced to form a loop and between which portions first repulsion magnetic forces occur that exert pressure on the contact arm to hold the contacts in the closed position; and
the repulsion magnetic forces of the shunt portions expediting movement of the carrying means about the first pivot to the open position when at least one of the contact arms and the trip device is deflected from a latched position.

4,656,445
HIGH SPEED CONTACT DRIVER

Bharat S. Bagepalli; Imdad Imam, both of Schenectady, N.Y., and Edward K. Howell, Simsbury, Conn., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 19, 1986, Ser. No. 876,132
Int. Cl.[4] H01H *77/10*
U.S. Cl. 335—195 **13 Claims**

1. A contact driver comprising:
a wire for conducting a main current;
means connected to said wire for interrupting the flow of electrical current therethrough;
a pair of series-connected, elongate, generally opposing electrical conductors, each of said conductors bowed along a predetermined contour in generally opposing directions when said wire is conducting said main current; and
circuit means connected to said electrical conductors for providing a current pulse of predetermined magnitude thereto;



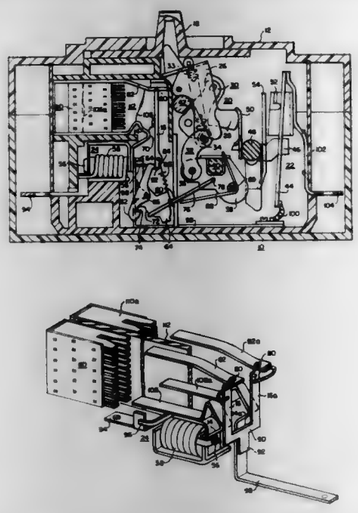
said electrical conductors connected between said circuit means and said current interrupting means such that said current pulse causes said pair of electrical conductors to electromagnetically repulse one another and cause said current interrupting means to interrupt the flow of said main current through said wire.

4,656,446
CURRENT LIMITING CIRCUIT BREAKER WITH SERIES DOUBLE BREAK CONTACT SYSTEM PER POLE

Yan-Ko N. Chien, Murrysville, and John A. Wafer, Brighton Twp., Beaver County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1985, Ser. No. 809,704
Int. Cl.[4] H01H *9/34*
U.S. Cl. 335—201 **8 Claims**

1. A current limiting circuit breaker comprising:
an electrically insulating housing and including line and load terminals;
a circuit breaker structure within the housing and having stationary contact means and movable contact means;
arc-quenching means including at least two separate arc-quenching chambers within the housing and having a line side arc guide rail and a load side arc guide rail;
the stationary contact means including at least a pair of spaced stationary contacts, one contact on the line side and adjacent to one of the chambers and the other contact being on the load side and adjacent to the other of the chambers;
the movable contact means including at least a pair of corresponding movable contacts connected in series and movable simultaneously between open and closed circuit conditions;
first means for actuating the movable contacts between open and closed circuit conditions;
second means for moving the movable contacts and including current limiting electromagnetic means responsive to an overcurrent circuit condition; and
each movable contact being an elongated arm having one end pivotally mounted on a corresponding arc guide rail and another end in response to operation of one of the first and second means, so as to cause arcs forming between the

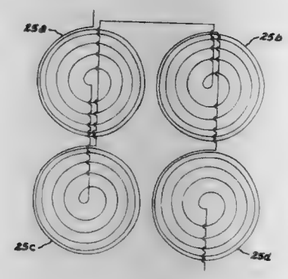


corresponding stationary and movable contacts to move from the contacts and between the rails of corresponding arc-quenching chambers.

4,656,447
SUPERCONDUCTING FILTER COILS FOR HIGH HOMOGENEITY MAGNETIC FIELD

Thomas A. Keim, Clifton Park, N.Y., and Isaak D. Mayergoyz, Rockville, Md., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 27, 1984, Ser. No. 625,076
Int. Cl.[4] H01F *7/22*
U.S. Cl. 335—216 **16 Claims**

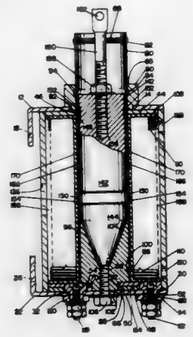


1. A magnet for producing a high homogeneity magnetic field, especially in a cylindrical volume, said magnet comprising:
a set of main coils disposed so as to produce a substantially uniform magnetic field within said volume; and
at least one short-circuited superconductive filter coil disposed substantially on the surface of a cylindrical support, substantially coaxially with said main coil set and exhibiting sinusoidal variation in turns density, at least in the axial direction.

4,656,448
SOLENOID FOR USE IN HARSH ENVIRONMENT CONDITIONS

Edwin J. Luetzow, Framington, Minn., assignor to Minnesota Technical Research, Farmington, Minn.

Filed Dec. 4, 1984, Ser. No. 677,980
Int. Cl.[4] H01F *7/08*
U.S. Cl. 335—262 **1 Claim**



1. Solenoid comprising front and rear flanged brackets including a plurality of holes, washers aligned at each end of said brackets, a non-magnetic stainless steel sleeve positioned between said brackets and secured to said rearward bracket with a bolt assembly and including a magnetic angled conical seat stop core end therein, a collar positioned on an outer side of said forward bracket and aligned with said sleeve, a molded polycarbonate bobbin positioned about said sleeve and between said brackets, a coil wound over said molded polycarbonate bobbin, and a zinc plated soft magnetic core including a front and rear groove, a conical end at a inner end and an actuator rod connected to said core at an outer end of the said core including an expandable pliable rubber cover positioned over said actuator rod and outer non-magnetic stainless steel sleeve and rings of a heat shrinkable low coefficient frictional fluorocarbon Teflon material positioned annularly in each of said annular inner and outer grooves about said core wherein said low coefficient frictional fluorocarbon Teflon rings about the magnetic core slide easily in solenoidal action under severe temperature ranges and conditions within a non-corrosive stainless steel sleeve wherein said solenoid is used for actuating power relay to a refrigeration unit.

4,656,449
FIELD MODIFYING ELEMENTS FOR AN ELECTROMAGNET HAVING A SUBSTANTIALLY C-SHAPED YOKE

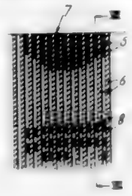
J. R. Mallard, 121 Anderson Drive, Aberdeen AB2 6BG, and F. E. Neale, 70 Beaconsfield Place, Aberdeen AB2 4AJ, both of Scotland

Filed Jan. 21, 1986, Ser. No. 820,753
Claims priority, application United Kingdom, Jan. 21, 1985, 8501442
Int. Cl.[4] H01F *3/00*
U.S. Cl. 335—297 **8 Claims**

1. An electromagnet having a ferromagnetic core comprising at least one yoke of substantially C-shape terminating in pole pieces with opposed pole faces separated by an air gap in which a magnetic field suitable for an NMR imaging process is, in use, produced, said core comprising stacked laminae of electrical sheet steel, which are bent around said C about axes perpendicular to the plane of said C, and at least some of which are spaced apart at said pole pieces to accommodate between

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said spaced laminae field modifying elements which are adapted to effect modification of said magnetic field to im-



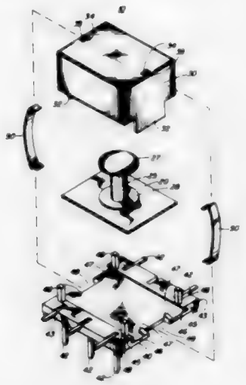
prove at least one of the homogeneity and confinement of said magnetic field in said air gap.

4,656,450

TRANSFORMER AND FERRITE CORE STRUCTURE THEREFOR

Andrew Jarosz, and Kent Callahan, both of Belleville, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 12, 1986, Ser. No. 862,089
Int. Cl.[4] H01F *27/26, 27/30*
U.S. Cl. 336—83 **2 Claims**



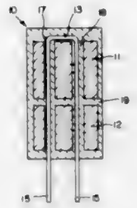
1. A transformer, comprising:
an integral ferrite spindle and base, said spindle having a flange remote from said base and a step adjacent said base;
transformer windings carried directly on said spindle between said step and said flange;
a ferrite cover for mounting to said base over said spindle and said windings so as to complete a magnetic circuit through said spindle and said base; and
a dielectric terminal plate for mounting to said base opposite said spindle, said terminal plate carrying a plurality of conductive terminals for electrical connection to ends of said windings, elongated projections having opposed lateral grooves therein for slidably receiving said base, and stop formations for engaging said base to positively locate and retain said base in said grooves.

4,656,451

ELECTRONIC NOISE SUPPRESSOR

Thomas F. Pomponio, Rochester, N.Y., assignor to Ferronics, Inc., East Rochester, N.Y.

Filed Jan. 23, 1986, Ser. No. 821,782
Int. Cl.[4] H01F *17/06, 27/26, 27/30*
U.S. Cl. 336—96 **5 Claims**



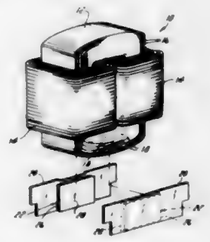
1. A device for broadband attenuation of high frequency electronic circuitry noise comprising a bead having
a first core body of a first ferrite having characteristically higher frequency impedance,
a second core body of a second ferrite having characteristically low frequency impedance,
said first and second core bodies being stacked one on another,
closely spaced passages through both of said bodies and a U-shaped conductor fitted within and through said passages, passing from one end of said conductor first through said first body, next through said second body and then reversing back through said second body and through and exiting from said first body,
and a resin coating binding said core bodies and conductor firmly into a double wired bead.

4,656,452

TRANSFORMER TELEPHONE INFLUENCE TRACTOR CORE SHUNT

Charles M. Martin, and Wayne W. Lien, both of Waukesha, Wis., assignors to RTE Corporation, Waukesha, Wis.

Filed Nov. 8, 1985, Ser. No. 796,419
Int. Cl.[4] H01F *17/06, 27/26*
U.S. Cl. 336—178 **5 Claims**



1. The combination with a transformer of the type having an enclosed core and an electrical coil assembly mounted on each of the legs of the core, said core being formed from a flat continuous strip of magnetic material which is spirally wound into a plurality of concentric superposed turns, said strips being cut to form a plurality of strips having a length equal to slightly less than one complete turn in said core to form a series of staggered gaps between the ends of the strips at one end of said core with a corresponding high flux density area, the improvement comprising a shunt packet mounted in abutting relation to each side of said core in a position to bridge the high flux density area at said one end of the core, each shunt packet

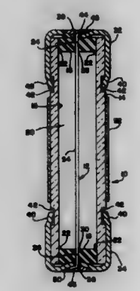
including one or more steel laminations, said laminations having a thickness corresponding to the difference in the cross sectional area of the core and the cross sectional area of the core through the air gaps at said one end of the core.

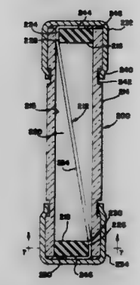
4,656,453

CARTRIDGE FUSE WITH TWO ARC-QUENCHING END PLUGS

Conrad M. Reeder, Prospect Heights, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 448,313, Dec. 9, 1982, Pat. No. 4,563,809. This application Dec. 10, 1985, Ser. No. 807,263
Int. Cl.[4] H01H *85/16*
U.S. Cl. 337—236 **5 Claims**





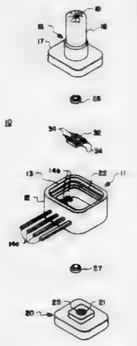
1. An electrical cartridge fuse comprising:
a housing made of insulating material and having a fuse filament receiving passageway therethrough, said passageway being rectilinear and having opposed ends opening to the exterior of said housing;
a fuse filament longitudinally disposed within said passageway in spaced relation to the central portion of said housing and having opposed ends opening to the exterior of said housing;
a fuse filament longitudinally disposed within said passageway in spaced relation to the central portion of said housing and having opposed ends extending to the opposite ends of said passageway; and
a pair of compressible resilient solid plug members made of insulating material of an axial length at least several times the transverse dimension of the fuse filament, said plug members being secured at the opposed ends of said passageway and being resiliently laterally compressed against an axial length of the opposed ends of said fuse filament at least several times the transverse dimensions of the fuse filament captively to secure said fuse filament in said housing under a desired axial tension and wherein, upon an arc forming and burning away material of the fuse filament portion adjacent thereto, the plug members will move into the space vacated by the burned away fuse filament material to quench the arc and;
end terminals closing off the ends of said passageway and electrically connected to the ends of said fuse filament.

4,656,454

PIEZORESISTIVE PRESSURE TRANSDUCER WITH ELASTOMERIC SEALS

Mark E. Rosenberger, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 24, 1985, Ser. No. 726,743
Int. Cl.[4] G01L *1/22, 9/04;* **H01L** *10/10, 41/08*
U.S. Cl. 338—2 **18 Claims**



1. A method of producing a pressure transducer assembly comprising the steps of: providing a semiconductor stress sensitive element having a central diaphragm portion on which a piezoresistive device is formed and a peripheral portion to which electrically conductive regions are extended from the piezoresistive device;
providing an enclosure configured to house the stress sensitive element and to have a pair of openings on opposite sides of the central diaphragm portion thereof, the enclosure including electrical conductors extending between the inside and outside thereof;
providing a pair of covers adapted to close the pair of openings in the enclosure, each cover having an internal surface formed with a seat for a seal;
positioning the stress sensitive element within the enclosure;
connecting separate electrical jumpers between the conductive regions on the stress sensitive element and the conductors within the enclosures;
providing a pair of elastormeric seals, each being molded in a configuration to extend from the seat on one of the internal surfaces of a cover to the stress sensitive element when the cover is in place, the seals further being configured to contact the surface of the stress sensitive element at a location surrounding the central diaphragm portion thereof;
fitting an electomeric seal in each of the seats; and
securing the covers fitted with the seals to the enclosure so as to close the pair of openings therein and form a pressure tight seal between the covers and the diaphragm.

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4,656,455

HUMIDITY-SENSING ELEMENT

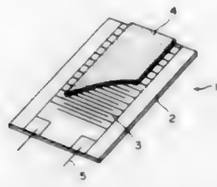
Katsumi Tanino, Takaoka; Norihiro Kiuchi, Hachioji; Chikara Tominaga, Yokohama; Eiji Itoh, Urawa; Kiyoshi Ogino, Yono; Masataka Yahagi, Urawa, and Masaru Sakamoto, Yono, all of Japan, assignors to Toyama Prefecture, Toyama and Nippon Mining Co., Ltd., Tokyo, both of, Japan

Filed Jul. 16, 1985, Ser. No. 755,641

Claims priority, application Japan, Jul. 20, 1984, 59-149349; Oct. 2, 1984, 59-205539; Mar. 8, 1985, 60-44731; Mar. 14, 1985, 60-49452; Jun. 17, 1985, 60-130018

Int. Cl.⁴ H01L *7/00*

U.S. Cl. 338—35 **11 Claims**



1. A process for fabricating a humidity-sensing element which comprises the steps of

forming a gold electrode layer in a pattern of twin combs on at least one side of a ceramic substrate,

preparing a humidity-sensing paste by preliminarily firing a powder of a stabilized solid solution comprising ZrO_2 and Y_2O_3 at 600° to 800° C., fully firing the powder at 900° to 1100° C., grinding the fired powder into finer particles of ≈625 mesh, immersing the powder in a 5 to 20% weight percent KOH solution thereby allowing the powder to acquire 1 to 10% by weight of KOH, primarily firing the KOH-containing powder at 800° to 1150° C., adding 1 to 5 mol% of Li_2CO_3, secondarily firing the powder at 700° to 900° C., regrinding, and thoroughly kneading the powder with the addition of a suitable resin material to adjust the viscosity of the resulting paste,

applying the humidity-sensitive paste thus prepared to the electrode layer by screen printing, to form a coat on the electrode layer, and

drying and firing the coat at 500° to 870° C. to form the humidity-sensing part of the humidity-sensing element.

4,656,456

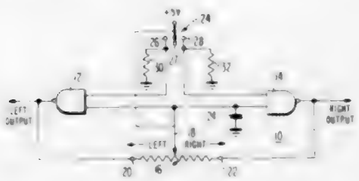
JOYSTICK CONTROL CIRCUIT

Steven K. Evans, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 11, 1985, Ser. No. 775,024

Int. Cl.⁴ H01C *10/16*

U.S. Cl. 338—128 **5 Claims**



1. A control circuit comprising:

first and second dual input logic gates;

a first potentiometer having first and second end terminals and a wiper, the wiper being connected to one input of each of the first and second logic gates, the first end terminal being connected to the output of said first logic gate, the second end terminal being connected to the output of said second logic gate;

a capacitor coupling the wiper of said first potentiometer to a first electrical potential; and

means operatively coupled to said wiper for selectively applying a second electrical potential to the other terminal of one of the first and second logic gates upon the wiper of the first potentiometer moving from a neutral position toward the first or second end terminals respectively;

whereby signals are produced at the outputs of said logic gates with the frequency of said signals varying in a continuous manner in correspondence with the movement of said wiper away from said neutral position.

4,656,457

POSITION-SENSING POTENTIOMETER ARRANGEMENT

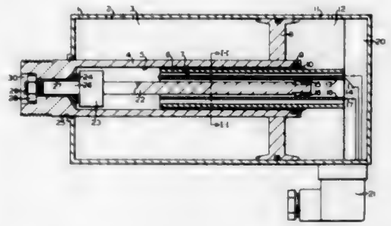
Walter Brassfeld, Hanover; Helmut Göttling, Isernhagen; Rudolf Möller, Gehrden; Peter Müller, Hanover, and Gerhard Scharnowski, Gehrden, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Steuerungstechnik GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 3, 1985, Ser. No. 783,979

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1984, 3436560; Jun. 5, 1985, 3520199

Int. Cl.⁴ F01B *25/26*

U.S. Cl. 338—176 **15 Claims**



1. A position-sensing potentiometer arrangement for sensing the position of a movable piston and piston rod configuration within a linear actuator comprising:

(a) a rod recess formed coaxially in the piston rod and having a rod opening facing a closed end of the linear actuator;

(b) at least one sliding contact secured to a first support member extending within said rod recess in a spaced-apart relation to an inner wall of said rod recess, said at least one contact being secured to said first support member at a point substantially corresponding in position to said rod opening;

(c) resistance means secured to and extending from the closed end of the linear actuator and in contact with said at least one sliding contact for providing a measurable resistance value which varies as a function of the piston rod position, such measurable resistance value corresponding to one of a range of predetermined resistance values associated with a range of such piston rod positions, said resistance means including a resistance element extending approximately the length equivalent to the length of travel of the piston rod, and a conductor element extending the approximate length of said resistance element;

(d) resistance support means secured to the closed end of the linear actuator and extending into at least a portion of said rod recess, said resistance support means further surrounding at least a portion of said resistance means for protecting said resistance means from contact by the piston rod and for supporting said resistance means in a stationary manner;

(e) said resistance element being disposed parallel to said conductor element, said first support member having said at least one sliding contact secured thereon is movable adjacent thereto such that said at least one sliding contact electrically couples said resistance element to said conductor element at approximately the position of said rod opening; and

(f) said resistance support means including a tubular support member secured to the closed end of the linear actuator and surrounding at least a portion of said first support member.

4,656,458

MOTION SENSOR

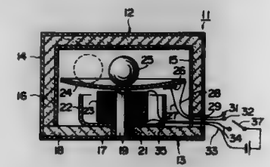
Keisuke Iwata, Tokyo, Japan, assignor to Iwata Electric Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1985, Ser. No. 741,689

Claims priority, application Japan, Apr. 11, 1985, 60-54147

Int. Cl.⁴ B60R *25/10*

U.S. Cl. 340—65 **9 Claims**



1. A motion sensor comprising: a casing; a support disk composed of non-magnetic material disposed in said casing and having a concave upper surface; a spherical body composed of magnetic metal and rotatably disposed on said concave upper surface of said support disk; a piezoelectric element attached on said support disk for converting a vibration of said support disk caused by rotational displacement of said spherical body into an electric signal; and electromagnetic means provided in said casing for supporting said support disk at a center portion of the lower surface thereof and for magnetically fixing said spherical body on said support disk upon energization of said electromagnetic means.

4,656,459

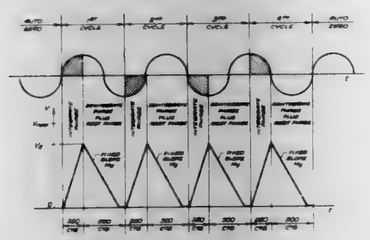
DUAL SLOPE CONVERTER WITH LARGE APPARENT INTEGRATOR SWING

Charles R. Thurber, Jr., Sunnyvale, Calif., assignor to Intersil, Inc., Cupertino, Calif.

Filed Oct. 7, 1985, Ser. No. 785,881

Int. Cl.⁴ H03M *1/50*

U.S. Cl. 340—347 NT **16 Claims**



1. In an integrating analog to digital converter of the type in which an integrator is charged to a level established by an unknown input signal during an integrate phase of fixed time and is then deintengrated during a deintegrate phase until the integrator output reaches a predetermined level, wherein the deintegration phase is measured by clock pulses occurring at predetermined intervals, the improvement wherein the duration of the fixed integration phase is less than one full power cycle period and the converter further comprises means for holding the integrator output constant at the end of the deintegrate phase to define a rest phase until the beginning of a subsequent integrate phase, and means for repeating the integrate and subsequent deintegrate and rest phases until the total duration of the integrate phases is equal to an integral multiple of the power line cycle, the integrate phases being timed to occur at various portions of the power line cycle to reject power line noise.

4,656,460

D/A CONVERTER

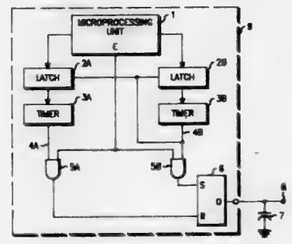
Hamid Daghighian, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 27, 1986, Ser. No. 866,837

Claims priority, application United Kingdom, Jun. 6, 1985, 8514347

Int. Cl.⁴ H03M *1/82*

U.S. Cl. 340—347 DA **12 Claims**



1. A D/A converter for use in a microprocessor, comprising first and second timers, first and second modulus latches associated respectively with said first and second timers for holding respective digital values, the timers being arranged to produce first and second respective overflow signals at predetermined counts, wherein said second overflow signal causes both said timers to be reset to the digital values held in said respective latches, and bistable means for receiving said overflow signals and for producing an output at a first level in response to said first overflow signal and at a second level in response to said second overflow signal, whereby the pulses so produced form a pulse width modulated signal whose duty cycle is representative of the ratio of said respective digital values held in said respective latches.

4,656,461

CONTROL HANDLE FOR REMOTELY CONTROLLING A HYDRAULICALLY OPERATED APPARATUS

Joachim Morsch, St. Wendel, and Walter Heidelberger, Saarbrücken-Dudweiler, both of Fed. Rep. of Germany, assignors to beo Steuerungstechnik GmbH, Sulzbach, Fed. Rep. of Germany

Filed Feb. 10, 1984, Ser. No. 579,130

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1983, 8337596[U]

Int. Cl.⁴ G06F *3/02*

U.S. Cl. 340—365 C **4 Claims**

1. A control handle comprising an insulating base having a cylindrical configuration, conductor paths disposed on the outer surface of said insulating base and adapted to be connected to a voltage source and an electronic control circuit, characterized in that said conductor paths are comprised of a

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pair of separate condensor plates disposed on a flexible foil wrapper around said insulating base and extending substantially around the circumference of said insulating base and for substantially the full length thereof, said condensor plates



being formed as comb-like members having teeth extending parallel and transverse to the longitudinal axis of the handle at the periphery thereof in spaced relationship to each other, and a sleeve of isolating material surrounding said condensor plates.

4,656,462

OBJECT DETECTING APPARATUS INCLUDING PHOTOSENSORS FOR RESTRICTED DETECTION AREA

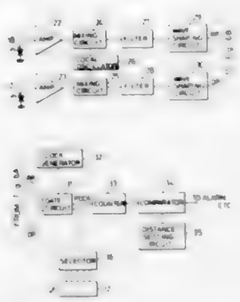
Tsuchiko Araki, Takarazuka; Hiroshi Matsuda, Shijonawate; Kazuhito Kayanoki, Tsu, and Akira Nagaoka, Hirakata, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 15, 1985, Ser. No. 723,060

Claims priority, application Japan, Apr. 25, 1984, 59-83143; Oct. 12, 1984, 59-213408

Int. Cl.⁴ G08B *13/18*

U.S. Cl. 340—556 **8 Claims**



1. An object detecting apparatus for a restricted detection area, comprising a plurality of light projecting means arranged in a row to be independently actuated to project a row of light beams, scanning means for sequential actuation of said light projecting means, first means for receiving said light beams directly from the respective light projecting means without reflection from an object external to said apparatus, second means for receiving the light beams projected by the light projecting means after being reflected by a reflecting object, means for receiving an output of said first light receiving means to provide a reference phase for the light beams projected, means for receiving an output of said second light receiving means to provide a detection phase of the light beams reflected and received, means for determining a phase difference between said reference and detection phases, an alarm means operated by an output provided by said phase difference determining means, means for storing indications representative of a predetermined range of said restricted detection area within which said device is operative, and output inhibiting means responsive to said stored indications and output of said phase difference determining means for inhibiting said output to said alarm means when said phase difference is of a level not within said predetermined range.

4,656,463

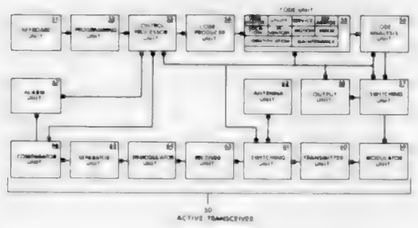
LIMIS SYSTEMS, DEVICES AND METHODS

Frank W. Anders, Greeley; Joseph C. Herring, and Douglas A. White, both of Aurora, all of Colo., assignors to Intelli-Tech Corporation, Aurora, Colo.

Filed Apr. 21, 1983, Ser. No. 487,284

Int. Cl.⁴ G08B *13/18, 13/16*

U.S. Cl. 340—572 **143 Claims**



1. A monitoring and control system comprising: active transceiver (AT) means including computing means and memory means and adapted for producing and transmitting encoded interrogation signals by at least one of electromagnetic radiation (EMR) and sound and;

unitary, self-contained passive transceiver (PT) means comprising encodeable and recodeable memory means, including at least one form of ROM memory means, means for encoding and recoding said memory means on the receipt of, respectively, encoding and recoding signals from said AT means, and transmission means adapted to transmit at least one indentification signal only in response to the receipt of said encoded interrogation signal.

4,656,464

LIQUID LEVEL DETECTOR

Arnie L. Cliffgard, 9268 Daisy Ave., Fountain Valley, Calif. 92708

Continuation-in-part of Ser. No. 706,131, Feb. 27, 1985, abandoned. This application Aug. 26, 1985, Ser. No. 769,440

Int. Cl.⁴ G08B *21/00*; **B60Q** *1/00*

U.S. Cl. 340—622 **3 Claims**

1. A liquid level detector for determining when the level of liquid in a container goes below a peredetermined level, said detector being adapted for use with a voltage supply which provides first and second points of reference potential, the detector comprising:

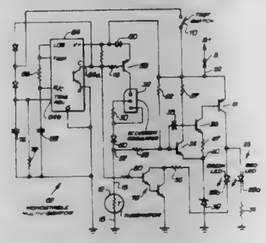
a current source and a thermistor connected in series between the first and second points of reference potential, said current source and thermistor having a junction therebetween, said current source being configured to provide a predetermined maximum amount of current through the thermistor regardless of fluctuations of the voltage supply, wherein the current source includes:

an integrated circuit voltage regulator having an input terminal connected to the first point of reference potential, an output terminal and a common terminal;

a first resistance having a first terminal connected to the output terminal and a second terminal connected to the common terminal; and

a diode connected between the second terminal of the first resistance and the thermistor, wherein said diode is connected to permit current flow through the first resistance to the thermistor;

reference means connected between the first and second points of reference potential for providing a third point of



reference potential hving a predetermined potential difference with respect to the second point of reference potential;

an integrated circuit comparator for comparing the potential at the junction between the current source and thermistor with the third point of reference potential; and

a first indicator connected to the output of the comparator for indicating whether the liquid level is above or below the predetermined level, said comparator being operative to activate or deactivate the indicator depending upon whether the voltage at the junction is greater or less than the third point of reference potential.

4,656,465

METHOD AND ARRANGEMENT FOR EVALUATING THE PERFORMANCE OF A YARN PROCESSING MACHINE

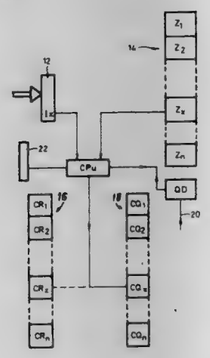
Markus Erni, Winterthur; Kurt Salvisberg, Gächlingen, and Marcel Zünd, Winterthur, all of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Mar. 22, 1985, Ser. No. 715,722

Claims priority, application United Kingdom, Mar. 22, 1984, 8407466

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—679 **3 Claims**



1. An arrangement for evaluating the performance of a yarn processing machine having a plurality of independently operatable yarn processing stations each of which can be at any given time in one of its "operating" and "non-operating" conditions and is equipped with a condition monitoring device operative for issuing first signals representative of a change from the "operating" to the "non-operating" condition of the station, and with a yarn quality monitoring device operative for issuing at least a defect signal indicative of defective yarn quality at the station, and means common at least to a group of the stations for issuing a combined second signal indicative of the issuance of a defect signal by any respective one of the group of stations, but not identifying the respective station and for changing from "operating" to "non-operating" the condition of the respective station, comprising means for separately supplying said first signals from all of said condition monitoring devices and said second signal to an evaluation location; and means situated at said evaluation location and connected to said supplying means for associating said second signal with the appropriate one of the yarn processing stations on the basis of that of the first signals which occurs first after the occurrence of said second signal.

4,656,466

ELECTRO-OPTIC DISPLAY DEVICE

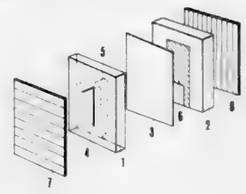
Masaaki Yoshida, Tokyo; Ryoichi Yoshikawa, Kanagawa; Naoki Nagase, Tokyo, and Masanori Yamada, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 398,184, Jul. 14, 1982, abandoned. This application Sep. 17, 1985, Ser. No. 777,009

Claims priority, application Japan, Jul. 24, 1981, 56-109689; Sep. 11, 1981, 56-143207; Oct. 6, 1981, 56-148408; Oct. 9, 1981, 56-150559; Oct. 9, 1981, 56-150560

Int. Cl.⁴ G09G *3/18*

U.S. Cl. 340—716 **14 Claims**



1. An electro-optic display device comprising:

a front transparent substrate;

a rear substrate, and an electro-optical material disposed between said front and rear substrates;

first and second electrical conductors disposed respectively on the inside surfaces of said front and rear substrates, said first conductor being transparent;

first means for selectively providing an optional image, said optional image defining a certain zone and being formed by at least one of the conductors; and

second means forming a non-transparent pattern comprising a permanent image similar to the optional image selectively provided by the first means, said pattern being formed in an optical path from front to rear substrates inside the zone of the optional image selectively provided by said first means.

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4,656,467

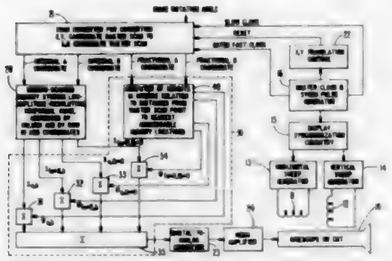
TV GRAPHIC DISPLAYS WITHOUT QUANTIZING ERRORS FROM COMPACT IMAGE MEMORY

Christopher H. Strolle, Montgomery County, Pa., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 327,631, Dec. 4, 1981, abandoned. This application Jan. 25, 1985, Ser. No. 695,224

Int. Cl.[4] G09G *1/00*

U.S. Cl. 340—727 **50 Claims**



1. Apparatus for generating a relatively high-amplitude-resolution video signal descriptive of an edge transition in a graphic image to appear on a display screen, which screen is to be raster scanned during the writing of the display in accordance with a system of orthogonal, Cartesian spatial coordinates in which integral values of one coordinate describe line locations and in which integral values of another coordinate describe pixel locations along a line, and which edge transition portion of the graphic image is defined by at least relatively low amplitude resolution samples of graphic image intensity at points defined by integral portions of another system of orthogonal spatial coordinates, said apparatus comprising:

means for generating in said other system of spatial coordinates a stream of pairs of first and second coordinates describing a phantom raster scan for at least a portion of the display screen raster and having respective integral and fractional values indicative of position in the phantom raster scan;

means for specifying without replication said low-amplitude-resolution samples of graphic image intensity at points in said other system of spatial coordinates specified by integral portions of said first and second coordinates;

means responsive to the integral values of each pair of first and second coordinates for selecting the ones of said low-amplitude-resolution samples of graphic image intensity at four points in said other system of spatial coordinates defining the corners of a spatial region, the location of the first point in said other system of spatial coordinates being specified by the integral values of said first and second coordinates, the location of the second point being specified by the integral value of said first coordinate as modified by unity and by the integral value of said second coordinate, the location of the third point being specified by the integral value of said first coordinate and by the integral value of said second coordinate as modified by unity, and the location of the fourth point being specified by the integral values of said first and second coordinates each as modified by unity; and

means for generating, responsive to each set of four low-amplitude-resolution samples of graphic image intensity thus successively selected, a respective sample of said high-amplitude-resolution signal essentially equal to a weighted summation of the then selected set of four low-amplitude-resolution samples, the sample concerning the first point being weighted in proportion to the product of the complements of the fractional portions of said first and second coordinates, the sample concerning the second point being weighted in proportion to the product of the fractional portion of said first coordinate times the complement of the fractional portion of said second coordinate, the sample concerning the third point being weighted in proportion to the product of the complement of the fractional portion of the first coordinate times the fractional portion of said second coordinate, and the sample concerning the fourth point being weighted in proportion to the product of the fractional portions of said first and second coordinates.

4,656,468

PATTERN DATA PROCESSING APPARATUS

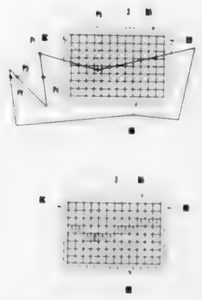
Kei Takikawa, Yokohama, and Hirofumi Kanemaki, Isehara, both of Japan, assignors to Nippon Telegraph and Telephone Corporation and Sony Corporation, both of, Japan

Filed Feb. 1, 1984, Ser. No. 575,986

Claims priority, application Japan, Feb. 4, 1983, 58-17096; Apr. 23, 1983, 58-72352

Int. Cl.[4] G09G *1/14*

U.S. Cl. 340—744 **15 Claims**



1. Apparatus for processing pattern data from which a processed pattern is displayed in a display area wherein there exists a predetermined scanning direction for said processing, and said pattern data having data corresponding to both said display area and a data calculating area outside of said display area, with said display area and said data calculating area being divided into a plurality of respective pixels, said pattern data processing apparatus comprising:

a flag data generator receiving said pattern data for generating first flag data indicating whether each of said pixels is located at a boundary of a closed area of said pattern from said pattern data corresponding to said display area;

a flag data memory having a memory area corresponding to said display area for storing said first flag data and having an outermost peripheral memory portion surrounding said memory area;

means for successively mapping said pattern data corresponding to said data calculating area into addresses of said outermost peripheral memory portion to said flag data memory by generating second flag data and storing said second flag data in said outermost peripheral memory portion of said flag data memory;

read-out means for reading out said first and second flag data from said flag data memory in said predetermined scanning direction; and

means for processing said pattern data inside of said closed area of said pattern by using said first and second flag data read out of said flag data memory.

4,656,469

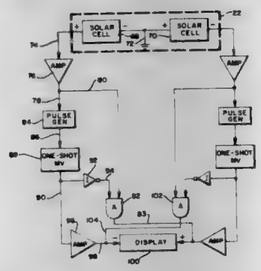
ACTIVATED WORK AND METHOD OF FORMING SAME

Earl H. Oliver, 2516 St. Anthony Rd., Minneapolis, Minn. 55418; Alfred E. Hall, 14943 Hillcrest Rd., and John L. Sigalos, 7335 Tophill Cir., both of Dallas, Tex. 75248

Continuation of Ser. No. 553,102, Nov. 17, 1983, abandoned. This application May 30, 1986, Ser. No. 871,125

Int. Cl.[4] G09G *3/36*

U.S. Cl. 340—802 **15 Claims**



1. An activated work comprising:

a. at least two turnable, juxtaposed pages,

b. at least one of said juxtaposed pages having a picture of a first scene on a side facing another page,

c. a second scene added to and interposed with said first scene, said second scene comprising areas thereof which are formed of a material having variable electromagnetic radiation absorption characteristics and being essentially invisible in a first state and visible in an electrically changed second state,

d. means on said work for producing an electrical signal when said one page is turned from its juxtaposed relationship with said other page, and

e. means for coupling said electrical signal to said areas of said second scene only by turning said one page from its juxtaposed relationship with said other page such that said areas of said second scene are independently, distinctly and reversibly changed from said invisible state to said electrically changed visible state.

4,656,470

TIMESHARING DRIVER FOR LIQUID CRYSTAL DISPLAY DEVICE

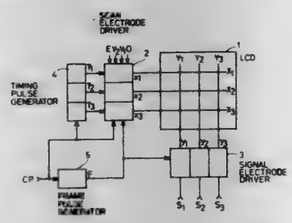
Masakazu Saka, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 22, 1983, Ser. No. 506,834

Claims priority, application Japan, Jun. 10, 1982, 57-100171

Int. Cl.[4] G09G *3/00*

U.S. Cl. 340—805 **8 Claims**



1. A circuit for driving a display of an electronic apparatus, said display having N scan electrodes and M signal electrodes (where M and N are positive integers) with a plurality of display elements disposed therebetween, each said scan electrode addressing M display elements, each said signal electrode addressing N display elements, said circuit comprising:

scan electrode drive means for driving each of said scan electrodes with a scan waveform having four discrete voltage levels, a high level, a low level, and first and second intermediate voltage levels, said scan waveform having first and second frame periods, each divided into N sub-periods, said first frame period defining a display writing period, and said second frame period defining a display erasing period, said scan means driving each of said N scan electrodes in a corresponding N sub-period with said high voltage level in said first frame period and said low voltage in said second frame period, said scan drive means alternately applying said first and second intermediate voltage levels to each of said N scan electrodes in all other said sub-periods, said first intermediate voltage level being applied during one half of the said other sub-period, and said second intermediate voltage level being applied during a second half of the said other sub-period;

signal electrode drive means for driving each of said signal electrodes with a signal waveform formed of said high and low voltage levels, said low voltage level being developed on each M signal electrode during a N sub-period of said first frame period and said high voltage level being developed during the N subperiod of said second frame period in order to selectively display the display element disposed between said M signal electrode and N scan electrode during the first frame period and selectively erase a displayed element during the second frame period;

each said display element being driven in a scanned manner by said scan electrode drive means and signal electrode drive means to thereby drive and selectively display each element of said display, said first and second intermediate voltage levels being different from each other to thereby reduce display energy consumption.

4,656,471

CIRCUIT ARRANGEMENT FOR CONNECTING A SUBSCRIBER TO A BUS LINE VIA SWITCH MEANS UNDER WHICH PREVENTS DISABLING OF THE BUS LINE IN THE EVENT OF DRIVER FAILURE

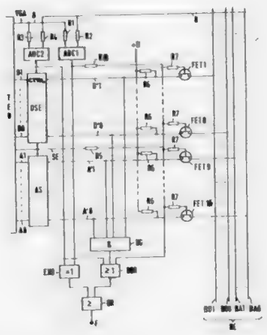
Karl Hanss, Kandel; Karl Schupp, Karlsruhe, and Siegfried Block, Kandel, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 28, 1985, Ser. No. 695,269

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402633

Int. Cl.[4] G08C *25/00*

U.S. Cl. 340—825.16 **10 Claims**



1. A circuit arrangement for coupling a subscriber device to a bus line comprising transmitter means coupled between the subscriber device and the bus line, the transmitter means being

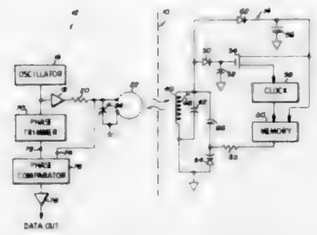
coupled in a low impedance state to the bus line upon receipt of a first signal from the subscriber device and in a high impedance state in the absence of said signal, the circuit arrangement further comprising electronic switch means comprising a switching path and a control input, the switching path being switched into conduction if said first signal is received at said control input, said switching path of said switch means being coupled between said transmitter means and said bus line, a plurality of connecting lines between the transmitter means and the electronic switch means being provided, the connecting lines each being coupled via a resistor to a constant potential source, and further comprising logic means coupled to the connecting lines for providing a fault signal in the event of different potentials on the connecting lines, said logic means providing said fault signal in the event at least one of said switch means short circuits, whereby a selected logic signal from said bus line on at least one of said connecting lines due to said short circuited switch means will be coupled to said logic means thereby to generate said fault signal.

4,656,472

PROXIMITY IDENTIFICATION SYSTEM WITH POWER AIDED IDENTIFIER

Charles A. Walton, 19115 Overlook Rd., Los Gatos, Calif. 95030

Filed Jan. 23, 1985, Ser. No. 693,992
Int. Cl.⁴ G07D 7/00; H04Q 7/00
U.S. Cl. 340—825.34 **24 Claims**



1. An electronic recognition and identification system comprising:

a reader section including an oscillator, a reader antenna connected to said oscillator for radiating electromagnetic power responsive to said oscillator, and a detection means connected to said reader antenna and to said oscillator for detecting changes in a vector phase angle of a voltage across said reader antenna relative to the oscillator signal and for delivering output signals responsive to said changes in vector phase angle; and

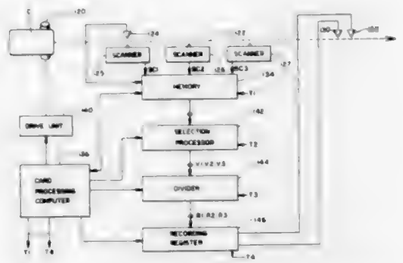
an identifier section having an identifier antenna for receiving power from said reader antenna by mutual coupling, a reactance modulation circuit connected to said identifier antenna, a data register means for providing an advance and sequence of data joined to said reactance modulation circuit, such that a vector phase angle of a current of said modulation circuit varies responsive to said sequence of data, a battery for powering said data register means, a diode connected intermediate said identifier antenna and said battery such that the battery is recharged when the identifier section is in close proximity to the reader section, and means for switching on power from said battery when the identifier section is in close proximity to the reader section and for switching off power from said battery when the identifier section is distant from the reader section.

4,656,473

SECURE CARD AND SENSING SYSTEM

Robert N. Goldman, Honolulu, Hi., and David Gold, Santa Monica, Calif., assignors to Light Signatures, Inc., Los Angeles, Calif.

Filed Oct. 4, 1984, Ser. No. 657,849
The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.
Int. Cl.⁴ H04Q 9/00
U.S. Cl. 340—825.34 **9 Claims**



1. A method of producing an authenticator device as to control or regulate transactions comprising the steps of:

selecting a synthetic material susceptible to forming stress waves;

forming a substantially flat sheet of said synthetic material to include random patterns of stress waves;

impinging light on at least one selected area of said pattern in said sheet to provide modulated light data indicative of at least one fragment of said pattern; and

recording the location of said fragment and said modulated light data to identify said sheet for verification.

4,656,474

PROCESS AND APPARATUS FOR AUTHENTICATING THE SIGNATURE OF A SIGNED MESSAGE

Jean H. Mollier, Bougival, and Charles J. Sauda, Saint Cloud, both of France, assignors to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

Continuation of Ser. No. 698,738, Feb. 5, 1985, abandoned, which is a continuation of Ser. No. 428,866, Sep. 30, 1982, abandoned. This application Nov. 20, 1985, Ser. No. 799,300
Claims priority, application France, Oct. 9, 1981, 81 19090
Int. Cl.⁴ H04Q 9/00; G06K 5/00
U.S. Cl. 380—23 **14 Claims**

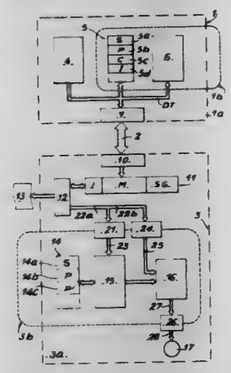
1. A process for authenticating the signature of a message sent by a transmitting device to a receiving device via a transmission path, comprising automatically computing at the transmitting device a signature of a message to be transmitted by using a signature-computing program which takes into account the entire contents of the message to be transmitted and a secret key which is unknown to both a sender and a recipient of the massage;

transmitting the message and signature to the receiving device;

automatically recomputing at the receiving device a signature of the received message by using another signature-computing program which is the same as said first-mentioned signature-computing program, said other signature-computing program taking into account the entire contents of the received message and said secret key;

automatically comparing the signature of the received message with the signature recomputed at the receiving device; and

indicating to the recipient of the message in response to said comparing only whether the signature of the received message and the recomputed signature are identical or different, while preventing the recipient from access to the value of the recomputed signature.

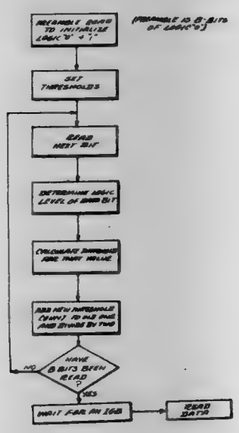


4,656,475

METHOD AND APPARATUS FOR CONTROLLING DISTRIBUTED ELECTRICAL LOADS

Edward B. Miller, West Warwick, R.I., and Charles W. Eichelberger, Schenectady, N.Y., assignors to General Electric Company, Cleveland, Ohio

Division of Ser. No. 325,031, Nov. 25, 1981, Pat. No. 4,535,332, which is a division of Ser. No. 89,478, Oct. 30, 1979, abandoned. This application May 1, 1985, Ser. No. 729,425
Int. Cl.⁴ H04Q 9/00
U.S. Cl. 340—825.06 **9 Claims**



1. In a control arrangement having apparatus at plural locations permitting non-interfering asynchronously initiated digital data communication between plural apparatus via a common data communication link, said apparatus being situated at each of said plural locations, a method for communicating among said plural locations comprising the steps of:

monitoring, by access means, the busy or free status of said communication link,

inhibiting initial access thereto from an apparatus unless a free status exists,

serially transmitting, by data transmitting means within an apparatus, digital binary bit information conveying width modulated pulses of electrical signals having first and second states onto said communications link as desired only if said communication link is in free status as monitored by said access means, one of said first and second states being dominant when transmitted on said link even it simultaneous transmission of the other state on the same link is attempted from another remote location, where the two binary values are represented by different pulse widths occurring as required to represent desired data values within successive bit cells or time periods,

monitoring, by arbitration means, the existence of said first and second states on the link during the time required for the transmission of each binary bit of information,

comparing the state value then being transmitted from its respective remote location with the state value then existing on said link; and

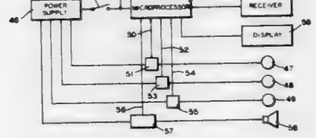
inhibiting further transmission of data onto said link by its respective said data transmission means is there is a difference between the value then being transmitted and the actual state then existing thus eventually leaving only one apparatus transmitting on said link.

4,656,476

WARNING DEVICE FOR GOLF CARTS

Richard Tavtigian, 12 Exmoor, Toledo, Ohio 43615

Filed Aug. 26, 1985, Ser. No. 769,089
Int. Cl.⁴ G01S 13/48, 17/08; A63B 57/00
U.S. Cl. 340—993 **14 Claims**



1. A warning device for indicating the position of a golf cart on a golf course with respect to a restricted area comprising:

a transmitter for transmitting an energy wave;

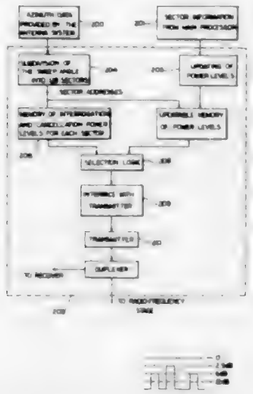
a receiver means mounted on a golf cart for receiving said energy wave and for generating an output signal representing the position of said golf cart with respect to a restricted area of a golf course on which the golf cart is located;

a microprocessor means connected to said receiver means and responsive to said output signal for generating one of a plurality of control signals, each said control signal representing a different position of said golf cart with respect to said restricted area, a first one of said control signals representing an area where it is permissible to drive said golf cart, a second one of said control signals representing an area adjacent said restricted area and a third one of said control signals representing said restricted area; and

an indicator means connected to said microprocessor means and responsive to said control signal for generating an indication of the position of said golf cart with respect to said restricted area wherein said indicator means includes first, second and third lamps responsive to said first, second and third control signals respectively.

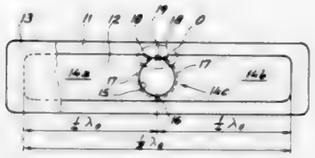
VOL 1077 ISS 1 AP 7 1987 UMI

4,656,477
PERFECTIONING IN REPLY TYPE RADAR SYSTEMS, IN PARTICULAR THE SSR TYPE
Roberto Rosconi, Guidonia, and Roberto Chierici, Leghorn, both of Italy, assignors to Selenia Industrie Elettroniche Associate—S.p.A., Rome, Italy
Filed Sep. 27, 1982, Ser. No. 427,285
Int. Cl.⁴ G01S *13/76*
U.S. Cl. 342—39 **5 Claims**



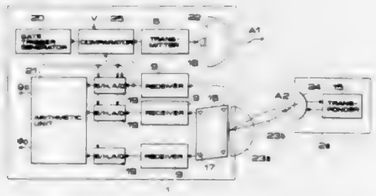
4. A method for the suppression of undesired replies due to reflections of fixed obstacles or due to radar system structure of a reply type reader system having an interrogator on land and a transponder aboard an aircraft comprising:
scanning azimuth with a single directional antenna through 360 degrees;
dividing sweep angle of said directional antenna into a plurality of sectors;
selectively limiting transmission power levels by substantially 3 to 6 decibels while continuously supplying sufficient power levels ample for reply of said transponder in accordance with reflectors in each of said plurality of sectors;
storing said power levels in a memory means; and
transmitting pulses in accordance with said power levels.

4,656,478
PASSIVE TRANSPONDER FOR LOCATING AVALANCHE VICTIMS
Claude-Eric Leuenberger, Chézard, Switzerland, assignor to Asulab S.A., Bienne, Switzerland
Filed Jul. 23, 1985, Ser. No. 757,990
Claims priority, application Switzerland, Jul. 30, 1984, 3693/84
Int. Cl.⁴ G01S *13/80*
U.S. Cl. 342—51 **21 Claims**



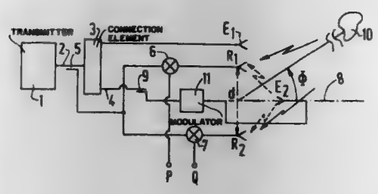
1. A passive transponder for seeking out persons by means of a combined transmitter-receiver capable of transmitting at a first frequency and receiving at a second frequency which is a harmonic of said first frequency, comprising: a dielectric support (11), an antenna formed from a thin conductive sheet (12) fixed to said support and including a non-linear passive component (19) and a conductive portion (16) electrically parallel to said passive component to establish a direct current bias thereof, said antenna sheet defining a cutout portion (15) having an edge (17) which defines a conductive path closed by the passive component to form a self-inductive loop, said loop, together with the capacity of the passive component, providing a circuit resonating at said first frequency, wherein the antenna sheet is linearly elongate, and the cutout portion is disposed proximate a central portion of said elongate antenna sheet intermediate opposite ends thereof.

4,656,479
RADAR SYSTEM
Tetsuo Kirimoto; Michimasa Kondo, and Takahiko Fujisaka, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 14, 1985, Ser. No. 690,938
Claims priority, application Japan, Feb. 8, 1984, 59-21145
Int. Cl.⁴ G01S *13/42*
U.S. Cl. 342—94 **7 Claims**



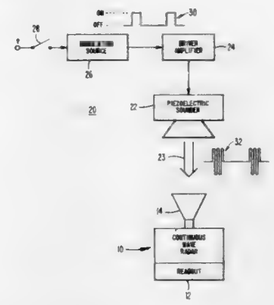
1. A radar system comprising:
a radio wave transmitting means having a transmitter which generates a first radio wave, and a first nondirectional antenna which radiates the first radio wave generated by the transmitter into external space, said radio wave transmitting means being aboard a first flying object;
a radio wave transmitting and receiving means having a second nondirectional antenna for receiving the first radio wave radiated by the first nondirectional antenna, and a transponder which amplifies and modulates the first radio wave received through the second nondirectional antenna to generate a second radio wave and to radiate the second radio wave through the second nondirectional antenna into the external space, said radio wave transmitting and receiving means being aboard a second flying object; and
a radio wave receiving means having an array antenna having a two-dimensional arrangement of a plurality of nondirectional antenna elements which receive the second radio wave generated by the transponder, a plurality of receivers which amplify and detect the second radio wave received through the nondirectional antenna elements constituting the array antenna to generate a plurality of corresponding receiving signals, means to decide whether or not the amplitude of the receiving signal detected by a designated one of the receivers is greater than a specified threshold, means to generate a trigger pulse only when the amplitude detected by the designated receiver exceeds the specified threshold, a plurality of sampling and quantizing means which, in response to the trigger pulse, sample and quantize simultaneously the plurality of receiving signals generated by the receivers, and a goniometric means which processes the output signal of the sampling and quantizing means to measure the direction of arrival of the second radio wave, and said radio wave receiving means being aboard said first flying object.

4,656,480
MONOPULSE FM-CW RADAR SYSTEM WITH IMPROVED AXIS STABILITY
Roland Allezard, Verrieres le Buisson, and Jean-Luc Degouy, Antony, both of France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 15, 1984, Ser. No. 671,663
Claims priority, application France, Nov. 23, 1983, 83 18656
Int. Cl.⁴ G01S *13/68*
U.S. Cl. 342—151 **10 Claims**



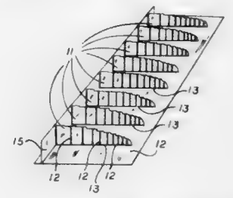
1. A monopulse FM-CW radar system comprising a first transmitting antenna and a transmitter coupled thereto for effecting transmission of a radar signal toward a target, first and second spaced-apart receiving antennas for producing respective echo signals in response to reflections of the radar signal from the target, first and second mixers each coupled to the transmitter and to a respective one of the receiving antennas for producing respective first and second beat signals, and signal processing means coupled to the first and second mixers for producing from the first and second beat signals respective first and second summation signals representing target information, characterized in that said radar system further comprises:
(a) simulated-echo producing means for producing a simulated target echo signal representing a target at a predetermined range which is outside a selected surveillance range interval of the radar system;
(b) a second transmitting antenna, coupled to the simulated-echo producing means and located at a predetermined position with respect to the receiving antennas for transmitting the simulated target echo signal toward the receiving antennas;
(c) range gating means coupled to the signal processing means for distinguishing between components of the first summation signal representing a target in the selected surveillance range interval and the simulated target at the predetermined range;
(d) phase comparison means coupled to the range gating means and to the signal processing means for producing a first phase signal representing the phase difference between the first summation signal components representing the target in the selected surveillance range and corresponding components of the second summation signal, and for producing a second phase signal representing the phase difference between the first summation signal components representing the simulated target and corresponding components of the second summation signal, said latter phase difference representing a phase error of the system;
(e) bearing detecting means coupled to the phase comparison means for producing from the first phase signal a target bearing signal representing the bearing of the target in the selected surveillance range; and
(f) phase correction means coupled to the phase comparison means and responsive to the second phase signal to correct for the system phase error, thereby substantially eliminating the affect of said error from the target bearing signal.

4,656,481
CALIBRATION INSTRUMENT FOR CONTINUOUS WAVE MICROWAVE DOPPLER RADAR
Daniel D. Mawhinney, Livingston, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Aug. 2, 1984, Ser. No. 637,141
Int. Cl.⁴ G01S *7/40*
U.S. Cl. 342—171 **2 Claims**



1. A calibration instrument for calibrating a continuous wave microwave doppler radar, said radar being of the type utilized to check the heart rate of a patient, said radar having an antenna means for transmitting continuous wave signals and receiving doppler shifted continuous wave signals, comprising in combination:
a piezoelectric sounder producing an acoustic signal at a known frequency only when energized with an electrical signal and physically arranged in operating relationship with said antenna of said continuous wave radar; and
means producing said electrical signal including means for producing a signal simulating the heart rate of a patient, said signal for alternately energizing and not energizing said piezoelectric sounder in a manner to simulate a patient heart rate for energizing said acoustic signal producing means to produce an acoustic signal which is directed toward said radar antenna whereby the acoustic signal produced by said means when energized may be used to calibrate said radar.

4,656,482
WIDEBAND WING-CONFORMAL PHASED-ARRAY ANTENNA HAVING DIELECTRIC-LOADED LOG-PERIODIC ELECTRICALLY-SMALL, FOLDED MONOPOLE ELEMENTS
Sheng Y. Peng, Escondido, Calif., assignor to Teledyne Micronetics, San Diego, Calif.
Filed Oct. 11, 1985, Ser. No. 786,980
Int. Cl.⁴ H01Q *1/28, 11/10*
U.S. Cl. 343—705 **10 Claims**

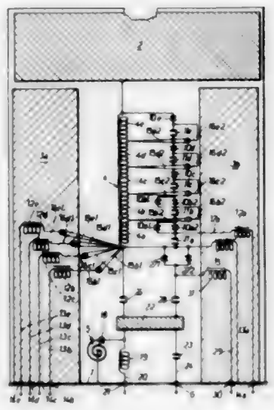


1. A phase array antenna for the transmission and reception of multiple frequency electromagnetic signals which comprises:
a first planar sheet of dielectric substrate;

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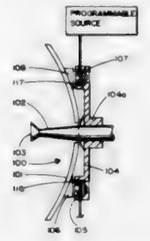
a plurality of monopole elements, each of said elements comprising:
a first conductive strip bonded to one face of said first sheet,
a second conductive strip bonded to the other face of said first sheet opposite said first strip;
means for connecting a set of proximal ends of said first and second strips together across the thickness of said first sheet;
a second planar sheet of dielectric substrate supporting said first sheet orthogonally;
a feed line bonded to the surface of said second sheet; and
means for connecting the free end of said first strip to said feed line.

4,656,483
SWITCHABLE ANTENNA FOR THE VHF AND UHF FREQUENCY BANDS
Hervé Jaquet, Paris, France, assignor to Avions Marcel Dassault-Breguet Aviation, Vaucresson, France
Filed Sep. 26, 1984, Ser. No. 654,488
Claims priority, application France, Sep. 28, 1983, 83 15399
Int. Cl.⁴ H01Q *9/06, 1/28*
U.S. Cl. 343—745 **9 Claims**



1. An antenna switchable between VHF and UHF frequency bands, comprising:
a reflecting surface constituting a ground;
a capacitative element spaced from said reflecting surface;
a first insulated conductor passing through said reflecting surface and connectable to a transmitter receiver adapted to be switched between VHF and UHF frequencies;
a first self-inductance comprising at least in part by at least one hollow, helically wound conductor and electrically inserted between said capacitive element and said first insulated conductor, and including several sections;
a second insulated conductor passing through said reflecting surface;
a plurality of first switches, each corresponding to one of said several sections for short-circuiting a respective section, and comprising at least one P-I-N diode having a first electrode connected to a first end point of said corresponding section and a second electrode connected to a second end point of said corresponding section through a capacitor having low resistance for VHF and UHF frequencies, and also connected to said second insulated conductor;
means for continuously biasing said diode via a self-inductance connected to a conductor which is helically wound and surrounded without contact by said hollow conductor and connected to said second insulated conductor;
a second self-inductance connected between said first self-inductance and said reflecting surface;
a second switch connected to said second self-inductance and adapated to be disconnected from said first self-inductance; and
conductive side members inserted between said capacitive element and said reflecting surface on opposite sides of said first and second self-inductances and connected to said reflecting surface.

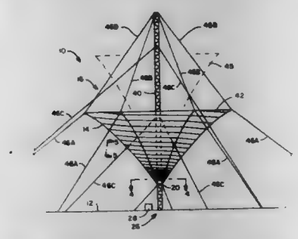
4,656,484
RADAR REFLECTOR AND SCANNER WITH ELECTROMAGNETIC PROGRAMMABLE DRIVE
Ralph A. Brown, Bountiful, and Gerald H. Piele, Salt Lake City, both of Utah, assignors to Sperry Corporation, Blue Bell, Pa.
Filed Aug. 5, 1985, Ser. No. 762,415
Int. Cl.⁴ H01Q *3/01, 3/12*
U.S. Cl. 343—761 **7 Claims**



1. An improved radar scanner comprising,
a signal source for producing an electromagnetic signal,
reflector means for reflecting said electromagnetic signal produced by said signal source so as to produce a beam pattern,
said reflector means comprising a unitary disk-like element having a substantially parabolic curvature and formed of a flexible reflective material,
at least one magnetic element associated with said releector means,
each said magnetic element comprises an electromagnet which includes a coil which is selectively activated by the application of an electrical signal thereto and an armature which is adapted to be moved when said coil is activated thereby to selectively displace a portion of said reflector means in order to selectively alter the curvature of said reflector means thereby to alter the angle of reflection of said electromagnetic signal and modify said beam pattern,
support means mounted to said reflector means and arranged to support each said magnetic element, and
control means connected to said coil to supply electrical signals thereto in a prescribed pattern thereby to control the operation of each said magnetic element.

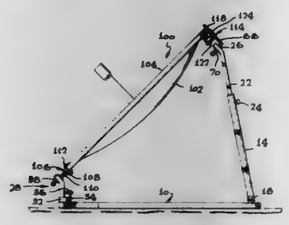
4,656,485
FOUR WIRE DUAL MODE SPIRAL ANTENNA
William L. Werner, Cupertino, and Raymond H. DuHamel, Mountain View, both of Calif., assignors to Granger Associates, Santa Clara, Calif.
Continuation of Ser. No. 679,829, Dec. 10, 1984, abandoned, which is a continuation of Ser. No. 454,693, Dec. 30, 1982, Pat. No. 4,498,084. This application Jun. 3, 1986, Ser. No. 873,081
Int. Cl.⁴ H01Q *1/36, 11/10*
U.S. Cl. 343—876 **18 Claims**

1. An antenna, comprising: first, second, third and fourth wire radiators; means for supporting said radiators in electrically insulated relationship to one another relative to a horizontal ground plane and around the outer surface of an imaginary cone having its apex located at a fixed point relative to said plane and its central axis extending vertically, said first, second, third and fourth radiators being supported so as to define successively interlaced first, second, third and fourth conical spiral windings, respectively, beginning at common ends of the radiators adjacent the apex of said cone, said common ends being circumferentially spaced 90° from each other about said central axis; means for providing first and second alternating currents having the same amplitude and a given frequency but 180° out of phase with one another; and means for simultaneously electrically connecting said first current to said common ends of said first and second radiators and said second current to said common ends of said third and fourth radiators, whereby to cause said radiators to produce a high angle radiation pattern relative to said horizontal ground



plane, said connecting means also including switch means movable between a first operating mode for simultaneously connecting said first current to said common ends of said first and second radiators and said second current to said common ends of said third and fourth radiators to provide said high angle radiation Pattern and a second operating mode for simultaneously connecting said first current to said common ends of said first and third radiators and said second current to said common ends of said second and fourth radiators whereby to cause said radiators to produce a low angle radiation pattern relative to said horizontal plane, said apex of said imaginary cone defining a preselected cone angle with its central axis and said spiral windings defining a preselected pitch angle with said axis, said cone and pitch angles being selected such that said low angle radiation pattern is predominantly horizontally polarized.

4,656,486
SATELLITE TV DISH ANTENNA SUPPORT
Allan L. Turner, 303 N. Davis St., Tehachapi, Calif. 93561
Filed Jul. 12, 1985, Ser. No. 754,414
Int. Cl.⁴ H01Q *1/08*
U.S. Cl. 343—882 **13 Claims**



11. A satellite TV dish antenna support comprising:
a base assembly, said base assembly having a lower ball support thereon and a ball rotatably mounted in said lower ball support, said base assembly also having an upper ball support thereon with an upper ball rotatably mounted in said upper ball support, said upper and lower balls defining a rotation axis for a TV dish antenna, at least one of said ball supports being adjustable so that the rotation axis can be adjusted with respect to said base;
an upper mount and a lower mount, said upper mount and said lower mount each being shaped to mount directly on the rim of a dish antenna which is substantially a curved surface of revolution about a dish axis, at least one of said mounts is shaped to clamp on the rim and is comprised of first and second clamp bars pivoted with respect to each other and is spaced to clamp on the rim and a jack bolt between said clamp bars to jack apart said clamp bars on one side of their pivot so that they clamp together on the other side of their pivot, one of said clamp bars carrying a pivot pin thereon, said upper and lower mounts each respectively carrying a pivot member thereon for respective engagement in said upper and lower balls so that a dish antenna carried on said upper and lower mounts can swing its dish axis by rotation on the rotation axis through said balls.

4,656,487
ELECTROMAGNETIC ENERGY PASSIVE FILTER STRUCTURE
Jean-Claude Sureau, Boston, and Janice M. Leibinger, Marlborough, both of Mass., assignors to Radant Technologies, Inc., Stow, Mass.
Filed Aug. 19, 1985, Ser. No. 766,544
Int. Cl.⁴ H01Q *15/02*
U.S. Cl. 343—909 **10 Claims**



1. A structure for selectively transmitting electromagnetic energy within a selected frequency range and for preventing the transmission of electromagnetic energy outside said selected frequency range, said structure comprising
an insulative member having first and second surfaces, each of said surfaces having a plurality of regions formed in a selected pattern thereon;
each of said regions having a metallized portion in the configuration of a first Jersusalem cross having four quadrant regions therein, each of said quadrant regions further having a metallized portion in the configuration of a second Jerusalem cross, the dimensions of the first Jerusalem cross and the dimensions of the second Jerusalem cross in each of said regions having a selected ratio and the dimensions of the first and second Jerusalem crosses on the regions of the first surface being different from the dimensions of the first and second Jerusalem crosses on the regions of the second surface.

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TRANSPORTATION EQUIPMENT RECORDER WITH TIME ACCURACY

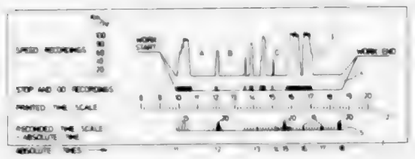
Hermann Ruhl, 133 Richmond Street West, Toronto, Ontario, Canada (M5H 2L7)

Continuation of Ser. No. 486,207, Apr. 18, 1983, abandoned, and Ser. No. 486,388, Apr. 19, 1983, abandoned. This application Sep. 23, 1985, Ser. No. 779,038

Claims priority, application Canada, Apr. 22, 1982, 401495

Int. Cl.⁴ G01D *15/00*

U.S. Cl. 346—49 **10 Claims**



1. A system for recording information regarding transportation equipment operating conditions and for determining accuracy of the recorded as opposed to actual duration of such operating conditions, said system comprising first recording means for recording the information on a recording receiving medium, clock means for moving the receiving medium relative to said first recording means, second recording means independent of said first recording means for recording time information on the receiving medium, and control means for controlling said second recording means to record in a predetermined pattern indicative of accurate recording of the duration of the operating condition information and for controlling said second recording means to produce recordings other than in such predetermined pattern when inaccurate recording of the duration of the operating condition information occurs thereby highlighting any such inaccurate time recording.

4,656,489

THERMAL PRINTER/PLOTTER

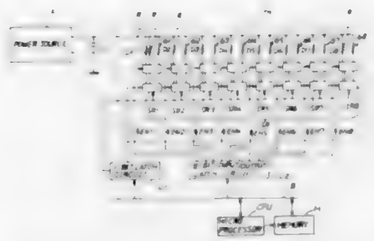
Tatuo Sato, and Shingo Takimoto, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Apr. 23, 1986, Ser. No. 854,805

Claims priority, application Japan, Apr. 26, 1985, 60-91779; May 17, 1985, 60-106475

Int. Cl.⁴ G01D *15/10*; **B41J** *3/20*

U.S. Cl. 346—76 PH **8 Claims**



1. A thermal printer/plotter comprising:

(a) a parallel thermal printhead including a plurality of thermal resistive elements divided into a plurality of groups and so arranged in a row as to produce a line of dots on a sheet of heat-sensitive paper when said thermal resistive elements are energized;

(b) means for selecting those of said thermal resistive elements which are to be energized in each one of said groups;

(c) means for producing a drive signal to be sequentially applied to one of said groups after another for simultaneous energization of said selected thermal resistive elements of each one of said groups;

(d) a DC power source having a current capacity smaller than the capacity that can provide the amount of current required for simultaneous energization of all the thermal resistive elements in each one of said groups;

(e) a capacitor connected to said power source in parallel with each of said thermal resistive elements, so that said capacitor provides a sufficient amount of discharge current to be added to the amount of current supplied by said power source when said latter amount is short of the amount required for simultaneous energization of said selected thermal resistive elements of each one of said groups; and

(f) control means for determining the period of time for said capacitor to be charged to a predetermined level after the termination of said drive signal applied to each one of said groups in accordance with the number of said selected thermal resistive elements which have been energized in each one of said groups, and causing said drive signal producing means to produce a drive signal to be applied to the succeeding one of said groups upon lapse of said determined period of time.

4,656,490

SUCTION RECOVERY APPARATUS OF INK-JET PRINTER

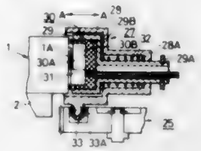
Koji Terasawa, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1985, Ser. No. 797,482

Claims priority, application Japan, Nov. 14, 1984, 59-240323

Int. Cl.⁴ G01D *15/18*

U.S. Cl. 346—140 R **7 Claims**



1. An apparatus for recovering the discharge function of an ink-jet printer by suction, which comprises a plurality of cap members facing fluid discharge recording means each for ejecting an ink onto a recording surface of a recording medium so as to record an image, wherein each of said cap members comprises a cap slider disposed in a cap holder to be movable in a back-and-forth direction and having a rear end portion provided with a stopper member which can abut against a rear end face of said cap holder; a rubber member disposed in a front opening portion of said cap slider and having an inner portion which can be coupled to said fluid discharge recording means; and a spring member interposed between said cap holder and said cap slider and compressed when said rubber member is depressed backward.

4,656,491

PROTECTION CIRCUIT UTILIZING DISTRIBUTED TRANSISTORS AND RESISTORS

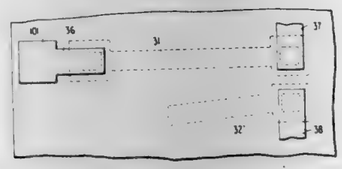
Hatsuhide Igarashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 17, 1983, Ser. No. 552,876

Claims priority, application Japan, Nov. 18, 1982, 57-202686

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.13 **10 Claims**



1. A semiconductor device provided with a protection circuit, the semiconductor device comprising:

a semiconductor substrate of one conductivity type;

a field effect transistor formed in said semiconductor substrate, said field effect transistor having a source and a drain formed in said semiconductor substrate and a gate formed on said semiconductor substrate between said source and said drain via an insulating film;

a first terminal formed on said semiconductor substrate for connecting with an external circuit;

a first region of the other conductivity type formed in said semiconductor substrate, said first region having a first and a second end portion and an elongated intermediate portion extending between said first and second end portions;

first means for connecting said first terminal with said first end portion of said first region;

second means for connecting said second end portion of said first region with said gate of said field effect transistor;

a second region of said other conductivity type formed in said semiconductor substrate, said second region having an elongated portion extending parallel to said intermediate portion of said first region with a distance therebetween determined such that said elongated portion of said second region and said intermediate portion of said first region operate as a distributed bipolar lateral transistor together with a portion of said semiconductor substrate located therebetween, said second region further having a contact portion at one end of said elongated portion, said elongated portion having no direct electrical connection thereto;

a second terminal formed on said semiconductor substrate for receiving a reference voltage; and

third means for connecting said contact portion of said second region with said second terminal.

4,656,492

INSULATED GATE FIELD EFFECT TRANSISTOR

Hideo Sunami, Nishitama; Hiroo Masuda, Kodaira; Yoshiaki Kamigaki, Nerima; Katsuhiro Shimohigashi, Musashimurayama, and Eiji Takeda, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 408,805, Aug. 17, 1982, abandoned. This application Oct. 15, 1985, Ser. No. 786,715

Claims priority, application Japan, Aug. 24, 1981, 56-131521

Int. Cl.⁴ H01L *29/76, 29/78, 29/94*

U.S. Cl. 357—23.3 **6 Claims**

1. An insulated gate field effect transistor comprising:

a semiconductor substrate of a first conduction type;

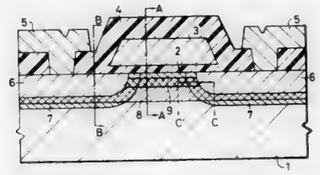
a gate electrode formed over a predetermined channel region in the surface region overlying said semiconductor substrate; and

a gate insulating film lying between said gate electrode and said semiconductor substrate;

at least one of source and drain regions adjacent to said channel region comprising:

a first impurity layer of a second conduction type and of a first predetermined depth, said first impurity layer having a first peak density and first impurity slope distribution of impurity values across said first predetermined depth of said first impurity layer, wherein said first impurity layer is formed with an impurity having a first impurity diffusion rate, and

a second impurity layer of the second conduction type and of a second predetermined depth, said second impurity layer having a second peak density and a second impurity slope distribution of impurity values across said second predetermined depth of said second impurity



layer, wherein said second impurity layer is formed with an impurity having a second impurity diffusion rate which is greater than the first impurity diffusion rate,

wherein said second predetermined depth is greater than said first predetermined depth, wherein said first peak density is greater than said second peak density, and wherein said first impurity slope distribution is steeper than said second impurity slope distribution, and

wherein said channel region has a first impurity distribution of the second conduction type lying in the vicinity of the surface of said semiconductor substrate and a second impurity distribution of the first conduction type and lying deeper in said substrate than said first impurity distribution, a concentration of said second impurity distribution being greater than an impurity concentration of said substrate.

4,656,493

BIDIRECTIONAL, HIGH-SPEED POWER MOSFET DEVICES WITH DEEP LEVEL RECOMBINATION CENTERS IN BASE REGION

Michael S. Adler, and Peter V. Gray, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 376,058, May 10, 1982, abandoned. This application Feb. 5, 1985, Ser. No. 698,498

Int. Cl.⁴ H01L *29/78*

U.S. Cl. 357—23.4 **6 Claims**

1. A symmetrical bidirectional power MOSFET device comprising:

a semiconductor substrate including a base region of one conductivity type and having a principal surface;

a pair of spaced main terminal regions, each of opposite conductivity type, formed to approximately the same depth within said base region and being of lesser lateral extent and depth than said base region, said main terminal regions having peripheries terminating at said principal surface such that, at said principal surface, and under influence of an electric field, a portion of said base region exists as a band of opposite conductivity type extending between said main terminal regions;

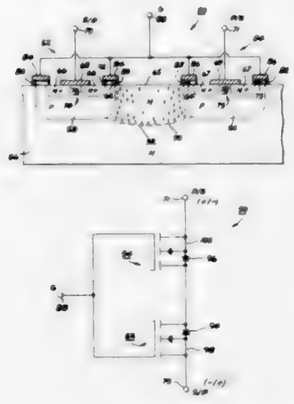
a pair of main terminal electrodes in ohmic contact with said main terminal regions, respectively;

a gate insulating layer disposed on said principal surface over said band of said base region;

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a conductive gate electrode disposed on said gate insulating layer at least laterally over said band of said base region; and

a recombination region included within said base region between said main terminal regions and extending to a depth of at least approximately the depth of said main terminal regions, said recombination region including deep level impurities for providing a relatively small lifetime for base region majority-carriers to avoid excess majority-carrier concentrations in said recombination region such that operation of said main terminal regions and said base region as a parasitic bipolar transistor is inhibited and such that, upon turnoff of said power MOSFET, excess base region majority-carriers are quickly recombined.

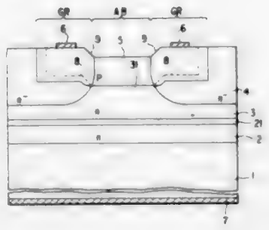


4,656,494

AVALANCHE MULTIPLICATION PHOTODIODE HAVING A BURIED STRUCTURE

Masahiro Kobayashi, Inagi; Susumu Yamazaki, Hadano; Takashi Mikawa, Tokyo; Kazuo Nakajima, and Takao Kaneda, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed May 29, 1985, Ser. No. 738,724
Claims priority, application Japan, May 31, 1984, 59-109433
Int. Cl.[4] H01L *27/14*
U.S. Cl. 357—30 **13 Claims**



1. An avalanche photodiode comprising:

a light absorbing semiconductor layer composed of a first semiconductor material having a first band gap allowing absorption of light to be detected, and doped with an impurity of a first conductivity type to a first concentration;

a first semiconductor layer provided on said light absorbing semiconductor layer, and composed of a second semiconductor material having a second band gap larger than said first band gap, and doped with an impurity of the first conductivity type to a second concentration at least as high as said first concentration, said first semiconductor layer having a mesa structure formed at a surface thereof opposite to said light absorbing semiconductor layer, said mesa providing a multiplication region;

a second semiconductor layer provided around said mesa of said first semiconductor layer, and composed of a third semiconductor material having a band gap at least as large as said second band gap, doped with an impurity of the first conductivity type to a concentration lower than said second concentration, said second semiconductor layer having a guard ring region formed therein, said guard ring region surrounding said mesa;

a first upper surface corresponding to said mesa and a second upper surface corresponding to said second semiconductor layer, said first upper surface being lower than said second upper surface with a predetermined distance therebetween; and

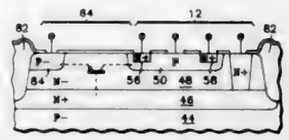
a pn junction formed by doping both of said first semiconductor layer in said multiplication region and said second semiconductor layer with a second conductivity type impurity at a concentration higher than said second concentration through said first and second upper surfaces, said pn junction extending across said mesa into said second semiconductor layer, wherein the distance between said pn junction and said light absorbing layer in said multiplication region is equal to or less than the distance between said pn junction and said light absorbing layer in said second semiconductor layer due to said distance between said first and second upper surfaces wherein said guard ring region is formed by the doping of said second semiconductor layer.

4,656,495

BIPOLAR RAM CELL AND PROCESS

Mark S. Birrittella, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 1, 1985, Ser. No. 750,121
Int. Cl.[4] H01L *29/72;* **G11C** *11/00*
U.S. Cl. 357—34 **3 Claims**



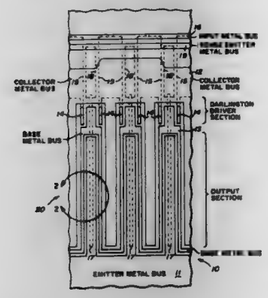
1. An integrated bipolar RAM cell comprising: first and second cross-coupled multiple emitter NPN transistors, the base of said first transistor coupled to the collector of said second transistor and the base of said second transistor coupled to the collector of said first transistor, a first emitter of said first transistor coupled to a first bit line and a first emitter of said second transistor coupled to a second bit line, a second emitter of each of said first and second transistors coupled to current generator means; first and second PNP transistors coupled between the collector of said first and second transistors, respectively, and a word line, said first and second PNP transistors having emitter regions characterized by an integrated impurity doping less than or equal to about 1×10^{13} cm^{-2}.

4,656,496

POWER TRANSISTOR EMITTER BALLASTING

Robert J. Widlar, Puerto Vallarta, Mexico, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 4, 1985, Ser. No. 698,043
Int. Cl.[4] H01L *29/72, 27/06, 29/04, 23/48*
U.S. Cl. 357—36 **7 Claims**



1. A power transistor of monolithic planar oxide-passivated, semiconductor construction said power transistor including a plurality of parallel-connected individual elements and comprising:

a semiconductor substrate of a first conductivity type;

a plurality of elongated base regions located in said substrate and extending from a first surface thereof into said substrate and having an opposite conductivity type, said plurality of elongated base regions being arrayed to form a plurality of columns on the face of said first surface of said semiconductor body;

a plurality of individual emitters of said first conductivity type located within the confines of each of said base regions and extending part way through said base regions;

a planar passivating oxide located on said first surface of said semiconductor substrate whereby the pn junctions created by said base regions and said emitters are passivated, said planar passivating oxide having apertures located within the confines each of said emitters and each of said base regions whereby contact is made thereto;

a resistive layer located on top of said planar oxide so that each of said emitters are contacted through said planar passivating oxide apertures, said resistive layer being contoured so that it provides a ballast resistor function coupled in series with each of said individual emitters, said resistive layer additionally providing a conductive cross under layer for said power transistor;

an insulating layer located on top of said resistive layer and having apertures therein where contact is to be made to said resistive layer;

a plurality of elongated emitter bus metal lines locates on top of said insulating layer whereby contact is made to each of the emitters in safid columns through said resistive layer by way of said apertures in said insulating layer and whereby each of said emitter bus metal lines can be made to have substantial width and be located directly over active emitter areas without compromising their function, said emitter metal bus lines being extended along one end of said columns to interconnect the emitters in said columns to form a unitary emitter electrode;

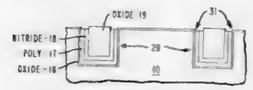
means for making low resistance ohmic connections to couple into said base region via said conductive cross-under layer and means for making contact from the first surface of said semiconductor substrate to provide a collector contact to said semiconductor substrate.

4,656,497

TRENCH ISOLATION STRUCTURES

Steven H. Rogers, Midwest City, Okla.; Randall S. Mundt, Colorado Springs, and Denise A. Kaya, Woodland Park, both of Colo., assignors to NCR Corporation, Dayton, Ohio

Division of Ser. No. 667,181, Nov. 1, 1984, Pat. No. 4,571,819.
This application Oct. 3, 1985, Ser. No. 783,717
Int. Cl.[4] H01L *27/04, 29/34, 29/04, 29/78*
U.S. Cl. 357—50 **3 Claims**



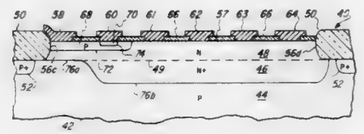
1. A trench dielectric isolation structure formed in a substrate, comprising a trench having substantially vertical sidewalls; and a layered structure comprising, in order from the trench walls, silicon dioxide, silicon, silicon nitride and silicon dioxide.

4,656,498

OXIDE-ISOLATED INTEGRATED SCHOTTKY LOGIC

Frank W. Hewlett, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 27, 1980, Ser. No. 200,834
Int. Cl.[4] H01L *27/04*
U.S. Cl. 357—50 **11 Claims**



1. In a semiconductor device having a body of semiconductor material and a thick oxide layer formed on the body for defining isolated active areas within the body, the logic unit comprising:

a first region of the body formed along an upper surface thereof and characterized by impurities of a first conductivity type,

a second region of the body characterized by impurities of a second conductivity type and having a portion underlying the first region and a portion extending to the upper surface,

an input contact disposed on the upper surface of the semiconductor body in ohmic contact with the second region,

a third region of the body characterized by impurities of the first conductivity type and having a portion underlying the second region and a portion extending to the upper surface,

a fourth region of the body characterized by impurities of the second conductivity type and underlying the third region,

PN junctions being formed where regions of the first conductivity type meet regions of the second conductivity type, the first, second and third regions defining respectively the emitter, base and collector of a drive transistor, the second, third and fourth regions defining respectively the emitter, base and collector of a clamp transistor, the transistors being formed within a single active area of the device defined by walls of the thick oxide layer,

the walls including first and second opposed sidewalls and first and second opposed endwalls adjoining the sidewalls at opposite ends of the active area, the first endwall and

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the sidewalls engaging and confining three of four substantially vertical edges of the second region,

the third region having a high resistivity zone and a low resistivity zone, the high resistivity zone having first, second and third portions, the first portion extending to the upper surface of the semiconductor body and meeting the fourth substantially vertical edge of the second region, the second portion underlying the second region directly below the first region, the third portion underlying the second region directly below the input contact, the low resistivity zone underlying the first and second portions but not the third portion, wherein the fourth region meets the high resistivity zone of the third region under the input contact so as to form the collector-base junction of the clamp transistor, and

at least one metal contact disposed on the upper surface in Schottky-barrier-forming contact with the high resistivity zone of the third region.

4,656,499

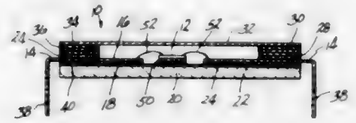
HERMETICALLY SEALED SEMICONDUCTOR CASING

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 405,640, Aug. 5, 1982, abandoned. This application Dec. 24, 1984, Ser. No. 685,864

Int. Cl.⁴ H01L *23/02, 23/06, 23/08, 23/10*

U.S. Cl. 357—74 **6 Claims**



1. A hermetically sealed semiconductor casing for an electrical component, comprising:

a metal or metal alloy lead frame having first and second opposite surfaces and being adapted to have said electrical component connected thereto, each of said first and second surfaces having a first refractory oxide layer thereon;

a metal or metal alloy base member having a second refractory oxide layer on at least one surface thereof;

a metal or metal alloy window frame shaped component comprising a cladding of first and second metal or metal alloy components, said first metal or metal alloy component having at least a first surface with a third refractory oxide layer thereon to produce improved glass or ceramic bonding strength, said second metal or metal alloy component having at least a first surface being readily solderable;

said metal alloy lead frame, metal alloy base member, and said first metal alloy component of said window frame component are formed of a first copper alloy having a coefficient of thermal expansion of about 170×10^{-7} in-/in/°C.;

a metal or metal alloy lid having at least a first surface being readily solderable;

a glass or ceramic component having a coefficient of thermal expansion of at least about 160×10^{-7} in/in/°C., said coefficient of thermal expansion of said glass or ceramic component being closely matched to the coefficient of thermal expansion of said metal or metal alloy lead frame, said metal or metal alloy base member, and the first metal or metal alloy component of said window frame shaped component, said glass or ceramic component bonding said first and second refractory oxide layers and said first and third refractory oxide layers for substantially eliminating thermal stress within said casing; and

solder means bonding the first readily solderable surface of the second component of said window frame component to the first readily solderable surface of the metal or metal alloy lid whereby said semiconductor casing is substantially hermetically sealed.

4,656,500

ADAPTIVE TYPE COMPRESSION METHOD FOR COMPRESSING A COLOR IMAGE BY IMPARTING PREDETERMINED VARIABLE-LENGTH CODES TO COMBINATIONS OF QUANTIZED VALUES BASED UPON QUANTIZED PREDICTION ERROR COMPONENTS

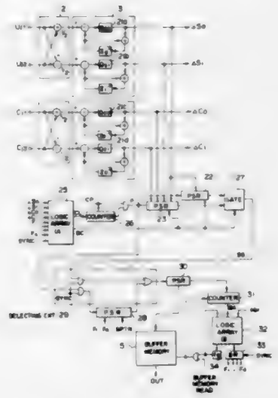
Sumio Mori, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

Filed Apr. 27, 1984, Ser. No. 604,480

Claims priority, application Japan, Apr. 27, 1983, 58-74666

Int. Cl.⁴ H04N *11/04, 1/417, 7/137*

U.S. Cl. 358—13 **4 Claims**



1. An adaptive type compression method for compressing a color image comprising the steps of:

(i) forming a plurality of blocks of picture elements, said picture elements each being represented by a plurality of color image components separated from a color image signal, each said block of picture elements comprising two adjacent picture elements,

(ii) obtaining sum components and difference components for each block using said color image components representing the two picture elements of each block,

(iii) transforming said sum components and said difference components of each two adjacent blocks into predication error components for each block,

(iv) quantizing said prediction error components on the basis of a quantization characteristic selected from a plurality of predetermined quantization characteristics,

(v) obtaining a plurality of combinations of quantized values based upon the quantized prediction error components for each block, and

(vi) imparting a predetermined variable-length code to each combination of quantized values.

4,656,501

IMAGE TRANSITION DETECTOR

Robert F. Casey, Oradell, and Kirk A. Law, East Windsor, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 31, 1985, Ser. No. 793,644

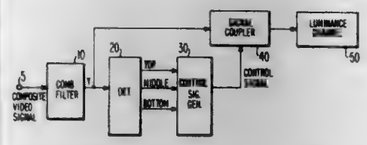
Int. Cl.⁴ H04N *9/78*

U.S. Cl. 358—31 **9 Claims**

1. In a video signal processor, including a comb filter for producing a comb filtered component signal, a component processing channel, and means for coupling said comb filtered component signal to said component processing channel including means for altering the composition of said comb filtered component signal in response to a control signal; an image transition detector comprising:

means responsive to said comb filtered component signal for detecting signals in the band of frequencies normally occupied by color representative information for a given line and two lines adjacent said given line; and

means coupled to said detecting means for generating said control signal in response to the relative levels of said detected signals for said given line and said adjacent lines.



4,656,502

COLOR MIXING OR INTERFERENCE REDUCTION CIRCUIT IN COLOR TV DECODING CIRCUITS

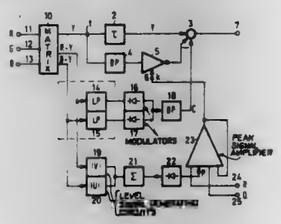
Michael Hausdörfer, Mühtal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 27, 1984, Ser. No. 675,193

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343261

Int. Cl.⁴ H04N *9/78*

U.S. Cl. 358—31 **6 Claims**



1. A circuit to reduce color mixing, interference, or cross-modulation, for use with a color television coding circuit, comprising

an input terminal (1) receiving a luminance signal;

an output terminal (7) adapted for connection to the coding circuit and supplying a low-interference luminance signal thereto;

and a transmission channel between the input terminal and the output terminal;

wherein, in accordance with the invention, the transmission channel comprises

a subtraction circuit (3) receiving the luminance signal;

a branch circuit, including

a band-pass filter (4) connected to receive the luminance signal and

a controlled circuit (5) having a main input terminal and a control input terminal (6), said main input terminal being serially connected with the band-pass filter,

the branch circuit being connected to the subtraction circuit to apply a subtraction signal to the subtraction circuit (3); and

a control signal generating circuit, connected to said control input terminal (6) and controlling the level of transmission of the controlled circuit (5) as a function of portions of the luminance signal which are approximately centrally within the range of the chroma subcarrier of a television signal.

4,656,503

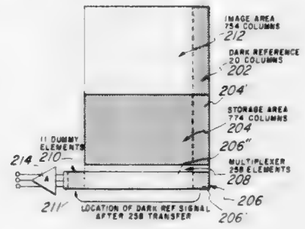
COLOR CCD IMAGER WITH MINIMAL CLOCK LINES

Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1985, Ser. No. 770,322

Int. Cl.⁴ H04N *9/07*

U.S. Cl. 358—44 **4 Claims**



3. A CCD color imager comprising:

an image sensing area;

a storage area comprising a plurality of chains of CCD wells;

a multiplexer connected to ends of said chains of wells in said storage area;

multiple CCD serial registers each connected to receive charge packets through said multiplexer from said chains of wells, each said serial register comprising a serial transfer gate positioned to cause packets of charge to transfer along the length of said register;

multiple sense amplifiers, each connected to one of said serial registers to sense charge packets output therefrom, each said amplifier comprising multiple clock phase inputs;

at least one of said sense amplifiers having said multiple clock inputs thereof respectively connected to said respective serial transfer gates of different ones of said serial registers to be clocked thereby.

4,656,504

ALLOCATION OF RECORDING AREA ONTO PHOTOSENSITIVE FILM

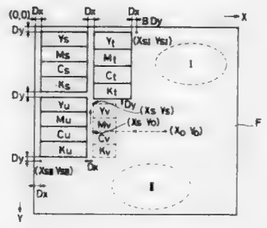
Makoto Hirosawa, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Feb. 13, 1985, Ser. No. 701,215

Claims priority, application Japan, Feb. 13, 1984, 59-25853

Int. Cl.⁴ H04N *1/23*

U.S. Cl. 358—75 **9 Claims**



1. In an image reproduction process, a method for allocating areas corresponding to color separation images of originals onto a photosensitive film comprising the steps of:

(a) displaying an allocation state of previously allocated areas of a photosensitive film on a display monitor;

(b) establishing an approximate recording start point of an

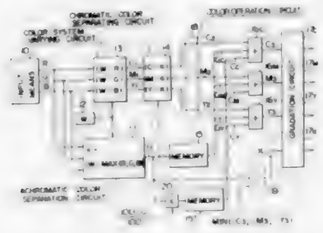
area to be allocated onto a desired position of the photosensitive film in due consideration of the displayed image;
(c) setting a conclusive recording start point at predetermined distances from the recording stop points of previously allocated areas in main and sub scanning directions according to the established approximate recording start point;
(d) allocating an area of the photosensitive film to the image according to the conclusive recording start point data thereof; and
(e) displaying the new allocation state of the photosensitive film.

4,656,505

METHOD FOR COLOR CORRECTION FOR MULTI-COLOR PRINTING PLATE PICTURES

Mitsuhiko Yamada; Hitomi Atoji, both of Kyoto, Japan, and Katsuaki Kashiwabara, London, England, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Dec. 21, 1984, Ser. No. 684,719
Claims priority, application Japan, Dec. 30, 1983, 58-249542; Dec. 30, 1983, 58-249543
Int. Cl.⁴ H04N *1/387, 1/46*
U.S. Cl. 358—80 **7 Claims**



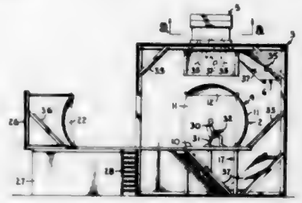
1. A method for color correction in the process for reproducing pictures, in which color separation picture signals obtained by photoelectrically scanning an original picture are converted into other color separation picture signals which correspond to multi-color printing inks, including a black ink therein to produce respective reproduction pictures for plate making corresponding to each of the ink colors, comprising the steps of:
producing a picture signal corresponding to a black ink based upon a gray component from B, G or R picture signals;
obtaining color separation picture signals which correspond to each of the other ink colors by chromatic color components which are produced by subtracting a neutral color component from said B, G and R signals;
obtaining neutral color density corresponding to the deficiency in neutral color reproductive density of the black ink according to a picture signal of the neutral color component;
converting said neutral color density into each of the color components of neutral color densities obtained from other color inks; and
adding each of said color components to each of said ink color picture signals, according to the respective corresponding colors.

4,656,506

SPHERICAL PROJECTION SYSTEM

Kurtis J. Ritchey, R.R. 3, Box 525, Leavenworth, Kans. 66048

Continuation-in-part of Ser. No. 457,876, Feb. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 346,509, Feb. 8, 1982, abandoned. This application Jan. 27, 1986, Ser. No. 822,648
Int. Cl.⁴ H04N *9/31*
U.S. Cl. 358—87 **15 Claims**



1. An image projection system comprising:
(a) an opaque enclosure;
(b) rear projection screen means supported within said enclosure, said screen means including at least a portion which is spherically shaped, the spherical portion being substantially greater than a hemisphere, said screen means being adapted to have images projected onto an external surface and to have said images viewed from an internal surface of said screen means;
(c) image projection means including a plurality of projection lens sets to simultaneously project a plurality of images onto said screen means;
(d) said screen means having an extent such that a viewer views a respective portion of said images in any viewable direction surrounding the head of the viewer;
(e) said screen means having a diameter such that the head and upper body of a viewer is surrounded by said screen means;
(f) said screen means having an entry aperture at a lower side thereof to admit the head and upper body of a viewer whereby the eyes of the viewer may be positioned at the approximate center of said screen means;
(g) said image projection means including a plurality of sets of mirrors positioned within said enclosure to reflect images from said projection lenses to respective areas of said screen means; and
(h) said screen means being rotatably supported within said enclosure for rotation about a vertical axis such that a viewer positioned therein may rotate said screen means with respect to said enclosure to view images projected onto said screen means in any desired azimuthal direction.

4,656,507

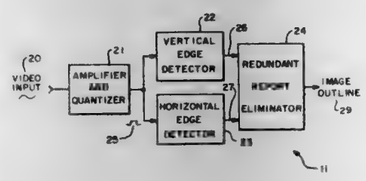
QUAD-EDGE VIDEO SIGNAL DETECTOR

John O. B. Greaves, and David J. Warrender, both of Sebastopol, Calif., assignors to Motion Analysis Systems, Inc., Santa Rosa, Calif.

Filed Apr. 10, 1984, Ser. No. 598,827
Int. Cl.⁴ H04N *7/00, 5/262*
U.S. Cl. 358—96 **16 Claims**

1. In a method of processing a raster scan video signal representing an image, said raster scan video signal representing a multiplicity of video image scan lines, the steps of:
encoding said raster scan video signal as a sequence of binary pixel values,
each said binary pixel value representing one pixel of said image, each said video image scan line being encoded as a multiplicity of binary pixels values representing adjacent pixels, said image being represented by a sequence of a multiplicity of encoded video image scan lines; and

for each of a plurality of said pixels:
detecting when the binary pixel values representing said pixel and a horizontally adjacent pixel are distinct;
detecting when both (a) the binary pixel values representing said pixel and a vertically adjacent pixel are



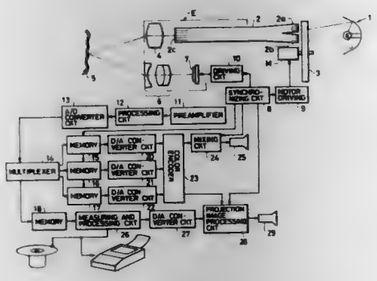
distinct, and (b) the binary pixel values representing a pixel horizontally adjacent to said pixel and a pixel vertically adjacent thereto are distinct; and
reporting said pixel as an outline pixel when either of said detecting steps detects distinct binary pixel values.

4,656,508

MEASURING ENDOSCOPE

Akira Yokota, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1985, Ser. No. 742,057
Claims priority, application Japan, Jun. 8, 1984, 59-117930
Int. Cl.⁴ H04N *7/18*
U.S. Cl. 358—98 **23 Claims**



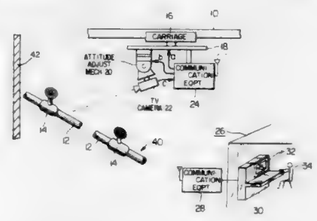
1. A measuring endoscope for measuring an object, comprising:
an endoscope body having a foremost end portion;
illumination light supply means housed within said body of said endoscope and having a number of regularly arranged fine light-emitting sectors, for supplying illumination, said illumination light supply means comprising a light guide including a bundle of a plurality of optical fibers, said bundle having two light-incidence end portions, said plurality of optical fibers being arranged at a light-emission end of said light guide to form a plurality of alternate rows of fibers in such a manner that those optical fibers included within one of the two light-incidence end portions and those optical fibers included within the other light-incidence end portion are arranged in alternate rows relative to each other at the light-emission end portion of the light guide;
image focusing means, housing in said foremost end portions of said endoscope body, for forming an image of said object from illumination reflected from said object;
image pickup means, housed within said endoscope body and having a number of picture elements disposed regularly at a position at which said image of the object is formed by said image focusing optical means, for picking up said object image;
controlling means, associated with said illumination light supply means, for controlling the illumination supplied to said fine light-emitting sectors to cause said illumination light supply means to emit light in lattice form;
image processing means, connected to said image pickup means, for performing a three-dimensional measurement of said object; and
display means, connected to said image processing means, for displaying information corresponding to the said three-dimensional measurement.

4,656,509

WATER LEAKAGE MONITORING SYSTEM

Isamu Matsuyama, Kobe, and Hiroshi Sugimoto, Toyonaka, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,596
Claims priority, application Japan, Aug. 19, 1983, 58-151913
Int. Cl.⁴ H04N *7/18*
U.S. Cl. 358—100 **4 Claims**



1. A water leakage monitoring system, comprising:
a plurality of discrete monitored members located along and adjacent to at least one side of a longitudinally extending inspection route, a carriage, means for remotely controlling said carriage with a driving control signal to intermittently travel along said inspection route adjacent to each monitored member, an attitude adjusting mechanism disposed on said carriage, a color television camera on said attitude adjusting mechanism, means for controlling attitude adjusting mechanism with an attitude control signal to change an attitude of said television camera relative to each of said monitored members so as to oppose each monitored member when said carriage is adjacent thereto, so as to successively monitor water leakage through each of said monitored members when said television camera is opposed thereto, and a coating composition applied to an exposed part of the surface of each of said monitored members, said coating composition being reactive with water leaked through the associated monitored member to change in color.

4,656,510

APPARATUS FOR IDENTIFYING AND RECORDING BOTTLES AND/OR BOTTLE HAMPERS

Timo Mattila, Kausala, Finland, assignor to Halton Oy, Finland

Filed Aug. 19, 1985, Ser. No. 767,031
Claims priority, application Finland, Aug. 29, 1984, 843414
Int. Cl.⁴ H04N *7/18*
U.S. Cl. 358—101 **5 Claims**

1. Apparatus for identifying and recording bottles and/or bottle hampers, a bottle hamper and the bottles therein being a target under examination, said apparatus comprising
a light source emitting a lineal light line for illuminating the target;
a semiconductor matrix camera for examining said target momentarily;

a conveyor for transporting said target past said camera and said light source, said camera and said light source being so disposed in relation to said conveyor that the light emitted by said light source is reflected from said target on said conveyor to said camera;

a data processing unit having a memory;

means for transforming the image formed by said camera into digital signals and transmitting said digital signals to said data processing unit for identifying said target



whereby said conveyor transports said target past a point of examination and as said target passes said point of examination, said camera delivers to said data processing unit images from several points of said target and a synthetic, three-dimensional picture of said target is formed in said memory of said data processing unit for identifying the characteristic features of said target; and

recording means connected to said data processing unit for recording said characteristic features of said target.

4,656,511

VIDEO SIGNAL COMPRESSING AND CODING APPARATUS

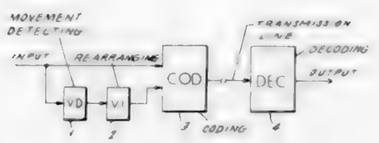
Toshio Koga, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 28, 1984, Ser. No. 656,147

Claims priority, application Japan, Sep. 30, 1983, 58-183441

Int. Cl.⁴ H04N *7/12*

U.S. Cl. 358—136 **8 Claims**



1. A video signal coding apparatus comprising:

means responsive to an input signal for detecting a movement in each of several blocks associated with said video signal to produce a movement detection signal representative of said movement, each said block including a plurality of picture elements which span across several scanning lines;

means for rearranging said movement detection signal into a rearranged movement detection signal which complies with the time sequence of the picture elements of said input video signal; and

means for predictive-coding said input video signal in response to said rearranged movement detection signal.

4,656,512

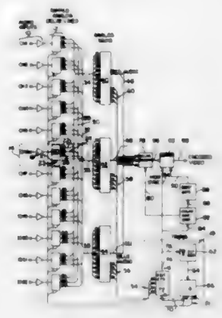
MULTIPLE AUDIO TRANSMISSION SYSTEM USING A SINGLE VIDEO COLOR CARRIER

Steven Devino, Derry, N.H., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 16, 1985, Ser. No. 734,514

Int. Cl.⁴ H04N *7/04*

U.S. Cl. 358—143 **5 Claims**



1. A single carrier video system for enabling broadcast of multiple input channels, in lieu of picture information as conventionally contained in a TV video waveform, the system comprising:

means for sampling and time compressing audio input signals from each channel and using the sampled-compressed signals to replace red, green and blue color video signals;

encoding means connected at its input to the output of the sampling-compressing means for combining the replaced signals to form an encoded composite signal;

means for demodulating the encoded signal to restore the audio signal samples; and

means connected at its input to the output of the demodulator means for expanding the samples to resemble the multiple audio input signals.

4,656,513

DATA SLICER CIRCUIT FOR SEPARATING AND RECOVERING DIGITAL TELETEXT SIGNALS

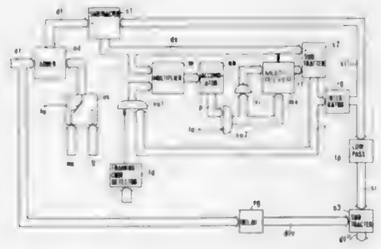
Ulrich Langenkamp, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 30, 1984, Ser. No. 676,556

Claims priority, application European Pat. Off., Dec. 7, 1983, 83112294.0

Int. Cl.⁴ H04N *7/087*

U.S. Cl. 358—147 **14 Claims**



1. A data slicer circuit for providing a digital composite color signal having a slicing level superimposed thereon for use in separating and recovering digital teletext signals from

said digital composite color signal having horizontal and color sync pulses, said circuit comprising:

an adder having first addend inputs receiving said digital composite color signal, second addend inputs and outputs;

selector means having first inputs receiving a digital arithmetic means of standard amplitudes of said teletext signals, second inputs receiving a signal corresponding to a predetermined numerical value, outputs coupled to said adder second addend inputs, and a control input receiving gating pulses, for coupling either said arithmetic mean or said signal corresponding to a predetermined numerical value to said second addend inputs in response to said gating pulses;

said gating pulses causing said selector means to couple said arithmetic mean to said second addend inputs for duration of the horizontal and color sync pulses;

first and second subtracters;

a digital integrator having inputs coupled to outputs of said second subtracter and outputs coupled to subtrahend inputs of said first subtracter

said first subtracter having minuend inputs coupled to said adder outputs, and having outputs coupled to minuend inputs of said second subtracter;

a framing code detector;

logic gate means for gating an output of said framing code detector with the outputs of said second subtracter to provide first gated outputs only in picture lines that contain the teletext signals;

a multiplier having first inputs coupled to said logic gate means first gated outputs, second inputs coupled to said first subtracter outputs, and having outputs;

an accumulator having inputs coupled to said multiplier outputs;

logic means for gating outputs of said accumulator with said gating pulses to provide second gated outputs, and for inverting said second gated outputs to provide inverted outputs;

a multiplexer having first inputs coupled to said second gated outputs, second inputs coupled to said inverted outputs, and outputs coupled to subtrahend inputs of said second subtracter;

a third subtracter;

a digital low pass filter coupling the outputs of said integrator to subtrahend inputs of said third subtracter;

delay means for coupling said digital composite color signal to minuend inputs of said third subtracter with a delay equal to a delay of said digital low pass filter;

outputs of said third subtracter providing said digital composite color signal having the slicing level superimposed thereon.

4,656,514

ERROR CONCEALMENT IN DIGITAL TELEVISION SIGNALS

James H. Wilkinson; John G. S. Ive, both of Basingstoke, United Kingdom, and Peter C. Boreland, Waterbury, Conn., assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 20, 1985, Ser. No. 767,646

Claims priority, application United Kingdom, Aug. 21, 1984, 8421170

Int. Cl.⁴ H04N *5/14*

U.S. Cl. 358—160 **10 Claims**

1. A method of concealing errors in a digital television signal organized in a succession of frames, the method comprising the steps of:

deriving a current sample value of a current sample and a first group of sample values of a first group of samples located spatially close to said current sample in one of said frames of said television signal;

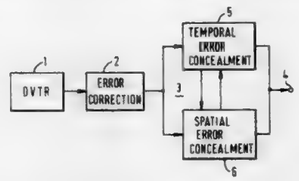
deriving from a preceding one of said frames of said television signal a delayed sample value of a delayed sample corresponding in position to said current sample, and a second group of sample values of a second group of samples respectively corresponding in position to the samples of said first group of samples;

effecting a check of said current sample value for error;

effecting a check of said delayed sample value for error;

effecting checks of pairs of sample values respectively paired from said first and second groups of samples for errors and deriving a measure of a difference in levels between the two sample values in each of said pairs;

providing, in response to said checks, an output signal which



is a measure of the number of said errors and of the sum of said differences;

checking said output signal against a predetermined threshold level; and

if said current sample value is in error, said delayed sample value is not in error and said output signal is below said predetermined threshold level, replacing said current sample value by said delayed sample value for supply to an output, and, if said current samples values is not in error, supplying said current sample value to said output.

4,656,515

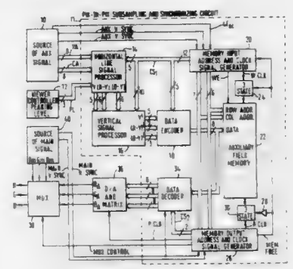
HORIZONTAL COMPRESSION OF PIXELS IN A REDUCED-SIZE VIDEO IMAGE UTILIZING COOPERATING SUBSAMPLING AND DISPLAY RATES

Todd J. Christopher, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 25, 1985, Ser. No. 715,818

Int. Cl.⁴ H04N *5/272*

U.S. Cl. 358—183 **9 Claims**



1. In a pix-in-pix television display including a source of main video signal and a source of sampled data auxiliary video signal having a predetermined sample rate, apparatus for displaying an image developed from the auxiliary signal as an inset in the image developed from the main signal, comprising:

means, responsive to said auxiliary sampled data signal, for developing a compressed auxiliary sampled data signal by subsampling said auxiliary sampled data signal in a ratio of one to N, N being a real number greater than two;

means for displaying said main signal; and

means for displaying said compressed auxiliary sampled data signal, as an inset in the display of said main signal, at a sample rate substantially equal to M/N times said predetermined sample rate to produce an apparent size reduc-

VOL 1077 ISS 1 AP 7 1987 UMI

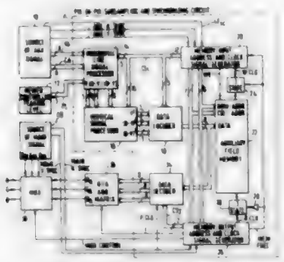
tion of 1/M in said auxiliary image, M being an integer greater than 1 and less than N.

4,656,516

VERTICAL SUBSAMPLING AND MEMORY SYNCHRONIZATION SYSTEM FOR A PICTURE WITHIN A PICTURE TELEVISION RECEIVER

Russell T. Fling, Noblesville, and Todd J. Christopher, Indianapolis, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 25, 1985, Ser. No. 715,263
Int. Cl.[4] H04N *5/272*
U.S. Cl. 358—183 **3 Claims**



1. In a pix-in-pix television display including a source of main video signal and a source of sampled data auxiliary video signal having a predetermined sample rate, each of said signals being composed of successive horizontal line intervals, apparatus for displaying an image developed from the auxiliary signal as an inset in the image developed from the main signal, comprising:

horizontal subsampling means, coupled to said source of sampled data auxiliary video signal for subsampling said auxiary video signal in a ratio of one to M to develop a horizontally subsampled auxiliary video signal;

vertical subsampling means, coupled to said horizontal subsampling means including:

first and second buffer means, each of which includes a memory having a sufficient number of bits to hold the samples provided by said horizontal subsampling means during one horizontal line interval of said auxiliary video signal; and

means coupled to said horizontal subsampling means for developing, in said first and second memories, during respective first and second time intervals, first and second horizontal line intervals of vertically subsampled auxiliary video signal representing the samples provided by said horizontal subsampling means during respective first and second groups of N horizontal line intervals of said auxiliary video signal;

a field memory, having a sufficient number of bits to hold a number of samples of said vertically subsampled auxiliary signal substantially equal to the number of samples in a field of said inset auxiliary image;

memory reading means, coupled to said field memory for reading samples, representing a horizontal line interval of said vertically subsampled auxiliary video signal, from said field memory for display during a predetermined portion of a horizontal line interval of said main video signal; and

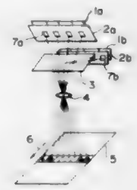
memory writing means, coupled to said buffer means, to said field memory and to said memory reading means for sequentially writing samples from the respective first and second memories of said buffer means to said field memory during said second and first time intervals respectively, and being controlled by said memory reading means to suspend writing samples into said field memory when said reading means reads samples from said field memory and to resume writing samples into said field memory when said reading means has stopped reading samples from said field memory, whereby one horizontal line interval of vertically subsampled auxiliary video signal from said vertical subsampling means may be written into said field memory during portions of N horizontal line intervals of said auxiliary video signal.

4,656,517

METHOD FOR INCREASING RESOLUTION OF ARRAY SENSOR AND SYSTEM THEREFOR

Junji Shida; Yoshio Ono, both of Kyoto; Ikuo Mitsuka, Shiga; Testuo Hoki, Kyoto; Akira Kuwabara, Shiga; Hitoshi Haibara, and Takashi Sakamoto, both of Kyoto, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed May 21, 1985, Ser. No. 736,634
Claims priority, application Japan, May 23, 1984, 59-102614
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—213 **2 Claims**



1. A method for increasing the resolution of an array sensor, which comprises:

projecting images of picture elements on the identical scanning line through a reflecting mask with alternately-arranged apertures and reflecting areas so that images of picture elements among said images passing through said apertures may be projected onto a first one-dimensional array sensor;

projecting reflected images of picture elements which are reflected by the reflecting surfaces of said reflecting mask onto a second one-dimensional array sensor; and improving resolving power of scanned picture images by outputting said images from said first and second one-dimensional array sensors array sensors into continuous picture image signals and synthesizing said picture image signals on the scanning line to the disposition order of said picture elements.

4,656,518

FIELD-TRANSFER CCD IMAGERS WITH POLY-PHASE IMAGE REGISTERS, OPERATED TO PROVIDE PSEUDO LINE INTERLACE ON ALTERNATE FIELDS

Walter F. Kosonocky, Skillman, N.J.; Donald F. Battson, Landisville, Pa., and Peter A. Levine, Trenton, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 11, 1985, Ser. No. 807,664
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213 **11 Claims**

1. A solid-state video camera providing line interlace between odd-numbered scan lines in odd-numbered ones of successively oridinally numbered field scan intervals and even-numbered scan lines in even-numbered ones of said field scan intervals, said solid-state video camera comprising:

a CCD imager of field transfer type including an image register, a field storage register into which charge packets are transferred from said image register during field transfer intervals between successive field scan intervals, and means for converting successive lines of the charge packets intervals read from said field storage register during each field scan interval into raster-scanned video signal samples, each of which video signal samples is responsive to a respective one of said charge packets transferred from said field storage register;

a parallel array of charge transfer channels included within said image register, disposed in a substrate of semiconductive material, illuminated by an optical image for generating charge carriers therein by photoconversion during saaíd field scan intervals, and crossed by gate electrodes succesive ones of which are successively ordinally numbered first through $2m^{th}$ in repeating cycles of 2m gate electrodes, which cycles repeat in arbitrary spatial phasing, m being a positive integer at least two;

means for applying during field transfer intervals forward clocking signal voltages in first through $2m^{th}$ successive phases to correspondingly numbered ones of the gate electrodes of each cycle crossing the charge transfer channels of said image register;

means for applying during even-numbered field scan intervals a well-inducing voltage to all except the first gate electrode of each cycle crossing the charge transfer channels of said image register, for inducing potential energy wells in the portions of those charge transfer channels underlying each continuous succession of those gate electrodes of each cycle to which said well-inducing voltage is then applied, in which potential energy walls charge

tial energy wells then induced in said charge transfer channels; and

means for suppressing frame rate flicker, which means includes:

a read-only memory for storing correction factors for eacch raster-scanned video signal sample from said CCD imager, over a frame comprising an odd-numbered field and an even-numbered field;

a temperture sensor with said CCD imager for supplying an indication of the CCD imager operating temperature;

means for computing an offset for each video signal sample, responsive to its correction factor and said indication of the CCD image operating temperature; and

means for compensating eeach video signal sample by its computed offset

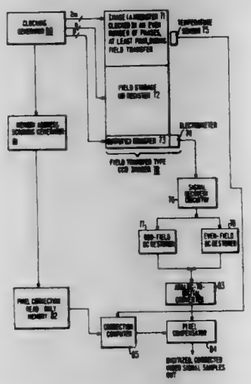
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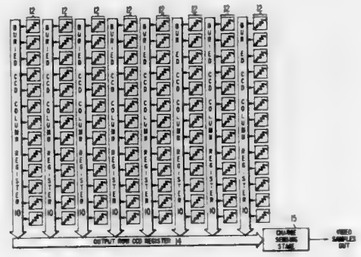
4,656,519

BACK-ILLUMINATED CCD IMAGERS OF INTERLINE TRANSFER TYPE

Eugene D. Savoye, Lancaster County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 4, 1985, Ser. No. 784,662
Int. Cl.[4] H04N *3/14*; H01L *27/14*
U.S. Cl. 358—213 **28 Claims**





1. A CCD imager of interline transfer type comprising:

a thinned semiconductive substrate having opposed first and second surfaces separated by a bulk;

a parallel array of CCD charge transfer channels arranged within said bulk along a portion of said first surface of said semiconductive substrate opposed by a portion of the second surface of said semiconductive substrate that is adapted for illumination by an optical image responsive to which illumination charge carriers are generated within said semiconductive bulk;

sets of gate electrodes crossing said CCD charge transfer channels for defining successive charge transfer stages in each of said charge transfer channels, said charge transfer stages being separated by electrically insulative layers from each other and the first surface of said substrate, said sets of gate electrodes being receptive of clocking signals selectively supplied to them to transfer charge packets from one charge transfer stage to the next in each of said charge transfer channels;

photocharge collecting regions in said semiconductive substrate spaced from said second surface by a substantial portion of said bulk and associated with at least selected ones of said charge transfer stages;

means for selectively transferring at specified times charge packets from each of said photocollecting regions to its associated charge transfer stage;

means, sensing the amplitudes of charge packets transferred out of the final charge transfer stage of each CCD charge transfer channel in said parallel array, for generating successive samples of a raster scanned video signal, said video signal having field retrace intervals therein, and said video signal having field trace intervals therein compris-

carriers generated through photoconversion are collected into charge packets representative of said odd-numbered scan lines;

means for applying during even-numbered field scan intervals a barrier-inducing voltage to the first gate electrodes of each cycle crossing the charge transfer channels of said image register, for inducing potential energy barriers to charge transfer between adjacent ones of the potential energy walls then induced in said charge transfer channels;

means for applying during odd-numbered field scan intervals said well-inducing voltage to all except the $(m+1)^{th}$ gate electrode of each cycle crossing the charge transfer channels of said image register, for inducing potential energy wells in the portions of those charge transfer channels underlying each continuous succession of those gate electrodes to which said well-inducing voltage is then applied, in which potential energy wells charge carriers generated through photoconversion are collected into charge packets representative of said even-numbered scan lines;

means for applying during odd-numbered field scan intervals said barrier-inducing voltage to the $(m+1)^{th}$ gate electrode of each cycle crossing the charge transfer channels of said image register, for inducing potential energy barriers to charge transfer between adjacent ones of the poten-

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ing interleaved line trace intervals and line retrace intervals; and

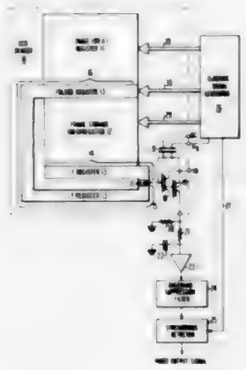
respective implantation regions disposed in said semiconductive substrate between its second surface and each of said CCD charge transfer channels in said parallel array, burying those charge transfer channels respective to the second surface of said semiconductive substrate, for causing charge generated by photoconversion between that second surface and each said charge transfer channel to diffuse towards nearby photocharge collecting regions and thus improve the fill factor of said CCD imager.

4,656,520

FRAME-TRANSFER CCD IMAGER WITH RECIRCULATING FRAME STORAGE REGISTER

Robert N. Hurst, Cherry Hill, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 16, 1985, Ser. No. 755,681
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213 **19 Claims**



1. In combination:

a CCD serial memory having a first succession p in number of charge transfer stages connected for operation as a serial-to-parallel-converting CCD line register, a second succession p in number of charge transfer stages connected for operation as a parallel-to-serial-converting CCD line register, and a plurality p in number of CCD charge transfer channels in parallel array having first ones of their ends connected to receive charge supplies in parallel from the charge transfer stages of said first CCD line register and having second ones of their ends connected to supply charge packets in parallel to the charge transfer stages of said second CCD line register;

means for non-destructively sensing the charge packets serially supplied form said parallel-to-serialconverting CCD line register;

means selectively applying said charge packets serially supplied from said parallel-to-serial-converting CCD line register to said serial-to-parallel-converting CCD line register through a charge transfer channel entirely in the charge domain without conversion to voltage between said parallel-to-serial-converting line register and said serial-to-parallel-converting line register for selectively recirculating the contents of said serial memory; and

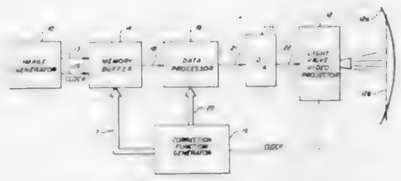
means for periodically transferring successive lines of charge packets in parallel into said parallel array of CCD charge transfer channels via respective ones of the charge transfer stages in one of said CCD line registers.

4,656,521

DIGITAL DISTORTION-CORRECTING CIRCUIT FOR PROJECTION A FLAT IMAGE ON A CURVED SCREEN FROM A DIGITAL DATA SOURCE FOR A SIMULATOR PROJECTED-IMAGE VISUAL SYSTEM

John R. Trzeciak, and James A. Turner, both of Binghamton, N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,581
Int. Cl.[4] H04N *5/74*
U.S. Cl. 358—231 **11 Claims**



1. In a simulator projected-image visual system, a distortion-correcting circuit to modify a flat image for projection on a curved screen to produce an image that is substantially free from distortion, comprising:

random access memory means including connections for storing video data sequentially and for accessing stored video data randomly to represent a predetermined undistorted image when projected on a flat screen;

means to store random addresses to obtain selected video data from said random access memory means in a predetermined order, and

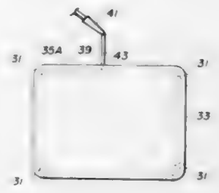
means to modify said selected video data by combining with a data signal representing a predetermined weighted average to form said image that is substantially free from distortion when projected on a curved screen.

4,656,522

METHOD FOR LAMINATING A SAFETY PANEL TO A CRT AND THE PRODUCT THEREOF

Joseph J. Piasecinski, Upper Leacock Township, Lancaster County, and Randolph H. Axelrod, Warwick Township, Lancaster County, both of Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 26, 1985, Ser. No. 705,650
Int. Cl.[4] H04N *5/65*
U.S. Cl. 358—247 **13 Claims**



1. A method for laminating a transparent safety panel to a screen-bearing viewing window of a CRT comprising:

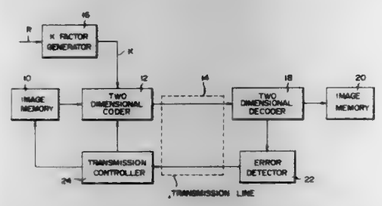
positioning said panel in a prescribed relationship with said window to provide a space therebetween, producing a mechanically-strong, hydraulically-tight closure between said window and said positioned panel around a margin of said panel by forcing a caulking material between said window and said panel, whereby said panel is bonded to said window, orienting said window with said panel bonded thereto in a generally vertical attitude relative to a horizontal plane, filling substantially all of the space between said window and said panel with liquid resin that is curable upon exposure to ultraviolet radiation, and curing said liquid resin to an optically-transparent solid material adhered to said window and said panel by exposing said liquid resin to ultraviolet radiation.

4,656,523

TWO DIMENSIONAL CODING APPARATUS

Motoharu Mizutani, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 6, 1985, Ser. No. 698,875
Claims priority, application Japan, Feb. 13, 1984, 59-24573
Int. Cl.[4] H04N *1/415*
U.S. Cl. 358—260 **8 Claims**



1. A two dimensional coding apparatus comprising:

means for coding an image signal corresponding to the signal of a scanned line and producing therefrom a code signal, said coding means normally performing two-dimensional coding with respect to each scanning line but performing one-dimensional coding every K scanning lines, wherein K scanning lines constitutes one block;

code processing means, connected to said coding means, for transmitting or storing said code signal from said coding means;

error detection means, connected to said code processing means, for detecting an error code in the code signal occurring during transmission or storing by said code processing means and producing an output therefrom;

means for controlling the retransmission or restoring of a code signal having said error code according to the output of said error detection means and connected to said coding means;

means for receiving an inputted error rate of said code processing means; and

means, connected to said receiving means, for selecting the number K, said selecting means selecting the number K according to said inputted error rate and supplying a signal representing the number K to said coding means.

4,656,524

ELECTRONIC IMAGING COPIER

Philip R. Norris, North Reading, and William B. Ware, Brighton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 23, 1985, Ser. No. 812,112
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—280 **16 Claims**

1. An electronic imaging copier for making an enhanced photographic copy of a photograph, said copier being initially operable in an interactive preview display mode for viewing and selectively modifying an electronically displayed image of the photograph and thereafter being operable in a copying mode for producing an enhanced copy, said copier comprising:

means for supporting a photograph at an object plane;

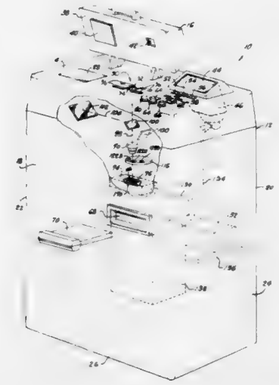
optical means for providing an optical image of the supported photograph at an image plane;

photoresponsive means for sensing an image provided at said image plane and being selectively operable to provide, in sequence, a first set of electronic image signals representative of a low resolution version of said image and a second set of electronic image signals representative of a higher resolution version of said image;

memory means for storing said first set of image signals;

display means responsive to at least a portion of said first set of signals for displaying a low resolution version of said image;

first signal processing means being selectively operable during said preview display mode and responsive to operator actuable input signals for processing said portion of said first set of signals provided to said display means to modify selected image defining parameters and, if modifications are made during said preview display mode, being



operative during said copy mode for processing subsequent signals in said first and second sets to apply said selected modifications thereto;

second signal processing means for processing said first and second set of image signals, subsequent to any modifications by said first signal processing means, to provide a third set of signals representative of an enhanced version of said image;

means for supporting a photosensitive film unit at an exposure plane; and means responsive to said third set of signals for providing an optical image representative of said enhanced image and for projecting said enhanced image onto said exposure plane to record it on a film unit thereat.

4,656,525

ELECTRONIC IMAGING COPIER

Philip R. Norris, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 4, 1985, Ser. No. 804,595
Int. Cl.[4] H04N *1/40*
U.S. Cl. 358—280 **25 Claims**

1. An electronic imaging copier configured for print and transparency copying modes of operation for making enhanced photographic copies of reflection print and transparency types of photographs, said copier comprising: prising:

means for supporting a print at a first object plane;

means for supporting a transparency at a second object plane;

optical means being selectively operable in the print copying mode for providing an optical image of a supported print at an image plane, and in the transparency copying mode for providing an optical image of a supported transparency at said image plane;

photoresponsive means for sensing an image provided at said image plane and being operative to provide, in sequence, a first set of electronic image signals representative of a low resolution version of said image and a second set of

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electronic image signals representative of a higher resolution version of said image;
memory means for storing said first set of signals;
display means responsive to at least a portion of said first set of signals for displaying a low resolution version of said image;
signal processing means for processing said first and second



sets of signals to provide a third set of signals representative of an enhanced version of said image;
means for supporting a photosensitive film unit at an exposure plane; and
means responsive to said third set of signals for providing an optical image representative of said enhanced image and for projecting said enhanced image onto said exposure plane to record it on a film unit thereat.

4,656,526

PLANE COLOR IMAGE SCANNING AND READING METHOD

Yuji Oshikoshi, Minamiashigara, and Takashi Fukui, Tokyo, both of Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Jan. 7, 1985, Ser. No. 742,145
Claims priority, application Japan, May 22, 1981, 56-78330
Int. Cl.[4] H04N *1/024, 9/14*
U.S. Cl. 358—294 **2 Claims**



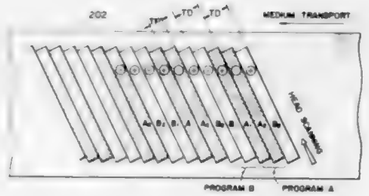
1. A method of scanning and reading out a plane color image including cyan, magenta and yellow color components comprising: disposing said plane color image in a scanning plane; balancing the intensities of a first laser beam having a wavelength of 488 nm emitted from an argon laser source and a second laser beam having a wavelength of 632.8 nm emitted from an He-Ne laser source to a predetermined ratio in response to the balance of the spectral reflectance characteristics of the cyan, magenta and yellow color components of said plane color image; coaxially superposing a first laser beam having a wavelength of 488 nm emitted from an argon laser source upon a second laser beam having a wavelength of 632.8 nm emitted from an He-Ne laser source to form a composite laser beam; impinging said composite laser beam upon a moving light deflector to deflect said composite laser beam to said plane color image and to effect a one-dimensional scan thereof for a main scan; moving said plane color image within said scanning plane in a direction perpendicular to said one dimensional scan for a sub-scan, thereby scanning said color image with said two laser beams superposed one upon the other; receiving light reflected from said color image without effecting a color separation by means of a single light receiver, said single light receiver generating a density signal in response to the intensity of the reflected light; modulating a recording beam with reference to said density signal; and impinging said recording beam upon a monochromatic photosensitive recording material to obtain a monochromatic image.

4,656,527

MAGNETIC RECORDING AND PLAYBACK APPARATUS

Takashi Uchimi, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Nov. 19, 1984, Ser. No. 672,565
Claims priority, application Japan, Nov. 25, 1983, 58-221533
Int. Cl.[4] H04N *5/782, 5/95*
U.S. Cl. 358—320 **14 Claims**



1. A single recording and playback apparatus for recording and reproducing at least two discrete input composite video signals in and out of a single recording medium in which the formats of the two video signals conform to an identical industrial standard, comprising:
first record signal generator means for generating a first record signal to be recorded from one of the two composite video signals;
second record signal generator means for generating a second record signal to be recorded by synchronizing a vertical sync signal of the one composite video signal to a vertical sync signal of the other composite video signal; and
rotary head means for simultaneously recording the first and second record signals in the recording medium and subsequently reproducing the recorded signals selectively out of the recording medium, said rotary head means comprising two head groups, each head group comprising two heads which are located close to each other with the two heads defining two tracks such that the area corresponding to the track width of a standard VTR is halved every time each head group scans the recording medium.

4,656,528

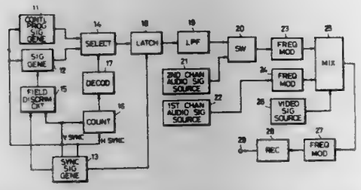
SIGNAL RECORDING SYSTEM FOR RECORDING SIGNALS ON A ROTARY RECORDING MEDIUM

Shunichi Shichijo, Sagamihara; Tooru Yamagishi, Tokyo, and Toyotaka Machida, Kashiwa, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohoma, Japan

Filed Apr. 22, 1985, Ser. No. 725,412
Claims priority, application Japan, Apr. 24, 1984, 59-82334
Int. Cl.[4] H04N *5/76*
U.S. Cl. 358—342 **9 Claims**

1. A signal recording system for recording signals on a rotary recording medium, said signal recording system comprising:
control program signal generating means for generating a modulated signal by subjecting a control program to a self clock modulation based on a reference clock having a

period which is a natural number multiple of one horizontal scanning frequency of a video signal and then to a band limitation to an audio signal band, said control program being transmitted in terms of blocks each having a fixed length approximately equal to a time period of one field of the video signal, said control program comprising control commands of a reproducing apparatus which plays a rotary recording medium having track turns recorded with said control program at least together with the video signal and input and output commands and internal processing commands of an external device which has a discriminating function and is coupled to the reproducing apparatus, said commands of said control program being written at least in down load type statements and direct statements;



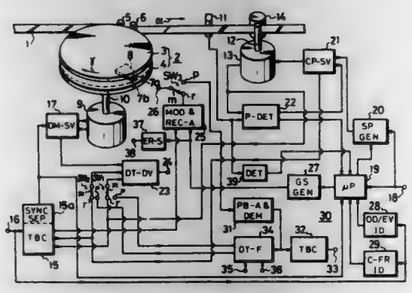
block discrimination signal generating means for generating a block discrimination signal for discriminating a beginning or end of each block having the fixed length, said block discriminating signal having a fundamental frequency which is different from the reference clock frequency of said modulated signal and is within the audio signal band;
time division multiplexing means for time-division-multiplexing said block discrimination signal to a time period in which said modulated signal is not transmitted so as to obtain a time division multiplexed signal; and
recording means for recording said time division multiplexed signal and at least the video signal on the rotary recording medium in phase synchronism with a horizontal synchronizing signal of the video signal.

4,656,529

VIDEO SIGNAL RECORDING APPARATUS

Hitoshi Sakamoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 25, 1984, Ser. No. 664,537
Claims priority, application Japan, Oct. 31, 1983, 58-203961
Int. Cl.[4] H04N *5/783;* **G11B** *21/10*
U.S. Cl. 360—10.2 **8 Claims**



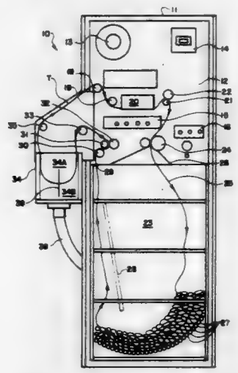
1. Apparatus for recording a video signal on a recording tape by recording head means scanning across said tape at a standard head speed, said video signal being recorded in a standard format consisting of successive parallel slant tracks having a standard pitch and a standard inclination relative to a longitudinal direction of said tape so that said video signal may be reproduced in a reproducing mode of said apparatus as said tape is moved at a standard tape speed and as said recording head means scans at said standard head speed, said apparatus comprising:
moveable head mounting means carrying said recording head means and being deflectable in a direction substantially perpendicular to the direction of said scanning;
means for controlling said tape speed in response to a speed reference signal to obtain a specified tape speed during recording different from said standard tape speed; and
position control means acting on said head mounting means for controlling a position of said recording head means so that said slant track which is formed by said recording head means as said tape is moved at said specified tape speed has an inclination relative to a longitudinal direction of said tape equal to said standard inclination.

4,656,530

METHOD AND APPARATUS FOR SERVO-CONTROL OF TAPE TENSION IN HIGH SPEED TAPE TRANSPORTER

Robert I. Farrow, and Richard L. Clark, both of Burlington, N.C., assignors to American Multimedia, Inc., Burlington, N.C.

Filed Nov. 25, 1985, Ser. No. 801,429
Int. Cl.[4] G11B *5/86, 15/43*
U.S. Cl. 360—15 **14 Claims**



1. In a closed loop, high-speed tape transporter of the type wherein a closed loop of recording tape is passed across a pick-up head where a signal on the loop of tape is conveyed downstream to at least one slaved duplicator, and wherein the loop of tape is conveyed from the pick-up head into a bin for accumulation and storage while a trailing length of the loop is passed across the pick-up head, and from the bin back across the pick-up heads repeatedly whereby successive replications of the signal from the loop are conveyed from the pick-up head to the slaved duplicator, the improvement which comprises:
(a) vacuum supply means;
(b) a vacuum column operatively connected to said vacuum supply means and positioned in the plane of tape travel intermediate the exit location of the loop from the bin and the pick-up head for receiving the loop of tape during its travel and exerting a vacuum-induced tension thereon;
(c) a motor-driven capstan positioned in the plane of tape travel intermediate the bin and the vacuum column for pulling the loop of tape from the bin and delivering the tape to the vacuum column; and
(d) servo-control means for sensing changes in the position

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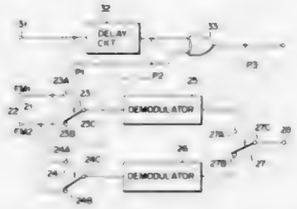
of the tape within the vacuum column caused by tension changes of the tape within the bin and sending a signal responsive to the change of position of the tape in said vacuum column to said capstan motor and varying the capstan speed responsively to the sensed position changes to maintain constant tension on the moving loop as it is delivered to the pick-up head.

4,656,531

NOISE-ELIMINATING APPARATUS FOR A VIDEO TAPE RECORDER

Takashi Ishii, Chigasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 15, 1984, Ser. No. 610,413
Claims priority, application Japan, May 20, 1983, 58-87479
Int. Cl.⁴ H04N *5/782, 5/94*
U.S. Cl. 360—19.1 **8 Claims**



1. A noise eliminating apparatus for a tape recorder which alternately processes first and second channels each of which have information thereon during a time when the other channel has no information thereon, and during an overlap period when both channels simultaneously have information thereon comprising:

main demodulation means, having an input terminal and an output terminal, for receiving an input signal, and demodulating said input signal to produce an output signal on said output terminal;

first channel selecting means, coupled to said first and second channels, for alternately selecting one of said first and second channels, and supplying the selected output as said input signal to said main demodulation means;

second demodulation means, having an input terminal and an output terminal, for receiving an input signal, and demodulating said input signal to produce an output signal on said output terminal;

second channel selecting means, coupled to said first and second channels, for alternately selecting one of said first and second channels as a selected output to be coupled as said input signal to said second demodulation means;

output selecting means, having an input coupled to said output signals of said main modulation means and said second demodulation means respectively, for selecting one of said output signals as a system output; and

controlling means, coupled to said first and second channel selecting means and said output selecting means, for:

(1) first controlling said first channel selecting means to select one of said first and second channels;

(2) second controlling said second channel selecting means to select one of said first and second channels, said second controlling being delayed with respect to said first controlling by a delay time which is less than said overlap period of of said first and second channels; and

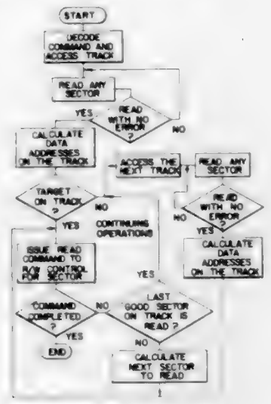
(3) controlling said output selecting means so that said output of said second demodulation means is selected as said system output only when both of: (a) said first channel selecting means has switched from one of said channels to the other of said channels, and (b) said second channel selecting means has not yet switched from said one of said channels to said other of said channels.

4,656,532

SECTOR IDENTIFICATION METHOD FOR HARD SECTORED HARD FILES

Richard Greenberg, and David A. Styczinski, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 29, 1985, Ser. No. 759,730
Int. Cl.⁴ G11B *5/09*
U.S. Cl. 360—48 **8 Claims**



1. In a data storage device with multiple media surfaces that rotate in unison and a plurality of transducers carried by an actuator to enable movement in unison and alignment with concentric data tracks on said media surfaces permitting each transducer to be in a read/write relationship with one of a series of tracks, whereby at a given location the tracks confronting said plurality of transducers form a cylinder and wherein each of said data tracks are divided into a plurality of sequential sectors, each comprising

an identifier portion and a data portion wherein said identifier portion includes a track ID, that identifies the cylinder and head; the actual sector number, the sequential number of the sector on the track; a displacement value, that specifies the number of sectors the logical sector has been displaced due to skipped defective sectors on previous tracks and/or spare sectors; and a defective sector list of sector numbers on the track which are to be skipped;

whereby the identifier portion of each sector provides the information as to the position of a plurality of the next subsequent logical sectors on the track.

4,656,533

FLOPPY DISC DRIVE UNIT

Junichi Sakai; Fujio Itoh, both of Yokohama, and Seiichi Watanabe, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 22, 1984, Ser. No. 663,173
Claims priority, application Japan, Oct. 20, 1983, 58-196354
Int. Cl.⁴ G11B *15/14, 5/09, 15/46*
U.S. Cl. 360—65 **11 Claims**

1. A floppy disc disc drive unit with a motor having a built-in frequency generator for rotating a floppy disc and a magnetic head assembly for writing reading information on off said floppy disc, comprising:

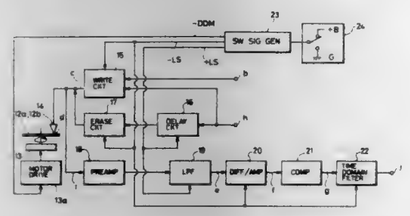
(a) switching signal generating means for generating a switching signal indicative of a selected mode relating to a magnetic recording characteristic of a floppy disc to be used;

(b) motor drive means responsive to said switching signal for causing said motor to rotate at different speeds in accordance with said selected mode, said motor drive means comprising:

(i) sample-and-hold means, responsive to an output signal from said frequency generator built in said motor, for converting said output signal to a saw-tooth wave signal,

(ii) variable time constant means, coupled to said sample and hold means and responsive to said switching signal, for changing a time constant, thereby changing the slope of said saw-tooth wave signal derived from said sample-and-hold means depending on a selected mode; and

(iii) comparator means, responsive to said saw-tooth wave signal from said sample-and-hold means and to a reference voltage, for producing a motor speed control



signal with the amplitude of said-tooth wave signal which is compared with said reference voltage so that said floppy disc is rotated at a desired rotational speed suitable for a selected mode; and

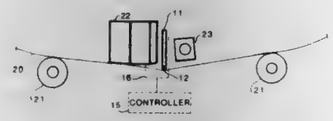
(c) a write/read means, coupled to said magnetic head assembly, including: (1) means for generating a write current fed to said magnetic head assembly for writing information, (2) means responsive to said switching signal for controlling a write cuurent fed to said magnetic head assembly so as to write information with a write current suitable for said selected mode, (3) means, responsive to a read out signal from said magnetic head assembly for producing a reproduced signal, and (4) means responsive to said switching signal to process said read out signal with a characteristic suitable for said selected mode.

4,656,534

ANTI-ADHESION DEVICE FOR MAGNETIC TAPE DRIVE

Robert D. Eanmerich, Loveland, and Leslie G. Christie, Jr., Greeley, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 10, 1986, Ser. No. 838,218
Int. Cl.⁴ G11B *5/008*
U.S. Cl. 360—71 **8 Claims**



1. An apparatus for preventing adhesion between a magnetic tape and elements of a tape transport, said apparatus comprising:

displacement means for moving the magnetic tape in a direction perpendicular to the plane of said tape;

actuator means, coupled to the displacement means, for driving the displacement means; and

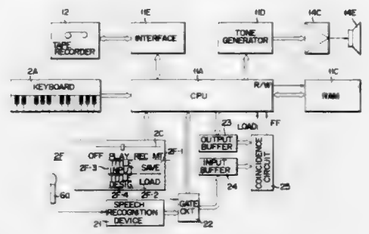
controller means, coupled to the actuator means, for sensing the speed of the magnetic tape and regulating the actuator means in response thereto.

4,656,535

RECORDING APPARATUS WITH RANDOM MUSIC SELECTION

Minoru Usui, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 475,109, Mar. 14, 1983, Pat. No. 4,615,024.
This application Jul. 31, 1985, Ser. No. 761,102
Claims priority, application Japan, Mar. 19, 1982, 57-38016; Aug. 27, 1982, 57-147727; Sep. 10, 1982, 57-136530; Dec. 6, 1982, 57-212802; Dec. 27, 1982, 57-197030
Int. Cl.⁴ G11B *5/008*
U.S. Cl. 360—72.1 **5 Claims**



1. An electronic apparatus comprising:

a magnetic tape in which is sequentially recorded a plurality of music number data records comprised of tone data in digital form, a blank space being interposed between adjacent music number data records;

random number generator means for generating a random number;

detector means for detecting the sequence of music number data records recorded on said magnetic tape by detecting the blank spaces;

selecting means responsive to said detector means and to said random number generator means for selecting, from said magnetic tape by fast feeding said magnetic tape in one of forward and reverse directions until said detector means detects the music number data record corresponding to said random number, from said magnetic tape the music number data record having a number in the sequence of music number data records which is the same as the random number generated by said random number generator means;

reproducing means for reproducing the music number data record selected by said selecting means;

memory means for storing digital tone data of music number data record reproduced by said reproducing means;

control means for controlling the reading and writing of the digital tone data to and from said memory means;

a tone generator for generating a tone signal as a function of the digital tone data which is read out from said memory means; and

a sound system coupled to said tone generator for amplifying the tone signal to an audible sound.

4,656,536

APPARATUS FOR RECORDING AND REPRODUCING IDENTIFICATION WORDS ON A HELICALLY SCANNED TAPE

Mitsunobu Furumoto, and Hiroshi Taniguchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

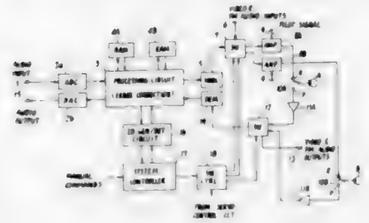
Filed Feb. 26, 1986, Ser. No. 833,583
Claims priority, application Japan, Feb. 27, 1985, 60-38035; Mar. 7, 1985, 60-45418
Int. Cl.⁴ G11B *5/008, 23/36, 27/30*
U.S. Cl. 360—72.2 **13 Claims**

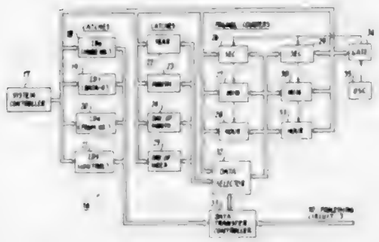
1. A magnetic tape recording and reproducing apparatus having at least one transducer head mounted on a rotary drum

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to scan a magnetic tape wound thereon in a direction oblique to the length of the tape for exchanging an information signal with each of a plurality of parallel tracks when said tape is transported at a normal speed, each of said tracks being divided into a series of sectors so that each of said information signals is recorded on each of a plurality of said sectors, said tape being transported at a higher speed than said normal speed during a search mode, said head scanning the tape in a direction different from the direction of scan at said normal speed when said search is effected, comprising:

means for generating a series of M identification words of N bits each, forming each of said M words into J groups of





I identification words (where $J \times I = M$) and at least one of said word groups comprising data bits representing distinct, but mutually closely related items of information and discrimination bits identifying said data bits and supplying said information signal and said word groups to said head during a recording mode to record said word groups at spaced intervals within each of said sectors and interleaved with said information signal, each of said recorded word groups being positioned in a location which can be detected by said head during said search mode to enable the discrimination bits of the detected word group to identify the data bits of said at least one word group.

4,656,537

HIGH SPEED REPRODUCTION METHOD AND APPARATUS

Akira Toba, and Tsutomu Mizusawa, both of Fukaya, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1985, Ser. No. 813,656

Claims priority, application Japan, Dec. 27, 1984, 59-273662

Int. Cl.⁴ G11B *5/008, 15/44*

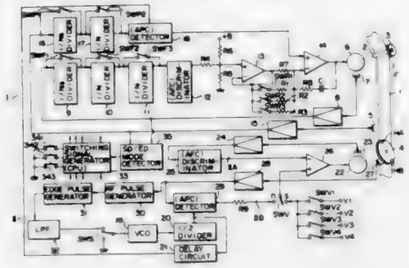
U.S. Cl. 360—73 **11 Claims**

1. A method of controlling high speed reproduction using a tape wherein information signals are recorded to sequentially form helical information tracks at first speed Vt and second speed Vt·N and control signals of a predetermined frequency are recorded to form a continuous control track along the longitudinal direction of the tape, said method comprising the steps of:

selectively specifying a first or second high speed reproduction mode at a speed Ns times or Ns·N times (where Ns is a positive integer of 2 or more) the tape speed in the recording mode;

detecting if the speed of the tape in the recording mode is first speed Vt or second speed Vt·N; and

controlling a common control element required for a first high speed reproduction mode for reproduction at a speed



Ns·N times first speed Vt and for a second high speed reproduction mode for reproduction at a speed Ns times second speed Vt·N when travel and high speed reproduction of the tape is controlled in accordance with the specified first or second high speed reproduction mode and the detected first or second speed.

4,656,538

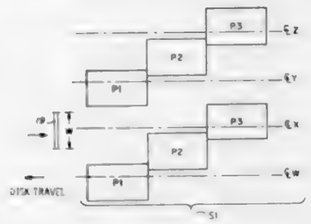
DISK DRIVE CONTROL SYSTEM

Gary L. Mattson, Thousand Oaks, Calif., assignor to Xebec Development Partners, Ltd., San Jose, Calif.

Filed Nov. 14, 1985, Ser. No. 797,932

Int. Cl.⁴ G11B *5/56*

U.S. Cl. 360—77 **21 Claims**



9. A method for providing servo information on the face of a magnetic recording disk, which servo information is utilized for controlling the movement of a read/write transducer associated with a magnetic disk drive system in which a read/write arm is driven by a non-stepping motor to move across the face of the disk, said read/write transducer being capable of both reading and writing said servo information, the improvement comprising:

writing equally spaced-apart servo sectors on the face of the disk, each of the servo sectors containing three sets of marker pulses, with the pulses in each set being radially aligned and spaced-apart radially from one another, said marker pulses in the first set being placed upon the face of the disk latitudinally adjacent and radially outward of said marker pulses of the second set which, in turn, are latitudinally adjacent and radially outward of said marker pulses of the third set; further, said marker pulses being arranged such that any group of three of said adjacent marker pulses spans two or fewer tracks on the face of the disk.

4,656,539

METHOD AND APPARATUS WITH IMPROVED TRACKING CONTROL FOR RECORDING A DIGITAL SIGNAL

Hiraku Sugiki, Saitama; Kentaro Odaka, Kanagawa; Tomoji Satake, Chiba; Takashi Ohmori, and Makoto Yamada, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

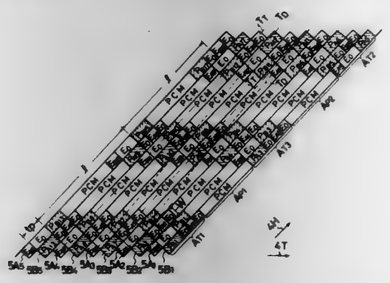
Filed Jan. 22, 1985, Ser. No. 693,270

Claims priority, application Japan, Jan. 25, 1984, 59-11630

The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.

Int. Cl.⁴ G11B *5/584, 5/09, 15/46*

U.S. Cl. 360—77 **14 Claims**



1. A method of recording digital signals on a record medium using a rotary head that periodically traces the record medium, the method comprising the steps of:

recording a digital information signal at first predetermined areas in a plurality of slanted tracks formed on said record medium by said rotary head and including forming said slanted tracks by said rotary head with no guard bands between adjacent tracks;

determining second and third predetermined areas proximate respective ends of said slanted tracks and differing from said first predetermined areas;

determining a first predetermined position in each of said second and third predetermined areas, said first predetermined positions being separated from the ends of said slanted tracks in a longitudinal direction thereof;

recording a tracking pilot signal in said first positions in every other one of said slanted tracks;

determining a second predetermined position different from the respective first predetermined position in each of said second and third predetermined areas; and

recording said tracking pilot signal at said second positions in each slanted track not having said tracking pilot signal recorded in said first positions so that said tracking pilot signal is available for controlling a playback head during reproduction of said information signal.

4,656,540

MAGNETIC TAPE LOADING AND FEEDING APPARATUS

Yoshimi Kodama; Toyozo Urakami, both of Kobe, and Osamu Takao, Higashiosaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 17, 1985, Ser. No. 724,227

Int. Cl.⁴ G11B *15/66*

U.S. Cl. 360—85 **15 Claims**

1. In a tape loading mechanism for helically winding a tape around a guide cylinder by drawing said tape out of a tape cassette, the improvement comprising:

a pin for drawing said tape from said tape cassette and for detecting tension of said tape;

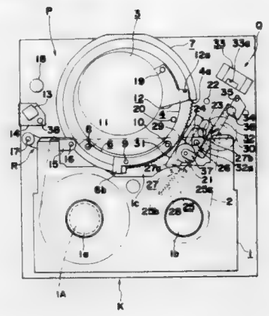
a tape loading means for winding said tape around said guide cylinder over a predetermined winding angle;

said pin for drawing said tape and said tape loading means being inserted into said tape cassette for drawing said tape from said cassette;

a cam driven in response to displacement of said tape loading means and formed with a cam groove;

a shaft; and

a back tension lever pivoted about said shaft and supporting said tape drawing pin;



the pivotal movement of said back tension lever about said shaft being controlled by said cam groove so that said tape drawing pin draws said tape from said tape cassette in response to the displacement of said tape loading means;

said cam groove being formed, at a position thereof corresponding to the completion of the drawing of said tape by said tape drawing pin, larger in width than other portions of said cam groove so as to allow said tape drawing pin to be pivoted at said tape loading completion position such that said tape drawing pin is capable of detecting the tension of said tape.

4,656,541

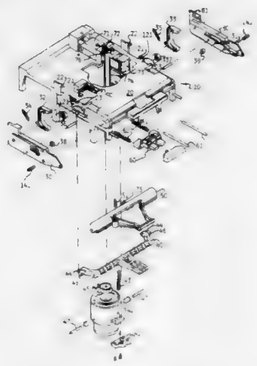
FRONT LOADING CARTRIDGE ACTIVATED CLAMP AND EJECT MECHANISM

Michael J. Rhyner, and Walter L. Auyer, both of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 11, 1985, Ser. No. 690,807

Int. Cl.⁴ G11B *5/008, 15/00, 17/00*

U.S. Cl. 360—96.5 **4 Claims**



1. An apparatus for positioning a magnetic tape cartridge in

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a magnetic tape drive device having a first and second stable state, the first state for ejecting a positioned tape cartridge when instructed by a force or accepting a tape cartridge to be positioned, the second state for clamping the tape cartridge into a registered position, the tape cartridge having a first and second side opposite to each other, a base used to reference the magnetic tape, and at right angles to the first and second side a third side where the magnetic tape of the tape cartridge is exposed, the apparatus comprising:

a frame having a reference surface to establish the registered position for the base of the tape cartridge;

first guiding means attached to the frame for guiding the first side of the tape cartridge into the registered position;

second guiding means attached to the frame for guiding the second side of the tape cartridge into the registered position;

first detection means supported by the first guiding means and contacting the cartridge for in the first state detecting when the first side of the cartridge is approximately in the registered position and for transmitting an ejecting force to the third side of the tape cartridge to eject the tape cartridge from the magnetic tape drive device;

second detection means supported by the second guiding means and contacting the cartridge for in the first state detecting when the second side of the cartridge is approximately in the registered position and for transmitting an ejecting force to the third side of the tape cartridge to eject the tape cartridge from the magnetic tape drive device;

positioning means pivotally mounted to the frame and movably connected to the first detection means and the second detection means for coupling the first detection means to the second detection means whereby the first and second detection means both must detect a tape cartridge prior to moving to the second state and for moving the first and second detection means from the second state into the first state when instructed by the force on the positioning means;

first biasing means connected to the first detection means for biasing the first detection means to seek the second state when a tape cartridge has been detected by the first detection means and for supplying the ejecting force to the first detection means when the apparatus is in the first state;

second biasing means connected to the second detection means for biasing the second detection means to seek the second state when a tape cartridge has been detected by the second detection means and for supplying the ejecting force to the second detection means when the apparatus is in the first state;

first clamping means located between the first guiding means and the frame and contacting the positioning means for clamping the first side of the base of the tape cartridge into the registered position when the apparatus is in the second state; and

second clamping means located between the second guiding means and the frame and contacting the positioning means for clamping the second side of the base of the tape cartridge into the registered position when the apparatus is in the second state.

4,656,542

DEVICE FOR LOADING AND EJECTING A FLOPPY DISK INTO AND FROM A MAGNETIC DISK DRIVE

Haruo Shibata, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 23, 1984, Ser. No. 613,323

Claims priority, application Japan, May 31, 1983, 58-96171

Int. Cl.⁴ G11B *17/02*

U.S. Cl. 360—97 **15 Claims**

1. A device for loading and ejecting a magnetic disk assembly including a disk element and a casing containing said disk element for movement into and from a magnetic disk drive apparatus having a base and means. mounted on the base, for driving the magnetic disk assembly, comprising:

means, including a pair of guide plates mounted on the base so as to oppose each other at a peredetermined distance, for guiding the magnetic disk assembly into and from the magnetic disk drive apparatus;

a holder located above the driving means and holding the magnetic disk assembly therein, the holder being supported by the guiding means so as to be linearly movable between a first position where the magnetic disk assembly can be inserted or ejected from the holder and a second position where the magnetic disk assembly can be driven by the driving means, said holder having an upper wall of a substantially rectangular shape, with an opening therein, a first pair of opposing side walls, and a second pair of opposing side walls, one of the second pair of side walls defining a port means for inserting and ejecting the magnetic disk assembly therethrough, said holder being disposed between the guide plates, so that the first pair of side walls face the guide plates, respectively;

a loading/ejecting member, supported by the guiding means, so as to be movable between an initial position and a forward position, for moving the holder from the first position to the second position upon movement of the member from the initial postion to the forward position



and for moving the holder from the second position to the first position upon movement of the member from the forward position to the initial position;

means for biasing the loading/ejecting member toward the forward position;

means, engaged with the loading/ejecting member, for latching the loading/ejecting member in the initial position;

an urging member mounted on the holder, to be movable between a first position and a second position, such that the urging member is moved from the first position to the second position upon insertion of the magnetic disk assembly into the holder, and, such that the urging member at its second position, urges the latching means to disengage from the loading/ejecting member, so that the urging member ejects the disk element from the holder upon movement of the urging member from the second position to the first position;

means for biasing the urging member toward the first position;

operating means for pushing the loading/ejecting member toward the initial position;

means, disposed in the holder, for locking the magnetic disk assembly in a predetermined position in the holder when the magnetic disk assembly is inserted at the predetermined position in the holder, said locking means including an elastically deformable hold plated mounted on the holder and having one end portion extending into the opening, and a lock pin which extends into the holder from the one end portion of the hold plate and which engages with a corresponding positioning hole of the casing, to lock the magnetic disk when the magnetic disk is inserted in the predetermined position in the holder; and

means for releasing the locking means from a locked state when the loading/ejecting member is moved from the forward position to the initial position and is latched at the initial position.

4,656,543

DEVICE FOR FIXING A REGULATING PLATE OF A MAGNETIC DISC DEVICE

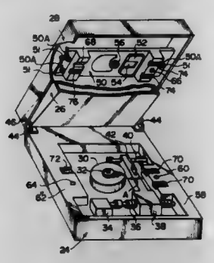
Shigenori Oosaka, and Naoki Takatori, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 22, 1985, Ser. No. 757,167

Claims priority, application Japan, Jul. 26, 1984, 59-113967[U]

Int. Cl.⁴ G11B *17/02*

U.S. Cl. 360—97 **4 Claims**



1. A rotary magnetic disc device comprising:

a main body of device wherein a rotary driving source and a magnetic head are provided;

a lid openably supported on the main body of device;

supporting means for pivotally supporting said lid on said main body;

a regulating plate movably provided on said lid and located at a position opposed to said magnetic head, when said lid is closed, to dispose a magnetic disc along said magnetic head;

mounting means for movably mounting said regulating plate on said lid;

a plurality of magnets located on one of said main body of the device and said regulating plate;

a plurality of magnetic materials provided on the other one of said main body of the device and said regulating plate, for attracting and fixing the regulating plate to the main body of the device when the lid is closed; and

positioning means for positioning the regulating plate at a predetermined position relative to said magnetic head when the lid is closed.

4,656,544

LOADING DEVICE FOR DISC CASSETTES

Hiroshi Yamanouchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

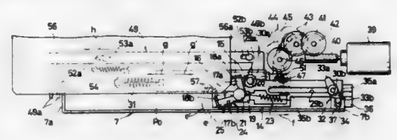
Filed Mar. 5, 1985, Ser. No. 708,505

Claims priority, application Japan, Mar. 9, 1984, 59-45879

Int. Cl.⁴ G11B *5/012*

U.S. Cl. 360—97 **4 Claims**

1. In a disc drive for use with a disc cassette having a record disc rotatable within a cassette housing provided with an engaging portion, and which includes a chassis and a turntable rotatably mounted on said chassis: a loading device for said disc cassette comprising spaced apart upright support plates on said chassis at opposite sides of said turntable; a cassette holder arranged horizontally between said support plates; means movably mounting said cassette holder in respect to said support plates for movement between a raised cassette inserting position in which said cassette housing with said disc therein is slidable in a predetermined horizontal direction into and out of said holder and a lowered loading position in which the record disc within said cassette housing in said holder engages said turntable with said holder remaining substantially horizontal during said movement between said cassette inserting position and said loading position; coupling means engaged with said engaging portion of the cassette housing when the latter



reaches a first location in said holder during manual insertion of the cassette in said direction into said holder in said inserting position; detecting means for detecting further insertion of said cassette housing in said direction into said holder to a second location beyond said first location; electrical motor driven means energized in response to said detecting means upon the attainment of said second location by the inserted cassette housing and being operable by way of said coupling means for further drawing said cassette housing in said direction into said holder to a third location beyond said second location; and raising and lowering means for lowering said holder to said loading position in response to further operation of said motor driven means following attainment of said third location by the cassette housing in said holder.

4,656,545

MAGNETIC DISC MEMORY DEVICE

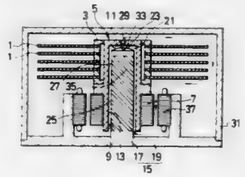
Kazuo Kakuta, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1984, Ser. No. 633,795

Claims priority, application Japan, Jul. 28, 1983, 58-116451[U]

Int. Cl.⁴ G11B *17/00, 5/012*

U.S. Cl. 360—98 **10 Claims**



1. A magnetic disc memory device comprising:

a rotatable member;

a stationary member for supporting said rotatable member, one of said rotatable member and said stationary member being a housing and the other being a shaft member;

a cylindrical hole (9) provided in said housing (5) having a thrust bearing surface (11) and a cylindrical radial bearing surface (13), said shaft member (15) disposed in said cylindrical hole (9) having a thrust receiving surface (23) opposed to said thrust bearing surface (11) and a radial receiving surface (27);

an axial pressure chamber being formed between said thrust surfaces;

at least one of said radial bearing surface (13) and said radial receiving surface (27) is provided with a dynamic pressure generating groove (35) to produce gas pressure upon relative rotation;

information recording magnetic disc means mounted on the outer peripheral portion of said rotatable member;

an annual rotor provided on the outer portion of said rotatable member in axially spaced relationship with said magnetic disc means;

a stator secured to said stationary member and facing said annular rotor;

said stator and said rotor together constituting an electric motor; and

a closed case secured to said stationary member and enclosing said magnetic disc means, said rotatable member, said rotor and said stator to seal them from extraneous dusts or contaminants; and

a communication hole (29) connecting said axial pressure chamber to the interior of said closed case;

wherein the gas is pressurized in cylindrical hole (9) by the relative rotation of said radial receiving surface (11) and said cylindrical radial bearing surface (13) to provide radial support of said rotor, the gas flowing to said axial pressure chamber to provide axial support to said rotor; the gas then flowing from said axial pressure chamber through said communicaiton hole (29) to the internal portion of the case and then flowing between said rotor and said stator and then returning to said cylindrical hole (9).

4,656,546

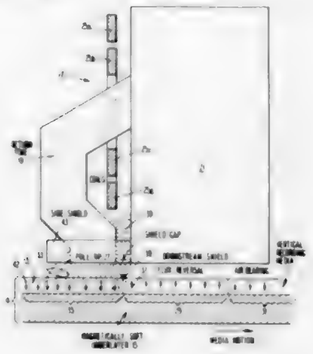
VERTICAL MAGNETIC RECORDING ARRANGEMENT

Michael L. Mallory, Berlin, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 22, 1985, Ser. No. 693,522

Int. Cl.⁴ G11B *5/127*

U.S. Cl. 360—110 **5 Claims**



1. An arrangement for effecting vertical magnetic recording of information comprising in combination: movable magnetizable recording means formed to have first and second layers which lie substantially parallel to the movement of said magnetizable recording means, said first layer comprised of magnetizable material which is characterized by perpendicular uniaxial anisotropy and said second layer comprised of material characterized by low magnetic reluctance, said magnetizable recording means arranged to be moved in a downstream direction; magnetic recording head means including magnetic flux generating means, formed to have a write pole section and a downstream magnetic shield section which is integrally connected to said write pole section so that magnetic flux can readily pass, bi-directionally, through said write pole section and said downstream magnetic shield section; said downstream magnetic shield section formed and disposed to have a relatively large face lying in close proximity to said first layer; said write pole section fashioned, while extending in an upstream direction from said downstream magnetic shield section, to form a partial loop configuration defining an opening and ending in a pole tip which is disposed to lie in close proximity to said first layer so that the magnetic flux passing into and alternatively out of said write pole section will pass from said first layer through said pole tip and alternatively from said pole tip into said first layer, said write pole section being further formed and disposed such that a small gap having a sufficiently small width is formed between said pole tip and said downstream magnetic shield section so that, when said pole tip has magnetic flux passing therethrough, fringing flux in the downstream direction will substantially pass across said small gap into said downstream magnetic shield face without passing through said first layer, and whereby the remainder of said magnetic flux passing through said pole tip passes substantially vertically through said first layer into said second layer, substantially parallel to and through said second layer, and substantially vertically from said second layer through said first layer into said downstream magnetic shield face, thereby effecting vertical magnetic recording of information in said first layer.

4,656,547

COMPOSITE TYPE MAGNETIC HEAD FOR RECORDING AND REPRODUCING HIGH FREQUENCY SIGNALS

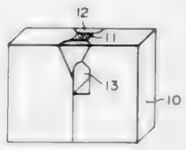
Noriyuki Kumasaka, Ome; Hideo Fujiwara, Tokorozawa; Shigekazu Otomo, Sayama; Takeo Yamashita, Hachioji; Shinji Takayama, Mitaka; Noritoshi Saito, Hachioji, and Mitsuhiro Kudo, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 9, 1984, Ser. No. 608,407

Claims priority, application Japan, May 11, 1983, 58-80096

Int. Cl.⁴ G11B *5/147, 5/187, 5/17*

U.S. Cl. 360—126 **13 Claims**



1. A composite type magnetic head comprising:

two high permeability ferrite blocks having projections projecting towards each other in a sectional view seen from a side of a surface facing a magnetic recording medium, said ferrite blocks at a front end of each of said projections having a width smaller than a track width of a recording track of the magnetic recording medium;

magnetic substances deposited over at least both side faces of said projections of said ferrite blocks, each of said magnetic substances having a saturation flux density larger than that of said ferrite blocks, said magnetic substances confronting each other via a functinal gap near front ends of said projection;

guard deposited over said magnetic substances around side faces of said projections of said ferrite blocks, said guard films comprising a non-magnetic material; and

non-magnetic materials filled over said guard films up to a side face of a core formed by said ferrite blocks.

4,656,548

TAPE CASSETTE CONTAINING ECHO-ERASING MEANS

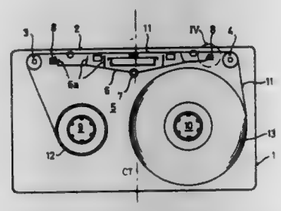
Dietmar Pfefferkorn, Hemsbach; Gerhard Nerschbach, Mutterstadt; Eberhard Koester, Frankenthal; Norbert Kreimes, Ludwigshafen, and Bozidar Pavelka, Willstaett, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 22, 1983, Ser. No. 554,320

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 8233253[U]

Int. Cl.⁴ G11B *23/02, 5/127*

U.S. Cl. 360—132 **15 Claims**



1. A tape cassette having a housing containing therein a magnetic recording medium in the form of two coplanar tape rolls having at least one magnetic track, said cassette comprising print-through echo-erasing means within said housing in the path of travel of the magnetic medium, said housing having a front wall, with openings through which the recording medium is accessed during the recording and/or playback operation, and said echo-erasing means consisting of two magnetic members made of permanent magnet material having a coercive force H_c in the range from 50 kA/m to 400 kA/m and having a constant field strength in the range from 4 kA/m to 32 kA/m on the portion of the periphery of the member which faces the recording medium, said two magnetic members being disposed symmetrically with respect to the central transverse axis of the cassette housing.

4,656,549

IMPROVEMENTS IN PLATE SPRINGS FOR TAPE CASSETTES IN PARTICULAR VIDEO TAPE CASSETTES

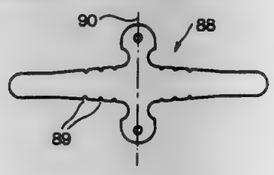
Klaus Schoettle, Heidelberg; Heinz Berger, Kehl; Herbert Dietze, Berghaupten, and Joachim Seitz, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 13, 1984, Ser. No. 681,242

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 8335968[U]

Int. Cl.⁴ G11B *23/08, 23/14*

U.S. Cl. 360—132 **4 Claims**



1. A tape cassette, in particular a video tape cassette, housing a pair of rotatable reels and having a top with at least one window therein, and a plate spring for holding down the reels, said plate spring essentially consisting of two long spring arms and fastening means located centrally with respect to said arms, and having tape-length indicators on at least one of the long spring arms, wherein the tape-length indicators are in the form of extensions or incisions adjacent outer edges of the two long spring arms.

4,656,550

DISK CARTRIDGE

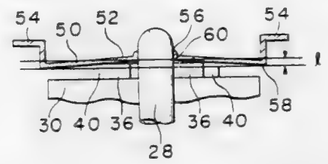
Michio Iizuka, Saku, and Haruo Shiba, Komoro, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 9, 1985, Ser. No. 753,143

Claims priority, application Japan, Jul. 19, 1984, 59-109494[U]

Int. Cl.⁴ G11B *23/02*

U.S. Cl. 360—133 **1 Claim**



1. A disc cartridge having an upper and a lower surface, said lower surface having a window, and

a magnetic disc adapted to be rotated in said hard casing, said magnetic disc including a hub matably fittable in said window so that said lower surface of said hub faces the exterior of said casing centrally of said window,

wherein said lower surface of said hub has an outer peripheral portion and a central opening, and wherein said lower surface of said hub is concave between said outer peripheral portion and said central opening, whereby the concavity of said concave lower surface has a depth of from 0.02 to 0.3 mm, whereby upon rotation of said magnetic disc a modulation percentage is improved.

4,656,551

SAFETY ARRANGEMENT FOR CASSETTE RECORDERS AND/OR PLAYBACK APPARATUS

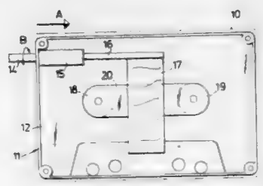
Raymond J. Gotto, Eugeniavägen 41, S-113 33 Stockholm, Sweden

Filed May 6, 1985, Ser. No. 731,054

Claims priority, application Sweden, May 16, 1984, 8402635

Int. Cl.⁴ E05B *73/00*

U.S. Cl. 360—137 **3 Claims**



1. A device for preventing unauthorized use of a cassette or video tape recorder or player comprising a hollow body having a substantially flat rectangular outer casing corresponding in size and shape to a standard tape or video cassette and locking means associated with said body for locking said body in a cassette opening of a cassette or video tape recorder or player having drive shafts, each of which drive shafts has a projecting end,

said locking means comprising a lock opening in said casing, a rotary lock cylinder having a keyhole accessible from the exterior of said casing through said locking, two sleeve-like members connected to a spring-biased plate and adapted to fit over said projecting ends of said drive

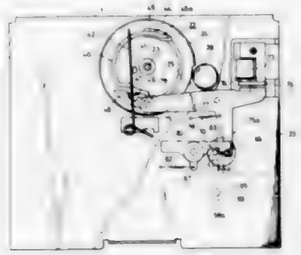
shafts, and transmission means within said casing connected between said lock cylinder and said sleeve-like members, said transmission means converting movement of said cylinder into projecting and retracting movements of said sleeve-like members with respect to said projecting ends of said drive shafts.

4,656,552

CAM DRIVEN ACTUATING MECHANISM FOR A TAPE PLAYER

Akira Takahashi, Nagoya, and Isao Hasegawa, Toda, both of Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1984, Ser. No. 643,224
Claims priority, application Japan, Aug. 30, 1983, 58-135026
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—137 **14 Claims**



1. In a cam driven actuating mechanism for a tape player which includes:
a drive source;
a rotatably supported disc and selectively actuable means for drivingly coupling said drive source to said disc so as to effect rotation of said disc;
a cam provided on a surface of said disc and having thereon a cam profile;
a pivotally supported control arm engageable with said cam profile of said cam so as to selectively permit and prevent rotation of said disc, said cam profile having a stop which engages said control arm in a stop mode of the tape player;
attraction solenoid means for releasably holding said control arm in a position in which a portion thereof is adjacent said attraction solenoid means when said cam is in a predetermined angular position corresponding to a selected operating mode of the tape player; and
means for disengaging said control arm from said stop;
the improvement comprising a resilient projection which is provided along and bulges outwardly from said cam profile of said cam and which, as said disc approaches said predetermined angular position, pivots said control arm in a direction causing said portion thereof to move into engagement with and to be releasably held by said attraction solenoid means, said resilient projection bulging farther outwardly than is needed to cause said portion of said control arm to engage and be releasably held by said solenoid means.

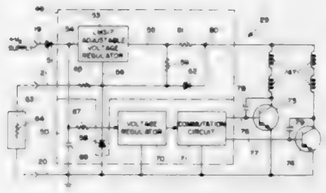
4,656,553

ELECTRONICALLY PROGRAMMABLE UNIVERSAL BRUSHLESS DC FAN WITH INTEGRAL TRACKING AND LOCKED ROTOR PROTECTION

Fred A. Brown, Woodstock, N.Y., assignor to Comair Rotron, Inc., Saugerties, N.Y.

Filed Jan. 21, 1986, Ser. No. 821,059
Int. Cl.[4] H02H *7/08*
U.S. Cl. 361—31 **16 Claims**

1. In a brushless DC motor driven, equipment cooling fan having a permanent magnet rotor in an impelier, a centrally mounted stator wound with windings, ends of the windings being electrically connected to a winding supply circuit centrally mounted with the stator, a commutation and switching circuit centrally mounted with the stator and the energization circuit, the impeller having blades supported thereon radially outward of the stator; the improvement comprising a voltage regulator having thermal protection mounted internally in the winding supply circuit and connected in current conducting relation to the windings, means connected between the voltage



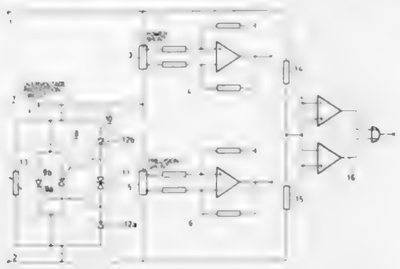
regulator and the windings to provide, in cooperation with the voltage regulator, current limiting of the current to the windings, voltage setting means connected to the voltage regulator to set the output voltage thereof and establish a desired fan speed, the commutation and switching circuit having input connection means for supplying current thereto independently of the voltage regulator connected in current conducting relation to the windings.

4,656,554

SHUNT ARRANGEMENT WITH POWER OVERLOAD PROTECTION BY A VOLTAGE RESPONSIVE BIDIRECTIONAL SWITCH

Martin Maschek, Würenlos, and Georg Mastner, Niederrohrdorf, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Mar. 19, 1985, Ser. No. 713,495
Claims priority, application Switzerland, Mar. 21, 1984, 1421/84
Int. Cl.[4] H02H *9/04*
U.S. Cl. 361—56 **15 Claims**



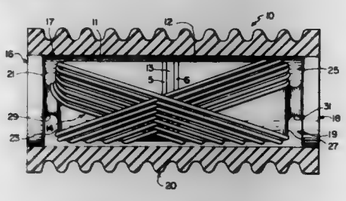
1. A shunt arrangement, comprising:
an electric circuit including a power shunt;
a precision shunt connected in series to said power shunt; and
a overvoltage protection circuit means connected in parallel to and responsive to a voltage drop across said precision shunt for conducting when said voltage substantially reaches one of an upper limit value and a lower limit value of an operating range containing voltage zero and for being inhibited when said voltage remains within said operating range.

4,656,555

FILAMENT WRAPPED ELECTRICAL ASSEMBLIES AND METHOD OF MAKING SAME

Donald E. Raudabaugh, Wadsworth, Ohio, assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Dec. 14, 1984, Ser. No. 681,800
Int. Cl.[4] H02H *1/04*
U.S. Cl. 361—117 **39 Claims**



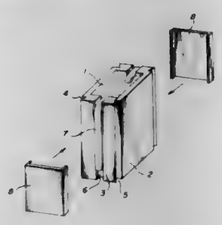
1. An electrical assembly, the combination comprising:
a plurality of conductive electrical components aligned in a row and having axially-directed ends, said electrical components being in electrical connection with one another via said axially-directed ends; and
means, wrapped around said components, for applying an axially-directed compressive force on said plurality of electrical components to maintain said electrical connection thereof,
said means including a non-conductive filament winding.

4,656,556

PLASTIC FILM CAPACITOR IN CHIP CONSTRUCTIONAL FORM

Wolfgang Westermann, Schellingstr. 7, 6800 Mannheim 1, Fed. Rep. of Germany

Filed Dec. 5, 1985, Ser. No. 804,625
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1985, 3505583
Int. Cl.[4] H01G *1/13, 1/14, 7/00*
U.S. Cl. 361—307 **18 Claims**



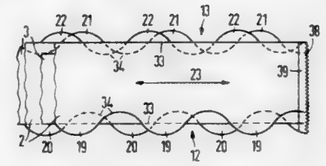
1. A capacitor in chip configuration, comprising:
(i) a capacitor body comprised of synthetic resin film as dielectric;
(ii) a coating provided on said capacitor body, said coating comprising a thermosetting material;
(iii) two connecting wires which make contact radially with said capacitor body and which project together from said capacitor body through a predetermined surface of said coating; and
(iv) an encapsulation body provided around said coating such that said predetermined surface is not contacted by said encapsulation body,
wherein the projecting section of each of said connecting wires (A) is bent over said encapsulation body and (B) contacts a metal plate.

4,656,557

ELECTRICAL LAYER CAPACITOR AND METHOD FOR THE MANUFACTURE THEREOF

Reinhard Behn, Munich, and Ferdinand Utner, Regensburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 4, 1985, Ser. No. 804,397
Int. Cl.[4] H01G *1/14, 4/08*
U.S. Cl. 361—309 **13 Claims**



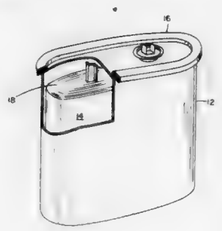
1. An electrical layer capacitor, comprising:
a stack having opposite lateral faces and formed of a plurality of first and second individual capacitors, each of which is formed of a plastic carrier layer, a regenerably thin first metal coating as a first electrode applied on the carrier layer so as to leave a first metal free edge region at one side of the carrier layer, a plastic glow polymerization layer as a dielectric on the first metal coating and which leaves an uncovered edge region on the first metal coating near an opposite face of the capacitor relative to the first metal free edge region, and a regenerably thin second metal coating as a second electrode on the glow polymerization layer and which leaves a second metal free uncovered edge region on the flow polymerization layer also near said face of the capacitor relative to the first metal free edge region;
metal coatings of the same polarization being electrically connected at same lateral faces of said stack; and
each of the individual capacitors having at one side a straight cut and at an opposite side a wavy cut, and wherein the first and second individual capacitors are adjacent one another in the stack and are aligned such that a straight cut of the one capacitor with the metal layer thereat to be contacted is adjacent a wavy cut of the other capacitor with the metal layer thereat to be contacted and vice versa.

4,656,558

ELECTRICAL CAPACITOR

Jeffrey A. Bentley, Riverside, R.I., assignor to Aerovox Incorporated, New Bedford, Mass.

Filed Aug. 2, 1985, Ser. No. 762,542
Int. Cl.[4] H01G *4/04;* **H01B** *3/20*
U.S. Cl. 361—327 **12 Claims**



1. An electrical capacitor having as its electrode the metallized portion of a rolled metallized thermoplastic strip and

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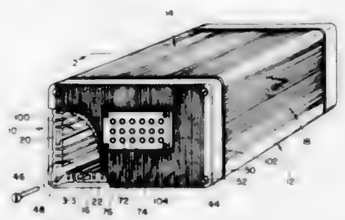
having as its dielectric spacer the thermoplastic portion of said strip, said capacitor further comprising a liquid dielectric comprising polybutene of average molecular weight of at least 800.

4,656,559

HOLDER AND HEAT SINK FOR ELECTRONIC COMPONENTS

Saul S. Fathi, Huntington, N.Y., assignor to Ultima Electronics Ltd., Farmingdale, N.Y.

Filed May 10, 1984, Ser. No. 608,952
Int. Cl.[4] H05K *7/20*
U.S. Cl. 361—386 6 Claims



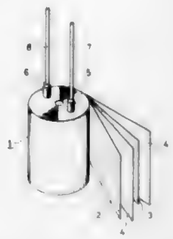
1. A holder for electronic components, comprising:
a tube open at opposite ends and having four walls integrally joined at respective corners of said tube;
a first one of said walls having a multiplicity of parallel laterally spaced first ridges inside said tube extending between said ends of said tube, and defining between consecutive pairs of said first ridges a first groove receiving a first edge of a flat circuit board carrying circuit elements;
a second one of said walls disposed parallel to said first wall and having a multiplicity of parallel laterally spaced second ridges inside said tube defining between consecutive pairs of said second ridges a second grooves aligned parallel with said first groove transversing said tube receiving a second edge of said board opposite from said first edge to removably support said board;
wherein third and fourth ones of said four walls are disposed parallel to each other with each perpendicular to said first and second walls, said third and fourth walls each having a plurality of other parallel ridges inside said compartment and defining between consecutive pairs of said other parallel ridges a respective third and fourth groove extending longitudinally of said tube, said third and fourth grooves aligned with each other to support another circuit board carrying other circuit elements when said first circuit board is removed from said compartment, said other circuit board having a width different from said width of said first circuit board;
wherein certain ones of said grooves in said first, second, third and fourth walls inside said tube are formed securing a threaded nut and wherein said certain grooves have a lateral opening through which a threaded screw is inserted to mate with the threads in said threaded nut;
further comprising a pair of cover plates respectively closing said open opposite ends of said tube to define a closed compartment; and
wherein said tube and said cover plates are made of a thermally conductive material and the outer sides of said first, second, third, and fourth walls are formed with a multiplicity of narrow grooves and wider grooves defined by V-shaped ridges which serve as effective radiators for conducting any heat generated in said tube out of said tube.

4,656,560

ORGANIC SEMICONDUCTOR ELECTROLYTE CAPACITOR AND PROCESS FOR PRODUCING THE SAME

Takato Ito; Akihiro Shimada, and Kimio Uchiyama, all of Tokyo, Japan, assignors to Nippon Chemi-Con Corporation, Tokyo, Japan

Filed Feb. 11, 1985, Ser. No. 700,248
Claims priority, application Japan, Feb. 10, 1984, 59-23099; Aug. 11, 1984, 59-168627
Int. Cl.[4] H01G *9/00*
U.S. Cl. 361—433 2 Claims



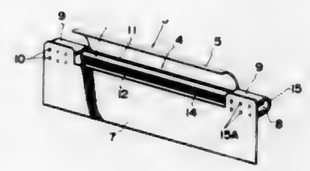
1. An organic semiconductor electrolyte capacitor comprising: a metal anode having a dielectric oxide film formed on a surface thereof and an electrolyte layer formed on said dielectric oxide film, a collector electrode, and a separator positioned between said anode and collector electrode, said electrolyte layer being formed by melting and solidifying a mixture of isopropyl-isoquinolinium tetracyanoquinodimethane complex salt and lactone compound.

4,656,561

DEVICE FOR ILLUMINATING MEASURING INSTRUMENTS

Shintaro Shinbo, and Yasuo Saito, both of Nagaoka, Japan, assignors to Nippon Seiki Corporation, Nagaoka, Japan

Filed Jul. 27, 1984, Ser. No. 635,354
Claims priority, application Japan, Nov. 25, 1983, 58-182524[U]
Int. Cl.[4] G01D *11/28*
U.S. Cl. 362—30 10 Claims



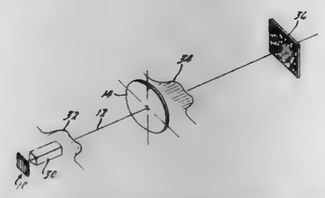
1. A device for illuminating measuring instruments including a display unit driven by a display driving circuit and a cold cathode discharge tube mounted on a printed circuit board in order to illuminate said display unit from a display side thereof comprising:
a conductive layer arranged circumferentially on at least the display side of the outer periphery of said cold cathode discharge tube and grounded to a grounding level of said display driving circuit in order to absorb noise generated in an outwardly direction,
a heater arranged circumferentially on the outer periphery of said cold cathode discharge tube and insulated from said conductive layer,
metal members disposed on said printed circuit board, provided at opposite ends of said cold cathode discharge tube and grounded to the grounding level of said conductive layer to absorb noise generated in an outwardly direction, and
a reflector provided against a portion of said cold cathode discharge tube opposite said display unit and reflecting light emitted from said cold cathode discharge tube to said display unit.

4,656,562

OPTICAL INTEGRATOR MEANS FOR INTENSITY MODIFICATION OF GAUSSIAN BEAM

Paul S. Sugino, Santa Maria, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Sep. 13, 1985, Ser. No. 776,189
Int. Cl.[4] F21V *5/02*; G02B *5/04*
U.S. Cl. 362—32 9 Claims



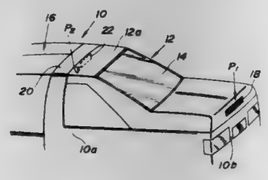
1. In an optical projection apparatus having a multi-element source projecting a beam having a generally Gaussian intensity distribution along an optical axis towards a target plane, with the beam including a marginal ray and an axial ray, wherein the improvement comprises:
a rod of optically transmitting material disposed coaxially with the optical axis, means defining an entrance face and an exit face for the rod, said means including different geometric configurations for the entrance and exit faces, adapted for inverting the intensity of the beam entering the entrance face such that marginal rays of the beam leave the exit face substantially parallel to the optical axis and wherein axial rays are redistributed outwardly so as to diverge from the exit face thereby providing the beam with a generally uniform intensity as it leaves the exit face.

4,656,563

AUTOMOTIVE VEHICLE STOPLIGHT ARRANGEMENT

Toru Segoshi, Yokohama, and Takasi Nomoto, Ebina, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Dec. 3, 1985, Ser. No. 804,143
Claims priority, application Japan, Dec. 3, 1984, 59-254071
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 362—61 17 Claims



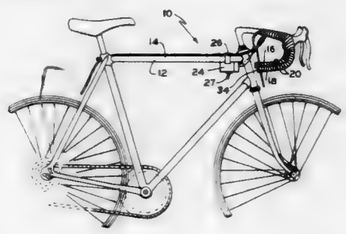
1. An automotive vehicle comprising:
a vehicle body including a vehicle shell having a section which is openable to form an opening in said vehicle body;
a first stoplight installed to said vehicle shell in a first position and connected to an electric circuit to be lighted when said section is moved to a closed position to close said opening; and
a second stoplight installed to said vehicle shell in a second position and connected to an electric circuit to be lighted when said section is moved to an open position to form said opening, said first position being lower than said second position and said positions being separate from each other, said first stoplight in said first position being clearly seen from said automotive vehicle when said section is in the closed position, and said first stoplight in said first position being blocked from being clearly seen from behind said automotive vehicle when said section is in the open position.

4,656,564

BICYCLE HANDLEBAR LIGHT

Willie L. Felder, 2644 Chicago Ave. S., Apt. 105, Minneapolis, Minn. 55407

Filed Mar. 20, 1986, Ser. No. 841,569
Int. Cl.[4] F21V *33/00*
U.S. Cl. 362—72 5 Claims



1. A light for improving the safety of a bicycle having handlebars including tubular rearwardly projecting handle portions comprising,
a bulb holder mountable substantially entirely within the tubular handlebar,
said bulb holder including an annular bead at its rearward end and a handlebar engaging retaining member secured to the annular bead and extending forwardly therefrom inside the handlebar to support the bulb holder within the handlebar and said retaining member surrounding and enclosing a light bulb,
a transparent cover sheet supported by the bead of the bulb holder and extending across the rearward end of the light holder rearwardly of the bulb in a position when mounted within the handlebar to be aligned close to an open end of the handlebar,
a bulb supporting member extending forwardly from the annular bead of the bulb holder to enclose and support said bulb therewithin,
a bulb socket supported on the member to enclose the base of the bulb and said bulb holder having a wire outlet opening through which a wire carrying current to the bulb can be passed out through the bulb holder so as to extend forwardly therefrom along the outside surface of the handlebar.

4,656,565

FLASHLIGHT

Anthony Maglica, Ontario, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.

Continuation-in-part of Ser. No. 648,032, Sep. 6, 1984, Pat. No. 4,577,263. This application Mar. 6, 1986, Ser. No. 836,975
The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.
Int. Cl.[4] F21L *7/00*
U.S. Cl. 362—187 29 Claims

1. A flashlight comprising:
a barrel for retaining at least one dry cell battery;

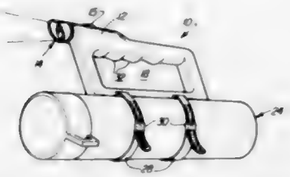
VOL 1077 ISS 1 AP 7 1987 UMI

a lamp bulb;
means for holding the lamp bulb;
a substantially parabolic reflector;
a substantially planar lens;
means for retaining the reflector and the lens located at one end of the barrel and removably attached thereto, said retaining means being adapted to be controllably axially translatable along the barrel such that the relative positional relationship between the reflector and the lamp bulb may be varied, thereby varying a reflection dispersion of a light beam emanating through the lens from said lamp bulb; a tail cap being engageable with the barrel at the end remote from the means for retaining the reflector and lens;



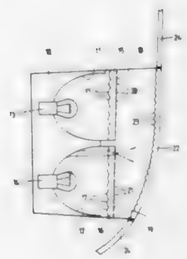
means for electrically coupling a first electrode of the battery to a first electrode of the lamp bulb; and
a conductive element within the barrel, said element being for electrically coupling a second electrode of the lamp bulb to a second electrode of the battery, said second electrode being located adjacent said tail cap; and
wherein relative motion of the means for retaining the reflector and the lens in an axial direction towards the barrel for retaining the battery causes opening of the electrical coupling of at least one electrode of the lamp bulb with its respectively coupled battery electrode.

4,656,566
THERMO LIGHT HANDLE
Robert J. Kelley, P.O. Box 6, Buckley, Mich. 49682
Filed Jul. 8, 1986, Ser. No. 883,525
Int. Cl.[4] F21R *7/00*
U.S. Cl. 362—202 **6 Claims**



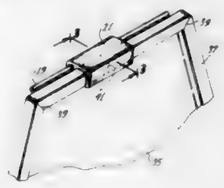
1. A combination detachable handle and flashlight attachment for a thermos bottle or other cylindrical container adapted to simultaneously provide a means for transporting the container and provide illumination in the use thereof, comprising:
(a) a hollow cylindrical member;
(b) a flashlight casing containing a flashlight, bulb, battery holding means and electrical circuit forming means sufficient to provide an electrical connection;
(c) a means of affixing said flashlight casing with the hollow cylindrical member;
(d) a switch for closing the electrical circuit;
(e) said switch affixed to the exterior of the cylindrical member housing the flashlight casing;
(f) a plurality of horizontally spaced arms extending from the cylindrical member in a common plane, sufficiently spaced to allow the cylindrical member to be gripped between them;
(g) a support member affixed to the ends of said arms, parallel to the principal cylindrical member;
(h) a plurality of straps with means for affixing said straps to the support member;
(i) a means for securing said straps around the thermos bottle or other cylinder.

4,656,567
INDISCERNIBLE LAMP
John R. Morris, Birmingham, England, assignor to Lucas Industries PLC, Birmingham, England
Filed Oct. 11, 1984, Ser. No. 659,836
Claims priority, application United Kingdom, Oct. 14, 1983, 8327529
Int. Cl.[4] F21V *9/08*
U.S. Cl. 362—231 **4 Claims**



1. A lamp assembly comprising a housing having a pair of juxtaposed internal lamps for emitting light of respectively different colours, a light-transmitting front cover of substantially uniform colour for imparting a desired colour appearance to the assembly when neither lamp is energized, and a pair of respectively differently coloured optical colour filters in the housing for intercepting light from the respective lamps before the light is transmitted through the front cover, and for colouring the light in a mixture of the light colour emitted from the front cover by the respective lamp and a colour complimentary to the colour of the front cover.

4,656,568
LAMP SHADE
Martin R. Reed, 23405 Caminito Telmo, Laguna Hills, Calif. 92653
Filed Dec. 26, 1985, Ser. No. 813,606
Int. Cl.[4] F21Y *1/06*
U.S. Cl. 362—352 **11 Claims**



1. A lamp shade comprising:
a plurality of panels, each of said panels having upper and lower edge portions;
a panel support;
means for attaching said panels to said panel support in a circumferentially extending pattern about the panel support;
means for holding the panels in said circumferentially extending pattern;
said attaching means including a clip having a first pair of legs for defining a panel groove and a second pair of legs for defining a support groove, said panel groove receiving regions of one of the edge portions of one of the panels with the legs of the panel groove resiliently gripping at least some of said region of said one edge portion of said one panel and said support groove receiving a region of the panel support with the legs of the support groove resiliently gripping at least some of said region of the panel support.

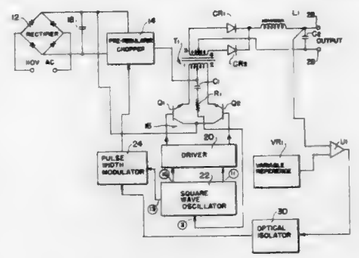
4,656,569
ELEVATING APPARATUS PARTICULARLY FOR THE CANOPY OF A LAMP STANDARD
Hugh Buskell, 399 King Edward Street, Winnipeg, Manitoba, Canada R3J 1L6
Filed Oct. 22, 1985, Ser. No. 790,129
Int. Cl.[4] F21S *3/12*
U.S. Cl. 362—418 **16 Claims**



1. A light standard comprising an elongate tubular mast, a light canopy for positioning at the top of the mast for projecting light therefrom over an area to be illuminated and elevating means for raising and lowering said canopy from a service position at a lower end of the mast to an elevated position at said top of the mast, said elevating means comprising an externally screw threaded shaft, means mounting the shaft on the tubular mast on an outer face thereof and extending from said service position to said elevated position, said mounting means being arranged to hold said shaft against movement longitudinally of the mast while allowing rotation of the shaft about a longitudinal axis of the shaft, collar means attached to said canopy for movement therewith and for engaging said shaft and including a screw thread member, and drive means for rotating the shaft whereby rotation of the shaft drives the collar means longitudinally of the shaft.

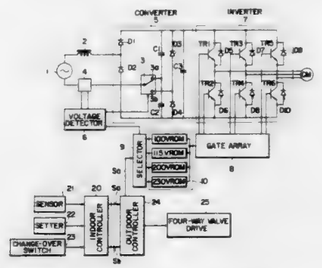
4,656,570
SELF-BALANCING PUSH-PULL SQUARE WAVE CONVERTER TYPE OF SWITCHED POWER SUPPLY
Jack W. Swoboda, Los Angeles, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.
Filed Sep. 23, 1985, Ser. No. 778,858
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—26 **4 Claims**

1. A self-balancing push-pull switched power supply including: a power transformer having a primary winding and a secondary winding; an output circuit connected to said secondary winding; first and second switched transistors connected in push-pull relationship to the respective sides of the primary winding; an input circuit including a pre-regulator connected to the transistors and to an intermediate tap on the primary winding for introducing a direct current regulated input voltage to the power supply, said direct current regulated input voltage having a ripple voltage superimposed thereon having an amplitude which is a function of the current flow through either of said switching transistors; driver circuitry connected to said transistors for introducing 180° out-of-phase drive pulses to the transistors; and control circuitry coupling the



output of said pre-regulator to said driver circuitry for introducing said ripple voltage to said driver circuitry so as to cause individual ones of said drive pulses to terminate when the current flow through a corresponding one of said first and second transistors reaches a predetermined maximum.

4,656,571
FREQUENCY CONVERTING DEVICE AND CONTROL METHOD THEREFOR
Kenji Umezu, Shizuoka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed May 22, 1985, Ser. No. 736,948
Claims priority, application Japan, May 25, 1984, 59-105952
Int. Cl.[4] H02M *5/45*; G05F *5/00*
U.S. Cl. 363—37 **11 Claims**



1. A frequency converting device connectable to a plurality of ac input power sources having voltages different from each other and for variably controlling a rotational speed of an ac motor when the device is connected to one of said ac input power sources, comprising:
(a) a converter for converting an ac input power from said ac input power source connected to the device into a dc power;
(b) an inverter provided with a plurality of switching elements to convert said dc power into an ac output power by controlling on and off operation of said switching elements and to supply said ac output power to said ac motor; and
(c) adjusting means for adjusting a ratio of on-time and off-time of said switching elements based on said ac input voltage supplied to said converter for keeping substantially constant an effective output value of said inverter regardless of the voltage of the ac input power source to which the device is connected.

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4,656,572

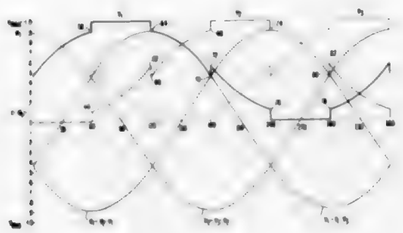
PWM INVERTER

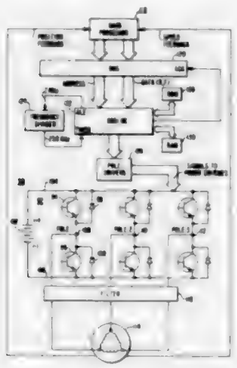
William R. Caputo, Wyckoff; Alan L. Hunson, Hackettstown, both of N.J., and Kenneth K. Lee, Alexandria, Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 702,997, Feb. 19, 1985, abandoned. This application Aug. 14, 1986, Ser. No. 896,568

Int. Cl.⁴ H02M *1/12*

U.S. Cl. 363—41 **17 Claims**





1. A PWM inverter having a predetermined maximum modulation fraction, comprising:

a three-phase bridge circuit having three power poles,

DC input terminals on said three-phase bridge circuit connectable to a unidirectional power supply having predetermined fixed upper and lower voltage limits,

AC output terminals on said three-phase bridge circuit connectable to a load circuit, and

control means for controlling the conduction times of the power poles to provide substantially sinusoidal pole voltages which alternate between the upper and lower voltage limits of the power supply, without entering a predetermined zone adjacent each limit,

said control means including means for switching each half cycle of each pole voltage to a predetermined fixed voltage limit of the power supply for a predetermined number of electrical degrees, resulting in step changes from a substantially sinusoidal changing waveform to the associated fixed limit voltage, to increase the maximum RMS pole-to-pole voltages obtainable from the unidirectional power supply,

said control means including a memory, with the desired maximum waveform of a pole voltage being stored in said memory,

said memory including first and second look-up tables, with the value of the changing portion of the pole voltage waveform being stored in the first look-up table, and with the value of the fixed portion of the pole voltage waveform being stored in the second look-up table.

4,656,573

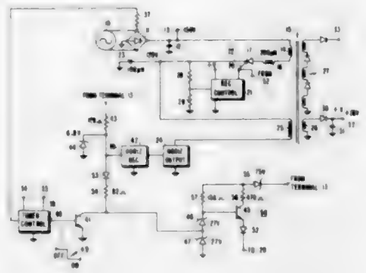
POWER SUPPLY HAVING ON-OFF CONTROL

Mu S. Lee, Taipei, Taiwan, assignor to RCA Corporation, Princeton, N.J.

Filed May 12, 1986, Ser. No. 862,027

Int. Cl.⁴ H02M *3/315*

U.S. Cl. 363—49 **7 Claims**



1. A power supply for a video display apparatus comprising:

a source of unregulated voltage;

regulator means incorporating a controllable switch means having an input terminal coupled to said source of unregulated voltage, an output terminal and a control terminal responsive to an input signal for rendering said switch means conductive;

a capacitor coupled to said switch means output terminal;

start-up means coupled to said switch means control terminal and responsive to a selectable video display apparatus enabling signal for applying a temporary input signal to said control terminal for rendering said switch means conductive such that a voltage is established across said capacitor; and

means responsive to said voltage across said capacitor for applying normal input signals to said control terminal, said start-up means being responsive to said voltage across said capacitor for becoming disabled.

4,656,574

LOGIC SIGNAL MULTIPLIER CIRCUIT

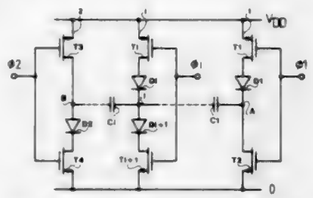
Francois H. Salchli, Neuchatel, Switzerland, assignor to Centre Electronique Horloger, Switzerland

Filed Sep. 17, 1984, Ser. No. 651,335

Claims priority, application Switzerland, Sep. 21, 1983, 5127/83

Int. Cl.⁴ H02M *7/25*

U.S. Cl. 363—60 **14 Claims**



1. A voltage multiplier circuit for providing an alternating output voltage comprising:

a first complementary MOS transistor inverter stage coupled between terminals of a source of supply voltage and having a control input terminal and an output node;

at least one second complementary MOS transistor inverter stage coupled between said terminals of the source of supply voltage and having a control input terminal and an output node;

a first capacitor coupled between the output nodes of said first and said at least one second inverter stage; and

means for applying alternating control signals to the control inputs of said first and said at least one second inverter stages such that said capacitor charges during a first phase to produce a voltage at the output node of said first inverter stage which is approximately equal to said supply voltage, said capacitor charges during a second phase to produce an increased voltage at the output node of said first inverter stage which has a value greater than said supply voltage, and said output node of said first inverter stage is coupled during a third phase to decrease the voltage at said output node of said first inverter stage to substantially zero, whereby said output nodes of said first and second inverter stages produce alternating output voltages having peak to peak values substantially higher than said supply voltage.

4,656,575

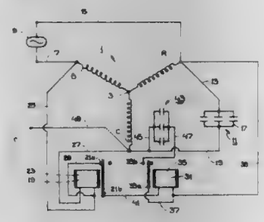
SINGLE PHASE TO THREE PHASE DYNAMOELECTRIC CONVERTER

Reed West, 3026 Quail Rd., Escondido, Calif. 92026

Filed Apr. 18, 1986, Ser. No. 853,652

Int. Cl.⁴ H02M *5/32*

U.S. Cl. 363—150 **7 Claims**



1. A single phase to three-phase dynamoelectric converter for starting and running a plurality of three-phase motors or like three-phase operating loads from a single-phase power supply, said converter comprising:

(a) a three-phase electric motor/generator comprising first, second and third Y-wound stator windings adapted to have said first and second windings connected to a suitable source of single-phase power;

(b) run capacitor means connected between said first powered stator winding and said third unpowered stator winding to develop a voltage in said third winding at a phase angle different from the phase angles in said first and second powered windings;

(c) a potential-type relay comprising a set of normally closed contacts and a winding to open them, said winding connected between said second and third stator windings;

(d) a slave relay comprising a set of normally open contacts and a winding to close them, said slave relay winding connected between said first stator winding and said potential relay winding through said set of normally closed potential relay contacts; and,

(e) start capacitor means, connected between said third, unpowered stator winding and one of said slave relay open contacts, adapted to provide immediate capacitor-phase shifted starting power to said third stator winding when said slave relay contacts close upon said slave relay winding becoming energized by the initial voltage increase developed between said second and third stator windings when external single-phase power is applied thereto, and wherein said slave relay contacts are adapted to open and disconnect said starting capacitor means when the voltage developed between said second and third stator windings reach a level sufficient to energize said potential relay windings to open said relay contacts, to allow said motor/generator to run under balanced power and produce balanced three-phase power to be drawn from all three stator windings for use in driving external three-phase motors.

4,656,576

CONTROL SYSTEM FOR A CHASSIS DYNAMOMETER

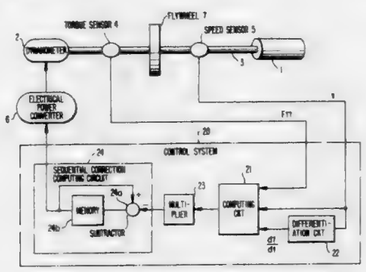
Shigeyuki Kawarabayashi, Kyoto, Japan, assignor to Horiba Ltd., Kyoto, Japan

Filed Jul. 24, 1984, Ser. No. 634,117

Claims priority, application Japan, Aug. 2, 1983, 58-142224

Int. Cl.⁴ G06F *15/20;* **G01M** *15/00*

U.S. Cl. 364—148 **1 Claim**



1. A control system for a chassis dynamometer having a torque sensor and a speed sensor for respectively providing torque and speed signals with respect to said dynamometer, said control system comprising:

a differentiator means connected to said speed sensor for differentiating said speed signal and for producing a differential speed signal corresponding thereto;

a computing means connected to said speed and torque sensors and said differentiator means for receiving said speed and torque and differentiated speed signals and for providing a computed output signal therefrom corresponding to a gradient of an evaluation function on the basis of said received signals;

a multiplier means connected to said computing means for multiplying said computed output signal by a constant and for producing an output signal corresponding thereto;

a sequential correction computing means connected to said multiplier means for producing a control signal for controlling said dynamometer through a power converter means, said correction computing means comprising a subtracting means connected to a memory means, said memory means storing an output signal from said subtractor means and outputting a stored signal to both said power converter means and to an input of said subtracting means, another input of said subtracting means being connected to said multiplier means for receiving an output signal therefrom such that said subtracting means produces a signal which is fed to said memory means and corresponds to a difference between said signal output from said multiplier means and said stored signal output from said memory means, wherein said evaluation function is reduced to a minimum by the steepest descent method such that fluctuations in acceleration or deceleration of a system mechanically connected to said dynamometer and corresponding to fluctuations in forces from said system are absorbed by said dynamometer.

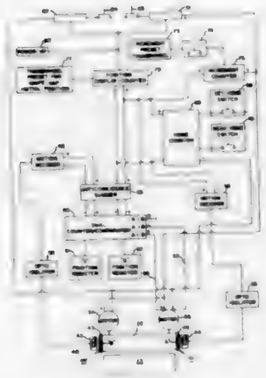
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4,656,577

PRECISION, FULLY CONTROLLED, METERING BLADE POSITIONING SYSTEM

Kenneth W. Herman, 6 Goldman Rd., Orange, Conn. 06477

Filed Mar. 29, 1985, Ser. No. 717,337
Int. Cl.[4] G06F *15/46*; B41F *31/00*
U.S. Cl. 364—167 16 Claims



1. A precision positioning system for maintaining two cooperating elements in perfectly aligned, juxtaposed, spaced parallel relationship along their entire length comprising:

A. a first element comprising an elongated cylindrically shaped roller member,
   1. supportingly mounted along the central axis thereof, and
   2. journaled for rotation about its central axis;

B. a second element comprising an elongated member
   1. mounted in juxtaposed, spaced, cooperating relationship with said first element, and
   2. supportingly retained in position at the opposed terminating ends thereof;

C. two separate, independent drive means, each being controllably engaged with opposed ones of said support ends of the second element for movement of said end independently of the movement of the opposed end;

D. two separate, independent, precision, movement measuring means,
   1. each being mounted at opposed ends of said second element for precisely and independently measuring the distance through which said end of said second means moves, and
   2. generating signals directly corresponding to the distance measured; and

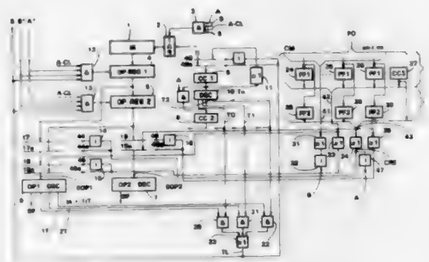
E. control means
   1. interconnected with said precision movement measuring means and said drive means, and
   2. responsive to the signals generated by the movement of said second element for controllably moving the drive means in order to assure each end of said second element is moved into a precisely desired position, assuring that the second element is in juxtaposed, spaced, perfectly parallel, aligned relationship with said first element.

4,656,578

DEVICE IN THE INSTRUCTION UNIT OF A PIPELINE PROCESSOR FOR INSTRUCTION INTERRUPTION AND REPETITION

Herbert Chilinski; Klaus J. Getzlaff, both of Schoenaich; Johann Hajdu, and Stephan Richter, both of Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1984, Ser. No. 646,873
Claims priority, application European Pat. Off., Sep. 16, 1983, 83109176.4
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 5 Claims



1. In an instruction unit of a pipeline processor, a device means for interrupting an execution of an instruction in response to an occurrence of an event and for repeating the execution of said instruction following the resolution of said event, said event being characterized by the generation of an event signal, said device means comprising:

first operation register means for storing said instruction, said instruction being maintained in said first operation register means in response to said event signal;

first instruction cycle counter means for providing a count of machine cycles relating to the execution of said instruction stored in said first operation register means, the contents of said first instruction cycle counter means being maintained in response to said event signal;

second operation register means responsive to said event signal for storing further instructions and control information;

second instruction cycle counter means for providing a count of machine cycles relating to the execution of said further instruction stored in said second operation register means;

operation decoder means for decoding an instruction;

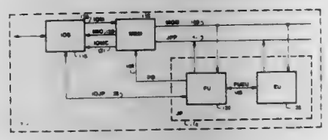
switch means interconnected between said operation decoder means and said first operation register means, said first instruction cycle counter means, said second operation register means and said second instruction cycle counter means and responsive to said event signal for transferring said further instructions and control information and said count from said second operation register means and said second instruction cycle counter means to said operation decoder means in response to said event signal.

4,656,579

DIGITAL DATA PROCESSING SYSTEM HAVING A UNIQUELY ORGANIZED MEMORY SYSTEM AND MEANS FOR STORING AND ACCESSING INFORMATION THEREIN

Brett L. Bachman, Boston; David H. Bernstein, Ashland; Richard G. Bratt, Wayland, all of Mass.; Gerald F. Clancy, Saratoga, Calif.; Edward S. Gavrin, Lincoln, Mass.; Ronald H. Gruner, Cary; Thomas M. Jones, Chapel Hill, both of N.C.; Lawrence H. Katz, Oregon City, Oreg.; Craig J. Mundie, Cary, N.C.; John F. Pilat, Raleigh, N.C.; Michael S. Richmond, Pittsboro, N.C.; Stephen I. Schleimer, Chapel Hill, N.C.; Steven J. Wallach, Saratoga, Calif., and Walter A. Wallach, Jr., Raleigh, N.C., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 266,404, May 22, 1981, abandoned.
This application Feb. 8, 1985, Ser. No. 699,240
Int. Cl.[4] G06F *9/10*
U.S. Cl. 364—200 14 Claims



1. A digital data processing system comprising:

universal memory means for storing and providing items of data, said data items including names representing other data items, said universal memory means including name tables containing name table entries corresponding to said names, each name table entry comprising data containing information for providing a logical address of data items represented by said names, said universal memory means including

memory organization means for organizing said universal memory means into objects permanently identified by unique identifiers, each said data item being contained in an object and being addressable by a logical address comprising data specifying the unique identifier identifying said object and the location of said data item in said identified object;

said objects including data objects containing data and procedure objects containing at least instructors and names;

processor means connected to said universal memory means for processing said data items, said processor means including

name interpretation means for providing logical addresses of data items to be processed by said processor means, said name interpretation means comprising:

means for accessing a name from said memory means;

means responsive to said accessed name for providing the name table entry corresponding to said accessed name;

means responsive to said name table entry for resolving the data in said name table entry, said resolution thereby providing the logical address of the data item represented by the name accessed from said memory means; and

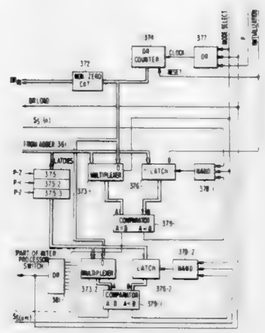
further wherein said processor means and said memory means further comprise: stack means responsive to certain of said instructions for storing information relating to the current state of execution of said instructions.

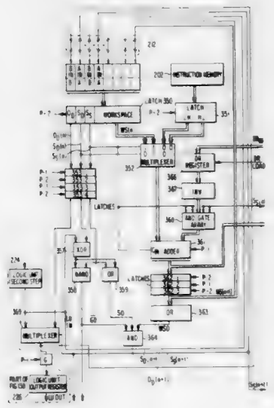
4,656,580

LOGIC SIMULATION MACHINE

Robert B. Hitchcock, Sr., Binghamton, and Matthew C. Graf, Highland, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,408
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—200 21 Claims





13. A logic function simulator comprising a plurality of basic processors, a control processor, and an interprocessor switch interconnecting said basic processors and said control processor, each of said basic processors comprising:

means for storing delay times for each logic function simulated by that basic processor;

means operating in response to said storing means for determining a time to a next successive logic operation for each said simulated logic function in accordance with a corresponding delay time;

means operating in response to said time determining means for determining a minimum work space value as a minimum time to a next successive logic operation among all said simulated logic functions; and

means for advancing said basic processor in time sequence by a global minimum work space value, said global minimum work space value being a minimum one of minimum work space values among all said basic processors.

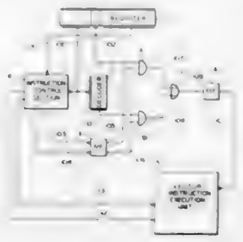
VOL 1077 ISS 1 AP 7 1987 UMI

4,656,581

VECTOR MASK CONTROL SYSTEM

Katsuaki Ohwada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 16, 1984, Ser. No. 661,462
Claims priority, application Japan, Oct. 20, 1983, 58-196438
Int. Cl.⁴ G06F *1/00*
U.S. Cl. 364—200 **5 Claims**



1. A vector mask control system comprising:

A. a vector instruction executing means comprising:

(1) operand holding means for holding a plurality of operands each comprising a plurality of elements;

(2) vector mask information holding means connected to said operand holding means for holding vector mask information comprising a plurality of elements associated with respective elements of the operands; and

(3) vector mask operation instruction executing means connected to said operand holding means and said vector mask information holding means for accessing respective elements of an operand sequentially from said operand holding means and, at the same time, accessing the elements of the respective vector mask information sequentially from said vector mask information holding means so as to perform an operation on each of the elements of the accessed operand in association with the successive accessed elements of the vector mask information;

B. identifying means for identifying an instruction intended for a vector mask operation;

C. first operation indicating means connected to said identifying means for indicating validity of a vector mask operation specified by a given area of an instruction identified by said identifying means and, thereby, commanding a vector mask operation;

D. holding means for holding a mode indicator which indicates a valid or invalid state of a vector mask operation;

E. second operation indicating means connected to said identifying means and said holding means for indicating a valid vector mask operation in response to an output from said identifying means, and a mode indicator output from said holding means; and

F. means for causing the vector instruction executing means connected to said first and second operation indicating means to execute the vector mask operation in response to an output from said first or second operation indicating means.

4,656,582

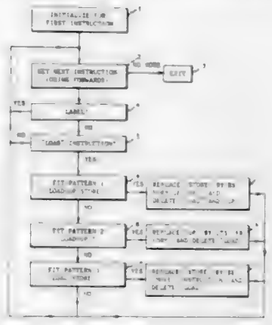
GENERATING STORAGE REFERENCE INSTRUCTIONS IN AN OPTIMIZING COMPILER

Gregory J. Chaitin, Yorktown Heights; Martin E. Hopkins, Chappaqua; Peter W. Markstein, Yorktown Heights, and Henry S. Warren, Jr., Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1985, Ser. No. 697,675
Int. Cl.⁴ G06F *1/00*
U.S. Cl. 364—300 **7 Claims**

1. A method for use in an optimizing compiler for generating code for subsequent machine execution which is more efficient in terms of storage references, said method comprising,

first generating intermediate code that completely avoids the SR, RS and SS instructions for arithmetic-like data, said code referring to main memory only via "load" and "store" instructions, and wherein all computations are done in registers (register ops) using symbolic RR instruc-



tions, optimizing the program by standard techniques including commoning, code motion out of loops, strength reduction, dead code elimination, and

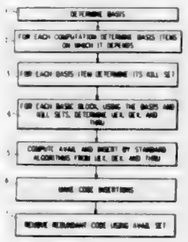
locating predetermined patterns in the code, comprising a 'load' op followed by a 'register' op or a 'store' op referring to the same object(s) and replacing these patterns with a shorter instruction sequence of SR, RS or SS instructions if said predetermined patterns exist.

4,656,583

METHOD FOR IMPROVING GLOBAL COMMON SUBEXPRESSION ELIMINATION AND CODE MOTION IN AN OPTIMIZING COMPILER

Marc A. Auslander, Millwood; John Cocke, Bedford, and Peter W. Markstein, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1984, Ser. No. 640,283
Int. Cl.⁴ G06F *9/44*
U.S. Cl. 364—300 **8 Claims**



1. A method in an electronic computing system within the code optimization phase of an optimizing compiler resident therein for doing global common subexpression elimination and code motion procedures, said method operating on an intermediate language representation of a program in which the basic blocks have been identified,

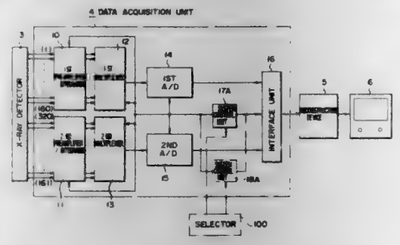
separately identifying in said system 'basis' items in each basic block for subsequent processing in said system wherein each 'basis' item comprises an operand which has not been previously defined within that block.

4,656,584

X-RAY TOMOGRAPHIC APPARATUS AND METHOD USING PARALLEL A/D CONVERSIONS OF DETECTOR CHANNEL SIGNALS

Kenichiro Katsumata, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 3, 1984, Ser. No. 637,275
Claims priority, application Japan, Oct. 31, 1983, 58-205680
Int. Cl.⁴ G06F *15/42*
U.S. Cl. 364—414 **18 Claims**



1. An X-ray scanning apparatus comprising:

generation means for producing a fan-shaped X-ray;

detection means including a plurality of detection channels having at least central and peripheral channel regions with respect to an entire detection region thereof, for detecting said fan-shaped X-ray as an X-ray transmission image that has penetrated through an object under investigation so as to transform said X-ray transmission image into X-ray transmission data signals, said detection channels being electrically divided into at least first and second subchannel groups, each of which involves said central and peripheral channel regions;

data acquisition means including at least first and second multiplexers respectively connected to one of said at least first and second subchannel groups, at least first and second A/D converters each respectively connected to said at least first and second multiplexers, and a system control unit connected to said at least first and second multiplexers and A/D converters, whereby A/D conversions of said at least first and second A/D converters are controlled under said system control unit in such a manner that said X-ray transmission data signals derived from said peripheral channel regions of said detection channels are converted prior to conversion of X-ray transmission signals from said central regions;

reconstruction means for reconstructing an X-ray tomographic image of the object by receiving a plurality of said X-ray transmission data signals that have been converted by said at least first and second A/D converters; and

monitor means for displaying said tomographic image of the object.

4,656,585

AIRCRAFT FLIGHT DATA RECORDER DATA ACQUISITION SYSTEM

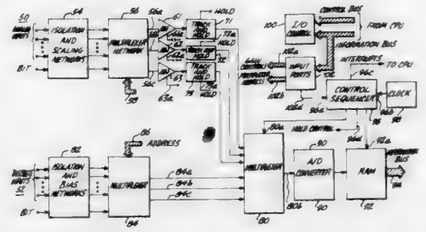
Edward A. Stephenson, Sequamish, Wash., assignor to Sundstrand Data Control Inc., Redmond, Wash.

Filed Feb. 3, 1984, Ser. No. 576,538
Int. Cl.⁴ G06F *15/20*
U.S. Cl. 364—424 **30 Claims**

1. A data acquistion system for an aircraft flight data recorder responsive to a central processor unit (CPU) for processing a plurality of input signals to provide a digitally encoded signal representative of a selected set of input signals each time the CPU provides a simple command signal, said digitally encoded signal being used by said CPU for generation of recorded flight data information, said data acquisition system comprising:

multiplexing means for outputting said selected set of said input signals, each selected input signal set being output responsive to a corresponding address command signal;

logic means responsive to said single command from said CPU for producing each address command signal; and



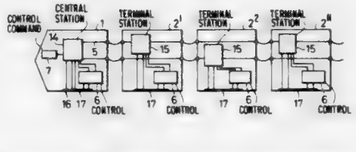
processing means for processing each signal in a selected signal set to supply said digitally encoded signal representative of said selected set of input signals.

4,656,586

AUTOMATIC VEHICLE TESTING APPARATUS

Hajime Ochiai; Kenji Morihara, and Hidetoshi Honma, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 6, 1984, Ser. No. 638,139
Claims priority, application Japan, Aug. 9, 1983, 58-146103
Int. Cl.⁴ G05B *23/02*; B61L *15/00*
U.S. Cl. 364—424 **3 Claims**



1. An automatic vehicle testing apparatus for testing control units on a plurality of vehicles, said plurality of vehicles including a first vehicle having a central station and an associated control unit and at least one second vehicle having a terminal station and an associated control unit, said control units being of the type responsive to response signals for providing operating signals as an output, said apparatus comprising:

response signal generating means at each vehicle coupled to the central or terminal station of its respective vehicle and to the control unit of its respective vehicle and responsive to a test signal for providing a response signal to said control unit;

measuring means at each vehicle, coupled to said central or terminal station of its respective vehicle and coupled to the control unit of its respective vehicle, and responsive to an operating signal output from said control unit for generating operating condition data indicative of the operating condition of its respective control unit;

first means at said central station for transmitting a test signal to each terminal station;

second means, at said central station and at each terminal station, responsive to the sending of said test signal by said first means for applying said test signal to the associated response signal generating unit, whereby each response signal generating unit provides a response signal to its associated control unit to cause said associated control unit to provide an operating signal to its associated measuring unit;

means in the terminal station at each second vehicle for receiving the operating condition data from its respective

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measuring unit means and for forwarding said operating condition data to said central station; and

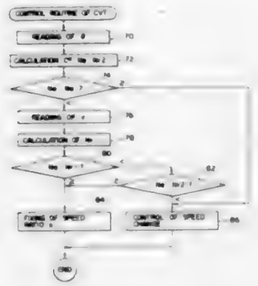
means coupled to said central station for receiving and processing said operating condition data.

4,656,587

APPARATUS FOR CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION

Akisori Ozasa; Takao Niwa, and Takeshi Goto, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 20, 1984, Ser. No. 632,663
Claims priority, application Japan, Aug. 22, 1983, 58-151730
Int. Cl.⁴ B60K *41/12*
U.S. Cl. 364—424.1 **1 Claim**



1. A continuous variable transmission for a vehicle provided with an internal combustion engine, which engine has a throttle valve, said transmission comprising:

transmission means arranged between the engine and the vehicle for obtaining a continuously changeable transmission ratio;

means for controlling a desired speed ratio of the transmission means;

means for storing a map of engine speed versus positions of said throttle valve for providing the minimum fuel consumption;

meand for detecting an actual position of the throttle valve;

means for detecting an actual engine speed;

means for detecting an actual vehicle speed;

first calculating means for calculatng, by use of said map, a desired engine speed value corresponding to the detected throttle position;

means for determining a first operating area of the engine speed Nr2 based upon throttle opening, which area is spaced from said desired engine speed and is capable of providing sufficeint power to attain a smooth acceleration at fixed transmission ratio, due to an absence of transmission losa;

means for determining a second operating area of an engine speed Nr1 based upon a vehicle speed where the engine speed is high in relation to vehicle speed, which second area is spaced from said desured engine speed and is capable of providing sufficient power to obtain a smooth acceleration at a fixed transmission ratio together with the absence of transmission loss;

means for providing a signal to the transmission varying means for maintaining a current fixed speed ratio when the engine is operating in said first or second area; and

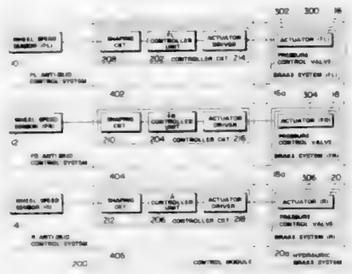
means for providing a signal to the transmission varying means for varying the speed ratio so that the actual engine speed corresponds to the desired engine speed when the engine is in an area other than said first and second areas.

4,656,588

ANTI-SKID BRAKE CONTROL SYSTEM WITH A PLURALITY OF INDEPENDENTLY OPERATIVE DIGITAL CONTROLLERS

Jun Kubo, Hino, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 17, 1984, Ser. No. 601,295
Int. Cl.⁴ B60T *8/32*
U.S. Cl. 364—426 **22 Claims**



13. An anti-skid brake control system for an automotive vehicle comprising:

a hydraulic brake system including wheel cylinders, one wheel cylinder associated with each of a driven and undriven vehicle wheels, first and second pressure control valves, each associated with one of the wheel cylinders associated with first and second undriven wheels, and a third pressure control valve associated with the wheel cylinders associated with said driven wheels, each of said first, second and third pressure control valves being operative to increase the fluid pressure in the corresponding wheel cylinder in a first position, to decrease the fluid pressure in said corresponding wheel cylinder in a second position and to hold the fluid pressure in said corresponding wheel cylinder constant in a third position;

a first wheel speed sensor producing first sensor signal pulses representative of the rotation speed of said first undriven wheel;

a second wheel speed sensor producing second sensor pulses representative of the rotation speed of said second undriven wheel;

a third wheel speed sensor producing third sensor signal pulses representative of the average rotation speed of said driven wheels;

a first controller associated with said first pressure control valve for controlling the latter, said first controller being responsive to said first sensor signal pulses to record an input timing of said first sensor signal pulses, to derive brake control variables including wheel speed and wheel acceleration for anti-skid brake control of said one of the undriven wheels, and to produce a first control signal which actuates said first pressure control valve to one of said first, second and third positions so as to adjust the rotation speed of said first undriven wheel toward an optimal relationship with the vehicle speed;

a second controller associated with said second pressure control valve for controlling the latter, said second controller being responsive to said second sensor signal pulses to record an input timing of said second sensor signal pulses, to derive brake control variables including wheel speed and wheel acceleration for anti-skid brake control of said the other undriven wheel, and to produce a second pressure control signal which actuates said second pressure control valve to one of said first, second and third positions so as to adjust the rotation speed of said second undriven wheel toward said optimal relationship to the vehicle speed;

a third controller associated with said third pressure control valve for controlling the latter, said third controller being responsive to said third sensor signal pulses to record an input timing of said third sensor signal pulses, to derive brake control variables including wheel speed and wheel acceleration for anti-skid brake control of said driven wheels, and to produce a third control signal which actuates said third pressure control valve to one of said first, second and third positions so as to adjust the rotational speed of said driven wheels toward said optimal relationship to the vehicle speed; and

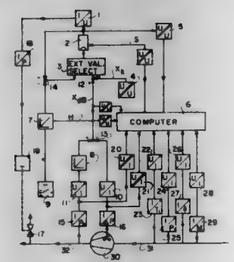
means, associated with said first, second and third controllers and responsive to failure of any one of said wheel speed sensors for performing a back-up operation in which the controller corresponding to the failing wheel speed sensor is operated for disabling anti-skid control and allow manual braking control immediately upon failure of the failing wheel speed sensor, and the other controllers are operated for disabling anti-skid control and allow manual braking control when said other controllers complete a current cycle of anti-skid control.

4,656,589

METHOD AND APPARATUS FOR OPERATING TURBO COMPRESSOR USING ANALOG AND DIGITAL CONTROL SCHEMES

Rolf Albers, and Wilfried Blotenberg, both of Oberhausen, Fed. Rep. of Germany, assignors to M.A.N.Maschinenfabrik Augsburg-Nürnberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 347,337, Feb. 9, 1982, abandoned. This application Dec. 18, 1984, Ser. No. 682,930
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105376
Int. Cl.⁴ F04D *27/02*; G05B *13/02*; G05D *16/20*
U.S. Cl. 364—431.02 **12 Claims**



1. A method of operating a turbo compressor, particularly one of large capacity, which compressor has a characteristic pressure-flow curve with a basic linear blowoff line (B) which is below an optimum blowoff line (A), and using an analog control system (10. 11, 13) responsive to the values representing the basic linear blowoff line, calculation means (6) responsive to values representing the optimum blowoff line, and an analog controller (2) for controlling at least one blowoff valve (17), comprising:

continuously measuring a rate of flow through the compressor and one of a discharge pressure and compression ratio of the compressor;

comparing values obtained by said continuous measuring with permissible values of the flow rate and one of the discharge pressure and compression ratio to generate a basic error signal value (X_{db}) for the controller;

generating values representing the optimum blowoff line using the calculator means;

generating an optimum error signal (X_k) using the calculator means which represent a difference between the basic and optimum blowoff line values at an operating pressure for the compressor;

superimposing the optimum error signal on the basic error signal to generate a control signal for the analog controller; and

reducing the optimum error signal to zero if a fault occurs in the calculator means whereby the analog control system applies the basic error signal even with failure of the calculator means.

7. A device for controlling the operation of a turbo compressor having a characteristic pressure-flow curve comprising:

first means for continuously measuring a flow rate of the compressor;

second means for measuring one of a discharge pressure and a compression ratio of the compressor;

an analog controller for controlling the compressor, being responsive to values representing a basic linear blowoff line on the pressure-volume curve, the basic blowoff line being below values representing an optimum blowoff line on the curve; and

a computing circuit connected to said analog controller for computing an error signal representing a difference between values representing the basic and optimum blowoff lines at a working pressure and operable to apply the error signal to said analog controller to control the compressor to an optimum extent.

4,656,590

METHOD AND APPARATUS FOR MAKING PATTERNS FOR EYEGLASSES

Ronald Ace, 5200 J. Philadelphia Way, Lanham, Md. 20706

Filed Nov. 7, 1984, Ser. No. 669,167
Int. Cl.⁴ G06F *15/46*; G06G *7/64*; B24B *49/00, 7/00*
U.S. Cl. 364—474 **23 Claims**

1. A method for producing lenses for eyeglass frames, comprising;

storing in a central computer memory frame peripheral shape data for each of a multiplicity of eyeglass frame styles and sizes;

selecting a desired style and size of an eyeglass frame;

measuring the location of the optical center of a lens to be mounted in the frame;

determining the decentration of the lens optical center with respect to the geometric center of the selected frame;

calling up from the central computer memory previously stored frame shape data corresponding to the selected frame;

transferring the frame shape data to a pattern cutter controller;

cutting a frame pattern for the selected style and size frame;

comparing the cut frame pattern with the selected frame;

edge grinding a lens blank to the size and shape of the lens pattern, using a common center of rotation for both the frame pattern and the lens blank, whereby a shaped lens is produced; and

mounting the shaped lens in said selected frame.

4,656,591

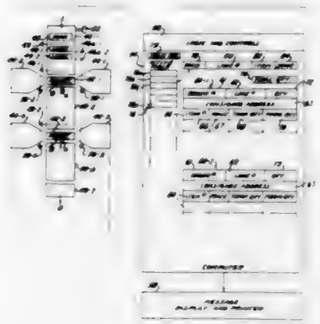
ORDER PROCESSING METHOD AND APPARATUS (II)

Stanley Goldberg, Roseland, N.J., assignor to Goody Products, Inc., Kearny, N.J.

Continuation of Ser. No. 485,841, Apr. 18, 1983, abandoned, which is a continuation-in-part of Ser. No. 463,487, Feb. 3, 1983, abandoned. This application Sep. 12, 1985, Ser. No. 776,983

Int. Cl.[4] G06F *15/20, 15/226, 15/24*

U.S. Cl. 364—478 **18 Claims**



1. Apparatus for processing a group of orders of various customers, wherein each order typically includes requirements for specified items, and where various items are supplied to the apparatus, all items of the same variety having corresponding characterizations that differ from the characterizations of items of different varieties, said apparatus including

(i) order recording means including means for storing customer-related data for each order of the group and means for storing the requirements of each of the orders for the specified items of the order,

(ii) scanning means for registering the characterization of each item supplied to the apparatus,

(iii) labeling means for applying customer-related data to at least some of the supplied items,

(iv) allocating means jointly responsive to the scanning means and the order recording means for allocating each scanned item to one of the orders, if any, among those orders for which there is a stored requirement for the same variety of item as the scanned item, said allocating means comprising (a) means for selecting one of said orders, if any, having such stored requirement, and (b) means for controlling said labeling means to label each item whose registered characterization corresponds to a stored requirement in the selected order with customer-related data in accordance with the selected order, and

(v) accounting means for limiting the allocation of items scanned by the scanning means to those orders represented in said order registering means whose storing means contain requirements for the same variety of item as the scanned item exceeding prior allocations of such variety of items to such orders, respectively, in processing the group of orders.

4,656,592

VERY LARGE SCALE INTEGRATED CIRCUIT SUBDIVIDED INTO ISOCHRONOUS REGIONS, METHOD FOR THE MACHINE-AIDED DESIGN OF SUCH A CIRCUIT, AND METHOD FOR THE MACHINE-AIDED TESTING OF SUCH A CIRCUIT

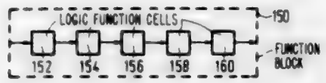
Lambertus Spaanenburg, Hengelo; Peter B. Duin, Nijmegen; Roberto Woudsma, Eindhoven, and Arie A. van der Poel, Enschede, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1984, Ser. No. 659,395

Claims priority, application Netherlands, Oct. 14, 1983, 8303536

Int. Cl.[4] G06F *1/00, 13/00, 15/60*

U.S. Cl. 364—490 **16 Claims**



1. A very large scale integrated circuit comprising a plurality of function cells which are connected to one another and to the environment by means of information connections, wherein said function cells are grouped in a number of $m \geq 3$ function blocks, the integrated circuit which is formed on a single chip being subdivided into m isochronous regions, each of which comprises one function block, each isochronous region comprising for each information connection a communication cell between a function cell which is situated within the isochronous region and any function cell which is situated outside said isochronous region, said communication cell being connected in the relevant information connection so that any information connection between two function cells which are situated in different isochronous regions always comprises a series connection of two communication cells, two communications cells thus paired being interconnected by an information connection and at least two synchronization connections for by means of bidirectional handshake signals under local control realizing as asynchronous information transport between said paired communication cells, and therefore between the associated isochronous regions, each information connection from any function cell to the environment comprising a further communication cell for the exchange of information and synchronization signals with the environment, the function cells within a function block forming a coherent first network while the function blocks within the integrated circuit form a coherent second network.

9. An integrated circuit as claimed in claim 1 or 2 comprising at least one isochronous region including means for supplying a test pattern or result pattern received from another isochronous region bit by bit to a third isochronous region when the integrated circuit is in a test state.

4,656,593

MULTI-FUNCTION LOAD CONTROLLER FOR CARRIER LOAD CONTROL SUBSYSTEM

James S. Gleba, Cromwell; James A. Stamatien, West Haven, and Gregory B. Fortune, Unionville, all of Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

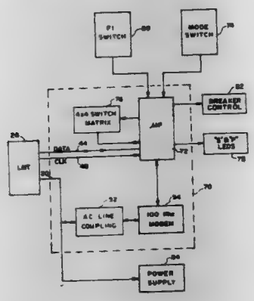
Filed May 20, 1985, Ser. No. 736,171

Int. Cl.[4] G01R *21/00;* **G06F** *15/56*

U.S. Cl. 364—492 **32 Claims**

1. In a bi-directional communication and control system,

a multipurpose two-way communication device coupled to a communication network line for receiving digital messages from and transmitting digital messages to said network, said device being operable in a first mode in which said device includes means for receiving and decoding a digital signal message from said network line and means responsive to the decoded message for executing a control function in accordance with an instruction contained in the decoded message, said device also being operable in a second mode in which said device includes means for receiving and storing a digital message from a master controller which includes an address portion and a function portion, means for generating a series of error checking bits the logic value of which is determined by the bits of said stored digital message, and means for developing a transmission output signal which includes at least the function portion of said stored digital message and said error checking bits.



4,656,594

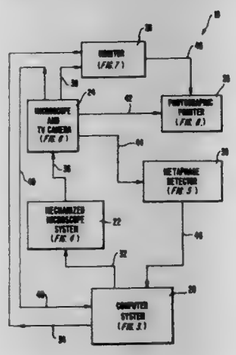
OPERATOR-INTERACTIVE AUTOMATED CHROMOSOME ANALYSIS SYSTEM PRODUCING A KARYOTYPE

Robert S. Ledley, Silver Spring, Md., assignor to National Biomedical Research Foundation, Washington, D.C.

Filed May 6, 1985, Ser. No. 730,421

Int. Cl.[4] G06F *15/46, 15/42;* **G06G** *7/60;* **G06K** *9/00*

U.S. Cl. 364—498 **14 Claims**



1. An operator-interactive automated chromosome analysis system for finding a chromosome spread disposed on a microscope slide and producing a karyotype, said system comprising:

a mechanized microscope stage on which the microscope slide is positioned for controlling microscope viewing of the chromosome spread;

a microscope positioned adjacent said mechanized microscope stage so that there is an optical pathway therebetween, said microscope providing a view of the chromosome spread and providing first and second optical outputs;

television camera means for receiving said first optical output and producing a corresponding video output;

monitor means connected to said television camera means and responsive to said video output for displaying a television image of said chromosome spread;

photographic printer means connected via a direct optical pathway to the second optical output of said microscope for producing a hardcopy representation of the chromosome spread;

metaphase detector means connected via a linear scanner optical pathway to said second optical output of said microscope for receiving optical data and for converting said optical data to digital data having a first logical state indicating absence of said chromosome spread and a second logical state indicating presence of said chromosome spread, said metaphase detector means processing said digital data so as to detect valid metaphase spreads within the chromosome spread; and

computer means connected to said metaphase detector means and having an interactive mode for notifying the operator of the detection of a valid metaphase spread, said computer means arranging all detected valid metaphase spreads in an order corresponding to a predetermined order of metaphase spreads naturally occurring in human beings;

said monitor means responding to commands from said computer means for displaying said detected valid metaphase spreads [redacted] arranged by said computer means, whereby to produce said karyotype.

4,656,595

METHOD AND A DEVICE FOR MONITORING LARGE METAL STRUCTURES

Harek Hognestad, Haslum, Norway, assignor to Seatralinstitutt for Industriell Forskning, Blindern, Norway

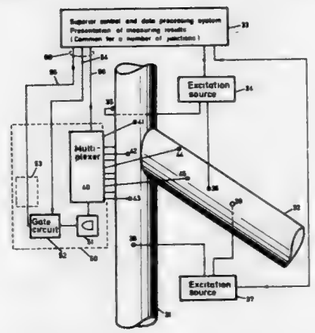
PCT No. PCT/NO83/00011, § 371 Date Dec. 8, 1983, § 102(e) Date Dec. 8, 1983, PCT Pub. No. WO83/03675, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 18, 1983, Ser. No. 571,876

Claims priority, application Norway, Apr. 19, 1982, 821257

Int. Cl.[4] G01N *29/04;* **G06F** *15/36*

U.S. Cl. 364—507 **18 Claims**



1. A method of monitoring large metal structure in order to detect and localize defects which occur in the course of the lifetime of the structure, said method comprising the steps of: supplying an electric current to the structure or to a section thereof an initially measuring the voltage drops between a plurality of pairs of discrete contact points thereon when the structure is in an initial condition and free from any defects; subsequently making similar measurements of voltage drops when using the structure; comparing the subsequent measure-

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ments with the initial measurements; wherein the structure or a section thereof is equipped with a large number of fixed discrete contact points arranged in a pattern with a relatively uniform distribution over all of the structure or over all of the section which is to be monitored, and wherein each of the measurements are performed by supplying an electric current through at least two contact points on the structure or section thereof so as to measure the voltage drop between selected pairs of contact points from among an essential portion or all of said contact points, and wherein the total picture of deviations between initial measurements and subsequently performed measurements are used in the detection and localization of defects; wherein the supplied electric current is a pulse shaped DC current with such a low frequency that transients which occur as the current rises or falls, die before the current alternates again.

4,656,596

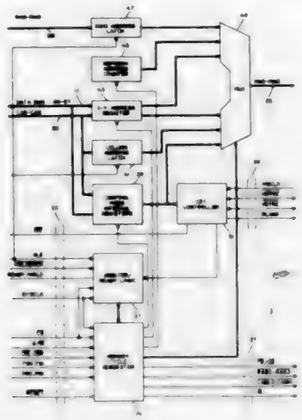
VIDEO MEMORY CONTROLLER

Robert C. Thaden, Houston; Jeffrey C. Bond, Sugarland, both of Tex.; John V. Moravec, Willow Springs, Ill.; Karl M. Guttag, Houston; Raymond Pinkham, Missouri City, both of Tex., and Mark Novak, Colorado Springs, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 23, 1984, Ser. No. 633,386

Int. Cl.⁴ G09G *1/02*; G06F *15/62*

U.S. Cl. 364—521 **7 Claims**



1. A video system comprising:

a data processor means for manipulating data in accordance with program instructions, said data processor means having a data bus, a first address bus and a control bus, said control bus for issuing data processor memory access requests;

a memory means connected to said data bus and having a second address bus, for storing and recalling data, including pixel image data corresponding to a visual image, in memory locations corresponding to addresses received from said second address bus;

a video system controller means connected to said data bus, said first address bus and said second address bus for controlling the address applied to said memory means via said second address bus, said video system controller means including

a refresh address counter means for storing an address for memory refresh,

a display update means for recalling said pixel image data from said memory means by sequential generation of addresses corresponding to said pixel image data in the order of display of pixels,

a multiplexer means connected to said first address bus, said second address bus, said refresh address counter and said display update means for connecting either an address received from said data processor means via said first address bus, said address stored in said refresh address counter, or said address generated by said display update means to said second address bus,

a memory cycle generator means connected to said memory means and to said multiplexer means for sequentially generating memory refresh requests during the active portion of a horizontal line and for generating display update memory requests during the inactive portion of a horizontal line, said memory cycle generator controlling memory access cycles by

controlling said multiplexer means to couple said address received from said data processor means via said first address bus to said second address bus during a data processor memory access cycle,

controlling said multiplexer means to couple said address stored in said refresh address counter means to said second address bus then incrementing said address stored in said refresh address counter means during a memory refresh cycle, and

controlling said multiplexer means to couple said address generated by said display update means to said second address bus during a display update access cycle, and

an arbiter means connected to said control bus and said memory cycle generator means for controlling said memory cycle generator means to perform only one of a data processor memory access cycle, a memory refresh cycle or a display update access cycle in accordance with received data processor memory access requests, memory refresh access requests and display update memory access requests, said arbiter means giving said display update memory access requests priority during the inactive portion of a horizontal line, giving said data processor memory access requests priority during an initial period of the active portion of a horizontal line and giving said memory refresh access requests priority during the final period of said horizontal line; and

a display means connected to said memory means for generating an operator perceivable visual display having plural horizontal lines corresponding to said pixel image data recalled from said memory means by said addresses generated by said display update means.

4,656,597

VIDEO SYSTEM CONTROLLER WITH A ROW ADDRESS OVERRIDE CIRCUIT

Jeffrey C. Bond, Sugarland, and Robert C. Thaden, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 23, 1984, Ser. No. 633,385

Int. Cl.⁴ G06F *3/14*, *3/153*

U.S. Cl. 364—518 **5 Claims**

1. A video system comprising:

a data processor means for manipulating pixel image data having a predetermined plural number of bits corresponding to a video image in accordance with program instructions, said data processor means having a read/write control line for indicating a read operation or a write operation, a data bus and a first address bus;

a memory means connected to said data bus and having a second address bus, for storing data at memory locations corresponding to the address supplied to said second address bus, said memory means having a plurality of memory planes, each memory plane having a separate memory write enable input, whereby pixel image data having said predetermined plural number of bits is stored at each memory location;

a video system controller means connected to said data bus, said first address bus and said second address bus for controlling the transfer of data between said data processor means and said memory means by control of the address applied to said memory means via said second address bus, said video system controller means further including

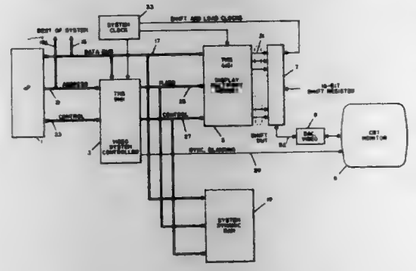
a plurality of output logic circuits, each connected to the memory enable input of one corresponding memory plane, each output logic circuit for providing a write enable signal to the corresponding memory plane,

a processor address register connected to said first address bus and said second address bus for receiving and temporarily storing an address from said data processor means on said first address bus and applying said address to said second address bus during a data processing access cycle,

an override means connected to said data bus, said read/write control line and said plurality of output logic circuits for controlling said plurality of output logic circuits to provide a write enable signal to selected memory planes of said memory in accordance with data received from said data processor means during a data processing access cycle when said read/write control line indicates a write operation,

a display update means for recalling said pixel image data from said memory means by sequential application of addresses to said second address bus corresponding to said pixel image data in the order of display of pixels; and

a display means connected to said memory means for generating an operator perceivable visual display corresponding to said video data recalled from said memory means via said display update means.



4,656,598

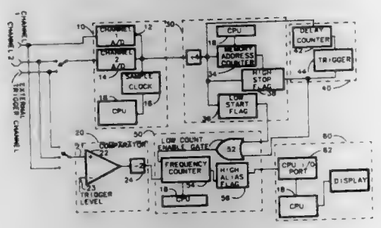
ALIAS DETECTOR FOR DIGITAL OSCILLOSCOPES

John R. Wilson, Colorado Springs, Colo., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Nov. 6, 1984, Ser. No. 668,776

Int. Cl.⁴ H03K *13/02*

U.S. Cl. 364—550 **12 Claims**



1. An alias detector for detecting and flagging incorrect electronic signal replication caused by using an insufficient number of sampling points, comprising:

frequency means for determining the fundamental frequency of an electronic signal in a system under test for a predetermined acquisition interval having a beginning and an end;

comparison means connected to the frequency means for determining whether a selected number of sampling points is greater than two times said fundamental frequency of said signal; and

flag means connected to said comparison means for indicating the result of the determination made by said comparison means.

4,656,599

ELECTRIC BALANCE

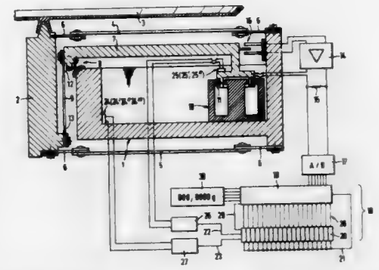
Erich Knothe, Bovenden; Franz-Josef Melcher; Jürgen Ober, both of Hardegsen; Christoph Berg, Adelebsen; Klaus Dardat, Nörten-Hardenberg; Eduard Bierich, Göttingen, and Günther Maaz, Uslar-Wiensen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 664,966

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340512

Int. Cl.⁴ G01G *7/00*; G01L *25/00*

U.S. Cl. 364—567 **17 Claims**



1. Electric balance with a measured value receiver for generating a weight-dependent signal, having a digital signal processing unit, with means for detecting disturbances which affect the measured value receiver (sensor) and with means for correcting errors of the measured value receiver resulting from these disturbances, characterized in that storage means (20) is present in the digital signal processing unit (18) to which digital data is continuously supplied and stored therefor a set time, whereby this data is derived from the particular output signal of sensor means (24', 24'', 24''', 25', 25''), and that the digital signal processing unit evaluates the data stemming from different times with set weighting factors and uses it to determine the corrections to be put on the output signal of the measured value receiver.

4,656,600

MIXING OF PRINTING INKS

David J. Swann, Girton, United Kingdom, assignor to Cherlyn Electronics Limited, Cambridgeshire, England

Filed Oct. 1, 1984, Ser. No. 656,322

Claims priority, application United Kingdom, Oct. 4, 1983, 8326495

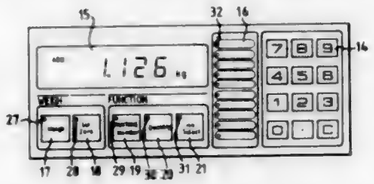
Int. Cl.⁴ G01G *19/22*, *23/30*

U.S. Cl. 364—567 **9 Claims**

1. A system for making a selected printing ink formulation from a plurality of printing ink formulations, each said formulation having predetermined proportions of constituent basic color inks by weight, the system comprising weighing means for weighing the constituent basic color inks, memory means

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for storing said predetermined proportions of each said plurality of formulations, said plurality of formulations stored in said memory means corresponding to a known color matching system with distinctive identification symbols such as numbers for each formulation, user interface means comprising a keyboard enabling a user to select one of said formulations, display means for displaying the weight of each constituent basic color ink to be added to said weighing means and for monitoring the weight addition of each successive constituent basic color ink, to enable the user to make said selected formulation, said user interface means including three function keys and said display means including an ink constituent display panel showing said constituent color inks of said known color matching system, a



first of said function keys being operative to enable a desired formulation symbol to be entered in said keyboard, a second of said function keys being operative to enable the desired weight of said formulation to be entered on said keyboard and a third of said keys being operative to cause said successive color constituent basic color inks to be displayed on said constituent display panel, said display of each constituent ink on said display panel being accompanied by an indication on said display means of the weight of that constituent basic ink to be added to said weighing means, whereby as each constituent basic color ink is added to said weighing means the displayed amount to be added correspondingly decreases until said display means indicates that no further amount of constituent basic inks need be added.

4,656,601

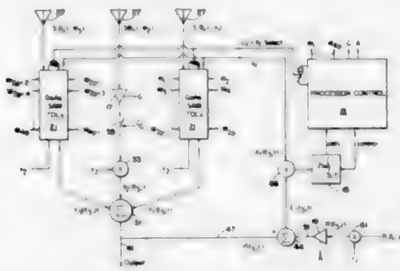
LARGE BANDWIDTH SAW ADAPTIVE PROCESSOR ARRANGEMENT

Sears W. Merritt; Thomas W. Grudkowski, and Gary K. Montress, all of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 29, 1984, Ser. No. 665,818

Int. Cl.⁴ G06G *7/195*

U.S. Cl. 364—821 **4 Claims**



1. An arrangement for selectively processing a plurality of complex array values employed as corresponding first and second tap weights in a first surface acoustic wave (SAW) device comprising a corresponding first and second adjacent series of field effect transistor (FET) elements effective for mixing oppositely launched radio frequency (RF) signals directed toward each other and said FET elements, said tap weights applied to corresponding ones of said FET elements, wherein said arrangement is characterized by an additional SAW device in parallel with said first SAW device and having an equivalent set of series FET elements and similarly subject to equivalent ones of said oppositely launched RF signals, and is further characterized in that the outputs of said corresponding first and second adjacent series of FET elements are combined in a phase quadrature output, whereby the tap weights of said first SAW device are addressable by applying a signal on a corresponding one of said FET elements of said parallel SAW device.

4,656,602

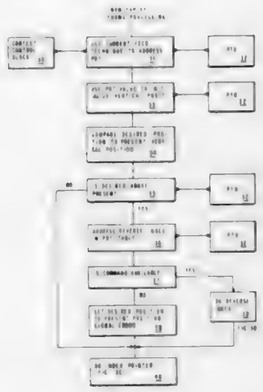
METHOD OF CONTROL PLACEMENT OF IMAGE OF DOCUMENT TO BE PRINTED ON PAPER IN AN INTERACTIVE TEXT PROCESSING SYSTEM

Philip T. Berkland, Leander; Allen W. Heath, Cedar Park, and Grady K. Waddell, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1984, Ser. No. 664,178

Int. Cl.⁴ G06F *3/12*

U.S. Cl. 364—900 **15 Claims**



1. A method to assist the operator of an interactive text processing system having a printer to control the placement by said system of a document image on a sheet of paper in said printer, said printer having a home print position which is offset a predetermined distance from at least the left edge or top edge of said paper after said paper is positioned to the initial print position of said printer, said document image comprising a text image including a first line that has a predetermined position relative to at least the left side or top side of said document image said method comprising the steps of,

(a) interactively entering into said system the initial paper positioning parameters of said printer, including said predetermined distance and

(b) adjusting the distance of the one side of said document image relative to a corresponding side of said text image to reflect said predetermined distance entered into said system in step (a) to cause said one side of said document image to coincide with the corresponding edge of said paper when said document image is printed.

4,656,603

SCHEMATIC DIAGRAM GENERATING SYSTEM USING LIBRARY OF GENERAL PURPOSE INTERACTIVELY SELECTABLE GRAPHIC PRIMITIVES TO CREATE SPECIAL APPLICATIONS ICONS

Robert M. Dunn, Woodbridge, Conn., assignor to The Cadware Group, Ltd., New Haven, Conn.

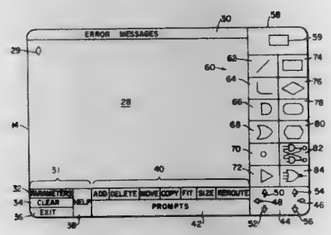
Filed Mar. 1, 1984, Ser. No. 585,535

Int. Cl.⁴ G06F *3/153, 15/40*

U.S. Cl. 364—900 **19 Claims**

MICROFICHE APPENDIX INCLUDED

(3 Microfiche, 200 Pages)



1. A general purpose interactive rule based system for generating problem solutions in schematic diagram form comprising:

a computer processor;

a graphics terminal coupled to said processor;

means for providing a multi-portion split display on said graphics terminal;

a plurality of functions and graphic primitives stored in said computer processor;

means for creating a library of icons for an intended application by enabling a methodology designer to:

select and arrange said graphic primitives using said graphics terminal, and

identify, by way of example, parameters for using each icon in response to prompts initiated by said computer processor;

means for generating and storing a specific set of rules pertaining to the use of each icon on the basis of the parameters identified;

means for symbolically displaying in one portion of said split display a set of icons from said library;

means for displaying in another portion of said split display a set of said functions; and

means for enabling a problem solving user to access and select displayed icons and functions, and to build a solution to a problem by using functions to graphically couple icons together on a chart work area portion of said split display in accordance with said rules.

4,656,604

CONTROL CIRCUIT WITH RECOVERY PROTECTION

Gerardus M. van Loon, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

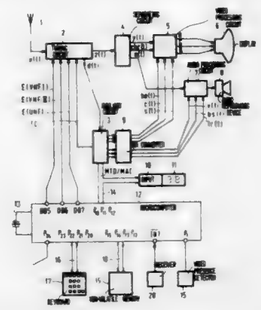
Filed Jan. 19, 1984, Ser. No. 571,988

Claims priority, application Netherlands, Sep. 14, 1983, 8303167

Int. Cl.⁴ G06F *11/28*

U.S. Cl. 364—900 **1 Claim**

1. In a television receiver, having a plurality of signal processing circuits responsive to control signals and having a non-volatile memory for storing reference data representative of the actual status of said receiver, a microcomputer control circuit coupled to said signal processing circuits and to said non-volatile memory and said microcomputer control circuit generating for each signal processing circuit a control signal representing control data, said microcomputer operating under the control of a plurality of control programs, each control program including a check subprogram for recognizing the allowability of the actual execution of that control program, a recovery program which is executed in response to the recognition of a non-allowable execution of the control program and in which said reference data is evaluated for producing allowable control data.



4,656,605

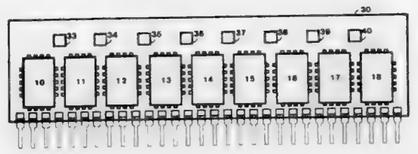
SINGLE IN-LINE MEMORY MODULE

James E. Clayton, Londonderry, N.H., assignor to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 528,817, Sep. 2, 1983, abandoned. This application Jun. 12, 1986, Ser. No. 873,879

Int. Cl.⁴ G11C *13/00*

U.S. Cl. 365—52 **1 Claim**



1. A memory module for installation on a printed circuit motherboard comprising:

eight data memory chips for storing digital data, each having a data input and output, a control input, and an address input, and each being packaged in a plastic leaded chip carrier;

a ninth memory chip for storing error detection and correction information associated with the eight data memory chips, said ninth memory chip having a data input and output, a control input and an address input interconnected with those of the eight memory chips, and a control input to provide writing in or reading out of the ninth memory chip at times other than when said bytes of digital information are written into or read out of the eight data memory chips to thereby facilitate said error detection and correction operation;

an epoxy-glass printed circuit board substrate having a length and width adequate for mounting thereon only in a single row said nine memory chips and for interconnecting the control inputs and the address inputs of the memory chips so that bytes of digital information may be input to or output from the memory chips one at a time;

the substrate including thirty terminals for providing access to the data inputs and outputs, control inputs, and address inputs of the nine memory chips to enable reading and writing of bytes of digital information into and out of the eight memory chips and to enable reading and writing of

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error detection and correction information into and out of the eight memory chips;

support means for supporting the memory module at an angle with respect to the printed circuit motherboard when the memory module is installed thereon; and

eight decoupling capacitors, mounted on said substrate and connected between the nine memory chips, for supressing transient voltage spikes between said memory chips.

4,656,606

SEMICONDUCTOR MEMORY DEVICE PROVIDING A SELECTION CIRCUIT CHANGE-OVER ARRANGEMENT

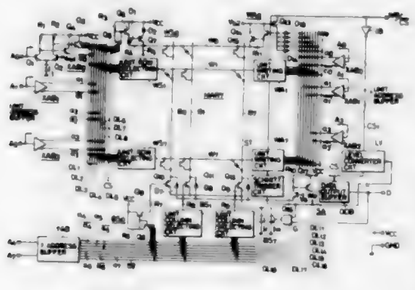
Nobuhiko Ohno, Tokorozawa; Katsumi Ogiue, Tokyo; Katsuya Mitsue, Koganei, and Noriyoshi Okuda, Mitaka, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Co Ltd, of Japan

Filed Feb. 14, 1984, Ser. No. 579,960

Claims priority, application Japan, Feb. 21, 1983, 58-26196

Int. Cl.⁴ G11C *11/34*

U.S. Cl. 365—104 **6 Claims**



1. A semiconductor memory device including:

(a) a plurality of memory elements each of which has a first terminal and a second terminal, and each of which is capable of semi-permanently changing its impedance from a given value to another value;

(b) a selecting circuit which receives address signals and which selects a memory element designated by the address signals out of said plurality of memory elements;

(c) a third terminal which is supplied with a writing current;

(d) a fourth terminal which is supplied with a writing signal that is to be written on a selected one of said plurality memory elements; and

(e) a control circuit having a writing circuit which, when the writing current is supplied to said third terminal, supplies the writing current from said third terminal to the first terminal of the memory element that is selected by the selecting circuit out of said plurality of said plurality of memory elements, and which further supplies a current in accordance with the writing signal sent from said fourth terminal to the second terminal of said selected memory element so that the impedance of the selected memory element is set to a value which complies with the writing signal,

wherein said selecting circuit comprises a first selecting circuit and a second selecting circuit, wherein said first selecting circuit receives said address signals and selects said selected memory element in the reading operation when a first level signal of said writing current is supplied to said third terminal, and wherein said second selecting circuit receives said address signals and selects said selected memory element in the writing operation when a second level signal of said writing current is supplied to said third terminal.

4,656,607

ELECTRICALLY ERASABLE PROGRAMMABLE RAM

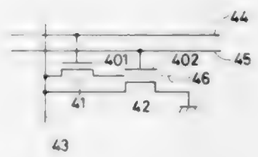
Takaaki Hagiwara, Nishitama; Toru Kaga, Kokubunji, and Hiroo Masuda, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 632,317

Claims priority, application Japan, Jul. 21, 1983, 58-133357

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—182 **11 Claims**



1. A semiconductor memory including a plurality of memory cells arranged in a matrix with each of said memory cells being coupled to one of a plurality of first word lines for said memory, one of a plurality of second word lines of said memory and one of a plurality of bit lines for said memory, and further including a semiconductor substrate having a first conductivity type and at least first and second surface regions that are disposed in adjacent portions of said substrate, wherein said first and second surface regions are separated from one another by an oxide film for isolation, wherein each of said first and second surface regions has a memory cell formed therein, and wherein each of said memory cells comprises:

an insulated-gate field effect transistor having a source and drain region formed by semiconductor regions in a semiconductor layer over said substrate, a first insulating film formed on a surface region of said semiconductor layer which is disposed between source and drain regions, and a gate electrode formed on said first insulating film connected to said first line; and

a memory element formed on said semiconductor substrate adjacent to said insulated-gate field effect transistor having a source and drain region formed by semiconductor regions in said substrate, wherein one of said source or drain regions of said memory element is connected to said bit line, and the other of said drain or source regions of said memory element is connected to a predetermined potential, a second insulating film formed on said semiconductor substrate which extends over a surface region of said substrate between said source and drain regions of said memory element, wherein said semiconductor layer extends over said second insulating film to form a first electrode serving as a floating gate of said memory element connected to one of said drain or source regions of said insulated-gate field effect transistor, a third insulating film formed on said first electrode, and a second electrode serving as a control gate of said memory element formed on said third insulating film connected to said second word line,

wherein a portion of said memory element is stacked on a portion of said insulated-gate field effect transistor, and further wherein at least a portion of said insulated-gate field effect transistor is formed on a fourth insulating film which is formed by the same process as said second insulating film.

4,656,608

SEMICONDUCTOR MEMORY DEVICE

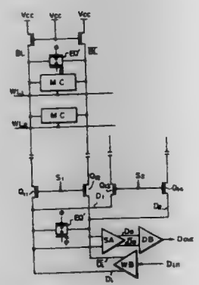
Keizo Aoyama, Yamato, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 23, 1985, Ser. No. 737,076

Claims priority, application Japan, May 30, 1984, 59-110291

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—190 **9 Claims**



1. A semiconductor memory device comprising a memory cell selected by an address signal, at least a pair of signal lines for receiving complementary signals corresponding to information stored or to be stored in said memory cell, and an equalizing circuit connected between said signal lines for equalizing the potential of said signal lines, said equalizing circuit comprising a P-channel type MIS transistor and an N-channel type MIS transistor connected in parallel, and first means for temporarily turning ON said P-channel type MIS transistor and said N-channel type MIS transistor in response to a change of said address signal.

4,656,609

SEMICONDUCTOR MEMORY DEVICE

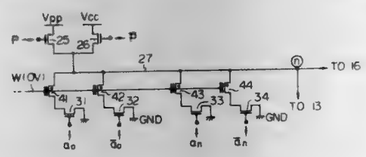
Mitsuo Higuchi, Tokyo, and Ryoji Hagihara, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 505,977, Jun. 20, 1983, abandoned. This application Apr. 2, 1986, Ser. No. 847,094

Claims priority, application Japan, Jun. 30, 1982, 57-111522

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—200 **7 Claims**



1. A semiconductor memory device, operatively connected to receive an address input signal, comprising:

a memory cell array including memory cells;

a decoder circuit, operatively connected to said memory cell array, for accessing a specified one of said memory cells in accordance with the address input signal;

a redundancy memory cell, operatively connected to said decoder circuit, for replacing a defective memory cell in said memory cell array; and

a redundancy decoder circuit, operatively connected to said decoder circuit, for receiving said address input signal and producing a selection signal for selecting said redundancy memory cell when the received address input signal corresponds to the address of the defective memory cell, said redundancy decoder circuit including a plurality of depletion-type FAMOS transistors, each of said FAMOS transistors being selected or non-selected in accordance with the selection signal and having a floating gate and a control gate, a write operation being performed in each of said selected FAMOS transistors by applying a predetermined voltage to said control gate of each of said FAMOS transistors and by injecting hot electrons into each said floating gate in dependence upon the predetermined voltage applied to said control gate, thereby inducing an electric field beneath the floating gate in a direction which repulses the hot electrons.

4,656,610

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANCY MEANS

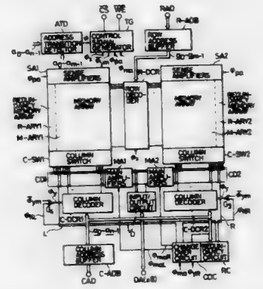
Masahiro Yoshida, Tachikawa, and Kanji Oishi, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1984, Ser. No. 573,139

Claims priority, application Japan, Jan. 21, 1983, 58-7272

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—200 **22 Claims**



9. A semiconductor memory device comprising:

a first memory array having a plurality of memory cells having control and input-output terminals and arranged in a matrix;

a second memory array having a plurality of memory cells having control and input-output terminals and arranged in a matrix;

first selection means for selecting memory cell rows from said first and second memory arrays;

second selection means receiving first address signals, and for selecting memory cell columns designated by said first address signals from said first and second memory arrays;

a plurality of first common data lines for receiving data of memory cells selected by said first and second selection means from said first memory array;

a plurality of second common data lines for receiving data of memory cells selected by said first and second selection means from said second memory array;

a first spare memory array including a plurality of memory cells arranged in a matrix, wherein a spare memory cell row is selected by said first selection means, and data of the memory cells selected are transmitted to said first common data lines in response to a first selection signal;

a second spare memory array including a plurality of memory cells arranged in a matrix, wherein a spare memory cell row is selected by said first selection means, and data of the memory cells selected are transmitted to said second common data lines in response to a second selection signal;

a plurality of first amplifier means coupled to respective ones of said first common data lines, and operating in response to the selection of memory cells from said first memory array so that data of the memory cells selected are amplified by said first amplifier means;

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a plurality of second amplifier means coupled to respective ones of said second common data lines, and operating in response to the selection of memory cells from said second memory array so that data of the memory cells selected are amplified by said second amplifier means;

first redundancy means receiving second address signals including at least said first address signals, and for generating a first control signal when said second address signals are address signals which select a defective memory cell column from either one of said first and second memory arrays;

second redundancy means receiving said second address signals, and for generating a second control signal when said second address signals are address signals which select a defective memory cell column from either one of said first and second memory arrays;

control means responsive to said first and second control signals, for generating one of said first and second selection signals, for inhibiting the selection of memory cell columns from one of said first and second memory arrays, and for operating ones of said first and second amplifier means so that data of memory cells in either one of said first and second spare memory arrays instead of memory cells in either one of said first and second memory arrays are amplified by the one of the first and second amplifier means which is operated.

4,656,611

LOGIC CIRCUIT

Katsuhiko Suyama, Yokohama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 22, 1985, Ser. No. 705,321
Claims priority, application Japan, Feb. 29, 1984, 59-037460
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—203 **15 Claims**



1. A logic circuit comprising a series circuit of a driver transistor and a load transistor, each formed by a junction type field effect transistor to have a respective threshold voltage and built-in voltage, an input terminal connected to a gate of said driver transistor, and a gate voltage generator which is connected to a gate of said load transistor and which provides a gate voltage to said gate of said load transistor that is higher than the sum of the threshold values of said load transistor and said driver transistor, and lower than the lowest one of (1) the sum of the built-in voltage of said load transistor and the threshold voltage of said driver transistor and (2) the sum of the built-in voltage of said driver transistor and the threshold voltage of said load transistor.

4,656,612

DRAM CURRENT CONTROL TECHNIQUE

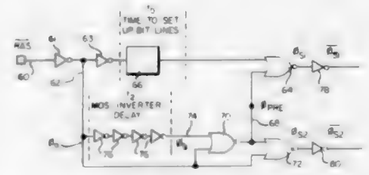
James D. Allan, Colorado Springs, Colo., assignor to Inmos Corporation, Colorado Springs, Colo.

Filed Nov. 19, 1984, Ser. No. 672,907
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—203 **14 Claims**

1. In a dynamic random access memory circuit having defined active and precharge periods, means for compensating for ambient environment variations to control current surges in said circuit comprising:

control means responsive to the commencement of said active period for generating a control signal;

first generating means coupled to receive said control signal and responsive to the commencement of said active period for generating a first sensing signal after a variable delay time following the commencement of said active period, said variable delay time being a function of the ambient environment within said memory circuit;



second generating means coupled to receive said control signal and responsive to the termination of said active period for generating a second sensing signal; and

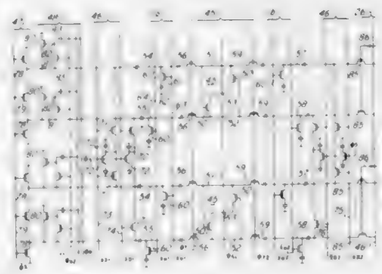
timing means responsive to the termination of said active period and responsively coupled to said control means for causing said control signal to disable said first and second generating means at a preselected time delay after the termination of said active period, whereby the duration of said sensing signals is determined by said preselected delay.

4,656,613

SEMICONDUCTOR DYNAMIC MEMORY DEVICE WITH DECODED ACTIVE LOADS

Roger D. Norwood, Sugar Land, Tex., and Chitranjan Reddy, Sunnyvale, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 29, 1984, Ser. No. 645,580
Int. Cl.⁴ G11C *7/02*
U.S. Cl. 365—208 **8 Claims**



1. A dynamic semiconductor memory device comprising:

an array of rows and columns of memory cells, with all cells in each row connected to a row line and all cells in each column connected to a column line, each column line split into two bit lines, the two bit lines for each column being positioned side by side and the row lines being interleaved,

a plurality of differential sense amplifiers, each sense amplifier having a pair of sense nodes,

each sense amplifier being multiplexed for two separate columns by first and second pairs of coupling transistors, the first pair connecting the bit lines for one column to said sense nodes and the other pair connecting the bit lines for another column to said sense nodes;

a pair of active pull-up circuits for each sense amplifier, each said pull-up circuit connected to one of the bit lines for said one column on one side of a sense amplifier but not connected to the other side of said sense amplifier;

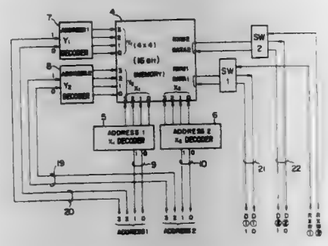
timing means to activate both said first and second pairs of coupling transistors during an active cycle and also to selectively activate said active pull-up circuits for the bit line containing the selected memory cell, while both the first and second pairs of coupling transistors are activated.

4,656,614

MULTIPLE SIMULTANEOUS ACCESS MEMORY

Naruhito Suzuki, 1555-1, Tsurogasone, Yashio-shi, Saitama, 340, Japan

PCT No. PCT/JP83/00418, § 371 Date Jul. 25, 1984, § 102(e) Date Jul. 25, 1984, PCT Pub. No. WO84/02222, PCT Pub. Date Jun. 7, 1984
PCT Filed Nov. 24, 1983, Ser. No. 637,050
Claims priority, application Japan, Nov. 27, 1982, 57-208303
Int. Cl.⁴ G11C *8/00*
U.S. Cl. 365—230 **5 Claims**



1. A memory matrix for simultaneously reading or writing information from or onto at least two cells of the memory matrix, each cell having a different address, comprising:

a matrix of memory cells;

a plurality of data buses connected to each of said memory cells, each of said data buses provided with a data input line and a data output line;

a plurality of XY address buses connected to each of said memory cells, the number of said address buses corresponding to the number of said data buses;

a plurality of independent X address decoders, a single X address decoder for each of said X address buses;

a plurality of independent Y address decoders, a single Y address decoder for each of said Y address buses;

a plurality of switching circuits, each of said switching circuits provided for each of said cells and connected to each of said plurality of data buses;

a plurality of read/write control lines connected to said plurality of switching circuits, and thereby to each of said memory cells;

a first selection line connected to a first of said XY address buses; and

connecting means between said first of said XY address buses and a second non-corresponding data bus for utilizing information provided from said memory matrix for addressing said matrix.

4,656,615

HYDROPHONE ARRAY POLARITY TEST CIRCUIT

Gordon T. Grice, Houston, Tex., assignor to Digicon, Inc., Houston, Tex.

Filed Jun. 13, 1985, Ser. No. 744,323
Int. Cl.⁴ G01R *31/02*
U.S. Cl. 367—13 **10 Claims**



7. A hydrophone receiver test network subcombination for providing an orientation test connection to a hydrophone receiver including a pressure acceleration response element, said response element having a proper polarity response orientation and also exhibiting a predominantly capacitive impedance, comprising

a switching diode,

a zener diode connected in series with said switching diode and in opposite polarity therewith,

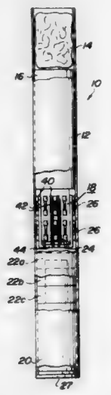
said switching diode and zener diode combination connected in parallel with the hydrophone response element in a predetermined orientation with respect to the proper polarity response orientation of said response element so that with a test voltage of proper polarity at a higher level than the reverse zener breakdown voltage of said zener diode applied thereto said switching diode is reversed biased to result in an output at said test voltage level and so that with said test voltage of reverse polarity applied thereto said zener diode breaks down to result in an output at said zener diode breakdown level.

4,656,616

VOLUMETRIC TRANSDUCER ARRAY AND ERECTING STRUCTURE

Derek J. Bennett, and Gene Anderson, both of Thousand Oaks, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1975, Ser. No. 638,389
Int. Cl.⁴ H04B *13/00*
U.S. Cl. 367—153 **10 Claims**



1. A self-erecting transducer array for deployment between a float and a terminal mass, comprising, in combination:

first erecting means having a plurality of radially telescoping arms having inner and outer ends, said arms being opera-

tively secured in common at the respective inner ends thereof to the float;

a plurality of flexible stave lines secured at respective one ends thereof to the outer ends of said first erecting means telescoping arms and having a plurality of transducer sensors attached along the individual lengths of each of said lines;

second erecting means having a plurality of radially telescoping arms equal in number to said first erecting means plurality, said arms having inner and outer ends and being secured at the respective outer ends thereof to the other ends of said stave lines; and

means connected to said first and second erecting means and to the terminal mass for causing said telescoping arms to expand to the deployed position when the mass descends from the float.

4,656,617

START-CONTROL METHOD AND CIRCUIT FOR OPTICAL DISC PLAY-BACK SYSTEM

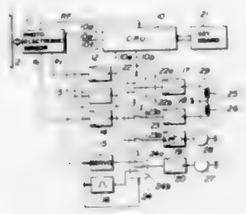
Takashi Nakatsuyama, Chiba, and Akashi Ito, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 6, 1985, Ser. No. 730,542

Claims priority, application Japan, May 8, 1984, 59-90158

Int. Cl.⁴ G11B *7/08*

U.S. Cl. 369—45 **5 Claims**



1. A start-control method for an optical disc play-back system comprising an optical disc with an information track to be read, a disc drive motor which rotates the optical disc, an objective lens facing the information track, a photoelectric sensor which receives a beam of reflected light from the surface of the optical disc through the lens, a focus servomotor which drives the lens in a direction normal to the surface of the optical disc, a tracking servomotor which moves the lens radially across the optical disc, a drive circuit for starting the disc drive motor, a focus search circuit, a focus servo circuit, a tracking servo circuit, a disc-drive-motor servo circuit for regulating the speed of the disc drive motor at a rated level, and means for generating control signals for the focus servo circuit, the tracking servo circuit and the disc-drive-motor servo circuit characterized in that the method comprises the steps of:

energizing the disc drive motor for a certain period of time;

establishing at least the focus search circuit while the disc drive motor continues to rotate due to the force of inertia.

4,656,618

OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS

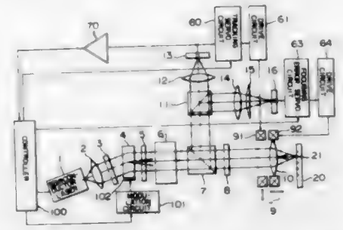
Toshimitsu Kaku, Hachioji; Keiji Katsuka, Kawagoe; Yoshito Tsunoda, Mitaka, and Kazuo Shigematsu, Saitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 639,004

Claims priority, application Japan, Aug. 26, 1983, 58-154855; Aug. 26, 1983, 58-154857

Int. Cl.⁴ G11B *7/125*

U.S. Cl. 369—112 **20 Claims**



1. An optical information recording and reproducing apparatus comprising:

a laser light source;

an optical system having an acousto-optic modulator receiving a beam from said laser light source and focusing at least one beam from said acousto-optic modulator on an information recording medium;

a detecting system receiving light reflected from said information recording medium, for detecting a change in quantity of the reflected light; and

a modulation unit including oscillation means for generating a plurality of signals at different frequencies, modulation means for modulating outputs of said oscillation means and means for adding together outputs of said modulation means and driving said acousto-optic modulator with an output of said adding means so that said acousto-optic modulator produces a plurality of beams which are focused on a track of said information recording medium so as to irradiate a plurality of light spots on different positions along the track.

4,656,619

SUPERVISING AND CONTROLLING SYSTEM FOR A COMMUNICATION STATION IN A TDMA COMMUNICATION SYSTEM

Toshinori Hotta, and Yuuhei Ishi, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Apr. 15, 1985, Ser. No. 723,099

Claims priority, application Japan, Apr. 16, 1984, 59-76221; Apr. 16, 1984, 59-76222

Int. Cl.⁴ H04J *1/16, 3/06*

U.S. Cl. 370—13 **13 Claims**

1. In a supervising and controlling system for a communication station in a time-division multiple access (TDMA) communication system comprising a supervisory and control apparatus coupled to a TDMA equipment in the station, said TDMA equipment having two memory means to be used as an operating memory and a spare memory, respectively, each memory means storing transmission and reception burst signal control data for designating a time position and length of each component bursts of each of burst signals transmitted from and received at the TDMA equipment, the improvement wherein:

said supervisory and control apparatus comprises:

control means;

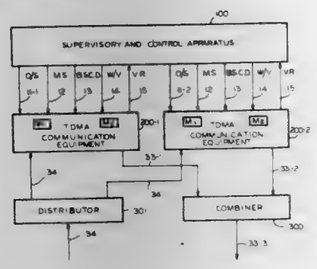
storage means for storing a significant burst signal control data;

means for transmitting, under control of said control means, a memory selection signal to said TDMA equipment for designating one of two memory means to function as an operating memory means while the other of said memory means functions as a spare memory;

means for periodically transmitting, under control of said control means, said significant burst signal control data stored in said storage means to said TDMA equipment;

means for periodically transmitting, under control of said control means, a verification signal to said TDMA equipment for commanding it to verify said significant burst signal control data as transmitted and the content stored in said memory means;

means responsive to the transmission of said burst signal control data for measuring an elapsed time and for thereafter producing a time-over signal after a lapse of a predetermined time period from the transmission of said burst signal control data; and



means responsive to said time-over signal for detecting a coincidence signal caused by verification at said TDMA equipment in response to said time-over signal, said coincidence signal detecting means providing a non-coincidence signal upon detecting no coincidence signal; and

wherein said TDMA equipment comprises:

means for switching said two memory means between an operating condition and a spare condition, respectively, in response to said memory selection signal;

means for reading out the content in one of said two memories which is switched to the spare condition in response to said verification signal; and

means for comparing said burst signal control data transmitted from said suppervisory and control apparatus to said TDMA equipment and the read-out data, and, on coincidence of both data, for generating the coincidence signal.

4,656,620

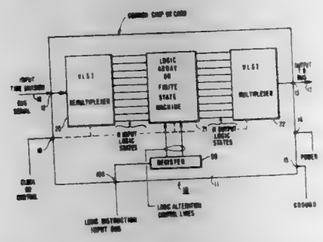
APPARATUS FOR OBTAINING REDUCED PIN COUNT PACKAGING AND METHODS

John E. Cox, Stamford, Conn., assignor to ITT Corporation, New York, N.Y.

Filed Sep. 19, 1984, Ser. No. 652,371

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—58 **14 Claims**



1. Circuit apparatus for performing operations on data in a digital system and for distributing said data throughout said system, comprising:

an input for serially receiving digital data signals from an input time division data bus;

demultiplexing means responsive to said digital data signals for providing at an output a plurality of data outputs, each data output indicative of one of said digital data signals;

data operating means having a plurality of inputs and outputs, said inputs being associated with said plurality of data outputs for performing operations on said data signals and for providing a plurality of output digital data signals at said outputs for distribution throughout said system;

multiplexing means, having a plurality of inputs adapted to receive said output digital signals of said data operating means, for serially providing said output digital data signals;

a time slot interchanger coupled to said multiplexing means for varying the positions of said output digital data signals in said serially provided output digital data signals; and

an output for serially providing said output digital data signals to an output time division data bus, whereby said circuit requires a reduced number of terminals as compared to the inputs and outputs of the data operating means.

4,656,621

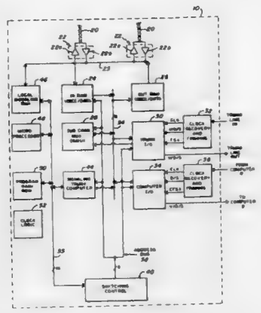
DIGITAL SWITCHING SYSTEM

Michael Cooperman, Framingham; Donald J. Gray, Lynnfield; Richard W. Sieber, Attleboro, and Rob Mooleenbeek, Ashland, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 687,548, Dec. 28, 1984, abandoned. This application Jul. 3, 1986, Ser. No. 882,023

Int. Cl.⁴ H04Q *11/04*; H04J *3/04*

U.S. Cl. 370—59 **40 Claims**



1. A system for exchanging messages between subscribers and an exchange wherein messages of serial trains of digital pulses are coupled from an exchange to each subscriber during a TRANSMIT half of a transmission frame and messages of serial bits of pulses from each of the subscribers are coupled to the exchange during the RECEIVE half of a transmission frame, said system comprising:

(a) a message input array of addressable memory elements into which a first group of said pulses are written as M words of N bits;

(b) a message output array of addressable memory elements into which the first group of pulses are transferred and stored as N words of M bits and are read out as M words of N bits for transmission to said subscribers;

(c) signalling input and output arrays of addressable memory elements wherein at least one of said digital pulses is written into the signalling input array; and

(d) a data processor for periodically reading the information in the signalling input array and transferring outgoing

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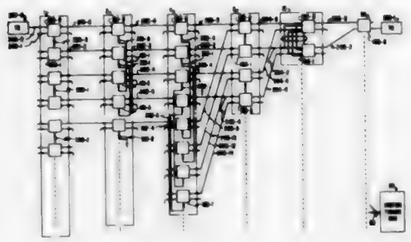
signalling information to said signalling output array for transmission to said subscribers.

4,656,622

MULTIPLE PATHS IN A SELF-ROUTING PACKET AND CIRCUIT SWITCHING NETWORK

Chin-Tau A. Lea, Lisle, Ill., assignor to American Telephone and Telegraph Company, Murray Hill, N.J.

Filed Sep. 26, 1984, Ser. No. 654,765
Int. Cl.⁴ H04Q *11/04*
U.S. Cl. 370—60 **18 Claims**



1. An alternate-path, self-routing, packet and circuit switching system for switching packets for a plurality of messages and circuit switched information from a plurality of digital data units, said system comprising:

a switching network having a plurality of stages each comprising sets of a plurality of switch nodes;

a plurality of distributed controllers each for interfacingly connecting an individual one of said digital data units to one set of said switch nodes;

each of said controllers responsive to a received one of said packets and a start of circuit information for transmitting address signals to establish a path through said switching network;

each switching node of a set of said switch nodes of one stage being interconnected to another set of switch nodes in the next sequential stage; and

one switch node of a set of said switch nodes responsive to receipt of said address signals for setting up said path via another one of said set of switch nodes in said next sequential stage.

4,656,623

AGENT COMMUNICATION ARRANGEMENTS FOR TELECOMMUNICATION SYSTEMS

John C. Dalby, Jr., Wheaton, and Charles E. W. Ward, Hinsdale, both of Ill., assignors to American Telephone and Telegraph Company, Murray Hill, N.J.

Filed May 3, 1985, Ser. No. 730,764
Int. Cl.⁴ H04M *3/60*
U.S. Cl. 370—60 **25 Claims**

1. A telecommunication system comprising:

agent position means, responsive to integrated voice and data input signals for generating acoustical outputs and visual outputs to an agent, and responsive to acoustical inputs and data inputs from an agent for generating integrated voice and data output signals;

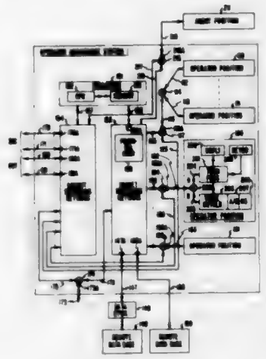
switching network means comprising a plurality of ports connectable to customer stations;

interconnection means connected to said agent position means and said switching network means for transmitting said integrated input signals and said integrated output signals between said agent position means and said switching network means;

control processor means, connected to said switching network means, for generating control signals for controlling said switching network means; and

data communication means for transmitting data signals to and receiving data signals from a data base;

wherein said switching network means comprises switch multiplexing means responsive to said integrated output signals for generating output data signals and output voice signals, circuit switching means responsive to said control signals for transmitting voice signals received on one of said plurality of ports to said switch multiplexing means, and packet switching means responsive to said control signals for transmitting data signals received from said



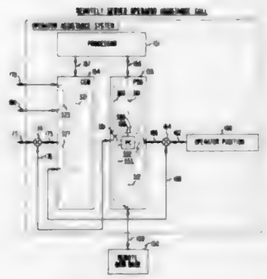
data communication means to said switch multiplexing means, wherein said switch multiplexing means is further responsive to said transmitted data signals and said transmitted voice signals for generating said integrated input signals, wherein said circuit switching means is further responsive to said control signals to transmit said output voice signals to said one of said plurality of ports, and wherein said packet switching means is further responsive to said control signals to transmit said output data signals to said data communication means.

4,656,624

OPERATOR COMMUNICATION ARRANGEMENTS FOR OPERATOR ASSISTANCE SYSTEMS

Johnny Collins; Michael H. Cooper, both of Oak Park; Douglas C. Dowdes; Raymond J. Gill, both of Naperville, and Meyer J. Zola, Oak Park, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 3, 1985, Ser. No. 730,765
Int. Cl.⁴ H04M *3/60*; H04Q *11/04*
U.S. Cl. 370—60 **25 Claims**



1. An operator assistance system comprising:

operator position means, responsive to integrated voice and data input signals for generating acoustical outputs and visual outputs to an operator, and responsive to acoustical inputs and data inputs from an operator for generating integrated voice and data output signals;

switching network means comprising a plurality of ports connectable to customer stations;

interconnection means connected to said operator position means and said switching network means for transmitting said integrated input signals and said integrated output signals between said operator position means and said switching network means; and

control processor means, connected to said switching network means, for generating control signals for controlling said switching network means, and for generating data signals for transmission to said switching network means;

wherein said switching network means comprises switch multiplexing means responsive to said integrated output signals for generating output data signals and output voice signals, circuit switching means responsive to said control signals for transmitting voice signals received on one of said plurality of ports to said switch multiplexing means, and packet switching means resnonsive to said control signals for transmitting data signals received from said control processor means to said switch multiplexing means, wherein said switch multiplexing means is further responsive to said transamitted data signals and said transmitted voice signals for generating said integrated input signals, wherein said circuit switching means is further responsive to said control signals to transmit said output voice signals to said one of said plurality of ports, and wherein said packet switching means is further responsive to said control signals to transmit said output data signals to said control processor means; and

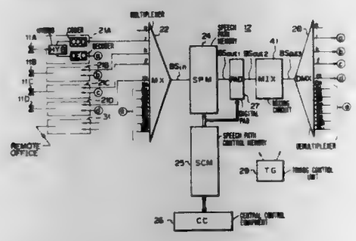
wherein said control processor means is responsive to said output data signals to generate said control signals.

4,656,625

SWITCHING SYSTEM HAVING CAPABILITY FOR TELECOMMUNICATION CONFERENCES

Shoji Nojiri, Kawasaki; Kenichi Ogawa, and Koso Murakami, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 28, 1985, Ser. No. 738,643
Claims priority, application Japan, May 30, 1984, 59-108526
Int. Cl.⁴ H04Q *11/04*; H04J *3/02*; H04M *3/00*
U.S. Cl. 370—62 **22 Claims**



1. A switching system having telecommunication conference capability and including central control equipment and connected to subscriber lines, said system comprising:

a multiplexer circuit for time division multiplexing a plurality of voice data signals transmitted via respective subscriber lines;

switching means being under operative control of the central control equipment and including, at least, a speech path memory for sequentially storing the multiplexed voice data signals from said multiplexer circuit;

a demultiplexer circuit for demultiplexing the switched voice data signals and transmitting the voice data signals to subscribers via respective subscriber lines; and

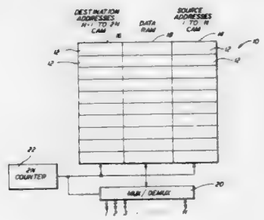
mixing and feedback means for merging two voice data signals, and feeding the mixed voice data signals back to said speech path memory to write again the feedback voice data signals therein, and accumulating the thus mixed voice data signals in said speech path memory for each of the subscribers by using the individual voice data signals except for the voice data signal of the target subscriber, and each of the thus accumulated voice data signals is returned, from the speech path memory, to respective subscribers via the corresponding subscriber lines.

4,656,626

APPARATUS AND METHOD FOR PROVIDING DYNAMICALLY ASSIGNED SWITCH PATHS

Joseph R. Yudichak, Madison, and Herbert J. Toegel, Middlebury, both of Conn., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 14, 1984, Ser. No. 682,033
Int. Cl.⁴ H04Q *11/04*; H04J *3/00*; G11C *15/49*
U.S. Cl. 370—68 **24 Claims**



1. A memory array, comprising:

a first CAM:

a RAM; and

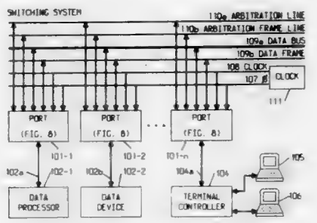
a second CAM, portions of the first CAM, RAM and second CAM being associated to form a means for storing a word, the first and second CAM portions of each word storing means including means for storing addresses for a word, whereby the RAM portion of any word storing means may be accessed using one of the addresses stored in the first and second CAM portions of the word storing means.

4,656,627

MULTIPHASE PACKET SWITCHING SYSTEM

Lloyd A. Hasley, Carrollton, Tex., and Jaan Raamot, Broomfield, Colo., assignors to AT&T Company and AT&T Information Systems Inc., both of Holmdel, N.J.

Filed Nov. 21, 1984, Ser. No. 674,049
Int. Cl.⁴ H04J *3/02, 3/16*
U.S. Cl. 370—85 **22 Claims**



1. In a packet switching system having a plurality of ports interconnected by a data bus and by a data bus control conductor:

means for defining system data transfer cycles,

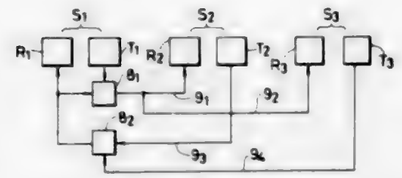
means for subdividing each defined data transfer cycle into a plurality of phases,
means for assigning different ones of said ports having data to transmit to different one of said phases,
means in each one of said assigned ports for applying data to said data bus during an occurrence of the applying data to said data bus during an occurrence of the phase to which said one port is assigned whereby a plurality of said assigned ports can apply data to said bus during different phases of a single data transfer cycle, and
means in said each one assigned port for applying a signal to said data bus control conductor during each assigned phase occurrence in which said one assigned port applies data to said data bus to indicate to other ones of said assigned ports a busy state of said data bus during each said occurrence of said assigned phase.

4,656,628

DIGITAL SIGNAL TRANSMISSION SYSTEM

Yoichi Tau, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,599
Claims priority, application Japan, Oct. 30, 1981, 56-172898
Int. Cl.⁴ H04J *3/02, 3/24*
U.S. Cl. 370—85 **9 Claims**



1. In an inter-multistation communication network in which a digital signal transmitted on a communication cable is located fixedly in a frame periodically repeated on a time axis, the frame being subdivided into blocks on the time axis, so that each of plural stations is given a digital signal transmission opportunity to enable each station to effect signal transmitting-/receiving operations in packet form in a time division multiplexing and line switching mode, a digital signal transmission system, comprising, at least one station having means for receiving packets sent from plural stations to thereby establish plural TDM channels simultaneously with said plural stations, respectively, and means for reproducing said packets from said plural stations into plural, independent digital signals respectively to establish plural TDM channels simultaneously with said plural stations, respectively, and a station for sending a digital signal in a single packet to plural stations in a simultaneous calling mode, such that at least one station in said network effects digital signal real time transmission between said station and other plural stations.

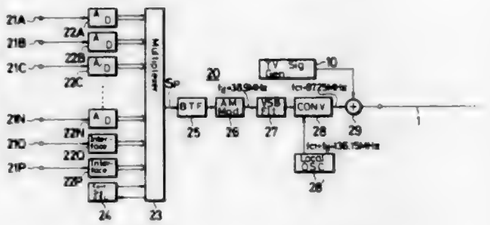
4,656,629

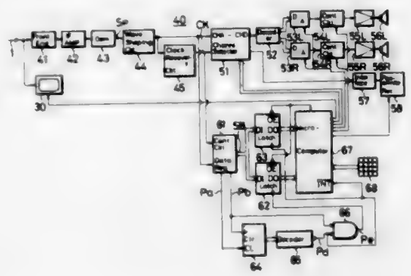
DIGITAL SIGNAL TRANSMITTING AND/OR RECEIVING SYSTEM

Yoshiyuki Kondoh, and Takanobu Ishidoh, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1984, Ser. No. 668,794
Claims priority, application Japan, Nov. 9, 1983, 58-210356
Int. Cl.⁴ H04J *3/02, 3/12;* **H04H** *1/00;* **H04N** *1/00*
U.S. Cl. 370—85 **7 Claims**

1. A digital signal transmitting system comprising:
means for generating a word synchronizing signal;
means for generating digital audio signals sampled at a sampling frequency and coded in a predetermined data length;
means for generating service bit signals including an identifying signal indicating that an emergency broadcast signal is being transmitted;
means for mutiplexing said word synchronizing signal, digital audio signals and service bit signals so as to produce a digital word signal;





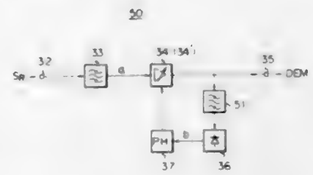
a cable television transmission line; and
means for modulating a carrier in accordance with said digital word signal and transmitting the modulated carrier through said cable television transmission line.

4,656,630

AUTOMATIC GAIN CONTROL CIRCUIT

Tokihiro Miyo, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 31, 1984, Ser. No. 687,812
Claims priority, application Japan, Jan. 10, 1984, 59-002222
Int. Cl.⁴ H04J *3/06;* **H04B** *11/03*
U.S. Cl. 370—104 **15 Claims**



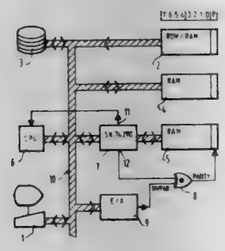
1. An automatic gain control circuit receiving a received signal, comprising:
a band pass filter, operatively connected to receive the received signal, allowing desired frequency spectrum components of the received signal to pass therethrough as a first filtered output signal having a first equivalent noise bandwidth;
variable level adjusting means, operatively connected to receive the filtered output signal from said band pass filter, for effecting an automatic level control of the first filtered output signal and producing a level adjusted output signal as an automatic gain controlled signal, said variable level adjusting means having a control input;
a particular signal filter, operatively connected to receive the level adjusted output signal from said variable level adjusting means, responsive only to a particular signal component, having a predetermined frequency spectrum with a certain duration, included in the desired frequency spectrum components, said particular signal filter performing an integration operation on the particular signal component, and producing a second filtered output signal exhibiting a second equivalent noise bandwidth, when the certain duration ends, which is narrower than the first equivalent noise bandwidth of said band pass filter; and
detector means, for detecting the second filtered output signal with the second equivalent noise bandwidth and for supplying a level control signal to the control input of said variable level adjusting means.

4,656,631

PROCESS AND CIRCUIT ARRANGEMENT FOR CHECKING A PROGRAM IN DATA PROCESSING UNITS

Gerhard Nowak, Paderborn, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Feb. 6, 1985, Ser. No. 698,801
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404782
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—19 **4 Claims**



1. A method for checking a program in a data processing unit, the program to be checked normalizing the working memory by writing data with parity signals into the memory cells of the working memory which are to be used by the program, the data processing system having an operating system for controlling the running of the program and for interrupting the program when data is recalled from the working memory having a parity error, the improvement comprising:
writing data with false parity signals into at least the memory cells of the working memory to be used by the program to be checked prior to the program to be checked normalizing the working memory.

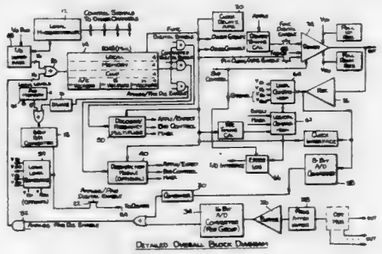
4,656,632

SYSTEM FOR AUTOMATIC TESTING OF CIRCUITS AND SYSTEMS

Philip Jackson, Mahwah, N.J., assignor to Giordano Associates, Inc., Sparta, N.J.

Filed Nov. 25, 1983, Ser. No. 555,287
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—20 **22 Claims**

1. A system for the automatic testing of a unit under test having a plurality of pins, said system including a plurality of test channels each coupled to a single pin of said unit capable of functioning as an input pin and a single pin of said unit capable of functioning as an output pin, at least one of said test channels being adapted to be coupled to selectively apply analog, parametric digital and functional digital stimuli to a said single pin capable of functioning as an input pin and to receive an induced response from a said single pin capable of functioning as an output pin, at least one of said channels comprising: a local memory for storing digital information in response to which said stimuli are generated, a driver adapted to be coupled to said single pin capable of functioning as an input pin, a receiver adapted to be coupled to said single pin capable of functioning as an output pin, means including a digital to analog converter coupled to said memory and to said driver to provide analog stimuli to said driver based on digital information read from said memory, means coupled to said memory and to said driver for receiving digital information from said memory and providing functional digital and parametric digital stimuli to said driver, means including an analog



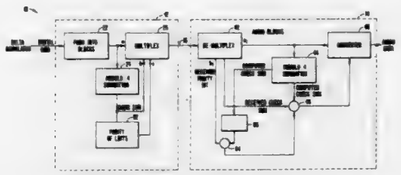
to digital converter coupled to said receiver and to said memory for storing digital information in said memory based on analog responses received from said single pin capable of functioning as an output pin, means coupled to said receiver for receiving via said receiver functional digital and parametric digital responses from said single pin capable of functioning as an output pin and to said memory for receiving digital information therefrom relating to expected responses and for comparing expected responses with received responses, and timing means coupled to said memory, to said analog stimuli providing means, to said functional and parametric digital stimuli providing means, to said storing means and to said comparing means for timing and controlling the same.

4,656,633

ERROR CONCEALMENT SYSTEM

Craig C. Todd, Mill Valley, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Filed Mar. 15, 1985, Ser. No. 712,560
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—54 **25 Claims**



1. An apparatus for concealing transmission or storage bit errors for use with a decoder which decodes digital signals received through a transmission or storage medium from an encoder system, wherein the digital signals have been grouped into a plurality of blocks of 1 bit words, and wherein the apparatus also receives through the medium information related to the number of 1's in each of the plurality of blocks of 1 bit words before transmission or storage of the blocks, said apparatus comprising:
means for deriving information on the number of 1's in each received block of words and comparing such derived

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information to the information received from the encoder system related to the number of 1's in such block before transmission or storage, and for determining, from such comparison, the presence and polarity of any transmission or storage bit errors; and

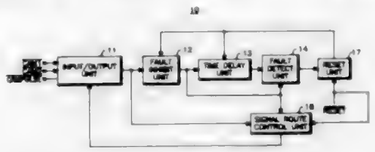
means for introducing into each block of words received from the encoder system determined to contain one or more bit errors at least one bit error of the opposite polarity from that determined by the deriving, comparing and determining means to conceal at least some of the effects of the bit errors.

4,656,634

SKEW INSENSITIVE FAULT DETECT AND SIGNAL ROUTING DEVICE

Steven A. Lombardi, Waukesha, Wis., and David O. Potter, Lake Villa, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 14, 1985, Ser. No. 745,341
Int. Cl.⁴ G06F *11/20*
U.S. Cl. 371—68 **16 Claims**



1. A fault detect and signal routing device comprising:

(a) input/output means having:

(i) at least two inputs for receiving at least first and second input signals;

(ii) a first output to which one and only one of said input signals can be selectively individually routed; and,

(iii) a plurality of additional outputs for providing at least first and second logic signals related to said first and second input signals respectively;

(b) time delay means for receiving signals related to said logic signals, and for providing a delayed output signal in response thereto;

(c) fault detect means for receiving signals related to said logic signals and for receiving said delayed output signal, and for providing a fault signal when one of said logic signals is present and another of said logic signals is not present when said delayed output signal is present; and

(d) signal route control means for receiving said first and second input signals and for receiving at least one of said logic signals, for providing control signals to said input-/output means to control which of said input signals is routed to said first output.

4,656,635

LASER DIODE PUMPED SOLID STATE LASER

Thomas M. Baer, Mountain View, and Mark S. Keirstead, San Jose, both of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 730,002, May 1, 1985. This application Dec. 19, 1985, Ser. No. 811,546
Int. Cl.⁴ H01S *3/10*
U.S. Cl. 372—27 **17 Claims**

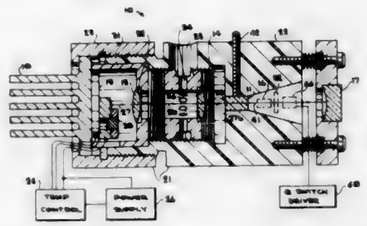
1. A high-efficiency, laser diode pumped array, frequency doubled, compact solid state laser, comprising:

a rare earth doped birefringent solid laser rod selected from the group consisting of Nd:YLF, Nd:YALO having a front end and a back end, the rod producing a polarized output beam;

a housing with means holding the laser rod in fixed position in the housing with its front end forward;

a laser array having a predetermined wavelength pumping the laser rod, having an output frequency sufficently matched to said laser rod to pump said laser rod, secured in the housing behind and in optical alignment with the rod;

laser cavity means defining a laser cavity mounted in the housing with the laser rod positioned within the cavity, the laser cavity means further including within the cavity an output coupler means;



a frequency doubler, positioned to receive a suitably polarized output beam from said laser rod and to halve its wavelength and double its frequency;

a polarization means for polarizing the output beam of the laser rod and substantially maintaining a polarization which optimizes frequency doubling at the frequency doubler and

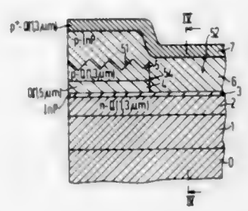
means for matching a focused image of the laser diode with a lasing volume of the laser cavity.

4,656,636

METHOD FOR MANUFACTURING OF INTEGRATED DFB LASER WITH COUPLED STRIP WAVEGUIDE ON A SUBSTRATE

Markus-Christian Amann, Munich; Hans F. Mahlein, Unterhaching; Bernhard Stegmueller, Augsburg; Wolfgang Thulke, Munich; Gerhard Winzer, Putzbrunn, and Ulrich Wolff, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 784,673, Oct. 3, 1983, abandoned. This application Dec. 23, 1985, Ser. No. 810,611
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1984, 3436306
Int. Cl.⁴ H01S *3/19*; H01L *21/00, 21/306*; B44C *1/22*
U.S. Cl. 372—50 **22 Claims**



1. An integrated structure on a substrate comprising in sequence:

a first layer disposed above and closest to said substrate;

a laser-active layer disposed above and partially overlapping said first layer;

a second layer disposed adjacent and coextensive with said laser-active layer and having an upper surface with a grating therein;

a third layer disposed adjacent said second layer and partially overlapping said first layer beyond said laser-active layer;

a fourth layer disposed adjacent and coextensive with said third layer;

said laser-active layer, said second layer, said third layer and said fourth layer forming a transverse strip structure above said first layer operable as a laser; and

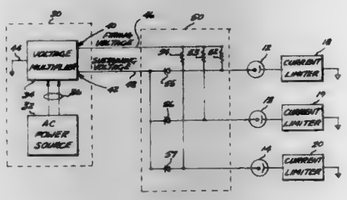
said substrate, said laser-active layer and said third layer having a higher refractive index than said first layer, said laser-active layer being disposed close enough to said first layer to establish optical coupling therebetween, and said first layer having a selective thickness such that said first layer is operable as a strip waveguide.

4,656,637

MULTIPLE RING LASER GYRO POWER SUPPLY

Willis G. McCormick, Redmond, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Feb. 14, 1985, Ser. No. 701,395
Int. Cl.⁴ H01S *3/00*
U.S. Cl. 372—38 **8 Claims**



1. A power supply means for providing electrical power to a plurality of lasers, each laser containing a gas lasing means of a ring laser gyro, the power supply means comprising:

means for producing a firing voltage at a first terminal and a sustaining voltage at a second terminal, the firing voltage firing each laser by initiating current flow therethrough and the sustaining voltage sustaining current flow through each laser after the laser has fired; and

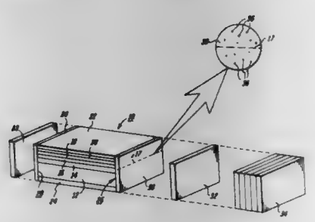
interface means associated with each laser for coupling said laser to the first and second terminals, each interface means comprising resistive means for connecting said laser to the first terminal, and diode means for connecting said laser to the second terminal in such a way that the diode means does not permit current flow between said first and second terminals when said first terminal is at the firing voltage and said second terminal is at the sustaining voltage.

4,656,638

PASSIVATION FOR SURFACES AND INTERFACES OF SEMICONDUCTOR LASER FACETS OR THE LIKE

Peter Tihanyi, Palo Alto, and Robert S. Bauer, Portola, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 14, 1983, Ser. No. 466,763
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—49 **6 Claims**



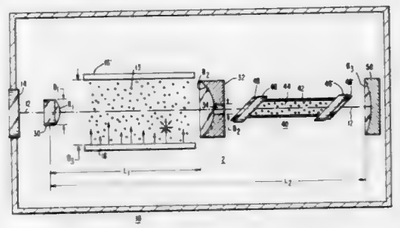
1. In a semiconductor light emitting device, such as a semiconductor laser or the like, a passivating layer deposited on a facet of said device to getter contaminants from said facet and comprising a thin layer of a reactive material, the thickness of said layer sufficiently thick to react with an optimum amount of said contaminants on said facet but sufficiently thin so as to be consumed in the gettering process and to render said layer electrically nonconductive if initially conductive in nature, the thickness of said layer being less than 100 Å, said reactive material selected from the group consisting of Al, Si, Ta, V, Sb, Mn, Cr and Ti.

4,656,639

LASER GENERATING APPARATUS UTILIZING FREQUENCY AGILE UNSTABLE RESONATOR LOW PRESSURE GAIN CELL AND TUNING MEANS

Deanis R. Suhre, Monroeville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 17, 1985, Ser. No. 788,302
Int. Cl.⁴ H01S *3/097*
U.S. Cl. 372—83 **10 Claims**



1. An infrared-generating tuned transverse excited atmospheric (TEA) laser-energy-generating apparatus comprising:

a sealed primary envelope means having an optical axis and enclosing a predetermined gaseous mixture, said gaseous mixture comprising carbon dioxide and other predetermined gases at about atmospheric pressure, and a radiation-transmitting window means located proximate one end of said sealed primary envelope means;

spaced high voltage electrodes positioned within said primary envelope means and generally paralleling one another at a predetermiend distance about said optical axis of said primary envelope means, and said electrodes operable to produce therebetween an electric discharge, said electric discharge further producing a substantial number of lasing transitions, said lasing transitions having different optical gains which are characteristic of said discharge produced in said predetermiend gaseous mixture;

a first reflective means of predetermined relatively small peripheral diameter positioned upon said optical axis of said primary envelope means and at a location proximate the ends of said electrodes which are located nearest said window means, said first reflective means having a predetermined radius of curvature, a second reflective means of predetermined large diameter relative to said first reflective means, said second reflective having a predetermined radius of curvature, said second reflective means positioned on said optical axis of said primary envelope means and at a position proximate the ends of said electrodes which are located remote from said window means, an aperture of predetermined diameter provided through said second reflective means and coincident with said optical axis of said primary envelope means, and said first and said second reflective means operable to reflect said lasing transitions comprising said electric discharge;

gain cell means enclosed within said primary envelope means, said gain cell means comprising a relatively small elongated envelope which is aligned with said optical axis of said primary envelope means and is positioned on the

opposite side of said second reflective means from said spaced electrodes, said gain cell means enclosing the same predetermined atmosphere as said primary envelope means but at a predetermined low pressure, hollow spaced electrodes positioned proximate the ends of said relatively small elongated envelope means operable to produce a low pressure gain cell electric discharge, said small elongated envelope including radiation-transmitting window means at the ends thereof, and said gain cell means operating as a selective filter to pass only a predetermiend limited porition of said lasing transitions; and,

a reflecting means within said primary envelope means and aligned with said optical axis of said primary envelope means and said gain cell means and positioned on the opposite side of said gain cell means from said second reflective means (producing a multiplicity of resonator modes), said reflecting means operable to receive and reflect said lasing transitions which pass through said gain cell means, and said lasing transitions reflected from said reflecting means and then passing again through said gain cell means and then through said aperature in said second reflective means and thence through said electric discharge in said primary envelope means where lasing transitions and said resonator modes passed by said gain cell means are amplified by multiple reflections between said first and said second reflective means to form a laser beam comprising a discrete lasing transition and discrete resonator mode which are all ultimately passed about the periphery of said first reflective means and through said window means out of said primary envelope means.

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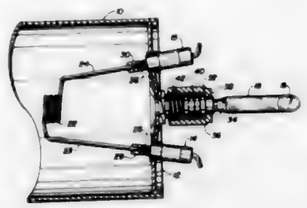
MODULAR GAS LASER CATHODE ASSEMBLY

Royal D. Peterson, Alpharetta, Ga., and Ronald E. Jones, Cupertino, Calif., assignors to Continental Laser Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 692,787, Jan. 17, 1985. This application May 6, 1985, Ser. No. 731,134

Int. Cl.⁴ H01S *3/097*

U.S. Cl. 372—87 **5 Claims**



1. In a gas laser, a construction for a cathode assembly comprising,

a laser tube including a housing,

cathode electrode means disposed within the housing at an end of the tube for providing ionizing electrons to a gas medium in said housing, said electrode means terminating in at least one cathode wire located entirely inside of the laser tube,

feedthrough means bonded to said housing for bringing electrically conductive leads into said housing into electrical communication with the cathode wire while maintaining insulation of said leads,

swaged electrically conducting sleeve means located inside said laser tube for mechanically securely joining in electrical conduction said leads to said cathode wire.

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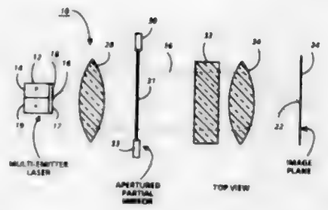
LASER CAVITY OPTICAL SYSTEM FOR STABILIZING THE BEAM FROM A PHASE LOCKED MULTI-EMITTER BROAD EMITTER LASER

Donald R. Scifres, Los Altos, and Robert A. Sprague, Saratoga, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1985, Ser. No. 697,811

Int. Cl.⁴ H01S *3/08*

U.S. Cl. 372—103 **29 Claims**



1. A laser cavity optical system for collimating a light output from a multi-emitter or broad emitter semiconductor laser capable of producing a multiple or broad low divergence output beam from said laser, said laser near field having a single beam waist position in a first spatial directional near the emission facet of said laser and having an elongated but phase coherent far field emitting pattern in a second spatial direction, a lens system positioned at one facet of said laser for imaging said near field of said single beam waist position in said first spatial direction and reimaging said far field pattern in said second spatial direction after having first focused said pattern in said second spatial direction to a single beam waist position, the improvement comprising a feedback means which is partially reflecting and partially transmitting and is located at the second spatial direction beam waist position to stabilize the laser beam and prevent laser beam shift at higher operating powers and operating temperatures.

4,656,642

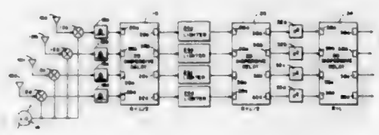
SPREAD-SPECTRUM DETECTION SYSTEM FOR A MULTI-ELEMENT ANTENNA

John T. Apostolos, Merrimack, and Chester E. Stromswold, Nashua, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 18, 1984, Ser. No. 601,453

Int. Cl.⁴ H04B *15/00*

U.S. Cl. 375—1 **14 Claims**



12. A system for detecting spread-spectrum signals comprising:

A. a plurality of antenna elements arranged as an antenna array, which generated at antenna element outputs, a plurality of antenna element output signals;

B. a two-dimensional compressive receiver operably connected to the antenna element outputs at a plurality of input ports, each input port associated with one of the antenna element outputs, for generating a plurality of time compressed signals at a plurality of two-dimensional compressive receiver output ports, the number of compressive receiver input ports not necessarily equal to the number of compressive reciver output ports;

C. a plurality of limiter circuits, each associated with one of the compressive receiver output ports, for generating a plurality of limiter outputs in which any portion of a compressive receiver output above a threshold amplitude is eliminated; and

D. a spread-spectrum processor circuit for detecting the spread spectrum signals present in at least one of limiter the outputs.

4,656,643

LINE INTERFACE CIRCUIT

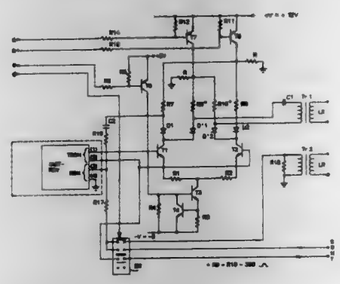
Michel Geneste, Vence, and Christian Jacquart, Gattiere, both of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 12, 1985, Ser. No. 764,460

Claims priority, application European Pat. Off., Aug. 24, 1984, 84430030.1

Int. Cl.⁴ H04L *1/24*

U.S. Cl. 375—10 **4 Claims**



1. A line interface circuit for selectively, in one state, interconnecting the transmit and receive ports of a transmit receive device to transmit and receive lines, respectively, and in another state to each other through an active portion of the said line interface circuit, said line interface circuit comprising:

a power supply;

a differential amplifier having a first and second input and first and second outputs;

first means connecting the first and second differential amplifier inputs to the transmit ports of the transmit-receiver device;

a first load circuit connected to the first and second differential amplifier outputs and to the transmit line;

first switching means connecting said first load circuit to the power supply and arranged such that power is supplied to said differential amplifier when the first switch means is turned on by a control signal;

a second load circuit connected to said first and second differential amplifier outputs and to the receive ports of the transmit receive device;

second switching means connecting said second load circuit to the power supply and arranged such that power is supplied to said differential amplifier when the second switch means is turned on by a control signal;

third switching means connecting the receive ports of transmit receiver device to the receive line under control of a third control signal;

logic control means for selectively supplying control signals to said first and second switching means whereby said differential amplifier is connected between the transmit ports of the transmit receiver device and the transmit line and the differential amplifier outputs are isolated from the receive ports of the transmit receive device when the first switch means is turned on and the second switch means is not turned on, and the said third control signal controls said third switching means to connect the receive ports to the receive lines, and the differential amplifier outputs are connected to the receive ports of the transmit receiver device and the differential amplifier outputs are isolated from the transmit line when the second switch means is turned on and the first switch means is not turned on, and the said third control signal controls said third switching means to disconnect the receive ports from the receive line.

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DIGITAL RADIO RECEIVING APPARATUS

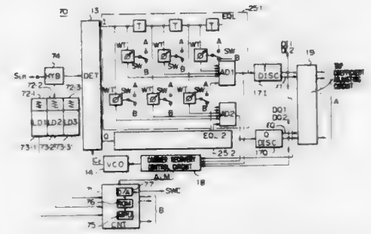
Takayuki Ozaki, Nasu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 11, 1984, Ser. No. 659,963

Claims priority, application Japan, Oct. 14, 1983, 58-191026; Oct. 14, 1983, 58-191029; Mar. 13, 1984, 59-47818

Int. Cl.⁴ H04B *3/04*

U.S. Cl. 375—14 **21 Claims**



11. A digital radio receiving apparatus operatively connected to receive an intermediate frequency signal representing original data, comprising:

transversal demodulator means, operatively connected to receive the intermediate frequency signal, for providing weighting values and for converting the intermediate frequency signal into reproduced data corresponding to the original data, in dependence upon thhe weighting values;

internal control means for generating an internal control signal in dependence upon the reproduced data, said transversal demodulator means providing the weighting values in dependence upon the internal control signal during normal operation of said transversal demodulator means;

alarm means for providing an alarm signal when said transversal demodulator means operates abnormally; and

external control means for generating an external control signal in response to the alarm signal, the external control signal repeatedly adjusting the weighting values until said transversal demodulator means is restored to normal operation.

4,656,645

RADIO COMMUNICATION SYSTEM

Kunio Kaneko, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 1, 1985, Ser. No. 718,515

Claims priority, application Japan, Apr. 2, 1984, 59-63195

Int. Cl.⁴ H04B *7/02*

U.S. Cl. 375—40 **11 Claims**

1. A radio communication system comprising:

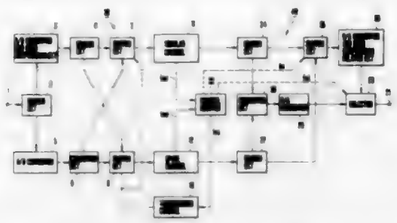
a transmitting station for receiving an input digital signal and transmission thereof and a receiving station for receiving a transmitted signal and delivery thereof;

first and second transmission channels for linking said transmitting and receiving stations;

band compression means, provided at said transmitting sta-

tion, for compressing by half the transmission speed of the digital signal;

converter means, provided at said transmitting station, for converting the input digital signal into two digital signals being each halved in transmission speed; and



switching means responsive to status of said first and second transmission channels to effect switchover between a first transmission mode for transmission of the output of said band compression means and a second transmission mode for transmission of the outputs of said converter means.

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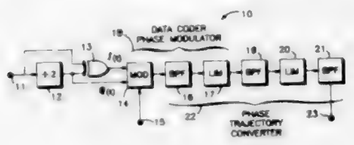
SERIAL MINIMUM SHIFT-KEYED MODEM

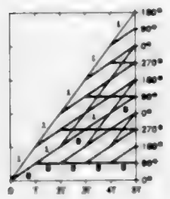
Carl R. Ryan, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 619,418, Jun. 11, 1984, abandoned. This application Mar. 27, 1986, Ser. No. 846,497

Int. Cl.⁴ H04L *27/10*

U.S. Cl. 375—47 **15 Claims**





1. Serial minimum shift keyed divide-by-two (SMSK/2) modem, wherein said SMSK/2 modem is defined as dividing an incoming serial bit stream data signal by two and transmitting and receiving a modulated minimum shift keyed (MSK) serial signal, said SMSK/2 modem comprising:

SMSK/2 modulator means having at least three phase changes possible per bit period; and

SMSK/2 demodulator means for demodulating said modulated signal.

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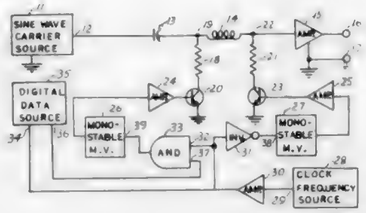
PULSED BI-PHASE DIGITAL MODULATOR SYSTEM

William Hotine, 633 Ramona Ave., Los Osos, Calif. 93402

Filed May 17, 1985, Ser. No. 735,330

Int. Cl.⁴ H04L *27/20*

U.S. Cl. 375—52 **4 Claims**



1. The method of identifying binary digits for modulation by phase shift of a sine wave carrier frequency which comprises:

generating a sine wave carrier frequency;

generating a square wave modulating frequency used as the clock frequency for serial binary digit logic signals;

applying said carrier frequency to the input of a reactive-resistive phase shift circuit including semiconductor switches for controlling said circuit to change the trigonometric sign of the phase angle of said carrier frequency at the output of said circuit;

shifting the phase of said carrier frequency to a leading or negative phase angle at said output by actuating a first said semiconductor switch;

shifting the phase of said carrier frequency to a lagging or positive phase angle at said output by actuating a second said semiconductor switch;

actuating said switches for a time period of one half or less of a cycle of said modulating frequency by digital circuit means responsive to said logic signals and to said modulating frequency;

identifying a first type of binary digit by a phase shift of one trigonometric sign at the start of a cycle of said modulating frequency and by a phase shift of the opposite trigometric sign at the middle of said cycle and

identifying a second type of binary digit by a phase shift at the middle of a cycle of said modulating frequency of the same trigonometric sign used at the middle of a said cycle for identifying said first type binary digit, whereby said types of said binary digits can be unambigously identified for demodulation by said phase shifts and whereby every said "binary" digit provides a phaes shift synchronization signal for demodulation and recovery of said clock frequency.

4,656,648

PROCESS FOR THE NONCOHERENT DEMODULATION OF A DIGITAL SIGNAL

Robert Vallet, 14 rue des Fougères, 911130 Rés Orangis, France

PCT No. PCT/FR84/00123, § 371 Date Jan. 9, 1985, § 102(e) Date Jan. 9, 1985, PCT Pub. No. WO84/04640, PCT Pub. Date Nov. 22, 1984

PCT Filed May 4, 1984, Ser. No. 691,080

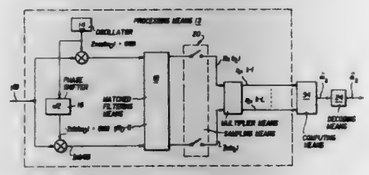
Claims priority, application France, May 9, 1983, 83 07711

Int. Cl.⁴ H04L *27/22*

U.S. Cl. 375—80 **10 Claims**

1. A process for the noncoherent demodulation of a signal y(t), said signal y(t) consisting of a signal x(t) on which is superimposed a Gaussian white noise b(t), said signal x(t) being linearly modulated by a sequence of information symbols $\alpha_0, \ldots, \alpha N-1$ taken from an alphabet α, in which N is a nonzero integer, said symbols being emitted at successive dates separated by a time interval T, said signal x(t) being centered on a

carrier frequency f_0, wherein the process comprises processing the signal y(t) to obtain N data blocks, $z_{k,k-1}, \ldots, z_{k,k-L}$, in which L is a non-zero integer and $0 \leq k \leq N-1$, said data being defined for $1 \leq l \leq L$, by $z_{k,k-l} = r_k \cdot r^*_{k-l}$ on which r^*_{k-l} is the



conjugate complex of r_{k-l} and in which $r_0, \ldots, r_{N-1}$ is a sequence of observations containing all the information of the signal y(t), maximizing a quantity $V(\alpha_0, \ldots, \alpha_{N-1})$ in which $\alpha_0, \ldots, \alpha_{N-1}$ is a sequence of symbols of the alphabet α, said quantity being equal to

$$Re\left(\sum_{k=0}^{N-1} \alpha_k \cdot \sum_{l=1}^{L} \alpha^*_{k-l} \cdot z_{k,k-l}\right)$$

in which Re signifies "real part of" and α^*_{k-l} is the conjugate complex of α_{k-l}, and in which the index k−l is between 0 and N−1, said maximization being obtained by a recursive algorithm.

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CLOCK FREQUENCY DIVIDER CIRCUIT

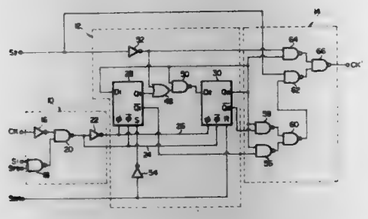
Hideo Takahashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 18, 1985, Ser. No. 810,123

Claims priority, application Japan, Dec. 18, 1984, 59-266747

Int. Cl.⁴ H03K *21/02, 21/10, 5/156*

U.S. Cl. 377—48 **5 Claims**



1. A clock frequency divider circuit for producing a signal of a desired frequency in response selectively to input clock pulses of a first predetermined frequency or input clock pulses of a second predetermined frequency, comprising

(1) means for receiving first and second frequency selection signals each having first and second logic states,

(2) means for receiving a synchronizing signal of a predetermined frequency larger than each of said first and second predetermined frequencies,

(3) a clock control network which is responsive to said first frequency selection signal and to said synchronizing signal and which is to be supplied selectively with input clock pulses of said first predetermined frequency or input clock pulses of said second predetermined frequency, the clock control network being operative to produce a first control signal of a frequency which is equal to the frequency of said input clock pulses except in the presence of the first frequency selection signal of the second logic state and in the concurrent presence of said synchronizing signal, or a second control signal of a predetermined logic state in the copresence of the first frequency selection signal of the second logic state and said synchronizing signal,

(4) a frequency division network which is responsive to said second frequency selection signal and selectively to said first or second control signal and which is operative to produce a first frequency-divided signal of a frequency equal to a first predetermined fraction of said first predetermined frequency in the presence of the second frequency selection signal of the first logic state, or a second frequency-divided signal of a frequency equal to a second predetermined fraction of said second predetermined frequency in the presence of the second frequency selection signal of the second logic state, and

(5) a frequency selector network responsive to said second frequency selection signal and selectively to said first or second frequency-divided signal, said frequency selector network being operative to produce output clock pulses of a frequency equal to a first predetermined multiple of the frequency of said first frequency-divided signal in the presence of the second frequency selection signal of the first logic state, or output clock pulses of a frequency equal to a second predetermined multiple ("2") of the frequency of said second frequency-divided signal in the presence of the second frequency selection signal of the second logic state.

4,656,650

X-RAY DIAGNOSTIC APPARATUS FOR ELIMINATING SCATTERED X-RAY COMPONENTS

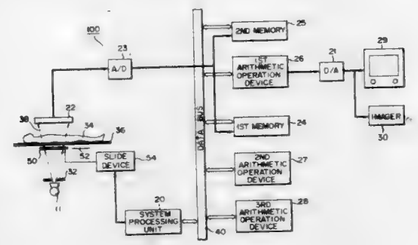
Katsuya Kikuchi, and Michitaka Honda, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 2, 1985, Ser. No. 719,168

Claims priority, application Japan, Apr. 3, 1984, 59-66259

Int. Cl.⁴ H05G *1/64;* **G01N** *23/00*

U.S. Cl. 378—7 **7 Claims**



1. An X-ray diagnostic apparatus comprising:

X-ray source means for generating X-rays;

X-ray detection means for detecting an X-ray image of an object under examination by projecting said X-rays from said X-ray source toward said object over an X-ray projection area and for converting a resultant detected image into X-ray transmission signals;

analog-to-digital converter means for converting said X-ray transmission signals into corresponding digital X-ray transmission data;

X-ray shield member means, having a plurality of X-ray shields, for selectively blocking the transmission of said X-rays from said X-ray source means to said X-ray detection means through said object for selected blocked portions of said projection area;

first memory means for temporarily storing first X-ray transmission data acquired from said analog-to-digital converter means with said X-ray shield member inserted into said X-ray projection area;

second memory means for temporarily storing second transmission data acquired from said analog-to-digital con-

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verter means with said X-ray shield member removed away from said X-ray projection area; and

arithmetic operation means:

(i) for performing a first subtraction between said first X-ray transmission data and said second X-ray transmission data to obtain first X-ray intensity data of said selected blocked portions of said projection area which are shielded by said X-ray shields;

(ii) for performing bilevel quantization to said first X-ray intensity data to obtain bilevel data which identifies those portions of said first X-ray transmission data corresponding to said selected blocked portions of said projection area;

(iii) for obtaining, as a function of said bilevel data, selected data from said selected blocked portions of said first X-ray transmission data;

(iv) for interpolating said selected data over said projection area; and

(v) for performing a second subtraction between said second X-ray transmission data and said interpolated selected data to obtain third X-ray transmission data essentially free from scattered X-ray components.

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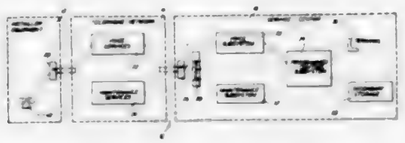
SYSTEM FOR PROVIDING REMOTE SERVICES

David S. Evans, Newtown; Mark G. Smith, Naugatuck; Francisco A. Middleton, and Franklin Hargrave, both of Newtown, all of Conn., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 9, 1985, Ser. No. 774,113

Int. Cl.⁴ H04M *1/24*

U.S. Cl. 379—1 **16 Claims**



1. A system for providing remote services, said system comprises:

a service center, said service center being responsive to remote requests received via a telecommunication network, said service center including means for automatically vocally responding to the requestor providing said remote requests

a voice-based subsystem, said voice-based subsystem including said vocally responding means, means for receiving vocalized commands from said requestor, and means for receiving dual tone multifrequency tonal signals;

a controller, said controller being preprogrammed to respond to inputs from said voice-based subsystem and to command said voice-based subsystem to provide said vocalized responses; and

a modem, said modem bidirectionally communicating with controller.

4,656,652

EMERGENCY WARNING DEVICE FOR USE IN A PARTY LINE TELEPHONE SYSTEM OR THE LIKE

Kyoichi Nagai, 1-9-2 Kamiasrtmoo, Taitoh-ku, Tokyo, Japan

Filed Dec. 13, 1984, Ser. No. 681,231

Claims priority, application Japan, Dec. 16, 1983, 58-237220

Int. Cl.⁴ H04M *11/04*

U.S. Cl. 379—41 **2 Claims**

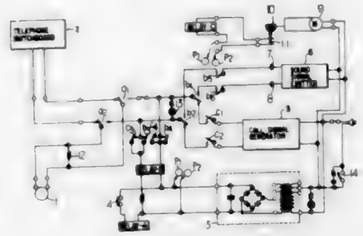
2. An emergency warning device for use with a party line telephone system or an interphone system, which comprises:

an alarm signal circuitry including a call signal generator for ringing the bell of a telephone or the like and a sound signal generating means for giving a warning message of a state of emergency;

a control switch;

a first switching means for switching the telephone system from its normal communication state in which the telephone system is connected with a telephone switchboard to its emergency state in which the telephone system is connected with said alarm circuitry output when said control switch is activated;

a second switching means, having actuating means for switching said alarm signal circuitry from its normal communication state in which the alarm signal circuitry output is connected with said call signal generator to its



emergency state in which the alarm signal circuitry output is connected with said sound signal generating means;

an intermittently actuated relay; and

a circuit actuated by said relay and incorporating a first switch which is connected in series to said call signal generator so as to intermittently issue an alarm call and a second switch having a pair of break contact switches arranged in series between the telephone system and the actuating means of said second switch means to actuate said second switch means to its emergency state if a telephone goes off-hook and a pair of self-induced make contact switches connected in parallel to said break contact switches of said second switch to hold said second switch means in its emergency state.

4,656,653

CORDLESS TELEPHONE APPARATUS HAVING MEANS FOR SYNCHRONIZING CHANNEL SCANNING OF FIXED AND PORTABLE UNITS

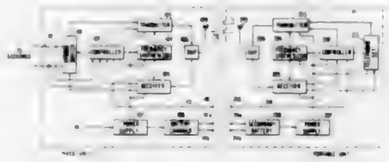
Toshiaki Oda, and Akio Yotsutani, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 28, 1986, Ser. No. 856,253

Claims priority, application Japan, Apr. 30, 1985, 60-65265[U]

Int. Cl.⁴ H04Q *7/04*

U.S. Cl. 379—61 **17 Claims**



1. A cordless telephone apparatus comprising:

a fixed unit and a portable unit, each having control means for channel scanning to determine whether or not each of a plurality of channels is engaged, said portable unit being battery-charged in a state where it is attached to said fixed unit;

a connecting line for transmitting and receiving signals between said two control means in a state where said portable unit is attached to said fixed unit; and

means for synchronizing the channel scanning processes of said two control means through said connecting line.

4,656,654

COMPUTER ASSISTED GRAPHIC TELECONFERENCING METHOD AND APPARATUS

Neil S. Dumas, Mclean, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

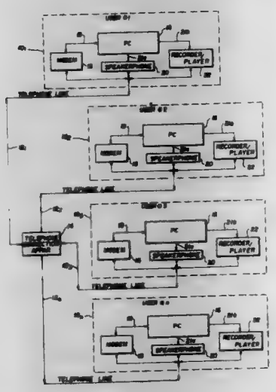
Continuation of Ser. No. 598,751, Apr. 11, 1984, abandoned. This application Apr. 8, 1986, Ser. No. 849,314

Int. Cl.⁴ H04M *11/00*

U.S. Cl. 379—96 **7 Claims**

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 21 Pages)



1. A method of integrating graphics into a teleconference between at least two participants, a local user and a remote user, each provided with a computer programmed to control a programmable modem including a receiver and a transmitter, and a respective telephone apparatus including a speakerphone connectable to a telephone line for voice conferencing, comprising the steps of:

initializing said modem so that said receiver continuously silently monitors telephone communications between users without interference with voice conferencing except when transmitting;

initializing predetermined program variables in the computer program of said computer including enabling said modem transmitter to transmit graphic images;

displaying a first menu of a plurality of local user options, said first menu including the selective steps of: connecting to an incoming phone call, dialing a remote user telephone, interrupting the modem receiver to transmit a graphic image during the interruption, transmitting a full library and respective index of graphics to at least one said remote user, receiving a full library and respective index of graphics from at least one said remote user, and storing at least one of said libraries and its respective index in local user storage;

selecting a first menu option and depending on the selection displaying a second menu of a plurality of local user options;

checking the selection of any second menu options and executing a selected option and, if none is selected, checking for the reception of a graphic code from a remote user to display either a specified graphic image received from said remote user and stored in local user storage or to display a graphic image contemporaneously generated and transmitted from the remote user.

4,656,655

REMOTE CONTROL ADAPTER OF ELECTRIC EQUIPMENT USING TELEPHONE LINES

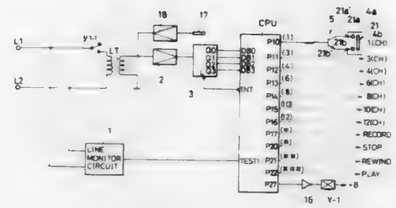
Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Oct. 23, 1985, Ser. No. 790,647

Claims priority, application Japan, Oct. 23, 1984, 59-222592

Int. Cl.⁴ H04M *11/06*

U.S. Cl. 379—105 **8 Claims**



1. A remote control adapter for interfacing a remote control unit for electric equipment with telephone lines, the control unit having a plurality of selection switches for selectively controlling said equipment, the adapter comprising:

receiving means for supporting said remote control unit in a suitable direction for remote control of said electric equipment, said receiving means including means for controlling said selection switches;

engaging means for automatically detecting a telephone ringing signal and engaging the telephone lines;

a tone decoder for converting a remote control signal transmitted by calling party through said telephone lines;

said controlling means operated by said tone decoder for switching said selection switches arranged in said remote control unit; and

disengaging means for detecting an on-hook signal and disengaging said telephone lines from said remote control adapter.

4,656,656

CALL-ACCOUNTING SYSTEM

Thomas C. Mundy, Jr., and Frank Ingle, both of Jacksonville, Fla., assignors to Mundy Communications Corporation, Jacksonville, Fla.

Filed Feb. 11, 1985, Ser. No. 700,812

Int. Cl.⁴ H04M *15/34*

U.S. Cl. 379—113 **15 Claims**

1. A system for processing and billing records of telephone calls made from a plurality of stations located in an institution having a transient population of n persons, said system comprising in combination,

at least n stations which comprise dial-telephone equipment capable of placing outgoing long-distance telephone calls billable by a long-distance telephone company to said institution,

a private-business-exchange (PBX) means connected to said n stations, said PBX means including a call-detail-recording (CDR) means which generates and stores signals which record the digits dialed, the trunk group used, the duration of the call, and a time of day for one end of a call,

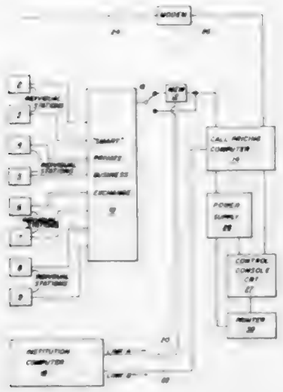
a backup memory means of such capacity as to be able to record upon its internal random-access memory said call-detail-recording signals for approximately at least 7,000 calls,

a call-pricing computer means,

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means selectively connecting said PBX means to said backup memory means and said call-pricing computer means,

an institution computer means which operates to maintain records of the census and locations of the n persons comprising the population of said institution and the charges applicable to the account of each during their stay with said institution,



a control-console cathode-ray tube means (CCCRTM) operatively connected to said call-pricing-computer means,

a printer means operatively connected to said CCCRTM,

means linking said backup memory means to said institution computer means, and

means linking said institution computer means with said call-pricing computer means for bidirectional transmission of signals therebetween.

4,656,657

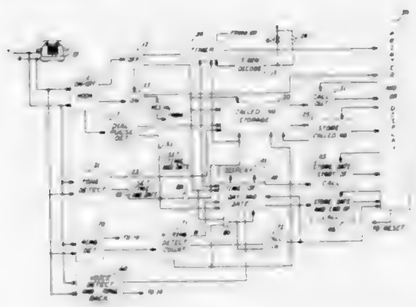
TELEPHONE MONITORING DEVICE

Richard Hunsicker, 40 Summit Rd., Sparta, N.J. 07871

Filed Oct. 15, 1985, Ser. No. 787,690

Int. Cl.⁴ H04M *15/18*

U.S. Cl. 379—140 **20 Claims**



1. A telephone monitoring system for monitoring the status of incoming and outgoing calls to a telephone subset, said telephone subset capable of operating in an on-hook or off-hook condition, and including a dialer for accessing a called number in the off-hook condition, comprising:

means responsive to the on-off hook condition of said subset to provide a first output signal for an off-hook condition and a second output signal for an on-hook condition,

storage means responsive to said first output signal for storing therein a number indicative of a dialed number for accessing a called party,

means responsive to said called party answering said call for providing an output signal,

a time of day and date generator responsive to said output signal for storing therein in a first mode the time and date of said answer according to said output signal,

timing means responsive to said output signal for commencing a timing cycle indicative of the time said called and calling party are in communication,

means responsive to said second output signal indicative of said subset being in the on-hook condition and coupled to said timing means and said time of day and date generator to cause said timing means to end said timing cycle and to cause said time of day and date generator to store in a second mode said date and time said call is ended, and

display means coupled to said timing means, said time of day and date generator and operative in response to said second signal to cause the time of said call, the day and time of the start of said call and the day and time of the end of said call to be displayed for use by a user of said subset.

4,656,658

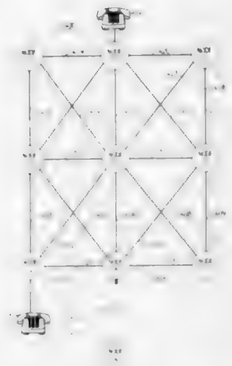
NETWORK ROUTING ARRANGEMENT

Gary S. King, Thornton, Colo., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Oct. 11, 1985, Ser. No. 786,741

Int. Cl.⁴ H04M *7/00*

U.S. Cl. 379—221 **11 Claims**



1. An arrangement for use in a network comprised of a plurality of nodes interconnected by a plurality of steps, said arrangement being adapted for selecting at a current node in a path between an originating node and a terminating node a next step to a next node, comprising

means for storing at least one advance for each of said steps connected to said current node, each of said nodes being a predetermined number of steps from said terminating node, the advance for each one of said steps connected to said current node being (a) the minimum number of steps that another node connected to said each one of said steps is from said terminating node subtracted from (b) the minimum number of steps that said current node is from said terminating node,

means for receiving a routing state from a prior node in said path connected to said current node, said routing state being indicative of the advances of N prior individual ones of said steps in said path, N being a predetermined integer ≥ 3, and

means for selecting as said next step an individual one of said steps connected to said current node which does not connect to said prior node and which has an advance (a) whose sum with the advances of said N prior individual ones of said steps is positive and (b) whose sum with the advances of all but the Nth prior one of said individual ones of said steps is positive.

4,656,659

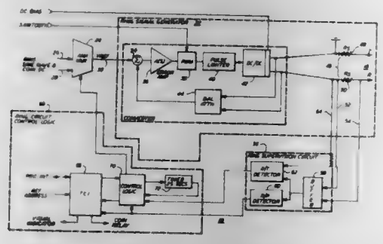
PROGRAMMABLE RING SIGNAL GENERATOR

Ramon C. W. Chea, Jr., Monroe, Conn., assignor to ITT Corporation, New York, N.Y.

Filed Jul. 18, 1985, Ser. No. 756,879

Int. Cl.⁴ H04M *3/02, 19/02*

U.S. Cl. 379—253 **9 Claims**



1. A digitally controlled ring signal generator, comprising:

means for generating a ring signal including a d.c. to d.c. flyback converter for selectively amplifying one of a plurality of low level ringing signals, each of said plurality of ringing signals having a unique frequency whereby immediate ringing is available to one or more subscriber lines;

means for sensing a loop current connected directly to said d.c. to d.c. flyback converter;

means, responsive to said sensed loop current, for generating ringing supervisory signals;

means, responsive to said generating ringing supervisory signals and an external data input, for providing an output control signal; and

a ring signal reference source, said ring signal reference source being responsive to said output control signal, for coupling said ringing signals to said ring signal generating means whereby the characteristics of said ringing signals are selectable in accordance with said external data input and the presence or absence of said generated ringing signals being determined by said ringing supervisory signals, said ring signal reference source having a d.c. voltage source and a sinusoidal voltage source, said d.c. voltage source having a fixed voltage potential, said fixed voltage potential being greater than or equal to the peak amplitude of said sinusoid.

4,656,660

OFFICE LINE HOLDING CIRCUIT WITH AN AUTOMATIC RELEASE FUNCTION FOR DIRECT CONNECTION TELEPHONE SYSTEM

Toshio Nishimura, and Shinichi Tokita, both of Kawasaki, Japan, assignors to Nitsuko Limited, Kawasaki, Japan

Filed May 9, 1985, Ser. No. 732,384

Claims priority, application Japan, May 10, 1984, 59-91787; May 10, 1984, 59-91788; Jul. 25, 1984, 59-113009[U]

Int. Cl.⁴ H04M *1/00*

U.S. Cl. 379—393 **11 Claims**

1. An office line holding circuit with an automatic release function for a direct connection telephone system having a plurality of telephone sets directly connected to a pair of subscriber's drop terminals of a common office line of paired two wires, which comprises:

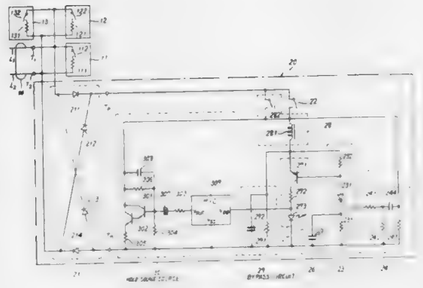
polarity identifying means to be connected to said subscriber's drop terminals and having positive and negative polarity output terminals, said polarity identifying means identifying voltage polarities on said subscriber's drop terminals and coupling one of said drop terminals of a positive polarity with said positive polarity output terminal with the other drop terminals of a negative polarity being coupled with said negative polarity output terminal;

manual switch means to be operated when the office line is desired to be held;

a holding path including resistor means and switching means connected across said positive and negative polarity output terminals, said holding path holding said office line through said polarity identifying means when said switching means is in an on-condition;

turn-on signal generating means connected across said positive and negative polarity output terminals through said manual switch means and generating a turn-on signal in response to operation of said manual switch means, said turn-on signal being applied to said switching means for turning on said switching means so that an office line holding condition is established;

turn-off signal generating means for generating turn-off signal for said switching means in response to an electric voltage variation across said subscriber's drop terminals



due to an off-hook operation at any one of said telephone sets so that the office line holding condition is released;

hold indicator circuit means comprising a switching transistor and an indicator lamp means connected in series with one another across said positive and negative polarity output terminals, said switching transistor having a base connected to said holding path so that said switching transistor is turned on when said switching means is turned on;

switch means for blocking connection of said hold indicator circuit means across said positive and negative polarity output terminals when said switching means is in off-condition; and

driving means for driving said switch means to establish the connection of said hold indicator circuit means across said positive and negative polarity output terminals when said switching means is in an on-condition,

said switch means and said driving means being a self-maintaining relay including a switch contact and a driving coil connected in series with one another, said holding path being connected across said positive and negative polarity output terminal means through said switch contact and said driving coil, said manual switch means being connected in parallel with said switch contact.

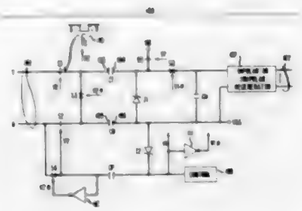
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4,656,661

SWITCHED CAPACITOR COUPLED LINE RECEIVER CIRCUIT

Robert L. Carbrey, Boulder, Colo., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Dec. 13, 1984, Ser. No. 681,484
Int. Cl.⁴ H04B *3/36*
U.S. Cl. 379—399 **8 Claims**



1. A circuit for coupling signals received from a facility to communication apparatus, said circuit comprising

a first capacitor,

a second capacitor,

first means for connecting a first terminal and a second terminal of said first capacitor, respectively, between a first lead of said facility and a first reference voltage during a first time interval and connecting said first and second terminals of said first capacitor, respectively, between a first terminal of said second capacitor and said first reference voltage during a second time interval,

second means for connecting said first terminal and a second terminal of said second capacitor, respectively, between a second lead of said facility and a second reference voltage during said first time interval and connecting said first and second terminals of said second capacitor, respectively, in series between said first terminal of said first capacitor and a first input terminal of a voltage regenerator circuit during said second time interval, and

said voltage regenerator circuit for coupling signals from said capacitors to said communication apparatus and having a second input terminal connected to said first reference voltage.

4,656,662

PERSONAL IDENTIFICATION METHOD AND APPARATUS

Mark D. Fillman, Beavercreek, and Robert H. Granzow, Miamisburg, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

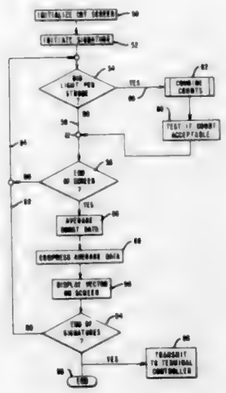
Filed Jul. 18, 1983, Ser. No. 514,992
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 382—3 **12 Claims**

1. A method for personal identification, comprising the following steps:

(a) providing a display device for use in recording of identification indicia;

(b) providing recording means which includes high resolution means for receiving positional data from a display device;

(c) recording a unique pattern of personal identification data remotely from said display device on a separate element and subsequently recording by placing said element on said display device and tracing the path of the recording with said recording means, said recording means picking



up high-resolution positional data from said display device during said movement; and

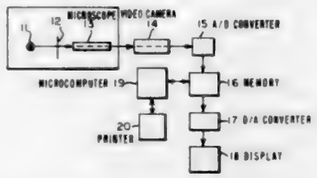
(d) storing said high resolution positional data for reference.

4,656,663

METHOD OF FILM INSPECTION WITH A MICROSCOPICAL IMAGE ANALYZER

Peter A. Jansson, Hockessin; Michael J. Merrill, New Castle, both of Del.; Daniel K. Owens, Circleville, Ohio, and Barry Rubin, Glen Mills, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 6, 1984, Ser. No. 637,801
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 382—8 **5 Claims**



1. In a method of inspecting a transparent film having asperities distributed over its surface, that includes the steps of metallizing the film surface by vapor deposition of a metal impacting the film surface at a preselected shadowing angle to form transparent metallizing shadows adjacent each asperity, illuminating a metallized film sample, and examining an area of the film surface with an optical microscope placed in the path of the light illuminating the sample and transmitted through the metallizing shadows to determine the number and lengths of said metallizing shadows and therefrom the asperity height distribution,

the improvement comprising:

(a) scanning the field of view of the microscope with a video camera to detect metallizing shadows therein,

(b) generating signals responsive to the transmitted light intensity for each metallizing shadow and comparing them with a calculated threshold value adapted to each image, and

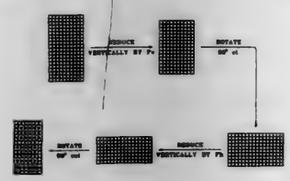
(c) from the signal amplitudes at least equal to the threshold values and from the preselected shadowing angle,, automatically calculating the asperity height distribution within the field of view.

4,656,664

METHOD FOR REDUCING A BINARY IMAGE

Karen L. Anderson, Peekskill, and Frederick C. Mintzer, Shrub Oak, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1984, Ser. No. 664,137
Int. Cl.⁴ G06K *9/42*
U.S. Cl. 382—47 **10 Claims**



Steps of the Reduction Process

1. A method for reducing a binary digital image along two orthogonal axes by factors of F1 and F2 respectively, comprising the steps of:

storing said image in raster scan in order in an input storage area in a computer;

removing one or more lines of bits along one of said orthogonal axes of said stored image to convert i lines of bits to j lines of bits, where $0.5i \leqq j < i$;

repeating said step of removing a predetermined number of times to achieve a reduction by a factor F1 along said one orthogonal axis;

rotating said reduced image in a first direction by ninety degrees;

removing one or more lines of bits along the other of said orthogonal axes in said rotated reduced image to convert i' lines of bits to j' lines of bits where $0.5i' \leqq j' < i'$;

repeating said step of removing a predetermined number of times to achieve a reduction by a factor F2 along said other orthogonal axis; and

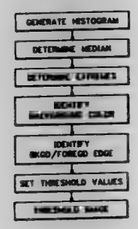
rotating said reduced image in a second direction opposite said first direction by ninety degrees.

4,656,665

THRESHOLDING TECHNIQUE FOR GRAPHICS IMAGES USING HISTOGRAM ANALYSIS

William B. Pennebaker, Carmel, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1985, Ser. No. 692,008
Int. Cl.⁴ G06K *9/39*
U.S. Cl. 382—51 **10 Claims**



1. A method for thresholding image data comprising the steps of:

generating a histogram of an image said histogram including histogram elements representative of a count of pixel elements of said image at predetermined intensities;

computing a median of distribution of the image by summing the histogram elements until a half sum of a total of all pixels is reached;

computing extremes of said distribution;

determining the skew of said distribution from the relative position of said median with respect to said extremes to determine the color of the image background;

determining a width of distribution of image background and defining an edge between background and foreground regions of the image by determining a point located between the median and the background extreme to be at a distance equal to half the distance between the median and the foreground color extreme, the edge point being used as a base for calculating a sequence of threshold levels; and

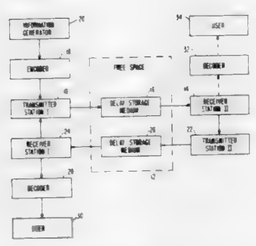
determining said sequence of threshold levels in a foreground region of said histogram by establishing a plurality of points differentially spaced along the distance between said edge point and said foreground color extreme.

4,656,666

METHOD AND APPARATUS FOR HANDLING INFORMATION

Lawrence J. Piekenbrock, 1437 Pearl St., Boulder, Colo. 80302

Filed Oct. 1, 1979, Ser. No. 80,236
Int. Cl.⁴ G11C *21/00*; H04B *7/185*
U.S. Cl. 455—12 **10 Claims**



1. A data storage system comprising:

a first transmitter of first data-carrying electromagnetic radiation located on a first object having a determinable position in space;

a first receiver of second data-carrying electromagnetic radiation located on said first object;

a second transmitter of said second radiation located on a second object having a determinable position moving in a predetermined orbit in outer space free of the earth's atmosphere and removed from said first object by a distance creating substantial delay in propagation of said first and second radiation through said outer space between said first and second objects;

a second receiver of said first radiation located on said second object;

means for directing said first and second radiation respectively from said first transmitter to said second receiver and from said second transmitter to said first receiver through said space;

means for coupling externally-derived intelligence-representing data encoded on said radiation from said first receiver to said first transmitter and from said second receiver to said second transmitter, said receivers and transmitters together with said coupling means and propagation space between said objects establishing a continuously recirculating loop of said data which loop extends between said first and second objects;

means for encoding said data into said loop for storage therein;

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means for extracting said data from said loop after storage therein by repeated recirculation;

said first object being the planet earth; and

in which said directing means broadcasts said first radiation in a confined narrow beam from said first transmitter to said second receiver but broadcasts said second radiation from said second transmitter in a diverging beam which subtends a wide angle that spreads said second radiation over a substantial geographical area of said planet Earth, said wide angle being of a magnitude sufficient to cover a plurality of spaced geographical locations on said planet.

DESIGNS

APRIL 7, 1987

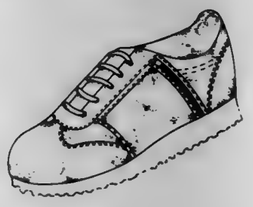
289,100
EDIBLE CONFECTION
Arne Frisch, Bro, Sweden, assignor to Aktiebolaget Cloetta, Sweden
Filed Sep. 19, 1984, Ser. No. 651,997
Term of patent 14 years
U.S. Cl. D1—127



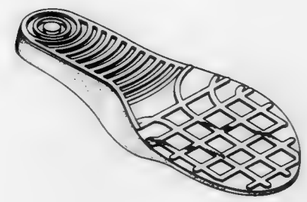
289,101
BOOT
Dieter H. G. Horn, 142 Coolgardie Avenue, Redcliffe, Western Australia, Australia
Filed Jan. 9, 1984, Ser. No. 569,346
Claims priority, application Australia, Jul. 28, 1983, 4564/83
The portion of the term of this patent subsequent to May 1, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—272



289,102
POCKETED ATHLETIC SHOE
Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A., Inc., Chesterfield, Mo.
Continuation of Ser. No. 587,167, Mar. 7, 1984, abandoned, which is a division of Ser. No. 314,136, Oct. 23, 1981, Pat. No. Des. 281,116, which is a continuation-in-part of Ser. No. 107,093, Dec. 26, 1979, Pat. No. Des. 261,823, which is a continuation-in-part of Ser. No. 116,279, Jan. 28, 1980, Pat. No. Des. 261,695. This application Dec. 16, 1985, Ser. No. 808,381
Term of patent 14 years
U.S. Cl. D2—309



289,103
SHOE INSOLE
James C. Autry, Dallas, TX, assignor to Autry Industries, Dallas, Tex.
Filed Aug. 1, 1983, Ser. No. 519,524
Term of patent 14 years
U.S. Cl. D2—318

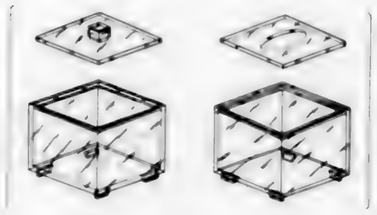


289,104
CANE HANDLE
William F. Kennedy, 411 Lincoln St., Neenah, Wis. 54956
Filed Nov. 13, 1984, Ser. No. 670,304
Term of patent 14 years
U.S. Cl. D3—16

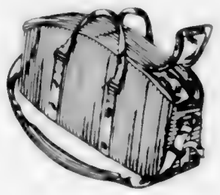


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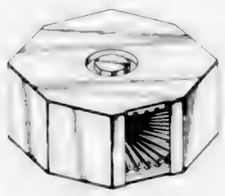
289,105
STACKABLE STORAGE CONTAINER
Howard Seaman, 3101 NW. 25th St., Pompano Beach, Fla. 33060
Filed Oct. 21, 1983, Ser. No. 544,421
Term of patent 14 years
U.S. Cl. D3—30.1



289,106
VIDEO EQUIPMENT CARRYING CASE
Steven G. Leiserson, 9190 Manor Dr., La Mesa, Calif. 92041
Filed Jul. 19, 1984, Ser. No. 632,327
Term of patent 14 years
U.S. Cl. D3—33

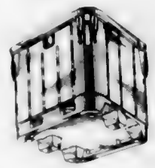


289,107
COMPUTER MINI DISK STORAGE CARROUSEL
Kenneth M. McAlhany, 2612 Cliffview Dr., Lilburn, Ga. 30247
Filed Jan. 9, 1984, Ser. No. 569,288
Term of patent 14 years
U.S. Cl. D3—35

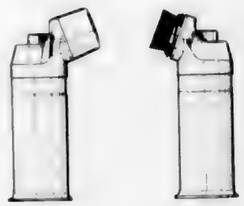


289,108
FISH BOX
Denis Guibault, 5285 des Tilleuls, Montreal, Canada, assignor to Xactics Ltd., Saint John, Canada
Filed Jul. 14, 1983, Ser. No. 513,727
Term of patent 14 years
U.S. Cl. D3—38

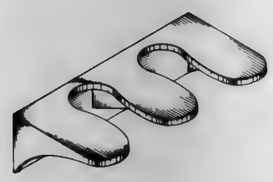




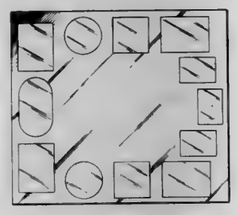
289,109
BRUSH DISPENSER FOR SHOE POLISH OR OTHER LIQUIDS
Herbert Buecheler, Erkrath, and Erich Tuerk, Langenfeld-Reusrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
Filed Oct. 17, 1984, Ser. No. 661,643
Claims priority, application Hague, May 14, 1984, DM/003730
Term of patent 14 years
U.S. Cl. D4—114



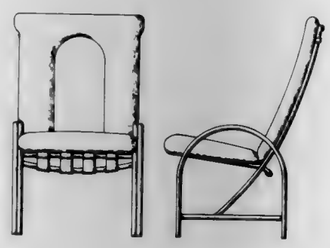
289,110
SUPPORT FOR BOOTS OR THE LIKE
Corwin D. Wagner, 17718 Spruce Way, and Bradford L. Kropp, 20706-53rd W., both of Lynnwood, Wash. 98036
Continuation-in-part of Ser. No. 483,008, Apr. 6, 1983, abandoned. This application Sep. 13, 1984, Ser. No. 650,974
Term of patent 14 years
U.S. Cl. D6—320



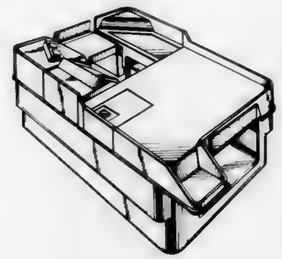
289,111
COMBINED MIRROR AND PICTURE FRAME
Jack W. Barcus, 438 Catalina Dr., Newport Beach, Calif. 92663
Filed Sep. 13, 1984, Ser. No. 650,204
Term of patent 14 years
U.S. Cl. D6—302



289,112
CHAIR
James R. Arthur, Jr., P.O. Box 58081, Birmingham, Ala. 35259
Filed Nov. 29, 1984, Ser. No. 676,234
Term of patent 14 years
U.S. Cl. D6—379



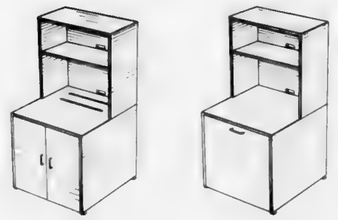
289,113
CHECKOUT COUNTER
Robert M. Woolf, Cincinnati, Ohio, assignor to The Kroger Company, Cincinnati, Ohio
Filed Mar. 16, 1984, Ser. No. 590,166
Term of patent 14 years
U.S. Cl. D6—402



289,114
COMPUTER WORK STATION UNIT
William J. Dickson, Toronto, Canada, assignor to Jamie Dickson Design Inc., Downsview, Canada
Filed Jul. 23, 1984, Ser. No. 633,527
Claims priority, application Canada, Apr. 12, 1984, 12-04-84-10
Term of patent 14 years
U.S. Cl. D6—421

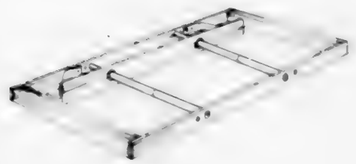






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289,115
DOCUMENT HANGER
Victor R. Spicer, Auckland, New Zealand, assignor to Planborse International (NZ) Limited, Auckland, New Zealand
Filed Aug. 13, 1984, Ser. No. 640,444
Claims priority, application New Zealand, Feb. 13, 1984, 18921
Term of patent 14 years
U.S. Cl. D6—462



289,116
TABLE FOR MOUNTING TELEPHONE FOR FACSIMILE
Masahiro Kando, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 26, 1984, Ser. No. 654,741
Claims priority, application Japan, Apr. 2, 1984, 59-13123
Term of patent 14 years
U.S. Cl. D6—474



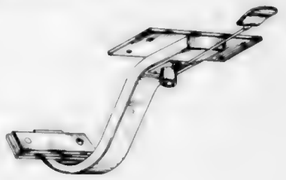
289,117
TABLE
Werner Schmid, Reusweg 50, CH-8001 Zurich, Switzerland
Filed Jul. 6, 1984, Ser. No. 628,419
Claims priority, application Switzerland, Jan. 9, 1984, 113470
Term of patent 14 years
U.S. Cl. D6—484



289,118
COMBINED SEAT AND KNEE REST SUPPORT ARM FOR A CHAIR
Peter Opsvik, Högtunveien 12, 1370 Asker, Norway
Division of Ser. No. 531,869, Sep. 13, 1983. This application Oct. 25, 1985, Ser. No. 791,334
Claims priority, application Norway, Mar. 17, 1983, 63854; Mar. 17, 1983, 63855
Term of patent 14 years
U.S. Cl. D6—491



289,119
COMBINED SEAT AND KNEE REST SUPPORT ARM FOR A CHAIR
Peter Opsvik, Högtunveien 12, 1370 Asker, Norway
Division of Ser. No. 531,868, Sep. 13, 1983. This application Oct. 25, 1985, Ser. No. 791,333
Claims priority, application Norway, Mar. 17, 1983, 63853
Term of patent 14 years
U.S. Cl. D6—500

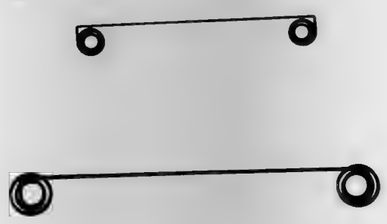


289,120
CHAIR SHELL
Donald T. Chadwick, Los Angeles, Calif., and William E. Stumpf, Winona, Minn., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Feb. 17, 1984, Ser. No. 581,360
Term of patent 14 years
U.S. Cl. D6—502

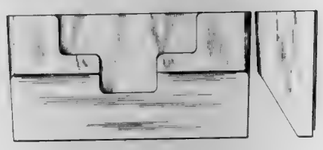


289,121
SPRING FOR BED
Noboru Sasaki, Akishima, Japan, assignor to France Bed Company, Ltd., Tokyo, Japan
Division of Ser. No. 609,890, May 14, 1984. This application Jun. 9, 1986, Ser. No. 872,417
Term of patent 14 years
U.S. Cl. D6—504

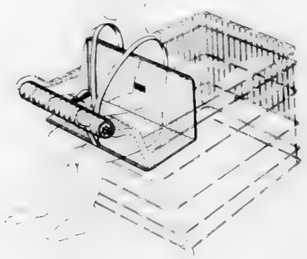




289,122
MAGNETIC WALL-MOUNTED RECEPTACLE
Stephen T. Meyer, Carmel, and C. Rodger Meyer, Noblesville, both of Ind., assignors to Deflecto Corporation, Indianapolis, Ind.
Filed Jun. 27, 1984, Ser. No. 625,096
Term of patent 14 years
U.S. Cl. D6—573



289,123
PORTABLE SEAT PAD FOR USE IN A SHOPPING CART
Ken Tennen, P.O. Box 5411, Ocean Park Station, Santa Monica, Calif. 90405-0411
Filed Sep. 13, 1984, Ser. No. 650,122
Term of patent 14 years
U.S. Cl. D6—596



289,124
BEVERAGE CUP
Steve A. Unger, Manlius, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Apr. 13, 1984, Ser. No. 600,092
The portion of the term of this patent subsequent to Feb. 24, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—9

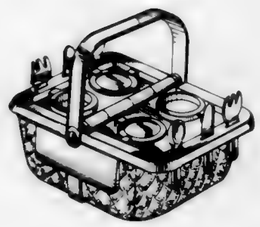


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289,125
GOBLET OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute 62510, Arques, France
Filed Mar. 22, 1985, Ser. No. 714,979
Term of patent 14 years
U.S. Cl. D7—11



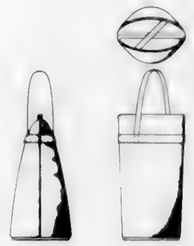
289,127
PICNIC BASKET
Martin Blumenthal, 99 Longview Ave., Chatham, N.J. 07928
Filed Sep. 19, 1983, Ser. No. 533,367
Term of patent 14 years
U.S. Cl. D7—76



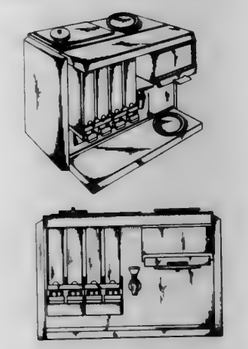
289,126
COMBINATION PEPPER GRINDER AND DISPENSER
David A. Holcomb, and James A. Tryon, both of Seattle, Wash., assignors to F. Bartow Fite, Seattle, Wash.
Filed Sep. 18, 1985, Ser. No. 777,218
Term of patent 14 years
U.S. Cl. D7—53



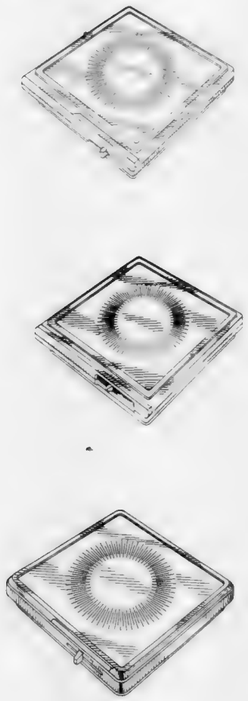
289,128
SINGLE BOTTLE INSULATED BAG
Charlotte S. Bradshaw, 344 139th Ave., San Leandro, Calif. 94578
Filed Jul. 23, 1984, Ser. No. 633,629
The portion of the term of this patent subsequent to Dec. 3, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—77



289,129
HOT BEVERAGE SERVER
Jon R. Syverson, Albert Lea, Minn., assignor to Fountain Industries, Inc., Albert Lea, Minn.
Filed Jun. 18, 1984, Ser. No. 621,688
Term of patent 14 years
U.S. Cl. D7—305



289,130
HOT PLATE
Yasuhiro Rengeji; Tomoaki Sugimoto, both of Yokohama, and Masato Goto, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 27, 1984, Ser. No. 644,530
Claims priority, application Japan, Feb. 27, 1984, 59-7119; Feb. 27, 1984, 59-7121; Feb. 27, 1984, 59-7122
Term of patent 14 years
U.S. Cl. D7—363



289,131
PLANT TAG
William J. Stehouwer, Lansing, Mich., assignor to A. J. Sparks & Company, Grand Rapids, Mich.
Filed Apr. 12, 1984, Ser. No. 599,664
Term of patent 14 years
U.S. Cl. D8—1

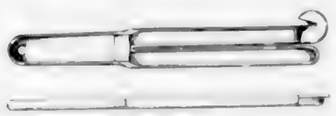


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289,132
TOOL FOR INSERTING CABLES INTO CONDUITS OR THE LIKE
Curtis M. Wright, P.O. Box 83, Dundee, N.Y. 14837, and Charles Wray, 56 W. Green Wood Rd., Andover, N.Y. 14806
Filed Jul. 23, 1984, Ser. No. 634,142
Term of patent 14 years
U.S. Cl. D8—14



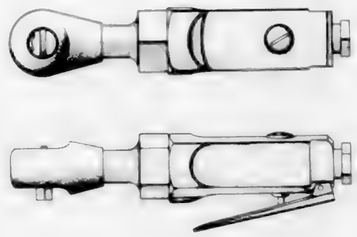
289,133
FOOD POUCH OPENER
Larry W. Taylor, 3 Kirkside Court, Rexdale, Ontario, Canada (M9V 3R5)
Filed Jun. 28, 1984, Ser. No. 625,663
Claims priority, application Canada, Jun. 5, 1984, 0501844
Term of patent 14 years
U.S. Cl. D8—41



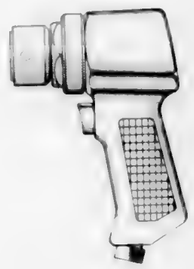
289,134
SELF ADJUSTING BELT TIGHTENING TOOL
Virgil D. Hodges, 7211 Oak Village, Humble, Tex. 77338
Filed Apr. 27, 1984, Ser. No. 604,452
Term of patent 14 years
U.S. Cl. D8—44



289,135
AIR RATCHET
Donald W. Doman, Janesville, Wis., assignor to Snap-on Tools Corporation, Kenosha, Wis.
Filed Dec. 24, 1984, Ser. No. 685,860
Term of patent 14 years
U.S. Cl. D8—61

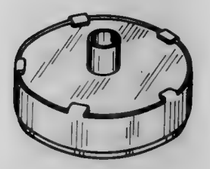


289,136
PNEUMATIC SANDER
Donald W. Doman, Janesville, Wis., assignor to Snap-on Tools Corporation, Kenosha, Wis.
Filed Dec. 24, 1984, Ser. No. 686,023
Term of patent 14 years
U.S. Cl. D8—62

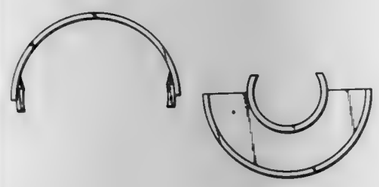


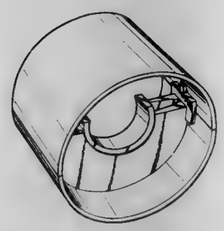


289,137
MAGNETIC CLOSURE CLASP
Yoshihiro Aoki, Tokyo, Japan, assignor to Application Art Laboratories Co., Ltd., Tokyo, Japan
Filed May 18, 1984, Ser. No. 612,016
Term of patent 14 years
U.S. Cl. D8—331



289,138
SNAP-ON HANGER COLLAR FOR PIPES AND THE LIKE
Dean P. Nead, P.O. Box 265, Plymouth, Calif. 95669
Filed Aug. 15, 1984, Ser. No. 641,095
Term of patent 14 years
U.S. Cl. D8—356



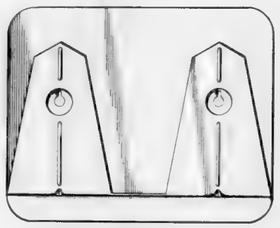


289,139
PICTURE HOOK
Lee R. Chasen, Port Chester, N.Y., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Mar. 20, 1985, Ser. No. 714,178
Term of patent 14 years
U.S. Cl. D8—367





289,140
CONTAINER MOUNTING BRACKET
Danial O. Fischer, Cherokee County, and Ronald F. Cook, Cobb County, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sep. 17, 1984, Ser. No. 650,744
Term of patent 14 years
U.S. Cl. D8—373





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289,141
CLAMPING BODY
Robert Tusso, Greensburg, and Marshall E. Florini, Latrobe, both of Pa., assignors to Federal Laboratories, Inc., Saltsburg, Pa.
Filed Feb. 24, 1984, Ser. No. 583,416
Term of patent 14 years
U.S. Cl. D8—396



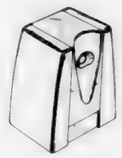
289,142
PERFUME BOTTLE
André44 Allée Berthie Albrecht Bijaoui, 93320 Pavillons Sous Bois, France
Filed Feb. 28, 1984, Ser. No. 584,389
Claims priority, application United Kingdom, Dec. 20, 1983, 1016962
Term of patent 14 years
U.S. Cl. D9—307



289,143
FOOD JAR
Bernard Guillaume, 12 Rue Freville le Vingt, 92310 Sèvres, France
Continuation-in-part of Ser. No. 238,970, Feb. 27, 1981, abandoned. This application May 24, 1984, Ser. No. 613,670
Claims priority, application France, Aug. 29, 1980, 802724
Term of patent 14 years
U.S. Cl. D9—353



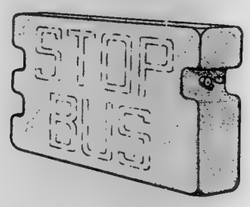
289,144
BOTTLE CAP
Reinhold Geiger, Neuilly, France, assignor to R & A Holding S.A., Fribourg, Switzerland
Filed Apr. 5, 1984, Ser. No. 596,915
Term of patent 14 years
U.S. Cl. D9—448



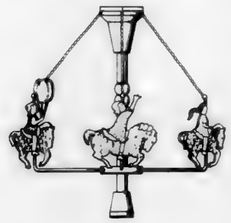
289,145
WRISTWATCH
Adel Homsy, Chene-Bougeries, Switzerland, assignor to Leonard S.A., Switzerland
Filed Aug. 10, 1984, Ser. No. 639,688
Term of patent 14 years
U.S. Cl. D10—32

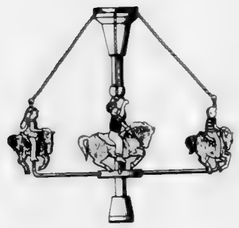


289,146
TRANSLUCENT HAND-HELD BLINKING DEVICE FOR SIGNALING TRANSPORATION, SUCH AS BUS OR TAXI
Clifton Freshwater, 142 Windsor Ave., Westfield, N.J. 07090
Filed Sep. 10, 1984, Ser. No. 648,531
Term of patent 14 years
U.S. Cl. D10—114



289,147
CAROUSEL FOR A CLOCK OR THE LIKE
Gloria Van Boven, 22W021 Temple Dr., Medinah, Ill. 60157
Filed Oct. 31, 1983, Ser. No. 547,253
Term of patent 14 years
U.S. Cl. D10—128





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289,148
VASE
Larry Lasio, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 4, 1984, Ser. No. 616,924
Term of patent 14 years
U.S. Cl. D11—146



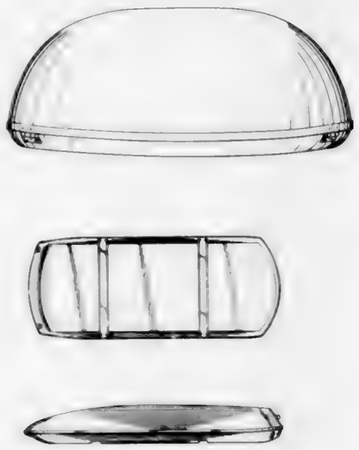
289,149
TRUCK BODY
John Henik, 7400 S. Park Rd., Kansas City, Mo. 64129
Filed May 25, 1984, Ser. No. 613,826
Term of patent 14 years
U.S. Cl. D12—96



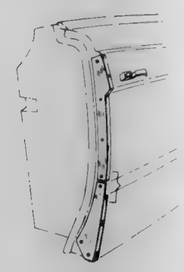
289,150
MOTORCYCLE TIRE
Junichi Kawajiri, and Hiroshi Kojima, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Sep. 14, 1984, Ser. No. 651,393
Claims priority, application Japan, May 2, 1984, 59-17847
Term of patent 14 years
U.S. Cl. D12—140



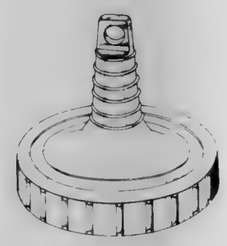
289,151
SKI AND LUGGAGE CONTAINER
Hans Forsman, Strängnäs, Sweden, assignor to Forsman Armerad Plast AB, Sweden
Filed Jul. 5, 1983, Ser. No. 510,959
Term of patent 14 years
U.S. Cl. D12—157



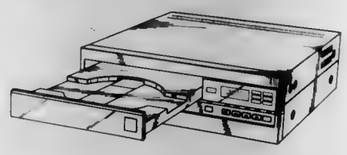
289,152
SET OF DOOR EDGE GUARDS
Albert E. Fritz, 14770 La Rinconada Dr., Los Gatos, Calif. 95030
Filed Apr. 12, 1984, Ser. No. 599,530
Term of patent 14 years
U.S. Cl. D12—190



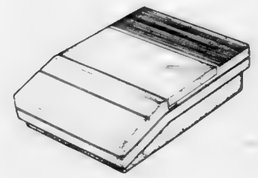
289,153
BOAT ANCHOR
Ira J. Silberman, Opelika, Ala., assignor to Diversified Products Corporation, Opelika, Ala.
Filed Dec. 28, 1984, Ser. No. 687,173
Term of patent 14 years
U.S. Cl. D12—215



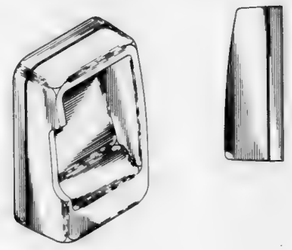
289,154
OPTICAL DISC PLAYER
Kuniyuki Kawamoto; Yutaka Koso, and Akishige Sai, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 27, 1984, Ser. No. 654,910
Claims priority, application Japan, Apr. 2, 1984, 59-12911
Term of patent 14 years
U.S. Cl. D14—1



289,155
TELEPHONE ANSWERING DEVICE
Richard R. Brooks, Greenwood, Ind.; David C. Danielson, New Canaan, Conn.; Jerome M. Gotway, Indianapolis, Ind.; John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Information Systems, Holmdel, N.J.
Filed May 30, 1986, Ser. No. 869,263
Term of patent 14 years
U.S. Cl. D14—4

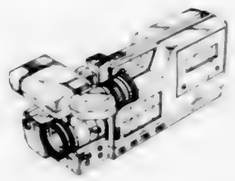


289,156
HOUSING FOR A VEHICULAR TELEPHONE CONTROL UNIT OR SIMILAR ARTICLE
Joseph F. Pulio, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 27, 1984, Ser. No. 644,601
The portion of the term of this patent subsequent to Dec. 18, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—60



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289,157
COMBINED VIDEO TAPE RECORDER AND VIDEO CAMERA
Takayoshi Issi, Kagawa; Masaharu Katayama, Ehime; Noriyuki Arai, Ehime, and Masaki Takemoto, Ehime, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 20, 1984, Ser. No. 622,611
Claims priority, application Japan, Dec. 20, 1983, 58-54819
Term of patent 14 years
U.S. Cl. D14—78



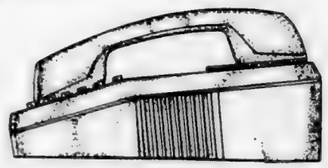
289,158
VIDEO TAPE RECORDER OR THE LIKE
Shin Miyashita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 1, 1984, Ser. No. 636,863
Claims priority, application Japan, Mar. 7, 1984, 59-8753
Term of patent 14 years
U.S. Cl. D14—2

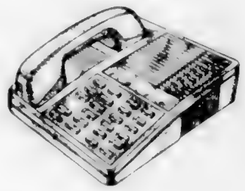


289,159
COIN OPERATED BOX TELEPHONE UNIT
Robert V. Albertson, Wayzata, Minn., assignor to Burd, Bartz & Gutenkauf, Minneapolis, Minn.
Filed Mar. 30, 1984, Ser. No. 595,500
Term of patent 14 years
U.S. Cl. D14—55

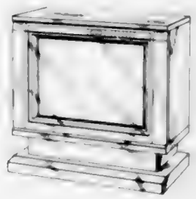


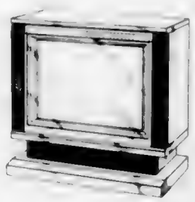
289,160
TELEPHONE
John A. Mahan, Kanata, Canada, assignor to Mitel Corporation, Kanata, Canada
Filed Apr. 25, 1984, Ser. No. 603,531
Claims priority, application Canada, Nov. 1, 1983, 01-11-83-2
The portion of the term of this patent subsequent to Oct. 2, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—58



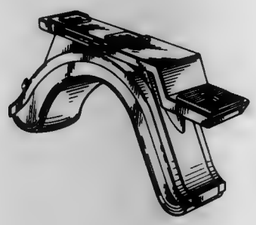


289,161
TELEVISION RECEIVER
Takao Aoki, Hachioji; Toru Kiyota, Tachikawa; Akemi Takahashi; Ryuichiro Tanaka, both of Kokubunji; Hiroyuki Kogane, Tokyo; Toru Higashihara, Tokyo; Mitsuo Kawaguchi, Tokyo, and Taisuke Kashima, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 24, 1984, Ser. No. 643,732
Claims priority, application Japan, Apr. 4, 1984, 59-12980
Term of patent 14 years
U.S. Cl. D14—82

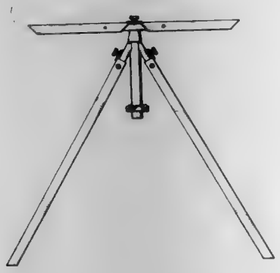




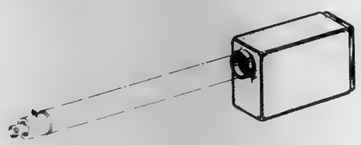
289,162
VIDEO CAMERA SHOULDER REST
Walter E. Lisowski, 152 Prairie Dr., Westmont, Ill. 60559
Filed Jun. 1, 1984, Ser. No. 616,555
Term of patent 14 years
U.S. Cl. D14—84



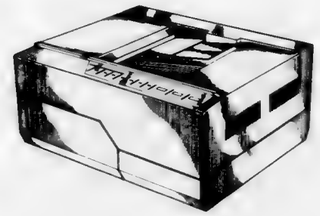
289,163
ANTENNA OR SIMILAR ARTICLE
Stefan Eriksson, Mönsterås, Sweden, assignor to Antenn & Elektronik Ekstam & Eriksson, Alem-Blomstermala, Sweden
Filed Nov. 6, 1984, Ser. No. 669,651
Term of patent 14 years
U.S. Cl. D14—86



289,164
COVER FOR A LINEAR ACTUATOR FOR AN EARTH STATION SATELLITE-RECEIVING ANTENNA
David E. Carr, P.O. Box 182, 300 S. Church, New Carlisle, Ohio 45344
Filed May 14, 1984, Ser. No. 610,154
Term of patent 14 years
U.S. Cl. D14—90



289,165
FACSIMILE TRANSCEIVER
Takashi Oshima, Tokyo; Ryoji Yamaguchi, Kokubunji, and Kiyoshi Hizume, Akishima, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Jul. 18, 1984, Ser. No. 632,121
Claims priority, application Japan, Mar. 5, 1984, 59-8277
Term of patent 14 years
U.S. Cl. D14—94



289,166
TERMINAL CONSOLE
Eugene L. Morgan, Belleville, Ill., assignor to Priatos Marsh Corporation, Belleville, Ill.
Filed Sep. 7, 1984, Ser. No. 648,645
Term of patent 14 years
U.S. Cl. D14—100

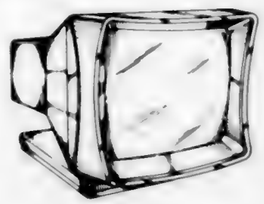


289,167
ELECTRONIC PRINTER
Hiroshi Otsuka, Suwa, Japan, assignor to Seiko Epson Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 9, 1984, Ser. No. 658,853
Claims priority, application Japan, Apr. 17, 1984, 59-15521
Term of patent 14 years
U.S. Cl. D14—111



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289,168
VIDEO TERMINAL
Sheldon M. Ratter, Miami, Fla., assignor to Gould Inc., Rolling Meadows, Ill.
Filed Jun. 21, 1984, Ser. No. 622,912
Term of patent 14 years
U.S. Cl. D14—113



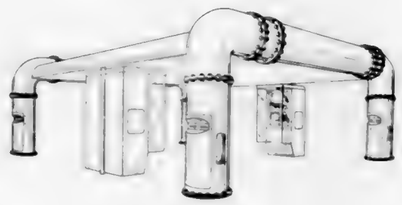
289,169
OUTBOARD MOTOR
Yoshio Mikado, Saitama; Jun Ito, and Masayuki Ohsumi, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 19, 1984, Ser. No. 683,408
Claims priority, application Japan, Jun. 19, 1984, 59-25258
The portion of the term of this patent subsequent to Apr. 7, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—4



289,170
OUTBOARD MOTOR
Yoshio Mikado, Saitama; Jun Ito, and Masayuki Ohsumi, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 19, 1984, Ser. No. 683,407
The portion of the term of this patent subsequent to Apr. 7, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—4



289,171
FUEL DISPENSING STATION
Greg Gabourie, Ajax; Rod Senior, and Glen Crolly, both of Don Mills, all of Canada, assignors to Ultramar Canada Inc., Don Mills, Canada
Filed May 2, 1984, Ser. No. 606,115
Claims priority, application Canada, Nov. 18, 1983, 18-11-83-6
Term of patent 14 years
U.S. Cl. D15—9.2



289,172
COMBINE REEL FINGER
Ralph L. Bolinger, R.R. #1, P.O. Box 181, Roann, Ind. 46974
Filed Aug. 29, 1984, Ser. No. 645,233
Term of patent 14 years
U.S. Cl. D15—29



289,173
YARN CUTTER GATE UNIT FOR A YARN TENSION CONTROL SYSTEM FOR CREELS
Marlin Van Wilson, Rte. 1, Box 449, Barboursville, Va. 22923
Filed Dec. 5, 1984, Ser. No. 678,784
Term of patent 14 years
U.S. Cl. D15—77

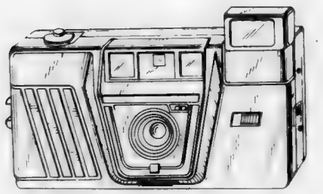


289,174
COMBINED THREADING HOOK AND MOTION SENSOR UNIT FOR YARN TENSION CONTROL SYSTEM FOR CREELS
Marlin Van Wilson, Rte. 1, Box 449, Barboursville, Va. 22932
Filed Dec. 5, 1984, Ser. No. 678,783
Term of patent 14 years
U.S. Cl. D15—78

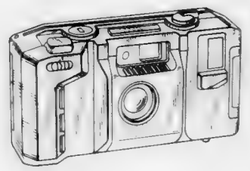




289,175
CAMERA
Seijiro Noda, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Jun. 4, 1984, Ser. No. 616,698
Claims priority, application Japan, Dec. 15, 1983, 58-54193
Term of patent 14 years
U.S. Cl. D16—6



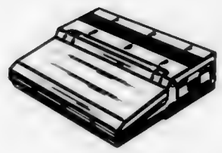
289,176
CAMERA
Michio Yoshida, and Hideo Tamamura, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 2, 1985, Ser. No. 688,438
Claims priority, application Japan, Jul. 20, 1984, 59-30308
Term of patent 14 years
U.S. Cl. D16—8



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289,177
ELECTRONIC CALCULATOR
Masaji Sawada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 19, 1984, Ser. No. 662,720
Claims priority, application Japan, Apr. 19, 1984, 59-16027
Term of patent 14 years
U.S. Cl. D18—7

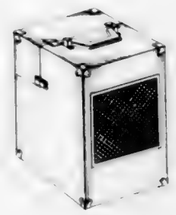


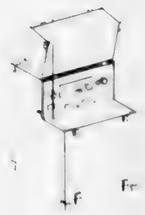


289,178
FONT OF TYPE
Paul G. Parenteau, Beacon Falls, Conn., assignor to Exxon Printing Systems, Inc., Brookfield, Conn.
Filed May 14, 1984, Ser. No. 610,001
The portion of the term of this patent subsequent to Nov. 11, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—24

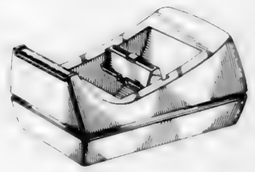


289,179
MARCHING BAND TEACHING-SOUND SYSTEM CASE
Donald O. Musgrave, Lake Jackson, Tex., assignor to Megasound, Inc., Lake Jackson, Tex.
Filed Jul. 11, 1984, Ser. No. 629,610
Term of patent 14 years
U.S. Cl. D19—59

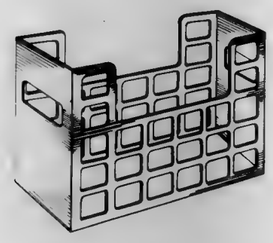




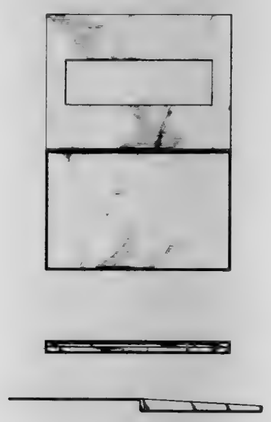
289,180
TAPE DISPENSER
Dennis L. Crawford, Roberts, Wis., and Logan W. Johnson, Green Valley, Ariz., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 598,168, Apr. 9, 1984, abandoned. This application Jul. 14, 1986, Ser. No. 885,329
Term of patent 14 years
U.S. Cl. D19—69



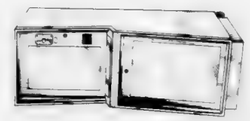
289,181
RACK FOR HANGING FOLDERS
Jack Solomon, Long Beach, N.Y., assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Aug. 13, 1984, Ser. No. 640,306
Term of patent 14 years
U.S. Cl. D19—90



289,182
PAPER TRAY FOR A PRINTER
Bruce S. Weinberg, 2117 Ammer Ridge Ct., Glenview, Ill. 60025
Filed Aug. 1, 1984, Ser. No. 636,703
Term of patent 14 years
U.S. Cl. D19—92

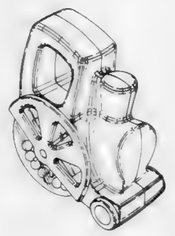


289,183
CARD DISPENSER
Barry A. MacNamara, and John H. Garde, both of 260 Boundary St., Brisbane 4000, QLD, Australia
Filed Jun. 4, 1984, Ser. No. 617,273
Term of patent 14 years
U.S. Cl. D20—2



289,184
ILLUMINATED HOUSE NUMBER DISPLAY OR SIMILAR ARTICLE
Sheldon M. Rutter, Miami, Fla., assignor to FL Industries, Inc., Livingston, N.J.
Filed Sep. 4, 1984, Ser. No. 647,171
Term of patent 14 years
U.S. Cl. D20—17

289,185
SIMULATIVE TOY RATTLE
Norman R. Emms, Welwyn Garden City, England, and Peter D. Bryant, St. Helier, Channel Islands, assignors to Hestair Kiddicraft Limited, Great Britain
Filed Jun. 13, 1984, Ser. No. 620,267
Term of patent 14 years
U.S. Cl. D21—65

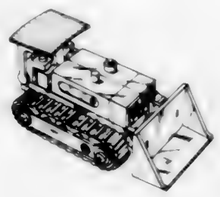


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289,186
TOY PAIL
Harry S. Thomson, Richmond; David M. Raffe, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, England
Filed Feb. 19, 1985, Ser. No. 702,668
Claims priority, application United Kingdom, Jan. 14, 1985, 1024390
Term of patent 14 years
U.S. Cl. D21—109



289,187
RECONFIGURABLE TOY BULLDOZER
Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Sep. 4, 1984, Ser. No. 647,234
Claims priority, application Japan, Mar. 28, 1984, 59-12035
Term of patent 14 years
U.S. Cl. D21—131





289,188
DOLL
Paul W. Bardwell; F. Carolyn Bardwell, both of 2208 Woodsong Trail, Arlington, Tex. 76016, and Irene Corey, 4147 Herschel, Dallas, Tex. 75219
Filed May 24, 1984, Ser. No. 613,852
Term of patent 14 years
U.S. Cl. D21—171



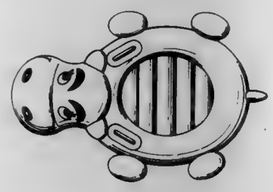
289,189
TOY MOUSE
Alice A. Kilgore, 3433 Bennington Ct., Birmingham, Mich. 48010
Filed Nov. 7, 1984, Ser. No. 669,232
Term of patent 14 years
U.S. Cl. D21—188



289,190
PHYSICAL EXERCISE CHAIR
Jerry D. Bretham, 2121 Industrial Park Rd., Belton, Tex. 76513
Continuation of Ser. No. 614,294, May 25, 1984, abandoned.
This application May 27, 1986, Ser. No. 873,042
Term of patent 14 years
U.S. Cl. D21—195



289,191
FLOAT
Henry S. Wolfe, 14480 62nd St. North, Clearwater, Fla. 33518
Filed Jan. 17, 1985, Ser. No. 692,401
Term of patent 14 years
U.S. Cl. D21—237



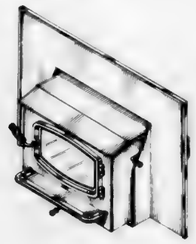
289,192
BICYCLE SKID DISC FOR PLAYING BIKE HOCKEY
Gene Clura, 35558 Fernwood Dr., Westland, Mich. 48185
Filed Jul. 13, 1984, Ser. No. 630,744
Term of patent 14 years
U.S. Cl. D21—224



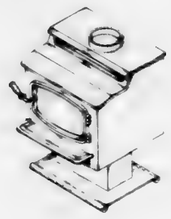
289,193
OFFSET HANDLE BODY FOR A FISHING ROD
Casey J. Childre, Foley, Ala., assignor to Lew Childre & Sons, Inc., Foley, Ala.
Filed Mar. 12, 1984, Ser. No. 588,529
The portion of the term of this patent subsequent to Apr. 7, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D22—142



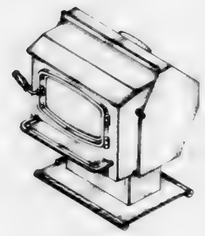
289,194
FIREPLACE INSERT
John F. Desautels, Snohomish, Wash., assignor to Avalon Corporation International, Seattle, Wash.
Filed Aug. 5, 1985, Ser. No. 762,438
Term of patent 14 years
U.S. Cl. D23—94



289,195
FREE-STANDING STOVE
John F. Desautels, Snohomish, Wash., assignor to Avalon Corporation International, Seattle, Wash.
Filed Aug. 5, 1985, Ser. No. 762,437
Term of patent 14 years
U.S. Cl. D23—97

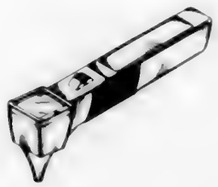


289,196
STOVE
John F. Desautels, Snohomish, Wash., assignor to Avalon Corporation International, Seattle, Wash.
Filed Aug. 5, 1985, Ser. No. 762,439
Term of patent 14 years
U.S. Cl. D23—97



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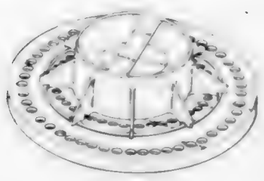
289,197
OTOSCOPE
Clive P. Ware, 10616 52nd Ave., N.E., and G. Paul Ware, 6805 40th St. N.E., both of Marysville, Wash. 98270
Filed Feb. 7, 1985, Ser. No. 699,324
Term of patent 14 years
U.S. Cl. D24—17



289,198
CONTOURED BIOPSY NEEDLE
Stuart A. Karten, Malibu, Calif., assignor to American Hospital Supply Corp., Deerfield, Ill.
Filed Apr. 9, 1984, Ser. No. 597,972
Term of patent 14 years
U.S. Cl. D24—24



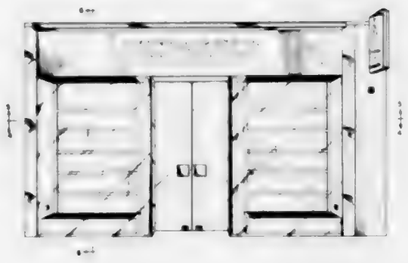
289,199
DIAGNOSTIC INSTRUMENT CAROUSEL OR THE LIKE
Palmer L. Tag, Barrington, and Robert Case, Chicago, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Jun. 12, 1984, Ser. No. 619,766
Term of patent 14 years
U.S. Cl. D24—31



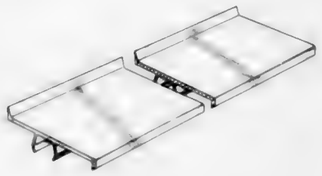
289,200
DOSE CONTAINER
Robert E. Newell, Pinner, United Kingdom, assignor to Glaxo Group Limited, London, United Kingdom
Filed Aug. 22, 1984, Ser. No. 643,287
Claims priority, application United Kingdom, Feb. 27, 1984, 1018166
Term of patent 14 years
U.S. Cl. D24—56



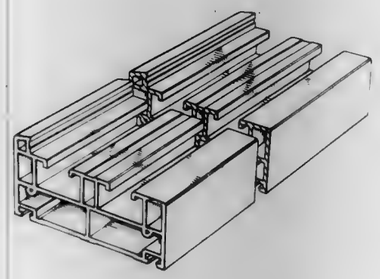
289,201
STORE FRONT
Christopher Weeden, 52 BVD De Montparnasse, and Denis Ruel, 52 BVD Montparnasse, both of, 75015 Paris, France
Filed Apr. 20, 1984, Ser. No. 602,452
Claims priority, application France, Oct. 21, 1983, 833,839
Term of patent 14 years
U.S. Cl. D25—59



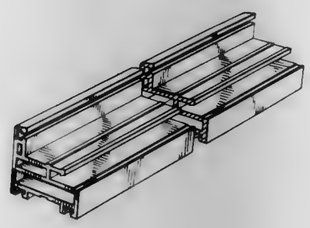
289,202
COVER STRIP FOR A WINDOW FRAME
Terence Hardy, Belper, England, assignor to L.B. (Plastics) Limited, England
Filed May 7, 1984, Ser. No. 607,899
Claims priority, application United Kingdom, Nov. 19, 1983, 1016381
Term of patent 14 years
U.S. Cl. D25—74



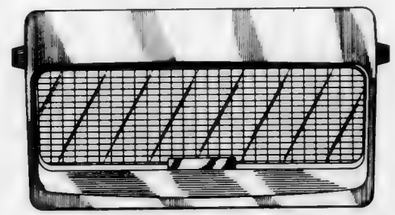
289,203
WINDOW FRAME COMPONENT
Terence Hardy, Belper, England, assignor to L.B. (Plastics) Limited, Derby, England
Filed May 7, 1984, Ser. No. 608,009
Claims priority, application United Kingdom, Nov. 19, 1983, 1016376
Term of patent 14 years
U.S. Cl. D25—74



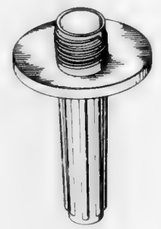
289,204
WINDOW FRAME COMPONENT
Terence Hardy, Belper, England, assignor to L.B. (Plastics) Limited, Derby, England
Filed May 7, 1984, Ser. No. 608,010
Claims priority, application United Kingdom, Nov. 19, 1983, 1016377
Term of patent 14 years
U.S. Cl. D25—74



289,205
AUXILIARY AUTOMOTIVE BRAKE LIGHT
Fred C. Biggs, Marina del Rey, Calif., assignor to Laser Corp, Inglewood, Calif.
Filed May 14, 1985, Ser. No. 733,935
Term of patent 14 years
U.S. Cl. D26—28



289,206
SURGICAL LIGHT HANDLE
John R. Scoville, Jr., Henrietta, and Danny J. LePage, Rochester, both of N.Y., assignors to Castle Company, Rochester, N.Y.
Filed Feb. 28, 1984, Ser. No. 584,502
Term of patent 14 years
U.S. Cl. D26—140



289,207
CASE FOR A BREATHING MASK OR BREATHING APPARATUS UNIT
Wolfgang Drews, Bahrenhof, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany
Filed Dec. 26, 1984, Ser. No. 686,288
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1984, MR 795
Term of patent 14 years
U.S. Cl. D29—6

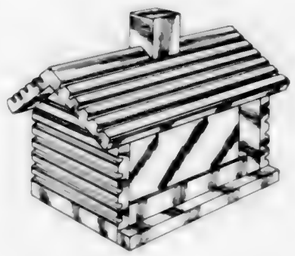


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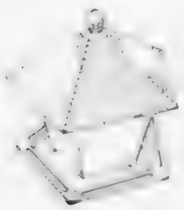
289,208
ANIMAL WATER BOWL
Michael A. Fasciullo, 1209 S. Carson Way, Aurora, Colo. 80012
Filed Feb. 15, 1985, Ser. No. 702,390
Term of patent 14 years
U.S. Cl. D30—13



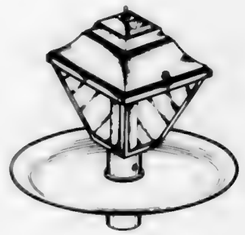
289,209
BIRD FEEDER
Bruce E. Erichsen, Maple Grove, Minn., assignor to R. L. Granger Co., Siren, Wis.
Filed Jan. 24, 1985, Ser. No. 747,780
Term of patent 14 years
U.S. Cl. D30—15



289,210
BIRDFEEDER
James E. Tucker, Batavia, and John Beecher, III, Carpentersville, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed Apr. 3, 1986, Ser. No. 847,848
Term of patent 14 years
U.S. Cl. D30—15



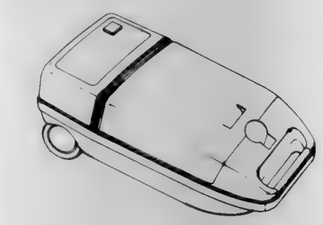
289,211
BIRD FEEDER
Thomas B. Rika, Northville, Mich., assignor to The Budd Company, Troy, Mich.
Filed Aug. 5, 1985, Ser. No. 762,416
Term of patent 14 years
U.S. Cl. D30—15

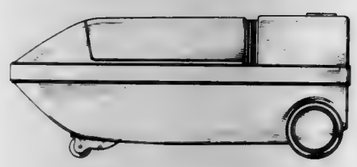


289,212
WASHING MACHINE
Yuji Nakamura, Inagi; Junichi Udagawa, Narashino, and Kazuhiko Nakao, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan
Filed Oct. 5, 1984, Ser. No. 658,374
Claims priority, application Japan, Apr. 9, 1984, 59-13631
Term of patent 14 years
U.S. Cl. D32—6

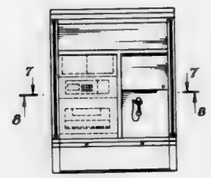


289,213
CANISTER VACUUM
Nancy J. Perkins, Schaumburg, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Dec. 17, 1984, Ser. No. 682,095
Term of patent 14 years
U.S. Cl. D32—24





289,215
AUTOMATED TELLER SERVICE CENTER ENCLOSURE
Ernest F. J. Prinzhorn, Los Angeles, Calif., assignor to QRS Corporation, Los Angeles, Calif.
Division of Ser. No. 556,856, Dec. 1, 1983, Pat. No. Des. 283,937. This application Oct. 11, 1985, Ser. No. 786,619
Term of patent 14 years
U.S. Cl. D99—28



289,214
CONTROL PANEL FOR A SANITATION SYSTEM FOR FOOD PREPARATION MACHINERY
Richard J. Steinmetz, 3719 Linwood, Royal Oak, Mich. 48073
Continuation-in-part of Ser. No. 27,994, Apr. 9, 1979. This application Oct. 3, 1983, Ser. No. 538,208
Term of patent 14 years
U.S. Cl. D32—28



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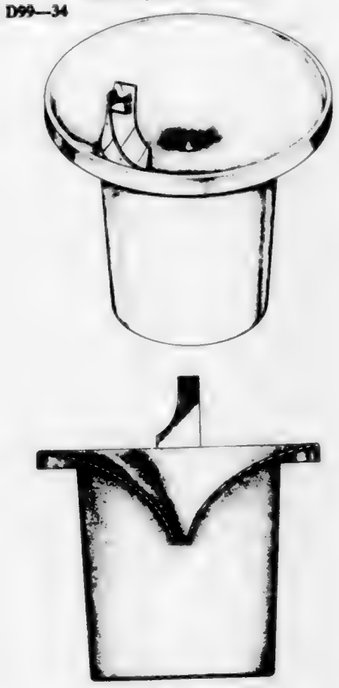
289,216
AUTOMATIC TELLER MACHINE
Yoshiaki Nishida, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 16, 1984, Ser. No. 641,473
Claims priority, application Japan, Feb. 28, 1984, 59-7035; Feb. 28, 1984, 59-7036
Term of patent 14 years
U.S. Cl. D99—28



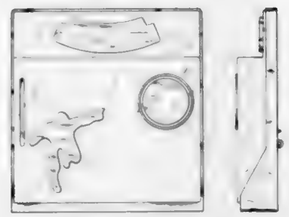
289,217
COIN CARRIER
Kent D. Murphy, 13017 Twinbrook Pkwy., #102, Rockville, Md. 20852
Filed Jul. 10, 1984, Ser. No. 629,332
Term of patent 14 years
U.S. Cl. D99—34



289,218
COIN COLLECTOR
Stevan M. Divnick, Spring Valley, Ohio, assignor to Divnick International, Inc., Spring Valley, Ohio
Filed Jan. 22, 1986, Ser. No. 821,300
Term of patent 14 years
U.S. Cl. D99—34



289,219
COIN BANK
Rim Tverss, Palos Hills; Michael G. Landaman, Highland Park, and Keith Patterson, Oak Pk., of all Ill., assignors to Superior Toy & Mfg. Co., Inc., Chicago, Ill.
Filed Nov. 8, 1984, Ser. No. 669,645
Term of patent 14 years
U.S. Cl. D99—39



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF APRIL, 1987

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Finkl & Sons Co.: *See—*
Finkl, Charles W., 4,655,826, Cl. 75-10.660.

A.R.A. Manufacturing Company of Delware, Inc.: *See—*
Burney, Charles F., 4,656,407, Cl. 318-626.000.

Aagano, Toshitaka; and Takasaki, Yoshimi, to Fuji Photo Film Co., Ltd. Method of coalescing laser beams. 4,655,590, Cl. 356-72.000.

Aanstoos, Theodore A.: *See—*
Weldon, James M.; Aanstoos, Theodore A.; Zowarka, Raymond C.; and Weldon, William F., 4,656,328, Cl. 219-104.000.

AB Bofors: *See—*
Franzen, Arne; Albrektsson, Kjell; and Fixell, Jan-Olov, 4,655,411, Cl. 244-3.110.

AB Essve Produkter: *See—*
Jonsson, Nils-Arne, 4,655,656, Cl. 411-337.000.

AB Ferrosan: *See—*
Bjork, Anders K.; and Christensson, Erik G., 4,656,175, Cl. 514-255.000.

AB Hedemora Verkstader: *See—*
Ragnegard, Samuel, 4,655,920, Cl. 210-331.000.

AB Volvo: *See—*
Jonason, Arne, 4,655,733, Cl. 474-242.000.

Abbott, Stephen R.: *See—*
Baker, Terence S.; Abbott, Stephen R.; Simpson, John G.; Wright, John F.; and Powell, Michael J., 4,656,143, Cl. 436-527.000.

Abe, Kouichi: *See—*
Yamatsu, Isao; Inai, Yuichi; Abe, Shinya; Suzuki, Takeshi; Suzuki, Yoshikazu; Tagaya, Osamu; Suzuki, Kouichi; Abe, Kouichi; and Yamada, Kouji, 4,655,973, Cl. 260-404.000.

Abe, Michiharu: *See—*
Sato, Tsutomu; Umehara, Masaakira; Abe, Michiharu; Oba, Hideaki; and Ueda, Yutaka, 4,656,121, Cl. 430-495.000.

Abe, Shinya: *See—*
Yamatsu, Isao; Inai, Yuichi; Abe, Shinya; Suzuki, Takeshi; Suzuki, Yoshikazu; Tagaya, Osamu; Suzuki, Kouichi; Abe, Kouichi; and Yamada, Kouji, 4,655,973, Cl. 260-404.000.

Abe, Toshiro: *See—*
Kawai, Noboru; Abe, Toshiro; and Murata, Kei, 4,655,876, Cl. 156-643.000.

Abel, Heinz: *See—*
Navratil, Josef; and Abel, Heinz, 4,655,786, Cl. 8-475.000.

Acco Babcock Inc.: *See—*
Kottke, Louis E., 4,655,729, Cl. 464-58.000.

Ace, Ronald. Method and apparatus for making patterns for eyeglasses. 4,656,590, Cl. 364-474.000.

Acerra, Rita: *See—*
Reilly, Letizia; and Acerra, Rita, 4,655,272, Cl. 160-348.000.

ACI Australia Limited: *See—*
Goodacre, Stanley A.; and Blaubaum, Anthony E., 4,656,082, Cl. 428-248.000.

Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Apparatus for storing recording media. 4,655,344, Cl. 206-307.000.

AcroMed Corporation: *See—*
Steffee, Arthur D., 4,655,199, Cl. 128-69.000.

Acufex Microsurgical, Inc.: *See—*
Honkanen, George P.; Strahan, John C.; and Lichtman, Philip R., 4,655,752, Cl. 604-256.000.

Adachi, Keiji: *See—*
Udaka, Shigezo; Ueyama, Hideo; Taniguchi, Junichi; and Adachi, Keiji, 4,656,037, Cl. 424-118.000.

Adachi, Tsukasa; Shinguryo, Satoshi; Furuta, Hideya; Sakai, Yoshihiro; Ikeda, Itsuo; and Sakai, Katsuo, to Ricoh Company, Ltd. Multicolored image forming apparatus. 4,655,579, Cl. 355-4.000.

Adam, Jean-Marie, to Ciba-Geigy Corporation. Benzoquinophthalone quaternary ammonium salt derivatives. 4,656,268, Cl. 544-126.000.

Adams, Donald T.; and Gray, R. William, to SCM Corporation. Spelling error finding feature including an electronic spelling dictionary. 4,655,620, Cl. 400-63.000.

Adams, J. Robert, Jr.: *See—*
Allcock, Harry R.; Stinnett, S. James; Tedder, Joseph B., Jr.; and Adams, J. Robert, Jr., 4,656,017, Cl. 423-300.000.
Chang, Suae-Chen; Tedder, Joseph B., Jr.; and Adams, J. Robert, Jr., 4,656,246, Cl. 528-499.000.
Sulzer, Gerald M.; Tedder, Joseph B., Jr.; Adams, J. Robert, Jr.; and Juneau, Matthew K., 4,656,018, Cl. 423-300.000.

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Jadamus, Hans; Ribbing, Wilfried; Feinauer, Roland; and Schafer, Wolfgang, 4,656,220, Cl. 524-502.000.

Felder, Willie L. Bicycle handlebar light. 4,656,564, Cl. 362-72.000.

Felleisen, Peter; Krug, Aribert; and Grosshans, Peter, to BASF Aktiengesellschaft. Method and circuit arrangements for detecting and evaluating faults in recording media having digital signals recorded on one or more tracks. 4,656,420, Cl. 324-212.000.

Felt Products Mfg. Co.: *See*—
Inciong, Josefino T.; and Widder, Edward S., 4,655,463, Cl. 277-180.000.

Feluwa Schlesiger & Co. KG: *See*—
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Fenzl, Horst: *See*—
Kupper, Gerd; Fenzl, Horst; and Zabinski, Siegfried, 4,655,730, Cl. 474-53.000.

Feofanov, Vitaly A.; Pilat, Boris V.; Zhdanovich, Larisa P.; Romanenko, Anatoly G.; Lukhanin, Boris S.; Donets, Oleg V.; and Korobochkin, Valery P., to Gosudarstvenny Nauchno-Issledovatelsky I Proektny Institut PO Obogascheniju Rud Tsvetnykh Metallov "Kazmekhanobr". Apparatus for purifying effluents and liquids. 4,655,895, Cl. 204-213.000.

Ferrazza, Gerald P.; and Huck, Pamela R., to Spraying Systems Co. Dual purpose foam generating and high pressure nozzle. 4,655,394, Cl. 239-412.000.

Ferrier, Christiane, to Aerospatiale Societe Nationale Industrielle. Device for thermal protection from ablation and vibrations and manufacturing method. 4,655,866, Cl. 156-192.000.

Ferronics, Inc.: *See*—
Pomponio, Thomas F., 4,656,451, Cl. 336-96.000.

Fettes, Ian; and Jervis, Gary F., to Hudd Enterprises. Prunner with collapsible drive shaft and housing. 4,654,971, Cl. 30-383.000.

f'Geppert, Erwin, to United States of America, Army. Tapered roller bearing. 4,655,619, Cl. 384-567.000.

Fiber Materials, Inc.: *See*—
McAllister, Lawrence E.; and Hill, John E., Jr., 4,656,095, Cl. 428-413.000.

Fichtel & Sachs AG: *See*—
Caspar, Manfred; Hartig, Franz; and Tomm, Dagwin, 4,655,336, Cl. 192-106.200.
Handke, Gunther; and Prozeller, Ernst, 4,655,439, Cl. 267-8.00R.

Ficke, Geoff. Facial treatment and lotion kit. 4,655,232, Cl. 132-79.00A.

Fickus, Lawrence W.: *See*—
Kercheval, Mark R.; and Fickus, Lawrence W., 4,655,804, Cl. 55-324.000.

Fields, Roger A., to Eastman Kodak Company. Drop-in loading camera. 4,655,574, Cl. 354-288.000.

Filliman, Mark D.; and Granzow, Robert H., to NCR Corporation. Personal identification method and apparatus. 4,656,662, Cl. 382-3.000.

Fillios, Jean P. R. Hot liquid generator with condensation and installation incorporating this generator. 4,655,174, Cl. 122-261.000.

Fink, Werner: *See*—
Bohn, Heinz; Fink, Werner; and Luhmann, Reinhold, 4,655,688, Cl. 417-18.000.

Finkl, Charles W., to A. Finkl & Sons Co. Method for post-melting treatment of molten steel. 4,655,826, Cl. 75-10.660.

Finley, Roland L.: *See*—
Pinson, George T.; Reinhold, Ralph R.; and Finley, Roland L., 4,656,349, Cl. 250-203.00R.

Fischione, Eugene A. Angioplasty pressure controller. 4,655,749, Cl. 604-98.000.

Fixell, Jan-Olov: *See*—
Franzen, Arne; Albrektsson, Kjell; and Fixell, Jan-Olov, 4,655,411, Cl. 244-3.110.

FJW Industries, Inc.: *See*—
Kreitzer, Melvyn H.; and Betensky, Ellis I., 4,655,562, Cl. 350-538.000.

Flaherty, Robert, to Westinghouse Electric Corp. Flexural pivot device and method for assembling same. 4,655,629, Cl. 403-291.000.

Fleer, Ernst O., to Siemens Aktiengesellschaft. Coupling device for dental handpieces. 4,655,709, Cl. 433-29.000.

Fleetwood Systems, Inc.: *See*—
Mojden, Wallace W.; and Mojden, Andrew E., 4,655,350, Cl. 209-577.000.

Fleming, James D., to Central States Products Company. Diskette folder with strap fastener. 4,655,388, Cl. 229-45.00R.

Fleming, Ward. Vertical three-dimensional image screen. 4,654,989, Cl. 40-427.000.

Fleury, Jean-Luc: *See*—
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Flexwatt Corporation: *See*—
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Flight Dynamics, Inc.: *See*—
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Flight, Robert S., to Caldwell Manufacturing Company. Adjustable friction block and tackle window balance system. 4,654,928, Cl. 16-199.000.

Flinchum, John A. Hydraulic volumetric proportioning valve. 4,655,240, Cl. 137-110.000.

Fling, Russell T.; and Christopher, Todd J., to RCA Corporation. Vertical subsampling and memory synchronization system for a picture within a picture television receiver. 4,656,516, Cl. 358-183.000.

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Flo-Bob Industries Inc.: *See*—
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Florez, Hugo R.; and Tannhauser, Robert J., to Ethicon, Inc. Coated surgical staple. 4,655,222, Cl. 128-334.00R.

Floyd, William C., to Sun Chemical Corporation. Novel compounds and their use as insolubilizers for binders for paper coating compositions. 4,656,296, Cl. 549-379.000.

FMC Corporation: *See*—
Henaler, Paul L.; Kelso, Frederick J.; Wolfe, Gary E.; and Zeh, Peter H., 4,656,019, Cl. 423-315.000.

Folb, Reece; and Gay, Shelton M., Jr., to United States of America, Navy. High-speed faired towline. 4,655,155, Cl. 114-243.000.

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Fong, Dodd W.; and Kowalski, David J., to Nalco Chemical Company. Water-soluble cationic quaternary ammonium monomers. 4,656,277, Cl. 544-399.000.

Fontana, Anacleto. Machine for automatically applying hooks to elastic belts. 4,655,381, Cl. 227-15.000.

Ford Aerospace & Communications Corporation: *See*—
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Ford Motor Company: *See*—
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Fradenburgh, Evan A., to United Technologies Corporation. Helicopter main rotor blade having a short span slot near the tip end. 4,655,685, Cl. 416-90.00A.

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Franchin, Franco; and Bellomo, Paolo, to Paghanti, Antonio Eliano. Reticular structure. 4,655,021, Cl. 52-641.000.

Franco, Miguel V. Loom for carpets, tapestry, and the like and method of using. 4,655,863, Cl. 156-72.000.

Franklin, James D.; and Dewhirst, Donald R., to Hughes Aircraft Company. Laser amplifier buffer. 4,656,433, Cl. 330-4.300.

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Franzen, Arne; Albrektson, Kjell; and Fixell, Jan-Olov, to AB Bofors. Means for reducing spread of shots in a weapon system. 4,655,411, Cl. 244-3.110.

Franzen, Gilis, to Stubinen Utreckling AB. Device for cleaning liquids in sand filters. 4,655,908, Cl. 210-87.000.

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Frederick, Gary L.; and Null, Robert A., to Garrett Corporation, The. Rolling element jackscrew. 4,655,100, Cl. 74-424.80C.

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Freeman, Thomas R.; Wilson, John F.; and Knott, Ronald P., to Westinghouse Electric Corp. Reversible BWR fuel assembly and method of using same. 4,655,995, Cl. 376-267.000.

Freeport Research and Development Company: *See*—
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Freeport Research and Engineering Company: *See*—
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Frost, Terry; and Smith, Terry B., to ASC Machine Tools, Inc. Panel forming line. 4,655,067, Cl. 72-131.000.

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Fuji, Tsuneo: *See*—
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Fukuda, Kumio; and Shimoma, Taketoshi, to Kabushiki Kaisha Toshiba. Color picture tube device. 4,656,390, Cl. 313-409.000.

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Fulger, Charles V.; and Gum, Ernest K., to General Foods Corporation. Process for preparing an all grain, enzyme-saccharified cereal and product produced. 4,656,040, Cl. 426-18.000.

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Funk, Gary L.; Stewart, William S.; and Pennington, Guy S., Jr., to Phillips Petroleum Company. Process control for parallel heat exchangers. 4,655,277, Cl. 165-1.000.

Furchert, Hans-Juergen, to Jenoptik Jena GmbH. Xy-surface drive having limited ϕ-rotation and z-movement. 4,656,408, Cl. 318-653.000.

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Furukawa, Genzo, to Sumitomo Gomu Kogyo Kabushiki Kaisha. Sand scattering device for artificial lawn. 4,655,635, Cl. 404-108.000.

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Furumoto, Mitsunobu; and Taniguchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Apparatus for recording and reproducing identification words on a helically scanned tape. 4,656,536, Cl. 360-72.200.

Furuno, Nobuo, to Nippon Paint Co., Ltd. Water-deionizing system. 4,655,909, Cl. 210-90.000.

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Furuyoshi, Shigeo; and Tani, Nobutaka, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Lipoprotein adsorbent for use in extracorporeal circulation treatment and process for preparing thereof. 4,656,261, Cl. 536-59.000.

Fuso Keigokin Co., Ltd.: *See*—
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Gahlau, Heinemann; Wittenmayer, Klaus; Laubner, Manfred; and Baumeister, Herbert, to Dr. Alois Stankiewica GmbH. Motor vehicle noise insulation. 4,655,496, Cl. 296-39.00A.

Galos, Imre G., to E. H. Wachs Company, The. Tube-squaring tool and clamping mechanism. 4,655,108, Cl. 82-38.00R.

Galvin, John J.; and Miller, Richard L. Electrical shock proof fiber optic control system. 4,655,544, Cl. 350-96.200.

Games 'n Things Inc.: *See*—
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Gamez, Gamaliel. Portable tire bead breaker. 4,655,271, Cl. 157-1.260.

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Ganguly, Pankaj, to University of Tennessee Research Corporation. Method of separating blood platelets. 4,656,035, Cl. 424-101.000.

Garcia, Luciano F. Portable cooler. 4,655,052, Cl. 62-441.000.

Garcia, Steven A. Soap holder cover. 4,654,901, Cl. 4-605.000.

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Garlick, Russell K., to Du Pont de Nemours, E. I., and Company. Radioiodinated dopamine receptor ligand. 4,656,280, Cl. 546-20.000.

Garraway, John; and Wilson, Peter D., to British Nuclear Fuel plc. Process of treating nuclear fuel. 4,656,011, Cl. 423-10.000.

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Kowalik, Ralph M.: *See—*
Duvdevani, Ilan; Lundberg, Robert D.; Kowalik, Ralph M.; and Peiffer, Dennis G., 4,656,204, Cl. 523-175.000.

Kowalski, David J.: *See—*
Fong, Dodd W.; and Kowalski, David J., 4,656,277, Cl. 544-399.000.

Kowcz, Oksana A.: *See—*
Hawkins, Geoffrey R.; and Kowcz, Oksana A., 4,656,043, Cl. 424-70.000.

Koyo Seiko Co., Ltd.: *See—*
Yasui, Hiroyoshi; and Yoshida, Teruo, 4,655,617, Cl. 384-465.000.

Krabetz, Richard: *See—*
Hofmann, Friedbert; Krabetz, Richard; and Schwarzmann, Matthias, 4,656,157, Cl. 502-439.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Assmann, Helmut; Dorr, Wolfgang; Maier, Georg; and Peehs, Martin, 4,655,978, Cl. 264-0.500.
Queiser, Horst; Meininger, Siegfried; and Kleinschroth, Karl-Heinz, 4,655,968, Cl. 252-632.000.

Kramer, Wilfried, to Heinrich H. Klussendorf GmbH & Co. KG. Apparatus for conveying and printing postal items. 4,655,131, Cl. 101-236.000.

Krantz, Anders, to Industriell Arbetshygien i Soderhamn AB. Filter, especially air filter. 4,655,805, Cl. 55-298.000.

Krase, Horst: *See—*
Drawert, Manfred; and Krase, Horst, 4,655,836, Cl. 106-26.000.

Krasuk, Julio: *See—*
Rahbe, Georgette; Marzin, Roger; Cavicchioli, Ivan; and Krasuk, Julio, 4,655,903, Cl. 208-96.000.

Kraus, Ulrich; Egle, Elmar; and Schmude, Leonhard, to Iveco Magirus AG. Arrangement of steering wheel and control mechanisms. 4,655,308, Cl. 180-78.000.

Krauss u. Reichert GmbH & Co. KG: *See—*
Schwartzott, John M., 4,654,969, Cl. 30-275.000.

Krautkramer-Branson, Inc.: *See—*
Renzel, Peter, 4,655,084, Cl. 73-611.000.

Krebs, Rolf: *See—*
Gross, Heinz; Gerber, Manfred; Krebs, Rolf; and Retzlaff, Friedhelm, 4,656,332, Cl. 219-121.0LD.

Krecke, Edmond D. Formwork assembly for concrete walls. 4,655,014, Cl. 52-105.000.

Kreimes, Norbert: *See—*
Pfefferkorn, Dietmar; Nerschbach, Gerhard; Koester, Eberhard; Kreimes, Norbert; and Pavelka, Bozidar, 4,656,548, Cl. 360-132.000.

Kreitzer, Melvyn H.; and Betensky, Ellis I., to FJW Industries, Inc. Objective lens system, relay lens system, and eyepiece lens system for night-vision goggles. 4,655,562, Cl. 350-538.000.

Kries, Gary W. Method and apparatus for improving the operation of a hot water heater. 4,655,042, Cl. 60-648.000.

Kriz, Helmut, to Diehl GmbH & Co. Platform arrangement with movable mirrors, one movable with tracking means, directing light from a fixed laser source. 4,655,591, Cl. 356-152.000.

Kroger, Keijo: *See—*
Anttila, Arjo; Paloposki, Risto; and Kroger, Keijo, 4,655,669, Cl. 414-458.000.

Krones AG Herman Kronseder Maschinenfabrik: *See—*
Weiss, Wilhelm, 4,655,029, Cl. 53-432.000.

Kronstadt, Eric P.: *See—*
Kirkpatrick, Edward S.; Kronstadt, Eric P.; Montoye, Robert K.; and Wilcke, Winfried W., 4,656,417, Cl. 324-73.00R.

Krug, Aribert: *See—*
Felleisen, Peter; Krug, Aribert; and Grosshans, Peter, 4,656,420, Cl. 324-212.000.

Krumhansl, Mark U. Valves. 4,655,252, Cl. 137-595.000.

Krumm, Valentin: *See—*
Dornier, Peter; and Krumm, Valentin, 4,655,263, Cl. 139-446.000.

Krupinski, Veronica M.: *See—*
Turner, Jan R.; Krupinski, Veronica M.; Fukuda, David S.; and Baltz, Richard H., 4,656,258, Cl. 536-7.100.

Krupp Koppers GmbH: *See—*
Pohl, Hans C., 4,655,793, Cl. 48-210.000.

Krusos, Denis A.: *See—*
DiSanto, Frank J.; and Krusos, Denis A., 4,655,897, Cl. 204-299.00R.

Krzyzewski, John. Arsenical creosote wood preservatives. 4,656,060, Cl. 427-397.000.

Kubo, Jun, to Nissan Motor Company, Limited. Anti-skid brake control system with a plurality of independently operative digital controllers. 4,656,588, Cl. 364-426.000.

Kubo, Yoichiro: *See—*
Oyama, Motofumi; Honda, Toshiharu; and Kubo, Yoichiro, 4,656,219, Cl. 524-481.000.

Kubota, Tetsuhiro: *See—*
Iizuka, Kinji; Kamijo, Tetsuhide; Kubota, Tetsuhiro; Akahane, Kenji; Umeyama, Hideaki; and Kiso, Yoshiaki, 4,656,269, Cl. 544-139.000.

Kucera, Frank C., to J. I. Case Company. Phasing circuit for serially. 4,655,031, Cl. 56-11.900.

Kudo, Jun: *See—*
Kakimoto, Seizo; Kudo, Jun; and Koba, Masayoshi, 4,655,850, Cl. 148-1.500.

Kudo, Kazunori, to Kabushiki Kaisha Tokyo Fashion. Swimsuit. 4,654,894, Cl. 2-67.000.

Kudo, Mitsuhiro: *See—*
Kumasaka, Noriyuki; Fujiwara, Hideo; Otomo, Shigekazu; Yamashita, Takeo; Takayama, Shinji; Saito, Noritoshi; and Kudo, Mitsuhiro, 4,656,547, Cl. 360-126.000.

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Kudoh, Shinichi, Kabeshita, Akira; and Murakami, Syuichi, to Matsushita Electric Industrial Co., Ltd. Method of forming thick film circuit patterns with a sufficiently wide and uniformly thick strip. 4,656,048, Cl. 427-8.000.

Kuener Textilwerke GmbH: *See*—
Hefele, Josef, 4,655,868, Cl. 156-238.000.

Kuhle, Engelbert: *See*—
Anderson, John; Homeyer, Bernhard; Kuhle, Engelbert; Scheinpflug, Hans; Zeck, Walter M.; and Simonet, Donald E., 4,656,163, Cl. 514-84.000.

Kuhn, Albert; and Muller, Reinhard, to BBC Brown, Boveri & Company, Limited. Process for the removal of elemental oxygen by means of a reducing agent in a coolant circulating in one or more closed circulations, and apparatus for the removal of elemental oxygen. 4,655,930, Cl. 210-668.000.

Kulik, Yaroslav P.; Shmyrin, Ivan I.; Utyamyshev, Rustam I.; Vyrzhikovskaya, Marina N.; and Smirnov, Boris A., to Blagoveschensky Gosudarstvuvenny Meditsinsky Prosthetic valve holder. 4,655,218, Cl. 128-321.000.

Kulzer & Co GmbH: *See*—
Angrick, Michael; Trautwein, Ullrich; and Lenz, Kurt, 4,656,053, Cl. 427-53.100.

Kumahira Safe Co., Inc.: *See*—
Nishikawa, Makoto; Inada, Takeo; Tomoda, Hiroaki; Naruto, Eiro; Oki, Kazuyuki; and Hirano, Kouichi, 4,655,061, Cl. 70-271.000.

Kumasaka, Noriyuki; Fujiwara, Hideo; Otomo, Shigekazu; Yamashita, Takeo; Takayama, Shinji; Saito, Noritoshi; and Kudo, Mitsuhiro, to Hitachi, Ltd. Composite type magnetic head for recording and reproducing high frequency signals. 4,656,547, Cl. 360-126.000.

Kumonaka, Takahiro: *See*—
Wakabayashi, Toshio; Kumonaka, Takahiro; and Suwabe, Yasushi, 4,656,172, Cl. 514-252.000.

Kunimune, Kouichi, Kutsuzawa, Yoshiya; and Konotsune, Shiro, to Chisso Corporation. Soluble polyimide-siloxane precursor, process for producing same, and cross-linked polyimide-siloxane. 4,656,238, Cl. 528-26.000.

Kunugi, Yoshifumi; Sugimoto, Shigeo; Kohno, Kyoji; Ouchi, Tomihisa; and Machizawa, Kenji, to Hitachi, Ltd. Air-cooled absorption refrigeration system. 4,655,053, Cl. 62-476.000.

Kunz, Cleon V.; and Jones, Dennis H., to United Technologies Corporation. Compressor stator assembly having a composite inner diameter shroud. 4,655,682, Cl. 415-119.000.

Kuo, Charles C. Y., to CTS Corporation. Base metal resistive paints. 4,655,965, Cl. 252-518.000.

Kupper, Gerd; Fenzl, Horst; and Zabunski, Siegfried. Automatic gear box. 4,655,730, Cl. 474-53.000.

Kurabo Industries Ltd.: *See*—
Dahne, Claus; and Gross, Daniel, 4,655,225, Cl. 128-633.000.

Kuraray Co., Ltd.: *See*—
Tamai, Yoshin; Yamamoto, Fumito; Shiono, Manzo, Kanehira, Koichi; Ozasa, Hiroshi; and Nomoto, Kaoru, 4,656,195, Cl. 514-772.000.

Kurata, Shuhei: *See*—
Graham, Kenneth W., Norton, Edward J.; and Kurata, Shuhei, 4,654,983, Cl. 36-30.00R.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Murayama, Naohiro; Kakutani, Haruko; Mizuno, Toshiya, Nakamura, Kenichi; and Terasaki, Syuji, 4,656,234, Cl. 526-255.000.

Kurimoto, Yukuo, to Tokyo Electric Co., Ltd. Bar code reading apparatus. 4,656,345, Cl. 235-472.000.

Kurita, Akitsugu; Maruyama, Kazou; Okusa, Akira; and Hayashi, Haruo, to Toshiba Silicone Co., Ltd., and Asahi Breweries Ltd. Composition for concealing graze marks on transparent glass bottle. 4,656,221, Cl. 524-731.000.

Kurita, Isao: *See*—
Asano, Katsuhiko; Kurita, Isao; and Kamishita, Isamu, 4,654,961, Cl. 29-599.000.

Kurita Water Industries Ltd.: *See*—
Mizuno, Keisuke; Kondou, Eiichirou; Tahara, Kenji; and Sekikawa, Ayako, 4,656,059, Cl. 427-345.000.

Kuroda, Kouki: *See*—
Yagasaki, Toshiaki; Kuroda, Kouki; and Inuzuka, Tsuneki, 4,656,338, Cl. 219-497.000.

Kurono, Masayasu; Iida, Takafumi; Hayashi, Katsuhiro; and Yagi, Kunio, to Institute of Applied Biochemistry. Novel resolution method of racemic mixture. 4,656,303, Cl. 558-354.000.

Kurtz, Robert L.; and Whiting, John F., to Xerox Corporation. Reproducing apparatus cartridge mounting assembly. 4,655,578, Cl. 355-3.00R.

Kurusu, Shozo. Sports Rackets. 4,655,455, Cl. 273-73.00C.

Kusano, Fumio. *See*—
Hiramatsu, Minoru; Kawasaki, Hitoshi; and Kusano, Fumio, 4,655,882, Cl. 204-16.000.

Kusuki, Yoshihiro; Kikuchi, Masao; and Takeuchi, Yoshio, to UBE Industries, Ltd. Spun yarn piling and cleaning method. 4,654,910, Cl. 8-151.200.

Kutsuzawa, Yoshiya. *See*—
Kunimune, Kouichi, Kutsuzawa, Yoshiya; and Konotsune, Shiro, 4,656,238, Cl. 528-26.000.

Kuwabara, Akira: *See*—
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Kyocera Corporation: *See*—
Satou, Mamoru; and Yamaguchi, Kohichi, 4,656,052, Cl. 427-38.000
Soroi, Kazunori, 4,656,145, Cl. 501-86.000.

Kyogoku, Hiroshi; Nozaki, Mineo; and Rachi, Masahiro, to Canon Kabushiki Kaisha. Printer. 4,655,130, Cl. 101-93.230.

Kyoto, Michihisa; Ishiguro, Yoichi; Kawauchi, Hiroshi; and Tanaka, Gotaro, to Sumitomo Electric Industries, Ltd. Method for producing glass preform for optical fiber. 4,655,808, Cl. 65-3.120.

Kysiak, William J., to Switchcraft, Inc. Jack module and jackfield. 4,655,535, Cl. 339-182.00R.

Labedan, Jean-Denis; and Stephan, Gerard, to Nadella. Needle bearing and in particular a needle sleeve having a reinforced seal. 4,655,618, Cl. 384-486.000.

Laemmle, Joseph T.: *See*—
Tsai, Mei-Yuan; and Laemmle, Joseph T., 4,655,947, Cl. 252-49.500.

Lafaille, Jean-Pierre: *See*—
Poulhes, Marie-Andree; Lafaille, Jean-Pierre; Pourrat, Jacques; and Sanchez, Victor, 4,655,898, Cl. 204-299.00R.

Laitem, Leo: *See*—
Broze, Guy; Bastin, Danielle; Laitem, Leo; and Ouhadi, Trazollah, 4,655,954, Cl. 252-102.000.

Lamb, William C. Music page holder and turner. 4,655,427, Cl. 248-460.000.

Lamoureux, Robert. Belly pan for four wheel all terrain vehicles. 4,655,307, Cl. 180-69.100.

Lancucki, Peter G.: *See*—
Svirklys, Ferdinand M.; and Lancucki, Peter G., 4,655,156, Cl. 114-266.000.

Landon, James K.: *See*—
Hills, Stanley; and Landon, James K., 4,655,884, Cl. 204-321.000.

Landry, Gary L. High pressure hose gripper. 4,655,492, Cl. 294-15.000.

Landry, James F.; Croudace, Michael C.; On, Harry P., Jr.; and Shen, Sidney Y., to Union Oil Company of California. Lubricating oil compositions containing organometallic additives. 4,655,949, Cl. 252-51.50R.

Lane, Kenneth R.: *See*—
Sinclair, Stuart W.; and Lane, Kenneth R., 4,655,672, Cl. 414-661.000.

Lane, Michael L.; and Whitney, Lowell, to Quoin Enterprises. Foldable garment bag with carry straps. 4,655,343, Cl. 206-287.100.

Lane, Roger M.; Hull, Derek M. C.; Saxton, Charles A.; and van der Ouderaa, Franciscus J. G., to Lever Brothers Company. Dentifrice compositions. 4,656,031, Cl. 424-49.000.

Lane, William L.; and Lewis, Donald L. Rockbolt and installer wand. 4,655,643, Cl. 405-260.000.

Lane, William L.; and Lewis, Donald L. Binder-injecting rockbolt. 4,655,644, Cl. 405-260.000.

Lang Apparatebau GmbH: *See*—
Boedecker, Kay; Scheurl, Robert; and Strasser, Hans-Erwin, 4,655,690, Cl. 417-53.000.

Lang, David J.: *See*—
Chun, Kil Whan; Lang, David J.; and Santos, Edward, 4,655,780, Cl. 8-108.100.

Lang, Gerard: *See*—
Grollier, Jean F.; Lang, Gerard; Forestier, Serge; and Rosenbaum, Georges, 4,656,029, Cl. 424-47.000.

Lang, Marc, to Ciba-Geigy Corporation. Aminomethyl penem compounds. 4,656,165, Cl. 514-192.000.

Lang, Theodore B.: *See*—
McFarland, Timothy M.; and Lang, Theodore B., 4,655,757, Cl. 604-366.000.

Langenkamp, Ulrich, to ITT Industries, Inc. Data slicer circuit for separating and recovering digital teletext signals. 4,656,513, Cl. 358-147.000.

Langenwalter, Michael; and Spater, Lothar, to Siemens Aktiengesellschaft. Optoelectronic transducer. 4,656,352, Cl. 250-227.000.

Langevin, David: *See*—
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Larimore, Franklin C.; and Sinclair, Robert A., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesive tape having a substantially tack-free surface. 4,656,077, Cl. 428-156.000.

Larsen, Eric R., to Dow Chemical Company, The. Radiopaque thermoset polymer. 4,656,224, Cl. 525-40.000.

Larue, John C.: *See*—
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Laruelle, Claude. Galenical administration form of METOCLOPRAMIDE, method for its preparation and medicament comprising the new form. 4,656,024, Cl. 424-497.000.

LaSalle, Ernest R.: *See*—
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Laska, Eugene M.: *See*—
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Lasota, Robert E., and Haibach, William, to Ampco-Pittsburgh Corporation. Threaded end protector and component. 4,655,256, Cl. 138-96.00T.

Lastofka, Paul A.; and Wondergem, M. James, to Dart Industries Inc. Toaster oven. 4,656,337, Cl. 219-386.000.

Lattion, Andre, to Machinenfabrik Rieter AG. Bobbin magazine for a travelling service device of a yarn processing machine. 4,655,665, Cl. 414-112.000

Laubgan, Villi R.: *See*—
Zarogatsky, Leonid P.; Ivanov, Nikolai A.; Korolkov, Mikhail F.; Laubgan, Villi R.; and Safronov, Andrei N., 4,655,405, Cl. 241-215.000.

Laubner, Manfred: *See*—
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Laufer, Helmut: *See*—
Eckert, Konrad; Eisele, Hermann; Laufer, Helmut; and Straubel, Max, 4,655,184, Cl. 123-458.000.

Lauffer, Donald K.; and Sanwo, Ikuo J., to NCR Corporation. Temperature compensated CMOS to ECL translator. 4,656,375, Cl. 307-475.000.

Laughlin, Patrick E. Dental flossing tool. 4,655,233, Cl. 132-91.000.

Laukenmann, Erich; and Bardroff, Hans, to Preh Industrieausrustungen GmbH. X-Y positioner. 4,655,442, Cl. 269-73.000.

Lauro, Charles W.: *See*—
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Lautenschlager, Gerhard: *See*—
Lautenschlager, Karl, Jr.; and Lautenschlager, Gerhard, 4,654,930, Cl. 16-288.000.

Lautenschlager, Karl, Jr.; and Lautenschlager, Gerhard, to Karl Lautenschlager GmbH & Co. KG. Self-closing over-center hinge having a link guided in a spring biased cam. 4,654,930, Cl. 16-288.000.

Lavergne, Robert. Fire-arm safety device. 4,654,992, Cl. 42-70.010.

Law, Kirk A.: *See*—
Casey, Robert F.; and Law, Kirk A., 4,656,501, Cl. 358-31.000.

Law, Nin. Y., to Soma International Ltd. Toy vehicle and steering and drive mechanism therefor. 4,655,724, Cl. 446-443.000.

Laychak, Steven F.: *See*—
Johnson, Lennart B.; Walkup, William B.; and Laychak, Steven F., 4,655,518, Cl. 339-17.0LC.

Le Materiel Biomedical: *See*—
Benajam, Alain C. A., 4,656,009, Cl. 422-102.000.

Lea, Chin-Tau A., to American Telephone and Telegraph Company. Multiple paths in a self-routing packet and circuit switching network. 4,656,622, Cl. 370-60.000.

Lebrun, Jean-Jacques; and Porte, Hugues, to Rhone Poulenc Specialites Chimiques. Process for a thermal treatment of a polysilazane containing ≡SiH groups and ≡Si—NH— groups. 4,656,300, Cl. 556-412.000.

Leclercq, Joseph, to Commissariat A L'Energie Atomique; and Framatome. Fuel assemblies for nuclear reactors. 4,655,990, Cl. 376-225.000.

Ledley, Robert S., to National Biomedical Research Foundation. Operator-interactive automated chromosome analysis system producing a karyotype. 4,656,594, Cl. 364-498.000.

Lee, Kenneth K.: *See*—
Caputo, William R.; Husson, Alan L.; and Lee, Kenneth K., 4,656,572, Cl. 363-41.000.

Lee, Kuyn C. Toe ventilating pneumatic shoes. 4,654,982, Cl. 36-3.00R.

Lee, Len F.; and Miller, Maria L., to Monsanto Company. Herbicidal 2-trifluoromethyl 3-pyridine carboxylic acid derivatives. 4,655,816, Cl. 71-86.000.

Lee, Mu S., to RCA Corporation. Power supply having on-off control. 4,656,573, Cl. 363-49.000.

Lee, Peter F., to Southland Instruments, Inc. Disposable biopsy needle unit. 4,655,226, Cl. 128-754.000.

Leemax Manufacturing Corporation: *See*—
Maxwell, Bryan L.; and Urbanic, James J., 4,655,105, Cl. 82-1.00C.

Leemke, Stuart H. Roofing fastener. 4,655,659, Cl. 411-359.000.

Leeper, Alan L., to International Shoe Machine Corporation. Side and heel lasting machine. 4,654,914, Cl. 12-10.500.

Legroux, Didier: *See*—
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Lehner, August; Kohl, Albert; Roller, Hermann; Balz, Werner; Koester, Eerhard; and Sommermann, Friedrich, to Basf Aktiengesellschaft. Magnetic recording media. 4,656,093, Cl. 428-403.000.

Lehrer, Marc: *See*—
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Leiber, Heinz, to Robert Bosch GmbH. Hydraulic brake booster with travel simulator and associated anti-skid brake system. 4,655,511, Cl. 303-92.000.

Leiber, Heinz, to Robert Bosch GmbH. Brake system having a brake booster. 4,655,512, Cl. 303-114.000.

Leibinger, Janice M.: *See*—
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Leitner, Michael W.: *See*—
Divens, William G.; Cole, William B.; Leitner, Michael W.; and Blau, David A., 4,656,358, Cl. 250-372.000.

Leitzel, Larry L.: *See*—
Beck, Hoy S., Jr.; Leitzel, Larry L.; and Shoemaker, John R., 4,655,522, Cl. 339-32.00M.

Leitzke, Ortwin; and Wolf, Ewald, to Messer Griesheim GmbH. Device for producing ozone. 4,656,010, Cl. 422-186.180.

Leland Stanford Jr. University, Board of Trustees of: *See*—
Ringold, Gordon M., 4,656,134, Cl. 435-91.000.

Lemelson, Jerome H. Reaction apparatus and method. 4,655,146, Cl. 110-346.000.

Lemmo, Patrick V. Deflector skirt. 4,655,120, Cl. 98-40.050.

Lenhart, Ronald A., to Precision Metal Fabricators, Inc. Method for handling container ends en masse. 4,655,677, Cl. 414-786.000.

Lenz, Franz: *See*—
Hasenauer, Dieter; and Lenz, Franz, 4,656,102, Cl. 429-104.000.

Lenz, Kurt: *See*—
Angrick, Michael; Trautwein, Ullrich; and Lenz, Kurt, 4,656,053, Cl. 427-53.100.

Leonard, Gary L.; and Carrea, Sanjay M., to General Electric Company. Steam purge of a piston/cylinder gap in a diesel engine. 4,655,175, Cl. 123-25.00C.

Leonard, James B. Collapsible mast assembly. 4,655,154, Cl. 114-91.000.

Leone, Vincent D. Desilter apparatus including adaptor members for accommodating connection of cyclone separators of any diameter to manifold conduits having invariant diameters. 4,655,923, Cl. 210-512.200.

Le Page, Jean-Francois: *See*—
Plumail, Jean-Claude; Le Page, Jean-Francois; and Giuliani, Pierre, 4,655,905, Cl. 208-216.00R.

Lepeska, Bohumir: *See*—
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Lepp, Nicholas W.; and Phipps, David A., to Pilkington Brothers P.L.C. Treatment of trees and bushes. 4,655,001, Cl. 47-57.500.

Lerch, Allen: *See*—
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Lescarden Inc: *See*—
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Lesgourgues, Jacques: *See*—
Fournes, Jean-Paul; Lesgourgues, Jacques; and Martinou, Robert, 4,655,383, Cl. 228-119.000.

Lesinski, S. George, to Oto Enterprises, Inc. Prostheses for ossicular reconstruction. 4,655,776, Cl. 623-10.000.

Letsche, Ulrich: *See*—
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Leucadia, Inc.: *See*—
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Leuenberger, Claude-Eric, to Asulab S.A. Passive transponder for locating avalanche victims. 4,656,478, Cl. 342-51.000.

Leuenberger, Hans, to Glatt Maschinen-und Apparatebau AG. Process of treating a particulate material and apparatus for implementing the process. 4,656,056, Cl. 427-213.000.

Lever Brothers Company: *See*—
Bodor, Janos; and Van Heteren, Jan, 4,656,045, Cl. 426-601.000.
Chun, Kil Whan; Lang, David J.; and Santos, Edward, 4,655,780, Cl. 8-108.100.
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McCallion, Elizabeth J.; Karpusiewicz, William; and Irwin, Charles F., 4,655,782, Cl. 8-111.000.
Oakes, John, 4,655,953, Cl. 252-99.000.

Levi Strauss & Co.: *See*—
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Levin, Lev; Vogt, Russell G.; Eylon, Daniel; and Froes, Francis H., to United States of America, Air Force. Method for refining microstructures of prealloyed titanium powder compacted articles. 4,655,855, Cl. 148-20.300.

Levine, Peter A.: *See*—
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Norris, Philip R., to Polaroid Corporation. Electronic imaging copier. 4,656,525, Cl. 358-280.000.

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Nowak, Gerhard, to Nixdorf Computer AG. Process and circuit arrangement for checking a program in data processing units. 4,656,631, Cl. 371-19.000.

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Noyes, Harold B., to Hewlett-Packard Company. Modem with power-off ring detection. 4,656,318, Cl. 379-93.000.

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Oda, Toshiaki; and Yotsutani, Akio, to NEC Corporation. Cordless telephone apparatus having means for synchronizing channel scanning of fixed and portable units. 4,656,653, Cl. 379-61.000.

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Schnur, Rodney C., to Pfizer Inc. Tetracyclic spiro-hydantoin aldose reductase inhibitors and compositions. 4,656,169, Cl. 514-235.000.

Schoeffler, William N., to Petro-Design, Inc. Remote control selector valve. 4,655,289, Cl. 166-320.000

Schoeffler, William N., to Petro-Design, Inc. Angle deviation tool. 4,655,299, Cl. 175-38.000.

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Schott, Wilhelm, to Jean Walterscheid GmbH. Bearing ring for drive assembly having wide angle joint and protective funnel. 4,655,614, Cl. 384-220.000.

Schrader, W. Charles, to Tru-Brew. Coffee maker improvement for measured charges from bottled water. 4,655,123, Cl. 99-279.000.

Schreiber, Wolfgang; Ludwig, Manfred; and Hald, Ewald, to C. & E. Fein GmbH & Co. Clutch for power screwdrivers. 4,655,103, Cl. 81-474.000.

Schroder, Joris; Kiml, Jiri; and Meyer, Fritz, to Inventio AG. Method and apparatus for controlling elevators with double cars. 4,655,325, Cl. 187-127.000.

Schroder, Ludwig: *See*—
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Schwartz, Robert C.: *See*—
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Scifres, Donald R.; and Sprague, Robert A., to Xerox Corporation. Laser cavity optical system for stabilizing the beam from a phase locked multi-emitter broad emitter laser. 4,656,641, Cl. 372-103.000.

Sciortino, Ronald R. Ice shaving machine with stabilization means. 4,655,403, Cl. 241-92.000.

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Silver, Alexander, to Garrett Corporation, The. Foil bearing surfaces and method of making same. 4,654,939, Cl. 29-149.50A.

SIMESA - Societa Italiana Montaggi E Servizi Affini S.p.A.: *See*—
Domenighetti, Domenico, 4,655,636, Cl. 404-117.000.

Simon, Gerard: *See*—
Prud'Homme, Christian; and Simon, Gerard, 4,656,301, Cl. 556-472.000.

Simon, Myron S.: *See*—
MacGregor, Paul T.; and Simon, Myron S., 4,656,286, Cl. 548-146.000.

Simonet, Donald E.: *See*—
Anderson, John, Homeyer, Bernhard; Kuhle, Engelbert; Scheinpflug, Hans; Zeck, Walter M.; and Simonet, Donald E., 4,656,163, Cl. 514-84.000.

Simonsen, Karl: *See*—
Skovhauge, Erik; and Simonsen, Karl, 4,655,127, Cl. 99-455.000.

Simplec Manufacturing Company, Inc.: *See*—
Chappell, George D.; West, Jerry B.; and Wilson, Robert B., 4,656,397, Cl. 315-241.00S.

Simpson, Bobby R. Waterways treatment composition and method. 4,655,814, Cl. 71-67.000.

Simpson, John G.: *See*—
Baker, Terence S.; Abbott, Stephen R.; Simpson, John G.; Wright, John F.; and Powell, Michael J., 4,656,143, Cl. 436-527.000.

Simro A.G.: *See*—
Czech, Guenther, 4,655,564, Cl. 351-41.000.

Sims, Scott M. Optical eyepiece adaptor for cameras. 4,655,569, Cl. 354-62.000.

Sincholles, Daniel: *See*—
Coquelet, Claude; Bertez, Chantal; Bonne, Claude; and Sincholles, Daniel, 4,656,184, Cl. 514-370.000.

Sinclair, Robert A.: *See*—
Larimore, Franklin C.; and Sinclair, Robert A., 4,656,077, Cl. 428-156.000.

Sinclair, Stuart W.; and Lane, Kenneth R., to Long Reach Manufacturing Co. No crease option for a lift truck attachment. 4,655,672, Cl. 414-661.000.

Singer Company, The: *See*—
Trzeciak, John R.; and Turner, James A., 4,656,521, Cl. 358-231.000

Singer Company-Kearfott Division, The: *See*—
Albert, William C., 4,656,383, Cl. 310-321.000.

Sinisi, David B.: *See*—
Evans, William R.; and Sinisi, David B., 4,655,519, Cl. 339-17.0CF.

Sircar, Ila, to Warner-Lambert Company. N-[4-[2-(1,4,5,6-tetrahydro-4-methyl-6-oxo-3-pyridazinyl)ethenyl]phenyl]acetamide and related compounds. 4,656,170, Cl. 514-247.000.

Sjoovist, Rolf I., to Astra Lakemedel Aktiebolag. Pharmaceutical mixture. 4,656,027, Cl. 424-495.000.

SKF GmbH: *See*—
Olschewski, Armin, 4,655,731, Cl. 474-137.000.

Skovhauge, Erik; and Simonsen, Karl, to Pasilac A/S. Apparatus for producing acid and heat coagulated types of cheese. 4,655,127, Cl. 99-455.000.

Smart, Michael W.: *See*—
Andrews, David K., Benson, Trevor P.; and Smart, Michael W., 4,655,049, Cl. 62-172.000.

Smirnov, Boris A.: *See*—
Kulik, Yaroslav P.; Shmyrin, Ivan I.; Utyamyshev, Rustam I.; Vyrzhikovskaya, Marina N.; and Smirnov, Boris A., 4,655,218, Cl. 128-321.000.

Smith, Dennis E.: *See*—
Hunt, Alexander, III; and Smith, Dennis E., 4,655,525, Cl. 339-63.00M.

Smith, Don E., to Texas Metal Casting Co., Inc. Attachment apparatus for columnar member. 4,655,632, Cl. 403-362.000.

Smith, Elvin T., Jr.; and Ramsey, Robert D., to LOF Plastics Inc. Holder for embossing items of irregular cross-section. 4,655,267, Cl. 144-2.00R.

Smith, Francis X.: *See*—
Chromecek, Richard C.; Ogunbiyi, Lai; Riedhammer, Thomas M.; and Smith, Francis X., 4,655,957, Cl. 252-174.230.

Smith, Gary I.: *See*—
Graft, Richard P.; and Smith, Gary I., 4,655,007, Cl. 51-338.000.

Smith, Mark G.: *See*—
Evans, David S.; Smith, Mark G.; Middleton, Francisco A.; and Hargrave, Franklin, 4,656,651, Cl. 379-1.000.

Smith Meter Inc.: *See*—
Kappelt, Eric G.; and Ciccozzi, Frederick A., 4,655,089, Cl. 73-861.380.

Smith and Nephew Associated Companies p.l.c.: *See*—
Potter, William D.; Kiamil, Sinan B.; and White, Nicholas D., 4,655,202, Cl. 128-90.000.

Smith, Sidney K., Jr., to Hughes Tool Company. Latching production seal assembly. 4,655,290, Cl. 166-382.000.

Smith, Terry B.: *See*—
Frost, Terry; and Smith, Terry B., 4,655,067, Cl. 72-131.000.

SmithKline Beckman Corporation: *See*—
Kalbag, Suresh M.; and Voelker, Paul J., 4,656,248, Cl. 530-315.000.

SmithKline & French Laboratories Limited: *See*—
Roantree, Michael L.; and Young, Rodney C., 4,656,176, Cl. 514-256.000.

Snamprogetti, S.p.A.: *See*—
Taramasso, Marco; Manara, Giovanni; Fattore, Vittorio; and Notari, Bruno, 4,656,016, Cl. 423-277.000.

Snap-on Tools Corporation: *See*—
Boston, John T.; and Pacetti, Larry D., 4,656,418, Cl. 324-127.000.

Snoble, Karel A. J., to Dow Chemical Company, The. Solid chelating poly(carboxylate and/or sulfonate)peroxyhydrate bleaches. 4,655,975, Cl. 260-503.000.

Snyder Laboratories, Inc.: *See*—
Atkinson, Robert W., 4,655,197, Cl. 128-66.000.

Snyder, Robert B.: *See*—
Kouba, Jay K.; and Snyder, Robert B., 4,656,297, Cl. 549-508.000.

Sobue, Norio: *See*—
Sakakibara, Shiro; Sobue, Norio; Miyashi, Yoshinori; Koshiba, Sadahiro; and Hasebe, Masahiro, 4,655,735, Cl. 474-245.000.

Societa Italiana Vetro-Siv-S.p.A.: *See*—
Cestaro, Massimo; and Paudice, Ciro, 4,655,589, Cl. 356-35.000.

Societe de Fabrication d'Appareils Automatiques et Sirops dite F.A.-.A.S (S.a.r.l): *See*—
Ciekanski, Francois, 4,655,266, Cl. 141-82.000.

Societe Europeenne de Recherche d'Instrumentations Medicales Company: *See*—
Basuyaux, Michel, 4,655,204, Cl. 128-130.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See*—
Fournes, Jean-Paul; Lesgourgues, Jacques; and Martinou, Robert, 4,655,383, Cl. 228-119.000.

Sodeno, Toshiaki: *See*—
Yoshieda, Keiichi; Sodeno, Toshiaki; and Honmoto, Syuichi, 4,655,662, Cl. 414-14.000.

Soeda, Mahito: *See*—
Okazaki, Hiroshi; Soeda, Mahito; Wada, Hiromu; and Onishi, Kiyotaka, 4,656,279, Cl. 546-150.000.

Soejima, Shigeo: *See*—
Mase, Syunzo; and Soejima, Shigeo, 4,655,901, Cl. 204-426.000.

Sogah, Dotsevi Y.: *See*—
Hertler, Walter R.; and Sogah, Dotsevi Y., 4,656,233, Cl. 526-190.000.

Sohda, Yoshio: *See*—
Uemura, Seiichi; Hirose, Takao; Sohda, Yoshio; Sakamoto, Takayoshi; and Katoh, Kenji, 4,656,022, Cl. 423-447.200.

Sola Basic Industries, Inc.: *See*—
Ben-Dov, Oded, 4,654,962, Cl. 29-600.000.

Solara, Inc.: *See*—
Boynton, Sharon L., 4,655,195, Cl. 126-429.000.

Sollas Holland, B.V.: *See*—
Oly, Pieter J., 4,655,873, Cl. 156-502.000.

Soma International Ltd.: *See*—
Law, Nin. Y., 4,655,724, Cl. 446-443.000.

Somero, David W.; Somero, Paul J.; and Quenzi, Philip J., to Somero, David W.; and Somero, Paul J. Screeding apparatus and method. 4,655,633, Cl. 404-75.000.

Somero, Paul J.: *See*—
Somero, David W.; Somero, Paul J.; and Quenzi, Philip J., 4,655,633, Cl. 404-75.000.

Sommermann, Friedrich: *See*—
Lehner, August; Kohl, Albert; Roller, Hermann; Balz, Werner; Koester, Eerhard; and Sommermann, Friedrich, 4,656,093, Cl. 428-403.000.

Sonneborn, Siegfried; Handel, Manfred; Mack, Ernst; Gerstrom, Carl F.; and Sorensen, Peter, to V Kann Rasmussen Holding A/S. Hinge device with brake spring for tilting windows. 4,654,931, Cl. 16-337.000.

Sonoda, Hiroshi: *See*—
Tsuchida, Takayasu; Otsuka, Noboru; and Sonoda, Hiroshi, 4,656,135, Cl. 435-116.000.

Sonotek Corporation: *See*—
Berger, Harvey L., 4,655,393, Cl. 239-102.100.

Sony Corporation: *See*—
Araki, Shoji; and Numata, Shinichi, 4,656,387, Cl. 313-389.000.
Kondoh, Yoshiyuki; and Ishidoh, Takanobu, 4,656,629, Cl. 370-85.000.
Nakatsuyama, Takashi; and Ito, Akashi, 4,656,617, Cl. 369-45.000.
Ninomiya, Yoshinobu; Muroyama, Masakazu; Sugiyama, Masayoshi; and Hashimoto, Akira, 4,656,089, Cl. 428-327.000.
Sakamoto, Hitoshi, 4,656,529, Cl. 360-10.200.
Sugiki, Hiraku; Odaka, Kentaro; Satake, Tomoji; Ohmori, Takashi; and Yamada, Makoto, 4,656,539, Cl. 360-77.000.
Takikawa, Kei; and Kanemaki, Hirofumi, 4,656,468, Cl. 340-744.000.
Wilkinson, James H.; Ive, John G. S.; and Boreland, Peter C., 4,656,514, Cl. 358-160.000.
Yamanouchi, Hiroshi, 4,656,544, Cl. 360-97.000.

Sorensen, Peter: *See*—
Sonneborn, Siegfried; Handel, Manfred; Mack, Ernst; Gerstrom, Carl F.; and Sorensen, Peter, 4,654,931, Cl. 16-337.000.

Sorimachi, Kazuaki: *See*—
Togashi, Seigo; Yamamoto, Etsuo; Aota, Katsumi; Tanabe, Hiroshi; Sekiguchi, Kanetaka; and Sorimachi, Kazuaki, 4,655,552, Cl. 350-342.000.

Soroi, Kazunori, to Kyocera Corporation. Zirconia type black decorative article and process for production thereof. 4,656,145, Cl. 501-86.000.

Southco, Inc.: *See*—
Bisbing, Robert H., 4,655,489, Cl. 292-110.000.

Southern Research Institute: *See*—
Dunn, Richard L.; and Casper, Robert A., 4,655,777, Cl. 623-16.000.

Southland Instruments, Inc.: *See*—
Lee, Peter F., 4,655,226, Cl. 128-754.000.

Southwest Research Institute: *See*—
Bronstad, Maurice E., 4,655,434, Cl. 256-13.100.

Sowinski, Allan F.; and Shuman, David C., to Eastman Kodak Company. Reversal photographic elements containing tabular grain emulsions. 4,656,122, Cl. 430-505.000.

Spaanenburg, Lambertus; Duin, Peter B.; Woudsma, Roberto; and van der Poel, Arie A., to U.S. Philips Corporation. Very large scale integrated circuit subdivided into isochronous regions, method for the machine-aided design of such a circuit, and method for the machine-aided testing of such a circuit. 4,656,592, Cl. 364-490.000.

Sparks, John E.: *See*—
Horn, James L.; Schwartz, Robert C.; and Sparks, John E., 4,654,933, Cl. 19-200.000.

Spater, Lothar: *See*—
Langenwalter, Michael; and Spater, Lothar, 4,656,352, Cl. 250-227.000.

Spectra-Physics, Inc.: *See*—
Baer, Thomas M.; and Keirstead, Mark S., 4,656,635, Cl. 372-27.000.

Sperry Corporation: *See*—
Brown, Ralph A.; and Piele, Gerald H., 4,656,484, Cl. 343-761.000.

Spiegel, H. Jay; and Groza, Louis R. All-purpose football place kicking tee. 4,655,453, Cl. 273-55.00B.

Spieth, Manfred: *See*—
Manschitz, Erwin; Gartner, Karl-Heinz; Hunger, Josef; Spieth, Manfred; Moser, Hans-Karl; and Mundle, Jurgen, 4,655,464, Cl. 279-64.000.

Spietschka, Ernst; and Urban, Manfred, to Hoechst Aktiengesellschaft. Process for preparing organic pigments having excellent application properties. 4,655,845, Cl. 106-309.000.

Spinelli, Pia: *See*—
Arsura, Emilio; Capizzi, Amedeo; Cassani, Giorgio; Spinelli, Pia; and Tonini, Cristina, 4,656,032, Cl. 424-84.000.

Spiro Research B. V.: *See*—
Roffelsen, Franciscus, 4,655,282, Cl. 165-184.000.

Spiroff, Carl M., to United States of America, Air Force. Low height fin control actuator. 4,655,420, Cl. 244-3.240.

Spitzer, William R. Plug for use in hot oil treatment of wells having paraffin deposits and method of use thereof. 4,655,285, Cl. 166-250.000.

Spongr, Jerry J.; and Sawyer, Byron E., to Twin City International, Inc. Apparatus for measuring coating thickness. 4,656,357, Cl. 250-359.100.

Sports Protective Orthotics Ltd.: *See*—
Meyers, Andrew; Minkoff, Jeffrey; and Langevin, David, 4,654,893, Cl. 2-2.000.

Sprague, Robert A.: *See*—
Scifres, Donald R.; and Sprague, Robert A., 4,656,641, Cl. 372-103.000.

Spraying Systems Co.: *See*—
Ferrazza, Gerald P.; and Huck, Pamela R., 4,655,394, Cl. 239-412.000.

Sprenger, Kenneth J.: *See*—
Powell, Thomas A.; Kolnes, Kenneth O.; Sprenger, Kenneth J.; Casarotto, John D.; Whitney, Kenneth P.; and Hammer, Gerald M., 4,654,957, Cl. 29-568.000.

Sprintschnik, Gerhard: *See*—
Reiss, Kurt; Niederstatter, Walter; Stroszynski, Joachim; Bohm, Dieter; and Sprintschnik, Gerhard, 4,655,136, Cl. 101-459.000.

Stainless Foundry & Engineering, Inc.: *See*—
Bird, Charles R.; and Mertz, John M., 4,655,276, Cl. 164-519.000.

Stamatien, James A.: *See*—
Gleba, James S.; Stamatien, James A.; and Fortune, Gregory B., 4,656,593, Cl. 364-492.000.

Standard Oil Company, The: *See*—
Ward, Michael D.; Brazdil, James F., Jr.; and Grasselli, Robert K., 4,655,891, Cl. 204-157.930.

Standard Oil Company (Indiana): *See*—
Wennerberg, Arnold N., 4,656,153, Cl. 502-182.000.

Stanley, Edward T., to United States of America, Army. Sound reduction for tracked vehicles. 4,655,514, Cl. 305-56.000.

Stant Inc.: *See*—
Szlaga, Emil, 4,655,238, Cl. 137-43.000.

Stanzione, Robin C.: *See*—
Maryanoff, Cynthia A.; Plampin, James N.; and Stanzione, Robin C., 4,656,270, Cl. 544-148.000.
Maryanoff, Cynthia A.; Plampin, James N.; and Stanzione, Robin C., 4,656,291, Cl. 548-351.000.

Stark, William C. Paint shields and painting methods. 4,656,058, Cl. 427-282.000.

Statkow, Peter R.: *See*—
Sunkel, Carlos E.; Fau de Casa-Juana, Miguel; Statkow, Peter R.; and Straumann, Danielle, 4,656,181, Cl. 514-336.000.

Statsney, Joseph F.: *See*—
Blaker, James G.; and Statsney, Joseph F., 4,655,111, Cl. 83-356.300.

Stauffer Chemical Company: *See*—
Chavdarian, Charles G., 4,656,164, Cl. 514-134.000.
Jung, Alfred K.; and Weil, Edward D., 4,655,958, Cl. 252-194.000.

Stauffer, Norman L., to Honeywell Inc. Adjustable zone proximity sensor. 4,655,586, Cl. 356-1.000.

Steel, Alan, to Anderson Strathclyde PLC. Angle stations in or for endless conveyor belts. 4,655,340, Cl. 198-839.000.

Steffee, Arthur D., to AcroMed Corporation. Spinal column straightening apparatus. 4,655,199, Cl. 128-69.000.

Stegmueller, Bernhard: *See*—
Amann, Markus-Christian; Mahlein, Hans F.; Stegmueller, Bernhard; Thulke, Wolfgang; Winzer, Gerhard; and Wolff, Ulrich, 4,656,636, Cl. 372-50.000.

Steichen, Dale S.: *See*—
Hsieh, Chung-Lu; Kong, Stephen B.; Steichen, Dale S.; and Wheeler, Harold R., 4,655,781, Cl. 8-111.000.

Stein, Hermann: *See*—
Buhler, Hans-Eugen; Stein, Hermann; Levkov, Blagoje; Kainer, Hartmut; Kalfa, Horst; and Grimm, Daniel, 4,656,148, Cl. 502-34.000.

Stein Industrie Societe Anonyme: *See*—
Roger, Gerard; and Marsault, Jean J., 4,656,001, Cl. 376-405.000.

Steinberger, Rolf; Schlag, Johannes; Schlichting, Karl; Seiler, Erhard; Von Tomkewitsch, Sibylle; and Schmidt, Hans-Friedrich, to BASF Aktiengesellschaft. Conductive nylon molding materials. 4,655,964, Cl. 252-511.000.

Steinegger, Helmut: *See*—
Meyer, Adolf; Steinegger, Helmut; Pachow, Ulrich; and Pfeifer, Manfred, 4,655,982, Cl. 264-166.000

Steiner, Alois, to Sulzer Brothers Limited. Lamella for a picking comb of a weaving rotor. 4,655,259, Cl. 139-11.000.

Stenberg, Johan E.: *See*—
Bjork, Nils A. N.; Sandstrom, Erland T.; Stenberg, Johan E.; and Stiblert, Lars B., 4,655,595, Cl. 356-369.000.

Stephan, Gerard: *See*—
Labedan, Jean-Denis; and Stephan, Gerard, 4,655,618, Cl. 384-486.000.

Stephens, John A.: *See*—
de Buda, Francis, 4,656,150, Cl. 502-83.000.

Stephenson, Edward A., to Sundstrand Data Control Inc. Aircraft flight data recorder data acquisition system. 4,656,585, Cl. 364-424.000.

Sterling, Edward L., Jr.: *See*—
Robertson, John W., Jr.; Bastjanic, Edward; and Sterling, Edward L., Jr., 4,655,074, Cl. 73-4.00R

Stern, Harold; and Suleiman, Elisabeth, to International Playtex, Inc. Brassiere. 4,655,224, Cl. 128-443.000.

Stevens, Robert E.: *See*—
Cothran, Liggett A.; Morgan, Edward L.; Stevens, Robert E.; Holden, Homer N.; and Ensley, R. Neal, 4,655,986, Cl. 264-308.000.

Stewart, Rodger L., to Cobe Laboratories, Inc. Medical heat exchange. 4,656,004, Cl. 422-46.000.

Stewart, William S.: *See*—
Funk, Gary L.; Stewart, William S.; and Pennington, Guy S., Jr., 4,655,277, Cl. 165-1.000.

Stiblert, Lars B.: *See*—
Bjork, Nils A. N.; Sandstrom, Erland T.; Stenberg, Johan E.; and Stiblert, Lars B., 4,655,595, Cl. 356-369.000.

Stinnett, S. James: *See*—
Alcock, Harry R.; Stinnett, S. James; Tedder, Joseph B., Jr.; and Adams, J. Robert, Jr., 4,656,017, Cl. 423-300.000.

Stockmann, Michael: *See*—
Storck, Eckhard; and Stockmann, Michael, 4,655,593, Cl. 356-300.000.

Stockwell, John R.: *See*—
Walker, John R.; and Stockwell, John R., 4,656,205, Cl. 523-201.000.

Stoichkova, Nedyalka M.: *See*—
Jetcheva, Dimka I.; Todorov, Todor M.; and Stoichkova, Nedyalka M., 4,655,955, Cl. 252-105.000.

Stokar, Saul: *See*—
Tsur, Yuval; Duby, Tomas; and Stokar, Saul, 4,656,424, Cl. 324-309.000.

Stolle, Joseph W.: *See*—
Davis, Albert P., Jr.; Ramsey, Mark S.; and Stolle, Joseph W., 4,655,300, Cl. 175-39.000.

Stopper, Howard R., to Drackett Company, The. Preparation of non-flammable aerosol propellant microemulsion system. 4,655,959, Cl. 252-305.000.

Storck, Eckhard; and Stockmann, Michael, to Siemens Aktiengesellschaft. Method and apparatus for illuminating a Bragg cell. 4,655,593, Cl. 356-300.000.

Stoub, Everett W.: *See*—
Persyk, Dennis E.; and Stoub, Everett W., 4,656,359, Cl. 250-486.100.

Strahan, John C.: *See*—
Honkanen, George P.; Strahan, John C.; and Lachtman, Philip R., 4,655,752, Cl. 604-256.000.

Stransky, Werner: *See*—
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; and Lust, Sigmund, 4,655,824, Cl. 71-94.000.

Strasser, Hans-Erwin: *See*—
Boedecker, Kay; Scheurl, Robert; and Strasser, Hans-Erwin, 4,655,690, Cl. 417-53.000.

Straubel, Max: *See*—
Eckert, Konrad; Eisele, Hermann; Laufer, Helmut; and Straubel, Max, 4,655,184, Cl. 123-458.000.

Straumann, Danuelle: *See*—
Sunkel, Carlos E.; Fau de Casa-Juana, Miguel; Statkow, Peter R.; and Straumann, Danuelle, 4,656,181, Cl. 514-336.000.

Strauss, Gary J.: *See*—
Loomis, Bernard; Basera, Vincent A.; Caldwell, Bennie J.; and Strauss, Gary J., 4,655,721, Cl. 446-219.000

Strauss, Paul, to Zenith Electronics Corporation. Tensed mask color cathode ray tube and mask support frame therefore. 4,656,388, Cl. 313-402.000

Stresswall International, Inc.: *See*—
Babcock, John W., and Wormus, Ronald K., 4,655,646, Cl. 405-286.000

Stricker, Robert F.: *See*—
Purvis, Howard A.; and Stricker, Robert F., 4,655,077, Cl. 73-86.000.

Strobl, Georg, to Johnson Electric Industrial Manufactory. Commutator with winding connection segments having cutting edges. 4,656,380, Cl. 310-236.000.

Strolle, Christopher H., to RCA Corporation. TV graphic displays without quantizing errors from compact image memory. 4,656,467, Cl. 340-727.000.

Strom, Valter E.; Johansson, Bo-Lennart I.; Karlsson, Hakan I.; and Ostman, Thomas, to Svenska Traforskningsinstitutet. Web tension measuring method and device. 4,655,093, Cl. 73-862.410.

Stromswold, Chester E.: *See*—
Apostolos, John T.; and Stromswold, Chester E., 4,656,642, Cl. 375-1.000.

Stroszynski, Joachim: *See*—
Ress, Kurt; Niederstatter, Walter; Stroszynski, Joachim; Bohm, Dieter; and Sprintschnik, Gerhard, 4,655,136, Cl. 101-459.000.

Stryker Corporation: *See*—
Richmond, James W.; Tice, Robert G.; and Booth, William M., III, 4,655,754, Cl. 604-323.000.

Stubinen Utreckling AB: *See*—
Franzen, Gillis, 4,655,908, Cl. 210-87.000.

Stuebner, Terry L., to Nalco Chemical Company. Microbiological control in uranium processing. 4,655,936, Cl. 210-764.000.

Stull, Thomas E.: *See*—
Conley, Kenneth E.; and Stull, Thomas E., 4,656,074, Cl. 428-95.000.

Stupak, Joseph J., Jr.: *See*—
Pailthorp, Robert M.; Stupak, Joseph J., Jr.; and Elliott, Randall B., 4,656,400, Cl. 318-135.000.

Stursa, Lloyd C., to E. F. Johnson Company. Right angle coaxial connector. 4,655,534, Cl. 339-177.00R.

Styczinski, David A.: *See*—
Greenberg, Richard; and Styczinski, David A., 4,656,532, Cl. 360-48.000.

Suchovsky, Carl W.: *See*—
Shute, Alan B.; Suchovsky, Carl W.; and Bazzo, Richard J., 4,655,705, Cl. 431-78.000.

Sudo, Fumio: *See*—
Ishizaka, Kunihiko; Sudo, Fumio; Seki, Akira; and Aso, Yoshio, 4,655,831, Cl. 75-257.000.

Sudo, Isamu: *See*—
Takaki, Usaji; Sudo, Isamu; and Matsuhisa, Toshio, 4,656,306, Cl. 560-104.000.

Suematsu, Toshio: *See*—
Takeda, Yuji; Anzai, Katsushi; Harada, Osamu; and Suematsu, Toshio, 4,655,186, Cl. 123-480.000.

Sugalski, Raymond K., to General Electric Company. Method for making electrochemical cell having cast-in-place insulator. 4,654,963, Cl. 29-623.100.

Sugaya, Hiroyuki: *See*—
Tomioka, Hisatsugu; Waki, Tazuo; and Sugaya, Hiroyuki, 4,655,327, Cl. 188-290.000.

Sugihara, Masahiro: *See*—
Nakamura, Toshiyuki; Sugihara, Masahiro; Inaba, Tsutomi; Oide, Masahiko; Kimura, Tadashi; and Kobayashi, Norihide, 4,655,697, Cl. 418-55.000.

Sugiki, Hiraku; Odaka, Kentaro; Satake, Tomoji; Ohmori, Takashi; and Yamada, Makoto, to Sony Corporation. Method and apparatus with improved tracking control for recording a digital signal. 4,656,539, Cl. 360-77.000.

Sugimoto, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Nuclear magnetic resonance diagnostic apparatus. 4,656,423, Cl. 324-309.000

Sugimoto, Hiroshi: *See*—
Matsuyama, Isamu; and Sugimoto, Hiroshi, 4,656,509, Cl. 358-100.000.

Sugimoto, Naotsugu; Torii, Kazutoshi; Tanahashi, Yuka; Morita, Hideo; Watanabe, Yuzo; Yamamoto, Kohei; and Kainuma, Teisuke, to Takara Shuzo Co., Ltd. Soybean milk-containing alcoholic beverages. 4,656,044, Cl. 426-592.000.

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Shoesmith, May V., executrix: *See—*
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Young Family Trust: *See—*
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Young, John D., to Young Family Trust. Plum tree ("JD-1"). 5,926, 4-7-87, Cl. 38.000.

LIST OF STATUTORY INVENTION REGISTRATIONS

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Annibale, Joseph R.; and Teets, Joseph C., to United States of America, Navy. Wheel stop and tie-down for aircraft carrier flight and elevator decks. H256, 4-7-87, Cl. 248-499.000.
Bahl, Chander P., to Cetus Corporation. Plasmid for producing human insulin. H245, 4-7-87, Cl. 435-71.000.
Banura, George A., to United States of America, Navy. Motor drive circuit. H246, 4-7-87, Cl. 318-480.000.
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Eng, Patrick S., to United States of America, Navy. Method of keying outer bearing race to housing. H242, 4-7-87, Cl. 29-525.000.
Field, Werner, to United States of America, Army. Increased safety in use, and improved function, of ammunition items. H251, 4-7-87, Cl. 102-487.000.
Garraway, James R.: *See—*
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Hart, Michael A.: *See—*
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Henninger, Jeffrey L.; Hart, Michael A.; Garraway, James R.; Elbert, Robert G.; and Olinger, Curtis P. Dewatering process and apparatus for slurry recovered from waste water. H258, 4-7-87, Cl. 210-737.000.
Hindman, James R., to W. R. Grace & Co. Method of increasing the volume yield of exfoliated vermiculite. H254, 4-7-87, Cl. 252-378.00R.
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Middlebrooks, Herbert, to United States of America, Army. Fuse status indicator system. H248, 4-7-87, Cl. 340-639.000.
Morris, Hayden; Rhodes, Henry W.; and Marlow, Margaret C., to United States of America, Navy. Metallization for hermetic sealing of ceramic modules. H260, 4-7-87, Cl. 428-35.000.
Olinger, Curtis P.: *See—*
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Sapienza, Richard S.; Slegeir, William A.; and Goldberg, Robert I., to United States of America, Energy. Catalysts for the production of hydrocarbons from carbon monoxide and water. H243, 4-7-87, Cl. 518-701.000.
Sitzmann, Michael E.; and Gilligan, William H., to United States of America, Navy. Branch chained polynitrodiols. H253, 4-7-87, Cl. 549-321.000.
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Sturman, Edgar J. Filling needle holder assembly. H252, 4-7-87, Cl. 141-392.000.
Tam, Shiu-Wing; and Johnson, Carl E., to United States of America, Energy. Coated ceramic breeder materials. H259, 4-7-87, Cl. 376-146.000.
Task, Harry L., to United States of America, Air Force. Optical alignment method for binocular displays. H261, 4-7-87, Cl. 356-138.000.
Taylor, Robert J., to United States of America, Navy. High efficiency marine anchor system. H250, 4-7-87, Cl. 114-303.000.
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Annibale, Joseph R.; and Teets, Joseph C., H256, Cl. 248-499.000.
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Wes, James A.: *See*—
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124 L 4,655,005
168 4,655,006
293 4,655,794
309 4,655,795
338 4,655,007

CLASS 52
2 4,655,008
58 4,655,009
63 4,655,010
79.1 4,655,011
79.8 4,655,012
80 4,655,013
105 4,655,014
125.4 4,655,015
169.1 4,655,016
187 4,655,017
302 4,655,018
475 4,655,019
551 4,655,020
641 4,655,021
646 4,655,022
685 4,655,023
745 4,655,024
771 4,655,025

CLASS 53
55 4,655,026
140 4,655,027
399 4,655,028
432 4,655,029
456 4,655,030

CLASS 55
3 4,655,796
16 4,655,797
64 4,655,798
195 4,655,800
208 4,655,802
218 4,655,801
273 4,655,799
298 4,655,805
322 4,655,803
324 4,655,804
341 NT 4,655,806
522 4,655,807

CLASS 56
11.9 4,655,031
12.7 4,655,032

CLASS 57
11 4,655,033

CLASS 60
39.29 4,655,034
274 4,655,037
307 4,655,035
328 4,655,039
521 4,655,036
602 4,655,038
4,655,040
4,655,043
646 4,655,041
648 4,655,042
753 4,655,044

CLASS 62
18 4,655,809
45 4,655,045
55.5 4,655,046
64 4,655,047
78 4,655,048
172 4,655,049
200 4,655,050
324.4 4,655,051
441 4,655,052
476 4,655,053

CLASS 63
13 4,655,054
14 D 4,655,055

CLASS 65
3.12 4,655,808
60.4 4,655,810
60.51 4,655,811
346 4,655,812
359 4,655,813

CLASS 68
205 R 4,655,056

CLASS 70
14 4,655,057
178 4,655,058
224 4,655,059
230 4,655,060
271 4,655,061
339 4,655,062
419 4,655,063

CLASS 71
67 4,655,814
4,655,815
86 4,655,816
90 4,655,817
4,655,818
92 4,655,819
4,655,820
4,655,821
4,655,822
93 4,655,823
94 4,655,824

CLASS 72
35 4,655,064
45 4,655,065
90 4,655,066
131 4,655,067
208 4,655,068
306 4,655,069
325 4,655,070
346 4,655,071
422 4,655,072
469 4,655,073

CLASS 73
4 R 4,655,074
32 A 4,655,075
73 4,655,076
86 4,655,077
168 4,655,078
295 4,655,079
462 4,655,080
505 4,655,081
594 4,655,082
606 4,655,083
611 4,655,084
638 4,655,085
646 4,655,086
708 4,655,087
756 4,655,088
861.38 4,655,089
861.81 4,655,090
862.08 4,655,091
862.35 4,655,092
862.41 4,655,093
863.31 4,655,094
864.83 4,655,095

CLASS 74
5 F 4,655,096
53 4,655,097
163 4,655,098
421 A 4,655,099
424.8 C 4,655,100
552 4,655,101

CLASS 75
0.5 B 4,655,825
10.66 4,655,826
84.4 4,655,827
97 A 4,655,828
101 R 4,655,829
233 4,655,830
257 4,655,831

CLASS 81
15.9 4,655,102
474 4,655,103
483 4,655,104

CLASS 82
1 C 4,655,105
4 C 4,655,106
38 R 4,655,108
47 4,655,109

CLASS 83
23 4,655,107
27 4,655,110
356.3 4,655,111

CLASS 84
1.03 4,655,112
4,655,113
1.19 4,655,114
4,655,115
312 R 4,655,116
423 B 4,655,117

CLASS 89
185 4,655,118

CLASS 92
169 4,655,119

CLASS 98
40.05 4,655,120
78 4,655,121
119 4,655,122

CLASS 99
279 4,655,123
323.2 4,655,124
355 4,655,125
386 4,655,126
455 4,655,127

CLASS 100
145 4,655,128

CLASS 101
35 4,655,129
93.23 4,655,130
236 4,655,131
269 4,655,132
363 4,655,133
426 4,655,134
4,655,135
459 4,655,136

CLASS 102
202 4,655,137
307 4,655,138
494 4,655,139
508 4,655,140

CLASS 104
7.1 4,655,142
307 4,655,141

CLASS 105
168 4,655,143
341 4,655,144

CLASS 106
1.18 4,655,832
1.23 4,655,833
20 4,655,834
4,655,835
26 4,655,836
76 4,655,837
90 4,655,838
105 4,655,839
126 4,655,840
287.23 4,655,841
288 B 4,655,842
308 B 4,655,843
309 4,655,844
4,655,845

CLASS 109
52 4,655,145

CLASS 110
263 4,655,147
346 4,655,146
347 4,655,148

CLASS 112
121.12 4,655,149
153 4,655,150
168 4,655,151
220 B1 3,815,531
253 4,655,152

CLASS 114
75 4,655,153
91 4,655,154
243 4,655,155
266 4,655,156
291 4,655,157
297 4,655,158

CLASS 116
212 4,655,159
277 4,655,160

CLASS 118
24 4,655,161
50 4,655,162
62 4,655,163
503 4,655,164
647 4,655,165
673 4,655,166
718 4,655,167
4,655,168

CLASS 119
3 4,655,169
51 R 4,655,170
73 4,655,171
96 4,655,172
103 4,655,173

CLASS 122
261 4,655,174

CLASS 123
25 C 4,655,175
90.16 4,655,176
90.36 4,655,177
321 4,655,178
326 4,655,179
361 4,655,180
440 4,655,181
4,655,182
449 4,655,183
458 4,655,184
459 4,655,185
480 4,655,186
481 4,655,187
489 4,655,188
519 4,655,189

CLASS 124
78 4,655,190

CLASS 125
16 R 4,655,191

CLASS 126
20 4,655,192
224 4,655,193
299 D 4,655,194
429 4,655,195
451 4,655,196

CLASS 128
66 4,655,197
4,655,198
69 4,655,199
71 4,655,200
80 C 4,655,201
90 4,655,202
92 YP 4,655,203
130 4,655,204
132 R 4,655,205
134 4,655,206
135 4,655,207
156 4,655,208
4,655,209
4,655,210
4,655,211
201.11 4,655,212
205.25 4,655,213
207.18 4,655,214
303.14 4,655,215
303.17 4,655,216
305 4,655,217
321 4,655,218
4,655,219
328 4,655,220
334 R 4,655,221
4,655,222
4,655,223
443 4,655,224
633 4,655,225
660 4,655,228
754 4,655,226
781 4,655,227

CLASS 131
273 4,655,229
343 4,655,230
359 4,655,231

CLASS 132
79 A 4,655,232
91 4,655,233
92 A 4,655,234

CLASS 134
1 4,655,846
7 4,655,847
99 4,655,235

CLASS 135
88 4,655,236

CLASS 137
13 4,655,237
43 4,655,238
94 4,655,239
110 4,655,240
240 4,655,241

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247 27 4,655,242
403 4,655,243
412 4,655,244
493 4,655,245
505 11 4,655,246
516.29 4,655,251
519.5 4,655,247
528 4,655,248
595 4,655,252
596.13 4,655,250
614.18 4,655,253
625.5 4,655,249
625.65 4,655,254
627.5 4,655,255

CLASS 138

96 T 4,655,256
120 4,655,257

CLASS 139

1 C 4,655,258
11 4,655,259
196.2 4,655,260
302 4,655,261
435 4,655,262
446 4,655,263

CLASS 140

93.6 4,655,264

CLASS 141

9 4,655,265
82 4,655,266

CLASS 144

2 R 4,655,267
3 R 4,655,268
193 A 4,655,269

CLASS 148

1 5 4,655,848
4,655,849
4,655,850
6 4,655,851
6.11 4,655,852
16.5 4,655,853
20.3 4,655,855
111 4,655,854
423 4,655,857

CLASS 149

19.2 4,655,859
19.92 4,655,858
4,655,860

CLASS 152

380 4,655,270

CLASS 156

62.2 4,655,861
66 4,655,862
72 4,655,863
89 4,655,864
157 4,655,865
192 4,655,866
234 4,655,867
238 4,655,868
252 4,655,869
285 4,655,870
484 4,655,871
499 4,655,872
502 4,655,873
643 4,655,874
4,655,875
4,655,876

CLASS 157

1.26 4,655,271

CLASS 160

348 4,655,272

CLASS 162

146 4,655,877

CLASS 164

323 4,655,273
341 4,655,274
4,655,275
519 4,655,276

CLASS 165

1 4,655,277
2 4,655,278
4,655,279
47 4,655,280
160 4,655,281
184 4,655,282

CLASS 166

55.1 4,655,283
84 4,655,284
250 4,655,285
285 4,655,286
294 4,655,287
319 4,655,288
320 4,655,289
321 Re 32,390
382 4,655,290
385 4,655,291
387 4,655,292

CLASS 168

4 4,655,293

CLASS 169

46 4,655,294

CLASS 172

26 4,655,295
400 4,655,296
445.1 4,655,297

CLASS 174

35 GC 4,656,312
35 R 4,656,313
68.5 4,656,314
92 4,656,316

CLASS 175

4.52 4,655,298
38 4,655,299
39 4,655,300
171 4,655,301
218 4,655,302
329 4,655,303

CLASS 177

4 4,655,304
211 4,655,305
229 4,655,306

CLASS 178

18 4,656,317

CLASS 180

69.1 4,655,307
78 4,655,308
215 4,655,309
219 4,655,310
4,655,311
268 4,655,312
273 4,655,313

CLASS 181

113 4,655,314
153 4,655,315
164 4,655,316
257 4,655,317

CLASS 182

90 4,655,318
96 4,655,319
172 4,655,322
194 4,655,320
196 4,655,321

CLASS 187

1 R 4,655,323
121 4,655,324
127 4,655,325

CLASS 188

18 A 4,655,326
290 4,655,327
352 4,655,328

CLASS 190

107 4,655,329

CLASS 191

12.4 4,656,320

CLASS 192

3.3 4,655,330
70.18 4,655,331
70.27 4,655,333
70.28 4,655,332
89 B 4,655,334
99 S 4,655,335
106.2 4,655,336
4,655,337

CLASS 194

74 R 4,656,315

CLASS 198

395 4,655,338
771 4,655,341
836 4,655,339
839 4,655,340

CLASS 200

50 A 4,656,322
50 C 4,656,321
68.1 4,656,323
146 R 4,656,324

CLASS 201

1 4,655,878

CLASS 203

37 4,655,879

CLASS 204

1 T 4,655,880
15 4,655,881
16 4,655,882
59 F 4,655,883
72 4,655,885
98 4,655,886
4,655,887
129.43 4,655,888
149 4,655,889
157.22 4,655,890
157.93 4,655,891
192.15 4,655,892
4,655,893
206 4,655,894
213 4,655,895
263 4,655,896
299 R 4,655,897
4,655,898
321 4,655,884
412 4,655,899
415 4,655,900
426 4,655,901

CLASS 206

45.18 4,655,342
287.1 4,655,343
307 4,655,344
309 4,655,345
315.6 4,655,346
390 4,655,347
444 4,655,348

CLASS 208

22 4,655,902
96 4,655,903
129 4,655,904
216 R 4,655,905
217 4,655,906

CLASS 209

17 G 4,655,386
404 4,655,907
524 4,655,349
577 4,655,350

CLASS 210

87 4,655,908
90 4,655,909
107 4,655,910
4,655,911
133 4,655,912
163 4,655,913
168 4,655,914
169 4,655,915
173 4,655,916
198.2 4,655,917
199 4,655,918
236 4,655,919
331 4,655,920
489 4,655,921
497.1 4,655,922
512.2 4,655,923
603 4,655,924
605 4,655,925
611 4,655,926
639 4,655,927
651 4,655,928
664 4,655,929
668 4,655,930
679 4,655,931
709 4,655,932
721 4,655,933
728 4,655,934
750 4,655,935
764 4,655,936
772 4,655,937
798 4,655,938
799 4,655,939
805 4,655,940

CLASS 211

88 4,655,351
175 4,655,352
189 4,655,353
199 4,655,354

CLASS 213

32 4,655,355
230 4,655,356

CLASS 219

10.55 E 4,656,325
69 R 4,656,326
86.21 4,656,327
104 4,656,328
121 LD 4,656,332
121 PL 4,656,331
121 PR 4,656,330
4,656,329
4,656,333
4,656,334
234 4,656,336
386 4,656,335
497 4,656,337
528 4,656,338
532 4,656,339
4,656,340

CLASS 220

1.5 4,655,357
86 4,655,358
67 4,655,359
69 4,655,360
85 F 4,655,361
260 4,655,362
268 4,655,363
307 4,655,364
314 4,655,365
441 4,655,366
445 4,655,367

CLASS 221

4 4,655,368
213 4,655,369

CLASS 222

57 4,655,370
355 4,655,371
391 4,655,372
465.1 4,655,373
504 4,655,374

CLASS 223

85 4,655,375

CLASS 224

324 4,655,376

CLASS 225

48 4,655,377

CLASS 226

23 4,655,378
110 4,655,379

CLASS 227

9 4,655,380
15 4,655,381

CLASS 228

56.3 4,655,382
119 4,655,383
132 4,655,384
223 4,655,385

CLASS 229

17 R 4,655,387
45 R 4,655,388
48 T 4,655,389

CLASS 232

35 4,655,390
43.1 4,655,391

CLASS 235

101 4,656,341
379 4,656,342
454 4,656,343
462 4,656,344
472 4,656,345
487 4,656,346

CLASS 236

15 E 4,655,392

CLASS 239

102.1 4,655,393
412 4,655,394
427 4,655,395
533.9 4,655,396
542 4,655,397
588 4,655,398
745 4,655,399

CLASS 241

29 4,655,400
69 4,655,401
76 4,655,402
92 4,655,403
99 4,655,404
215 4,655,405
261 4,655,406

CLASS 242

4 A 4,655,407
55.19 A 4,655,408
55.2 4,655,409
158 R 4,655,410

CLASS 244

3.11 4,655,411
3.24 4,655,420
35 R 4,655,412
53 B 4,655,413
75 R 4,655,414
105 4,655,415
121 4,655,416
122 A 4,655,417
138 R 4,655,418
199 4,655,419

CLASS 246

167 R 4,655,421

CLASS 248

56 4,655,422
71 4,655,423
73 4,655,424
311.2 4,655,425
405 4,655,426
460 4,655,427
470 4,655,428
553 4,655,429

CLASS 249

172 4,655,430

CLASS 250

201 4,656,347
4,656,348
203 R 4,656,349
209 4,656,350
221 4,656,351
227 4,656,352
231 R 4,656,353
256 4,656,354
325 4,656,355
326 4,656,356
359.1 4,656,357
372 4,656,358
486.1 4,656,359
571 4,656,360
578 4,656,361

CLASS 251

1.3 4,655,431

CLASS 252

1 4,655,941
8.5 4,655,942
8.551 4,655,943
12.2 4,655,944
32.5 4,655,946
49.5 4,655,947
49.6 4,655,948
51.5 R 4,655,949
62 4,655,950
70 4,655,951
88 4,655,952
99 4,655,953
102 4,655,954
105 4,655,955
124 4,655,945
153 4,655,956
174.23 4,655,957
194 4,655,958
305 4,655,959
321 4,655,960
4,655,961
350 4,655,962
511 4,655,963
4,655,964
518 4,655,965
4,655,966
520 4,655,967
632 4,655,968
700 4,655,969

CLASS 254

134.3 FT 4,655,432
364 4,655,433

CLASS 256

13.1 4,655,434
17 4,655,435

CLASS 260

378 4,655,970
397.45 4,655,971
404 4,655,972
4,655,973
410 4,655,974
503 4,655,975

CLASS 261

44.2 4,655,976
153 4,655,977

CLASS 264

0.5 4,655,978
42 4,655,979
102 4,655,980
162 4,655,981
166 4,655,982
297.1 4,655,983
314 4,655,984
320 4,655,985
508 4,655,986
563 4,655,987
566 4,655,988

CLASS 266

44 4,655,436
197 4,655,437

CLASS 267

8 R 4,655,438
4,655,439
64.11 4,655,440

CLASS 269

61 4,655,441
73 4,655,442
156 4,655,443
4,655,444
304 4,655,445

CLASS 271

314 4,655,446

CLASS 272

69 4,655,447
94 4,655,450
144 4,655,448

CLASS 273

26 R 4,655,452
32 H 4,655,451
55 B 4,655,453
63 E 4,655,454
73 C 4,655,455
73 J 4,655,449
84 R 4,655,456
162 R 4,655,457
170 4,655,458
171 4,655,459
185 C 4,655,460
249 4,655,461

CLASS 277

164 4,655,462
180 4,655,463

CLASS 279

64 4,655,464

CLASS 280

11.12 4,655,465
47.37 R 4,655,466
81 B 4,655,467
154.5 R 4,655,468
4,655,469
211 4,655,470
242 WC 4,655,471
303 4,655,472
610 4,655,473
666 4,655,474
777 4,655,475
804 4,655,476
4,655,477

CLASS 281

45 4,655,478

CLASS 285

18 4,655,479
21 4,655,480
24 4,655,481
81 4,655,482
169 4,655,483
333 4,655,485
340 4,655,486

CLASS 290

44 4,656,362

CLASS 292

57 4,655,487
66 4,655,488
110 4,655,489
238 4,655,490
247 4,655,491

CLASS 294

15 4,655,492
49 4,655,494
61 4,655,495

CLASS 296

39 A 4,655,496
78.1 4,655,497
97 H 4,655,498
146 4,655,499
223 4,655,500

CLASS 297

113 4,655,501
229 4,655,502
238 4,655,503
239 4,655,504
284 4,655,505
467 4,655,506

CLASS 299

33 4,655,493
4,655,507
79 4,655,508

CLASS 303

10 4,655,509
40 4,655,510
92 4,655,511
114 4,655,512
115 4,655,513

CLASS 305

56 4,655,514

CLASS 307

10 LS 4,656,363
112 4,656,364
140 4,656,365
252 A 4,656,366
270 4,656,367

272 A 4,656,368
297 4,656,369
303 4,656,370
362 4,656,371
475 4,656,372
4,656,373
4,656,374
4,656,375

CLASS 310

41 4,656,376
68 R 4,656,377
71 4,656,378
181 4,656,379
236 4,656,380
257 4,656,381
270 4,656,382
321 4,656,383
334 4,656,384
348 4,656,385

CLASS 313

113 4,656,386
389 4,656,387
402 4,656,388
4,656,389
409 4,656,390
414 4,656,391
533 4,656,392

CLASS 315

5.38 4,656,393
5.41 4,656,394
57 4,656,395
519 4,656,396
241 S 4,656,397
293 4,656,398
411 4,656,399

CLASS 318

135 4,656,400
329 4,656,401
341 4,656,402
4,656,403
558 4,656,404
571 4,656,405
587 4,656,406
626 4,656,407
653 4,656,408
689 4,656,409
718 4,656,410

CLASS 320

16 4,656,411
39 4,656,412

CLASS 322

47 4,656,413

CLASS 323

289 4,656,414
314 4,656,415

CLASS 324

52 4,656,416
73 R 4,656,417
127 4,656,418
158 D 4,656,419
212 4,656,420
244 4,656,421
303 4,656,422
309 4,656,423
4,656,424
4,656,425
4,656,426
444 4,656,427

CLASS 328

14 4,656,428
149 4,656,429
229 4,656,430

CLASS 329

50 4,656,431
107 4,656,432

CLASS 330

4.3 4,656,433
84 4,656,434
253 4,656,435
4,656,436
4,656,437
287 4,656,438

CLASS 332

7.51 4,656,439
45 4,656,440

CLASS 333

33 4,656,441
140 4,656,442
156 4,656,443

CLASS 335

16 4,656,444
195 4,656,445
201 4,656,446
216 4,656,447
262 4,656,448
297 4,656,449

CLASS 334

83 4,656,450
96 4,656,451
178 4,656,452

CLASS 337

236 4,656,453

CLASS 338

2 4,656,454
35 4,656,455
128 4,656,456
176 4,656,457

CLASS 339

14 R 4,655,515
17 CF 4,655,516
4,655,519
17 LC 4,655,517
4,655,518
21 R 4,655,520
31 R 4,655,521
32 M 4,655,522
40 4,655,523
59 M 4,655,524
63 M 4,655,525
74 R 4,655,526
91 R 4,655,527
99 R 4,655,528
122 R 4,655,529
126 R 4,655,530
135 4,655,531
143 R 4,655,532
4,655,533
177 R 4,655,534
182 R 4,655,535
191 R 4,655,536
221 R 4,655,537
255 P 4,655,538

CLASS 340

65 4,656,458
347 DA 4,656,460
347 NT 4,656,459
365 C 4,656,461
556 4,656,462
572 4,656,463
622 4,656,464
679 4,656,465
716 4,656,466
727 4,656,467
744 4,656,468
802 4,656,469
805 4,656,470
825.06 4,656,475
825.16 4,656,471
825.34 4,656,472
4,656,473
993 4,656,476

CLASS 342

39 4,656,477
51 4,656,478
94 4,656,479
151 4,656,480
171 4,656,481

CLASS 343

705 4,656,482
745 4,656,483
761 4,656,484
876 4,656,485
882 4,656,486
909 4,656,487

CLASS 346

49 4,656,488
76 PH 4,656,489
140 R 4,656,490

CLASS 350

3.6 4,655,539
3.64 4,655,542
3.7 4,655,540
3.71 4,655,541
6.6 4,655,543
86.20 4,655,544
96.34 4,655,545
99 4,655,546
162.12 4,655,547
245 4,655,548
331 R 4,655,549
332 4,655,550
334 4,655,551
342 4,655,552
345 4,655,553
350 S 4,655,561
386 4,655,554
432 4,655,555
4,655,556
445 4,655,557
465 4,655,558
538 4,655,562
588 4,655,559
611 4,655,560
4,655,563

CLASS 351

41 4,655,564
159 4,655,565

CLASS 352

225 4,655,566
243 4,655,567

CLASS 354

21 4,655,568
62 4,655,569
107 4,655,570
150 4,655,571
173.11 4,655,572
213 4,655,573
215 Re.32,391
288 4,655,574
322 4,655,575
415 4,655,576

CLASS 355

3 R 4,655,577
4,655,578
4 4,655,579
7 4,655,580
14 C 4,655,581
14 R 4,655,582
29 4,655,583
53 4,655,584
61 4,655,585

CLASS 356

1 4,655,586
5 4,655,588
35 4,655,589
72 4,655,590
152 4,655,591
237 4,655,592
300 4,655,593
346 4,655,587
363 4,655,594
369 4,655,595
372 4,655,596
373 4,655,597
400 4,655,598
401 4,655,599
4,655,600
4,655,601

CLASS 357

16 B1 3,982,261
23.13 4,656,491
23.3 4,656,492
23.4 4,656,493
30 4,656,494
34 4,656,495
36 4,656,496
50 4,656,497
4,656,498
74 4,656,499

CLASS 358

13 4,656,500
31 4,656,501
4,656,502
44 4,656,503
75 4,656,504
80 4,656,505
87 4,656,506
96 4,656,507
98 4,656,508
100 4,656,509
101 4,656,510
136 4,656,511
143 4,656,512
147 4,656,513
160 4,656,514
183 4,656,515
4,656,516
213 4,656,517
4,656,518
4,656,519
4,656,520
231 4,656,521
247 4,656,522
260 4,656,523
280 4,656,524
4,656,525
294 4,656,526
320 4,656,527
342 4,656,528

CLASS 360

10.2 4,656,529
15 4,656,530
19.1 4,656,531
4,656,532
65 4,656,533
71 4,656,534
72.1 4,656,535
72.2 4,656,536
73 4,656,537
77 4,656,538
4,656,539
85 4,656,540
96.5 4,656,541
97 4,656,542
4,656,543
4,656,544
98 4,656,545
110 4,656,546
126 4,656,547
132 4,656,548
4,656,549
133 4,656,550
137 4,656,551
4,656,552

CLASS 361

31 4,656,553
56 4,656,554
117 4,656,555
307 4,656,556
309 4,656,557
327 4,656,558
386 4,656,559
433 4,656,560

CLASS 362

30 4,656,561
32 4,656,562
61 4,656,563
72 4,656,564
187 4,656,565
202 4,656,566
231 4,656,567
352 4,656,568
418 4,656,569

CLASS 363

26 4,656,570
37 4,656,571
41 4,656,572
49 4,656,573
60 4,656,574
150 4,656,575

CLASS 364

148 4,656,576
167 4,656,577
200 4,656,578
4,656,579
4,656,580
300 4,656,581
4,656,582
4,656,583
414 4,656,584
424 4,656,585
4,656,586
424.1 4,656,587
426 4,656,588
431.02 4,656,589
474 4,656,590
478 4,656,591
490 4,656,592
492 4,656,593
498 4,656,594
507 4,656,595
518 4,656,597
521 4,656,596
550 4,656,598
567 4,656,599
4,656,600
821 4,656,601
900 4,656,602
4,656,603
4,656,604

CLASS 365

52 4,656,605
104 4,656,606
182 4,656,607
190 4,656,608
200 4,656,609
4,656,610
203 4,656,611
4,656,612
208 4,656,613
230 4,656,614

CLASS 366

56 4,655,602
107 4,655,603
219 4,655,604
312 4,655,605

CLASS 367

13 4,656,615
153 4,656,616

CLASS 368

160 4,655,606

CLASS 369

45 4,656,617
112 4,656,618

CLASS 370

13 4,656,619
58 4,656,620
59 4,656,621
60 4,656,623
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62 4,656,625
68 4,656,626
85 4,656,627
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104 4,656,630

CLASS 371

19 4,656,631
20 4,656,632
54 4,656,633
68 4,656,634

CLASS 372

27 4,656,635
38 4,656,637
49 4,656,638
50 4,656,636
83 4,656,639
87 4,656,640
103 4,656,641

CLASS 374

4,655,607
119 4,655,608
194 4,655,609

CLASS 375

1 4,656,642
10 4,656,643
14 4,656,644
40 4,656,645
47 4,656,646
52 4,656,647
80 4,656,648

CLASS 376

173 4,655,989
225 4,655,990
245 4,655,991
247 4,655,992
252 4,655,993
254 4,655,994
267 4,655,995
272 4,655,996
289 4,655,997
290 4,655,998
333 4,655,999
352 4,656,000
405 4,656,001

CLASS 377

48 4,656,649

CLASS 378

7 4,656,650

CLASS 379

1 4,656,651
29 4,656,319
41 4,656,652
61 4,656,653
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105 4,656,655
113 4,656,656
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221 4,656,658
253 4,656,659
393 4,656,660
399 4,656,661

CLASS 380

23 4,656,474

CLASS 382

3 4,656,662
8 4,656,663
47 4,656,664
51 4,656,665

CLASS 384

13 4,655,610
45 4,655,611
4,655,612
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49 4,655,614
220 4,655,615
286 4,655,616
446 4,655,617
465 4,655,618
486 4,655,619
567 4,655,620
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63 4,655,622
100 4,655,623
121 4,655,624
208 4,655,625
4,655,626
605 4,655,627

CLASS 403

163 4,655,628
291 4,655,629
342 4,655,630
349 4,655,631
362 4,655,632

CLASS 404

75 4,655,633
84 4,655,634
108 4,655,635
117 4,655,636

CLASS 405

17 4,655,637
107 4,655,638
181 4,655,639
198 4,655,640
204 4,655,641
217 4,655,642
260 4,655,643
4,655,644
261 4,655,645
286 4,655,646

CLASS 406

194 4,655,647

CLASS 407

42 4,655,648

CLASS 408

136 4,655,649
225 4,655,650
226 4,655,651

CLASS 409

132 4,655,652
182 4,655,653
220 4,655,654
232 4,655,655

CLASS 411

337 4,655,656
348 4,655,657
353 4,655,658
359 4,655,659
366 4,655,660
387 4,655,661

CLASS 414

14 4,655,662
31 4,655,663
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310 4,655,666
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730 4,655,673
735 4,655,674
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71 4,655,678
90 4,655,679
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4,655,697
85 4,655,698

CLASS 419

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CLASS 420

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644 4,656,023

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9 4,656,026
37 4,656,028
47 4,656,029
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88 4,656,033
94 4,656,034
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115 4,656,036
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CLASS 425

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73 4,655,700
222 4,655,701
318 4,655,702
335 4,655,703
461 4,655,704

CLASS 426

5 4,656,039
18 4,656,040
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396 4,656,042
592 4,656,044
601 4,656,045
657 4,656,046

CLASS 427

2 4,656,047
8 4,656,048
10 4,656,049
12 4,656,050
33 4,656,051
38 4,656,052
53.1 4,656,053
81 4,656,054
89 4,656,055
213 4,656,056
245 4,656,057
282 4,656,058
345 4,656,059
385.5 4,656,061
397 4,656,060
397.8 4,656,062
420 4,656,063

CLASS 428

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17 4,656,065
35 4,656,066
4,656,067
4,656,068
4,656,069
36 4,656,070
4,656,071
40 4,656,072
85 4,656,073
95 4,656,074
110 4,656,075
137 4,656,076
156 4,656,077
204 4,656,078
209 4,656,079
215 4,656,080
233 4,656,081
248 4,656,082
265 4,656,083
266 4,656,084
290 4,656,085
309.9 4,656,086
323 4,656,087
4,656,088
327 4,656,089
364 4,656,090
383 4,656,091
402.2 4,656,092
403 4,656,093
412 4,656,094
413 4,656,095
426 4,656,096
457 4,656,097
517 4,656,098
610 4,656,099
611 4,656,100
620 4,656,101

CLASS 429

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185 4,656,104
192 4,656,105

CLASS 430

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5 4,656,107
18 4,656,108
46 4,656,109
57 4,656,110
109 4,656,111
110 4,656,112
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170 4,656,115
197 4,656,116
225 4,656,117
272 4,656,118
327 4,656,119
434 4,656,120
495 4,656,121
505 4,656,122
543 4,656,123
548 4,656,124
551 4,656,125
559 4,656,126

CLASS 431

78 4,655,705
187 4,655,706

CLASS 433

9 4,655,707
10 4,655,708
29 4,655,709
223 4,655,710
225 4,655,711
229 4,655,712

CLASS 434

178 4,655,713
211 4,655,714
258 4,655,715
267 4,655,716

CLASS 435

6 4,656,127
7 4,656,128
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30 4,656,130
68 4,656,131
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253 4,656,136
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314 4,656,138

CLASS 436

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527 4,656,143
534 4,656,144

CLASS 440

27 4,655,717

CLASS 441

106 4,655,718

CLASS 446

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61 4,655,720
219 4,655,721
226 4,655,722
241 4,655,723
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268 4,655,726
443 4,655,724
470 4,655,727

CLASS 455

12 4,656,666

CLASS 464

28 4,655,728
58 4,655,729

CLASS 474

53 4,655,730
137 4,655,731
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4,655,734
245 4,655,735

CLASS 493

43 4,655,736
194 4,655,737
269 4,655,738
357 4,655,739

CLASS 501

86 4,656,145
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26 4,656,147
34 4,656,148
35 4,656,149
83 4,656,150
113 4,656,151
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185 4,656,154
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439 4,656,157

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250 4,656,171
252 4,656,172
253 4,656,173
254 4,656,174
255 4,656,175
256 4,656,176
264 4,656,177
279 4,656,178
307 4,656,179
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324 4,656,182
336 4,656,181
346 4,656,183
370 4,656,184
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CLASS 521

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CLASS 522

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CLASS 523

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CLASS 526

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255 4,656,234
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320 4,656,237

CLASS 528

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279 4,656,241
295.3 4,656,242
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336 4,656,244
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499 4,656,246

CLASS 530

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4,656,250
350 4,656,252
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CLASS 534

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654 4,656,257

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7.1 4,656,258
22 4,656,259
55 4,656,260
59 4,656,261

CLASS 540

221 4,656,262
310 4,656,263
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CLASS 544

33 4,656,265
85 4,656,266
119 4,656,267
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139 4,656,269
148 4,656,270
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197 4,656,272
211 4,656,273
250 4,656,274
251 4,656,275
353 4,656,276
399 4,656,277

CLASS 546

20 4,656,280
82 4,656,281
140 4,656,278
150 4,656,279
4,656,282
170 4,656,283
290 4,656,284
291 4,656,285

CLASS 548

146 4,656,286
194 4,656,287
244 4,656,288
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548 4,656,292

CLASS 549

6 4,656,293
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CLASS 556

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CLASS 558

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354 4,656,303

CLASS 560

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54 4,656,305
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117 4,656,307
170 4,656,308
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CLASS 568

9 4,656,310
775 4,656,311

CLASS 585

253 4,655,484

CLASS 604

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6 4,655,741
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96 4,655,748
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21 4,655,778
37 4,655,779

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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01	4,655,137		4,655,346		4,655,969		4,654,927		4,656,438	17 :	4,654,898
	4,655,410		4,655,351		4,655,976		4,654,956		4,656,577		4,654,913
	4,655,482		4,655,382		4,655,980		4,654,985		4,656,593		4,654,919
	4,655,777		4,655,418		4,656,049		4,655,064		4,656,601		4,654,926
	4,655,858		4,655,425		4,656,058		4,655,215		4,656,603		4,654,929
	4,655,859		4,655,432		4,656,070		4,655,343		4,656,620		4,654,957
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04	4,655,016		4,655,486		4,656,150		4,656,004	10 :	4,655,817		4,655,055
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	4,655,191		4,655,520		4,656,164		4,656,337		4,655,822		4,655,104
	4,655,196		4,655,553		4,656,198		4,656,463		4,655,823		4,655,108
	4,655,236		4,655,554		4,656,248		4,656,534		4,655,839		4,655,161
	4,655,364		4,655,559		4,656,253		4,656,541		4,655,864		4,655,171
	4,655,542		4,655,604		4,656,254		4,656,598		4,656,207		4,655,201
	4,655,778		4,655,607		4,656,341		4,656,612		4,656,208		4,655,315
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	4,656,495		4,655,658		4,656,358		4,656,661		4,656,663		4,655,355
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	4,654,939		4,655,715		4,656,404		4,655,133		4,655,078		4,655,458
	4,654,941		4,655,716		4,656,407		4,655,135		4,655,157		4,655,463
	4,654,951		4,655,720		4,656,412		4,655,305		4,655,160		4,655,535
	4,654,958		4,655,723		4,656,413		4,655,324		4,655,206		4,655,637
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	4,654,986		4,655,726		4,656,433		4,655,414		4,655,248		4,655,700
	4,655,003		4,655,727		4,656,439		4,655,416		4,655,328		4,655,753
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	4,655,011		4,655,762		4,656,472		4,655,524		4,655,502		4,655,862
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	4,655,057		4,655,775		4,656,538		4,655,685		4,656,656		4,656,028
	4,655,076		4,655,781		4,656,562		4,655,812	13 :	4,654,969		4,656,062
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	4,655,170		4,655,827		4,656,570		4,656,039		4,654,993		4,656,153
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	4,655,214		4,655,848		4,656,633		4,656,169		4,655,451		4,656,297
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	4,655,342		4,655,949	08 :	4,654,896		4,656,362	16 :	4,655,128		4,656,388

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	4,656,622		4,656,525		4,655,750		4,656,447	42 :	Re.32,392		4,655,434
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18 :	4,654,902	26 :	4,654,897		4,655,780		4,656,521		4,655,122		4,655,479
	4,655,007		4,654,924		4,655,782		4,656,553		4,655,123		4,655,484
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	4,656,173		4,655,475		4,656,190		4,655,230		4,655,504		4,655,923
	4,656,187		4,655,481		4,656,204		4,655,378		4,655,515		4,655,936
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	4,655,718		4,655,912		4,656,632		4,654,979		4,655,809		4,656,627
	4,655,743		4,655,975		4,656,657		4,655,008		4,655,825	49 :	4,654,988
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21 :	4,654,918		4,656,224		4,655,830		4,655,113		4,656,017		4,656,484
	4,655,194		4,656,284		4,655,890		4,655,145		4,656,023	50 :	4,654,953
	4,655,363		4,656,406		4,656,430		4,655,195		4,656,057		4,655,705
	4,656,202		4,656,566	36 :	4,654,893		4,655,197		4,656,063	51 :	4,654,980
22 :	4,654,909	27 :	4,654,925		4,654,895		4,655,199		4,656,107		4,655,017
	4,655,058		4,655,005		4,654,903		4,655,353		4,656,156		4,655,018
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	4,656,018		4,656,077		4,655,120		4,655,608		4,656,392		4,655,794
	4,656,214		4,656,114		4,655,153		4,655,628		4,656,411		4,655,896
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24 :	4,654,991		4,656,469		4,655,404		4,655,880		4,656,522		4,654,995
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25 :	4,654,935		4,656,251		4,655,620		4,656,151		4,654,994		4,656,083
	4,654,983	31 :	4,655,102		4,655,625		4,656,213		4,654,998		4,656,312
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	4,655,082	33 :	4,654,914		4,655,711		4,656,333		4,656,035		4,656,416
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	4,656,087		4,655,210		4,656,122		4,656,230		4,655,279		4,655,761
	4,656,115		4,655,221		4,656,137		4,656,231		4,655,285		4,655,849
	4,656,117		4,655,222		4,656,177		4,656,313		4,655,286		4,655,867
	4,656,252		4,655,224		4,656,189		4,656,497		4,655,290		4,656,239
	4,656,280		4,655,361		4,656,222	41 :	4,654,996		4,655,291		4,656,327
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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Apr. 1, 1987 and was announced in the *Official Gazette* at 1077 O.G. 3 on Apr. 7, 1987

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

Schedule of current PCT fees effective Apr. 1, 1987

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
If paid before Apr. 1, 1987:	1015.00
If paid on or after Apr. 1, 1987:	1180.00
International fees	
Basic fee (first 30 pages):	430.00
Basic Supplemental fee (for each page over 30):	8.00
Designation fee for the first 10 national or regional offices:	105.00
Designation fee for 11th and subsequent designations:	No charge

DONALD J. QUIGG,
Mar. 23, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 10, 1984, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,441,211 through 4,442,550
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 25, 1987, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,369,535	06/218,034	1/25/83
4,369,543	06/253,496	1/25/83
4,369,544	06/222,260	1/25/83
4,369,547	06/292,255	1/25/83
4,369,551	06/262,229	1/25/83
4,369,552	06/247,723	1/25/83
4,369,564	06/219,296	1/25/83
4,369,566	06/259,144	1/25/83
4,369,568	06/232,431	1/25/83
4,369,574	06/219,523	1/25/83
4,369,575	06/230,304	1/25/83
4,369,579	06/258,907	1/25/83
4,369,583	06/338,193	1/25/83
4,369,596	06/301,885	1/25/83
4,369,600	06/263,534	1/25/83
4,369,601	06/228,946	1/25/83
4,369,615	06/283,909	1/25/83
4,369,618	06/296,845	1/25/83
4,369,626	06/288,619	1/25/83
4,369,633	06/299,215	1/25/83
4,369,639	06/240,231	1/25/83
4,369,648	06/261,744	1/25/83
4,369,649	06/261,769	1/25/83
4,369,663	06/231,065	1/25/83
4,369,682	06/230,184	1/25/83
4,369,696	06/225,077	1/25/83
4,369,697	06/253,695	1/25/83
4,369,699	06/241,481	1/25/83
4,369,749	06/228,898	1/25/83
4,369,762	06/245,211	1/25/83
4,369,770	06/285,698	1/25/83
4,369,778	06/252,234	1/25/83
4,369,790	06/241,001	1/25/83
4,369,792	06/319,370	1/25/83
4,369,799	06/262,308	1/25/83
4,369,802	06/281,443	1/25/83
4,369,813	06/228,579	1/25/83
4,369,827	06/255,165	1/25/83
4,369,837	06/231,176	1/25/83
4,369,841	06/220,850	1/25/83
4,369,842	06/232,575	1/25/83
4,369,846	06/285,065	1/25/83
4,369,854	06/236,080	1/25/83
4,369,858	06/234,488	1/25/83
4,369,859	06/225,385	1/25/83
4,369,866	06/241,940	1/25/83
4,369,871	06/226,909	1/25/83
4,369,882	06/275,372	1/25/83
4,369,883	06/258,007	1/25/83
4,369,884	06/284,430	1/25/83
4,369,893	06/235,371	1/25/83
4,369,904	06/264,645	1/25/83
4,369,921	06/215,833	1/25/83
4,369,929	06/218,046	1/25/83
4,369,934	06/231,584	1/25/83
4,369,935	06/217,609	1/25/83
4,369,936	06/250,035	1/25/83
4,369,937	06/264,268	1/25/83
4,369,943	06/220,417	1/25/83
4,369,953	06/238,897	1/25/83
4,369,959	06/267,008	1/25/83
4,369,967	06/249,596	1/25/83
4,369,968	06/231,933	1/25/83
4,369,969	06/243,343	1/25/83
4,369,972	06/236,323	1/25/83
4,369,976	06/264,141	1/25/83
4,369,980	06/309,235	1/25/83
4,369,982	06/216,384	1/25/83
4,370,007	06/231,496	1/25/83
4,370,040	06/301,338	1/25/83
4,370,051	06/297,012	1/25/83
4,370,055	06/261,741	1/25/83
4,370,063	06/226,422	1/25/83
4,370,082	06/327,481	1/25/83
4,370,105	06/240,164	1/25/83
4,370,110	06/291,286	1/25/83
4,370,130	06/279,407	1/25/83
4,370,137	06/286,548	1/25/83
4,370,152	06/278,777	1/25/83
4,370,174	06/297,979	1/25/83
4,370,184	06/322,021	1/25/83
4,370,185	06/270,724	1/25/83
4,370,188	06/281,724	1/25/83
4,370,204	06/354,466	1/25/83
4,370,207	06/268,421	1/25/83
4,370,220	06/285,817	1/25/83
4,370,224	06/317,116	1/25/83
4,370,239	06/216,402	1/25/83
4,370,245	06/219,926	1/25/83
4,370,277	06/315,156	1/25/83
4,370,282	06/287,177	1/25/83
4,370,311	06/271,952	1/25/83
4,370,312	06/315,213	1/25/83
4,370,320	06/303,475	1/25/83
4,370,327	06/237,066	1/25/83
4,370,330	06/308,607	1/25/83
4,370,339	06/301,475	1/25/83
4,370,344	06/236,644	1/25/83
4,370,345	06/315,150	1/25/83
4,370,355	06/291,866	1/25/83
4,370,380	06/367,256	1/25/83
4,370,384	06/306,665	1/25/83
4,370,396	06/235,228	1/25/83
4,370,424	06/237,028	1/25/83
4,370,431	06/291,546	1/25/83
4,370,450	06/266,949	1/25/83
4,370,487	06/254,384	1/25/83
4,370,509	06/298,926	1/25/83
4,370,511	06/244,587	1/25/83
4,370,523	06/267,478	1/25/83
4,370,534	06/247,261	1/25/83
4,370,546	06/234,873	1/25/83
4,370,562	06/237,823	1/25/83
4,370,607	06/257,131	1/25/83
4,370,631	06/227,337	1/25/83
4,370,636	06/250,825	1/25/83
4,370,658	06/258,688	1/25/83
4,370,750	06/263,828	1/25/83

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,836,876, Re. S.N. 004,381, Filed Jan. 12, 1987, Cl. 252/333, ACOUSTIC SURFACE WAVE DEVICES, Frank G. Marshall, et al., Owner of Record: *The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 252

4,499,891, Re. S.N. 016,553, Filed Feb. 19, 1987, Cl. 126/292, FLUE CONTROL DEVICE, John W. Seppamaki, Owner of Record: *Inventor,* Attorney or Agent: John A. Waters, Ex. Gp.: 345

4,500,688, Re. S.N. 016,158, Filed Feb. 18, 1987, Cl. 525/421, CURABLE SILICONE CONTAINING COMPOSITIONS AND METHOD OF MAKING SAME, Barry C. Arkles, Owner of Record: *Petrarch Systems, Inc., Levittown, Pa.,* Attorney or Agent: Ronald L. Panitch, et al., Ex. Gp.: 151

4,502,372, Re. S.N. 016,194, Filed Feb. 18, 1987, Cl. 99/330, DEEP-FRYER PAN FOR INDUSTRIAL

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FRYERS, Rene G. Moriotti, Owner of Record: *Friteco, Inc., Oakton, Va.*, Attorney or Agent: George B. Finnegan, Jr., et al., Ex. Gp.: 242

4,503,527, Re. S.N. 927,025, Filed Nov. 5, 1986, Cl. 367/53, METHOD FOR ENHANCEMENT OF THE SIGNAL-TO-NOISE RATIO IN SEISMIC REFLECTION SIGNALS, Keh Pann, Owner of Record: *Mobile Oil Corp., New York, N.Y.*, Attorney or Agent: George W. Hager, Jr., Ex. Gp.: 220

4,509,193, Re. S.N. 016,108, Filed Feb. 18, 1987, Cl. 99/330, INDUSTRIAL DEEP-FRYER, Rene G. Mariotti, Owner of Record: *Friteco, Inc., Oakton, Va.*, Attorney or Agent: George E. Finnegan, Jr., et al., Ex. Gp.: 242

4,523,936, Re. S.N. 016,647, Filed Feb. 13, 1987, Cl. 135/55, SEPARATION-CHAMBER MEANS, William G. DiSanza, Jr., Owner of Record: *Inventor,* Attorney or Agent: Daniel H. Bobis, et al., Ex. Gp.: 135

4,624,050, Re. S.N. 011,557, Filed Feb. 5, 1987, Cl. 29/740, HEAD FOR HANDLING ELECTRICAL COMPONENTS, Victor T. Hawkswell, Owner of Record: *Dynapert Precima Ltd., Essex, England,* Attorney or Agent: William F. White, et al., Ex. Gp.: 326

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,961,877, Reexam. No. 90/001,187, Requested: Mar. 9, 1987, Cl. 432/253, REINFORCED WAFER BASKET, Douglas M. Johnson, Owner of Record: *Fluoroware, Inc., Chaska, Minn.*, Attorney or Agent: H. D. Palmatier, Ex. Gp.: 340, Requester: Owner

4,160,892, Reexam. No. 90/001,188, Requested: Mar. 12, 1987, Cl. 219/83, METHOD AND APPARATUS FOR SEAM WELDING OVERLAPPED EDGES, Paul Opprecht, et al., Owner of Record: *Elpatronic A. Z., Zug, Switzerland,* Attorney or Agent: Unknown, Ex. Gp.: 210, Requester: Fael S. A., Saint-Blaise, Switzerland

4,327,482, Reexam. No. 90/001,189, Requested: Mar. 16, 1987, Cl. 29/739, ELECTRONIC PARTS MOUNTING APPARATUS, Shigeru Araki, et al., Owner of Record: *Mitsushita Electric Ind. Co., Osaka, Japan,* Attorney or Agent: Unknown, Ex. Gp.: 320, Requester: Owner

4,347,674, Reexam. No. 90/001,186, Requested: Mar. 3, 1987, Cl. 36/126, ATHLETIC SHOE, Gary F. George, Owner of Record: *Inventor, Detroit, Mich.*, Attorney or Agent: D. W. Sprinkle, Ex. Gp.: 240, Requester: Nike, Inc., Beaverton, Oreg.

4,472,499, Reexam. No. 90/001,185, Requested: Mar. 2, 1987, Cl. 435/18, REAGENTS FOR THE DETERMINATION OF ENZYMES, Ralph P. McCroskey, Owner of Record: *American Hoechst Corp., Somerville, N.J.*, Attorney or Agent: Jerome Rosenstock, Ex. Gp.: 120, Requester: Owner

4,496,553, Reexam. No. 90/001,176, Requested: Feb. 27, 1987, Cl. 514/166, PHARMACEUTICAL COMPOSITION AND METHOD FOR THE TREATMENT OF COLITIS ULCEROSA AND CROHN'S DISEASE BY ORAL ADMINISTRATION, Soren Halskov, Owner of Record: *Farmaceutisk Laboratorium Ferring A/S, Vanlose, Denmark,* Attorney or Agent: Fleit, Jacobson, et al., Ex. Gp.: 120, Requester: Millen & White, Arlington, Va.

4,617,931, Reexam. No. 90/001,184, Requested: Mar. 2, 1987, Cl. 128/328, ULTRASONIC PULSE APPARATUS FOR DESTROYING CALCULUSES, Jacques Dory, Owner of Record: *Patentee, Esblay, France,* Attorney or Agent: W. A. Drucker, Ex. Gp.: 330, Requester: Owner

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Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished the Director, Office of Enrollment and Discipline on or before May 15, 1987:

Abate, Mark J., 2515 K St., NW., #103, Washington, D.C. 20037
Anagnos, Larry N., 8332 Kenwood Ave., Springfield, Va. 22152
Cockeram, Herbert S., 3804 Delano St., Wheaton, Md. 20902
Crawford, Judith E. M., 41 Speers Rd., #502, Oakville, Ont., Canada L6K 3R6
DeFranco, Carl M. Jr., 4103 11th Pl., N. Arlington, Va. 22201
Deifendorf, Richard, 2882 S. Meade St., Arlington, Va. 22206
Dorsey, Daniel K., 800 S. 18th St., Arlington, Va. 22202
Engle, Samuel W., 2610 Vantage Cove, Annapolis, Md. 21401
Goodman, Rosanne, 2325 42nd St., NW., Washington, D.C. 20007
Helfin, Bernard, 13918 Marianna Dr., Rockville, Md. 20853
Hendricks, Glenna M., 4215 Braeburn Dr., Fairfax, Va. 22032
Johnson, Vance G., 6649 Briarleigh Way, Alexandria, Va. 22310
Krawaczewicz, Stanley T., 6103 87th Ave., New Carrollton, Md. 20784
Lazarus, Ronald H., 1336 Lancia Dr., McLean, Va. 22102
Lieberman, Eli, 1712 Overlook Dr., Silver Spring, Md. 20903
Love, Ethel G., 4513 17th St., NE., Washington, D.C. 20017
Malpede, Scott D., 3719B Madison La., Falls Church, Va. 22041
McCarthy, Helen M., 1200 N. Nash St., #1132, Arlington, Va. 22209
Novack, Sheri, 2122 California St., NW., Washington, D.C. 20008
Phenix, Donald F., Smart & Biggar, P.O. Box 2999, Sta. D., Ottawa, Ont.,Canada K1P 5Y6
Ronning, Royal N., 98 Longview Ave., Lake Hiawatha, N.J. 07034
Rosdan, Peter E., 5024 Wissioming Rd., Bethesda, Md. 20816
Sapone, William J., 798 Mill Plain Rd., Fairfield, Conn. 06430
Smith, Yvonne H., 1515 Jefferson David Hwy., #414, Arlington, Va. 22202
Trousof, Natalie, 4701 Willard Ave., #721, Chevy Chase, Md. 20815
Vlachos, Leonidas, 4007 Javins Dr., Alexandria, Va. 22310

Mar. 17, 1987. CAMERON WEIFFENBACH, *Director, Office of Enrollment and Discipline.*

Minimum Requirements for Acceptance of Applications Under 35 U.S.C. 371 (the National Stage of PCT)

The Patent and Trademark Office is continuing to receive application papers which do not clearly identify whether the papers (1) are being submitted to enter the national stage of the Patent Cooperation Treaty (PCT) under 35 U.S.C. 371 or (2) are being filed as a regular national application under 35 U.S.C. 111.

Attention is directed to the notice in the *Official Gazette* at 1070 O.G. 11 titled "Unity of Invention Practice in International Applications and National Phase Applications Entered Under 35 U.S.C. 371" wherein at item eight it is stated

> "(8) Applicants should clearly indicate on all application papers filed for entry under 35 U.S.C. 371 and 37 CFR 1.61 that the filing is being made under 35 U.S.C. 371. Otherwise, the application papers will be treated as having been filed under 35 U.S.C. 111."

To clearly indicate an international application is being filed under 35 U.S.C. 371 the applicant should use the "Transmittal Letter for United States Designated Office" (Form PTO–1390) as the transmittal letter.

Alternatively, one of the following indications may be used:

> 1) the applicant shall clearly state in the transmittal or cover letter that he or she is filing under 35 U.S.C. 371 or entering the national stage under the PCT; or
>
> 2) the applicant clearly identifies in the oath or declaration the specification to which it is directed by referring to a particular international application by PCT Serial Number and International Filing Date and that he or she is executing the declaration as, and seeking a U.S. Patent as, the inventor of the invention described in the identified international application.

Applicants are cautioned that the identification of the international application, in the oath or declaration or otherwise, as a prior filed application for priority purposes is *not* considered to be an indication of an intention to file under 35 U.S.C. 371.

If there are any conflicting instructions as to which section of the statute (371 or 111) is intended the application will be accepted under 35 U.S.C. 111. It is strongly recommended that applicant use the Form PTO–1390 in all cases where a filing under 35 U.S.C. 371 is intended.

Mar. 16, 1987. RENE D. TEGTMEYER, *Assistant Commissioner for Patents.*

Patents Available for License or Sale

4,276,484. METHOD AND APPARATUS FOR CONTROLLING CURRENT IN INDUCTIVE LOADS, *C. Riverds*, P.O. Box 4757, Woodbridge, Va. 22194.
4,507,155. CLEANING COMPOSITION AND METHOD, *Robert H. Cheek*, 1042 Buchanan St., NE., Washington, D.C. 20017.
4,580,593. DISK VALVE FOR CORROSIVE FLUIDS, *Gunter Herberholz*, c/o Antonelli, Terry & Wands, 1919 Pennsylvania Ave., NW., Suite 600, Washington, D.C. 20006.
4,583,735. GOLD GAME APPARATUS, *Donald L. Knight*, 1720 Ala Moana H–204, Honolulu, Hi. 96815, (808) 955–2394.
4,644,915. HEAT RETAINING COVER FOR INTERNAL COMBUSTION ENGINE, *Bahram Afshar*, 11509 Links Dr., Reston, Va. 22090.
4,647,095. HOIST CABLE COUPLING DEVICE FOR SUSPENDED LOADS, *Edwin Zenith Gabriel*, 91 Mt. Tabor Way, Ocean Grove, N.J. 07756.

General Electric Co., owner by assignment of the below listed patent, desired to give public notice that it is prepared to grant non-exclusive licenses under the following patent upon reasonable terms to domestic manufacturers, and requests publication of such notice in the Official Gazette in accordance with the procedure established under the Commissioner's notice dated Oct. 29, 1954 (688 OG 627). Applications for licenses may be addressed to: General Electric Co., Construction Equipment Business Operation, 41 Woodford Ave., Plainville, Conn. 06062

4,638,244. GROUND CONNECTION MONITOR.

S.N. 689,888. ROTARY INTERNAL COMBUSTION ENGINE, *Joseph F. Frasca*, 5801 Yorktown Rd., Lorain, Ohio 44053.

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PATENT NOTICES

Certificates of Correction for the Week of Apr. 14, 1987

D. 285,687	4,588,280	4,615,581	4,628,332
4,405,598	4,589,428	4,616,003	4,628,597
4,437,053	4,589,891	4,616,981	4,628,672
4,471,321	4,589,925	4,617,242	4,628,785
4,482,832	4,593,859	4,617,802	4,628,786
4,498,935	4,594,382	4,618,103	4,628,943
4,511,710	4,595,216	4,618,198	4,628,967
4,512,342	4,596,978	4,618,210	4,629,557
4,519,348	4,597,187	4,618,315	4,629,688
4,519,392	4,598,032	4,618,330	4,630,236
4,522,517	4,598,466	4,618,561	4,631,215
4,525,857	4,600,614	4,618,616	4,631,463
4,531,948	4,600,777	4,618,745	4,632,577
4,535,790	4,601,037	4,618,874	4,632,937
4,539,392	4,601,323	4,619,723	4,632,985
4,539,840	4,601,948	4,619,773	4,633,510
4,549,902	4,602,867	4,619,827	4,634,841
4,551,085	4,603,439	4,620,136	4,634,900
4,557,990	4,603,812	4,622,282	4,635,123
4,563,425	4,608,087	4,622,339	4,635,298
4,564,814	4,610,531	4,622,623	4,635,302
4,568,911	4,610,656	4,623,179	4,635,423
4,573,486	4,611,373	4,623,663	4,636,065
4,573,870	4,611,562	4,624,096	4,636,207
4,574,593	4,611,971	4,624,506	4,636,366
4,576,016	4,612,472	4,625,380	4,636,560
4,578,725	4,613,577	4,625,942	4,636,656
4,579,797	4,614,098	4,625,954	4,636,979
4,581,127	4,614,298	4,626,246	4,637,789
4,582,237	4,614,336	4,626,756	4,638,205
4,584,718	4,614,351	4,627,166	4,638,512
4,587,536	4,615,187	4,628,263	4,638,818

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	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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Oregon	Salem: Oregon State Library	(503) 378-4239
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	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 14, 1987

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-22-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-26-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	7-25-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	2-25-85
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-19-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	11-4-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	1-25-85
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	3-28-85
DESIGN, GROUP 290—K. L. CAGE, Director	8-09-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-29-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	7-22-85
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	8-16-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during March 1987, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,497,872 to 3,504,376, inclusive
Plant Patents ..... None

REEXAMINATIONS

APRIL 14, 1987

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,910,296 (666th)
METHOD OF REMOVING PROTEINACEOUS DEPOSITS FROM CONTACT LENSES

Hampar L. Karageozian, Laguna Hills, and Paul Rudko, Huntington Beach, both of Calif., assignors to Allergan Caribbean, Hormiqueros, P.R.

Reexamination Request Nos. 90/000,947, Feb. 3, 1986 and 90/001,047, Jan. 27, 1986.

Reexamination Certificate for Patent No. 3,910,296, issued Oct. 7, 1975, Ser. No. 447,744, Mar. 4, 1974.

Continuation-in-part of Ser. No. 352,861, Apr. 20, 1973, abandoned.

Int. Cl.[4] **B08B** *3/08*; **C03C** *23/00*

U.S. Cl. 134—42

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **11** and **12** is confirmed.

Claims **1** and **6** are determined to be patentable as amended.

Claims **2–4** and **7–10**, dependent on an amended claim, are determined to be patentable.

New claim **13** is added and determined to be patentable.

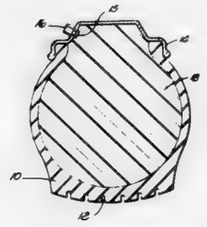
1. A method for removing proteinaceous deposits from *soft* contact lenses comprising contacting a *soft* contact lens having proteinaceous deposits for a period of time sufficient to clean the lens with an aqueous solution comprising an effective cleaning amount of protease which is non-toxic to the eyes.

Claims **2**, **7**, **8** and **10–13** are cancelled.

Claims **1**, **3** and **4** are determined to be patentable as amended.

Claims **5**, **6** and **9**, dependent on an amended claim, are determined to be patentable.

New claims **14–25** are added and determined to be patentable.



B1 4,416,844 (667th)
DEFLATION-PROOF PNEUMATIC TIRE AND ELASTOMERIC FILLINGS THEREFORE

Ramoone J. Wyman, 821 Camino Calibri, Calabasas, Calif. 91302

Reexamination Request No. 90/000,651, Oct. 17, 1984.

Reexamination Certificate for Patent No. 4,416,844, issued Nov. 22, 1983, Ser. No. 219,456, Dec. 23, 1980.

Int. Cl.[4] **B60C** *7/00*

U.S. Cl. 264—67

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

1. A method for obtaining a deflation-proof tire, comprising:
filling a pneumatic tire casing to a pressure of at least 25 psi with a liquid solution prior to significant production of carbon dioxide, said solution comprising, in combination, a polyol, an organic polyisocyanate, *at least 10 volume percent oil* and water, in amounts sufficient to produce carbon dioxide and form a polyurethane elastomer containing polyurea, said pressure being sufficient to prevent bubble formation in the tire; and
curing said elastomer to maintain said carbon dioxide dissolved in said elastomer whereby to produce a substantially void-free elastomeric filling material within said casing.

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REISSUES

APRIL 14, 1987

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,394
SOLE CONSTRUCTION FOR SHOES

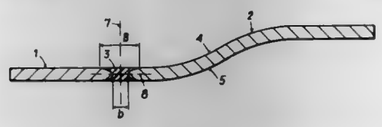
Johann Ehrlich, Kreuz/Weinzierl, Austria, assignor to Patoflex Corporation, Scottsdale, Ariz.

Original No. 4,400,894, dated Aug. 30, 1983, Ser. No. 191,066, Sep. 26, 1980. Application for reissue Jul. 30, 1985, Ser. No. 760,474

Claims priority, application Austria, Sep. 28, 1979, 6382/79

Int. Cl.⁴ A43B *13/08, 13/14*

U.S. Cl. 36—33 **9 Claims**



1. A sole construction for shoes, comprising at least two [independently] prefabricated parts formed of a wood material, said wood parts being interconnected to each other at an area that is located beneath the ball of the foot of the wearer by at least one flexible intermediate part that consists of foamed polyurethane, said intermediate part including a first outer portion located adjacent to the sole of the wearer's foot, a second outer portion located adjacent to the walking surface of said sole and a middle neck portion disposed beneath said first and second outer portions, the width of said intermediate part as measured in the longitudinal direction of said sole being greater at the marginal areas of said first and second outer portions than at the smallest width of said middle neck portion, the interfacing surfaces between said wood parts and said intermediate part being free from sharp edges, the upper portions of said interfacing surfaces tapering gradually arcuately upwardly and outwardly from said middle portion to the marginal areas of said first and second outer portions, and the portions of said interfacing surfaces in the marginal areas adjacent to the surface supporting the sole of the wearer's foot each being tangent to said latter surface without forming a step therewith.

Re. 32,395
PISTON AND PISTON RINGS SET

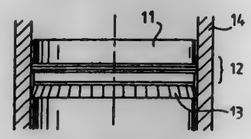
Robert Geffroy, and Christophe Geffroy, both of 1 Blvd. Richard Wallace, Neuilly s/s Maillot 38-57, Paris, France

Original No. 4,516,481, dated May 14, 1985, Ser. No. 344,732, Feb. 1, 1982. Application for reissue Aug. 16, 1985, Ser. No. 766,247

Claims priority, application France, Feb. 6, 1981, 81 02353; Dec. 23, 1981, 81 24100; Jan. 15, 1982, 82 00625

Int. Cl.⁴ F16J *1/04, 9/20, 15/32*

U.S. Cl. 92—212 **42 Claims**



34. An assembly comprising a cylinder for internal combustion engine or compressor extending between a compression head and a crankcase, a piston, and piston ring set reciprocable within said cylinder characterized by compression ring means in a piston groove providing free axial clearance comprising at least one thin metal ring having a plurality of separate circumferentially spaced segments, said ring segments being provided with free form curvature substantially equal to said cylinder wall and when in abutting relation a free form circumference slightly greater than operating circumference, and means for resiliently biasing said segments outwardly beyond operating circumference in the free state.

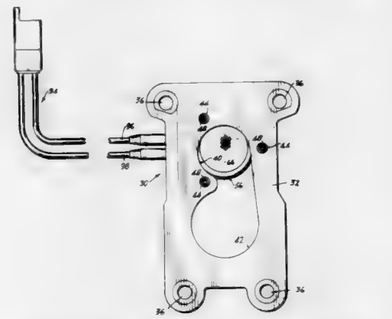
Re. 32,396
PTC HEATER CONSTRUCTION

Edward J. Fitz, Fairfield, Conn., assignor to Casco Products Corporation, Bridgeport, Conn.

Original No. 4,424,787, dated Jan. 10, 1984, Ser. No. 408,374, Aug. 16, 1982. Application for reissue Dec. 16, 1985, Ser. No. 809,153

Int. Cl.⁴ F02M *31/12;* H05B *3/06*

U.S. Cl. 123—549 **14 Claims**



13. An encapsulated PTC heater unit comprising, in combination:

(a) an electrical resistance ceramic wafer of PTC material,

(b) a holder assemblage including a ring-shaped cup for mounting said wafer,

(c) said wafer having on its opposite sides electrically conducting surfaces to enable energization of the wafer through the resistance thereof,

(d) said wafer having an annular peripheral portion and a multiplicity of passages extending through it from one side to the other,

(e) said holder assemblage comprising a pair of spaced-apart metal ring members each of which has a contact surface facing toward the other ring member,

(f) said ceramic wafer being interposed between the said ring members,

(g) a resilient metal wave washer member engaging one of said ring members,

(h) one of said ring members engaging and electrically contacting one conductive surface of said wafer, and

(i) means clamping together said wave washer member and said two ring members and the ceramic wafer against the action of said resilient wave washer member, thereby to maintain a continuous force between said three members and the wafer.

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Re. 32,397

GOLF CLUB SWING TRAINING AID

James M. Self, and Charles Schaubel, both of Metairie, La., assignors to Golfbands Products, New Orleans, La.

Original No. 4,353,556, dated Oct. 12, 1982, Ser. No. 228,734, Jan. 27, 1981. Application for reissue Jul. 8, 1983, Ser. No. 512,139

Int. Cl.⁴ A63B *69/36*

U.S. Cl. 273—186 A **29 Claims**



16. An athletic training aid consisting of:

an athletic implement for hitting game balls;

alignment band means;

means for attaching one end of said alignment band means to one of a pair of spaced apart mounting points and the other end of said alignment band means to the other of said mounting points to establish a straight baseline;

a first tension member;

means for securing one end of said first tension member to said implement;

means for attaching the other end of said first tension member to one of said spaced mounting points;

a second tension member;

means for securing one end of said second tension member to said implement;

means for attaching the other end of said second tension member to the other of said spaced mounting points; and

said first and second tension members urging said implement into alignment with the baseline established by said alignment band means during an athletic maneuver.

Re. 32,398

ELECTROLYTIC PROCESS AND ELECTROLYTIC CELL FOR THE PREPARATION OF ORGANIC COMPOUNDS

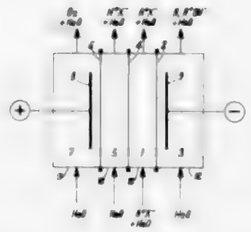
Paolo De Witt, Rome, and Enrico Benedetto, Novara, both of Italy, assignors to Oronzio de Nora S.A., Lugano, Switzerland and Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Original No. 6,041,985, Ser. No. 551,817, Nov. 15, 1983. Application for reissue Oct. 21, 1985, Ser. No. 789,819

Claims priority, application Italy, Nov. 25, 1982, 24432 A/82

Int. Cl.⁴ C25B *3/00*; **B01D** *57/02*

U.S. Cl. 204—72 **16 Claims**



1. A method for removing an anion from an organic compound comprising at least a cationic functional group and containing an anion as an impurity or in combination therewith and dissociable therefrom in a polar solvent which comprises conducting said removal in an electrolytic cell divided into a pre-cathodic compartment wherein a solution of the organic compound to be treated is disposed and which is separated from the cathodic compartment which contains a cathode, by a cation-exchange membrane a pre-anodic compartment separated from the anodic compartment, which contains an anode, by a cation-exchange membrane and the pre-anodic compartment separated from the pre-cathodic compartment by a anion-exchange membrane; disposing an acid electrolyte in the anodic compartment and water in the pre-anodic compartment and in the cathode compartment, passing an electrolysis current through the cell causing the anion to migrate from the pre-cathodic compartment through the anion-exchange membrane into the pre-anodic compartment to combine with the hydrogen ion migrating from the anode compartment through the cation-exchange membrane into the pre-anodic compartment to form the corresponding acid, and causing the organic cation to migrate from the pre-cathodic compartment through the cationexchange membrane into the cathodic compartment, wherein a solution containing the organic cation is obtained.

Re. 32,399

METHOD FOR THE MANUFACTURE OF A COMPOSITE METAL WIRE

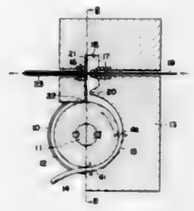
Masahiro Nagai, and Yasuhiko Miyake, both of Hitachi, Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Original No. 4,242,368, dated Dec. 30, 1980, Ser. No. 899,968, Apr. 25, 1978. Application for reissue Dec. 9, 1985, Ser. No. 806,799

Claims priority, application Japan, Aug. 30, 1977, 52-50073; Aug. 30, 1977, 52-50076

Int. Cl.⁴ B05D *3/02*

U.S. Cl. 427—11 **11 Claims**



1. A method of manufacturing a composite metal wire including a metal core wire surrounded by a coating metal of a material different from said metal core wire, said method comprising:

providing a rotary wheel having therein a peripheral groove;

providing a fixed shoe block having a fitting surface cooperating with a circumferential portion of said groove to define therewith a narrow passageway having an inlet end and an outlet end, a fixed stopper portion fitting in said groove to entirely close said passageway and to define said outlet end thereof, and a covering chamber communicating with said outlet end of said passageway and having a nipple for guiding a metal core wire and a die for defining the outer cross-section of a composite metal wire;

feeding coating metal into said inlet end of said passageway, while rotating said rotary wheel in a direction toward said outlet end of said passageway;

subjecting said coating metal within said passageway to plastic deformation due to oppositely directed frictional forces including a greater friction force from the surfaces of said wheel defining said groove and a lesser friction force from said fitting surface of said fixed shoe block;

positively carrying said coating metal through said passageway by said greater friction force and causing said coating metal to collide with said fixed stopper portion, thereby imparting an extrusion pressure to said coating metal;

passing a metal core wire into said nipple and through said covering chamber; [aid]

due to said extrusion pressure, passing said coating metal into said chamber, thus filling said chamber with said coating metal, covering said metal core wire with said coating metal to form a bond therebetween, and extruding through said die said metal core wire covered with said coating metal as a composite metal wire[.]; *and providing the cross sectional area of said chamber greater than the cross sectional area of said passageway to ensure that said extruding pressure remains stable in said chamber.*

Re. 32,400

SUBSTITUTED IMIDAZOLE DERIVATIVES AND THEIR USE AS ANTI-THROMBOSIS AGENTS

Arto J. Karjalainen, and Kauko O. A. Karkela, both of Oulu, Finland, assignors to Farmos Yhtyma Oy, Turku, Finland

Original No. 4,514,412, dated Apr. 30, 1985, Ser. No. 345,548, Feb. 3, 1982. Application for reissue Jul. 30, 1985, Ser. No. 760,608

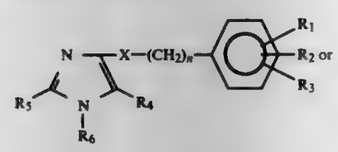
Claims priority, application United Kingdom, Feb. 5, 1981, 8103620

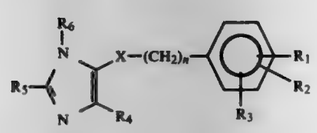
The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.⁴ A61K *31/415*; **C07D** *233/54, 233/66, 263/30*

U.S. Cl. 514—397 **29 Claims**

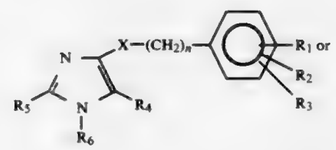
1. A substituted imidazole of the formula:





wherein each of R_1, R_2 and R_3, which can be the same or different, is hydrogen, chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, [hydroxy] or nitro and at least one of R_1, R_2 and R_3 is other than hydrogen; R_4 is hydrogen or an alkyl radical of 1 to 7 carbon atoms; R_5 is hydrogen or a straight or branched alkyl group of 1 to 5 carbon atoms or a phenyl group; R_6 is hydrogen or an alkyl group of 1 to 7 carbon atoms or benzyl which is unsubstituted or substituted by chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy or nitro; X is $—CH_2—$, —CHOH— or —CH=CH—; and n is 0–4, provided that R_5 and R_6 are simultaneously hydrogen only when n is 4 and X is —CH=CH— and that when n is 2, X is CHOH, R_1, R_2, R_4 and R_5 are all hydrogen, and R_6 is methyl, then R_3 is a substituent other than 2-amino; and its non-toxic, pharmaceutically acceptable acid addition salts.

3. A method of reducing and preventing thrombosis which comprises administering to a patient subject thereto an effective amount of a compound selected from the glass consisting of a substituted imidazole of the formula:



(I)

wherein each of R_1, R_2 and R_3, which can be the same or different, is hydrogen, chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy or nitro and at least one of R_1, R_2 and R_3 is other than hydrogen; R_4 is hydrogen or an alkyl radical of 1 to 7 carbon atoms; R_5 is hydrogen or a straight or branched alkyl group of 1 to 5 carbon atoms or a phenyl group, R_6 is hydrogen or an alkyl group of 1 to 7 carbon atoms or benzyl which is unsubstituted or substituted by chloro, bromo, fluoro, methyl, ethyl, methoxy, amino, hydroxy, or nitro; X is $—CH_2—$, —CHOH— or CH=CH—; and n is 0–4, provided that R_5 and R_6 are simultaneously hydrogen only when n is 4 and X is —CH=CH—; and its non-toxic pharmaceutically acceptable acid addition salts.

Re. 32,401

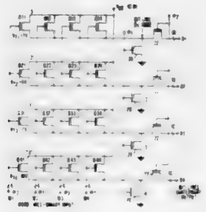
QUATERNARY FET READ ONLY MEMORY

Kenneth E. Beilstein, Jr., and Harish N. Kotecha, both of Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,202,044, dated May 6, 1980, Ser. No. 915,338, Jun. 13, 1978. Application for reissue Feb. 27, 1981, Ser. No. 238,872

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—182 **19 Claims**



13. In a read-only memory comprising a plurality of cells wherein information storage is provided in individual cells by a field-effect transistor, the improvement wherein a cell represents one set of a plurality of sets of n bits of information, n≧2, the one set being selected from the 2^n arrangement of bits taken n at a time, comprising:

the cross-sectional area of the transistor channel being selected from one of 2^n preselected values to provide an electrical output corresponding to said one set of n bits;

the 2^n transistor electrical outputs forming an ordered sequence;

sensing means connected to the plurality of cells and selectively activated in response to the transistor electrical outputs for producing an amplified electrical output characteristic of the one field-effect transistor output of the ordered sequence; and

logic means driven by the sensing means output for generating said set of n bits corresponding to the transistor output.

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PLANT PATENTS

GRANTED APRIL 14, 1987

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,937

APPLE TREE—JONAGORED

Joe Morren-De Coster, Halen, Belgium, assignor to Danielle Gemis-Zuckerman, Davie, Fla.

Filed Oct. 16, 1984, Ser. No. 662,978
Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of fruiting apple tree Malus Mill-type, as described and illustrated, characterized by a vigorous, upright growth habit with large dark-red fruit and most with white lenticels, by the keeping quality of its fruit, the wood of the tree being darker than Jonagold, and the growth habit being the same as Jonagold.

5,938

GERANIUM PLANT NAMED CASINO

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,097
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Casino, as described and illustrated, and particularly characterized by its dark salmon flower color with white under surface; semi-double flower form; relatively early flowering response and good flower production; good branching and vigorous growth habit; good chlorophyll qualities for transportation; good temperature tolerance; and medium leaf zonation.

5,939

GERANIUM PLANT NAMED BOLERO

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,098
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Bolero, as described and illustrated, and particularly characterized by its red flower color; semi-double flower form; dark green foliage; very good chlorophyll quality for transportation; slight zonation; good weather resistance; early flowering response; and compact growth habit.

5,940

GERANIUM PLANT NAMED VOLCANO

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,099
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Volcano, as described and illustrated, and particularly characterized by its red flower color; semi-double to single flower form; good rooting; compact growth habit; good chlorophyll quality for transportation; and good temperature tolerance.

5,941

GERANIUM PLANT NAMED SATELLITE

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,100
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Satellite, as described and illustrated, and particularly characterized by its salmon flowering startel flower type, with strong divided petals; novel, decorative zonal foliage; compact growth habit with good branching; early flowering response, and its heavy flower yield.

5,942

GERANIUM PLANT NAMED CHAMPAGNE

Ingeborg Schumann, Bad Ems, Fed. Rep. of Germany, assignor to Fischer Geraniums, Inc., Netherlands Antilles

Filed Jul. 31, 1985, Ser. No. 761,101
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium named Champagne, as described and illustrated, and particularly characterized by its light rose flower color; single flower form; round flower type; early flowering response and excellent flower production; light leaf zonation; excellent temperature tolerance; good branching and medium growth habit.

5,943

CHRYSANTHEMUM PLANT NAMED FASCINATION

Leonard H. Shoesmith, deceased, late of Westfield, England by May V. Shoesmith, executrix, assignor to Ball Pan Am Plant Company, Parrish, Fla.

Filed Jun. 20, 1985, Ser. No. 746,980
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Fascination, as described and illustrated, and particularly characterized by its flat capitulum form and spoon tipped daisy type; lavender ray floret color; diameter of 1" to 2.5" across face of flower; uniform eight week flowering response using photoperiodic control and when grown in a 6" pot with its center bud removed.

5,944

CHRYSANTHEMUM PLANT NAMED SEMINOLE

May V. Shoesmith, Westfield, England, assignor to Ball Pan Am Plant Company, Parrish, Fla.

Filed Jun. 20, 1985, Ser. No. 746,889
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Seminole, as described and illustrated, and particularly characterized by its flat capitulum form and quilled daisy type; bright lavender color when finished under cool temperatures; diameter across face of the flowers of 0.75" to 2"; uniform eight week flowering response when grown photoperiodically and natural flowering season of September 26–October 9; height 6" to 8" above the edge of a 4" pot when grown photoperiodically, and 1' to 2' when grown outdoors, and a compact cushion habit when grown outdoors.

5,945

CHRYSANTHEMUM PLANT NAMED CITADEL

Leonard H. Shoesmith, deceased, late of Westfield, England by May Victoria Shoesmith, executrix, assignor to Ball Pan Am Plant Company, Parrish, Fla.

Filed Jun. 20, 1985, Ser. No. 747,066
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Citadel, as described and illustrated, and particularly characterized by its large flat capitulum form and quilled decorative capitulum type; medium lavender flower color which is a very pale white lavender under extreme high temperature; diameter across capitulum of 8 cm to 14 cm; vigorous growth habit and strong stems; and, uniform nine week flowering response.

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5,946

CHRYSANTHEMUM PLANT NAMED KEYSTONE

Leonard H. Shoesmith, deceased, late of Westfield, England by May Victoria Shoesmith, executrix, assignor to Ball Pan Am Plant Company, Parrish, Fla.

Filed Jun. 20, 1985, Ser. No. 746,890
Int. Cl.[4] A01H 5/00
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Keystone, as described and illustrated, and particularly characterized by its large incurved capitulum form and formal capitulum type; medium yellow ray floret color; diameter across face of capitulum of 11 cm to 14 cm; vigorous growth habit on strong stems; and, uniform 9 week flowering response.

PATENTS

GRANTED APR. 14, 1987

ERRATA

For CLASS	See PATENT NO.
100-003	4,656,930
100-004	4,656,931
128-303	4,656,995
123-204	4,657,009
381-068	4,657,106
084-001	4,657,114
292-173	4,657,206
420-020	4,657,588
502-035	4,657,874
380-025	4,658,093
380-028	4,658,094
379-103	4,658,095
379-059	4,658,096
379-075	4,658,097
379-113	4,658,098
379-007	4,658,099
380-020	4,658,292
379-100	4,658,301
455-017	4,658,435
380-031	4,658,436

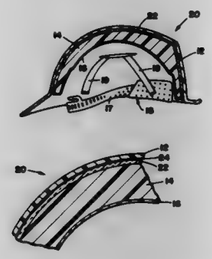
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PATENTS

GRANTED APRIL 14, 1987

GENERAL AND MECHANICAL

4,656,667
FIRE HELMET AND THE LIKE
Bruce H. Blake, Lexington, Ky., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed Mar. 25, 1985, Ser. No. 715,621
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—5 **11 Claims**



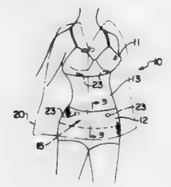
1. In an impact barrier structure for fire helmets and the like including an outer layer of hard, impact-deformable material and a relatively thick inner layer of a relatively softer material, the improvement comprising a layer of flaccid material interposed between said layer of hard material and said relatively thick layer of relatively softer material, said layer of flaccid material being of minimal mechanical strength and adhered to said layer of hard material in intimate heat exchanging relation thereto, and having good heat absorbing properties so as to ace as a heat sink for absorbing heat from the outer layer without changing the mechanical properties of the outer layer, and thereby also to delay conduction of heat to the inner layer.

4,656,668
EYE PROTECTOR
Diane A. Castrejon, 1321 S. Finley Rd., Lombard, Ill. 60148
Continuation of Ser. No. 757,244, Jul. 22, 1985. This application Jun. 30, 1986, Ser. No. 880,109
Int. Cl.[4] A61F *9/00*
U.S. Cl. 2—15 **7 Claims**



1. An eye protector, comprising:
a pair of substantially light impervious eye cups formed entirely of an absorbent flexible material and adapted to fit over the closed eyes of a user, said absorbent flexible material comprising a soft foam-like material for each of said eye cups sized and shaped to substantially entirely cover the region defined by one of the orbital openings in the skull of the user and having a soft contoured surface of generally cup shape extending to a soft outer periphery and closely conforming to the shape of the closed eyes of the user, said soft foam-like material being sufficiently absorbent to retain water while accommodating air circulation around the eyes of the user and sufficiently flexible to conform to the closed eyes of the user;
a bridge band adapted to fit over the nose bridge of the user, said bridge band being formed of an elastic material capable of expanding and contracting to vary the spacing between said eye cups to accommodate the difference in spacing between said eye cups so as to accommodate the difference in spacing between the orbital openings in the skulls of different users, said bridge band being permanently secured to said eye cups; and
a head band adapted to fit around the head of the user, said head band being entirely separate from said bridge band and being formed of an elastic material capable of expanding and contracting to retain said eye cups in position over the closed eyes of the user while accommodating the differences in head sizes among different users, said head band being permanently secured to said eye cups;
said bridge band and said head band each having a pair of end portions, one of said end portions of each of said bridge band and head band being secured to opposite sides of one of said eye cups and the other of said end portions of each of said bridge band and head band being secured to opposite sides of the other of said eye cups such that said bridge band and head band are only secured to said eye cups at locations corresponding to opposite sides of the orbital openings in the skull of the user remote from said cup shaped contoured surface, said bridge band and said head band extering forces only on said outer peripheries of said eye cups.

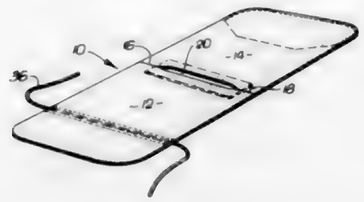
4,656,669
VERSATILE BATHING SUIT
Donna Beard, 25 Marmora Rd., Parsippany, N.J. 07054
Filed Jun. 30, 1986, Ser. No. 880,588
Int. Cl.[4] A41D *5/00*
U.S. Cl. 2—67 **16 Claims**



1. In a bathing suit comprising a multiple-piece ensemble having a matching cape and an upper portion and a lower portion which are to be worn about the torso, said upper portion including a bra section, and said lower portion including a panty section, comprising means defining at least one pouch disposed within said panty section, said pouch having an inner lining and being generally disposed about an internal area of said panty section for the purpose of containing at least two additional bathing suit materials for complementing said ensemble, one of said additional materials being removably attachable to said inner lining by a fastening means and additionally fastenable to said bra section.

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4,656,670
MULTI-FUNCTION BEACH TOWEL
Hans Schluter, 5826 Bowcroft St., #1, Los Angeles, Calif. 90016
Filed Aug. 9, 1985, Ser. No. 764,184
Int. Cl.[4] A47G 9/06; A41D 23/00
U.S. Cl. 2—92 **12 Claims**



1. A combination towel and robe comprising:
an elongate fabric piece defining an opening for a wearer's head, said opening being substantially in the central portion of said piece;
a flap having one edge attached to said fabric piece substantially in the vicinity of said opening;
attachment means for releasably attaching the opposite edge of said flap to said piece so that said flap covers said opening when said opposite edge is attached; and
second attachment means for releasably attaching said opposite edge of said flap to said piece away from said opening so that said flap can further be releasably attached to said fabric piece in a position wherein said opening is uncovered.

4,656,671
REUSABLE HEADBAND
Richlyn P. Manges, R.D. #1, Box 443, Monongahela, Pa. 15063
Filed Jan. 28, 1985, Ser. No. 695,525
Int. Cl.[4] A41D 13/00
U.S. Cl. 2—174 **1 Claim**



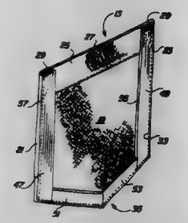
1. The method of making a reusable perm band of terry cloth comprising folding over one longitudinal edge of the Perm band and applying a zigzag stay stitch throughout the entire length of the longitudinal folded portion of said band while flat, pinning the center of an elastic strip of substantially shorter length than said band and stretching the ends of said elastic strip and, while stretched, zigzag stitching said elastic strip on the longitudinal central portion of said band, then folding over the other longitudinal edge over the elastic strip so as to abut said first-mentioned longitudinal edge and completely surround said elastic strip and zigzag sewing it to said elastic strip while stretched, and finally sewing hood and pile strips on the ends of the Perm band devoid of said elastic strip, but on opposite sides thereof.

4,656,672
ZIPPER NECKTIE
Martin Lasde, 34 Glenmore Road, Hampstead, Quebec, Canada (H3X 3M6)
Filed Jun. 18, 1986, Ser. No. 875,493
Int. Cl.[4] A41D 25/02
U.S. Cl. 2—150 **9 Claims**



1. In a pretied necktie having, as any conventional necktie, a front tie portion, a knot portion, a neck encircling portion and a rear tie portion, said pretied necktie comprising:
a knot support made of semirigid material, said knot support having a vertical front wall with front and rear sides;
a front tie member having an upper end fixed to the front side of the front wall of said knot support, said front tie member being wrapped around the knot support in such a manner as to form both the knot and front tie portions of the necktie;
a rear tie member having an upper end formed as a loop, said rear tie member forming both of said neck encircling and rear tie portions of the necktie; and
a zip fastener for enlarging or reducing the size of the loop and thus allowing insertion and adjustment of the pretied necktie around the neck of a wearer, said zip fastener comprising two continuous strings of interlockable elements symmetrically stitched onto opposite portions of the loop and a slider in which the interlockable elements of the two strings pass and are cammed in, and uncammed from, interlocked position, said slider being connected to the rear side of the front wall of the knot support whereby relative movement of the upper end of the rear tie member with respect to the knot support to which the slider is connected causes the loop of said rear tie member to be increased or reduced in size, the improvement wherein:
snap fastening means are provided for connecting the slider of the zip fastener to the rear side of the front wall of the knot support, said snap fastening means comprising male and female elements detachably connectable to each other, said male and female elements being rigidly connected to, or integral with, said slider and said front wall of knot support, respectively;
the slider of the zip fastener comprising a small elongated hooking member integral projecting from one of its sides;
the male element of the snap fastening means comprising said small elongated hooking member; and
the female element of said snap fastening means comprising a small slot provided in the front wall of the knot support, said slot being shaped and sized to receive and snap on the small elongated hooking member of the slider.

4,656,673
INDIVIDUALLY ATTACHABLE POCKETS FOR ARTICLES OF CLOTHING SUCH AS SHIRTS
Joseph E. Easton, 3026 S. Paseo Lona Cir., Mesa, Ariz. 85202, and Michael Saider, 1004 S. 21st St., Mesa, Ariz. 85204
Filed Feb. 11, 1986, Ser. No. 828,378
Int. Cl.[4] A41D 27/20
U.S. Cl. 2—247 **11 Claims**

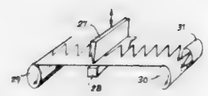


1. An iron-on pocket for application to shirts and the like after manufacture and initial distribution comprising:
a single unitary piece of material formed in the shape of a pocket, said material having a top edge, and first and second side edges for defining a central pocket portion therebetween;
a predetermined portion of the outer peripheral end portions of each of said bottom edge and said first and second opposite sides being adapted to be folded back toward one another and disposed over the outer edge portion of the remaining bottom edge portion and said side portion, said folded back portions facing the rear of said pocket;
strips of relatively flat, tape-like fastening means having an adhesive means on one surface thereof, one of said strips being operably disposed over each of said folded back portions such that said adhesive means surface is disposed toward the rear of said pocket;
stitching means for fixedly attaching said strips of fastening means to each of said folded back portions and to the opposing remaining bottom edge portion and side portions for forming a unitary pocket patch;
an indicia means operatively secured to the front of said pocket; and
said adhesive means coated surface of said strips of fastening means being disposed against said shirt at a predetermined location thereon where it is desirable to add a pocket and being responsive to the application of heat thereto for adhesively bonding said pocket to said shirt.

4,656,674
COMPOSITE HELMET
Roger T. A. Medwell, Coventry, England, assignor to National Plastics Limited, Colchester, England
Filed Oct. 24, 1985, Ser. No. 790,740
Claims priority, application United Kingdom, Oct. 31, 1984, 8427469
Int. Cl.[4] A42B 3/00
U.S. Cl. 2—410 **4 Claims**

1. A method of making a composite protective helmet reinforced with fabric, said method including the steps of:
cutting a length of reinforced fabric along a zig-zag line so that the length of the fabric is dividable along the cutting line into two parts, each part comprising an uncut longitudinally extending base portion and a series of teeth projecting from said uncut base portion along one edge thereof;
winding a number of layers of one of said cut parts of the reinforcing fabric on a former having a diameter approximately the same size as the opening in a helmet to be manufactured, the pitch of the teeth in said fabric part being such that teeth of successive layers in the winding are in staggered relationship so that the teeth of one layer overlap gaps between teeth of the next lower layer;
bending the teeth inwardly and securing them to form a dome shape constituting a helmet pre-form;





molding said pre-form with synthetic resin to produce a helmet; and
similarly using said other cut fabric part thereby reducing the amount of wasted fabric.

4,656,675
VENTED URINARY DRAINAGE DEVICE
Aleksander Fajnsztajn, 555 Kernberry Dr., San Rafael, Calif. 94903
Filed May 12, 1986, Ser. No. 862,315
Int. Cl.[4] A47K 11/00; A61F 5/44; A61B 5/00; A61M 1/06
U.S. Cl. 4—144.4 **4 Claims**





1. An improved urinary drainage device for removal of urine from a male patient comprising:
a sheath of thin elastic material comprising:
a thin cylindrical section disposed for rolling into position tightly upon a penis;
a frusto-conical section attached at its larger end to one end of said cylindrical section and forming an integral part of said sheath;
a hollow cylindrical tube of thicker material than said sheath attached to the smaller end of said frusto-conical section;
a vent positioned on said frusto-conical section;
said vent having an area approximately equivalent to the area of the inside of said tube;
said vent being covered by a membrane capable of passing air therethrough but being impervious to liquid at relatively low pressures.

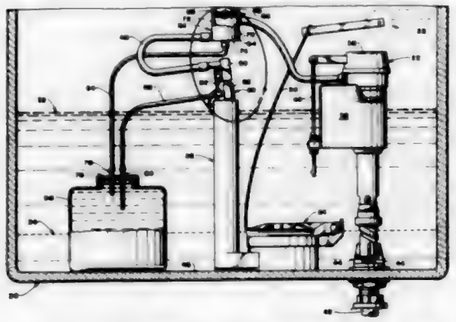
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4,656,676

PRESSURE ACTIVATED CLEANER DISCHARGE FOR TOILETS AND THE LIKE

Oscar R. Dufau, Fullerton, and Kabir Siddiqui, Brea, both of Calif., assignors to Fluidmaster, Inc., Anaheim, Calif.

Filed Mar. 31, 1986, Ser. No. 846,071
Int. Cl.[4] E03D 9/02
U.S. Cl. 4—228 10 Claims



1. In a pressure activated cleaner discharge device of the type for use in a toilet water tank, the water tank having a ballcock for discharging water to fill the tank from a minimum water level to a maximum water level, a flush valve connected to a toilet bowl for flushing water into the bowl from the tank, and an overflow pipe projecting above the maximum water level having a ballcock refill tube connected thereto for directing a pressure flow of tank water to fill the toilet bowl after said flushing; the cleaner discharge device in combination therewith including: a container in the tank having an inlet and an outlet, said container being at any location in said tank above or below said maximum water level; an inlet water tube connected between said refill tube and said container inlet; an outlet cleaner tube connected between said container outlet and said refill tube downstream of said inlet water tube connection; said refill tube and its connections and said container and its connections all being liquid-tight from said ballcock through said refill tube substantially throughout the downstream flow of water in said refill tube and cleaner discharge device; low pressure means operably connected between said outlet cleaner tube and said refill tube for creating positive water flow from said outlet cleaner tube into said refill tube upon flow in said refill tube permitting liquid cleaner to be placed in the container and to be forced by the pressure flow of water through said container from and to said refill tube for depositing liquid cleaner into said overflow pipe and ultimately cause it to flow into said toilet bowl.

4,656,677

WATER-CLOSET VALVE

Leonard A. Miskiewicz, 219 Sprucewood St., Pittsburgh, Pa. 15210

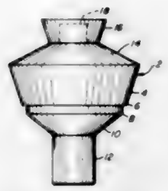
Filed Oct. 24, 1985, Ser. No. 791,107
Int. Cl.[4] E03D 1/35
U.S. Cl. 4—395 3 Claims

1. A water-closet valve which is principally hollow and thin-walled and made of flexible material, being open at its bottom,

said valve having means including an internally-threaded inflexible bushing member snugly received within a collar member integrally formed on the top of said valve for connecting it to a vertically-extending rod-like operating member,

said valve being adapted to be received by an open-bottom valve seat member having a frustroconical surface which tapers inwardly toward its bottom,

said valve having an exterior frustroconical surface adapted to engage with said frustroconical surface of said seat member and in said exterior frustroconical surface first and second circumferential protuberances effective to create by engagement with said seat member a double-seal action



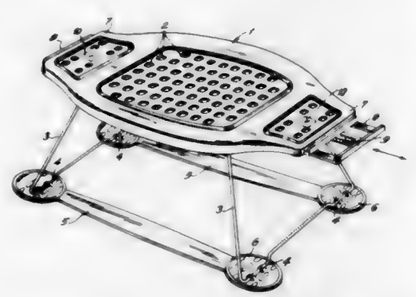
said valve being imperforate and capable of developing within its interior during the downward rush of water from a flush tank to toilet bowl a partial vacuum in its hollow interior which generates a downward thrust action to accelerate the closing of an exterior frustroconical surface of said valve against said frustroconical surface of said seat member to obtain a water-saving effect.

4,656,678

BATH TUB STOOL

Mordechai Lipski, 12 Recanati Street, Tel Aviv, Israel

Filed Oct. 4, 1985, Ser. No. 784,805
Claims priority, application Israel, Jul. 21, 1985, 75860
Int. Cl.[4] A47K 3/022, 3/12
U.S. Cl. 4—578 7 Claims



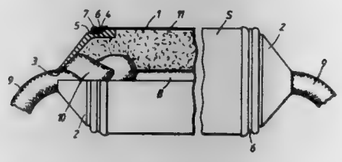
1. A bath tub stool comprising a perforated seat and a pair of U-shaped hoops connected to the seat serving as legs movable relative to the seat, wherein the seat has at least one lateral extension onto which washing requisites, such as soap, a sponge and the like can be deposited, a pair of elongated lower stabilizing strips each having at both its ends gripping means which are adapted to grip the web portion of the U-shaped hoops, whereby the two hoops are spread apart and the collapse of support of the stool and comprising at least one upper stabilizer which is positioned beneath the lateral extension of the seat, the at least one upper stabilizer designed to lean onto the side of the tub, so as to prevent the slipping or sliding of the stool is prevented.

4,656,679

LIFTING SLINGS

David R. James, Tirley, England, assignor to James Industries Limited, Gloucester, England

Filed Sep. 18, 1985, Ser. No. 777,319
Claims priority, application United Kingdom, Sep. 28, 1984, 8424527
Int. Cl.[4] A61G 7/08
U.S. Cl. 5—81 R 9 Claims



1. An invalid lifting sling of filled tubular form comprising:

an outer tubular elongated sleeve of generally circular cross-section containing a naturally resilient filling, said sleeve dimensioned to fit substantially around a torso of an invalid;

a pair of end fittings each firmly secured to an opposite end of said sleeve and which comprise plastic moldings having apertures; and

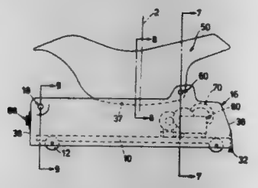
attachment cord tails which extend through said apertures and attachable to an invalid device such that an invalid may be lifted with the sling by passing the sling around the back and below the armpits of the invalid, with said sling tending to maintain its generally circular cross-section due to the natural resilience of the filling, and said end fittings directly transferring lifting forces to said sleeve during lifting.

4,656,680

METHOD AND APPARATUS FOR OSCILLATING A BABY TO SLEEP

Roger F. Wilson, Rte. 1 74-224, O-Bar Rd., Sarasota, Fla. 33583

Filed May 13, 1985, Ser. No. 733,092
Int. Cl.[4] A47D 9/02
U.S. Cl. 5—108 21 Claims



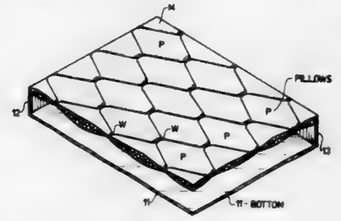
1. Apparatus for oscillating a baby to sleep comprising in combination; a base, a baby carrier support pivotally mounted on the base for oscillating movement about a generally horizontal pivot axis such that the support is raised and lowered relative to the base between upper and lower extremes of travel, a baby carrier having a head end and an opposite foot end and adapted to hold a baby in reclining position with the head of the baby located at the head end of the carrier, said baby carrier being removably mounted to said baby carrier support to move with the support relative to the base, and drive means for oscillating the baby carrier support, said drive means including a cam mounted on the base below said support, said cam being shaped to impart to the carrier greater acceleration levels in the vicinity of the lower extreme of travel than in the vicinity of the upper extreme of travel, and wherein there is further included releasable connecting means connecting said carrier to said support while being releasable to permit said carrier to be removed from said support.

4,656,681

WATER MATTRESS

Bruce H. Alexander, Catonsville, and Iftakhar Malik, Laurel, both of Md., assignors to United States Water Mattress Co, Baltimore, Md.

Filed Apr. 18, 1986, Ser. No. 853,443
Int. Cl.[4] A47C 27/08
U.S. Cl. 5—451 8 Claims



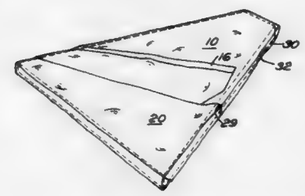
1. A floatation mattress comprised of an envelope with a top body supporting panel and where the top panel is heat sealed to side and end panels and each of the side and end panels is heat sealed to a bottom panel, and wherein the top panel consists of multiple sheets of vinyl and a fiberous material that are heat sealed together to form a multi-layer top panel.

4,656,682

BED CLOTHING

Susan F. DeFelice, 7 Starboard La., Barrington, R.I. 02806; Mary L. Gatta, 259 Lexington Ave., North Providence, R.I. 02904, and Roger P. DeFelice, 7 Starboard La., Barrington, R.I. 02806

Filed Aug. 29, 1985, Ser. No. 770,612
Int. Cl.[4] A47G 9/02, 9/04
U.S. Cl. 5—494 5 Claims



1. An article of bedding for covering a mattress comprising an upper sheet and a lower sheet joined at one end, a pouch consisting of two separate similarly shaped portions having juxtaposed faces with each portion being sewn to the sheets at said one end such that the pouch has an open top and closed bottom and side edges, the bottom and side edges of said pouch secured to the said one end of the lower and upper sheets so that the face of one of the portions normally lies juxtaposed to the lower sheet and the other portion lies on the outside of the upper sheet whereby the one portion of the pouch may receive the end of a mattress and lie thereunder and the other portion lies over the upper sheet the two portions forming a carrying bag for the sheets.

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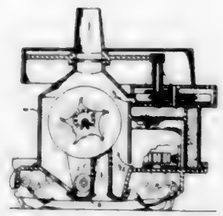
VOL 1077 ISS 2 AP 14 1987 UMI

4,656,683

SUCTION CLEANER FOR SUBMERGED SURFACES

Johann N. Raubenheimer, Transvaal, South Africa, assignor to Fabot NV, Curacao, Netherlands Antilles

Filed Aug. 27, 1985, Ser. No. 769,743
Claims priority, application South Africa, Dec. 18, 1984, 84/9853
Int. Cl.[4] E04H *3/20*
U.S. Cl. 15—1.7 3 Claims



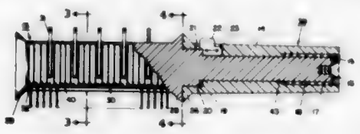
1. A suction cleaner head for use on a submerged surface comprising:
a turbine housing,
a suction inlet in the base of the housing, an outlet from the housing adapted to be connected to a suction hose,
a shaft journalled in the housing,
a turbine mounted on the shaft,
means driven by the shaft for causing the head to move over the submerged surface, and
a nozzle projecting from the inlet to the turbine, the nozzle being formed of a resiliently deformable material.

4,656,684

TANGLE-FREE BLOW-DRY BRUSH

John H. Jewett, 4743 Noble Ave., Sherman Oaks, Calif. 91403

Filed Aug. 1, 1985, Ser. No. 761,750
Int. Cl.[4] A46B *13/00*
U.S. Cl. 15—27 20 Claims



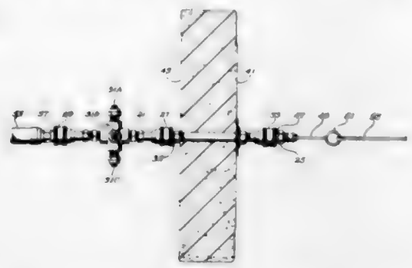
6. A tangle-free grooming and hair-dressing implement for use with a blow dryer, comprising:
a handle;
a brush and hair grooming member;
said member including;
a. a row of heat-resistant bristles;
b. spaced inner and outer surface means for directing hair towards the center of said member; and
c. outwardly extending thin ribs positioned equal distance from the central axis of said member as said bristles;
whereby hair may be untangled and curled over the body of said member while a blow dryer is directed onto the hair and the implement may be readily disengaged from the hair by rotating the brush as the implement is pulled away from the hair.

4,656,685

DUCT CLEANER

H. Larry Wood, Arlington, Tex., assignor to Blackmon Mooring Steamatic Catastrophe, Inc., Fort Worth, Tex.

Filed Jun. 19, 1985, Ser. No. 746,511
Int. Cl.[4] B08B *9/04*
U.S. Cl. 15—104.16 33 Claims



1. An apparatus for use in a duct, comprising:
a nozzle conduit having first and second opposite ends and nozzle means intermediate its ends for spraying fluid in said nozzle conduit outward onto the interior walls of a duct,
said nozzle conduit having connecting means at its first and second ends,
an end conduit having first and second opposite ends with connecting means at its opposite ends,
said first end of said end conduit being adapted to be removably connected to the end of a hose and said second end of said end conduit being adapted to be removably connected to said first end of said nozzle conduit for providing a passageway for the flow of fluid from said hose to said nozzle conduit,
a flexible member fitted around the exterior of said end conduit for engaging the walls of the duct,
a plug member having connection means at one end for removable connection at least to said second end of nozzle conduit,
said plug member having means at its other end to which a rope or the like may be connected,
in using said apparatus, said first end of said end conduit is connected to the end of said hose, said second end of said end conduit is connected to said first end of said nozzle conduit with said flexible member fitted around said end conduit, said one end of said plug member is connected to said second end of said nozzle conduit and the end of a rope or the like is connected to said other end of said plug member such that said apparatus may be located in the duct and said apparatus and the end of said hose pulled therethrough by the rope in a given direction while fluid is flowing from the hose to said nozzle conduit and is sprayed out of said nozzle means onto the interior walls of the duct ahead of said flexible member.

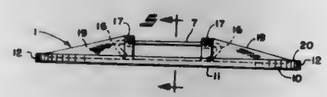
4,656,686

PLASTIC FRAME FOR DUST MOPS

Ted C. Moss; William H. Kenney, both of Cleveland; Earl V. Boing, Jr., McDonald, and H. Edwin Cross, Sr., Cleveland, all of Tenn., assignors to Seco Industries, Inc., Cleveland, Tenn.

Filed Nov. 7, 1985, Ser. No. 795,764
Int. Cl.[4] A47L *13/255*
U.S. Cl. 15—147 A 16 Claims

1. A dust mop frame for use in supporting a dust mop and providing an attachment for connecting the dust mop to a handle comprising a plastic molded base member having a flat bottom surface for applying uniform pressure over substantially the entire surface of the mop and a back side opposite said bottom surface, a rigid hinge member, and mounting means for securely mounting said hinge member in spaced relation to said back side of said base member for use in attaching a handle to the base member, said mounting means comprising a pair of transverse ribs integrally molded to said back side of said base member, and longitudinal ribs integrally molded to the back side of said base member and to the axial outer sides of said transverse ribs intermediate the length of said transverse ribs, said hinge member having ends molded in place in said transverse ribs and longitudinal ribs, said ends of said hinge member extending completely through said transverse ribs and into said longitudinal ribs and extending downwardly and inwardly back on themselves at an angle towards the back side of said base member and within said longitudinal ribs for a substantial portion of the height of said longitudinal ribs.

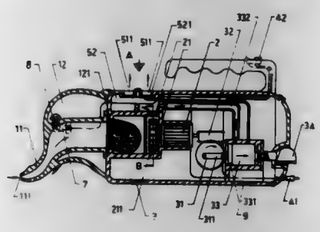


4,656,687

ELEPHANT-SHAPED CAR CLEANER AND AIR PUMP

Yung-Kuan Wei, No. 1, Lane 970, Sec 2, Pen Tien Street, Taiwan, Taiwan

Filed Jan. 9, 1986, Ser. No. 817,519
Int. Cl.[4] A47L *5/24*
U.S. Cl. 15—324 3 Claims



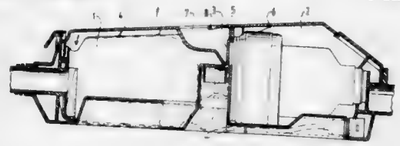
1. An elephant-shaped car vacuum cleaner and air pump, including: an elephant-shaped cover, a dirt suction device consisting of an inlet passage, a motor, an impeller driven by the motor, and a dirt bag; an air pumping device consisting of said motor, a transmission consisting of a worm gear rod, a worm-gear wheel, and an eccentric crank; and a cylinder with a piston driven by said transmission; a lighting and colored-light signaling device, and an electric power system; having the characteristics that dirt can be suctioned and collected in the dirt bag through said inlet passage in a trunk of said cover by the suction created by the impeller turned by the motor; and that air can be pumped by compressing the air coming into the cylinder through an exhaust pipe from the impeller by means of the piston driven by the transmission.

4,656,688

HOUSING FOR A VACUUM CLEANER

Gernot Jacob, Weissach-Flacht, and Leon Radom, Ellhofen, both of Fed. Rep. of Germany, assignors to Progress-Elektrogerate Mauz & Pfeiffer GmbH & Co., Fed. Rep. of Germany

Filed Sep. 26, 1985, Ser. No. 780,514
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1984, 8428850[U]
Int. Cl.[4] A47L *5/28*
U.S. Cl. 15—327 F 6 Claims



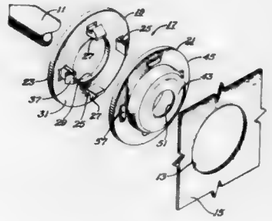
1. A housing for a hand vacuum cleaner having a front dust chamber provided with a swingably arranged dust chamber cover and a rear motor chamber provided with a tightly connected motor chamber cover and being separated from the dust chamber by a baffle, a handle hollow designed in the area of the dust chamber cover adjacent to the motor chamber cover, and a handhold partially covering said handle hollow, said handhold being arranged at the motor chamber cover as an integral part thereof.

4,656,689

GROMMET

Frank S. Dennis, Fort Worth, Tex., assignor to Molded Products Company, Fort Worth, Tex.

Filed Apr. 1, 1986, Ser. No. 846,760
Int. Cl.[4] B65D *55/00*
U.S. Cl. 16—2 8 Claims



1. A grommet device for protecting conduit passing through a wall opening, and for providing an air seal between the conduit and the edges of the wall around the wall opening, comprising:
a. a fastener portion made of relatively stiff material having:
i. a base portion, said base portion having an opening appropriately sized to allow the passage of said conduit through said base portion opening and to prevent said conduit from contacting the wall at the wall opening,
ii. a plurality of projections extending outwardly from said base portion and disposed around said base portion opening, and
iii. locking means at the ends of said projections for locking said grommet device in place relative to said wall opening;
b. a seal portion made of elastomeric material having:
i. an aperture of slightly less dimensions than the outside dimensions of said conduit, whereby a seal around the perimeter of said conduit is formed when said conduit is passed through said aperture of said seal portion, and

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ii. a plurality of openings appropriately positioned around said seal portion aperture to receive said projections,

iii. those portions of the seal portion near said seal portion openings having a thickness that is less than the length of said respective fastener portion projections, whereby said locking means protrude beyond those portions of the seal portion near said seal portion openings when said seal portion is assembled onto said fastener portion.

4,656,690

FIREPROOF DOOR CLOSER AND HOLDER HAVING A SOLENOID AND A TOGGLE MECHANISM

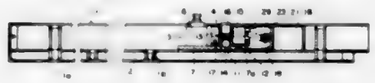
Fujio Katagiri, Fuchu; Haruyuki Atsumi, Yokohama; Hisatugu Aazai, Machida, and Noboru Kanehara, Fuchu, all of Japan, assignors to Ryobi Limited, Fuchu and Hochiki Corporation, Tokyo, both of, Japan

Filed Oct. 15, 1985, Ser. No. 787,528

Claims priority, application Japan, Oct. 18, 1984, 59-158278[U]; Nov. 7, 1984, 59-169581[U]

Int. Cl.⁴ E05F *13/20*

U.S. Cl. 16—48.5 **8 Claims**



1. An apparatus adapted for use with a fireproof door which is normally held open and which is closed manually or automatically in response to a signal generated when fire is detected, said apparatus comprises a door closer secured to the fire proof door and a holding device secured to an upper portion of a door wall;

said holding device comprising a latch mechanism and a slider mounted in a housing;

said latch mechanism comprising an actuator member and first means for swingably supporting the actuator in said housing, a toggle link mechanism, and second means for cooperatively connecting the toggle link mechanism to said actuator member, a solenoid having a plunger, and means for securing said solenoid to the housing;

said toggle link mechanism being collapsed into a V-shaped state in response to the movement of said plunger of the solenoid; and

said slider being connected to said door closer and slidably received in said housing in response to the opening and closing of the fireproof door;

the improvements which comprise in

that said actuator member is provided with a tubular portion wherein a stopper is inserted and downwardly biased by a spring, the biasing force of said spring being adjustable by a screw threaded into said tubular portion;

that said slider is provided with an inclined surface at the front end thereof and a recess to receive said stopper therein; and

that said slider is slid into the spacing formed between said actuator member and the housing with said stopper being upwardly guided by said inclined surface of the slider, and said slider is locked by said stopper when it falls into said recess of the slider.

4,656,691

DOOR HINGE WITH PIN MEMBER FOR ENGAGING WALL STRUCTURE

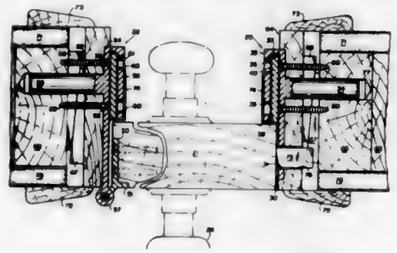
Mark L. Allen, 1776 E. 13th St., Brooklyn, N.Y. 11229

Division of Ser. No. 522,325, Aug. 11, 1983, Pat. No. 4,547,009. This application Oct. 3, 1985, Ser. No. 783,874

Int. Cl.⁴ E05D *11/00, 5/06*

U.S. Cl. 16—251 **1 Claim**

1. A high security hinge for an entry door in which a door opening in a wall is framed by a door jamb secured to a supporting wall structure and is closed by an entry door that is pivotally supported on the door jamb by the hinge, said hinge comprising: a door leaf for securing the hinge to the edge of the door; a jamb leaf for securing the hinge to the door jamb, said jamb leaf having an extended portion such that when the door is supported on the door jamb in a closed position the extended portion of said jamb leaf extends parallel to the edge of the door and beyond the outer surface of the closed door over the part of the door jamb aligned with the wall supporting structure, said jamb leaf being provided on the extended portion with screwholes so that screws that secure said jamb leaf to the door jamb are outside the area covered by the edge of the closed door and with buck pin means which is integrally formed with the jamb leaf, is located between the screws and projects perpendicularly from said extended portion a distance such that said buck pin means will extend through the door jamb and into an aperture provided in the wall structure to which the door jamb is secured; cover plate means that covers only the area of the jamb leaf lying outside the surface of the closed door, said cover plate means comprising a first portion that extends substantially perpendicular to the edge of said



jamb leaf, and a second portion that extends substantially perpendicular to the first portion and extends substantially parallel to and along only a part of the jamb leaf; said cover plate means and said jamb leaf being formed in one piece, said first and second portions and said jamb leaf forming a recess that is accessible only from the edge of the cover plate means adjacent the closed door, access to said recess being completely blocked only by the door when the door is in the closed position, said cover plate means being further provided with apertures aligned with the screwholes in said jamb leaf so that a screwdriver can have access to and drive screws through the screwholes in said jamb leaf; and separate guard plate means insertable into said recess only when the door is not in the closed position to block access to screws securing said jamb leaf to a door jamb; said door leaf comprising a door leaf arm and an angle arm which extends perpendicular to the door leaf arm, said angle arm being shorter in length than said door leaf arm, wherein said door leaf arm is secured to the edge of the door and extends in a direction toward the cover plate means while being substantially parallel to the jamb leaf when the door is in the closed position.

4,656,692

APPARATUS FOR HOLDING A GUTTED ANIMAL BODY

Daniel Villemin, Chennevieres sur Marne, and Paul Romand, Valence, both of France, assignors to Etablissements Arrive S.A., Saint Fulgent and Union Financiere pour le Developpement de l'Economie Cerealiere-Unigrains, Paris, both of, France

Filed May 20, 1986, Ser. No. 865,166

Claims priority, application France, May 20, 1985, 85 08275

Int. Cl.⁴ A22C *21/00*

U.S. Cl. 17—44.1 **11 Claims**

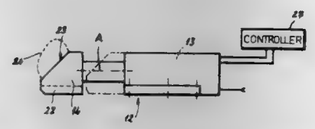
1. An apparatus for holding a gutted animal body having an empty body cavity that has an open end and a closed end, the apparatus comprising:

an elongated holder body having a front portion and a rear portion offset along a longitudinal axis of the holder body from the front portion;

means interconnecting the portions for relatively axial displacing of same between an adjacent position and an axially spaced position;

holding means on the front portion for engaging same in the closed end;

holding means on the rear portion for engaging same adjacent the open end when the holding means of the front portion is engaged with the closed end; and



control means connected to all of the other means for, on engagement of the holder body in the body cavity with the portions in the adjacent position for sequentially engaging the holding means of the one of the portions with the animal body adjacent the respective cavity end, then extension of the holder body into the spaced position, then engagement of the holding means of the other portion with the animal body at the other cavity end.

4,656,693

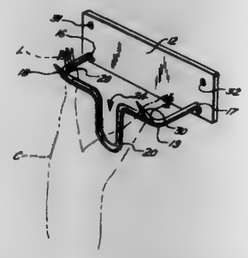
GAME SKINNER

Paul A. Brooks, 120 Meadow La., Hazlehurst, Miss. 39083

Filed Apr. 7, 1986, Ser. No. 848,571

Int. Cl.⁴ A22B *1/00, 5/16*

U.S. Cl. 17—44.2 **6 Claims**



1. An apparatus for field dressing small game animals comprising:

a. a base;

b. means for immobilizing the base by attachment to a supporting structure such as a tree;

c. an elongated rod member having two end portions affixed rigidly to the base at spaced apart positions, said points of attachment defining substantially a perpendicular angle with said base plate, said rod having a central portion which is spaced from said base plate, said central portion including a generally U-shaped section defined by a 180° bend of said rod;

d. a pair of spikes spaced on opposite sides of said loop and extending generally forwardly of said base for supporting the hind legs of a small game animal carcass.

4,656,694

DUAL CHUTE FIBER TUFT FEEDING APPARATUS

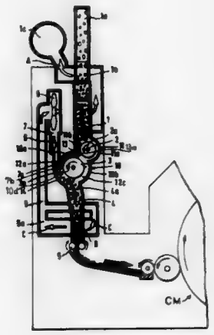
Bernhard Windges, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trutzschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Feb. 10, 1986, Ser. No. 827,745

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1985, 3504607; Jun. 7, 1985, 3528853; Aug. 24, 1985, 3530327

Int. Cl.⁴ D01G *23/02, 15/40*

U.S. Cl. 19—105 **7 Claims**



1. In an apparatus for feeding a fiber lap to a card, including the upper reserve chute having an upper end through which fiber material is introduced into the apparatus, a feed roller situated at a lower end of said reserve chute and arranged for withdrawing fiber material from said reserve chute; a feed chute having an upper end situated adjacent to the lower end of said reserve chute; an opening roller situated in a space between the lower end of the reserve chute and the upper end of the feed chute; said opening roller being arranged under the feed roller to receive fiber material therefrom and to advance the fiber material into said feed chute through the upper end thereof; delivery rollers arranged at a lower end of said feed chute for withdrawing fiber material therefrom as a fiber lap; and air circulating means for guiding a compressing air stream to a location spaced from the upper end of said feed chute and bounded by said opening roller, subsequently introducing the compressing air stream into the feed chute through the upper end thereof, driving the air stream through said feed chute to compress fiber material therein and withdrawing air from openings in a lower portion of said feed chute, the improvement comprising means for introducing the compressing air stream into said location tangentially to said opening roller; and means defining an air channel connecting said location with said upper end of said feed chute for guiding said compressing air stream and fiber tufts from said location in an arcuate path along and in contact with a peripheral portion of said opening roller into said upper end of said feed chute; said means defining the air channel including said peripheral portion of said opening roller and a wall radially spaced from and generally following the curvature of the periphery of the opening roller; said wall extending from said location to said upper end of said feed chute, whereby said air channel has a curved course extending in a circumferential direction of said opening roller laterally thereof from said location to said upper end of said feed chute.

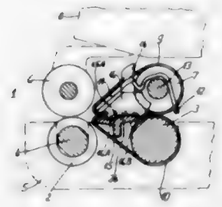
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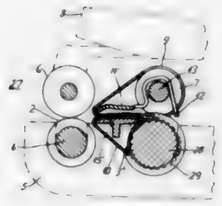
4,656,695

DRAFTING ASSEMBLY FOR A SPINNING MACHINE

Manfred Lattner, Ebersbach/Fils, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed May 13, 1985, Ser. No. 733,555
Claims priority, application Fed. Rep. of Germany, May 11, 1984, 3417516
Int. Cl.[4] D01H *5/68*
U.S. Cl. 19—236 4 Claims





1. A drafting assembly for a spinning machine, comprising, in combination:

a plurality of lower rollers at respective drafting stations;

a turnover rail extending through said stations proximal to said lower rollers;

a respective endless lower belt extending directly around each of said lower rollers and said rail and having an upper pass;

a respective upper roller disposed above each lower roller;

a respective upper endless belt passing around each upper roller and having a lower pass juxtaposed with a respective upper pass of a respective lower belt so that yarn can be drawn between said belts, said turnover rail having an upper surface underlying said upper pass substantially over the length thereon; and

a respective lateral guide element at each of said stations, formed in one piece and lying wholly outside the lower belt of the respective station, each of said guide elements having a pair of side walls flanking at least said lower belt for guiding same while axially abutting and flanking ends of at least one of said rollers of the respective station, and a web connecting said side walls and lying outside the respective lower belt, said side walls engaging said upper surface to prevent canting of said element.

4,656,696

DEVICE FOR RETAINING AN ARTICLE ON AN ITEM OF CLOTHING

Bernard De Montalembert, 9, rue Saint-Louis, 77300 Fontainebleau, France

Continuation-in-part of Ser. No. 660,955, Oct. 15, 1984, Pat. No. 4,570,302. This application Dec. 19, 1985, Ser. No. 810,922
Claims priority, application Switzerland, Oct. 17, 1983, 5637/83
Int. Cl.[4] A45F *5/02*
U.S. Cl. 24—3 R 10 Claims



1. A device for retaining an object fastened to a clothing article comprising:

a stiff member having means for releasably engaging said article, means for securing said stiff member to said object and at least one cutout;

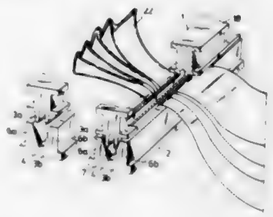
a flexible member having an end section, said flexible member being attached to said stiff member, and translatable between a first position wherein said stiff member is secured to said article and a second position wherein the stiff member is removable from said article, said flexible member cooperating with said cutout to rotate said end section to penetrate said clothing article as said flexible member is translated from said second to said first position, whereby said stiff member is prevented from being released from said article by said flexible member in said first position, said flexible member being urged toward said first position by its own spring action.

4,656,697

BAG CLIP

Jan I. Näslund, Vasavägen 21, S-141 39 Huddinge, Sweden

Filed Mar. 18, 1985, Ser. No. 712,864
Claims priority, application Sweden, Mar. 26, 1984, 8401657
Int. Cl.[4] B77D *77/10*
U.S. Cl. 24—30.5 P 2 Claims



1. A bag clip for tightly sealing a bag, comprising a first limb and a second limb hinged together at one of their respective ends, said limbs being openable to receive therebetween that portion of the bag where a seal is to be effected and closeable together to seal said bag, said limbs further having at their other respective ends a manually openable snap-lock device which automatically closes when said limbs are brought together to a sufficient extent, said limbs further having back portions and facing portions, said facing portions opposing one another to effect the seal on said bag when said limbs are brought together, said facing portion of said first limb having a pair of spaced-apart upstanding longitudinally parallel relatively thick walls defining a first longitudinal channel therebetween, the interior of said channel being wedge-shaped so that it is wider at the mouth thereof and narrows further down the height of said walls, said back portion of said second limb having a plurality of transverse reinforcing ribs so that said back portion is relatively rigid, said facing portion of said second limb having a pair of spaced-apart upstanding longitudinally parallel legs which are substantially thinner than said thick walls of said first limb and relatively more elastic than the back portion of said second limb, said legs defining a second channel therebetween, said pair of legs, including their included second channel, having a narrower width than the mouth of said first channel so that when said legs are pressed into the wedge-shaped interior of said first channel when said clip is closed with the bag material therebetween, the pair of legs are elastically brought together bit by bit as said pair of legs are pressed into the wedge-shaped interior of said first channel.

4,656,698

ARRANGEMENT FOR GRIPPING END REGIONS OF ELONGATED FLEXIBLE ELEMENTS

Hideo Arakawa, Tokyo, Japan, assignor to Arakawa & Co., Ltd., Japan

Filed Nov. 8, 1985, Ser. No. 796,423
Claims priority, application Japan, Nov. 8, 1984, 59-168554[U]; Nov. 9, 1984, 59-169178[U]
Int. Cl.[4] F16G *11/00*; B65H *59/14*
U.S. Cl. 24—136 A 16 Claims



1. An arrangement for gripping an end region of an elongated flexible element, comprising:

(a) a casing bounding an interior passage which extends axially along a longitudinal axis of said casing, said casing having an inner circumferential wall which is tapered in an axial direction;

(b) a sleeve mounted at least in part in said interior passage for axial movement relative to said casing, said sleeve having an outer circumferential wall which is tapered in the axial direction and slidably engages said inner circumferential wall of said casing during movement of said sleeve, said sleeve further having an interior axially-extending channel in which the end region of the element is inserted, said sleeve also having a radial bore which extends radially from said outer wall of said sleeve for a predetermined radial distance to said channel;

(c) a gripping member mounted at least in part in said radial bore for radial movement therealong, said gripping member having a radial dimension larger than said predetermined radial distance of said radial bore; and

(d) means for moving said sleeve and said gripping member between a non-gripping position in which said gripping member is located outside said channel, to a gripping position in which said gripping member extends at least in part into said channel for gripping the inserted end region of the element;

wherein said sleeve has a generally conically-shaped body portion bounded by said outer circumferential wall, an extension portion extending axially of said body portion at one end thereof outwardly and past said casing, and a reduced-diameter portion extending axially of said body portion at the opposite end thereof into said casing;

wherein said moving means include biasing means for normally urging said sleeve to the gripping position;

wherein said moving means include a support member mounted on said casing and having an abutment surface within said passage, and wherein said biasing means constitute an elongated spring having one end engaged with said abutment surface, an opposite end engaged with said body portion, and a coiled portion surrounding said reduced diameter portion;

wherein said support member has an exterior thread which threadedly engages an interior thread formed within said passage, and further comprising

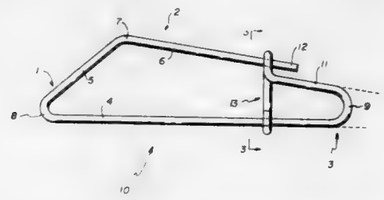
a mounting member securely mounted to a support surface, said mounting member having an exterior thread, wherein said moving means further include a turnbuckle member having an interior thread which threadedly engages said exterior thread of said mounting member, and an exterior thread which threadedly engages an interior thread of said support member; and wherein said exterior and interior threads of said turnbuckle member extend in opposite circumferential directions such that turning of said turnbuckle member causes relative movement between said mounting and support members.

4,656,699

BAIT SNAP

William F. Maahs, P.O. Box 971, Fort Bragg, Calif. 95437

Filed Dec. 3, 1980, Ser. No. 212,688
Int. Cl.[4] A44B *13/02*
U.S. Cl. 24—237 4 Claims



1. A bait snap for affixing a baited hook to a fishing line or the like comprising, in combination:

a lower portion defined by the conjunction of first and second legs which said legs extend to a middle portion of said bait snap,

said first leg extending substantially linearly through said middle portion and onto an upper portion,

said second leg provided with a bend in said middle portion and thereafter defining a third leg linear along its entire length which terminates in an upper portion of said bait snap without a bend in said third leg,

said first leg continuing to a curved section which curves toward said second leg,

a linear fourth leg extending from said curved section,

and clasping means connected to said fourth leg remote from said curved section whereby a terminal linear unbent

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portion of said third leg is clasped therein, so that the baited hook can be easily placed on and retained at said lower portion and said third leg can be passed through both the baited hook and bait,

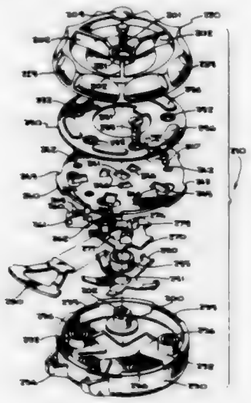
wherein said clasping means comprises a C-shaped element disposed in a plane transverse to the plane of said first, second and third legs, one end of said element affixed to said fourth leg, another end of said element underlying said first leg whereby said third leg bypasses under said fourth leg for clasping and unclasping engagement.

4,656,700

LIGHTWEIGHT, MULTIPLE-POINT, QUICK-RELEASE, SAFETY BUCKLE FOR BODY HARNESSES

Akira Tanaka, Northridge, and Hans Unger, Sylmar, both of Calif., assignors to American Safety Equipment Corporation, Troy, Mich.

Filed Dec. 2, 1985, Ser. No. 803,821
Int. Cl.[4] A44B *11/25, 17/00*
U.S. Cl. 24—574 **9 Claims**



1. A multiple-point, quick-release, safety buckle for a body harness comprising:

a lightweight, non-load-bearing plastic handle and a lightweight, non-load-bearing plastic base, said handle being rotatable relative to said base;

a load-bearing, releasably-locking tongue plate subassembly consisting of a pair only of metal plates and means for holding said plates in a spaced, fixed relationship to provide a tongue-plate-receiving space therebetween;

one or more load-bearing pawls and means for mounting them for pivotal movement on one of said metal plates into, and out of, said tongue-place-receiving space;

means for mounting said plastic handle and base in non-load-bearing relation to said pair of metal plates; and

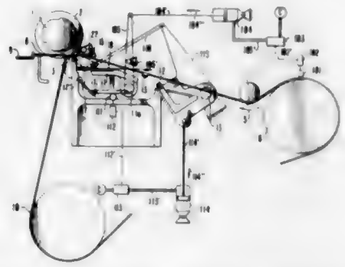
means for operating said pawls associated with said pair of metal plates and said plastic handle whereby said pawls transfer the loading of said tongue plates located in said space to only said pair of metal plates and rotation of said handle relative to said base pivots said pawls out of said tongue-plate-receiving space between said metal plates.

4,656,701

CORDUROY CUTTING MACHINE AND METHOD OF OPERATION THEREOF

Albert Vroomen, Moenchengladbach, Fed. Rep. of Germany, assignor to Franz Müller GmbH & Co., Moenchengladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 451,874, Dec. 21, 1982, abandoned. This application Jun. 24, 1985, Ser. No. 748,020
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150735
The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.
Int. Cl.[4] D06C *13/08*
U.S. Cl. 26—10 C **10 Claims**



1. Corduroy cutting machine, comprising a shaft, a plurality of circular knives disposed adjacent each other on said shaft for cutting open floating wefts of a corduroy fabric web being moved along a given travel direction, a plurality of needles having points and having longitudinal slots formed therein for receiving portions of said knives defining a cutting edge opposite said knives, means for inserting said needles into the floating wefts to be cut open in the direction opposite said given travel direction, a contact table disposed below said needle points, means for stopping the cutting machine upon contact between the contact table and one of said needles, said needles and said contact table defining a working plane for a cutting operation into which the fabric web is guided from below over said contact table to said cutting edge, a rear table disposed at a distance from said contact table upstream of said needle points in said given travel direction, means for holding said rear table in the working plane during the cutting operation, means for lowering said rear table, and said contact table from said working plane, a needle supporting table, and means for moving said needle supporting table into a region directly below any of said needle points still disposed in said working plane when said rear table is lowered.

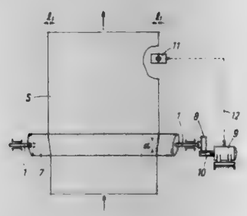
9. Method of operating a corduroy cutting machine, including a shaft, a plurality of circular knives disposed adjacent each other on said shaft for cutting open floating wefts of a corduroy fabric web being moved along a given travel direction, a plurality of needles having points and having longitudinal slots formed therein for receiving portions of the knives defining a cutting edge opposite the knives, the needles being inserted into the floating wefts to be cut open in the direction opposite the given travel direction, a contact table disposed below the needle points for stopping the cutting machine upon contact by one of the needles, the needles and the contact table defining a working plane for a cutting operation into which the fabric web is guided from below over the contact table to the cutting edge, a rear table disposed at a distance from the contact table upstream of the needle points in the given travel direction, means for holding said rear table in the working plane during the cutting operation, means for lowering said rear table and said contact table from the working plane, the rear table being held in the working plane during the cutting operation and the rear table and the contact table being lowerable at random from the working plane, and a needle supporting table being movable in a region directly below any of the needle points still disposed in the working plane when the rear table is lowered, which comprises initially moving the needle supporting table in the region below the needle points while lowering the fabric web from the working plane for cutting the needles free, and supporting the needles along with the needle points on the needle supporting table.

4,656,702

EXPANDER AND GUIDER ROLLER

Isamu Tsuchida, c/o U Engineering Co. Ltd. 3-13-21 Awaji, Higashiyodogawa-ku, Osaka-shi, Japan

Division of Ser. No. 688,004, Dec. 31, 1984, abandoned. This application Jan. 31, 1986, Ser. No. 824,889
Int. Cl.[4] D06C *3/06*
U.S. Cl. 26—75 **3 Claims**



1. An expander and guider apparatus for expanding and guiding a sheet-like travelling article comprising:

an expander roller which engages the article comprising (a) a straight shaft, (b) rotary disk groups each having a plurality of rotary disks rotatably put on said shaft, and (c) a stretchable and resilient cylindrical member closely fitted on said rotary disk groups, said rotary disk groups being formed by a left-hand rotary disk group and a right-hand rotary disk group of which respective rotary disks are inclined in the opposite directions from the longitudinal center of said shaft to the both ends thereof, the inclination angles of said rotary disks in each of said rotary disk groups being gradually increased by a predetermined amount in the direction from the center to each end of said shaft, said expander roller being characterized in that the left-hand rotary disk group is displaced in the circumferential direction of the shaft by about 90° with respect to the right-hand rotary disk group such that the relative expanding action of each said rotary disk groups on the article is non-symmetrical with respect to the other said rotary disk group except where the article contacts the expander roller at a unique neutral position where the relative expanding action of each said rotary disk group on the article is symmetrical;

a selvedge detector located downstream of said expander roller for detecting the position of a travelling edge of the article and for producing a signal indicative of the deviation of the edge of the article on either side of a predetermined desired position; and

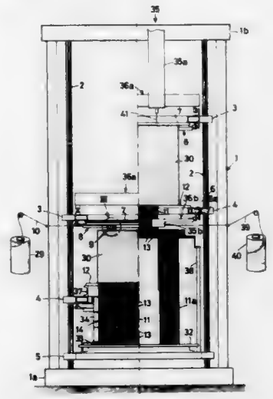
a shaft rotating means for selectively displacing said shaft in the circumferential direction in response to signals from said selvedge detector of a deviation of the edge of the article from the desired position such that when the travelling article upsteam of said expanding roller is laterally shifted as sensed by said selvedge detector, the expanding action of said expander roller is adjusted whereby the travelling article is preferentially expanded on the opposite side from the direction of shift to compensate for the shift and to thereby produce an expanded article downstream of said expander roller which is not shifted.

4,656,703

MACHINE FOR PRODUCING COMPLEX OBJECTS BY MULTIDIRECTIONAL DEPOSITION OF THREAD

Georges J. J. Cahuzac, Le Bouscat, and Francois J. R. Monget, Merignac, both of France, assignors to Societe Nationale Industrielle Aerospatiale, France

Continuation-in-part of Ser. No. 519,578, Aug. 2, 1983, abandoned. This application Jan. 9, 1986, Ser. No. 817,512
Claims priority, application France, Aug. 9, 1982, 82 13893
Int. Cl.[4] D04H *3/04; B32B 5/12*
U.S. Cl. 28—100 **3 Claims**



1. A machine for producing a package made of threads assembled by a multidirectional deposit of thread, said machine comprising a fixed frame work, an assembly of three horizontal frames disposed one above the other in the fixed framework and non-rotatable but vertically movable in an independent manner, drive means for independently moving said frames vertically in the fixed framework, said frames comprising an intermediate frame, an upper frame and a lower frame, a set of horizontal plates provided with perforations arranged in accordance with a regular network and carried by the intermediate frame, rigid rods of equal length received in said perforations and being thus maintained in said regular network extending in a vertical direction, a shuttle mechanism carried by the upper frame, a shuttle carried by the shuttle mechanism, the shuttle mechanism having means for displacing the shuttle in two horizontal crossed directions so that the shuttle is movable in a horizontal plane located slightly above the top of the network rods, the shuttle having means for depositing a thread in a sinuous path in the network of rods from above with displacement of the shuttle, a horizontal unperforated stop plate located adjacent the network of rods and carried by the lower frame for engaging lower ends of the rods, and a further horizontal perforated plate carried by said upper frame, above the shuttle, the further horizontal perforated plate having perforations arranged in accordance with said regular network for receiving the rods as the further perforated plate is lowered onto the rods for compacting layers of thread deposited in said network, said means for displacing the shuttle operating to move the shuttle in one of the two horizontal crossed directions, to deposit a first layer of thread in a sinuous path on the network of rods, said drive means being operable thereafter to move said intermediate frame downwardly by the thickness of the first layer, said drive means being operable thereafter to move said upper frame downwardly into engagement with said rods to compact the first layer of thread, said means for displacing the shuttle being operable thereafter to move the shuttle in the other of the two horizontal crossed directions to deposit a second layer of thread in a sinuous path in the network above the first layer of thread, said drive means being

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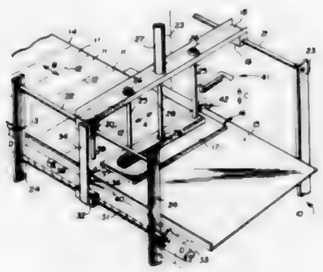
operable thereafter to move said intermediate and upper frames to lower and compact the second layer and subsequent layers until a desired number of layers of thread has been deposited and compacted on the network of rods.

4,656,704

AUTOMATIC COLLAR SEPARATION

Robert H. Best, Greensboro, and Vernon T. Daniel, Oak Ridge, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Dec. 20, 1985, Ser. No. 811,746
Int. Cl.[4] D04B *19/00*
U.S. Cl. 28—170 24 Claims



1. Apparatus for automatically separating two textile blanks connected together by connector threads, which threads extend generally in a first dimension, the apparatus comprising:
- a support surface on which the textile blanks are disposed;
- textile blank engaging means;
- means for mounting said textile blank engaging means for back and forth movement with respect to said support surface in a second dimension generally perpendicular to said first dimension;
- means for mounting said textile blank engaging means for movement with respect to said support in a third dimension, generally perpendicular to said first dimension;
- means for moving said textile blank engaging means in said second dimension;
- means for moving said textile blank engaging means in said third dimension;
- sensing means for sensing the position of said connector threads between textile blanks;
- cutting means responsive to said sensing means for cutting said connector threads; and
- unravelling means for engaging the cut connector threads and unravelling them from the textile blanks so that the blanks are separated.

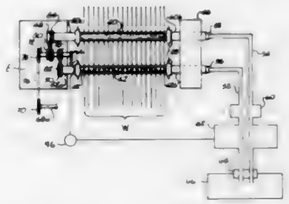
16. A method for automatically separating a pair of textile blanks which are connected by a connector thread, the connector thread extending generally in a first dimension, and the textile blanks having first and second sides which are opposite from each other and extend in a second dimension, generally perpendicular to the first dimension, the method comprising the steps of:
- (a) automatically operatively engaging the textile blanks and moving them into a first position wherein the connector thread is properly positioned;
- (b) automatically, essentially simultaneously, severing the connecting thread at a first side of the textile blanks, while grasping the connector thread at a second side of the textile blanks;
- (c) automatically moving the grasped connector thread generally in the first dimension away from the textile blanks; and
- (d) automatically releasing the grasp on the connector thread and then operatively engaging the connector thread and effecting complete unravelling and automatic disposal thereof.

4,656,705

TEXTILE SLASHER LUBRICATING METHOD

Scott O. Seydel, 80 Broad St., N.W., Atlanta, Ga. 30303, and William H. Cutts, P.O. Box 748, Clemson, S.C. 29631

Continuation-in-part of Ser. No. 308,449, Oct. 5, 1981, Pat. No. 4,513,485. This application Apr. 26, 1985, Ser. No. 727,868
Int. Cl.[4] D02H *5/02*
U.S. Cl. 28—179 10 Claims



1. In a slashing process of preparing a loom beam for weaving on a slasher, which includes the steps of forming a sheet of individual warp yarn ends from at least one warp section beam wherein said ends are arranged individually side by side, passing said warp yarn sheet through a sizing process to place sizing on said individual warp ends, drying said sized warp ends on said warp yarn sheet, busting said warp yarn sheet which has been dried into a plurality of warp yarn sheets corresponding to the number of warp section beams from which said warp yarns are withdrawn, and winding said warp yarn ends onto a single loom beam, wherein the improvement comprises lubricating said warp yarns after drying and before busting by arranging a pair of porous lubricating rods including a first rotating lubricating rod and a second rotating lubricating rod, passing said dried warp yarn sheet under said first rotating lubricating rod and over said second rotating lubricating rod whereby the opposite sides of said warp yarn sheet are contacted by at least one of said rotating lubricating rods, and providing each of said lubricating rods in the form of a porous hollow rod having an inner porous lubricant distribution layer terminating in a generally smooth outer continuous lubricant application surface which contacts said warp yarn ends for lubrication and facilitates smooth passage of said individual warp yarn ends over said application surface without snagging and breakage; an inner flow control membrane formed at a boundary region of said porous distribution layer; and said flow control membrane having a porosity not greater than the porosity of said lubricant distribution layer to meter the flow of lubricant onto said lubricant application surface.

8. In a slashing process for preparing a loom beam for weaving on a slasher of the type which includes forming a warp yarn sheet of individual warp ends arranged generally side by side, subjecting said warp yarn sheet to a sizing process wherein sizing is applied to said warp ends, drying said sized warp ends, and winding said warp ends upon a loom beam, said method comprising:
- providing a pair of rotating lubricating rods on a frame;
- arranging said pair of lubricating rods on said slasher generally in a vertical plane after said drying process;
- rotating said porous lubricating rods at a rotational speed proportional to the speed of said slasher;
- passing said warp yarn sheet over a first of said lubricating rods and under a second of said lubricating rods;
- metering a desired amount of lubricant and delivering said metered amount of lubricant to said interior of said lubricating rods;
- the metering of said lubricant being in response to the operational speed of said slasher; and
- applying a desired percentage of add-on weight of said lubricant to said warp yarns.

4,656,706

FORMATION EFFICIENCY OF POSITIVE PLATES OF A LEAD-ACID BATTERY

Basanta K. Mahato, Brown Deer, and William C. Delaney, Saukville, both of Wis., assignors to Globe-Union, Inc., Milwaukee, Wis.

Filed Jan. 6, 1986, Ser. No. 816,257
Int. Cl.[4] H01M *4/56*; B23P *13/00*
U.S. Cl. 29—2 10 Claims

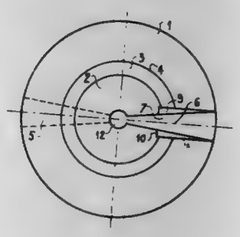
1. In the manufacture of a lead-acid battery having cell elements including positive plates constructed of conductive grids with positive active precursor material applied thereto in paste form, the method of improving the formation efficiency of the positive plates comprising the step of exposing the surfaces of the plates to an ozone-enriched gas to convert a thin outer layer of the active precursor material to lead dioxide.

4,656,707

METHOD OF FABRICATING A HIGH-FREQUENCY PIEZOELECTRIC RESONATOR

Marc Berté ; Louis Bidard, and Serge Lechopier, all of Sartrouville, France, assignors to Compagnie d'Electronique et de Piezo-Electricite, Sartrouville, France

Division of Ser. No. 498,513, May 26, 1983, Pat. No. 4,517,485. This application Feb. 25, 1985, Ser. No. 705,025
Claims priority, application France, Jun. 1, 1982, 82 09511
Int. Cl.[4] H01L *41/22*
U.S. Cl. 29—25.35 11 Claims



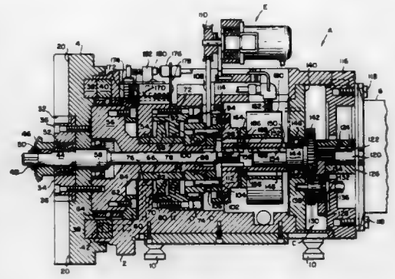
1. A method fabricating a resonator comprising the steps of:
- forming a thinned region of reduced thickness in a central region of one face of a quartz plate, a step zone forming the transition between the thinned region and a non-thinned region of said one face;
- depositing a conductive tongue of a first shape on said one face extending over said step zone, a portion of said non-thinned region and a portion of said thinned region, said conductive tongue reinforcing said step zone;
- mounting two conductive masts on said plate; and
- depositing first and second electrodes on said plate, each electrode coupled to a respective one of said masts, a portion of said first electrode being deposited on said conductive tongue, said first electrode having a second shape different from said first shape, said first electrode having a width narrower than a width of said conductive tongue at said step zone.

4,656,708

LIVE TOOLING TURRET

Roger R. Smith, Erin, and K. Kamalakar Rao, Elmira Heights, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Oct. 29, 1985, Ser. No. 792,462
Int. Cl.[4] B23B *39/20*
U.S. Cl. 29—40 23 Claims



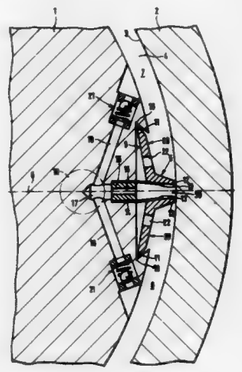
13. A live tooling turret assembly for machine tools comprising:
- (a) a turret mounted on said assembly;
- (b) means for indexing said turret;
- (c) means on said turret for mounting a plurality of live tooling;
- (d) means for driving said live tooling;
- (e) means for permitting turret indexing; and,
- (f) timing and encoder means connected to said means for driving said live tooling for controlling operation of said driving means.

4,656,709

FLOATING ROLL CAPABLE OF ACTING IN TWO OPPOSITE DIRECTIONS

Peter-Friedel Mingers, Willich, and Karl-Heinz Kusters, Krefeld-Forstwald, both of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Dec. 3, 1985, Ser. No. 804,287
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1984, 3445890
Int. Cl.[4] B21B *13/02, 31/32*
U.S. Cl. 29—113 R 17 Claims



1. In a roll comprising: a revolving hollow shell forming the working roll circumference; a stationary cross piece extending

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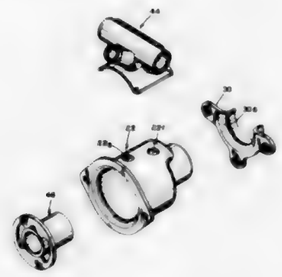
through the shell lengthwise with a spacing from the inside circumference of the hollow roll all around, with ends extending from the shell, said ends protruding from the hollow shell adapted for the application of the external forces; means forming longitudinal chambers in the space between the hollow shell and the cross piece; means supplying a pressure fluid to one of said longitudinal chambers, so that the hollow shell is braced via the pressure liquid; said means forming longitudinal chambers in the space between comprising a sealing arrangement mounted to the cross piece including transverse end seals disposed at the mutually opposite ends of the longitudinal chambers along the cross piece and the hollow roll, and strip-shaped longitudinal seals extending along the cross piece and the hollow roll, on both sides of the action plane of the roll, each longitudinal seal having a longitudinal edge engaging a longitudinal undercut at the cross piece and resting with its other longitudinal edge against the inside circumference of the hollow roll and directed at an angle toward the pressurized longitudinal chamber, the improvement comprising: each longitudinal seal comprising two sealing strips arranged with mirror symmetry relative to the connecting plane of the longitudinal seals and closely adjacent in the circumferential direction; and means to fill the space between the sealing strips with pressure liquid at a selectable pressure.

4,656,710

METHOD OF MAKING A HYDRAULIC PUMP HOUSING

Noman Maciejewski, 2354 Eastbrook, Toledo, Ohio 43613

Filed Aug. 19, 1985, Ser. No. 766,515
Int. Cl.⁴ B23P *15/00*
U.S. Cl. 29—156.4 WL **4 Claims**



1. A process for producing a hydraulic pump housing assembly, comprising the steps of:

(a) producing a substantially hollow cylindrical pump body and forming an aperture in the cylindrical wall of the body;

(b) drawing an elongate sleeve assembly and forming at least one aperture in wall of the sleeve assembly;

(c) forming a saddle member with at least one aperture therein; and

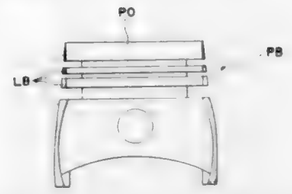
(d) securing the elongate sleeve assembly to the saddle member and fastening the saddle member to the outer peripheral surface of the cylindrical pump body with the apertures in communication with one another.

4,656,711

METHOD FOR DETERMINING PISTON FORM FOR AN INTERNAL COMBUSTION ENGINE

Toshiro Yagi, Higashihiroshima, and Kiyomi Sumida, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 6, 1984, Ser. No. 597,550
Claims priority, application Japan, Apr. 11, 1983, 58-64383
Int. Cl.⁴ B23P *15/10;* **B23Q** *17/00*
U.S. Cl. 29—156.5 R **2 Claims**



1. A method of determining a form of a piston for an internal combustion engine, which comprises the steps of preparing a prototype piston having dimensions slightly smaller than those of a finally processed piston; applying to an outer peripheral surface of said prototype piston, a composite material composed of 25 to 45% by weight of flake aluminum, 2 to 30% by weight of graphite, and a remainder of epoxy resin; heating the prototype piston thus applied with the composite material at temperatures in the range of 90° to 230° C. for more than 20 minutes to form a covering layer on the prototype piston; incorporating said prototype piston thus formed with the covering layer into the internal combustion engine; operating the prototype piston for a predetermined period of time, thereby abrading the covering layer of the piston to form an external configuration corresponding to the internal configuration of a cylinder liner of said internal combustion engine; and utilizing the configuration obtained through abrasion of said covering layer in the design of a production piston.

4,656,712

METHOD FOR MANUFACTURING A HEAT SHIELDED EXHAUST SYSTEM COMPONENT

Jon Harwood; Michael Clegg; Bruno A. Ross, and Walter G. Moring, all of Toledo, Ohio, assignors to AP Industries, Inc., Toledo, Ohio

Filed Jun. 9, 1986, Ser. No. 872,191
The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.
Int. Cl.⁴ B21D *53/00;* **F01P** *1/08*
U.S. Cl. 29—157 R **17 Claims**

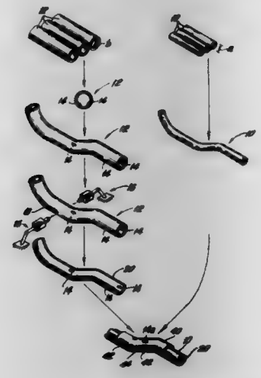
1. A process for manufacturing a heat shield for insulating one longitudinal half of an elongated nonlinear tubular exhaust system component, said process comprising:

selecting an elongated tubular member of generally circular cross section having opposed inner and outer surfaces, the inner surface thereof defining a diameter which exceeds the maximum outer dimension of the exhaust component;

bending the tubular member into a nonlinear configuration substantially identical to the nonlinear configuration of the exhaust system component;

cutting the tubular member longitudinally in half along its entire nonlinear length; and

mounting a selected longitudinal half of the tubular member in generally spaced relationship to the exhaust system component such that the opposed longitudinal half of the exhaust system component is substantially uninsulated,



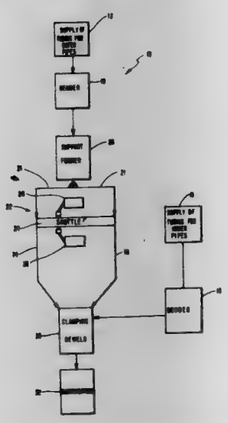
thereby achieving a directionally controlled dissipation of heat from said exhaust system component.

4,656,713

METHOD FOR FORMING AN AIR GAP PIPE

Bruno A. Ross; Jon W. Harwood; Walter G. Moring, III, all of Toledo, Ohio, and Peter L. Reuggan, Goldsboro, N.C., assignors to AP Industries, Inc., Toledo, Ohio

Filed Oct. 24, 1985, Ser. No. 790,737
The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.
Int. Cl.⁴ B21D *53/00;* **B23P** *15/26;* **F16L** *9/18*
U.S. Cl. 29—157 R **21 Claims**



1. A process for forming a nonlinear air gap pipe utilizing a programmable cutting apparatus, said process comprising the steps of:

providing supplies of inner and outer pipes with the radial dimension of each inner pipe being selected to enable the mounting of each inner pipe within a corresponding outer pipe;

bending the inner and outer pipes into similar nonlinear configurations;

sequentially mounting each respective outer pipe to a support;

moving the support into proximity to the cutting apparatus;

cutting the outer pipe substantially longitudinally in half with the cutting apparatus;

moving the longitudinally cut outer pipe away from the cutting apparatus;

separating the longitudinal halves of the cut outer pipe;

crimping the longitudinal edges of each longitudinal half of the outer pipe at selected locations;

placing the inner pipe between the cut longitudinal halves of the outer pipe;

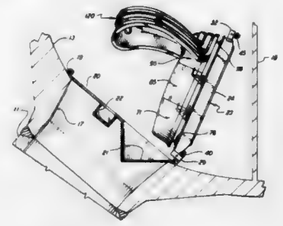
resecuring the longitudinal outer pipe halves together around the inner pipe.

4,656,714

METHOD OF INSTALLING A NOZZLE DAM ASSEMBLY

Cliff Evans, West Redding, Conn.; Alvaro Obligado, Waccabuc, and Louis J. Zezza, Ossinging, both of N.Y., assignors to Automation Industries, Inc., Darien, Conn.

Division of Ser. No. 686,686, Dec. 27, 1984. This application Jan. 27, 1986, Ser. No. 822,764
Int. Cl.⁴ B21D *53/00*
U.S. Cl. 29—157 C **5 Claims**



1. A method of installing a circular dam in a circular nozzle opening in a chamber wall about which a flange ring is affixed which comprises

(a) pivotably attaching one end of a support frame to the ring;

(b) pivoting the opposite end of the frame up and away from the ring past dead center to a substantially upright position;

(c) assembling the dam in segments on the substantially upright frame;

(d) pivoting said opposite end of the frame down and onto said ring with the dam operatively located within the nozzle; and

(e) locking said opposite end of the frame onto the ring.

4,656,715

TRANSMISSION CLUTCH HOUSING REMOVAL TOOL SET

Eusebio M. Diaz, 6450 Balboa Blvd., Van Nuys, Calif. 91406

Filed Jul. 11, 1986, Ser. No. 884,438
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—259 **7 Claims**

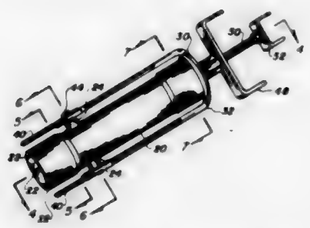
1. A transmission clutch housing removal tool for dislodging and removing a clutch housing from an automatic transmission case where said tool comprises:

(a) a tubular housing having a first and second end larger than the middle portion thereof having a plurality of slots within the first end, and a pair of opposed bosses near the first end, each having a threaded cavity therein;

(b) an expansion sleeve disposed within said housing having a first end belled outward to a diameter slightly larger than that of said housing and a second end reduced in diameter forming a hollow rod with both the inside and outside threaded;

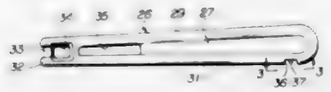
VOL 1077 ISS 2 APR 14 1987 UMI

(c) a bifurcated yoke having a top disk and a pair of downwardly extending legs each having channel guides on the ends thereof, the top disk having a stepped shoulder insertably connected to the second end of said housing also having a hole receiving the expansion sleeve rod in a slideable manner;
(d) a pair of positioning bars having slots therein juxtapositioned on said guides and fastening means, threadably connected through said slots and said guides into said bosses in the housing providing positioning means to orient the tool at right angles to the transmission components affording a rigid interface thereupon;
(e) expansion release means retainably positioned between said expansion sleeve second end and said yoke top disk in such a manner as to continually urge a separation thereof,



forcing the belled end of the sleeve away from the first end of the housing;
(f) manual sleeve compressing means having an internal threaded portion and a handle portion threadably retained on the sleeve hollow rod and interfacing with said yoke top disk, forcing the belled end of the sleeve into the slotted end of the housing increasing the outside diameter sufficiently to grasp a register on a specific transmission component when rotated thereagainst; and,
(g) a threaded shaft, having a handle, engaging the inside threads of said sleeve allowing removal of a specific transmission component when said housing is compressibly grasped thereupon by urging the component from the transmission shaft by rotation of the handle of the threaded shaft.

4,656,716
HAND TOOL FOR BENDING AND STRAIGHTENING STUDS OF BOOKBINDING STRIPS
Karl Hyunnen, Sparks, Nev., assignor to VeloBind, Inc., Sunnyvale, Calif.
Filed Sep. 16, 1985, Ser. No. 776,207
Int. Cl.⁴ B25B *27/00*
U.S. Cl. 29—270 **6 Claims**



2. A hand tool for use in binding and debinding a book of the type formed of a first strip having flexible studs upstanding therefrom at spaced intervals, said studs having points at their outer ends, sheets apertured to receive said studs, and a second strip formed with holes spaced at the same intervals as said studs to receive said studs and having an outer face formed with grooves extending longitudinally of said second strip, said tool having a handle and a distal end formed with a transverse slot of a width slightly greater than the width of said second strip, the bottom of said slot being flat, so that said tool may be positioned with said second strip received in said slot and said outer face engaging said bottom of said slot, whereby said tool may be drawn along said second strip to sequentially engage said studs and bend each said stud into a groove, said tool further having an edge formed with a second slot of the width of said second strip and a depth less than the thickness of said second strip, means in said second slot positioned to engage a point of one of said studs when said second slot straddles said second strip and said means enters a groove in said second strip and engages the point of a stud in said groove whereby pulling said tool away from said second strip said stud is at least partially straightened.

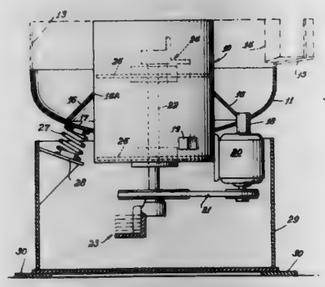
4,656,717
METHOD FOR MANUFACTURING TAPE CASSETTES USING AN OPEN-BOTTOM ASSEMBLY TRAY
Robert E. MacLeod, Jr., Kennebunkport, Mass., assignor to Shape Inc., Biddeford, Mass.
Division of Ser. No. 654,131, Sep. 25, 1984. This application Sep. 27, 1985, Ser. No. 780,995
Int. Cl.⁴ B21D *39/00*; B23P *19/00*
U.S. Cl. 29—430 **4 Claims**



1. A method of manufacturing tape cassettes on an automated assembly line, comprising the steps of:
(a) selecting an assembly tray having an open bottom, exterior gear teeth and one-piece injection-molded construction from a first stack of empty assembly trays;
(b) inserting a cassette component into the selected assembly tray;
(c) indexing the selected assembly tray along the automated assembly line using the gear teeth on the bottom of the selected assembly tray;
(d) performing a manufacturing process on the cassette component, the manufacturing process including at least one of
(di) labelling the cassette component through the open bottom of the assembly tray,
(dii) attaching a spring to a dust door, and
(diii) attaching a dust door subassembly to a cassette shell; and
(e) repeating steps (b) through (d) until the selected assembly tray is full.

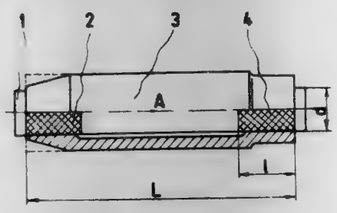
4,656,718
METHOD OF PRODUCING A FINISHING CHAMBER FOR A VIBRATORY FINISHING MACHINE
Gary L. McNeil, Allegan, Mich., assignor to Roto-Finish Company, Inc., Kalamazoo, Mich.
Filed Feb. 27, 1985, Ser. No. 706,143
Int. Cl.⁴ B21D *39/00*
U.S. Cl. 29—455 R **14 Claims**

1. The method of producing a chamber suitable for employment as the finishing chamber of a vibratory finishing machine or the like, comprising the steps of:
providing an essentially cylindrical tube adapted for employment as the center column of a finishing machine,
providing an essentially circular tank head, having a bottom and an upwardly extending outer wall and a circumference selected so as to constitute the outer circumference of the chamber desired to be produced and adapted to constitute the bottom portion of said chamber, with an essentially circular opening in the bottom thereof having a circumference corresponding to the circumference of said cylindrical tube,
providing a cone-shaped gusset with an essentially circular opening in the top thereof and a skirt outwardly and downwardly extending from said opening, said opening having a circumference corresponding to the circumference of said cylindrical tube, said gusset having an outer circumference less than the circumference of said tank head,
inserting said cylindrical tube through the essentially circular opening in said tank head,
inserting said cone-shaped gusset over said cylindrical tube



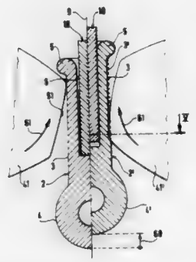
with its outer circumference within said upwardly extending outer wall of said tank head and into contact with said tank head, and with its circular opening around said cylindrical tube, and
welding said cylindrical tube to said tank head where said tube passes through the opening therein, and said cone-shaped gusset to said tube where said tube passes through the opening therein, and said cone-shaped gusset to said tank head where the outer circumference of said cone-shaped gusset contacts said tank head.

4,656,719
METHOD OF PREPARING BIMETALLIC TUBES FOR ROLL-FORMING RIBS
Janusz Przybyla, Zabkowice Bedzinskie; Zygmunt Gozdziewicz, Kedzierzyn-Kozle; Andrzej Szal, Kedzierzyn-Kozle; Ryszard Zub, Kedzierzyn-Kozle, and Andrzej Maczynski, Gliwice, all of Poland, assignors to Zaklady Urzadzen Chemicznych Metalchem, Kedzierzyn-Kozle, Poland
Filed Jun. 19, 1984, Ser. No. 622,138
Int. Cl.⁴ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—516 **2 Claims**



1. In a method of preparing bimetallic pipes for roll-forming ribs from the external surface thereof, comprising the steps of: introducing an inner pipe into an outer pipe to form a bimetallic assembly, subjecting the assembly to initial compression stresses, and then forming ribs on the outer pipe by the action of rotary roller tools, the improvements which are characterized in that, before introducing the inner pipe into the outer pipe, the external surface of the inner pipe is roughed over at two sections, one at each end, each roughened section having a length $l=(0.8-3)\,d$, where d is the outer diameter of the inner pipe, said sections being spaced from each other by a distance $L=(1.6-6)\,d$, where L is the length of outer pipe, the inner pipe is then introduced into the outer pipe so that the ends of the outer pipe are aligned with the roughened ends of the inner pipe, and then the ends of the outer pipe are clamped on the inner pipe over a distance from about 0.5–1.5 times the length of said roughened sections of the inner pipe, and simultaneously axially displacing parts of the outer pipe towards the middle of the pipe assembly, the magnitude of which corresponds to said compression stresses set up in the material of the outer pipe to enable forming said ribs.

4,656,720
METHOD OF FIXING A MALLEABLE METAL SLEEVE ON A ROD OF COMPOSITE MATERIAL
Denis Dumora, Vichy, France, assignor to Ceraver, S.A., Paris, France
Continuation of Ser. No. 579,560, Feb. 13, 1984, abandoned. This application Jan. 6, 1986, Ser. No. 817,755
Claims priority, application France, Feb. 22, 1983, 83 02853
Int. Cl.⁴ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—520 **6 Claims**



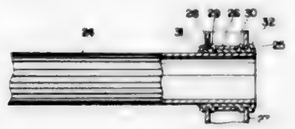
1. A method for fixing an end fitting including a sleeve of malleable metal on a composite rod of nonmetallic insulating fibers bonded by synthetic resin, the sleeve having a cylindrical bore with an inlet end, wherein the method comprises:
inserting an end of the resin-bonded fiber rod into the inlet of the malleable metal sleeve;
compressing the sleeve radially against the rod at circumferentially spaced areas in annular zones moving in continuous progression from a first location adjacent to the inlet of the sleeve to a final location substantially even with the end of the rod while permitting the sleeve to expand freely in the axial direction toward said end of the rod so as to stretch the fibers of the rod without applying substantial radial compression thereto; and
adjusting the radial compression force so as to cold flow the metal of the sleeve along and against the rod without stretching the composite material of the rod beyond its elastic strain limit.

4,656,721
APPARATUS AND METHODS FOR MAKING RAIL-TO-RUNG JOINTS FOR LADDERS AND JOINTS FOR OTHER STRUCTURAL ELEMENTS
Richard L. Werner, Sharon, Pa., assignor to R. D. Werner Co., Inc., Greenville, Pa.
Filed Nov. 19, 1984, Ser. No. 672,992
Int. Cl.⁴ B23P *11/02*
U.S. Cl. 29—523 **5 Claims**

1. The method of joining an end portion of a tubular ladder rung to a box-type ladder side rail having spaced side walls and spaced substantially aligned openings in the walls to receive an end portion of the rung therein, which method includes telescoping a malleable ferrule over an end portion of the rung, telescoping a sleeve over a mid-portion of the ferrule, provid-

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ing flanges at each of the outer ends of the ferrule adapted to engage the outer surfaces of the side walls surrounding the opposite openings in the walls, projecting the assembled ferrule, rung and sleeve through said openings, the sleeve being of substantially less length than the ferrule and abutting at least one inner wall of the rail.

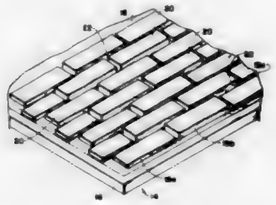


4,656,722

METHOD OF FORMING A DECORATIVE PANEL OF MOLDED PLASTIC

Larry Armstrong, P.O. Box 1148, Poteau, Okla. 74953

Continuation-in-part of Ser. No. 486,667, Jul. 25, 1983, abandoned. This application Oct. 21, 1985, Ser. No. 789,840
Int. Cl.[4] B29C *51/10, 71/00, 33/40*
U.S. Cl. 29—527.2 **6 Claims**



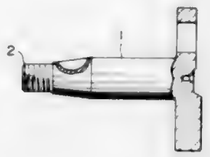
1. An improved method of forming a decorative panel of molded plastic comprising the steps of,
constructing a form having a realistically detailed surface;
covering said detailed surface with a mold release material;
applying a thin layer of gel coat over said mold release material;
applying a plurality of layers of fiberglass matte and resin over said gel coat layer;
allowing said plurality of layers of fiberglass matte and resin to harden thereby forming a mold having a female side being formed against said detailed surface and a side opposite from said female side;
removing said mold from said form;
perforating said mold with a plurality of small holes thereby providing fluid communication between said female side and said side opposite;
providing a vacuum means to said side opposite of said mold;
placing a sheet of plastic in a retention means, thereby disposing said sheet above and adjacent said female side of said mold;
locking said sheet of plastic in said retention means;
activating a heating means, thereby heating said sheet to a pliable state;
activating a ram means, thereby placing said mold in a sealed position directly adjacent the pliable sheet of plastic;
activating said vacuum means, thereby drawing said pliable sheet of plastic into said female side of said mold;
cooling said formed panel; and
unlocking said retention means and removing said formed panel from said mold;
wherein the step of constructing a form having a realistically detailed surface includes the steps of,
constructing a rectangular wooden base;
affixing shims of varying thicknesses to the wooden base; and
affixing a veneer of authentic material to each shim thereby resulting in a detailed surface duplicating an actual structure comprised of the authentic material.

4,656,723

METHOD OF FORMING SCREW THREAD ON CRANKSHAFT AND THE LIKE

Teruo Uchida, Fuchu, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed May 30, 1985, Ser. No. 739,329
Claims priority, application Japan, Jun. 11, 1984, 59-119563
Int. Cl.[4] B23P *13/04*
U.S. Cl. 29—558 **1 Claim**



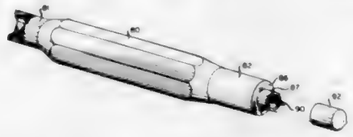
1. A method of forming a screw thread by roll threading on one portion of a crankshaft and the like requiring carburizing to be performed thereon, comprising the steps of:
preliminarily working on one portion of the shaft to provide thereto a diameter of a value greater than the value of the diameter of the one portion of the shaft before it is subjected to roll threading plus the value of the thickness of a hard, thin surface layer expected to be formed on the whole of the shaft by carburizing;
subjecting the shaft to carburizing and hardening to form a hard, thin surface layer on the whole of the shaft said hard layer having a hardness of more than about 60 H_{RC};
removing by machining the hard, thin surface layer from the one portion of the shaft to reduce the diameter of the one portion of the shaft to a level conforming to the diameter thereof before roll threading is performed; and
subjecting the one portion of the shaft from which the hard thin surface layer is removed to roll threading to provide the shaft with a threaded portion.

4,656,724

TOOL FOR THE INSTALLATION OF A COAXIAL TAP

Lev B. Furman, York, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 29, 1985, Ser. No. 792,408
Int. Cl.[4] H01R *43/00*
U.S. Cl. 29—566 **5 Claims**



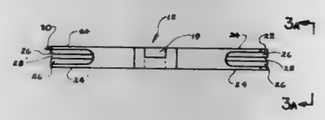
1. A tool for installing a probe assembly in a recess in a cable-engaging member, said recess having a depth stop and an aperture of rrelatively small diameter therebeyond, said tool comprising,
a body portion having a hand grippable portion and first and second ends,
said second end comprising a drill extending from the face thereof, said second end having a geometry to engage said depth stop for limiting the depth of penetration of said drill into said aperture,
said first end constructed with an exterior geometry fitting within and rotatable within said recess, said first end being hollow and having an internal geometry constructed with a shape engagable with and complementary with a corresponding shape of said probe assembly to rotate said probe assembly together with said first end.

4,656,725

CONDUCTOR INSERTION TOOL

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Jul. 10, 1985, Ser. No. 753,724
Int. Cl.[4] B23P *23/00*
U.S. Cl. 29—566.4 **14 Claims**



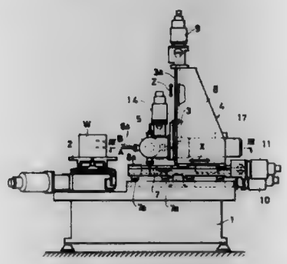
11. In a wire installation tool of the type having a handle and a stem, the stem having first and second ends and extending from the handle, an improved stem comprising:
a body portion, said body being adapted for installation in the handle;
at least one blade means, said blade means being integral with said body portion and comprising:
a pair of parallel spatially displaced flange members, said blade means flange members having width substantially equal to the width of said body portion; and
a web member on each of said flange members, said web members having faces parallel to each other and being spatially displaced at opposed locations on said flange members to define a longitudinal slot between said web members, said web members being generally transverse to said flange members to define a generally U-shaped channel at either side of said web members, said U-shaped channel communicating through said longitudinal slot.

4,656,726

DRILLING MACHINE TOOL

Mitsuo Suzuki, Kikyomachi; Hitoshi Hashimoto, Iruma; Nobuyasu Ichikawa, Kawagoe; Ichiko Yamada, Niiza; Akira Ozawa, Sayama, and Taizo Matsuyama, Seikimachi Kita, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1984, Ser. No. 682,212
Claims priority, application Japan, Dec. 16, 1983, 58-236326; May 14, 1984, 59-94538; May 14, 1984, 59-94539
Int. Cl.[4] B23Q *3/157*
U.S. Cl. 29—568 **3 Claims**



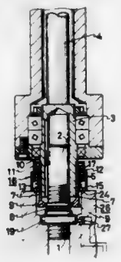
1. A drilling machine tool having a machine tool body with a movable frame which is movable in the three axial directions X, Y, and Z, of a rectangular coordinate system comprising:
a working head provided on said movable frame, said head having at least one drilling spindle thereon, wherein said X direction is the direction in which said movable frame advances to and retreats from a workpiece at the general level of the workpiece, said Y direction is perpendicular to the X direction and said Z direction is generally up and down and is perpendicular to both said X and Y directions;
X, Y and Z shafts corresponding to X, Y and Z directions, respectively, each shaft operatively connected with said movable frame for moving said frame in the X, Y and Z directions;
a plurality of driving sources, one each corresponding with each of said shafts and operatively connected thereto for driving said shafts;
wherein said frame is movable such that said spindle is operable when inclined with respect to the X axis as well as when said spindle is parallel to the X axis, and said frame is driven along the axis centerline of said spindle, even when said spindle is inclined with respect to the X axis, in response to said driving sources; and
wherein said working head includes,
a turret head having a plurality of spindles on the outer periphery thereof,
an index shaft at right angles to said X axis and coaxially connected to said turret, and
a head holder attached to said movable frame for supporting said turret head, such that the working head is adjustable to any desired angular position about said index shaft.

4,656,727

TOOL MOUNTING AND DEMOUNTING DEVICE FOR CHANGING TOOLS OF A DRILLING MACHINE

Kinio Itoh, Kawasaki, Japan, assignor to Kabushiki Kaisha Ito Seisakusho, Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 647,647
Int. Cl.[4] B23Q *3/155*
U.S. Cl. 29—568 **2 Claims**



1. A tool mounting and demounting assembly for a drilling machine, said assembly comprising:
a drill shaft rotatable about, and movable along, a first axis;
a tool holder having a longitudinal second axis;
cylinder support means fixed to to one end of said drill shaft and having a bore and means for non-rotatably supporting said tool holder in said bore with said second axis aligned with said first axis;
means for releasably securing said tool holder in said cylindrical support means, said releasably securing means comprising means forming a groove on said tool holder, said groove extending transverse to said second axis, and at least one tongue having one end fixed to said cylindrical support means and a second end forming a hook movable in a radial direction to a first position, said hook being inserted in said groove when said hook is in said first

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position and when said tool holder is fully inserted in said bore;

means for stationarily supporting said tool holder with said second axis aligned with said first axis, said stationarily supporting means comprising a support body having a surface transverse to said first axis, a hole in said support body, said hole having a third axis coaxial with said first axis, and means in said hole for supporting said tool holder with said first, second and third axes in alignment;

means for releasably locking said tool holder in said means for stationarily supporting said tool holder, comprising a piston in said support body movable into locking engagement with a collar of said tool holder; and

means for releasing said means for releasably securing said tool holder in said cylinderical support means in response to movement of said drill shaft along said first axis to a position wherein a tool holder supported by said means for stationarily supporting said tool holder is at least partially inserted in said bore of said cylindrical support means, wherein said releasing means comprises a collar slidably mounted on said cylindrical support means, said collar including an inner wall slidable along said at least one tongue for pressing said hook into said first position, and a bottom; means for biasing said collar for movement in a direction from said one end of said at least one tongue toward said hook; and stop means on said at least one tongue adjacent said hook, said stop means being positoned such that said collar presses said hook into said first positoin when said collar is stopped by said stop means, and such that said collar bottom engages said transverse surface of said support body of said means for stationarily supporting said tool holder when said tool holder is at least partially inserted in said cylindrical support means bore, whereby further movement of said drill shaft toward said means for stationarily supporting said tool holder causes said collar to be lifted from said stop means to release said hook from said first position.

4,656,728

TOOL STORING AND FEEDING APPARATUS

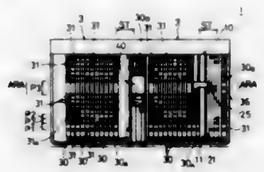
Hideki Saeki, and Isao Kanematsu, both of Inuyama, Japan, assignors to Yamazaki Machinery Works, Ltd., Niwa, Japan

Filed Aug. 6, 1985, Ser. No. 762,835

Claims priority, application Japan, Aug. 9, 1984, 59-167055; Aug. 14, 1984, 59-169843; Aug. 17, 1984, 59-171124; Aug. 21, 1984, 59-173873

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **7 Claims**



1. A tool storing and feeding apparatus comprising:

a frame defining a first plane having perpendicular longitudinal and latitudinal axes;

a plurality of tool racks located within said frame, each tool rack being longer along the longitudinal axis than along the latitudinal axis, said tool racks being mounted so as to be movable along the latitudinal axis and so as to define a predetermined space between two adjacent tool racks, each said tool rack having a plurality of longitudinally arranged tool pockets for storing tools therein, each tool having a tool holder associated therewith;

moving means, connected to said frame, for moving said tool racks within said frame;

an intermediate feed pocket, located within a tool rack, for temporarily holding a tool delivered thereto so that it is available for use by a machining apparatus; and

delivering and feeding means, connected to said frame and movesble in a second plane parallel to said first plane, for delivering and feeding tools to said intermediate pocket from said tool pockets, the delivering and feeding including the steps of gripping a tool by its tool holder while the tool is in its tool pocket, removing the tool from the tool pocket, and delivering and feeding the removed tool to said intermediate feed pocket.

4,656,729

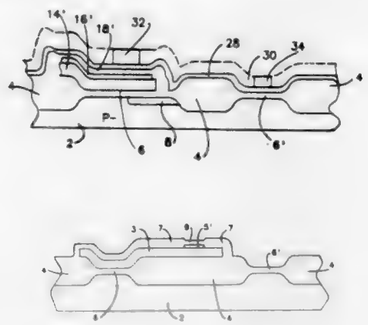
DUAL ELECTRON INJECTION STRUCTURE AND PROCESS WITH SELF-LIMITING OXIDATION BARRIER

Charles T. Kroll, Jr., Raleigh, and Geoffrey B. Stephens, Cary, both of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 25, 1985, Ser. No. 715,318

Int. Cl.⁴ H01L *21/04*

U.S. Cl. 29—571 **11 Claims**



1. A method for incorporating a non-continuous DEIS structure between multiple layers of polysilicon in an array of devices on an integrated circuit substrate comprising the following steps:

(a) fabricating at least one thin oxide region surrounded by thick oxide regions on a silicon substrate;

(b) depositing a first polysilicon gate interconnect layer on the substrate;

(c) depositing a layer of silicon rich nitride on said polysilicon gate interconnect layer;

(d) patterning a first photoresist mask on the silicon rich nitride layer with said photoresist mask defining a profile for the silicon rich nitride;

(e) etching the uncovered areas of the silicon rich nitride;

(f) patterning a second mask on the first polysilicon gate interconnect layer with said second mask defining a profile for the first polysilicon gate interconnect layer;

(g) etching the uncovered areas of the first polysilicon gate interconnect layer;

(h) etching back the thin oxide region in step (a) to the silicon substrate;

(i) growing an oxide layer of sufficient thickness on the silicon rich nitride, the first polysilicon gate interconnect layer and oxidizing the silicon substrate of step (h);

(j) depositing a layer of silicon rich oxide on the oxide layer of step (i);

(k) depositing a second polysilicon layer on the silicon rich oxide of step (j); and

(l) patterning the second polysilicon layer of step (k) to form at least one gate electrode.

6. A method for fabricating an improved semi-conductor module comprising the steps of:

(a) providing a silicon substrate having at least one thin oxide region thereon;

(b) depositing a first polysilicon gate interconnecting layer on the substrate;

(c) depositing a silicon rich nitride (SRN) layer on the first polysilicon gate interconnecting layer;

(d) depositing a silicon dioxide (SiO_2) layer on the SRN layer;

(e) masking the SiO_2 layer;

(f) etching the unmasked section of the SRN layer, the SiO_2 layer and the unmasked section of first polysilicon gate layer;

(g) etching back the thin oxide region of step (a) to the silicon substrate;

(h) stripping the mask in step (e);

(i) thermally oxidizing the module;

(j) depositing a layer of silicon rich oxide on the SiO_2 layer of step (d);

(k) depositing a second polysilicon gate interconnecting layer on the silicon rich oxide layer in step (j); and

(l) generating gate electrode and poly 2 devices in said interconnecting layer of step (k).

4,656,730

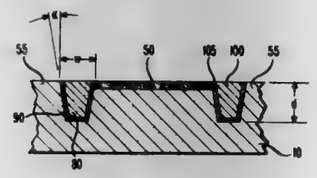
METHOD FOR FABRICATING CMOS DEVICES

William T. Lynch, Summit, and Louis C. Parrillo, Warren, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 23, 1984, Ser. No. 674,274

Int. Cl.⁴ H01L *21/38, 21/461*

U.S. Cl. 29—571 **11 Claims**



1. A method for fabricating a device, comprising the steps of:

incorporating diffusant comprising a dopant into a substrate which includes substrate material and a surface, said dopant being incorporated into a region of said surface;

diffusig said dopant into a portion of said substrate; and

completing the fabrication of said device, wherein

said method further comprises the steps of forming a trench in said surface, partially or completely encircling said region, prior to said diffusing step, and

at least partially filling said trench with a filler material, said filler material being chosen so that the ratio of the thermal expansion coefficient of the filler material to the thermal expansion coefficient of the substrate material is less than about three.

4,656,731

METHOD FOR FABRICATING STACKED CMOS TRANSISTORS WITH A SELF-ALIGNED SILICIDE PROCESS

Hon W. Lam, Dallas, and Ravishankar Sundaresan, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 5, 1985, Ser. No. 762,657

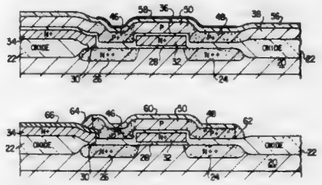
Int. Cl.⁴ H01L *21/88, 29/78, 27/02*

U.S. Cl. 29—576 J **11 Claims**

1. The method for forming a vertically integrated integrated semiconductor device, comprising:

(a) forming a first layer of transistors of a first conductivity type and associated polycrystalline silicon interconnects in accordance with a predetermined first layer pattern on a semiconductor substrate, each of the transistors in the first layer having a source, drain and gate;

(b) forming a second layer of transistors of a second conductivity type opposite the first conductivity type, each of the second layer transistors having a source, drain and channel region formed in the second layer over selected ones of the first layer transistors in a stacked configuration, the gates of the associated first layer transistors being common to the associated second layer transistors;



(c) encapsulating the second layer transistors;

(d) exposing select portions of the polycrystalline silicon interconnects and silicon in the first layer; and

(e) then forming titanium di-silicide with the exposed silicon on the exposed polycrystalline silicon and silicon in the first layer to increase the conductivity thereof, the encapsulated second layer transistors being protected from having titanium di-silicide formed thereon by the encapsulation thereof during titanium di-silicide formation.

4,656,732

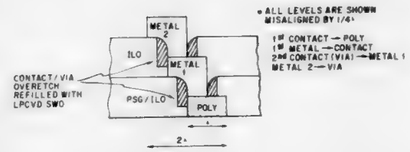
INTEGRATED CIRCUIT FABRICATION PROCESS

Clarence W. Teng, Plano, and Roger A. Haken, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 26, 1984, Ser. No. 654,998

Int. Cl.⁴ H01L *21/283*

U.S. Cl. 29—591 **8 Claims**



1. A process for fabricating integrated circuits, comprising the steps of:

providing a substrate having semiconductor active device regions near the surface thereof;

providing an insulating layer above predetermined portions of said active device regions;

defining a first metal interconnect layer which interconnects predetermined portions of said active device regions to configure a predetermined circuit function;

providing an interlevel dielectric above said first metal interconnect layer, and anisotropically etching said interlevel dielectric to expose said first metal interconnect layer at predetermined via locations;

conformally depositing an additional layerof insulating material, and anisotropically etching said additional layer of insulating material to remove it from exposed flat surfaces, whereby said exposed via locations are narrowed at the periphery thereof by remaining portions of said additional layer of insulating material; and

depositing, patterning, and etching an additional layer of

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conductive material, to interconnect said via areas in a predetermined pattern;

wherein said first metal interconnect layer is defined to be no wider under at least some locations where said interlevel dielectric is etched than the minimum width of said first metal interconnect layer elsewhere.

4,656,733

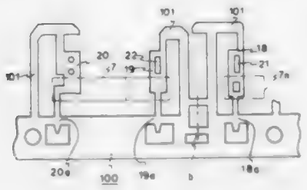
METHOD OF MANUFACTURE OF BASE ASSEMBLY FOR AN ELECTROMAGNETIC RELAY

Kozo Maeniwi; Keiji Gouma, both of Nagaokakyo; Takeso Sano, Shiga; Toshiki Tanaka, Ohtsu, and Shigenobu Sato, Ohmi-Hachiman, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Division of Ser. No. 772,026, Sep. 3, 1985. This application Mar. 11, 1986, Ser. No. 838,521

Int. Cl.[4] H01H *11/06*

U.S. Cl. 29—602 R **4 Claims**



1. A method of forming a base assembly for an electromagnetic relay, comprising the steps, in the specified order, of:

(a) forming from a metal plate a lead frame with, connected thereto by connecting portions: a fixed terminal member for, when said relay is assembled, supporting in a cantilever fashion a movable contact support member by its one end; a first fixed contact support member, adjacent on said lead frame to said fixed terminal member, for, when said relay is assembled, supporting a first fixed contact for cooperating with a movable contact fixed to the free end of said movable contact support member; and a second fixed contact support member, for, when said relay is assembled, supporting a second fixed contact for cooperating with said movable contact fixed to said free end of said movable contact support member;

(b) insert molding said fixed terminal member and said first fixed contact support member to said base assembly, and forming an arc barrier wall on said base assembly;

(c) cutting away some of the connecting portions which support said second fixed contact support member;

(d) bending back, along a line on a non cut away one of said connecting portions, said second fixed contact support member, so that it opposes said first fixed contact support member;

(e) fixing said second fixed contact support member to said base assembly; and

(f) cutting free said second fixed contact support member.

4,656,734

APPARATUS FOR REPLACEMENT OF GUIDE PINS OF A GUIDING TUBE FORMING PART OF THE TOP INTERNAL EQUIPMENT OF A PRESSURISED WATER NUCLEAR REACTOR

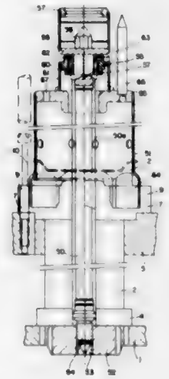
Pierre Styskal, Thoiras, and Laurent Guichard, Villeurbanne, both of France, assignors to Framatome & Cie., Courbevoie, France

Division of Ser. No. 509,116, Jun. 29, 1983, Pat. No. 4,585,613. This application Jun. 6, 1985, Ser. No. 741,916

Claims priority, application France, Aug. 6, 1982, 82 13751

Int. Cl.[4] B23P *19/00, 17/00*; G21C *19/00*

U.S. Cl. 29—723 **6 Claims**



1. Apparatus for replacement of the guide pins (3) of a guiding tube (2) forming part of the top internal equipment of a pressurized water nuclear reactor, comprising:

(a) means for fastening two parts of said guiding tube, comprising a rod (50) of great length and two end members (51, 52), of which at least one (52) is removable and which are movable in the axial direction relative to one another by rotationally operating said rod (50);

(b) a device for the vertical displacement of tools, adapted to be operated manually from a distance and detachably supported on said guiding tube fastening means;

(c) a screwing and unscrewing tool adapted to be operated from a distance and detachably supported on said device for the vertical displacement of tools;

(d) a manually operated extraction and thrust device mounted detachably on said guiding tube fastening means;

(e) a dry treatment station adapted to receive said guiding tube and having a radiation insulating wall; and

(f) a crimping tool mounted detachably on said device for the vertical displacement of tools and comprising a head adapted to be accurately oriented and to be operated from a distance.

4,656,735

PROCESS FOR PRODUCING AN ELECTROLYTE RETAINING MATRIX OF ELECTRICAL INSULATING LONG FIBERS

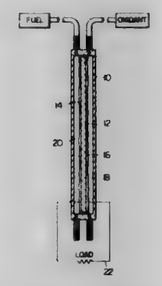
Hideo Okada, Hitachi; Masuto Takeuchi, Katsuta; Sigeru Okabe, Hitachi; Hiroshi Tobita, Kitaibaraki; Shimpei Matsuda, Tonkai; Kohki Tamura, and Fumito Nakajima, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 767,702, Aug. 22, 1985, which is a continuation of Ser. No. 379,915, May 19, 1982, abandoned. This application Apr. 23, 1986, Ser. No. 855,103

Claims priority, application Japan, May 20, 1981, 56-75026

Int. Cl.[4] H01M *2/14*

U.S. Cl. 29—623.1 **14 Claims**



1. A process for producing an electrolyte retaining matrix which comprises:

contacting a self-supporting alumina felt or plate, made of alumina long fibers that have been interlocked with each other, with a lithium salt;

heating the alumina felt or plate in contact with the lithium salt to form a lithium aluminate matrix by the reaction of alumina with the lithium salt; and

impregnating the lithium aluminate matrix with an alkali carbonate electrolyte to fill spaces in the matrix.

4,656,736

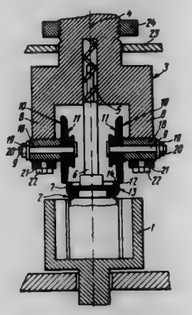
APPARATUS FOR SEALING A CYLINDRICAL STORAGE CELL

Nikolai N. Volkhin; Vladimir P. Ardabatsky, both of Leningrad; Boris A. Dulya, Smolensk; Vitaly P. Zhuravlev, Smolensk, and Alexandr V. Stepanov, Smolensk, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky I Tekhnologichesky Akkumulyatorny Institut, Lenigrad, U.S.S.R.

Filed Jan. 8, 1986, Ser. No. 817,078

Int. Cl.[4] H01M *6/00*; B23P *19/00*

U.S. Cl. 29—730 **4 Claims**



1. An apparatus for sealing a cylindrical storage cell having a cover cap and a housing with a portion thereof to be rolled-in comprising:

a first holder having a first and second end faces, a longitudinal axis, a passage extending along said longitudinal axis, and a wall, this holder being capable of travelling along said longitudinal axis;

a spring accommodated inside said passage of said first holder;

a rod for orienting said cover cap of said cylindrical storage cell perpendicularly to said longitudinal axis of said first holder, said rod having a longitudinal axis which coincides with said longitudinal axis of said first holder, said rod being secured inside said passage of said first holder to move along its longitudinal axis by means of said spring;

a second holder capable of rotation and accommodating said cylindrical storage cell;

a means for rolling-in said housing of said cylindrical storage cell and having;

first and second shafts having longitudinal axes and secured coaxially in said wall of said first holder;

first and second seaming rollers each having a working surface facing said portion of the housing to be subjected to the rolling-in operation, these rollers being mounted on said first and second shafts to rotate from said cylindrical housing as said working surfaces are brought into contact with said portion of the cylindrical housing to be subjected to rolling-in;

first and second elements for adjusting the distance between said seaming rollers mechanically connected to said first and second shafts and to said first and second seaming rollers;

first and second stop means for limiting the movement of said seaming rollers mechanically connected respectively to the first and second elements for adjusting the distance between said rollers.

4,656,737

FILM LOADING APPARATUS

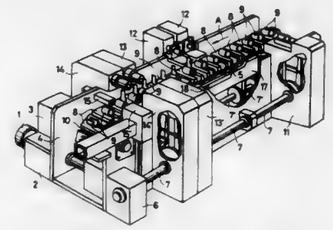
Shigehisa Shimizu; Chiaki Suzuki; Kazumasa Harada, and Tomohisa Maeda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 576,649, Feb. 3, 1984, Pat. No. 4,614,019. This application Apr. 24, 1986, Ser. No. 855,262

Claims priority, application Japan, Feb. 3, 1983, 58-16640/83

Int. Cl.[4] B23P *19/00*

U.S. Cl. 29—806 **3 Claims**



1. A film loading apparatus in which a film cartridge is formed by assembling caps, a spool and a shell plate supplied individually, comprising:

(a) a plurality of intermittently moving pallets, each having a shell plate chuck which is open for receiving said shell plate;

(b) means for making each said shell plate chuck half open and then closed while each said shell plate chuck is holding a shell plate;

(c) a plurality of winding stations, each comprising a mechanism which is movable towards each intermittently mov-

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ing pallet, said mechanism comprising means for holding said spool, means for winding film on said spool thus held, and means for supplying said spool on which said film has been wound to said shell plate while said shell plate is half open; and

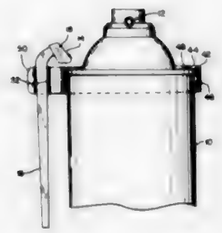
(d) a capping unit.

4,656,738

RAZOR HOLDING MEANS FOR SHAVING CREAM CANS

Allan J. Corah, 6812 N. Willamette Blvd., Portland, Oreg. 97203

Filed Aug. 1, 1985, Ser. No. 761,155
Int. Cl.⁴ B26B *21/44*
U.S. Cl. 30—41 **2 Claims**



1. A safety razor supporting device arranged for use with a shaving cream can and a safety razor having a handle and a blade carrying head, said device comprising

a circular open center band having a flat top wall portion and an outer depending flange on said top wall portion,

said band being arranged to be removably fitted on an upper portion of a shaving cream can with said top wall portion lying on a top edge of the can and said flange extending in snug relation down on the can and with a nozzle dispensing portion of the can projecting therethrough;

recess means formed in said band dimensioned and arranged removably to receive a portion of a safety razor therein for supporting a razor on the band when the razor is not in use but to allow ready release from the band when the razor is to be used,

said recess means comprising a pair of projections extending outwardly from said depending flange and forming an upright slot therebetween for frictionally receiving the handle of a safety razor therein for removably supporting the razor on a shaving cream can;

and an upright web portion between said projections intermediate the ends thereof for selectively spacing the head of the razor outwardly from a shaving cream can on which the razor is mounted.

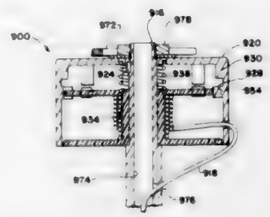
4,656,739

BUMP-FEED FILAMENT VEGETATION TRIMMER

Charles B. Pittinger, Jr., 320 Cockeys Mill Rd., Reisterstown, Md. 21136

Division of Ser. No. 713,147, Aug. 10, 1976, abandoned. This application Jul. 10, 1985, Ser. No. 753,409
Int. Cl.⁴ A01D *50/00*
U.S. Cl. 30—276 **7 Claims**

1. In a filament trimmer mechanism for cutting materials including ground-growing vegetation by swinging a filament free-end as a cutting length, means for storing filament for resupplying said cutting length, and means for deploying in succession lengths from the storing means for said resupplying, the improvement comprising: the means for deploying including means responsive to impulse actuation for feeding predetermined lengths of filament, means for securing filament following said feeding, the means responsive including first means, second means, one of said first and second means including said means for storing, the other of said first and second means including means for guiding, means for positioning the first means and the second means movably relative to each other for responding to said impulse actuation, the means for positioning including a driveshaft, the first means including means for guiding a said cutting length of filament, the first means having slidable coupling for rotation with the driveshaft, the second means including said means for storing, the first means movable along the driveshaft from a first position to a second position, the means for deploying comprising means



permitting rotation of the second means at said first position, the means for securing comprising means preventing rotation of the second means at said second position, means for biasing the first means toward the second position, the driveshaft being hollow and having an upper end and a lower end, the first means and the second means being toward the upper end of the driveshaft, and means providing for a said filament to extend from the second means and the guiding means through at least a portion of the driveshaft for deployment therefrom as a cutting length.

4,656,740

FOUR PRONGED CARVING-FORK HAVING TWO PAIRS OF SPACED PARALLEL PRONGS

Francesco P. Giannitrapani, Via Castiglione d'Orcia, 24-Roma, Italy

Filed Jul. 18, 1985, Ser. No. 756,266
Claims priority, application Italy, Feb. 3, 1984, 35560/84[U]
Int. Cl.⁴ A47J *43/28*
U.S. Cl. 30—322 **6 Claims**



1. A carving-fork, comprising two curved metal bodies, each comprising a pair of substantially parallel prongs provided with sharped edges and tips, said prongs defining a front pair of prongs and a back pair of prongs;

an upper junction for connecting the two pairs of prongs to one another;

a single shank, the free end of which is connected to the upper junction so as to form an acute angle therebetween thereby interconnecting the two pairs of prongs with said single shank, and the other end of the shank of the carving-fork being connected to a handle;

said shank and handle defining a longitudinal axis;

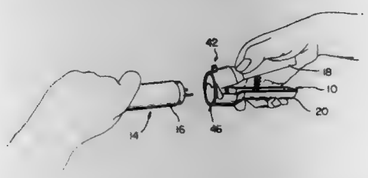
wherein the two pairs of prongs face one another and are spaced apart from one another while the facing surfaces of the prongs are concave with respect to one another, with the upper junctions thereof converging to support said prongs, so that the tips of the prongs are substantially parallel to one another and are placed at the corners of a parallelepiped having a roughly rectangular cross-section, while the tips of said prongs lie in a transverse plane forming an angle of less than 90° with respect to the axis of the shank and handle and wherein the tips of the front prongs lie in a first longitudinal plane which is parallel with and spaced at a distance from the longitudinal axis of the shank and handle and the tips of the back prongs lie in a second longitudinal plane which is parallel with and spaced at a distance from the longitudinal axis in a direction which is opposite to the direction in which said first plane is spaced from said longitudinal axis.

4,656,741

HAND HELD AND HAND OPERATED TOOL FOR CONTROLLABLY PUNCHING A SMALL AIR INTAKE HOLE IN A BURNED OUT REMOVED FLUORESCENT LIGHTING TUBE

Richard P. Couture, 1715 S. Washington, Tacoma, Wash. 98405

Filed Oct. 10, 1985, Ser. No. 786,300
Int. Cl.⁴ B26F *1/36*
U.S. Cl. 30—363 **8 Claims**



1. A hand held and hand operated tool for controllably equalizing the inside and outside air pressures of a burned out fluorescent lighting tube, before this tube is subsequently broken up for more convenient disposal, by controllably piercing the glass tube with a pin unit, to create a small air intake hole, vent, or orifice passageway, comprising:

(a) a pair of lever portions, each one of the lever portions having:

(1) a leading hollow entry semicircular housing end to internally receiver one half of the volume of an end of a fluorescent lighting tube;

(2) a trailing hand grippable end;

(3) two alike hinge forming portions diametrically spaced at the start of the leading hollow entry semicircular housing end, at the circumference thereof, and remaining completely clear of any entry of an end of a fluorescent lighting tube;

(4) an internal abutment within the leading hollow entry semicircular housing end, to stop the entry of a cylindrical end of a fluorescent lighting tube within this tool, to thereby position a starting glass portion of a fluorescent lighting tube spaced just inside the start of the leading hollow entry semicircular housing and spaced just beyond the two alike hinge forming portions;

(5) a spring end positioning receiver on the trailing hand grippable end;

(b) a spring extending between the spring end positioning receivers to hold the trailing hand grippable ends a diagonal distance apart, until lever portions are moved completely together;

(c) a glass piercing pin unit located in one lever portion of the pair of lever portions, between the hinge forming portions and the internal abutment, so the glass piercing unit is positioned at a starting glass portion of a fluorescent lighting tube;

whereby as the hand held and hand operated tool is axially slipped over an end of a burned out fluorescent lighting tube, using one hand to manipulate this tool and the other hand to hold this tube, as opposing hand forces are axially created, and,

then pivotally closing this tool, using the one hand manipulating this tool to pivotally move together, the respective leading hollow entry semicircular housing ends, to thereby completely enclose an end of this tube, and

in so doing this pivotal closing of the tool, a glass piercing pin unit will be forming and completing the small air intake passageway, and

thereafter the outside and inside tube air pressures become the same, and

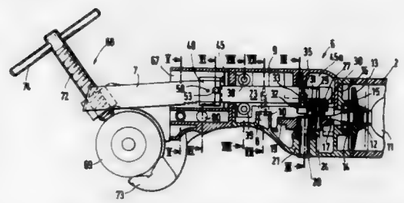
then, when a burned out fluorescent lighting tube has such equal pressures, there will not be any explosive scattering of glass particles and/or phosphorus powders, when this tube is intentionally broken into several pieces for convenient disposal.

4,656,742

PORTABLE COMPASS SAW

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to REMS-WERK Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Aug. 1, 1985, Ser. No. 761,601
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1984, 3428445
Int. Cl.⁴ B23D *47/06*
U.S. Cl. 30—372 **19 Claims**



1. A portable compass saw having a housing in which are accommodated a drive motor and an oscillation drive for a push rod to which a saw blade can be attached; the push rod being supported in said housing; the improvement therewith which comprises:

a push rod having an angular cross-section;

guide means for guiding part of the length of all sides of said push rod in said housing; said guide means including, on two opposite sides of said push rod, guide surfaces formed by parts of said housing; said guide means further including, in each of the other two sides of said push rod, at least one roller bearing, each of which extends at right angles to the stroke direction; said guide means also including at least one pressure member which acts on said push rod in the vicinity of, and on that side of said push rod opposite from, said oscillation drive; said pressure member loads said push rod in the direction toward said oscillation drive; and

a clamping device for holding a workpiece which is to be sawed; said housing having a through hole in the region below said push rod; said through hole receiving a connection member of said clamping device for effecting connection of the latter to said housing;

said clamping device including means for receiving said workpiece, said means being defined by a partially circular bracket having two ends, one of which is provided with clamping jaw means, and the other of which is provided with a clamping spindle for securely holding said workpiece in said bracket.

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4,656,743

ARRANGEMENT FOR DETERMINING THE POSITION OF A HOLLOW SECTION SYSTEM WHICH IS PRESSED FORWARD

Heinz Thiemann, Bardowick; Bernd Schwarz, Hamburg, and Dieter Langhans, Appen-Unterglinde, all of Fed. Rep. of Germany, assignors to Ed. Züblin Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

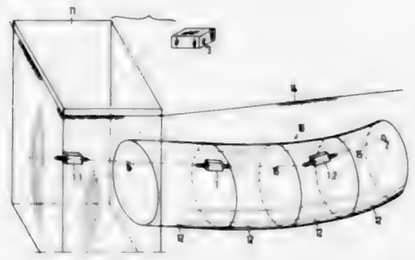
Filed Mar. 8, 1985, Ser. No. 709,524

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1984, 3408437

The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.

Int. Cl.⁴ G01B *11/27*

U.S. Cl. 33—1 H **19 Claims**



1. An arrangement for determining the position of a hollow section system which is pressed forward as a hollow profile strand in which sequentially in definite space intervals there are provided fixedly arranged measuring points of which positions respectively are ascertainable and detectible; said arrangement utilizes measuring apparatus disposed one after the other as spaced along a polygon course with known separations along the hollow profile strand as an instrumentally technical unit in said hollow section system whereby a first measuring apparatus in the polygon course is arranged with a definite orientation of a coordinate system thereof, and including at least one self-illuminating measuring point; the improvement in combination therewith wherein:

each of said measuring apparatus comprises at least one light source operable to send out parallel light bundles in opposite directions with a common optical axis for marking a position, at least one position detector that measures spatial angle of incidence of the parallel light bundles as to adjoining measuring apparatus, each position detector being arranged sequentially in series with the hollow profile strand and including evaluation means connected therewith and an optical system to detect light emitted from the respectively adjoining measuring apparatus; said measuring apparatus being disposed in such a way that there takes place a projection of said light source of each of said measuring apparatus onto said position detector of the respectively adjacent measuring apparatus and deflecting rays upon the respective position detector; said measuring apparatus one after another being coupled with one another both to transmit as well as to receive measuring data signals present at said position detectors with respect to the evaluation means.

4,656,744

SCRIBING TOOL FOR WALL PANELS AND THE LIKE

Henry P. Decker, 2233 S. Alton Way, Denver, Colo. 80231

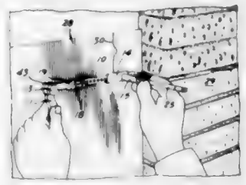
Filed Jan. 29, 1985, Ser. No. 696,251

Int. Cl.⁴ B43L *13/02*

U.S. Cl. 33—41.5 **12 Claims**

1. A tool for marking irregular lines on wall panels, sheets and the like to follow the contour of brick, stone or other irregular wall features, which comprises:

an elongated relatively flat member having a row of spaced holes extending longitudinally thereof and having a rounded point at one end for engaging an irregular wall surface, a second member slidably mounted on said elongated member and having an elongated guide for a marking device secured thereto and extending normal to and away from said row of holes, said guide having an end closure portion positioned adjacent said elongated member and having a central hole therein located for alignment with any selected one of the holes in said row, whereby a marking device when positioned in said guide and extending through said central hole and a selected hole of the row of holes and, when engaging the perimeters of both holes, locks said second member in its marking position.



4,656,745

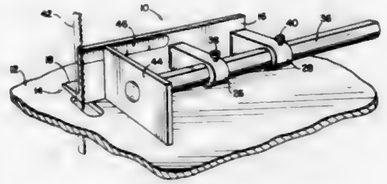
CENTERING DEVICE AND METHOD

William J. Griffin, P.O. Box 26, Walker Springs, Ala. 36586

Division of Ser. No. 699,439, Feb. 7, 1985. This application Apr. 2, 1986, Ser. No. 847,217

Int. Cl.⁴ B27C *1/12*; B27M *1/00*

U.S. Cl. 33—626 **3 Claims**



1. A method for locating the center of at least one end of a piece of wood lathe stock which comprises:

(a) positioning a piece of wood stock on a saw table having a centering device mounted thereon, said centering device including a stop member formed of longitudinally extending horizontal and vertical planar portions attached along respective longitudinal edges at right angles to form an L-shaped cross-section, an adjustable fence including a rod member having a generally rectangular plate mounted at one end thereof, and means for mounting said rod member on the stop member to permit sliding movement of said fence relative to the stop member in a direction parallel to the longitudinal axis of the stop member;

(b) adjusting the fence so that the distance between the saw blade and the plate is equal to one-half the thickness of the wood stock;

(c) applying the saw blade to one end of the wood stock to make a first cut with the wood stock having one side portion in contiguous relation with said plate;

(d) rotating the wood stock 180 degrees about the longitudinal axis thereof;

(e) applying the saw blade to said one end of the wood stock to make a second cut, thus providing a slot having a thickness equal to twice the slot width cut by the saw blade; and

(f) carrying out a further sequence of steps (c), (d) and (e) with the wood stock initially rotated 90 degrees from the position at which the first cut was made, thus providing a pair of slots which intersect at the center of said one end of the wood stock.

4,656,746

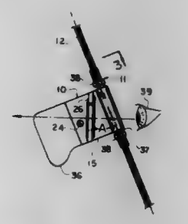
BOWSTRING-MOUNTED AIMING SIGHT

Mark E. Gillespie, Box 74 Allen Fork Route, Sissonville, W. Va. 25320

Filed Apr. 14, 1986, Ser. No. 851,541

Int. Cl.⁴ F41B *5/00*

U.S. Cl. 33—265 **10 Claims**



1. A bowstring-mounted aiming sight device comprising:

(a) a sight body assembly comprised of:

(1) a bifurcated rigid frame having upper, lower, front and rear extremities, and facing side panels having interior and exterior surfaces, said rear extremity having a circular cylindrical channel extending between said upper and lower extremities, said interior surfaces being flat and in parallel juxtaposition, and at least one flat sighting panel extending outwardly from the exterior surface of a side panel, said sighting panel having a peep aperture,

(2) a weighted counterbalance positioned between said side panels and extending forwardly of said front extremities, and

(3) joining means extending in operative engagement between said opposed side panels and through said counterbalance, and

(b) positioning means comprised of a pivot surface which engages said channel, and upper and lower retaining shoulders which maintain the sight body assembly upon the pivot surface while permitting rotative movement thereabout.

4,656,747

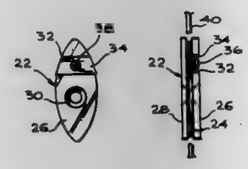
ARCHERY BOWSTRING PEEP SIGHT

Vincent F. Troncoso, 14090-6100 Rd., Montrose, Colo. 81401

Filed Oct. 24, 1985, Ser. No. 790,894

Int. Cl.⁴ F41G *1/46*

U.S. Cl. 33—265 **3 Claims**



1. An improved archery bowstring peep sight, said sight comprising, in combination:

a. a generally oval peep sight body having a peripheral bowstring groove therearound, a tapered peep opening extending through said body substantially perpendicular to the plane of said groove and a transverse cutaway portion spanning said peep sight body and exposing said groove; and,

b. a movable connector comprising a pressure plate spanning said peep sight body in said cutaway portion and in contact with said groove, and securing means releasably securing said plate to said body in said cutaway portion for bearing against a bowstring when said bowstring is in said groove to releasably lock said peep sight to said bowstring.

4,656,748

SUNDIAL ARRANGEMENT

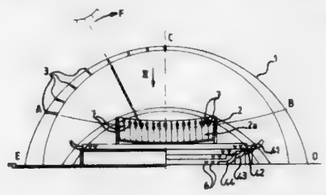
Jacques G. Thual, 43 avenue Foch, 75116 Paris, France

Filed Feb. 20, 1986, Ser. No. 831,482

Claims priority, application France, Feb. 28, 1985, 85 02946

Int. Cl.⁴ G04B *49/04*; G01C *21/02*

U.S. Cl. 33—270 **14 Claims**



1. A sundial arrangement, comprising a screen portion provided with several slits allowing the passage of a narrow beam of solar rays and angularly spaced from one another so as to be successively traversed by the beam of solar rays;

a dial with several hour graduations;

container means visible from the outside and representing a predetermined elapsed duration when filled up with a liquid;

liquid discharge means for filling said container means at a predetermined rate; and

a control device for bringing said liquid discharge means into operation every time a slit is traversed by the beam of solar rays at a substantially precise hour, the beam addressing an hour graduation of said dial.

4,656,749

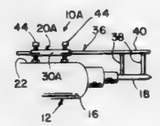
HAND DRILL LEVEL

Donnie L. Ashley, 327 E. Marshall St., Marion, Ind. 46952, and George Spector, 233 Broadway RM 3615, New York, N.Y. 10007

Filed Jan. 22, 1986, Ser. No. 820,974

Int. Cl.⁴ B23B *45/00*

U.S. Cl. 33—334 **3 Claims**



1. A hand drill level for a conventional hand drill having a handle portion and a shank portion adapted to secure a conventional drill bit, said hand drill level comprising:

(a) a mounting frame removably mountable to top surface of said shank portion of said hand drill;

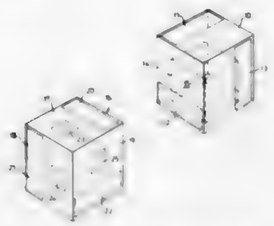
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(b) a vial having a bubble chamber operably affixed within said mounting frame and parallel to longitudinal axis of said drill bit to aid in drilling holes straight through a work piece, wherein said mounting frame includes:
(c) a receptacle of a per-determined configuration;
(d) a plurality of pliable tabs extending outwardly from sides of said receptacle;
(e) adhesive material placed on underside of said tabs so that said tabs can be bent to conform to contour of said top surface of said shank portion of said hand drill and be removeably mountable thereto, wherein said mounting frame further includes:
(f) a leveling rod horizontally slideable through said receptacle, said rod having two transverse legs of equal length spaced apart at front end to extend downwardly to make contact with said drill but for stabilizing said receptacle;
(g) said tabs being elongated to aid in measuring center of said drill bit; and
(h) a pair of adjustment screws, each of said screws vertically thread through opposite ends of said receptacle to adjust said receptacle to said longitudinal axis of said drill bit.

4,656,750
HEADING SENSOR

Gilles D. Pitt, Saffron Walden; Philip Extance, Cambridge, and David Wilson, Bishops Stortford, all of United Kingdom, assignors to Standard Telephones and Cables Public Limited Company

Filed May 22, 1985, Ser. No. 736,835
Claims priority, application United Kingdom, May 23, 1984, 8413226
Int. Cl.⁴ G01C *17/02*
U.S. Cl. 33—352 **15 Claims**

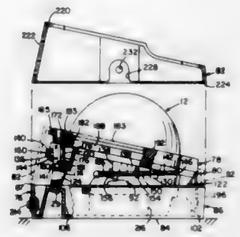


1. A heading sensor comprising a cube-like structure of non-magnetic material on each of three orthogonally related faces of which is located a respective Hall effect device, which cube and Hall effect devices constitute a three-axis magnetometer, and comprising a three-axis accelerometer, each of the three axes of the magnetometer being aligned with a respective one of the three axes of the accelerometer, the three-axis accelerometer comprising three etched semiconductor accelerometers, one for each of the three axes of the accelerometer, wherein the three-axis accelerometer comprises a three-axis module disposed in a recess in the cube-like structure, and wherein the three-axis module comprises a further cube-like structure on each of three orthogonally related faces of which is located a respective one of said three etched semiconductor accelerometers.

4,656,751
MAGNETIC COMPASS

W. Gordon White, Dover, and William N. Anastos, Belmont, both of Mass., assignors to Rule Industries, Inc., Gloucester, Mass.

Filed Sep. 10, 1985, Ser. No. 774,416
Int. Cl.⁴ G01C *17/38*
U.S. Cl. 33—358 **34 Claims**

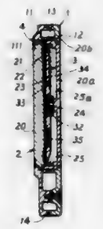


1. A magnetic compass comprising a compass unit, adjustable corrector magnets and a housing in which said compass unit and said corrector magnets are mounted;
said compass unit comprising a compass bowl, a gimbal mount within said bowl, and, pivotally supported within said bowl by said gimbal mount, a card assembly comprising a compass card and a magnet;
said housing comprising a base, a cover removably attached to said base enclosing said corrector magnets and a portion of said bowl, support means connecting said corrector magnets to said base above the bottom thereof, said support means adapted to support corrector magnets on at least two axes parallel to the equatorial plane of said compass with said base in a horizontal or a vertical orientation, and connecting means connecting said compass unit to said base, a portion of said compass bowl extending through an opening in said cover for viewing said compass card;
the improvement characterized in that:
said support means, with said base in a horizontal orientation, support said corrector magnets in positions beside said bowl and above at least portions of the sides of said base, said corrector magnets thereby being exposed above said sides with said cover removed and being accessable for adjustment without moving said compass.

4,656,752
PRECISE-READING ANGULAR LEVEL

Chyi-Yiing Wu, P.O. Box 10160, Taipei, Taiwan

Filed Jun. 2, 1986, Ser. No. 869,602
Int. Cl.⁴ G01C *9/10*
U.S. Cl. 33—399 **1 Claim**



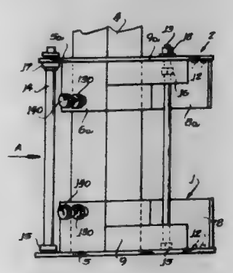
1. A precise-reading angular level comprising:
a casing consisting of a front plate and a rear plate combined

to form an annular groove therein and having a round hole formed on the front plate;
a rotational protractor made of transparent material formed by combining a front panel protruding through said round hole of said casing and a rear panel to form an annular flange rotatably engaged with said annular groove of said casing and to form a shallow cylindrical hollow portion therein for filling a transparent dampening oil inside said hollow portion, a pivot extending from said rear panel within said hollow portion;
a plumbing swing wheel made of transparent plastic disk and pivotedly mounted on said pivot of said protractor; and
a vernier formed on the central top position of a rim along said round hole of said casing, having a zero graduation showing the real zero degree of said level;
the improvement which comprises:
(A) said rotational protractor formed with an outer angle scale having angle graduations respectively printed both rightward and leftward from a central zero graduation coinciding with the zero graduation of said venier on a same plane, and printed on the periphery of the outer surface of said front panel of said protractor;
an inner angle scale printed on the periphery of the inside wall of said front panel with a diameter slightly smaller than that of said outer angle scale; and
an aligning pointer mark printed on the radius of the protractor and projectively aligning zero graduation of said protractor and aligned with a normal line perpendicular to the center of the bottom of said casing;
(B) said plumbing swing wheel printed with a pointer mark on the outer surface of the upper half portion of said wheel to projectively superimpose the central line of an arrow background mark printed on the bottom surface of said wheel;
and embedded with a transparent plumb made of glass material heavier than said plastic disk of said wheel on the lower half portion of said wheel, said pointer mark of said wheel coinciding with said zero graduation of said vernier as said wheel being gravitationally pendant on pivot of said protractor, whereby upon the laying of the bottom of said casing on a measured object, said pointer mark of said wheel will point at the inner scale of said protractor for reading the measured angle in situ, and by rotating said protractor to allow said aligning pointer mark of said protractor projectively coinciding with said pointer mark of said wheel, the degrees may be quickly read out as the measured degrees on said outer scale coinciding with the zero graduation of said vernier.

4,656,753
POST SUPPORT UNIT FOR A BUILDING PROFILE

Noel D. Chesworth, 609 Plum Grove Rd., Roselle, Ill. 60172

Filed Oct. 22, 1985, Ser. No. 790,189
Claims priority, application United Kingdom, Nov. 28, 1984, 8429975
Int. Cl.⁴ B43L *13/00*
U.S. Cl. 33—408 **6 Claims**

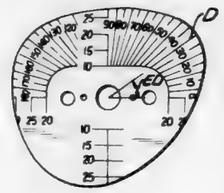


1. A post support device for attachment to a corner building wall having mortared joints between adjacent bricks or blocks; said device comprising:
a lower support means having an edge to be inserted into one of the unmortared joints in the corner wall,
an upper support means spaced above said lower support means having an edge to be inserted into another of the unmortared joints in the corner wall,
vertical spacer means extending between said upper and lower support means and joining the same together, said vertical spacer means being spaced from the corner wall,
one of said support means being angularly adjustable relative to said vertical spacer means,
securing means for securing the angularly adjustable support means at a fixed position after it has been located in a horizontal plane at a unmortared joint,
said securing means and said upper and lower support means clamping said device to said corner wall,
a post removably mounted in said upper and lower support means and supported by said upper and lower support means in a location spaced from the corner wall, and
releasable locking means for said post cooperating with, at least, one said upper and lower support means for locking the post at a predetermined vertical position after said post has been aligned at a predetermined vertical orientation.

4,656,754
LENS PATTERN BLANK

James Cingone, Hempstead, N.Y., assignor to James Industries Inc., Hempstead, N.Y.

Filed Nov. 14, 1985, Ser. No. 798,037
Int. Cl.⁴ A61B *3/10*
U.S. Cl. 33—507 **11 Claims**



1. In a lens pattern blank having two planar faces, a mounting hub on one face, a circular mounting hole passing through the faces and the hub and a grid pattern on one of the two faces and having the origin of the axes thereof coincident with the center of the mounting hole, the improvement comprising: a pattern of concentric circles on one of the two faces and having the centers thereof coincident with the center of the mounting hole and diameter indicators for each circle disposed on the same face as the circles and at the circumference of each circle.

4,656,755
CARPET BANDING CAPPER

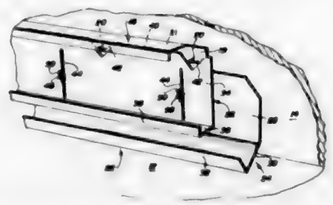
Donald A. Birnel, 803 N. Piere, and Kenneth G. Manson, 3506 Birch Vale, both of Wenatchee, Wash. 98801

Filed Apr. 10, 1986, Ser. No. 850,127
Int. Cl.⁴ G01B *3/00*
U.S. Cl. 33—526 **5 Claims**

1. In combination with a carpet strip trim cap for trimming the upper marginal edge of a wall base edge mounted carpet strip and wherein said cap includes a vertical rear wall terminating upwardly in a forwardly projecting upper flange, a fitting for positioning and supporting said cap in predetermined elevated position relative to said wall base edge and with said cap held tightly against said wall preparatory to securement of said cap to said wall, said fitting including an

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upright planar web for opposing and abutting said wall, said web including a forwardly projecting base flange and terminating upwardly in an upper edge paralleling said base flange, said trim cap being supported from said fitting with the underside of said upper flange resting upon said upper edge and said



vertical rear wall clamped between the upper marginal edge portion of said web and said room wall by manual pressure applied to said fitting in the direction opposing said wall, said upper marginal portion of said web including openings formed therethrough, said openings including lower extremities spaced above the lower extremity of said vertical rear wall.

4,656,756

METHOD FOR HEAT-TREATING TEXTILE MATERIAL AND TENTER FOR CARRYING OUT METHOD

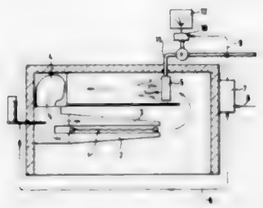
Theo Schiffers, Würselen, Fed. Rep. of Germany, assignor to H. Krantz, GmbH & Co., Aachen, Fed. Rep. of Germany

Continuation of Ser. No. 636,403, Jul. 31, 1984, abandoned. This application Jan. 9, 1986, Ser. No. 817,171

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1983, 3328557

Int. Cl.⁴ F26B *3/04*

U.S. Cl. 34—25 **5 Claims**



1. The method of heat treating a textile fabric web in a tenter device to effect the drying and thereafter the fixing thereof, said tenter device including a plurality of discrete treatment fields, each said field including a valve having a regulator portion for separately regulating heating means for a stream of gaseous treatment medium circulated in said field, comprising the steps of adjusting said regulator portions to cause each said field to be heated to a desired temperature in a no-load operation, determining the setting of said regulator portions required to maintain said temperature in each of said fields at said desired temperature, advancing a sample fabric web to be treated through said tenter, readjusting the setting of said regulator portions to the degree necessary to maintain the temperature in each of said fields at said desired temperature, determining the energy consumption in each said field as a function of the difference in the settings of said regulator portions between said no-load operation and operation with said sample web to thereby ascertain the energy required for the treatment of said fabric in each said field, and thereafter adjusting the speed at which said web is advanced through said tenter as a function of the pair of adjacent fields exhibiting the greatest deviation in energy usage.

4,656,757

METHOD AND PLANT FOR THE DESICCATION OF DRYING GAS

Klaus Ouchmann, Mitterweg 9, D-8066 Bergkirchen, Fed. Rep. of Germany

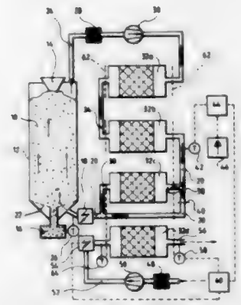
PCT No. PCT/EP84/00306, § 371 Date Jun. 26, 1985, § 102(e) Date Jun. 26, 1985, PCT Pub. No. WO85/01569, PCT Pub. Date Apr. 11, 1985

PCT Filed Oct. 4, 1984, Ser. No. 740,903

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3336048

Int. Cl.⁴ F26B *3/06*

U.S. Cl. 34—27 **8 Claims**



1. In a method of removing moisture from a drying gas used for the drying of solid substances, particularly granular plastics, in which the gas after flowing through the substance is dried in an adsorption drying agent, thereafter heated and finally conducted through the substance to be dried, and in which the adsorption drying agent, after it has reached a given degree of moisture, is replaced by a newly regenerated drying agent while it is itself regenerated by the application of heat, the improvement comprising:

(a) conducting said drying gas sequentially through a first bed of drying agent and through a second bed of drying agent;

(b) dividing said gas stream after the second bed of drying agent into a first and second partial gas stream;

(c) conducting said first partial gas stream of the drying gas, behind the second bed of drying agent, through a newly regenerated third bed of drying agent;

(d) thereafter returning said first gas stream, behind said third bed, to said second partial stream of gas which has bypassed said third bed of drying agent;

(e) conducting said united gas streams to the substance to be dried;

(f) regenerating a fourth bed of drying agent with a heating medium; and

(g) replacing said four beds of drying agent in constant sequence upon complete saturation of said first bed of drying agent.

4,656,758

PAINT DRYING FURNACE

Makoto Nakayama, Higashihiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 13, 1985, Ser. No. 765,112

Claims priority, application Japan, Aug. 20, 1984, 59-173476

Int. Cl.⁴ F26B *21/06*

U.S. Cl. 34—54 **3 Claims**

1. A drying furnace for drying a paint coating applied on an automobile body, comprising:

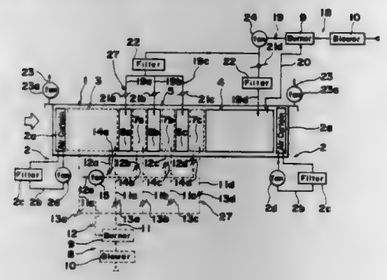
a generally tunnel-shaped refractory housing having entry and exit openings defined at the opposite ends thereof, respectively, and also having an indirect drying zone

defined therein adjacent the entry opening, a direct drying zone defined therein adjacent the exit opening and an intermediate drying zone defined therein between the indirect and direct drying zones, and a switching system for switching the intermediate drying zone into one of an indirect drying mode, in which the intermediate drying zone can be used as an extension of the indirect drying furnace, and a direct drying mode in which the intermediate drying zone can be used as an extension of the direct drying zone;

the intermediate drying zone being constituted by at least one auxiliary indirect drying region and at least one auxiliary direct drying region, said auxiliary indirect drying region being defined between the auxiliary direct drying region and the direct drying zone, said auxiliary direct drying region being defined between the auxiliary indirect drying region and the indirect drying zone;

a first source of hot gases communicating with the indirect drying zone through a first damper and also with the auxiliary indirect drying region through a respective second damper; and

a second source of hot gases communicated with the direct drying zone through a first damper and also with the auxiliary direct drying region through a respective second damper.



4,656,759

AERATION-TYPE ROTARY DRYER

Yukio Yamato, Ceno, Japan, assignor to Yamato Seako Mfg. Co., Ltd., Tokyo, Japan

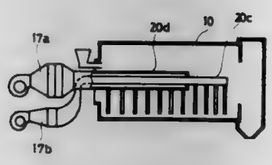
PCT No. PCT/JP85/00368, § 371 Date Feb. 24, 1986, § 102(e) Date Feb. 24, 1986

PCT Filed Jul. 2, 1985, Ser. No. 834,275

Claims priority, application Japan, Jul. 3, 1984, 59-136589

Int. Cl.⁴ F26B *11/04*

U.S. Cl. 34—134 **3 Claims**



1. An aeration-type dryer comprising inlet and outlet boxes, a rotary cylinder having opposite open end portions rotatably and air-tightly supported by said inlet and outlet boxes, a hot-air source, a feeder provided in said inlet box, an exhaust port, a discharge port provided in said outlet box, an axial duct axially extending from said hot-air source into said rotating cylinder, a plurality of radial ducts branched slantingly downwardly from said axial duct near to an inner surface of said rotating cylinder, and a nozzle formed in an outer end of each radial duct, said axial duct comprising coaxial inner and outer pipes, said hot-air source consisting of first and second members, said inner and outer pipes being respectively connected to said first and second members, said inner pipe having a portion axially projecting from said outer pipe to branch to a first group of radial ducts, said outer pipe branching to a second group of radial ducts.

4,656,760

CUSHIONING AND IMPACT ABSORPTIVE MEANS FOR FOOTWEAR

Raymond F. Tonkel, St. Louis County, Mo., and Alexander L. Gross, Suffolk County, Mass., assignors to Kangaroos U.S.A., Inc., Chesterfield, Mo.

Filed Feb. 26, 1985, Ser. No. 705,659

Int. Cl.⁴ A43B *13/18*

U.S. Cl. 36—28 **12 Claims**

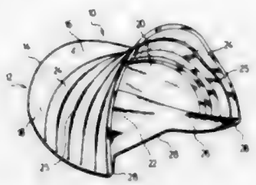




1. A cushioning and impact absorption means for application within footwear of the type having a shoe upper affixed to a sole formed at least partially of a polymer like material, comprising, a shoe upper and a shoe sole, said upper secured to a cellular insert applied within the polymer like material, forming said sole, said cellular insert comprising layers of woven polymer material, and also comprising a series of cellular components formed of woven polymer material and arranged intermediate and connecting to said layers of material, siad cellular components having upper, lower and side surfaces, said layers of polymer material connecting to the upper and lower surfaces of said cellular components, said cellular components having cavities generally formed therethrough, with said formed cavities being arranged intermediate the said upper and lower surfaces of the cellular components, said series of cellular components provided therein being secured together by strands of linking means along their contiguous side surfaces, said cellular insert being arranged substantially aligned within the sole structure during shoe usage, said cellular inserts as being formed of a woven polymer material having a hardness greater than the polymer material forming said sole, whereby the cellular insert formed within the sole tending to effect absorption of any forces of impact encountered by the footwear during usage.

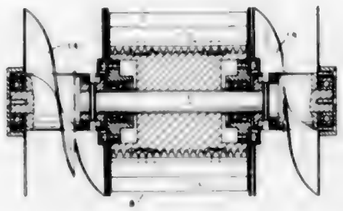
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4,656,761
FOOTWEAR REINFORCEMENT
Ronald D. Lord, Willowdale, Canada, assignor to Mining Industry Research Organization of Canada, Toronto, Canada
Filed May 15, 1986, Ser. No. 863,497
Claims priority, application Canada, Jun. 26, 1985, 485310
Int. Cl.[4] A43C *13/14*
U.S. Cl. 36—77 R **1 Claim**



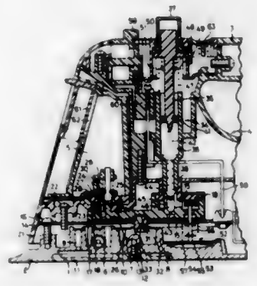
1. A footwear reinforcement formed as an integral moulding of synthetic plastic material and comprising a toe cap portion having a curved front end wall curving rearwardly at the top into an upper wall and curving on opposite sides into opposed side walls integral with the upper wall, a bottom wall integral with lower edges of the front and side walls, said bottom wall having a rearwardly extending portion, and a series if longitudinally-spaced, transversely extending curved ribs with transversely opposite ends extending from one side of the reinforcement to the other side behind the toe cap portion and integral at their transversely opposite ends with the rearwardly extending portion of the bottom wall of the toe cap portion.

4,656,762
ICE PREPARATION MACHINE FOR ICE TRACKS
Heinrich Schliebe, Zum Schiebesbusch 9, 4500 Osnabrück, Fed. Rep. of Germany
Filed May 14, 1985, Ser. No. 734,384
Claims priority, application Fed. Rep. of Germany, May 19, 1984, 8415366
Int. Cl.[4] E01H *5/09*
U.S. Cl. 37—238 **8 Claims**



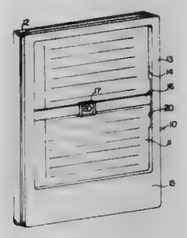
1. An ice preparation machine for ice surfaces, comprising a snow container; a means for transporting snow from an ice surface into said snow container, said transporting means including a conveyor which is formed as an inclined conveyor which has a belt drive provided with a plurality of driving posts and transporting screws rotatable about horizontal axes for transporting the snow and arranged so that said belt drive is located centrally between said transporting screws, said belt drive having at least two belt pulleys and a one-piece belt with a lower side facing toward said belt pulleys, a plurality of mounting pieces arranged on said lower side of said belt and mounting said driving posts on said belt, said belt pulleys being provided with a grooved uniform surface and also with recesses in said surface, said belt having an upper side which faces toward said driving posts and is provided with a smooth surface, and said lower side of said belt being provided with a webbed mating uniform surface engaging said grooved uniform surface of said belt pulleys, and said mounting pieces passing through said recesses of said surface of said belt pulleys.

4,656,763
STEAM IRON WITH STEAM SURGE GENERATION CAPABILITY
Kazuhisa Kawasaki, Kyoto; Yoshiyuki Ujino, Nishinomiya; Takahisa Tsuji, and Tsuneo Saeki, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Jan. 10, 1986, Ser. No. 817,592
Claims priority, application Japan, Jan. 11, 1985, 60-3543
Int. Cl.[4] D06F *75/18*
U.S. Cl. 38—77.83 **6 Claims**



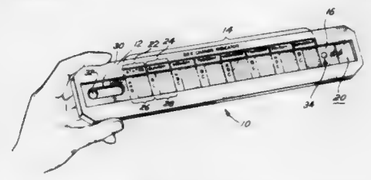
1. A steam iron having a steam surge generating capability, comprising:
- a soleplate provided with a heater element;
- a steam generating chamber disposed upon said soleplate;
- a main body attached to an upper portion of said soleplate;
- a water tank for storing water to be supplied to said steam generating chamber;
- a plurality of members mounted above said soleplate to form a water passage for supplying water from said water tank to said steam generating chamber at a regulated rate of flow suitable for a normal steam generation mode of operation of said steam iron;
- a pump mechanism communicating with said water passage, operable to supply a momentary surge of water to said steam generating chamber, said pump mechanism comprising a cylinder and a piston slidably movable within said cylinder;
- an external operating member coupled to said pump mechanism for moving said piston through a fixed range of movement;
- means defining a flow inlet aperture communicating between said water tank and said water passage;
- means defining a flow outlet aperture communicating between said water passage and said steam generating chamber;
- reverse flow prevention valve means for preventing a reverse flow of water through said water passage into said water tank, operable in response to actuation of said pump mechanism, and;
- restraining means coupled to said operating member of said pump mechanism, for producing a restraining force acting against movement of said operating member at a specific position within said fixed range of movement of said piston, said restraining means comprising at least two springs coupled in series to said operating member and having respectively different values of stiffness.

4,656,764
SHEETHOLDER
Horst Fengler, Scharnhorststr. 10a, 4902 Bad Salzuflen, Fed. Rep. of Germany
Filed Aug. 14, 1985, Ser. No. 765,608
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1984, 8424369[U]
Int. Cl.[4] G09D *3/02*
U.S. Cl. 40—122 **1 Claim**



1. A base adapted to hold a pile of similarly dimensioned sheets comprising, in combination:
- a substantially flat and rectangular holder made of synthetic material, and defining two parallel and normally horizontally positioned sides, a lower and normally horizontally positioned rim strip being formed on said holder, and having an indentation,
- said holder being formed in a lower rear region thereof with a clearance,
- a substantially flat stand being pivotably connected to said holder, and being disposed in a collapsed position thereof in said clearance, while being outwardly extendable from said holder,
- two normally horizontally disposed pins pivotably extending from said stand, said holder being formed with bores aligned to pivotably receive said pins, respectively,
- said stand having two forwardly projecting dogs snapping into respective slits formed in said holder on a rearside thereof, when said stand is in said collapsed position,
- a frame attachable to said holder, said holder being formed with normally upright rim strips, said frame covering said upright rim strips, each upright rim strip being formed with a guide slot and a slit, said frame being formed in upper corner regions thereof with two projections extending rearwardly therefrom,
- resiliently formed tongues formed on a rearside of said holder, projecting forwardly thereinto, and being adapted to press said sheets against said frame,
- a bar of transparent material disposed in parallel with said horizontally positioned sides and being slidable along said holder in a direction substantially perpendicular to said horizontally positioned sides,
- said frame being formed with recesses in the region of said guide slots, so as to accomodate said slidable bar,
- each recess in said frame, and each guide slot corresponding thereto being located in a center region of a corresponding upright rim strip, and extending about one third along a length thereof,
- a plug resiliently mounted on said frame on a lower side thereof, and being press-fitted into said indentation, so as to be releasably connected to said lower and normally horizontally positioned rim strip of said holder,
- said projections formed in said upper corner regions of said frame being releasably engaged in respective of said slits formed in the upright rim strips of said holder,
- said bar having bent over end portions engaging said guide slots, respectively, said frame surrounding said holder so as to cover the bent over end portions of said bar engaging said guide slots, and
- a frame-like slider glidably disposed on said bar.

4,656,765
APPARATUS FOR BEDDING CONTROL IN HEALTH CARE INSTITUTIONS
Harry F. DeBoer, Lansing, Ill., assignor to ServiceMaster Industries, Inc., Downers Grove, Ill.
Continuation-in-part of Ser. No. 441,431, Nov. 15, 1982, abandoned. This application Oct. 27, 1983, Ser. No. 546,102
Int. Cl.[4] G09F *11/00*
U.S. Cl. 40—491 **6 Claims**



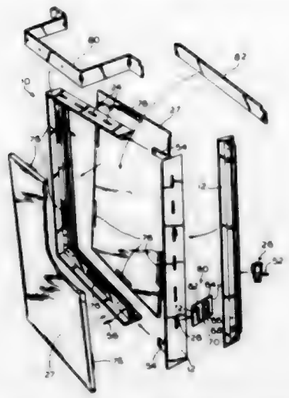
1. A bed change indicator for use in health care institutions to indicate when the bedding of a patient's bed should be changed, comprising, in combination:
- a generally flat, rectangular body having an information display area defining a plurality of information display columns, the columns having titles, each column being subdivided into sub-columns positioned beneath the column titles, each of the sub-columns of a particular column having a corresponding sub-column in each of the other columns, the corresponding sub-columns of each column thereby forming a plurality of sets of sub-columns;
- a manually adjustable display indicator having transparent portions and being mounted over and integral with said body in moveable relation to said information display area of said body such that only one set of the subcolumns below the display indicator is visible at any given time through the transparent portions, the transparent portions corresponding in size and shape to the sub-columns beneath the display indicator;
- said subcolumns having markings thereon such that when the display indicator is positioned in a predetermined orientation to display a particular set of subcolumns, the display area and the display indicator cooperatively record and display a predetermined bedding control schedule for a particular patient; and
- a face plate mounted on the body over the display indicator that is transparent to the columns below it.

4,656,766
MODULAR DISPLAY SYSTEM
Donald S. Cooper, 221 Ridge Rd., Scotia, N.Y. 12302
Filed Aug. 5, 1985, Ser. No. 762,622
Int. Cl.[4] G09F *7/00*
U.S. Cl. 40—605 **8 Claims**

1. A modular panel display system including in combination a plurality of side members, a frame defined by respective side members, a base portion of each of said side members, a first surface of each said base portion, a pair of spaced parallel legs projecting inwardly of said frame at right angles to its respective first surface, inner and outer surfaces of said legs, said inner surfaces of respective legs facing one another and providing a channel therebetween, said legs located upon said first surface in spaced relation to at least one edge of said respective side member to provide a support surface between said respective outer surface of at least one of said legs and said edge to support a panel thereon, a plurality of bracket members, each

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of said bracket members having a portion thereof within the channel of adjacent side members, and fastening means maintaining said bracket members within respective channels whereby said side members are interconnected.



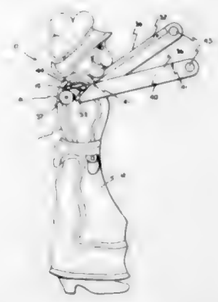
4,656,767
CABLE TAG
Thomas G. Tarrant, P.O. Box 199, Hunt, Tex. 78024
Filed Feb. 18, 1986, Ser. No. 830,264
Int. Cl.[4] G09F *3/00*
U.S. Cl. 40—316 7 Claims



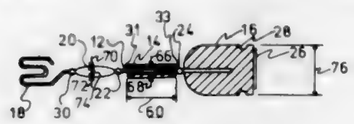
1. A cable tag for placing identification upon an otherwise unidentified cable, said tag including an elongated strip of flexible material having first and second sides, said first side of said strip including longitudinally spaced "hook" and "loop" thistle-type fastener panels mounted thereon with said fastener panels spaced apart along said strip a distance less than the circumference of said cable, said second side of said strip, on one end thereof, including identifying indicia, said strip being tightly deflectable about said cable with the portion of said first side spaced between said panels tightly contacting a major portion of the circumference of said cable and said panels tightly anchored relative to each other, portions of the hooks on said "hook" panel adjacent the "loop" panel being yieldingly deflected by said cable and enjoying a frictional grip on the cable and further functioning to increase the tension of the portion of said strip disposed between said panels and the frictional grip of that portion on the cable.

4,656,768
WIND DRIVEN SIGN
James C. Thigpen, P.O. Box 994, Shallotte, N.C. 28459
Filed Feb. 8, 1982, Ser. No. 347,020
Int. Cl.[4] G09F *19/08*
U.S. Cl. 40—412 6 Claims

1. A wind driven means comprising: a support means; at least one elongated appendage means having a blade end which is set at an angle to the wind and a counterbalance end; means adjacent said counterbalance end for rotatively mounting said appendage means on said support means; and a counterbalance weight means mounted on said counterbalance end to approximately equalize the weight of each end of said appendage on either side of said rotative mounting thereof on said support means whereby an appendage is provided which can be easily rotatively driven by ambient air currents in a whirling motion but which includes only a single outwardly extending blade-like means.

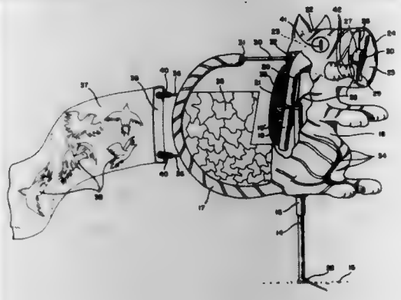


4,656,769
FISHING DEVICE
Larry L. Walker, 691 S. Zinnia Ct., Lakewood, Colo. 80228
Filed Mar. 13, 1984, Ser. No. 588,942
Int. Cl.[4] A01K *97/00*; D03J *3/00*
U.S. Cl. 43—1 4 Claims



1. A hand held device for use with thread or the like and with dubbing in the assembly of fishing flies, the device being used by a user having a plurality of fingers, comprising:
(a) an elongated rod having opposite ends;
(b) means, positioned around a portion of the elongated rod, for holding the rod with a portion of the user's fingers while permitting the rod to be rotated as desired;
(c) means, associated with and fixedly attached to one end of the rod, for rotating the rod at a predetermined speed within the holding means, the rotating means comprising a weight fixedly attached to one end of the rod, the weight serving as a flywheel for rotating the rod at the predetermined speed; and
(d) means, associated with the fixedly attached to the other end of the rod, for gripping the thread in a spaced apart manner so that the dubbing can be positioned between the spaced apart thread on the other end of the rod and the elongated rod can be rotated by another portion of the user's fingers to tightly wrap the thread around a portion of the dubbing.

4,656,770
BIRD REPELLING MEANS
David A. Nuttle, Rte. 2, Youngsville, N.C. 27596
Filed Oct. 28, 1985, Ser. No. 791,989
Int. Cl.[4] A01M *29/04*
U.S. Cl. 43—2 24 Claims



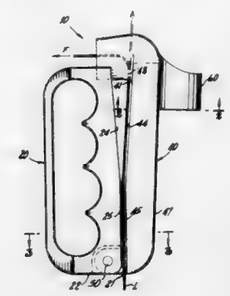
1. A bird repelling means comprising: predator simulating means; a wind driven flute mounted within said predator simulating means; means for mechanically altering the tone of said wind driven flute; means for periodically broadcasting prerecorded bird warning and panic calls; and means for periodically creating explosion-type noises whereby the simulated predator will act as a visual bird repelling means while the wind flute, periodic broadcast and explosions will act as an aural means of repelling said birds.

4,656,771
CARRYING ARRANGEMENT FOR DECOYS AND OTHER OBJECTS
Joseph G. Holmes, 209 Highland Ave., Piedmont, Calif. 94611
Filed Oct. 29, 1985, Ser. No. 792,461
Int. Cl.[4] A01M *31/06*
U.S. Cl. 43—3 17 Claims



1. In combination:
a decoy object,
an eyelet attached to an outside surface of said object, and a flexible line threaded through said eyelet,
one part of said line, on one side of said eyelet, having a stop attached thereto, said stop sized to prevent said one part of said line from passing through said eyelet,
one other part of said line, on the other side of said eyelet, having means forming a loop thereat for preventing said other part of said line from passing through said eyelet and for enabling said line, with said object and stop attached thereto, to be picked up by an elongated member which can be extended through said loop.

4,656,772
FISHING DEVICE
Manuel Lopez, 900 NW. 1 St., Belle Glades, Fla. 33430
Filed Oct. 10, 1986, Ser. No. 917,700
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—4 8 Claims



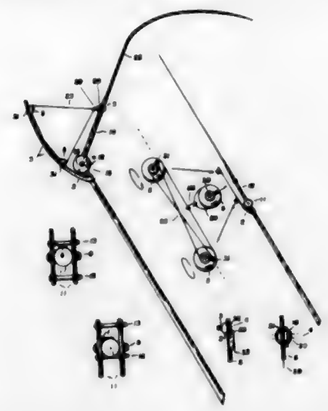
1. A fishing device for manually controlling a fishing line, comprising:
A. finger grip means having an upper and a lower portion;
B. line guiding means having an upper and lower end and said upper end protruding slightly over said upper portion, said line guiding means being hingedly mounted on said lower end to said lower portion of said finger grip means and said line guiding means including an opening on its lower end that allows said fishing line through and between said line guiding means and said finger grip means, and further including a passageway on the upper end of said line guiding means so that said fishing line is passed through it and so arranged and constructed that when said device is held in the upright position any pulling force on said fishing line is diverted and proportionally converted into a torque on said line guiding means with respect to said finger grip means that causes a frictional opposition to said pulling force.

4,656,773
ENERGY EFFICIENT CASTING ROD
Robert J. Klefbeck, 3 Dresden Ct., Albany, N.Y. 12203
Filed Jun. 2, 1986, Ser. No. 869,601
Int. Cl.[4] A01K *91/02*
U.S. Cl. 43—18.1 7 Claims

1. A breakdown sport fishing rod which comprises: a fishing rod butt section, said rod butt section supporting a rotatable spool, said spool having separate means to abruptly limit its clockwise and counterclockwise rotation and means to support an elongated appendage, said elongated appendage being capable of receiving interchangeable fishing rod blanks at its free end, and having means to support a pulley which communicates by means of elastomers or energy storing cable with at least one other pulley located on a flexible appendage, said flexible appendage being supported by said rod butt section, whereby a muscular impulse of a crisp backcast induces a clockwise rotation of said spool resulting in a pivoting motion of said attached elongated appendage and its accompanying fishing rod blank and a storing of energy in said pulley support elastomers or cable, said spool's clockwise location being abruptly stopped and reversed by said clockwise rotation limiting means, which combined with the releasing of energy contained in the pulley supported elastomers or cable and the action of said counterclockwise rotation limiting means oper-

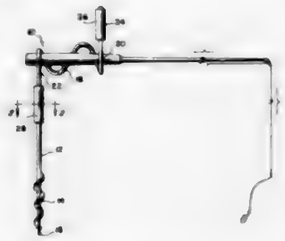
VOL 1077 ISS 2 AP 14 1987 UMI

ates to induce an exaggeration in the effective bending length of the fishing rod blank which adds time to the cast, resulting



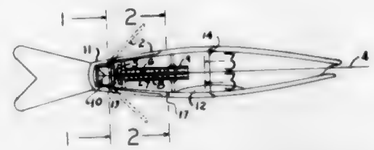
in an increase in the rod's recoil power and velocity and provides a substantially longer cast.

4,656,774
SURFACE ENGAGING FISHING POLE HOLDER
Maurice W. Terrill, 12454 E. Alaska Ave., Aurora, Colo. 80012
Filed Dec. 12, 1985, Ser. No. 808,259
Int. Cl.[4] A01K *97/10*
U.S. Cl. 43—21.2 1 Claim



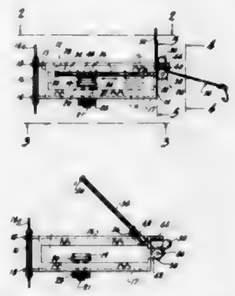
1. A fishing pole holder comprising:
a ground surface engaging stake having an upper section and lower section; an auger formed on said lower section of said stake adapted to penetrate said ground surface;
said upper section including a fishing pole support integrally connected to said lower section and offset therefrom at an angle, said fishing pole support being convoluted and having an upwardly extending half loop section and a downwardly extending half loop section adapted to engage and support a fishing pole handle;
said fishing pole holder forming a crank arm for rotating said auger; a gripping sleeve freely rotatable and telescopically mounted on said lower section of said ground engaging stake; and a handle, said handle further including a second gripping sleeve freely rotatable and telescopically connected thereto, said handle being disposed at the end of said fishing pole support and in a parallel relationship with said lower section of said ground engaging stake, said first and second gripping sleeves being substantially parallel with each other, whereby, in use, said handle is rotated with one hand while said ground surface engaging stake is being held with a second hand by means of first said gripping sleeve so rotation of said handle turns said crank arm which in turn rotates said auger causing said ground engaging stake to penetrate said ground surface when rotated.

4,656,775
FISH FRIENDLY LURE
Charles E. Annett, II, 1938 E. View Dr., Sun City Center, Fla. 33570
Filed Sep. 12, 1985, Ser. No. 775,410
Int. Cl.[4] A01K *83/02*
U.S. Cl. 43—35 1 Claim



1. A non-destructive fish friendly lure for catching fish by the mouth without penetration of the flesh comprising:
an essentially hollow simulated bait fish composed of semi-rigid material having an open mouth and,
a leader extending from within to pull the lure thru water causing tension in the leader,
a plurality of L-shaped substantially straight prongs having barbless blunt distal rounded ends, said prongs having long and short arms,
the long arms extending forwardly along the outer surface of the lure when in a protracted position, the short arms projecting within the lure with means to rotate each prong about a pivot secured to the rear of the lure,
means to apply sufficient pressure from within the lure to the short arms to secure the long arms against the body while the lure is pulled forward, adjustable threaded means for adjusting the force of said means to apply pressure to control the point at which said prongs are deployed,
the leader being arranged so that added tension exerts forward pressure against the short arms causing the long arms to project out away from the body of the lure in an extended position thereby engaging a fish's mouth to hold the fish without penetration of the flesh.

4,656,776
FISHING LINE RELEASE DEVICE
Jesus D. Macachor, 1135 Ridgeway Rd., Brookfield, Wis. 53005
Filed Mar. 5, 1986, Ser. No. 836,322
Int. Cl.[4] A01K *91/06*
U.S. Cl. 43—43.12 10 Claims



9. A downrigger release mechanism including, an elongate tubular body having means at one end adapted to be attached to an outrigger line and a surface formed at the opposite end,

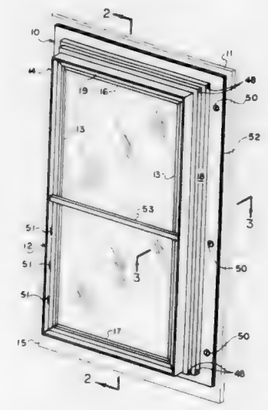
a pair of projections extending in a spaced apart relation outwardly from said surface and constructed and arranged to have a fishing line wound therearound so that a portion of said line extends across said surface and between said projections,
first magnetic means slidably mounted on the body for movement in a path extending toward and away from the projections,
means for releasably holding the first magnetic means in various positions along the path,
lever means pivotably mounted on the body adjacent said surface and having pivoted and unpivoted positions, said lever means including first and second lever portions, said first lever portion extending in a direction generally parallel to the path and adjacent said first magnetic means and said second lever portion extending between said projections and adjacent said surface when the lever means is in an unpivoted position,
second magnetic means mounted on the first lever portion for free movement thereon to positions thereon adjacent the first magnetic means, whereby the magnetic attraction between said magnetic members must be overcome to pivot the lever means from its unpivoted to its pivoted position with the force required to pivot said lever means being directly related to the position of the first magnetic means along the path so that the pull required to pivot said lever means and thereby release said fishing line can be adjusted for the requirements of different fish.

4,656,777
FISHING BOBBER ASSEMBLY
James L. Ferabach, Colerain Township, Hamilton County, Ohio, assignor to Alexis A. Ferabach, Cincinnati, Ohio
Filed Feb. 12, 1986, Ser. No. 828,853
Int. Cl.[4] A01K *93/00*
U.S. Cl. 43—44.9 2 Claims



1. A fishing bobber assembly which comprises an elongated body having spaced end panels, there being an elongated bore in the body, ends of the bore being in the end panels, a smooth plastic liner in the bore of the body, there being a radial slot in the body extending outwardly from the bore through an outer face of the body, there being a slot in the liner alignable with the slot in the body, the liner extending outwardly of one of the end panels, a weight having a bore therein in which the outwardly extending portion of the liner is received, there being a radial slot in the weight extending from the bore of the weight through an outer face of the weight and alignable with the slot in the liner, and a pair of plug members, each of the plug members including a stem frictionally receivable inside the liner at one of the end panels and a head, the head of one of the plug members bearing on one of the end panels, the head of the other plug member bearing on the weight, there being an elongated bore in each plug member extending lengthwise of the stem and the head thereof and a radial slot extending from the bore thereof through an outer edge thereof, the radial slots of the plug members being alignable with the radial slots of the body, the liner and weight, the bores of the liner and the bores of the plug members capable of receiving a portion of a line, the line being held in the liner and in the bores of the plug members when the plug members are rotated from aligned position.

4,656,778
STORM WINDOW ASSEMBLY
Jack Fiorenza, Sr., 326 White Oak Ridge Rd., Short Hills, N.J. 07078
Filed Oct. 3, 1986, Ser. No. 914,918
Int. Cl.[4] E05B *65/04*
U.S. Cl. 49—63 5 Claims



1. A storm window assembly adapted to be installed in abutment with the exterior surface of the frame of a prime window of a building, said assembly comprising:
(a) a rectangular frame, the sides of which are comprised of a pair of parallel long jamb members having upper and lower extremities, and shorter header and sill members in facing horizontal disposition at the upper and lower extremities, respectively, of said jamb members, said sides defining interior and exterior borders of the assembly and being comprised of four lengths of an aluminum extrusion having been cut and joined at 45 degree angles at the corners of the frame,
(b) first, second, third and fourth storm window sashes of sequentially increasing size, and a screen sash, said sashes being of rectangular shape and having heights of about half the height of said frame measured between the sill and the header, the upper extremities of said sashes having paired laterally directed bearing posts which engage said jambs to permit vertical sliding movement of the sash within the jambs and permit removal of the sashes from the jambs by the manual lifting of the lower extremity of the sashes in the direction of the interior border in pivotal movement about said bearing posts followed by the tilting of the upper extremity of the sash within a vertical plane, the lower extremities of the sashes having paired latch means which slideably engage said jambs,
(c) said aluminum extrusion being comprised of:
(1) an interior flat border surface,
(2) an exterior flat border surface spaced apart from said interior border surface in a plane parallel thereto but displaced therefrom laterally with respect to the long direction of the extrusion,
(3) a connecting wall extending between said interior and exterior border surfaces,
(4) first, second, third and fourth track means adapted to slideably receive said bearing posts and having lower extremities closed by said connecting wall, and open

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upper extremities, said first track means lying adjacent said exterior border surface and said second, third and fourth tracks lying in contiguous succession, placing the fourth track adjacent the interior border surface, said succession being a stepwise array wherein each track is laterally displaced from adjacent tracks, and

(5) a flange strip disposed on the opposite side of said connecting wall from said track means and disposed between said interior and exterior border surfaces in parallel disposition thereto,

(d) the fourth lengths of said aluminum extrusion constituting the sides of said frame being interconnected in a manner whereby the first, second, third and fourth track means of each side are in vertical coplanar alignment, directing the open upper extremities of the track means toward the center of the frame, thereby forming continuous rectangular first, second, third and fourth pathways which accommodate said first, second, third and fourth storm window sashes, respectively, and said screen sash sharing said first pathway with said first storm window sash.

4,656,779

BLOCK SYSTEM FOR DOORS, WINDOWS AND THE LIKE WITH BLOCKING MEMBERS AUTOMATICALLY SLIDED FROM THE DOOR FRAME INTO THE WING

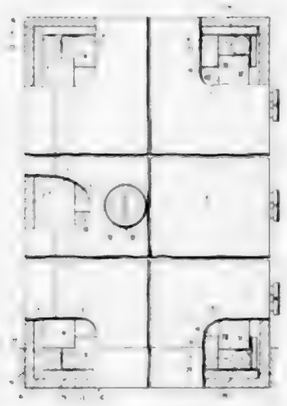
Benedetto Fedeli, Piazza dei Sanniti, 11, Roma, Italy

Filed May 25, 1983, Ser. No. 498,098

Claims priority, application Italy, Nov. 11, 1982, 49487 A/82; Jan. 5, 1983, 47604 A/83

Int. Cl.⁴ E06B *7/28*

U.S. Cl. 49—318 **3 Claims**



1. A blocking system for doors, comprising a door frame, a door wing, and two pairs of mechanically interconnected blocking members disposed in slots in said frame and adapted to slide into confronting slots in the edges of the door wing, said blocking members comprising four bars one disposed in each of said frame slots and extending parallel to and adjacent an associated said edge of the door wing, rack and pinion means mechanically interconnecting said bars for conjoint movement into and out of the slots in the door wing thereby respectively to block and unblock the door wing, spring means continuously urging said bars toward said door wing slots, and a central control device on said door wing to push one said blocking member into its associated said housing slot thereby simultaneously to push all said blocking members into their respective housing slots.

4,656,780

APPARATUS FOR RECIPROCABLY MOVING A DESIRED OBJECT SUCH AS A VEHICLE WINDOW PANEL

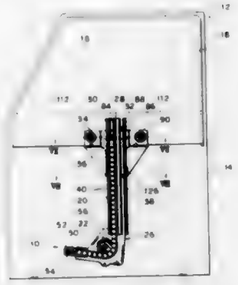
Shizuya Miyauchi; Takashi Suzuki; Shinichi Minobe, and Shigeyuki Soga, all of Shizuoka, Japan, assignors to Koito Seisakusho Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1986, Ser. No. 832,241

Claims priority, application Japan, Jul. 29, 1985, 60-167040

Int. Cl.⁴ E05F *11/38*

U.S. Cl. 49—348 **14 Claims**



1. A vehicle door window regulator for moving a window panel up and down with respect to a door frame, said window regulator comprising:

a drive ball assembly including a series of balls of rigid plastic and a flexible wire on which said balls are threaded together, said drive ball assembly having one end anchored to said window panel;

ball guide means for guiding the drive ball assembly along a predetermined path including a first portion extending downwardly from the window panel and a second portion joined to said first portion at an angle thereto, said ball guide means including an elongated ball guide secured to the door frame and extending along said first portion of the predetermined path of the drive ball assembly;

a drive wheel rotatably supported on the door frame and disposed at the joint between said first and second portions of the predetermined path of the drive ball assembly, the drive wheel having a series of concavities defined peripherally therein for driving engagement with the balls of the drive ball assembly;

biasing means for biasing said drive ball assembly in a direction to urge said window panel toward a closed position with respect to the door frame; and

window guide means for guiding the window panel up and down with respect to the door frame, said window guide means including an elongated window guide extending parallel to said elongate ball guide of the ball guide means and formed integral therewith, and a slider secured to the window panel and slidably engaged with said elongate window guide.

4,656,781

SLIDING DOOR ASSEMBLY

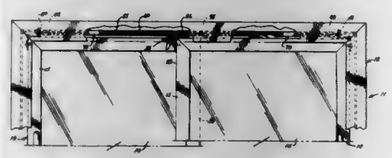
Francis M. Niekrasz, Canoga Park, Calif.; Melvin C. Kaspar, La Grange, and Gerald J. Bockwinkel, Mundelein, both of Ill., assignors to Ardco, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 704,395, Feb. 22, 1985. This application Apr. 19, 1985, Ser. No. 725,005

Int. Cl.⁴ E05D *15/06*

U.S. Cl. 49—404 **24 Claims**

1. A door assembly comprising a stationary frame having at least one door mounted for translational movement in opposite directions relative to the frame, self-moving means for said door including a flexible tubular member, means for affixing one end of said tubular member to said frame, a follower secured to the other end of said tubular member for loose positioning in an active position adjacent a side of said door for urging said door in one direction of movement and follower engagement means mounted on a corner of said door for engaging said follower when in said active position and for moving said follower to an inactive position as an incident to movement of said door to a predetermined position between fully opened and fully closed positions, said follower engagement means being made of resilient material that deforms to permit passage of said corner of the door relative to said follower when said follower is moved to said inactive position.



4,656,782

HORIZONTAL SLIDER CLOSURE

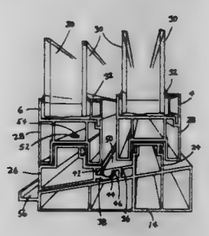
Volker Guelck, 114 Columbia St. West, Waterloo, Ontario, Canada (N2L 3K8)

Filed Nov. 7, 1985, Ser. No. 795,893

Claims priority, application Canada, Nov. 13, 1984, 467660

Int. Cl.⁴ E05D *15/06*

U.S. Cl. 49—404 **24 Claims**



1. A horizontal slider closure having an inner panel and an outer panel mounted in a frame, said frame being rectangular in shape and having a sill that slopes downward and outward, said sill having an inner monorail and an outer monorail located thereon, each monorail supporting one panel, said outer monorail and said outer panel being slidable together relative to said sill with guide means for said outer monorail so that said monorails are always substantially parallel to one another.

4,656,783

INSULATION OF STRUCTURES

Pentti Ahonen, 55 Franklin St., Milton, Mass. 02186

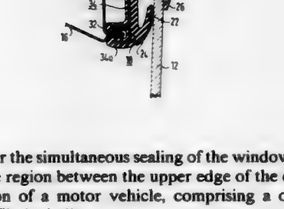
Continuation of Ser. No. 371,556, Apr. 26, 1982, abandoned. This application Apr. 5, 1984, Ser. No. 589,530

Int. Cl.⁴ E04B *1/62*; E06B *7/23*

U.S. Cl. 49—404 **15 Claims**

1. An insulated panel forming at least part of a window and comprising a supporting structure for the window including a mating surface, frame, said frame having separate double-hung window panels which are vertically movable relative to the mating surfaces in which the panels are slidable, each such panel having an elongated groove along at least one side of the panel, each said groove comprising a slot having a relatively wide base leading to a restricted opening, and an insulating strip proportioned to be slidable into said accommodating slot and comprising an enlarged base received by the wide base of the slot and converging to a restricted neck and thereafter extending laterally to a narrow blade-like tip, said restricted neck of the insulating strip being locked into said slot by said restricted opening, said narrow tip extending longitudinally parallel to said groove and disposed in a sealing position between an apron of the frame and the mating surface, said tip maintained in the same position between the apron and mating surface in all positions of the panel, said apron defined by a recess in the frame from which said slot extends, said narrow tip being disposed inside of the outer extremity of the frame,

wherein each panel has an edge recess forming adjacent aprons with each panel frame having an insulating strip with the narrow longitudinally extending tips thereof disposed in intimate facing relation tip-to-tip and at least



partially vertically overlapping when the window is closed,

the edge recesses in the panels being disposed in juxtaposition to form a single recess,

said mating surface being defined by an elevated runner narrower than the panels and positioned to extend into the adjacent recesses of the facing panels, said facing tips both contacting and sealing against said elevated runner;

said elevated runner having a flat strip-contacting surface against which both insulating strips are urged,

said laterally extending tips of the insulating strips disposed along a substantial length thereof into intimate contact with said flat strip-contacting surface.

4,656,784

DEVICE FOR THE SIMULTANEOUS SEALING OF THE WINDOW PANE OF A DOOR AND THE ROOF OF A MOTOR VEHICLE

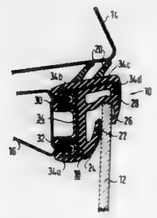
Walter Brachmann, Nonnenhorn, Fed. Rep. of Germany, assignor to Sigri GmbH, Meitingen, Fed. Rep. of Germany

Filed Nov. 19, 1985, Ser. No. 799,633

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1984, 3442241

Int. Cl.⁴ E06B *7/16*

U.S. Cl. 49—491 **7 Claims**



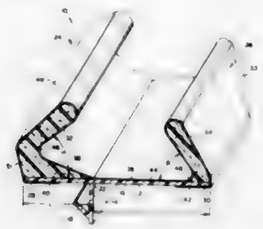
1. Device for the simultaneous sealing of the window pane of a door and the region between the upper edge of the door and the roof region of a motor vehicle, comprising a one-piece elastomer profile including:

at least one element for sealing the window pane having a sealing lip gripping around the edge of the window pane and lying against the outer surface of the window pane;

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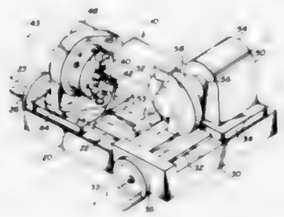
at least one element for sealing the region between the upper edge of the door and the roof;
a mounting region having two U-shaped recesses formed therein defining holding lips directly clamped from the outside onto two parallel sheet metal webs of the frame of the door projecting outwardly perpendicular to the frame of the door; and
a one-piece reinforcement insert disposed in said profile, surrounding said two U-shaped recesses and extending substantially to said sealing lip at an angle.

4,656,785
WEATHERSEAL
Charles Yackiw, Fairport, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.
Filed Apr. 11, 1986, Ser. No. 851,122
Int. Cl.⁴ E06B *7/16*
U.S. Cl. 49—495 **7 Claims**



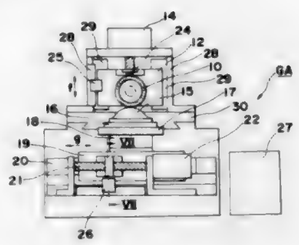
1. An elongate weatherseal of a generally uniform cross-section throughout its length for installation in a right angled recess in a door frame or the like comprising:
an elongate substantially rigid plastic base member which in its manufactured form is flat and has side edge portions and a central portion;
a pair of legs formed from a soft resilient material, each leg having one end secured to one side surface of said base member at one of said side edge portions thereof, said legs further having opposite flat free end portions extending outwardly transversely of said base member toward one another; and
an elongated hinge notch on the opposite side surface of said base member in said central portion of said base member to facilitate bending said base member through an angle of substantially 90° for installation of the weatherseal to the door frame.

4,656,786
PUNCH TOOL GRINDER AND METHOD
Tommy D. Horner, 3440 N. Beltline Rd., No. 1066, Irving, Tex. 75062
Filed Apr. 5, 1985, Ser. No. 718,961
Int. Cl.⁴ B24B *3/60, 41/06*
U.S. Cl. 51—50 R **19 Claims**



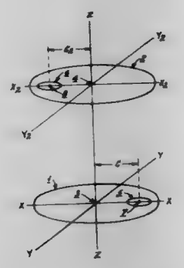
1. A device for quickly aligning a punch tool for grinding a surface thereof, in combination with a grinding machine of the type having an "x" direction guideway, a "y" direction guideway at a right angle to the "x" direction guideway, a rotatable chuck slidably mounted on said "x" direction guideway, a motor driven grinding wheel slidably mounted on said "y" direction guideway with the axis of rotation of said grinding wheel parallel to said "y" direction guideway, said device for aligning comprising:
a. a punch tool holding means having a spheroidal outer surface;
b. at least two adjustable jaws in said rotatable chuck movable into and out of clamping engagement with said spheroidal outer surface of said tool holding means; and
c. abutment means movably attached to said grinding machine for abutting against a face of said punch tool to align said punch tool face perpendicular to the axis of rotation of said rotatable chuck and which abutment means is movable away from said tool face when said jaws are in said clamping engagement with said tool holding means so that said punch tool face can be ground by said grinding wheel.

4,656,787
CURVED SURFACE FORMATION POLISHING APPARATUS
Shuji Ueda, Neyagawa; Kunio Nakada, Suita; Kazuhiko Fujino, Hirakata; Hiroshi Saeki, Neyagawa, and Kenji Fujishiro, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Apr. 22, 1985, Ser. No. 725,651
Claims priority, application Japan, Apr. 20, 1984, 59-80440
Int. Cl.⁴ B24B *13/00*
U.S. Cl. 51—50 R **13 Claims**



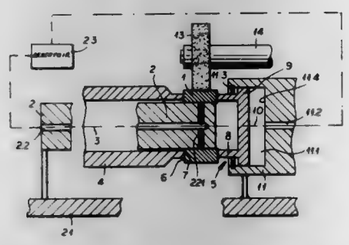
1. A curved surface formation polishing apparatus which comprises:
means for rotating a workpiece to be processed about a workpiece rotary axis;
a processing tool rotating means having a processing tool rotary axis generally intersecting at right angles with the workpiece rotary axis and being for holding a processing tool thereon so as to be rotated thereby around said processing tool rotary axis;
means for relatively displacing said processing tool rotating means and said workpiece rotating means in a direction parallel to the workpiece rotary axis;
means for varying the position of said processing tool rotating means in the direction parallel to said processing tool rotary axis; and
means for displacing said workpiece rotating means relative to said processing tool rotating means in a direction generally at right angles to the processing tool rotary axis and the workpiece rotary axis.

4,656,788
VARIABLE ORBITAL DRIVE MECHANISM
Lawrence J. Rhoades, Pittsburgh, and Nicholas P. Nokovich, Greensburg, both of Pa., assignors to Extrude Hone Corporation, Irwin, Pa.
Filed Sep. 6, 1984, Ser. No. 647,810
Int. Cl.⁴ B24B *7/00*
U.S. Cl. 51—58 **10 Claims**



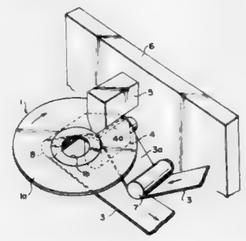
1. A mechanism for imparting planar relative orbital motion to at least two associated driven elements comprising:
A. frame means for confining said driven elements;
B. constraining means for fixing said driven elements to prevent rotation relative to one another;
C. two opposed eccentric drive means having a common axis of rotation for driving each of said driven elements in a planar orbital path, each of said eccentric drive means having an independently controllable radius of eccentricity to control the radius of each of said orbital paths; and
D. means for controlling the relative angular displacement of each of said orbital paths relative to the other orbital path of said driven elements by angular adjustment of one of said drive means relative to the other.

4,656,789
APPARATUS FOR GRINDING CYLINDRICAL WORKPIECES, ESPECIALLY INNER AND OUTER SURFACES OF RACE RINGS FOR BEARINGS
Rudolf Schwär, Wuppertal, Fed. Rep. of Germany, assignor to Rene Keller, Bern, Switzerland
Filed Aug. 21, 1985, Ser. No. 768,027
Claims priority, application Switzerland, Sep. 17, 1984, 4444/84
Int. Cl.⁴ B24B *33/10*
U.S. Cl. 51—105 R **1 Claim**



1. A grinding apparatus for an annular workpiece, said apparatus comprising:
a stationary support base for said apparatus;
a driver in the form of a hollow cylinder mounted on said support base, said driver having an end face adapted to engage said workpiece at one side thereof and rotate said workpiece about a longitudinal axis;
a pressing device including:
a hydraulic pressing cylinder coaxial with said hollow cylinder,
a piston adapted to press said workpiece against said driver, said piston being disposed in the hydraulic pressing cylinder with radial adjustment clearance which allows passage of a hydraulic pressure medium from one side of said piston to an opposite side of said piston, and
a pressing ring formed as an extension of said piston and adapted to be rotatively driven by the workpiece;
a nonrotating workpiece holder provided with means for hydrodynamically centering said workpiece, said holder being spaced from said workpiece by a distance smaller than said clearance between said piston and said cylinder, said workpiece holder having a longitidunal bore and two transverse bores in communication with one another and wherein one of said two transverse bores is positioned orthogonal to said workpiece while a second of said two transverse bores is positioned orthogonal to said pressing ring; and
a tool for grinding a peripheral surface of said workpiece.

4,656,790
BURNISHING METHOD AND APPARATUS FOR MAGNETIC DISK
Kazuo Mukai; Akira Houjoh, both of Tokyo, and Shuji Nakata, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 26, 1985, Ser. No. 801,762
Claims priority, application Japan, Dec. 4, 1984, 59-256290
Int. Cl.⁴ B24B *21/00*
U.S. Cl. 51—141 **4 Claims**



1. A method of burnishing a surface of a magnetic disk by use of an abrasive tape, which comprises the steps of: rotating said magnetic disk, jetting compressed air via opposed air nozzles to the same positions on the two surfaces of said magnetic disk, intervening said abrasive tape between one of said air nozzels and one of said surfaces of said magnetic disk, and closely contacting said abrasive tape with the magnetic material surface of said magnetic disk and thereby conducting the burnishing.

3. An apparatus for burnishing a surface of a magnetic disk, which comprises a drive mechanism for supporting and rotating a magnetic disk, air nozzles positioned on each surface side of said magnetic disk so that they oppose each other for jetting compressed air at said magnetic disk, and an abrasive tape intervening between one of said air nozzles and a magnetic material surface of said magnetic disk.

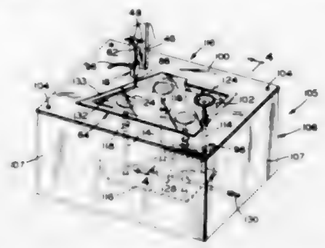
VOL 1077 ISS 2 AP 14 1987 UMI

4,656,791

ABRASIVE FLUID JET CUTTING SUPPORT

Richard A. Herrington, Walbridge; Thomas G. Kleman, Northwood, and Ermelinda A. Apolinar, Toledo, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Sep. 27, 1984, Ser. No. 654,975
Int. Cl.[4] B24C 3/04
U.S. Cl. 51—410 9 Claims



1. A fluid jet cutting system including apparatus for supporting a sheet from which a pattern is to be cut by abrasive particles entrained in a fluid jet stream directed against the sheet from a nozzle, said nozzle being adapted to follow a path along said sheet describing said pattern, said sheet comprising a peripheral portion lying outwardly of said path and a central portion inwardly of said path, comprising:

a catcher tank for collecting the fluid and spent abrasive and debris resulting from the cutting, said catcher tank comprising a box-like structure having side walls and a bottom wall with structural members at its open upper end defining a frame;

a first support member mounted on said frame, said first support member having a central opening therein generally similar to and larger than said pattern defined by said path and including an upper planar surface for supporting said peripheral portion of said sheet; and

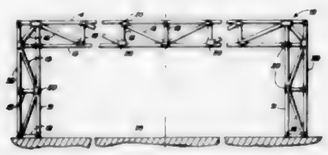
a second support member independent from said first support member comprising a vacuum stand supported upon said bottom wall of said catcher tank centrally of said opening for supporting said central portion of said sheet in substantially the same plane as said peripheral portion upon said upper planar surface of said first support member.

4,656,792

TRUSS BUILDING SYSTEM

Gerald L. Clark, 1740 E. Butler, Phoenix, Ariz. 85020

Filed Mar. 7, 1984, Ser. No. 587,304
Int. Cl.[4] E04B 7/02
U.S. Cl. 52—93 6 Claims



1. A system for construction of a building having a floor and including, in combination:

a plurality of U-shaped truss members, each prefabricated as a single unitary member and each spaced a first predetermined distance from the next adjacent truss member and disposed in a parallel vertical planes normal to the floor of the building for providing primary structural support and unique architectural features for the building:

each truss member comprising (a) first and second wall truss subsystems, each comprising interior and exterior parallel wall chord members spaced apart a second predetermined distance and interconnected by a reinforcing web brace member, and (b) a roof truss subsystem having first and second ends and including top and bottom roof chord members, spaced apart and interconnected by a plurality of reinforcing web brace members, said first wall truss subsystem attached to said first end of said roof truss subsystem and said second wall truss subsystem attached to said second end of said roof truss subsystem to form each of said prefabricated unitary U-shaped truss members:

said second predetermined distance being substantially two feet to permit cabinets and closets of standard depth to be recessed in the spaces between adjacent ones of said U-shaped truss members;

means for maintaining said plurality of truss members in proper vertical orientation; and

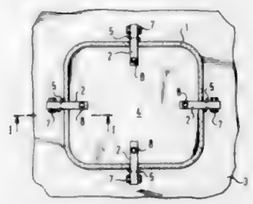
means for anchoring the bottom ends of said wall truss subsystem to the floor of the building.

4,656,793

EXPLOSION COVER PLATE ESPECIALLY EXPLOSION HATCH

Gerrit Fons, HE Zaandam, Netherlands, assignor to Jansens & Dieperink B.V., HE Zaandam, Netherlands

Filed Jun. 25, 1981, Ser. No. 277,249
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1981, 3114941
Int. Cl.[4] E04B 1/92
U.S. Cl. 52—98 8 Claims



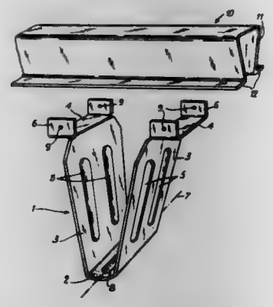
1. An explosion cover plate for containers and ships' holds, especially an explosion hatch, which is pivoted by means of at least one lever arm to a wall of the container or ships' hold to be closed and by means of a locking element is retained in a closure position in which it closes off an opening in said wall wherein the locking element upon occurrence of a predetermined overpressure and/or negative pressure in said container or ships' hold will shear or break from the wall to at least partially release the opening, characterized in that the lever arm (2) bridges a flexionally elastic clamping section (1) which sealingly maintains the cover plate in the closure position and will release the same only at the predetermined overpressure or negative pressure, and in that a bearing block (6) is mounted either on the wall (3) or the plate (4) in the vicinity of the clamping section (1), said bearing block being provided both with the pivot in the form of a pivot bearing (7) and with the support for the locking element (5), and, further, in that the lever arm (2) at the end remote from the bearing block (6) is adjustably supported by means of a setting element (8) either on the plate (4) or the wall (3).

4,656,794

DEVICE FOR PROVIDING DOUBLE COVERINGS OR CLADDINGS, SUPPORT PIECES, SUPPORTS AND PLIERS FOR PUTTING INTO EFFECT SAID DEVICE

Patrick D. Thevenin; Bernard C. Gisinger, and Stéphane J. Thevenin, all of 0880 Montbermé, France

Filed Feb. 13, 1984, Ser. No. 579,719
Claims priority, application France, Mar. 11, 1983, 83 04029
Int. Cl.[4] E04B 7/00
U.S. Cl. 52—22 21 Claims



1. A device for providing double coverings or claddings comprising:

a stiff support piece adapted to be fixed in a bottom portion of a corrugation of a pre-existing roof covering, said support piece adapted to be fixed to subjacent purlins through said covering, said support piece having a generally U-shaped section including a base cooperatively shaped for being fixed in said bottom of said corrugation, with upper edges of said U-shaped section being folded back horizontally so as to provide two seats, with laterally disposed ends of said seats raised at a right angle to said seats for forming abutments,

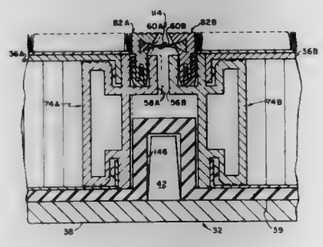
an upper purlin fixed to said abutments of said support piece, wherein said upper purlin is a reversed U-shaped metallic section having side wings, said wings having edges folded back horizontally and outwardly.

4,656,795

FLOOR PANEL FOR ELEVATED FLOOR ASSEMBLY

Raymond E. Albrecht, Sewickley; Rodney W. Gartner, Coraopolis; John O. Hazen, Monaca, and Robert G. Lindner, Sewickley, all of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Continuation of Ser. No. 502,897, Jun. 10, 1983, abandoned.
This application Nov. 29, 1984, Ser. No. 676,450
Int. Cl.[4] E04B 5/58
U.S. Cl. 52—126.6 12 Claims



1. A floor panel for use in elevated floor assemblies, comprising:

generally rectangular upper and lower facing sheets laminated to opposite faces of a relatively incompressible core;

said panel having an upper face and a lower face and contiguous side and end faces;

a relatively thin, flexible strip extending along said side and end faces around the perimeter of said panel, said flexible strip projecting laterally outwardly from and generally parallel with said upper face of said panel;

said upper and lower facing sheets including perimeter flanges extending inwardly toward but outboard of said incompressible core;

perimeter frame members surrounding said core and receiving said flanges; and

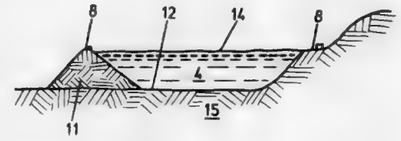
said flexible strip being provided in plural strips, one carried by each of said frame members and extending substantially the entire length thereof.

4,656,796

BUILDING STRUCTURE AND METHOD OF PRODUCING THE SAME

Pietro De Porcellinis, Madrid, Spain, assignor to Rodio Foundation Engineering Ltd., Zurich, Switzerland

Filed Oct. 15, 1985, Ser. No. 787,387
Claims priority, application Switzerland, Oct. 19, 1984, 5028/84
Int. Cl.[4] E05D 15/48
U.S. Cl. 52—169.7 12 Claims



1. A building structure sealed against hydrostatic pressure and comprising one of a concrete and stabilized natural substratum, the building structure comprising at least a first cover layer of an essentially homogeneous mass of concrete on a side exposed to the hydrostatic pressure, an intermediate layer covered by a sealing layer polymerized in situ, the sealing layer containing a synthetic sealing and impregnating compound and being fashioned as a web disposed on the intermediate layer so as to form a sandwich-like plating lining.

7. A method for constructing a structure sealed against hydrostatic pressure, the method comprising the steps of forming an outline of the structure, allowing the outline of the structure to stabilize, applying at least a first layer to a surface of the structure exposed to the hydrostatic pressure, allowing the first layer to at least partially solidify, impregnating a web with a synthetic sealing and impregnating compound, and applying the web in an unpolymerized condition to the first layer so as to allow the web to polymerize in situ.

4,656,797

PREFABRICATED HOME FOUNDATION SKIRT SYSTEM

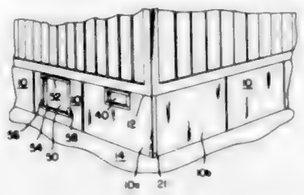
Clark M. Marquart, 6923 Storm Lake Rd., Snohomish, Wash. 98290

Filed Jan. 13, 1986, Ser. No. 818,015
Int. Cl.[4] B60R 27/00; E04B 1/04
U.S. Cl. 52—169.12 4 Claims

1. A modular load bearable skirting system for pre-manufactured homes and building structures supported in an elevated position which comprises a plurality of rectangular concrete skirt modules positioned in side-by-side adjancy beneath and in contact with the lower peripheral edge of such a building structure; each module having a length greater than its height, and thin panel making up most of its size with a top edge

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abutting the overhead building structure lower peripheral edge, and a footing integral with and thicker than the panel supporting the module, the side edges of each panel being



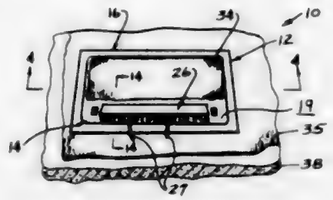
rabetted so as to provide an inner vertical flange on one edge and outer vertical flange on its other edge with adjacent panel edges abutting in vertical rabbet joints.

4,656,798

CLOSURE MEMBER FOR AN ELECTRICAL ACTIVATING ASSEMBLY

John O. Hazen, Monaca, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Apr. 17, 1986, Ser. No. 853,058
Int. Cl.⁴ E04F *19/08*; H02G *3/08*
U.S. Cl. 52—221 **10 Claims**



1. In a closure member for an electrical activating assembly comprising a plate member having a recess along one edge portion; and an access port assembly supported in said recess for movement between a closed position wherein said access port assembly is flush with said plate member and an open position wherein said access port assembly projects upwardly from said plate member; the improvement wherein said access port assembly comprises:

an access port housing including a top wall having a front edge and a rear edge, a bottom wall inclined downwardly from said rear edge of said top wall and extending forwardly of said rear edge and spaced from said front edge, end walls, and plural egress slots extending inwardly from that edge of said bottom wall remote from said rear edge;

a resilient filler strip overlying said bottom wall and covering said egress slots; and

retainer means retaining said filler strip engaged with said bottom wall.

4,656,799

SUPER HIGH-RISE BUILDINGS

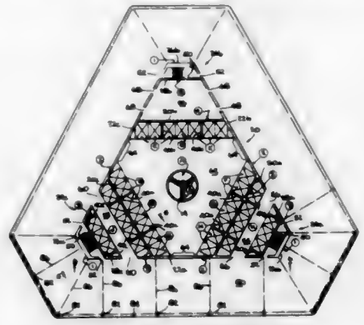
John G. Maryon, Apt. 2818, 77 Davisville Ave., Toronto, Ontario, Canada (M4S 1G4)

Filed Apr. 28, 1986, Ser. No. 856,461
Int. Cl.⁴ E04H *1/00, 14/00*
U.S. Cl. 52—236.3 **40 Claims**

1. A super high-rise building for human occupation having at least 100 vertically spaced, human-occupiable stories comprising:

a foundation; and

a hollow vertical prism of reinforced concrete, mounted on the foundation and being at least 100 stories high, for transmitting to the foundation substantially all loads above at least the 75th floor of the building in a manner such that automatic lateral rigidity, stability, and strength are attained, the sides of said prism having a plurality of aper-



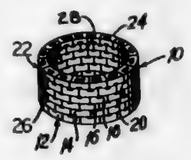
tures for such purposes as allowing human movement between the inside and outside of the prism, the portion of substantially any horizontal circumference of said prism which is occupied by said apertures being less than about 25% of said horizontal circumference.

4,656,800

METHOD AND CONSTRUCTION OF A CISTERN FROM COMPONENT BLOCKS AND REINFORCING RODS

Thomas B. Christenson, 252-29 72nd Ave., Bellerose, N.Y. 11426

Filed Aug. 28, 1986, Ser. No. 901,284
Int. Cl.⁴ E04B *1/04, 1/35*; E04G *15/00*
U.S. Cl. 52—248 **14 Claims**



9. A cistern construction in the form of a cylindrical monolithic structure comprising:

a plurality of superimposed layers of like arcuate concrete blocks having communicating openings therewith extending through and between said layers, said openings extending both horizontally and in a vertical direction;

wedged-shaped openings opened outwardly toward the superimposed layers and extending radially through each of said blocks along at least one horizontal surface thereof;

at least one annular reinforcing ring disposed in interconnecting relationship and extending through the blocks of each of said layers in generally concentric relation with said cylindrical form; and

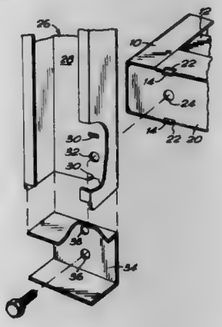
reinforcing rods extending through the vertical openings of said blocks in a generally axial disposition relative to said rings, said rods having hook-shaped upper extremedies hooked over the uppermost reinforcing ring, so that when mortar is charged through the openings of each of said blocks, the mortar will bind the blocks, reinforcing rods and reinforcing rings together to form a monolithic structure.

4,656,801

FRAME STRUCTURES

David P. Eriam, Winchester, England, assignor to Rittal-Werk Rudolf LOH GmbH & CO KG, Fed. Rep. of Germany

Filed Oct. 28, 1985, Ser. No. 792,065
Claims priority, application United Kingdom, Nov. 1, 1984, 8427710
Int. Cl.⁴ E04C *2/38*; F16B *12/50*
U.S. Cl. 52—280 **13 Claims**



1. A frame structure comprising:

a first transverse frame member;

a location piece fitted to one end of said first transverse frame member, said location piece having at least two spaced protrusions extending therefrom substantially axially of said first transverse frame member, and said location piece also having a first threaded securement element;

a second transverse frame member having at least two spaced openings fitted over said protrusions to locate said second transverse frame member with respect to said first transverse frame member, said second transverse frame member also having an aperture which is aligned with said first threaded securement element;

an upright frame member having at least two spaced openings fitted over said protrusions to locate said upright frame member with respect to said first and second transverse frame members, said upright frame member also having an aperture which is aligned with the aperture of said second transverse frame member and with said first threaded securement element; and

a second threaded securement element engaged with said first threaded securement element via the apertures in said second transverse frame member and said upright frame member to secure together said first and second transverse frame members and said upright frame member.

4,656,802

VENT PIPES FOR CINDER BLOCK WALLS

Lawrence E. Reynolds, 1093 Eden Cir., Spring Hill, Fla. 33526

Filed Feb. 21, 1986, Ser. No. 831,800
Int. Cl.⁴ E04B *1/70*; E04F *17/04*
U.S. Cl. 52—300 **7 Claims**

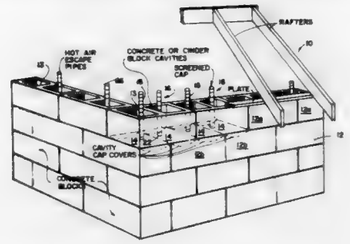
1. A device that cools cinder block walls by allowing heat within the walls to escape into the atmosphere, comprising:

a cavity cap cover member of the type designed as a capping means for cinder blocks, there being as many cavity cap covers per cinder block as there are cavities formed in said cinder block;

an aperture formed in said cavity cap cover member;

an upstanding vent pipe having a preselected length and a base;

said base of said vent pipe specifically configured and dimensioned to securely engage the periphery of said aperture so that when said base is engaged by said aperture, said vent pipe is held firmly in an upstanding disposition and so that



concrete poured upon said cavity cap cover member can not leak through the aperture.

4,656,803

MULTIPLY GLAZED WINDOW AND DOOR ASSEMBLIES WITH SCREENED BREATHING PASSAGES

Steven T. Chludil, 12050 Baumgartner Rd., St. Charles, Mich. 48655

Filed Jun. 9, 1986, Ser. No. 872,134
Int. Cl.⁴ E06B *3/24*
U.S. Cl. 52—304 **8 Claims**



1. A multiply glazed, vented window or door assembly having spaced apart glass panes sealably secured perimetrally in parallel side sash members and parallel upper and lower sash members, at least one of said sash members having, in its outer surface, a linear groove perimetrally aligned with the space between said panes and further having a breathing port extending from the marginal wall of the groove through to the space between said panes; an elongate flat plate having fine perforations and parallel end flanges projecting generally perpendicularly therefrom, fitting into and sealing off said groove at spaced distances from said port to provide an air circulation manifold under said plate, the plate being sufficiently long to have sufficient perforations to provide a cross-sectional area which correlates with the cross-sectional area of said port; and means for securing said plate in place.

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4,656,804

CYLINDRICAL MAST ELEMENT FOR END TO END ASSEMBLY WITH OTHER ELEMENTS SO AS TO CONSTITUTE A MAST

Yves Foissac, 15 rue des Lauriers, 59300 Famars, and Guy Guislain, 103 Grand'rue, 59158 Maulde, both of France

Filed Jun. 18, 1985, Ser. No. 745,934
Claims priority, application France, Jun. 18, 1984, 84 09998
Int. Cl.⁴ E04C *1/00*
U.S. Cl. 52—309.16 **16 Claims**



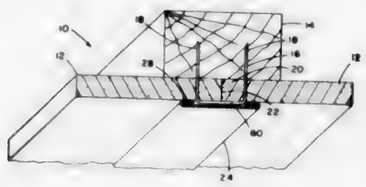
1. A mast element comprising a cylindrial axial tube (2), one (4) of the ends (4,6) of which includes a sleeve tube (5) for assembly by engagement with the inside of a hollow end (6) of a similar element, the mast element having plane surfaces (7,8) at each end (4,6) inclined with respect to the axis (3) of the element and having a wall which is constituted by the polymerization of a coil of pieces of fabric impregnated with thermosetting resin, said pieces including a first plaurality of pieces of fabric having substantially equal streangth in two perpendicular directions known as the warp and the weft, and a second plurality of pieces of fabric oriented such that they have greater streangth in one direction, for example, the warp, said element having a zone (9) near a beveled end (6) adapted to engage a sleeve tube (5) of an adjacent element said zone having at least one piece of fabric (19) of the oriented type disposed such that its greater strength is in the transverse direction of the mast.

4,656,805

PAPER BATTENS

Daniel A. Winkowski, Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.

Division of Ser. No. 407,138, Aug. 11, 1982, Pat. No. 4,581,870.
This application Dec. 12, 1985, Ser. No. 808,028
Int. Cl.⁴ E04B *2/00*; E04F *19/02*; B32B *3/04*
U.S. Cl. 52—417 **8 Claims**



1. A predecorated wall comprising a plurality of substantially flat faced predecorated wallboards having edge portions forming a joint therebetween and an elongate paper batten adhesively disposed over at least some of said joints, said paper batten having a width of about one and a half inches and being a single flat strip of impregnated, stiffened paper having a substantially uniform thickness throughout of about 0.015 inch, said paper batten having a printed design on a substantially flat front face thereof and pressure sensitive adhesive on the substantially flat back face thereof adhering said batten to said wallboard, said printed design on said paper batten being aesthetically compatible with the decoration on said predecorated wallboard and said batten flat front face being held in fixed parallel relation to the substantially flat surfaces of said wallboards.

4,656,806

EXPANSION ANCHOR ASSEMBLY

Erich Leibhard, Munich, and Armin Herb, Peissenberg, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Liechtenstein

Filed Dec. 16, 1985, Ser. No. 809,501
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1984, 3445713
Int. Cl.⁴ E04C *5/12*
U.S. Cl. 52—704 **7 Claims**



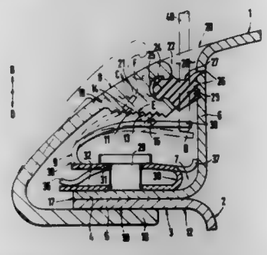
1. Expansion anchor assembly for use in a borehole in a receiving material including an axially elongated expansion sleeve having a leading end and a trailing end relative to the insertion direction of the expansion anchor assembly into the borehole and said expansion sleeve having an axially extending bore between the leading and trailing ends thereof, the leading end of said expansion sleeve arranged to be expanded radially outwardly, an axially extending cone sleeve having a conically shaped outer surface and having a leading end and a trailing end relative to the insertion direction with said cone sleeve located at and arranged to be drawn into the leading end of said expansion sleeve, an axially elongated tie rod having a leading end and a trailing end relative to the insertion direction and extending axially through said expansion sleeve and with an expansion cone having a conically shaped radially outer surface secured to the leading end of said tie rod and located within and in surface contact with cone sleeve, means for drawing said expansion cone into said cone sleeve in the direction opposite to the insertion direction so that said expansion cone moves axially relative to said expansion sleeve towards the trailing end of said expansion sleeve, the radially outer surfaces of said cone sleeve and expansion cone each having a different cone angle and being axially displaceable into the leading end of said expansion sleeve by said means for drawing said expansion cone, and means forming a stop for limiting the axial movement of the one of said cone sleeve and expansion cone having the smaller cone angle after said means for drawing said expansion cone into said cone sleeve has effected a certain axial movement of said expansion cone relative to said expansion sleeve.

4,656,807

DETACHABLE FASTENING OF A DECORATIVE STRIP

Sigmund Anhegger, Renningen, and Klaus-Peter Lehmann, Muehlacker, both of Fed. Rep. of Germany, assignors to Ing. H.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 20, 1985, Ser. No. 811,337
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1984, 3447097
Int. Cl.⁴ B60R *13/04*
U.S. Cl. 52—718.1 **16 Claims**



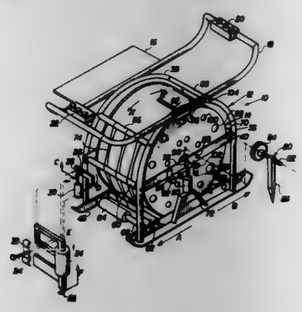
1. A detachable fastening of a decorative strip at a support flange means of a motor vehicle, comprising decorative strip means cooperating with a retaining clamp means, flange bolt means mounted at the support flange means for holding in position the retaining clamp means, the decorative strip means including two essentially parallelly extending support sections of which one of the support sections abuts section-wise at the bottom side of the support flange means, said retaining clamp means including at least one detent member which form-lockingly and force-lockingly engages into one of several detent receiving means arranged one behind the other on the other of the support sections.

4,656,808

ROOF SHINGLE LAYING MACHINE

Peter W. Mansfield, 511 59th St., Holmes Beach, Fla. 33510

Filed Apr. 28, 1986, Ser. No. 856,473
Int. Cl.⁴ E04D *15/02*
U.S. Cl. 52—749 **14 Claims**



1. A roof shingle laying machine for laying shingles on a roof comprising:

a frame having a bottom;

a pair of roller index actuators mounted for lateral translation on cross shafts connected to said frame adjacent to said bottom of said frame;

a drum having an axle, said drum connected for rotation in said frame;

said drum also connected for limited movement relative to said frame between a lifted position and an unlifted position;

drum lifting means connected to said frame for moving said drum to said lifted position wherein said frame will be supported on said roller index actuators;

said drum having a circumferential surface with an upper portion of said surface open to receive a shingle, and a lower portion of said surface open to lay a shingle on the roof; and

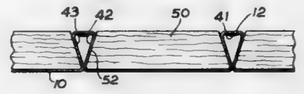
piston means connected to said cross shafts within said roller index actuators for moving said frame laterally relative to said roller index actuators when said drum is in said lifted position.

4,656,809

PROFILED SHEET MATERIAL

Frederick G. Wilson, Co. Antrim, Northern Ireland, assignor to Wilson Double Deck Trailers Limited, Lisburn, Northern Ireland

PCT No. PCT/GB85/00075, § 371 Date Oct. 21, 1985, § 102(e) Date Oct. 21, 1985, PCT Pub. No. WO85/03679, PCT Pub. Date Aug. 29, 1985
PCT Filed Feb. 25, 1985, Ser. No. 793,689
Claims priority, application United Kingdom, Oct. 13, 1984, 8425915; Feb. 25, 1985, 8404977
Int. Cl.⁴ E04C *2/32*
U.S. Cl. 52—795 **8 Claims**



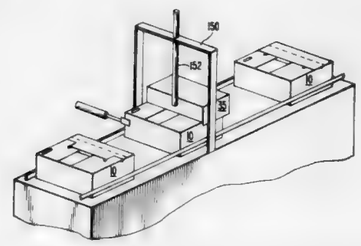
1. A vehicle having side walls comprising a rigid profiled sheet material having a plurality of parallel deformations which in cross section are substantially triangular with the base of each deformation spaced from the body of the sheet, the apex of each deformation being formed by closely abutting curved faces of the sheet material where the body of the sheet material is bent into the deformation, forming an outer face which is substantially flat and an inner face which has a series of parallel strengthening ribs, the outer face comprising the outer surface of a side wall of the vehicle.

4,656,810

APPARATUS FOR AUTOMATICALLY LOCKING L-SLIDE LOCK CARTONS

John Plaskett, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Jul. 1, 1986, Ser. No. 880,687
Int. Cl.⁴ B65B *7/24*
U.S. Cl. 53—374 **18 Claims**



1. An apparatus for locking a top of a case having an un-

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locked closing flap and L-slide lock slots for receiving opposite free end corners of the closing flap, the apparatus comprising:

(a) a closing flap securing member for detachably securing an unlocked closing flap of a stationary case, the case having a top portion which top portion includes said closing flap, the closing flap being connected to a top end of a side of the case, the closing flap having a free longitudinal edge and opposite free end corners, the top portion further including L-slide lock slots for receiving respective free end corners of the closing flap; and

(b) means for moving the unlocked closing flap with the closing flap securing member secured thereto, from a generally horizontal unlocked position flush with the top of the case to form a longitudinal fold in the closing flap between said free longitudinal edge and the connection between the closing flap and the side top end, with the free longitudinal edge of the closing flap at about the level of the side top end, to thereby position the opposite free end corners of the closing flap adjacent respective L-slide lock slots; and for thereafter flattening the longitudinal fold and tucking the opposite free end corners of the closing flap into respective L-slide lock slots to thereby lock the case.

4,656,811

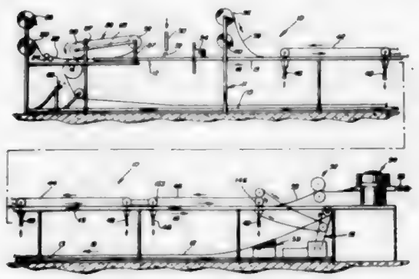
CONTINUOUS MOLDING MACHINE FOR PRODUCING CHAINS OF SOIL PLUGS

Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics Co., Naperville, Ill.

Division of Ser. No. 351,232, Feb. 22, 1982, Pat. No. 4,517,764. This application Mar. 20, 1985, Ser. No. 714,126

Int. Cl.⁴ B65B *47/04*; **A01G** *9/02*

U.S. Cl. 53—559 **10 Claims**



1. A machine (**10**) for producing a plurality of interconnected soil plugs (**50**) in which plants may be grown prior to permanent planting, said soil plugs (**50**) being molded and cured in a machine comprised of:

a continuous chain (**12**) with a plurality of open top mold elements (**14**), each element including a body (**70**) defining a transverse groove (**72**) open on each end;

means (**16**) for driving said continuous mold (**12**) along a path, said path including a curing section;

means (**28,78,88**) for conforming a first continuous cover material (**22**) to a surface (**72**) of said mold elements (**14**);

a die element (**74**) pivotably connected to each end of said body (**70**), each of said die elements (**74**) including a die portion (**78, 80**) for forming a seed recess at said groove end and for holding said cover material (**22**) within said groove (**72**);

means (**30**) for introducing a reaction mixture (**32**) to said mold elements (**14**); and

at least one pressure element (**42,44,46**) moving over said curing section with said chain (**12**) during the curing of said reaction mixture (**32**) in said mold elements (**14**).

4,656,812

METHOD OF PRODUCING ROUND BALES OF AGRICULTURAL PRODUCTS

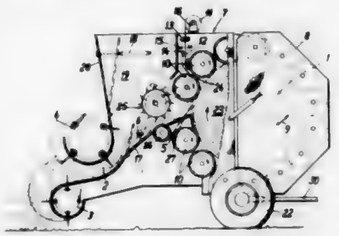
Winfried Busse, Harsewinkel; Theodor Freye, Gutersloh; Karl H. Tooten, Harsewinkel, and Gerhard Clostermeyer, Gütersloh, all of Fed. Rep. of Germany, assignors to Claas Ohg, Harsewinkel, Fed. Rep. of Germany

Filed Aug. 16, 1985, Ser. No. 766,812

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1984, 3431389

Int. Cl.⁴ B65B *63/04*; **A01D** *91/00*

U.S. Cl. 53—399 **2 Claims**



1. An improved method of producing round bales of agricultural products wrapped by a wrapping material, with the steps of continuously supplying a product into a press; transporting the product into pressing chamber for forming a bale; wrapping the bale with a wrapping material; intermediately storing the product and interrupting the supply of the product into the pressing chamber during the wrapping step; separating the wrapping material after wrapping of the bale; opening the pressing chamber; discharging the wrapped finished bale out of the pressing chamber; closing the pressing chamber; further transporting the intermediately stored product and the continuously supplied products into the pressing chamber so as to form a new bale wherein the improvement comprises:

starting the opening of the pressing chamber before separating the wrapping material; and

starting of the closing of the pressing chamber in response to sensing of the discharged bale during said discharging step by a sensor, and transporting the intermediately stored product and the continuously supplied product into the pressing chamber before the chamber is fully closed.

4,656,813

SYSTEM AND EQUIPMENT FOR THE MANUFACTURE AND FILLING OF FLEXIBLE STERILIZABLE BAGS

Luciano Baldini, Tirano, Italy, and Alberto Siccardi, Lugano, Switzerland, assignors to Bieffe S.p.A., Italy

Filed Nov. 7, 1984, Ser. No. 669,004

Claims priority, application Italy, Nov. 14, 1983, 23694 A/83

Int. Cl.⁴ B65B *61/00*

U.S. Cl. 53—410 **9 Claims**

1. A method for the continuous production of flexible bags of synthetic or artificial materials and for simultaneously filling the bags with a selected fluid during the manufacture thereof, said method including the steps of:

unwinding film from a reel, the reel having a width which is an integer number multiple of the width dimension associated with said bags;

cleaning said film in two stages which include a first stage of subjecting the film to ultrasound radiation followed by a second stage of washing said film with water supplied from water jets;

drying the film;

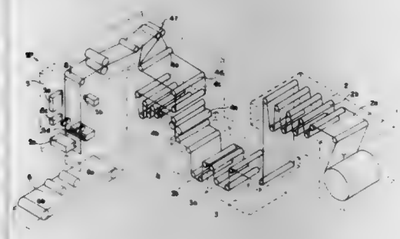
sterilizing the film by means of ultraviolet rays;

aligning the film to permit precise folding thereof;

transporting the film along a predetermined direction;

folding the film over itself along a center fold which extends along the length direction of the film to thereby generate a front and back film section which are aligned over each other, the folding step being carried out while, simultaneously, the direction at which said film travels is changed with respect to said predetermined direction;

installing valves comprising a rubber piece enclosed within an envelope formed of the same material as said film at spaced longitudinal intervals along one of the longitudinal edges of the film which has been folded, said valves being applied onto the outer wall of the folded film without puncturing the inner wall;



welding the longitudinal ends of the folded film to one another to define an enclosed interior between the two film sections;

filling said interior of the film with said fluid;

welding the front and back sections of the film to each other along transverse seams which are located at spaced longitudinal intervals of the film;

cutting the film into a plurality of individual bags having a final shape and size; and

testing the integrity of said plurality of bags.

4,656,814

METHOD FOR JOINING SHEET MATERIALS

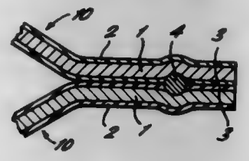
Philip G. Lockington, Middlesex, England, assignor to Laser Engineering (Development) Limited, London, England

Filed Dec. 11, 1984, Ser. No. 680,656

Claims priority, application United Kingdom, Dec. 14, 1983, 8333275

Int. Cl.⁴ B65B *9/02*, *51/22*

U.S. Cl. 53—450 **3 Claims**



1. In a method of packaging an article to provide a complete radio frequency shield thereabout, including enclosing the article with sheet material comprising an electrically conductive substrate and a layer of heat sealable material, and forming a continuous seam along overlapping portions of the sheet material; the improvement wherein forming said seam comprises:

disposing an electrically conductive filamentary element between the sheet portions along the direction selected for said seam;

heating said sheet portions at least in the region of said element; and

squeezing the sheets together between a pair of resilient rollers with the layers of heat sealable material facing each other and in contact with said element to cause the heat sealable material on each of said sheets to be squeezed by contact with said element laterally away from said element and to urge the element into close electrical contact with both of the conductive substrates along the entire length of the seam.

4,656,815

METHOD AND DEVICE FOR CONTROLLING THE FILLING OF A CONTAINER

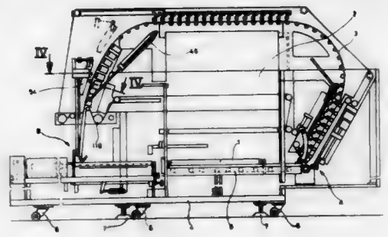
Jean-Philippe Jaton, Lausanne, Switzerland, assignor to Bobst SA, Switzerland

Filed Aug. 29, 1985, Ser. No. 770,794

Claims priority, application Switzerland, Aug. 31, 1984, 4174/84

Int. Cl.⁴ B65B *5/10*

U.S. Cl. 53—475 **13 Claims**



11. A method for controlling the filling of a container with a stack of sheet-like blanks comprising providing a device having means for creating a flow of shingled blanks, feed means for removing a blank one at a time from the flow of shingled blanks, filling means for inserting the blanks one after another into a container, conveyor means for receiving the removed blanks from the feed means and transporting the removed blanks one after another to the filling means and means for shifting a container relative to the filling means as blanks are inserted therein; determining the presence of a flow of shingled blanks at the feed means; starting the feed means and the conveyor means simultaneously to feed blanks from the flow of shingled blanks one after another and one at a time into the filling means; detecting the vertical and longitudinal positions of the filling means relative to a surface in the container; lowering the filling means and stopping the lowering of the filling means in response to the detecting of a preselected vertical position; detecting the arrival of the blank from the conveyor means to the filling means; inserting the blanks one after another and one at a time into the container on their edges in a stack while actuating the means for shifting the container as each blank is placed therein; and then selectively detecting one of the completing of the filling of a row by the detected longitudinal position of the filling means and the feeding of a predetermined number of blanks to stop the filling operation.

4,656,816

SKIN PACKAGING MACHINE WITH INCLINED OVEN

Ridley Watts, Jr., Gatesmills, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Jun. 10, 1981, Ser. No. 269,956

Int. Cl.⁴ B65B *31/00*, *11/52*

U.S. Cl. 53—511 **1 Claim**

1. A skin packaging machine having a front and a rear comprising,

a base having a horizontal foraminous surface for receiving a porous board and an article to be packaged,

an oven mounted above said foraminous surface and having a downwardly- and frontally-facing planar opening through which heat can be directed, said opening being inclined at an angle of about 40° to horizontal,

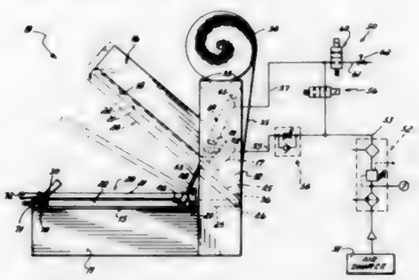
a frame adapted to carry a film between positions adjacent

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said horizontal surface and said oven opening, respectively, and

means for pivoting said frame to said base to swing between said two positions,

means connected between said base and frame to swing said frame between said two positions,



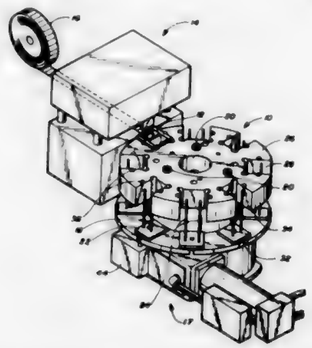
whereby the inclining of the oven provides greater access to the workspace between the oven and the base and minimizes the complexity of the structure required to move the film-carrying frame between its two positions.

4,656,817

APPARATUS FOR LOADING SINGULATED LEAD FRAMES INTO CONTAINERS

William M. Kesdy, Redwood City; Frank Iseger, Campbell, and Barry Maidment, Santa Clara, all of Calif., assignors to Advalloy, Inc., Palo Alto, Calif.

Filed Jan. 10, 1986, Ser. No. 817,586
Int. Cl.[4] B65B *63/00*
U.S. Cl. 53—520 **15 Claims**



1. An apparatus for use in combination with a lead frame singulation press for loading single lead frames into a container comprising:

a rotary indexing table having a plurality of vertical loader pins spaced apart from each other and at a distance from the center of said indexing table;

a baseplate sitting atop and rotatable with said rotary indexing table held in place by said vertical locator pins;

a circular container holder located above and rotatable with said baseplate means having open-ended compartments extending inward from its perimeter thereby forming spaces sized to accomodate a plurality of containers to be held within the apparatus also held in place by said vertical locator pins;

said circular container holder having a plurality of openings therein to receive said locator pins and thereby connect said container holder and said base-plate for movement together horizontally while allowing vertical displacement of said container holder and said baseplate relative to said rotary indexing table;

means extending upwardly from said base-plate, adapted to exetnd into a container being loaded for guiding the stamped lead frames into the container retained within a said compartment of said circular container holder; and

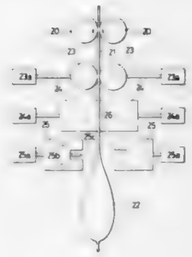
means for indexing said baseplate and circular container holder from one loading position, wherein said compartment and retained container are aligned with said singulation press to the next loading position after the aligned container has been filled.

4,656,818

PACKAGING MACHINE

Mamoru Shimoyama, and Isamu Hoshina, both of Gunma, Japan, assignors to Orihiro Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 486,100, Apr. 18, 1983, Pat. No. 4,506,494. This application Jan. 4, 1985, Ser. No. 688,955
The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.
Int. Cl.[4] B65B *9/12, 51/14, 51/32*
U.S. Cl. 53—551 **2 Claims**



1. A packaging machine for intermittently feeding a tubular film material, filling it with a substance to be packaged and sub-dividing it into individual packages, which machine comprises the combination of:

(a) a pair of squeezing guide rolls positioned opposite each other in the upper region of said machine and movable perpendicularly toward and away from said tubular film;

(b) a pair of heat-sealing members positioned opposite each other, substantially spaced from and beneath said squeezing guide rolls and movable perpendicularly toward and away from said tubular film;

(c) a multi-purpose unit having two members positioned opposite each other and movable perpendicularly toward and away from said tubular film, said multi-purpose unit comprising: (i) a compressing component, (ii) a cooling component and (iii) a cutting component; said cooling component being provided on at least one of said two members of said multi-purpose unit, said cutting component being positioned on either of said two members of said multi-purpose unit, said multi-purpose unit being positioned spaced from and neath said heat-sealing members at a distance corresponding to the width of a sealed portion of tubular film, said cutting component being operative individually and separately from the operation of said other two components of the said multi-purpose unit; and

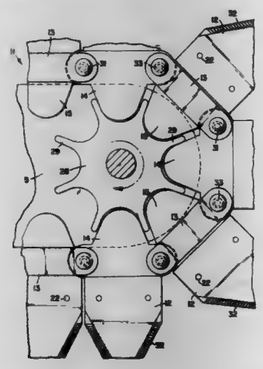
(d) means for feeding said charge to said film and rotatingly driving said squeezing guide rolls alternately, first a distance corresponding to the positioning of said tubular film in juxtaposition with said heat-sealing members and then a distance corresponding to the width of the sealed portion of said tubular film.

4,656,819

CHAIN SICKLE

Willard Pearson, Box 98, R.R. 1, Dawson, Minn. 56232

Filed Sep. 9, 1985, Ser. No. 774,241
Int. Cl.[4] A01D *34/83*
U.S. Cl. 56—291 **7 Claims**



1. A rotary cutting apparatus comprising:

(a) a chain assembly, the chain assembly having an inner edge and an outer edge, the chain assembly comprising:

(i) a first chain member, the first link member being substantially polygonal in shape with an elongated midsection, the elongated midsection having rounded ends; and

(ii) a second chain member, the second link member being substantially polygonal in shape and substantially identical to the first chain member, the second chain member having a midsection in which are formed concavities, the concavities being compatibly shaped so as to mate with the rounded ends of the midsection of the first chain member;

(b) a plurality of cutting blades, the cutting blades being rigidly affixed to the outer edge of the chain assembly;

(c) a rail;

(d) an angle bracket; the angle bracket being cooperatively mounted to the rail so as to form a channel such that the inner edge of the chain assembly is retained within the channel while permitting translational movement of the chain assembly in a direction substantially parallel to the rail;

(e) a frame member, the fame member having a perimeter, a first end, and a second end, the frame member being formed as a relatively long and narrow planar surface to which the rail member is rigidly mounted such that the rail member extends around substantially the entire perimeter of the frame member, thereby permitting the cutting blades to extend outwardly from the frame member; and

(f) means for motivating the chain assembly such that the chain assembly is caused to translate along the perimeter of the frame member, thereby permitting the cutting blades to perform a cutting operation.

4,656,820

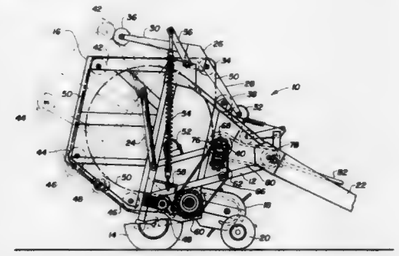
ROUND BALER APRON TENSIONING SYSTEM

Richard E. Jennings, Manheim, Pa., assignor to New Holland Inc., New Holland, Pa.

Filed May 8, 1986, Ser. No. 860,971
Int. Cl.[4] A01D *39/00;* **B30B** *5/06*
U.S. Cl. 56—341 **7 Claims**

1. In a roll baling machine having an apron for forming roll bales of crop material, said apron being formed of a pair of endless chains connected together at spaced intervals along the length thereof by transverse members, a system for tensioning said apron comprising:

first and second pairs of drive sprockets engaging said chains for moving said apron in a predetermined path, said apron having an inner course thereof extending between said first and second pairs of drive sprockets, said inner course of said apron being expandable in length during bale formation;



means for driving said first pair of drive sprockets at a first speed;

means for driving said second pair of drive sprockets at a second speed which is slower than said first speed in order to maintain tension in said inner course of said apron; and

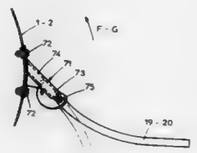
clutch means for disengaging said means for driving said second pair of drive sprockets when the differential between the first and second speeds reaches a preset limit.

4,656,821

HAYMAKING MACHINE FOR THE TEDDING

Jerome Aron, Dossenheim-sur-Zinsel, France, assignor to Kuhn S.A., Saverne, France

Continuation of Ser. No. 624,942, Jun. 27, 1984, Pat. No. 4,628,673. This application Mar. 13, 1986, Ser. No. 839,149
Claims priority, application France, Jul. 19, 1983, 83 12036
Int. Cl.[4] A01D *81/00*
U.S. Cl. 56—370 **6 Claims**



1. A haymaking machine comprising at least two drums; a flexible skirt on the lower part of each drum; spaced collectors on the periphery of said drums; means located at least partially under the skirts of said drums for raising cut fodder plants into a zone located between the drums, and wherein each collector is curved and articulated on the periphery of its respective drum by means of a shaft so that each collector can be pivoted and stopped in two different positions, one for tedding in which its outer end is practically radial and the other for windrowing in which said collector is directed toward the direction opposite to the rotational direction of its respective drum and the diameter of its trajectory is reduced.

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4,656,822

SPINNING MACHINE WITH SLIVER-FEED INTERRUPTER

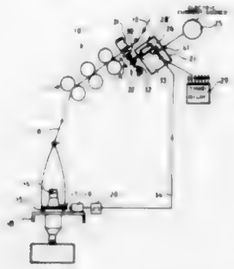
Werner Meissner, Hattenhofen, and Richard Schöllhammer, Göppingen, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Jul. 23, 1986, Ser. No. 889,333

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1985, 3526305

Int. Cl.⁴ D01H *13/18, 13/14*

U.S. Cl. 57—81 **13 Claims**



1. In a spinning machine having a multiplicity of spinning stations each provided with

a sliver feed for a respective sliver,

a spinning spindle and means for receiving said sliver for spinning said sliver into yarn on said spindle,

a yarn-breakage sensor responsive to a yarn break at the respective station, and

a sliver-feed-stopping element actuatable upon detection of a yarn break at the respective station by said sensor,

the improvement which comprises:

means responsive to an excessive number of simultaneous thread breaks as detected by said sensors at said stations for operating all at least the respective sliver-feed-stopping elements at the stations at which thread breaks are detected; and

time-delay means connected to said sliver-feed-stopping elements for time-staggering the operation of said sliver-feed-stopping elements upon said detection of said excessive number of simultaneous thread breaks.

4,656,823

SPINDLE TOP

Glenn H. Mauney, Sylvania, Ga., assignor to BASF Corporation, Williamsburg, Va.

Filed Jun. 20, 1986, Ser. No. 876,568

Int. Cl.⁴ D01H *7/18, 1/42*

U.S. Cl. 57—73 **13 Claims**

1. An improved spindle top to be utilized in a process for forming a spun yarn, the improved spindle top comprising:

(a) between 3 and 8 fingers, the fingers having a longitudinal height between 10 and 30 millimeters, the fingers being positioned on an upper section of the spindle top, the fingers providing a substantially planar yarn-catching surface which is substantially parallel to the axis of the spindle top, the fingers being positioned substantially within the volume extending above a lower section of the spindle top; and

(b) a yarn-catching, yarn directing groove in association with each of the fingers, each of the grooves having a total length of at least 2.25 inches, each of the grooves being oriented in a following helical orientation with respect to the direction of rotation of the spindle top, each of the grooves making at least 0.25 revolutions around the axis of the spindle top, each of the grooves having a yarn-catching section and a yarn-directing section, the yarn-catching section originating both immediately upstream of its associated finger and at an uppermost position on the spindle top, each of the yarn-catching sections progressing downward along an axis which is substantially parallel to the plane of the yarn-catching surfaces on the associated finger and each yarn-catching section then turning at an angle between 99° and 129° to the main axis of the spindle top, the yarn-catching sections turning along a course which extends both below and downstream of its associated finger, each of the yarn-catching sections becoming a yarn-directing section at a point at which the groove extends both below and behind its associated finger, a combination of each of the yarn-catching walls and their associated yarn-catching sections forming yarn-catching surfaces, the yarn catching surfaces having a height of between 0.140 inches and 0.200 inches, the yarn-catching section of the yarn-catching surface providing a yarn-catching undercut of up to 0.010 inches.



4,656,824

OPEN-END YARN PIECER

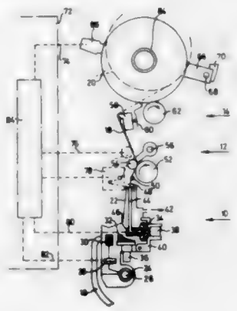
Jakob Stapfer, Horgen, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed May 18, 1984, Ser. No. 611,672

Claims priority, application United Kingdom, May 20, 1983, 8313993

Int. Cl.⁴ D01H *15/02*

U.S. Cl. 57—263 **14 Claims**



1. In combination,

a yarn handling machine having a plurality of stations, each said station including a pair of nip rolls for engaging and forwarding a yarn therebetween; and

a travelling piecer movable along said machine for selective positioning with a respective station, said piecer including first means for positioning an accessible length of seed yarn in a first position, a yarn reserve means for forming a yarn reserve of the accessible length of yarn for backfeeding in a selected station and a yarn threading means movable in a predetermined path to intersect the accessible length of a yarn in said first position for threading between said nip rolls of a selected station and into said yarn reserve means.

4,656,825

SEWING THREAD AND METHOD FOR MANUFACTURING THE SAME

Takao Negishi, and Teiryo Kojima, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

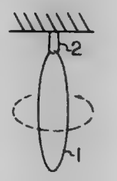
Division of Ser. No. 463,030, Feb. 1, 1984, Pat. No. 4,513,565.

This application Oct. 25, 1984, Ser. No. 664,506

The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.

Int. Cl.⁴ D02G *1/02, 1/20, 3/46*

U.S. Cl. 57—289 **26 Claims**



1. A method for manufacturing a sewing thread comprising the following steps:

(1) preheating a polyester multifilament yarn having an intrinsic viscosity (IV) of between 0.65 and 1.20 determined at a temperature of 25° C. in O-chloro phenol solution having a concentration of 8% by weight;

(2) false twisting said preheated polyester multifilament yarn;

(3) subjecting said false twisted yarn to a fluid jet treatment under a slackened condition so as to interlace along a lengthwise direction constituent filaments of said yarn and so as to form yarn portions protruding from the surface of said yarn; and

(4) post-heat treating said interlaced yarn.

4,656,826

APPARATUS FOR OPEN-END FRICTION SPINNING

Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Suessen, Fed. Rep. of Germany

Filed Aug. 2, 1985, Ser. No. 761,684

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1984, 3428705

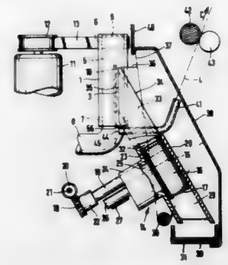
Int. Cl.⁴ D01H *1/135, 13/04*

U.S. Cl. 57—401 **30 Claims**

1. An open-end friction spinning apparatus having friction surface means defining a yarn formation zone, inlet and opening means for processing fiber material to be spun and withdrawal means for withdrawing spun yarn comprising:

said friction surface means, having a first end and a second end,

said inlet and opening means being disposed at said first end of said friction surface means for feeding fiber material toward said second end, and said withdrawal means being disposed at said second end of said friction surface means for withdrawing the yarn toward said first end, and



yarn guide means for guiding the yarn from said first end of the friction surface means toward said withdrawal means.

4,656,827

FUEL METERING SYSTEM FOR A GAS TURBINE ENGINE

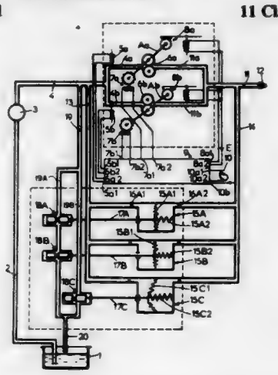
Raymond Puillet, Lagny, France, assignor to Societe Nationale d'Etude et de Construction de Meteur d'Aviation-"S.N.E.C.-M.A.", France

Filed Oct. 17, 1985, Ser. No. 788,588

Claims priority, application France, Oct. 17, 1984, 84 15871

Int. Cl.⁴ F02C *9/26*

U.S. Cl. 60—39.281 **11 Claims**



1. A fuel metering system for a gas turbine engine having a fuel supply line emanating from a fuel source, the system comprising:

(a) first and second rotating flowmeters;

(b) inlet conduit means connecting inlets of the first and second flowmeters in parallel to the fuel supply line;

(c) outlet conduit means connecting outlets of the first and second flowmeters in parallel to a fuel outlet line;

(d) first and second torque generators rotatably coupled to the first and second flowmeters, respectively;

(e) first and second tachometer means drivingly coupled to the first and second flowmeters, respectively, so as to rotate therewith, each of the first and second tachometer means producing an output signal proportional to its rotational speed;

(f) means for generating a reference signal for the desired value of total fuel flow through the fuel outlet line; and,

(g) control circuit means connected to the reference signal generating means, the outputs of the first and second tachometer means and the first and second torque genera-

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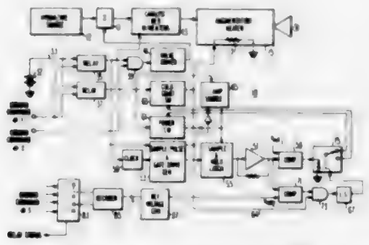
tors so as to control the first and second torque generators such that the total fuel flow through the fuel outlet line remains approximately at the desired value.

4,656,828

AUGMENTATION HEATER TEMPERATURE CONTROL SYSTEM

John D. Bingley, Yardley, Pa., and Dennis F. Lougeoy, East Windsor, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 28, 1984, Ser. No. 655,432
Int. Cl.⁴ F02K 9/00
U.S. Cl. 60—203.1 **9 Claims**



1. An improved electrothermal hydrazine thruster comprising:

a hydrazine source;

a catalyst bed heater coupled to said hydrazine source for raising the temperature of said hydrazine;

an output exhaust port;

an augmentation heater coupled between said catalyst bed and said output exhaust port including a resistance wire heater element for further heating the hydrazine gas to a given temperature before expulsion out of said output exhaust port;

a battery bus for supplying electrical current to said heater element;

means coupled between said battery bus and said heater element for periodically disconnecting said bus to said heater element and for sensing the resistance across said heater element;

said means for sensing the resistance across said heater element including a constant current source for providing a sampling current and means for periodically applying the sampling current from said source to said heater element when said bus is disconnecting therefrom to obtain a sensed resistance value;

means for comparing the sensed resistance of said heater element to a reference representing a selected maximum heater element temperature; and

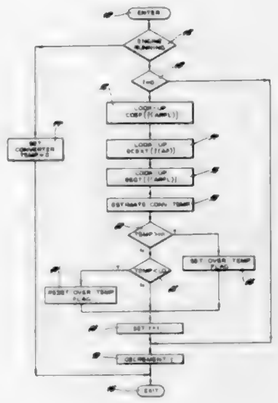
means coupled to said comparing means for disconnecting said heater element from said bus when said sensed resistance value corresponds to a temperature that exceeds said maximum heater element temperature and for coupling said heater element to said bus when said sensed resistance value represents a temperature below said maximum heating element temperature to substantially maintain a given heater element resistance and hence temperature of the hydrazine at the output exhaust port.

4,656,829

SYSTEM FOR PREDICTING CATALYTIC CONVERTER TEMPERATURE

Wendell D. Creps, Lake Orion, and William B. Orrell, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 27, 1986, Ser. No. 822,784
Int. Cl.⁴ F01N 3/20
U.S. Cl. 60—277 **3 Claims**



1. A system for predicting the temperature of an exhaust gas purifying device positioned in the exhaust system of an internal combustion engine into which air and fuel are drawn to undergo combustion and from which exhaust gases are discharged into the exhaust system, the system comprising:

means for storing (A) a first schedule of predetermined values of the steady state contribution to the exhaust gas purifying device temperature due to the temperature of the exhaust gases as a function of the air flow into the engine, (B) a second schedule of predetermined values of the steady state contribution to the exhaust gas purifying device temperature due to exothermic reactions as a function of the air/fuel ratio of the mixture drawn into the engine and (C) a third schedule of predetermined values of the time response of the temperature of the exhaust gas purifying device to changes in the air flow through the engine and the air/fuel ratio of the mixture drawn into the engine as a function of the air flow drawn into the engine;

means for measuring the air flow into the engine;

means for regulating the ratio of the air and fuel drawn into the engine; and

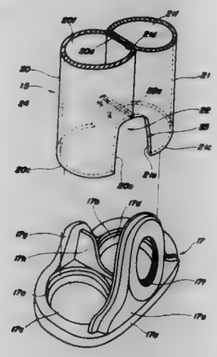
means for providing a predicted temperature of the exhaust gas purifying device that is varied toward the sum of the predetermined values of the steady state contribution to the converter temperature in the first and second schedules corresponding to the measured air flow and the regulated ratio of the air and fuel, respectively, at a rate determined by the value of the time response in the third schedule corresponding to the measured air flow into the engine.

4,656,830

EXHAUST MANIFOLD FOR INTERNAL COMBUSTION ENGINES

Hiromitsu Ohno, Sakado; Yutaka Noritake, Kawagoe; Kiminasa Owari, Toda, and Masao Fukuda, Ohmiya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1986, Ser. No. 863,019
Claims priority, application Japan, May 14, 1985, 60-103567
Int. Cl.⁴ F01N 3/18
U.S. Cl. 60—276 **6 Claims**



1. In an exhaust manifold for an internal combustion engine having a plurality of cylinders and at least one exhaust pipe, comprising: a plurality of exhaust ducts formed of discrete pipe members, said exhaust ducts having respective exhaust conduits defined therein and connected at upstream ends thereof to respective ones of the cylinders; a united section having an upstream divergent portion connected to downstream ends of the exhaust ducts and having a downstream convergent portion having at least two internal passages defined therein and a peripheral wall; and a flange member coupled with the downstream convergent portion of the united section for connecting the united section to the at least one exhaust pipe, the improvement wherein: (a) an internal space is defined in the downstream convergent portion of the united section and at a location intermediate between adjacent ones of the at least two internal passages to communicate them with each other; (b) an opening is formed in the peripheral wall of the downstream convergent portion at a location positionally corresponding to the internal space; and (c) the flange member has a boss formed thereon, said boss being larger in size than the opening and disposed in face-to-face contact with an outer surface of the peripheral wall of the downstream convergent portion, the boss having a through bore formed therein and aligned with the opening, through which an exhaust constituent concentration sensor is to be inserted.

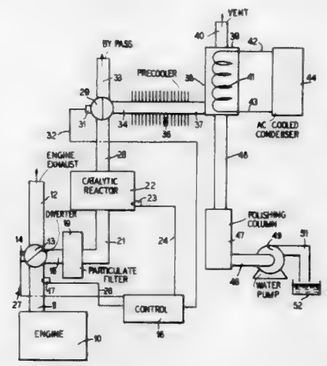
4,656,831

APPARATUS AND METHOD OF RECOVERING WATER FROM ENGINE EXHAUST GASES

Pranas Budininkas, Cicero, and Philip A. Saigh, Morton Grove, both of Ill., assignors to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed May 14, 1985, Ser. No. 733,886
Int. Cl.⁴ F01N 3/02, 3/10
U.S. Cl. 60—297 **2 Claims**

1. Apparatus for recovering potable water from engine exhaust gases comprising, a particulate filter to which said engine exhaust gases are supplied, a catalytic reactor receiving the gases from said particulate filter, a condenser connected to receive the output gases of said catalytic reactor and cooling the output gases to a temperature such that the water condenses, and a water neutralizing means receiving the water which may contain some acid from said condenser and purifying and clarifying it to render it potable, wherein said engine has an exhaust pipe, a diverter valve with controller mounted in said engine exhaust pipe, a diverter pipe connected from said diverter valve to said particulate filter, a temperature sensor



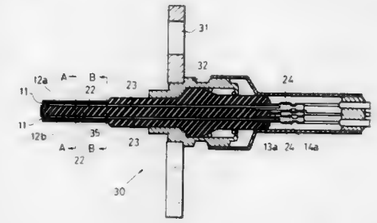
mounted in said engine exhaust pipe, and a control means receiving an input from said temperature sensor and connected to said controller of said diverter valve to actuate it to divert engine gases to said particulate filter when the temperature of said engine gases has reached a predetermined temperature.

4,656,832

DETECTOR AND PARTICULATE DENSITY AND FILTER WITH DETECTOR FOR PARTICULATE DENSITY

Takeuchi Yukihisa, Chita; Miura Yasunao, Kasugai, and Hirayama Tsukasa, Ohbu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 536,389, Sep. 27, 1983, abandoned. This application Jun. 3, 1986, Ser. No. 871,146
Claims priority, application Japan, Sep. 30, 1982, 57-171511; Apr. 21, 1983, 58-71013
Int. Cl.⁴ F01N 3/02; B01D 46/24; G01R 27/02
U.S. Cl. 60—303 **5 Claims**



1. A detector for detecting particulate density of engine exhaust gases, comprising:

a heat resistant insulating member means for trapping conductive particulates, the resistance of said heat resistant insulating member means varying in accordance with the amount of trapped conductive particulates;

a pair of electrodes disposed opposite to each other in said heat resistant insulating member means, said electrodes being provided for detecting the resistance of said heat resistant insulating member means; and

an electric heating means for drying said trapped particulates to allow accurate detection of the resistance of said heat resistant insulating member means.

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4,656,833

HYDRAULIC BRAKE SYSTEM FOR AUTOMOTIVE VEHICLES

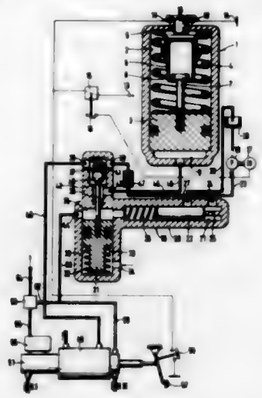
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries Inc., New York, N.Y.

Filed Apr. 6, 1984, Ser. No. 597,517

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315731

Int. Cl.⁴ F15B *7/00*

U.S. Cl. 60—545 **8 Claims**



1. A hydraulic brake system for use with automotive vehicles comprising:

a hydraulic fluid pump including means for energizing pump, said means including a motor coupled to said pump and being connectable with an external energy source upon commencing of a vehicle operation;

a pressure accumulator including a chamber fillable by fluid being supplied by said pump until a predetermined fluid pressure is developed therein;

said pressure accumulator comprising contact means for connecting said motor with said energy source and interrupting connection therebetween upon accumulation of said predetermined fluid pressure;

a brake actuator controlling a connection between said motor and said energy source;

said brake actuator being connected with and regulating a fluid flow to brake circuits via a power booster;

a control valve means operatively connected between said pressure accumulator and a conduit for blocking a communication between said pump and said pressure accumulator said control valve means being moved by a fluid pressure responsive member to a blocking position upon exhaustion of said fluid pressure into said brake circuits via said booster and upon accumulation of said predetermined fluid pressure in said conduit;

said fluid pressure exhaustion and motor actuation being triggered by operation of said brake actuator;

said control valve means including means for permitting a re-charge of said pressure accumulator upon termination of said operation of said brake actuator.

4,656,834

ELECTRONIC TURBOCHARGER CONTROL

David G. Elpern, Los Angeles, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 24, 1985, Ser. No. 813,114

Int. Cl.⁴ F02D *23/00*

U.S. Cl. 60—602 **24 Claims**

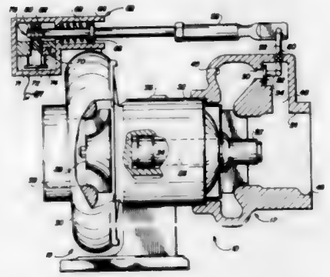
1. A turbocharger comprising:

a turbine adapted to be rotatably driven by exhaust gas flow from an engine;

a compressor rotatably driven by said turbine and adapted to deliver pressurized airflow to the engine;

housing means for defining a turbine gas inlet and outlet to direct gas flow to and from said turbine, and for defining a compressor air inlet and outlet to direct airflow to and from said compressor, said housing means further defining a wastegate passage interconnecting said turbine gas inlet and outlet in bypassing relation to said turbine;

a valve in said wastegate passage for modulating the volume of gas flow therethrough in bypassing relation to said turbine, said valve arranged such that pressure of gas flow



in said turbine gas inlet urge said valve toward an open position;

an actuator operably engaging said valve for moving the latter;

biasing means operably engaging said actuator for urging said valve toward a closed position;

means for generating an electrical control signal in response to an engine operating parameter; and

control means responsive to said electrical control signal for engaging and disengaging said actuator, said control means operable upon engaging said actuator to override the urgings of said biasing means and said turbine inlet pressure and hold said actuator and said valve stationary.

4,656,835

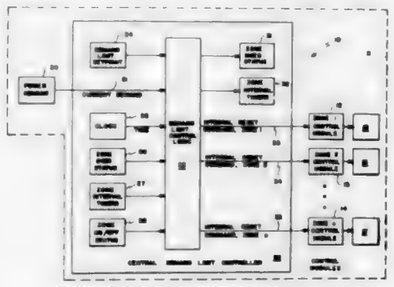
DEMAND LIMIT CONTROL BY INTEGRAL RESET OF THERMOSTATS

Kenneth B. Kidder, Coon Rapids, Minn.; Gary A. Smith, Albuquerque, N. Mex., and Paul C. Wacker, St. Louis Park, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 15, 1986, Ser. No. 907,548

Int. Cl.⁴ F25B *7/00*

U.S. Cl. 62—175 **7 Claims**



1. A temperature control system for an environmentally controlled space having a central demand limit controller,

including: thermostat means with said thermostat means including proportional error means and integral error means; said central demand limit controller connected to said thermostat means with said central demand control means being capable of remotely changing an integral error of said integral error means; electrical load sensing means for sensing an electrical demand including electrical power drawn by environmental conditioning means for said controlled space; and said central demand limit controller periodically decrementing said integral error by a fixed amount upon electrical demand for said space exceeding a predetermined limit.

4,656,836

PRESSURIZED, ICE-STORING CHILLED WATER SYSTEM

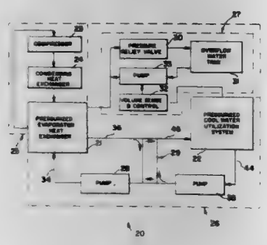
Thomas A. Gilbertson, 216 Sandringham, North, Moraga, Calif. 94556

PCT No. PCT/US84/01349, § 371 Date Apr. 23, 1985, § 102(e) Date Apr. 23, 1985, PCT Pub. No. WO85/01097, PCT Pub. Date Mar. 14, 1985

PCT Filed Aug. 23, 1984, Ser. No. 732,760

Int. Cl.⁴ F25D *17/02, 3/00*

U.S. Cl. 62—185 **16 Claims**



1. In a chill water system, in combination:

structural means defining a closed vessel for containing a volume of water entirely filling said vessel;

heat exchanger means for forming a volume of ice within said vessel;

chill water utilization means communicating with said closed vessel including means for circulating water under pressure through said vessel in contact with said volume of ice;

overflow tank means for containing a volume of water and being open to atmospheric pressure; and

compensation means for automatically removing water from said closed vessel to said overflow tank means during formation of said volume of ice to prevent build up of destructive internal pressures and for automatically returning water from said overflow tank to said closed vessel during melting of said volume of ice by said circulating water to maintain water pressure and volume in said closed vessel.

4,656,837

SAFETY ARRANGEMENT IN A GAS OPERATED APPARATUS

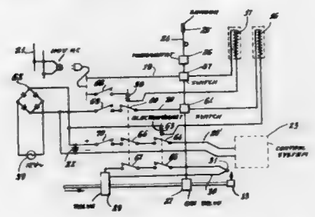
Peter E. Blomberg, Stockholm, Sweden, assignor to AB Electrolux, Stockholm, Sweden

Continuation-in-part of Ser. No. 769,788, Aug. 26, 1985, abandoned, which is a continuation of Ser. No. 728,442, Apr. 29, 1985, abandoned, which is a continuation of Ser. No. 492,601, May 9, 1983, abandoned, which is a continuation of Ser. No. 195,867, Oct. 10, 1980, abandoned, which is a division of Ser. No. 938,772, Sep. 1, 1978, Pat. No. 4,257,758. This application Feb. 5, 1986, Ser. No. 827,219

Claims priority, application Sweden, Sep. 8, 1977, 7710072

Int. Cl.⁴ F25B *27/00*

U.S. Cl. 62—236 **4 Claims**



1. A heat operated refrigerator apparatus which is alternately capable of being driven by a gas burner or one of a plurality of electric heating elements comprising: a gas burner circuit being electrically operated and having a plurality of electrically operated switch members associated with plurality of alternately operated current sources, including alternating current, a D.C. generator and a battery, said switch members being closed in said gas burner circuit to automatically put said burner in operation and to maintain it in operation, and a pair of electromagnetic elements which, when one of said alternate current sources delivers current to one of said electric heating elements operatively connected therewith is arranged to automatically place the burner out of operation by opening one of said electrically operated switch members, and whereby when said battery is the only available current source, said burner circuit is activated, thereby to set the burner in operation.

4,656,838

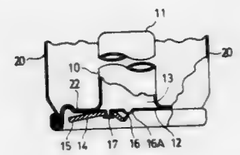
COOLING DEVICE FOR A CAN CONTAINING A BEVERAGE

Hwang K. Shen, No. 116, Suan Fu Chun, Ming Hsiung Hsiang, Chia Yi Hsien, Taiwan

Continuation-in-part of Ser. No. 799,571, Nov. 11, 1985, abandoned. This application Sep. 11, 1986, Ser. No. 906,191

Int. Cl.⁴ F25D *3/10*

U.S. Cl. 62—294 **1 Claim**



1. A cooling device for a can containing a beverage, said can having a metallic end panel; comprising:

a closure member integrally formed with said metallic end panel and protruding inwardly from a central part of said metallic end panel, said closure having a closed inner end for containing therein a cooling substance in compressed

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form, said cooling substance being capable of absorbing heat from its surroundings when allowed to expand and evaporate;

a cover for sealing said cooling substance in said closure member; and

a lever securely mounted on said cover, said lever having a first free end and an opposite second end, said second end being sharply pointed and disposed against said cover and capable of piercing through said cover to form an orifice in said cover when said first end of said lever is pulled, whereby said cooling substance in said closure member is allowed to expand and to evaporate.

4,656,839

HEAT PUMPS

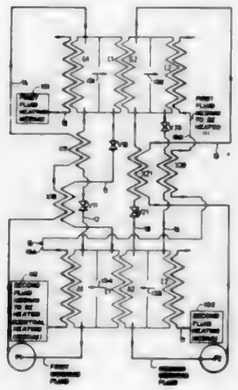
William T. Cross, and Colin Ramshaw, both of Cheshire, England, assignors to Imperial Chemical Industries plc, London, England

Filed Jan. 7, 1985, Ser. No. 689,190

Claims priority, application United Kingdom, Jan. 6, 1984, 8400324

Int. Cl.⁴ F25B *15/00*

U.S. Cl. 62—476 **9 Claims**



1. A centrifugal absorption heat pump comprising a vapour generator to which a first fluid heating medium at a higher temperature is charged, a condenser to which a first fluid medium to be heated is charged, an absorber to which a second fluid medium to be heated is charged, and an evaporator to which a second fluid heating medium at a lower temperature is charged characterised in that a plurality of axially-spaced, parallel, rotatable discs mounted upon a rotary shaft for rotation therewith, through the thickness of each of which discs a heat transfer takes place, are arranged and adapted such that

(a) heat released on condensation of the vapour of a first working fluid on one face of one of the said discs is transferred through the thickness of the disc to generate the vapour of a second working fluid which is flowing in solution in a first absorbent across the second face of the disc, which vapour of the first working fluid is generated in the vapour generator; and/or

(b) heat released on absorption of the vapour of a third working fluid in a second absorbent flowing across one face of one of the said discs is transferred through the thickness of the disc to evaporate a fourth working fluid flowing as a liquid across the second face of the disc, which vapour of the third working fluid is generated in the evaporator.

4,656,840

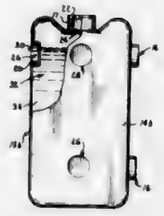
CONTAINER FOR FREEZABLE LIQUID

James G. Loofbourrow, Corona del Mar; William E. Lewis, San Pedro, and Robert J. Pelton, Nevada City, all of Calif., assignors to Gott Corporation, Winfield, Kans.

Filed Nov. 29, 1985, Ser. No. 802,735

Int. Cl.⁴ F25D *3/08*

U.S. Cl. 62—530 **1 Claim**



1. A container for holding freezable liquid, said container comprising:

a plastic shell adapted to receive and contain the freezable liquid, said shell presenting a face surface and an opposed back surface and a pair of opposed side surfaces presenting planar areas smaller than the face and back surfaces;

a pair of spaced apart plugs projecting from said face surface;

a pair of recesses in said back surface in contraposition to and aligned with said plugs and having sizes and shapes complemental to the plugs;

a pair of spaced apart plugs projecting from one of said side surfaces and having the same size, shape and spacing as the plugs on said face surface; and

a pair of recesses in the other of said side surfaces in contraposition to and aligned with the plugs on said one side surface and having the same size, shape and spacing as the recesses on said back surface, whereby a plurality of containers can be joined with the plugs on the face surface of each container fitting in the recesses in said back surface or said other side surface of an adjacent container and with the plugs on said one side surface of each container fitting in the recesses in said back surface or said other side surface of an adjacent container, thereby permitting adjacent containers to be arranged face surface against back surface, face surface against side surface, side surface against back surface or side surface against side surface.

4,656,841

RESILIENT IMPACT-TYPE LATCH NEEDLE FOR KNITTING MACHINE

Harald Mayer, Albstadt, Fed. Rep. of Germany, assignor to Theodor Groz & Söhne & Ernst Beckert Nadelfabriken Commandit Gesellschaft, Albstadt-Ebingen, Fed. Rep. of Germany

Continuation of Ser. No. 633,594, Jul. 23, 1984, abandoned. This application Jan. 7, 1986, Ser. No. 817,157

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1983, 3331030

Int. Cl.⁴ D04B *35/04*

U.S. Cl. 66—121 **12 Claims**

1. Latch needle for a knitting machine having

a needle shank (1) having shank side portions (8, 9);

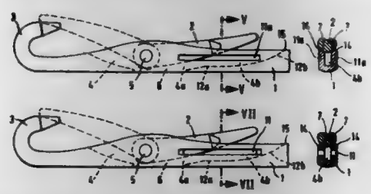
a latch (2) pivotably secured to the needle shank, the latch having converging surfaces (7) on the side engaging the shank when the latch is in open, or rear position;

a longitudinal slot (4) formed in the needle shank, the slot separating the shank side portions;

latch engagement surfaces (10) formed on the side portions (8, 9) of the shank to seat the latch when the latch is in open position;

and wherein, in accordance with the invention,

the shank side portions (8, 9) located beneath the engagement surfaces (10) of the shank for the latch (2) are formed with a region (11, 11a) of greater elastic deformability than remaining regions of the shank,



wherein the region of greater elastic deformability in each shank side portion is formed by a transverse slit (11) extending through the associated shank side portion (8, 9).

4,656,842

YARN FEEDING AND CHANGING APPARATUS FOR CIRCULAR KNITTING MACHINE

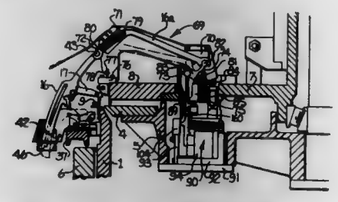
Masatoshi Sawazaki, Kobe, and Hidetoshi So, Ashiya, both of Japan, assignors to Precision Fukuhara Works, Ltd., Japan

Filed Feb. 21, 1986, Ser. No. 831,640

Claims priority, application Japan, Mar. 2, 1985, 60-41496

Int. Cl.⁴ D04B *15/60*

U.S. Cl. 66—139 **13 Claims**



1. A yarn feeding and changing apparatus for a circular knitting machine including a rotating needle cylinder, a plurality of knitting stations spaced around said needle cylinder, a plurality of yarn guides positioned at each of said knitting stations, means for selectively moving said yarn guides between lowered inactive position and raised active position, a selecting device for controlling the movement of said yarn guides by a program, an individual yarn clamping and cutting device operatively associated with each of said yarn guides, operator means carried by each of said yarn guides for engaging and moving the corresponding clamping and cutting device to an open position in response to movement of a corresponding yarn guide from an active to an inactive position, and cam means carried by said needle cylinder and being operable to move an open clamping and cutting device to a closed position.

4,656,843

APPARATUS FOR THE AUTOMATIC CONCENTRATION CONTROL OF AQUEOUS CAUSTIC SODA SOLUTION

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Nov. 19, 1984, Ser. No. 672,794

Claims priority, application Japan, Nov. 21, 1983, 58-218892

Int. Cl.⁴ D06B *3/10*

U.S. Cl. 68—13 R **1 Claim**

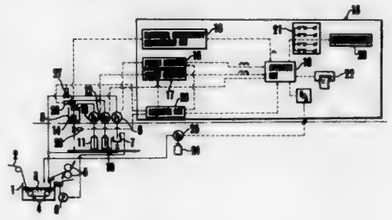
1. An apparatus for the automatic concentration control of an aqueous caustic soda solution in a cloth treating tank through which a cloth to be treated is continuously transported, comprising:

(i) a pair of squeeze rollers for squeezing a part of the soda solution out of a cloth that has been soaked with an aqueous caustic soda solution in a cloth treating tank;

(ii) means for introducing a portion of said caustic soda solution squeezed out of the cloth taken as a sample thereof in a sample solution stirring container while returning the remainder of said caustic soda solution to the cloth treating tank;

(iii) means for adding a neutralization agent to said caustic soda solution in said sample solution stirring container;

(iv) a sensor for detecting the neutralization point of said caustic soda sample solution in said sample solution stirring container while adding the neutralization agent thereof on the basis of electrical conductivity;



(v) means for detecting the original caustic soda concentration of said caustic soda sample solution after the addition of the neutralization agent on the basis of the amount of the neutrilization agent added until said caustic soda sample solution becomes neutralized, as detected by means of said sensor; and

(vi) means for supplying a supplementary caustic soda solution to the caustic soda solution in said cloth treating tank for controlling the concentration of said caustic soda solution to a prescribed value on the basis of the caustic soda concentration of the caustic soda sample solution detected by said detection means.

4,656,844

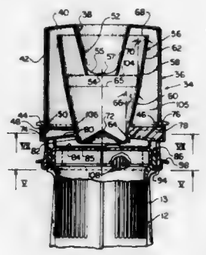
CENTRIFUGAL DISPENSER FOR AUTOMATIC WASHER WITH HIGH SPEED SPIN

James R. Mulder, Berrien Township, Berrien County, and Joel M. Snider, Lincoln Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 2, 1985, Ser. No. 688,380

Int. Cl.⁴ D06F *35/00*

U.S. Cl. 68—17 A **25 Claims**



16. For use in an automatic washer having a vertical axis oscillating agitator concentrically mounted in a wash basket to rotate with said basket in a spin mode, said agitator having a cylindrical top end with a solid top and an annular lip formed below said top end, a rinse additive dispenser comprising:

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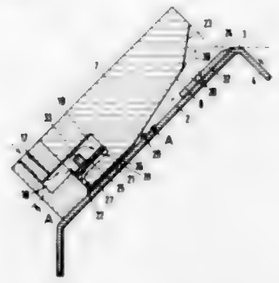
a cup portion for retaining a liquid additive and having substantially vertical walls angled slightly outwardly towards an open top end to permit liquid therein to be dispensed during said spin mode by centrifugal force;
a cover portion enclosing said cup and having a top opening above said cup with downwardly extending funnel shaped walls for directing liquid into said cup;
wall means connecting said cup and said cover to form a chamber for retaining said liquid after it has left said cup during said spin mode, said wall sloping downwardly from said cover to said cup and having a plurality of apertures therethrough adjacent said cup providing communication between said chamber and said wash basket to permit the passage of liquid from said chamber into said basket after said spin mode;
downwardly extending annular wall means coupled to said cup for engaging said cylindrical top end of said agitator;
retaining means comprising radially inwardly projecting buttons formed on an interior surface of said annular wall to engage below said annular lip on said agitator;
a selectively movable locking ring captured on said annular wall means for holding said buttons below said lip in a locked position;
said annular wall means having vertical slots extending upwardly from a bottom end thereof and a greater circumference opposite said buttons thereby resulting in said buttons being urged inwardly when said ring is moved to said locked position to overlie said greater circumferential area.

4,656,845

APPARATUS FOR APPLYING A LIQUID FILM OF LARGE WIDTH TO A LENGTH OF MATERIAL

Gerold Fleissner, Chur, Switzerland, assignor to Vepa Aktiengesellschaft, Riehen/Basel, Switzerland

Filed Sep. 26, 1985, Ser. No. 780,691
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1985, 3522320
Int. Cl.⁴ B05C *5/02*
U.S. Cl. 68—205 R **23 Claims**



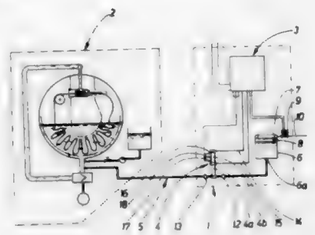
1. An apparatus for applying a laminar-flow liquid film, preferably of a large width, which is uniformly thin over the operating width, onto a continuously advanced length of textile material comprises a liquid reservoir supplied by a pump, an overflow weir, and a guide surface following the overflow weir so that an overflowing liquid film runs off onto the length of material from the lower edge of the guide surface, said liquid reservoir having a holding capacity even in case of an applied liquid quantity of more than 30 l/min/m, that is smaller than 5 l/m of the operating width of the device; said liquid reservoir, being arranged upstream of the overflow weir, defining a storage chamber that opens up in a widening and flaring fashion toward the overflow weir, said reservoir comprising a baffle that adjoins the overflow weir and that is oriented upwardly, inclined with respect to the horizontal towards the overflow weir and a diffuser wall associated with the inclined baffle and arranged to face the baffle, said diffuser wall being more steeply arranged as compared with the baffle for the formation of the storage chamber that widens towards the overflow weir.

4,656,846

APPARATUS FOR DYEING CELLULOSE FIBER MATERIAL BY CONTROLLED ADDITION OF ALKALINE MATERIAL

Sture Damm, Borås, Sweden, assignor to Adcon AB, Borås, Sweden

Division of Ser. No. 589,475, Mar. 14, 1984, Pat. No. 4,562,604.
This application Jan. 3, 1986, Ser. No. 815,896
Claims priority, application Sweden, Mar. 18, 1983, 8301484
Int. Cl.⁴ D06B *3/02, 3/28*
U.S. Cl. 68—207 **2 Claims**



1. Apparatus for dyeing cellulose fibers and mixtures thereof with other fibers in a bath containing at least one reactive dyeing agent in the presence of an alkaline material for fixation of said dyeing agent comprising:
a vessel for containing a bath of cellulose fibers and a dyeing agent;
pump means for progressively adding an alkaline material to said vessel and bath; and
control means for regulating said pump means to deliver an alkaline material automatically to said vessel progressively and in a substantially continuous manner over a predetermined time interval, said control means limiting the amount of said alkaline material so delivered in an initial phase of said time interval and increasing same to a largest amount in a final phase of said time interval until a sufficient amount of alkaline material has been delivered to said vessel to fix said dyeing agent on said cellulose fibers, and said control means including means for choosing between different timing intervals for the supply of alkaline material and for choosing between different degrees of progression for the supply of alkaline material.

4,656,847

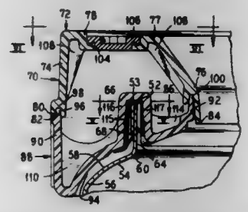
AUTOMATIC WASHER BALANCING RING WITH SPRING CLIP ATTACHMENT MEANS

David B. Bean, St. Joseph, and Richard L. Fanson, St. Joseph Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 19, 1985, Ser. No. 766,595
Int. Cl.⁴ D06F *37/24*
U.S. Cl. 68—23.2 **9 Claims**

1. The combination of a wash basket and balancing ring comprising:
a wash basket having a circular opening at a top end thereof;
an annular upwardly projecting lip on said basket adjacent said opening;
an annular downwardly facing shoulder provided on said basket lip;
a balancing ring member sized to rest on said annular lip;
said ring member having a channel formed in a bottom wall thereof for receiving said annular lip;

a plurality of clips retained in said channel; said clips having inwardly extending tangs for engaging radially interior and exterior surfaces of said lip, one of said tangs engaging said lip below said shoulder;



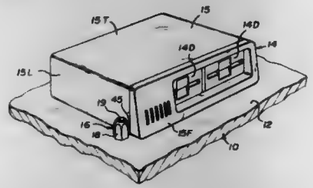
whereby, the engagement of said one tang with said shoulder secures said balancing ring against removal from said basket lip.

4,656,848

SECURITY DEVICE FOR PERSONAL COMPUTERS

C. David Rose, 7209 Ontario, Hammond, Ind. 46368

Filed Aug. 27, 1984, Ser. No. 644,241
Int. Cl.⁴ F16B *41/00;* **E05B** *73/00*
U.S. Cl. 70—58 **15 Claims**



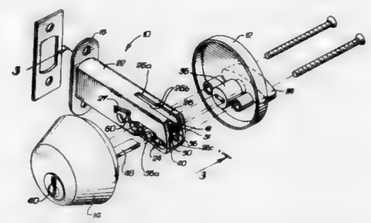
1. A security device for securing a personal computer or like unit having side-walls to a bench, table or like top, comprising:
an elongated bar having a length longer than a horizontal dimension of the unit, said bar being adapted for positioning under the top;
first means for providing a horizontally-projecting bolt, said means being capable of being releasably secured through the top to said bar at first location therealong and said horizontally-projecting bolt capable of being received in a hole defined in a side-wall of the unit as the unit is moved horizontally on the top;
second means for providing a second horizontally-projecting bolt capable of being received in a hole defined in another side-wall of the unit, said second means being capable of being releasably secured through the top to the bar at a second location therealong, which second location is spaced from said first location a distance approximately equal to a horizontal dimension of the unit, so that the unit can be positioned between the first and second means when they are affixed to said bar; and
one of first and second means being adapted to be moved horizontally on the top prior to securing to the bar so as to allow its horizontally-projecting bolt to enter a hole in the unit and that means thereafter be secured to said bar, whereby the device may be installed on a top and the unit positioned to receive one of the horizontal bolts of said means in one of its side-walls, and the other horizontal bolts received in its other side-wall with both means secured through the top to the bar so as to releasably secure the unit to the top.

4,656,849

DEADBOLT ASSEMBLY HAVING SELECTABLE BACKSET DISTANCE

Anthony J. Rotondi, Whittier; Richard O. Mullich, Burbank, and George F. Carabet, Rancho Palos Verdes, all of Calif., assignors to TRE Corporation, Los Angeles, Calif.

Division of Ser. No. 518,448, Jul. 29, 1983, Pat. No. 4,593,542.
This application Dec. 5, 1985, Ser. No. 804,624
Int. Cl.⁴ E05B *65/06*
U.S. Cl. 70—134 **2 Claims**



1. a deadbolt lockset having a selectable backset distance comprising:
a hollow latch case assembly;
a deadbolt slidably carried within the latch case assembly and movable between an extended and a retracted position;
actuator means for extending and retracting the deadbolt;
a deadbolt extension slidably carried within the latch case assembly and coupled at one end to the deadbolt, the other end of the deadbolt extension including first and second spaced openings, the second opening being spaced between the first opening and the deadbolt;
coupling means, connected to the actuator means, for coupling the actuator means to the deadbolt extension, the coupling means being selectively coupleable to the deadbolt extension at either of the spaced openings by moving the coupling means and being slidable within the latch case during selective coupling from a first location within the latch case, where the coupling means is coupled to the first deadbolt extension opening thereby to provide a first backset distance, to a second location within the latch case where the coupling means is coupled to the second deadbolt extension opening thereby to provide a second backset distance; and
adjustment means for guiding movement of the coupling means in selecting backset distance from the first location to the second location, wherein at each of the first and second locations the actuator means is operable to extend or retract the deadbolt.

4,656,850

ELECTRIC LOCK

Hiroshi Tabata, Mie, Japan, assignor to Miwa Lock Mfg. Co., Ltd., Watarai, Japan

Filed Dec. 18, 1984, Ser. No. 683,320
Claims priority, application Japan, Dec. 19, 1983, 58-239294
Int. Cl.⁴ E05B *47/06*
U.S. Cl. 70—276 **16 Claims**

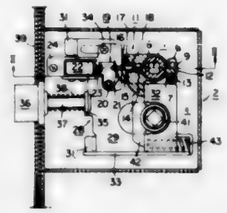
1. An electric lock comprising
(a) an actuator rotatably supported by a lock box, integrally joined to an outer unlocking member and having a recess formed at the outer peripheral surface thereof;
(b) a bolt operating member rotatably fitted over said actuator;
(c) an engaging rod guided in the direction perpendicular to the axis of rotation of said actuator by said bolt operating member and having an engaging pin extended from one end thereof which is extended beyond said bolt operating member, and which is biased in the direction in which the

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other end thereof engages with said recess of said actuator;

(d) a solenoid having a permanent magnet for attracting a plunger and an electromagnetic coil connected to said permanent magnet to control the magnetic flux of said permanent magnet;

(e) a cam member having a cam surface formed at one end thereof which engages with said engaging pin when said bolt operating member is rotated to lock said electric lock



so that the engaging rod is forced to move in the direction opposite to the direction in which said engaging bolt is biased, and whose other end is connected to said plunger of said solenoid; and

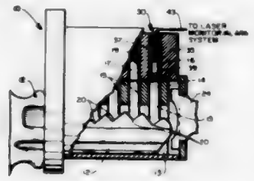
(f) a voltage application unit which responds to an unlocking signal so as to cause a current to flow temporarily through said electromagnetic coil in such a way that the flux produced by said electromagnetic coil cancels the magnetic flux produced by said permanent magnet.

4,656,851

ALARM CAPABILITY FOR PIN TUMBLER LOCKS

Bobby J. Leek, and Henry L. Self, both of Oxnard, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1986, Ser. No. 856,065
Int. Cl.⁴ E05B *47/00*
U.S. Cl. 70—277 **8 Claims**



1. A fiber optic laser sensor system for tumbler locks and the like, comprising;

a. a lock cylinder having a key plug, operable to be rotated by a proper key, and a series of pin tumblers each comprising top and bottom pins and spring means located within pin cells in said lock cylinder and key plug, which are accessible through a longitudinal keyway in said key plug; said pin tumblers normally locking said key plug from rotation within said lock cylinder and being operable to be moved to release position by use of said proper key;

b. fiber optic laser sensor means replacing at least the top pin and spring means in at least one of said series of pin tumblers;

c. each said fiber optic laser sensor means being connected by a first fiber optic light transmitting means to a laser light source in a laser alarm and monitor system;

d. said fiber optic laser sensor means comprising upper and lower sections and including compressive spring means for spacing opposite ends of said upper and lower sections apart a determined distance;

e. a mirror means mounted in the lower section of said fiber optic laser sensor means;

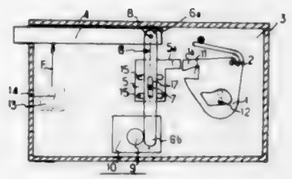
f. a second fiber optic light transmitting means being mounted within the upper section of said fiber optics laser sensor means and in turn being connected to said first fiber optic light transmitting means for transmitting laser light impulses from said laser light source to said mirror means in the lower section and for transmitting reflected laser light from said mirror back to said alarm and monitor system; wherein surreptitious attempts to unlock said lock cylinder with key or pick means will compress said fiber optic laser sensor means, change the distance said laser light impulses travel, and operate to signal said alarm and monitor system of such attempt.

4,656,852

LOCK WITH A DOUBLE LOCKING MECHANISM FOR A SAFE, BANK COMPARTMENT OR THE LIKE

Daniel Deschamps, Moutigny le Bretonneux, France, assignor to Fichet-Bauche, France

Filed Jul. 8, 1985, Ser. No. 752,531
Claims priority, application France, Jul. 12, 1984, 84 11114
Int. Cl.⁴ E05B *35/12, 47/06*
U.S. Cl. 70—277 **5 Claims**



1. In a lock with a double locking mechanism, in particular for a bank compartment, comprising a lock casing and first and second mechanisms mounted therein and which can be actuated by a first key and a second key respectively, said first mechanism having at least one tumbler movable by the first key to authorize the operation, by means of the second key, of said second mechanism which comprises at least one bolt associated with a releasable member adapted to co-operate with said tumbler to allow the opening of the lock with the second key, the improvement wherein

said lock comprises a link bar (6) pivotally connected (7) to said releasable member (5) which is independent from said bolt (4) and movably mounted with respect to said lock casing (3) so as to enter said tumber (1) after said tumbler has been moved to an appropriate position with respect to said releasable member (5) by means of the first key,

said link bar (6) comprises a first end (6a) pivotally connected (8) to said bolt (4) and a second end (6b),

a retractable stop member (9) mounted in said lock casing, and

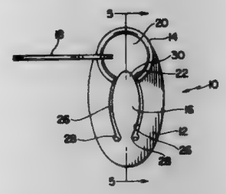
means for controlling said stop member between retracted and non-retracted positions from a distance, said stop member co-operating with said second end (6b) of said link bar, so as to authorize the opening of the lock either using the first key and the second key when the stop member is in said non-retracted position or using the second key and upon actuation of said stop member control means to move said stop member to said retracted position.

4,656,853

KEY HOLDER CONSTRUCTION

William D. Mancini, 145 Claypool Dr., Warwick, R.I. 02886

Filed Jun. 5, 1986, Ser. No. 871,084
Int. Cl.⁴ A47G *29/10*
U.S. Cl. 70—456 R **7 Claims**



1. A key holder comprising:

a. a substantially planar body portion;

b. a substantially circular ring having an open gap therein rotatably mounted on said body portion in substantially coplanar relation therewith, said ring being oriented on said body portion so that it is rotatable between a closed position wherein an uninterrupted portion of said ring projects outwardly from said body portion to define a closed loop on said key holder and said gap is disposed in a predetermined inwardly facing position with respect to said body portion and an open position wherein at least a portion of said gap is disposed outwardly from said body portion to permit the insertion of a key or the like on said ring; and

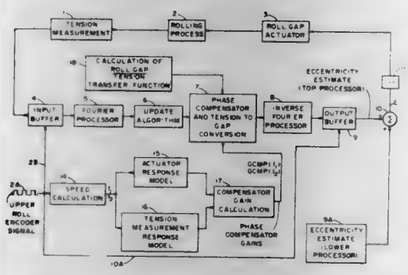
c. a resilient tongue on said body portion, said tongue being oriented so that when said ring is in said closed position said tongue is substantially coplanar with said body portion and extends into said gap to lock said ring in said closed position thereof, said tongue being deflectable away from the plane of said body portion to remove it from said gap and to thereby permit said ring to be rotated to said open position thereof.

4,656,854

ROLLING MILL ECCENTRICITY COMPENSATION USING MEASUREMENT OF SHEET TENSION

D. Fred Stewart, Export, and Dickon T. Oliver, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 6, 1985, Ser. No. 773,295
Int. Cl.⁴ B21B *37/06*
U.S. Cl. 72—8 **2 Claims**



1. A method of eliminating thickness changes in material exiting a stand or stands of a rolling mill comprised of one or more stands, the thickness changes being caused by the eccentricity of one or more rolls of the mill, the method comprising the steps of:

directing material through the mill,

engaging the material with a device that measures the tension of the material entering or leaving the mill,

using said device to measure directly a change in the tension of the material due to roll eccentricity,

providing samples of said change in tension during the time required for a roll to make one revolution,

processing said samples of change by characterizing them as frequency, magnitude and phase angle components of the change in tension using a Fourier transform function,

using said components in an update algorithm to provide a current estimate of a cyclically occurring change in tension,

converting said tension change to a current estimate of thickness change,

processing the current estimate of thickness change in a manner that returns the same to a time based value using an inverse Fourier transform function, and

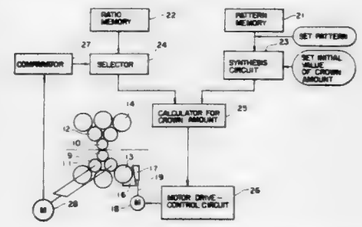
using said time based value to correct for roll eccentricity by controlling the working gap of the mill in synchronism with the occurrence of roll eccentricity such that the effects of roll eccentricity are offset.

4,656,855

CROWN CONTROL METHOD FOR A MULTI-ROLL ROLLING MILL

Hirokichi Sakamaki, and Tadao Nakayama, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 8, 1985, Ser. No. 785,403
Claims priority, application Japan, Oct. 22, 1984, 59-222469
Int. Cl.⁴ B21B *37/00*
U.S. Cl. 72—8 **1 Claim**



1. A crown method in a multiroll rolling mill, which comprises:

setting in advance a plurality of shapes of a thermal crown of a work roll corresponding to a mechanical crown applied to a work roll;

applying a roll bending force, as an initial value, to the work roll;

controlling said roll bending force from said thermal crown shape and an initial value of a mechanical crown amount at a suitable position of the work roll determined from a predetermined rolling schedule and a target mechanical crown amount at a standing speed;

detecting the rolling speed;

selecting a changing gradient of said mechanical crown amount according to a rolling speed zone at that time; and simultaneously adjusting the roll bending force applied to the work roll.

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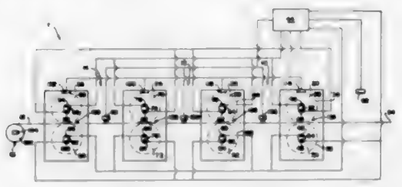
VOL 1077 ISS 2 AP 14 1987 UMI

4,656,856

METHOD AND APPARATUS FOR ELIMINATING CRESCENT FORMATION IN A REDUCTION MILL

Joseph L. Voye, Jr., Portage, Ind., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 23, 1985, Ser. No. 790,536
Int. Cl.⁴ B21B 37/06
U.S. Cl. 72—11 **26 Claims**



1. Apparatus for regulating interstand strip tension to avoid crescent formation in a reduction mill having an upstream stand and a downstream stand, each of said stands having a driven roll, comprising:

(a) strip tension monitoring means between said stands for engagement with a strip when the strip is between said stands for monitoring the tension of the strip when between said stands and for transmitting data indicative thereof;

(b) roll speed monitoring means for connection with at least the driven roll of said upstream stand for monitoring the rotational speed of the roll and for transmitting data indicative thereof;

(c) speed control means for connection with the driven roll of said upstream stand for regulating the rotational speed thereof;

(d) tail end detection means for being positioned upstream of and proximate the upstream stand for detecting the tail end of a strip and for transmitting data indicative thereof when detected; and,

(e) a controller in circuit connection with said strip tension monitoring means, said roll speed monitoring means and said tail end detection means for receiving the data transmitted therefrom and said controller including means for calculating a target interstand tension sufficiently below the last monitored tension to prevent extrusion of the strip upon detection of the tail end of the strip and said controller in circuit connection with said speed control means and including means responsive to the data of said strip tension monitoring means for causing the speed of the driven roll of the upstream stand to be increased sufficiently so that the calculated target interstand tension is attained prior to the passage of the tail end therethrough.

4,656,857

METHOD FOR CUTTING UNCOILED WEB

Yoshikazu Tomita, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

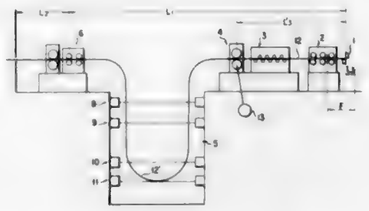
Filed Nov. 21, 1985, Ser. No. 800,328
Claims priority, application Japan, Nov. 29, 1984, 59-250411
Int. Cl.⁴ B21F 11/00
U.S. Cl. 72—131 **4 Claims**

1. A method for cutting an uncoiled web in an uncoiled web feed line including a shear, continuous feed and measuring pinch rolls, a pit for accommodating a loop portion of the uncoiled web, intermittent feed pinch rolls, and a mold for forming products arranged in a sequence, comprising the steps of:

determining when the number of products formed by said metal mold has reached a predetermined integral number N_2;

stopping continuous production of said parts when said predetermined number has been reached;

further advancing said uncoiled web until the loop portion of said uncoiled web reaches a predetermined lower limit position;



additionally advancing said uncoiled web by a length L_3; and

cutting said uncoiled web at its midway position by said shear, when N_1, N_2 and L_3 are derived according to the following equations:

$$N_1 = \frac{L_1 + L_2}{F}$$

$$N_2 = N - N_1, \text{ and}$$

$$L_3 = F \times (\text{a decimal part of } N_2),$$

where N represents a number of products in one lot; F represents a feed pitch; L_1 represents a web length with its loop portion held at a lower limit position between said shear and said intermittant feed pinch rolls; and L_2 represents a web length between said intermittant feed pinch rolls and an inlet of said metal mold.

4,656,858

ROLL FORMING APPARATUS

Gordon D. Addison, Birmingham, England, assignor to Gutterfast Limited, Surrey, England

Filed Jun. 21, 1984, Ser. No. 623,225
Claims priority, application United Kingdom, Jun. 21, 1983, 8316864
Int. Cl.⁴ B21D 5/14
U.S. Cl. 72—181 **9 Claims**

1. Roll forming apparatus, comprising:

a main frame;

means, mounted on said main frame and extending in a lengthwise direction, for supporting a strip of sheet metal which moves from an upstream direction to a downstream direction;

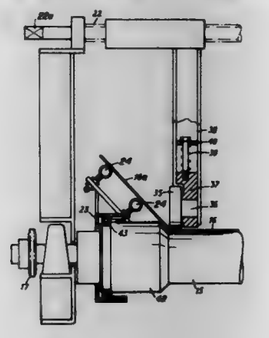
a first frame component attached to said main frame and extending in said lengthwise direction, means for adjustably positioning said first frame component in directions at right angles to said lengthwise direction;

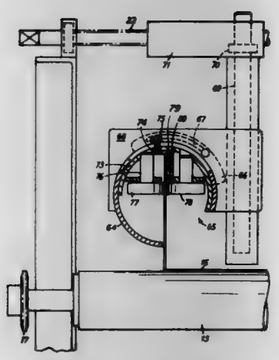
driving means, mounted on said first frame component, for driving said strip of sheet metal in said lengthwise direction through said roll forming apparatus, said driving means including a plurality of pairs of rolls, located at intervals spaced along said first frame component in said lengthwise direction, and jointly defining a plane of nipping of said strip of sheet metal, the rolls at one side of said plane having corresponding edges thereof aligned in said lengthwise direction to define a bending axis of said strip of sheet metal;

a plurality of bars mounted on said first frame component at positions laterally offset from said bending axis and extending in said lengthwise direction and ending at a position along said first frame component, said plurality of bars being inclined at an angle with respect to said support means and being operable to engage and progressively

bend a marginal portion of said strip of sheet metal about said bending axis, at least one of the rolls at the other side of said plane being formed with a portion beyond said bending axis which portion has a chamfered surface extending laterally away from said axis towards said bars;

at least one forming means, located downstream of said plurality of bars along said lengthwise direction, said at least one forming means including a bearing sleeve mounted on said first frame component and having a wide axially-extending slot therein, said bearing sleeve having





an arcuate bearing surface extending about a second axis which is laterally offset from and parallel to said bending axis, a carrier mounted within and adjustably secured to said bearing sleeve to fix said carrier in a predetermined angular position about said second axis, a first roller mounted on said carrier for rotation about a third axis which extends in a plane which is perpendicular to said second axis, and anvil member means mounted on said carrier for engaging said marginal portion of said strip of sheet metal between said first roller mounted on said carrier and said anvil member means.

4,656,859

ROLLING MILL STAND EMPLOYING VARIABLE CROWN ROLLS AND ASSOCIATED METHOD

Vladimir B. Ginzburg, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Aug. 21, 1985, Ser. No. 767,851
Int. Cl.⁴ B21B 27/02, 31/18
U.S. Cl. 72—243 **20 Claims**

1. A rolling mill stand comprising

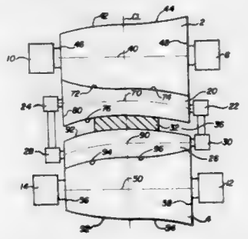
a pair of work rolls each having work surfaces and a pair of backup rolls each contacting a said work roll,

said backup rolls being generally cylindrical with portions of varying diameter and generally symmetrical about their longitudinal axes,

said backup rolls each diverging from a first end toward a second end,

both said backup rolls being oriented so as to diverge in generally the same direction,

means for positioning said work rolls with respect to said backup rolls in a flat strip producing first position, a central crown strip producing second position or an edge crown strip producing third position,



said work rolls having said work surfaces of different shape from each other,

said first work roll diverging toward one end thereof,

said first work roll diverging in a direction generally opposite to the direction of divergence of said backup rolls,

said second work roll diverging toward one end thereof,

said second work roll diverging in the same general direction as said first work roll diverges, and

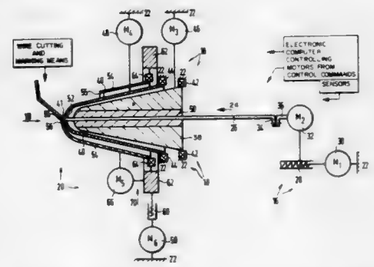
means for axially displacing said work rolls with respect to said backup rolls in the same direction in moving said work rolls from one said position to another said position.

4,656,860

DENTAL APPARATUS FOR BENDING AND TWISTING WIRE PIECES

Wolfgang Orthuber, Arbeostrasse 3, 8358 Vilshofen, and Helge Fischer-Brandies, Walterstrasse 22/V, 8000 Munich, both of Fed. Rep. of Germany

Filed Mar. 28, 1985, Ser. No. 717,031
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1984, 3415006
Int. Cl.⁴ B21D 11/14
U.S. Cl. 72—299 **3 Claims**



1. For use with orthodontic wire, a machine for filling prescriptions employing orthodontic wire by advancing, bending and twisting the wire comprising, wire advancing, bending and twisting means each of which are separately controlled by electronic commands to controlled stepping motors, said ad-

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vancing means including a stepping motor drive for incrementally advaning a measured length of said wire along its axis to engage said wire after it passes through said bending and twisting means, said bending means including a movable bending edge movable substantially perpendicular to the axis of the wire by an associated drive means, said twisting means including two relatively opposing rotatable grippers having associated drive means for gripping two places axially spaced from one another on said wire, said gripping drive means comprising stepping drive motors for rotating said grippers relative to one another to twist said wire about its axis, a stepping motor coupled to said bending means for incrementally advancing the bending means against said wire to bend it away from its axis as it is held in said twisting means, and all of said stepping motors being programmable by counting a predetermined number of incremental step counts to advance bend and twist the wire to achieve desired wire patterns for filling orthodontic prescriptions.

4,656,861

BENDING MACHINE AND A DIE CHANGING SYSTEM FOR SUCH BENDING MACHINE

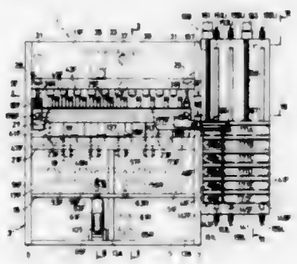
Shigeo Koyama, Hatano, and Katsuyoshi Sakamoto, Isehara, both of Japan, assignors to Amada Company, Limited, Japan

Division of Ser. No. 717,675, Mar. 29, 1985. This application Jan. 28, 1986, Ser. No. 823,461

Claims priority, application Japan, Mar. 30, 1984, 59-060687; Apr. 5, 1984, 59-049140

Int. Cl.⁴ B21D *5/04*

U.S. Cl. 72—323 **7 Claims**



1. A die changing system in combination with a bending machine having front and rear bending stations, each station comprising a top die cooperable with a bottom die for gripping a workpiece and a bending beam movable to bend said workpiece against said top die, each bending beam having a bending surface for contacting and bending said workpiece, said bending surface extending horizontally along a longitudinal axis of the bending beam comprising:

a front plurality and a rear plurality of elevating racks supported for vertical movement adjacent said bending machine, each of said elevating racks being formed with a plurality of stages which store top dies separately;

means connected with said elevating racks for controlling the elevating racks individually to select any combination of top dies stored on the stages; and

a die exchanging device supported on the bending machine for moving said top dies horizontally and furnishing the combination of the top dies in the proper position in the bending machine to both said front and rear bending stations by transferring said top dies from the stages.

4,656,862

PRESS MACHINE

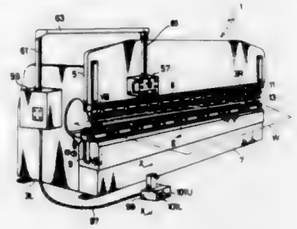
Tsuneo Kogure; Yuji Tsuchiyama, both of Hatano; Tadashi Amano, Sagamihara; Hideaki Takahashi, Atsugi; Katsuji Sekita, Hiratsuka, and Ichio Akami, Atsugi, all of Japan, assignors to Amada Company, Limited, Japan

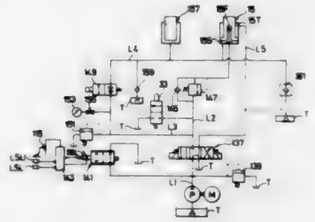
Division of Ser. No. 642,767, Aug. 21, 1984, Pat. No. 4,608,857. This application Oct. 29, 1985, Ser. No. 792,529

Claims priority, application Japan, Aug. 24, 1983, 58-129755; Sep. 2, 1983, 58-135388; Sep. 7, 1983, 58-137797; Sep. 14, 1983, 58-168349; Sep. 14, 1983, 58-141574

Int. Cl.⁴ B21J *7/46;* **F16K** *31/02*

U.S. Cl. 72—443 **7 Claims**





1. A press machine comprising an upper and lower bending tool a vertically movable ram supporting either said upper or lower bending tool for providing relative movement between the tools; a hydraulic circuit operatively connected to said ram for driving said ram up and down; an electromagnetic proportional valve installed in said hydraulic circuit for controlling the speed of vertical movement of said ram; a speed control device operatively connected to and controlling the electromagnetic proportional valve said speed control being freely located at any desired position; wherein the speed of vertical movement of said ram is controlled proportionally in correspondence with the control amount of said speed control device.

4,656,863

GAS SENSOR

Akio Takami; Toshitaka Matsuura, and Nobuo Kawai, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

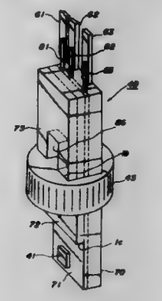
Filed Aug. 27, 1985, Ser. No. 769,715

Claims priority, application Japan, Sep. 3, 1984, 59-182559

Int. Cl.⁴ G01N *27/12*

U.S. Cl. 73—23 **12 Claims**

1. A gas sensor comprising an elongated planar ceramic substrate, a gas-sensitive layer formed at one longitudinal end of the ceramic substrate, and a ceramic layer integrally overlaid on the ceramic substrate with a setback from the gas-sensitive layer so as to form a staircase-like step on the ceramic substrate, the staircase-like step of the ceramic layer being non-linear in width direction of the ceramic substrate with at least one first portion longitudinally extending toward the gas sensitive layer and at least one second portion not longitudinally extending toward the gas sensitive layer so that the length of the ceramic layer including the extended portion is



longer than the length of the ceramic layer not including the extended portion, the extended end of said first portion of the staircase-like step being spaced from the gas-sensitive layer, whereby the ceramic substrate with the staircase-like step formed thereon has a high strength against mechanical shock.

4,656,864

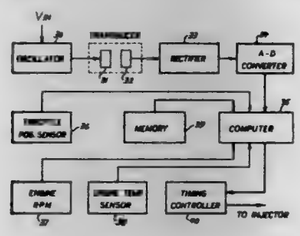
FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Robert A. Kraus, and Edmund J. Kraus, both of 1636-T E. Edinger, Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 685,908, Dec. 24, 1985, abandoned. This application Oct. 17, 1985, Ser. No. 788,634

Int. Cl.⁴ G01N *29/02*

U.S. Cl. 73—24 **3 Claims**



1. An acoustical device for determining the density of engine aspirated air as part of an automotive engine fuel control system comprising:

oscillator means for providing alternating, electric current; piezoelectric, acoustic generator means for converting said alternating, electric current to acoustic energy; piezoelectric, acoustic receiver means for converting said acoustic energy to alternating, electric current; means for converting said alternating, electric current to direct current; and means for converting said direct current from analog to digital output, said components being sequentially connected to a computer including electronic means for storing engine parameter related data; said device further comprises individually connected to said computer, means for sensing engine throttle position; means for sensing distributor RPM; means for sensing engine temperature; and means for controlling the engine fuel injector;

said acoustical device comprises a first housing portion having a radially outward extending flange provided with a planar surface, and includes concentrically within disposed, said piezoelectric, acoustic wave generator means having electric input leads, and being provided with an acoustic energy generating surface disposed in a coplanar relationship with said planar surface; said acoustical device further comprises a second housing portion having a radially outward extending flange provided with a planar surface, and includes concentrically within disposed, said piezoelectric, acoustic wave receiver means having electric output leads, and being provided with an acoustic energy receiving surface disposed in a coplanar relationship with said planar surface; said first and said second housing portions are coaxial aligned so that said acoustic energy generating and said acoustic energy receiving surfaces face each other through a well defined distance being fixed by suitable means to combine said first and said second housing portions so as to expose said acoustic energy generating and said acoustic energy receiving surfaces to atmosphere;

a method wherein said piezoelectric, acoustic wave generator means receives electric pulses of a fixed frequency and amplitude, thereby stimulating said acoustic energy generating surface to produce acoustic energy in form of wave motion which is received by said acoustic energy receiving surface; wherein the acoustic energy transmissibility varies as the density of intervening air between said acoustic energy generating and said acoustic energy receiving surfaces; wherein the magnitude of electric output of said piezoelectric, acoustic wave receiver means is proportional to the density of said intervening air;

and wherein the magnitude of said piezoelectric, acoustic wave receiving means produced electric output, together with the electric output produced by said means for sensing throttle position, said means for sensing distributor RPM, and said means for sensing engine temperature are continuously computed and correlated by said computer with said stored data, to compensate by readjusting said engine fuel injector to constantly occurring changes in engine throttle position, engine load, and engine environmental conditions.

4,656,865

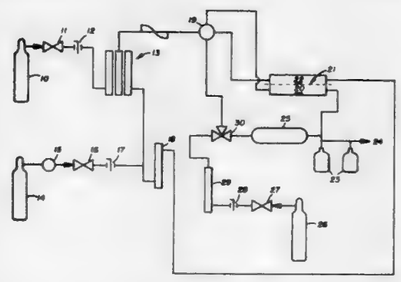
SYSTEM FOR ANALYZING PERMEATION OF A GAS OR VAPOR THROUGH A FILM OR MEMBRANE

Lawrence W. Callas, Antioch, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 9, 1985, Ser. No. 774,107

Int. Cl.⁴ G01N *15/08*

U.S. Cl. 73—38 **11 Claims**



2. A system for measuring the permeation of a test gas or vapor through a film or membrane, the system comprising

(a) a means for introducing a test gas or vapor;

(b) a means for regulating the flow and pressure of the test gas or vapor connected to the means for introducing the test gas or vapor;

(c) a means for introducing a bulk gas;

(d) a means of regulating the flow and pressure of the bulk gas connected to the means for introducing the bulk gas;

(e) a means for combining the test gas or vapor and a portion of the bulk gas and adapted for controlling the pressure

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and flow of such, said means for combining the test gas or vapor and a portion of the bulk gas is connected to the means for regulating the flow and pressure of the test gas or vapor and further connected to the means for regulating the flow and pressure of the bulk gas;

(f) a test cell comprising

(i) a first chamber connected to the means for combining test gas or vapor and a portion of the bulk gas wherein the first chamber is adapted for passing combined test gas or vapor and a portion of the bulk gas through the first chamber at a rate such that a portion of the test gas or vapor can permeate through a film or membrane;

(ii) a second chamber connected to the means for regulating the flow and pressure of the bulk gas wherein the second chamber is adapted for flowing bulk gas through the chamber and for receiving test gas or vapor which permeates through the film or membrane;

(iii) a means for securing the film or membrane such that the film or membrane separates the first and second chamber;

wherein the pressure in the first chamber is regulated by the means for combining the test gas or vapor and a portion of the bulk gas; and the pressure in the second chamber is regulated by the means for regulating the flow and pressure of the bulk gas;

(g) a means for analyzing the composition of a gas or vapor specially adapted for measuring the concentration of test gas or vapor, connected to the second chamber of the test cell or the means for combining the test gas or vapor and a portion of the bulk gas;

(h) a means for regulating flow of the combined test gas or vapor and a portion of the bulk gas, adapted for regulating the flow of combined test gas or vapor and a portion of the bulk gas from the means for combining the test gas or vapor and a portion of bulk gas between the first chamber of the test cell and the means for analyzing the composition of a gas or vapor.

(i) a first of transferring heat in contact with the first chamber adapted for regulating the temperature of the first chamber; and

(j) a second means of transferring heat in contact with the second chamber adapted for regulating the temperature in the second chamber.

4,656,866

METHOD OF MEASURING THE PRESSURE IN A VACUUM PACKAGE

Mathias L. C. Aarts, Bilthoven, Netherlands, assignor to Douwe Egberts Koninklijke Tabaksfabriek-Koffiebranderijen-Theehandel N.V., Netherlands

Filed Apr. 9, 1985, Ser. No. 721,296

Claims priority, application Netherlands, Apr. 11, 1984, 8401150

Int. Cl.⁴ G01M *3/34*

U.S. Cl. 73—49.3 **5 Claims**



1. A method of determining the pressure in a vacuum package when a product is packed in a flexible gas-tight film which may be surrounded by a non-gas-tight wrapper, comprising:

placing at least a part of the surface of the flexible gas-tight film covering of the package in a rigid chamber adapted to be hermetically sealed from the outer air,

measuring, by means of an electrical pressure sensor, pressure variation as a function of time in the space between the package and said rigid chamber when said space is coupled through a gas resistor to a space in which a constant reduced pressure lower than the desired pressure within the package prevails, and

establishing a transition point at which the pressure variation begins to deviate from the pressure variation existing before the volume of the package increases under the influence of said at least constant reduced pressure.

4,656,867

EARTHQUAKE FORECASTING METHOD

Youji Sasaki, 885 Oaza Hata, Yachihomura, Minamisakugen, Naganoken, Japan

Filed Oct. 17, 1985, Ser. No. 788,649

Claims priority, application Japan, Oct. 23, 1984, 59-221242

Int. Cl.⁴ G01W *1/00*; G01V *1/00*

U.S. Cl. 73—170 R **5 Claims**



1. An earthquake forecasting method comprising the steps of:

observing Cirrus or Cirri of the elongated thready form which has grown above a great geological trough;

tracing the extending direction and the end point of the Cirrus or Cirri; and

confirming the end point of the Cirrus or Cirri from a position above said Cirrus or Cirri.

4,656,868

METHOD AND APPARATUS FOR DISCRIMINATING CUTTING STATE FROM NON-CUTTING STATE IN MACHINE TOOL

Hidekazu Azuma, Nagoya; Ryozi Yoshinaka, Toyota; Takayuki Tsuruhashi, Toyota; Katsuiku Hokao, Toyota; Kazuki Watanabe, Toyota; Kazutaka Ogo, Aichi; Takatoshi Suzuki, Aichi, and Masahiro Hayashi, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi, Japan

Filed Aug. 7, 1985, Ser. No. 763,220

Claims priority, application Japan, Sep. 3, 1984, 59-183955

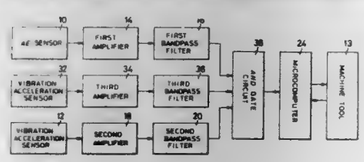
Int. Cl.⁴ B23Q *15/00, 17/12*

U.S. Cl. 73—587 **8 Claims**

2. An apparatus for discriminating a cutting state from a non-cutting state in a machine tool wherein a workpiece is cut with a cutting tool, comprising:

a plurality of vibration sensors which detect vibrations of different frequency bands, respectively, which are produced during cutting of the workpiece by the cutting tool; and

discriminating means for judging that the workpiece is being cut by the cutting tool when levels of output signals generated from at least two of said vibration sensors are higher than respective predetermined threshold levels, and for judging that the workpiece is not being cut by the cutting tool when the level of an output signal generated from less than two of said vibration sensors is higher than



a predetermined threshold level, one of said plurality of vibration sensors being an acoustic-emission sensor which detects an elastic wave of a high frequency band that is generated due to breakage or elastic deformation of the workpiece or said cutting tool.

4,656,869

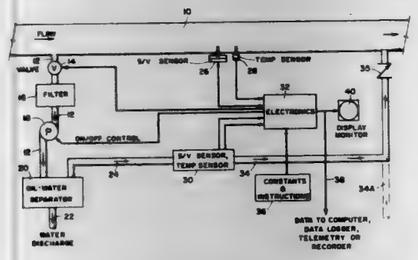
METHOD OF MEASURING THE AMOUNT OF WATER FLOWING IN A CRUDE OIL PIPELINE

Ellis M. Zacharias, 11391 E. Tecumseh St., Tulsa, Okla. 74116

Filed Jun. 24, 1985, Ser. No. 747,924

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—597 **9 Claims**



1. A method of measuring the composition of an oil and water mixture flowing in a pipeline comprising:

(1) extracting a sample of mixture from the pipeline;

(2) measuring the speed of sound transmission of the mixture;

(3) measuring the temperature of the mixture;

(4) separating the water from the sample;

(5) measuring the speed of sound transmission of a sample having the water separated therefrom;

(6) measuring the temperature of the sample having the water separated therefrom; and

(7) comparing the determined speed of sound transmission of the mixture and the speed of sound transmission of the sample having the water separated therefrom as corrected for the detected temperatures to determine the ratio of oil and water in the mixture.

4,656,870

ULTRASONIC TESTING DEVICE

Klaus Ruthrof, Erlangen; Georg Hölzler, Möhrendorf, and Rudolf Körner, Leinburg, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim/Ruhr, Fed. Rep. of Germany

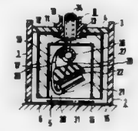
Filed Jul. 25, 1985, Ser. No. 759,125

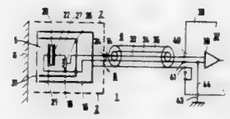
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1984, 3428056

Int. Cl.⁴ G01N *29/04*

U.S. Cl. 73—629 **10 Claims**

1. Ultrasonic testing device with a test head which comprises, an electromechanical transducer, especially a piezo electric oscillator, and an electrically conducting shield and an insulating housing, with an ultrasonic device and with a shielded cable which connects the test head with the ultrasonic device, the combination therewith of: an additional electrically conducting shield with the two electrically conducting shields spaced from one another arranged to enclose the test head in a





cup-fashion; the shielded cable is a triple coaxial cable; the two shields are each separately connected to one of a middle conductor and an outer conductor of the triple coaxial cable; a metal housing around the ultrasonic device, and at least the outer conductor of said cable is connected and grounded to the metal housing of the ultrasonic device.

4,656,871

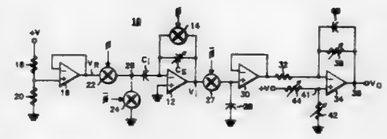
CAPACITOR SENSOR AND METHOD

Walter S. Czarnocki, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 16, 1985, Ser. No. 755,390

Int. Cl.⁴ G01L *9/12, 19/04*

U.S. Cl. 73—724 **5 Claims**



1. A method of converting a measured input variable to an electrical output signal, comprising:

(a) converting changes in the variable to changes in capacitance;

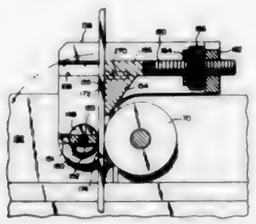
(b) providing a DC reference signal having a substantially constant value;

(c) multiplying the DC reference signal by a variable gain which changes as a function of changes in said capacitance, including providing an amplifier connected to form part of a switched-capacitor amplifier with said capacitance, coupling the capacitance in a feedback path around the amplifier so as to vary the gain of the amplifier in accordance with variations in the capacitance, and applying the reference signal to the amplifier's input; and

(d) outputting the multiplied reference signal for use as an indicator of the value of the input variable.

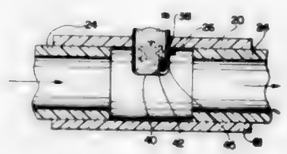
VOL 1077 ISS 2 AP 14 1987 UMI

4,656,872
WRAP-AROUND BEND TEST METHOD AND APPARATUS
Glenn N. Fischer, c/o Fischer Engineering Company, 7595 E. Singer Rd., Dayton, Ohio 45424
Filed Apr. 14, 1986, Ser. No. 851,743
Int. Cl.[4] G01N *3/20*
U.S. Cl. 73—850 16 Claims



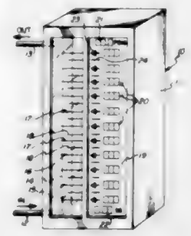
13. A method of testing the ductility of a weld formed within an elongated specimen including a weld, comprising the steps of:
positioning the specimen against the outer surface of a cylindrical mandrel mounted for rotation along a first axis;
linearly moving a second cylindrical roller into contact with the specimen on a side thereof opposite said mandrel, said second roller being mounted for rotation along a second axis disposed parallel to said first axis;
moving the contact surface of a shoe into contact with the specimen along a side of the specimen opposite said mandrel and remote from said second roller; and
rotating said mandrel and said shoe about said first axis, whereby said shoe bends the specimen about said mandrel.

4,656,873
FLOW MEASURING DEVICE
David A. Stewart, 39 Hawthorne Ave., Barrington, R.I. 02806
Filed Aug. 19, 1985, Ser. No. 767,176
Int. Cl.[4] G01F *1/05*
U.S. Cl. 73—861.33 8 Claims



1. A device for measuring the rate of flow of a fluid comprising a paddle-wheel having a central axis and a plurality of paddle elements which extend outwardly relative to said central axis, said paddle-wheel having axially opposite first and second end portions, an elongated housing having an open interior area and having a substantially longitudinally extending side wall portion which defines the side periphery of said interior area and having an end wall portion which defines an end of said interior area, said paddle-wheel being mounted in said interior area so that the axis of said paddle-wheel is substantially perpendicular to the longitudinal extent thereof and so said paddle-wheel is rotatable about its axis, said housing having a slot therein which extends through said end wall portion in substantially transverse relation to said interior area, said slot being angularly disposed with respect to said paddle-wheel axis and defining both inlet and outlet passages in said housing.

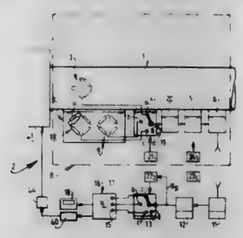
4,656,874
FLOWMETER WITH ELECTRONICALLY ADJUSTABLE MEASUREMENT MODULE AND DISPLAY
Frank M. Kulig, Bloomfield, Conn., assignor to The J. M. Ney Company, Bloomfield, Conn.
Filed Dec. 10, 1985, Ser. No. 807,367
Int. Cl.[4] G01F *1/22, 15/06*
U.S. Cl. 73—861.55 8 Claims



1. A flowmeter comprising a vertical tube tapering slightly from bottom to top; a float member in said tube adapted to be moved upwardly in said tube by fluid flow therein and indicate the rate of fluid flow through said tube; means for connecting said tube in a fluid flow line whereby the fluid in the line moves upwardly through said tube and displaces said float member upwardly from an at rest position and the position of said float member in said tube is indicative of the flow rate of the fluid; a vertically extending, electrically illuminatable display positioned adjacent said tube and adapted to display a plurality of sets of numeric values in response to electrical signals received thereby; memory means containing data for generating a multiplicity of graduated vertical scales corresponding to specific gravity values for fluids to be measured and the line pressure of the fluid being measured and for providing electrical signals corresponding to the numeric values of a selected scale to illuminate said display; and manipulatable means connected to said memory means for inputting specific gravity values and thereby illuminating said display to provide a graduated vertical scale of numeric values with an upper numeric value which is a function of the specific gravity of the fluid and the pressure of the fluid and is descendingly graduated to a lower numeric value adjacent the lower end thereof.

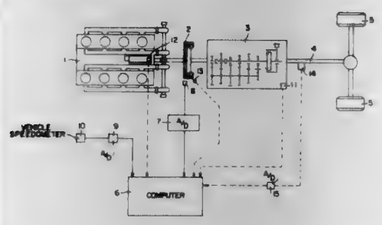
4,656,875
METHOD AND DEVICE FOR MEASURING THE DEFORMATION OF A ROTATING SHAFT
Rombartus W. Uitermarkt, Alblasserdam, Netherlands, assignor to 501 Techno Diagnosis B.V., Vlaar Dingen, Netherlands
PCT No. PCT/NL84/00037, § 371 Date Jul. 1, 1985, § 102(e) Date Jul. 1, 1985, PCT Pub. No. WO85/02011, PCT Pub. Date May 9, 1985
PCT Filed Oct. 31, 1984, Ser. No. 752,188
Claims priority, application Netherlands, Oct. 31, 1983, 8303745
Int. Cl.[4] G01L *3/10, 25/00*
U.S. Cl. 73—862.35 12 Claims

6. The method of calculating the calibrated value of the deformation of a shaft, which is being subjected to torque, from a strain gauge bridge producing an uncalibrated signal representing the deformation of the shaft, which comprises the steps of:
intermittently measuring the value of the uncalibrated signal;
intermittently measuring the value of a signal which approximates the value which the strain gauge bridge should yield in the absence of deformation thereof;
intermittently measuring the value of a signal which approximates the value which the strain gauge bridge should yield in the presence of a known deformation thereof; and



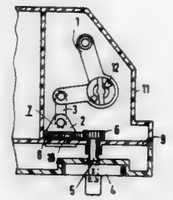
calculating the calibrated value of the deformation of the shaft from said intermittently measured values.

4,656,876
APPARATUS FOR MEASURING THE MASS OF A MOTOR VEHICLE
Rainer Fremd, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Continuation of Ser. No. 763,367, Aug. 7, 1985, abandoned. This application Jun. 16, 1986, Ser. No. 874,857
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429184
Int. Cl.[4] G01D *21/00;* G01G *19/03, 9/00;* G01M *17/00*
U.S. Cl. 73—865 15 Claims



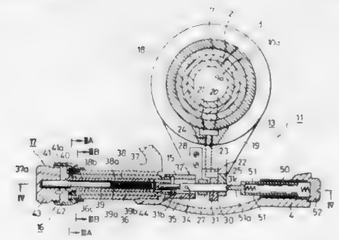
1. An apparatus for measuring the mass of a motor vehicle during operation comprising:
first means for measuring the speed of an engine of said motor vehicle;
second means for measuring the transmission ratio of the transmission of said motor vehicle; and
third computer means connected to said first and second means for storing a series of measured engine speed values, for calculating the frequency of periodic speed fluctuations using said stored engine speed values and for calculating the mass of said motor vehicle using said frequency of periodic speed fluctuations and corresponding by measured transmission ratio.

4,656,877
ASSEMBLY FOR TRANSMITTING ROTARY MOTION IN AUTOMOTIVE AIR CONTROL SYSTEM
Reinhard Hildebrand, and Friedrich Riedel, both of Redwitz, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 19, 1985, Ser. No. 777,603
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1984, 3435359
Int. Cl.[4] F16H *21/14*
U.S. Cl. 74—68 5 Claims



1. An assembly for transmitting rotary motion from a manually rotatable actuator knob to an operating mechanism in an air control system of an automotive vehicle, said assembly comprising:
a housing including a guide track;
a sliding element formed with a rack, said sliding element being shiftably mounted to said guide track in said housing;
an intermediate lever pivotably connected at a first end to said sliding element;
a positioning lever rotatably mounted to said housing and pivotably linked to said intermediate lever at a second end thereof opposite said first end; and
a shaft rotatably mounted to said housing, said shaft being provided with a pinion meshing with said rack, the manually rotatable actuator knob being attached to said shaft at an end thereof spaced from said pinion.

4,656,878
ROTATION AXIS FINE ADJUSTMENT APPARATUS
Hideo Iwai; Fumitomo Kondo, and Akio Kimura, all of Tokyo, Japan, assignors to Tokyo Kogaku Kika Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 28, 1985, Ser. No. 770,183
Claims priority, application Japan, Sep. 1, 1984, 59-132060[U]; Mar. 8, 1985, 60-032998[U]
Int. Cl.[4] G12B *5/00*
U.S. Cl. 74—89.15 3 Claims



1. A rotation axis fine adjustment apparatus for finely adjusting rotation of a mounting portion mounted around a shaft portion to be rotatable with respect to a base portion through a fastening frame by suitably fastening and finely adjusting the fastening frame relative to the rotation axis comprising:

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an outer tube inserted in and fixed to the mounting portion with its end portion projecting outside the mounting portion;

an intermediate hollow axial body formed at the outer peripheral surface thereof with a flange portion and at the inner peripheral portion thereof with a female thread portion, said hollow axial body being disposed inside of said outer tube and concentrically secured to said outer tube by fixing means such that said flange portion abuts against said end portion;

a fastening intermediate hollow axial body rotatably arranged inside of said outer tube and outside of said intermediate hollow axial body, an outer end of said fastening intermediate hollow axial body being provided with a fastening control handle; and

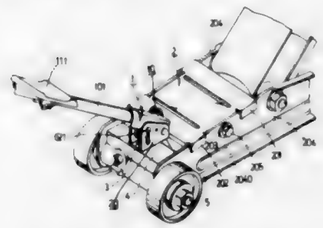
a fine adjustment axial body formed with a male thread portion for being in reciprocally movably threaded engagement with the female thread portion of said intermediate hollow axial body and provided at an inner side of said intermediate hollow axial body in order to finely rotate said mounting portion, an outer end of said fine adjustment axial body being provided with a fine adjustment control handle coaxially with respect to said fastening control handle.

4,656,879

PUMP LEVER FOR A JACK

You Y. Jen, Taipei, Taiwan, assignor to Yann Tay Enterprises Co., Ltd., Taiwan

Filed Jul. 17, 1984, Ser. No. 631,596
Int. Cl.⁴ F16H *21/44*; G05G *1/04*
U.S. Cl. 74—102 **5 Claims**



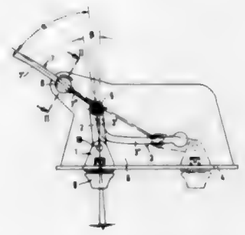
1. A pump lever for a jack comprising: a handle sleeve adapted to receive a handle and be connected to a piston of a fluid pump for said jack; a limiting piece secured to a base on said jack and for guiding said handle sleeve to be raised and lowered and confining a safe range within which said handle sleeve can be raised and lowered without damaging said piston; and an elastic member mounted between said handle sleeve and said limiting piece so that said elastic member will urge said handle sleeve upwardly to a raised position when one frees said handle the top end of which is in said handle sleeve in a lowered position; said limiting piece having a U cross-section, a bottom wall and two first side plates each of which has a first hole at its front end and a curve groove at its rear end; said handle sleeve having a corresponding portion of inverted U cross-section which is capable of being guidedly received in said limiting piece of U cross-section and has a top wall and two second side plates each of which has a second hole at its front end and a third hole at its rear end and; said pump lever further including a first pin pinned through all of said first and second holes; and a second pin pinned through all of said curve grooves and said third holes and having its two ends respectively retained in said curve grooves, said elastic member being a wire spring having an eyelet for passing said first pin, a first end urging upon said top wall and a second end urging upon said bottom wall, each of said two first side plates having a fourth hole provided between its said first hole and curve groove; and each of said two second side plates has a fifth hole provided between its second and third holes and said pump lever further includes a third pin capable of pinning through all of said fourth and fifth holes to fix said handle sleeve in said limiting piece.

4,656,880

CONTROL-MOTION TRANSMISSION ASSEMBLY FOR AIR CONTROL SYSTEM OF AUTOMOTIVE VEHICLE

Reinhard Hildebrand, Redwitz, and Bernd Waldmann, Kronach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 19, 1985, Ser. No. 777,596
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1984, 3438833
Int. Cl.⁴ F16L *1/10*
U.S. Cl. 74—105 **10 Claims**



1. A transmission assembly in an air control system of an automotive vehicle for transmitting a control motion to an operating mechanism of the air control system, comprising:

a housing provided with a guide slot;

a manually movable actuator lever translatably mounted to said housing, said actuator lever having an end projecting from said housing and adapted to be grasped by an operator;

a setting lever pivotably connected at a first point to said actuator lever, said setting lever overlapping said actuator lever in a region about said point;

a guide pin attached to said setting lever at a second point spaced from said first point, said guide pin projecting into said guide slot, said guide pin being positionally fixed with respect to said setting lever; and

a Bowden cable having a sheath connected at one end to said housing and a wire slidably disposed within said sheath and connected at one end to said setting lever.

4,656,881

LINEAR DRIVE

Wolf-Dieter Goedecke, Unterkirnach; Reinhard Schwenzer, Düsseldorf, and Ralf Huber, Brigachtal, all of Fed. Rep. of Germany, assignors to GAS Gesellschaft für Antriebs- und Steuerungs-technik mbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed Oct. 4, 1985, Ser. No. 784,375
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1984, 3436977
Int. Cl.⁴ F16H *21/44*
U.S. Cl. 74—110 **15 Claims**

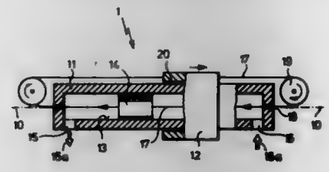
1. A linear drive module for industrial handling devices comprising

a profiled elongated member extending along a longitudinal axis, said member being provided with an axial bore having a piston longitudinally reciprocal therein;

terminals associated with said bore for feeding fluid to said bore on at least one side of said piston;

a carriage slidably arranged on said elongated member for displacement in said longitudinal axis;

linking means associated with said carriage and said piston for linking said carriage to said piston to allow relative displacement between said carriage and said elongated member in response to said fluid being fed to said terminals; and



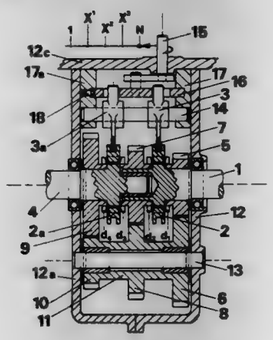
roller bearing means arranged between said elongated member and said carriage ,said roller bearing means including rollers mounted on said carriage running on surface portions of flange-like end portions of said elongated member, said end portions projecting radially in a star-like pattern from a central area of said elongated member.

4,656,882

INCREMENTALLY VARIABLE SINGLE COUNTERSHAFT TRANSMISSION

John H. Kerr, P.O. Box 40, R.R. 1, Kingston, Ontario, Canada (K7L 4V1)

Filed Apr. 29, 1985, Ser. No. 728,306
Claims priority, application Canada, May 29, 1984, 455342
Int. Cl.⁴ F16H *5/06, 3/08*
U.S. Cl. 74—337.5 **5 Claims**



1. Incrementally variable single countershaft transmissions consisting of; single structures having three to five gear-pairs with ratios substantially in the order of the geometric progression,

$$X^*_{y,\ y},\ X^2/y,\ X^4/y,\ X^6/y,$$

where y is the ratio of a second gear-pair and both y and X are common constants in the ratios of all other gear-pairs,

$$X = R^{1/(2[N-1]-1)},$$

where R is the maximum ratio and N is the number of gear-pairs in the structure, wherein the number of ratio-states T is,

$$T = 2\,[N-1]+3,$$

with each said ratio-state defined as a function of X in the following combinations,

providing either ratio-states X^3, X^2, X and 1, or X^5, X^4, X^3, X^2, X and 1, or X^7, X^6, X^5, X^4, X^3, X^2, X and 1, with respectively three, four and five gear-pairs in the structure; wherefore, said single structures comprise of coaxially mounted input and output shafts with abutting ends concentrically journaled and outer ends with journals in the casing of said transmission; a countershaft mounted free to rotate on a mandrel with ends fixed to said casing adjacent and parallel to said two coaxial shafts; said gear-pairs with ratios X*y and y being referenced from said input shaft and said gear-pairs with ratios X^2/y, X^4/y, X^6/y being referenced from said countershaft; with a gear element of said gear-pairs with ratios X*y and y mounted free to rotate on and provided with a coupling means to said input shaft, and with a gear element of each said gear-pairs with ratios X^2/y, X^4/y, X^6/y mounted free to rotate on and together with said gear element of said gear-pair with ratio y are provided with a coupling means to said output shaft; and with a second gear element of all said gear-pairs fixed to said countershaft: and a series arrangement of said single structures with the ratios in their said gear-pairs substantially in a progressive relationship as defined by,

$$X_u{}^u = r_{u-1}{}^r * X,$$

where $X_u{}^u$ is a common constant in the ratios of all but a second gear-pairs in structure u of a series of structures, and $r_{u-1}{}^r$ is the maximum ratio obtained in the said series prior to the addition of structure u, and with the number of ratios T_s in a series of single structures defined by,

$$T_s = T_{u-u} \ldots {}^*T_{u-1} {}^*T_u$$

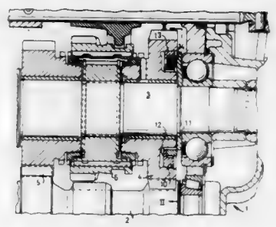
where T_u and T_{u-1} are respectively the last and second to last single structures in the series.

4,656,883

MOTOR VEHICLE GEARBOX

Lars Bengtsson, Kungsbacka, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Aug. 21, 1984, Ser. No. 642,768
Claims priority, application Sweden, Aug. 23, 1983, 8304563
Int. Cl.⁴ F16D *63/00*; F16F *7/04*; F16H *57/10*
U.S. Cl. 74—411.5 **5 Claims**



1. Motor vehicle gearbox, comprising brake means for applying to a gear, with the gearbox in a neutral position, a limited braking torque directed counter to an input torque, characterized in that said brake means comprise frictional surfaces on elements rotatable relative to each other and that cooperating parts, upon relative rotation between the elements in one direction, produce engagement between the frictional surfaces and upon relative rotation in the opposite direction at

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least substantially release said engagement, said cooperating parts comprising spring means for urging said frictional surfaces into engagement responsive to relative rotation of said elements in said one direction.

4,656,884

POWER TRANSMISSION MECHANISM

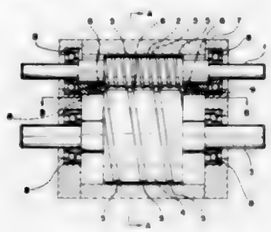
Isao Nemoto, Narashino, Japan, assignor to Nemoto Kikaku Kogyo Co., Ltd., Chiba, Japan

Filed Mar. 7, 1985, Ser. No. 709,312

Claims priority, application Japan, Mar. 9, 1984, 59-45249; Mar. 24, 1984, 59-57088

Int. Cl.⁴ F16H *1/18*

U.S. Cl. 74—424.5 **8 Claims**



1. A power transmission mechanism comprising: a predetermined number of first rotary shafts arranged on a first common axis, said rotary shafts each having on its periphery a small screw thread; a predetermined number of second rotary shafts arranged on a second common axis such that said second common axis is parallel to said first common axis, said second rotary shafts each having on its periphery a large screw thread; a plurality of ball means; wherein a pitch and a pitch circle diameter of the large screw threads is equal to an integer multiple of the pitch and pitch circle diameter of the small screw threads, the large screw threads and the small screw threads are arranged symmetrically so that there is a space therebetween, and wherein said balls are circularly and successively supplied into said space and contact both said large screw threads and said small screw threads so that when one of said shafts is rotated, the other of said shafts is rotated in the same direction.

4,656,885

LUBRICATION MECHANISM IN FINAL DRIVE AND DIFFERENTIAL UNITS

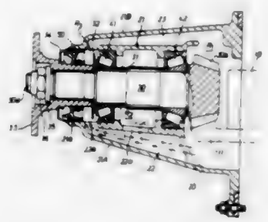
Hiroshi Hori, and Kiyoshi Taniyama, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Dec. 17, 1984, Ser. No. 682,144

Claims priority, application Japan, Dec. 23, 1983, 58-202826[U]

Int. Cl.⁴ F16H *57/04, 1/38;* F01M *9/66*

U.S. Cl. 74—467 **3 Claims**



1. A final drive and differential unit for a motor vehicle comprising:

a cylindrical support structure including an outer end and an inner end;

a drive pinion mounted on said inner end of said cylindrical support sturcture;

a differential carrier integrally formed with said cylindrical support structure and arranged to store an amount of lubricating oil therein;

a differential gear unit rotatably mounted within said differential carrier;

a ring gear located within said differential carrier and mounted on said differential gear unit for rotation therewith;

a drive pionon shaft and a pair of axially spaced bearings, said drive pinion shaft and said pair of axially spaced bearings being located within said cyclindrical support structure, said axially spaced bearings supporting said drive pinion shaft;

an annular oil seal member being mounted within said outer end of said cylindrical support structure, said drive pinion shaft extending outwardly through said annular oil seal member, a first annular space being defined between said annular oil seal member and a first bearing of said pair of axially spaced bearings, and a second annular space being defined between said pair of axially spaced bearings;

said cylindrical support structure of said differential carrier including a first side and a second side, said first side including a first enlarged portion, said first englarged portion, said first enlarged portion including an oil supply passage which is parallel to said drive pinion shaft, said oil supply passage having a first end and a second end, said first end being in open communication with the interior of said differential carrier said second side of said cylindrical support structure of said differential carrier including a second enlarged portion, said second enlarged portion incuding an oil return passage which is in parallel with said drive pinion shaft, said oil return passage including a first end and a second end, said first end being in open communication with the interior of said differential carrier and said second end being in communication with said first annular space, said cylindrical support structure including a side wall, said side wall including a first lateral hole connecting an intermediate portion of said oil supply passage with said second annular space and a second lateral hole connecting the second end of said oil supply passage with said first annular space, said first lateral hole including a first lowermost edge and said second lateral hole including a second lowermost edge, said second lowermost edge being below said first lowermost edge in a horizontal direction to ensure lubricating oil will flow into said first annular space.

4,656,886

SHIFT MECHANISM

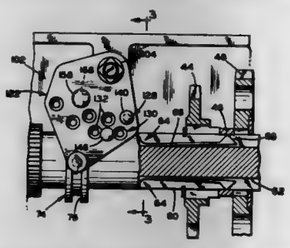
Douglas F. Edwards, Mt. Vernon, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio

Continuation of Ser. No. 706,662, Feb. 28, 1985, abandoned. This application Jul. 24, 1986, Ser. No. 869,812

Int. Cl.⁴ F16H *3/08;* B60K *20/00*

U.S. Cl. 74—475 **7 Claims**

1. In a gearbox having a housing, a gear shaft, a plurality of gears rotatably mounted on said shaft, a connecting member movable along said shaft for individually connecting said gears to said shaft for causing said gears to rotate individually with said shaft, and a collar positioned around said shaft and engageable with said connecting member, shifting means for moving said collar and said connecting member along said shaft, said shifting means comprising a shift shaft pivotally mounted in said housing transversely to said gear shaft, said shift shaft having a detent plate extending from said shift shaft on one side of said collar, said detent plate having engaging means on an end portion thereof for engaging a portion of said collar, said detent plate having a plurality of detent recesses formed therein spaced inwardly from said engaging means, said detent recesses being on the side of said detent plate opposite said engaging means.



4,656,887

TILTABLE STEERING COLUMN WITH ADJUSTABLE LOCKING PAWL

Moritaka Yoshida, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 20, 1985, Ser. No. 811,289

Claims priority, application Japan, Dec. 21, 1984, 59-194737[U]

Int. Cl.⁴ B62D *1/18;* G05G *5/24*

U.S. Cl. 74—493 **3 Claims**

1. A tiltable steering column for an automotive vehicle, comprising:

(a) a main steering shaft comprising a lower steering shaft and an upper steering shaft tiltably rotationally connected to said lower steering shaft;

(b) a column tube assembly, comprising:

(b1) a lower tube which rotatably supports said lower steering shaft from a body of said automotive vehicle; and

(b2) an upper tube which rotatably supports said upper steering shaft and is pivotally mounted so as to be able to tilt relative to said lower tube;

and

(c) a tilt locking mechanism, comprising a first side ratchet mechanism on a first side of said column tube assembly and a second side ratchet mechanism on a second side of said column tube assembly opposite said first side, said first and second side ratchet mechanisms each comprising:

(c1) a first and a second ratchet each fixedly attached to one of said upper tube and said lower tube;

(c2) a first and a second pawl each pivotally attached to the other of said upper tube and said lower tube so as to be pivotable about an axis of pivotal rotation;

(c3) a means for continuously biasing said first and second pawls so as to engage them respectively with said first and second ratchets; and

(c4) a means for selectively biasing said first and second pawls so as to release said respective engagement thereof with said first and second ratchets;

and further comprising:

a means for shifting the axis of pivotal rotation of one of said first and second pawls relative to the axis of pivotal rotation of the other of said first and second pawls.

4,656,888

APPARATUS FOR VERTICAL AND AXIAL ADJUSTMENT OF A STEERING WHEEL

Axel Schmitz, Dusseldorf, Fed. Rep. of Germany, assignor to Kloeckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Mar. 20, 1986, Ser. No. 841,581

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1985, 3510311

Int. Cl.⁴ B62D *1/18;* G05G *5/06*

U.S. Cl. 74—493 **12 Claims**

1. Apparatus for vertical and axial adjustment of the position of a motor vehicle steering wheel having a steering shaft extending directly into a hydraulic steering control unit, said apparatus comprising:

a U-shaped bracket rigidly secured to said hydraulic control unit and presenting parallel flanges along opposite lateral sides thereof,

a support adapted for rigid attachment to a vehicle including a pair of upstanding plates parallel to and on the outboard sides of said flanges,

a pair of slots in said plates, respectively, elongated in a direction parallel to the axis of said steering shaft,

a pair of aligned pivot pin means secured to said flanges, respectively, and extending into said slots, respectively,

a pair of spaced elongated links on the inboard sides of said plates having first corresponding ends pivotally connected to the outboard sides of said flanges, respectively, on an axis parallel to and spaced above the axis of said pivot pin means and having second corresponding ends presenting slotted openings elongated in the general direction of elongation of said links, said general direction being diverse to said axis of said steering shaft, and

locking means operable to releasably secure said links to said plates including,

a generally horizontal clamping bolt mounted on said plates in vertically spaced relation to said slots and extending through said slotted openings in said links and

means carried on said clamping bolt presenting friction surfaces in confronting relation to said links and to the laterally inner sides of said plates, and

a manually operable lever connected to said clamping bolt, said plates being drawn toward one another whereby said links are frictionally secured to said plates when said lever is pivoted in one rotative direction and said links being released from said plates when said

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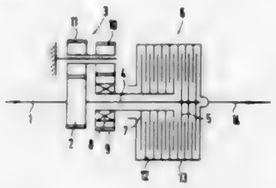
lever is pivoted in an opposite rotative direction to said one rotative direction.

4,656,889

TRANSMISSION SYSTEM WITH LAMELLA COUPLING FOR ALL WHEEL DRIVE VEHICLE

Robert Mueller, Moeusheim, Fed. Rep. of Germany, assignor to Dr. Ing. H.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 3, 1986, Ser. No. 835,377
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1985, 3507491
Int. Cl.⁴ F16H *47/00, 47/04, 47/08*
U.S. Cl. 74—718 **23 Claims**



1. An arrangement for a four wheel drive motor vehicle positioned between a front and a rear axle comprising:

a plate clutch means for transferring a rotational moment from said front to said rear axle, a portion of said plate clutch means being fixedly connected to said front axle,

connecting means for engaging another portion of said plate clutch means with said front axle at a predetermined rotational speed differential between said front and rear axle,

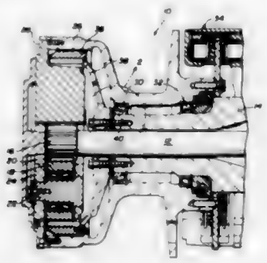
wherein at said predetermined rotational speed differential, the rotational moment transferred from the front to the rear axle with respect to the rotational speed differential increases sharply.

4,656,890

COUPLING FOR A PLANETARY RING GEAR

Julius F. Marquardt, Westchester, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 19, 1985, Ser. No. 810,626
Int. Cl.⁴ F16H *1/28*
U.S. Cl. 74—801 **9 Claims**



1. A planetary gear system, said system comprising:

a hollow spindle having a longitudinal axis, said spindle having a plurality of radiating, circumferentially spaced coupling teeth on an annular surface thereon, said annular surface being disposed generally perpendicularly to said axis;

a drive shaft located in said spindle and rotatable relative thereto, said shaft having gear teeth on an end thereof projecting from the first end of said spindle;

hub means rotatably mounted on said spindle adjacent to the first end thereof, said hub means carrying a plurality of circumferentially spaced planetary gears meshing with said gear teeth;

ring gear means encircling said planetary gears in mesh therewith, said ring gear means including a ring gear and a ring gear carrier encircling said shaft and having a carrier surface thereon confronting the end surface on said spindle, said carrier surface including a plurality of radiating, circumferentially spaced coupling teeth in mesh with the coupling teeth on said spindle; and,

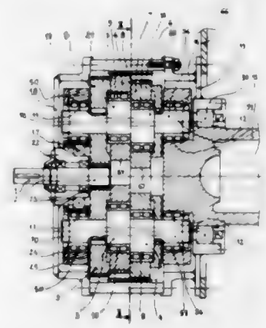
means maintaining said coupling teeth in mesh for transferring driving and reverse loading into said spindle when said hub is driven by said shaft, planetary gears and ring gear.

4,656,891

PLANETARY GEAR BOX WITH TWO DOUBLE ECCENTRICS

Francois Durand, 11 rue du Bateau, 06600 Antibes, France

Filed Oct. 4, 1985, Ser. No. 784,851
Claims priority, application France, Oct. 8, 1984, 84 15856
Int. Cl.⁴ F16H *1/28*
U.S. Cl. 74—804 **12 Claims**



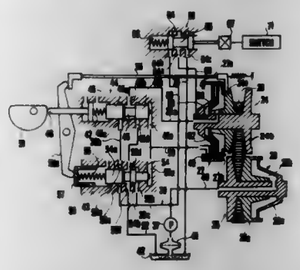
1. In a planetary gear box with two double eccentrics which comprises an input shaft, a first outer gear secured to said input shaft, a plurality of second outer gears meshing with the first outer gear, a plurality of crankpins which are connected to the second outer gears so that a rotary movement of the second outer gears is transduced into an orbital movement of the crankpins, two gear wheel and planets which have a plurality of pin holes formed therein circumferentially spaced from each other, said planets having outer gear teeth formed at the periphery of each planet, the crankpins being inserted into the pin holes so that eccentric revolutional movements of the planets, which are angularly spaced 180°, are generated by means of the orbital movement of the crankpins, an outer gear ring surrounding the outer gear teeth of the planets and having inner teeth which mesh with the planets, this gear ring being formed on an outer part of a housing of the gear box and constituting one member, the crankpins being journaled in a planet carrier forming another member, one of said members being a low speed rotating element and the other member being a stationary element of said planetary gear box, the improvement wherein: said gear box has only two of said crankpins diametrically opposite one another, each crankpin having a double eccentric, each double eccentric having a bearing with normal internal radial clearance on one eccentric and a bearing with greater than said normal internal radial clearance on the other eccentric, each planet having two pin holes equipped one with a bearing with normal internal radial clearance and the other with a bearing with greater than said normal internal radial clearance.

4,656,892

CONTROL SYSTEM FOR AN INFINITELY VARIABLE TRANSMISSION

Motohisa Miyawaki, Chofu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,704
Claims priority, application Japan, Dec. 9, 1983, 58-232934
Int. Cl.⁴ B60K *41/14;* **F16H** *11/06*
U.S. Cl. 74—868 **6 Claims**



1. In a control system for an infinitely varible transmission for transmitting the power of an internal combustion engine mounted on a vehicle, the transmission comprising a primary pulley operatively connected to a crankshaft of the engine having a hydraulically shiftable disc and a first hydraulic cylinder for shifting the disc, a secondary pulley operatively connected to an output shaft and having a hydraulically shiftable disc and a second hydraulic cylinder for operating the disc of the secondary pulley, a belt engaged with both pulleys, a first hydraulic circuit having a pump for supplying oil, a transmission ratio control valve responsive to engine speed for controlling the oil so as to shift the disc of the primary pulley to change the transmission ratio, and a pressure regulator valve responsive to the transmission ratio for increasing line pressure of the hydraulic circuit with an increase of the transmission ratio, the improvement comprising:

means comprising a piston axially slidably mounted in the first hydraulic cylinder of the primary pulley defining a piston chamber in the first hydraulic cylinder, said means for restricting shifting of the disc of the primary pulley to a maximum transmission ratio of the transmission so as to limit movement of said disc of the primary pulley at a restricted position where the transmission ratio is lower than said maximum transmission ratio of the transmission;

a second hydraulic circuit provided between the pump and the piston chamber;

valve means in said second hydraulic circuit for controlling the oil supplied to the piston chamber; and

means for operating the valve means for shifting the piston so as to provide said restricting of the shifting of the disc of the primary pulley to provide the lower transmission ratio.

4,656,893

WIRE STRIPPING TOOL

Neal W. Hudson, 232 W. Washington, Meridian, Id. 83642

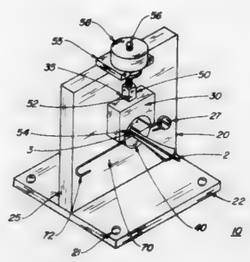
Filed May 5, 1986, Ser. No. 859,450
Int. Cl.⁴ H02G *1/12*
U.S. Cl. 81—9.51 **7 Claims**

1. A wire stripper for cutting insulation from a wire, said cutter comprising:

a stationary housing defining an opening for receiving and holding an insert;

a wire guide insert received by the opening of said housing, said insert including a body portion and a shoulder portion, said body portion provided with a wire guide opening and having an exterior wall engageable with the interior wall of the opening of said housing and said shoulder portion including a longitudinally extending groove of equal size and concentric with the opening of said body portion for supporting an insulated wire placed therein; and

at least one cutting blade mounted on said housing, each of



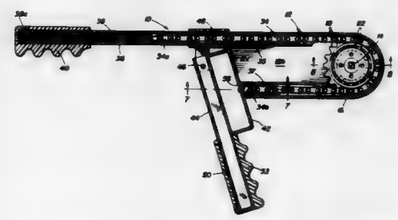
said blades transversely mounted relative to the groove of said shoulder portion of said insert and each blade adjustably and reciprocally movable to and from the longitudinal axis of the groove for cutting insulation from wire drawn through the wire guide opening of said body portion and groove of said insert.

4,656,894

RATCHET WRENCH

Harold E. Goetz, 1004 First, Dodge City, Kans. 67801

Filed Apr. 7, 1986, Ser. No. 848,798
Int. Cl.⁴ B25B *13/00*
U.S. Cl. 81—57.43 **10 Claims**



1. A ratchet wrench comprising a wrench head, an elongate first wrench operating handle extending rigidly from one end of the wrench head, a driving ratchet member rotatably mounted in the wrench head, a driven ratchet member rotatably mounted in the wrench head for engaging a workpiece to be turned, pawl means connected between the ratchet members for providing a drive connection therebetween in one direction of rotation of the driving member and for disconnecting said drive connection in the other direction of rotation of the driving member, an elongate flexible drive element looped around the driving ratchet member for rotating the driving ratchet member, the drive element having opposite ends extending from said one end of the wrench head, a longitudinally extendible resilient resistance member connected between one end of the drive element and the first handle, a second handle attached to the other end of the drive element, a guide means for providing reciprocatory sliding movement of the second handle from said one end of the wrench head in a direction substantially parallel to the first handle effective to extend and retract said other end of the drive element with respect to said end of the wrench head and thereby rotate the driving ratchet member, a pivot joint between the second handle and said guide means, and an extension extending laterally from the second handle for providing pivotal movement of the second

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handle when the guide means is in engagement against said one end of the wrench head and is also effective to extend and retract said other end of the driving element with respect to said end of the wrench head and thereby rotate the driving ratchet member.

4,656,895

EMERGENCY GAS SHUT-OFF TOOL

Johnnie L. Wilson, Pasadena, Calif., assignor to Erik M. Arnbem, a part interest

Filed Feb. 11, 1985, Ser. No. 700,496
Int. Cl.⁴ B25B *13/00, 13/30;* **B25G** *1/00*
U.S. Cl. 81—177.8 **9 Claims**



1. An emergency gas valve turning tool, comprising in combination

(a) an elongated three-dimensional rectangularly shaped shank having an upper end terminating in a butt;

(b) a head, comprising two arms each said arm having a free end, and a shoulder connecting said two arms, forming a three-dimensional rectangular inverted U-shape each free end of said arms being, rotatably mounted by pivoting means to an opposite side of the shank adjacent the butt thereof, said butt, said two arms and said shoulder cooperating to form a closed rectangular space, within which a gas valve may be captivated.

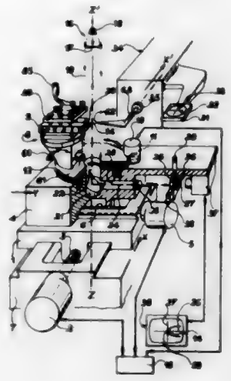
4,656,896

PROCESS FOR THE POSITIONING OF A POINT BELONGING TO THE CUTTING ZONE OF A TOOL AND APPARATUS FOR PERFORMING THIS PROCESS IN A DIGITALLY CONTROLLED LATHE

Bernard Bietz, Morolles en Hurepoix; Jacques van der Vliet, Sevres, and Michel Cartant, Paris, all of France, assignors to Commissariat a L'energie Atomique, Paris, France

Filed Apr. 18, 1986, Ser. No. 853,725
Claims priority, application France, Apr. 19, 1985, 85 06002
Int. Cl.⁴ B23B *1/00, 25/06*
U.S. Cl. 82—1 C **7 Claims**

1. A process for positioning a point of the cutting zone of a tool in a digitally controlled lathe, said lathe comprising a fixed frame and on the latter first and second slides, means for displacing these slides in translations respectively parallel to first and second directions X, Y which are perpendicular to one another, direction X being parallel to direction X' of a virtual axis of a spindle of the lathe, a capstan with a tool holder supported by one of said slides and means for displacing said capstan in rotation about a virtual rotation axis Z'Z perpendicular to the first and second directions, and a programmable control unit connected to the means for displacement in translation and rotation, in order to apply thereto displacement control signals, to maintain only said single point in contact with said part during machining, the process comprising optically determining the position of said point in an absolute fixed reference mark, wherein said optical determination comprises obtaining the image of said contact point and the image of a virtual relative mark with two perpendicular axes, then by rotating the capstan, displacement of the tool in the tool holder and displacement of the image of the relative mark, to bring about coincidence between the origin of the relative mark and the virtual rotation axis Z'Z of the capstan, said process then consisting of rotating the axes of the virtual relative mark and marking one of the two directions, so as to bring about coincidence between one of the axes of the virtual relative mark and



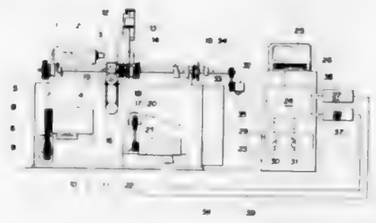
the direction X' of the spindle, then bringing about coincidence between the chosen contact point and the origin of the virtual relative mark, the cutting zone of the tool being tangential to one of the two axes at said contact point, the orientation of the tool being chosen with respect to one of the two axes of the virtual relative mark; then obtaining the image of the absolute fixed reference mark, then displacing the slides to bring said contact point and the intersection point of the axes of the relative mark into coincidence with the origin of said absolute mark, the translation displacements of the slides being measured relative to the two axes of said absolute mark.

4,656,897

NUMERICAL CONTROL DEVICE FOR AUTOMATIC LATHE

Francis von Niederhäusern, Moutier, and Eugen Matthias, Zürich, both of Switzerland, assignors to VN SA Electronics, Moutier, Switzerland

Filed Apr. 29, 1986, Ser. No. 857,002
Claims priority, application Switzerland, May 2, 1985, 01856/85
Int. Cl.⁴ B23B *7/00*
U.S. Cl. 82—2 B **5 Claims**



1. In a single spindle automatic lathe having tools cyclically

performing machining operations on a workpiece and finally severing it from a bar of stock, a camshaft mechanically controlling said tools, a first motor driving said spindle and a second motor driving said camshaft, the arrangement of a numerical control device comprising:

an encoder being associated with said camshaft and uninterruptedly recording the successive angular positions thereof, and

a numerically programmable memory programmed in view of the control of the rotational speed of said motors,

said memory permanently receiving from said encoder informations corresponding to the records thereof and,

as said informations proceed, immediately and simultaneously transmitting to said first and to said second motor mandatory instructions according to its running program,

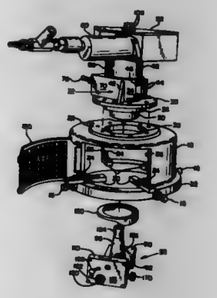
said instructions causing said motors to rotate at speeds ensuring a work of said tools under the best possible conditions.

4,656,898

PORTABLE LATHE DEVICE

Christopher C. Hunt, and Paul M. Strait, both of Newberg, Oreg., assignors to Climax Manufacturing Company, Newberg, Oreg.

Filed May 14, 1984, Ser. No. 610,021
Int. Cl.⁴ B23B *5/16*
U.S. Cl. 82—4 R **10 Claims**



1. A lathe device adapted to be mounted on work to be machined, said device comprising:

a mounting portion,

a spindle housing carried by the mounting portion,

a spindle having first and second opposite ends and defining a central axis, said spindle being adapted to be connected at its first end to a motor,

bearing means supporting the spindle for rotation about its central axis within the spindle housing,

tool mounting means carried by the spindle at the second end thereof for rotation with the spindle about its central axis, said tool mounting means comprising a tool carrier for receiving a tool, guide means defining a path of movement of the tool carrier, said path of movement intersecting said central axis, and feed means for moving the tool carrier along said path of movement between a first position in which a tool held in the tool carrier is located on said central axis and a second position which defines the perimeter of the area to be machined and in which the tool is spaced from said central axis, the feed means comprising a lead screw, a cam follower for rotating the lead screw, a cam attached to the spindle housing for actuating the cam follower to rotate the lead screw as the spindle rotates the tool mounting means, clutch means effective between the cam follower and the lead screw for driving the lead screw in a given rotational direction in response to movement of the cam follower, means for adjustably spacing the cam follower from the dwell of the cam to adjust the rotation of the lead screw by the cam follower, and reversing means effective between the cam follower and the lead screw for reversing the direction of rotation of the lead screw, and

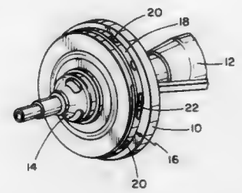
means for attaching the mounting portion to the work at locations that are spaced farther from central axis than is the perimeter of the area to be machined.

4,656,899

SILENCER BAND

Peter Contoyonis, Libertyville, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Apr. 28, 1986, Ser. No. 856,173
Int. Cl.⁴ F16F *15/12*
U.S. Cl. 82—34 R **11 Claims**



11. A silencer band for damping vibration in a workpiece during machining, the band comprising a belt having a plurality of lead weights attached thereto at spaced intervals along the length thereof, an end of the belt having a clip secured thereto, said clip including an attachment portion for securing said clip to said belt and a connection portion for selective engagement with a weight when coupling of the ends of the band is desired, the improvement comprising:

said connection portion including a pair of first leg members having end portions projecting generally toward said attachment portion,

said attachment portion including a second leg member and a third leg member each extending from a respective one of said end portions of said first leg members,

said second and third leg members arranged in predetermined spaced apart relation one to another,

a fourth leg member depending from said third leg member and connected thereto by a bight portion, said fourth leg member extending into the space defined between said second and third leg members and having a distal end projecting generally in the direction of said connection portion, and

said distal end of said fourth leg member having a hook member formed thereon, said hook member comprising a first portion directed generally toward said third leg member and a second portion directed generally away from said third leg member.

4,656,900

ROTARY TUBE PUNCHING ARRANGEMENT AND METHOD FOR PUNCHING HOLES INTO A MOVING WEB MATERIAL

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 15, 1985, Ser. No. 798,518
Int. Cl.⁴ B26D *7/18*
U.S. Cl. 83—24 **14 Claims**

8. A method for punching holes into a continuously advancing thermoplstic film web, comprising:

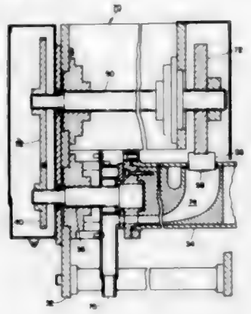
(a) advancing said film web over a rotatable anvil roll constituted of a closed-ended hollow drum with said film web extending in surface contact with least a portion of the circumference of said roll; at least one punch-receiving

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opening of predetermined size extending through the circumferential surface of said anvil roll so as to communicate with the interior of said hollow drum;

(b) causing a rotary punch having a serrated cutting edge at the radially outer end thereof to pierce said film web and to enter said opening in said anvil roll at predetermined intervals;

(c) rotating said rotary punch; and concurrently rotating said anvil roll;



(d) and synchronizing the rotational movements of said anvil roll and said rotary punch said film web advancing over said opening on the anvil roll facing said punch to cause said serrated cutting edge to punch a hole into said web upon entering said opening said anvil roll;

(e) and suctioning the interior of said hollow drum for aspirating the segments of said film web punched out by said rotary punch.

4,656,901

METHOD FOR CUTTING CARPET

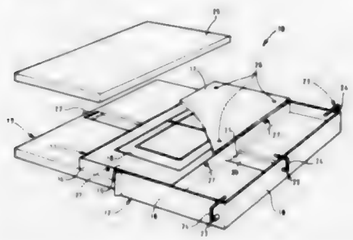
Robin Axford, Pensax, Near Worcester, and John R. Young, Kidderminster, both of England, assignors to Bondax Carpets Limited, Netherlands

Division of Ser. No. 566,675, Dec. 29, 1983, Pat. No. 4,528,882. This application Apr. 22, 1985, Ser. No. 725,491

Claims priority, application United Kingdom, Jan. 12, 1983, 8300708

Int. Cl.⁴ B26F *1/40*

U.S. Cl. 83—55 **2 Claims**



1. A method of cutting carpet tiles from a patterned carpet, wherein the carpet is formed with marker tufts which are used for positioning the carpet and which lie between the periphery of the carpet and the location at which the carpet is cut, said method comprising the steps of placing the carpet on the support at a distance from a cutting device, moving indicator means to overlie the carpet comparing the position of the marker tufts with the position of the carpet and therefore the marker tufts to a predetermined position relative to the indicator means, moving said support and the carpet position thereon away from said indicator means to a location beneath said cutting device, and forming cuts in the carpet at predetermined positions relative to the support, after which the marker tufts are included in off cuts and not in said carpet tiles.

4,656,902

METAL STAMPING TOOL WITH WORKING PARTS REMOVABLE WHILE ON THE MACHINE

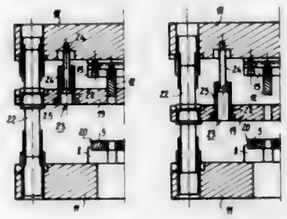
Dorice Vrignaud, La Roche sur Yon, France, assignor to Easwein S.A., La Roche sur Yon, France

Filed Nov. 4, 1985, Ser. No. 794,673

Claims priority, application France, Nov. 11, 1984, 84 17112

Int. Cl.⁴ B26F *1/14*

U.S. Cl. 83—136 **7 Claims**



1. A tool for stamping a sheet metal piece to form shape on a stamping machine comprising:

at least one matrix element;

at least one stamp element;

a blank-holder means for guiding each said stamp element during displacement thereof and for securing a sheet metal piece to be stamped against each said matrix element during a working stroke; and

means for mounting said blank-holder means in a working position and first and second withdrawal positions, said blank-holder means being spaced from each said stamp element and each said matrix element in said second position,

whereby each said stamp element and each said matrix element can be repaired or replaced while the tool is mounted on the stamping machine.

4,656,903

CUTTER FOR CUTTING MATERIAL IN TAPE FORM

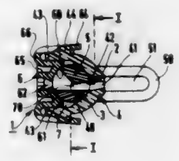
Jacques Peyre, Paris, France, assignor to SMH Alcatel, Paris, France

Filed Aug. 30, 1985, Ser. No. 770,919

Claims priority, application France, Aug. 31, 1984, 84 13515

Int. Cl.⁴ B26D *1/38*

U.S. Cl. 83—199 **9 Claims**



1. Cutter for cutting material in tape form, comprising a movable blade of circular segment shape in cross-section, a fixed blade, means for mounting said circular segment shape movable blade for movement in front of said fixed blade, a rotating shaft, means for coupling said movable blade to said rotating shaft so as to move it in front of said fixed blade, said mounting means comprising a first support carrying said fixed blade, said first support being U-shaped in cross-section and having a bottom and opposite sides, said first support, at its bottom having a semicircular inside surface, a longitudinal first opening within the bottom of said first support and a groove opening laterally into said first opening from the inside surface of said first support and accommodating said fixed blade, an auxiliary support which is generally trough-shaped and has a bottom which is semi-circular on the inside surface thereof, a second opening within the bottom of the auxiliary support, said auxiliary support having opposite edges inserted between the sides of the U shaped first support, a substantially cylindrical housing for said movable blade defined by said first and auxiliary supports, snap-fastener means carried by said first and auxiliary supports for maintaining pressure on said first and auxiliary supports to limit movement of said movable blade to that of rotation in said housing without axial play, and means operatively coupling said rotating shaft to said movable blade for operating said movable blade to close off said first opening when the cutter is closed and to move said movable blade to the same side of the first and second openings without closing them off, when the cutter is open.

4,656,904

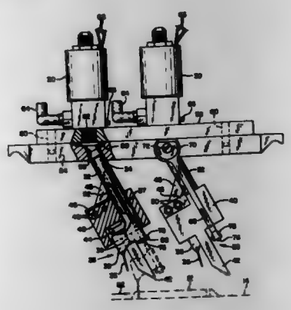
FOOD PRODUCT CUTTER APPARATUS

Arthur G. Rayment, Santa Clara, Calif., assignor to Lamb-Weston, Inc., Portland, Oreg.

Filed Sep. 4, 1985, Ser. No. 772,603

Int. Cl.⁴ B26D *5/38*

U.S. Cl. 83—289 **20 Claims**



1. Food defect removal apparatus, comprising:

cutter means for cutting an elongated food product at a predetermined point as it is conveyed along a path of travel to remove a defect therefrom, including at least one knife blade;

actuator means for moving the knife blade toward the food product to cut said food product when an actuator member is moved from a retracted position to an extended position;

return means for moving the knife blade away from the food product and returning the actuator member from the extended position to the retracted position;

resilient connection means for connecting said blade to said actuator member so that said blade moves in response to movement of said actuator member; and

control means for operating said actuator means in response to a control signal to cause the cutter means to cut the food product at a proper location to remove the defect.

4,656,905

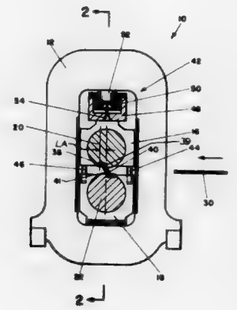
SHEARING APPARATUS

Vladimir B. Ginzburg, Pittsburgh, and Robert H. Ellis, Oakmont, both of Pa., assignors to Wean United, Inc. and International Rolling Mill Consultants, Inc., both of Pittsburgh, Pa.

Filed Apr. 2, 1985, Ser. No. 719,386

Int. Cl.⁴ B26D *1/62*

U.S. Cl. 83—337 **15 Claims**



1. A shearing apparatus for selectively performing one of several desired cutting actions on material which may be in a stationary mode or a travelling mode, comprising:

a first drum having opposed ends and carrying a leading knife,

a second drum having opposed ends and carrying a trailing knife,

means for mounting said first and second drums at their respective opposed ends,

said first and second drums further constructed and arranged in a manner to be spaced away from each other to form a gap for positioning said material therebetween during one of said two modes of said material and to cooperate with each other in said preselected desired cutting actions,

means connected to said first and said second drums for rotating said drums in opposite directions relative to each other, and in the same direction as said material at substantially the same speed when said material is in its said travelling mode,

means associated with said means for mounting said first and second drums for independently displacing each said opposed ends of at least one of said first and second drums to vary said gap and to position said at least one of said drums in a predetermined cutting relationship relative to its said cooperative drum,

said means for rotation and said means for displacement being separate and distinct from each other and independently operable,

means for controlling said rotation means and said displacement means constructed and arranged in a manner so that said rotation and said displacement may simultaneously be effected when said material is in its said travelling mode, whereby depending on which of said modes said material assumes, said rotation and displacement may be selectively effected to produce said desired cutting action on said material.

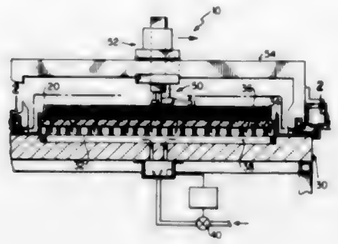
VOL 1077 ISS 2 APR 14 1987 UMI

4,656,906

SUPPORTING BED FOR SHEET MATERIAL CUTTING MACHINE AND METHOD OF MANUFACTURE

Michael Mozieka, Wall Township, Belmar County, and Leo Fisher, Fairlawn, both of N.J., assignors to Crest-Foam Corporation, Moonachie, N.J.

Filed Feb. 4, 1986, Ser. No. 825,811
Int. Cl.[4] B26D *7/01*; D06H *7/10*
U.S. Cl. 83—451 **16 Claims**



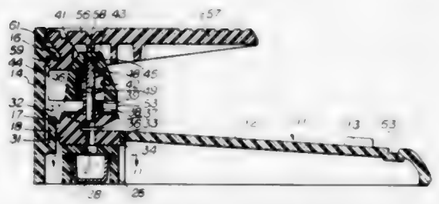
1. A supporting bed for supporting a stack of sheet material in a cutting machine of the type retaining the material by means of a vacuum applied from below the supporting bed, said supporting bed comprising a sheet of reticulated foam starting material which has been compressed under heat and pressure so as to be permanently reduced to approximately 10–35% of its initial thickness, the degree of compression, the temperature, the compression time, and the porosity of the reticulated foam starting material being selected so that a 1-inch thick sheet of the support bed permits an airflow of at least 1.5 cfm through a four square inch area with a pressure drop between the surfaces of the sheet material corresponding to ½ inch of water, and so that compressing a 1-inch thick sheet to one quarter of an inch requires a pressure of at least 1.5 psi.

4,656,907

PAPER PUNCH

Karl Hymmen, Sparks, Nev., assignor to Velobind, Inc., Sunnyvale, Calif.

Filed Aug. 30, 1985, Ser. No. 771,512
Int. Cl.[4] B26F *1/02*
U.S. Cl. 83—571 **8 Claims**



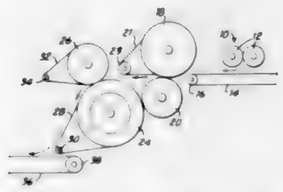
1. A paper punch comprising a base having a platen, sides, and an upstanding back, a die bar formed with die holes spaced at intervals supported by said base, a throat formed in said die bar, a punch bar, means guiding said punch bar for reciprocation toward and away from said die bar, said punch bar being formed on its underside with cavities at the same intervals as said die holes, a punch pin for each said cavity biased for movement with said punch bar and having a pin formed on its lower end with a die cooperable with said die holes to punch holes in sheets in said throat and spring means biasing said pin and said punch bar away from said die bar, said punch bar engaging the upper ends of all said pins, said die bar being formed with bores aligned with said die holes, a handle having a lever at its forward end and a first hook at its rearward end, a second hook formed on said back engageable with said first hook, said first and second hooks comprising means for pivotal movement of said handle relative to said base when said lever is depressed, means on a lower surface of said handle positioned above said punch bar to transmit pivotal movement of said lever to force simultaneous downward movement of said punch bar and said pins when said lever is depressed against the force of said spring means.

4,656,908

APPARATUS AND METHOD FOR CONTINUOUSLY CUTTING SHREDDED GRAIN PRODUCT

Clifford C. Elwood, Niagara Falls, Canada, assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Oct. 26, 1984, Ser. No. 665,257
Int. Cl.[4] A21C *11/00*
U.S. Cl. 83—863 **1 Claim**



1. In an apparatus for cutting a continuous travelling web of shredded grain product, the apparatus including slitting blade means for slitting the web in a first direction parallel to the direction of travel of the web and means for cutting the web in a second direction transverse to the first direction, the improvement comprising:

stripping means for preventing the web from adhering to the slitting means, including at least one endless belt means disposed adjacent a slitting blade of the slitting means; and

wherein the transverse cutting means includes cutting wheel means having cutting teeth means transverse to the web direction of travel, circumferentially spaced on said wheel, the relative motion of said cutting wheel and the web defining downstream and upstream directions with respect to the web, said teeth being defined, in cross-section, by mutually intersecting first, second and third arcs, said first arc extending substantially the entire distance between said adjacent teeth, said second arc having a radius substantially smaller than the radius of said first arc and being located upstream of said first arc, and said third arc having a radius smaller than the radius of said second arc and being located downstream of said first arc, whereby the shredded grain product is formed having crimped edges.

4,656,909

METHOD AND APPARATUS FOR PRODUCTION OF ONION RINGS

Scott K. Carter, Meridian, and George A. Mendenhall, Boise, both of Id., assignors to GME, Inc., Boise, Id.

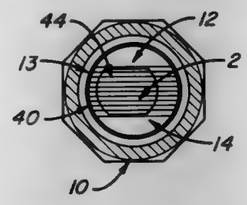
Filed Jan. 3, 1986, Ser. No. 816,167
Int. Cl.[4] B26D *3/28*, *7/06*
U.S. Cl. 83—874 **14 Claims**

1. A method for cutting onions into onion rings comprising the steps of:

cutting the top and bottom portions off the onion to define an onion having a preselected thickness from top to bottom, said thickness being less than the width of the onion;

propelling the onion so cut in a fluid stream through a flow tube;

aligning the onion within said tube to a preselected exit position; and



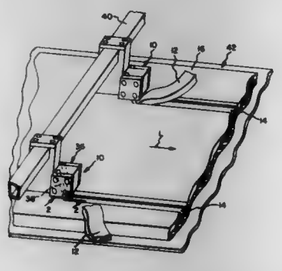
feeding the onion so aligned into a plurality of cutting knives for cutting the onion into rings.

4,656,910

BELT SKIVING METHOD AND APPARATUS

Paul J. Peterson, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 3, 1986, Ser. No. 835,591
Int. Cl.[4] B26D *3/06*
U.S. Cl. 83—875 **10 Claims**



1. A cutting apparatus for skiving a longitudinal strip from a rubber conveyor belt comprising:

a U-shaped blade angled relative to the belt, having a leading edge and being composed of a cutting portion connecting two upwardly and forwardly extending arms, said cutting portion having a sharp cutting edge with an upper surface and a lower surface forming a 5° to 25° taper angle therebetween and lying wholly in an imaginary plane containing said leading edge, said lower surface of said cutting edge being substantially parallel to said conveyor belt; and

a blade holding means fixedly attached to said upwardly extending arms, said blade holding means including forwardly angled slots which receive said arms therein to maintain said upper surface of said cutting edge at a 5° to 25° acute angle relative to the conveyor belt.

4,656,911

AUTOMATIC RHYTHM GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENT

Kelichi Sakurai, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1985, Ser. No. 709,539
Claims priority, application Japan, Mar. 15, 1984, 59-48082; May 24, 1984, 59-105507
Int. Cl.[4] G10H *1/38*, *7/00*
U.S. Cl. 84—1.03 **7 Claims**

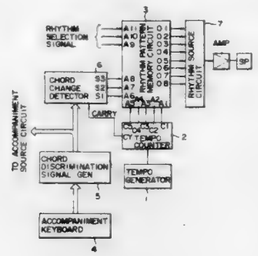
3. An automatic rhythm generator for an electronic musical instrument, comprising:

an accompaniment keyboard;

a chord discrimination signal generator for generating multi-bit data representing a chord type and a root of a chord designated by said accompaniment keyboard;

detecting means for detecting a degree of change between roots of a currently designated chord and an immediately preceding chord, and the types of the currently designated chord and the immediately preceding chord;

memory means for sequentially storing data representing said degree of change detected by said detecting means;



rhythm pattern change circuit means for changing an accompaniment rhythm pattern in accordance with the contents of said memory means; and

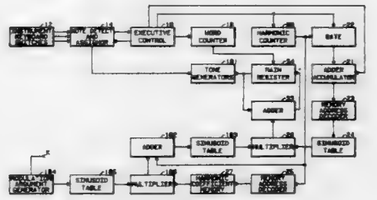
means for producing rhythm tones in accordance with the accompaniment rhythm pattern as changed by said rhythm pattern change circuit means.

4,656,912

TONE SYNTHESIS USING HARMONIC TIME SERIES MODULATION

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Sep. 30, 1985, Ser. No. 781,361
Int. Cl.[4] G10H *1/08*, *7/00*
U.S. Cl. 84—1.22 **6 Claims**



1. In combination with a musical instrument in which a plurality of data words corresponding to the amplitudes of evenly spaced points defining the waveform of a musical tone are computed in a sequence of computation cycles from a preselected set of harmonic coefficients and are transferred sequentially and converted into musical waveshapes at a rate proportional to the pitch of the musical tone being generated, apparatus for producing a musical tone having a time variant spectra comprising;

a harmonic coefficient memory means for storing said preselected set of harmonic coefficients,

a harmonic memory reading means whereby said preselected set of harmonic coefficients are read out sequentially from said harmonic coefficient memory means to produce a time sequence of harmonic coefficients,

a harmonic coefficient modulation means whereby said time sequence of harmonic coefficients are modulated in a time variant manner to produce an equivalent time sequence of harmonic coefficients,

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a waveshape memory means for storing a plurality of data points

a computing means responsive to said equivalent time sequence of harmonic coefficients whereby said amplitudes of evenly spaced points defining said waveform of a musical tone are computed and stored in said waveshape memory means,

a waveshape reading means whereby said data points are sequentially and repetitively read out of said waveshape memory means, and

a means for producing musical tones responsive to waveshape data points read out from said waveshape memory means thereby producing said musical tone having a time variant spectra.

4,656,913

ELECTRONIC MUSICAL INSTRUMENT WITH KEYBOARD AND COVER

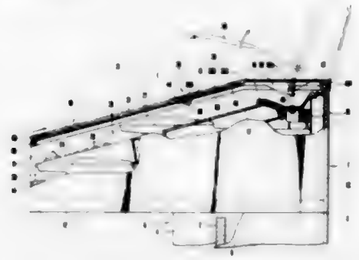
Yoshimasa Yoshikawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo, Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 27, 1986, Ser. No. 823,045

Claims priority, application Japan, Jan. 31, 1985, 60-11334[U]; Jan. 31, 1985, 60-11335[U]; Jan. 31, 1985, 60-11336[U]; Jan. 31, 1985, 60-11337[U]

Int. Cl.⁴ G10C *3/02*

U.S. Cl. 84—177 **12 Claims**



1. A housing assembly of an electronic musical instrument with a keyboard, comprising:

a musical instrument housing with said keyboard and an operation panel located adjacent to said keyboard; and

a cover for covering said keyboard and said operation panel,

said housing assembly further being provided with guides located at two sides of said keyboard and said operation panel of said musical instrument housing,

said cover being constituted by first and second cover bodies, a first coupling device for coupling said first and second cover bodies in a foldable manner, and a second coupling device for pivotally coupling a rear end portion of said first cover body to said musical instrument housing,

said second cover being adapted such that a front end portion thereof is moved along said guides while said cover is opened/closed, and

said second cover being adapted such that an outer surface thereof stands facing forward and serves as a music rack when opened.

4,656,914

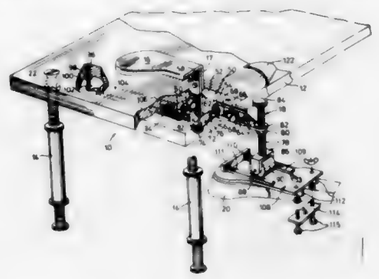
STOOL AND AUXILIARY PEDAL FOR A KEYBOARD INSTRUMENT

Karl W. Weisser, 736 Meadowvale Road, West Hill, Ontario, Canada (M1C 1T2), and Ngai H. Cheung, 2 Trimontium Crescent, Toronto, Ontario, Canada (M4C 5N7)

Filed Mar. 24, 1986, Ser. No. 843,470

Int. Cl.⁴ G10C *3/26*

U.S. Cl. 84—232 **22 Claims**



1. A stool, for use with a keyboard instrument including at least one main, foot pedal, the stool comprising: a platform; a first, auxiliary pedal pivotally mounted above the platform; actuating means connected to the first, auxiliary pedal and adapted to contact and actuate a main, foot pedal; a plurality of support legs extending downwardly from the support platform; and a roller and guide assembly comprising a rotatably mounted roller and a roller guide member, with one of the roller and the roller guide member being adapted for mounting on a main pedal of a keyboard instrument and the other of the roller and roller guide member being connected to the actuating means.

4,656,915

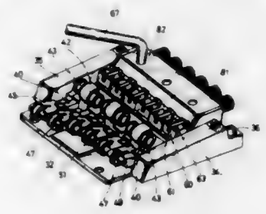
TREMOLO MECHANISM FOR GUITAR

Tamotsu Osuga, 21-2, 1-chome, Yoyogi Shibuya-ku, Tokyo, Japan

Filed Mar. 14, 1985, Ser. No. 711,966

Int. Cl.⁴ G10D *3/00*

U.S. Cl. 84—313 **23 Claims**



1. A tremolo mechanism for a guitar comprising:

a main rotor;

means supporting said main rotor for rotational movement relative to a guitar about a rotational axis extending generally tansverse to a set of strings on the guitar and generally parallel to a surface of the guitar over which said strings extend;

resilient means coupled to said main rotor to bias said main rotor to a first position at which no tremolo effect is provided and away from a second position at which a tremolo effect is provided;

a fixing means on the main rotor for securing one end of each of said strings to the main rotor;

tension adjustment means for individually varying the degree of tension to a different extent for each of said strings as said main rotor is rotated between its said first and second positions, the tension adjustment means being coupled to the main rotor for rotation therewith.

4,656,916

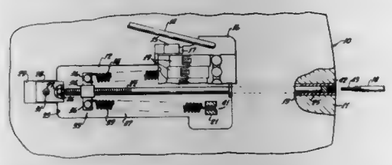
TREMOLO SPRING ADJUSTMENT MECHANISM FOR ELECTRIC GUITARS

Charles A. Gressett, Jr., 808 W. Lime St., Brea, Calif. 92621

Filed Jan. 31, 1985, Ser. No. 697,219

Int. Cl.⁴ G10D *3/00*

U.S. Cl. 84—313 **15 Claims**



1. An electric guitar, comprising:

(a) a guitar body having a guitar neck projecting therefrom, said body having an access opening at the tail end thereof,

(b) guitar strings anchored at the outer end of said neck, and extended over said neck and body,

(c) pivot means mounted on said body,

(d) a tremolo bridge-plate lever pivotally associated with said pivot means, said bridge-plate lever being connected to said strings,

(e) a handle connected to said bridge-plate lever for operation by the guitarist to pivot said bridge-plate lever and thus provide a tremolo action,

(f) elongated spring means disposed within said guitar body,

(g) means to connect one end of said spring means to said bridge-plate lever,

(h) a long, threaded shaft disposed in said guitar body generally longitudinally of said strings,

said shaft passing beneath said bridge-plate lever, from the tail of said guitar body to a position far closer to the outer end of said neck than is said bridge-plate lever,

(i) means in said body to mount said shaft for rotation about the longitudinal axis thereof,

said shaft being so related to said access opening at the tail end of said body that said shaft may be rotated about said longitudinal axis by a means located at said access opening, and

(j) means to connect said shaft to the other end of said spring means,

said mounting means (i) and said connecting means (j) being so constructed and so related to each other that said rotation of said shaft about its longitudinal axis effects movement of said other end of said spring means generally longitudinally of said strings to thus effect a large amount of controlled variation in the force exerted by said spring means on said bridge-plate lever.

4,656,917

MUSICAL INSTRUMENT SUPPORT

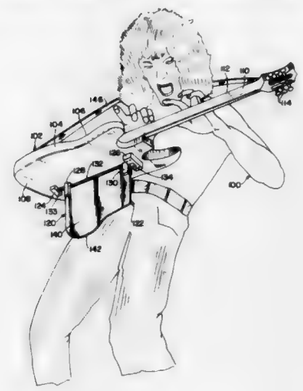
Edward L. Van Halen, 1900 Ave. of Stars #1780, Los Angeles, Calif. 90067

Filed Jul. 30, 1985, Ser. No. 760,598

Int. Cl.⁴ G10G *5/00*

U.S. Cl. 84—327 **22 Claims**

1. A stringed musical instrument comprising an instrument body having front and rear surfaces, sound producing means extending over a portion of said front surface, and a device mounted onto said rear surface for positioning said instrument body at an angular orientation to a player's body, said device including attachment means movable between an inoperative position overlying said rear surface and an operative position at an angle to said rear surface, a pair of spaced-apart mounting blocks attached to said rear surface and support means coupled to said mounting blocks for rotationally supporting therebetween said attachment means, said attachment means engaging said player's body when in said operative position for maintaining said instrument body in said angular orientation and disengaging from said player's body when in said inoperative position for maintaining said instrument body in other than said angular orientation.



4,656,918

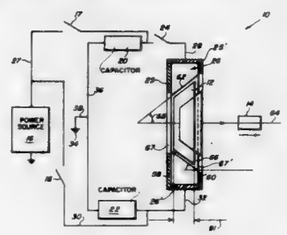
ELECTROMAGNETIC INDUCTION METHOD AND APPARATUS THEREFOR FOR COLLAPSING AND PROPELLING A DEFORMABLE WORKPIECE

Millard F. Rose, King George, Va., and Osa E. Fitch, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Arlington, Va.

Filed Feb. 20, 1985, Ser. No. 703,583

Int. Cl.⁴ F41F *1/02*; **B21D** *26/14*

U.S. Cl. 89—8 **14 Claims**



1. An electromagnetic induction method for progressively collapsing an annular shaped deformable workpiece about its axis while at the same time simultaneously accelerating the progressively collapsed workpiece for propulsion therealong comprising the steps of:

initially positioning and supporting a frusto-conical shaped deformable workpiece in concentric relation about an axis, the workpiece being of a suitable grade of electric conductive material and of relatively lightweight sheet-like construction, and

generating a series of electromagnetic forces in pulse-like

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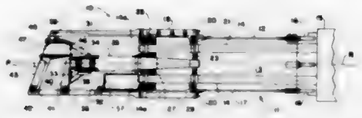
fashion and sufficient duration about the periphery of the workpiece, such that each force of the series of forces is directed toward the axis but in angular relation thereto, the radial force component of each one of the forces of the series thereof acting on the workpiece so as to progressively collapse the workpiece about its periphery in a radial direction from its initial position and support towards the axis in order to effect formation of the workpiece into an approximately cylindrically-shaped slug of reduced dimensions and solid-like construction while at the same time the axial force component of each one of the forces of the series thereof acting on the workpiece in a direction outwardly of its initial position and support and along the axis in order to cause acceleration and propulsion of the workpiece from its initial position and support to another position along the axis that is spaced outwardly of its initial position and support as the workpiece is also progressively collapsed to a slug of cylindrical shape and solid-like construction.

4,656,919

SABOT/GUN GAS DIVERTER

Anthony L. Farinacci, Baldwin; Steven G. Witkin, Pikesville, and Christopher J. Yasiger, Lutherville, all of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 8, 1985, Ser. No. 689,736
Int. Cl.[4] F41F *17/12*
U.S. Cl. 89—14.6 **14 Claims**



1. A device for diverting and discharging sabot fragments from a rapid fire gun having a plurality of gun barrels rotatable about a central axis and configured to fire strippable sabotted projectiles, comprising:

a. a diverter member mounted forward of said barrels for rotation therewith, said diverter member defining a generally conical, radially outwardly divergent first impact surface from which said fragments are diverted outwardly upon impact thereon;

b. said diverter member including a plurality of axial bores spaced therearound corresponding in number to and respectively coaxial with said plurality of rotatable gun barrels, through which the trajectories of said fired projectiles are defined; and

c. means defining a second impact surface attached to said gun and disposed forward of said diverter member for substantially absorbing the forward momentum of said fragments and diverting said fragments from said gun in a predetermined direction relative to said central axis.

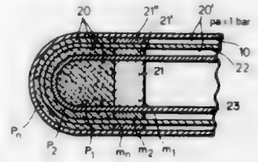
4,656,920

METHOD AND APPARATUS FOR DYNAMICALLY SUPPORTING A HIGH STRESS STRUCTURE

Horst Schneider, Arget, and Joachim Hermann, Duernhaar, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, DEX

Division of Ser. No. 627,346, Jul. 2, 1984, Pat. No. 4,607,560. This application Jan. 21, 1986, Ser. No. 820,956
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329672
Int. Cl.[4] F41F *17/08*
U.S. Cl. 89—16 **2 Claims**

1. An apparatus for dynamically supporting a high stress structure, comprising a first tubular member having a closed end and an open end for forming said high stress structure, second tubular means operatively surrounding said first tubular member for enclosing a space around said first tubular member, first explosive charge means in said first tubular member for generating an operating stress inside said first tubular member, said second explosive charge means for simultaneously providing a protective dynamic supporting stress inside said space for at least partially counteracting said operating stress, wherein said second tubular means comprise at least



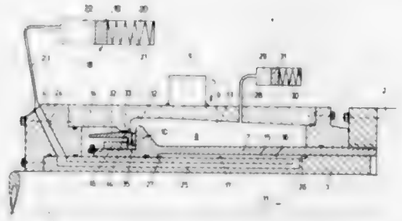
one second tubular member also having a closed end and an open end arranged concentrically relative to said first tubular member so that said closed ends face each other, said apparatus further comprising at least one spacer ring member between adjacent tubular members for permitting a manual axial displacement of said second tubular member relative to said first tubular member for varying a volume enclosed by said closed ends of said first and second tubular members and by said spacer ring member, whereby said second explosive charge is dimensioned by said volume.

4,656,921

GUN WITH RECOIL AND COUNTER RECOIL MEANS

Reinhard Zierler, Micheldorf, Austria, assignor to Voest-Alpine Aktiengesellschaft, Austria

Filed May 13, 1985, Ser. No. 733,365
Claims priority, application Austria, May 29, 1984, 1773/84
Int. Cl.[4] F41F *19/02*
U.S. Cl. 89—43.01 **9 Claims**



1. A gun comprising: a gun cradle adapted to be pivotally mounted on a carriage, said cradle having an inner annular part and an outer annular part, said inner part forming a bore through said cradle and said inner and outer parts defining between them an annular hydraulic recoil chamber concentric with and surrounding said bore; a gun tube having a muzzle end and a breech end, said gun tube being mounted in and guided by said bore for longitudinal sliding movement relative to said cradle; an annular recoil piston having an annular piston head and an annular part of reduced diameter relative to said piston head, said piston head being longitudinally slidable in said recoil chamber and said reduced-diameter portion extending from said recoil chamber and rigidly connected to said gun tube at a location outside said recoil chamber so as to move with said gun tube; and an annular hydraulic counter recoil chamber in said cradle coaxial with said gun tube and surrounded by said annular recoil chamber, said annular counter

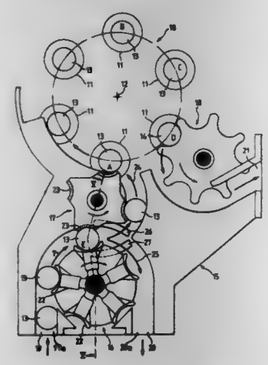
recoil chamber being formed by and between said reduced-diameter portion of said recoil piston and said inner annular part of said cradle, the latter part thereby forming a piston within said annular counter recoil chamber.

4,656,922

MONITORING APPARATUS FOR MONITORING DELAYED FIRING CARTRIDGES IN AN EXTERNALLY DRIVEN FIRING WEAPON

Erwin Bohler, Zürich; Beat Itea, Niederhasli, and Werner Bruderer, Zürich, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Nov. 12, 1985, Ser. No. 797,213
Claims priority, application Switzerland, Nov. 19, 1984, 5511/84
Int. Cl.[4] F41D *10/04, 10/22, 10/26*
U.S. Cl. 89—33.17 **8 Claims**



1. A monitoring apparatus for monitoring delayed firing cartridges in an externally powered firing weapon, each of the cartridges having a lengthwise cartridge axis, comprising:

an ammunition feed housing for receiving cartridges and feeding such cartridges along a predetermined travel path;

said ammunition feed housing possessing an outfeed channel;

deflecting means for the cartridges displaceably supported in said ammunition feed housing;

said deflecting means serving for deflecting said cartridges received by said ammunition feed housing, at and only at the occurrence of a firing delay, to said outfeed channel for enabling reception of the deflected cartridges by an endless chain;

said deflecting means containing two segment members;

said deflecting means comprising means for selectively deflecting said two segment members in the direction of the lengthwise cartridge axis during operation of the firing weapon; and

a selectively deflected one of said two segment members protruding into said predetermined travel path.

4,656,923

LOSS STROKE REDUCING APPARATUS FOR HYDRAULIC SERVOMECHANISM

Yasuo Tsuyuki, and Yuzoh Gotoh, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1985, Ser. No. 780,743
Claims priority, application Japan, Oct. 17, 1984, 59-217554
Int. Cl.[4] F15B *9/10*
U.S. Cl. 91—369 R **3 Claims**

1. A hydraulic servomechanism comprising:

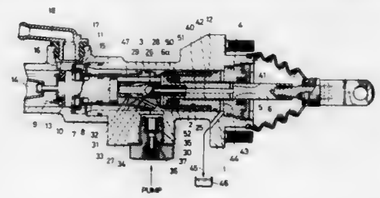
a housing;

a power piston slidably fitted in said housing, said power piston being formed with an axial bore, and one end of said power piston and an interior of said housing defining a power chamber;

an input shaft having a tip end slidably fitted into said bore of said power piston;

a control valve disposed in said power piston, said control valve being responsive to an advancing movement of said input shaft to supply hydraulic pressure proportional to an input applied to said input shaft to said power chamber to thereby move said power piston frontwardly;

a key member provided in said bore of said power piston and positioned so as to be abuttable with said tip end of said input shaft, said key member allowing advancing movement of said input shaft and preventing its retractive movement at a predetermined level while preventing said



tip end of said input shaft from releasing from said bore of said power piston, said key member being disposed slidably with respect to said power piston in a direction of movement thereof and permitting a varying amount of opening of said control valve by controlling relative movement of said input shaft and said power piston; and

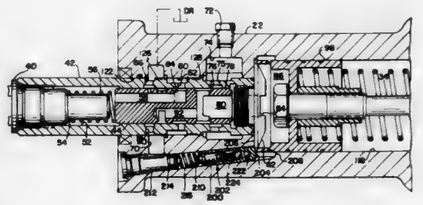
a plug member disposed around said input shaft and extending into said bore of said power piston, a front end of said plug member serving as a stop member abuttable on said key member in a non-operative state of said servomechanism such that said key member and said input shaft when in contact with said key member are held at an advanced position with respect to said power piston, whereby a loss stroke of said power piston during an initial stage operation is reduced.

4,656,924

PULSATION LIMITER FOR MANUALLY ACTUATED HYDRAULIC VALVE

Probir K. Chatterjea, Mount Prospect, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 648,551, Sep. 10, 1984, abandoned. This application Dec. 18, 1985, Ser. No. 809,650
Int. Cl.[4] F01B *11/02;* **F15B** *9/10*
U.S. Cl. 92—85 B **2 Claims**



1. A method of limiting the pulsation of a spool valve and its associated linkage of a brake booster valve from a brake actuated position to a brake deactuated position comprising the steps of:

developing a hydraulic force in an auxiliary bore as he spool valve and linkage are moved into the brake actuated position, said auxiliary bore containing a motion retarding plunger;

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directing the force against the spool valve and linkage by the movement of said motion retarding plunger into a position abutting said spool valve as the spool valve and linkage move from the brake actuated to brake deactuated position;

increasing the force against the plunger to resist movement of the linkage to the brake deactuated position; and

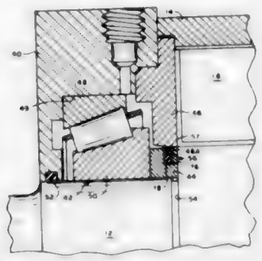
restricting decay of said increased force to slowly return the spool valve and linkage to the brake deactuated position.

4,656,925

FACE SEAL

Phillip A. Sollami, 1300 E. Pine, Herrin, Ill. 62948

Filed Jan. 24, 1985, Ser. No. 694,509
Int. Cl.[4] F01C *9/00*
U.S. Cl. 92—125 **5 Claims**



1. A method of providing a fluid tight seal between a shaft and a housing in which it is journaled, comprising the steps of

providing a bushing on said shaft, said bushing having an outer annular surface disposed in spaced relation to an adjacent internal annular surface of said housing and having an annular groove facing said surface of said housing,

mounting in said groove an annular sealing member and an annular elastomeric member, said elastomeric member being disposed between a bottom of said groove and a bottom of said sealing member to exert an outward radial force on said sealing member when said elastomeric member is compressed, said sealing member extending outwardly from said groove,

forcing said shaft in an axial direction into said housing to press said sealing member against said internal annular surface of said housing to exert on said sealing member an inwardly directed radial force greater than the compression strength of said sealing member thereby to extrude said sealing member outwardly of said groove into the space provided between said outer annular surface of said bushing and said adjacent surface of said housing to provide a rotary seal between said sealing member and said housing.

3. In a fluid operated, reciprocatory rotary motor of the type having a body having a cylindrical bore therein,

first and second head assemblies fixedly mounted to said body over the respective ends of said bore,

a shaft extending through said bore and through said head assemblies,

first and second annular thrust bearings respectively disposed in said first and second head assemblies,

said shaft being journaled in said bearings,

a radially disposed, longitudinal vane fixedly mounted to said shaft and extending from said first head assembly to said second head assembly,

first sealing means carried by said body for sealing said shaft to said body and to said assemblies,

second seal means carried by said vane for sealing said vane to said body and to said head assemblies,

means for selectively admitting fluid under pressure into said bore to one side or the other of said vane,

said first head assembly including a head member having a central bore and a counterbore through which said shaft extends,

an annular thrust bushing compressed between an annular shoulder on said shaft and said first thrust bearing,

said annular thrust bushing having an annular groove defining an outer wall surface,

an annular end plate compressed between an annular end surface of said body and an annular facial surface on said head member,

said annular end plate having a central bore defining an inner annular wall surface, said inner wall surface being disposed in spaced relation to the outer annular wall surface of said thrust bushing,

an annular seal member formed of a rigid material having a low coefficient of surface friction and a low memory,

an annular elastomeric member compressed between said seal member and said annular groove of said thrust bushing, and

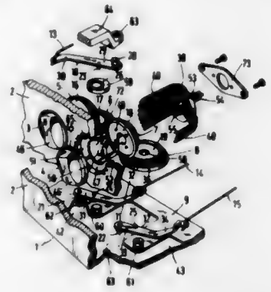
said seal member being forced by said elastomeric member into sealing engagement with the inner annular surface of said end plate and being extruded into the space provided between said inner annular surface and the outer annular wall surface of said thrust bushing.

4,656,926

VENTILATION CONTROL UNIT FOR MOTOR VEHICLES

Karl-Heinz Bauer, Bad Neustadt, and Reinhold Moret, Mellrichstadt, both of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh, Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

Filed Jul. 29, 1985, Ser. No. 759,944
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1984, 3428331; Sep. 19, 1984, 3434302
Int. Cl.[4] B60H *1/24*
U.S. Cl. 98—2 **19 Claims**



1. A control unit for setting heating, air conditioning, or ventilation in motor vehicles that can be inserted in the instrument panel of the motor vehicle, the control unit comprising:

a body having a front panel and a substantially flat rear carrier member attached substantially perpendicularly thereto;

at least one control knob rotatably mounted on one side of the front panel;

at least one driving bevel gear associated with said at least one control knob and rotatably mounted on the opposite side of said front panel such that rotation of said control knob causes rotation of said associated driving bevel gear;

at least one driven bevel gear rotatably mounted on said body and associated with said at least one driving bevel gear and capable of being driven therby, the axis of rotation of said driven bevel gear being substantially perpendicular to the axis of rotation of said associated driving bevel gear;

an elongate adjusting lever pivotally mounted at one end thereof to said body and cooperating with said driven bevel gear and capable of being pivoted thereby through an angular range, the pivot axis of said cooperating lever being spaced for the axis of rotation of said driven bevel gear;

a Bowden cable attached to the other end of said adjusting lever and capable of being actuated thereby to transmit motion; and

guide means associated with said driven bevel gear and said cooperating adjusting lever for determining the movement of said lever in respone to rotation of said driven bevel gear;

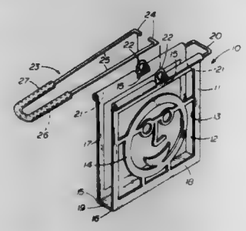
wherein each driving bevel gear has at least one driven bevel gear associated therewith, and each driven bevel gear has at least one adjusting lever cooperating therewith.

4,656,927

DEVICE FOR MAKING DESIGNS ON TOAST

Bob L. Mosby, and Edith C. Mosby, both of 11923 Coral Reef Dr., Houston, Tex. 77044

Filed Dec. 9, 1985, Ser. No. 806,520
Int. Cl.[4] A47J *37/08*
U.S. Cl. 99—388 **13 Claims**



1. A device for producing designs on a slice of bread during toasting of the bread in an electric toaster having a toast well and a bread carriage member comprising;

a bread holding member of lightweight heat resistive material adapted to receive and removably carry a slice of bread into the toast well of an electric toaster and isolated from direct contact with any electrical conduit or heating elements of the toaster,

said bread holding member having a bottom portion to rest on the bread carriage member of the electric toaster and side panels extending upwardly therefrom in a spaced parallel relation and a top portion thereof adapted to receive a handling member,

at least one of said side panels having a template portion comprising a frame central opening therethrough and a design disposed generally central within the framed opening, and

a handling member of heat resistive material operatively associated with said holding member for inserting and removing said bread holder from the toast well of an electric toaster,

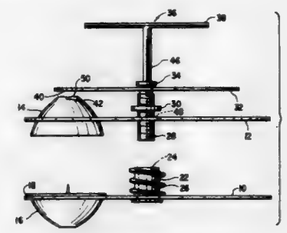
said design of said template portion shielding the face of the bread carried within said bread holding member such that the design will be reproduced on the slice of bread in toasting.

4,656,928

APPARATUS FOR MOLDING AND COOKING MULTIPLE EGG PRODUCTS

Leegett Mack, 641 19th St., N.E., Washington, D.C. 20019

Filed May 23, 1986, Ser. No. 866,502
Int. Cl.[4] A47J *37/04*
U.S. Cl. 99—419 **6 Claims**



1. An apparatus for molding and cooking multiple egg products, comprising:

a plurality of egg-shaped cups, each of said cups having a top section and a bottom section removably engageable with one another to form a hollow container, said top section having a hole on the top thereof, each hole having at least one vent groove extending radially therefrom along the surface of said top section to allow venting of the interior of said cup even when said hole is covered, and said bottom section having a spike extending centrally upward therein and having its upper end terminating within said egg-shaped cup;

a lower support member for supporting each of said bottom sections;

an upper support member for supporting each of said top sections;

a cover means attached to said upper support for covering the holes of said top section; and

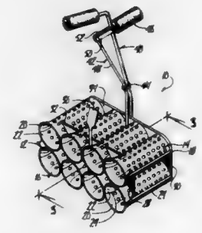
means for removably securing said upper support member to said lower support member such that said top and bottom sections of each of egg-shaped cups fit together.

4,656,929

COOKING UTENSIL FOR DEEP FAT FRYING OF FOOD ITEMS

Tri T. Dinh, R.R. #2, Lot 24, N. Haven Trailer Ct., Muscatine, Iowa 52761

Filed Nov. 22, 1985, Ser. No. 800,759
Int. Cl.[4] A47J *37/12*
U.S. Cl. 99—407 **14 Claims**



1. An improved cooking utensil for the deep fat frying of food items comprising:

a food holding container defining a food holding cavity and having an opening for insertion and removal of said food

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item and having at least one movable portion which can be moved away from said food holding container;

a movable portion control means attached to said movable portion of said food holding container to control the movement of said movable portion over a range of positions from a closed position in alignment with adjacent portions of said food holding container to closely surround and contain said food item during deep fat frying, to an open position away from said food holding container and said food holding cavity, so that said food item can more easily be inserted into and removed from said food holding container when said movable portion of said food holding container is moved to said open position;

said movable portion control means including a lever means which is operatively connected to the movable portion of the food holding container by a linkage means, movement of said lever means in a pre-determined direction causing movement of the movable portion away from the food holding container.

4,656,930

METHOD OF WRAPPING ROUND BALES

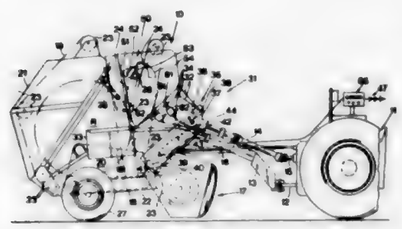
Bart Van Den Bossche, Ghent, and Rene A. Vandecandelaere, Houthulst, both of Belgium, assignors to New Holland Inc., New Holland, Pa.

Division of Ser. No. 799,764, Nov. 19, 1985. This application Oct. 20, 1986, Ser. No. 920,407

Claims priority, application European Pat. Off., Nov. 12, 1984, 84/201690.9

Int. Cl.⁴ B65B *13/04*

U.S. Cl. 100—3 **2 Claims**



1. A method of forming and wrapping a bale of crop material in a baler comprising a bale forming chamber and wrapping means including a dispensing means operable to wrap binding filament upon a bale in the bale forming chamber as the bale is being rotated therein; the method comprising the steps of:

feeding crop material into the bale forming and rolling said crop material into a generally cylindrically shaped bale;

advancing the dispensing means from a home position and permitting the binding filament to enter the bale forming chamber for engagement with the bale;

further moving the dispensing means and subsequently returning the dispensing means to the home position thus causing the binding filament to be wrapped upon the bale during continued rotation of the bale;

sensing whether filament is being wrapped upon the bale in the bale forming chamber at a predetermined time interval after the start of the advancing step; and

delaying temporarily the further moving step in the event that filament wrapping has not yet commenced upon the expiration of said predetermined time interval while permitting the further moving step to succeed the advancing step without interruption in the event that filament wrapping has started.

4,656,931

APPARATUS FOR AUTOMATICALLY WRAPPING ROUND BALES

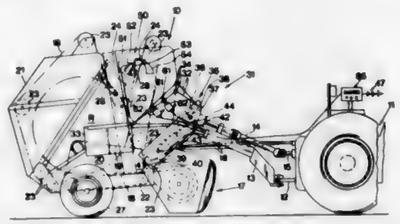
Bart Van Den Bossche, Ghent, and Rene A. Vandecandelaere, Houthulst, both of Belgium, assignors to New Holland Inc., New Holland, Pa.

Filed Nov. 19, 1985, Ser. No. 799,764

Claims priority, application European Pat. Off., Nov. 21, 1984, 84201690.9

Int. Cl.⁴ B65B *13/04*

U.S. Cl. 100—4 **10 Claims**



1. In a baling machine having a bale forming chamber for forming crop material into a generally cylindrical bale and having means for supplying filament to be wrapped upon a bale as it is rotated in the bale forming chamber; the filament supplying means comprising filament dispensing means having a home position, drive means operably coupled with the dispensing means for moving it; automatic control means coupled with the drive means for causing the drive means to move the dispensing means in a predetermined dispensing cycle from its home position, the automatic control means including starter means operable to initiate said predetermined dispensing cycle and detector means operable to detect filament being wrapped upon the bale; the detector means generating a first signal when filament is not being wrapped upon the bale and a second signal when filament wrapping has started; the improvement wherein:

the automatic control means further comprises a time delay coupled with the detector means for causing at least temporary interruption of the movement of the dispensing means in said dispensing cycle in response to said first signal and for permitting uninterrupted continuation of the movement of the dispensing means in said dispensing cycle when the detector means generates said second signal.

4,656,932

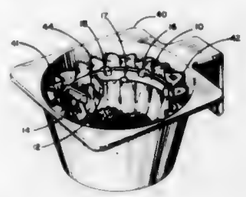
COFFEE FILTER RING

Earl Kopp, 708 Stark Dr., Las Vegas, Nev. 89107

Filed Jul. 8, 1985, Ser. No. 752,954

Int. Cl.⁴ A47J *31/08, 31/02*

U.S. Cl. 99—295 **10 Claims**



1. In a drip coffee maker including a filter basket and a filter therein, the improvement comprising a contractable annular member inside said filter and urging said filter against said basket said annular member comprising a single length of a contractable memory-retaining material in its normal expanded condition having a diameter greater than the inside diameter of said filter and includes first and second opposite ends and means for securing said ends in a substantially planar relationship and having means secured thereto for being urged together to contract said annular member.

4,656,933

WATER-CARBONIZING SYSTEM

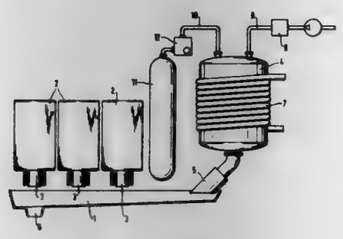
Matthias Aschberger; Karlheinz Färber, both of Giengen, and Anton Deininger, Bachhagel, all of Fed. Rep. of Germany, assignors to The Coca-Cola Company, Atlanta, Ga. and Bosch-Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 22, 1985, Ser. No. 768,217

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1984, 3430950

Int. Cl.⁴ B01F *3/04*

U.S. Cl. 99—323.1 **10 Claims**



1. A water carbonation system comprising:

a tank containing gas having a first pressure higher than atmospheric pressure during normal operation and having a second, predetermined pressure during abnormal operation, said second pressure being less than said first pressure;

means for introducing water into the tank and means for introducing CO_2 gas into the tank, both said means for introducing permitting carbonation of the water;

means for withdrawing carbonized water from the tank; and

a valve assembly associated with said means for introducing CO_2 gas, said valve assembly having an aperture and having closure means, said closure means being movable between an open position for permitting release of the gas in the tank through said aperture and a closed position for closing said aperture, said closure means being in the closed position when the tank is at the first pressure and being in the open position when the tank is at the second pressure.

4,656,934

PASTA PREPARATION APPARATUS

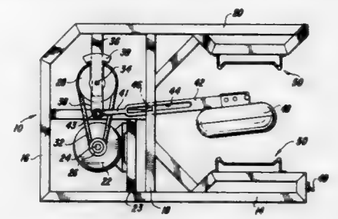
Guido Bellanca, 220 E. 54th St., New York, N.Y. 10022

Filed Aug. 7, 1985, Ser. No. 763,247

Int. Cl.⁴ A47J *37/12;* **B01F** *15/06*

U.S. Cl. 99—348 **19 Claims**

1. A device for simultaneously agitating and applying heat to foods; comprising a frame, elongated beam means disposed on said frame for rotational motion of the ends of said beam means, a container mounted to said beam means, said container being adapted to hold food; rotary drive means, said beam means being connected at a point near one of its ends to said rotary drive means, said rotary drive means being adapted to transcribe a continuous path and impart a substantially reciprocating movement to said beam means; said container being mounted at the other end of said beam means remote from said rotary drive means; support means positioned on said frame between said container and said rotary drive means, said beam means being slidably and pivotally supported on said support means; and means adjacent to said container for applying heat to said container.



4,656,935

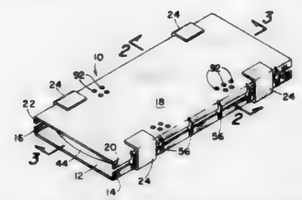
APPARATUS FOR MAKING AN OVULAR SHAPED EDIBLE BUN

Raymond R. Kukura, 2608 E. Newton Pl., Tulsa, Okla. 74110

Filed Jun. 21, 1985, Ser. No. 747,360

Int. Cl.⁴ A47J *37/01*

U.S. Cl. 99—426 **9 Claims**



1. Apparatus for making an ovular boat shaped edible bun comprising an assembly of:

a base with upward front and back sides;

a top plate with downward front and back sides substantially matching said base when assembled therewith;

a plurality of parallel spaced male mold inserts attached and depending from the inner side of one of said top plate and base the form of said mold configured to create the internal shape of said bun to have a flat ovoid bottom, substantially vertical sides slightly upwardly and outwardly conjoining with rounded upwardly and outward ends;

a plurality of dough keepers surrounding each insert when assembled with said base and top plate to create and retain the outer sides of said bun, each keeper comprised of two identical, interlocking and separable halves, and having outward tab means, said keepers, when assembled with said base and top plate, are of depth defining the top and bottom of said bun, being greater than the depth of said male mold inserts;

a plurality of parallel spaced and matching grooves in the upward sides and downward sides of said respective base and top plate, said grooves to receive said tab means of each of said keepers; and

means to releasably retain said assembly together.

4,656,936

FRUIT AND VEGETABLE PEELER

Aubrey C. Bardon, 80 Heritage Hills, Tuscaloosa, Ala. 35406

Filed Feb. 19, 1986, Ser. No. 830,819

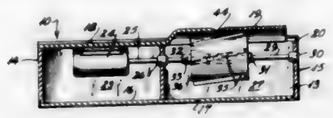
Int. Cl.⁴ A23N *7/00*

U.S. Cl. 99—593 **10 Claims**

1. An automated fruit and vegetable peeler comprising a housing, said housing having upper and lower surfaces, said upper surfaces including at least a first and second plate means,

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at least one of said first and second plate means being movable with respect to the other of said plate means, motor means disposed within said housing, said motor means having a drive shaft extending through said housing, a rotary cutting means mounted to said drive shaft of said motor means and spaced below said first and second plate means of said upper surface of



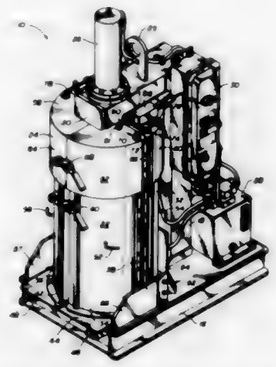
said housing, said first and second plate means being selectively adjustable so as to create an opening therebetween in vertically overlying relationship with said cutter means, whereby a fruit or vegetable may be maintained on said first and second plate means with a portion thereof extending through said adjustable opening therebetween and into contact with said rotary cutting means.

4,656,937

TRASH COMPACTOR

John W. Turner, Jr., Houston, Tex., assignor to International Tool and Supply Company, Inc., Houston, Tex.

Filed Nov. 12, 1985, Ser. No. 796,878
Int. Cl.[4] B30B *15/04*
U.S. Cl. 100—100 **14 Claims**



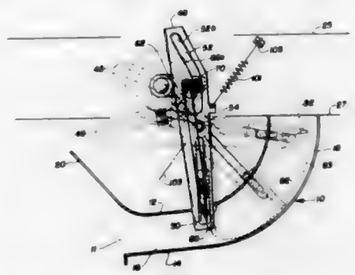
1. A compact, heavy duty trash compactor comprising:
a skid;
a rigid, generally C-shaped frame member, a lower leg of said member being mounted within said skid;
a container unit mounted on said skid within said C-shaped frame;
a hydraulic ram mounted on an upper end of said C-shaped frame member for compacting trash within said container;
a hydraulic drive unit;
a tilt table beneath said container unit, said tilt table being hinged to said skid such that it can tilt said container unit forward; and
a hydraulic cylinder mounted to said container unit for tilting said container unit forward on said tilt table.

4,656,938

BALER STUFFER MECHANISM

Bryant F. Webb, Ephrata, Pa., and Donald O. Bigelow, Webster, N.Y., assignors to New Holland Inc., New Holland, Pa.

Filed Feb. 7, 1986, Ser. No. 827,292
Int. Cl.[4] B30B *1/26;* **A01D** *39/00*
U.S. Cl. 100—189 **8 Claims**



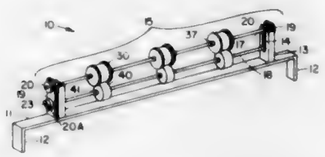
7. A baler feed assembly including a stuffer means mechanism comprising:
a fixed shaft;
a rotatable crank shaft spaced from said fixed shaft;
a movable member associated with said rotatable crank shaft;
a lever, movable about said fixed shaft, having a first slot engageable with said movable member and positioned on a first side of said fixed shaft and a second slot positioned on a second side of said fixed shaft;
a support member supporting a plurality of tines;
means movable within said second slot of said lever member and attached to said support member; and
a linkage member, having a first end connected to said rotatable crank shaft and a second end connected to said support member thereby imparting reciprocable motion to said support member and said plurality of tines as the crank shaft rotates.

4,656,939

PRINTER AND INKER ARRANGEMENT FOR MARKING CONVEYED ARTICLES

Patrick Lassuskas, 808 Waterford Clr., and Daniel R. Tobin, 716 Jane's View, both of, Papillion, Nebr. 68046

Filed Nov. 2, 1981, Ser. No. 317,238
Int. Cl.[4] B41F *17/26*
U.S. Cl. 101—35 **8 Claims**



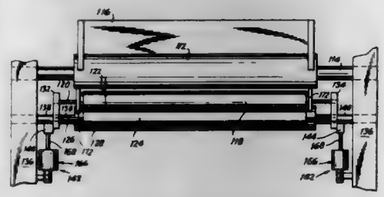
1. A marking device for marking items passing along a conveyor surface, comprising
a printer wheel shaft means,
an inking wheeel shaft means oriented parallel to said printer wheel shaft means,
a printer wheel means mounted on said printer wheel shaft means and having an outer peripheral printing surface,
an inking wheel means mounted on said inking wheel shaft means,
means for mounting said printer wheel shaft means proximate to and below said conveyor surface such that the uppermost portion of the outer peripheral printing surface of said printer wheel means is positioned generally in the plane of said conveyor surface, thereby to printingly contact the bottom surface of items passing along the conveyor surface,
said printer wheel means being freely rotatably supported whereby said printer wheel means is rotated by frictional engagement with the bottom surface of an item conveyed thereover,
means for mounting said inking wheel shaft means for rolling frictional contact between said inking wheel means and printer wheel means for delivering ink to said printer wheel means,
said printer wheel means comprising a plurality of printer wheels,
said printer wheels being selectively positionable on said printer wheel shaft means,
said inking wheel means comprising a plurality of inking wheels,
each printer wheel being in contact with a separate inking wheel,
said marking device being mounted at the discharge end of the conveyor surface,
said printer wheel shaft means being positioned above said inking wheel shaft means and wherein the longitudinal axis of said wheel shaft means are positioned perpendicular to the direction of movement of items on said conveyor surface,
said printer wheel means comprising removable print strips mounted on said printer wheels and wherein said print strips protrude slightly above the outermost surface of said printer wheels whereby an item passing over said printer wheels is placed in moving frictional contact with said print strips, and
said mounting means comprising two end posts for holding said two shaft means in parallel alignment and bracket means mounted on the support structure of the conveyor surface adapted to slidingly accept said two end posts whereby a unit comprising said two shaft means, said two end posts, said printer wheels and said inking wheels is slideably removable from said bracket means.

4,656,940

METERING ROLL SYSTEM FOR PRINTING PRESS

Michael Turturro, Spring Valley, and Attilio Rossi, Harrison, both of N.Y., assignors to Hantscho, Inc., Mt. Vernon, N.Y.

Filed Nov. 21, 1985, Ser. No. 800,735
Int. Cl.[4] B41F *31/06, 31/30*
U.S. Cl. 101—350 **4 Claims**



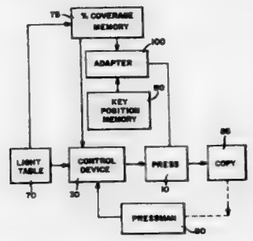
1. A printing system ink metering apparatus comprising an ink reservoir having an interior into which ink is placed, a fountain roll, said fountain roll including an exterior cylindrical surface, a portion of said fountain roll exterior cylindrical surface being immersed in ink that is located in said ink reservoir, said fountain roll including an axis about which said fountain roll rotates, a metering roll having an exterior cylindrical surface, said metering roll including an axis about which it rotates, said metering roll axis and said fountain roll axis being parallel to each other, said metering roll exterior cylindrical surface being spaced from said fountain roll exterior cylindrical surface, ring means mounted on said metering roll exterior cylindrical surface and having a diameter greater than that of said metering roll exterior cylindrical surface, said ring means mounted at opposite ends of said metering roll exterior cylindrical surface and rotatable relative to said metering roll exterior cylindrical surface, said ring means being in rolling contact with opposite ends of said fountain roll exterior cylindrical surface with said ring means by being rotatably mounted on said metering roll allowing said metering roll exterior cylindrical surface to have a different tangential velocity than that of fountain roll exterior cylindrical surface.

4,656,941

PRESS PRESETTING METHOD

Yakoy Z. Brovman, Mystic, Conn., assignor to Harris Graphics Corporation, Westerly, R.I.

Continuation of Ser. No. 51,930, Jun. 25, 1979, abandoned. This application Oct. 12, 1984, Ser. No. 659,980
Int. Cl.[4] B41F *31/04, 33/16*
U.S. Cl. 101—426 **1 Claim**



1. A method of automatic control of a printing press comprising the steps of
scanning a representation of an image to be printed to derive therefrom objective data representing the average density of the inked image in areas corresponding to those controlled by keys of an ink fountain,
producing multiple printed copies of the image as a result of subjective operator intervention in the setting of the fountain keys,
recording both the objective data and subjective data representing the setting of the fountain kyes as set by the operator for a plurality of different press runs,
analyzing both the objective data and the key setting data by examining a plurality of harmonic components thereof sufficiently large to represent accurately that data,
correlating by a linear regression analysis respective harmonic components of the objective data and subjective data over said plurality of press runs and storing said linear regression parameters,
thereafter scanning a representation of a new image to be printed to derive objective data therefrom,
analyzing the new objective data by examining its harmonic components, and by applying the regression parameter data for each previously found harmonic values, deriving therefrom key setting instructions for presetting the press.

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4,656,942

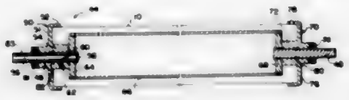
PRINTING APPARATUS UTILIZING FLEXIBLE METAL SLEEVES AS INK TRANSFER MEANS

Jacobus-Gerardus Vertegaal, Boxmeer, and Lodewijk Asselrode, St. Anthonis, both of Netherlands, assignors to Stork Brabant B.V., Boxmeer, Netherlands

Continuation of Ser. No. 57,267, Jul. 13, 1979, abandoned, which is a continuation of Ser. No. 864,332, Dec. 27, 1977, abandoned. This application Nov. 12, 1980, Ser. No. 205,896

Int. Cl.⁴ B41F *27/12*

U.S. Cl. 101—426 **16 Claims**



1. A method of mounting an elongate collapsed imperforate flexible thin-walled metal sleeve having a thickness of the order of one millimeter which is capable of being readily collapsible along its length but sufficiently stiff to prevent axial collapse for mounting on a frame for use in a rotary printing press which method comprises providing a framework adapted to be rotated, shaping the ends of said collapsed sleeve into a circular configuration, sealably engaging only the ends of the sleeve leaving the remaining length of the sleeve mechanically unsupported, sealing said ends and containing them against axial movement and applying fluid pressure to the interior of the collapsed sleeve to inflate the same uniformly along said mechanically unsupported length to rigidify same in a right cylindrical configuration having a uniform overall diameter equal to the diameter of the sleeve ends, and to thereby establish a fluid filled continuous chamber extending laterally along the length of the inner wall of said sleeve to maintain said diameter dimensions during use in the printing press.

4,656,943

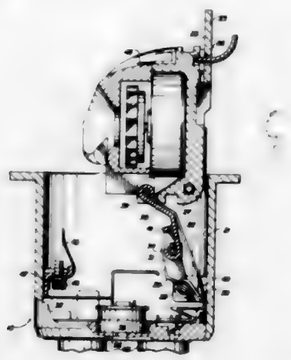
LOW PROFILE, PIVOTED GENERATOR

Robert E. Edminster, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1984, Ser. No. 679,657

Int. Cl.⁴ F42C *11/00*

U.S. Cl. 102—208 **17 Claims**



1. An apparatus for generating electricity from a fluid flow, the apparatus having operative and inoperative modes, the apparatus comprising:

a cover having inward and outward sides, said cover being hinged to a structure so that said cove pivots between a closed positon where the apparatus is in the inoperative mode and an open position; and

an electricity generating device having a mounting side and a flow engaging side, the mounting side of said generating device attached to the inward side of said cover so that said cover being in the closed position substantially prevents the flow-engaging side of said generating device from engaging the fluid flow, and said cover being in the open position allows the flow-engaging side to engage the fluid flow.

4,656,944

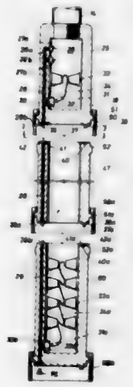
SELECT FIRE WELL PERFORATOR SYSTEM AND METHOD OF OPERATION

Manuel E. Gonzalez, Corpus Christi, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Dec. 6, 1985, Ser. No. 805,688

Int. Cl.⁴ F42B *3/00*

U.S. Cl. 102—312 **8 Claims**



1. A method for firing sequentially at least two vertically spaced-apart perforator guns connected to the lower end of tubing suspended in a well to perforate subsurface intervals surrounding said well comprising the steps of:

transmitting from the earth's surface electromagnetic waves having selected frequencies down said tubing to detonate the charges of one of said perforator guns in response to said selected frequencies; and

transmitting second electromagnetic waves having second different selected frequencies down said tubing to detonate the charges of a second of said perforator guns in response to said second selected frequencies.

4,656,945

HELICOPTER DESTRUCTION SYSTEM EMPLOYING CABLES

Charles M. Stancil, 6661 Green Ash Dr., Springfield, Va. 22151

Filed Mar. 21, 1985, Ser. No. 714,205

Int. Cl.⁴ F42B *13/56*

U.S. Cl. 102—405 **7 Claims**



1. A method of destroying flight vehicles having rotating blades and control mechanisms for such blades comprising the steps of

launching a cable carrying projectile to deploy the cable into a position to be ingested into the rotating blades of the vehicle and

selecting for transport by a projectile a cable having a product of $\rho_c d_c$ satisfying the equation $4.22\times10^{-5}V_z^2/\rho d \geq 1$ where V_z is the rotor induced velocity of air of the vehicle to be destroyed and ρ_c and d_c are the density and diameter, respectively of the cable and having a length to become effectively entangled in the rotating blades and mechanisms and having the strength to survive ingestion.

4,656,946

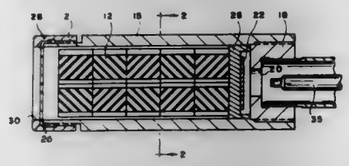
RIFLE LAUNCHED AMMUNITION FOR MOB DISPERSION

Tsvi J. Gordon, and Shmuel Sorek, both of Jerusalem, Israel, assignors to The State of Israel, Ministry of Defence, Israel Military Industries, IILX

Filed Jun. 11, 1984, Ser. No. 619,343

Int. Cl.⁴ F42B *13/50*

U.S. Cl. 102—438 **5 Claims**



1. An arrangement for dispersing crowds, comprising:

a cannister having aft and fore ends and defining an interior space therewithin;

a plurality of projectiles formed of elastomeric material, each projectile having a pair of opposed planar end surfaces, said projectiles being situated in said interior space of said cannister to form at least one column of projectiles with planar end surfaces of each pair of adjacent projectiles in mutual abutting relationship;

means provided at said aft end of said cannister for mounting said cannister at an end and externally of a barrel of a launching rifle;

a piston situated in said interior of said cannister near said aft end thereof;

passage means for conducting propellant gases from the rifle to act on said piston; and

burstable sealing means for closing said fore end of said cannister, said sealing means being burstable by said projectiles upon launching such that said at least one column of projectiles is launched through said fore end of said cannister.

4,656,947

RIFLE LAUNCHED AMMUNITION FOR MOB DISPERSION

Tsvi J. Gordon, Jerusalem, and Shmuel Sorek, Kiryat Yovel, both of Israel, assignors to The State of Israel, Ministry of Defence, Israel Military Industries, Israel

Division of Ser. No. 649,343, Jun. 11, 1984, Pat. No. 4,617,380. This application Dec. 19, 1985, Ser. No. 810,774

Int. Cl.⁴ F42B *13/50*

U.S. Cl. 102—438 **5 Claims**

1. An arrangement for dispersing a crowd comprising:

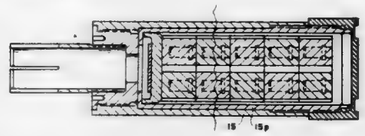
a first cannister having aft and fore ends and defining an interior space therewithin;

a second cannister removably situated in said interior space of said first cannister and having aft and fore ends and defining an interior space therewithin;

a plurality of projectiles formed of elastomeric material, each projectile having a pair of opposed planar end surfaces, said projectiles being situated in said interior space of said second cannister to form at least one column of projectiles with planar end surfaces of each pair of adjacent projectiles in mutual abutting relationship;

means provided at said aft end of said first cannister for mounting said first cannister in which said projectile-containing second cannister is situated at an end and externally of a barrel of a launching rifle;

a piston situated in said interior space of said second cannister near said aft end thereof;



passage means for conducting propellant gases from the rifle to act on said piston; and

sealing means mounted at said fore end of said first cannister for closing said fore ends of said cannisters, said sealing means being burstible by said projectiles upon launching;

whereby after projectiles are propelled out of said second cannister it is removable out of said first cannister, with the latter being adapted to be reloaded with another projectile-containing second cannister.

4,656,948

WATER CONTAINING EXPLOSIVE CARTRIDGE AND PREPARATION THEREOF

Kenji Tsukiuda, Fuji, and Yasushi Sasaki, Nobeoka, both of Japan, assignors to Asahi Engineering Co., Ltd., Osaka, Japan

Filed Jan. 7, 1986, Ser. No. 816,837

Claims priority, application Japan, Jan. 11, 1985, 60-2667

Int. Cl.⁴ F42B *7/02*

U.S. Cl. 102—452 **4 Claims**



1. A water containing explosive cartridge having substantially flat end faces comprising:

(A) a water containing explosive;

(B) a paper cylinder comprising a paper coated with a resin on at least the face which contacts the water containing explosive, said paper cylinder having a star-shaped crimping closure on at least one end thereof; and

(C) a circular inner lid comprising a paper coated with a resin on the outside which does not contact the explosive, said lid being inserted into the innerside of the star-shaped crimping closure of said paper cylinder and fixed on said paper cylinder portion or said paper cylinder portion and the star-shaped crimping closure portion.

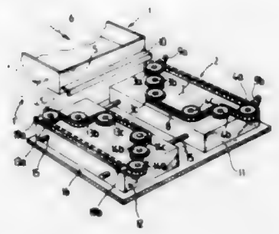
VOL 1077 ISS 2 AP 14 1987 UMI

4,656,949

DEVICE FOR GRIPPING AND TRANSFERRING LOAD SUPPORTS OR CONTAINERS USING SYNCHRONOUS ENDLESS CHAINS WITH DRIVE FINGERS, MOUNTED TO TRANSVERSELY ADJUSTABLE MODULES

Jean C. R. Ragot, L'Ile Adam, France, assignor to Lapouyade S.A., Paris, France

Filed Sep. 20, 1985, Ser. No. 778,150
Claims priority, application France, Sep. 4, 1985, 85 13116
Int. Cl.⁴ B65G *19/02, 21/12, 25/00*
U.S. Cl. 104—172.3 **8 Claims**



1. In a device for gripping load supports or load containers of different dimension each having a front and rear and a load drive axis substantially perpendicular to said front and rear for transferring same by means of a mobile handling platform providing an allowed clearance comprising at least one flexible endless element actuated horizontally by several pinions and driven by a motor, said flexible element being provided with at least two fingers intended to cooperate with housings provided on front and/or rear of the load support or container, one of the fingers acting by pulling and the other by pushing , said flexible element having an advancing movement such that the pulling finger, after being engaged in the front housing of the load support and moving this latter to a first positon on the platform, has a portion of movement generally lateral to the load drive axis, such that said pulling finger stops driving the load support for a time sufficient to allow the pushing finger to be engaged inside a rear housing, and so that driving of the load support continues until the load support is centered on the platform, through the simultaneous action of the pulling finger and of the pushing finger, there are disposed on the mobile handling platform two independent modules one at least of which is movable transversely with respect to the other, the two modules being able to occupy all positions between a position in which they are disposed side by side for gripping a load support of minimum width and a position in which they are spaced apart to the maximum of the clearance allowed by the platform for gripping a load support of maximum width, each module comprising a flexible endless element having at least two drive fingers, there being two flexible elements, each one mounted on a corresponding one of said two modules symmetrically with respect to the load drive axis and having an operation synchronized from a symmetrical position of their drive fingers.

4,656,950

TRANSIT VEHICLE DOOR CONTROL APPARATUS

Richard S. Rhoton, Mt. Lebanon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 1, 1985, Ser. No. 750,945
Int. Cl.⁴ B60N *5/00*
U.S. Cl. 105—341 **5 Claims**

1. In control apparatus for a transit vehicle having a first passenger door and having a second passenger door located at respectively opposite sides of the vehicle, said vehicle being operative to move along a roadway track having a safety walkway at one side of the track and having a predetermined power rail positioned on the same side of the track, the combination of:

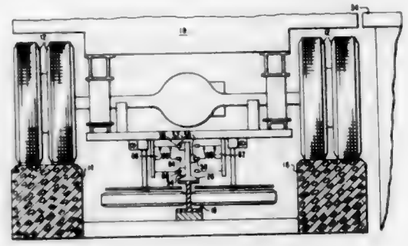
first collector means carried by the vehicle when traveling in a first direction for operation with the power rail and including first signal means,

second collector means carried by the vehicle when traveling in a second direction for operation with the power rail and including second signal means,

door control means for controlling the locked condition of said first and second passenger doors, said door control means including latch means for providing that said first and said second passenger doors are alternatively unlocked, except under failure conditions for which doors on both sides of the vehicle are unlocked after a limited time period,

with the first signal means sensing current from the power rail when the first collector means is operative with said power rail and providing a first control signal to the door control means for locking one of the first and second passenger doors, and

with the second signal means sensing current from the power rail when the second collector means is operative with said power rail and providing a second control signal to the door control means for locking the other of the first and second passenger doors.

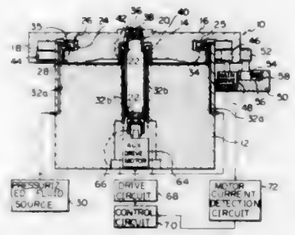


4,656,951

ROTARY TABLE UNIT

Sosaku Kimura, Tokyo; Toshikazu Hatsuse; Masami Shimizu, both of Tanashi; Masakazu Miyashita, Kokubunji; Junichi Yoshioka, Chiba; Akira Kasai, Higashiyamato, and Koichi Koizumi, Matsudo, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 23, 1985, Ser. No. 737,267
Claims priority, application Japan, May 25, 1984, 59-105708; Aug. 18, 1984, 59-172264
Int. Cl.⁴ A47B *45/00*
U.S. Cl. 108—20 **9 Claims**



1. A rotary table comprising

a cylindrical stationary base having a central bore, an upwardly projecting central guide surrounding said central bore, and an upwardly projecting annular guide surrounding an upper peripheral portion of the base;

a circular table having a face on an upper surface thereof for mounting a workpiece, a central shaft rotatably mounted in the central bore of the base, a peripheral rim extending the peripheral portion of the table, a first annular groove in the peripheral portion of the table, said annular guide on the base cooperating with and projecting into said first annular groove, a second annular groove in the peripheral rim of the table, and a central recess in the table that cooperates with the central guide on the base;

hydrostatic bearing guide means located between a part of said annular guide of said stationary base and a part of said first annular groove of said table, and also between said upwardly projecting central guide and said central recess of said table, said hydrostatic guide means rotatably supporting said table on said stationary base;

hydrodynamic bearing guide means located between another part of said annular guide of said stationary base and another part of said first annular groove of said table that vertically faces said another part of said annular guide, said hydrodynamic bearing guide means slidably supporting said table on said annular guide of said stationary base during rotation of said table whereby the table slides in the rotating direction under a predetermined contact pressure regulated by the hydrostatic bearing guide means;

main drive means located for engagement with one of said second annular groove or said central shaft of said table for rotating said table;

auxiliary drive means for supplementing said main drive means to supply said table with a supplementary drive force to rotate said table, said auxiliary drive means being located for engagement with the other of said second annular groove or said central shaft of said table;

detection circuit means for detecting a load acting on said table; and

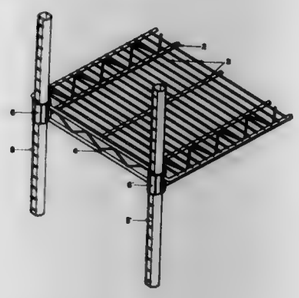
control circuit means for controlling operation of said auxiliary drive means in accordance with the detection of said load by said detection circuit means to maintain a constant rotational speed of the table.

4,656,952

ADJUSTABLE SHELVING SYSTEM

Martin F. Schweizer, 324 E. 84th St., Apt. 4C, New York, N.Y. 10028

Filed Nov. 4, 1985, Ser. No. 794,469
Int. Cl.⁴ A47B *3/00*
U.S. Cl. 108—111 **14 Claims**



1. An adjustable shelving system comprising:

vertical corner support posts;

corner sleeve assemblies, each comprising a pair of separable bracket members inter-engaged about a respective support post;

each assembly and respective support post being adjustably positioned through a locking means comprising a coupled protrusion and depression provided on their contiguously abutting surfaces;

a shelf provided with corner retainers, each retainer having a recess revealing an inner surface complimentary of one-half the circumference of each assembly;

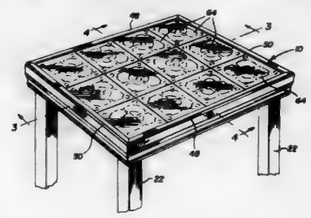
each retainer being secured to both bracket members of an assembly by means of substantially longitudinal sets of complimentary extending ribs and recessed grooves opposingly positioned on the inner surface of the retainer and the exterior surface of the bracket member respectively, said retainer and assembly being wedgingly meshed to redirect downward longitudinal force radially inward towards a respective support post.

4,656,953

EXPANDING TABLE TOP FOR DISPLAY OF DECORATIVE TILES

Walton H. Miller, Jr., 1008 E. Ash St., Goldsboro, N.C. 27530

Filed Dec. 23, 1985, Ser. No. 812,464
Int. Cl.⁴ A47B *57/00*
U.S. Cl. 108—153 **10 Claims**



1. A table construction for the replaceable display of panel-shaped articles in generally coplanar relation, said table construction including an upper generally horizontal peripheral frame and support legs dependingly supported from peripherally spaced portions of said frame, at least three generally horizontal table top sections, said table top sections and frame including coacting guide means supporting said sections from said frame in position overlying said frame and for independent guided horizontal movement of said sections relative to said frame between predetermined inner and outer limit positions along generally straight paths equal in number to the number of said sections and extending generally radially of a vertical axis extending centrally through said frame, said table top sections including outwardly facing generally straight outer elongated marginal portions extending therealong and equipped with upwardly projecting curb portions which together define an effectively continuous marginal curb about said table top sections when the latter are in their inner limit positions, a plurality of horizontal coplanar panel-shaped articles removably gravity supported upon said table top sections for omnidirectional horizontal shifting thereof relative to said table top sections, said articles being entirely confined within the boundary of said curb and snugly embracingly engaged thereby against said horizontal shifting when said sections are in said inner positions.

4,656,954

AUTODIRECTING SECURITY ENTRANCE FOR BANKS AND THE LIKE

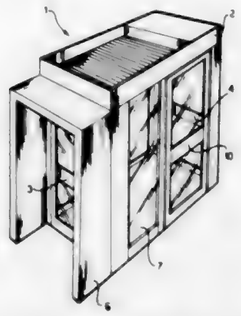
Roberto Tonali, Faggeto Lario, Italy, assignor to Tonali S.p.A., Milan, Italy

Filed Aug. 6, 1985, Ser. No. 762,778
Claims priority, application Italy, Aug. 8, 1984, 22267 A/84
Int. Cl.⁴ E05G *5/02*
U.S. Cl. 109—6 **2 Claims**

1. A security entrance for separating a protected room from an exterior free space, said security entrance comprising:

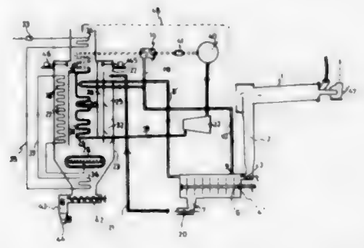
VOL 1077 ISS 2 AP 14 1987 UMI

a vestibule;
a first door means interconnecting said vestibule with the exterior free space;
a second door means interconnecting said vestibule with the protected room; and



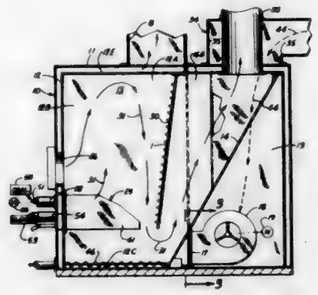
a third door means interconnecting said vestibule with a discharge space, said discharge space being separate from the protected room and said discharge space communicating with the exterior free space, one of said second door means and said third door means being opened after passage of a person into said vestibule through said first door means from the exterior free space.

4,656,955
REFUSE INCINERATION SYSTEM
Tsung H. Kuo, No. 5, Alley 57, Lane 158, Mi Tou Rd., Chu-Yi, Taiwan
Filed May 1, 1986, Ser. No. 858,598
Int. Cl.[4] F23G *5/04*
U.S. Cl. 110—346 **4 Claims**



1. A method of refuse incineration comprising the step of drying the refuse before passing the latter to a boiler adapted to generate high-pressure superheated steam for producing mechanical work in an expander, wherein, in said drying step, the wet refuse is heated in a dryer by a heating medium in directly contact to vaporize most of the moisture contained in said refuse to produce vapor, recovering said vapor and confining it into said heating medium.

4,656,956
FURNACE WITH OSCILLATING GRATE
Dale M. Flickinger, Box 434, Spicer, Minn. 56288, and Mark D. Flickinger, Box 137, Aneta, N. Dak. 58212
Division of Ser. No. 653,680, Sep. 21, 1984, Pat. No. 4,598,651. This application Mar. 31, 1986, Ser. No. 846,052
Int. Cl.[4] F23B *7/00*
U.S. Cl. 110—233 **6 Claims**

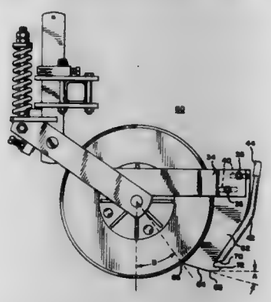


1. A hot air furnace for burning solid fuel comprising:
a furnace cabinet having walls defining a first furnace burner chamber;
a heat exchanger in heat conducting relation to the first chamber and having a heated air outlet;
wall means defining a second chamber, including an inclined wall extending diagonally upwardly and across the first burner chamber from one side wall to the other;
a blower in the second chamber having a discharge opening leading to the heat exchange passageway and an intake open to the second chamber;
at least one baffle in the burner chamber forming a third chamber portion overlying the diagonal wall and defining a serpentine path for products of combustion into the third chamber portion;
a discharge stack leading from the third chamber; and
intake air duct means formed through said third chamber and having outer surfaces open to the third chamber and opening through the diagonal wall to the second chamber for permitting intake air for the blower to be taken from outside of said furnace into the second chamber.

4,656,957
LIQUID FERTILIZER APPLICATOR
Gerald E. Williamson, Macomb, and Carroll D. Noland, Rushville, both of Ill., assignors to Yetter Manufacturing Company, Colchester, Ill.
Continuation-in-part of Ser. No. 682,280, Dec. 14, 1984, abandoned. This application Oct. 23, 1985, Ser. No. 790,398
Int. Cl.[4] A01D *23/02*
U.S. Cl. 111—7 **8 Claims**

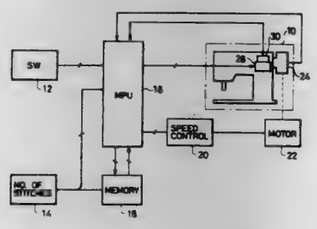
1. A liquid fertilizer applicator including:
(a) a portable frame and a support mechanism connected to said frame supporting a coulter wheel on a central axis;
(b) an arcuately shaped knife mounted on an arm of said support mechanism, said knife having a leading edge substantially complimentary in configuration to the outer periphery of said coulter wheel, said knife disposed rearwardly of said coulter and in partial surrounding relationship thereto, said knife positioned in uniform and adjacent generally skimming proximity to a portion of said coulter's outer periphery from a lowermost point of said leading edge located below and behind said central axis, to an uppermost point of said leading edge located above and behind said central axis of said coulter;
(c) a liquid application conduit associated with said knife and

connectable to a source of treating liquid for dispensing said liquid directly into a trench created by said coulter wheel; and
(d) adjustment means consisting of a plurality of horizontal slots formed in said knife and a plurality of complementary fasteners extending from said arm of said support



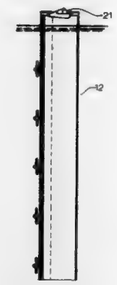
mechanism positioned to correspond with said slots and adapted to be horizontally movable therein, said adjustment means operative to uniformly vary the spacing between said knife and said coulter and to maintain said spacing at a uniform predetermined distance to compensate for wear.

4,656,958
TEMPERATURE COMPENSATED SOLENOID IN A SEWING MACHINE
Satomi Yamauchi, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 18, 1986, Ser. No. 898,163
Claims priority, application Japan, Aug. 20, 1985, 60-182695
Int. Cl.[4] D05B *69/18, 69/20*
U.S. Cl. 112—317 **3 Claims**



1. A sewing machine control device comprising:
a reverse stitching solenoid for providing power to reverse a sewing direction;
temperature detecting means for detecting a temperature of said reverse stitching solenoid; and
a control section to which a temperature detection signal is applied by said temperature detecting means, wherein said control section adjusts a timing of turning on or off of current supplied to said reverse stitching solenoid according to said temperature thus detected.

4,656,959
VERTICAL SHIP
Roger F. G. Moisdon, 4875 SW. 28th Ave., Ft. Lauderdale, Fla. 33312
Filed Mar. 25, 1985, Ser. No. 715,726
Int. Cl.[4] B63B *1/32*
U.S. Cl. 114—56 **22 Claims**



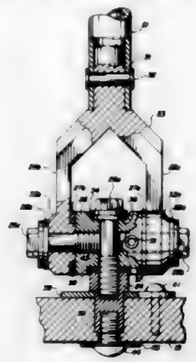
1. A vertical watercraft for stable transport in rough seas, comprising:
a. a normally above-waves, personnel-carrying first portion;
b. a normally vertically-disposed, elongate, knife-blade-shaped hull second portion, normally substantially submarine in operation and having a hydrodynamically streamlined configuration with generally narrow leading end trailing edges for reduced drag when propelled with said leading edge forward in its normal vertical orientation for transport;
c. articulated connection means connecting said first portion to said second portion for maintaining said first portion level when said second portion is changed from its normally vertical orientation for certain operations, said operations including passage through shallow waters, landing, and loading;
d. adjustable ballast means disposed within said second portion to maintain said first portion above water and to regulate trim, attitude and bottom clearance of said second portion under different loads and operating conditions;
e. a plurality of propulsion means, vertically spaced-apart within said second portion said propulsion means being so disposed relative to the center of drag of said second portion as to permit control of the vertical angle of said second portion while under way by regulation of the relative power to each of said propulsion means.

4,656,960
SAILBOAT TILLER EXTENSION HIKING STICK
Frank A. Davenport, Palatine, Ill., assignor to StaFast Products, Inc., Palatine, Ill.
Filed Jan. 6, 1986, Ser. No. 816,639
Int. Cl.[4] B63H *25/06*
U.S. Cl. 114—144 R **7 Claims**

1. A sailboat steering assembly having a rudder controlled by a tiller to which is attached a tiller-extension comprising: a base mounted to a forward portion of the tiller, having a vertically disposed member in an upper portion thereof and having an annular shoulder encompassing the member; a compression member supported on the base shoulder, adapted to be compressed and deformed to a greater degree than said base when both said shoulder and said base are subjected to force; an axle supported upon the base and having a vertical and a horizontal channel disposed therein, said vertical channel extending through said axle and communicating with said vertical base member, and having annular shoulders at each horizontal and

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vertical channel end and which encompass each channel; a horizontal annular compression surface mounted on an axle shoulder; a yoke having a tiller-extension shaft at its upper end, and spaced-apart arms at the lower end thereof, the arms terminating in annular rings which mate with a horizontal



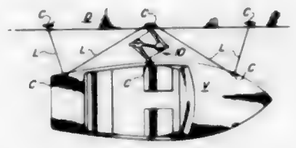
compression member and communicate with the horizontal channel of the axle; end compression screws adjustably positioned within each channel and adapted to apply pressure to the compression members thereby providing uniform and controlled resistance to movement of the tiller extension shaft end in horizontal and vertical positions.

4,656,961

ARTICULATED MOORING DEVICE

Leo A. Hellkamp, Cincinnati, Ohio, assignor to Gerrard Brothers, Incorporated, Davenport, Iowa

Filed May 27, 1986, Ser. No. 866,652
Int. Cl.[4] B63B *21/00*
U.S. Cl. 114—230 **6 Claims**



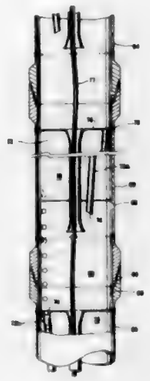
1. A flexible mooring device adapted for disposition in the space between a vessel and a mooring object, comprising an elongated rigid beam having first and second opposite ends and including first and second parallel pivots disposed crosswise of the beam and spaced apart lengthwise of the beam and being further spaced respectively inwardly of the beam ends, a first rigid arm having one end connected to the beam via the first pivot and extending away from the beam to a distal end, said distal end having means for effecting connection thereof to a vessel, a second rigid arm having one end connected to the beam via the second pivot and extending away from the beam oppositely to the first arm and having a distal end including means for effecting connection to a mooring object, and a plurality of yieldable means connected between the beam and the arms for normally maintaining the arms in extended positions as respects the beam while enabling yieldable rocking of the arms about their respective pivots.

4,656,962

BUOYANCY SUPPORT FOR DEEP-OCEAN STRUTS

Neville E. Hale, Mississauga, Canada, assignor to Fathom Oceanology Limited, Mississauga, Canada

PCT No. PCT/US84/01606, § 371 Date Jun. 11, 1985, § 102(e) Date Jun. 11, 1985, PCT Pub. No. WO85/01762, PCT Pub. Date Apr. 25, 1985
PCT Filed Oct. 9, 1984, Ser. No. 757,986
Claims priority, application Switzerland, Oct. 12, 1983, 4383/83
Int. Cl.[4] E21B *7/12*
U.S. Cl. 114—264 **10 Claims**



1. Apparatus for transmitting forces between two points that are widely separated vertically by a body of deep water, the apparatus comprising a strut and a buoyancy means for supporting the weight of the strut, characterized by the following structural arrangement;

(a) the strut has hollow circular cylindrical wall sections that are joined together end-to-end at respective interfaces, the respective spaces enclosed inside the hollow interior of the strut and extending above and below the respective interfaces being termed the respective joint spaces, each section having a middle portion and two respective end portions welded to the ends of the middle portion;

(b) sections of the strut are provided each with a one or more respective air containing canisters comprising a diaphragm welded to said section walls, and said middle portion walls, and a respective canister attachment means, each of the canisters having a respective inspection tube and inspection tube location means locating the inspection tube concentrically with said cylindrical wall, and a respective cascade tube and cascade tube location means locating said cascade tubes radially offset relation;

(c) the canister attachment means is arranged to receive buoyancy forces of the one or more respective canisters and transmit those forces to the section;

both tubes having respective ports at either end and pass through the canister, and are open to the passage of fluids from beneath to above the canister;

(d) the bottom port of the inspection tube is situated at a lower level vertically than the bottom port of the cascade tube;

(e) means are provided for positioning the adjacent ends of adjacent cascade tubes in offset mutually non-aligned relation so as to prevent, in use, the upward passage of air emerging from a lower tube directly outward into the next-above cascade tube;

(f) the inspection tube location means is effective to hold an inspection tube of a section in alignment with the inspection tubes of the sections immediately above and below, so that a probe in following a path straight through in an inspection tube enters directly into the inspection tube of the adjacent section; and wherein:

(g) the arrangement is such that air does not become entrapped in the joint space, so that the joint space, once flooded, remains flooded with water; and

(h) the canisters, the tubes, and their respective attachment means, substantially do not obtrude into the respective joint spaces, so that an inspection probe may be traversed over substantially all of the inside surfaces of the sections in the joint space substantially without restriction

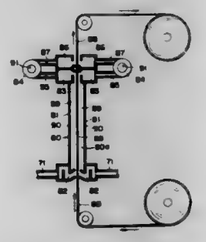
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4,656,963

METHOD AND APPARATUS FOR FORMING AN EXTREMELY THIN FILM ON THE SURFACE OF AN OBJECT

Takashi Yonehara, 26-3, Ontamachi 5-chome, Higashimurayama-shi, Tokyo, and Kanji Hayashi, 10-2, Omorihoncho 2-chome, Ota-ku, Tokyo, both of Japan

Division of Ser. No. 412,988, Aug. 30, 1982, Pat. No. 4,605,574. This application Jun. 18, 1985, Ser. No. 745,876
Claims priority, application Japan, Sep. 14, 1981, 56-143817; Oct. 6, 1981, 56-159251; Nov. 5, 1981, 56-164354[U]; Nov. 16, 1981, 56-169468[U]; Dec. 12, 1981, 56-183102[U]; Mar. 17, 1982, 57-40842; Apr. 12, 1982, 57-51830[U]; Apr. 12, 1982, 57-51831[U]
Int. Cl.[4] B05B *15/12*
U.S. Cl. 118—326 **7 Claims**



1. An apparatus for the surface treatment of an elongated film with an aerosol, comprising:

a pair of spaced apart facing walls defining an aerosol chamber therebetween, said walls being elongated in a direction travel of the film, said aerosol chamber having an inlet end for receiving film to be surface treated and an opposite outlet end for discharging film after it has been treated;

an ultrasonic aerosol generator having an aerosol solution chamber for carrying a supply of aerosol solution and an ultrasonic vibrator operatively connected to said aerosol solution chamber for passing ultrasonic waves through said aerosol solution chamber to form an aerosol in said aerosol solution chamber;

an aerosol duct connected between said aerosol solution chamber and said aerosol chamber adjacent said inlet end of said aerosol chamber for supplying an aerosol into said aerosol chamber from said aerosol solution chamber;

a suction chamber communicating with said aerosol chamber adjacent said outlet end thereof for drawing aerosol from said aerosol chamber;

suction means connected to said suction chamber for drawing aerosol from said suction chamber to cause aerosol to move into said aerosol chamber from said aerosol duct;

an exhaust chamber communicating with said aerosol chamber adjacent said outlet end of said aerosol chamber and downstream of said suction chamber in the direction of movement of the film through said aerosol chamber; and

an exhaust pipe connected between said suction means and said exhaust chamber for discharging aerosol from said suction means to said exhaust pipe through said exhaust chamber into said aerosol chamber adjacent said outlet thereof;

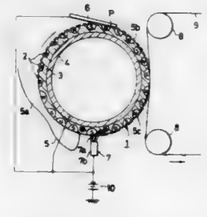
at least one of said walls including a secondary air hole for entry of air into said aerosol chamber intermediate said inlet and outlet ends thereof.

4,656,964

DEVELOPING DEVICE

Fuchio Kanno, Yokohama; Kazuo Kobayashi, Kawasaki; Koji Sakamoto; Toshio Kaneko, both of Tokyo, and Wataru Yasuda, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 565,273
Claims priority, application Japan, Dec. 27, 1982, 57-226631
Int. Cl.[4] G03G *15/08*
U.S. Cl. 118—648 **15 Claims**



1. A device for developing an electrostatic latent image by applying magnetically attractable toner hereto, comprising:

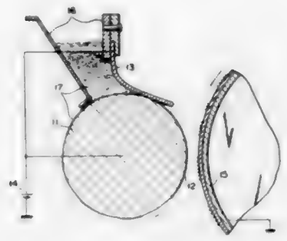
transporting means for transporting said toner along a predetermined path including a developing region where said latent image is developed, said transporting means including a rotatable supported sleeve whose outer peripheral surface defines a transporting surface on which said toner is carried as magnetically attracted thereto to travel along a circular path defined by the circumference of said sleeve, said sleeve including an electrically conductive, cylindrical support, a dielectric layer formed on the outer peripheral surface of said support, and a plurality of fine magnets comprised of an electrically conductive material and provided as embedded in said dielectric layer as separate from one another and from said support, thereby causing said toner to be magnetically attracted to said transporting surface;

supply means disposed upstream of said developing means with respect to the direction of transportation of said toner for supplying said toner to said transporting means; and

toner film forming means disposed between said supply means and said developing region with respect to the direction of transportation of said toner, said toner film forming means including a blade in pressure contact with said transporting means thereby pressing said toner into a thin film of predetermined thickness while having said toner charged triboelectrically to a predetermined polarity.

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4,656,965
DEVELOPING APPARATUS
Masahiro Hosoya, Yokohama; Tsutomu Uehara, Yokosuka, and Shinya Tomura, Yamato, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation-in-part of Ser. No. 831,092, Feb. 21, 1986, and a continuation of Ser. No. 785,038, Oct. 8, 1985, abandoned, which is a continuation-in-part of Ser. No. 655,444, Sep. 28, 1984, abandoned. This application Mar. 27, 1986, Ser. No. 844,613
Claims priority, application Japan, Sep. 30, 1983, 58-182689; Sep. 30, 1983, 58-182743
Int. Cl.⁴ G03G *15/06*
U.S. Cl. 118—649 **13 Claims**

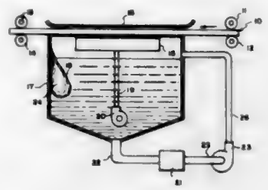


1. A developing apparatus for developing a latent image formed on an image carrier by a non-magnetic developing agent consisting essentially of non-magnetic particles, said developing apparatus comprising:
(a) an image carrier;
(b) a developing agent carrier for carrying the non-magnetic developing agent thereon in the form of a layer, said developing agent carrier being disposed apart from said image carrier by a prescribed distance; and
(c) an elastic metal member formed of a metallic material and pressed against one surface of said developing agent carrier to apply the non-magnetic developing agent thereto, so that the non-magnetic developing agent is applied to the surface of said developing agent carrier by said elastic metal member to form a thin layer of the non-magnetic developing agent on the surface of said developing agent carrier;
(d) the thin layer of the non-magnetic developing agent being opposed to said image carrier to deposit the non-magnetic developing agent on the latent image of said image carrier, thereby developing the latent image;
(e) the thickness of the thin layer of the non-magnetic developing agent being smaller than the prescribed distance;
(f) said developing agent carrier having a surface which is opposed to said image carrier and the whole of which is roughened;
(g) said dveloping agent carrier being electricaly connected to said elastic metal member;
(h) the relation among μt, μb, and μr being:

$$\mu t < \mu b < \mu r$$

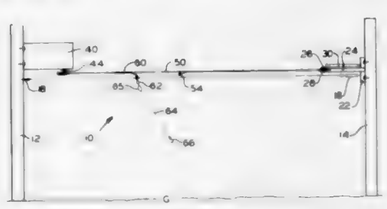
where the value μr is the friction coefficient between said developing agent carrier and the non-magnetic developing agent, the value μt is the friction coefficient between the particles of the developing agent, and the value μb is the friction coefficient between said elastic metal member and the non-magnetic developing agent.

4,656,966
METHOD AND APPARATUS FOR DEVELOPING ELECTROGRAPHIC IMAGES USES MOLECULAR SIEVE ZEOLITE
Robert A. Guistina, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 4, 1986, Ser. No. 893,426
Int. Cl.⁴ G03G *15/10*
U.S. Cl. 118—661 **17 Claims**



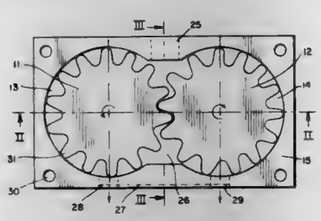
1. In a method of developing an electrostatic charge pattern on the surface of an electrographic element with a liquid developer, the improvement which comprises contacting the liquid developer with a molecular sieve zeolite.

4,656,967
DOG WALKING DEVICE
Richard Duksa, 1063 West St., Southington, Conn. 06489
Filed Aug. 19, 1985, Ser. No. 766,952
Int. Cl.⁴ A01K *15/00*
U.S. Cl. 119—29 **12 Claims**



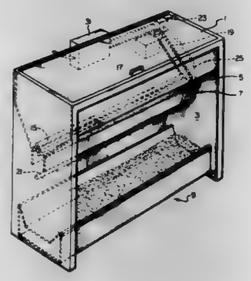
1. A dog walking device comprising:
cable means comprising a cable suspended between spaced supports for forming an elevated linear guideway;
slide means mounted on said cable for sliding motion along said guideway;
belt means comprising a pair of spaced pulleys and an endless belt, said belt passing about and extending between said pulleys whereby said belt may be continuously driven, said belt being formed from a flexible material and having an adjustable length, said belt means including means for supporting said pulleys such that said belt extends generally along and in spaced relation to said cable;
connector means comprising a flexible connector continuously connected between a fixed location of said belt and said slide means to pull said slide means along said guideway so that when said belt is continuously driven in a first direction, the slide means sequentially travels in forward and reverse directions along the guideway; and tether means coupled to said slide means and adapted to be coupled to a lead for a dog.

4,656,968
APPARATUS FOR THE DISTRIBUTION OF PUMPABLE FISH FOOD
Anders Losen, N-7096, Kvaal, Norway
Filed Dec. 6, 1985, Ser. No. 805,711
Int. Cl.⁴ A01K *5/00*
U.S. Cl. 119—51 R **5 Claims**



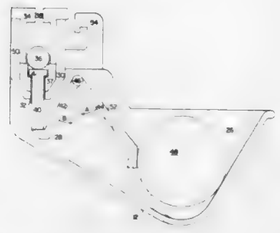
1. An apparatus for distributing fish foodstuff in a seafarm for breeding fish comprising a housing, a gear pump disposed in said housing, said gear pump including a rotor chamber and at least one pump gear disposed within said chamber, said pump gear being adapted to be rotated, at least one feeder opening provided in said housing, a pressure area defined by said rotor chamber and at least one relatively sharp-edged outlet opening provided in said housing, said outlet opening being a short outlet channel primarily radially arranged out from said rotor chamber, said pressure area being connected with said rotor chamber at said outlet opening, said pump gear being adapted to stroke across said outlet opening.

4,656,969
AUTOMATIC LIVESTOCK FEEDER
Benjamin F. Rapp, 11 Apple Loop, R.R.1, Box 222, Petersburg, Ill. 62675, and Gary L. Rapp, R.R. 1, Athens, Ill. 62613
Filed Dec. 16, 1985, Ser. No. 808,950
Int. Cl.⁴ A01K *5/02*
U.S. Cl. 119—51.11 **13 Claims**



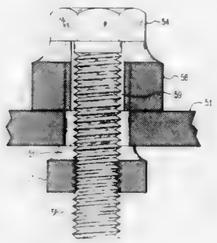
1. An automatic livestock feeding apparatus comprising:
a hopper means;
a trough means;
a distribution means for transferring feed from said hopper means to said trough means;
a feed level sensing means comprising (a) means for inducing sustained vibration of said trough means only when an amount of feed present in said trough means is less than a predetermined level and (b) means for detecting said sustained vibration to indicate that said amount of feed is below said predetermined level; and
a distribution means control means responsive to said feed level sensing means for activating said distribution means.

4,656,970
POULTRY DRINKER DEVICE
Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.
Filed Jan. 24, 1985, Ser. No. 694,235
Int. Cl.⁴ A01K *39/02*
U.S. Cl. 119—75 **7 Claims**



1. A drinker assembly comprising:
cup means,
valve means adjacent said cup means and having an outlet above a maximum water fill line of the cup means, said valve means being biased to a closed position to prevent a flow of water into said cup means,
valve-actuating lever means pivotable about a pivot point attached to said cup means for opening said valve means to cause water to flow into the cup means up to its normal fill line, said lever means comprising a first lever leg extending from said pivot point to said vlave means and a second lever leg extending from said pivot point into said cup means below the normal water fill line, and
free floating buoyant float means, said float means normally freely floating in the cup means and being floatingly displaceable aroung the cup means to provide unfettered access to the water in the cup means without causing pivoting of the valve-actuating lever means and being capable of causing pivoting of said valve-actuating lever means by contacting said second lever leg only when the water level in said cup falls below the normal fill line to a predetermined level, said pivoting causing said first lever leg of said valve-actuating means to open said valve means to provide for filling.

4,656,971
NON-PLUGGING AIR DISTRIBUTION SYSTEM FOR SPENT BED COOLER
Robert L. Eaton, Ashland, Ky., and Edward V. Creamer, Huntington, W. Va., assignors to Ashland Oil, Inc., Ashland, Ky.
Continuation-in-part of Ser. No. 699,716, Feb. 8, 1985. This application May 13, 1986, Ser. No. 862,874
Int. Cl.⁴ F22B *1/00*
U.S. Cl. 122—4 D **12 Claims**



1. In a distribution system for fluidizing gas comprising holes

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through plates wherein there is a pressure drop through at least a portion of such holes of at least 12 inches of a column of water, the improvement which comprises: restricting gas passage through unthreaded holes by means of a fastener comprising a threaded bolt or a rivet wherein in cooperation with said fastener there is a means for imposing a horizontal flow path as said fluidizing gas exits upwardly through said unthreaded holes said means comprising nuts or unthreaded spacers having openings in the top circumference comprising 10–80 vol. % of said means whereby a non-plugging distribution system for gas to a fluidized bed is achieved.

4,656,972

METHOD AND APPARATUS FOR REDUCING NO_x IN EXHAUST GASES FROM FLUIDIZED-BED BOILER

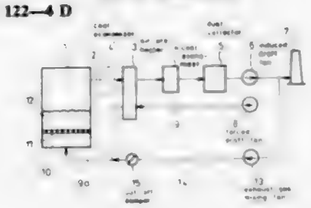
Hiromi Shimoda, Hasuda, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1985, Ser. No. 773,116

Claims priority, application Japan, Sep. 26, 1984, 59-145627[U]

Int. Cl.⁴ B09B *3/00*

U.S. Cl. 122—4 D **1 Claim**



1. A method for reducing NO_x in exhaust gases from a fluidized-bed boiler comprising the steps of:

charging the exhaust gases from said fluidized-bed boiler through heat exchanger means comprising an air preheater and a coal economizer into a dust collector and then to an induced draft fan;

flowing combustion air from a forced draft fan through said air preheater so that said combustion air is heated;

supplying the heated combustion air to said fluidized bed boiler; and

mixing part of the exhaust gases which are withdrawn at a point downstream of said dust collector with said heated combustion air through an exhaust-gas mixing fan.

4,656,973

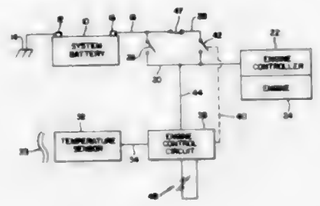
TEMPERATURE RESPONSIVE ENGINE CONTROL APPARATUS

Mark C. Esdres, Oregon City, Oreg., assignor to Instrument Sales and Service, Inc., Portland, Oreg.

Filed Aug. 17, 1984, Ser. No. 641,623

Int. Cl.⁴ F02B *77/00*

U.S. Cl. 123—41.15 **4 Claims**



1. A temperature responsive engine control apparatus comprising:

temperature sensing means for sensing the temperature of the engine and producing an engine temperature output signal corresponding to the sensed engine temperature;

engine control means responsive to said engine temperature output signal of said temperature sensing means for selectively preventing the engine from shutting off depending upon the magnitude of the sensed engine temperature, said engine control means including reference temperature circuit means for producing a reference temperature output signal corresponding to a predetermined temperature, said engine control means including comparator means for receiving and comparing the engine temperature output signal and the reference temperature output signal and for producing a comparator output signal corresponding to the relationship between the sensed engine temperature and reference temperature, said engine control means also including means for receiving said comparator output signal and preventing the engine from shutting off when the comparator output signal corresponds to a sensed engine temperature which is above the predetermined temperature.

4,656,974

V-TYPE ENGINE BOILING AND COOLING APPARATUS

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

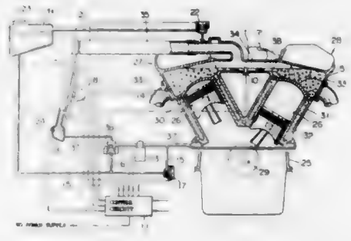
PCT No. PCT/JP84/00552, § 371 Date Jul. 16, 1985, § 102(e) Date Jul. 16, 1985

PCT Filed Nov. 16, 1984, Ser. No. 758,221

Claims priority, application Japan, Nov. 17, 1983, 58-216860

Int. Cl.⁴ F01P *3/22*

U.S. Cl. 123—41.21 **10 Claims**



1. An internal combustion engine comprising:

a radiator;

means for forming a first combustion chamber;

means for forming a first coolant chamber around said first combustion chamber, said first coolant chamber being adapted to discharge vaporized coolant;

means for forming a second combustion chamber;

means for forming a second coolant chamber around said second combustion chamber, said second coolant chamber being adapted to receive liquefied coolant from said radiator and discharge vaporized coolant;

a mechanism provided between said first and second coolant chambers at a position above or higher than the positions of said first and second combustion chambers for collecting vaporized coolant, said mechanism communicating with said radiator for introducing vaporized coolant to said radiator to liquefy the same in same radiator;

a first level sensor sensitive to the level of the coolant contained in said collecting mechanism, said first level sensor deriving a control signal based on the sensed coolant level so as to control said coolant level in said collecting mechanism at a predetermined level; and

a coolant circulating circuit means connecting said first and second coolant chamber, said radiator and said collecting mechanism and including a valve means responsive to said control signal to control the amount of the coolant to be introduced from said radiator to said first and second coolant chambers so as to maintain the coolant level at said predetermined value in said collecting chamber.

4,656,975

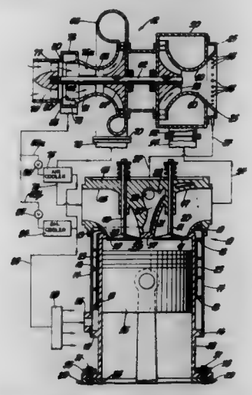
ENGINE COOLING SYSTEM

Kenneth A. Johnson, 15236 Tacoma St., Detroit, Mich. 48205

Filed Apr. 22, 1985, Ser. No. 725,972

Int. Cl.⁴ F01P *1/02*

U.S. Cl. 123—41.68 **1 Claim**



1. In a vehicle power plant that includes a piston engine having a plurality of combustion cylinders, each engine cylinder comprising an end wall (37), annular side wall 28, combustion air intake passage means (45) connected to the cylinder end wall, and an exhaust passage means (47) extending from the cylinder end wall for exhausting products of combustion from the combustion cylinder: the improvement comprising novel means for cooling the engine cylinders; said cooling means comprising a coolant chamber surrounding each engine cylinder; a fan means (77); a first conduit means for transmitting coolant air from the fan means to the individual coolant chambers; a second conduit means (24) for directing spent coolant air from the individual coolant chambers to an area external to the vehicle; said cooling means being a completely confined system wherein all of the engine coolant air is sealed from escape while traveling through the first conduit means, the engine cylinders, and the second conduit means; each coolant chamber being defined by an annular shroud wall (14) surrounding the cylinder side wall, and a head member (43) overlying the cylinder end wall;

said annular shroud wall having a connection (85) with the first conduit means, and the head member having a connection (22) with the second conduit means;

a plural number of heat-conducting fins (18) (23) extending outwardly from the cylinder side wall in the annular space circumscribed by the annular shroud wall (14); said fins having leading ends spaced from the aforementioned connection (85) with the first conduit means whereby coolant air is divided into a series of separate streams during flow through the space circumscribed by the shroud wall;

the aforementioned head member (43) having an interior surface defining a cavity (20) in open communication with the outer surface of the cylinder end wall; said cavity including a peripheral space (19) in open communication with the annular space circumscribed by the aforementioned shroud wall, whereby coolant air flows into the cavity through the peripheral space; said cavity being configured to provide an air passage in surrounding relation to the aforementioned intake passage means and exhaust passage means; said cavity (20) including a cavity surface spaced only a slight distance from the cylinder end wall in the vicinity of the intake passage means so that coolant air is caused to flow generally parallel to the end wall surface as it moves toward the aforementioned connection (22) with the second conduit means; the cavity surface in the vicinity of the exhaust passage means being spaced from the cylinder end wall to expose the exterior surface of the exhaust passage means to the cavity, and heat transfer fins (21) on the exposed surface of the exhaust passage means; the aforementioned connection with the second conduit means being located so that coolant air is caused to flow over the heat transfer fins on the exhaust passage means to reach the second conduit means.

4,656,976

HYDRAULIC ROCKER ARM

Gary E. Rhoads, 8565 Boulder Dr., La Mesa, Calif. 92041

Filed Apr. 1, 1984, Ser. No. 585,261

Int. Cl.⁴ F01L *9/02*

U.S. Cl. 123—90.12 **8 Claims**



1. A stationary hydraulic rocker arm assembly comprising:

a housing;

a first piston cylinder having a top wall and being mounted in said housing, a first piston having a top surface and a bottom surface and being positioned within said first piston cylinder, a first fluid chamber formed between the top surface of said first piston and the top wall of said first piston cylinder, means on the bottom surface of said first piston for receiving the top end of a rod;

means for supplying hydraulic fluid to said first fluid chamber;

a second piston cylinder having a top wall and being mounted in said housing, a primary piston having a top surface positioned within said second piston cylinder, a primary fluid chamber formed in said second piston cylinder above the top surface of said primary piston;

means for transmitting hydraulic fluid from said first fluid chamber to the primary fluid chamber in said second piston cylinder when said first piston in the first piston cylinder is caused to travel toward the top wall of said first piston cylinder, the hydraulic fluid that is transmitted to said primary fluid chamber causes said primary piston to travel downwardly and since the bottom of the primary piston would be engaging the top end of an engine valve this will cause the valve to travel downwardly thereby opening it from its valve seat; and

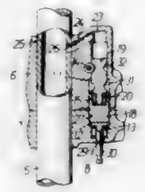
means in said stationary hydraulic rocker arm assembly for performing a delay in valve duration, valve lift and valve overlap at low engine rpm and which as the engine rpms increases, the valve duration, valve lift and valve overlap are automatically increased.

4,656,977

OPERATING MECHANISM FOR DUAL VALVES IN AN INTERNAL COMBUSTION ENGINE

Kenichi Nagahiro; Atsushi Ishida, both of Saitama, and Shigemasa Kajiwara, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1985, Ser. No. 758,153
Claims priority, application Japan, Jul. 24, 1984, 59-153803
Int. Cl.⁴ F01L *1/26*
U.S. Cl. 123—90.16 **15 Claims**



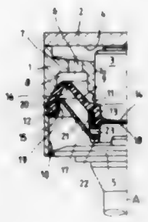
1. A valve operating mechanism for an internal combustion engine having camshaft, a pair of intake or exhaust valves for each engine cylinder and a rocker shaft, comprising, first and second rocker arms pivotally mounted on the rocker shaft in adjacent relationship and engaging said pair of valves, said first rocker arm engaging said camshaft, and piston means in said rocker arms selectively shiftable between positions connecting said rocker arms for pivotal movement in unison and disconnecting said rocker arms for independent movement, wherein said piston means includes two pistons slidably mounted in said first rocker arm with one piston slidable into said second rocker arm for connecting the first and second rocker arms.

4,656,978

VALVE CLEARANCE ADJUSTING DEVICE

Hans Dearing, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Apr. 2, 1986, Ser. No. 847,229
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1985, 3513161
Int. Cl.⁴ F01L *1/24*
U.S. Cl. 123—90.55 **22 Claims**



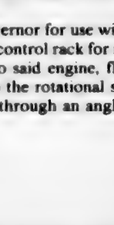
1. In a valve actuating mechanism for periodically opening and closing an engine valve, including a hollow reciprocating tappet having a tappet axis, a tappet bottom having an outer face arranged for engagement with a rotary cam of an engine cam shaft, and an inner circumferential wall surface; a valve clearance adjusting device accommodated in the tappet and including a valve clearance adjusting element having an outer circumferential face and cooperating with a valve stem of said engine valve, a chamber defined in said tappet, said chamber being filled with a hydraulic fluid, and an elastic diaphragm supported in said tappet and arranged for bounding and sealing said chamber; the improvement wherein said diaphragm extends generally radially relative to said tappet axis between said inner circumferential wall surface of said tappet and said outer circumferential face of said valve clearance adjusting element; said diaphragm having a radially inner circumferential zone adjacent said outer circumferential face of said valve clearance adjusting element and a radially outer circumferential zone adjacent said inner circumferential wall surface of said tappet; the improvement further comprising first and second reinforcing elements supported in said tappet; said first reinforcing element being arranged for radially pressing said radially outer circumferential zone of said diaphragm against said inner circumferential wall surface of said tappet and said second reinforcing element being arranged for radially pressing said radially inner circumferential zone of said diaphragm against said outer circumferential face of said valve clearance adjusting element, whereby said diaphragm is immobilized in a desired orientation.

4,656,979

IN TANK FUEL LINE HEATER

Milan C. Hogenson, 328 Wilson Ave., Fond du Lac, Wis. 54935

Filed Sep. 9, 1985, Ser. No. 773,987
Int. Cl.⁴ F02M *53/00*; **F02N** *17/02*
U.S. Cl. 123—142.5 R **4 Claims**



1. An in the tank fuel line heating system for heating the fuel as it is removed from the tank for use by a fluid cooled internal combustion engine, said system comprising:

a fuel outlet conduit communicating with a port in the upper portion of the tank and extending downwardly into the tank to a point substantially near the bottom of the tank,

a coolant circulating conduit having a vertical section located substantially adjacent said fuel outlet conduit and serving to transfer heat from the engine heated coolant and the fuel in said fuel outlet conduit, wherein said vertical section is closely adjacent to and parallel to said fuel outlet conduit,

a fuel return conduit for returning unused fuel from the engine to the tank said fuel return conduit located substantially adjacent and running parallel along substantially the entire length of said fuel outlet conduit and extending downwardly into the tank to a point above the bottommost end of said fuel conduit, and

wherein said fuel return conduit and said vertical section of said coolant circulating conduit substantially and closely surround said fuel outlet conduit.

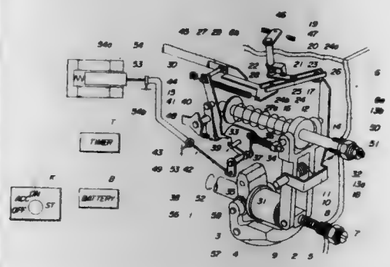
4,656,980

CENTRIFUGAL GOVERNOR FOR INTERNAL COMBUSTION ENGINES

Masayoshi Ohkoshi, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1985, Ser. No. 753,721
Claims priority, application Japan, Jul. 11, 1984, 59-104751[U]; Jul. 12, 1984, 59-105816[U]
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—179 L **12 Claims**

1. In a centrifugal governor for use with an internal combustion engine, including a control rack for regulating the quantity of fuel to be supplied to said engine, flyweights radially displaceable in response to the rotational speed of said engine, a tension lever pivotable through an angle dependent upon the amount of radial displacement of said flyweights, a torque cam pivotable about and relative to a fulcrum shaft thereof and having a cam surface including a cam surface portion determining a fuel increment to be applied at the start of said engine, a sensor lever having one end engaged by said control rack, said sensor lever having another end disposed to engage with said cam surface portion of said torque cam when said engine is in a starting condition, to permit displacement of said control rack into a fuel increasing position for the start of said engine, and a cancelling spring interposed between said torque cam and said tension lever and urging said torque cam with a force dependent upon the angularity of said tension lever to cause pivoting of said torque cam about said fulcrum shaft thereof in a direction of disengaging said sensor lever from said cam surface portion of said torque cam,



the improvement comprising

biasing means for forcibly pivotally displacing, immediately before operation of a starter of said engine, said torque cam in one direction against the urging force of said cancelling spring to a predetermined position wherein said sensor lever can easily engage said cam surface portion of said torque cam, and timer means for causing said biasing means to hold said torque cam in said predetermined position for a predetermined time period, irrespective of a period of time for which said starter is operated, whereby said cancelling spring is operable to force said torque cam into the original position when said predetermined time has elasped.

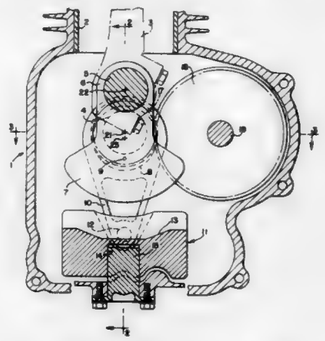
4,656,981

BALANCING MECHANISM FOR RECIPROCATING PISTON ENGINE

Nobuyoshi Murata, Miki, and Toru Ogino, Kobe, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation of Ser. No. 641,608, Aug. 17, 1984, abandoned. This application Dec. 18, 1985, Ser. No. 810,230
Claims priority, application Japan, Aug. 24, 1983, 58-130843
Int. Cl.⁴ F02B *75/06*
U.S. Cl. 123—192 B **2 Claims**

1. A balancing mechanism for a reciprocating piston internal combustion engine which includes a cylinder, a piston reciprocatable in said cylinder, a crankcase, a crankshaft mounted in said crankcase, a crankpin connected to said piston, and a pair of crank arms bridging said crankshaft and crankpin, said crank arms and said crankpin rotating with said crankshaft during operation and forming a rotating mass, said balancing mechanism comprising at least one rotating counterweight attached to and rotating with said crankshaft, eccentric journal means on said crankshaft adjacent said crank arms and rotating with said crankshaft, said journal means having an axis spaced to the side of the crankshaft axis which is opposite from said crankpin, said rotating counterweight and said eccentric journal means counterbalancing said rotating mass, a reciprocating counterbalance, counterbalance arm means carried by said eccentric journal means and connected to said reciprocating counterbalance, said reciprocating counterbalance moving in directions reverse to the piston motion as said crankshaft rotates, and guide means mounted on said crankcase and engaging said reciprocating counterbalance and confining said reciprocating counterweight to reciprocating movement on the cylinder axis, said guide means comprising a hole in the lower side of said reciprocating counterbalance adjacent said crank-



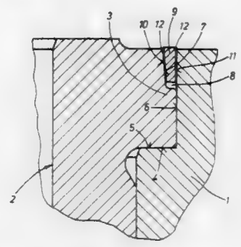
case, and a pin adapted to be secured to the bottom of said crankcase and extend substantially coaxially with said cylinder for sliding engagement within said hole, whereby said hole and said pin are adjacent the bottom of said crankcase and are thereby adapted to be lubricated by lubricant at the bottom of said crankcase.

4,656,982

ENGINE CYLINDER LINER ARRANGEMENT

Milorad Mirjanic, Fellbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed May 20, 1985, Ser. No. 735,578
Claims priority, application Fed. Rep. of Germany, May 22, 1984, 3419003
Int. Cl.⁴ F01B *21/00*
U.S. Cl. 123—193 CH **7 Claims**



1. A cylinder liner arrangement for lining cylinder block means of an internal combustion engine, comprising:

a liner exhibiting a collar engageable with a bearing support surface of the block means to axially support the liner in position, the block means having a topmost edge and the liner having an outward edge terminating at a height approximating the topmost edge, and

a single clamping ring disposable between a ring support surface of the liner and a ring support surface of the cylinder block means to clampingly hold the liner in position at the bearing surface of the cylinder block means and to provide radial support for the liner against the block means,

wherein the clamping ring and one of the liner and cylinder block means exhibit mating sloped conical surfaces with the clamping ring being narrower at its bottom than at its

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top when inserted downwardly from above in a vertically disposed cylinder arrangement, and

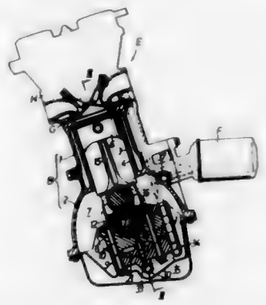
wherein said mating sloped conical surfaces are configured to self-lockingly fasten the clamping ring with the mating surface of one of the liner and cylinder block means so that the clamping ring is maintained between the two ring support surfaces so as to hold the liner axially against the bearing surface and to provide a radial support between the ring support surface of the liner against the ring support surface of the cylinder block.

4,656,983

CRANKSHAFT SUPPORTING AND LUBRICATING STRUCTURE FOR MULTICYLINDER INTERNAL COMBUSTION ENGINES

Nobuo Asano, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1985, Ser. No. 802,524
Claims priority, application Japan, Jun. 3, 1985, 60-83812[U]
Int. Cl.⁴ F01M *1/00*
U.S. Cl. 123—196 R **14 Claims**



1. A crankshaft supporting and lubricating device in a multicylinder internal combustion engine having a plurality of bearing caps secured to a plurality of journal walls of a cylinder block rotatably supporting a crankshaft between the bearing caps and the journal walls with a bridge interconnecting the bearing caps, the improvement comprising, said bearing caps and said bridge having a plurality of branch oil passages defined therein for supplying lubricating oil to bearings of the crankshaft, said branch oil passages being deviated to one side from a cylinder axis passing through the center of said crankshaft, said bridge having a main gallery defined therein in communication with said branch oil passages and also deviated to said one side, said bridge and one of said bearing caps having an oil passage defined therein on said one side and providing communication between said main gallery and a pressurized oil source.

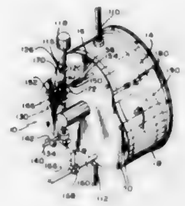
4,656,984

ROTARY INTERNAL COMBUSTION ENGINE WITH INTEGRATED SUPERCHARGED FUEL-AIR INDUCTION

Albert A. Southard, R.R. #3, Council Grove, Kans. 66846

Continuation of Ser. No. 944,850, Sep. 22, 1978, Pat. No. 4,230,088. This application Oct. 27, 1980, Ser. No. 201,352
Int. Cl.⁴ F02B *53/06*
U.S. Cl. 123—202 **4 Claims**

1. An improved method of operating a rotary internal combustion engine of the type wherein a multicusped rotor rotatable upon a rotatable eccentric rotates within a cavity bounded by a wall of lobed trochoidal configuration with which the rotor cusps have sealing engagement separating and defining operating chambers in the cavity about the rotor between adjacent pairs of cusps, with such chambers being angularly spaced about and orbiting the center of the cavity as the rotor rotates while each chamber alternately expands and contracts in volume; said method comprising cyclically operating each chamber through a sequence of six phases that are synchronized with three successive increases and decreases in the volume of such chamber, with the first four phases being an internal combustion engine power cycle comprising an air intake phase, a compression phase, a combustion phase and an exhust phase, and with the fifth phase comprising inducting air into the chamber, and the sixth phase comprising compressing the inducted air in such chamber and passing such inducted and compressed air through an elongated transfer zone along a path that is for an intermediate portion of its extent laterally



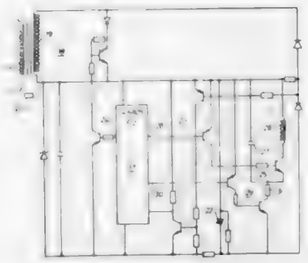
isolated from the cavity into another chamber intermediate operation of the latter in its intake and compression phases, with said chamber being separated from said another chamber by a single cusp engaging the wall with the chamber immediately trailing the orbit of said another chamber about the center of the cavity, whereby the operation of said chamber in it sixth phase occurs at a time during which the chamber next preceding it in orbit is being operated in its first phase, and wherein the induced and compressed air is passed into said another chamber during a continuous interval during which said another chamber orbits at least 24 degrees and during which interval said another chamber has at least in part entered upon its compression phase of operation.

4,656,985

ARRANGEMENT IN A MOTOR SAW

Bo C. Andreasson, Göteborg; Jan O. Donnerdal, Partille, and Hans I. Ström, Kode, all of Sweden, assignors to Aktiebolaget Electrolux, Sweden

Filed Jun. 17, 1985, Ser. No. 745,219
Claims priority, application Sweden, Jun. 19, 1984, 8403280
Int. Cl.⁴ F02P *9/00*; B06T *7/12*; B27B *17/02*
U.S. Cl. 123—335 **9 Claims**



1. In a motor saw having an engine for driving a saw chain, a brake for the saw chain, and an electrically controlled release apparatus connected to control the brake, the improvement wherein said brake release apparatus comprises means for providing a signal having a characteristic that changes as a function of the speed of rotation of said engine, and means

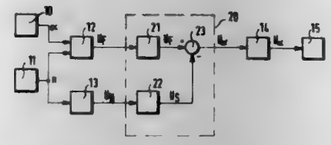
responsive to a determined rate of change in said signal corresponding to a determined rate of decrease in the speed of rotation of said engine for applying a brake release signal to said brake, said determined rate of decrease of the speed of said engine corresponding to kickback of said engine.

4,656,986

DEVICE FOR MODIFYING OPERATION OF REGULATOR FOR SETTING FUEL QUANTITY IN AN INTERNAL COMBUSTION ENGINE OPERATING WITH SELF-IGNITION

Hermann Kull, Stuttgart; Wilfried Seatter, Ditzingen, and Wolf Wessel, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 9, 1984, Ser. No. 670,144
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343854
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—357 **15 Claims**



1. A device for regulating a fuel metering system of a diesel engine comprising:

sensing means including a gas pedal position sensor and a rotary speed sensor;

an end stage regulator for controlling a fuel quantity setting member;

means for producing in response to signals from said sensing means a nominal signal corresponding to a desired fuel quantity;

jolt damping means connected between said producing means and said end stage regulator, said jolt damping means including a guide regulator for adjusting said nominal signal and means for generating a modifying signal corresponding to low frequency fluctuations of rotary speed of the engine; means for combining said nominal signal and said modifying signal to produce a modified nominal signal, said combining means being directly coupled to said end stage regulator to counteract said fluctuations by a corresponding change in the adjusted fuel quantity; and

means for limiting the rise of said modifying signal to a preset value.

4,656,987

PRESSURIZED FUEL CARBURETOR FOR AN INTERNAL COMBUSTION ENGINE

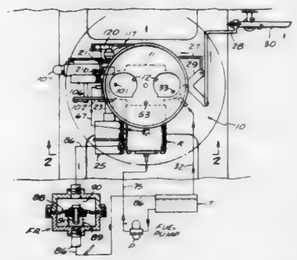
Michael A. Arpaia, 1540 Flower St., Glendale, Calif. 91209

Filed Aug. 6, 1984, Ser. No. 637,964
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—463 **22 Claims**

1. A pressurized fuel carburetor for an internal combustion engine comprising:

a main housing provided with an air intake passage equipped with a normally closed throttle valve connected to an accelerator and which intake passage is unobstructed by other movable air flow responsive means;

engine manifold pressure sensing means located entirely exteriorly of said intake passage but in communication therewith downstream from said throttle valve means; a single normally fully closed fuel metering valve in communication with said air intake passage downstream from said throttle valve and mechanically connected to a source of pressurized fuel and to said accelerator and to said pressure sensing means and responsive to subatmospheric pressure in the engine fuel intake manifold to open said single fuel valve and maintain a continuous flow of pressurized fuel into said air intake passage via said single fuel metering valve so long as said pressure sensig means senses subatmospheric pressure in said intake manifold and



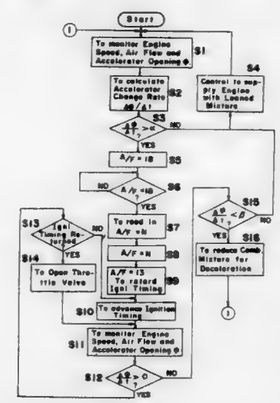
responsive to a change in the intake manifold pressure to adjust said single fuel metering valve automatically to vary fuel flow into said intake passage to accommodate changing engine power output demand and to fuly close said single fuel metering valve when said intake manifold pressure rises substantially to atmospheric pressure.

4,656,988

AUTOMOBILE FUEL SUPPLY CONTROL

Tsugio Fukube; Akinori Yamashita; Noboru Hashimoto, and Hiroyuki Yamamoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 1, 1986, Ser. No. 846,946
Claims priority, application Japan, Apr. 4, 1985, 60-71558
Int. Cl.⁴ F02M *51/00*
U.S. Cl. 123—489 **14 Claims**



1. A fuel supply control system for an internal combustion engine designed to adjust a combustible air-fuel mixture to be supplied to the engine according to engine operation condition from one of lower and higher A/F ratios than the critical A/F ratio at which the NO_x emission from the engine is maximum, to the other of the lower and higher A/F ratios, which system comprises:

a detecting means for detecting the timing at which the engine is switched from one engine operating condition to a different engine operating condition;

a fuel adjusting means for variably controlling the amount of fuel to be supplied to the engine;

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an A/F ratio setting means for setting one of the lower or higher A/F ratios than the critical A/F ratio to the other of the lower and higher A/F ratios than the critical A/F ratio at which the engine can produce substantially the same torque as that produced by the engine with the supply of a combustible mixture of said one of the lower and higher A/F ratios than the critical A/F ratio; and

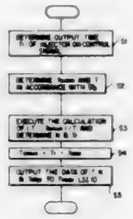
a control means operable in response to an output from the detecting means to control the fuel adjusting means in such a way that, at the time the engine is switched from one engine operating condition to a different engine operating condition, said one of the lower and higher A/F ratios than the critical A/F ratio can be rapidly adjusted to said other of the lower and higher A/F ratios than the critical A/F ratio set by the A/F ratio setting means and, thereafter, the A/F ratio can be progressively adjusted to a target A/F ratio.

4,656,989

SYSTEM FOR DRIVING SOLENOID VALVE FOR INTERNAL COMBUSTION ENGINE

Masahiko Yakuwa, Fujimi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1986, Ser. No. 846,686
Claims priority, application Japan, May 13, 1985, 60-99651
Int. Cl.[4] F02M *51/00*
U.S. Cl. 123—490 **10 Claims**



1. A system for driving a solenoid valve for an internal combustion engine, comprising:

(a) a Ti determining means for detecting the operating state of the engine at a predetermined time and determining an output time Ti of an injector ON control signal in accordance with the operating state of the engine;

(b) a T storage means for storing a period T of a solenoid valve holding pulse signal;

(c) a Tomin storage means for storing a shortest time Tomin required for lifting the solenoid valve;

(d) a calculating means coupled to said Ti determining means, said T storage means, and said Tomin storage means, for calculating a solenoid valve holding time which is equal to or shorter than the difference obtained by subtracting Tomin from Ti and which is an integer (N) multiple of T, and calculating an actual solenoid valve lifting time Tone from a difference between said Ti and said solenoid valve holding time;

(e) a solenoid valve lifting signal generating means coupled to said calculating means, for generating a solenoid valve lifting signal in accordance with Tone;

(f) a solenoid valve holding pulse generating means coupled to said calculating means, for generating N number of solenoid valve holding pulse signals at a predetermined duty ratio and at the period T in accordance with T and N; and

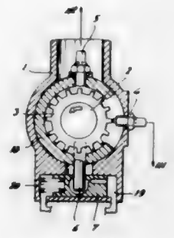
(g) a solenoid valve drive circuit coupled to said lifting signal generating means and said holding pulse generating means and controlled in accordance with said solenoid valve lifting signal and solenoid valve holding pulse signal.

4,656,990

METHOD AND APPARATUS FOR CONTROLLING FUEL INJECTION TIMING

Masahiko Miyaki, Ooba, and Hideya Fujisawa, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 20, 1984, Ser. No. 652,564
Claims priority, application Japan, Sep. 21, 1983, 58-175980
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—494 **2 Claims**



1. A method for controlling fuel injection timing in a fuel injection pump for use in an internal combustion engine by operating means for changing fuel injection timing according to signals from first and second rotational position detectors which respectively detect the rotational position of a toothed wheel coaxially mounted on a drive shaft of said pump, said first detector being mounted on a pump housing and said second detector being mounted on a member rotatably provided around said drive shaft, said rotatable member being rotated by means of said injection timing changing means for changing fuel injection timing, said method comprising the step of:

(a) receiving signals relating to the rotational position of said toothed wheel by means of said first and second rotational position detectors;

(b) computing a time interval T2 between said signal from said first rotational position detector and said signal from said second rotational position detector;

(c) receiving a signal relating to the rotational position of said toothed wheel by means of said first rotational position detector;

(d) computing a time interval T1 between two continuous and signals from said first rotational position detector;

(e) computing the ratio of time interval T2 to time interval T1;

(f) computing an advancing angle value indicative of an actual fuel injection timing by multiplying the ratio (T2/T1) by an angle between two consecutive teeth of said toothed wheel; and

(g) controlling said injection timing changing means so that the advancing angle approaches a reference advancing angle.

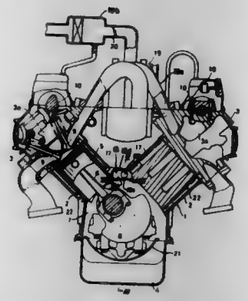
4,656,991

BREATHER DEVICE FOR INTERNAL COMBUSTION ENGINE

Koichi Fukuo, and Shinji Sasaki, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1985, Ser. No. 804,676
Claims priority, application Japan, Dec. 4, 1984, 59-255132; Dec. 4, 1984, 59-183231[U]
Int. Cl.[4] F02M *25/06*
U.S. Cl. 123—572 **14 Claims**

1. A breather device in a V-type engine for recycling blow-by gas from a crankcase to an intake system through a breather chamber, comprising said breather chamber formed integrally with an underside of a V-bank bottom wall of the engine, and passage means for conducting the blow-by gas from the crankcase through said breather chamber and then into valve chambers located thereabove for recycling into said intake system.

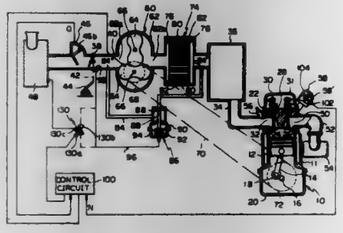


4,656,992

INTERNAL COMBUSTION ENGINE WITH BY-PASS CONTROL SYSTEM FOR SUPERCHARGER

Hidemi Oonaka; Toyokazu Baba; Yoshiaki Shibata; Kingo Horii, all of Susono; Yasushi Sato, Mishima, and Tomojiro Akiyama, Numazu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 3, 1985, Ser. No. 751,384
Claims priority, application Japan, Jul. 6, 1984, 59-138993
Int. Cl.[4] F02D *23/00*
U.S. Cl. 123—559 **9 Claims**



1. An internal combustion engine comprising:

an engine body;

an intake system connected to the engine body, the intake system having a throttle valve for controlling the amount of air introduced into the engine body;

an exhaust system connected to the engine body for reception of combustion product from the engine body;

a supercharger functioning as a mechanical pump arranged in the intake system at a position downstream of the throttle valve;

connecting means for kinematically connecting the supercharger to the engine for driving the supercharger;

a by-pass having a first end connected to the intake system at a position downstream of the supercharger and a second end connected to the intake system at a position between the throttle valve and the supercharger;

by-pass valve means including a valve member arranged in the by-pass for controlling an amount of air diverted into the by-pass; and

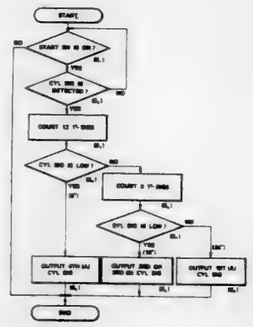
actuator means comprising a spring and a diaphragm located in a chamber and a link means, said spring biasing the valve member toward a closed position, said link means connecting the valve member with the diaphragm means, said valve member being arranged so that it is forced against the spring to open by positive pressure in the intake system downstream of the supercharger said actuator means further comprising a vacuum takeout means arranged in the intake system at a position downstream of the throttle valve and a vacuum conduit for connecting the vacuum takeout means with the chamber for said diaphragm of said actuator means.

4,656,993

CRANK ANGLE DETECTING SYSTEM FOR ENGINES

Haruo Yuzawa; Masafumi Nishiyama, both of Yokohama; Katsuyuki Nakamura, Yokosuka, and Kazuhiro Ishigami, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 8, 1985, Ser. No. 709,665
Claims priority, application Japan, Mar. 14, 1984, 59-37182
Int. Cl.[4] F02P *5/04, 1/00*
U.S. Cl. 123—643 **4 Claims**



1. A crank angle detecting system for a multicylinder engine having at least three cylinders classified as groups, which comprises:

(a) a disc connected for rotation with a crankshaft and formed with a first slit group having a large number of slits for detecting crankshaft angular positions and a second slit group having a small number of slits for detecting each predetermined piston stroke of each of said at least three cylinders, said slits of said second group having at least three widths which are different from each other;

(b) sensing means responsive to said slits on said disc for continuously detecting crankshaft angular positions by sensing said first group of slits and producing crank angle signals corresponding to the slits of said first group and for detecting each predetermined piston stroke of each engine cylinder by sensing said second group of slits and producing piston stroke signals representing said piston strokes, each piston stroke signal having a duration which corresponds to one of said different widths; and

(c) means for identifying said piston stroke signals based on the duration thereof by counting crank angle signals occurring during the duration of each piston stroke signal and classifying said piston stroke signals based on said counted crank angle signals.

4,656,994

BOWSTRING RELEASE DEVICE AND ADJUSTABLE BOW SIGHT

Charles C. Jenks, Rte. 1, Box 42, Norwood, N.Y. 13668

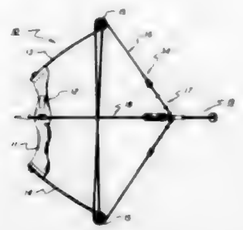
Filed Dec. 31, 1984, Ser. No. 687,944
Int. Cl.[4] F41C *19/00*; F41B *5/00*; F16B *39/12*; F41G *1/00*
U.S. Cl. 124—23 R **7 Claims**

1. Apparatus for drawing, aiming, and firing a bow having limbs and a cable secured thereto that includes

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a bowstring connected at both ends to the cable, said bowstring further including a spool for being slidably received in a nock mounted on an arrow,

a peepsight aligner having a swage secured to one end of the cable and an eyelet secured to one end of the bowstring, a threaded shank for mounting the eyelet in the swage and



locking means acting between the shank and the swage for holding the eyelet in an aligned position,

a hand-held release mechanism for releasably engaging the nock of the arrow to permit the bow to be drawn, and

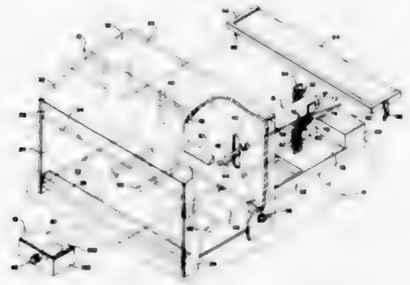
trigger means operable to disengage the nock and release the arrow.

4,656,995

SURGICAL APPARATUS FOR CONTOURING IMPLANTS

Gerald E. Merwin, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Filed May 24, 1985, Ser. No. 737,535
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—303 R **16 Claims**



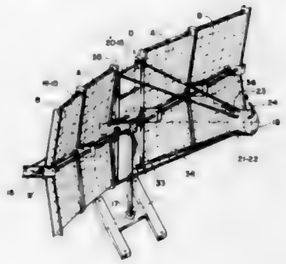
1. Surgical apparatus for use in contouring medical implants and the like comprising an enclosure adapted to be disposed on an operating theater work surface, the enclosure being sized to enable manipulation and contouring within its interior of a medical implant and having first and second openings, the first opening being formed to enable insertion of the implant into the interior of the enclosure and manipulation of the implant therein, the second opening being formed to enable contouring and irrigating tool means to be inserted into the interior for contouring the implant, the enclosure being formed of transparent material so as to enable illumination of the interior and to facilitate visual access thereto and being formed with a top surface having at least a portion inclined with respect to the first opening to facilitate visual access to the interior, the inclined portion having on an interior surface thereof a groove to promote beading of irrigation fluid so as to prevent the irrigation fluid from running down the interior surface and obstructing said visual access; stand means for adjustably positioning and fixing in a preselected location the contouring and irrigating tool means; means for immobilizing the stand means with respect to the work surface; and means for connecting the stand means and the enclosure in aligned relationship such that the contouring and irrigating tool means is inserted through the second opening into the interior of the enclosure.

4,656,996

SOLAR COLLECTOR

Naaman B. Aharon, P.O.B.1016, Beer Sheva 84110, Israel

Filed May 22, 1985, Ser. No. 736,780
Claims priority, application Israel, Jan. 13, 1984, 72098
Int. Cl.[4] F24J *2/12*
U.S. Cl. 126—438 **7 Claims**



1. A focusing solar collector comprising:

a. a central construction being the skeleton;

b. at least one pair of segments bearing reflecting surfaces, said segments being built in such a manner that they approximate a paraboloidal surface, said segments being arranged in a symmetrical manner on both sides of the vertical axis of the collector; each segment comprising:

a'. two winglike plates each being constituted by two side members being connected to and arranged in a symmetrical manner on both sides of a central beam having a front and a rear end, said winglike plates being distanced from each other and extending parallel to each other, the side members of one winglike plate being mounted on said central beam at a location closer to said front end than those of the opposite winglike plate;

b'. means for connecting one winglike plate to another;

c'. holes bored in the side members of each said winglike plates along an identical parabolic curve at identical locations thereon;

d'. a suitable number of reflecting surfaces;

e'. means for carrying each of said reflecting surfaces mounted in said holes;

f'. adjustment means on said means for carrying for each of said reflecting surfaces;

c. means for connecting said segments to said central construction;

d. means for connecting said segments to each other;

e. a stand for bearing said segments being provided with means for rotating the same in the vertical and/or horizontal direction for tracing the position of the sun; and

f. an absorber located at the focus of the collector and being mounted on said central construction.

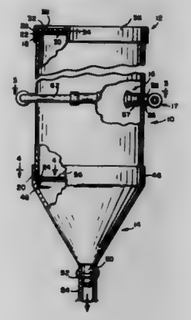
4,656,997

DEVICE FOR TREATING ANATOMICAL PARTS

Hector Morales-George, 1170 Southwest 102 Ave., Miami, Fla. 33174

Filed Jun. 13, 1984, Ser. No. 620,312
Int. Cl.[4] A61B *19/00*
U.S. Cl. 128—1 R **1 Claim**

1. A device for treating anatomical parts in isolation comprising means defining an open-ended cylindrical chamber, a flexible diaphragm at one open end containing a plurality of peripherally-spaced radial incisions intersecting at the geometric center of the diaphragm, a rigid ring at said one open end of the chamber corresponding in diameter to said one open end of the chamber containing in one face a recess dimensioned to receive the diaphragm, a cap dimensioned to fit over said one open end of the chamber to clamp said ring and diaphragm to the chamber, a drain applied to the opposite end of the chamber embodying means defining a perforate strainer which



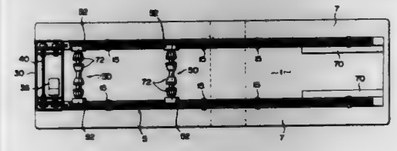
subtends said opposite open end of the chamber, said drain being of conical configuration, a coupling element connected to the apex of the drain for connecting the drain to a source of low pressure and a plurality of nozzle elements for introducing fluid into the chamber substantially midway between the top and bottom, said nozzles being spaced equally about circumferentially of the chamber, said nozzle elements embodying nipples externally of the chamber and a conductor disposed peripherally of the chamber to which the nipples are connected.

4,656,998

FOLDABLE MASSAGE BED WITH RECIPROCATING ROLLERS

Teruo Masuda, Tokyo, and Kichiro Yamaguchi, Kumagaya, both of Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1985, Ser. No. 782,708
Claims priority, application Japan, Oct. 5, 1984, 59-150925[U]; Oct. 9, 1984, 59-211660
Int. Cl.[4] A61H *11/02, 15/00*
U.S. Cl. 128—57 **16 Claims**



1. A massage apparatus comprising:

an elongate base plate foldable at least in two;

at least one carrier capable of running on the base plate, said carrier having at least one massage roller;

drive means for reciprocating the carrier in the longitudinal direction of the base plate, said drive means including at least one elongate member extending in the longitudinal direction of the base plate and coupled to the carrier and a drive source for driving the elongate member for reciprocation; and

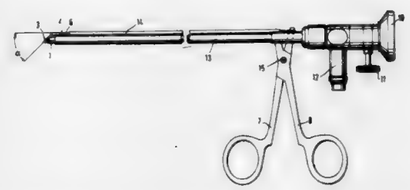
at least one guide member disposed on the base plate so as to extend in the longitudinal direction thereof and foldable together with the base plate, said guide member including passage means for guiding the drive of the elongate member thereby guiding the running carrier.

4,656,999

CONTACT ENDOSCOPE

Karl Storz, Aufdem Schildrain 39, 7200 Tuttlingen, Fed. Rep. of Germany

Continuation of Ser. No. 611,800, May 18, 1984, abandoned. This application Apr. 3, 1986, Ser. No. 848,328
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1984, 84100917
Int. Cl.[4] A61B *1/00*
U.S. Cl. 128—4 **6 Claims**



1. An endoscope for contact endoscopy, said endoscope having a proximal end and a distal end, and comprising an optical system with an optical axis, said optical system terminating with an exposed transparent surface located at or adjacent to said distal end, said transparent surface intended to be pressed directly into surface-to-surface contact with an area of tissue to be observed and to be severed at that area for biopsy purposes while still in surface-to-surface contact with said transparent surface, elongated structure having an axis of elongation and mounting said optical system by which the optical system can be physically manipulated, said axes being parallel; and means for severing a layer of tissue including said area while in contact with said surface comprising a slideway spaced from and straddling said transparent surface, and having an aperture therethrough which enables said area of said tissue to pass through said slideway to make said surface-to-surface contact with said transparent surface thereby to be observed, a strip-shaped cutter blade slidably mounted in said slideway adapted to be moved across said aperture whereby to sever a layer of said tissue including said area while in contact with said transparent surface and still in view therethrough while being cut off, and actuating means so as to move said blade in said slideway.

4,657,000

ADJUSTABLE SPLINT AND SECURING MEANS THEREFOR

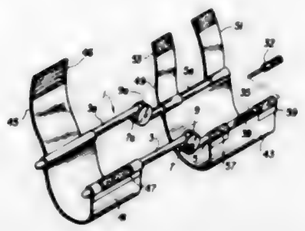
George R. Hepburn, Severna Park, Md., assignor to Dynasplints Systems, Inc., Baltimore, Md.

Division of Ser. No. 484,439, Apr. 13, 1983, Pat. No. 4,508,111, which is a continuation-in-part of Ser. No. 367,598, Apr. 12, 1982, Pat. No. 4,485,808, and a continuation-in-part of Ser. No. 286,161, Jul. 23, 1981, Pat. No. 4,397,308. This application Aug. 8, 1984, Ser. No. 638,766
Int. Cl.[4] A61F *3/00*
U.S. Cl. 128—88 **2 Claims**

1. An adjustable spring-loaded splint comprising a pair of lower struts and a pair of upper struts, each member of the pair of lower struts being pivotably connected to a member of the pair of upper struts, said members of each pair being spaced apart a distance to accomodate limb parts distal and proximal to the limb joint, at least one of said struts having at one end a pivotably mounted head portion defining a cam surface, an adjustable spring means mounted within the strut pivotably connected to said cam surface-containing strut and biased into engagement with said cam surface, for applying a quantifiable force tending to align or approximate the cam surface-containing strut with the adjustable spring means and means provided said pair of upper struts and said pair of lower struts for securing holding therebetween said distal and proximal parts of a

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limb, said securing means comprising an elongate cuff member having on the outside thereof at least one velcro loop section spaced apart from at least one velcro hook section, said loop and hook sections each being followed by a zone therebetween containing both velcro hook and velcro loop sections, said



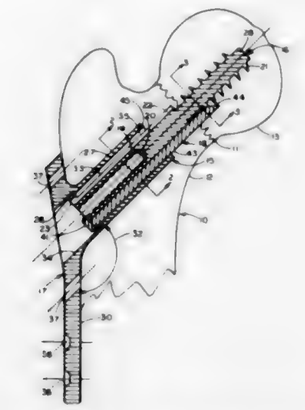
zone between the spaced apart velcro hook and loop sections being comprised of an intermediate area constituted of a velcro loop section or hook section identical to the preceding section, flanked on each side by areas having a velcro loop section or a velcro hook section identical to the section of velcro hooks or loops that follows.

4,657,001

ANTIROTATIONAL HIP SCREW

Irving E. Fixel, 111 N. 31st Ave., Hollywood, Fla. 33021

Filed Jul. 25, 1984, Ser. No. 634,205
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 YS **4 Claims**



1. An implantable hip screw adapted for internal fixation and compression of a fractured portion of the proximal femur comprising

plate and barrel means for attaching said hip screw to the lateral side of said femur, said plate and barrel means having a bore therethrough with said barrel being positioned within the femur,

screw means comprising an elongated screw for internally fixing the fractured portion of said femur, said screw being slidingly received within said bore of said plate and barrel means and extending out of said barrel across the fracture line and into the fractured portion of said femur with the threads of said screw being located within the fractured portion, said screw including a head and said barrel includes a counterbore with said screw head being in bearing contact with a bearing surface created by said counterbore,

compressing means for compressing said fractured portion ot said femur, said compressing means acting in conjunction with said screw means and said plate and barrel means, and

means for preventing rotation of said fractured portion relative to said femur and for preventing rotation of said screw means within said plate and barrel means and for allowing axial sliding of said screw means relative to said plate and barrel means comprising one or more axial grooves in said bore of said barrel, one or more axial grooves in the surface of said screw, said grooves in said barrel and said screw being aligned with each other and an elongated rod positioned within each of said one or more aligned grooves.

4,657,002

BONE IMPACTORS

Charles D. Ray, Deephaven, Minn., assignor to Charles D. Ray, Ltd., Wayzata, Minn.

Filed May 6, 1985, Ser. No. 731,024
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—92 V **20 Claims**



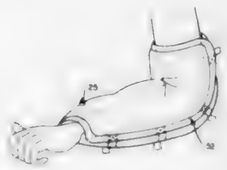
1. A bone impactor which is useful for compressing a bone excrescence to relieve pressure on a nerve and comprises a handle and a shank, across the tip of which extends a working surface that forms a symmetrical cylindrical concavity, the axis of which extends at an angle of 50°-80° to the direction of attack of the impactor, each edge of the working surface having a radius of at least 0.1 mm.

4,657,003

IMMOBILIZER DEVICE

H. Robert Wirtz, Westlake Village, Calif., assignor to Cramer Products, Inc., Gardner, Kans.

Continuation of Ser. No. 541,789, Oct. 3, 1983, abandoned. This application Jan. 24, 1986, Ser. No. 822,052
Int. Cl.⁴ A61F *5/04*
U.S. Cl. 128—133 **12 Claims**





1. A vacuum immobilizer device being reversibly convertible from a collapsed and easily manipulated condition wherein

said device may be roughly conformed to an object to be supported to a rigidified condition wherein said device maintains a substantially firm shape and is suitable for immobilizing the object to be supported, said device comprising:

(a) an air impervious lightweight pliant envelope having an interior and an exterior surface;

(b) a plurality of lightweight expanded polymer beads having exterior surfaces and diameters of generally greater than five millimeters, loosely filling a portion of the interior volume of said envelope;

(c) said envelope substantially being open internally so as to permit movement of said beads throughout said envelope and to permit said beads to accumulate in the areas of said envelope where support is required; said envelope interior surface being relatively low friction relative to said beads and said bead exterior surfaces being relatively slippery with respect to said envelope interior surface; and said envelope including a fabric support and being generally non-elastic;

(d) whereby when a vacuum is applied to said envelope interior so as to produce a partial vacuum within said envelope, said beads are slippery with respect to said envelope interior and said envelope fabric support tends to support said envelope and limit said envelope from being drawn tightly between adjacent beads such that said beads are generally movable within said envelope to allow easier adjustment of the device to conform to the object to be supported and to provide better patient comfort;

(e) detachable securement means coupled to said envelope for securing said envelope about the object to be supported; and

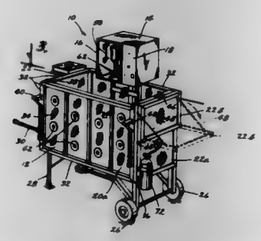
(f) valve means mounted on said envelope exterior surface and communicating with said envelope interior, whereby a vacuum source can be connected to said valve for reducing the air pressure inside said envelope, compressing said beads into contact with each other and pulling said envelope into contact with said beads and whereby air can be readmitted through said valve into said envelope interior to convert said device from said rigidified condition to said collapsed condition.

4,657,004

MOBILE LIVESTOCK INTENSIVE CARE UNIT

Robert T. Coffey, R.R. 1, Box 238A, Newton, Iowa 50208

Filed Aug. 29, 1986, Ser. No. 901,812
Int. Cl.⁴ A61D *7/00*
U.S. Cl. 128—134 **8 Claims**



1. A portable livestock intensive care unit, comprising:

a restraining unit for housing an animal undergoing treatment having two vertical sidewalls and two vertical endwalls, the walls spaced at right angles to each other and engaging each other and a floor, said floor engaging the bottom portion of said walls, said restraining unit including means for restraining movement of an animal when placed inside of said housing;

a pair of wheels mounted below the floor and parallel to each other, said wheels positioned at one end of the unit and generally defining the front of the unit;

at least one leg extending downward from the floor of the end of the restraining unit opposite said wheels and generally defining the rear of the unit;

one of the said walls between the front and rear of the unit being rotatably attached to the floor and releaseably attached to one of said end walls, and opening outwardly from the unit to a semi-horizontal position;

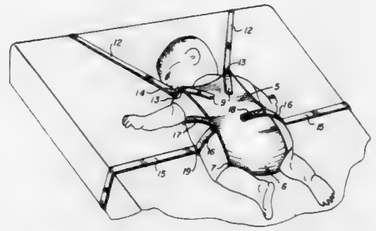
a control cabinet mounted to the restraining unit adjacent thereto and including a fluid/medication chamber and a control chamber; said fluid/medication chamber including means adapted to receive fluids and medications for and during treatment of the animal; a controllable heating means in the fluid/medication chamber for maintaining the fluid/medication chamber at a predetermined temperature; said control chamber adapted to be connected to a source of electrical energy and electrically connected to the heating means for controlling the heating means and further including means adapted to control and monitor said heating means and also add other controls and monitors for other components that may be used with the unit.

4,657,005

GER HARNESS

Shirley Williamson, S.R. 4 Box 210, Brightwood, Va. 22715

Filed Jan. 24, 1986, Ser. No. 821,971
Int. Cl.⁴ A61F *5/37*
U.S. Cl. 128—134 **6 Claims**



1. An infant's harness for positional treatment of an infant afflicted with gastroesophageal reflux comprising;

(i) an elongated body portion having a front side, a back side, and a bottom;

(ii) a pair of anti-roll straps attached to opposite side edges of said back side for preventing rotation of said elongated body portion;

(iii) a pair of waist encircling straps attached to opposite side edges of said back side for securing said elongated body portion around the waist of an infant,

(iv) means for releasably attaching said waist encircling straps to one another,

(v) a pair of anchor straps attached to the top edges of said back side for anchoring said elongated body portion to an inclined surface,

(vi) a pair of shoulder straps attached to the top edge of said front side for releasably securing said elongated body portion around the shoulders of the infant, and

(vii) adustable means for releasably attaching said shoulder straps to said anchor straps and to said front side, said adjustable means comprising apertured members connected to said anchor straps near where said anchor straps are attached to said back side, said membes each including an aperture of sufficient size for one of said shoulder straps to fit through, said adjustable means further comprising longiudinally spaced interengaging fastener mean on one face of said shoulder straps and on said front side, so that said shoulder straps may fit through said apertured members and said fastener means may interengage to attach said shoulder straps to said anchor straps and to said front side to provide a snug fit of said shoulder and anchor

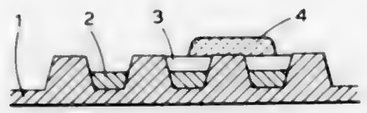
VOL 1077 ISS 2 AP 14 1987 UMI

straps around the shoulders of the infant thereby eliminating any space between the shoulder straps and the anchor straps.

4,657,006
SURGICAL DRESSING

David A. Rawlings, Stansted Mountfitchet, and William D. Potter, Bishops Stortford, both of United Kingdom, assignors to Smith and Nephew Associated Companies p.l.c., England

Continuation of Ser. No. 535,614, Sep. 26, 1983, abandoned. This application Jun. 13, 1986, Ser. No. 874,057
Claims priority, application United Kingdom, Oct. 2, 1982, 8228224; Dec. 22, 1982, 8236411; Jul. 26, 1983, 8320041
Int. Cl.[4] A61L *15/00*
U.S. Cl. 128—156 20 Claims



1. A moisture vapor permeable adhesive wound dressing which adheres to the skin but not to wounds which comprises an outer film and a body contacting film which outer film comprises a continuous film which has a moisture vapour permeability which is greater when in contact with water than when not in contact with water and which outer film is attached at least around its edges to the body contacting film so as to form a sealed pouch into which exudate may pass from an exuding wound, said body contacting film being substantially coextensive with the outer film and being interrupted in the area within the sealed pouch, and which body contacting film comprises a backing film and a continuous adhesive layer spread over the non-interrupted surface of the body contacting film remote from the outer film suitable for adhering the dressing to the skin but not to the wound, said dressing further having between the outer film and the non-adhesive side of the body contacting film a water transmitting film whereby when the dressing is placed on an exuding wound the wound exudate passes through the body contacting layer into the sealed pouch and contacts the outer film which has a high moisture vapour permeability when in contact with water and thus prevents the dressing from forming a blister when used on an exuding wound.

4,657,007
NEBULIZER

Benson Carlin, Princeton, N.J., and Edward H. Ransom, Ashland, Va., assignors to Whittaker General Medical Corporation, Richmond, Va.

Filed Jun. 28, 1982, Ser. No. 392,490
Int. Cl.[4] A61M *11/00*
U.S. Cl. 128—200.18 6 Claims

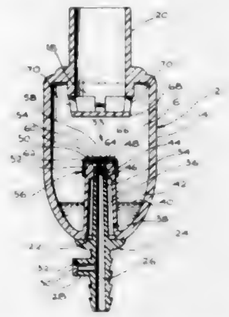
1. An improved nebulizer, said nebulizer comprising in combination:

A. A hollow generally elongated housing defining a central chamber containing a body of nebulizable liquid, said housing including a gas entry port adjacent the lower end thereof and a nebulized liquid exit port adjacent the upper end thereof;

B. a gas conduit having a central passageway connected to said gas entry port and extending below paid chamber, said gas conduit including a branch extending generally laterally of said conduit and defining a gas relief port;

C. seal means releasably sealing said gas relief port;

D. an elongated nozzle assembly connected to said gas entry port and extending up into said chamber, said assembly including an inner gas-containing tube coaxial with said gas conduit, an outer annular liquid-containing tube disposed around and over said gas-containing tube and defining a lateral passageway extending to said liquid body, the upper ends of said two tubes being flat and containing coaxial exit orifices of reduced size, the liquid of said outer tube contacting the gas of said inner tube below the upper end of said outer tube and a removable perforated cap adjustably slideably received over said outer tube and



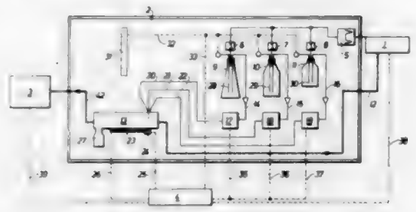
bearing a target spaced above and in line with said orifices, whereby a gas and liquid mixture exiting said orifices and impinging on said target is broken up into small adjustably sized droplets; and,

E. a diffuser disposed within said chamber adjacent said exit port to prevent direct flow of nebulized liquid out of said port.

4,657,008
ANESTHESIA AND/OR RESPIRATOR APPARATUS HAVING A MOISTENING AND/OR GASIFICATION CHAMBER

Sven M. Brodd ner, Upplands Vasby; Leif B. Hogman, Vallingby; Rune Nyman, Solna, and Lars Klintholm, Spanga, all of Sweden, assignors to Gambro Engstrom AB, Sweden

Filed Jun. 25, 1985, Ser. No. 748,542
Claims priority, application Sweden, Jun. 28, 1984, 8403447
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—203.27 25 Claims

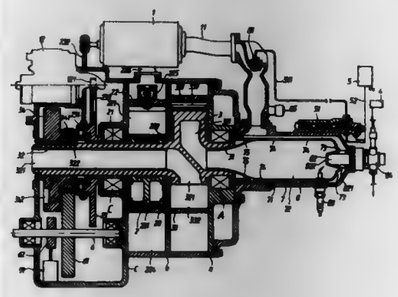


1. Apparatus for supplying a gas stream to a patient comprising a source of a propellant gas; storage means for storing a gasifiable liquid; pressure means in fluid communication with said source for maintianing said liquid within said storage means under a pressure provided by said propellant gas, said liquid being supplied from said storage means in response to the pressure of said propellant gas acting on said liquid; a gasification chamber including a liquid inlet for receiving said liquid supplied from said storage means by said propellant gas, a gas inlet for receiving said propellant gas from said source and a gas stream outlet, said gasification chamber gasifying said liquid in the presence of said propellant gas supplied through said gas inlet to provide a gas stream therefrom to be supplied through said gas stream outlet to a patient; and metering means arranged between said liquid inlet and said storage means for metering the quantity of said liquid being supplied by said pressure means for said storage means to said gasification chamber.

4,657,009
CLOSED PASSAGE TYPE EQUI-PRESSURE COMBUSTION ROTARY ENGINE

Sheng T. Zen, 5-3, Jin-An W. Rd., Jin-An Village, Long Tarn Shiang, Taur Yuan Shiann, Taiwan

Filed May 14, 1984, Ser. No. 609,852
Int. Cl.[4] F02G *3/00*
U.S. Cl. 123—204 2 Claims

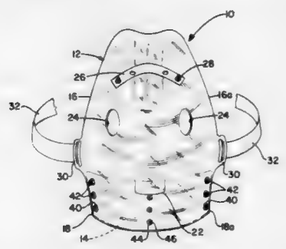


1. A rotary engine, comprising:
means for compressing fresh air;
an external pressure vessel;
an internal pressure vessel inside said external pressure vessel, said internal pressure vessel having walls enclosing a combustion chamber therein;
a fuel nozzle in said walls opening into said combustion chamber;
means for pumping fuel into said fuel nozzle;
means for guiding compressed air compressed by said compressing means into said internal pressure vessel;
means for spraying water into the compressed air guided by said guiding means whereby the compressed air guided into said internal pressure vessel carries the water therewith into said internal pressure vessel, said guiding means including means directing at least a portion of the compressed air and water carried therewith along said wall so as to cool said wall and be converted to compressed steam by heat in said wall and for directing the at least part of the compressed air and steam into said fuel nozzle so as to mix with the fuel pumped into said fuel nozzle to form a compressed air and steam/fuel mixture and be carried therein into said combustion chamber;
an igniter in said combustion chamber for igniting the fuel in the mixture to produce a high temperature, high pressure gas;
an output shaft; and
means for converting the pressure of the high pressure gas produced in said combustion chamber into rotative force applied to said output shaft, said converting means including a dynamic rotor cylinder, a dynamic rotor eccentrically rotatably mounted in said dynamic rotor cylinder, means for directing the high pressure gas produced in said combustion chamber into a high pressure space in said dynamic rotor cylinder so as to press against said dynamic rotor and rotate said dynamic rotor eccentrically in said dynamic rotor cylinder, said dynamic rotor being coupled to said output shaft so as to rotate said output shaft when said dynamic rotor rotates;
said converting means including a hollow shaft, said dynamic rotor being eccentrically fixed to said hollow shaft, said dynamic rotor cylinder having a cylindrical interior surface and having means for, together with said dynamic rotor, separating the space between said dynamic rotor and said cylindrical interior surface into said high pressure space and a low pressure space sealingly separated from said high pressure space;
said hollow shaft having a long hollow shaft portion having a porcelain head-insulating layer formed on the inner surface thereof and defining an exhaust passage on one side of said dynamic rotor, and a short hollow shaft portion defining an intake passage on the other side of said dynamic rotor;
said dynamic rotor having a hollow internal space and an inclined partition in said internal space separating said internal space into a first hollow rotor portion communicating with said high pressure space and the interior of said short hollow shaft portion, and a second hollow rotor portion communicating with said low pressure space and the interior of said long hollow shaft portion, said high pressure gas directing means including said interior of said short hollow shaft portion, said interior of said short hollow shaft portion communicating with said combustion chamber;
said compressing means comprising a compressor, a compressive rotor cylinder, a compressive rotor having a sleeve sleeved over said long hollow shaft portion so as to eccentrically mount said compressive rotor on said hollow shaft for eccentric rotation in said compressive rotor cylinder, means for drawing fresh air into said compressive rotor cylinder, means for rotatively decouplably coupling said starter motor and coupling said dynamic rotor, to said compressive rotor so as to compress the fresh air drawn into said compressive rotor cylinder by rotating said compressive rotor in said compressive rotor cylinder, and means for directing air compressed in said compressive rotor cylinder into said compressor for further compression;
said rotary engine further comprising a first side cover sealingly covering one side of said compressive rotor cylinder, and a second side cover sealingly covering one side of said dynamic rotor cylinder, said first side cover having a first flange and a first main bearing in said first flange rotatively supporting said sleeve and said long hollow shaft portion therein, said second side cover having a second flange and a second main bearing in said second flange rotatively supporting said short hollow shaft portion therein.

4,657,010
ADJUSTABLE FACE MASK

Stewart L. Wright, 115½ E. Pine St., Altadena, Calif. 91001

Filed Sep. 3, 1985, Ser. No. 772,031
Int. Cl.[4] A61M *16/00*; A62B *7/10*
U.S. Cl. 128—205.25 12 Claims



1. An adjustable mask for supplying a desired atmosphere to the wearer, said mask comprising
separate overlapping flexible upper and lower sections, said upper section having a lower portion in overlapping en-

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gagement with the upper portion of said lower section, said upper and lower sections being vertically adjustable with respect to each other and which together defined a peripheral edge adapted to cover the wearer's face and to form an enclosure therewith, one of said sections being inside the other in the area of overlap, the amount of overlap between said upper and lower sections being adjustable in accordance with the height of the wearer's face, means for transferring a gas to and from said enclosure, and

means for adjustably securing the two sections together in overlapping relationship, said means comprising,

gripping means carried by at least one of said sections in the portion that overlaps the other, said gripping means being capable of maintaining the two sections in a plurality of different positions relative to each other so that the mask can be made larger or smaller in accordance with the facial dimensions of the wearer.

4,657,011

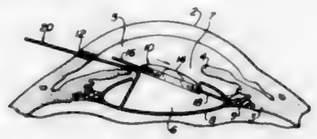
METHOD OF USING AN INTRAOCULAR LENS INSERTION GUIDE

Rodolfo Gaba, Simi Valley, Calif., assignor to Iolab Corporation, Covina, Calif.

Division of Ser. No. 656,387, Oct. 1, 1984. This application Jun. 16, 1986, Ser. No. 874,949

Int. Cl.[4] A61B *17/00*

U.S. Cl. 128—303 R **4 Claims**



1. A method of inserting an intraocular lens having an optic and a plurality of support haptics into the capsular bag in the posterior chamber of the eye comprising the steps of:

(a) inserting a lens guide having a body portion and a flap portion integrally connected by a resilient connecting portion said connecting portion permitting said flap portion to be folded against the body portion to facilitate insertion into the eye through an incision in the eye;

continuing insertion through said incision and through the pupil until said flap portion passes the superior side of the pupil and unfolds under the influence of the resilience in said connecting portion;

(b) withdrawing the body portion of said guide superiorly until said unfolded flap portion approaches the superior edge of the pupil;

(c) inserting the lens through the incision;

(d) placing the inferior haptic of said lens in the capsular bag;

(e) placing the optic of said lens into the capsular bag;

(f) inserting the superior loop of the lens past said connecting portion of said lens guide and letting said superior loop move along said flap portion into said bag; and

(g) removing the guide from the eye.

4,657,012

SURGICAL INSTRUMENT WITH INCORPORATED LIGHTING SYSTEM

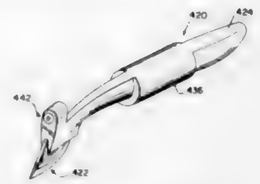
Kermit H. Burgin, R.R. #1, Box 334, Whitestown, Ind. 46075

Continuation of Ser. No. 552,323, Nov. 16, 1983, Pat. No. 4,542,741, which is a continuation of Ser. No. 284,506, Jul. 17, 1981, abandoned. This application Apr. 1, 1985, Ser. No. 718,505

Int. Cl.[4] A61B *17/32*

U.S. Cl. 128—303.1 **2 Claims**

1. A surgical instrument comprising a handle having a long axis, a scalpel blade molded into one end of the handle, the handle being contoured to fit the hand of the user, a battery pack molded into the handle, a light source molded in the handle directly above the blade, the light source being angled



downwardly relative to the long axis of the handle to direct light downwardly to illuminate a field around the scalpel blade.

4,657,013

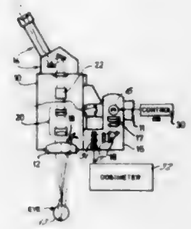
ILLUMINANCE DOSAGE DEVICE FOR AN OPERATION MICROSCOPE

Peter G. Hoerenz, Hartsdale, N.Y., and Gerhard Mueller, Aalen, Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Mar. 25, 1985, Ser. No. 715,408

Int. Cl.[4] A61B *17/36*

U.S. Cl. 128—303.1 **10 Claims**



1. In an operation microscope, comprising an objective and a viewing ocular at spaced locations along an optical-viewing path, and field-illumination means including a light source establishing an illuminating path via said objective to the viewing-path field of said objective, the improvement in which illumination-sampling means is positioned in said illuminating path, said sampling means including a detector producing an electrical-signal output responsive to a sampled fraction of illuminating flux at a location in the illuminating path, and field-dosage integrating means including a clock timer and connected for response to the output of said detector, said integrating means integrating detector output as a function of time of illumination on said illumination path, and said integrating means including display means for displaying the instantaneous integration value thereof.

4,657,014

LIQUID INTERFACE FIBEROPTIC COUPLER

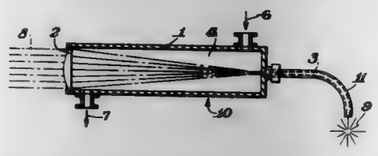
William Edelman, Seal Beach; Hamid R. Naghieh, Santa Ana, and Deanis Coastantinou, Irvine, all of Calif., assignors to Shiley, Inc., Irvine, Calif.

Filed Mar. 11, 1985, Ser. No. 710,184

Int. Cl.[4] A61B *17/36*

U.S. Cl. 128—303.1 **6 Claims**

1. A coupling device for conveying high energy electromagnetic radiation from an excimer laser source to an optical fiber to reduce degradation of the fiber, which comprises a sleeve means having a proximal end and a distal end for enclosing a liquid which is transparent to said radiation, the distal end of said sleeve means having attachment means for attaching said distal end to the input end of the optical fiber; and a focussing lens attached to the proximal end of said sleeve means, said



liquid having a refractive index which substantially matches the refractive index of the lens and of the optical fiber to enhance the energy transfer from the laser to the optical fiber and thereby reduce degradation of the fiber.

4,657,015

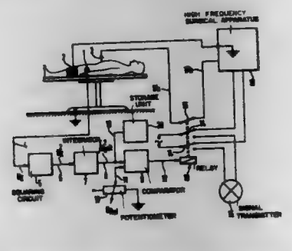
CONTROL DEVICE FOR A HIGH FREQUENCY SURGICAL APPARATUS

Werner Irnich, Birkenweg 60, D-6301 Wettenberg, Fed. Rep. of Germany

Filed Feb. 14, 1985, Ser. No. 701,576

Int. Cl.[4] A61B *17/39*

U.S. Cl. 128—303.13 **8 Claims**



1. A high frequency surgical apparatus including a neutral electrode adapted to be affixed to a patient's body, an active electrode adapted for surgical treatment of the patient's body, a high frequency current generator connected to the active and neutral electrodes, and a control circuit adapted to detect a high frequency voltage relative to the neutral electrode during treatment and to control the high frequency current generator in response thereto, comprising:

(a) a control electrode adapted to be affixed to the patient's body at a large distance from said active electrode;

(b) squaring means connected to said control electrode for squaring a voltage signal detected by said control electrode;

(c) integrating means for integrating over time the squared voltage signal;

(d) comparator means having a first input and a second input, said first input connected to an output of said integrating means;

(e) a variable reference voltage source connected to said second input, for providing a predetermined reference voltage to said second input; and

(f) switch means actuated by said comparator means for turning off said high frequency current generator, when the output voltage of said integrating means equals or exceeds said predetermined reference voltage.

4,657,016

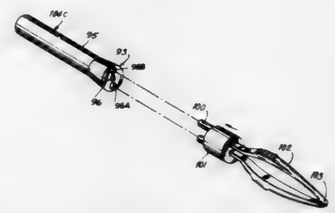
ELECTROSURGICAL HANDPIECE FOR BLADES, NEEDLES AND FORCEPS

Jon C. Garito, 264 Hedge La., Hewlett Harbor, N.Y. 11577, and Alan G. Ellman, 1 Auerbach La., Lawrence, N.Y. 11516

Continuation-in-part of Ser. No. 642,521, Aug. 20, 1984. This application Apr. 16, 1985, Ser. No. 723,690

Int. Cl.[4] A61B *17/36*

U.S. Cl. 128—303.13 **13 Claims**



1. A handpiece for use with a current-generating unit and adapted to receive a plurality of different electrosurgical electrodes, comprising:

(a) an elongated handle casing made of insulating material and having an axis;

(b) a terminal located inside said handle casing;

(c) an insulated lead extending from said handle casing and electrically connected to said terminal;

(d) an elongated collet made of metal and having an axis, said collet being electrically connected to said terminal and mechanically coupled to said handle casing such that said collet axis is substantially parallel to said handle casing, and said collet having a central bore formed along a portion of said collet axis and extending from an endface, a slit extending along a plane through said collet axis, and a pair of axial bores extending from said endface and diametrically arranged with respect to said central bore; and

(e) a sleeve made of insulating material and having a bore adapted to receive said collet,

wherein the surface at one end of the bore of said sleeve has an inner diameter less than the outer diameter of said collet at said endface, said surface of said one end of the bore engaging an outer circumferential surface of said collet in the vicinity of said endface at a first axial position of said collet relative to said handle casing.

4,657,017

ELECTROSURGICAL INSTRUMENT

Oleg A. Sorochenko, Kharkov, U.S.S.R., assignor to Nauchno-Issledovatelsky Institute Obshei I Neotlozhnoi Khirurgii, Kharkov, U.S.S.R.

PCT No. PCT/SU83/00043, § 371 Date Jul. 30, 1985, § 102(e) Date Jul. 30, 1985, PCT Pub. No. WO85/02336, PCT Pub. Date Jun. 6, 1985

PCT Filed Dec. 1, 1983, Ser. No. 769,622

Int. Cl.[4] A61B *17/36*

U.S. Cl. 128—303.14 **1 Claim**



1. An electrosurgical instrument, comprising a disk-shaped

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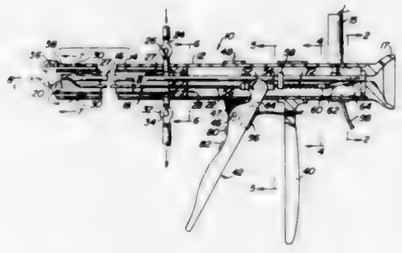
cutting assembly which has an outer periphery and which includes two ring-shaped electrodes isolated by a disk of an insulating material, a power actuator drivingly connected to the disk-shaped assembly to impart rotation to the disk-shaped assembly, and current leads electrically connected to respective ones of the ring-shaped electrodes, one of the electrodes and the insulating disk each having a segmental outer portion removed essentially along a chordal cut and a segmental outer portion of the other electrode standing over the segmental cut defining a knife having a cutting edge which extends along a circular arc the size of which is not in excess of 90 arc degrees of the outer periphery of the disk-shaped cutting assembly, so that the knife and an electrical field established across the ring-shaped electrodes cause cyclic mechanical cutting of tissue and electrocoagulation of cut tissue, respectively, as the disk-shaped cutting assembly is rotated by the power actuator.

4,657,018

AUTOMATIC/MANUAL RESECTOSCOPE

Said I. Hakky, 185 Dagenham Road, Rush Green, Romford, Essex RM7 OTL, England

Continuation-in-part of Ser. No. 524,814, Aug. 19, 1983, abandoned. This application Oct. 15, 1984, Ser. No. 660,594
Int. Cl.⁴ A61B *17/39*
U.S. Cl. 128—303.15 **17 Claims**



1. A resectoscope having means to view the operative field during the operation of said resectoscope, said resectoscope comprising a linearly movable cutter mounted for reciprocation within an outer sheath, characterized by a power source for automatically reciprocating the cutter when said source is energized to move said cutter through a pair of strokes, one stroke extending said cutter from said sheath and the other stroke retracting said cutter to said sheath, with only one of said strokes serving as a cutting stroke, control means actuatable by a user for energizing the power source, manually operable, hand actuatable lever means interconnected with the cutter and arranged to be moved by the user for effecting manual reciprocation of the cutter through at least one of said pair of strokes under control of the lever means independently of the operation of the power source, said hand actuatable lever means being decoupled from said power source so that said means is not moved during automatic reciprocation of said cutter.

4,657,019

ANASTOMOSIS DEVICES AND KITS

David J. Walsh, Mississauga; William M. Lougheed, Toronto; Fred Gentili, Toronto, and Mahmood Fazl, Toronto, all of Canada, assignors to Idea Research Investment Fund, Inc., Toronto, Canada

Filed Apr. 10, 1984, Ser. No. 598,900
Int. Cl.⁴ A61B *17/11*
U.S. Cl. 128—334 C **5 Claims**

1. An anastomosis kit for non-suture, non-adhesive connection of tubular tissue members to be anastomosed with overlapping intima to intima contact comprising:

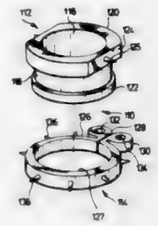
a plurality of anastomosis devices, each device comprising:

a tubular connection member of sterilizable, biocompatible material having an inner cylindrical surface and an outer cylindrical surface,

first and second, spaced apart clip-retaining means on said outer surface, adjacent first and second ends of said connection member, respectively,

first and second clip members, each clip member having a ring-shaped body part and opposed ends separable under spring tension for temporary enlargement of the ring-shaped body part each body part defining a substantially circular opening, the body parts of said first and second clip members being adapted to circumferentially surround said outer cylindrical surface,

said opposed ends having opposed handling elements to facilitate handling of said clip members and separation of said opposed ends for temporary enlargement of the ring-shaped body parts and application of said clip members about tubular tissue applied over said outer surface of said



tubular connection with essentially radial application of spring force on said tissue on release of force separating said opposed ends,

said devices being of different sizes in the diameter range of 0.75 mm to 7.5 mm,

a clip applicator comprising a pair of opposed legs connected at one end and having support means remote from said one end to supportingly engage the opposed handling elements of said clip members, said legs being operable under spring tension to separate said support means and the engaged opposed handling elements to enlarge said substantially circular opening; and

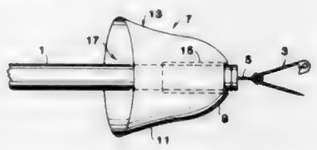
a holder for the connection members comprising a pair of opposed legs connected at one end and having opposed feet remote from said one end, adapted to engage the inner cylindrical surfaces of a connection member of said devices, said holder legs being operable under spring tension to forcefully urge said feet in opposite directions against opposed sides of the inner cylindrical surface of said connection member.

4,657,020

METHOD OF USING A FOREIGN OBJECT PROTECTOR HOOD

Lester J. Lifton, Camp Hill, Pa., assignor to Jayco Pharmaceuticals, Camp Hill, Pa.

Filed Jul. 10, 1985, Ser. No. 753,464
Int. Cl.⁴ A61B *17/24*
U.S. Cl. 128—356 **5 Claims**



1. A method of removing a foreign object from an internal

track of a body, such as a human body, without damaging the wall defining the track, the method comprising the steps of:

inserting a probe into the track in a first direction with an inverted bell-shaped, flexible shield fixed thereto, the bell-shaped shield having an opening facing opposite the first direction and having a peripheral edge engaging the wall of the track;

grasping the object with a tool extending from the probe;

inverting the bell-shaped shield to cover the now grasped object by moving the probe in a second longitudinal direction opposite the first direction with the peripheral edge of the shield in engagement with the wall of the track, and

removing the object from the track while preventing engagement of the object therewith by continuing longitudinal motion of the probe in the second direction.

4,657,021

TOUCH ENHANCING PAD

Donald A. Perry, and H. Earl Wright, both of Decatur, Ill., assignors to Earl Wright Company, Decatur, Ill.

Filed Apr. 24, 1985, Ser. No. 726,767
Int. Cl.⁴ A61B *19/00*
U.S. Cl. 128—630 **11 Claims**



1. An apparatus which enhances the sense of touch when placed between the fingertips of the user and the object being touched, the apparatus comprising:

(a) a sealed enclosure of a single piece of a pliable, elastic material having a wall thickness of about 0.005 to 0.020 inches, a modulus at 300 percent elongation of less than about 1,500 psi, a tensile strength of greater than about 3,000 psi, and an ultimate elongation of greater than about 400 percent so that the enclosure is resistant to tearing or puncturing and is able to conform to the contours of the object being touched and to readily transmit touch stimuli; and

(b) a liquid lubricant inside the enclosure which has sufficient lubricity to reduce the coefficient of kinetic friction between the interior walls of the enclosure by at least about 60 percent so that the bottom wall of the pad remains stationary over the object being touched while the top wall moves freely with the fingertips, a sufficiently-high resistance to mass transfer through the enclosure so that the amount of lubricant inside the enclosure remains substantially constant over time, substantial inertness towards the enclosure, and which is present in an amount sufficient to fully coat the interior of the enclosure, provided that the amount of the liquid lubricant permits the enclosure to be flattened with at least about 75 percent of the surface area of one wall in contact with the other wall with only a maximum layer of lubricant between the walls.

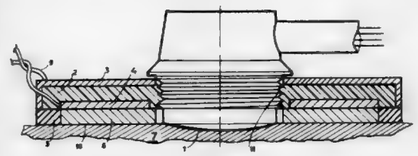
4,657,022

ELECTRODE ARRANGEMENT FOR TRANSDUCERS

Uwe Hölscher, Stockelsdorf, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany

Filed Nov. 4, 1985, Ser. No. 794,625
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1984, 3440401
Int. Cl.⁴ A61B *5/00, 5/04*
U.S. Cl. 128—635 **5 Claims**

1. An electrode arrangement for a transducer comprising, a measuring head having a measuring surface for measuring a first physiological quantity, a ring body connected to and surrounding said measuring head, said ring body having a first surface facing in the same direction as said measuring surface and a second surface spaced away from said first surface, an edge member made of insulating material connected to said first surface and adjacent an outer edge of said ring body, said edge member extending outwardly of said first surface, a first electrode connected to said first surface of said ring body, a second electrode connected to said second surface of said ring body and spaced away from said first electrode, said first electrode forming a measuring electrode and said second electrode forming a counter-electrode, and an adhesive layer of material which is electrically conductive disposed on said first electrode over said first surface of said ring body and extending to said edge member, said adhesive layer having an adhesion area facing the same direction as said measuring surface of said measuring head whereby said adhesion area and said measuring surface may contact skin from which physiological parameters are to be measured, said adhesion layer establishing electrical connection between the skin and said first electrode.

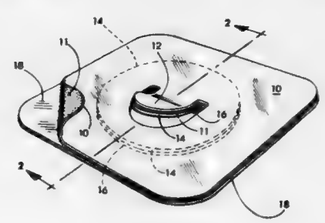


4,657,023

SELF-ADHERING ELECTRODE

Nicholas J. Kuhn, Edina, Minn., assignor to Lec Tec Corporation, Eden Prairie, Minn.

Filed Dec. 23, 1985, Ser. No. 812,125
Int. Cl.⁴ A61B *5/04*; A61N *1/04*
U.S. Cl. 128—640 **10 Claims**



1. An electrode device for establishing electrical contact with the skin comprising,

a flexible electrically conductive film layer, said film layer comprising a conductive sheet of predetermined area having a peripheral edge portion defining the perimeter of the film layer,

an electrically conductive flexible substrate attached to a portion of one side of said film layer,

a pressure sensitive adhesive coated film covering the other side of said conductive film layer and extending beyond the edge of said conductive film layer and said substrate to provide a surface for the pressure-sensitive adhesive coated film to adhere to the skin,

a portion of the conductive film layer has a U-shaped tab forming a cut therein within the confines of the perimeter of the conductive film so that the tab is surrounded on all sides by the peripheral edge of the conductive film layer and said tab is also substantially surrounded by said substrate and by an exposed portion of said pressure-sensitive coated film, the U-shaped cut in the conductive film layer corresponds with the sides and end of the tab whereby the cut defines the edge of the tab, the surface of the tab

adjacent the substrate being uncoated such that the tab provides an exposed electrically conductive surface for establishing electrical contact with the electrode, and

a removable protective liner overlying the surface of said pressure-sensitive adhesive coated film, said substrate, and said tab.

4,657,024

MEDICAL-SURGICAL CATHETER

Thomas A. Conoys, Mendham, N.J., assignor to Teleflex Incorporated, Limerick, Pa.

Continuation of Ser. No. 560,273, Dec. 12, 1983, abandoned, and a continuation of Ser. No. 383,980, Jun. 1, 1982, which is a continuation of Ser. No. 118,411, Feb. 4, 1980, abandoned. This application Aug. 19, 1985, Ser. No. 767,098

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 128—658 **18 Claims**



1. An improved flexible medical-surgical tube which has a circumferential exterior wall with a smooth surface for the entire wall, which wall defines an outer annular layer within the tube, which tube comprises a thermoplastic material, which material defines a longitudinal region integrally coextruded through the thermoplastic material, which region extends continuously throughout the entire length of the tube, which longitudinal thermoplastic region consists of a homogeneous blend of thermo-plastic and radiopaque material which is homogeneously dispersed throughout said thermoplastic longitudinal region, said region being completely embedded in the thermoplastic material throughout the entire length of the tube.

4,657,025

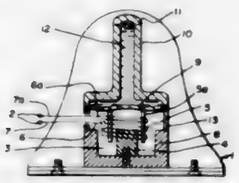
HEART AND BREATHING ALARM MONITOR

Carl Orlando, 47 Willow Rd., Tinton Falls, N.J. 07724

Continuation of Ser. No. 329,262, Dec. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 129,588, Mar. 12, 1980, abandoned. This application Mar. 25, 1985, Ser. No. 715,991

Int. Cl.⁴ A61B *5/02, 5/08*

U.S. Cl. 128—671 **3 Claims**



1. An alarm device for detecting abnormal heartbeat and respiration of a person resting on a mattress in a bed, comprising:

means for detecting vertical movements of the upper surface of the mattress at a location on said mattress remote from said person, said mattress movements being caused by movements of the person's body which result from the combined effect of the heartbeat and respiration of the person, said detecting means comprising

mechanical/electrical transducer means resting under the influence of gravity on and in contact with said mattress upper surface for converting movements of said upper surface caused by the heartbeat and respiration of said person to an electrical signal having a frequency dependent upon the heart rate of the person and an envelope dependent upon said respiration; and

means responsive to said electrical signal for indicating when said heart rate and/or said respiration is outside of a preselected "normal" range whereby the alarm can be placed on top of a mattress supporting a person to pick up vertical vibrations of the mattress due to the person's heart and respiratory motions, and issues an alarm if the person's heart and/or respiration rate is outside of a preselected range;

said transducer means including:

a case resting on said mattress upper surface,

a cup-shaped pole piece within said case with a permanent magnet centrally mounted within said pole piece, whereby a radial magnetic field is set up within an air gap between said permanent magnet and the inside of said pole piece,

a movable coil mounted on a form, said form being suspended within said air gap, one end of said form being attached to a flexible diaphragm, the other end of said form being unattached, and

an elongated sealed chamber extending above said diaphragm, said diaphragm forming the base of said chamber, said chamber being filled with a liquid of specific gravity greater than one.

4,657,026

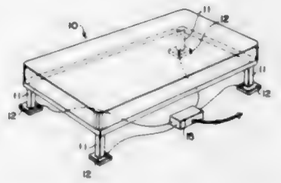
APNEA ALARM SYSTEMS

James R. Tagg, 510 Hays Ave., Pittsburgh, Pa. 15210

Filed Jul. 14, 1986, Ser. No. 885,176

Int. Cl.⁴ A61B *5/08*

U.S. Cl. 128—721 **5 Claims**



1. An apparatus for detecting the cessation of force from the acceleration of the mass of the uppermost side of the ribcage from breathing of a human in a crib or bed having a frame for support comprising sensor means on said frame which signals a change in vertical force on said frame as an electrical output signal, amplifier means receiving the electrical output signals from all sensor means and providing an output signal, variable gain means in the amplifier providing matching of the signal with the physical parameters of the patient, microprocessor means comparing successive said signals and providing an output signal if a change occurs and at least one of audible and physical output alarm means receiving the signal from the microprocessor to signal a change in state on the sensor means.

4,657,027

MEANS FOR TAKING BLOOD SAMPLES FOR THE DIAGNOSIS OF BODILY FUNCTIONS

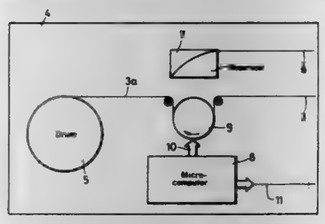
Otto Paulsen, Kiel, Fed. Rep. of Germany, assignor to Ferring Biotechnik GmbH, Kiel, Fed. Rep. of Germany

Filed Jan. 24, 1985, Ser. No. 694,337

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1984, 3403957

Int. Cl.⁴ A61B *5/14*

U.S. Cl. 128—762 **15 Claims**



1. A blood sampling means for automatically taking blood samples from a patient and separately storing the blood samples for subsequent analysis, said blood sampling means comprising a catheter for permanent connection to a patient throughout a preselected time period, a flexible pipe means connected to said catheter, a reservoir of inert separating fluid and/or anti-coagulent fluid adapted to be connected to said pipe means, a pump operably connected to said pipe means to withdraw blood samples from said patient through said catheter and fluid from said reservoir and to pump said blood samples and fluid through said pipe means, said pipe means including a flexible container tube for receiving and storing said blood samples and fluid, drum means for mounting said flexible container tube in a coil-configuration, valve means for connecting said fluid container tube alternately to said catheter and to said reservoir for flowing blood samples and portions of said fluid into said fluid container tube, and control means for switching said pump on and off and for operating said valve means to automatically take a plurality of blood samples from said patient at spaced intervals during said time period in accordance with a predetermined programme.

4,657,028

BLOOD SAMPLING DEVICE

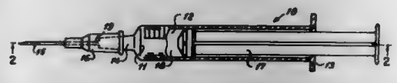
Russell Rick, North Ridgeville, Ohio, and Joergen Andersen, Herlev, Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

Continuation of Ser. No. 477,972, Mar. 23, 1983, abandoned. This application Apr. 19, 1985, Ser. No. 724,801

Claims priority, application Denmark, Feb. 21, 1983, 729/83

Int. Cl.⁴ A61B *5/00*

U.S. Cl. 128—765 **15 Claims**



1. A liquid sample comprising: a sample container for receiving a liquid sample in an inner space thereof and having a sample inlet passage and a venting passage each communicating with the inner space; valve means comprising valve surface parts, said surface parts being made from a liquid resistant material and at least partly defining said venting passage, said surface parts being mutually movable from an open position to a closed position in which the venting passage is closed by said valve surface parts and

a liquid reacting substance so disposed within the venting passage that it is exposed to the liquid sample flowing into the venting passage, said liquid reacting substance maintaining the valve surface parts in their open position when the liquid reacting substance is in a non-wetted condition and permitting the valve surface parts to move into their closed position when the liquid reacting substance is wetted by the liquid sample.

4,657,029

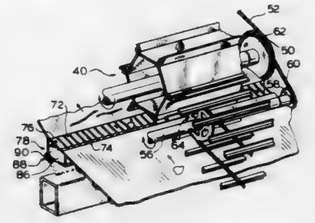
STONE TRAP FOR A COMBINE HARVESTER

William N. Helm, Oakville, and David G. Link, Cayuga, both of Canada, assignors to Massey Combines Corporation, Brantford, Canada

Filed Jan. 31, 1986, Ser. No. 824,494

Int. Cl.⁴ A01F *12/16*

U.S. Cl. 130—27 JT **4 Claims**



1. A stone trap for a combine harvester including a frame, ground engaging wheels supporting the frame, threshing and separating assemblies supported by the frame, an elevator assembly with an upper rear portion pivotally attached to the frame, an attaching assembly on the front portion of the elevator assembly, a harvesting table attached to the attaching assembly, and power means attached to the frame and the elevator assembly operable to pivot the elevator assembly relative to the frame about a generally horizontal axis, characterized by the elevator assembly including a pair of side walls, a top wall, a bottom wall forming a floor, a beater rotatably journaled on the side walls, a stone catcher trough in the floor under the beater and extending substantially from one side wall to the other side wall, spring fingers attached to the floor and extending across the upper portion of the stone catcher trough and drive means connected to the beater and operable to rotate the beater.

4,657,030

DEVICE FOR FILLING CIGARETTE PAPER TUBES

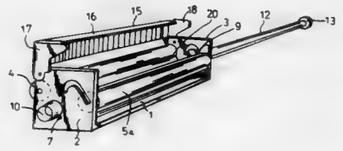
Wilfried J. Werding, Pully, Switzerland, assignor to Etablissements L. Lacroix Fils, Wilrijk, Belgium

Filed Dec. 5, 1984, Ser. No. 678,342

Claims priority, application Switzerland, Dec. 6, 1983, 4184/83

Int. Cl.⁴ A24C *5/40, 5/42, 5/44*

U.S. Cl. 131—70 **16 Claims**



1. A device for filling cigarette paper tubes comprising:

a base plate;

two side walls standing on said base plate, one of said walls

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being provided with a tube-like part projecting outwardly and fitting inside a cigarette paper tube to be filled, the other of said side walls being provided with an opening oppostie said tube-like part;

four rollers rotatingly mounted in said side walls;

a flexible hose partly surrounding at least one of said four rollers;

a push-rod extendable through said opening in said other side wall, said push rod having a length sufficient to push a tobacco roll outside said tube-like part;

two of said four rollers lying below the other two of said four rollers, one of said two upper rollers being movably mounted between the side walls between a position nearer the other of said two upper rollers and a position farther away from said other upper roller; and

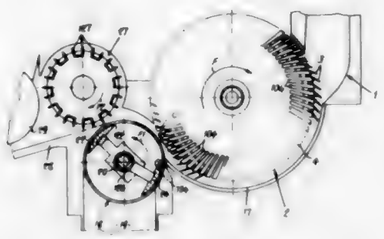
the flexible hose surrounding said four rollers to cause said four rollers to rotate the circumference of said hose such as to form a trough between the upper rollers to recieve tobacco for filling the cigarette paper tube when said movable upper roller lies in said farther-away position thereof, and to form a smaller recess between said four rollers when said movable upper roller lies in said smaller recess extending in the extension of said tube-like part.

4,657,031

CUT TOBACCO DISTRIBUTING DEVICE FOR CIGARETTE MAKING MACHINES

Massimo Sartoni, Bologna, Italy, assignor to Sasib S.p.A., Bologna, Italy

Filed Jul. 18, 1985, Ser. No. 756,699
Claims priority, application Italy, Jul. 27, 1984, 12572 A/84
Int. Cl.⁴ A24C *5/39*
U.S. Cl. 131—109.1 **12 Claims**



1. A cut-tobacco distributing device for cigarette-making machines, comprising:

a rotating detaching cylinder which is constructed as a pneumatic suction cylinder without points; and

a rotating pointed drum disposed adjacent the detaching cylinder to receive the cut tobacco and transfer it to the detaching cylinder, the pointed drum including

a plurality of points,

means mounting the points for movement between an extended position and a substantially retracted position, and

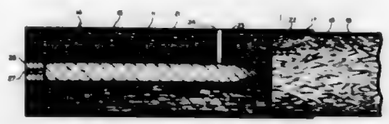
control means for extending and retracting the points, the control means temporarily moving the points to their substantially retracted position when the points are in the region of the detaching cylinder.

4,657,032

ASPIRATION DEVICE FOR A SMOKING ARTICLE

Robert T. Dorr, 1130 S. Avenida Conales, Tucson, Ariz. 85748, and David S. Alberts, 250 N. Indian House Rd., Tucson, Ariz. 85711

Filed Oct. 25, 1985, Ser. No. 791,533
Int. Cl.⁴ A24D *3/00, 3/04*
U.S. Cl. 131—336 **8 Claims**



1. An aspiration device for a smoking article such as a cigarette comprising:

an elongated housing having an axial bore, said housing having an upstream end adapted to be attached to said smoking article and a downstream exit end through which smoke drawn by a smoker exits;

a hollow elongated container for a liquid or particulate material within said housing, said container having a sealed upstream end, a downstream exit end which is substantially coplanar with exit end of said housing, and an inlet port adjacent its sealed end, said inlet port penetrating said housing and permitting air to be drawn into said container by said smoker;

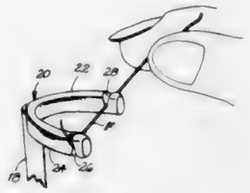
said exit end of said container having a restricted orifice through which said liquid or particulate material is discharged when suction is applied thereto by said smoker.

4,657,033

DENTAL FLOSS HOLDER

Paul V. Dalton, 7008 7th Avenue Blvd., NW., Bradenton, Fla. 33529

Filed Jun. 2, 1986, Ser. No. 869,373
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—91 **8 Claims**



1. A dental floss holder comprising:

an elongated handle and an integral wishbone-shaped portion disposed at one end of said handle;

said handle having a gripping portion and a necked down portion;

said wishbone portion having a pair of opposing symetrically and divergently extending prongs forwardly disposed from the end of said necked down portion at an acute angle of greater than ninety degrees to the axis of said handle;

said pair of prongs shaped to form a generally wishbone configuration adapted to straddle the width and height of the user's teeth;

each said prong having a groove adjacent the distal end of, and transverse to, each said prong;

said grooves shaped to lockably receive at least one wrap of dental floss around said prong and into said groove;

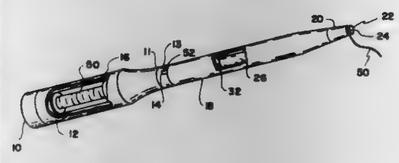
the bottom of said grooves and said grooves are disposed in tranverse relationship one to another and spaced from said handle axis such that the segment of lockably wrapped dental floss there between is disposed generally transversely between said prongs.

4,657,034

DENTAL FLOSS DISPENSER

Philip A. Koski, 7588 Groveland Rd., Minneapolis, Minn. 55432

Filed Oct. 17, 1986, Ser. No. 920,217
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—92 R **8 Claims**



1. A dental floss dispenser comprising:

A. a container having first and second ends adapted to hold a reel of dental floss;

B. a barrel including a barrel tip;

C. a tube having first and second ends, the tube being inserted in the barrel and having an interior diameter large enough such that a line of dental floss could be fed through the tube and further having a flared end cap at its second end extending beyond the barrel tip and a floss exit hole located between the flared end cap and the first end of the tube; and

D. means for twisting open and locking the floss comprising a female connector having first and second ends wherein the first end is rigidly attached to the barrel and the second end forms a cylinder which has a threaded interior, a male connector having first and second ends wherein its first end is threaded and adapted to mate with the second end of the female connector and its second end has a hole and is attached to the first end of the tube, and wherein the twist-and-lock means additionally comprises a sleeve which is rotatably clamped to the second end of the female connector and partially encases the female connector, wherein the sleeve is of a sufficient interior diameter to allow the male connector to freely reciprocate within the sleeve, and wherein the sleeve is rigidly connected to the interior wall of the container such that a twist of the container in a first direction in relation to the barrel will allow the line of floss to be pulled out through the floss exit hole and a twist of the container in a second direction will lock the floss in place, pinching it between the flared end cap and the barrel tip.

4,657,035

DEVICE FOR SEPARATING SINGLE COINS

Gert Zimmermann, Berlin, Fed. Rep. of Germany, assignor to F. Zimmermann & Co., Fed. Rep. of Germany

Filed Mar. 4, 1985, Ser. No. 707,604
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1984, 3408514
Int. Cl.⁴ G07D *1/00*
U.S. Cl. 133—5 R **12 Claims**

1. A device for separating coins singly from a collection of coins including coins having a thickest thickness and coins having a thinnest thickness comprising:

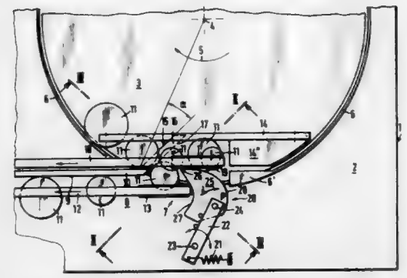
a coin disc having a top surface and an outer circumference and being rotatable in a coin sorting direction,

collar means associated with said disc for confining coins to said top surface said collar means having an exit for releasing coins from said top surface over said outer circumference,

guideway means defining a substantially horizontal guideway extending substantially tangentially to said outer circumference and having an entrance for receiving coins from said exit from said collar means,

first conveyor means associated with said guideway means for conveying coins from said entrance along said guideway,

a first coin stripping arm disposed above said top surface near said exit of said collar means, said first coin stripping arm having a lower edge spaced above said top surface by slightly more than the thickness of said thickest coins for passing coins having at most said thickest thickness under said lower edge with rotation of said coin disc,



a second coin stripping arm disposed over said top surface adjacent said exit and between said first coin stripping arm and said entrance of said guideway, said second coin stripping arm having a thin guide finger which is at most as thick as the thickness of said thinnest coins, said thin guide finger extending directly above said coin disc and about radially with respect to said coin disc, said thin guide finger being disposed just above said top surface for guiding coins on said top surface into said entrance of said guideway, and

second conveyor means associated with said second coin stripping arm and arranged for conveying away from said entrance and back onto said top surface any overlying coins disposed on a coin on said top surface which is being guided by said thin guide finger into said entrance of said guideway.

4,657,036

COMBINATION WATER INLET, VENT STACK, BLOWER AND BLOWER HOUSING ASSEMBLY FOR AN AUTOMATIC DISHWASHER

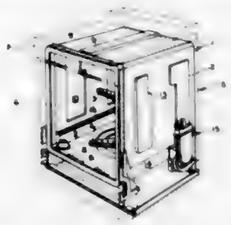
William H. Yake, Connersville, Ind., assignor to Design & Manufacturing Corporation, Connersville, Ind.

Filed Dec. 12, 1983, Ser. No. 560,756
Int. Cl.⁴ B08B *3/02*
U.S. Cl. 134—95 **22 Claims**

2. A water inlet, air vent, blower and blower housing combined assembly for use with a vat of an automatic dishwasher, said combined assembly comprising a water inlet nozzle, a vent stack, a blower housing, duct means, a motor and a fan, said water inlet nozzle having an inlet end and a discharge end, said vent stack comprising an open top chamber having front and rear sides, ends and a bottom, a lateral conduit extending from said front side adjacent said bottom, said conduit having a free end, means to mount said conduit free end in sealed relationship about an opening in said vat, said blower housing being located beneath said vent stack and having an inlet and an outlet, said duct means being located along side said vent stack, the lower end of said duct means being connected to one of said blower housing inlet and outlet, the upper end of said duct

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means being connected to and enclosing said open upper end of said vent stack, means to mount said motor in association with said blower housing, said fan being mounted in association with said blower housing and being operatively connected to



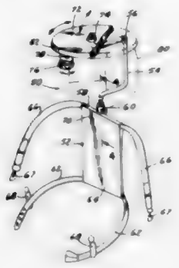
said motor, and means to mount said water inlet nozzle above said vent stack with said discharge end thereof extending through an opening in said upper end of said duct means and downwardly into said vent stack chamber.

4,657,037

LABORER SUN PROTECTOR

Humberto Garrido, and George Spector, both of 233 Broadway, Rm. 3615, New York, N.Y. 10007

Filed Apr. 8, 1985, Ser. No. 721,178
Int. Cl.⁴ E04H *15/04;* **A45B** *11/00, 11/02*
U.S. Cl. 135—90 **2 Claims**



1. A sun protector for a person which comprises:

(a) a stretch material back support plate having an upper support sleeve adapted to adjustably receive a bracket;

(b) a vertical C-shaped support bracket having a pivotable joint, said support bracket mounted adjustably on said sleeve;

(c) first means for securing lower portion of said back support plate to waist of said person;

(d) second means for securing upper portion of said back support plate to back of said person said second means comprising straps integral with said stretch material back support plate;

(e) a cover disc rotatably mounted to top of said vertical C-shaped support bracket in a horizontal position above head of said person whereby said cover disc can be rotated and adjusted out of said horizontal position by said pivotable joint of said vertical C-shaped support bracket;

(f) a fan adjustably affixed to underside of said cover disc for cooling said person; and

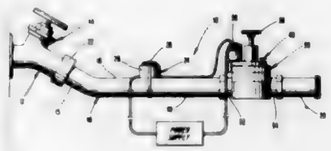
(g) a piece of flexible material affixed to a portion of the circumference of said cover disc so that said material will hang down to block the sun's rays when said cover disc is manually rotated and adjusted to a proper position.

4,657,038

APPARATUS FOR PREVENTING WATER PIPE FREEZE-UP

Kevin D. Lyons, Rte. 2, Box 215 Alachua Way, Alachua, Fla. 32615

Filed Jun. 9, 1986, Ser. No. 871,821
Int. Cl.⁴ E03B *7/12;* **F16K** *31/70, 31/02*
U.S. Cl. 137—62 **7 Claims**



1. An automatic liquid flow control unit adapted to be attached to a liquid line to enable liquid to trickle therethrough in order to avoid liquid freeze-up, said unit comprising:

a rigid conduit means having an inlet including threaded fastening means for attaching said inlet to said liquid line, an electrical conduit,

a solenoid-actuated pilot valve mounted to said conduit means downstream of said inlet and being in a normally closed state to prevent the passage of liquid therethrough, said valve including an electric solenoid connected to said electric circuit to be actuable to open said valve to a predetermined trickling mode wherein liquid trickles through said conduit means, and

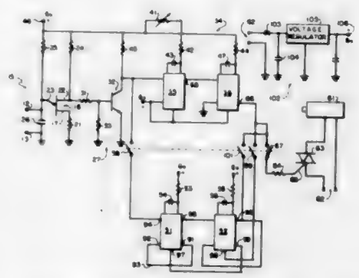
temperature sensitive switch means mounted against an outer surface of said conduit upstream of said valve and downstream of said fastening means and arranged for sensing the temperature of said outer surface and being electrically connected to said electrical conduit and said solenoid for actuating said solenoid to open said valve to said liquid-trickling mode in response to the sensed temperature approaching the freezing temperature of the liquid, said valve including a manual bleed valve means for actuating said pilot valve independently of said temperature sensitive switch means to establish a flow rate greater than said trickling mode.

4,657,039

MOISTURE SENSOR

Richard L. Bireley, San Diego, and Rumult Iltis, La Jolla, both of Calif., assignors to Ranya L. Alexander, San Diego, Calif.

Filed Aug. 30, 1984, Ser. No. 646,641
Int. Cl.⁴ A01G *25/16*
U.S. Cl. 137—78.3 **16 Claims**



1. A moisture sensor for detecting percentage moisture in a substance, said sensor being adapted to be coupled to indication means and comprising:

a variable frequency oscillator having a pulsed output;

plate capacitance means in said oscillator, the capacitance value thereof being responsive to the percentage of moisture between the plates of said capacitance means, the frequency of said oscillator being linearly related to the capacitance value of said capacitance means;

timing means coupled to said oscillator output, said timing means having a set point, the output of said timing means depending on the value of said set point and being adapted to be coupled to the indication means, said timing means comprising:

a first timing device having a predetermined first time-out period and comprising a retriggerable, monostable multivibrator, the output of which is constant when the period of the pulses from said oscillator is shorter than said first time-out period; and

a second timing device having a predetermined second time-out period substantially longer than said first time-out period, said second timing device comprising a retriggerable, monostable multivibrator adapted to provide an enable signal to the indicating means when the period of the pulses from said oscillator is shorter than the time-out period of said first timing device;

the output of said first timing device being pulsed when the period of the pulses from said oscillator is longer than said first time-out period, whereby said second timing device is adapted to provide a constant disable signal to the indication means; and

means for varying the value of said set point, said set point varying means being connected to said first timing means so as to vary said first time-out period;

said oscillator output being applied to said first timing device;

said second timing device being coupled to the output of said first timing device and being adapted to be coupled to the indication means;

whereby the moisture content at which said timing means is adapted to trigger the indication means is dependent on the value of said set point;

whereby when the moisture percentage is above a value corresponding to the value of said set point, the output of said second timing device is adapted to trigger the indication means to indicate a high level of moisture in the substance; and

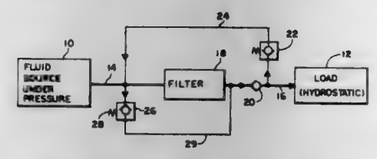
when the moisture percentage is below a value corresponding to the value of said set point, the output of said second timing device is adapted to trigger the indication means to indicate a low level of moisture in the substance.

4,657,040

BYPASS REVERSE FLOW VALVE

Jorge Torres, Newbury Park, Calif., assignor to HR Textron Inc., Valencia, Calif.

Filed Nov. 25, 1985, Ser. No. 801,540
Int. Cl.⁴ F16K *17/18;* **B01D** *35/14*
U.S. Cl. 137—110 **8 Claims**



1. In a filter assembly having a housing including a fluid inlet and outlet, a tubular filter element seated within said housing for filtering fluid under pressure flowing from said inlet to said outlet, the improvement for providing bypass and reverse flow capability through flow paths other than said filter element comprising:

ring valve means including first and second ring members telescopically received one within the other and having first and second surfaces and an opening disposed coaxially with said filter element and including fluid sealing means, the first surface being exposed to fluid under pressure before filtering thereof and the second surface being exposed to said fluid after filtering thereof;

spring means biasing said ring members in opposite directions and sealing means into sealing engagement during normal operation of said filter assembly;

said sealing means opening against said spring bias responsive to said filter element becoming plugged and generating a first differential pressure thereacross which is applied across said first and second surfaces to allow unfiltered fluid to flow from said inlet to said outlet without passing through sasid filter element; and

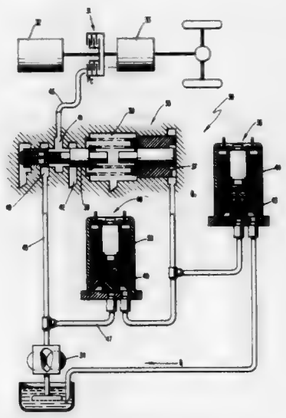
reverse flow check valve means disposed to close said opening to prevent fluid flow from said outlet to said inlet through said filter element, said check valve means, responsive to said fluid flow from said outlet toward said inlet generating a second differential pressure, opening said sealing means to allow fluid to flow freely from said outlet to said inlet, said second differential pressure being less than said first differential pressure.

4,657,041

OIL PRESSURE CONTROL APPARATUS

Tsutomu Mitsui, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 15, 1985, Ser. No. 765,928
Claims priority, application Japan, Aug. 31, 1984, 59-180738
Int. Cl.⁴ G05D *16/20*
U.S. Cl. 137—116.3 **10 Claims**



1. A clutch control apparatus comprising:

a clutch portion;

an oil pressure pump;

first passage means for communicating said oil pressure pump with said clutch portion;

pressure regulating valve means for controlling oil pressure in said first passage means, said pressure regulating valve means having a back pressure chamber;

second passage means for communicating said back pressure chamber with said oil pressure pump;

drain valve means for selectively draining said chamber, said drain valve means in communication with said second passage means;

supply valve means for controlling a pressure of said back

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pressure chamber, said supply valve means at a location along said second passage means; and

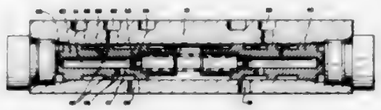
control means for inversely operating said drain valve means and supply valve means during all operating conditions of said clutch control apparatus.

4,657,042

PRESSURE MODULATION DEVICE FOR HYDRAULIC SYSTEMS

Thomas F. Lewis, Erie, Pa., assignor to Snap-Tite, Inc., Union City, Pa.

Filed Apr. 7, 1986, Ser. No. 849,003
Int. Cl.⁴ F16K *31/12*
U.S. Cl. 137—505.13 **7 Claims**



1. Apparatus for modulating pressure delivered from a pressure source to a load in a hydraulic system, comprising

a valve body having a generally cylindrical bore therein and having, opening into said bore, a pressure port communicating with said pressure source and a load port communicating with said load;

a spring; and

a generally cylindrical valve spool slidingly mounted in said bore and adapted to be urged in a first direction by said spring, toward a first position;

said spool having an interior chamber and having a first and a second orifice on a first and second end, respectively, of said spool, communicating between said chamber and the exterior of said spool, said orifices having relative sizes such that when said interior chamber is at a higher pressure than the exterior of said spool, a pressure difference between said ends of said spool urges said spool in a second direction in opposition to said spring; and toward a second position;

said spool having a land on its exterior outside said interior chamber and between said ends of said spool, having first port means communicating between said interior chamber and said spool exterior between said land and said first end of said spool, and having second port means communicating between said interior chamber and said spool exterior between said land and said second end of said spool.

4,657,043

OIL PRESSURE REGULATING VALVE

Herbert Ampferer, Bietigheim-Bissingen, and Robert Binder, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Dr. Ing. H.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 27, 1985, Ser. No. 802,433
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1984, 3443518
Int. Cl.⁴ F16K *15/02, 17/04*
U.S. Cl. 137—543.19 **10 Claims**

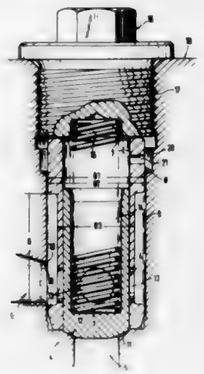
1. A pressure relief valve for a lubrication system of an internal-combustion engine, comprising:

a housing having a generally cylindrical bore therein and having a tapered surface formed within the bore to define a valve seat on the housing;

a valve body disposed within the bore, said valve body being axially movable within the bore and having a sealing surface thereon;

spring means for biasing the sealing surface of the valve body against the valve seat on the housing; and

guide means, non-fixedly arranged within the bore and disposed between said housing and said valve body, for guiding the axial movement of said valve body and for allowing the sealing surface of the valve body to sealingly mate with the valve seat in the presence of tolerances



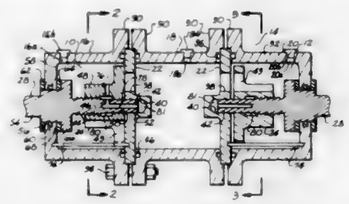
which would otherwise prevent mating of the sealing surface and valve seat on the housing when the valve is closed.

4,657,044

DUAL MOTION VALVE WITH SINGLE MOTION INPUT

Robert R. Belew, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 3, 1985, Ser. No. 751,691
Int. Cl.⁴ F16K *3/02*
U.S. Cl. 137—606 **13 Claims**



1. A valve structure for controlling fluid flow, comprising:

a longitudinally extending valve housing having a cylindrical bore at one end;

a valve assembly carried within said valve housing, including;

(i) a stationary valve plate being substantially perpendicular to said valve housing having a predetermined number of stationary valve plate ports spaced about said stationary valve plate;

(ii) a rotary valve plate being substantially parallel to said stationary valve plate having a predetermined number of rotary plate valve ports;

(iii) a longitudinally extending threaded spindle rotatably connected at one end to said rotary valve plate for selective both with and relative to said rotary valve plate, said spindle being carried at its other end for substantially axially-fixed rotation in said cylindrical bore of said valve housing;

(iv) a longitudinally extending stop pin carried substantially perpendicular to and for engagement with said rotary valve plate for preventing said rotary valve plate

from rotating a complete revolution upon rotation of said spindle;

said spindle providing upon its rotation, axial and limited rotational movement of said rotary valve plate relative to said stationary valve plate while maintaining said rotary valve plate substantially parallel to said stationary valve plate; and

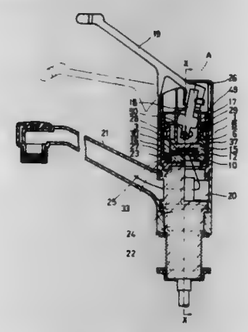
said spindle selectively providing upon rotation, alignment between said rotary valve plate ports and said stationary valve plate ports, to thereby selectively provide an open fluid passage within said valve housing extending through both said rotary valve plate and said stationary valve plate.

4,657,045

NOISE-PREVENTING STRUCTURE FOR WATER MIXING COCKS

Yoshiaki Kitamura, Yamagata, Japan, assignor to Kitamuragokin Ind. Co., Ltd., Gifu, Japan

Filed Jan. 28, 1985, Ser. No. 695,244
Int. Cl.⁴ F16K *11/06*
U.S. Cl. 137—625.4 **2 Claims**



1. A water mixing cock having a noise-preventing structure, comprising:

a valve case;

a fixed plate mounted in said valve case, said fixed plate having a hot water passage and a cold water passage therethrough;

a movable plate valve having a cut-off surface disposed in opposition to and slidable with respect to the fixed plate;

a hollow chamber being formed in the movable plate valve and having an inlet portion for selectively interconnecting said hot water passage, said cold water passage or both passages with said hollow chamber;

a sound arresting member disposed in the inlet portion of the hollow chamber;

valve operating means, arranged in contact with the fixed plate and the movable plate valve, for moving the movable plate valve to allow passage of hot water, cold water, or mixed hot and cold water through said inlet portion into the hollow chamber;

a discharge water passage arranged in communication with the hollow chamber; and

a variable escape groove means, cut into the cut-off surface of the movable plate valve, for communicating the hollow chamber and the cold water passage in the fixed plate with each other when the inlet portion of the hollow chamber is in fluid communication with only the hot water passage in the fixed plate;

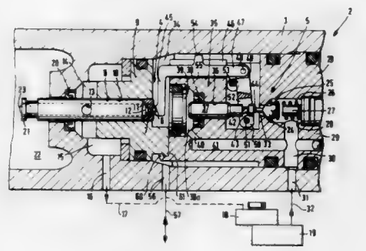
whereby noise occurring when the movable plate valve is moved by the valve operating means is minimized.

4,657,046

BRAKE VALVE

Heinz Leiber, Oberriexingen, and Robert Mergenthaler, Markgröningen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 13, 1986, Ser. No. 818,445
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1985, 3509980
Int. Cl.⁴ F16K *11/14*; B60T *15/06*
U.S. Cl. 137—627.5 **21 Claims**



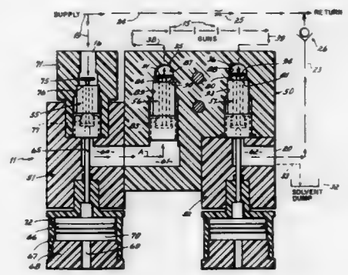
1. A brake valve including a housing for connection to a pressure supply apparatus, a return flow container and at least one pressure receiver for operating vehicle brakes, comprising a first valve which is normally open in a non-braking position and a second valve which is normally closed by means of a closing spring in a non-braking position, said second valve is embodied as a seat valve, a fluid pressure passage which connects said second valve to the pressure supply apparatus, a cylinder in said housing which can be connected to the pressure supply apparatus, a compensation piston in said cylinder, a tappet-like valve opening element which presses against the second valve in the opening direction, and a pivotable lever associated with said compensation piston for opening said second valve to a fluid pressure for operation of the brakes.

4,657,047

MODULAR COLOR CHANGERS WITH IMPROVED VALVES AND MANIFOLDS

James A. Kolibas, Broadview Heights, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Dec. 10, 1984, Ser. No. 680,351
The portion of the term of this patent subsequent to Dec. 9, 2003, has been disclaimed.
Int. Cl.⁴ F16K *11/10*
U.S. Cl. 137—881 **18 Claims**



1. A color changer for changing the color of a selected paint, supplied through a universal supply manifold to a paint applicator, said color changer comprising, for each selected paint color to be supplied:

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a one-way, selectively operable, paint supply check valve means, positively closed by non-selected paint supply pressurized thereagainst and selectively movable to open in a direction against paint sealing pressure for admitting such selected paint from a supply of a selected paint toward said supply manifold and said applicator;

a one-way inlet check valve means for passing selected paint from said supply valve to said universal supply manifold, and for preventing backflow of any paint therethrough from said manifold;

a universal return manifold for operative connection to an applicator for returning selected paint from an applicator; and

a one-way, selectively operable, paint return check valve positively closed by the presence of other pressurized paint in said universal return manifold and being selectively operable in a direction into said return manifold for passing therethrough the paint of said selected color supplied to the manifold through its supply check valve means for returning said paint to said selected supply of paint.

4,657,048

VALVE ASSEMBLY FOR GLASSWARE FORMING MACHINE

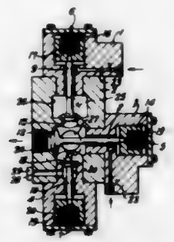
Thomas V. Foster, Castley, England, assignor to Emhart Industries Inc., Farmington, Conn.

Continuation of Ser. No. 433,129, Sep. 30, 1982, abandoned. This application Apr. 19, 1985, Ser. No. 724,867

Claims priority, application United Kingdom, Feb. 27, 1981, 8106181

Int. Cl.⁴ F16K *11/22*; C03B *9/20*

U.S. Cl. 137—884 **5 Claims**



1. A valve assembly for controlling the application of vacuum and counterblow air to a blank mould of a glassware forming machine, said assembly comprising first normally closed pilot open valve means for controlling the application of vacuum to the blank mould, second normally closed pilot open valve means for controlling the flow of counterblow air to the blank mould, and third normally open pilot closed valve means for venting the blank mould to atmosphere, said first, second and third valve means being enclosed within a single body, said body having a central chamber, first passage means for connection to a vacuum source, said first valve means connecting said first passage means with said chamber when open, second passage means for connection to a source of counterblow air, said second valve means connecting said second passage means with said chamber when open, third passage means leading to atmosphere, said third valve connecting said third passageway to said chamber when open, and shuttle valve means for directing a supply of pilot fluid pressure to the third valve to close the third valve means when the first valve is opened by said pilot fluid pressure and for directing a supply of pilot fluid pressure to the third valve to close the third valve means when the second valve is opened by said pilot fluid pressure.

4,657,049

TUBULAR BODY COMPOSED OF REINFORCED THERMOSETTING POLYMER

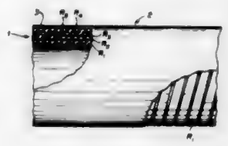
Georges Fourty, 73, Boulevard Marquette, 31000-Toulouse, France; Eric Anderson, 2 chemin des Mouillenses, 1249 Lacounex, Switzerland, and Jürgen Rexer, Richardstrasse 22, Lüdenscheid 5880, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 678,377, Apr. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 405,111, Oct. 10, 1973, abandoned. This application Apr. 8, 1980, Ser. No. 138,300

Claims priority, application Switzerland, Oct. 12, 1972, 14782/72

Int. Cl.⁴ F16C *11/08*

U.S. Cl. 138—133 **14 Claims**





1. A reinforced composite tubular body comprising: a tubular polymeric material comprised of thermosetting polymer having a coefficient of elongation at breaking of less than about 15%; and at least one metallic reinforcing strip completely embedded within and completely surrounded by said tubular polymeric material and being helically wound about the longitudinal axis of said tubular polymeric material so as to define a plurality of longitudinally partially overlapping convolutions which overlap one another a distance equal to or greater than $L_c/2$ where

$$L_c/2=(e\cdot\sigma_r)/2\tau$$

and e is the thickness of said metallic reinforcing strip, σ_r is the breaking strength of said metallic reinforcing strip and τ is the shear strength of the interface between said metallic reinforcing strip and said polymeric material.

4,657,050

PIPELINE INSULATION SYSTEM

Maurice M. Patterson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 25, 1984, Ser. No. 634,342

Int. Cl.⁴ F16L *9/14*

U.S. Cl. 138—149 **4 Claims**

1. A pipeline insulation system comprising:

a pipeline segment;

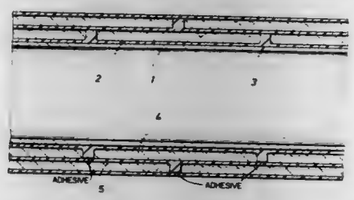
a layer of high density plastic encompassing the pipeline segment;

circumferential ribs which encircle and are integral with the layer of high density plastic;

a layer of plastic foam covering the layer of high density plastic between the circumferential ribs;

a layer of rigid material covering the plastic foam and the layer of high density plastic;

circumferential ribs which encircle and are integral with the layer of rigid material, the latter circumferential ribs being



located laterally along the length of the pipeline segment between the former circumferential ribs; and

a layer of plastic foam covering the layer of rigid material between the latter circumferential ribs and a layer of rigid material covering the latter layer of plastic foam.

4,657,051

WEAVING MACHINE

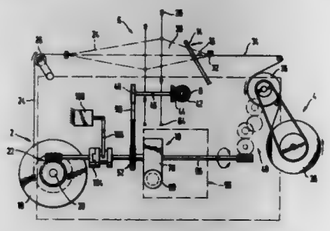
Francisco Speich, Bleumattstrasse 10, 5264 Gipf-Oberfrick, Switzerland

Filed Jan. 17, 1984, Ser. No. 571,450

Claims priority, application Switzerland, Jan. 18, 1983, 250/83

Int. Cl.⁴ D03D *51/02*

U.S. Cl. 139—1 E **5 Claims**



1. Weaving machine comprising an electronically operated control apparatus (12) for operating a weaving program for the weaving machine, a shedding apparatus (6) including a dobby (56) and a first drive shaft (58) for driving said dobby, a main drive (8), a fabric take-up apparatus (4) capable of being driven in a first direction for take-up and in an opposite second direction, a warp let-off apparatus (2), a second drive shaft (66) interconnecting said warp let-off apparatus (2) and said fabric take up apparatus (4), means interconnecting said main drive (8) to said second drive shaft (66) and a reversing gear unit, said reversing gear unit comprises a second drive shaft for driving said fabric take-up apparatus, wherein the improvement comprises that said reversing gear unit includes an override gear unit, an auxiliary motor arranged to drive said override gear unit, said auxiliary motor is controlled by said control apparatus for driving said override gear unit for selectively overriding said main drive so that said fabric take-up apparatus can be selectively driven in the second direction while said interconnecting means remains connected to said main drive.

4,657,052

DEVICE TO ALTER THE DISTANCE BETWEEN THE FRAME STAVE OF A HEALD FRAME AND THE HEALD CARRYING ROD HELD BY ROD HOLDERS ON THE FRAME STAVE

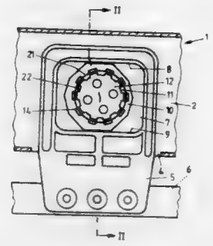
Hans Baumann, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Aug. 21, 1985, Ser. No. 767,842

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1984, 3433181

Int. Cl.⁴ D03C *9/06*; F16B *1/00*

U.S. Cl. 139—92 **5 Claims**



1. A device for setting the distance between the frame stave of a heald frame and the heald carrying rod, held on the frame stave by rod holders, inserted in an opening of the hollow frame stave, the walls of which having appropriate bores, into which an intermediate element consisting of a ringed straped member and a central member is seated and can be rotated, the ring shaped member having an eccentric whereby the outer circumference with a polygon shape engaging a rectangularly shaped recess in the rod holder whereby the upper and lower surfaces of the recess engage the eccentric ring shaped member securely but can still be rotated by means of the central member, being in mating engagement with the ring shaped member enabling to move the rod holder in relation to the frame stave, wherein the central member comprises a concentric ring (11) and a center core (12) being of elastic material, the concentric ring having a partition slit and both front faces of the ring (11) having appropriate configured shoulders (21) by means of which the concentric ring is kept in the bores (20) of the frame stave (1) and having locking elements (14) on the outer and inner periphery in engagement with the eccentric ring shaped member and the center core (12) which can be rotated by means of a tool.

4,657,053

NEEDLE RIBBON WEAVING MACHINE

Francisco Speich, Gipf-Oberfrick, Switzerland, assignor to Textilma A G, CH-Hergiswil, Switzerland

PCT No. PCT/CH84/00157, § 371 Date Jun. 3, 1985, § 102(e) Date Jun. 3, 1985, PCT Pub. No. WO85/01524, PCT Pub. Date Apr. 11, 1985

PCT Filed Sep. 27, 1984, Ser. No. 744,002

Claims priority, application Switzerland, Oct. 6, 1983, 5434/83

Int. Cl.⁴ D03D *47/27*

U.S. Cl. 139—449 **6 Claims**

1. A needle-ribbon weaving machine having a warp compartment (14) and conveying finished goods (16) along a predetermined path and comprising:

a rotatable main drive shaft (2) arranged traverse with respect to the path,

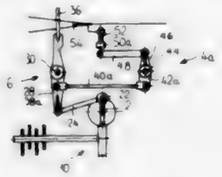
a crankshaft pin (22) rotatable in association with said main drive shaft (2);

a connecting rod (24) pivotally connected to said crankshaft pin (22);

weaving blade drive means (6) including a first rocking lever

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(28) pivotally connected to said connecting rod (24) and a shaft (30) coupled to said first rocking lever (28); and weft needle drive means (4) including a first coupling rod (40), a second rocking lever (38) pivotally connected to said first coupling rod (40), a third rocking lever (42) pivotally connected to said first coupling rod (40), said second ranking lever (38) being coupled to said shaft (30), an intermediate shaft (44) parallel to said main drive shaft (2) and coupled to said third rocking lever (42) and supporting a fourth rocker arm (46), a second coupling rod



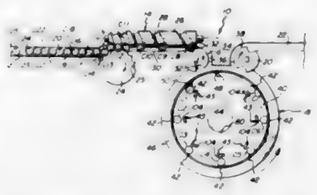
(48) pivotally connected to said fourth rocker arm (46), a fifth rocker arm (50) pivotally connected to said second coupling (48), a vertical shaft (52) mounting said fifth rocker arm (50), a sickle-shaped weft needle (54) connected to said fifth rocker arm (50), such that said weft needle (54) is movable in and out of said warp compartment (14), said weaving blade drive (6) being movable to a mean movement phase, said first coupling rod (40) during said mean movement phase of the weaving blade drive (6) forming an angle of about 90° together with said second and third connected rocker levers (38; 42).

4,657,054

METHOD AND APPARATUS FOR HIGH SPEED CONTAINER PLACEMENT

Herbert E. Schaltegger, 10 Schaghticoke Trail, New Milford, Conn. 06776

Continuation-in-part of Ser. No. 716,680, Mar. 27, 1985, Pat. No. 4,625,775. This application Aug. 1, 1986, Ser. No. 893,035
The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.
Int. Cl.⁴ B65B *1/04*
U.S. Cl. 141—1 **30 Claims**



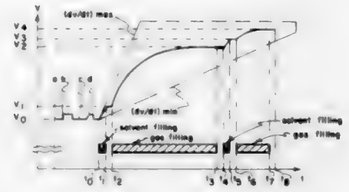
19. A method of high speed placement of containers, comprising the steps of:
moving a container along a selected path at a production line speed;
intercepting said container;
decelerating the intercepted container to rest;
said intercepted container being moved along a first curved path during said decelerating step and being transferred thereby to a stationary container receiving station;
processing said container while at rest at said container receiving station;
returning the processed container to said selected path;
accelerating said processed container along a second curved path during said returning step; and
continuing said container along said selected path at said production line speed.

4,657,055

FILLING OF ACETYLENE CYLINDERS

Bo Poulsen, Copenhagen, Denmark, assignor to AGA A.B., Sweden

Continuation of Ser. No. 429,490, Sep. 30, 1982, Pat. No. 4,582,100. This application Oct. 2, 1985, Ser. No. 783,343
The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.
Int. Cl.⁴ F17C *5/06*
U.S. Cl. 141—83 **6 Claims**



1. Apparatus for filing a pressurized gas cylinder to store acetylene gas therein, wherein the cylinder is of the type which contains a porous mass with a solvent absorbed therein for dissolving acetylene gas, the apparatus comprising:
(a) filling means for introducing quantities of pressurized acetylene gas and of a solvent for dissolving acetylene gas into a pressurized gas cylinder, which quantities are necessary to refill the cylinder;
(b) control means for determining the necessary quantities of acetylene gas and solvent that should be added to the cylinder to properly refill the cylinder, for checking the cylinder for safe filling conditions before either acetylene gas or solvent are introduced into the cylinder, and for monitoring the cylinder for safe filling conditions during introduction of the necessary quantities of acetylene gas and solvent into the cylinder to fill the cylinder, including means for:
(i) measuring the initial weight of the cylinder and its contents;
(ii) measuring the initial pressure of the contents of the cylinder;
(iii) comparing the measured initial weight and pressure values with predetermined acceptable maximum and minimum values which define acceptable ranges of safety for these measured values with respect to the type of cylinder to be filled to determine whether the measured initial values lie within the predetermined ranges of safety for the cylinder to be filled;
(iv) monitoring the weight of the cylinder and its contents during introduction of gas into the cylinder;
(v) monitoring the pressure of the contents of the cylinder during introduction of gas into the cylinder;
(vi) comparing the monitored weight and pressure values that are monitored during introduction of gas into the cylinder with predetermined acceptable maximum and minimum values which define ranges of acceptability for these monitored values to determine whether the values that are monitored during introduction of gas into the cylinder continue to lie within the predetermined ranges of acceptability;
(c) the filling means being operative to refill the cylinder by introducing into the cylinder the necessary quantities of solvent and acetylene gas in a sequence of first, second, third and fourth filling stages wherein:
(i) a first stage includes introducing into the cylinder a first portion of the necessary quantity of solvent;
(ii) a second stage includes introducing into the cylinder a first portion of the necessary quantity of acetylene gas;
(iii) a third stage includes introducing into the cylinder the remaining portion of the necessary quantity of solvent; and,

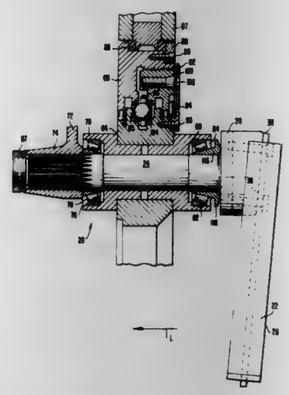
(iv) a fourth stage includes introducing into the cylinder the remaining portion of the necessary quantity of gas, with the gas being introduced during this stage being selected from a group consisting of acetylene and such gases as have a compatibility with acetylene to assist in stabilizing the contents of a cylinder of acetylene gas;
(d) the control means being operative to permit the filling means to introduce solvent and acetylene gas into the cylinder in accordance with said first, second, third and fourth stages if, and only if, the measured and monitored weight and pressure values are found to fall within predetermined maximum and minimum values which define acceptable ranges of safety for the cylinder; and,
(e) the control means being operative to cause the filling means to terminate introduction of solvent and acetylene gas into the cylinder during said first, second, third and fourth stages if the monitored weight and pressure values are found to lie outside said acceptable ranges of safety.

4,657,056

LOG DEBARKING TOOL ASSEMBLY

James H. Hutson, Rte. 4, Box 925, Pell City, Ala. 35125

Continuation-in-part of Ser. No. 696,527, Jan. 30, 1985, abandoned, which is a division of Ser. No. 527,814, Aug. 30, 1983, Pat. No. 4,585,042, which is a continuation-in-part of Ser. No. 430,794, Sep. 30, 1983, Pat. No. 4,522,242. This application Nov. 19, 1985, Ser. No. 799,653
Int. Cl.⁴ B27L *1/00*
U.S. Cl. 144—208 E **35 Claims**



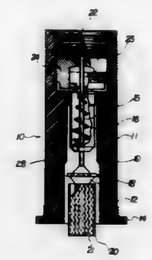
1. A log debarker comprising:
a rotatable rotor through which logs can be fed,
a tool shaft connected to said rotor,
a tool shaft head connected to said tool shaft,
said tool shaft head including a load-carrying slot portion,
a rigid cutting tool having a key member adapted to be positioned in said load-carrying slot portion,
said rigid cutting tool having a sharp elongated leading edge, and
a holding means for holding said key member in said slot portion, and thus said cutting tool to said tools shaft head so that said cutting tool is sloped at an angle in the direction of travel of a log entering said rotor.

4,657,057

SAFETY TIRE VALVE FOR CONTROLLING SPEED OF VEHICLE

Jin S. Ha, 12750-14 Centralia St., Lakewood, Calif. 90715

Filed Mar. 12, 1986, Ser. No. 838,833
Int. Cl.⁴ B60C *29/00*
U.S. Cl. 152—415 **4 Claims**



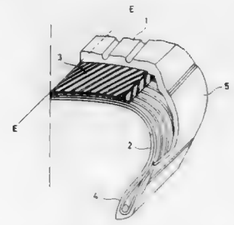
1. A safety air valve for a tire comprising
a casing adapted to be vertically mounted to a rim of a tire, said casing defining an air channel extending therethrough, said air channel containing an internal shoulder which extends into said air channel,
a valve means extending through said air channel for opening and closing the flow of air through said channel, said valve means including,
a valve stem containing a valve head at one end thereof, said valve head being provided with a lip which is adapted to engage the shoulder in the air channel through the movement of the valve head through said air channel,
spring means operatively associated with the valve stem to bias the valve head in closed position with the lip in engagement with said shoulder, and
a weight member attached to said valve head whereby upon the achieving of excessive speed and correspondingly excessive tire rotation the centrifugal force on the weight member causes the valve to open against the bias of the spring.

4,657,058

PNEUMATIC TIRE

Kazuyuki Kabe, Hiratsuka; Tuneo Morikawa, Hadano, and Shuichi Tsukada, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1985, Ser. No. 726,700
Claims priority, application Japan, Apr. 27, 1984, 59-84035
Int. Cl.⁴ B60C *9/08*
U.S. Cl. 152—556 **3 Claims**



1. In a pneumatic tire having a tread portion, right and left bead portions and right and left side wall portions extending between the tread and bead portions, a carcass cord layer extending between the right and left bead portions in which the

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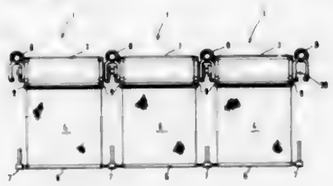
cords in the layer are at an angle of 70 to 90 degrees with respect to the circumferential direction of the tire, and a belt reinforcing layer disposed between the tread portion of the tire and the carcass cord layer, the improvement comprising said carcass cord layer comprising from 20 to 60 cords per 5 cm of the carcass layer in the equatorial plane of the tire, said cords being aromatic polyamide fiber cords having a diameter of from 0.55 to 0.65 mm, and being embedded in a rubber coating having a 100% modulus of 30 to 70 kg/cm^2.

4,657,059

SIDE SUPPORT FOR AN AWNING BOX

Ulrich Clauss, Bissingen, Fed. Rep. of Germany, assignor to Clauss Markisen, Bissingen-Ochsenwang, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 661,033
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337740
Int. Cl.^{4} E04F *10/06*
U.S. Cl. 160—120 **28 Claims**



1. An awning comprising:
(a) an awning box having side faces, said awning box including a substantially cylindrically shaped jacket having a longitudinal slot therein forming an outlet slot, an end closing piece supported at each side face, and a winding shaft;
(b) bearings at the ends of said awning box for said winding shaft;
(c) an awning canvas having first and second ends, said first end being connected to said winding shaft and said second end being connected to an extension bar, said awning canvas being guided through said outlet slot of said awning box;
(d) wall fixtures for non-rotatably mounting said awning box at its side faces on the facage of a building, each of said wall fixtures having at least one bifurcated jaw like extension extending perpendicularly to a longitudinal axis of said winding shaft, said jaw like extension being open in the radial direction with respect to said winding shaft; and
(e) an attachment secured on at least one of said end closing pieces at a side face of said awning box extending in the longitudinal direction of said winding shaft and received in said jaw like extension of an associated wall fixture, means for permitting at least one of said closing pieces to be longitudinally displaceable relative to said cylindrically shaped jacket and to be secured against rotation relative thereto so as to permit longitudinal movement of said cylindrically shaped jacket relative to said at least one end closing piece.

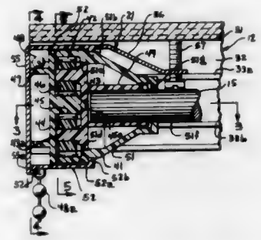
4,657,060

VERTICAL VENETIAN BLIND WITH INLINE DRIVE

Edward M. Kaucic, Middleton, Wis., assignor to Graber Industries, Inc., Middleton, Wis.

Filed Mar. 1, 1982, Ser. No. 353,333
Int. Cl.^{4} E06B *9/36*
U.S. Cl. 160—168 R **11 Claims**

1. In a vertical venetian blind closure of the type including a horizontal carriage guide channel having an opening along one side, a shaft extending lengthwise of the channel, a plurality of carriages mounted on the guide channel for movement therealong, a slat carrier mounted on each of the carriages for rotation about an upright axis, gear means in each of said carriages engageable with said shaft and with the respective slat carrier for rotating the latter in response to rotation of the shaft, and a shaft turning mechanism at one end of the shaft for turning the same, the improvement comprising, said shaft turning mechanism including a stationary housing means disposed substantially entirely within said channel with one end of the housing means adjacent one end of the channel, said housing means having a stepped passage therethrough opening at opposite ends of the housing means, the stepped passage having an annular internal ring gear intermediate its ends; a first generally circular inner wall portion at one end of the internal ring gear and having a larger internal diameter than the internal ring gear, and a second generally circular internal wall portion at the other end of the internal ring gear and having a smaller internal diameter than the internal ring gear,



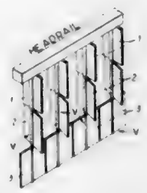
a planet carrier means having an annular peripheral portion rotatably supported on said second annular internal wall portion for rotation about the axis of the ring gear, means nonrotatably connecting the planet carrier means to said shaft, drive wheel means having an annular peripheral portion rotatably supported on said first annular internal wall portion for rotation about the axis of the ring gear and having a sun gear at one side thereof extending into the ring gear concentrically of the latter and a drive sprocket at the other side thereof coaxial with the sun gear, at least one planet gear in meshing engagement with the sun and ring gears and mounted on the planet carrier means for rotation relative thereto about an axis parallel to the axis of the ring gear and spaced radially inwardly therefrom to rotate the planet carrier means in response to rotation of the drive wheel means but at a relatively reduced speed, and a flexible drive chain entrained over the sprocket for rotating the drive wheel means.

4,657,061

VERTICALLY DISCONTINUOUS BLINDS

Francis W. Meier, 43-49 10th St., Long Island City, N.Y. 11101

Filed Apr. 21, 1986, Ser. No. 853,920
Int. Cl.^{4} E06B *9/26*
U.S. Cl. 160—176 R **8 Claims**



1. A vertically discontinuous blind comprised of vertically arranged sections that are independently controllable in their opening and closing, comprising

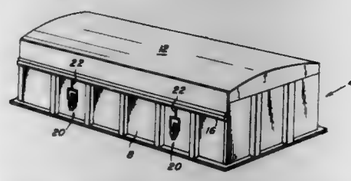
a plurality of parallel, closely spaced vertically extending vanes,
each vane being comprised of a plurality of vane elements,
an assembly of concentric elongated rods or tubes vertically extending through each vane, the innermost one of the tubes being secured to the lowermost element, the outermost tube being secured to the uppermost element, and the intermediate tubes, if any, of the assembly being secured to respective ones, if any, of the vertically arranged vane elements,
a plurality of tube rotation means each coupled to a respective one of said tubes for independently rotating each tube, and
means for independently actuating said tube rotation means.

4,657,062

ROLL TARP LOCKING ASSEMBLY

Robert P. Tuerk, 442 Bent Tree La., Indianapolis, Ind. 46260

Filed Mar. 8, 1985, Ser. No. 709,703
Int. Cl.^{4} B65D *43/02, 45/14;* B60P *7/04*
U.S. Cl. 160—243 **11 Claims**



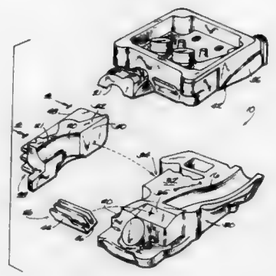
1. A roll tarp system for covering an open-topped rectangular container, comprising
(a) a rectangular cover member connected along one longitudinal edge thereof with an external surface of one longitudinal side wall of the container, said cover member extending over the container;
(b) claiming means connected with an external surace of the other longitudinal side wall of the container;
(c) a roll bar containing on its outer surface first and second diametrically-arranged longitudinally-extending grooves;
(d) first means for connecting the other longitudinal edge of said cover with said roll bar within said first groove; and
(e) means for connecting said roll bar with said clamping means, including
(1) fastening means including at least one slide member slidably connected with said roll bar second groove for longitudinal displacement within said groove to a position vertically aligned with said clamping means; and
(2) means connecting said slide member with said clamping means, said clamping means being operable from a released condition to a clamped condition to tension said cover via said roll bar and said connecting means, whereby when said cover member is in an unrolled condition covering the top of the container and said connecting means are connected with said clamping means said clamping means are operable to clamp said roll bar and tension said cover member in the unrolled condition, and when said connecting means are disconnected from said clamping means and said roll bar is rotated toward said container one longitudinal side wall, said cover member is rolled about said roll bar to uncover the top of the container.

4,657,063

FOAM PATTERN FOR CASTING AN AIR COOLED CYLINDER HEAD

Richard L. Morris, Collierville, Tenn., assignor to Outboard Marin Corporation, Waukegan, Ill.

Filed May 17, 1985, Ser. No. 735,207
Int. Cl.^{4} B22D *7/02, 9/04*
U.S. Cl. 164—45 **17 Claims**



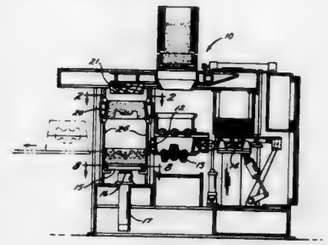
6. A method of fabricating a foam mold pattern for forming an air cooled cylinder head in a lost foam casting process, the cylinder head including an exhaust port, an exhaust passage, an inlet port, an inlet passage, and a cooling fin, said method comprising the steps of: fabricating a foam mold pattern fin portion adapted to form a cooling fin by first providing foam particles having a diameter, by also providing a mold comprising a cavity having the shape of said fin portion and including a fin cavity portion having a base with a thickness of approximately two particle diameter and with a length of approximately one inch, and by next injecting said foam particles into said mold cavity at a point adjacent said base of said fin cavity portion, by also fabricating a foam mold pattern main portion including an exhaust port, an exhaust passage, an inlet port, and an inlet passage, and finally by gluing said fin portion to said main portion.

4,657,064

ADJUSTABLE GUIDE SLIPPERS FOR MATCHPLATE MOLDING MACHINE

William A. Hunter, Inverness, Ill., assignor to Hunter Automated Machinery Corporation, Schaumburg, Ill.

Continuation of Ser. No. 685,166, Dec. 21, 1984, abandoned. This application Sep. 16, 1985, Ser. No. 776,099
Int. Cl.^{4} B22C *17/00, 21/10*
U.S. Cl. 164—169 **12 Claims**



1. Apparatus for mounting a component of a matchplate molding machine for sliding movement along an elongated rail, said apparatus comprising a mounting member, means for securing said mounting member to said component, a pad member having a flat bearing surface engageable with said rail, and a pair of independently adjustable fasteners extending

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between said mounting member and said pad member and securing said pad member for movement with said mounting member, said fasteners being adjustable in one direction to force said pad member away from said mounting member and to press said bearing surface into face-to-face contact with said rail, said fasteners being adjustable in the other direction to release said pad member from said mounting member, the clearance between said mounting member and said rail being sufficiently great to enable said pad member to be slipped from between said mounting member and said rail when said fasteners are released and without disturbing the position of said mounting member on said component.

4,657,065

COMPOSITE MATERIALS HAVING A MATRIX OF MAGNESIUM OR MAGNESIUM ALLOY REINFORCED WITH DISCONTINUOUS SILICON CARBIDE PARTICLES

Tsuguyasu Wada, Ann Arbor; George T. Eldis, Ypsilanti, and Darryl L. Albright, Ann Arbor, all of Mich., assignors to Amax Inc., Greenwich, Conn.

Filed Jul. 10, 1986, Ser. No. 884,123
Int. Cl.⁴ B22D *19/14*
U.S. Cl. 164—461 **7 Claims**

1. The method for producing a composite material having a matrix of magnesium-base alloy and up to 25%, by volume, of a discontinuous phase from the group consisting of silicon carbide particles and silicon carbide fibers, up to about 5%, by volume, of titanium carbide particles, which comprises preparing a bath of said magnesium-base alloy containing about 0.2% to about 0.7%, by weight, lithium, mixing said discontinuous phase material with said bath at a temperature above the liquidus temperature thereof for a time sufficient to provide substantially complete dispersion of said material throughout said bath and solidifying said bath while maintaining said dispersion.

4,657,066

METHOD OF CONTINUOUS CASTING SLABS TO PRODUCE GOOD SURFACE QUALITY HOT-ROLLED BAND

Clifford R. Whiddon, Lower Burrell; Daniel R. Flaherty, Pittsburgh, and Lawrence E. Turowski, Natrona Heights, all of Pa., assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Filed Jun. 28, 1985, Ser. No. 750,570
Int. Cl.⁴ B22D *11/00*
U.S. Cl. 164—476 **17 Claims**

1. A method of producing a substantially austenitic stainless steel strip comprising:

continuously casting a slab of said steel having a composition consisting essentially of, by weight, about 15% or more chromium, about 5% or more nickel, up to 5% molybdenum, up to 0.002% maximum sulfur, the balance iron and normal steelmaking additions and residuals; and

hot rolling the slab to a hot-rolled band gauge;

the hot-rolled band, which when descaled, has a good surface quality characterized by reduced metallurgical slivers.

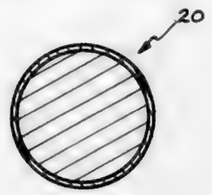
4,657,067

HYPEREUTECTIC DIRECT-CONTACT THERMAL STORAGE MATERIAL AND METHOD OF PRODUCTION THEREOF

Robert A. Rapp, Columbus, and Carroll E. Mobley, Upper Arlington, both of Ohio, assignors to Ohio State University, Columbus, Ohio

Filed Jun. 19, 1985, Ser. No. 746,586
Int. Cl.⁴ F28D *19/02*
U.S. Cl. 165—1 **20 Claims**

1. An improved particle for use in the storage and retrieval of thermal energy, said particle being formed from a phase change material having a generally spherical shape, said phase change material having a gross hypereutectic composition for a binary metal alloy containing silicon, wherein said particle has an outer shell of a relatively high-melting and corrosion



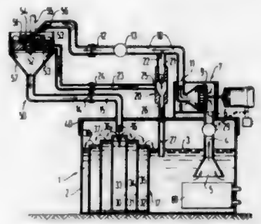
resistant material, said outer shell of said phase change material comprising silicon, said outer shell enclosing and containing a lower melting, heat storing eutectic core of such binary metal composition containing silicon.

4,657,068

DEVICE FOR FACILITATING THE CIRCULATION OF FLUID COOLANT

Hanns-Heinz Peltz, Munich, Fed. Rep. of Germany, assignor to Bruce Zimring, Palo Alto, Calif.

Filed Jun. 9, 1986, Ser. No. 872,120
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1985, 3521510
Int. Cl.⁴ B23Q *11/10*; B25B *11/00*
U.S. Cl. 165—47 **10 Claims**



1. A fluid coolant circulation device for a workpiece processing means, comprising:

a storage and collection tank,

an injector pump for transferring and pressurizing the coolant,

at least one fluid-jet negative-pressure pump,

a settling cascade for cleansing the coolant,

a heat exchanger, and

pipes for transferring the coolant, including

a first transfer pipe, one end of which is connected to an inlet of the injector pump and whose other end extends under the planned operational fluid level in the storage and collection tank,

a second transfer pipe connecting an outlet of the injector pump with a coolant outlet of the device,

a third transfer pipe connecting a coolant return flow inlet of said device to said settling cascade,

a fourth transfer pipe connecting the outlet of the injector pump with an operational inlet of the fluid-jet negative-pressure pump,

a fifth transfer pipe connecting a negative-pressure inlet of said device with a negative-pressure inlet of the fluid-jet negative-pressure pump, and

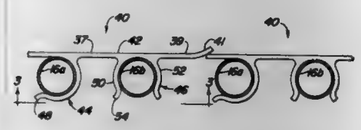
a sixth transfer pipe extending from an outlet of the fluid-jet negative-pressure pump to under the planned operational fluid level in the storage and collection tank.

4,657,069

HEAT EXCHANGE TUBE RETAINER

David J. Easton, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 31, 1986, Ser. No. 846,433
Int. Cl.⁴ F28F *7/00*
U.S. Cl. 165—76 **13 Claims**



1. A heat exchange tube retainer comprising:

a generally flat base;

a tube gripping member mounted on the base and having a heat exchange tube receiving recess therein, the recess opening in a first direction generally away from the base and extending along an axis; and

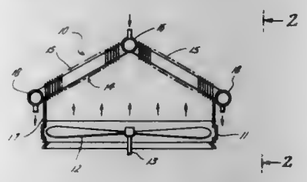
a tube gripping element mounted on the base, spaced apart from the member and having a heat exchange tube receiving channel therein, the channel opening in a second direction generally perpendicular to the first direction and generally away from the member and extending along an axis which is generally parallel to the axis of the recess.

4,657,070

AIR-COOLED VAPOR CONDENSERS

George E. Kluppel, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Feb. 15, 1984, Ser. No. 580,191
Int. Cl.⁴ F24B *1/06*
U.S. Cl. 165—124 **5 Claims**



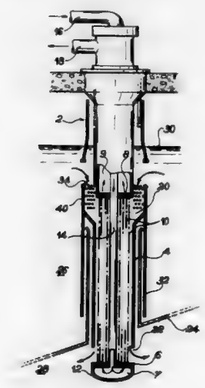
1. An air-cooled vapor condenser, comprising a fan ring, an axial flow fan adapted to rotate within the fan ring about an axis generally perpendicular to a horizontal plane, a pair of bundles each comprising at least one row of tubes mounted across one end of the fan ring, the axes of the tubes of the bundles being inclined with respect to the horizontal plane to dispose one end thereof above the other and extending in opposite directions to form an inverted "V" there between the tubes disposed so that the fan flows air toward and over the tubes, means for introducing vapor into the upper ends of the tubes and for draining condensate from the lower ends thereof, the fins disposed parallel to the direction of flow of air from the fan.

4,657,071

HEAT EXCHANGER INCORPORATING AN AUXILIARY COOLING DEVICE

Gilbert Arene, Pertuis; Robert Artaud, Aix en Provence, and Charley Renaux, Jouques, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Jun. 27, 1984, Ser. No. 625,122
Claims priority, application France, Jul. 1, 1983, 83 10993
Int. Cl.⁴ F28F *9/22*
U.S. Cl. 165—134.1 **8 Claims**



1. A heat exchanger comprising:

A. a vertical envelope having an inlet window and an outlet window for conducting a primary heat transfer medium through said envelope;

B. heat transfer tubes mounted in said envelope and extending between said envelope windows;

C. first and second fluid collectors in fluid communication with said tubes for conducting a secondary heat transfer medium through said tubes;

D. a ferrule extending up from said envelope at said inlet window therein; and

E. an auxiliary cooling device located within said ferrule and occupying substantially the entire width of said inlet window.

4,657,072

PANEL-TYPE COUNTER-FLOW HEAT EXCHANGER WITH FIN STRUCTURES FORMED FROM SHEET METAL

Desmond Mulock-Bentley, Transvaal, South Africa, assignor to D. Mulock-Bentley & Associates (Proprietary) Limited, South Africa

Filed Jun. 17, 1985, Ser. No. 745,203
Claims priority, application South Africa, Jun. 20, 1984, 84/4710
Int. Cl.⁴ F28D *1/02*
U.S. Cl. 165—153 **4 Claims**

1. A counterflow heat exchanger which comprises:

(a) a series of parallel, elongate conduits formed in conduit panels and adapted to be flowed through by a first fluid flowing in a first direction, the conduit panels being spaced apart to establish spaces therebetween which are adapted to be flowed through by a second fluid flowing in a second direction opposite to the first direction;

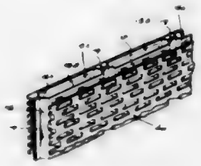
(b) the surfaces of the conduit panels being shaped to provide corrugations in the conduits which are transverse to the first and second direction, the corrugations promoting turbulent flow in the first fluid;

(c) pairs of surface-extending elements located in the spaces between the conduit panels;

(d) each surface extending element comprising a generally planar sheet of material from which V-shaped fins are pressed out of the plane of the sheet to leave slots in the sheet and remaining, generally planar portions of the sheet between the slots;

(e) the fins lying in planes transverse to the first and second directions with adjacent fins which are spaced apart from one another in the first or second direction being staggered with respect to one another in a direction transverse to the first and second directions;





(f) the surface extending elements in each pair being arranged with their remaining planar portions back-to-back and with their fins extending in opposite directions towards the conduit panels on opposite sides of the space in which said pair of surface extending elements is located; and

(g) the apices of the fins presenting knuckles which are in heat-transmitting contact with the conduit panels between the corrugations thereof.

4,657,073

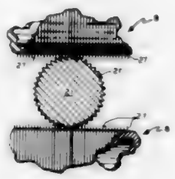
FINNED OR SERRATED ROD BAFFLES FOR FINNED TUBE-SHELL HEAT EXCHANGER

William A. McClintock, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 348,378, Feb. 12, 1982, Pat. No. 4,588,027. This application May 8, 1985, Ser. No. 731,694

Int. Cl.⁴ F28F *9/22*

U.S. Cl. 165—159 **21 Claims**



1. A rod baffle comprising a plurality of parallel solid or hollow rods, at least some of these rods having longitudinal fins such that they have a cross-section of a serrated circle in at least some areas along the rod, said rods being arranged in said baffle to enable the engagement of said rods with adjacent elements, said rods being mounted as parallel chords across a generally circular support member to form the rod baffle.

4,657,074

HEAT EXCHANGER FOR COMBUSTION HEATER

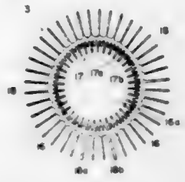
Ittizo Tomita, and Eiji Okura, both of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1986, Ser. No. 830,883

Claims priority, application Japan, Feb. 27, 1985, 60-27763[U]

Int. Cl.⁴ F28F *1/42*

U.S. Cl. 165—179 **5 Claims**



1. A heat exchanger for a combustion heater for effecting heat exchange between air and combustion heat generated by a combustion element of said combustion heater, said heat exchanger comprising:

an extruded heat exchanger element comprising a tubular body, a plurality of interior long and short fins alternately disposed around the inner periphery of said tubular body and integral therewith, each of said interior fins extending in a radial direction from said inner periphery towards the central axis of said tubular body, a plurality of thin exterior fins disposed around the outer periphery of said tubular body and integral therewith, each of said thin exterior fins extending in a radial direction from said outer periphery away from the central axis of said tubular body, said plurality of exterior fins having roughened outer surfaces so as to have an increased surface area for increasing the heat exchanging capacity thereof, and at least two thick exterior fins disposed on the outer periphery of said tubular body and integral therewith, each of said thick exterior fins extending in a radial direction from said outer periphery away from the central axis of said tubular body at positions spaced from positions on said outer periphery wherefrom said thin fins extend, said thick fins being spaced apart on said outer periphery for having their free ends when they rest on a flat planar support, support said tubular body above the flat planar support, and said thick exterior fins being thicker than said thin exterior fins for protecting said thin exterior fins from deforming during the extrusion of said heat exchanger element.

4,657,075

WELL HEAD ISOLATION TOOL

Roderick D. McLeod, 5104 125th St., Edmonton, Alberta, Canada (T6H 3V5)

Filed Dec. 27, 1985, Ser. No. 813,790

Claims priority, application Canada, Mar. 22, 1985, 477205

Int. Cl.⁴ E21B *33/02, 23/06*

U.S. Cl. 166—72 **1 Claim**

1. A concentric mandrel apparatus for use in a wellhead isolation tool, said apparatus comprising:

(a) means for mounting said apparatus on a wellhead;

(b) spaced, upper and lower beam assemblies, said lower beam assembly being secured to said mounting means;

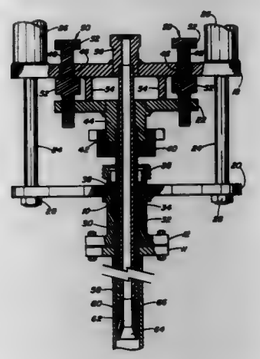
(c) an intermediate beam assembly adjustably connected to said upper beam assembly;

(d) an outer mandrel connected to said intermediate beam and nipple means including a resilient sealing member attached to the lower end thereof;

(e) an inner mandrel concentrically located within said outer mandrel and secured to said upper beam assembly, and a seal expander on the lower end of said inner mandrel;

(f) means for moving the upper and intermediate beam assemblies with respect to the lower beam assembly so as to lower or raise said concentric mandrels in a well casing; and

(g) means for moving the upper beam assembly with respect to the intermediate beam assembly so as to move the inner



mandrel with its expander with respect to the outer mandrel and its sealing member so that said expander engages and deforms said sealing member to expand it outwardly against the wall of said casing.

4,657,076

CHEMICAL INJECTION TUBE MOUNTING STRUCTURE FOR GEOTHERMAL WELL

Jiro Tsutsumi, Iwate; Minoru Uchiyama, Morioka; Kunio Katagiri, Funabashi, and Haruo Yamada, Morioka, all of Japan, assignors to Japan Metals and Chemicals Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,129

Claims priority, application Japan, Apr. 17, 1984, 59-76892

Int. Cl.⁴ E21B *37/06*

U.S. Cl. 166—90 **5 Claims**



1. A chemical injection tube mounting structure for a geothermal well comprising:

a casing pipe having an upper portion and a lower portion, said upper portion being disposed vertically and extending upwardly from the geothermal well, said lower portion being disposed within the geothermal well, said casing pipe comprising an inner casing pipe and an outer casing pipe;

a chemical injection tube wound spirally along the inner casing pipe at the upper portion of said casing pipe, said chemical injection tube being secured between the inner casing pipe and the outer casing pipe at the lower portion of said casing pipe, said chemical injection tube having a lower end which extends in the geothermal well below a flashing point; and

a chemical injection port formed in said inner casing pipe, said chemical injection port communicating with the lower end of said chemical injection tube, a plug disposed in said port so as to be removed by applying pressure into said chemical injection tube, whereby scale inhibiting chemicals can be injected from the ground directly into the geothermal well through said chemical injecting tube and said chemical injection port.

4,657,077

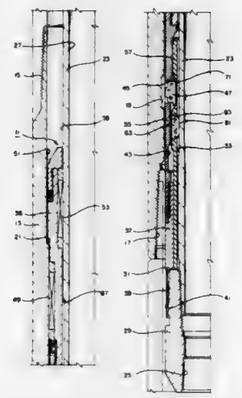
LOCKING PRODUCTION SEAL ASSEMBLY

Sidney K. Smith, Jr., and John L. Baugh, both of Huntsville, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Dec. 16, 1985, Ser. No. 809,615

Int. Cl.⁴ E21B *23/02*

U.S. Cl. 166—115 **3 Claims**



1. A locking production seal assembly for sealing a well tubing string within the bore of a surrounding well conduit, the surrounding conduit being provided with an internal recess for engagement by the seal assembly, comprising:

a mandrel having an interior bore for conducting well bore fluids, in exterior, and upper connecting means for connection in a well tubing string leading to the well surface, and a lower end, the lower end being connected to the remainder of the mandrel to form an external support shoulder, and wherein the mandrel exterior has a region of reduced external diameter which defines an upper and lower shoulder in the mandrel exterior adjacent the lower end;

an outer sleeve carried about the mandrel on the support shoulder while running into the well bore, the outer sleeve having an external seal region for sealingly engaging the interior bore of the surrounding well conduit and an internal seal region for sealingly engaging the mandrel exterior, the outer sleeve being provided with a plurality of openings at one circumferential location and with an internal recess at another circumferential location and the outer sleeve being provided with an external shoulder for engaging an internal landing shoulder provided in the surrounding well conduit;

a setting sleeve having an exterior surface with a plurality of windows formed therein, the setting sleeve being initially carried about the mandrel between the mandrel exterior and the outer sleeve with the region of reduced external diameter of the mandrel underlying the setting sleeve;

a plurality of setting dogs carried on a profile formed in the exterior surface of the setting sleeve, the setting dogs

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having upper camming surfaces adapted to be engaged by mating camming surfaces of the setting sleeve upon initial downward movement of the mandrel and the setting sleeve to move the setting dogs radially outwardly through the openings in the outer sleeve and into engagement with the internal recess of the surrounding well conduit; and

a plurality of locking dogs carried in the setting sleeve windows, the locking dogs having upper camming surfaces adapted to be engaged by the upper shoulder formed in the mandrel exterior for downward longitudinal movement upon initial downward movement of the mandrel and for outward radial movement upon continued downward movement of the mandrel and setting sleeve to move the locking dogs radially outwardly into engagement with the internal recess provided in the outer sleeve.

4,657,078

METHOD AND DEVICE FOR TESTING A WELL BORE PACKER

James M. Fraser, III, Woodlands, and M. P. Coronado, Huntsville, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Dec. 30, 1985, Ser. No. 814,710
Int. Cl.⁴ E21B *23/00*
U.S. Cl. 166—123 **4 Claims**



2. A method of testing a packer in a well bore, the packer being of the type having an interior bore for conducting fluids and external gripping and sealing means for gripping and sealing against the surrounding well bore, comprising the steps of:

first setting the packer at a desired depth within the well bore;

thereafter lowering a test tool having a generally cylindrical exterior and an internal bore on a tubing string to engage the interior bore of the previously set packer, the test tool having an external collet carried thereon with collet fingers which are received within a recess formed in the interior bore of the packer for engaging the packer on the test tool;

providing an external shear sleeve on the test tool, the shear sleeve being initially positioned to underlie the collet fingers when the collet fingers are received within the packer recess to thereby retain the packer on the test tool, the test tool also being provided with a port for communicating fluid pressure from the interior of the test tool for shearing the sleeve and releasing the collet fingers;

testing the packer by supplying pressurized fluid on at least one side of the packer external sealing means;

in the event of a successful test, sealing off the internal bore of the test tool at a point below the internal port;

pressurizing the internal bore of the test tool to supply pressure through the port to the pressure responsive seal area of the shear sleeve to shear the sleeve and release the collet fingers; and

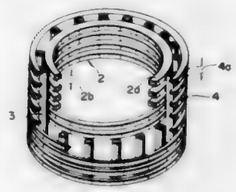
retrieving the test tool to the well surface by raising the tubing string.

4,657,079

SCREEN

Tadayoshi Nagaoka, Matsubara, Japan, assignor to Nagaoka Kaasai Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 549,635, Nov. 4, 1983, abandoned, which is a continuation of Ser. No. 326,718, Dec. 1, 1981, abandoned. This application Mar. 7, 1985, Ser. No. 709,826
Claims priority, application Japan, Dec. 11, 1980, 55-173767
Int. Cl.⁴ E21B *43/00*
U.S. Cl. 166—231 **6 Claims**



5. A screen for use in environments in which a large external pressure is applied to the screen such as a deep well comprising:

a plurality of support rods arranged substantially cylindrically at a predetermined interval in the circumferential direction of the screen;

a wire wound helically on the outside of said support rods at a predetermined pitch to perform a screening function; and

a reinforcing member of substantially cylindrical configuration made of a plurality of rings arranged on the inside of said support rods at an equal interval in the axial direction, said rings having a cross section such that their length in the radial direction is larger than their length in the axial direction;

said wire and said reinforcing member being rigidly fixed to said support rods respectively by welding.

4,657,080

METHOD OF FRACTURING A SUBTERRANEAN FORMATION USING DELAYED CROSSLINKER COMPOSITIONS CONTAINING ORGANIC TITANIUM COMPLEXES

Richard M. Hodge, Sand Springs, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Feb. 19, 1986, Ser. No. 831,230
Int. Cl.⁴ E21B *43/26*
U.S. Cl. 166—308 **3 Claims**

1. A method of fracturing a subterranean formation penetrated by a well, comprising:

(a) producing a gel solution by adding to an aqueous solution of an organic crosslinkable polymer:

(i) a sufficient amount of a crosslinker composition to result in delayed crosslinking of the polymer, the crosslinker composition having an organic titanium complex to crosslink the polymer, an organic alpha-monohydroxycarboxylic acid to delay crosslinking of the polymer by the titanium complex, and having a pH of no greater than 4.8;

(ii) sufficient carbon dioxide to result in a pH of substantially 3 to 5 in the polymer solution;

(b) pumping the fracturing fluid through the well against the formation at a sufficient pressure and flow rate to create and/or extend a fracture into the subterranean formation.

4,657,081

HYDRAULIC FRACTURING METHOD USING DELAYED CROSSLINKER COMPOSITION

Richard M. Hodge, Sand Springs, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Feb. 19, 1986, Ser. No. 831,229
Int. Cl.⁴ E21B *43/26*
U.S. Cl. 166—308 **5 Claims**

1. A method of fracturing a subterranean formation penetrated by a well, comprising:

(a) producing a gel solution by adding to an aqueous solution of an organic carboxylated crosslinkable polymer:

(i) a sufficient amount of a crosslinker composition to result in delayed crosslinking of the polymer, the crosslinker composition having an organic zirconium complex to crosslink the polymer, an organic alpha-hydroxymonocarboxylic acid to delay crosslinking of the polymer by the zirconium complex, and having a pH of no greater than about 4;

(ii) sufficient carbon dioxide to result in a pH of substantially 3 to 5 in the polymer solution;

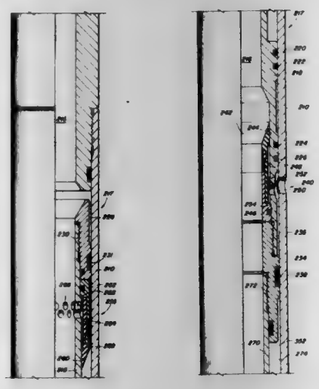
(b) pumping the fracturing fluid down the well under sufficient pressure to fracture the subterranean formation.

4,657,082

CIRCULATION VALVE AND METHOD FOR OPERATING THE SAME

Paul D. Ringgenberg, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 12, 1985, Ser. No. 797,375
Int. Cl.⁴ E21B *34/10*
U.S. Cl. 166—336 **16 Claims**



9. A method of operating a circulation valve of the type having a valve mandrel slidably disposed in a cylindrical housing and moveable from a first position closing a circulating port disposed through said housing to a second position in which fluid may be circulated through said port, said method comprising the steps of:

increasing pressure exterior of said housing relative to that interior thereof to move said valve mandrel toward one of said positions within said cylindrical housing, said pressure exterior of said housing being communicated to a first piston of said valve mandrel through a power port disposed through a wall of said cylindrical housing;

increasing pressure interior of said housing relative to that exterior thereof to move said valve mandrel toward the other of said positions within said housing, said valve mandrel having a second piston exposed to pressure interior of said housing; and

preventing movement of said valve mandrel from said first position until the pressure interior of said housing alternately exceeds the pressure exterior of said housing a predetermined number of times.

13. A circulation valve adapted to be suspended in a well bore on a pipe string comprising:

a cylindrical housing having an open longitudinal passageway therethrough and a circulation port disposed through a wall thereof;

a valve mandrel slidably received in said housing and moveable between a position in which fluid may flow through said circulation port only from the well bore annulus to the pipe string and a position in which fluid may flow through said circulation port only from the pipe string to the well bore annulus; and

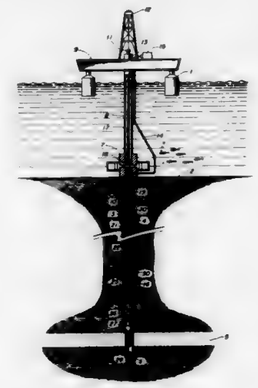
means for limiting axial movement of said valve mandrel in said housing including a groove and lug assembly associated with said valve mandrel and said housing.

4,657,083

PRESSURE OPERATED CIRCULATING VALVE WITH RELEASABLE SAFETY AND METHOD FOR OPERATING THE SAME

Paul D. Ringgenberg, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 12, 1985, Ser. No. 797,730
Int. Cl.⁴ E21B *34/10*
U.S. Cl. 166—374 **19 Claims**



1. A downhole tool comprising:

a housing;

an operating element disposed in said housing;

operating means comprising a mandrel operatively associated with and slidably received within said housing for operating said operating element in response to a pressure difference between the interior and the exterior of said housing; and

releasable safety means comprising a mandrel operatively associated with and slidably received within said housing,

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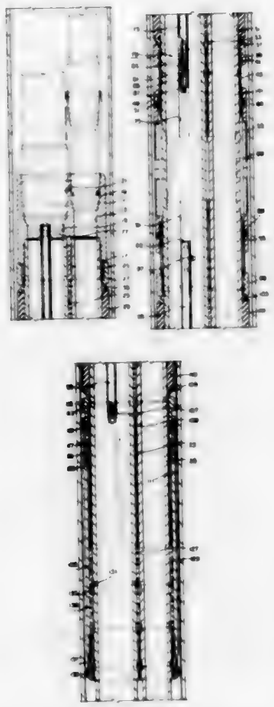
said operating element and said operating means for initially preventing operation of said operating element by said operating means until a pressure difference having a gradient opposite to that of said pressure difference for operating said operating element is applied between the interior and the exterior of said housing.

4,657,084

TWIN SEAL WELL PACKER

Robert W. Evans, Huntsville, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Sep. 17, 1985, Ser. No. 777,056
Int. Cl.[4] E21B *23/00*
U.S. Cl. 166—387 **7 Claims**



1. In a well packer of the type having a packer head and a pair of tubular mandrels extending downwardly therefrom, an upper seal located about the mandrels below the head, a gripping assembly located about the mandrels below the upper seal, a lower seal located about the mandrels below the gripping assembly, a lock body located about the mandrels below the lower seal, and actuator means within the lock body for causing outward radial movement of the seals and gripping assembly to seal and grip a surrounding well conduit, the improvement comprising:

a push rod extending from the lock body through the lower seal to the gripping assembly for moving the gripping assembly, as a unit, in the direction of the upper seal to compress the upper seal before the lower seal is compressed;

a tie rod extending from the packer head through the upper seal to the gripping assembly; and

lock means associated with the tie rod for allowing unidirectional movement of the gripping assembly with respect to the upper seal, whereby sealing force applied to the upper seal from the gripping assembly is locked into the upper seal.

6. A method of setting a well packer within a well conduit, the packer being of the type having a packer head and a pair of tubular mandrels extending downwardly therefrom, an upper seal located about the mandrels below the head, a gripping assembly located about the mandrels below the upper seal, a lower seal located about the mandrels below the gripping assembly, a lock body located about the mandrels below the lower seal, and an actuator means within the lock body for causing outward radial movement of the seals and gripping assembly to seal and grip a surrounding well conduit, comprising the steps of:

proving a push rod which extends from the lock body through the lower seal to the gripping assembly for moving the gripping assembly, as a unit, in the direction of the upper seal to compress the upper seal before the lower seal is compressed;

providing a tie rod which extends from the packer head through the upper seal to the gripping assembly;

providing lock means on the tie rod which allow unidirectional movement of the gripping assembly with respect to the upper seal, whereby sealing force applied to the upper seal from the gripping assembly is locked into the upper seal;

running the well packer to a desired depth within the well bore;

actuating the lock body to move the lower seal and gripping assembly, as a unit, in the direction of the upper seal to compress the upper seal and lock the setting force into the upper seal;

continuing to actuate the lock body once the top seal is set to cause outward radial movement of the gripping assembly to grip the surrounding well conduit; and

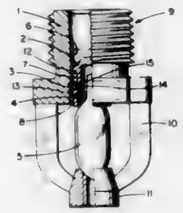
continuing to actuate the lock body to apply a setting force to the lower seal to compress the lower seal and lock the setting force into the lower seal.

4,657,085

SPRINKLER UNIT

Allan Jacobsen, Haarby, Denmark, assignor to G. W. Sprinkler A/S, Holte, Denmark

PCT No. PCT/DK83/00113, § 371 Date Aug. 3, 1984, § 102(e) Date Aug. 3, 1984, PCT Pub. No. WO84/02280, PCT Pub. Date Jun. 21, 1984
Continuation of Ser. No. 638,468, Aug. 3, 1984, abandoned. This PCT application Dec. 6, 1983, Ser. No. 873,089
Claims priority, application Denmark, Dec. 7, 1982, 5413/82
Int. Cl.[4] A62C *37/14*
U.S. Cl. 169—43 **2 Claims**



1. A sprinkler unit for use in systems for temperature responsive supply of a pressurized fluid through a piping to extiguish fires in buildings, comprising a unit body (1) having an axial central bore extending therethrough, a heat rupturable bulb (5), and a valve body (2) substantially axially movable with respect to the unit body in the bore of said unit body and closing the bore when in a resting position against an upstream end of the bulb via a sealing element (3), an upstream end of the unit body being adapted for stationary application to the piping and a downstream end of the unit body being provided with a bushing (11) for journalling a downstream end of the bulb, said valve body being movable through the bore of said unit body and provided in an outer surface with an axially enlarged annular groove (7) having said sealing element disposed therein adjacent an inner surface of the bore so that said sealing element is axially moveable along said groove, said groove in the inserted position of the valve body extending axially both upstream and downstream of a shoulder (15) provided in the inner surface of the bore and cooperating with a downstream shoulder (14) of the groove to retain the sealing element in a locking position constituting a tight-fit after exertion of a standard fluid test pressure on the assembled unit at a factory.

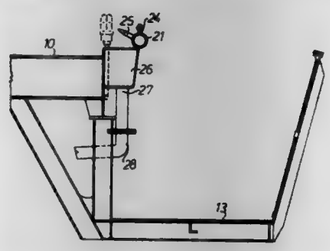
2. A method of assembling a sprinkler unit, comprising the steps of inserting a heat rupturable bulb into an end of a piping application which includes a unit body having a bore, journaling a downstream end of the bulb in a bushing located outside the downstream end of the bulb, then inserting a valve body having a sealing element loosely applied on an upstream shoulder of an axially extending annular groove in the outer surface of said valve body, partially into said bore in said unit body and into engagement with an upstream end of the bulb via an O-ring inserted on a shoulder at a downstream end of a valve body inner surface, and subjecting the unit thus assembled to a standard pressure test in a factory whereby the sealing element is moved downward in the annular groove and pressed against a downstream shoulder of the axially extending groove in the valve body, and simultaneously moved past a corresponding introverted shoulder on an inner surface of the bore in the unit body into a locking-and-sealing position in the unit body constituting a tight-fit between the last two mentioned shoulders.

4,657,086

HELICOPTER DECKS

Oscar Aanensen, N-4260 Torvastad, Norway

Filed May 15, 1985, Ser. No. 734,468
Claims priority, application Norway, Aug. 16, 1984, 843267
Int. Cl.[4] B64F *1/00*
U.S. Cl. 169—54 **9 Claims**



1. A helicopter deck equipped with a fire-extinguishing system comprising:

(a) gangway means extending around said deck and submerged relative to the plane of said deck; and

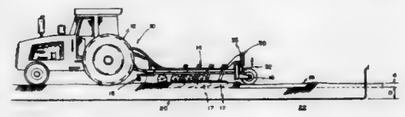
(b) means for conveying fire-extinguishing medium comprising a conduit mounted adjacent said gangway means to surround said deck at the periphery of the latter and having first and second sets of nozzles, said first set of nozzles being adapted to direct jets of fire-extinguishing medium of relatively low strength and relatively small range towards a predetermined region of said deck and said second set of nozzles being adapted to direct jets of fire-extinguishing medium of relatively high strength and relatively large range angularly of said deck and said first set of nozzles and in a direction towards another predetermined region substantially at the center of said deck.

4,657,087

VEHICLE CONTROL SYSTEM INCLUDING VEHICLE WITH STEERING AND ELEVATION CONTROL RELATIVE TO A FILAMENT

Zvi Livneh, 3290 Avondale Court, Windsor, Ontario, Canada N9E 1X6

Continuation-in-part of Ser. No. 464,466, Feb. 7, 1983, abandoned. This application May 23, 1983, Ser. No. 496,967
Int. Cl.[4] A01B *63/114, 69/04*
U.S. Cl. 172—3 **11 Claims**



1. A vehicle control system comprising

(a) a filament of metalic material adapted to be positioned in juxtaposition with the travelling surface, so as to trace out a predetermined course of travel;

(b) a prime mover mounted in a vehicle adapted to travel over the surface and having means for steering the same to follow said course of travel;

(c) a magnetic means mounted in a housing interconnected with the vehicle, that is magnetically responsive to the location of the said filament;

(d) a first position sensing means, affixed to the magnetic means, and mounted in the housing for sensing lateral positioning, relative to the housing of said magnetic means;

(e) first means responsive to the first position sensing means for driving said means for steering whereby to direct the travelling path of the prime mover in parallel to the path or course of the metalic filament,

(f) a second position sensing means attached to the magnetic means, and attachedly mounted to the housing for sensing the vertical position, relative to the housing, of said magnetic means; and,

(g) second means responsive to the second position sensing means for maintaining the second position sensing means at a predetermined distance, in elevation, relative to said filament.

4,657,088

ROTARY HAMMER DRIVING MECHANISM

Horst Grossmann, Hünfelden; Klaus Kalbacher, Rangendingen; Claus Kolesch, Bad Urach, and Karl Schekulin, Kirchheim-Teck Jesingen, all of Fed. Rep. of Germany, assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 5, 1985, Ser. No. 762,715
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429140
Int. Cl.[4] B25D *9/00*
U.S. Cl. 173—13 **11 Claims**

1. A rotary hammer, comprising:

a housing;

a piston reciprocally mounted in said housing for, in use, driving a beat piece;

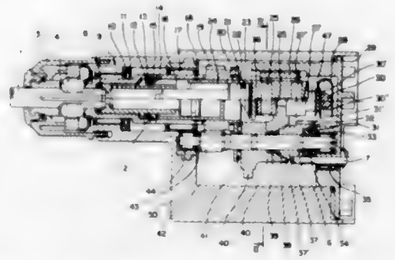
a rotatable drive element having a continuous fin around its circumference which cooperates with said piston so that as said drive element is rotated said piston moves back and forth in said housing;

said piston being provided with a pair of rollers which are disposed to opposite sides of and drivingly engaged by said fin;

said drive element being rotatably mounted on a drive shaft provided with a coupling element fast thereon, and said drive element being displaceable axially along said shaft for bringing said drive element into and out of driving engagement with said coupling element;

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a spring disposed between said coupling element and said drive elment and biasing them apart;
a rotatable tool spindle mounted in said housing and axially displaceable therein by contact pressure between a workpiece and a tool mounted in said rotary hammer to urge said drive element into driving engagement with said coupling element;
movement of said tool spindle being transmitted to said drive element by a separating disk;



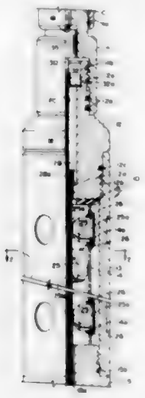
said disk having two spaced apart holes therein through which extend respectively said tool spindle and said drive shaft, said tool spindle and said drive shaft being rotatable in said holes; and
one side of said disk being acted upon by said tool spindle via a first needle bearing and an opposite side of said disk acting upon said drive element via a second needle bearing.

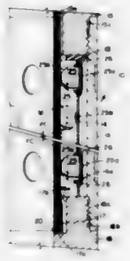
4,657,089

METHOD AND APPARATUS FOR INITIATING SUBTERRANEAN WELL PERFORATING GUN FIRING FROM BOTTOM TO TOP

Gregg W. Stout, Montgomery, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Jun. 11, 1985, Ser. No. 743,580
Int. Cl.[4] E21B *43/116*
U.S. Cl. 175—4.6 **29 Claims**





1. A perforating gun for a subterranean well, comprising: an elongated tubular carrier insertable in the well and defining a chamber normally sealed from entry of well fluids; a plurality of shaped charge containers transversely mounted in said carrier chamber in vertically spaced relation, each said shaped charge container having a primer end and a discharge end; a firing mechanism including a primer charge disposed above said shaped charge containers; a booster charge disposed below said shaped charge containers in the bottom of said chamber to be rendered inoperable by well fluids entering said chamber; primer cord means for detonating said shaped charges extending upwardly from said booster charge to pass adjacent all primer ends of said shaped charge containers; and means responsive to detonation of said primer charge for detonating said bottom booster charge to ignite said primer cord means to successively fire said shaped charges from the bottom of the gun upwardly to the top.

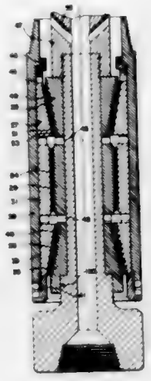
21. The method of detonating a plurality of vertically spaced shaped charges of a perforating gun for a subterranean well, comprising the steps of:
(1) at the well surface connecting a booster charge below all of the shaped charged and a firing mechanism above all of the shaped charges;
(2) connecting a detonation transmitting cord between the firing mechanism and the booster charge, said cord, when detonated, being incapable of detonating the shaped charges but capable of detonating the booster charge;
(3) running a primer cord in close proximity to each of said shaped charges and into contact with said booster charge; said primer cord being detonatable by said booster charge and having sufficient energy to successively fire each of said shaped charges; and
(4) lowering the perforating gun into the well to the desired location and actuating said firing mechanism, whereby said shaped charges are successively fired from the lowermost one upwardly.

4,657,090

TAPERED FRICTION BEARING ASSEMBLY

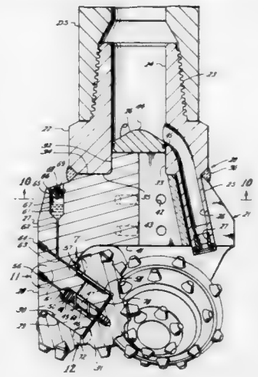
Bela Geczy, Orange, Calif., assignor to Smith International, Inc., Irvine, Calif.

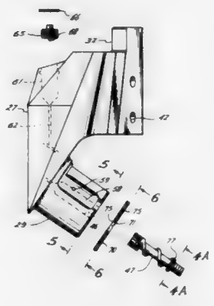
Filed Jan. 28, 1986, Ser. No. 823,344
Int. Cl.[4] E21B *4/02*; F16C *17/10*
U.S. Cl. 175—92 **5 Claims**



3. A drive assembly comprising:
a housing means;
a drive shaft positioned within said housing means;
an upper bearing means for absorbing both radial and thrust forces, said upper bearing means including:
a first upper bearing element mounted on said drive shaft and having an exterior frusto-conical bearing surface of a first selected taper;
a second upper bearing element on said housing means opposite said first upper bearing element and having an interior frusto-conical opening therein with the same taper as that of said first upper bearing element;
a radial bearing means for restricting bending of said drive shaft; said radial bearing means including:
a first radial bearing element mounted on said drive shaft below and adjacent to said first upper element and providing a first cylindrical radial bearing surface;
a second radial bearing element mounted on said housing means below and adjacent to said second upper element and providing a cylindrical radial bearing surface opposite said first cylindrical radial bearing surface;
a lower bearing means for absorbing both radial and thrust forces, said lower bearing means including:
a first lower bearing element mounted on said drive shaft and having an exterior frusto-conical bearing surface of second selected taper;
a second lower bearing element mounted on said housing means opposite said first lower bearing element and having an interior frusto-conical opening of the same taper as said first lower bearing element; and
the upper bearing means, radial bearing means, and lower bearing means providing a continuous cooling fluid flow path of circular cross section between the bearing elements on said housing means and the bearing elements mounted on said drive shaft, the radial bearing means further regulating the flow of said cooling fluid.

holds the cone on the bearing while permitting relative rotary movement between said cone and bearing and





preventing any substantialy longitudinal movement between said cone and bearing.

4,657,091

DRILL BITS WITH CONE RETENTION MEANS

Robert Higdon, 3300 Pebblebrook, Seabrook, Tex. 77586

Filed May 6, 1985, Ser. No. 730,550
Int. Cl.[4] E21B *10/22*
U.S. Cl. 175—229 **17 Claims**

1. A drill bit, comprising
a body having an upper end for connection to a rotary drilling string and legs depending from its lower end,
a journal bearing extending inwardly from each leg,
a cone fittable over the end of each bearing for rotation thereabout,
means forming a chamber between the walls of each bearing and cone,
a liquid filling said chamber from which air has been displaced, and
means seating said chamber,
said sealing means including means on said cone and said hournal bearing sealing therebetween,
said chamber being sealed to prevent leakage of air in or liquid out of the chamber to form a liquid lock which

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4,657,092

CIRCULATION REVERSING TOOL

Robert L. Franks, Jr., Lake Charles, La., assignor to J & F Oil Tools, Inc., Beaumont, Tex.

Filed Jul. 17, 1985, Ser. No. 755,909
Int. Cl.[4] E21B *21/00*
U.S. Cl. 175—232 **34 Claims**

1. A circulation tool for changing the path of circulation of drilling fluid at the drill bit without removing the drill bit from the borehole annulus comprising:
(a) a substantially hollow cylindrical body having a chamber including a first port disposed intermediate to a first portion having internal splines and a second portion having at least one by-pass passage extending axially from said chamber to a second port and at least one through passage extending from said chamber to the end of said substantially hollow cylindrical body;
(b) a telescoping member having a first end and a second end and a section including splines for engaging said internal splines of said substantially hollow cylindrical body;
(c) a diverter mounted to said second end of said telescoping member;
(d) means for rotatably positioning said diverter with respect

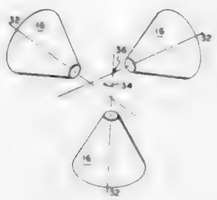
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to said at least one by-pass passage and said at least one through passage; and



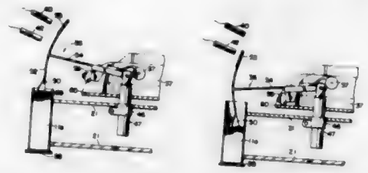
(e) a seal rotatably mounted on said substantially hollow cylindrical body and disposed intermediate said first port and said second port.

4,657,093
ROLLING CUTTER DRILL BIT
Percy W. Schumacher, Houston, Tex., assignor to Reed Rock Bit Company, Houston, Tex.
Continuation of Ser. No. 132,951, Mar. 24, 1980, abandoned. This application Feb. 3, 1982, Ser. No. 345,468
Int. Cl.[4] E21B *10/08*
U.S. Cl. 175—353 **6 Claims**



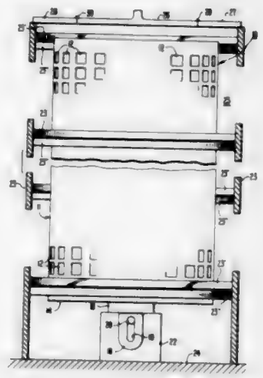
1. A rolling cutter drill bit for drilling through underground formations, said bit comprising:
- a main body having an upper end adapted for interconnection in a drilling string;
- a plurality of legs extending downwardly from said body, each having an inwardly projecting bearing journal formed thereon;
- a generally frustoconical cutter rotatably mounted on each said bearing journal, having a rotational axis generally coinciding with the central axis of said journal, and having a plurality of hard metal cutting elements inserted therein and protruding from the surface thereof;
- bearing means between each said cutter and bearing journal;
- said drill bit having a cutting diameter defined by the radially outermost located of said cutting elements on each said cutter and having a bit rotational axis passing longitudinally therethrough; and,
- the central axes of said journals being offset from said bit axis by an amount ranging from about one-sixteenth inch per inch to about one-eighth inch per inch of bit cutting diameter.

4,657,094
FILL HEIGHT DETECTOR IN WEIGHING AND PACKAGING SYSTEM
Oren A. Mosher, and Oren G. Mosher, both of Hayward, Calif., assignors to Package Machinery Company, East Longmeadow, Mass.
Filed Apr. 7, 1986, Ser. No. 849,032
Int. Cl.[4] G01G *19/52*; B65B *1/36*; G01F *17/00*; B67D *5/08*
U.S. Cl. 177—50 **6 Claims**



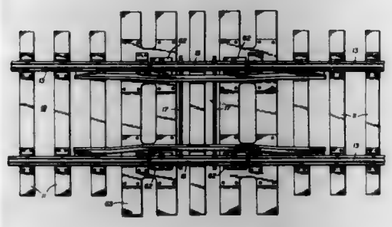
1. A weighing and packaging system comprising:
- means for supporting an empty package in an upright position,
- weighing and packaging means for weighing out a quantity of said product at a package weight near a target weight and discharging said quantity of product into said package,
- probe means for abutting the product in said package at the product fill level,
- insertion means for inserting said probe means into said package through an opening at the top until said probe means rests on said product at the fill level,
- means for sensing the position of said probe means while said probe means rests on said product in said package to detect whether said package is filled to a predetermined level, and
- control means connected to the sensor means for increasing the package weight above said target weight when said sensor means indicates that said package is filled to a level less than said predetermined level.

4,657,095
COMPACT ICE BASKET WEIGHING TOOL
Roy T. Hardin, Jr., Unity Township, Westmoreland County; Paul Pomalbo, N. Huntingdon, and Charles M. Scrabis, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 8, 1985, Ser. No. 785,380
Int. Cl.[4] G01G *19/52, 19/14, 5/04*; B66F *3/24*
U.S. Cl. 177—132 **13 Claims**



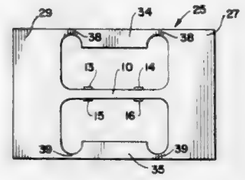
1. A weighing tool for vertically lifting an element having upper and lower ends from the upper end thereof, said element being mounted at the lower end thereof so as to permit said element to be raised vertically upwardly from a rest position within a corresponding compartment of a support which laterally confines said element, comprising:
- a support bar adapted to be received on said support for spanning said compartment in a position vertically displaced above said upper end of said element positioned therein;
- a housing;
- a piston received in sealed, sliding relationship within said housing and defining upper and lower chambers therein;
- a piston rod secured at its lower end to said piston and selectively connected at its upper end to said support bar;
- means for selectively connecting said housing to said upper end of said element with said housing disposed centrally of said element;
- means for introducing hydraulic fluid under pressure into said upper chamber for driving said housing upwardly relatively to said piston and raising said element therewith; and
- means responsive to the upward vertical raising of said element by said tool for providing an indication of the weight of said element.

4,657,096
LOAD BAR WEIGHING SYSTEM
John J. Angelbeck, Colorado Springs, Colo., assignor to Kaman Sciences Corporation, Colorado Springs, Colo.
Filed Dec. 6, 1984, Ser. No. 678,642
Int. Cl.[4] G01G *19/02, 19/04*
U.S. Cl. 177—163 **13 Claims**



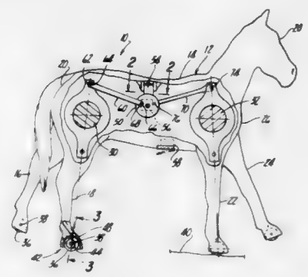
1. A weighing apparatus including:
- a section of isolated track rail separated and spaced at each end from the track rails of a railroad track;
- means supporting the isolated track adjacent the ends thereof to permit the isolated section to bend along the neutral axis thereof in response to a vertical load being applied thereto;
- motion sensing means operatively mounted upon said section of isolated track rail adapted to sense and measure the amount of bending of the neutral axis of the isolated track rail and produce an electrical output signal; and,
- system means for developing an output from said output signal which is a function of the amount of vertical load applied to the isolated track rail;
- wherein the rail support of the isolated section of track includes a pair of bearing means having a convex bearing surface attached to the isolated rail with the bearing surface thereof having a radius of curvature centered on the neutral axis of the rail and a bearing plate, adapted to provide earth support, having a concave bearing surface mating with said convex bearing surface to provide self-centering pivots for the isolated track rails.

4,657,097
LOAD CELL
Neil C. Griffen, Westerville, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio
Continuation of Ser. No. 579,488, Feb. 13, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 786,719
Int. Cl.[4] G01G *3/14, 3/08*
U.S. Cl. 177—211 **17 Claims**



1. A moment-insensitive load cell comprising a single beam member having a longitudinal and a lateral axis, said beam member having only first and second pairs of strain gauges mounted thereon, all of said gauges being mounted on the same horizontal surface of said beam member, the gauges of each pair being spaced apart longitudinally and sensing tensile and compressive strains, respectively, in said beam, the positions of said first pair of strain gauges with respect to the neutral axis of the beam being such that the gauges produce a correctable output response to loads applied off-center on said beam, said first and second pairs of strain gauges being connected in a bridge circuit, means for applying a load on said beam member between longitudinally spaced gauges, and a resistor connected in circuit with at least one of said strain gauges to make the output of said bridge circuit substantially independent of the position along at least one axis of said beam of a load applied thereto.

4,657,098
HOBBY HORSE
Roy Wilcox, Davison, Mich., assignor to Roy's Toys, Inc., Davison, Mich.
Filed Sep. 30, 1985, Ser. No. 781,676
Int. Cl.[4] B62D *57/02*
U.S. Cl. 180—8.1 **6 Claims**



1. A hobby horse comprising:
- an elongated body having an upper surface adapted to support a rider,
- at least one front leg and at least one rear leg,
- means for pivotally mounting an upper end of each leg to said body about a substantially horizontal axis extending transversely with respect to a longitudinal axis of said body so that the axes of said legs are spaced apart and parallel to each other and so that said legs depend down-

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wardly from said body, said pivotal mounting means comprising two cylindrical shafts, each shaft having both ends received in cylindrical recesses integrally molded in the body,

at least two wheels, one wheel being secured to a lower end of each leg, said wheels adapted to engage a ground support surface,

means for preventing rotation of said wheels in one rotational direction while permitting rotation in the opposite rotational direction,

means for reciprocally pivoting said legs about an axis, said means comprising an electric motor contained within said body, means for electrically powering said motor contained within said body, and means for mechanically connecting said motor to said legs, and,

wherein said body comprises a front section and a rear section, said rear leg being connected to said rear section and said front leg being secured to said front section, means for pivotally attaching said front section to said rear section about a vertical axis, said pivotal attaching means comprising

a semi-spherical socket integrally formed with said rear section and a semi-spherical ball integrally formed with said front section, said ball being rotatably received in said socket.

4,657,099

TRACK-LAYING AUXILIARY THRUST VEHICLE

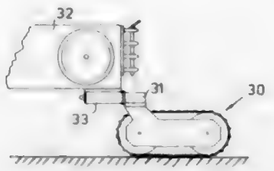
Eduard Baltensperger, Eichstrasse 176, Brütten, Switzerland

Filed Jul. 3, 1985, Ser. No. 751,499

Claims priority, application Switzerland, Jul. 5, 1984, 3243/84

Int. Cl.⁴ B62D *55/04*

U.S. Cl. 180—9.28 **14 Claims**



1. A thrust unit for use with a steerable vehicle comprising

a track-laying vehicle having a chassis, at least one endless track mounted on said chassis and means carried by said chassis for driving said track; and

means connected to said chassis for removably coupling said track-laying vehicle to the steerable vehicle to extend rearward of the rear wheels of said steerable vehicle and for transferring thrust produced by said track laying vehicle to said steerable vehicle land for reducing the per unit area ground pressure of said steerable vehicle.

4,657,100

PORTABLE GOLF CART

Andrew R. Lewis, 9166 E. 4th St., Tulsa, Okla. 74112

Continuation-in-part of Ser. No. 661,076, Oct. 15, 1984, abandoned. This application Dec. 6, 1985, Ser. No. 806,036

Int. Cl.⁴ B62B *1/04*

U.S. Cl. 180—19.1 **8 Claims**

1. A portable golf cart comprising:

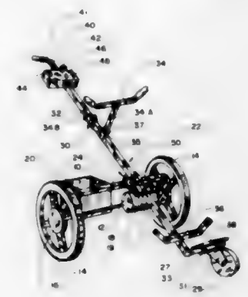
an axle;

wheels supported by said axle;

a main frame supported by said axle;

a bag support frame having an upper support frame section and a lower support frame section pivotally attached to each other such that the upper bag support frame section can be folded over the lower support frame section;

a pivot connector attaching said bag support framed to said main frame so that said bag support frame can be rotated into substantial alignment with said axle, said connector including a lower plate attached to said main frame, an upper plate attached to said lower bag support frame, a bearing plate positioned between said lower plate and said upper plate, said lower plate having first and second spaced apart locking holes extending at least partially therethrough, said upper plate and said bearing plate having a rod hole extending therethrough, a rod extendable through said rod hole and biased toward said lower plate, a handle for pulling said rod upwardly out of said first locking hole of said lower plate so that said upper plate and said bearing plate may be rotated with respect to said lower plate until said rod is aligned with the said second locking hole in said lower plate, and a bolt extending through said rod hole and into a selected one of said locking holes.



4,657,101

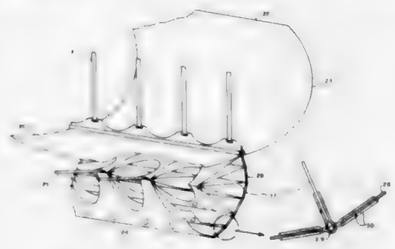
PARASOL DESIGN FOR TRANSVERSELY SUPPORTED MEMBRANE SEAL

Sydney Davis, Jerusalem, Israel, and Alexander Malakhoff, Arlington, Va., assignors to U.S. Dept. of Navy, Bethesda, Md.

Filed Jun. 13, 1985, Ser. No. 744,592

Int. Cl.⁴ B60V *1/16*

U.S. Cl. 180—127 **16 Claims**



1. A seal structure for an air cushion marine vessel of the type having a hull with spaced, depending sidewalls for forming a plenum chamber therebetween comprises:

a flexible bag secured to the hull and positioned between the sidewalls to form an expansible chamber, said bag being deformable in response to fluid pressure exerted thereon;

a stiffened lobe portion positioned beneath said bag, said stiffened lobe portion including a membrane section and a plurality of elongated stiffener members connected to and extending transversely across said membrane section; and

means connected to the hull for flexibly supporting said stiffened lobe portion beneath said flexible bag which

support means includes at least one positioning element attached to said hull through an adjusting strap, axis means fixedly connected to said hull, oscillatory means pivotally connected about said axis means and operatively connected along its oscillatory path to said positioning element, characterized in that at least one of said elongated stiffener members is pivotally connected to said axis means.

4,657,102

FOUR-WHEEL STEERING DEVICE FOR VEHICLE

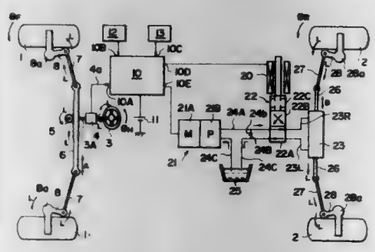
Hirotaka Kanazawa; Terahiko Takatani, and Naoto Takata, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Continuation of Ser. No. 546,174, Oct. 27, 1983, abandoned. This application Jan. 27, 1986, Ser. No. 821,875

Claims priority, application Japan, Oct. 28, 1982, 57-189448; Oct. 29, 1982, 57-190045; Oct. 29, 1982, 57-190046

Int. Cl.⁴ B62D *5/06, 3/06*

U.S. Cl. 180—140 **13 Claims**



1. A four-wheel steering device for a vehicle comprising a front wheel steering mechanism for turning the front wheels, a rear wheel steering mechanism for turning the rear wheels, a vehicle speed sensor for detecting the vehicle speed, and a controller for controlling the rear wheel steering mechanism, characterized in that said controller controls the rear wheel steering mechanism so that the rear wheel turning angle is changed in accordance with a turning angle ratio characteristic curve which is defined on a θF–θR cartesian coordinate system wherein θF and θR respectively represent the front wheel turning angle and the rear wheel turning angle, said cartesian coordinate system including an origin, a positive θF axis, a negative θR axis and a positive θR axis, said θF axis and said positive θR axis defining a quadrant I and said θF axis and said negative θR axis defining a quadrant IV, a positive θR value denoting turning of the rear wheels in equal phase with the front wheels and a negative θR value denoting turning of the rear wheels in reverse phase to the front wheels, and which is changed according to the vehicle speed, the turning angle ratio characteristic curve for very low vehicle speeds not higher than a first predetermined speed including a first portion extending on said θF axis in the region in which the value of θF is smaller than a first predetermined value and a second portion having a negative inclination to extend into quadrant IV so that the rear wheels are turned in the reverse phase when the front wheel turning angle exceeds the predetermined value, the first and second portions being connected with each other at a reverse phase starting point having values of θF and θR respectively equal to the first predetermined value and zero, and the turning angle ratio characteristic curve for vehicle speeds higher than said first predetermined speed having a positive inclination to extend into quadrant I so that the front wheels and rear wheels are turned in the equal phase, said turning angle ratio characteristic curve for vehicle speeds higher than said first predetermined speed comprising a plurality of lines with different positive inclinations extending from the origin of the θF and θR axes, increasing inclination of the line corresponding to increasing vehicle speed; a turning angle sensor for detecting whether or not the front wheel turning angle (θF) exceeds the first predetermined value and said controller includes means for setting the turning angle ratio curve for very low vehicle speeds in response to output of the turning angle sensor when the vehicle speed detected by the vehicle speed sensor is not higher than the first predetermined speed and means for setting the turning angle ratio characteristic curve for vehicle speeds higher than the first predetermined speed when the vehicle speed detected by the vehicle speed sensor is higher than the first predetermined speed.

4,657,103

ELECTRIC POWER STEERING SYSTEM FOR VEHICLES

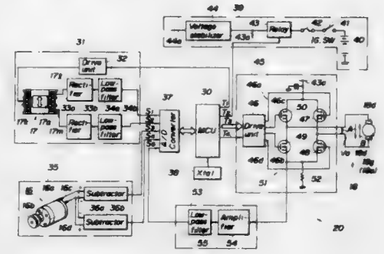
Yasuo Shimizu, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1986, Ser. No. 863,898

Claims priority, application Japan, May 27, 1985, 60-113499

Int. Cl.⁴ B62D *5/08*

U.S. Cl. 180—142 **8 Claims**



1. An electric power steering system (**200**) for vehicles, comprising:

an input shaft (**4**) operatively connected to a steering wheel (**6**);

an output shaft (**5**) operatively connected to a steered wheel;

an electric motor (**18**) for operatively supplying auxiliary torque to said output shaft (**5**);

torque detecting means (**31**) for detecting steering torque (Ts) acting on said input shaft (**4**); and

drive control means (**30, 45, 53**) for giving said electric motor (**18**) a drive signal (Va), taking into consideration an output signal (S_1, S_2) from said torque detecting means (**31**),

wherein:

said steering system (**200**) further comprises:

means (**35**) for detecting the steering speed (Ns) of said input shaft (**4**); and

means (**115, 116, 122–126, 130–132**) for detecting the steering acceleration (dNs) of said input shaft (**4**); and

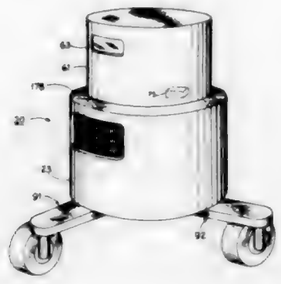
said drive control means (**30, 45, 53**) is adapted to give said motor drive signal (Va) to said electric motor (**18**), taking into consideration an output signal (S_3, S_4) from said steering speed detecting means (**35**) and an output signal (dNs) from said steering acceleration detecting means (**115, 116, 122–126, 130–132**) in addition to said steering torque signal (S_1, S_2).

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4,657,104
CONCENTRIC SHAFT MOBILE BASE FOR ROBOTS AND THE LIKE

John M. Holland, Shawsville, Va., assignor to Cybermation, Inc., Roanoke, Va.

Continuation-in-part of Ser. No. 535,168, Jul. 23, 1983, Pat. No. 4,573,548. This application Mar. 27, 1985, Ser. No. 716,671
Int. Cl.[4] B62D 57/00
U.S. Cl. 180—211 49 Claims

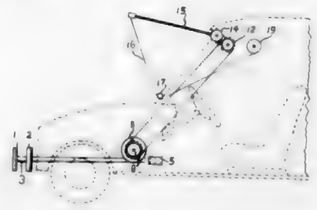


1. A mobile base for movement on a surface comprising:
A. a plurality of leg assemblies, each leg assembly including,
1. a pivotable wheel assembly, the wheel assembly including,
a. a wheel having an axle extending therefrom,
b. a first gear mounted to the axle so as to impart axial rotation thereto,
c. a second gear meshed with the first gear so as to impart rotation to the first gear,
d. a shaft having one end connected to the second gear for rotation thereof,
e. a third gear connected to the second end of the shaft,
f. an outer housing positioned about the shaft and the axle so that pivoting the housing causes simultaneous pivoting of the wheel, and
g. a steering gear secured to the housing for controlling the pivotal orientation of the wheel assembly, and
2. a leg assembly comprising,
a. a second drive shaft,
b. a first steering shaft concentrically positioned about the second drive shaft,
c. gears mounted at each end of the second drive shaft and the second steering shaft with the gear at a first end of the second drive shaft meshed with the third gear of the wheel assembly and the gear at the first end of the first steering shaft meshed with the steering gear of the wheel assembly housing;
B. a universal driving and steering assembly comprising
1. a third drive shaft having a drive gear mounted thereon for simultaneous engagement with the drive gear on the second end of the second drive shaft of each leg assembly, and
2. a second steering shaft having a steering gear mounted thereon for simultaneous engagement with the steering gear on the second end of the first steering shaft of each leg assembly;
C. first means for powering the third drive shaft; and
D. second means for powering the second steering shaft;
whereby simultaneous steering and/or axial rotation of the wheels associated with each of the wheel assemblies is achieved and further wherein the transfer of power from the drive and steering means to the wheel and wheel assembly of each leg assembly is achieved through the use of concentric shafts.

4,657,105
OPENABLE WINDSHIELD SYSTEM

Thomas S. Miyada, P.O. Box 430, Summit, N.J. 07901-0430

Filed Jan. 21, 1986, Ser. No. 820,560
Int. Cl.[4] B60K 28/14; B60R 21/08
U.S. Cl. 180—274 4 Claims



1. An openable windshield system in combination with a vehicle for preventing occupants of a front seat of said vehicle in the event of sudden decelleration from being thrown against a windshield of the vehicle, said system comprising:
a collision contact bar positioned horizontally and parallel to a front bumper of the vehicle with an air space between said bumper said contact bar;
two horizontal longitudinal bars having forward ends extending through a hole in the vehicle bumper and attached to said contact bar and a rearwardly extending end extending into an engine compartment of the vehicle, each of said horizontal bars having said rear end slidably held in a holder attached to a body section of the vehicle and a horizontal row of gear teeth;
a first shaft positioned perpendicular to said horizontal longitudinal bars, and having gear wheels in mesh with the gear teeth on each of said horizontal longitudinal bars;
two electric motors connected to opposite ends of said first shaft, each having a first gear wheel keyed to said first shaft; said electric motors connected to an electrical circuit having a switch which in response to rearward motion of said longitudinal bars activate said electric motors;
a second shaft rotatably mounted to a front roof section of the vehicle and having a pair of gear wheels mounted thereon;
two chains, each chain operably attached to one of said first gear and said twin gears;
a third shaft rotatably mounted to said front roof section adjacent said second shaft, such third shaft having gears mounted thereon in mesh with said twin gears;
said windshield being openable and having an upper frame member securely attached to said third shaft so as to rotate therewith and a lower frame member connected with a cord to a safety net where rearward movement of said horizontal longitudinal bars activates said electrical motors thereby causing the gear wheels to turn, the windshield to open, and the safety net to be pulled in front of the vehicle occupant.

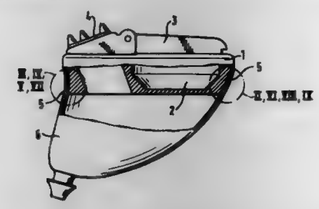
4,657,106
"EAR" HEARING AID

Heinz Hardt, Vienna, Austria, assignor to Viennatone Gesellschaft m.b.H., Vienna, Austria

Filed Nov. 5, 1985, Ser. No. 795,203
Claims priority, application Austria, Nov. 26, 1984, 3747/84
Int. Cl.[4] A61B 7/02
U.S. Cl. 381—68.4 9 Claims

1. A hearing aid adapted to be worn in the ear, which comprises
(a) a housing receiving a sound transducer and a sound amplifier, the housing being shaped to fit into the ear and having a circumferentially extending upper rim defining an opening,

(b) a mounting plate defining a space for holding a battery and a sound volume adjustment control, the mounting plate having a circumferentially extending outer rim projecting from the mounting plate into the housing opening and insertable therein, the upper housing rim and the outer mounting plate rim engaging along the entire circumference thereof, and

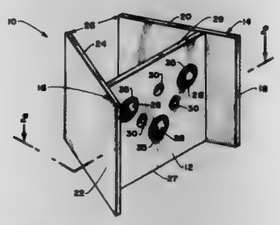


(c) detachable fastening means connecting the upper housing rim and the outer mounting plate rim along their entire circumference and fastening the upper housing rim under radially extending fastening force to the outer mounting plate rim.

4,657,107
LOUDSPEAKER CABINET

Warren S. Harwood, 6616 Maplegrove St., Agoura Hills, Calif. 91301

Filed Feb. 18, 1986, Ser. No. 830,625
Int. Cl.[4] H05K 5/00
U.S. Cl. 181—144 8 Claims

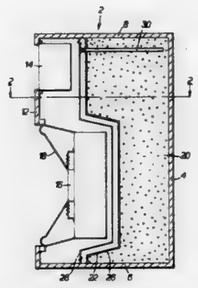


1. A loudspeaker cabinet comprising:
a substantially planar front panel having an upper edge and a lower edge, said lower edge adapted to rest on a supporting surface, said front panel having side edges;
an array of loudspeakers mounted within said front panel, each said loudspeaker having a diaphragm, said diaphragms being located in substantial planar alignment; and:
a first side panel connected to one said side edge, a second side panel connected to the other said side edge, both said first and second said side panels being planar, a portion of said first side panel protruding forwardly of said front panel forming a front section, a portion of said first side panel protruding rearwardly of said front panel forming a first rear section, a portion of said second side panel protruding forwardly of said front panel forming a second front section, a portion of said second side panel protruding rearwardly of said front panel forming a second rear section, both said first side panel and said second side panel oriented at an inclined angle relative to said front panel so said first and second rear sections are located closer together (but spaced apart) than said first and second front sections.

4,657,108
CONSTANT PRESSURE DEVICE

Brian D. Ward, 36 Glenferrie Road, Malvern, Victoria, Australia

PCT No. PCT/AU84/00033, § 371 Date Nov. 2, 1984, § 102(e) Date Nov. 2, 1984, PCT Pub. No. WO84/03600, PCT Pub. Date Sep. 13, 1984
PCT Filed Mar. 2, 1984, Ser. No. 672,241
Claims priority, application Australia, Mar. 2, 1983, PF8276
Int. Cl.[4] H05K 5/00
U.S. Cl. 181—151 16 Claims



1. A loudspeaker assembly comprising:
a speaker box,
at least one loudspeaker mounted so that a rear part of the speaker is in communication with the interior of the box,
a gas or vapor located within the box, said gas or vapor having one or more components each exerting a partial pressure, and
a mass of material located in the box, said material being substantially adsorbent to at least one of said components of the gas or vapor to a degree which is dependent upon the partial pressure thereof whereby pressure increases in the gas or vapor in the box resulting from excursions of said loudspeaker into the box, are relatively low because of increased adsorption of said component on said mass of material.

15. A method of stabilizing pressure in an effectively closed volume which contains a gas or vapor, said gas or vapor having one or more components each exerting a partial pressure, and is subject to variations in volume comprising the step of introducing into the volume a mass of substantially adsorbent material, said adsorbent material being selected whereby at least one of said components of the gas or vapor is adsorbed thereon to a degree which depends upon the partial pressure of said component, whereby pressure variations consequent upon said variations and volume are less than those which would occur if said material were not present in the volume.

4,657,109
ATTACHMENT JIB FOR CRANES

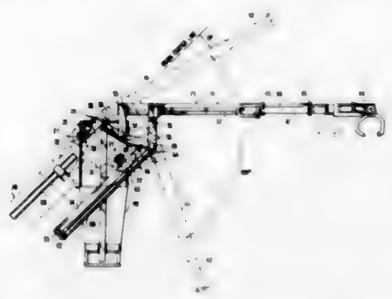
Russell L. Sterner, Greencastle, Pa., assignor to Kidde, Inc., Saddle Brook, N.J.

Division of Ser. No. 310,768, Oct. 13, 1981, Pat. No. 4,493,426. This application Sep. 24, 1984, Ser. No. 653,589
Int. Cl.[4] E06C 5/06; B66F 9/06
U.S. Cl. 182—2 3 Claims

1. A worker support attachment for a crane boom comprising a support base releasably coupled to a pair of vertically spaced parallel, sheave-supporting shafts on the nose block of the crane boom, said support base comprising a frame having upper and lower laterally spaced parallel arms straddling the nose block of said crane boom, said parallel arms including bifurcated end portions straddling the end portions of said pair of shafts on said crane boom, removable tethered wedge blocks

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mounted within the bifurcated end portions and engaging said shafts, removable, tethered locking pins extending through said bifurcated end portions and wedge blocks for retaining said wedge blocks in the operative position relative to the shafts and bifurcated end portions, whereby the support base is releasably locked to said shafts; spaced 5 parallel members rigidly interconnecting said arms, a transversely extending tubular member mounted on said members and connected between said spaced parallel members, a shaft extending through said tubular member, and a worker support means pivotally mounted on and suspended from said shaft.

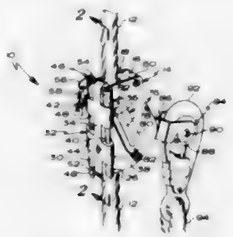


4,657,110

INERTIA ROPE GRAB

J. Thomas Wolner, Red Wing, Minn., assignor to D B Industries, Inc., Red Wing, Minn.

Filed Dec. 10, 1984, Ser. No. 679,624
Int. Cl.⁴ A62B *1/14*
U.S. Cl. 182—5 **10 Claims**



1. A rope grab safety device for restrainably engaging a vertically extending safety line comprising:

a mounting bracket having spaced apart, vertically extending wall segments defining therebetween a vertical channel through which a safety line extends when the bracket is mounted in its upright position of use;

a safety line retainer member extending across said channel between said wall segments and cooperating therewith to contain a safety line within said channel;

a pair of guide tracks formed in said wall segments parallel to each other in opposed, spaced apart relation adjacent to said channel, said guide tracks being disposed at an angle to the vertical and extending upwardly and toward said retainer member, each said guide track having an upper end and a lower end;

a free-floating stop roller extending between said wall segments and having end extremities positioned in said guide tracks, whereby said roller may travel up and down in said guide tracks, said roller being positioned relative to said channel at a location wherein said stop roller will be closer to said retainer member at said track upper ends than the thickness of said line and further from said retainer member than said thickness at said track lower ends; and

a pivot arm comprising first and and second ends with said first end comprising means for connection to a safety harness, said arm being pivotally mounted to said wall segments for movement between first and second positions, whereby an upward force on said pivot arm first end first locates said pivot arm in said first position free of any mechanical connection with said stop roller and thus with no restraining force being applied against a safety line within said channel, and said pivot arm being positioned relative to said stop roller to cause said pivot arm second end to contact and mechanically actuate said roller as said arm moves toward said second position thereby forcing said stop roller upwardly in said guide tracks and against said safety line to thereby restrainably engage said safety line between said roller and said retainer member.

4,657,111

SCAFFOLD FOR SERVICING VESSEL PROPELLERS AND THE LIKE

Donald Tremblay, Contrecoeur, Canada, assignor to Marine Industrie Limitee, Canada

Filed Jan. 23, 1986, Ser. No. 821,685
Claims priority, application Canada, Nov. 22, 1985, 496023
Int. Cl.⁴ E04G *1/22*; B60P *1/16*
U.S. Cl. 182—36 **9 Claims**



1. For use in a shipyard, a scaffold for working under the stern of vessels to service propellers, propeller shafts, stern tubes, rudders and the like, said scaffold comprising:

a movable carriage;

vertical support means mounted to said carriage;

longitudinal platform means mounted at the upper end of said vertical support means and adapted for longitudinal displacement relative to said support means;

first actuating means for raising said platform means to said propeller, propeller shaft, stern tubes, rudders or the like, and for tilting said platform means along a trajectory coinciding with the longitudinal axis of said propeller shaft or stern tube; and

second actuating means connected between said platform means and said support means for longitudinally displacing said platform means relative to said support means.

4,657,112

MAST CONSTRUCTION FOR PEDESTAL SCAFFOLD

Michael D. Ream, Lafayette, and Gerald L. Claxton, Fresno, both of Calif., assignors to Up-right, Inc., Berkeley, Calif.

Filed Apr. 25, 1986, Ser. No. 856,050
Int. Cl.⁴ E04G *1/22*
U.S. Cl. 182—63 **7 Claims**

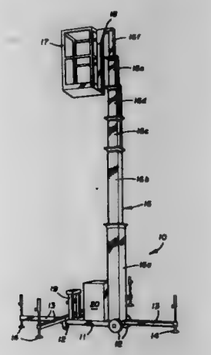
1. A pedestal scaffold comprising:

(a) a base member having ground engageable supports,

(b) a vertical mast mounted on said base member, said mast having a plurality of telescopically nested tubular mast sections of rectangular cross-section, the majority of which mast sections are made from thin-walled sheet aluminum with rounded corners and a vertical stiffening rib formed on each side and extending the height thereof,

(c) a first set of four plastic slide blocks mounted on the upper end of each mast section except the innermost section, each of the four slide blocks in a set being mounted at a different one of the inside corners of a mast section, each slide block having an outer surface of a shape complementary to the shape of the inside corner of the mast section to which it is mounted and having an inner surface of a shape complementary to the shape of the outside corner of the next inner mast section adjacent thereto,

(d) a second set of four plastic slide blocks mounted on the lower end of each mast section except the outermost section, each of the four slide blocks of a set being mounted at a different one of the outside corners of a mast section, each slide block having an inner surface of a shape complementary to the shape of the outside corner to which it is mounted and an outer surface of a shape complementary to the shape of the inner corner of the next outer mast section adjacent thereto,



(e) a work cage mounted on the upper end of the innermost of said mast sections, said work cage being spaced horizontally from said innermost mast section,

(f) an extensible ram vertically disposed in said mast and having a piston member and a housing member, one of which members is secured to the lower end of the outermost of said mast sections and the other of which members is secured to the lower end of the next innermost mast section,

(g) extending means for upwardly extending all of said mast sections which are inwardly of the next to outermost mast sections in response to upward movement of said next to outermost mast section relative the outermost mast section, said means including a plurality of chains interconnecting said mast sections and located on the side of said mast sections opposite to said work cage.

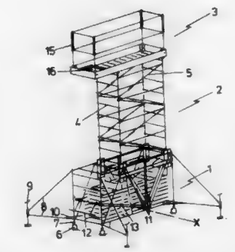
4,657,113

APPARATUS FOR ELEVATING AND LOWERING SCAFFOLDING

Colm J. Costello, 4 Seamount Road, Malahide, County Dublin, Ireland

Filed Jan. 17, 1986, Ser. No. 820,403
Claims priority, application Ireland, Jan. 24, 1985, 158/85; Oct. 4, 1985, 2432/85
Int. Cl.⁴ E04G *1/34*
U.S. Cl. 182—63 **9 Claims**

1. Apparatus for elevating and lowering scaffolding comprising (a) a base; (b) associated with the base, a plurality of movable scaffold guides, such that repeating elements of an erect scaffold stage disposed above the base may be moved horizontally in one direction so as to be supported by the movable guides; (c) vertical movement means for causing simultaneous movement, between a lower and upper position, of the movable guides and scaffold elements supported thereby; (d) associated with the base, a plurality of fixed guides, such that elements of an erect scaffold stage above the base may be moved horizontally in the opposite direction so as to be supported by the fixed guides; and (e) means for preventing horizontal movement of erect scaffold stages in either direction when the movable guides are between the lower and upper positions; whereby scaffolding may be elevated or lowered by operating the vertical movement means to move the movable guides to their lower or upper positions respectively, moving the scaffolding horizontally so that elements of an erect stage of the scaffolding are supported by the movable guides, then operating the vertical movement means to move the movable guides to their opposite position, and finally moving the scaffolding horizontally so that repeating elements of an erect stage of the scaffolding are supported by the fixed guides.

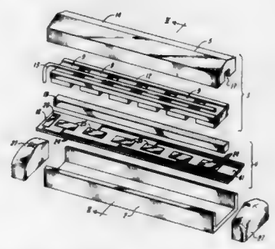


4,657,114

BRIDGE PICKUP FOR STRING INSTRUMENT

Timothy P. Shaw, Kalamazoo, Mich., assignor to Gibson Guitar Corp., Wilmington, Del.

Filed Mar. 27, 1985, Ser. No. 716,410
Int. Cl.⁴ G10H *3/18*
U.S. Cl. 84—1.16 **13 Claims**



1. A bridge pickup for an instrument having strings, such pickup comprising:

a plurality of piezo sensor elements, each element having an upper and a lower electrode contact face;

a holding means, for holding the sensor elements in a fixed generally elongate spatial array;

a generally elongate cast member encapsulating the sensor elements and the holding means so as to form a unitary sensor assembly, said cast member including an upper crest portion above the upper contact faces for contacting the strings of the instrument and transmitting vibrations therefrom to the sensor elements below, said cast member further having a groove therein at a portion thereof below the sensor elements, such groove extending to the lower contact faces of the sensor elements;

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conductive means for providing an output from the sensor elements; and

base means defining a channel for fixedly receiving the sensor assembly and conductive means therein.

4,657,115

METHOD AND APPARATUS FOR THE AUTOMATIC LUBRICATION OF THE LINKS OF A CONTINUOUSLY MOVING MATERIAL TRANSPORT CHAIN IN A TENSIONING MACHINE

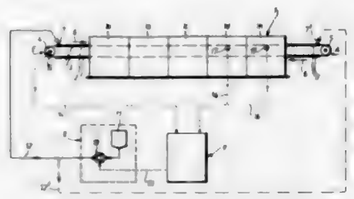
Harry Grossen, Beuningen/Neckar, Fed. Rep. of Germany, assignor to Bruckner Trockentechnik, Leonberg, Fed. Rep. of Germany

Filed Apr. 22, 1986, Ser. No. 854,528

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1985, 3523254

Int. Cl.⁴ F01M *1/08*

U.S. Cl. 184—6.1 **9 Claims**



1. Method of automatic lubrication of the links of a continuously moving material transport chain in a tensioning machine for drying and/or fixing lengths of textile material, in which the chain links are counted as pulses and the pulse count signal is supplied to a counter in a control arrangement which switches on the supply of lubricant to the transport chain via the counter in each case for the duration of at least one complete circuit of the chain, and the number of chain links which define the lubrication time interval is preset in this counter, characterised in that

in addition the temperature inside the tensioning machine is measured,

a multiplication factor for the pulse figure which is proportional to the speed at which the chain goes round is formed from the actual value obtained for the temperature,

the multiplication factor is superimposed upon the pulse count signal and

the total signal resulting from the product of the multiplication factor times the pulse count signal is supplied to the counter, which emits a control signal to switch on the supply of lubricant when a predetermined target figure is reached.

4,657,116

VIBRATION-ISOLATING APPARATUS

Terry N. Gardner; James N. Brekke; Lawrence P. Krolikowski, all of Houston, and Raymond E. Dextraze, Dallas, all of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Continuation of Ser. No. 354,562, Mar. 4, 1982, abandoned. This application Jul. 17, 1985, Ser. No. 756,558

Int. Cl.⁴ B66B *9/00*

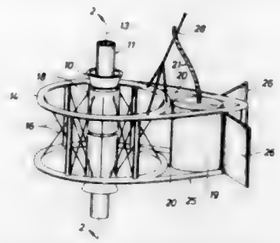
U.S. Cl. 187—1 R **12 Claims**

1. A vibration-isolating apparatus for transporting equipment along a vibrating, substantially vertical directional guide having a longitudinal axis and being located in a body of water, comprising:

a guide member which is disposed in operational relationship with the directional guide and is transportable along the length of the directional guide;

a frame means connected to the equipment and being disposed about and spatially separated from said guide member to permit relative movement without contact therebetween;

one or more shock-absorbing members connecting said guide member to said frame means for attenuating vibrations induced by the directional guide which act on the equipment; and



control means connected to the apparatus for transporting the apparatus along the directional guide to a subsea location and for raising the apparatus to the water surface.

4,657,117

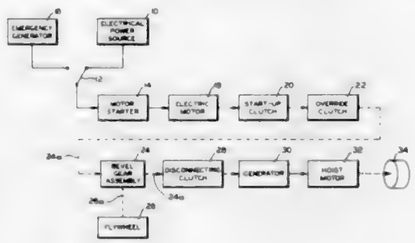
ELEVATOR POWER SUPPLY AND DRIVE SYSTEM

Robert J. Lauer, Toledo, Ohio, assignor to Schindler Haughton Elevator Corporation, Toledo, Ohio

Filed Jul. 2, 1984, Ser. No. 626,893

Int. Cl.⁴ B66B *1/00*

U.S. Cl. 187—114 **15 Claims**



1. A power supply and drive system for operating an elevator comprising:

a power source;

means connected to said power source for generating a mechanical output at an energy level limited to approximately the average power requirement of the elevator over a prolonged duty period;

means for storing energy coupled to said mechanical output generating means for storing energy when an actual power requirement of the elevator is less than said average power requirement and for supplying such stored energy when the actual power requirement of the elevator exceeds said average power requirement; and

drive means coupled between said mechanical output generating means at one input and the elevator at an output, and coupled between said energy storage means at another input and the elevator at said output for operating the elevator.

4,657,118

ANTI-SKID DEVICE

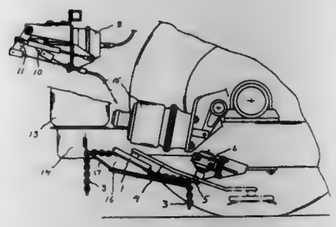
Olle G. Andersson, Linköping, Sweden, assignor to Onspot AB, Linköping, Sweden

Filed Apr. 23, 1985, Ser. No. 726,249

Claims priority, application Sweden, Apr. 27, 1984, 8402335

Int. Cl.⁴ B60T *1/00*; F16C *1/12*

U.S. Cl. 188—4 R **6 Claims**



1. An anti-skid device for use with a vehicle having a wheel, said device comprising a rotatable chain pulley provided with chain pieces, means for moving said chain pulley from a stowed location to a working position and a shelf, the chain pulley at the working position being in contact with a side of the vehicle wheel so that the chain pulley is rotated by the wheel, whereby the chain pieces are directed under the vehicle wheel as the chain pulley is rotated, the movement of the chain pulley from the working position to the stowed location being generally lateral, the shelf being affixed to the vehicle so as to be stationary relative to the stowed location, said shelf being positioned beneath the stowed location, the shelf being wider than the chain pulley and positioned relative to said chain pulley at said stowed location so that the shelf draws up sufficient portions of the chain pieces when the chain pulley is moved to the stowed location to prevent chain pieces from contacting the ground, whereby the shortest vertical distance from the pulley wheel at the stowed location to the ground is less than a length of one of the chain pieces.

4,657,119

DEVICE FOR ATTACHING A COMPONENT OF A STRUT INCORPORATING AN AUTOMATIC ADJUSTMENT DEVICE FOR A SHOE OF A DRUM BRAKE

Michel Dearee, Aulnay-sous-Bois, and Jean-Yves Michaud, La Courneuve, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Continuation of Ser. No. 669,559, Nov. 8, 1984, abandoned. This application Jun. 16, 1986, Ser. No. 874,881

Claims priority, application France, Nov. 21, 1983, 83 18489

Int. Cl.⁴ F16D *51/18, 65/00, 65/52*

U.S. Cl. 188—79.5 R **5 Claims**



1. A device for attaching a component of an adjustable strut to a shoe of a drum brake, the adjustable strut comprising an automatic adjustment device that operates as a function of brake friction lining wear, the shoe having a circumferentially extending web with a recess formed therein, the recess having a bearing zone and a projection extending adjacent an opening of the recess, said component comprising a portion having a groove adjacent an end of the portion, the portion disposed in an operating position in said recess between the bearing zone and projection with the projection extending into the groove to immobilize the component relative to the web so that axial loading imposed upon said strut is transmitted directly to the web, the portion maintained in said operating position by means of an elastic member than engages and exerts on the component a transverse biasing force that biases the portion in a circumferential direction relative to said brake and into engagement with the projection, the elastic member disposed between the shoe and portion so as to exert said transverse biasing force to maintain the strut and web in a direct load-bearing relationship, the elastic member positioned within said recess between an edge of the recess and the portion, the elastic member comprising a resilient clip having three arms, two of said arms being a complementary shaped pair of arms received about said portion and within said groove, the third arm extending from said elastic member to engage said edge, and ends of the pair of arms engaging associated sides of said projection to maintain the elastic member in position relative to said web.

4,657,120

FLYWHEEL MECHANISMS FOR ANTI-SKID BRAKING SYSTEMS

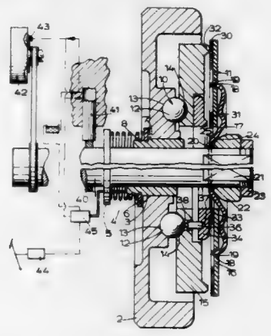
Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Public Limited Company, England

Filed Mar. 18, 1985, Ser. No. 712,859

Claims priority, application United Kingdom, Mar. 29, 1984, 8408165

Int. Cl.⁴ B60T *8/02*

U.S. Cl. 188—181 A **5 Claims**



1. A flywheel mechanism for vehicle anti-skid braking systems comprising a rotatable shaft adapted to be driven by a braked wheel, a flywheel which is angularly movable with respect to said shaft, a thrust member, camming means acting between said thrust member and said flywheel and through which rotation of said shaft is imparted to said flywheel from said thrust member, said camming means being so constructed and arranged that relative rotation between said flywheel and said thrust member as a result of excessive deceleration of said thrust member relative to said flywheel is accompanied by relative movement between said flywheel and said thrust member in an axial direction to operate pressure-regulating means controlling brake-applying fluid pressure, and a clutch which permits said flywheel to overrun said shaft against clutch torque, a clutch plate which is rotatable with said shaft and said flywheel mechanism are both provided on pitch circles of greater and smaller diameters with outer and inner clutch faces of annular outline, said inner and outer clutch faces being alternately engageable to define respectively a first clutch engagement at the pitch circle of greater diameter through which said flywheel is driven during spin-up during actuation of said camming means, and a second clutch engagement at the

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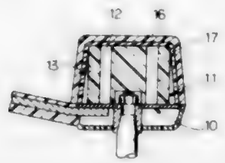
pitch circle of smaller diameter during overrun following actuation of said camming means.

4,657,121

IMPACTIVE ENERGY ABSORBING STRUCTURE

Sadao Uchida, Ichinomiya, and Mitsuru Harata, Nagoya, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 12, 1985, Ser. No. 701,249
Claims priority, application Japan, Feb. 13, 1984, 59-025857
Int. Cl.[4] B60R *21/02*; F16F *7/12*
U.S. Cl. 188—376 **9 Claims**



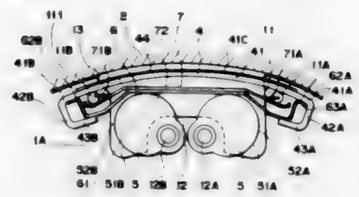
1. An impactive energy absorbing structure comprised of a first member having an axis and a first energy absorbing rate, a second member positioned about said first member so as to extend at least parallel to the axis of said first member and spaced horizontally therefrom, said second member having a second energy absorbing rate for absorbing energy simultaneouly with said first member, and cover means for covering said first and second members, said first and second members each being comprised of a brittle plastic material and dimensioned so that under a predetermined load said second member will yield and break after which only said first member will absorb the load.

4,657,122

CENTRIFUGAL FRICTION CLUTCH AND COUPLING MECHANISM USING SUCH CLUTCH

Shiro Sakakibara, and Shigeo Tsuzuki, both of Anjo, Japan, assignors to Aisin-Warner Limited, Anjo, Japan

Filed Oct. 26, 1984, Ser. No. 665,395
Claims priority, application Japan, Oct. 31, 1983, 58-205298; Oct. 31, 1983, 58-205299
Int. Cl.[4] F16D *43/04*
U.S. Cl. 192—3.31 **16 Claims**



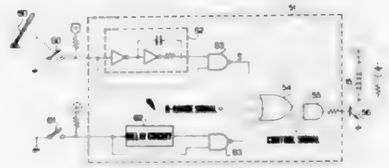
1. A centrifugal type friction clutch, comprising:
a first rotary coupling member comprising a portion having a radially extending wall and a plural number of friction element support means on said radially extending wall;
a second rotary coupling member having a cylindrical inner peripheral surface, disposed coaxially with said first rotary coupling member, for frictional engagement with said first rotary coupling member; and
friction coupling elements supported by said friction element support means, each of said friction coupling elements comprising:
a friction shoe having an arcuate portion with a frictional engaging surface;
resilient retractor means, located between said friction shoe and said friction element support means, for biasing said friction shoe radially inward;
cam means rotatably supported on said first rotary coupling member and having a curved cam surface; and
a resilient thin strip located between said curved cam surface and said friction shoe, said cam means rotating and bearing against said resilient thin strip to displace said friction shoe radially outward according to the rotational speed of said first rotary coupling member, the cam angle between said cam means and said thin strip changing as said cam means pivots.

4,657,123

SYSTEM FOR ENGAGING AN ELECTROMAGNETIC CLUTCH DURING RANGE CHANGE OPERATION

Ryuzo Sakakiyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1985, Ser. No. 693,712
Claims priority, application Japan, Jan. 31, 1984, 59-15418
Int. Cl.[4] B60K *41/22*
U.S. Cl. 192—3.58 **13 Claims**



1. A system for controlling clutch current of an electromagnetic clutch which current produces engagement of the electromagnetic clutch in a vehicle having an engine, an automatic transmission with the clutch being connected between the engine and the automatic transmission, and a select layer selectively moveable to respective positions corresponding to first and second driving ranges of the automatic transmission which ranges are different in transmission performance and in which ranges the clutch current engages the clutch, comprising:
a first driving range switch and a second driving range switch respectively operated at the respective positions of the select lever producing first and second signals respectively;
delay means responsive, during operation of the select lever, to termination of the first and second signals immediately producing respecitively a third signal terminating with delay and a fourth signal terminating with delay after the resepctive termination of the first and second signals;
gate means, responsive to the third and fourth signals respectively, providing the clutch current, whereby the clutch is continuously engaged during the operation of the select lever away from said positions, during said delay

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4,657,124

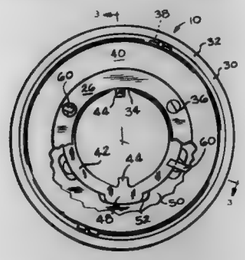
CLUTCH BRAKE NOISE SUPPRESSOR

Richard A. Flotow, Butler, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Oct. 9, 1985, Ser. No. 785,915
Int. Cl.[4] F16D *67/02*
U.S. Cl. 192—13 R **17 Claims**

9. A clutch brake assembly for disposition on a rotating drive shaft comprising, in combination,
a housing having opposed friction surfaces and defining a through passageway for receiving said drive shaft,
an inner ring member having means for rotationally engaging said drive shaft while permitting relative axial motion therebetween,

an outer ring member rotationally coupled to said inner ring member through a lost motion coupling, and



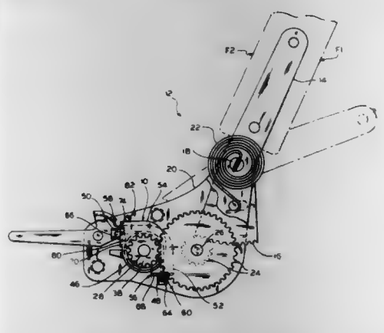
an axially resilient member disposed between said housing and said outer ring member, said resilient member having tab means for axially biasing said inner ring member.

4,657,125

SINGLE-SPRING CLUTCH MECHANISM

Max O. Heesch, Ypsilanti, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Nov. 12, 1985, Ser. No. 796,978
Int. Cl.[4] F16D *11/06*
U.S. Cl. 192—41 S **9 Claims**



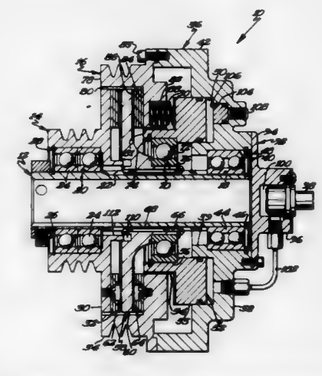
1. A spring clutch mechanism for controlling pivotal motion of a member between a first angular position and a second angular position and for releasably retaining said member at any of an infinite number of intermediate angular positions between said first angular position and said second angular position against application of a first force applied to said member toward said first angular position and against application of a second force applied to said member toward said second angular position comprising:
spring clutch means including one torsion spring having at least one spring coil, a first end and a second end of said spring in angularly spaced apart relationship, spindle means mounted for rotation within said spring coil about an axis coaxial with said spring coil including means operatively connected to said member for rotating said spindle means in a first direction in response to movement of said member toward said first angular position and in a second direction opposite to said first direction in response to movement of said member toward said second angular position, said spring coil adapted to frictionally engage and restrain said spindle against said rotation when tension thereof is increased and to disengage and allow said spindle to rotate when tension thereof is released;
means for selectively reducing the tension of said spring coil defining a released position of said clutch means providing for said disengagement of said spring coil from said spindle and said rotation of said spindle;
means for selectively increasing the tension of said spring coil to a magnitude providing for said frictional engagement and restraint of said spindle defining an engaged position of said clutch means; and
means for maintaining said spring coil in tension when under the influence of torsional forces transmitted thereto from said spindle means in the engaged position and acting in either of said first and said second directions of rotation of said spindle means in response to said torsion forces exerted on said spindle means in response to the application of one of said first force and said second force to said member.

4,657,126

TWO-SPEED CLUTCH

James V. Hanks, Fridley, and Edward Brooks, Robbinsdale, both of Minn., assignors to Horton Manufacturing Co., Inc., Minneapolis, Minn.

Filed Feb. 25, 1985, Ser. No. 705,346
Int. Cl.[4] F16D *25/063, 21/02*
U.S. Cl. 192—48.91 **20 Claims**



17. In an apparatus for controlling rotation between an input and an output, with the rotation control apparatus including a housing and means for selectively rotationally interrelating the input and the output actuated by a piston, with the improvement comprising an axially extending aperture extending through the housing, with the aperture of the housing having a diameter defined by a radially inward facing surface; means for reciprocally mounting the piston in the housing independent of the aperture; wherein the piston includes at least a portion thereof having a shape and size for reciprocal receipt within said aperature but in a spaced condition from said surface and with relatively close tolerances to form a restricted air passage between said portion and said surface for reducing passage of dust and other elements therethrough.

4,657,127

CLUTCH FOR LINKING A COMPRESSOR WITH A DRIVE MEANS THEREFOR

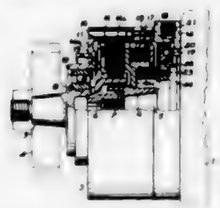
Pier C. Boffelli, San Donato Milanese, Italy, assignor to Baruffaldi Frizioni SPA, San Donato Milanese, Italy

Filed Jun. 12, 1985, Ser. No. 744,121
Claims priority, application Italy, Jun. 19, 1984, 22329/84[U]; Jan. 16, 1985, 20531/85[U]
Int. Cl.[4] F16D *25/063, 25/08*
U.S. Cl. 192—70.27 **6 Claims**

1. A compressor/clutch assembly, comprising:
a compressor having a compressor shaft extending from one end of said compressor;

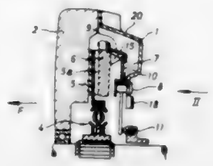
VOL 1077 ISS 2 AP 14 1987 UMI

a clutch surrounding said compressor shaft and including:
a flanged sleeve keyed to said compressor shaft,
a housing surrounding said sleeve and having a base connected to said end of said compressor,
a body formed with a driven shaft at one end thereof and a cylindrical hollow member at an opposite end thereof, said hollow member being journaled by a bearing on said sleeve,
bearing means rotatable journaling said body between the said ends thereof in said housing,
a pack of clutch plates surrounding said hollow member with at least some of said clutch plates being coupled to said hollow member for rotation therewith but being axially movable relative to said hollow member,



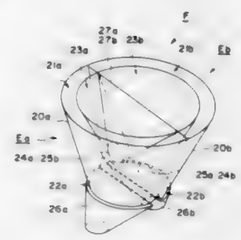
a drum surrounding said pack within said housing, said sleeve having a flange rotatably coupled to said drum but permitting axial movement of said drum relative to said sleeve, others of said clutch plate being rotatable coupled to said drum but movable axially relative thereto,
axially effective resilient means braced between said drum and said flange and pressing said clutch plates together to engage the clutch,
means forming an annular pneumatic cylinder in said base, and
an annular pneumatic piston in said cylinder biased by pneumatic pressure against said drum to relieve the pressure of said resilient means and release the clutch; and
drive means connected to said driven shaft for driving said compressor.

4,657,128
CLUTCH COOLING DEVICE
Nobutoshi Fujito, Neyagawa, and Hiroshi Takeuchi, Higashi-Osaka, both of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan
Filed Mar. 5, 1985, Ser. No. 708,614
Claims priority, application Japan, Mar. 6, 1984, 59-32467[U]
Int. Cl.⁴ F16D *13/60*
U.S. Cl. 192—113 A **7 Claims**



1. In a clutch having a flywheel for rotation about an axis,
a clutch cover secured at its outer peripheral end in fixed position on said flywheel for rotation with said flywheel about said axis,
a pressure plate in said cover in axial alignment with said flywheel and movable in an axial direction toward and away from said flywheel,
an output shaft in axial alignment with said flywheel,
a clutch disk between said flywheel and said cover and splined to said output shaft,
a diaphragm spring connected at its outer peripheral end to said pressure plate and engagable at its inner peripheral end with a release bearing mounted for axial movement relative to said output shaft,
a plurality of fulcrum means mounted on said cover and extending through said diaphragm spring intermediate said peripheral outer and inner ends of said diaphragm spring for supporting said diaphragm spring for axial movement about said fulcrum for moving said pressure plate axially away from said flywheel to release said clutch disk from said flywheel and said pressure plate when said release bearing is moved axially toward flywheel and for engaging said clutch disk between said flywheel and said pressure plate when said release bearing is moved axially away from said flywheel,
the inner end of said diaphragm spring from said fulcrum means to said inner peripheral end engagable with said released bearing having a plurality of equally spaced radially extending notches passing through said diaphragm spring and forming radially extending spring fingers for resilient engagement with said release bearing therebetween,
a cooling device for said clutch, said cooling device comprising a plurality of cooling fins at the inner peripheral end of said clutch cover,
said cooling fins being inclined in the axial direction of said clutch cover, said pressure plate and said clutch disc from the side of said clutch cover remote from said pressure plate to the side of said clutch cover adjacent said pressure plate in the direction of rotation of said flywheel and said pressure plate,
said cooling fins being intermediate said radially extending notches and extending circumferentially across said spring fingers for drawing air for cooling from the outside of said clutch housing, when said flywheel is rotating, and forcing said air through said radially extending notches to the faces of said flywheel, said pressure plate and said clutch disk and
air discharge holes in said clutch housing, spaced around said housing radially outward of said flywheel, pressure plate and clutch disk for discharging said air.

4,657,129
METHOD AND APPARATUS FOR COLLECTING WEIGHED ARTICLES DISCHARGED FROM COMBINATORIAL WEIGHING SYSTEM
Yoshiharu Mikami, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan
Continuation of Ser. No. 522,564, Aug. 12, 1983, Pat. No. 4,558,774. This application Jun. 25, 1985, Ser. No. 748,598
Claims priority, application Japan, Aug. 12, 1982, 57-140615
The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.
Int. Cl.⁴ B65G *11/00*; G01G *19/32*
U.S. Cl. 193—2 R **1 Claim**



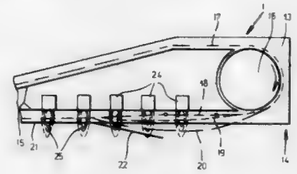
1. An apparatus for collecting articles, comprising:

first and second compound chutes, each compound chute including
an outer chute having an upper opening and a discharge opening, and
an inner chute spaced apart from and mounted within the outer chute and having an upper opening and a discharge opening, the first and second compound chutes being connected together so that the discharge openings of the first and second inner chutes are in communication with the second and first outer chutes, respectively; and
first and second discharge chutes connected to the first and second compound chutes, respectively, the first discharge chute having an upper opening for receiving articles collected by the first outer chute and the second inner chute from the discharge opening of the first outer chute, and the second discharge chute having an upper opening for receiving articles collected by the second outer chute and the first inner chute from the discharge opening of the second outer chute.

4,657,130
DISCRETE SOLID OBJECT FEEDING AND TRANSPORT APPARATUS AND METHOD
Charles E. Ackley, Jr., Tuckerton, N.J., and Robert L. Ross, Philadelphia, Pa., assignors to R. Hartnett Company, Philadelphia, Pa.
Filed Jul. 3, 1984, Ser. No. 627,399
Int. Cl.⁴ B65G *47/24*
U.S. Cl. 198—397 **21 Claims**

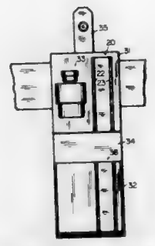
1. Apparatus for loading individual objects into a moving array, comprising:
(a) a hopper for housing a bulk supply of said objects and including a discharge orifice;
(b) a spaced array of carrier means, each for receiving and transporting said objects, said carrier means communicating with said hopper via said orifice as said carrier means move past said orifice with receptacle portions of said carrier means facing said orifice, with a portion of said hopper substantially conforming to the shape of said carrier means;
(c) object moving means positioned intermediate the hopper bottom and said carrier means, and having a surface contacting said objects, moving in a direction from said orifice toward said receptacle portions, for moving said objects from said hopper to said receptacle portions of said carrier means via said orifice; and
(d) positive conveying means for transporting said objects, along the bottom of said hopper and towards said orifice, to said object moving means, said positive conveying means and said hopper bottom being elongated in a direction transverse to the surface to said carrier means.

4,657,131
TENSION REGULATOR FOR A CHAIN DRIVE
Peter Brychta, Wuppertal, and Klaus-Peter Wiechers, Gladbeck, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany
Filed Feb. 21, 1985, Ser. No. 703,889
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406519
Int. Cl.⁴ B65G *43/00*
U.S. Cl. 198—810 **5 Claims**



1. A tension regulating apparatus for a chain drive for a subterranean mining machine, comprising:
a chain driven by said drive;
a telescoping cylinder acting upon said chain to regulate the tension thereof;
a contactless sensor positioned adjacent to said chain and to said chain drive, said sensor being attached to a supporting structure of said chain drive, said sensor being disposed so as to effectively measure changes in sag resulting in changes in a space between said sensor and said chain;
a logic circuit connected to said sensor for processing signals therefrom; and
a tension controlling unit for mechanically changing chain tension connected to said logic circuit acting upon said cylinder for automatically increasing tension on said chain during operation when said chain sags excessively and decreasing said tension when said chain is too taut, a plurality of such sensors being distributed and positioned along the length of said chain of said chain drive to monitor the configuration of the sag of said chain, said sensor is an electromagnetic sensor having oscillating, directed magnetic field.

4,657,132
CARTRIDGE HOLDER
Saide Abdo, 3005 Herrick Dr., Lansing, Mich. 48910
Filed Dec. 18, 1984, Ser. No. 682,855
Int. Cl.⁴ F42B *37/00*
U.S. Cl. 206—3 **4 Claims**



1. In a cartridge holder assembly for storing and positioning individual cartridges in vertically stacked horizontally oriented spaced-apart fixed positions therein for ready access to a user comprising:
a cartridge case, said cartridge case having integrally formed base, foldable hinge and cover portions, said cover portion

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selectively foldable so as to protectably cover said base portion;

snap tab lock means extending from said base portion so as to lockably engage the upper end of said cover portion when said cover portion is in its closed covering position on said base portion, said snap tab lock means being selectively snap releasable so as to allow said cover portion to be selectively flipped to its downwardly extending open position;

a cartridge speed loader assembly fixedly positioned upon said base portion;

a first cartridge holder track support member fixedly positioned on said base portion, said track support member provided with spaced-apart cartridge receiving recesses so as to snap clampably supportably engage a plurality of individual cartridges in vertically stacked horizontally oriented spaced-apart positions fixedly suspended apart from said base portion, said recesses being spaced apart from said base portion so as to enable finger access between said base and said cartridges placed in said receivers; and

a second cartridge track support member positioned on said cover portion in opposed longitudinally aligned register with said first cartridge track support member, said second cartridge track support member adapted to matingly register with said first cartridge track support member when said cover is in its closed position on said base portion, said first cartridge track support member and said second cartridge support member adapted to move into mating register upon closure of said cover member so that individual cartridges fixedly positioned thereon are moved into retentive contact with each other when the cover portion is in its closed position, said cover portion adapted to fully cover said speed loader assembly, said first cartridge holder track support member and said second cartridge holder track support member when said cover portion is in its closed position upon said base portion.

4,657,133

PACKAGE CONTAINING QUALITY-RETAINING AGENT

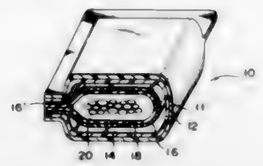
Toshio Komatsu; Akira Katada, and Hideyuki Takahashi, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Feb. 4, 1985, Ser. No. 697,748

Claims priority, application Japan, Feb. 9, 1984, 59-22519; May 15, 1984, 59-97189; May 15, 1984, 59-97190

Int. Cl.⁴ B65D *81/26*

U.S. Cl. 206—204 **17 Claims**



1. A package containing therein a quality-retaining agent, the packaging material of the package comprising:

an outer layer made of a substantially gas-impermeable material;

a first seal layer formed on the inner side of the outer layer;

an inner layer formed on the inner side of the first seal layer, the inner layer allowing gas to pass through in the lateral direction thereof; and

a gas-permeable second seal layer formed on the inner side of the inner layer;

wherein the peripheral portions of the second seal layer are adhered to each other to form a sealed inner pocket containing the quality-retaining agent, the package has an exposed cross section of the inner layer, so that the environmental air can pass into the inner pocket to contact the quality-retaining agent laterally through the inner layer and then through the second seal layer.

4,657,134

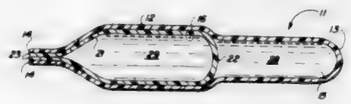
COMPARTMENTED PACKAGE

John L. Woodworth, Hopkinton, and John M. Lynch, Paxton, both of Mass., assignors to Kidde, Inc., Saddle Brook, N.J.

Filed Dec. 26, 1985, Ser. No. 813,415

Int. Cl.⁴ B65D *30/22*

U.S. Cl. 206—219 **15 Claims**



1. A compartmented package comprising:

an outer container having a side wall portion joining an outer closed end and an outer fill end with sealed together outer wall portions forming a fluid tight outer seal, said outer container defining a first chamber portion adjacent to said outer closed end and a second chamber portion adjacent to said outer fill end, said first and second chamber portions being spaced apart in a direction extending between said outer closed and fill ends, and said outer container further defining a stop surface;

a first fluid substance retained in said first chamber portion of said outer container;

an inner container retained in said second chamber portion of said outer container and having an inner closed end and an inner fill end with inner wall portions commonly sealed with said outer wall portions to form a fluid tight inner seal, said inner container defining an abutment surface engaging said stop surface so as to prevent movement of said inner container into said first chamber portion of said outer container; and

a second fluid substance retained in said inner container and sealed from said first fluid substance.

4,657,135

COMBINED GOLF BAG AND EQUIPMENT CARRIER

Kenneth L. Kjose, Apt. 202, 1319 E. Harvard, Glendale, Calif. 91205

Continuation of Ser. No. 475,504, Mar. 15, 1983, abandoned. This application Sep. 3, 1985, Ser. No. 771,478

Int. Cl.⁴ A45C *5/12, 5/14*; A63B *55/00, 55/06*

U.S. Cl. 206—315.3 **26 Claims**



15. A combined golf bag and equipment carrier comprising:

a golf bag comprising:

a bag having a generally rigid or semi-rigid cylindrical side wall, a generally flat bottom wall and an open top; and

a generally rigid or semi-rigid cover releasably attachable to the bag comprising a generally cylindrical side wall having a diameter about the same as the diameter of the side wall of the bag, a generally flat top wall and an open bottom;

a generally rigid elongated box-like container having an open top into which at least a portion of the golf bag can be fitted lengthwise and comprising:

a bottom wall;

two generally parallel side walls spaced apart a distance about equal to the diameter of the golf bag;

two generally parallel end walls spaced apart a distance about equal to the length of the golf bag; and

means for supporting the golf bag in the container at a level above the bottom of the container to provide a storage compartment and wherein the longitudinal axis of the golf bag is at about the same elevation as the top edges of the side walls and end walls of the container;

a flexible covering enclosable around the golf bag and container when the golf bag is fitted in the container for preventing movement of the golf bag relative to the container comprising:

a bottom panel;

a pair of side panels having upper and lower edges attached along their lower edges to the bottom panel; and

means for releasably joining the side panels along their upper edges to thereby enclose the covering around the golf bag and container to form an assembled golf bag and container; and

a strap releasably attached at its ends to the covering for carrying the assembled golf bag and container.

4,657,136

RECEPTACLE FOR MEMORY CASSETTE

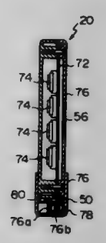
Takashi Yokota, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 477,462, Mar. 21, 1983. This application Mar. 26, 1985, Ser. No. 716,052

Claims priority, application Japan, Apr. 15, 1982, 57-62977

Int. Cl.⁴ B65D *73/02*

U.S. Cl. 206—328 **1 Claim**



1. A protector for protecting electric terminals of a memory cassette, comprising:

a casing; and

fixing means for fixing the terminals of the memory cassette in position;

the fixing means comprising opposing electrically conductive members which resiliently hold the electric terminals therebetween and electrically connect all of the terminals together, the conductive members resiliently engaging with each other when the memory cassette is removed from the protector;

the conductive members comprising tubular members made of a conductive elastic material.

4,657,137

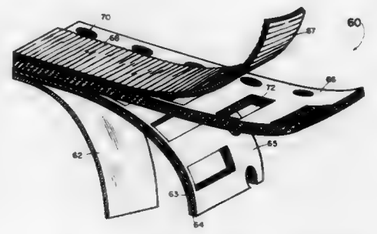
MULTI-CHIP PACKAGING SYSTEM

Carl W. Johnson, Neenah, Wis., assignor to North American Philips Corporation, New York, N.Y.

Filed May 22, 1981, Ser. No. 266,564

Int. Cl.⁴ B65D *73/02*

U.S. Cl. 206—329 **9 Claims**



1. A low cost, disposable, flexible engineered laminated tape for holding leadless components for feeding said components to automatic component placement machines comprising:

a stable base layer member of said laminated tape;

at least one flexible, expandable and compressible upper member layer of said laminated tape;

means to laminate said base layer and said upper layer members to form a monolithic laminated carrier tape structure;

tape drive engaging means integrally formed in said carrier tape;

spaced recess areas in said carrier tape for receiving said leadless components;

a bottom cover tape secured to said base member layer and dimensioned such that said bottom cover tape covers the base of each of said spaced recess without obstructing said tape drive engaging means;

a top cover tape dimensioned to cover the open tops of said spaced recesses without obstructing said tape drive engage means;

said top cover tape being a stretchable, thin material randomly adhered around the periphery of said spaced recesses; and

said top cover tape being removably secured to said upper member layer such that it may be peeled therefrom to yield the access to said components by an automatic component placement machine without leaving a fragmentary residue.

4,657,138

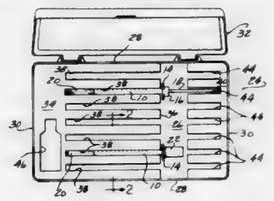
CARRYING CASE FOR INSULIN SYRINGES

Frank K. Watson, 3116 Beechwood Ave., Flint, Mich. 48506

Filed Apr. 11, 1986, Ser. No. 850,611

Int. Cl.⁴ B65D *5/50, 85/24, 69/00*

U.S. Cl. 206—366 **2 Claims**



1. A carrying case for storing a plurality of disposable insulin syringes having an elongate syringe barrel, a needle at one end of said barrel, a removable needle shield detachably mounted on said one end of said barrel, a plunger slidably received in

said barrel and projecting from the other end of said barrel, and a closure cap detachably mounted on said other end of said barrel to enclose said plunger when said plunger is at its maximum projection into said barrel,

said case comprising a box having a rectangular bottom and continuous side and end walls projecting upwardly from said bottom, said sidewalls having a length exceeding the length of a syringe with a needle shield mounted thereon and the plunger at its maximum extension from said barrel, a first pad of resilient material fixedly mounted within said box extending transversely of said box from one sidewall to the other and extending longitudinally of said box from one end wall to a free edge parallel to the other end wall and spaced from said other end wall by a distance greater than the length of a syringe barrel with a needle shield mounted thereon, means defining a plurality of like spaced parallel slots through said first pad extending from said free edge toward said one end wall parallel to said sidewalls, said slots having a length at least equal to the length of a syringe barrel with a needle shield mounted thereon and a width less than the diameter of a syringe barrel such that a syringe barrel placed within said slot will be resiliently gripped by and held between the opposed walls of said slot, a second pad of like material fixedly mounted within said box extending transversely of said box from one sidewall to the other and extending longitudinally of said box from the other end wall to a free edge parallel to and spaced from the free edge of said first pad by a distance greater than the length of a closure cap of a syringe, means defining a plurality of like spaced parallel slots through said second pad extending from the free edge of said second pad toward said other end wall in respective longitudinal alignment with the slots in said first pad, said slots in said second pad having a length and width such that an extended plunger of a syringe placed therein will be resiliently gripped and held between the opposed walls thereof,

wherein any selected number of the plurality of syringes may be carried in an extended, filled condition and the remainder of the plurality of syringes in an enclosed, empty condition.

4,657,139

CLOSURE FOR A SYRINGE COLLECTION AND DISPOSAL CONTAINER

Paul H. Hasiff, Barrington, Ill., assignor to Sage Products, Inc., Cary, Ill.

Filed Sep. 30, 1985, Ser. No. 781,754
Int. Cl.[4] B65D *39/02*
U.S. Cl. 220—336 **2 Claims**



1. A closure device for permanently closing an opening defined in a syringe collection and disposal container comprising:

a wheel-shaped cover member having a cut-out portion through which the opening can be accessed and a solid portion sized to completely cover the container opening, said cover member having an inboard side and an outboard side and being connected along its axis of rotation to the container adjacent the container opening in a manner permitting said cover member to be rotated from a first position wherein the opening is accessible through said cut-out portion to a second position wherein the opening is completely covered by said solid portion and said wheel is locked against further rotation,

a boss formed on the inboard side of said cover member,

an aperture defined in the container, said boss engaging in said aperture in said second position and preventing rotation of said cover member in any direction, and

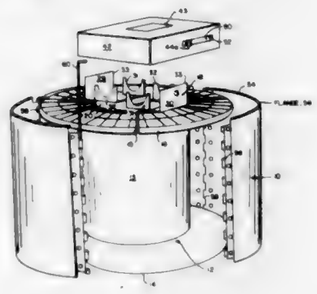
at least one bracket element formed on the container and overlying said aperture, said bracket engaging said outboard side of said cover member to thereby substantially prevent outboard movement of said cover member when said cover member is in said second position, said bracket applying an inboard directed bias to said cover member and boss which forces said boss into engagement with said aperture when in said second position, said cover member thereby being locked in said second position to permanently close the container.

4,657,140

FIBER OPTIC CABLE STORAGE DEVICE

Gregory J. Zagar, Rome; Thomas A. Ross, Liverpool, and Billy C. Lowry, Rome, all of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 18, 1985, Ser. No. 810,432
Int. Cl.[4] B65H *75/14*
U.S. Cl. 206—397 **7 Claims**



7. A fiber optic cable storage device comprising:

(a) a storage spool comprising:

(i) a cylindrical drum; and

(ii) flanges extending at each end of said drum wherein one of said flanges has a slot to allow the passage of fiber optic cable therethrough;

(b) at least one fiber optic cable connector holder mounted on an end of said drum for receiving a connectorized end of said fiber optic cable; and

(c) means for attachment to an end of said drum comprising an end cover which, when attached, traps said connectorized end of the fiber optic cable in said connector holder and in conjunction with said connector holder protects said connectorized end of said fiber optic cable from damage.

4,657,141

HOLLOW STACKABLE PLASTIC PRODUCTS

Jens O. Sorensen, Rancho Santa Fe, Calif., assignor to Primtec, Rancho Santa Fe, Calif.

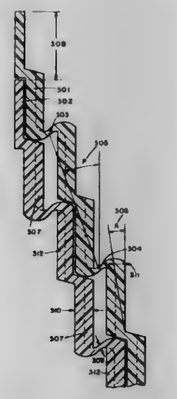
Continuation of Ser. No. 643,844, Aug. 23, 1984, abandoned, which is a division of Ser. No. 424,493, Sep. 27, 1982, Pat. No. 4,467,994. This application Jan. 16, 1986, Ser. No. 820,874
Int. Cl.[4] B65D *1/42*
U.S. Cl. 206—519 **7 Claims**

1. A molded thin-walled hollow, stackable plastic product, having an open top, a closed bottom and side walls;

wherein the side walls include a series of circumferential strips, with the upper of two adjacent wall sections having a minimum diameter greater than a maximum diameter of

the lowe adjacent wall section to thereby define a circumferential ridge at the bottom of each upper wall section;

wherein the circumferential strip joining a pair of said upper and lower wall sections is a circumferential isthmus having an isthmus distance which is the minimum thickness of said strip defining the isthmus, that is significantly shorter



than the predominant thickness of the adjacent wall sections; and

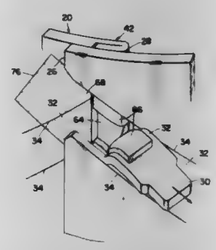
wherein said isthmus is aligned at an acute angle with respect to each of the wall sections joined by said isthmus, with the juncture of the isthmus and the upper wall section being closer to the bottom of the product than the juncture of the isthmus and the lower wall section.

4,657,142

EASY-TO-OPEN CARTON FOR CONFECTIONERY OR OTHER FOOD PRODUCTS INCLUDING A SKIVE UNDERLYING A TEARSTRIP END

Yoshihiko Mizoguchi, Tokyo; Keiichi Sekine, Shiki; Yasutoyo Komiya, Zama, and Yoshio Nishida, Tokyo, all of Japan, assignors to Meiji Seika Kabushiki Kaisha and Dai Nippon Insatsu Kabushiki Kaisha, both of, Japan

Filed Jul. 18, 1985, Ser. No. 756,272
Claims priority, application Japan, Jul. 26, 1984, 59-112555[U]
Int. Cl.[4] B65D *5/54*
U.S. Cl. 206—606 **14 Claims**



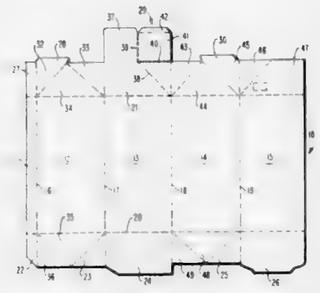
1. An easy-to-open carton, particularly well suited for packaging confectionery or like food products, approximately in the shape of a flattened cone formed by rolling a substantially sectorial piece of sheet material, comprising: a lapping side seam and an apex end, which are both sealed, and a base end which is sealable after placing a desired product into the carton therethrough, the sheet material having around the cone a loop of tear-off strip which is removable by tearing for opening the carton, the side seam of the cone including an overlapping edge having a tab protruding therefrom as an extension of the tear-off strip for use in removing same, said side seam also having an underlapping edge with its outer side pared to provide a skive of a constant thickness and a constant width extending along the underlapping edge, the skive being doubled outwardly to provide a fold approximately flush with an unskived part of the sheet material, that portion of the outer surface of the unskived part of the sheet material which immediately adjoins the fold of the skive and which underlies the tab protruding from the overlapping edge of the side seam having formed thereon a layer of a release agent, whereby the tab is prevented from sticking to the cone despite the sealing of the side seam, said fold of the skive having a pair of spaced apart notches formed in its edge in the area under the tear-off strip to facilitate the tearing of the fold upon application of a puling force to the tab.

4,657,143

POUR SPOUT CARTON

Hampton E. Forbes, Jr., Newark, Del., assignor to Westvaco Corporation, New York, N.Y.

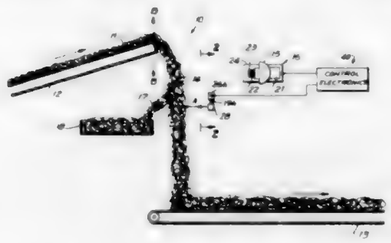
Filed Apr. 22, 1986, Ser. No. 854,563
Int. Cl.[4] B65D *5/70, 5/74*
U.S. Cl. 206—626 **2 Claims**



1. A folding carton having a self-contained, reclosable pour spout, comprising, a plurality of foldably connected side walls having ends, a plurality of top and bottom closure flaps foldably attached to the ends of said side walls, said top closure flaps having edges, a pour spout formed in the top closure flaps attached to a first side wall and two adjacent side walls, sift proof tabs integral with and extending beyond the edges of the top closure flaps attached to the first side wall and the side wall opposite said first side wall, said sift proof tabs each being formed with protruding leading edges which extend outwardly at an angle of from 10–20 degrees from the vertical to form an angle with the upper edges of the top closure flaps of less than 90 degrees to permit the ends thereof to overlap one another at the center of the carton when the carton is closed, slots formed between the top closure flap attached to an adjacent side wall and portions of the top closure flaps attached to the first side wall and the side wall opposite said first side wall when the carton is closed for accepting said sift proof tabs, and access means for said pour spout provided in the top closure flap attached to an adjacent side wall having a free edge, said access means comprising a cover panel formed in one corner of that top closure flap, said cover panel being defined by a perforated line extending from the free edge of that closure flap to a point near the center of said carton and a fold line extending from the edge of that closure flap near the first side wall to a point near the center of said carton where the two lines intersect, said cover panel including an integral lift tab located along its free edge, and means for temporarily attaching said cover panel to the top of said carton.

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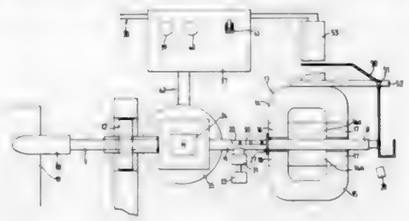
4,657,144
METHOD AND APPARATUS FOR DETECTING AND REMOVING FOREIGN MATERIAL FROM A STREAM OF PARTICULATE MATTER
Peter Martin, Richmond; Avis N. Wyatt, Jr., Chester; Hector Alonso, Richmond; Norman R. Rowe, Chester; Robert S. Southard, Chesterfield, and Stephen G. Zimmermann, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Feb. 25, 1985, Ser. No. 705,127
Int. Cl.⁴ B07C *5/342*; A24C *5/39*, *5/36*
U.S. Cl. 209—546 **20 Claims**



1. Apparatus for detecting foreign material in a stream of particulate matter, said apparatus comprising:
first conveying means for delivering a stream of particulate matter containing foreign material to said apparatus;
second conveying means located below and spaced vertically from said first conveying means for conveying said stream of particulate matter away from said apparatus, such that said stream of particulate matter is transferred from said first conveying means to said second conveying means by falling therebetween under the influence of gravity in a turbulent cascade;
illuminating means for illuminating said turbulent cascade of particulate matter while it is falling between said first and second conveying means;
detecting means for detecting light reflected from said illuminated turbulent cascade of particulate matter; and
control means for comparing, without resort to a background reference, the light reflected from said illuminated turbulent cascade of particulate matter containing foreign material with the light expected to be reflected from a turbulent cascade of the particulate matter free of foreign material and for generating a signal when said reflected light indicates the presence of foreign material.

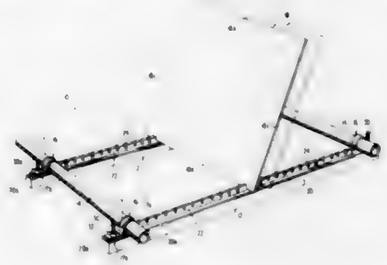
4,657,145
INSPECTION APPARATUS
Thomas F. Orr, Whitehaven, England, assignor to British Nuclear Fuels plc, Warrington, England
Filed Jun. 6, 1985, Ser. No. 742,006
Claims priority, application United Kingdom, Jun. 18, 1984, 8415476
Int. Cl.⁴ B07C *5/00*, *9/00*
U.S. Cl. 209—698 **14 Claims**

1. Inspection apparatus for articles having a throughbore comprising means for supporting an article to be inspected, an elongate inspection element, magnetic means for supporting the element for movement of the article along the element with the element in the throughbore, and means for rejecting the



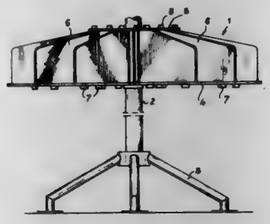
article if the element engages an obstruction in the throughbore.

4,657,146
ADJUSTABLE PRINTED CIRCUIT BOARD RACK FOR SUPPORTING PRINTED CIRCUIT BOARDS IN A HORIZONTAL OR A VERTICAL POSITION
Richard Walters, 58 Leandre St., Manchester, N.H. 03102
Filed Nov. 6, 1985, Ser. No. 795,601
Int. Cl.⁴ A47G *19/08*
U.S. Cl. 211—41 **6 Claims**



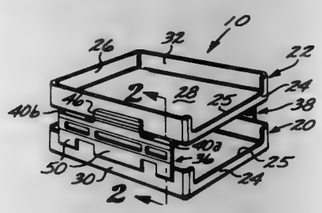
1. A low profile printed circuit board rack comprising at least two elongated support bars, said support bars each comprising a base portion and a vertically upright rail narrower than said base portion and offset from the edge of base portion facing the opposite support bar, uniformly spaced, aligned cross slots of a width in excess of the thickness of an upwardly open printed circuit board extending transversely through said rails, a pair of elongated cylindrical handles and means on the end of said bars for adjustably clamping said elongated cylindrical handles to said bars at right angles to the bars and at longitudinally adjustable positions along said handles such that said bars can be spaced parallel to each other and fixably maintained in position on said cylindrical handles by said clamping means at distances corresponding to the width of a printed circuit board fitted between the projecting rails with opposed edges of the printed circuit board resting horizontally on the tops of said base portions of said bars and between the projecting rails, or a position where said rails, are spaced at a distance less than the lateral width of the printed circuit board such that a printed circuit board may be slidably inserted on edge into aligned cross slots of respective projecting rails to maintain a plurality of printed circuit boards in generally upright, spaced parallel positions on said rack.

4,657,147
FILING DRUM
Gerard Le Mer, 12 Chemin du Milieu, 95540 Mery-sur-Oise, France
Filed Jul. 2, 1985, Ser. No. 751,253
Claims priority, application France, Jul. 10, 1984, 84 10949
Int. Cl.⁴ B47F *5/02*
U.S. Cl. 211—58 **11 Claims**



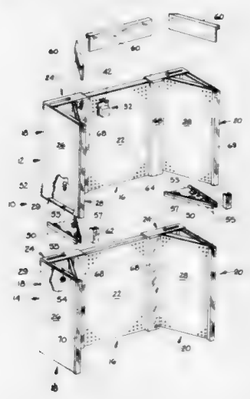
1. A filing drum in particular for a column having rotary drums, said drum comprising a lower horizontal plate of generally circular shape, an upper horizontal plate coaxial with the lower plate, and radially extending separating elements defining compartments in the shape of sectors, said separating elements being connected to the two plates, and means for rotatively mounting the drum on the column, the separating elements being formed by metal sheets, each separating element having a lower edge and an upper edge having extending therefrom fixing lugs, the plates having therein slots which receive said fixing lugs, wherein the fixing lugs extend through the plates and are twisted about respective axes parallel to the column so as to provide a connection between the plates and the separating elements.

4,657,148
SLIDABLY STAGGERABLE TIERED DOCUMENT TRAY
Cheng K. Heng, Kechil, Singapore, assignor to Metro Plastic Industry Pte. Ltd., Kallang Place, Singapore
Filed Sep. 30, 1985, Ser. No. 781,691
Int. Cl.⁴ A47F *3/14*
U.S. Cl. 211—128 **17 Claims**



1. A slidably staggerable tiered document tray that includes at least two trays, an upper tray and a lower tray, each having a bottom wall, a back wall, left and right side walls, and a plurality of feet attached to the bottom wall, and a pair of risers, a left riser and a right riser vertically separating each upper and lower tray and having lengths approximately equal to the length of said left and right side walls, detachably engaged between each upper tray and lower tray to provide vertical separation between said trays wherein the improvement comprises:
(a) a left support ledge attached at a right angle to each said left riser and having at least one hole and supporting said upper tray with at least one of said feet on said bottom wall of said upper tray extending through at least one of said holes in said left support ledge for providing a means for loosely coupling said left riser and said upper tray; and
(b) a right support ledge attached at a right angle to each said right riser and having at least one hole and supporting said upper tray with at least one of said feet on said bottom wall of said upper tray extending through at least one of said holes in said right support ledge for providing a means for loosely coupling said right riser and said upper tray; and
(c) a left top tab attached to each said left riser and in detached contact with the outside of said left side wall of said upper tray; and
(d) a right top tab attached to each said right riser and in detached contact with the outside of said right side wall of said upper tray; and
(e) a plurality of interlaced inner bottom tabs and outer bottom tabs attached to each said left riser and having an alternating inner bottom tab and outer bottom tab arrangement along the length of said left riser and detachably and slidably engaged over the left side wall of said lower tray, whereby said outer bottom tabs are attached over the outside of said left side wall of said lower tray and said inner bottom tabs are attached over the inside of said left side wall of said lower tray, and wherein said left riser and said upper tray can be slid back towards the back wall of said lower tray so that said upper and lower trays can be staggered; and
(f) a plurality of interlaced inner bottom tabs and outer bottom tabs attached to each said right riser and having an alternating inner bottom tab and outer bottom tab arrangement along the length of said right riser and detachably and slidably engaged over the right side wall of said lower tray, whereby said outer bottom tabs are attached over the outside of said right side wall of said lower tray and said inner bottom tabs are attached over the inside of said right side wall of said lower tray, and wherein said right riser and said upper tray can be slid back towards the back wall of said lower tray so that said upper and lower trays can be staggered.

4,657,149
FOLDABLE DISPLAY ASSEMBLY
Paul J. Masson, Cincinnati, Ohio, assignor to Lingo Manufacturing Company, Florence, Ky.
Filed Oct. 3, 1985, Ser. No. 783,844
Int. Cl.⁴ A47B *47/00*
U.S. Cl. 211—194 **9 Claims**



1. A display assembly which is foldable for shipment, comprising:
(a) a rear display section;

(b) a pair of lateral supports, one of said lateral supports being releasably securable to each side of the rear display section, each lateral support including elongated slot means;

(c) an angular display section associated with each lateral support, each of said angular display sections including inside and outside edges with the inside edge of each angular display section being pivotally interconnected to its associated lateral support; and

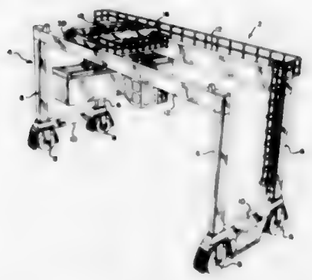
(d) a side section associated with each angular display section, each of said side sections having inboard and outboard edges, the inboard edge of each side section being pivotally interconnected to the same lateral support to which its associated display section is pivotally interconnected, with the outboard edge of each side section being pivotally interconnected to the outside edge of its associated angular display section, the pivotal interconnection between the lateral support and one of the angular display sections and side sections being about a pin slidable within the elongated slot means so as to allow the pivotally interconnected display and side sections to fold into substantially parallel relationship with the lateral support.

4,657,150

OVERHEAD CRANE HAVING BRIDGE MOUNTED FOR DIFFERENTIAL MOVEMENT

Myron Glickman, Morton Grove, and James A. Baumann, Orland Park, both of Ill., assignors to Mi-Jack Products, Inc., Hazel Crest, Ill.

Filed Apr. 21, 1986, Ser. No. 853,911
Int. Cl.[4] B66C *19/00*
U.S. Cl. 212—218 **9 Claims**



1. An overhead crane apparatus comprising

frame means forming a pair of parallel tracks;

hoist means;

bridge means spanning said parallel tracks and being operatively connected to said hoist means, said hoist means suspending a grappler device beneath said bridge means;

trolley means carrying said bridge means for movement along said parallel tracks;

pivot means centrally located between said parallel tracks and mounting said bridge means for central pivotal movement of said bridge means about a generally vertical axis about a generally vertical axis, with the amount of movement of the bridge means relative to each of said pair of parallel tracks being equal; and

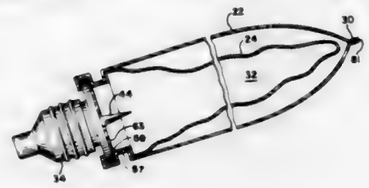
means for causing said central pivotal movement of said bridge means for corrective movement of said grappler device.

4,657,151

CONTAINER SUCH AS A NURSING CONTAINER, WITH FLEXIBLE LINER

James L. Cabernoch, Cary, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 12, 1984, Ser. No. 599,302
Int. Cl.[4] A61J *9/00, 9/08*
U.S. Cl. 215—11 E **29 Claims**



1. A nursing container comprising:

a substantially continuous outer rigid plastic shell;

a flexible plastic liner interior of said rigid shell and substantially coextensive with said shell;

a quantity of liquid within said liner;

a nipple assembly secured to said container and adapted to provide communication with the interior of said liner for dispensing the liquid therewithin; and

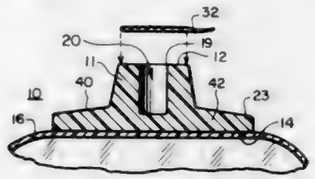
means for temporarily coextensively bonding said liner to said shell and permitting separation of said liner from said shell upon dispensing of the contents of said liner, whereby collapsing of said flexible liner permits said contents to be dispensed without requiring entry of displacement air.

4,657,152

THERMOPLASTIC FOAM FITMENT

Peter Carveth, Glen Ellyn; Albert Stone, Buffalo Grove, and L. Alan White, Gurnee, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 27, 1985, Ser. No. 802,640
Int. Cl.[4] B65D *41/50*
U.S. Cl. 215—249 **30 Claims**



1. A fitment comprising:

an integral body constructed from a thermoplastic foam, and having an integral skin outer surface and a cellular core;

the body having a top and bottom surface and at least one resealable port; and

the bottom surface includes means for securing the bottom surface to a surface of a container.

4,657,153

TAMPER-EVIDENT CLOSURE

Thomas H. Hayes, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

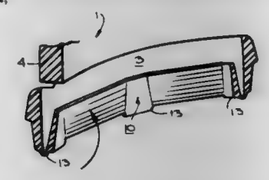
Filed Nov. 18, 1985, Ser. No. 799,328
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—252 **4 Claims**

1. A molded plastic tamper-indicating closure for sealing a container having closure engaging members on the container neck and an annular bead therebelow comprising the combination of:

a cup-like shell with a cover and a depending skirt;

means on said shell for engaging the closure engaging members;

a circular tear strip releasably attached to the lower edge of said skirt;



a plurality of separate radially inwardly projecting tabs each being hingedly connected by a snap-action arcuate over-center hinge means at the lower edge of said tear strip for locking engagement between the container bead and said tabs; and

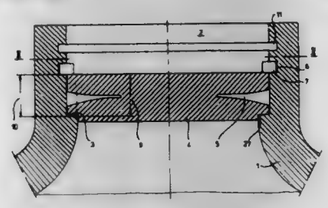
said hinge means comprising a plurality of spaced hinges between said tear strip and said tabs and separated from each other by arcuate slots.

4,657,154

CONTAINER HAVING A LATCHABLE COVER

Franz Pötz, Heppenheim; Franz-Wolfgang Popp, Wedemark, and Wolfgang Oswald, Ladenburg, all of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed May 20, 1986, Ser. No. 866,070
Claims priority, application Fed. Rep. of Germany, May 21, 1985, 3518181
Int. Cl.[4] B65D *39/02*
U.S. Cl. 215—273 **16 Claims**



1. A container comprising:

a vessel having an upwardly extending wall terminating in an upper end portion defining the opening of said vessel;

a removable cover for closing said opening;

said upper end portion having an inner wall surface with a shoulder formed therein for receiving said cover thereon when the container is closed;

said cover being one unitary piece having a peripheral edge;

annular groove means formed in said peripheral edge for causing said cover to be resiliently yieldable in response to a load applied to said cover in the region of said groove means;

recess means formed in said inner wall surface; and,

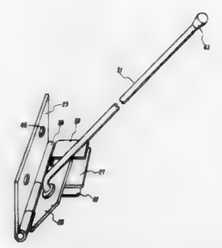
latching means for engaging said recess means when said cover is loaded and holding said cover in place against said shoulder when said load is removed therefrom.

4,657,155

LID SUPPORT ROD

Billy J. Kendrick, 1104 Rice Ct., Arlington, Tex. 76012

Filed Apr. 21, 1986, Ser. No. 853,933
Int. Cl.[4] F24B *3/00*
U.S. Cl. 217—60 B **5 Claims**



1. A support device for holding open the lid of a container, comprising:

hinge means having first and second plate members and a central pin member disposed between the first and second plate members, said second plate member being pivotally mounted on said central pin member so that said second plate member is rotatable about the axis of said pin member;

an elongated rod pivotally attached at one end thereof to said second plate member, said rod being rotatable about a vertical axis which is orthogonal with respect to a major surface of said second plate member so that said rod has three degrees of freedom of movement to engage the container lid at essentially any desired position thereon; and,

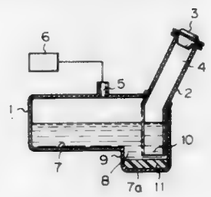
a third relatively flat plate member coupled to said central pin member and disposed substantially orthogonal with respect to said first plate member and a base member attached to a major surface of the third plate member, said base member having an extension portion extending horizontally beyond an end of said third plate member in the direction of said second plate member for engaging said second member to limit the travel thereof in one direction.

4,657,156

FUEL TANK FOR USE IN A MOTOR VEHICLE

Koji Uranishi, Susono; Takaaki Ito, Mishima, and Toshio Tanahashi, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 22, 1985, Ser. No. 715,172
Claims priority, application Japan, Mar. 23, 1984, 59-54440; Mar. 23, 1984, 59-54442
Int. Cl.[4] B65D *25/00*
U.S. Cl. 220—85 VS **6 Claims**



1. A fuel tank for use in a motor vehicle, comprising:

a bottom wall having a first planar portion and a second portion, said second portion extending downwardly from said first portion to form a chamber portion in the tank,

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said chamber portion having a bottom below the plane of said first portion,

a fuel inlet pipe having an inlet with a detachable cap and an outlet end in communication with the tank, said outlet end being spaced from and open to the bottom of the chamber portion,

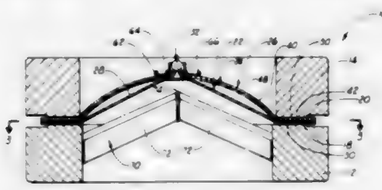
a baffle of sponge-like porous material fixed in the chamber portion, said baffle including a substantially plate-like portion spaced from and transverse to the outlet end of the fuel pipe and being between said end and the chamber portion bottom for reducing the formation of fuel vapor caused by bubbling during the filling of the tank through the pipe.

4,657,157

PRESSURE RELIEF METHOD AND RUPTURE DISK ASSEMBLY

Edward H. Short, III, Tulsa, Okla., assignor to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Jan. 19, 1986, Ser. No. 875,981
Int. Cl.⁴ F16K *17/40*; B65D *25/00*
U.S. Cl. 220—89 A **29 Claims**



1. A rupture disk assembly adapted to be clamped in a pressure relief area for relieving fluid pressure at a predetermined negative pressure differential comprising:

a flexible sealing member;

a retainer means positioned adjacent one side of said sealing member for engagement with and retention of said sealing member until disengaged therefrom when a predetermined negative pressure differential is exerted across said sealing member; and

knife means for severing said sealing member positioned adjacent the side of said sealing member opposite said retainer means and spaced therefrom whereby said sealing member is prevented from contacting said knife means until disengaged from said retainer means.

4,657,158

DEVICE FOR FEEDING ELECTRONIC COMPONENTS PACKED IN TAPE TO A PICK-UP POSITION

Franciscus C. M. Faes; Josephus M. M. Van Gastel; Jozef G. H. M. Smolders; Hubertus J. Theelen, and Petrus A. C. Verberne, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 13, 1984, Ser. No. 630,563
Claims priority, application Netherlands, May 11, 1983, 8303816
Int. Cl.⁴ G07F *11/66*
U.S. Cl. 221—25 **8 Claims**

1. A device for feeding electronic components packed in a tape to a pick-up position, said device being an exchangeable cassette and comprising:

(a) a supply reel for said tape,

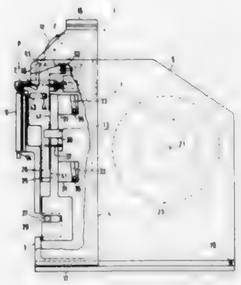
(b) a holder for said supply reel,

(c) a feeding mechanism provided with a feeding pin and coupled to said supply reel for moving said components to said pick-up position,

(d) a locking mechanism provided with a locking pin coupled to said supply reel for preventing undesired rotation of said tape,

(e) an ejection mechanism provided with an injection pin and coupled to said feeding mechanism for ejecting components from said tape at said pick-up position,

(f) a wind-up mechanism coupled to said supply reel for guiding said tape along a path coinciding with said pick-up position,



(g) sliding mechanism coupled to said feeding mechanism and said wind-up mechanism for driving said feeding and said wind-up mechanism,

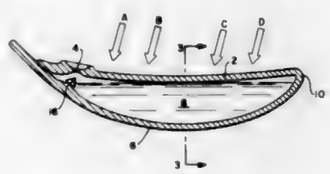
(h) and a housing secured to and providing a common support for said holder, and said mechanism and supplied with a support for said supply reel, a transport channel constituting a guide for said tape with said components to said pick-up position and a bearing for a take-up reel.

4,657,159

MENISCUS-SHAPED CONTAINER

Alan H. Grant, 3208 Woodhollow Dr., Chevy Chase, Md. 20015

Filed Aug. 6, 1985, Ser. No. 762,827
Int. Cl.⁴ B67B *7/24*
U.S. Cl. 222—83 **8 Claims**



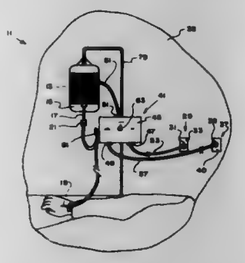
1. A container comprising a receptacle forming a concave part for receiving material and having a curved outer surface, and a lid covering said receptacle, wherein said lid is flexible and connected to said receptacle, said curved outer surface is of a size and shape to conform generally to a cupped human palm and to extend completely across said palm, said lid has a concave upper surface whereby it may be forced into said concave part by a user's fingers when said curved outer surface is in a cupped human palm for moving said material across said palm and expelling said material in response to sequential forces applied by said user's fingers, said concave part is wider in cross-section at a central region and tapers at opposed ends, and dispensing means for dispensing said material is located at one of said opposed ends.

4,657,160

PRESSURE INFUSION CONTROL

Andy Woods, 400 L.P.Mann Dr., Marion, Ark. 72364, and Peter T. Giannini, 3921 Hermitage, Memphis, Tenn. 38116

Continuation-in-part of Ser. No. 650,076, Sep. 13, 1984, abandoned. This application Jan. 21, 1986, Ser. No. 820,935
Int. Cl.⁴ A61M *5/00*; B65D *35/28*
U.S. Cl. 222—94 **4 Claims**



1. An improved pressure infusion system of the type including a flexible bag for containing a quantity of liquid to be infused into a patient, a pressure means for selectively applying pressure to said bag to force said liquid from said bag, wherein the improvement comprises:

(a) pressurized fluid means for supplying pressurized fluid to said pressure means to cause said pressure means to apply pressure to said bag to force said liquid from said bag;

(b) vacuum means for quickly and actively evacuating said pressurized fluid from said pressure means to allow said bag to be quickly removed from said pressure means and replaced with another bag; said vacuum means including a vacuum pump for creating a negative pressure to draw said pressurized fluid from said pressure means; said vacuum pump creating said negative pressure when pressurized fluid is supplied thereto; and

(c) control means for controlling said pressurized fluid means and said vacuum means, said control means including a valve means for movement between a first position in which said pressurized fluid means is allowed to supply pressurized fluid to said pressure means, and a second position in which said vacuum means is allowed to remove said pressurized fluid from said pressure means; said control means including a regulator means for regulating the pressure of said pressurized fluid before it is supplied to said pressure means; said pressurized fluid means being allowed to supply pressurized fluid to said vacuum pump when said valve means is in said second position.

4,657,161

A DISPENSING CONTAINER FOR CREAM-LIKE FLUIDS

Syuzo Endo, and Haruo Tsuchida, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1984, Ser. No. 593,857
Claims priority, application Japan, Mar. 30, 1983, 58-46461[U]
Int. Cl.⁴ G01F *11/00*
U.S. Cl. 222—256 **4 Claims**

1. A container for cream-like fluids, comprising:

a cylindrical body having a dispensing end and a sealed end, the dispensing end including an inner container end structure and an outer container end structure located above said inner container end structure;

the inner container end structure including a discharge unit with a discharge valve in a discharge port that communicates with said body;

the outer container end structure including a guide, a guide cylinder disposed within the guide and communicating with the inner container end structure, and an exhaust port communicating with a discharge chamber connected to the discharge port of the inner container end structure, the outer container end structure engaged with the body with said inner container end structure engaged therebetween;

the sealed end including a lower piston perforated with an air bleed hole, the air bleed hole being air-tightly sealed by a plug; and

a pushbutton associated with the inner and outer container end structures for dispensing the cream-like fluid from the body, the pushbutton having a top wall with a depending peripheral wall slidably received within the guide of the outer container end structure, the pushbutton further including a depending cylinder slidably disposed within the guide cylinder, the end of the depending cylinder opposite from said top wall being associated with an upper piston slidably received within a portion of the inner container end structure, the upper piston being integrally secured to the depending cylinder by posts which extend from the depending cylinder to the upper piston, a spring being disposed between said top wall of said pushbutton



and a bottom wall of said guide of the outer container end structure to urge said pushbutton and said upper piston away from said sealed end, said cylindrical body having an inner peripheral wall surface, said lower piston having an elastic peripheral wall of an arcuate-shaped section at a peripheral edge of said lower piston such that it is air-tightly pressed against the inner wall surface of said body and slidably engaged with said inner wall, inner and outer cylinder shaped members depending from a lower surface of the lower piston, said inner cylinder shaped member having a lower inner periphery with an engaging section formed thereon, said air bleed hole of the lower piston being disposed within the inner cylinder shaped member, said plug of said lower piston comprising a cylindrical plug body projecting upwardly from the center of a substantially flat plate, said flat plate being slidably engaged with the inner wall surface of the body, and the plug body being received within the engaging section of the inner cylinder shaped member, thereby fixedly securing the plug to the inner cylinder shaped member to block the air bleed hole.

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4,657,162

LIQUID DISPENSING DEVICE WITH REMOVABLE DOSING UNIT

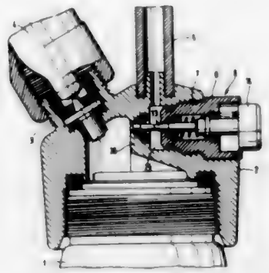
Hannes Folter; Christian C. Folter, and Franz Gröbl, all of Vienna, Austria, assignors to Karl Fischer-Pochtler Gesellschaft m.b.H., Vienna, Austria

Continuation of Ser. No. 682,160, Dec. 17, 1984, abandoned. This application Aug. 5, 1986, Ser. No. 894,477

Claims priority, application Austria, Dec. 23, 1983, 4514/83

Int. Cl.[4] B65D *83/00*

U.S. Cl. 222—402.25 1 Claim



1. A device for dispensing a liquid through a dispensing nozzle from a container having a neck portion and holding the liquid under pressure in the interior thereof, said liquid dispensing device comprising

(a) a head part detachably mounted on the neck portion, the dispensing nozzle being mounted on the head part and the head part having

(1) a partition wall and defining

(2) a tapped bore extending outwardly from the partition wall, and

(b) a removable dosing unit comprising

(1) a bushing having a screw thread for attachment of the bushing to the bore, the bushing having an inner end spaced from the partition wall and defining a liquid distribution chamber therewith between the dispensing nozzle and the partition wall, the partition wall separating the interior of the container from the liquid distribution chamber,

(2) a liquid dosing piston having an axis and being housed in the bushing for displacement along said axis, the piston having a cylindrical valve body section and a cylindrical section axially spaced from the cylindrical valve body section, a constricted valve body section of double conical shape therebetween, the cylindrical valve body section and the constricted valve body section protruding from the inner end of the bushing, and a frusto-conically tapering inner end adjacent the cylindrical valve body section,

(3) the partition wall defining a liquid flow passage coaxial with the piston between the liquid distribution chamber and the interior of the container,

(4) a first annular sealing gasket fixedly mounted on the partition wall in the liquid flow passage and coaxially surrounding the piston,

(5) a second annular sealing gasket mounted in the bushing axially spaced from the first gasket and coaxially surrounding the cylindrical piston section for engagement therewith, the piston being displaceable between a sealing position wherein the cylindrical valve body section engages the first annular sealing gasket and a dispensing position wherein the cylindrical valve body section is out of engagement with the first annular sealing gasket and the constricted valve body section is in registry therewith for dosing the liquid flowing through the liquid flow conduit,

(6) a spring means mounted in the bushing for biasing the piston for displacement into the sealing position, and

(7) the bushing screw thread having at least twice the length of the inner cylindrical valve body section.

4,657,163

DESK CLAMPING DEVICE OR DECOLLATOR FOR TEARING OFF STRIP SIDE EDGES

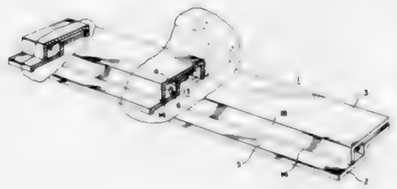
Pier C. M. Cats, Vreeland, Netherlands, assignor to Idetra B.V., Vreeland, Netherlands

Filed Aug. 9, 1985, Ser. No. 764,129

Claims priority, application Netherlands, Aug. 9, 1984, 8402464

Int. Cl.[4] B26F *3/02*

U.S. Cl. 225—106 6 Claims



1. A device for tearing the margins off a stack of edge driven continuous feed pages of the type having a central area, on which writing is placed, divided from the margin by a perforate line, the margin engaging by means of perforated openings, transport pins of a drive mechanism, said device comprising:

a bottom bar,

an upper bar,

mounting means for mounting the bottom bar and upper bar for pivotal movement about an axis between an open position in which the bottom bar and upper bar define an acute angle and a closed position in which the bottom bar and upper bar substantially overlie,

guiding stop means located on the bottom bar and extending in the direction of the axis for engaging an edge of the stack of pages and for positioning the perforate line at a predetermined distance from the axis,

a plurality of stopper elements arranged in a row upon the bottom bar and protruding therefrom, said plurality of stopper elements being spaced apart in a direction of the axis along a line corresponding to the arrangement of the perforated transport pin openings in the margins of the pages, and

a rib on the upper bar having a sharp ending rib portion protruding in a direction toward said bottom bar in said closed position, said rib extending substantially parallel to said guiding stop means and being aligned substantially along said predetermined distance from the axis to engage the perforate line in said closed position for tearing the central area from the margins of the stack of the pages.

4,657,164

WEB TENSION CONTROLLER

Willi Felix, Einsiegelweg 3, CH 4802 Strengelbach, Fed. Rep. of Germany

Filed Aug. 10, 1984, Ser. No. 640,035

Int. Cl.[4] B65H *20/24, 20/36, 23/192*

U.S. Cl. 226—42 8 Claims

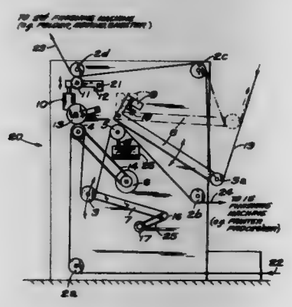
1. An apparatus for maintaining low and even web tension through an intermittently reversing operating unit in a continuous web finishing line in response to the flow of web through said intermittently operating unit, comprising:

(a) adjustable positive web feed means for feeding web to the intermittently operating unit;

(b) web feed control means located between the web feed means and the intermittently operating unit for sensing the demand for web by the intermittently operating unit and adjusting the speed of the web feed means to that demand, said web feed control means including means for maintaining low and even web tension during rapid acceleration of the web through the intermittently operating unit;

(c) brake means located downstream of the intermittently operating unit for stopping the web after it has exited the intermittently operating unit and preventing the transfer of tension on the web from a downstream operating unit to the intermittently operating unit;

(d) bistate reversal control means located between the intermittently operating unit and said brake means, said bistate reversal control means having a first mode for maintaining during forward operation of the intermittently operating unit a preselected quantity of web available to accomodate periodic reversal of web travel through the intermittently operating unit and a second mode for maintaining low and even web tension during reversal of web travel through the intermittently operating unit;



(e) said web feed control means including means to accommodate said preselected quantity of web upon said periodic reversal of the intermittently operating unit;

(f) first sensing and control means, responsive to forward deceleration of the web through the intermittently operating unit for turning on said brake means and for switching said bistate reversal control means to its second mode of maintaining low and even web tension during reversal of web travel through the intermittently operating unit; and

(g) second sensing and control means, responsive to the bistate reversal control means, for releasing the brake and for switching said bistate reversal control means to its first mode of maintaining said preselected quantity of web.

4,657,165

MECHANICAL MEANS FOR PREVENTING THE TWISTING OF A FIBER OPTIC CABLE WHILE TEMPORARILY STORING THE SAME

D. William Giroux, 3 Lakewood Villa, Lake Manawa, Council Bluffs, Iowa 51501

Filed Sep. 30, 1985, Ser. No. 782,119

Int. Cl.[4] B65H *49/00, 54/56, 57/08*

U.S. Cl. 226—183 1 Claim

1. A means for preventing the snarling of a fiber optic cable comprising,

a drive wheel support means,

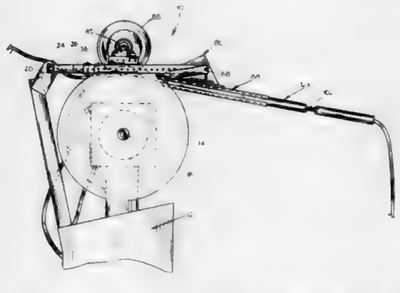
a drive wheel rotatably mounted on said support means, said drive wheel having a concave shaped peripheral rim surface adapted to receive a fiber optic cable extending thereover,

means for rotating said drive wheel,

a pressure wheel support means operatively pivotally mounted on said drive wheel support means,

a pressure wheel rotatably mounted on said pressure wheel support adjacent said drive wheel for pressing the fiber optic cable into frictional engagement with said concave shaped peripheral rim of rotating drive wheel so that the fiber optic cable will be pushed in the direction of rotation of said drive wheel,

and an elongated tubular guide means having one end positioned adjacent said drive wheel which receives the fiber optic cable being pushed by said drive wheel, the other end of said tubular guide means being positioned outwardly of said drive wheel whereby the optic cable being pushed through said tubular guide means will pass outwardly from the said other end of said tubular guide means and drop to the ground with the inherent characteristics of the fiber optic cable causing said fiber optic



cable to drop to the ground in a substantial figure eight pattern so that said fiber optic cable will not snarl when it is subsequently pulled from the pile of fiber optic cable on the ground,

said tube means comprising an inner tube member and an outer tube member embracing at least a portion of said inner tube member, each of said tube members having an elongated slot formed therein extending between the ends thereof, said tube members being rotatable and selectively locked with respect to each other to permit said slots to either be aligned or nonaligned, said tubes being rotatable from an aligned position to a nonaligned position to prevent the cable from becoming disengaged from the tube members.

4,657,166

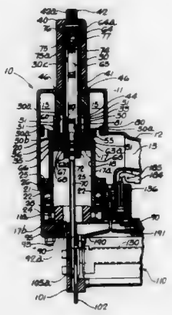
PNEUMATICALLY OPERATED NAILING MACHINE

Anstett Edgar P., 21 Lakewood Pl., Highland Park, Ill. 60035

Filed Nov. 29, 1985, Ser. No. 802,840

Int. Cl.[4] B25C *1/04*

U.S. Cl. 227—7 16 Claims



1. A pneumatically operated nailing machine comprising: a

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reciprocatable blade for driving nails when advanced; a reciprocatable differential piston for advancing and retracting the reciprocatable blade, said reciprocatable differential piston having a lower, large diameter piston and an upper, small diameter piston; a piston rod for said reciprocatable differential piston; a reciprocatable cylinder sleeve having a cylinder for receiving the lower, large diameter piston; a cylinder member having a cylinder for receiving the upper, small diameter piston; passages for conveying air under pressure beneath the upper, small diameter piston and for venting to atmosphere air above the lower, large diameter piston to drive the reciprocatable differential piston upwardly and to retract the reciprocatable blade, and for interrupting the venting of air to atmosphere from above the lower, large diameter piston, and for supplying air under pressure above the lower, large diameter piston to drive the reciprocatable differential piston downwardly to advance the reciprocatable blade; control valve means for selectively supplying air under pressure to said passages; and valve means for the upper, small diameter piston for venting air under pressure below the upper, small diameter piston to atmosphere when the reciprocatable blade is advanced by the reciprocatable differential piston.

4,657,167

AUTOMATIC FASTENING MACHINE FOR ROOF AND DECK COVERINGS

Gary S. Mays, Box 245, Ashley, Ohio 43003

Filed Jan. 16, 1985, Ser. No. 691,926
Int. Cl.⁴ B25C *7/00*
U.S. Cl. 227—99 **3 Claims**



1. An apparatus for feeding and positioning disks upon a surface layer of material and beneath a fastener driver guide for attaching the surface layer against an underlayer by fasteners driven through said disks into the underlayer, the apparatus comprising:

(a) a support frame for movement over said surface layer to the selected positions on the surface layer where disks and fasteners are desired;

(b) a disk supply magazine mounted to said frame and including means for separating and feeding individual disks in response to activation, the disk supply magazine including a retaining means for holding a supply of disks in a vertical stack extending upwardly from the top opening of an oblique chute to prevent lateral movement of all but the lowermost disk of the stack, said retaining means being skewed from the top opening of the chute so that edges of the lowermost disk rest upon edges of the top opening of the chute, the disk supply magazine also including a movable substantially horizontal plate below said retaining means and having a thickness not greater than the thickness of each of said disks and having a port for matingly surrounding the periphery of the lowermost disk, said plate being movable to move said port between a position at the bottom of said stack around the lowermost disk and a position in alignment with the top of said chute, wherein the stack retaining means, the port in the conveying plate and the top opening of the chute are vertically coaxial, the retaining means holding the supply of disks angularly rotated from alignment with the top opening of the chute and wherein said plate is pivotal about said vertical axis for rotating the lowermost disk from the stack into alignment with the chute;

(c) disk guide means for receiving disks from said supply magazine and guiding them to a driving position which is laterally offset from said supply magazine and immediately above said surface layer, said disk guide means including said oblique chute extending from beneath said magazine to beneath said drive guide and opening downwardly onto said surface layer, said disk guide means further including resilient movable catches extending inwardly from opposite sides of the lower portion of said chute and above the surface layer for releasably retaining one of said disks in position for being driven downwardly by a fastener against the surface layer, each of said catches including a resiliently bendable spring which is cantilevered from an edge of the lower portion of said chute, the disk guide means further including a permanent magnet mounted near the lower end of said chute, for attracting one of said ferromagnetic disks into position upon said catches;

(d) a fastener driver guide laterally offset from said magazine and above said driving position said guide including a plate mounted to said frame and having a vertical hole aligned with the central axis of the bottom opening of said chute; and

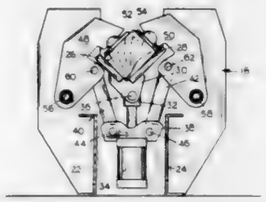
(e) a pair of spaced wheels both mounted to the same side of said frame laterally with respect to the travel direction, each wheel aligned parallel to the travel direction, the lowermost periphery of the wheels not extending significantly below the bottom of said support frame so that said frame may be laterally tilted, wheeled longitudinally and levelled with the bottom of said frame substantially resting upon said surface layer.

4,657,168

WOOD CROSS-TIE END PLATING MACHINE

Gordon E. Matlock, 554 Sappington Bridge Rd., Sullivan, Mo. 63080

Division of Ser. No. 533,779, Nov. 21, 1983, Pat. No. 4,513,900. This application Dec. 24, 1984, Ser. No. 686,082
Int. Cl.⁴ A43D *71/00*; B30B *9/00, 9/30*
U.S. Cl. 227—152 **2 Claims**



1. An end plating machine for wood cross-ties, comprising, a frame means,

at least a first stationary platen means on said frame means including first and second platens dwelling in a plane approximately 45° with respect to horizontal,

a hydraulic cylinder positioned below said stationary platen means and having its rod end operatively pivotally connected to said stationary platen means and extending downwardly therefrom,

first and second links pivotally connected to the body of the hydraulic cylinder and extending upwardly and outwardly therefrom,

first and second movable platen arms pivotally connected to said frame means,

the upper ends of said links being pivotally connected to said first and second movable platen arms whereby extension of the rod from said hydraulic cylinder will cause said movable platen arms to pivotally move towards the cross-tie positioned on the stationary platen means,

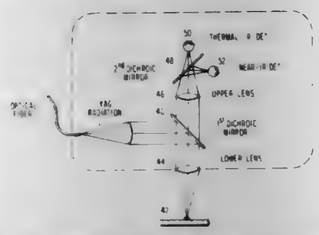
tie engaging platens on the ends of said movable platen arms for squeezing engagement with the tie when said hydraulic cylinder is extended.

4,657,169

NON-CONTACT DETECTION OF LIQUEFACTION IN MELTABLE MATERIALS

Ashod S. Dostoomian, Stoughton, and Riccardo Vanzetti, Brockton, both of Mass., assignors to Vanzetti Systems, Inc., Mass.

Filed Jun. 11, 1984, Ser. No. 619,438
Int. Cl.⁴ B23K *31/00*
U.S. Cl. 228—103 **24 Claims**



1. In a method of reflow soldering comprising the steps of disposing first and second components to be soldered in contact with a quantity of solder in solid phase, heating said solder to a temperature above its melting temperature to change the phase of said solder from solid to liquid, and thereafter allowing said solder to cool and solidify, said method further comprising non-contact monitoring said solder during said heating step to determine when said solder has melted, said monitoring step comprising optically detecting the change of phase of said solder by monitoring a property of said solder, other than the temperature of said solder, which property changes above said melting temperature, and interrupting said heating step in accordance with the value of said monitored property.

4,657,170

PROCESS FOR BONDING AN ELECTRIC COMPONENT TO A BLOCK OF CONNECTING TAGS AND A MACHINE AND TAPE FOR CARRYING OUT THIS PROCESS

Claude Müller, Le Locle, Switzerland, assignor to Farco, S.A., Le Locle, Switzerland

Filed Oct. 15, 1985, Ser. No. 787,552
Claims priority, application France, Oct. 16, 1984, 84 15944
Int. Cl.⁴ B23K *31/00, 37/04*; H01L *21/00*
U.S. Cl. 228—106 **11 Claims**

1. A process for bonding simultaneously a series of juxtaposed connecting terminals of an electric component to a connecting tag block having one tag per terminal, said process comprising:

aligning said tag block and said electric component such that one of said tags respectively is superposed per one of said terminals;

interposing a sheet of ductile, heat conducting material between a bonding tool and said superposed tags and terminals, said material having a melting point above the temperature which said tool reaches at the moment of bonding;

applying heat and pressure to said respectively superposed tags and terminals by the application of said bonding tool to said interposed sheet; and,

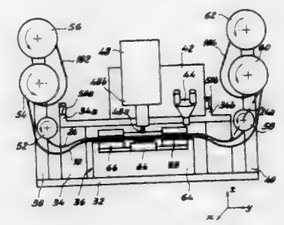
retaining said sheet against said tag block and said electric component to protect them after the bonding operation.

9. A machine for bonding simultaneously a series of juxtaposed connecting terminals of an electric component to a connecting tag block having one tag per terminal, said machine comprising:

means for aligning said tag block and said electric component at a bonding station such that one of said tags respectively is superposed per one of said terminals;

a bonding tool for applying heat and pressure to said respectively superposed tags and terminals by the application of said bonding tool to a sheet of a ductile, heat conducting material interposed between said bonding tool and said respectively superposed tags and terminals;

support means for positioning and holding said electric component and said block of tags in relation to each other and in line with said bonding tool at said bonding station,



and for positioning and holding said sheet interposed between said bonding tool and said respectively superposed tags and terminals at said bonding station;

first feed means for moving through said bonding station a first tape formed with a plurality of spaced blocks of said tags;

second feed means for moving a second tape through said bonding station parallel to said first tape and between said bonding tool and said first tape, said second tape being provided alternately with solid portions and cut-out portions, and said solid portions comprising said sheet of ductile, heat conducting material; and,

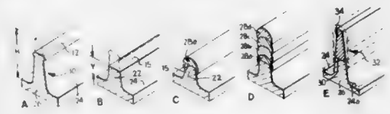
step-by-step drive means operative to advance said first tape block by block for fresh bonding operations, and to advance said second tape in two steps for each of said bonding operations, one of said steps indexing said cut-out portion of said second tape into said bonding station and the other of said steps indexing said solid portion of said second tape into said bonding station.

4,657,171

REPAIR OF A MEMBER HAVING A PROJECTION

Bertrand G. Robins, Marysville, Wash., assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 13, 1985, Ser. No. 744,365
Int. Cl.⁴ B23K *31/00*
U.S. Cl. 228—119 **7 Claims**



1. In a method of repairing a metal article comprising a support and a projection of an operating height and shape projecting from a first surface of the support, the projection

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being of a first metal characterized as having relatively poor weldability and repair weldability characteristics, including poor weld flow and crack sensitivity, the method including removing at least a portion of the projection and replacing the removed portion with additional material, the steps of:

mechanically removing at least a portion of the operating height of the projection to provide a projection pedestal having a base location extending in a range up to about 0.1" away from the first surface;

providing an additional material of a second metal characterized as having good weldability and repair weldability characteristics when diluted with the first metal and age hardenable with an aging heat treatment with which the first metal also is age hardenable;

metallurgically bonding the additional material directly to the base location, without prior melting of the base location, at a bond juncture zone to replace at least the removed portion, the additional material after bonding being in a condition which is substantially a solid solution, to provide a repair support/projection preform;

subjecting the preform to the aging heat treatment; and then

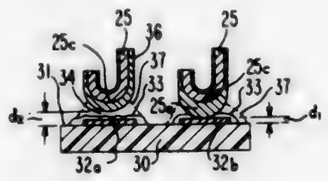
removing a portion of the additional material to regenerate the projection in the operating height and shape.

4,657,172

APPARATUS AND METHOD OF SOLDER COATING INTEGRATED CIRCUIT LEADS

Jong S. Lee, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 31, 1985, Ser. No. 794,038
Int. Cl.⁴ H05K *3/34*
U.S. Cl. 228—180.2 **5 Claims**



1. A method of precoating electrical leads extending from a surface of a discrete integrated circuit package having opposed flat top and bottom surfaces and where the electrical leads each have a first portion extending from a peripheral edge of the package and a second portion extending to a position adjacent to one of said top and bottom surfaces of said integrated circuit package, said second portion including a first surface to be precoated with solder for subsequent and separate connection to a printed circuit board comprising:

providing a container having a level of molten solder therein;

intermittently discharging a wave of molten solder in said container above said level of molten solder;

orienting said integrated circuit package with respect to said level of molten solder in a plane intersecting said wave of molten solder;

orienting the said integrated circuit package so that said electrical leads second portion extends in a direction upward and away from said level of molten solder and said first surface to be precoated extends exposed in a plane adjacent to said package; and

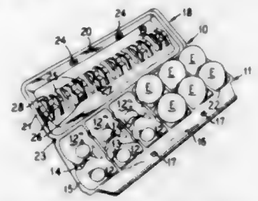
passing said so-oriented integrated circuit package including said first surface through said wave of molten solder to precoat each of said first surfaces of said electrical leads with essentially uniform thicknesses of solder.

4,657,173

DIVIDED CELL CARTON WITH RESILIENT BIASING MEMBERS

Connie Lake, Tinley Park, Ill., assignor to S. Eisenberg & Co., Bridgeview, Ill.

Filed Oct. 24, 1985, Ser. No. 790,947
Int. Cl.⁴ B65D *85/32*
U.S. Cl. 229—2.5 EC **19 Claims**



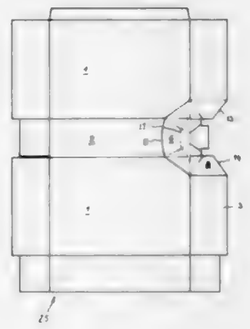
1. A carton especially adapted for housing fragile articles, such as eggs, which comprises an open top tray having adjacent open top article receiving cells, a lid closing said tray having a top wall with pairs of spaced opposed depending spring fingers isolated from the top wall by slots along the length of the fingers, with each pair of fingers positioned to engage articles in two adjacent cells, said fingers having inner ends spaced below the top wall of the lid and outer ends connected to said top wall, and a flexible bridge connecting said inner ends of the spring fingers of each pair to stiffen the spring effect of the fingers as they engage the articles.

4,657,174

FOLDING CARTON WITH A POURING OPENING

Horst Hennig, Kempten, Fed. Rep. of Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 18, 1985, Ser. No. 692,733
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1984, 3402096
Int. Cl.⁴ B65D *5/54*
U.S. Cl. 229—17 R **1 Claim**



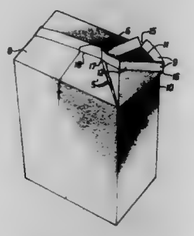
1. A folding carton having a top panel, first and second side panels, first and second narrow side panels, a bottom panel, and a pouring opening, which pouring opening is located in one corner of said folding carton between said first narrow side panel and said top panel, with a perforation line to tear said folding carton open in said corner and a plurality of folding lines, including first and second straight folding lines, first and second diagonal crease lines and a plurality of oblique folding lines, to fold at least one section of said first narrow side panel out of the plane of said first narrow side panel, said section that can be folded out being divided from the rest of said first narrow side panel by said first straight folding line extending across said first narrow side panel and a section of said top panel that is adjacent to said section that can be folded out from said first narrow side panel being divided off from the rest of said top panel by said second straight folding line extending across said top panel, wherein the ends of said two straight folding lines that extend across said narrow side panel and said top panel are connected by said first and said second crease lines which extend diagonally across said first and second side panels respectively of said folding carton, wherein said plurality of oblique folding lines (**11, 12 and 13, 14**) start from each of said ends, which extend diagonally across the sections of said first narrow side panel and said top panel respectively, and divide a triangular area off from each of said first narrow side panel and said top panel, said plurality of oblique folding lines (**11, 14 and 12, 13**) meeting at least approximately at points (**15 and 16**) located on an edge (**9**) joining said top panel and said first narrow side panel, said points (**15, 16**) being located a distance apart, wherein said perforation line for tearing open the folding carton consists of one middle section running parallel to and a certain distance from the edge joining the said first narrow side panel and said top panel and two side sections starting from said middle section and extending to a first end (**19**) and a second end (**20**) of said edge (**9**) joining said first narrow side panel and said top panel, and wherein the folding line that divides the section that can be folded out from the rest of said first narrow side panel curves downwards, said folding carton in its assembled form, with said pouring opening in a closed configuration and said perforation line not yet torn, having a flat top surface formed by said top panel with protrusions beyond a plane defined by said surface absent therefrom.

4,657,175

PACKAGE

Kjell H. Martensson, Malmö , Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Continuation of Ser. No. 472,880, Mar. 8, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 710,516
Claims priority, application Sweden, Mar. 18, 1982, 8201719
Int. Cl.⁴ B65D *17/00*
U.S. Cl. 229—17 R **6 Claims**



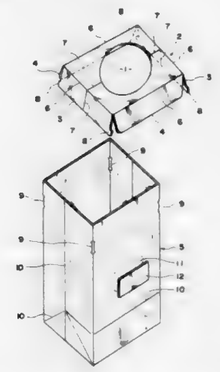
1. In a package of the type having a container body formed from a multi-layer packing material with four side walls located opposite each other in pairs; a bottom end wall and a top end wall, the top end wall including two triangular, double-walled lugs at opposite sides; and a sealing fin extending over the top end wall and the triangular lugs, said sealing fin being formed by joining inside layers of the packing material in a sealing bond, said sealing fin being folded down along a portion of its length against the top end wall and being retained in its folded down position, a region in said sealing bond being adapted to be torn open in order to unfold said sealing fin for forming a rhomboid opening in said package, the improvement comprising a first cut located in the layer of packing material of said sealing fin which is nearest to the top end wall of the package when said sealing fin is in the folded down position, said first cut being spaced from said triangular lug and a second cut in said sealing fin at an intersection of the top end wall and one of the side walls where the triangular lug joins the top end wall, whereby said first cut facilitates formation of said rhomboid opening.

4,657,176

COLLAPSIBLE BOX INCLUDING BAG AND ATTACHED LID

Izuru Matsubara, Osaka, Japan, assignor to Eiwa Sangyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 25, 1985, Ser. No. 801,314
Int. Cl.⁴ B65D *30/00*
U.S. Cl. 229—41 R **5 Claims**



1. A simplified and foldable box comprising a square-shaped upper lid having an opening thereon and provided with opposed folding flaps connected along folding lines on edges of the upper lid, a first pair of said opposing flaps so formed that they contact with inner surfaces near an opening of a square-bottomed bag while a second pair of said opposing folding flaps contact outer surfaces near the opening of the square-bottomed bag, wherein the folding lines of the folding flaps are positioned slightly above the open end of the square-bottomed bag, the first pair of opposing flaps having a folding line which crosses in the middle of said first pair of opposing folding flaps and along a line crossing the center of the opening provided on the upper lid means associated with said bag for permitting said bag and said lid to collapse as a unit, projections on both sides of each of said first pair of opposing folding flaps, said projections engaging holes on the square-bottomed bag located so as to receive the projections.

4,657,177

CARTON FORMED FROM BLANK OF EXPANDED POLYMER MATERIAL AND BLANK THEREFOR

James A. Karabedian, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 638,144, Aug. 6, 1984, abandoned. This application Nov. 12, 1985, Ser. No. 796,523
Int. Cl.⁴ B65D *5/08*
U.S. Cl. 229—137 **12 Claims**

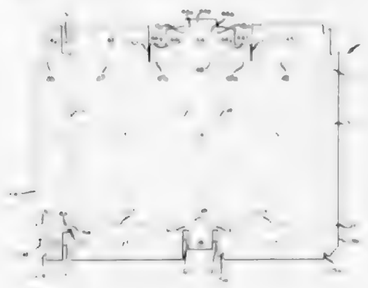
1. A six-sided carton formed from a unitary blank of a sheet-like, generally rigid polymeric material by die-cutting, a major portion of the thickness of said generally rigid polymeric material comprising an expanded polymeric material, said generally rigid polymeric material further comprising at least one thin layer of a non-expanded polymeric material on one of the opposed surfaces of said blank for improved resistance to moisture vapor transmission, said carton being sealed against moisture vapor transmission and comprising, in combination:

four sides formed in an open-ended tubular configuration from four serially connected panels in said blank by bending along fold lines at the junctures between said panels,

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the first and fourth of said panels being joined to one another in a joint;

a self-sealing end structure formed at one end of said tubular configuration, said self-sealing end structure sealing said one end against moisture vapor transmission and comprising four flaps and being formed by the inward folding of each of said four flaps, each of said four flaps comprising an integrally formed portion of said blank and depending from and being foldable with respect to one of said panels alone a fold line at the juncture between said each of said four flaps and said one of said panels, said four flaps being separated from one another by slots, each of said slots extending from the marginal edge of said blank adjacent said four flaps only partially to the fold lines between said panels and said flaps, the outer marginal edge of one of said four flaps of said self-sealing end structure comprising first and second spaced apart notched areas;



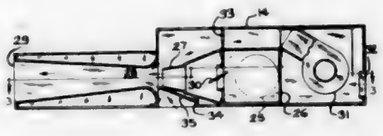
a plurality of gusset areas, each of said gusset areas lying between an adjacent pair of said flaps when said self-sealing end structure is formed by the inward folding of each of said four flaps to seal the corner of said carton that is adjacent said adjacent pair of said flaps, each of said gusset areas being compressed in the die-cutting step to a thickness of no more than about one-half of the thickness of said blank to reduce the thickness of the corners of said self-sealing end structure, each of said first and second spaced apart notched areas of said outer marginal edge of said one of said four flaps of said self-sealing end structure being aligned with and engaging one of said plurality of gusset areas when said four flaps are inwardly folded to rigidify said self-sealing end structure; and

means for sealingly closing the other end of said open-ended tubular configuration against moisture vapor transmission.

4,657,178
MIXING BOX

Gershon Meckler, Bethesda, Md., assignor to Camp Dresser & McKee, Boston, Mass.

Continuation-in-part of Ser. No. 184,282, Sep. 5, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 314,872
Int. Cl.⁴ G05D *23/13*
U.S. Cl. 236—13 **17 Claims**

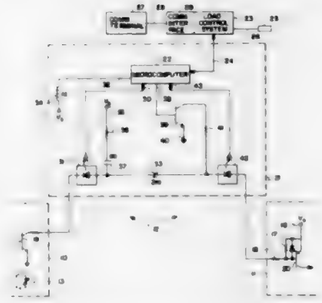


1. In a mixing box having an inlet end, an outlet end, an induction nozzle intermediate the inlet and outlet ends of the box, a substantially closed first passage and a primary air inlet, wherein primary air flows into the primary air inlet, and then through the induction nozzle and the outlet end of the box, the induction nozzle being operable, when primary air flows through the passage, to induce a flow of air through a first opening for mixture with primary air and delivery therewith through the outlet end of the mixing box, means for controlling the rate of flow of primary air through the passage, and a fan operable to induce a flow of air through a second opening and to deliver such air through the outlet end of the mixing box, the improvement wherein the mixing box forms a closed second passage for the flow of air from the second opening to the suction side of the fan and includes a control operable to energize the fan when the primary air flow is below a control rate and to de-energize the fan when the primary air flow is above the control rate, whereby primary air at a temperature sufficiently low to require insulated ducts to prevent condensation can be supplied to the mixing box while a mixture of primary air and recirculated air at a temperature sufficiently high that a condition of discomfort is avoided is delivered by the mixing box.

4,657,179
DISTRIBUTED ENVIRONMENTAL/LOAD CONTROL SYSTEM

John R. Aggers, Apple Valley; Ralph C. Brindle, Minnetonka; Kenneth B. Kidder, Coon Rapids, and David C. Ullestad, Brooklyn Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 26, 1984, Ser. No. 686,320
Int. Cl.⁴ H02J *1/00*
U.S. Cl. 236—51 **5 Claims**



1. A distributed environmental/load control system comprising:

a thermostat including a sensor for sensing a parameter in an environmentally controlled space and adapted to produce signals indicative of the sensed and desired values of the parameter;

a firt controller adapted to control condition changing equipment for regulating the parameter in the environmentally controlled space in response to command signals;

a communications link between said thermostat and said first controller for supplying the signals produced by said thermostat to said first controller as the command signals;

a second controller adapted to control loads connected thereto in accordance with predetermined criteria to limit energy consumed by the loads;

a computer apparatus adapted to communicate with said second controller and having a first input terminal for receiving signals which may be processed in accordance with instructions from said second controller, an output terminal for supplying the processed signals, and a switching terminal for supplying a switching signal if the signals received at the input first terminal are to be processed;

a first signal coupler for coupling the signal produced by said thermostat to the input terminal of said computer apparatus;

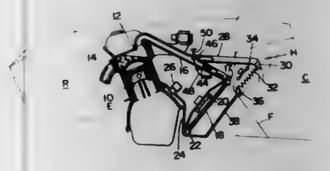
a first switch in said communications link and controlled by the switching signal for breaking said communications link between said thermostat and said first controller in the event the signal produced by said thermostat is to be processed; and

means for connecting the output terminal of said computer apparatus to said communications link on the side of said switch connected to said first controller for supplying the processed signals thereto, whereby said computer apparatus is operable to process the signals produced by said thermostat in response to instructions furnished by said second controller and to supply the processed signals to said first controller as the command signals.

4,657,180
PASSENGER CABIN HEATING SYSTEM

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 30, 1984, Ser. No. 595,537
Claims priority, application Japan, Apr. 27, 1983, 58-73000
Int. Cl.⁴ B60H *1/02*
U.S. Cl. 237—12.3 R **8 Claims**



1. In a motor vehicle powered by a combustion engine cooled by a boiling liquid cooling system which includes a coolant jacket defined in the engine proper and containing therein a coolant, a condenser for condensing the gaseous coolant introduced thereinto from said coolant jacket through a conduit and recirculating means for recirculating the coolant thus liquefied in the condenser back into the coolant jacket;

a passenger cabin heating system comprising:

a first passage connected to said conduit;

a heat exchanger located in the passenger cabin of said vehicle and connected to said first passage for receiving therein the gaseous coolant to achieve heat exchanging between the gaseous coolant in the heat exchanger and air surrounding the heat exchanger; and

a second passage extending between said heat exchanger and the coolant jacket for recirculating the coolant thus liquefied in said heat exchanger back into the coolant jacket; and

valve means associated with both said conduit and said first passage for simultaneously controlling both the flow rate of gaseous coolant directed to said condenser and that of gaseous coolant directed to said heat exchanger, said valve means having a position wherein said first passage is completely closed;

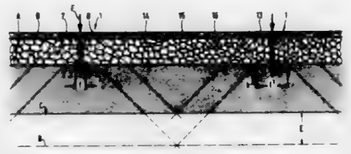
wherein said valve means provides a controlled flow through said conduit at all times; and

wherein said valve means comprises a first butterfly valve pivotally disposed in a passage extending between said coolant jacket and said condenser, a second butterfly valve pivotally disposed in a passage extending between said coolant jacket and said heat exchanger, and synchronizing means for achieving synchronized movements between said first and second butterfly valves.

4,657,181
RAIL FOR A TRACK BOUND VEHICLE

Bengt N. V. Bönström, Igelkottstigen 12, 43080 Hovås, Sweden

Continuation of Ser. No. 598,319, Mar. 16, 1984, abandoned. This application Aug. 6, 1986, Ser. No. 893,642
Claims priority, application Sweden, Jul. 19, 1982, 8204380
Int. Cl.⁴ E01B *5/04*
U.S. Cl. 238—130 **7 Claims**

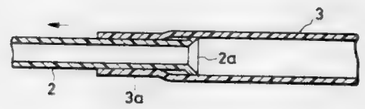


1. The combination of a rail for a track vehicle, and of a rail bed; said rail having: an essentially vertically extending web having an upper end and a lower end, a foot connected to the lower end of said web and having two lateral extensions extending transversely of said web in opposite directions, and a head connected to said upper end of said web, said head having a running surface for said track vehicle and two flanges extending from said head transversely to said web in opposite directions and having outer portions located essentially at the level of said running surface, said extensions being of a first width, said flanges being of a second width, said second width being greater than said first width; said flanges resting on said bed and constituting essentially the sole support for the rail for absorbing substantially all of the load exerted by a track vehicle on said rail.

4,657,182
TWO-STAGE TYPE OF FREELY ELONGATABLE SUCKING PIPE

Katsumasa Hoshi, Saitama, Japan, assignor to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1985, Ser. No. 738,651
Claims priority, application Japan, May 31, 1984, 59-109690; Sep. 18, 1984, 59-140446[U]; Jan. 23, 1985, 60-6787[U]
Int. Cl.⁴ A47G *21/18*
U.S. Cl. 239—33 **9 Claims**



1. A two-stage type of freely elongatable sucking pipe, comprising:

a larger-diameter pipe member and a smaller-diameter pipe member, each having two opposite ends, a longitudinal bore and a circumferentially-extending wall with an inner surface and an outer surface;

said smaller-diameter pipe member having a portion of the length thereof telescopically received in the longitudinal bore of said larger-diameter pipe member, so that telescopic overlapping of said smaller-diameter pipe member and said larger-diameter pipe member is delimited between a respective end of each said pipe member, each said respective end being provided on a tip portion of the respective said pipe member;

at least one of a circumferentially-extending portion of said smaller-diameter pipe member in the vicinity of said tip of said smaller-diameter pipe member and a circumferentially-extending portion of said larger-diameter pipe member in the vicinity of said tip of said larger-diameter pipe

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member is kept liquid-tightly in contact with said wall of the respective other of said pipe members;

said larger-diameter pipe member being made of a polypropylene type of polymer having a melt flow index of 7 to 14 g/10 min and stiffness of 10000 to 13000 kg/cm^2; and

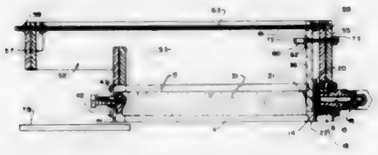
said smaller-diameter pipe member being made of propylene homopolymer having a melt flow index of 7 to 14 g/10 min and stiffness of at least 13500 kg/cm^2.

4,657,183

IRRIGATION CONTROL

Harry H. Arkebauer, 828 Smith Ave., Ferguson, Mo. 63135

Filed Nov. 20, 1985, Ser. No. 800,133
Int. Cl.[4] B05B *12/08*
U.S. Cl. 239—64 **2 Claims**



1. In an irrigation system in which earth is sprinkled with water falling upon it, a control system comprising a block frame; a needle valve mounted on said frame, said needle valve having a sliding stem projecting from it; biasing means for biasing said stem toward valve opening position; a two ended, elongated block of material that expands as it becomes wet and contracts as it dries, said block having upper and lower broad faces and relatively narrow side and end faces, mounted in said frame, being exposed and in contact, along the full length of its lower broad face, with part of the earth being watered and exposed along its upper broad face to the ambient air; adjustment means at one end of said block for moving said block toward and away from said needle valve; lever means positioned between the other end of said block and said sliding valve stem and operatively connected to said valve stem, said lever having a fulcrum intermediate its ends around which said lever rocks; a rod operatively connected to said lever on the opposite end of said lever, with respect to said fulcrum, from said block and valve stem, and support means for supporting said rod, said support means having a different temperature coefficient of expansion from said rod, whereby heating of said rod and support means causes said lever to rock about its fulcrum to move the valve stem, against its biasing means, to a valve closed position.

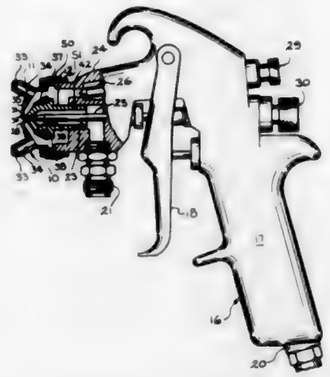
4,657,184

FLUID TIP AND AIR CAP ASSEMBLY

Richard Weinstein, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Jan. 31, 1986, Ser. No. 824,761
Int. Cl.[4] B05B *7/08*
U.S. Cl. 239—296 **5 Claims**

1. A fluid tip and air cap assembly for use in a pneumatic spray gun having a central bore for transporting fluent material, said fluid tip and air cap assembly comprising, in combination, a spray cap having a central opening for the discharge of the fluent material from said spray gun, opposed horns, and auxiliary air passages for shaping the fluent material, said spray cap defining an internal threaded opening and a stop surface defined at an end of said threaded opening, a fluid tip having a tip member mounted concentrically relative to said central opening of said spray cap, a tubular body extending rearwardly from said tip member, said tubular body defining a plurality of threads for mating engagement with said internal threaded opening of said spray cap, a stop member on said fluid tip for engagement with said stop surface of said spray cap, whereby said central opening and said tip member are aligned axially in a predetermined relationship, said spray cap and said fluid tip defining interface surfaces forward of said mating threads, whereby a radial fit exists between said fluid tip and said spray



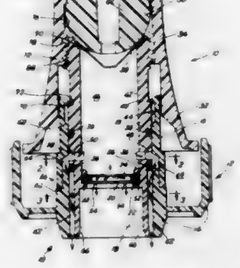
cap to ensure concentric alignment of said central opening of said air cap and tip member, and elastomeric seal means on said tubular body for engaging and sealing to the wall of such central bore of said spray gun.

4,657,185

SHOWERHEAD

Alfons Rundzaitis, Beverly Shores, Ind., assignor to Associated Mills, Inc., Chicago, Ill.

Filed May 1, 1985, Ser. No. 729,274
Int. Cl.[4] B05B *1/32*
U.S. Cl. 239—438 **11 Claims**



1. An improved showerhead, comprising in combination:

a nozzle defined by a first substantially cylindrical wall member having a front end, a back end, a longitudinal axis, and an interior cavity, the back end of said nozzle adapted for connection to a water source, the interior cavity of said nozzle defining a secondary fluid passageway that terminates to define an orifice at the front end of the nozzle;

said nozzle including at least one opening through the first cylindrical wall member at a first predetermined location between the front end and the back end thereof, said nozzle further including a plurality of grooves on the exterior surface of the first cylindrical wall member terminating at the front end of the nozzle;

a ring valve defined by a second substantially cylindrical wall member having a front end, a back end, a longitudinal axis which is substantially parallel to the axis of the nozzle, and further having an interior surface with a recessed cavity therein and manually operated means for gripping and moving the ring valve, said ring valve fitting over and slidably supported by the nozzle for movement by the gripping means between a first position and a second position relative to the nozzle;

said recessed cavity of the ring valve being defined by a substantially annular depression in the interior surface of the second cylindrical wall member, said recessed cavity extending between and communicating with the opening through the first cylindrical wall member and said plurality of grooves to define a primary fluid passageway when the ring valve is in its first position, a plurality of spray streams of fluid flowing through the primary passageway;

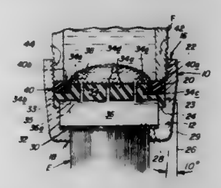
said ring valve having sealing means to prevent communication between the recessed cavity of the ring valve and the plurality of grooves when the ring valve is in its second position, thereby directing all of the fluid to flow through the secondary fluid passageway in the interior cavity of the showerhead.

4,657,186

STREAM FORMER

Eugene B. Shapiro, 1250 Rudolph Rd., Northbrook, Ill. 60062

Filed Oct. 4, 1985, Ser. No. 784,372
Int. Cl.[4] B05B *1/14*
U.S. Cl. 239—462 **14 Claims**



1. In a stream former, for transforming a turbulent flow of water, that would normally issue from a spout of a faucet, into a coherent, silent, non-splashing, non-aerated stream of water, and wherein, there extends, from a downstream end of the faucet spout, a tubular discharge member with imperforate walls and with a discharge end that is shaped to support a transverse screen or perforated member;

the improvement comprising, in combination:

an axially elongated, tubular barrel with a lowermost discharge end from which a well defined, silent, non-splashing, non-aerated, stream of water is to issue, and with an uppermost attachment end constructed for selective screw on attachment to the downstream end of the faucet spout;

said barrel containing and supporting, therewithin, a downstream screen disc of fine mesh;

a cylindrical, axially compressible, flow through disc, supported on the upstream side of said downstream screen disc, and being formed as a pad, of closely woven, non-shedding, matted nylon fibers, through which water will flow;

an upstream fine-mesh filter screen being shaped in the form of an arched dome whose center portion projects upstream toward the downstream end of the faucet spout, and whose outermost peripheral edge extends downstream and outwardly, somewhat frusto-conically at the outermost portion thereof, said outermost portion of said upstream screen being embedded at its outermost extent in a molded, resilient, compressible annular seal gasket, of greater thickness than the resilient screen;

said seal gasket being positioned to have its upstream surface sealingly engaged by the discharge terminus of the faucet spout;

a molded flow control disc having a downstream extending, sleeve portion for supporting said disc on an annular shoulder that is provided upon an inner wall of the barrel, said flow control disc having an axially thickened, flow control portion that is located in a region spaced between the upstream surface of said axially compressible, flow through disc and the underside of the central portion of said upstream fine-mesh filter screen;

an upperside of the flow control disc providing, on its upstream, outer peripheral edge, an annular, peripheral, upwardly facing support against which said resilient, compressible annular seal gasket is seated, said seal ring having an interior surface engaging an outer periphery of an upstream bulged portion of said flow control disc; and

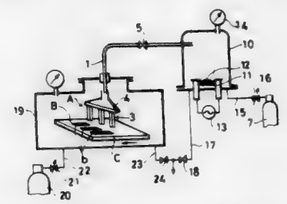
said control disc having a plurality of flow through bores whose total water-passing area is much less than the downstream flow discharge area provided by the screen disc at the discharge end of the stream former barrel.

4,657,187

ULTRAFINE PARTICLE SPRAYING APPARATUS

Chikara Hayashi, Chigasaki, Japan, assignor to Research Development Corporation of Japan, Tokyo, Japan

Filed Oct. 25, 1985, Ser. No. 791,491
Claims priority, application Japan, Jan. 14, 1985, 60-3162
Int. Cl.[4] B05B *1/02;* **B05D** *7/24*
U.S. Cl. 239—556 **4 Claims**



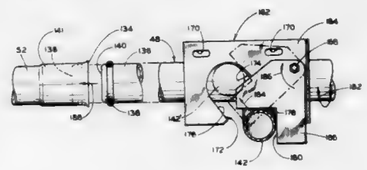
1. An ultrafine particle spraying apparatus comprising means for producing ultrafine particles; a nozzle means for spraying said ultrafine particles onto a surface in film of a desired pattern and for depositing said particles on and adherinig said particles to said surface in said desired pattern, said nozzle means comprising at least two nozzle pipes bundled together; and a converying means for conveying said ultrafine particles under pressure from said means for producing ultrafine particles to said nozzle means.

4,657,188

SPRAY SYSTEM FOR A DISHWASHING MACHINE

Herbert R. Crane, Kenton, and Richard D. Valentine, Pleasant Hill, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Sep. 17, 1984, Ser. No. 651,204
Int. Cl.[4] B05B *1/14, 1/00;* **B08B** *3/00;* **F16L** *35/00*
U.S. Cl. 239—557 **8 Claims**



1. A spray system for forming directed streams of a liquid supplied under pressure from a liquid source, comprising:

a supply conduit connected with said source and terminating at a first open end and having a first central axis thereat;

a manifold communicating with a plurality of spray nozzles

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and having an inlet conduit terminating at a second open end and having a second central axis thereat;

said supply and inlet conduits cooperating for coupling said second open end of said inlet conduit with said first open end of said supply conduit;

sealing means carried at at least one of said open ends for providing a fluid-tight seal upon proper alignment and full engagement of said inlet conduit with said supply conduit;

supporting means fixedly mounted with respect to said supply conduit for supporting said inlet conduit for pivotal rotation thereof about said second central axis;

said inlet conduit and said supporting means cooperating such that movement of said manifold toward said supply conduit to position said second open end of said inlet conduit near, although not in contact with, said first open end with said inlet conduit in a predetermined but misaligned rotational position with respect to said supply conduit, said first and second central axes being colinear, causes said inlet conduit and said supporting means to engage for defining a pivot about which said inlet conduit may be moved by pivotal motion into rotational alignment with said supply conduit; and

means for converting said rotational pivotal motion of said inlet conduit into motion of said second open end substantially along said first central axis sufficient to move said second open end into contact and fluid-tight engagement with said first open end;

said pivotal converting means including first and second means;

said first means defining first and second cam surfaces;

said second means defining a cam follower for cooperation with said cam surfaces;

one of said first and second means being fixedly mounted with respect to said supply conduit, and the other of said first and second means being fixedly mounted with respect to said inlet conduit; and

said first and second means defining said cam surfaces and said cam follower such that upon positioning of said inlet conduit in said predetermined but misaligned rotational position, said cam follower is positioned adjacent said first cam surface such that pivotal movement of said inlet conduit in a first direction causes movement of said cam follower along said first cam surface and produces linear movement of said inlet conduit along said second axis toward said first open end to engage said first and second open ends.

4,657,189

ELECTROMAGNETIC FUEL INJECTION VALVE FOR AN INTERNAL COMBUSTION ENGINE HAVING A PLURALITY OF INTAKE VALVES

Minoru Iwata, Susono; Shigetaka Takada, Oobu, and Hitoshi Takeuchi, Chita, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed Mar. 10, 1986, Ser. No. 838,290

Claims priority, application Japan, Mar. 13, 1985, 60-34717[U]; Jun. 25, 1985, 60-95151[U]; Aug. 2, 1985, 60-118105[U]

Int. Cl.⁴ F02M *51/06*

U.S. Cl. 239—585 **7 Claims**

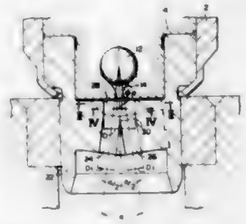
1. An electromagnetic fuel injection valve adapted for mounting on an internal combustion engine, the injection valve comprising:

a valve body having a longitudinal axis and being formed with a single fuel injection hole for metering fuel to be injected;

a plurality of injected fuel paths provided downstream of said fuel injection hole, each of said injected fuel paths being inclined from the axis of said valve body and having a constant cross section over its entire length;

an injected fuel dividing portion provided downstream of said fuel injection hole, said injected fuel dividing portion having a sharp edge facing upstream and being formed by intersecting walls of said injected fuel paths; and

a meeting portion of the injected fuel paths located downstream of said fuel injection hole and upstream of said injected fuel dividing portion, said meeting potion of the injected fuel paths being formed to have a constant cross section with an axis coinciding with said fuel injection valve body axis and including said cross section of each of said injected fuel paths therein, a wall of said meeting portion being formed to have an inner transverse dimension not smaller than a total corresponding transverse



dimension of walls of said plurality of injected fuel paths, wherein a length (L) of each said injected fuel paths, an equivalent diameter (Di) of each of said injected fuel paths, a diameter (d) of said fuel injection hole and a number (n) of said injected fuel paths have the following relationships:

$$30 \geq n(D_i/d)^2 \geq 20$$

and

$$3 \geq L/D_i \geq 1$$

4,657,190

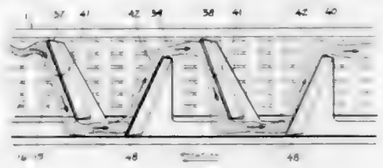
METHOD OF COMMINUTING A PRODUCT

Robert R. Fischer, Michigan City, and Joe R. Urschel, Valparaiso, both of Ind., assignors to Urschel Laboratories, Inc., Valparaiso, Ind.

Continuation of Ser. No. 733,580, May 13, 1985, abandoned, which is a division of Ser. No. 546,182, Oct. 27, 1983, Pat. No. 4,610,397. This application Jul. 22, 1986, Ser. No. 885,752

Int. Cl.⁴ B02C *19/12*

U.S. Cl. 241—30 **5 Claims**



1. A method of comminuting a product within a comminutor defined by a tubular cylinder having an interior wall provided with a plurality of transverse passages and a plurality of corresponding cutting edges disposed within the passages, and an impeller supported for rotation about an axis within the cylinder, which method comprises:

(a) providing an impeller including a base having a periphery and an even number of upwardly extending blades supported on the base and disposed in a circular configuration, half of the total number of blades sloping forwardly from the base towards the direction of rotation and the remaining half of the total number of blades sloping rearwardly from the base away from the direction of rotation with respect to the impeller axis of rotation, each forwardly sloping blade being positioned between two rearwardly sloping blades, a top end of each forwardly sloping blade extending beyond a top end of each rearwardly sloping blade and a bottom end of each rearwardly sloping blade extending beyond a bottom end of each forwardly sloping blade, and each forwardly sloping blade and each rearwardly sloping blade including a product engaging surface facing towards the direction of rotation;

(b) supplying a product into the cylinder;

(c) rotating the impeller thereby flowing the product along an undulating path that continues from the top end and down the product engaging surface and around the bottom end of each forwardly sloping blade, and up the product engaging surface and around the top end of each rearwardly sloping blade;

(d) cutting the product flowing along the undulating path by presenting the product uniformly against the cutting edges over the interior wall throughout the length of the cylinder; and

(e) discharging the cut product through the transverse passages.

4,657,191

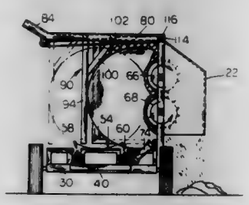
BALE HANDLING AND SHREDDING APPARATUS

Paul Dwyer, and Mark A. Dwyer, both of R.F.D., Bartlett, Nebr. 68622

Filed Feb. 22, 1982, Ser. No. 350,636

Int. Cl.⁴ B02C *13/286*

U.S. Cl. 241—101.7 **4 Claims**



1. A cylindrical bale shredding device comprising,

a wheeled frame means having rearward and forward ends and opposite sides,

a bale conveyor means pivotally mounted on said wheeled frame means and having rearward and forward ends,

means for pivotally moving said conveyor means between a substantially horizontally disposed position to an inclined position wherein the rearward end of said conveyor means is positioned adjacent the ground for facilitating the loading of cylindrical bales on said conveyor means whereby the ends of said bales are arranged in a fore and aft relationship,

means for operating said conveyor means for conveying a plurality of bales from the rearward end of said conveyor towards the forward end thereof,

a bale shredding apparatus at the forward end of said wheeled frame means at one side thereof,

and a bale pushing assembly operatively mounted on said wheeled frame means for pushing the forwardmost bale on said conveyor means laterally into said bale shredding apparatus whereby the side of the bale will be moved into engagement with said bale shredding apparatus,

said bale shredding apparatus comprising an upstanding support means secured to one side of said wheeled means and having upper and lower ends,

said bale shredding apparatus including a bale shredding drum means rotatably mounted, about a horizontal axis, on said upstanding support means, the longitudinal axis of said drum means being parallel to the longitudinal axis of said wheeled frame means,

said bale pushing assembly being mounted on the upper end of said support means and comprising a second frame means secured to the upper end of said support means and extending laterally therefrom over the forward end of said conveyor means, a push arm selectively movably mounted on said second frame means and extending downwardly thereform, for engagement with the side of a bale, and means for moving said push arm on said second frame means whereby the side of the bale will be pushed and forced into the rotating bale shredding drum means.

4,657,192

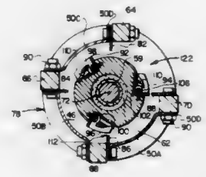
PAPER SHREDDER

James N. Browning, 1108 Pawnee Dr., Richardson, Tex. 75080

Filed Jun. 1, 1984, Ser. No. 616,119

Int. Cl.⁴ B02C *18/18*

U.S. Cl. 241—224 **1 Claim**



1. Apparatus for particulating paper material comprising, in combination:

a shroud assembly partially enclosing a comminuting chamber, said shroud assembly having portions defining an exhaust port, an open quadrant section and a chute coupled to said open quadrant section for loading paper material to be cut into the comminuting chamber;

a stator assembly disposed within said shroud assembly including first and second end blocks, first and second stator rings secured to said end blocks, respectively and a plurality of stator blades mounted on said stator blocks at spaced locations around said chamber, each end of each stator blade being supported by one of said stator rings; and,

a rotor assembly received within said comminuting chamber and movably mounted on said end blocks for rotation about an axis, said rotor assembly including a rotor body having a plurality of straight slots and a straight rotor blade receiving within each slot and fastened to said rotor body, each rotor blade having a cutting edge lying in a plane which is skewed with respect to said axis, and the cutting edge of each rotor blade being substantially concentric with said axis.

4,657,193

FOOD PROCESSOR FOR UNDER CABINET MOUNTING

Stephen L. Whittenburg, Overland Park, Kans.; David S. Morris; Albert V. Edmonds, both of Kansas City, Mo.; John McGaw, Markham, Canada; David D. McCormick, Trappe, Md.; William L. Bartlett, Santa Barbara, Calif.; Edward Cruz, Santa Barbara, Calif., and David Harding, Santa Barbara, Calif., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Mar. 25, 1985, Ser. No. 715,527

Int. Cl.⁴ B02C *18/12*

U.S. Cl. 241—282.1 **19 Claims**

1. A food processor comprising, in combination,

means for containing a quantity of material, a cutter assembly disposed within said containing means, shaft means for rotating said cutter assembly,

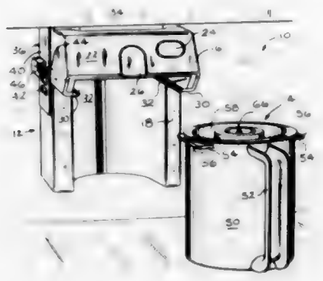
a housing having means for receiving said containing means,

drive means disposed within said housing and having an output member for driving said shaft means, said output member defining a rotational axis and movable between a first, driving position and a second, uncoupled position,

VOL 1077 ISS 2 AP 14 1987 UMI

guide means, included in said receiving means, for guiding said containing means in a selected direction, nonparallel with respect to said rotational axis, as the containing means is being inserted in said housing,

means actuated by said containing means for moving said output member between said first position and said second position while said containing means is being inserted in said housing,



said output member positioned to obstruct movement of the containing means in the guide means when in the first position and to allow movement of the containing means in the guide means when in the second position,

said moving means operating to move the output member to the second position to allow the containing means to be inserted in the housing and to move the output member to the first position, into engagement with said shaft means, after the containing means has been inserted in the housing.

4,657,194

AUTOMATIC BOBBIN WINDER WITH A TRAVELLING BOBBIN CHANGER

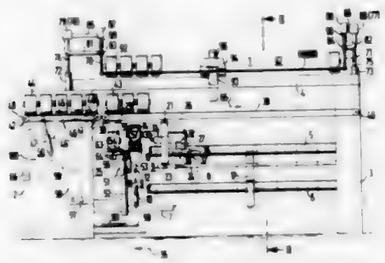
Edmund Wey, Nettetal; Gregor Kathke, Viersen, and Manfred Langen, Moenchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Moenchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 27, 1986, Ser. No. 844,815

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1985, 3511815

Int. Cl.⁴ B65H *67/04, 67/06*

U.S. Cl. 242—35.5 A **11 Claims**



1. Automatic bobbin winder, comprising a bobbin removal location; a bobbin transfer point; a bobbin conveyor belt for storing bobbins and transporting bobbins toward said bobbin removal location, said bobbin conveyor belt having an end at said bobbin transfer point; a travelling bobbin changer disposed below said bobbin conveyor belt for transporting individual bobbins to said bobbin transfer point; a bobbin transfer device controlled by said bobbin changer for successively transferring bobbins from said bobbin changer to said bobbin conveyor belt at said bobbin transfer point; means for advancing said bobbin conveyor belt by at least one bobbin width in a given storage direction prior to each bobbin transfer; and means for initiating a priority transport run of said bobbin changer for transporting an individual bobbin to said transfer point after each bobbin transfer.

4,657,195

TRAVERSE MOTION

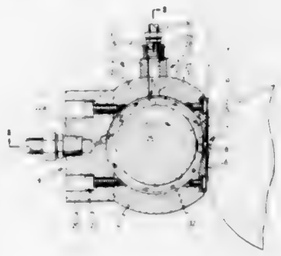
Shigeki Mori, Ohtsu, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 31, 1985, Ser. No. 793,294

Claims priority, application Japan, Nov. 6, 1984, 59-233433

Int. Cl.⁴ B65H *54/30*

U.S. Cl. 242—43 R **4 Claims**



1. A traverse motion comprising a traverse drum having a spiral groove formed in the circumference thereof, a traverse guide which moves along the spiral groove, guide rails for controlling the movement of the traverse guide, a drum case covering the traverse drum, and lubricating members fixed to the drum case so as to spray oil mist against the traverse drum, said lubricating members comprising a lubricating unit having a lubricating base plate extending substantially over the entire length of the traverse drum and fixed to the drum case and a plurality of lubricating nozzles secured in the lubricating base plate and connected to an oil tank where oil mist is formed, and a draining unit having a draining base plate extending substantially over the entire length of the traverse drum and fixed to the drum case, a slot formed in the drum case in a portion in contact with the draining base plate and communicating with a hole formed in the draining base plate and a pneumatic source for producing a suction air flow around the circumference of the traverse drum and through the hole and the slot.

4,657,196

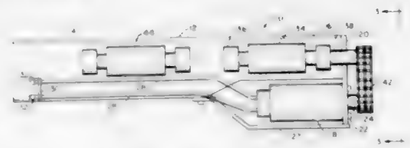
MECHANISM FOR SUPPORTING AND ROTATING A COIL

Joseph R. Irish, Davenport, Iowa, and Robert L. Moutieth, Port Byron, Ill., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 647,023, Sep. 4, 1984, abandoned. This application Feb. 11, 1985, Ser. No. 700,652

Int. Cl.⁴ B21C *47/16;* **B65H** *16/04, 75/00*

U.S. Cl. 242—55 **10 Claims**



1. A mechanism adapted for attachment to hoisting and transporting apparatus for unwinding material from a coil, comprising:

a coil engaging member having an unobstructed and unsupported end for insertion into the hollow core of a coil of wound material having a horizontal axis of rotation;

a roller attached to the coil engaging member, the roller being rotatable about its own axis and having an outer surface to tangentially contact the core surface of a coil to be unwound; and

means for attaching the coil engaging member to a hoisting and transporting apparatus for the purpose of moving the coil engaging member upward within the core and making tangential contact between the roller outer surface and the core surface and thereby enable the coil to be supported by the roller and have material unwound therefrom by rotating the roller.

4,657,197

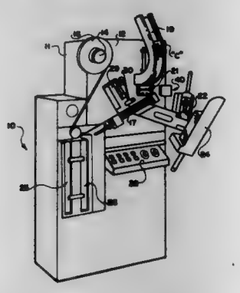
CASSETTE TAPE LOADER APPARATUS FOR TESTING THE PRESENCE OF MAGNETIC STORAGE MEDIUM ON A GIVEN SIDE OF A TAPE

Robert I. Farrow, Burlington, N.C., assignor to American Multimedia, Inc., Burlington, N.C.

Division of Ser. No. 540,074, Oct. 7, 1983, Pat. No. 4,578,644. This application Oct. 21, 1985, Ser. No. 789,733

Int. Cl.⁴ B65H *19/26, 26/00*

U.S. Cl. 242—56 R **4 Claims**



1. In a cassette tape loader comprising a supply reel of recording tape, a supply of empty cassettes, a cassette winding spindle, and a splicer for splicing sections of the recording tape from the supply reel into successive cassettes; the combination therewith of means for testing the tape before it is loaded into a cassette to determine whether the tape is oriented properly side to side on the supply package so that the recording medium is on the correct side of the tape to be recorded and played back.

4,657,198

APPARATUS FOR MEASURING THE THICKNESS OF A ROLL WINDING ON OR UNWINDING FROM A CORE

Shigehisa Shimizu, and Takao Otokozawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 20, 1985, Ser. No. 735,647

Claims priority, application Japan, May 18, 1984, 59-98641

Int. Cl.⁴ B41J *29/48;* **B65H** *26/08;* **G01V** *9/04*

U.S. Cl. 242—57 **8 Claims**

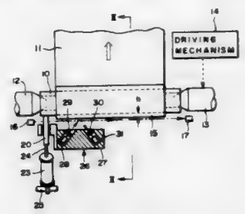
1. An apparatus for measuring the thickness of a roll on a core, said apparatus comprising:

a positioning roller movable between a position in which said positioning roller contacts a said core and a position spaced from a said core;

a first detector for detecting a predetermined thickness of said roll and providing a first signal;

means for pressing said positioning roller against the surface of said core when said first signal is provided; and

a second detector for detecting the thickness of said roll, said second detector comprising means for projecting a beam



toward the surface of said roll and means for receiving a reflected beam from said surface of said roll and adapted to provide a second signal corresponding to the thickness of said roll according to the position of said reflected beam on said beam receiving means.

4,657,199

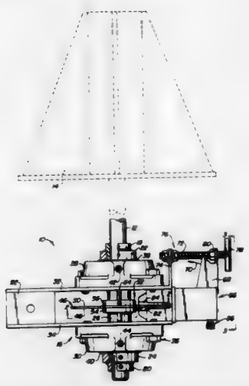
BRAKING MECHANISM FOR A ROTATABLE CORE SUPPORT FOR A FABRIC ROLL

Mounque Barazone, 22141 Buckeye Pl., Cottonwood, Calif. 96022

Filed Aug. 27, 1985, Ser. No. 769,676

Int. Cl.⁴ B65H *23/06, 16/06*

U.S. Cl. 242—75.4 **6 Claims**



1. A mechanism for controlling rotation of a core support for a paving fabric roll used in conjunction with a vehicle including means for forcing unwound paving fabric to a surface comprising:

a. a shaft extending along an axis, said shaft having a first end portion and an opposite, coaxial, second end portion, said shaft first end portion being connected to the rotatable core support for rotation therewith about said shaft axis;

b. a member positioned adjacent said shaft, said shaft being movable in relation to said member along said shaft axis;

c. a disc, said disc being connectable to said member;

d. means for fixing said member directly to said shaft for rotation therewith, said member being fixed to said shaft between said first and second end portions of said shaft, said disc rotating with said shaft and fixed member when said disc is connected to said member, said rotation of said disc being in a plane substantially perpendicular to the axis of said shaft;

e. a housing located between said first and second end portions of said shaft, said housing being linked to the vehicle;

f. means for supporting said shaft member and connected disc to said housing to permit rotation of said shaft disc and member in relation to said housing, said member having said disc connected thereto being located within said housing during said rotation of said disc with said shaft;

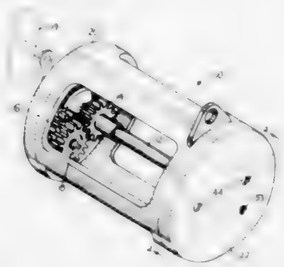
g. means connected to and located within said housing for frictionally engaging said disc rotating substantially perpendicularly to said shaft.

4,657,200

ALIGNMENT DEVICE FOR FISHING REEL GEARS

Stanley R. Parylak, Sewell, N.J., assignor to Penn Fishing Tackle Mfg. Co., Philadelphia, Pa.

Filed Jul. 22, 1985, Ser. No. 757,843
Int. Cl.[4] A01K *89/015*
U.S. Cl. 242—84.1 R **6 Claims**



1. In a fishing reel having a first plurality of gears concentrically disposed on a rotatable shaft wherein respective teeth of said gears selectively can intermesh between respective teeth of any of a second plurality of rotatable gears adjacent thereto and in communication with exteriorly activated rotation means, with said first and second pluralities of gears shiftable and ratioed between each other for selectable variable speed and power transmittable to a fishing line of said reel, wherein the improvement comprises:

(a) a disc comprising exteriorly accessible rotation means to selectively rotate said disc an annular distance and having rotation securement means to selectively fix the disc at any position of rotation, with said disc additionally comprising at least one pivotally-mounted member having tensioning means to urge said member to protrude laterally from the perimeter of the disc; and

(b) a drive plate fixedly engaged with the rotatable shaft, said drive plate being in adjacent slidable communication with the disc and having a plurality of stop means which permit continuous rotation of said drive plate in one direction only, said stop means being geometrically complimentary to the laterally protruding member of said disc for engagement therewith and disposed to prevent reverse direction of said drive plate at sites where gear intermeshing can substantially occur.

4,657,201

FISHING REEL

Thomas Munroe, c/o Munroe Sport Reels, Inc., P.O. Box 345, Dayton, Ohio 45409

Continuation of Ser. No. 669,183, Nov. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 536,019, Sep. 26, 1983, abandoned. This application Oct. 31, 1985, Ser. No. 794,255
Int. Cl.[4] A01K *89/02*
U.S. Cl. 242—84.5 R **6 Claims**

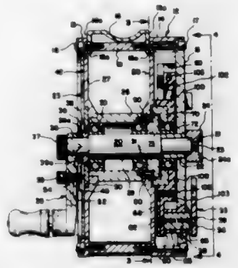
3. In a fishing reel having a frame, a back plate, and a spool rotatably mounted in the frame, and a spindle extending axially of the spool mounted rigidly to said back plate, the improvement comprising:

a crank handle,

means mounting said handle on an end of said spindle remote from said back plate for relatively free rotation therewith and for limited pivotal movement toward and away from said spool,

said spool having a side surface exposed to said crank handle,

annular means on said side surface defining a braking surface, means on said crank handle defining a brake pad



alignable with said annular surface, said brake pad being engageable with said surface, to provide a retarding force to said spool upon the depression of said handle and said pad thereon into engagement with said surface,

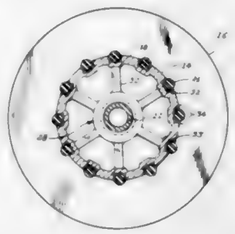
means on said spool side surface defining at least one recess terminating at an overhanging ledge, and pin means on said crank handle having a head proportioned to move into said recess for engagement with said spool at said ledge for rotating said spool by said handle in one direction of rotation of said handle and to release said spool in an opposite direction of rotation.

4,657,202

TENSION TAKE-UP SYSTEM FOR DRUMS AND THE LIKE

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Filed Mar. 24, 1986, Ser. No. 843,301
Int. Cl.[4] B65H *75/18*
U.S. Cl. 242—117 **6 Claims**



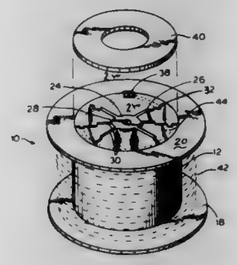
1. A tension take-up system for positioning a cable under tension by using pulling line or the like attached to the cable, comprising a substantially cylindrical central drum having a winding surface defined around it onto which the line pulling the cable may be wound, and a plurality of tension absorbing means disposed in recessed areas defined longitudinally across said winding surface of the drum said tension absorbing means normally being partially disposed within said recessed area and capable of progressively deforming so as to be totally disposed within said recessed areas so as to absorb and dissipate forces generated as the tensioned pulling line is wound over said winding area of said central drum.

4,657,203

FIBER OPTIC CABLE REEL

Brian F. Crawford, Sand Lake, N.Y., assignor to Crellin, Inc., Chatham, N.Y.

Filed Oct. 16, 1985, Ser. No. 788,077
Int. Cl.[4] B65H *75/28*
U.S. Cl. 242—125.1 **8 Claims**



1. A reel for holding a fiber or cable with a starting end comprising:

a. a drum having a cylindrical wall defining an outer surface and two opposed ends;

b. two opposed sidewalls connected to said ends to define with said outer surface an annular space for holding one of said fiber and cable;

c. a shaft disposed coaxially within said cylindrical wall;

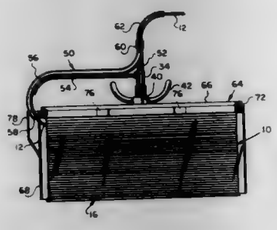
d. a plurality of ribs connected to and extending between said shaft and said cylindrical wall, at least one of said ribs having a radial edge with a notch opening axially from said edge for holding said starting end.

4,657,204

WELDING WIRE DISPENSER

Robert E. Colbert, 3843 E. Walmont, Jackson, Mich. 49203

Filed Feb. 14, 1986, Ser. No. 829,625
Int. Cl.[4] B65H *49/00*
U.S. Cl. 242—128 **18 Claims**



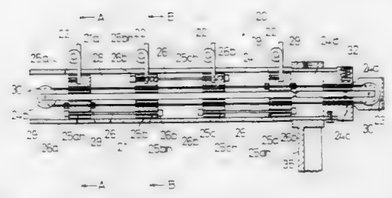
1. In an elongated strand dispenser wherein a strand coil includes an axis and a periphery and is supported such that the coil axis is substantially vertically oriented wherein the coil includes upper and lower ends, a strand guide rotatably extending from the coil upper end having a strand inlet disposed adjacent the coil periphery and adapted to rotate about the coil periphery to remove a strand therefrom, the improvement comprising, a dust cover disposed about the strand coil, means rotatably supporting said dust cover for rotation relative to the strand coil about a substantially vertical axis, and means interconnecting the strand guide to said dust cover whereby rotation of the guide rotates said cover about its axis.

4,657,205

GUIDE DEVICE FOR SEPARATING A PLURALITY OF YARN PASSAGES

Takami Sugioka, Matsuyama, Japan, assignor to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Jun. 9, 1986, Ser. No. 872,247
Claims priority, application Japan, Jun. 18, 1985, 60-092006[U]
Int. Cl.[4] B65H *57/16, 57/28;* D01H *13/04*
U.S. Cl. 242—157.1 **8 Claims**



1. A guide device for separating a plurality of yarns passages comprising:

a stationary member;

a rod member movable in a lengthwise direction thereof;

a plurality of slide members, provided with yarn guides and movable along said rod member;

said rod member having at least a pair of guide members, which sandwich said slide members therebetween;

a strand-like member wrapped around said guide members; and

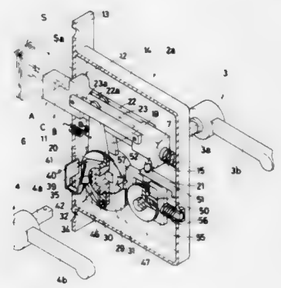
wherein said strand-like member is connected to one of said slide members and said stationary member.

4,657,206

DOOR INSTALLATION AND A LOCKING DEVICE USED THEREIN

Tadashi Matsumoto, and Katsuya Fukakura, both of Osaka, Japan, assignors to National House Industrial Co., Ltd., Osaka, Japan

Filed May 31, 1983, Ser. No. 499,445
Claims priority, application Japan, May 31, 1982, 57-93753[U]; Jul. 30, 1982, 57-116379[U]; Aug. 31, 1982, 57-132606[U]; Aug. 31, 1982, 57-132607[U]; Sep. 30, 1982, 57-150224[U]; Dec. 29, 1982, 57-196617[U]
Int. Cl.[4] E05C *1/16*
U.S. Cl. 292—173 **14 Claims**



1. A door installation comprising;

a door being provided with a body of a lock and operating units one by one on either side thereof;

a frame member facing to said door and being equipped with a receiving plate;

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a controlling means being operatively connected to the frame;

a bolt operatively positioned within said lock and being energized by a spring toward a wholly projecting position, said operating units being operatively connected to said bolt for selectively imparting motion thereto and for releasing said bolt;

said bolt being movable from the wholly projecting position to a door-opening position against the spring by operation of one of said operating units;

said bolt being slidable from a door-opening position to the wholly projecting position by releasing the one operating unit and by being energized by said spring;

said bolt being movable from the wholly projecting position to the door-opening position against the spring by operation of the other operating unit;

said body of said lock being provided with an engaging means which can hold said bolt at a half-projecting position between the door-opening position and the wholly projecting position;

said bolt being held at the half-projecting position on a returning motion of said bolt from said door-opening position accomplished by said operation of the other operating unit, said bolt being returnable by releasing the other operating unit and by being energized by said spring;

said receiving plate being formed with an engaging hole into which said bolt is insertable at the wholly projecting position and half-projecting position thereof;

said controlling means being received within said receiving plate for sensing the position of said bolt in order to distinguish said bolt which is not inserted in the engaging hole and which is in the half-projecting position, from the bolt which is in the wholly projecting position for enabling said controlling means to turn on, off or maintain an electrical connection to a power source.

4,657,207

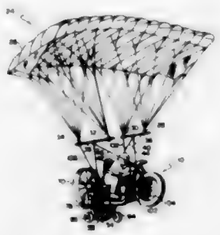
KIT FOR CONVERTING A MOTORCYCLE TO AN AIRBORNE VEHICLE

Don R. Poling, 11717 Lakeside Ave., Lakeside, Calif. 92040

Filed Aug. 27, 1984, Ser. No. 644,382

Int. Cl.⁴ B64C *37/00*

U.S. Cl. 244—2 **13 Claims**



1. An aircraft conversion system for converting a motorcycle having a rear driving wheel to an aircraft, said system comprising:

pusher propeller means comprising first and second coaxially mounted propellers, first and second concentrically mounted rotatable shafts drivingly supporting said propellers, and frame means comprising platform means on which said pusher propeller means is mounted and parallel arm means extending downward from said platform means on opposite sides of the driving wheel for mounting to the frame of a motorcycle directly over the driving wheel thereof;

drive train means mounted on said frame means for drivingly connecting the pusher propeller to the drive wheel of said motorcycle, said drive train means comprises first and second rollers mounted on arm means of said frame means, one roller on each side of the drive wheel for pivoting into a position drivingly coupled to the drive wheel of said motorcycle, and a belt drivingly connecting each of said rollers to a respective one of said rotatable shafts;

a para wing type gliding parachute having support lines connected thereto for attachment to fore and aft positions on the frame of said motorcycle for balanced support thereof; and

control means including control line means connected to each side of said wing for attachment to steering means of said motorcycle for in flight steering of said parachute.

4,657,208

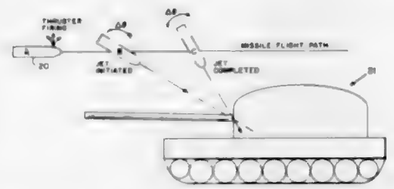
ROTATING WARHEAD

Walter E. Miller, Jr., and Robert R. Mitchell, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 10, 1985, Ser. No. 743,178

Int. Cl.⁴ F41G *9/00*; **F42B** *13/10*

U.S. Cl. 244—3.22 **5 Claims**



5. A system for directing a projectile towards a target having armor comprising first means for directing said projectile toward said target with a wiping component caused by projectile translation, said projectile containing a warhead for producing a jet for melting a hole in said armor, second means located on said projectile for producing an angular rate to the projectile and to the jet such that the angle of the attack of the jet on the target will change with the projectile translation and approximately cancel the translation of the jet about said armor; whereby the jet will be concentrated on a smaller area of the armorment than without the angle rate.

4,657,209

DUCTED PROPELLER AIRCRAFT

John K. Edgley, Cambridgeshire, England, assignor to Optica Industries Limited, London, England

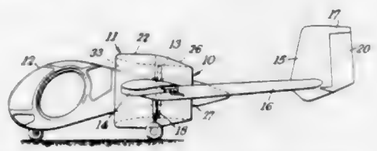
Continuation of Ser. No. 430,509, Sep. 30, 1982, Pat. No. 4,544,115. This application Mar. 18, 1985, Ser. No. 713,240

Claims priority, application United Kingdom, May 1, 1979, 7915156

The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.

Int. Cl.⁴ B64D *27/02*; **B64C** *3/32*

U.S. Cl. 244—54 **8 Claims**



1. A low-speed ground observation aircraft comprising:

i. a ducted propulsor thrust generator which comprises a prime mover, a propeller driven by the prime mover and an annular shroud including a mainplane support portion and a trailing portion within which the propeller rotates;

ii. port and starboard wings mounted to the mainplane support portion of the shroud, said wings and shroud providing sufficient lift for flight of the aircraft; and

iii. an aerodynamically smooth cabin adapted to accommodate a seated ground observer;

iv. said cabin being mounted to the shroud by stators for maintaining the cabin forward of the shroud and spaced from the shroud such that there is an annular flow path between the cabin and the shroud along which air flows around the cabin to the ducted propulsor, the cabin and annular flow path being free from projecting surfaces which have as their object or effect the generation of lift;

v. said prime mover being mounted through stator blades to, and located within, the said trailing portion; and

vi. said trailing portion itself being detachably connected to the mainplane support portion of the shroud, whereby the trailing portion, and the prime mover and propeller within the trailing portion, together constitute a detachable engine pod.

4,657,210

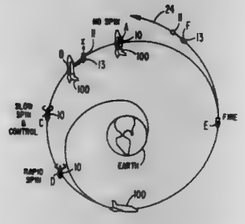
SPACECRAFT STABILIZATION SYSTEM AND METHOD

Carl H. Hubert, East Windsor; Paul A. Miller, Hamilton, both of N.J.; Thomas J. Furia, Blue Bell, Pa.; Ludwig Muhlfelder, Livingston, N.J.; George E. Schmidt, Jr., Newtown, Pa., and James F. Swale, Cranbury, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 17, 1985, Ser. No. 735,069

Int. Cl.⁴ B64G *1/10*

U.S. Cl. 244—158 R **7 Claims**



1. A method of launching a spacecraft/perigee stage assembly from a launch vehicle where said spacecraft includes a computer comprising the steps of:

initializing an attitude determination algorithm in the spacecraft's computer when said assembly is in the cargo bay of the launch vehicle;

providing a reference target attitude into said computer;

ejecting the assembly from the launch vehicle without spin;

after ejection spinning the assembly about the desired spin axis at a slow rate;

precessing the assembly such that the assembly is generally pointing in the direction of the reference target attitude representing the desired perigee stage firing attitude; and

spinning up the spacecraft/perigee stage assembly to a higher spin rate.

4,657,211

SPACECRAFT TO SHUTTLE DOCKING METHOD AND APPARATUS

William V. Fuldner, Bucks County, Pa., and William E. Stoney, Princeton, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 20, 1984, Ser. No. 673,484

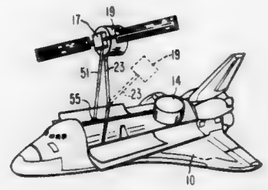
Int. Cl.⁴ B64G *1/64*

U.S. Cl. 244—161 **3 Claims**

1. A method for docking a satellite to the space shuttle orbiter for remote servicing without retracting deployed elements such as the solar panels using the RMS comprising the steps of:

maneuvering said orbiter and/or satellite so the RMS can reach said satellite,

capturing the satellite with the RMS,



deploying a boom from the satellite, and

maneuvering the satellite with extended boom using the RMS so the free end of the boom engages a fixture on the orbiter to achieve docking with the satellite spaced by the boom a predetermined distance from the orbiter.

4,657,212

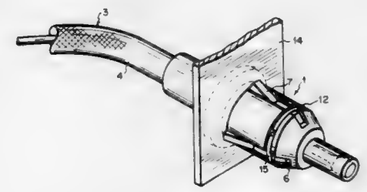
AUTOMATIC CONDUIT ANCHORAGE DEVICE

William J. Gilmore, Manitou Beach, and Leland E. Easter, Adrian, both of Mich., assignors to Acco Babcock Inc., Fairfield, Conn.

Filed Jun. 13, 1985, Ser. No. 744,846

Int. Cl.⁴ F16L *5/00*

U.S. Cl. 248—56 **6 Claims**



1. An anchoring device for securing a control cable conduit assembly to an opening in a support wall, having a predetermined thickness, comprising:

(a) an elongated body having a shouldered end which is larger in size than said opening and a front end which is smaller;

(b) axially extending slot means extending long the outer surface of said body;

(c) locking pawl means positioned within said slot means, said pawl means having

(1) a first end spaced from the shouldered end of said body by a distance equal to the predetermined thickness of said support wall;

(2) a second end spaced from said first end,

(3) a fulcrum point between said ends engaging the bottom of said slot means and about which said pawl pivots from a first position in which the first end is raised out of said slot means by a distance sufficient to interfere with axial movement of said anchoring device through the opening in said support wall and a second position permitting movement of said anchoring device through said opening; and

(4) a groove in the outer surface of said pawl means between said fulcrum point and second end thereof;

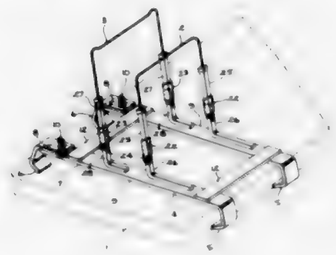
(d) an annular groove extending circumferentially along the outer surface of said body, said annular groove having substantially the same width and depth as said groove in

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the outer surface of said pawl means, the annular groove and the groove in the pawl means being substantially aligned; and

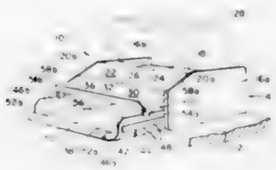
(e) an annular ring, disposed within said circumferential groove in said body and said groove in said pawl means, to bias said pawl means into said first position and to hold said pawl means against axial movement in said slot means.

4,657,213
IRON HOLDER
Andrew C. Hartlage, 6938 Norlynn Dr., Louisville, Ky. 40228
Filed Oct. 9, 1984, Ser. No. 658,682
Int. Cl.[4] D06F *79/02*
U.S. Cl. 248—117.7 3 Claims



1. A vertical iron holder comprising a pair of essentially parallel, foldable, open and vertical arm means attached to a clamp means for securing the arm means to an ironing board wherein said arm means are sufficiently spaced apart to receive and hold in a vertical position an iron which is placed on end, wherein each vertical arm means is comprised of a pair of parallel bars joined at the top with a horizontal bar and wherein said clamp means is adjustable so as to permit attachment to ironing boards of varying widths and said clamp means comprises a bed for attachment to the arm means having a plurality of securing clamps for attaching the bed to the sides of an ironing board.

4,657,214
COMPUTER MOUNTING STAND
Daniel F. Foster, 7160 S. Vine Cir. E., Littleton, Colo. 80122
Filed Nov. 19, 1985, Ser. No. 799,418
Int. Cl.[4] A47G *23/02*
U.S. Cl. 248—176 19 Claims



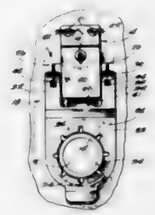
17. A mounting stand for a cathode ray tube screen device and a keyboard work station comprising,

a support means,

a copy support surface mounted on the support means and located at the upper front of the stand and extending at an angle upwardly and rearwardly,

a screen device platform mounted on the support means and located rearwardly of the copy support surface and extending generally horizontally, means for movably mounting a keyboard for movement between a stored position beneath the copy support surface and an operating position forward of the copy support surface, said copy support surface including an upper portion fixedly mounted to the support means and a lower portion hinged to the upper portion, said lower portion movable between a raised position coplaner with the upper portion to form the full copy support surface when the keyboard is moved to the operating position and a lowered position to form a front cover of the mounting stand when the keyboard is moved to a stored position.

4,657,215
MOUNTING ASSEMBLY FOR HEATER THERMSTAT CONTROL
Mark A. Murphy, Franklin, Tenn., assignor to Apcom, Inc., Franklin, Tenn.
Filed Jan. 8, 1985, Ser. No. 689,659
Int. Cl.[4] F24H *9/06*
U.S. Cl. 248—221.3 2 Claims



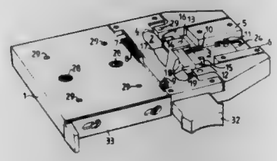
1. An assembly for mounting a thermostat control on the outer wall of a heater tank including an external spud in which a heating element is mounted, said mounting assembly comprising

a first bracket made from a spring material and including a body having an opening adapted to lockingly fit over the tank spud, said first bracket further including a pair of laterally-spaced legs extending from said body and having a bent upper end portion adapted to apply spring pressure toward the tank outer wall when said first bracket is locked on the tank spud, each of said legs including in said upper end portion an elongated slot having an upper end;

a second bracket carrying the thermostat control and having a pair of laterally-spaced, upstanding ears adapted to fit beneath the upper end portions of said legs, each of said ears including a nib received in a said slot for interlocking said first and said second brackets and having an upper edge adapted to engage the upper end of said slot and cooperate therewith to urge the thermostat control into firmer contact with the tank outer wall in response to upward vertical movement of said second bracket relative to said first bracket; and

said assembly further characterized by a retaining lip on said first bracket, said lip located between said legs and positioned to bear against the end wall of the thermostat control when the parts are in assembled position and an outward horizontal load is applied.

4,657,216
WEDGE AND WEDGE ADAPTORS
Malcolm D. Southgate, Suffolk, England, assignor to W. Vinten Limited, England
Filed Aug. 22, 1985, Ser. No. 768,131
Claims priority, application United Kingdom, Sep. 1, 1984, 8422153
Int. Cl.[4] F16M *11/04*
U.S. Cl. 248—187 5 Claims



1. A wedge and wedge adaptor engagement system comprising:

a wedge having a recess;

a wedge adaptor in which said wedge is removably received, said wedge adaptor including

(a) a base plate

(b) a spring loaded locking means for locking said wedge to said base plate, said locking means being reciprocally movable between (i) a wedge unlocked position and (ii) a spring-biased wedge locked position where said recess is engaged by said locking means to prevent removal of said wedge from said wedge adaptor;

(c) a spring loaded actuator means for frictionally holding said locking means in the unlocked position when said wedge is in said wedge adaptor and for positively holding said locking means in the unlocked position when said wedge is removed from said wedge adaptor, said actuator means including

(i) an actuator pin,

(ii) a pawl,

(iii) mounting means for mounting said pawl to said base plate for movement into and out of frictional engagement with said locking means when said locking means is in the frictionally held unlocked position,

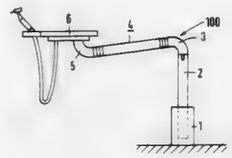
(iv) a first moving means for moving said pawl mounted on said mounting means into frictional engagement with said locking means when said wedge is in the said wedge adaptor, and

(v) a second moving means for moving said actuator pin into said pawl to move said pawl out of frictional engagement with said locking means and for moving said actuator means into positive full engagement with said locking means as said wedge is removed from said wedge adaptor; and

(d) a wedge engagement means on said actuator means for causing said locking means to be released from the unlocked position to the locked position as said wedge is received in said wedge adaptor.

4,657,217
PARALLELOGRAM BRACKET ASSEMBLY WITH A FORCE BALANCING MECHANISM
Helmut Kiesel, and Klaus Stoeckl, both of Bensheim, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Dec. 10, 1985, Ser. No. 806,830
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1984, 3445016
Int. Cl.[4] E04G *3/00*
U.S. Cl. 248—280.1 17 Claims

1. A parallelogram bracket assembly comprising a pair of parallelly extending arms, said arms being connected at their ends to transverse members by pivotal connections to form a parallelogram arrangement, one of the two parallel arms having a tubular guide channel closed at each end by an end piece, a first member being connectd to one of the end pieces, a second member being received in the guide channel, a third member connecting the second member to the pivotal connection of the adjacent arm adjacent the other of said end pieces,



a pneumatic spring having a piston and cylinder being inserted in said guide channel between said first and second members to press thereagainst so that the pneumatic spring applies a force between diametrically opposed pivotal connections of the assembly, and at least one of the two end pieces being constructed to allow easy removal of the pneumatic spring from said tubular guide channel.

4,657,218
ADJUSTABLE CHAIR PEDESTAL
James W. Scheberle, and Paul K. Smith, both of Terre Haute, Ind., assignors to J. I. Case Company, Racine, Wis.
Filed Jan. 21, 1986, Ser. No. 819,940
Int. Cl.[4] F16M *11/00*
U.S. Cl. 248—411 4 Claims



1. An adjustable chair pedestal comprising:

a base member including a tubular vertical recess terminating in floor means and having an inside wall and a lateral clamp-receiving orifice:

a substantially rigid pedestal tube secured with respect to a chair and telescopingly engaged in said recess, said tube having ceiling means and a wall with an inner surface and a vertical slot of substantially fixed cross-dimension, said slot having major and minor angularly-offset vertical portions joined by a generally horizontally-extending connecting portion, said major vertical portion terminating downwardly in said connecting portion to form a lower horizontal stop and said minor portion terminating downwardly in an open slot end;

a vertically-oriented coil spring inside the pedestal tube and

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recess and extending in compression from said floor means to said ceiling means to bias the pedestal tube upwardly;

means inside said pedestal tube and recess to support said coil spring in vertical alignment, said support means including a vertical guide pin secured with respect to the floor and extending inside the coil spring;

a locking member inside said pedestal tube and adjacent to the clamp-receiving orifice, said locking member being between the coil spring and the inner surface of the pedestal tube; and

a clamp screw extending radially through the orifice and the slot and terminating a distal end threadedly engaged with said locking member, said clamp screw having gripping means outside the base and pedestal walls,

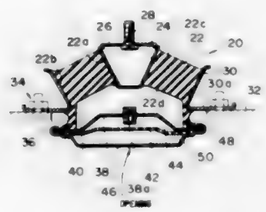
whereby tightening of the clamp screw draws the locking member against the inner surface of the pedestal tube to sandwich the pedestal tube between the locking member and the inside wall of the vertical recess.

4,657,219

FLUID-FILLED ENGINE MOUNT DEVICE

Toshihiko Kakimoto, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Jun. 17, 1982, Ser. No. 378,738
Claims priority, application Japan, May 18, 1981, 56-74390
Int. Cl.⁴ F16M *5/00*
U.S. Cl. 248—562 **8 Claims**



1. An engine mount device comprising:

an annular elastic block having inner and outer peripheral sections one of which is connected to a power unit side and the other connected to a support body side;

a partition plate;

an annular elastic member connected directly to and extending between said elastic block and said partition plate;

said partition plate member connected to and elastically supported by said annular elastic member, said partition plate member being formed with an orifice and defining between it and said elastic block a fluid chamber at least a part of which is capable of being filled with a fluid; and

a diaphragm member connected with said partition plate member and defining between it and said partition plate member an auxiliary chamber at least a part of which is capable of being filled with said fluid, said auxiliary chamber being in communication with said fluid chamber through said partition plate member orifice,

wherein peripheral edges of said partition plate are elastically supported by said annular elastic member and thereby movable relative to the elastic block in upward and downward directions in response to deformation of said annular elastic member

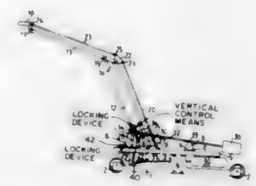
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4,657,220

TELEVISION CAMERA MOUNTING EQUIPMENT

Richard A. Lindsay, Suffolk, England, assignor to W. Vinten Ltd., England

Filed Aug. 23, 1985, Ser. No. 768,711
Claims priority, application United Kingdom, Sep. 1, 1984, 8422154
Int. Cl.⁴ F16M *3/00*
U.S. Cl. 248—647 **8 Claims**



1. A balanced arm for television or the like comprising, a movable base, a rotatable platform mounted on said base, a first traversable mounting on said rotatable platform having vertical control means operable on a control pivot of a pantograph having its fulcrum arm pivotally located on said rotatable table, a load carrying platform pivotally located at the end of the pantograph proportion arm, linkages forming a first parallelogram on said proportion arm wherein one link is formed on said load carrying platform and a second parallelogram on said fulcrum arm wherein one link is formed from part of said rotatable platform and said two parallelograms share a common link; arm mass counterbalancing means pivotally mounted on a second traversable mounting on said rotatable platform and having its fulcrum pivotally attached to a short link of said pantograph, load counterbalancing means operable on said vertical control means, and guide means for said first and second traversable mountings wherein said load carrying platform and load retains verticality and may be traversed with full counterbalance in any plane within its operational limits.

4,657,221

MALE CORE FOR FORMING VENT SLOTS IN A THERMOPLASTIC CLOSURE

Hugh C. Urmston, Sparta, N.J., and Elmer E. Pohlenz, Richmond, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 22, 1986, Ser. No. 854,771
Int. Cl.⁴ B29C *45/17*
U.S. Cl. 249—175 **12 Claims**



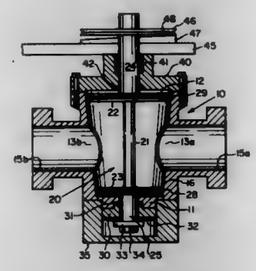
1. A male core comprising a cylindrical member having a helical groove formed about the outer periphery thereof which forms a thread on an inside surface of a thermoplastic closure, at least one rib integrally formed in said cylindrical member which is arranged parallel to the longitudinal axis of said closure, said rib forming a vent slot in said closure which bifurcates said thread, and convoluted surfaces formed in said cylindrical member which extend from each side of said rib to the bottom of adjacent helical grooves, said convoluted surfaces enabling a closure to be formed which can be axially stripped from said male core without deforming said thread into said vent slot thereby allowing for the passage of pressurized gas through said vent slot to the atmosphere as said closure is removed from a container.

4,657,222

VALVE

John A. Tullio, Erie, Pa., assignor to South Shore Manufacturing, Inc., Erie, Pa.

Filed Nov. 27, 1985, Ser. No. 802,236
Int. Cl.⁴ F16K *5/16*
U.S. Cl. 251—56 **15 Claims**



1. A valve comprising:

(a) a valve body having walls defining a tapered conical bore and bore axis, said bore having large and small axial end openings and opposed inlet and outlet openings, said inlet and outlet openings arranged about a flow axis substantially perpendicular to the bore axis,

(b) a tapered cage comprising conical interior and exterior surfaces, said exterior surface sized to abut the conical bore of the valve body, said cage being designed for easy replacement, said cage having opposed openings that open, at least in part, upon the opposed inlet and outlet openings,

(c) a stopper arranged to turn on an axis aligned with the bore axis and arranged within the cage and having, as a limiting exterior configuration, a conical surface that abuts the interior conical surface of the cage, said stopper having a control vane extending radially outward from the stopper axis, said vane having opposed edges arranged to abut the interior conical surface of the cage at all points on a first sealing plane including the bore axis, said stopper comprising larger and smaller conical plugs at each axial end of the control vane, said conical plugs having edges arranged to abut the interior conical surface of the cage at all points on second and third sealing planes perpendicular to the bore axis where they intersect the interior conical surface, said stopper having a drive stem extending axially away from the one conical plug and a balancing stem extending axially away from the other conical plug.

(d) a bonnet fixed relative to the valve body for closing of an axial end of the conical bore while permitting the drive stem to pass therethrough,

(e) cap means for closing the axial end of the conical bore opposite the bonnet means,

(f) biasing means for urging the stopper toward the small end of the conical bore,

(g) means for rotating the stopper fixedly secured to the stem emerging from the bonnet, and

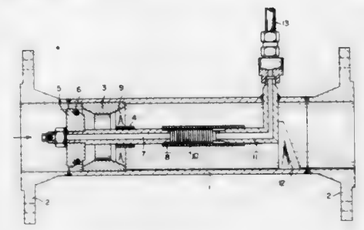
(h) means comprising a cam surface and cam follower for lifting the stopper axially away from the small end of the conical bore a controlled distance when it is rotated away from a closed position where the control vane is substantially perpendicular to the flow axis.

4,657,223

VALVE SYSTEM WITH HYDRAULIC POWER TRANSMISSION

Nils E. Lindgren, Borlänge, Sweden, assignor to SSAB Svenskt Stal AB, Stockholm, Sweden

PCT No. PCT/SE84/00236, § 371 Date Jan. 28, 1985, § 102(e) Date Jan. 28, 1985, PCT Pub. No. WO85/00203, PCT Pub. Date Jan. 17, 1985
Continuation of Ser. No. 709,023, Jan. 28, 1985, abandoned. This PCT application Jun. 20, 1984, Ser. No. 883,843
Claims priority, application Sweden, Jun. 23, 1983, 8303607
Int. Cl.⁴ B03D *3/00*
U.S. Cl. 251—61.2 **8 Claims**



1. A valve apparatus for a fluid flow line which can automatically shut off the fluid flow when the flow therethrough exceeds a predetermined value, said valve apparatus comprising

a tubular casing which has a first end and a second end and which is connectable to the fluid flow line such that the fluid flowing through the fluid flow line will flow through said first end towards said second end,

an annular valve seat positioned within the interior of said tubular casing,

a valve body which is cooperable with said annular seat to close and open the interior of said tubular casing,

a first expansion bellows positioned in the interior of said cylindrical tubular casing, said expansion bellows having a first end which is operatively connected to said valve body and a second end,

a pressure tube extending into said tubular casing, said pressure tube having a first end attached to said second end of said expansion bellows and a second end located outside said cylindrical tube, and

a manually adjustable pressure means attached to the second end of said pressure tube to supply a pressure fluid thereto, thus controlling the pressure applied by said first expansion bellows and thereby determining the pressure of fluid flow against the valve body required to move the valve body towards and against or away from said annular valve seat to shut off or open fluid flow through said tubular casing.

4,657,224

PNEUMATICALLY ACTUATED VALVE

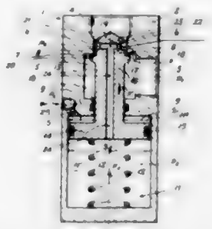
Sergio Lattuada, Bergamo, Italy, assignor to STI Strumentazione Industriale S.p.A., Bergamo, Italy

Filed Dec. 31, 1984, Ser. No. 687,589
Claims priority, application Italy, Jul. 19, 1984, 2917 A/84
Int. Cl.⁴ F16K *31/163*
U.S. Cl. 251—63.5 **1 Claim**

1. A pneumatically controlled valve for use in decompression and subsequent venting of at least one tank used for adsorption drying of gases, said valve comprising a body (2) having an inlet conduit (3), an outlet conduit (4), and a first annular projection (6) having a surface (7) adjacent said inlet conduit, an inlet chamber (5) and a thrust chamber (11) within said body, a valve member (13) slideable within said inlet chamber (5) and connected with a piston (14) slideable within said thrust chamber (11), said thrust chamber (11) being seal-

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ingly separated from said inlet chamber (5) by guide means (9) for said valve member (13), said valve member (13) having a second annular projection (17) opposing said surface (7) of said first annular projection, said first and second annular projections thereby defining a first orifice (20), said valve member (13) having a third annular projection (23) at the end of said valve member opposite said piston (14), said third annular projection (23) and said first annular projection (6) defining a second orifice (22) having fixed dimensions substantially narrower than said outlet conduit (4) when said third annular projection (23) is adjacent said first annular projection (6), said orifices communicating with a feedback chamber (21) intermediate said orifices, said feedback chamber (21) communicating with a first portion (11') of said thrust chamber (11) through conduit means (24), said first portion (11') containing spring means (12) biasing said first orifice (20) to a closed position, said thrust chamber (11) having a second portion (11'') connected with a piloting circuit (26) at constant pressure biasing said first orifice (20) to an open position, and pressure from said feedback chamber (21) in said thrust chamber first portion (11') biasing said first orifice (20) to a closed position, whereby a constant rate of flow through said valve is maintained when said third annular projection (23) is adjacent said first annular projection (6).

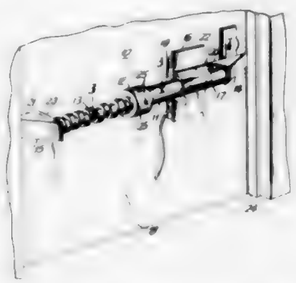


4,657,225

PORTABLE SELF-CONTAINED INTRUSION DEVICE

Frederick C. Hoehn, 261 Brehaut Ave., Staten Island, N.Y. 10307, and George Toth, 874 E. 14th St., Brooklyn, N.Y. 11230

Filed Jul. 21, 1986, Ser. No. 887,873
Int. Cl.[4] B66F *3/24*
U.S. Cl. 254—93 HP **2 Claims**



1. A portable self-contained intrusion device capable of dislodging a door from a mechanically locked and/or barred position comprising:

(a) a cylindrical threaded pressure bar member;

(b) an internally threaded cylindrical collar member capable of mechanical interfit with said cylindrical threaded pressure bar member so as to enable threaded engagement there between, said internally threaded cylindrical collar member being mechanically threaded about one end of said threaded pressure bar member so as to have a portion of said cylindrical threaded pressure bar member extend beyond the structure of said internally threaded cylindrical collar member, the axis of said internally threaded cylindrical collar member being coincident with the axis of said cylindrical threaded pressure bar member;

(c) a cylindrical hollow static bar member whose axis is aligned with and otherwise coincident with the axis of said internally threaded cylindrical collar member and the axis of said cylindrical threaded pressure bar member, said cylindrical hollow static bar member having an exterior diameter less than the exterior diameter of said internally threaded cylindrical collar member while the internal diameter of the hollow cylindrical opening defined by said cylindrical hollow static bar member is sufficient to allow for the insertion therein of said cylindrical threaded pressure bar member while providing a mechanical interfit there between so as to provide for axial rigidity over the combined lengths of said cylindrical hollow static bar member and said cylindrical threaded pressure bar member, one end of said cylindrical hollow static bar member thereby abutting immediately adjacent to the exterior wall of said internally threaded cylindrical collar member;

(d) a first wedge member defining a right triangular shape so as to have surfaces relative to the height, base and hypotenuse of said right triangular shape, the base surface of said first wedge member being mechanically affixed to the end of said cylindrical threaded pressure bar member such that a spacing is defined between the base surface of said first wedge member as said based surface of said first wedge member is placed adjacent the surface of said door that is to be dislodged from its mechanically locked and/or barred position and the exterior surface of said cylindrical hollow static bar member;

(e) a second wedge member defining a right triangular shape so as to have surfaces relative to the height, base and hypotenuse of said right triangular shape, the base surface of said first wedge member being mechanically affixed to the end of said cylindrical hollow static bar member such that a spacing is defined between the base surface of said second wedge member as said base surface of said second wedge member is placed adjacent the surface of said door that is to be dislodged from its mechanically locked and/or barred position and the exterior surface of said cylindrical hollow static bar member;

(f) a pressure plate member comprising a planar surface member and an angular member, said angular member being structurally affixed to one face of said planar surface member and capable of selective mechanical coupling with the exterior surface of said cylindrical hollow static bar member along any portion thereof so as to provide for the creation of a uniform spacing between the surface of said door that is to be dislodged from its mechanically locked and/or barred position and the surface of said planar surface member that is opposite to said face of said planar surface member of said pressure plate member that is structurally affixed to said angular member; and

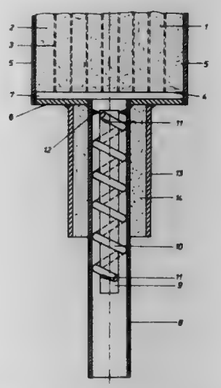
(g) means for selectively exerting force simultaneously against the surface of said door that is mechanically locked and/or barred as well as against the surface of said pressure plate member that is adjacent to the surface of said door.

4,657,226

APPARATUS FOR INTRODUCING GAS TO MOLTEN METAL WITHIN A VESSEL

Heinrich Illemann, St. Magdalen, and Gustav M. Heinricher, Döbriach, both of Austria, assignors to Osterreichisch-Amerikanische Magnesit Aktiengesellschaft, Austria

Filed Sep. 16, 1985, Ser. No. 776,441
Claims priority, application Austria, Sep. 18, 1984, 296284
Int. Cl.[4] C21C *5/48*
U.S. Cl. 266—220 **12 Claims**



1. An apparatus for introducing gas to molten metal within a vessel interior, said apparatus comprising a refractory purge brick having a first surface adjacent said vessel interior, a second surface communicating with gas supply means, a plurality of openings within said brick communicating with said vessel interior and said gas supply means, said gas supply means including a gas conduit through which gas flows to said brick, through said openings in said brick and into said vessel interior; and cooling means within said gas conduit for cooling and solidifying molten metal entering said conduit from said vessel interior.

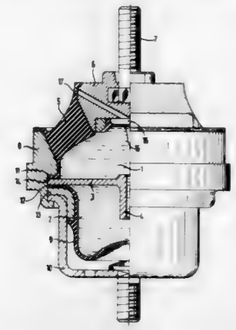
4,657,227

TWO-CHAMBER ENGINE MOUNT WITH HYDRAULIC DAMPING

Manfred Hofmann, Hünfelden, Fed. Rep. of Germany, assignor to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 556,635, Nov. 30, 1983, abandoned. This application Nov. 8, 1985, Ser. No. 799,541
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244296
Int. Cl.[4] F16F *9/08*
U.S. Cl. 267—8 R **5 Claims**

1. Two-chamber engine mount with hydraulic damping, comprising a housing, an intermediate plate disposed in said housing dividing said housing into an upper chamber above said intermediate plate and a lower chamber below said intermediate plate, both of said chambers to be filled with fluid, said intermediate plate having a damping opening formed therein for fluid passage, an upper rubbery elastic peripheral wall at least partially defining said upper chamber, a lower cup-shaped rubbery elastic peripheral wall with a given hardness at least partially defining said lower chamber, an upper motor support plate disposed above said upper chamber, said upper support plate having a membrane chamber centrally formed therein to be filled with air, and an elastic rubbery membrane having a hardness greater than said given hardness of said lower peripheral wall, said rubbery membrane separating said membrane chamber from said upper chamber and being disposed in a plane extending through said upper rubbery elastic peripheral wall so that said membrane and said upper elastic peripheral wall are disposed in parallel operative relationship, and the diameter of said rubbery membrane being at most one-third the size of the largest diameter of said upper chamber.

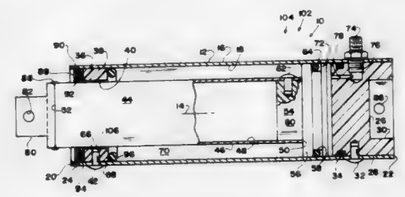


4,657,228

GAS-ACTUATED SHOCK ABSORBER FOR AIRCRAFT

John L. Lautzenhiser, Highway 69 North, Box 87, Nobel, Ontario, Canada P0G 1G0

Filed Feb. 25, 1985, Ser. No. 705,100
Int. Cl.[4] F16F *5/00*
U.S. Cl. 267—64.15 **13 Claims**



1. A gas-actuated shock absorber for aircraft, which shock absorber comprises:

a cylinder barrel having first and second ends, having a cylindrical outside surface, and having a cylinder bore;

a cylinder head being dispsoed proximal to one of said ends of said cylinder barrel, and being operatively attached to said cylinder barrel;

a bearing being disposed proximal to the other of said ends of said cylinder barrel, being operatively attached to said cylinder barrel, and having a rod bore;

a piston rod having an inner end that is inserted through said rod bore, having an outer end, and being movable in both inward and outward directions;

means, comprising a piston that is inserted into said cylinder bore and that is operatively attached to said piston rod, for dividing said shock absorber into first and second volumes that are inversely variable by longitudinally positioning said piston rod and said piston;

means, comprising a valve, for charging one of said volumes with a gas;

energy absorbing means, comprising a flow path that aspirates the other of said volumes to atmospheric air, and comprising restriction of said flow path in one direction of air flow, for damping movement of said piston rod in one of said directions;

said shock absorber includes a diametral clearance that is disposed proximal to one of said ends of said cylinder barrel;

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said flow path comprises said diametral clearance; and

said restriction of said flow path in said one direction of air flow comprises restricting said flow path in the direction of atmospheric air flowing into said other volume; whereby

said energy absorbing means comprises reducing pressure in said other volume below atmospheric pressure.

4,657,229

PNEUMATIC SHOCK ABSORBER WITH ROLLING BELLOWS

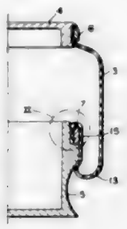
Gerhard Thurow, Garbsen, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 684,486

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346108

Int. Cl.⁴ B60G *11/26*; F16F *9/04*

U.S. Cl. 267—64.27 **1 Claim**



1. A pneumatic shock absorber, especially for road vehicles, which includes a rolling bellows made of rubber, or rubber-like elastomeric synthetic material, containing reinforcing elements; said rolling bellows having two oppositely disposed end portions which are respectively mounted by means of clamping rings on mounting regions of a first support element and a second support element respectively, with said second support element being in the form of a support piston; in the mounted state, said rolling bellows having a rolling fold associated with one of its end portions, said rolling fold being adapted to ride on a surface of said support piston;

said mounting region of said support piston being in the form of a substantially cylindrical, reduced diameter portion of the latter, with a flange-like end abutment surface for the associated clamping ring being provided between said reduced diameter portion and said surface of said support piston on which said rolling fold rides, with said end abutment surface extending substantially at right angles to said reduced diameter portion of said support piston; circumferential ribs provided on said reduced diameter portion, and disposed in diametrical planes; said circumferential ribs having angularly symmetrical cross-sectional shapes; the improvement in combination therewith wherein:

said circumferential ribs are provided in only one axial portion of said reduced diameter mounting region of said support piston;

said circumferential ribs being provided in a central zone of said reduced diameter mounting region, with said central zone being bounded on both sides by respective smooth-cylindrical zones.

4,657,230

OVERTRAVEL SPRING ASSEMBLY FOR SLACK ADJUSTER

Roger J. Weseloh, South Holland, Ill., assignor to American Standard Inc., Chicago, Ill.

Continuation of Ser. No. 142,282, Apr. 21, 1980, abandoned. This application Apr. 16, 1982, Ser. No. 369,064

Int. Cl.⁴ F16F *1/10*

U.S. Cl. 267—71 **1 Claim**



1. An overtravel spring assembly, for use in an automatic slack adjuster for railroad car brake apparatus, comprising,

(a) a cylindrical housing of preselected length,

(b) a cylindrical sleeve member of selected shorter length than said cylindrical housing length and positioned coaxially therein,

(c) an annular spring retainer plate positioned concentrically within and substantially at each end of said housing,

(d) an overtravel helical spring positioned coaxially with and between said housing and said sleeve member and in abutting contact with the inner radial surfaces of said spring retainer plates, and

(e) a plurality of equi-angularly spaced crimp notches positioned around the perimeter at each end of said cylindrical housng and extending radially inward for retaining the corresponding spring retainer plate within the axial length of said housing to maintain a selected precompressed tension in said spring,

(f) each spring retainer plate being free to move axially inward within said housing away from said crimp notches in response to an external force with further compression of said spring to the limit set by said sleeve member.

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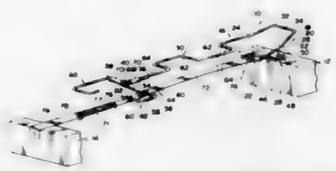
FURNITURE SPRING ASSEMBLY HAVING FRAME SUPPORT

Zygmunt M. Surletta, East Detroit, Mich., assignor to Lear Siegler, Inc., Berkley, Mich.

Filed Apr. 4, 1986, Ser. No. 848,407

Int. Cl.⁴ F16F *3/02*

U.S. Cl. 267—107 **24 Claims**



1. A furniture spring assembly for providing support between first and second spaced frame members of an article of furniture, the furniture spring assembly comprising: a torsion bar spring having a first end including a fishmouth section having a generally V-shaped configuration; said fishmouth section including a torsion bar and a pair of spacer bars extending from the torsion bar to provide the V-shaped configuration of the fishmouth section; one of the spacer bars having a foot that defines a terminal end of the torsion bar spring and provides for mounting thereof directly on the first frame member; the torsion bar spring including an intermediate portion having a first end connected to the other spacer bar of the fishmouth section and having a second end spaced from the fishmouth section; the torsion bar spring having a second end connected

to the second end of the intermediate spring portion and having a foot that defines another terminal end of the torsion bar spring and provides for mounting thereof; and a support extending from the torsion bar of the fishmouth section at the first end of the spring to the foot at the second end thereof and thence for mounting on the second frame member.

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HYDRAULICALLY DAMPED MOUNTING DEVICE

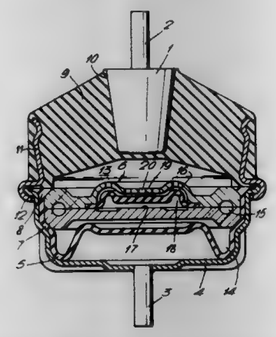
John P. West, Devizes, United Kingdom, assignor to Avon Industrial Polymers Limited, Wiltshire, United Kingdom

Continuation of Ser. No. 572,580, Jan. 20, 1984, abandoned. This application Mar. 13, 1986, Ser. No. 840,972

Claims priority, application United Kingdom, May 12, 1983, 8313111

Int. Cl.⁴ F16M *1/02*

U.S. Cl. 267—140.1 **11 Claims**



1. A hydraulically damped mounting device comprising:

a first anchor point;

a second anchor point;

a first deformable wall connecting said first and said second anchor points;

a rigid partition rigidly associated with said first anchor point;

a working chamber enclosed between said first deformable wall and said partition, said working chamber containing a liquid;

a second deformable wall;

a compensation chamber for said liquid, said compenstion chamber being at least partially bounded by said second deformable wall, at least a part of said second deformable wall being freely movable in dependence upon changes of pressure of said liquid in said compensation chamber;

a passage between said working chamber and said compensation chamber to allow fluid communication of said liquid between said working chamber and said compensation chamber;

a flexible diaphragm in contact with said liquid in said working chamber, said flexible diaphragm acting as a barrier between said liquid in said working chamber and a gas chamber partially bounded by said rigid partition, said flexible diaphragm being mounted on said rigid partition;

a first rigid abutment means rigidly associated with said rigid partition, said rigid abutment means being located in said working chamber adjacent said flexible diaphragm and having apertures therein for fluid communication therethrough, whereby said rigid abutment means limits movement of said flexible diaphragm in a direction causing increase in volume of said gas chamber; and

a second rigid abutment means rigidly associated with said rigid partition, said rigid abutment means being located in said gas chamber adjacent said flexible diaphragm and having apertures therein for gas communication therethrough, whereby said second rigid abutment means limits movement of said flexible diaphragm in a direction causing decrease in volume of said gas chamber.

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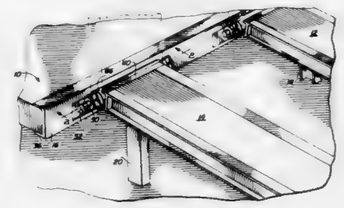
ASSIST APPARATUS FOR RAMPS

James W. Vroom, 6945 E. Cheney, Paradise Valley, Ariz. 85253

Filed Apr. 19, 1985, Ser. No. 725,260

Int. Cl.⁴ B65G *67/00*

U.S. Cl. 267—155 **6 Claims**



1. A spring assist mechanism for assisting pivotal movement intermediate two elements, such as a ramp extending from a trailer, said mechanism comprising in combination:

(a) a coil spring having opposed ends for exerting a material force to assist pivotal movement of the ramp relative to the trailer;

(b) a shaft located internally concentric with said coil spring for translating a force exerted by said coil spring to the trailer;

(c) a shroud enveloping said coil spring for translating a force exerted by said coil spring to the ramp;

(d) means for securing one end of said coil spring to said shaft; and

(e) further means for securing the other end of said coil spring to said shroud, said further securing means comprising a further annular bearing in penetrable engagement with said shaft and disposed within said shroud and further means for fixedly attaching said further annular bearing to said shroud;

whereby, the degree of assisting force produced by said mechanism is a function of the relative pivotal relationship between the ramp and the trailer.

4,657,234

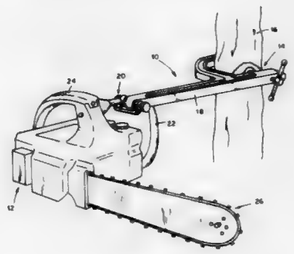
CHAIN SAW HOLDER

James H. Stout, 9423 Emory Rd., Knoxville, Tenn. 37931

Filed Feb. 24, 1986, Ser. No. 832,822

Int. Cl.⁴ F16M *13/02*; B25B *11/00*

U.S. Cl. 269—97 **10 Claims**



1. A chain saw holder attachable to a fixed support for holding and supporting a chain saw during refueling and maintenance, the chain saw having a laterally extending tubular handle bar, said chain saw holder comprising:

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clamp means for clamping to the fixed support, said clamp means having means defining a clamp mouth for receiving the fixed support therein and for supporting at least one movable jaw which is movable toward and away from an opposing jaw to clamp the fixed support in said clamp mouth between said jaws;

an elongated extension member attached to and extending away from said clamping means;

chain saw attachment means supported by said extension member remote from said clamp means for attaching to said chain saw, said chain saw attachment means comprising a C-shaped member pivotally attached to said extension member and having an opening defining a handle bar mouth for receiving a portion of the handle bar of the chain saw, and said attachment means further having securing means for securing said handle bar in said mouth, said C-shaped member pivoting about an axis generally perpendicular to said extension member with said axis extending generally across said handle bar mouth to enable said mouth to receive said portion of said tubular handle bar with said portion in orientations aligned with, oblique to and perpendicular to said extension member said securing means comprising first and second jaws opposing each other across said mouth, at least one of said jaws being movable towards the other to secure said handle bar of the chain saw in said mouth;

whereby, said chain saw holder is operable when clamped onto a fixed support to receive and secure a portion of the tubular handle bar and hold and support the chain saw.

4,657,235

PATIENT'S TABLE

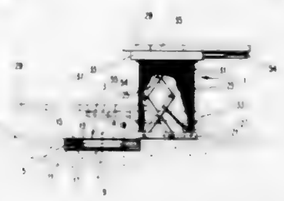
Hugo Schär, Flaach, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 7, 1985, Ser. No. 763,282

Claims priority, application Switzerland, Aug. 14, 1984, 3904/84

Int. Cl.⁴ A61G *13/00*

U.S. Cl. 269—322 **15 Claims**



1. In a patient's table of the type having drive means, longitudinal guideways and a vertically adjustable couch plate, said couch plate slidable horizontally along said longitudinal guideways and rotatable about a vertical axis, said drive means driving the table about the vertical axis and the couch plate horizontally along said longitudinal guideways, the improvement comprising a guide pedestal supporting the couch plate and two mutually independent guideways spaced apart from each other, said guideways respectively provided between the couch plate and said guide pedestal for the sliding of the couch plate in the longitudinal direction, one of said guideways provided with a support member, means for slidably engaging said support member with said couch plate and said guide pedestal, whereby said support member may guide the sliding of the couch plate and means for moving said support member concurrently with said couch plate such that said couch plate moves twice a distance that said support member is moved, whereby stability of said couch plate at its fully extended position may be enhanced.

4,657,236

SHEET DELIVERY DEVICE

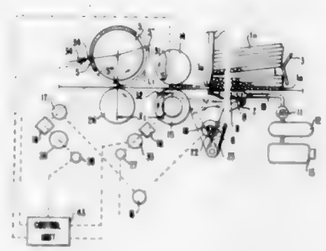
Tadashi Hirakawa, and Arifumi Okamoto, both of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1985, Ser. No. 751,011

Claims priority, application Japan, Jul. 20, 1984, 59-108922[U]

Int. Cl.⁴ B65H *3/08*

U.S. Cl. 271—99 **8 Claims**



1. A sheet delivery device comprising:

a movable suction unit for moving individual sheets in a sheet delivery direction away from a sheet supply position at which one or more sheets are supplied to said delivery device;

sheet processing equipment located along said sheet delivery direction for processing each sheet moved by said movable suction unit;

feed rolls positioned between said movable suction unit and said sheet processing equipment for delivering sheets from said movable suction unit to said sheet processing equipment, said feed rolls including at least one first roll, a first motor connected to said first roll, at least one second roll spaced from said first roll in a direction perpendicular to said sheet delivering direction and a second motor connected to said second roll, said first and second motors being operable to correct the orientation of each sheet by independently rotating said first and second rolls at different speeds and said first and second motors being operable to adjust the speed of delivery of each sheet to correspond to the operation of said sheet processing equipment;

sheet orientation sensor means for detecting the orientation of each sheet delivered by said feed rolls;

sheet processing equipment sensor means for detecting a reference point in operation of said sheet processing equipment;

sheet position sensor means for detecting when each sheet arrives at a reference position; and

control unit means connected to said first and second motors, said sheet orientation sensor means, said sheet processing equipment sensor means and said sheet position sensor means for individually controlling rotation of said first and second rolls to correct any deviation in the orientation of each sheet and for controlling the speed of delivery of each sheet to correspond with the operation of said sheet processing equipment.

4,657,237

METHOD OF, AND APPARATUS FOR, PRODUCING STACKS OF FLEXIBLE FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS

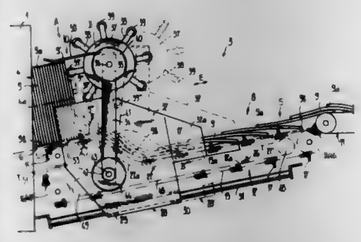
Egon Hänsch, Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 25, 1984, Ser. No. 624,365

Claims priority, application Switzerland, Jul. 11, 1983, 3799/83; Feb. 20, 1984, 817/84

Int. Cl.⁴ B65H *29/38*

U.S. Cl. 271—178 **48 Claims**



13. An apparatus for producing reclining stacks of flexible, substantially flat products, especially printed products, and having a longitudinal axis extending at most at a slight inclination to the horizontal, comprising:

feeding means for feeding said products and sliding the same during a slide-on operation in a predetermined upward slide-on direction upon each other in order to form a substantially immobile reclining stack defining a rearmost positioned product and a next following product;

pressing means acting upon each said rearmost positioned product at a predetermined pressing location during said slide-on operation;

said pressing location being located during said slide-on operation in front of a leading edge defined by said next following product in said predetermined upward product slide-on direction thereof; and

said pressing location being displaceable conjointly with said next following product in said predetermined upward product slide-on direction thereof during the slide-on operation.

4,657,238

SHEET TURN OVER APPARATUS

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1985, Ser. No. 707,953

Claims priority, application Japan, Mar. 6, 1984, 59-41382; Mar. 29, 1984, 59-59526

Int. Cl.⁴ B65H *39/00*

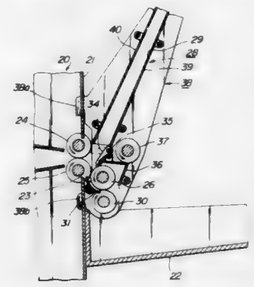
U.S. Cl. 271—186 **13 Claims**

1. A sheet orientation apparatus comprising

a sheet turn over switching mechanism for discharging a sheet selectively in a non-turn over mode and in a turn over mode;

a sheet discharging mechanism for discharging successive sheets on a tray to form a stack of sheets; and

control means for driving said sheet turn over switching mechanism in such a manner that only the first sheet among a series of sheets is discharged on the tray while an image recorded surface of the first sheet faces in an opposite direction to that of the remaining sheets, wherein said sheet discharging mechanism comprises first and second rollers arranged vertically to form a first nip portion therebetween for feeding a sheet substantially horizontally, a third roller arranged substantially laterally with respect to the second roller to form a second nip portion between the second and third rollers, a fourth roller arranged below the third roller to form a nip portion between the third and fourth rollers, a sheet support member having an opening arranged above the third roller and an inclined surface for supporting a sheet fed through the opening, a first sheet guide member arranged movably between a first position in which the first sheet guide member is engaged with a sheet fed from the first nip portion guides the sheet onto the inclined surface through the opening of the sheet supporting member and a second



position in which the first sheet guide member is not engaged with the sheet supplied from the first nip portion, and a second sheet guide member arranged between the second and third nip portions in such a manner that a sheet fed from the sheet support member by the second nip portion is guided into the third nip portion, and said sheet turn over switching mechanism includes means for driving selectively said first sheet guide member into the first and second positions.

4,657,239

SHEET ALIGNING DEVICE

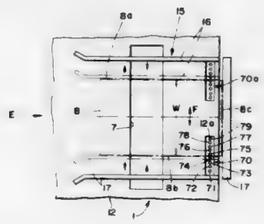
Masumi Ikesue, and Yasuhiro Takahashi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 20, 1984, Ser. No. 633,118

Claims priority, application Japan, Jul. 20, 1983, 58-132546; Jul. 20, 1983, 58-132547; Jul. 26, 1983, 58-135151

Int. Cl.⁴ B65H *9/06*

U.S. Cl. 271—227 **5 Claims**



1. A sheet aligning device comprising a pair of side walls located on opposite sides of sheets successively delivered at intervals, at least one of said side walls being movable in reciprocatory movement to bring the sheets into alignment with each other widthwise thereof which is perpendicular to the direction in which the sheets are delivered, wherein the improvement comprises:

detecting means for detecting, before the sheets are aligned widthwise thereof, a displacement of each of the sheets widthwise thereof while the sheet remains aligned with a reference line lengthwise of the sheets and a displacement of each of the sheets in which the sheet is skewed with respect to the reference line, said detecting means produc-

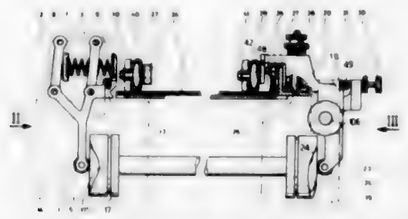
VOL 1077 ISS 2 AP 14 1987 UMI

ing an output for altering at least one of the frequency, speed and stroke of the reciprocatory movement of at least one side wall when a sheet aligning operation is performed.

4,657,240
DEVICE FOR LATERAL ALIGNMENT OF FLAT OBJECTS IN A FLOW

Edwin Bolliger, Morges, Switzerland, assignor to Bobst SA, Switzerland

Filed Nov. 5, 1985, Ser. No. 795,260
Claims priority, application Switzerland, Nov. 5, 1984, 05302/84
Int. Cl.⁴ B65H *9/10*
U.S. Cl. 271—250 **5 Claims**



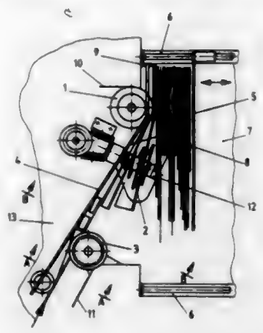
1. A device for laterally aligning a flow of flat objects against a fixed stop comprising a frame; a stop; means mounting the stop on one end of the frame enabling movement between the stop and frame; lateral alignment means being disposed on the frame opposite the stop to urge a blank against the stop; means for monitoring the thickness of the blank flowing through the device; and means for frictionally holding a flat object moved against the stop by the pushing member; said lateral alignment means including a pushing member having a V-shaped groove extending along the direction of flow of the blank through the device, means for mounting the pushing member for reciprocating in a path directed toward the stop, and means for controllably shifting the pushing member toward said stop; said means for mounting the pushing member for reciprocating movement including a pair of arms mounted for pivotal movement on a support, the lower ends of said arms being pivotally connected to a Y-shaped member to form a parallelogram, and spring means acting on said parallelogram to modify the shape thereof; and said means for controllably shifting the pushing member including a cam having a cam surface with a depression and a cam follower mounted on the Y-shaped member engaging said cam surface so that the depression allows the parallelogram to be shifted to urge the pushing member against an edge of a blank.

4,657,241
DISTRIBUTION LINE FOR FLAT OBJECTS AND PARTICULARLY FOR LETTERS

Werner Frank, Reichenau, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP84/00145, § 371 Date Jan. 15, 1985, § 102(e) Date Jan. 15, 1985, PCT Pub. No. WO84/04518, PCT Pub. Date Nov. 22, 1984
PCT Filed May 15, 1984, Ser. No. 692,881
Claims priority, application Fed. Rep. of Germany, May 17, 1983, 3317865
Int. Cl.⁴ B65H *29/40, 29/70*
U.S. Cl. 271—305 **8 Claims**

1. In a compartmented distribution line for flat articles, such as letters, arriving in succession over a conveying path, a device comprising a succession of stacking compartments arranged one behind the other to which said flat articles are supplied by switches separately associated with the individual compartments, and wherein, on the conveying path, closely before each individual stacking compartment, there is provided a rubber elastic roller-type attachment which forces the upper edge of each flat article against a guide sheet disposed

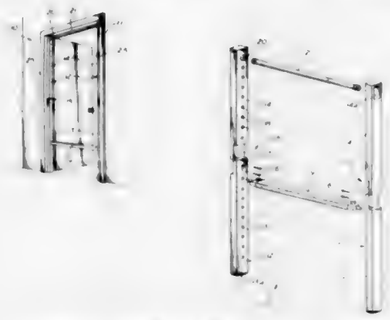


opposite said attachment, and wherein further on the conveying path, closely before each individual stacking compartment and below the roller-type attachment there is disposed a rimmed roller which imparts a stiffening curvature to said flat articles.

4,657,242
EXERCISE APPARATUS FOR RELEASABLE INSTALLATION IN A DOORWAY

Jose J. S. Guridi, 9475 Roark Rd., Apt. #433, Houston, Tex. 77099

Filed Nov. 19, 1984, Ser. No. 672,479
Int. Cl.⁴ A63B *1/02;* **A61H** *1/02*
U.S. Cl. 272—62 **19 Claims**



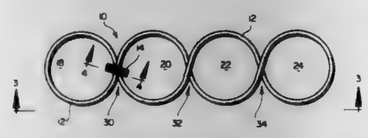
1. An exercise apparatus for installation in a conventional doorway comprising
a pair of elongated support members, adapted to be secured vertically in parallel relation on opposite sides of a door jamb, each member comprising a separate lower section and upper section and means for securing said sections together,
a plurality of vertically spaced cylindrical recesses on one side of each said support member so that pairs of said recesses are horizontally aligned when assembled in place to receive one end of a horizontal crossbar,
means on the upper section of each said support member, aligned horizontally when assembled in place, to receive opposite ends of an extendable chinning bar,
a horizontal crossbar having an intermediate portion of rectangular cross section having a length less than the distance between the support members when installed,

retractable means in said rectangular portion with cylindrical end portions extendable therefrom to be received within said cylindrical recesses,
means for maintaining said end portions in said extended position within said cylindrical recesses to permit said portion of rectangular cross section to rotate during use,
an extendable and retractable chinning bar having ends adapted, in the extended position, to be received within said receiving means, and
at least one of said bars being operable in the extended position to secure said support members in a fixed position against said door jamb.

4,657,243
FINGER EXERCISE DEVICE

Sharon L. Thomas, O N 231 Hathaway, West Chicago, Ill. 60185

Filed Aug. 12, 1985, Ser. No. 764,409
Int. Cl.⁴ A63B *5/00*
U.S. Cl. 272—67 **5 Claims**

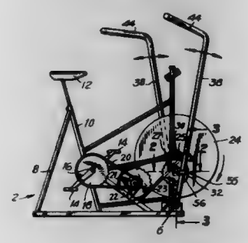


1. A novelty device for placement on a user's fingers and useful for hand and finger exercises comprising:
a one-piece, closed, endless loop formed of a continuous extension of a rigid wire-like material, said endless loop having at least two adjacent open loops and a common juncture between the open loops, with said wire-like material non-connectably crossing at said common juncture;
a captive element slidably mounted on the wire-like material so that the captive element can traverse around and along the two open loops and along the continuous extension of the wire-like material;
each of the open loops being sized with respect to a finger and the captive element and adapted for mounting on a user's fingers so as to accommodate a finger insertable through the respective open loop with the common juncture between fingers and to enable the captive element to be manipulated around the fingers and along the continuous extension of the wire-like material;
whereby upon movement of the user's hand and fingers the captive element will fall by gravity and be maneuvered around and along the closed, endless loop.

4,657,244
EXERCISE BICYCLE

Sherwood B. Ross, No. Miami, Fla., assignor to Ross Bicycles, Inc., Rockaway Beach, N.Y.

Filed Jul. 31, 1986, Ser. No. 892,788
Int. Cl.⁴ A63B *21/00*
U.S. Cl. 272—73 **7 Claims**

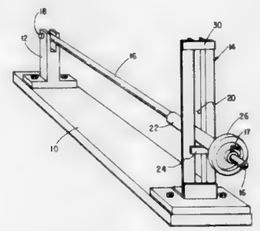


1. An exercise bicycle having a frame, a seat, foot pedal means, an energy absorbing wheel and means to link the foot pedal to the energy absorbing wheel, wherein the improvement comprises:
gear means affixed to an axle of said energy absorbing wheel for rotation with said energy absorbing wheel;
an eccentric means positioned on said gear means and including first and second roller freely rotatable on a face surface of said gear means; and
reciprocating arm levers pivotally mounted on said frame, passing between said rollers of said eccentric means, and interacting with said eccentric means for rotation of said gear means and said energy absorbing wheel upon reciprocation of said arm levers.

4,657,245
EXERCISING DEVICE

Brett A. Smith, 803 S. Gary Pl., Tulsa, Okla. 74104

Filed Apr. 8, 1983, Ser. No. 483,143
Int. Cl.⁴ A63B *21/00*
U.S. Cl. 272—117 **8 Claims**

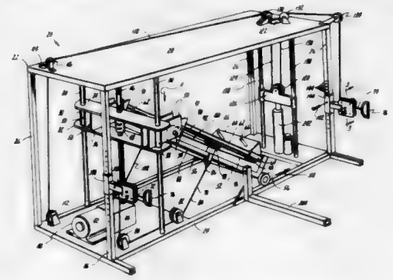


1. An exercise machine comprising:
(a) an upright post;
(b) an upright track spaced from said upright post in a rigid relationship therewith and having a guideway;
(c) a bar pivotably connected at one end to a pivot supported by said upright post and the other end extending to said guideway so that said bar may pivot about said pivot;
(d) resistance at a fixed point on the other end of said bar near said guideway positioned on said bar so that said bar may pivot about said pivot;
(e) a hand hold supported by said bar between said upright post and said upright track.

4,657,246
WEIGHT EXERCISE MACHINE

Alan Salyer, 1092 Louise, Apt. 23, Ypsilanti, Mich. 48197

Filed Apr. 26, 1985, Ser. No. 727,745
Int. Cl.⁴ A63B *21/06*
U.S. Cl. 272—117 **17 Claims**



1. In a cable exercise machine having frame means, a system

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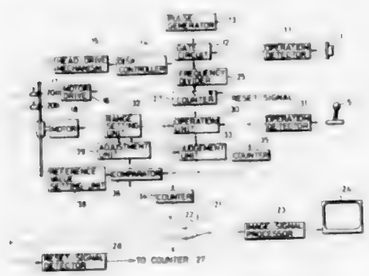
of sheaves on said frame means, cable means trained by said system of sheaves, load resistance means operatively coupled with said cable means, sheave assembly means adjustably positionable on said frame means providing guidance of said cable means from said system of sheaves to a user, said cable means having an operative coupling with said load resistance means by at least one sheave, said cable means terminating in two untethered ends for cooperative association with the user via which the user can exercise against said load resistance means by operating said cable means, the improvement which comprises said sheave assembly means having an operative engagement with said cable means between said system of sheaves and said untethered ends of said cable means, said sheave assembly means comprising sheaves for training said cable means adjacent its untethered ends, said sheave assembly means being adjustably positionable on said frame means without affecting the amount of slack in said cable means, said sheave assembly means comprising two sheave assemblies spaced apart from each other on said frame means, each sheave assembly training said cable means adjacent a corresponding one of its untethered ends, said two sheave assemblies being each individually positionable on said frame means to respective desired positions of adjustment, and that portion of said cable means which is trained by one of the sheave assemblies passing from that one sheave assembly to said system of sheaves in a particular direction and the portion of said cable means is trained by the other sheave assembly passing from said other sheave assembly to said system of sheaves in a direction which is opposite the direction that the first-mentioned portion of said cable means passes from said one sheave assembly to said system of sheaves, in which said two sheave assemblies are vertically positionable on said frame means and in which that portion of said cable means which is trained by said one sheave assembly passes from that one sheave assembly to said system of sheaves in a downwardly direction and the portion of said cable means which is trained by the other sheave assembly passes from said other sheave assembly to said system of sheaves in an upward direction.

4,657,247

VIDEO GAME APPARATUS WITH AUTOMATICALLY ADJUSTING TIMING WINDOW

Kazuo Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed Dec. 12, 1985, Ser. No. 808,278
Claims priority, application Japan, Dec. 12, 1984, 59-188540
Int. Cl.⁴ A63F *9/22*
U.S. Cl. 273—1 E **4 Claims**



1. In a video game apparatus which judges a game success if a manipulation of an operation member by a player in accordance with a displayed game image (hereinafter an "operation timing") falls within an allowable time limit for a game success set in a range setting unit, the improvement comprising:

first output means for outputting a numerical signal derived from said operation timing and said allowable time limit for game success;

count means for counting said numerical signal from said first output means;

second output means, responsive to said count means, for outputting an adjustment signal when the count of said count means reaches a predetermined value; and

allowable range changing means for changing the allowable time limit for game success set in said range setting unit, said allowable range changing means being responsive to said adjustment signal.

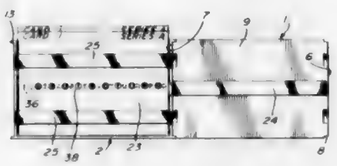
4,657,248

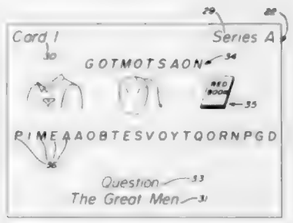
QUESTION-AND-ANSWER GAME

Prosper Benaim, 8 Cadman Street, Dollard des Ormeaux, Province of Quebec, Canada H9B 1X5

Filed Aug. 7, 1985, Ser. No. 763,291
Int. Cl.⁴ A63F *9/18*
U.S. Cl. 273—1 R **6 Claims**







1. A question-and answer game comprising, in combination, a question card bearing at a first location the letters forming the answer to the question out of proper sequence and also bearing at a second location the same letters in the proper sequence, but intermingled with other letters, an answer card adapted to be superposed on said question card with third and fourth locations overlying said first and second locations, respectively, when said answer card is superposed on said question card, said answer card bearing at said third location data giving first clues to help in arriving at the proper answer and having a series of holes at said fourth location registering only with said same letters at said second location, whereby the proper answer appears through said holes, first and second plates each having an inner and an outer face, said first plate inner face

provided with means for positioning said cards thereon in said superposed position, flexible opaque tapes interconnecting said plates and permitting successive pivoting of the two plates in the same direction alternately about their opposite ends, said tapes including a first tape portion masking said holes in a first pivoted position of said plates, wherein said inner faces are exposed and both said cards are positioned on said first plate inner face, said tape portion transferred to and overlying the inner face of said second plate in a second pivoted position of said plate, wherein said inner faces are again exposed, whereby said tape portion unmasks said holes.

4,657,249

BASKETBALL GOAL SUPPORT

James C. Offutt, Peoria, Ill., assignor to Rimball, Inc., Peoria, Ill.

Filed Jul. 31, 1985, Ser. No. 761,050
Int. Cl.⁴ A63B *63/08*
U.S. Cl. 273—1.5 R **5 Claims**



1. A basketball goal support for securement to a door, or the like comprising:

a generally U-shaped anchoring means formed of a planar front plate, a planar back plate and a planar connecting plate, said front and back plates secured at right angles to and extending from said connecting plate disposing said front and back plates in parallel relation, said front and back plates spaced sufficiently for receiving an edge of a door between the front and back plates with the edge abutting the connecting plate;

a hollow cylindrically shaped receptacle mounted to said front plate disposing the axis of said cylindrical shaped receptacle in a plane parallel with said front and back plate and disposing said axis parallel with the line edge of the side of the door when said receptacle is secured to the door;

a cylindrical shaped support tube diametrically sized for close fit within said receptacle, said support tube of a size for supporting a basketball goal above a playing floor; and

securing means carried by said anchoring means for securing said anchoring means to said door.

4,657,250

BASEBALL PITCHING PRACTICE APPARATUS

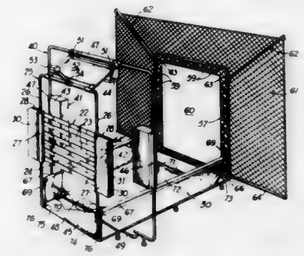
Paul H. Newland, Rte. 2, Box 2250A, Selah, Wash. 98942, and Richard J. Briggs, 2205 S. 18th St., Space 47, Yakima, Wash. 98903

Filed Mar. 25, 1985, Ser. No. 715,249
Int. Cl.⁴ A63B *71/02*
U.S. Cl. 273—26 A **5 Claims**

1. A baseball pitching practice apparatus comprising,

a united framework including a bottom horizontal generally rectangular frame close to ground level, said frame having a forward end and a rearward end a forward vertical substantially rectangular frame attached to the forward end of the horizontal frame, an intermediate vertical substantially rectangular frame of greater width and greater height than the forward frame and spaced rearwardly thereof and also attached to said bottom horizontal frame, and a rear vertical substantially rectangular frame attached to the rear end of the bottom horizontal frame and being spaced rearwardly of said intermediate vertical frame by a distance substantially greater than the distance between the forward and intermediate vertical frames,

a mechanical target mounted on the forward vertical frame including a pair of vertical tube members supported on opposite side members of the forward vertical frame, plural vertically spaced horizontal yielding target strips having corresponding ends secured to said tube members and extending from the tube members toward the transverse center of the apparatus and having other corresponding ends freely disposed in closely spaced relationship substantially at the transverse center of the forward vertical frame, and cushion pads held on said tube members and extending vertically along substantially the lengths of the tube members and the height of the mechanical target and being disposed immediately laterally outwardly of the side members of the forward vertical frame,



electro-optical orthogonal axis pitched ball location sensing means on the top, bottom and opposite sides of said intermediate vertical frame and being operable in a vertical plane rearwardly of a vertical plane occupied by said yielding mechanical target strips,

a vertical pitched ball rebound panel spring-suspended on the rear vertical frame, and

a pitched ball return trough formed of flexible sheet material extending between the front and rear vertical frames and including a horizontal bottom wall attached to said bottom horizontal frame and a pair of upstanding side walls rising from the sides of the bottom horizontal frame and a pair of longitudinal support bars for said side walls connected between the forward and rear vertical frames of the united framework.

4,657,251

SPORT IMPLEMENT SWING TRAINING METHOD

Erling A. Larsen, 2020 S. Columbus, No. 402, Tucson, Ariz. 85711

Filed Feb. 14, 1985, Ser. No. 701,865
Int. Cl.⁴ A63B *69/40*
U.S. Cl. 273—26 C **9 Claims**

1. A method for adding a person in maintaining proper orientation of a person's first hand during a swinging motion of the person's first hand, said method comprising the steps of:

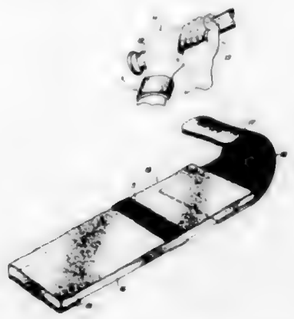
(a) placing an elastic wristband on the wrist of the first hand;

(b) orienting the elastic wristband so that a relatively small section of skin-stimulating material attached to the inner surface of the wristband is pressed against a predetermined portion of the skin of the wrist;

(c) causing the skin-stimulating material to poke the skin with sufficient force to produce a stimulation sensation that is capable of focusing the person's attention to the

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portion of the skin pressed against during the swinging motion; and



(d) focusing his or her attention on the area of skin so stimulated during swinging of the person's arm and first hand and aiming the stimulated skin in a certain manner during the swinging motion.

4,657,252

COMBINATION FOOTBALL PLACE KICKING TEE AND PLACE KICKING BLOCK

H. Jay Spiegel, 2112 Whiteoaks Dr., Alexandria, Va. 22306

Filed Apr. 24, 1985, Ser. No. 726,765
Int. Cl.⁴ A63B *67/00*
U.S. Cl. 273—55 B **24 Claims**



1. In an improved football kicking tee including:
(a) a base portion including a first substantially flat surface and a second surface spaced from said first surface;
(b) a recessed portion of predetermined depth in said second surface extending toward said first surface and
(c) said recessed portion being at least partially shaped in general conformance with the shape of the end of an oblate spheroidal football whereby said recess portion is adapted to engage and support said football therein while providing substantially no resistance to kicking of said football out of said recessed portion; the improvement comprising:
(d) said base portion having a front face and a rear face defining the rearmost extend of said tee; and
(e) said recessed portion including a rear profile at an intersection of said recessed portion and said second surface, said rear profile generally corresponding in configuration to a surface of said football, said base portion rear face intersecting with said second surface in a curved profile closely adjacent to said rear profile whereby when said football is inserted into said recessed portion substantially all surfaces of said football above said tee and facing away from said front face and below a middle portion of said football are located on a side of said curved profile remote from said recessed portion, said recessed portion including an opening of approximately said predetermined depth remote from said rear profile and means associated with said opening for aiding in retaining said football in said recessed portion.

4,657,253

TOY BALL WITH TAIL

Christopher Lerner, 2801 Quebec St., NW., Apt. #145, Washington, D.C. 20008, and Brian S. Kressin, 1704 Hampshire Green La., Apt. #22, Silver Spring, Md. 20903

Filed Sep. 27, 1985, Ser. No. 780,952
Int. Cl.⁴ A63B *43/02*
U.S. Cl. 273—58 A **14 Claims**



13. A toy comprising:
an elastomer ball having a forward outer surface and a rearward outer surface, said elastomer ball comprising a material selected from the group consisting of rubbers and plastics, and said elastomer ball having a diametrical hole therethrough; and
a flexible tail member comprising a tail material selected from the group consisting of, nylon nylon blends, and stocking-like materials such that said tail material will stretch to at least 1.25 times its normal size along its length, said tail having a first end and a second end, said tail being inserted into said diametrical hole and frictionally engaging therewith such that said tail member comprises a U-shaped portion within said hole, said first end of said tail being substantially flush with said rearward outer surface of said ball and being a first end of said U-shaped portion, with a bottom portion of said U-shaped portion being substantially flush with said forward outer surface of said ball, and said second end of said tail extends outwardly from said diametrical hole from said rearward outer surface of said ball.

4,657,254

PARLOR GAME APPARATUS FOR PLAYING A SIMULATED SKILL GAME INVOLVING MULTIPLE CHOICE STRATEGY

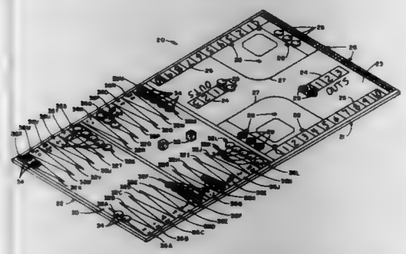
David B. Renner, Rte. 4, Box 207, Victoria Rd., DeSoto, Mo. 63020

Filed Jun. 26, 1985, Ser. No. 749,012
Int. Cl.⁴ A63F *3/00*
U.S. Cl. 273—88 **15 Claims**

14. A board game apparatus for playing a simulated baseball game comprising a first game portion having a displaying board, markings associated with said displaying board for identifying bases, other markings associated with said displaying board for identifying innings, and still other markings associated with said displaying board for identifying outs, tokens to display the positions of baserunners relative to said bases, other tokens to move about the markings to reflect the progress of play of said simulated baseball game, and means for keeping score, and a second game portion, the play of which

affects and determines in part the progress of play of the simulated baseball game, said second game portion including first and second groups of playing pieces and a playing board, said first group of playing pieces controlled by one player, said second group of playing pieces controlled by another player, designations on said playing board indicating positions suitable for being occupied by said playing pieces, indicia associated with certain ones of said designations identifying offensive and defensive plays of the simulated baseball game, and game motivator means usable by the players in alternating turns to produce movement indications, said groups of playing pieces positionable in an initial arrangement upon particular designations on said playing board, the positions of the first and second groups of playing pieces relative to said designations at the beginning of each player's turn in combination with the movement indication produced by each player through use of said game motivator means in his respective turn determining play options available to the player in such turn, selection of an available play option by each player in his turn determining the movement during and positioning at the conclusion of such player's turn of the group of playing pieces controlled by such player, the positions of said playing pieces at the conclusion of a player's turn determining the particular indicia which affect the play of the simulated baseball game in each such turn, such particular indicia in combination with the status of the simulated skill game determining the play of the simulated skill game in such turn.

15. A method of playing a simulated skill game having two competing players, comprising the steps of



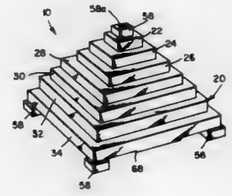
(a) providing a game apparatus including a first game portion having means for denoting the plays and progress of play in the simulated skill game, a second game portion including a game board portion, first and second sets of playing pieces, and game motivator means, said game board portion including a plurality of designated positions thereon upon which said playing pieces may be positioned during play of the game, at least some of said designated positions having skill play indicia associated therewith denoting plays in the simulated skill game, said game motivator means being utilizable by the players to generate movement determinants,
(b) positioning said first and second sets of playing pieces upon starting positions on said game board portion, said first set of playing pieces being associated with a first one of said players and said second set of playing pieces being associated with the other of said players,
(c) effecting game play, wherein each player, in alternating turn,
(1) utilizes said game motivator means to generate a movement determinant,
(2) elects a play from among plays available to him in light of the positions of said playing pieces relative to said designated positions at the beginning of his turn and the movement determination generated, and positions his playing pieces on said game board portion of said second game portion in accordance with the elected play,
(3) receives the benefit of plays in the simulated skill game in accordance with the positions of said playing pieces at the conclusion of step (c)(2) relative to said designated positions and said skill play indicia associated therewith, and,
(4) in light of the status of the simulated skill game at the beginning of the turn and the simulated skill game play benefit received during such turn, utilizes said denoting means of said first game portion to denote the further plays and the progress of play in the simulated skill game.

4,657,255

PYRAMID SHAPED PUZZLE

Zoltan S. Seres, 118 N. Viceroy Ave., Azusa, Calif. 91702

Filed Dec. 12, 1985, Ser. No. 808,359
Int. Cl.⁴ A63B *67/14*
U.S. Cl. 273—113 **5 Claims**



1. A puzzle comprising:
a. a base having a square bottom, rigid upstanding side walls about its perimeter, a plurality of upstanding partitions forming at least one maze, and a home destination in each corner of said base;
b. a stop-flag and foot assembly inserted through each corner of said base and rotatable with respect thereto;
c. a plurality of stacked successively smaller maze-panels stacked together and to said base to form a pyramid, said maze-panels each having a square bottom, rigid upstanding side walls about their perimeter, a plurality of upstanding partitions forming at least one maze and at least one hole through each said maze-panel;
d. a flat panel having one hole therein attached to said uppermost maze panel;
e. a housing enclosing a ball release spindle having a plurality of vanes and rotatable with respect to the vertical axis of said puzzle attached to said flat panel; and
f. at least one game-piece which can be maneuvered through the mazes of said respective maze-panels and holes to reach a designated home destination.

4,657,256

SLOT MACHINE WITH WIN/LOSS BIASING MEANS

Kazuo Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

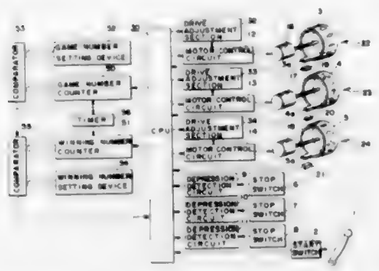
Continuation of Ser. No. 671,447, Nov. 14, 1984, abandoned. This application Apr. 25, 1986, Ser. No. 856,843
Claims priority, application Japan, Nov. 14, 1983, 58-212547
Int. Cl.⁴ A63F *7/00*
U.S. Cl. 273—143 R **4 Claims**

1. In a slot machine of the type in which the presence or absence of a win is determined for each game based upon the combination of symbols disposed on a winning line, the improvement comprising:
means for cumulatively storing the number of games played;
means for cumulatively storing the number of wins every time a game is played and a win occurs;
first comparison means for comparing said cumulatively stored number of games played to a pre-set number of games;
second comparison means, rendered operative by said first comparison means, for comparing said stored number of wins with a predetermined standard number of wins every

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time said first comparison means determines that the stored number of games equals said pre-set number of games; and

control means for altering the stopping positions of said symbols on said winning line in such a manner that when said comparison means detects that said stored number of wins is larger than said standard number of wins, said combination of symbols is biased away from a winning



combination, and when said comparison means detects that said stored number of wins is smaller than said standard number of wins, said combination of symbols is biased toward a winning combination;

reset means for resetting to zero said game number storing means and said win number storing means each time said second comparison means compares said cumulatively stored number of wins with said predetermined standard number of wins.

4,657,257

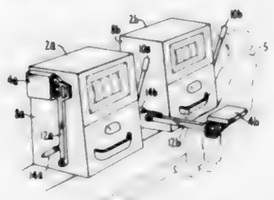
RETRACTABLE SEAT FOR GAMING DEVICES

Joseph G. Labeck, Uniouville, Pa., assignor to Laureate Innovations, Inc., E. Stroudsburg, Pa.

Filed Mar. 25, 1985, Ser. No. 715,646

Int. Cl.[4] A63B *71/00*; **A63F** *9/00*; **A47C** *1/02*; **A47G** *29/02*

U.S. Cl. 273—148 R **13 Claims**



1. A retractable seat which comprises:

(a) an elongate support arm whose longitudinal axis lies in a plane parallel to a side vertical standing surface and which is affixed at one end to said side vertical surface;

(b) means for selectively extending and retracting said support arm, generally in a direction along the longitudinal axis of said support arm;

(c) a seat; and

(d) means for pivotally joining said seat to a free end of said support arm such that said seat can be selectively positioned either parallel to said side vertical standing surface or perpendicular to said side vertical standing surface,

whereby, when the support arm is fully extended, the seat can be selectively offset from the support arm to position the seat perpendicular to a front vertical standing surface.

4,657,258

GOLFER'S STANCE POSITIONING DEVICE

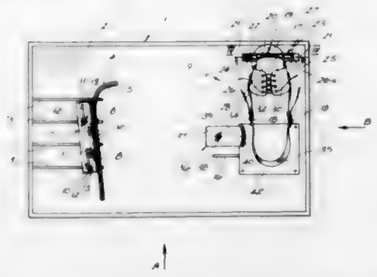
Martin Melov, 82 Hardie Street, Mascot N.S.W. 2020, and Francis C. Walsh, 37 Eyre Street, Chifley, N.S.W. 2036, both of Australia

Filed Oct. 29, 1985, Ser. No. 792,549

Claims priority, application Australia, Nov. 8, 1984, PG8023

Int. Cl.[4] A63B *69/36*

U.S. Cl. 273—187 R **3 Claims**



1. A golf driving aid, comprising a base board, front-foot locating means on said base board, a portion of said locating means being upstanding and concave to locate a forward side edge of a golfer's front shoe, back-foot support means on said base board, adjustment means on said base board operable to vary the spacing between said locating means and said support means in accordance with the spacing desired between the golfer's feet when driving, first pivotal connection means between said support and said base board and providing for rotation of said support means about an upright axis with respect to said base board, channel means on said support means, spaced sidewalls on said channel means formed with opposed upright forward and rearward slots respectively, a convex end-wall provided in the forward one of said slots and a concave end-wall provided in the rearward one of said slots, the vertical curvature of the convex end-wall being greater than the vertical curvature of said concave end-wall, second pivotal connection means provided by shaft means extending horizontally across said channel means, opposite shaft end-portions of said shaft means being located in said slots respectively and being rotatable therein and displaceable upwardly thereon to a position at which upward tilting of the forward end of the shaft means with respect to the rearward end of the shaft means disengages the shaft means from the slots and from the support means, and golfer's shoe retaining means fixedly connected to said shaft means.

4,657,259

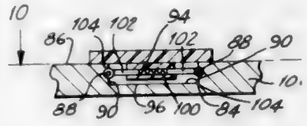
COON HUNTERS NIGHT HUNT GAME

Lynn R. Smith, 56727 Pulver Rd., Three Rivers, Mich. 49093, and George Spector, 233 Broadway RM 3815, New York, N.Y. 10007

Filed Sep. 26, 1985, Ser. No. 780,188

Int. Cl.[4] A63F *3/00*

U.S. Cl. 273—244 **2 Claims**



1. A coon hunters night hunt game that simulates an outdoor racoon hunt indoors which comprises:

(a) a game board having a plurality of space playing positions forming a plurality of paths around said game board,

each said space playing position bearing indicia instructions during play of said game;

(b) said game board having a continuous track within the top surface thereof to follow said plurality of paths around said game board and opposite positioned stop recesses on side walls of said track at each of said space playing positions;

(c) a plurality of playing pieces being in the shapes of hound dogs of different colors representing each player and of a size to fit within said space playing positions;

(d) each of said playing pieces having a base member with a built in stop mechanism to automatically stop said playing piece at said stop recesses within each of said space playing positions when said playing piece is pushed along said track, said stop mechanism having means whereby said mechanism is manually overcome by the player pushing said piece to a desired position;

(e) play money of different denominations for distribution of part thereof to each said player;

(f) a die showing how many space playing positions to move each of said playing pieces;

(g) a plurality of point cards having different points thereon to be chosen when each said player receives points during play of said game;

(h) a plurality of chance cards bearing additional indicia instructions to be chosen when said player lands on said space playing position indicating a chance;

(i) a plurality of chance positions from which a plurality of paths may be taken corresponding to a chosen chance card; and

(j) a plurality of dog ownership title cards having six different breeds of coon hunting dogs being male and female, one of said dog ownership title cards to be chosen by each player at the start of said game and added and traded when said player picks said chance card during play of said game, wherein the first player to accumulate 1,000 points and have ownership of three dogs wins.

4,657,260

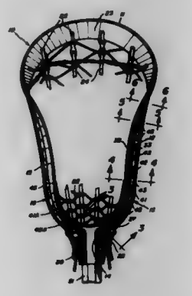
LACROSSE STICK HEAD FRAME

William H. Brine, Jr., Gypsy Ln., Weston, Mass. 02193

Filed Aug. 13, 1984, Ser. No. 639,717

Int. Cl.[4] A63B *59/02*

U.S. Cl. 273—326 **4 Claims**



1. A lacrosse stick head frame comprising:

elongated side walls extending outwarding from each other at a throat portion of a transverse top wall,

said side walls lying generally in a plane and formed of a resilient organic plastic material, having a predetermined stiffness,

means extending from said throat portion towards said transverse top wall for stiffening said side walls in said plane,

said means comprising a flange extending outwardly from the side walls and having holes therein for obtaining desired stiffness in said frame at a desired weight,

said flange having an outer enlarged wall enlarged in a direction substantially perpendicular to said flange providing stiffness to said side walls.

4,657,261

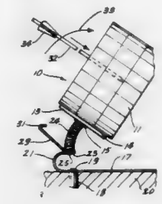
SPRING MOUNTED SILHOUETTE ARCHERY TARGET APPARATUS

Charles A. Saunders, 8380-36th Ave., Columbus, Nebr. 68601

Filed Jan. 6, 1986, Ser. No. 816,341

Int. Cl.[4] F41J *3/00*

U.S. Cl. 273—392 **5 Claims**



1. An archery target apparatus comprising:

target means for receivingly stopping and holding arrows;

a support member;

at least one helically shaped spring having a longitudinal axis normally disposed generally transversely with respect to the path of arrows entering said target means;

means for attaching one end of said spring to said support member;

means for operably attaching the other end of said spring to said target means whereby said spring will bias said target means to a first position and will permit said target means to move rearwardly to a second position when an arrow enters said target means, for absorbing the force of impact of the arrow on said target means; and

oscillation dampening means operably attached to said support member for reducing the oscillation of said target means after an arrow has impacted the target means, said oscillation dampening means comprises a stop member having one end operably attached to said support member and the other end being a free end operably contacting a front bottom portion of said target means, said stop member being a long and thin metal strap which will bend within its elastic range to absorb some of the shock of the target means when it moves forwardly from the second to the first position thereof.

4,657,262

SHUTTLECOCKS

Roy W. Buckland, 35, Pennycroft, Pixton Way, Forestdale, Croydon, CRO 9LL, England

Filed Mar. 21, 1985, Ser. No. 714,458

Claims priority, application United Kingdom, Mar. 22, 1984, 8407405; Apr. 10, 1984, 8409276

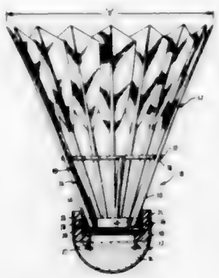
Int. Cl.[4] A63B *67/18*

U.S. Cl. 273—417 **11 Claims**

1. A badminton shuttlecock comprising a base, a plurality of flight feathers diverging upwardly from said base in an annular array, a connector element secured to said base and a bracing ring located intermediate the ends of the flight feathers above said base and with which each of the stems of the flight feathers cooperates, said connecting element and said bracing ring

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being joined together by a connecting structure, and said connecting element and said base being adjustably connected



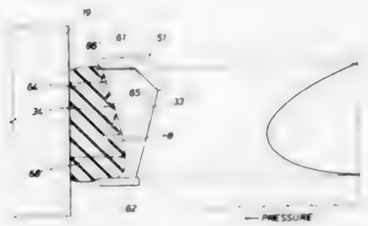
together by cooperating screw threads for causing an alteration in the speed of the shuttlecock.

4,657,263

ANNULAR PACKING UNIT AND INSERT

Joseph H. Hynes, and James A. Burton, both of Houston, Tex., assignors to Hydril Company, Los Angeles, Calif.

Continuation of Ser. No. 485,619, Apr. 18, 1983, abandoned.
This application Oct. 19, 1984, Ser. No. 670,132
Int. Cl.⁴ F16J *15/12;* **F21B** *33/06*
U.S. Cl. 277—31 **8 Claims**



1. An insert adapted for use in an annular blowout preventer packing unit having a longitudinal axis, the packer having an annular elastomeric body in which one or more of the inserts are embedded comprising,

top and bottom plates interconnected solely by a generally longitudinal web, the inner edge of the web sloping generally from a relatively smaller radius near the top plate to a relatively greater radius near the bottom plate.

4,657,264

FLUID SEAL ASSEMBLY WITH SEGMENTED SUB-ASSEMBLY

Wayne F. Webber, Horseheads, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 1, 1985, Ser. No. 793,918
Int. Cl.⁴ F16J *15/38*
U.S. Cl. 277—118 **13 Claims**

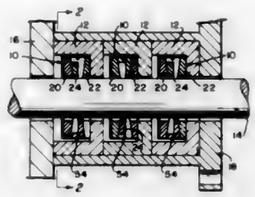
1. A fluid seal assembly, comprising:

a pair of annular, load rings; and

a seal ring subassembly interpositioned between said load rings; wherein

said seal ring subassembly, and said load rings, have mutually-engaging surfaces which cooperate to restrain said seal ring subassembly against undue radial displacement;

said seal ring subassembly comprises two pluralities of segments; and



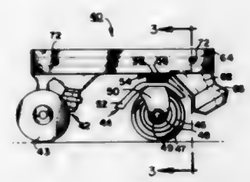
each segment of said pluralities thereof subtends an arc of approximately one hundred degrees of arc.

4,657,265

CONVERTIBLE SKATE

Paul M. Ruth, 5011 Pine Lake Village Apartments, Lindenwold, N.J. 08021

Filed Dec. 13, 1985, Ser. No. 808,927
Int. Cl.⁴ A63C *17/18*
U.S. Cl. 280—7.13 **12 Claims**



1. A convertible skate comprising a shoe assembly including a shoe and a skate assembly removably attachable to the shoe assembly, the shoe assembly including support member attachment means comprising a sole plate attached to the bottom of the shoe, the sole plate having a flat upper surface extending substantially the width of the shoe, a beam extending downwardly from the sole plate, the beam having an outwardly laterally extending pair of flanges spaced from the sole plate, the skate assembly including a support member which bears means for engaging a surface, the skate assembly having means to releaseably secure the support member to the support member attachment means, the skate assembly support member comprising a support element having at least two channels formed by inwardly laterally extending flanges adapted to extend substantially the length of the shoe between the sole plate and the outwardly laterally extending flanges of the beam, the skate assembly further comprising front and rear roller skating truck assemblies mounted thereunder, the rear truck assembly bearing a pair of wheels and being mounted to the support member by mounting means permitting steering of the rear truck assembly by tilting of the sole plate, the front truck assembly bearing a single roller ball and being affixed to the support member and pivotable about a vertical axis.

4,657,266

PERSONAL SLED

Reinhard Böhme, 203 W. 17th St., Olympia, Wash. 98501

Filed Jun. 27, 1985, Ser. No. 749,455
Int. Cl.⁴ B62B *15/00*
U.S. Cl. 280—18 **7 Claims**

1. A sled for use by an individual for sliding on snow or ice, said sled comprising a one piece jacket, fabricated from a material with a low coefficient of friction relative to snow and ice, and having a lower generally rectangular front portion and an extended generally rectangular back portion, and being

adapted to fit around the torso of a sledder, said jacket being open at its upper end so as to permit a sledder to be able to draw said jacket up on his or her torso, and including a crotch portion at its lower end defining a pair of leg holes for accommodating the legs of a sledder, and a pair of arm holes at opposite sides of the jacket's upper end accommodating the arms of a sledder and shoulder straps attached before the upper end of said extended back and extending to the upper edge of



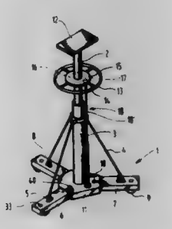
said lower front portion for retaining the jacket on the sledder, said back portion extending above said shoulder straps and constituting a headrest for said sledder, whereby when the sledder is attired in such a jacket, with the sledder in rear-end first position with the sledder's legs in a raised position off the ground and with the sledder's head resting against the extended back portion, a rapid and easy slide down the snow-covered hills is obtained.

4,657,267

MOTION PICTURE OR TELEVISION CAMERA STAND

Leonhard Jaumann, München, and Helmut Kus, Ottobrunn, both of Fed. Rep. of Germany, assignors to Sachtler GmbH Filmtechnische Geraete, Garching, Fed. Rep. of Germany

Filed Sep. 18, 1985, Ser. No. 777,168
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1984, 3434386
Int. Cl.⁴ G03B *17/00*
U.S. Cl. 280—47.11 **11 Claims**



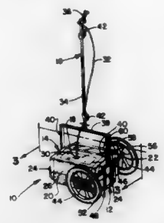
1. A camera stand comprising a running support having: a central body with three arms which are provided each with a set of one or more wheels on their free ends, the running wheels being steerable through a central steering system comprising a stand having a central column, a steering wheel disposed around the central column of the stand and fastened thereon, an upper central sprocketwheel mounted on the central column, a steering shaft rotatably mounted on the central body and extending parallel to the latter and having a pinion on the upper end cooperating with the upper central sprocketwheel and having a lower pinion on the bottom end, a lower central sprocketwheel on the central body of the support cooperating with the lower pinion on the steering shaft, a sprocketwheel on each of the shafts bearing the running wheel sets, and one sprocketwheel drive from the lower central sprocketwheel to the sprocketwheel on the shafts bearing the running wheel sets, the stand from the support and two of the arms of the support being foldable against the third arm.

4,657,268

IMPLEMENT TRANSFER CARRIAGE

Norman E. Colson, 7240 Lavalle Dr., Centerville, Minn. 55038

Filed Jul. 15, 1985, Ser. No. 754,593
Int. Cl.⁴ B62B *1/04*
U.S. Cl. 280—47.27 **10 Claims**



1. Carriage apparatus for transferring, from one location to another, an implement having a chassis, a maneuvering handle having at least one arm mounted to one of opposite lateral sides of the chassis for pivoting forwardly and rearwardly with respect to an intended direction of movement of the chassis, and ground engaging transport means carried by the chassis at the one of the lateral sides thereof to which the at least one arm is mounted, comprising:

(a) track means including a pair of spaced plates for receiving and retaining the chassis ground engaging transport means therebetween;

(b) a support member extending upwardly from said track means adjacent the arm of the implement, when the ground engaging transport means are received within said track means;

(c) holding means carried by said support member, detachably securable to the implement handle arm, for holding the arm, when secured thereto, against pivoting; and

(d) wheel means carried by said support member for mounting said track means, said support member, and said holding means for movement over a surface;

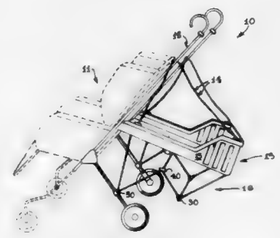
(e) wherein the implement handle is employed, when said holding means is secured to the handle arm, to tilt the implement to be fully supported by said wheel means and to propel the implement over a surface by utilizing said wheel means.

4,657,269

TANDEM INFANT CARRIER

Pamela Elvin, 1828 Greenplace Terr., Rockville, Md. 20850

Filed Dec. 20, 1985, Ser. No. 811,232
Int. Cl.⁴ B62B *9/12*
U.S. Cl. 280—47.38 **5 Claims**



5. A tandem infant carrier apparatus comprising the combination of:

a wheeled stroller unit having a pair of rearwardly extending rigid handles;

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an infant carrier unit having a pair of elongated flexible handles; wherein the flexible handles are looped over the said rigid handles on the wheeled stroller unit to dispose and support the infant carrier unit rearwardly of said wheeled stroller unit; and,

an articulated framework unit operatively connected to the bottom of the infant carrier unit and a portion of the wheeled stroller unit; wherein, the articulated framework unit comprises a framework member having inboard framework segments and outboard framework segments pivotally connected; wherein, the inboard framework segments are provided with clamp members that operatively connect said framework unit to said wheel stroller unit; and, wherein the outboard framework segments are pivotally secured to said infant carrier unit and provided with brake members that may be selectively engaged with the ground.

4,657,270

CONVERTIBLE TRICYCLE

David A. Allen, and Robert L. Diekman, both of Centerville, Ohio, assignors to Huffy Corporation, Dayton, Ohio

Filed Apr. 25, 1984, Ser. No. 603,877
Int. Cl.[4] B60K *5/02*
U.S. Cl. 280—7.1 **10 Claims**



1. A convertible tricycle comprising:

a main tube having a front segment including a head tube fixed at an oblique angle thereto, said head tube having first and second opposing openings, and a rear segment extending rearwardly from said front segment and positioned at an angle thereto;

front fork means pivotally and removably attached to said head tube at said first opening thereof and including front wheel means rotatably attached thereto;

handlebar means pivotally and removably attached to said head tube at said second opening thereof;

rear wheel means attached to said rear segment at a rearward end thereof and including a rear deck and a pair of rear wheels rotatably attached thereto;

a single removable seat adapted to be alternately mounted on opposite sides of said main tube;

a mounting bracket attachable to said main tube at a selected one of a plurality of locations therealong, said bracket being adapted to position said seat alternately on opposite sides of said main tube;

first means for attaching said bracket to said main tube at said plurality of locations therealong;

second means for attaching said seat to said mounting bracket;

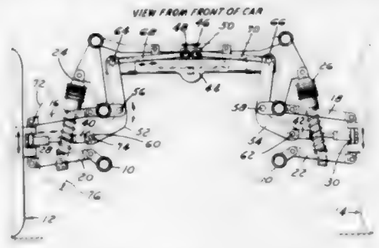
said main tube including means for engaging said first means for mounting said seat on one side of said main tube at one of said locations on said front segment such that said main tube and said tricycle assume a high position, and means for receiving said first means for mounting said seat on an opposite side of said main tube at one of said locations on said rear segment for converting said tricycle to a low slung position, wherein said main tube is inverted relative to said front fork means and said handlebar means, said front fork means is attached to said head tube at said second opening and said handlebar means is attached to said head tube at said first opening thereof.

4,657,271

VEHICLE STEERING SYSTEM

Michael E. Salmon, 2622 Makin, Flint, Mich. 48504

Filed Jun. 26, 1985, Ser. No. 749,001
Int. Cl.[4] B62D *9/02*
U.S. Cl. 280—95 R **14 Claims**



1. In a vehicle having a steering gear mechanism with an occupant controlled output, and a pair of steerable wheel assemblies each rotatable about a steering axis and each having a steering input point radially spaced from said steering axis, the wheel assemblies being suspended from the vehicle chassis by control arm means allowing movement in jounce and rebound relative to the vehicle chassis causing the steering input point to move along a generally arcuate path defining a center of curvature and a bounce radius; a steering linkage comprising, in combination:

a pair of levers each having a fulcrum axis extending therethrough and a first and second pivot point spaced radially therefrom on generally opposite sides of the fulcrum axis from one another;

means pivotally connecting the levers at their fulcrum axes to the chassis adjacent each wheel assembly so as to allow the wheel to move and jounce in rebound without moving the fulcrum axis location;

link means connecting the output of the steering gear mechanism to the first pivot point of each lever, said link means comprising at least one link pivotably connected to the output of the steering gear mechanism at one end and extending generally transversely therefrom to pivotably connect with said lever first pivot point, said link and said lever arranged in a generally perpendicular manner so that link motion will be confined within a small tubular-shaped envelope; and

a pair of tie rods each pivotably connecting the steering input point of a respective wheel assembly to a corresponding lever second pivot point, said second pivot point being located in the proximity of the center of curvature of the arcuate path of the wheel assembly steering input point and said tie rod being substantially the length of the bounce radius so as to minimize bump steer.

4,657,272

WHEELED VEHICLE

James M. Davenport, 28212 Bluebell Dr., Laguna Niguel, Calif. 92677

Filed Sep. 11, 1985, Ser. No. 774,993
Int. Cl.[4] B62K *5/04*
U.S. Cl. 280—266 **25 Claims**

1. A wheeled vehicle comprising:

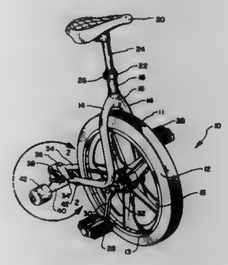
a drive wheel having a drive axle;

a first frame member attached to the drive wheel for supporting a rider, said first frame member extending generally upwardly from the drive axle such that the center of gravity of the rider is substantially positioned over the drive axle;

drive means for causing the drive wheel to rotate;

at least two support wheels;

a second frame member for fixedly positioning the support wheels in relation to the drive wheel such that the support



wheels are positioned rearward of the drive wheel, said second frame member extending generally rearwardly and outwardly from the drive axle and attached to the support wheels; and

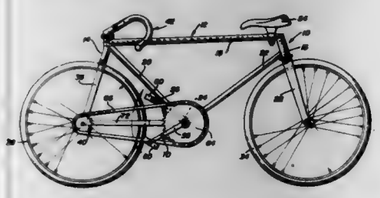
means for allowing sufficient vertical and horizontal rotation of the support wheels to allow the support wheels to pronate as the wheeled vehicle turns such that the support wheels track rearward of the drive wheel.

4,657,273

TWO-WHEELED CYCLE

Frank W. Slater, Durant, Okla., assignor to Southeastern Research and Development, Inc., Durant, Okla.

Filed Jan. 8, 1986, Ser. No. 817,120
Int. Cl.[4] B62K *21/10, 21/18*
U.S. Cl. 280—271 **4 Claims**



1. A bicycle including a longitudinal frame having upper front and rear frame portions, a depending front support stationarily mounted from said upper front frame portion and having a front driving support wheel journaled from the lower portion of said support, a depending rear support oscillatably supported from said upper rear frame portion for rotation about an upright rearwardly and downwardly inclined axis and having a support wheel journaled from the lower end of said rear support, a forwardly facing seat mounted from said upper rear frame portion, a steering control oscillatably supported from said upper front frame portion for angular displacement relative to said frame about an upstanding axis, said frame including an elongated tubular connected member extending between and interconnecting said upper front and rear frame portions, said steering control and rear support including lever arm means carried thereby for oscillation therewith, elongated connecting rod means pivotally anchored at its opposite ends to and extending between said lever arm means establishing a steering connection between said steering control and rear support for controlled oscillation of said rear support responsive to controlled oscillation of said steering control, said connecting rod means extending longitudinally through said connecting member, the longitudinal mid-portion of said connecting member including a stationary partition therein which includes an opening extending therethrough through which said connecting rod means is slidingly received, a pair of abutments stationary mounted on said connecting rod means in positions spaced on opposite sides of and opposing opposite sides of said partition, and coiled compression spring means disposed about said connecting rod means on opposite sides of said partition and between the latter and said abutments such that said spring means yieldingly biases said connecting rod means to a center position of longitudinal reciprocation in which said steering control and depending rear portion are disposed in centered positions.

4,657,274

RETRACTABLE KING PIN VEHICLE

William B. Mann, and Dennis A. Domingos, both of P.O. Box 544, Solvang, Calif. 93464

Filed Sep. 16, 1985, Ser. No. 776,524
Int. Cl.[4] B62D *53/08*
U.S. Cl. 280—433 **8 Claims**



1. A truck having a flat bed with a work surface and with outer edges of the flat bed, in combination with a retractable king pin having a horizontal hole, comprising:

a. a housing secured to the flat bed below the flat bed surface and having a vertical bore and an intersecting horizontal bore, said king pin being vertically reciprocatable in the vertical housing bore for retraction below the surface of the flat bed when the truck is used for cargo and extension above the surface of the flat bed for use in hauling a trailer;

b. a horizontally reciprocatable bolt moveable into the housing horizontal bore and the king pin horizontal hole for locking the king pin to the housing and moveable out of engagement with the king pin hole for retraction of the king pin;

c. a first mechanical control extending from the bolt to an outer edge of the flat bed for reciprocating the bolt into and out of the hole in the king pin;

d. and a second mechanical control extending from the king pin to an outer edge of the flat bed for extending and retracting the pin.

4,657,275

SELF-ALIGNING TRAILER HITCH

Gordon L. Carroll, 2143 S. Minneapolis, Wichita, Kans. 67211

Filed Apr. 7, 1986, Ser. No. 849,215
Int. Cl.[4] B60D *1/06*
U.S. Cl. 280—477 **9 Claims**

1. A self-aligning hitch attached to the drawbar of a towing vehicle for lifting and aligning the trailer tongue to the ball of the hitch comprising:

a base member having a conventional upstanding ball thereon;

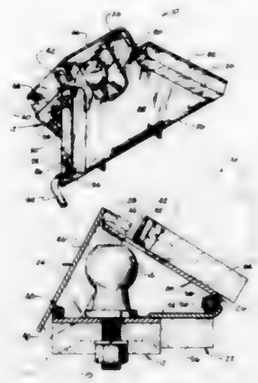
an extension member removably overlaying the base member and having an offset end;

a ramp member with forward and rearward edges positioned over the extension member and pivotally attached to the offset end of the extension member, the ramp member

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having a pair of converging sidewalls defining an adjustable width end opening therebetween, the rearward edge of the ramp member including a slot for passage of the ball;

support leg means pivotally supported on the base member including a catch supporting the rearward edge of the



ramp member in a canted position above the ball member whereby engagement of the support leg means with the trailer tongue and rotation of the support leg means releases the ramp member, allowing it to drop to a horizontal position under the weight of the tongue as the tongue socket engages the ball.

4,657,276

TRAILER HITCH

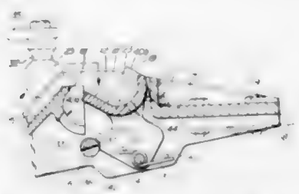
Arthur J. Hamerl, 15, 6440-4th Street, NW., Calgary, Alberta, Canada T2K 1B8

Filed Aug. 16, 1985, Ser. No. 766,434

Claims priority, application Canada, Apr. 19, 1985, 479544

Int. Cl.⁴ B60D *1/06*

U.S. Cl. 280—512 **4 Claims**



1. A trailer coupling of the type comprising means for receiving, and locking in place, a ball secured to one of a trailer tongue and a drawbar of a tractor vehicle or the like, the trailer coupling comprising:

a coupling body having a first body portion for attachment to the tractor drawbar or the trailer tongue, and a second body portion for receiving and locking the ball in position;

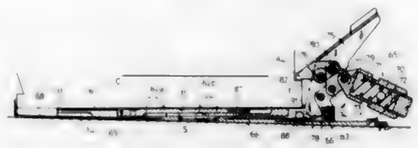
the second body portion including a ramp up which the ball may be guided, and a socket, for receiving the ball, adjacent the ramp,

the socket comprising a first socket portion integral with the body, and a movable element, swingable about a horizontal pivot, disposed within the body opposite the first socket portion,

the movable element being swingable between a locking position in which, together with the first socket portion, the ball may be locked in position, and a release position in which the ball may be released from the socket;

a second ramp formed integrally with the movable element and engageable by said ball for, when the movable element is in its release position, causing the ball to ride up said second ramp out of the socket;

and rotatable locking means within the body for selectively releasably locking the movable element in either of the locking and release position.



4,657,277

SAFETY BINDING OF A BOOT ON A SKI

Gaston Haldemann, Fürigen, and Francois Wirz, Saviese, both of Switzerland, assignors to Haldemann A.G., Stans, Switzerland

Filed Oct. 29, 1984, Ser. No. 666,221

Claims priority, application Switzerland, Nov. 1, 1983, 5903/83

Int. Cl.⁴ A63C *9/08*

U.S. Cl. 280—616 **4 Claims**

1. Safety binding of a boot on a ski comprising two lateral jaws mounted displaceably under the action of elastic means between a closed service position in which these jaws coact with the sole of the boot and an open position, means interacting with the heel of a ski boot, said interacting means having a sole grip member mounted displaceably under the action of the same elastic means between a service position in which said member maintains the rear end of the sole of the boot on the ski and an open position, the whole being so arranged that the opening or the closing of the lateral jaws effects the opening or the closing, respectively, of the sole grip member, and vice versa, each lateral jaw being carried by an arm mounted pivotally on an axle perpendicular to the plane of the ski and being connected to levers pivoted at one end of a longitudinally slidable strap, the other end of the strap coacting with a rocker provided by the interacting means and which is subjected to the action of the elastic means, whereby this rocker has two stable positions corresponding to the service and open positions respectively of the binding, the sole grip member of the interacting means being secured to a lever pivotally mounted on a transverse axle and parallel to the plane of the ski and being subjected to the action of the elastic means to exert only a downward force on the sole of the boot, the elastic member comprising a spring housing formed in two respectively forward and rear parts sliding one within the other and containing a compression spring, the rear part of this spring housing being pivotally mounted on a fixed transverse axle and the forward part of said housing being articulated on a first fixed corner of a triangular lever, a cranked member serving as said rocker pivotally mounted by its cranked portion on a fixed transverse axle and connected by one of its ends with said strap of the lateral jaws and articulated by its other end to a second corner of said triangular lever, said triangular lever being articulated by its third corner on a actuating lever, this lever being pivotally mounted on a fixed transverse axle.

4,657,278

STEP-IN ELECTRONIC SAFETY SKI BINDING

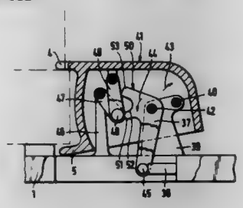
Gerd Klubitschko, Daisenbergstrasse 12, 8106 Oberau, Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,161

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1981, 3146318

Int. Cl.⁴ A63C *9/00*

U.S. Cl. 280—612 **2 Claims**



1. An electronic safety ski binding for releasably latching a ski boot, said binding comprising:

a sole plate;

a release actuator movable between a cocked position and an actuating position, said actuator responsive to an electrical release signal;

a housing movable between latching and releasing positions, said housing including protrusions for receiving and engaging the sole of a ski boot, one of said protrusions engageable by a boot for moving said housing means from the releasing to the latching position;

a linkage for connecting said sole plate and said housing wherein said linkage comprises a first linkage arm connected to said sole plate, a second linkage arm connected to said housing and an axle interconnecting said first and second linkage arms, and

a latching lever, pivotally connected to said sole plate, including a recess, a nose portion, and an actuator engaging portion, said recess for receiving and engaging said axle during movement of said housing from the releasing position to the latching position, said engagement effecting rotation of said lever wherein said actuator engaging portion moves said release actuator to the cocked position;

said release actuator releasably retaining said lever in a cocked condition wherein said nose portion bears on said axle to hold said housing in the latching conditionand rotating said lever to release said nose from engagement with said axle and allow said housing to move to the releasing condition in response to movement of said release actuator to the actuating position upon receiving said electrical signal.

4,657,279

ANTI-FRICTION DEVICE FOR SKI BINDING

Roger Pascal, Annecy-Le-Vieux, and Denis Girault, Annecy, both of France, assignors to Salomon S.A., Annecy, France

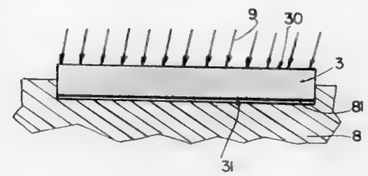
Continuation of Ser. No. 538,897, Oct. 4, 1983, abandoned. This application Jan. 6, 1986, Ser. No. 816,377

Claims priority, application France, Oct. 4, 1982, 82 17014

Int. Cl.⁴ A63C *9/00*

U.S. Cl. 280—636 **10 Claims**

1. In a polytetrafluorethylene ski binding anti-friction plate of the type pretreated to provide an adhesive receptive surface, the improvement comprising a pigment or filler incorporated into said plate forming a colored plate which pigment or filler serves to reduce the ultra-violet absorption reaching the



treated surface whereby damage causing disfunction or delamination of this surface is prevented.

4,657,280

SYSTEM FOR CONTROLLING THE DAMPING RATE OF A VEHICLE SUSPENSION

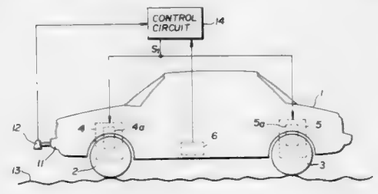
Taiji Ohmori, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1984, Ser. No. 665,592

Claims priority, application Japan, Oct. 27, 1983, 58-201436

Int. Cl.⁴ B60G *21/00*

U.S. Cl. 280—707 **4 Claims**



1. A system for controlling the adjustable damping rate in a suspension on a vehicle dependent on a road condition, comprising:

(a) a first single detector disposed in the vicinity of the center of the vehicle for detecting a vertical vibration acceleration of the vehicle and emitting a signal corresponding to said vibration accelaration; and

(b) control means for controlling the suspension in response to the signal from said first single detector.

4,657,281

DEVICE FOR ADJUSTING A STEERING COLUMN OF A MOTOR VEHICLE PROVIDED WITH TOGGLE LOCKING MEANS

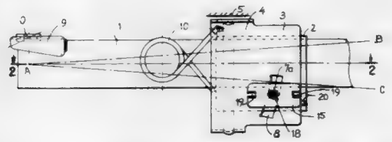
Bernard Haldric; Grégorio Bénédi, and Daniel Pretot, all of Vendome, France, assignors to NACAM, Vendome, France

Filed Mar. 25, 1986, Ser. No. 843,585

Claims priority, application France, Mar. 25, 1985, 85 04426

Int. Cl.⁴ B62D *1/18*

U.S. Cl. 280—775 **10 Claims**



1. A device for adjusting the position of a steering column relative to a body of a motor vehicle, said device comprising a tube for supporting the column, a housing of substantially

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rectangular shape connected to the tube, a bracket for mounting on the body of the vehicle in a fixed position and having two spaced-apart wings, an articulation fixed relative to the body of the vehicle and connected to the tube for pivotally mounting the tube relative to said body between the wings of the bracket toggle locking means comprising openings in the wings of the bracket, a rod extending through the housing and engaged in the openings in the wings of the bracket, the rod having at a first end thereof abutment means cooperative with a first of the wings of the bracket and at a second end opposed to the first end of the rod a head, and a toggle system including an actuating lever and at least one element interposed between a second of said wings and the head of the rod.

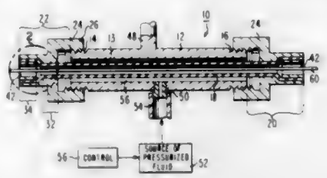
4,657,282
SKI POLE HAND SHIELD
Jean Koch, 1635 Tillemont Street, Ville Brossard, Canada J4W 2H9
Filed Nov. 5, 1985, Ser. No. 795,401
Int. Cl.[4] A63C *11/22*
U.S. Cl. 280—821 **4 Claims**



1. A ski pole hand-shield for removable attachment to a ski pole and to a ski pole hand-grip of the type having a blind bore removably receiving the top end of said ski pole, said shield including a shell made of semi-rigid material and of a shape and size to cover and be spaced from the top, the front sides and the bottom of the gloved hand of a skier when clenched on said hand-grip, said shell having an inside surface covered by a coating which is metallised and reflective, a front part, a top part, a bottom part and side parts which form a hand access opening at the rear of said shell, said bottom part having a rearwardly-downwardly-slanted surface provided with a hole to slidably receive the ski pole below the hand-grip, said top part being forwardly and downwardly inclined and overlying the top end of said hand-grip, a spacer member interposed between said top end and said top part and formed by the bottom wall of a central, narrow depression integrally formed in said top part and running from front to back of said shell and fastening means to removably fix said top part and spacer member to said top end.

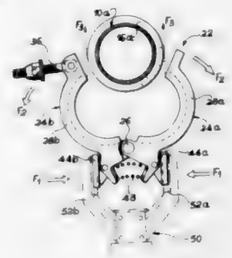
4,657,283
CLAMP DEVICE
Allan E. White, Hightstown, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Apr. 18, 1986, Ser. No. 853,429
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—18 **7 Claims**

1. A clamp device comprising:
an outer tubular member having a bore lying on a longitudinal axis and first and second oppositely disposed ends;
an inner tubular member within the bore of and pliable relative to the outer member, the inner member having portions adjacent the ends of said outer tubular member at first and second regions;
said outer tubular member having an inner bore and a pair of outer circular cylindrical bores aligned on said axis, one outer bore at each end of the outer tubular member at said first and second regions, the inner bore having a smaller diameter than the outer bores and positioned next to and between the outer bores, the transition region between said outer and inner bores being inclined relative to said axis to form a frustro-conical surface of a given extent parallel to said axis, each of said outer bores extending parallel to said axis a distance substantially greater than said given extent; said given extent having a magnitude just sufficiently great to provide said frustro-conical surface;
a pair of clamping rings, a different one in each of said outer bores, each ring having a circular cylindrical portion extending along said axis and dimensioned to closely fit



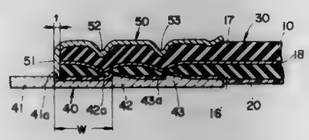
within the bore of the inner tubular member at a corresponding one of said outer bores, an end of each of said rings having a frustro-conical surface corresponding to and adapted to face a different transition region to compressively clamp that inner tubular member substantially in that transition region in response to a tensile force induced in the inner member; and
inlet means coupled to the outer member adapted to couple a source of pressurized fluid to the chamber defined by said inner and outer tubular members between said clamped end regions to induce said tensile force in said inner member.

4,657,284
REMOTELY MANIPULATABLE CLAMP
Robert Fiori, Comnaux, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Mar. 5, 1986, Ser. No. 836,332
Claims priority, application France, Mar. 8, 1985, 85 03430
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—39 **6 Claims**



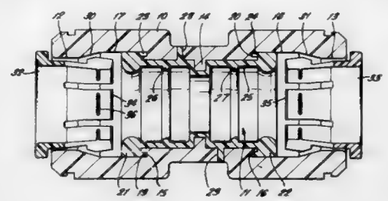
1. A clamp for coupling together two pipes having at respective ends conical nipples, said clamp having two half-clamps with a profile complimentary of that of the nipples and dismantlable tightening means for joining the half-clamps to effect the coupling of said nipples, wherein the clamp comprises two members articulated about and hingedly connected by a common pin lying along an axis parallel to said pipes, said members forming on one side of said pin the two half-clamps and on the other side two gripping levers which can be drawn towards one another by a gripping tool wherein said half-clamps spread apart, elastic biasing means acting on said members to draw said half-clamps toward each other to a half-clamp closing position in which said tightening means can be operated for joining the half clamps to effect coupling of the nipples, said clamp including an adaptor articulated on and connected to each of the gripping levers to receive a shoe portion of said gripping tool.

4,657,285
TUBULAR RUBBER PRODUCTS
Setsuo Akiyama, Higashimurayama; Yukio Fukuura, Kawagoe; Masato Yoshikawa, Tokyo; Takeyuki Matsuda; Hisanobu Monobe, both of Yokohama; Shigeki Ohkubo, Yokosuka, and Shiro Yoshida, Yokohama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Nov. 9, 1984, Ser. No. 669,845
Claims priority, application Japan, Nov. 22, 1983, 58-220095
Int. Cl.[4] F16L *33/00*
U.S. Cl. 285—256 **12 Claims**



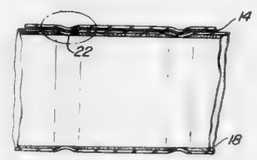
2. A process for producing a tubular rubber product, in which a polyamide resin layer is formed onto an inner circumferential surface, an outer circumferential surface or an intermediate layer of the main body of the tubular rubber product, which comprises:
treating a surface of a main body of the tubular rubber product with halogenoid compound selected from the group consisting of halogenated isocyanate, N-monohaloalkyl urethane, N,N-dihaloalkyl urethane, N,N-dihaloallysulfone amide, halogenated surfur sulfenil halide, halomethyl ether, thiocyanogen, iodized azid, brominated azide, chrloinated iodine, brominated iodine, trichloro acetic acid iodide, acetic acid bromide, nitric acid iodide, alkyl hypohalide, alkylthionyl chloride, alkylthionyl chloride, chlorinated nitrosyl, brominated nitrosyl, halogenated isocyanuric acid, and halogenated methyl hydantoin;
coating a solvent solution of a polymamide resin containing an organic solvent-soluble nylon on the surface of the treated tubular rubber product; and
evaporating the organic solvent to form a nylon layer.
10. The process defined in claim 2, wherein the tubular rubber product has attached at one end portion thereof a hose head, comprising:
a nipple;
a sleeve operatively associated with said nipple;
the outer diameter of the nipple at a first end portion being larger than the outer diameter thereof at a second end portion, at least one ring-like rounded ridge being formed at the outer circumference on the second end portion and each of the rounded ridges having a seizing surface opposing the larger diameter portion and extended in the direction perpendicular to the axial direction of the nipple;
the sleeve having a ring-like inward flange at the first end portion;
the distance between the end face at the larger diameter portion of the nipple and the seizing surface of the ridge is four times or more as large as the thickness of the inward flange; and
the nipple being inserted from the second end portion thereof having the ridge into the opening on one end of the flexible hose having the synthetic resin layer at its inner circumference surface, the sleeve being disposed so as to cover the outer circumference at one end portion of the hose so that the inward flange is situated between the larger diameter portion of the nipple and the ridge adjacent therewith and in contact with one end face of the hose, the sleeve being subjected to caulking at a portion between the ridge adjacent with the larger diameter portion of the nipple and one end of the hose, and the inner diameter of the inward flange of the sleeve being smaller than the outer diameter at the top of the ridge of the nipple after caulking.

4,657,286
TUBE COUPLINGS
John D. Guest, "Iona", Cannonhill Way, Bray, Maidenhead, Berkshire, United Kingdom
Filed Mar. 10, 1986, Ser. No. 838,232
Claims priority, application United Kingdom, Mar. 12, 1985, 8506317
Int. Cl.[4] F16L *21/06*
U.S. Cl. 285—323 **8 Claims**



1. A tube coupling comprising a hollow body having a throughway to receive a tube from at least one end of said throughway, a releasable tube gripping device mounted in the throughway adjacent said one end, a seal encircling the throughway to seal with the outer periphery of the tube disposed adjacent the tube gripping device and a liner extending along the throughway from the seal and arranged with the seal to prevent fluid from the tube having direct contact with the wall of the hollow body, the seal and liner being formed from inert material; wherein the improvement comprises providing an annular shoulder in the throughway spaced from said one end to provide a stop for engagement by an end of a tube inserted in the throughway, the liner extending along the throughway and over the annular shoulder to hold the liner in place in the throughway.

4,657,287
GROOVED CONNECTOR
Helmut E. Nimke, Tuxedo, N.Y., assignor to The Brooklyn Union Gas Company, Brooklyn, N.Y.
Continuation-in-part of Ser. No. 613,380, May 29, 1984, Pat. No. 4,549,752, which is a continuation-in-part of Ser. No. 292,455, Aug. 13, 1981, Pat. No. 4,465,309. This application Oct. 7, 1985, Ser. No. 785,133
Int. Cl.[4] F16L *21/06*
U.S. Cl. 285—373 **24 Claims**



1. A device for connecting together tubular members, comprising:
a resilient sheet member in the form of a coil having at least partially overlapping surfaces, the diameter of said sheet

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member coil being of a predetermined diameter to receive the tubular members to be joined;

said resilient sheet member coil being provided with a plurality of circumferential grooves in its circumference, said grooves of said sheet member coil forming beads on the opposite surface of said sheet member, said grooves at least partially mating in the area of said overlapping surfaces;

a heat sensitive adhesive bonding material applied to a surface of said sheet member coil, said heat sensitive adhesive bonding material being applied in a layer on the surface of said sheet member coil adapted to adhesively contact the tubular members except for peaks of the projecting surfaces of the beads and having a thickness substantially equal to the height of the beads in the sheet member coil as they project from the surface of said sheet member coil; and

said sheet member coil being forced to a first diameter against a resiliently directed force of said sheet member and held in said condition by said heat sensitive adhesive bonding material, the first diameter being of a predetermined diameter to receive the ends of said members to be joined, whereby said ends may be easily inserted into or over said coiled sheet member, said coiled sheet member being heatable whereby said heat sensitive adhesive bonding material holding said coil at said first diameter melts allowing said sheet member to change to a second diameter forming a tight bond between the surface of said sheet member bearing said adhesive and said members to be joined to form a strong bond upon cooling of said heat sensitive bonding material between said surface of said coil and said tubular members being joined with said resilient sheet member coil providing support.

4,657,288

CLAMPING RING FOR USE IN A PIPE JOINT

Erwin Hawle, Vöcklabruck, Austria, assignor to E. Hawle & Co., Vocklabruck, Austria

Filed Feb. 25, 1985, Ser. No. 704,711
Int. Cl.[4] F16L *25/00*
U.S. Cl. 285—420 3 Claims



1. A clamping ring for use in a pipe joint, comprising:

an annular body having an annular inner surface engageable with an outer surface of a pipe; and

a surface array of contiguous indentations in said inner surface for gripping said outer surface of said pipe, said indentations being generally elongated and defined by arcuate ridges, said indentations and ridges extending generally peripherally of said inner surface with adjacent ridges and indentations in a peripheral direction of said body overlapping one another and adjacent indentations in a direction transverse to said peripheral direction being peripherally offset from one another, each of said indentations having a length which is only a fraction of the peripheral extent of said inner surface whereby a multiplicity of said indentations lie in end-to-end relationship around the periphery of said inner surface.

4,657,289

ORBITAL ELECTRICAL POWER AND SIGNAL GENERATOR MOUNTABLE ON A ROTATABLE BODY

Robert E. Boyer, 2650 Davisson St., River Grove, Ill. 60171

Filed Aug. 19, 1985, Ser. No. 767,136
The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.
Int. Cl.[4] H02P *9/04*; H02K *7/10*
U.S. Cl. 290—1 R 30 Claims



1. An electrical energy generator means mounted within a housing, said housing mounted to a rotatable body such as a vehicle wheel, rotatable therewith comprising, in combination:

said housing being ring-shaped and having an outer circular wall, front and rear walls, and an interior wall forming a passageway for surrounding an axial member;

a bearing means having inner and outer races with said inner race fixedly mounted to said interior wall of said housing, and said outer race fixedly attached to;

an armature shaft for said generator;

a friction driven wheel fixedly attached to said armature shaft;

said generator means suspended as a pendulum for maintaining a substantially non-rotating condition while said housing and said vehicle wheel rotate;

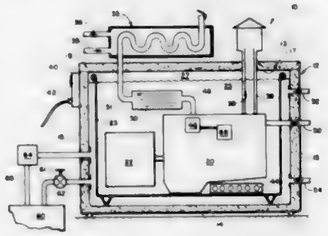
a drive ring fixedly attached to a wall of said housing and in operative communication with said friction driven wheel to thereby cause said armature shaft to rotate during rotation of said wheel and housing and develop an electrical potential.

4,657,290

CO-GENERATION PLANT MODULE SYSTEM

Craig L. Linden, 1335 Midway Dr., Alpine, Calif. 92001

Filed Oct. 3, 1984, Ser. No. 657,205
Int. Cl.[4] F02G *5/02*
U.S. Cl. 290—2 6 Claims



1. A co-generation plan module system comprising:

a housing having an internal chamber formed by a top wall, a bottom wall and side walls;

an engine positioned within said chamber and characterized in operation by the generation of heat;

means for circulating cooling fluid through said engine for collection of said heat and for circulating said cooling fluid to the exterior of said housing for extraction of said heat;

means for supplying air from outside said housing to said engine;

means for supplying fuel from outside said housing to said engine;

an electricity generator mounted in said housing and being connected to said engine;

means venting exhaust gas from said engine to the outside of said housing;

means for carrying electricity generated by said generator to the outside of said housing; and

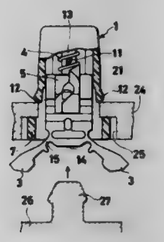
heat insulating means completely filling the remaining space in said chamber whereby said heat insulating means comprises a quiescent thermal barrier tending to cause said heat to pass into said cooling fluid rather than into said heat insulating means.

4,657,291

LOCKING DEVICE

Mutsuo Kurosaki, Yawata, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Apr. 18, 1986, Ser. No. 853,845
Claims priority, application Japan, Apr. 24, 1985, 60-60273[U]
Int. Cl.[4] E05C *13/02*
U.S. Cl. 292—6 5 Claims



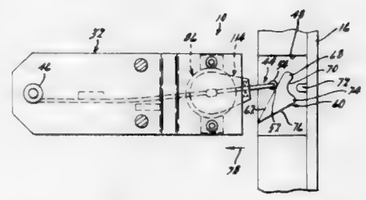
1. A locking device, which is locked when a spike is pushed once and is released from the lock when the spike is pushed once again, comprising: a case open at one end and having a wall provided with a spring portion having an end projection; a lock member slidably accommodated in said case for movement away from and toward said open end and having a pair of locking pawls; a spring for urging said lock member toward said open end of said case at all times; and a cam member provided between said lock member and an end wall of said case and having a lateral ridge formed on one surface and received in a lateral groove of the lock member, said cam member being provided on the other surface with a uni-directional looped path, said projection of said case being slidably engaged in said path; wherein when said spike is pushed once said lock member is retracted into said case against the biasing force of said spring so that said spike is hooked between said locking pawls while said projection of said spring portion is moved along said uni-directional looped path into engagement in an intermediate engagement section of said path to bring about a locked state, and when said spike is pushed once again the engagement of said projection is released to cause said lock member to proceed toward said open end of said case to recover the initial state while releasing said spike from said locking pawls, thereby releasing the locked state; said uni-directional looped path provided on said other surface of said cam member surrounding a substantially heart-shaped raised portion provided substantially in a central portion of said other surface and including a first upwardly inclined bottom section extending from a rear edge of said cam member to one side of said raised portion, a first stepped section extending from said first upwardly inclined bottom section, said engagement section extending from said first stepped section, a second upwardly inclined bottom section extending from said engagement section and having a small length, a second stepped section extending from said second upwardly inclined bottom section, and a third upwardly inclined bottom section extending from said second stepped section along the opposite side of said raised portion up to said rear edge, and also said cam member has a position recovery guide projection provided on the outer side of the end of said third upwardly inclined bottom section for returning said cam member to a central position.

4,657,292

LATCHING MECHANISM FOR A PIVOTALLY MOUNTED DOOR

Gary A. Bruck, Fraser, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Sep. 27, 1985, Ser. No. 780,865
Int. Cl.[4] E05C *19/02*
U.S. Cl. 292—80 4 Claims



1. In combination with a door pivotally mounted on an interior compartment of a vehicle, a latching mechanism comprising spring means mounted between the door and the compartment for biasing the door to open, a latch spring arm mounted within the compartment, a striker cam plate mounted on the door, a latching element carried by the latch spring arm, the striker cam plate having a first cam surface positioned to contact the latching element upon pushing of the door to close against the action of the spring means and cause the latching element to cam thereon with resultant deflection of the latch spring arm permitting full closure of the door, the striker cam plate having a first cam lobe at the termination of the first cam surface, the latching element passing over the first cam lobe upon full closure of the door, the striker cam plate having a second cam lobe and a depression between the cam lobes, a detent mountable on the door in alignment with the depression, the detent blocking passage of the latching element after it passes over the first cam lobe with the door fully closed, the door being biased to a slightly open position by the spring means after pushing thereon ceases, the detent moving out of blocking position upon such slight opening of the door permitting the latching element to be moved into the depression between the cam lobes as a consequence of the biasing action of the deflected latch spring arm, the second cam lobe blocking passage of the latching element after it moves into the cam depression and with the door in a slightly open position to thereby latch the door in a closed position, the second cam lobe moving out of blocking position upon again pushing of the door to the fully closed position against the action of the spring means thereby permitting the latching element to pass over the second cam lobe as a consequence of the biasing action of the deflected latch spring arm to unlatch the door, and retardation means connected between the latch spring arm and the compartment, the retardation means being effective to slow down movement of the latch spring arm to delay passage of the latching element past the second cam lobe for a short time period after the door is pushed to the fully closed position.

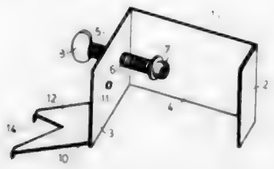
VOL 1077 ISS 2 APR 14 1987 UMI

4,657,293

DOOR JAMMER LOCK

L. James Bell, Willowdale, Canada, assignor to O. Ruben Pettersson, Toronto, Canada

Filed Mar. 29, 1985, Ser. No. 718,119
Int. Cl.⁴ E05C *17/54*
U.S. Cl. 292—258 **1 Claim**



1. A door jammer device for attachment to the outside edge of a door near the floor, for preventing opening from the outside of an inward opening door, comprising:
- a substantially U-shaped member having a shorter arm, a longer arm, and a base;
- screw means installed through a threaded hole through said longer arm towards said shorter arm, for attaching said member to said door by clamping said door between the screw means and said shorter arm; and
- a substantially L-shaped jamming member having a vertical arm and an arm which angles downwardly at an angle of approximately fifteen to twenty degrees to the horizontal;
- where said vertical arm is pivotally attached to said longer arm of the U-shaped member, for pivoting about a horizontal axis perpendicular to the plane of said door, and said horizontal arm of said jamming member angles downwardly away from said U-shaped member to engage the floor;

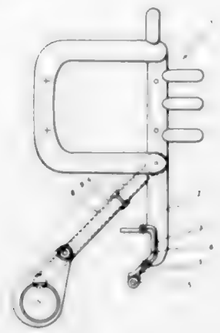
whereby said door may be locked by tightening said screw means to clamp the device to the outside edge of the door near the floor, such that the jamming member engages the floor.

4,657,294

FRONT GUARD BAR FOR MOTOR VEHICLES

Gerhard Rumpp, Schornstrasse 2, D-8084-Inning, Fed. Rep. of Germany

Filed Mar. 27, 1985, Ser. No. 716,451
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1984, 3411490
Int. Cl.⁴ B60R *19/04*
U.S. Cl. 293—115 **10 Claims**



1. A front guard bar for motor vehicles, in particular for cross-country vehicles, comprising a tube frame for protecting the front face of the vehicle, insert hinges (6, 7) connecting the tube frame for pivotal movement toward and away from the front face of said vehicle and means releasably connecting attachment members (8) on both sides of said vehicle via respective struts (4) connected to said tube frame, characterized in that each strut end facing said attachment member (8) includes a tube-shaped coupling member (9) having an axial threaded fastener (13) adapted to be axially screwed into said strut (4) for length adjusting purposes, said coupling member end facing the strut (4) being surrounded by a sleeve (14) mounted on said strut (4), and there is included means to releaseably connect said respective attachment member (8) to said coupling member via a rapid-release connection means (10).

4,657,295

COLLAPSIBLE GROCERY BAG CARRIER

Terry W. Holem, 1912 8th St., Winthrop Harbor, Ill. 60096

Filed Dec. 2, 1985, Ser. No. 803,737
Int. Cl.⁴ A47G *23/06*
U.S. Cl. 294—162 **6 Claims**



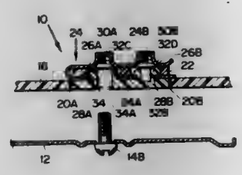
1. A collapsible article carrier comprising:
- an upright, substantially planar member defining a handle on an upper end thereof and a contacting surface on the edge of a lower end thereof, said edge separating opposite outwardly facing side surfaces;
- first and second rigid, substantially planar support members each defining a contacting surface on an edge thereof;
- hinge means for attaching said first and second support memers to said opposite side surfaces, respectively, of the lower end of said upright member and for permitting said support members to independently move between raised positions substantially parallel to said upright member and lowered positions substantially perpendicular to said upright member, said support members each connected to said upright member only by said hinge means when in said lowered position, the contacting surface defined by said first support member contacting the contacting surface defined by said second support member and the contacting surace of said upright member contacting both said first and second support members simultaneously whenever both support members are in said lowered position;
- fastening means for selectively fastening said support members in said raised position to said upright member;
- hook means, attached to said upright member at the upper end opposite said lower end thereof, for retaining a looped member; and
- retaining means, fixed to the upper end of the opposite side surfaces of said upright member, for retaining a thin sheet of material in proximity to and parallel with said upright member on said opposite outwardly facing side surfaces.

4,657,296

LICENSE PLATE MOUNTING DEVICE IN FRONT BUMPER

Shigetoshi Nishii, Sagamihara; Toshimitsu Matsuoka, Kawasaki; Toshio Tsuchida, Yokohama, and Atsushi Hosaka, Hatano, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jun. 23, 1986, Ser. No. 877,505
Claims priority, application Japan, Jun. 24, 1985, 60-137546
Int. Cl.⁴ B60R *13/10*
U.S. Cl. 296—1 C **9 Claims**



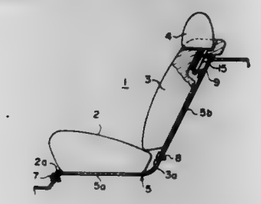
1. A front bumper for a motor vehicle, comprising:
- an elongated bumper main body;
- a recess provided to said bumper main body;
- a projection provided to said bumper main body to serve as a bottom end wall of said recess, said projection having a pair of holes spaced in the longitudinal direction of said bumper main body;
- a U-shaped leaf nut having first and second arms and mounted on said projection in such a manner that said projection is interposed between said first and second arms, said first arm having a pair of holes respectively aligned with said holes of said projection while said second arm having a pair of threaded holes respectively aligned with said holes of said projection; and
- a blank cap disposed in said recess and having a resiliently deformable clipping portion inserted into one of said holes of said projection through one of said holes of said first arm to be fixedly and releasably held by said first arm, said blank cap having a blind hole aligned with one of said threaded holes of said second arm and having a thin-walled closed end which is to be removed when a fastening bolt is screwed through said blind hole into said one threaded hole.

4,657,297

REAR SEAT APPARATUS FOR AUTOMOBILE

Sadao Ishibashi, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 23, 1986, Ser. No. 854,815
Claims priority, application Japan, Apr. 25, 1985, 60-89485; Apr. 26, 1985, 60-90629; Apr. 26, 1985, 60-62998[U]
Int. Cl.⁴ B60N *1/02*
U.S. Cl. 296—63 **12 Claims**



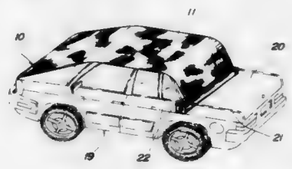
1. A rear seat apparatus for an automobile in which a rear seat constituted by a seat cushion, a seat back and a head rest is secured to a vehicle body, wherein the improvement comprises:
- (i) forming a forwardly projecting support section on said vehicle body at a position corresponding to an upper portion of said seat back,
- (ii) forming a recess section for receiving said support section on a rear surface of said seat back,
- (iii) constituting said head rest by a main body and stays extending downwardly of said main body, and
- (iv) inserting said stays into support holes formed through the upper portion of said seat back and through said support section, thereby securing said seat back to said vehicle body.

4,657,298

VEHICLE PROTECTIVE COVER DEVICE

Sung Yong O, 4707 Chevy Chase Dr. #208, Chevy Chase, Md. 20815

Filed Mar. 3, 1986, Ser. No. 835,740
Int. Cl.⁴ B60J *7/20*
U.S. Cl. 296—136 **10 Claims**



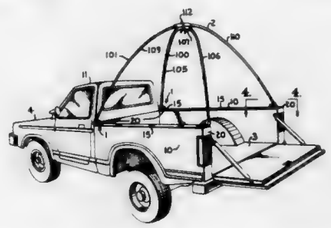
1. A vehicle protective cover device adapted to be mounted in the trunk of a vehicle which comprises,
- a container mounted in the trunk,
- a buffer member placed between the container and the front top portion of the trunk,
- a sheet material wound around a roller, said roller being rotatably disposed within said container, said sheet material having a free end which is provided with a rod member, and
- motor means operatively associated with said roller whereby after the sheet material has been extended from the roller to cover the vehicle, the motor can be actuated to retract the sheet material to be stored within its container.

4,657,299

PICKUP TRUCK TENT POLE ANCHOR, OPERATIONAL COMBINATION UTILIZING SAME, AND METHOD

Richard L. Mahan, Rte. 12, Box 74, Bentonville, Ark. 72712

Filed Feb. 27, 1986, Ser. No. 833,973
Int. Cl.⁴ E04H *15/06*
U.S. Cl. 296—159 **11 Claims**



1. A tent pole anchor for anchoring a selected tent pole to a pickup truck stake receiving pocket having opposite sidewalls; and tent pole anchor comprising:
- (a) an expandable plug member having a longitudinal bore extending therethrough;
- (i) said expandable plug member being selectively expand-

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able in directions transverse to said longitudinal bore, whenever said plug is substantially compressed by forces directed along a direction of extension of said bore;

(ii) said plug member being sized, when not substantially expanded, to be receivable within a selected stake receiving pocket in a pickup truck, with said longitudinal bore extending such that expansion of said plug member, when actuated, is generally toward the opposite sidewalls of the pocket;

(b) a bolt member having a head portion and a shaft portion;

(i) said bolt member being mounted on said plug member with said bolt member shaft portion extending through said plug bore;

(ii) said shaft portion having first and second ends with said head portion being mounted on said shaft portion first end;

(c) a nut plate threadibly engageable with said shaft portion second end;

(i) said plug member, as said bolt member is increasingly threaded into said nut plate, being compressed along said longitudinal bore, and generally expanding in directions transverse thereto;

(d) a slide member mounted in said anchor and engaging said bolt member substantially near said head portion; and

(e) a tent pole receiving socket member mounted on said slide member;

(i) said socket member being selectively engageable with a selected tent pole to support same;

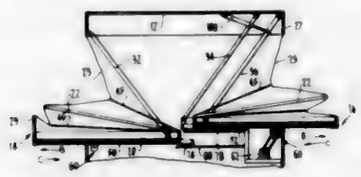
(f) whereby said anchor may be selectively secured to a pickup truck stake receiving pocket by selective actuation of said bolt member and said nut plate; and

(g) whereby a tent pole may be selectively secured to said anchor by insertion of portion of the tent pole into said tent pole-receiving socket member, orienting the tent pole in a preferred position of extension for use in supporting a tent.

4,657,300
CAMPER

Steven J. Penny, and Donald J. Fraser, both of 15 Villeroy Street, Hampton, Victoria, Australia

Filed Oct. 22, 1985, Ser. No. 790,047
Claims priority, application Austria, Oct. 23, 1984, PG7782
Int. Cl.⁴ B60P *3/32*
U.S. Cl. 296—173 **9 Claims**

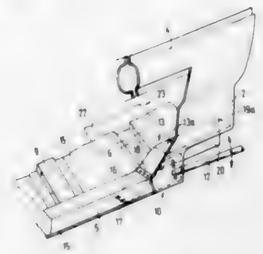


1. A camper, said camper having a roof and a base which define a living area therebetween, two laterally extendable sections between the roof and the base, coupling means for coupling said two laterally extending sections to the roof, said coupling means comprising a first pair of struts extending between an inner portion of one of the laterally extending sections and one end portion of said roof and second pair of struts extending between an inner portion of the other of said laterally extending sections and an opposite end portion of said roof, at least one of said second pair of struts having a further strut arranged in close proximity thereto and extending substantially parallel thereto, said further strut extending between the inner portion of the other of said laterally extending sections and the opposite end portion of the roof, and driving means for moving said two laterally extendable sections between an extended position outwardly of the living area and a retracted position beneath said roof in the living area, wherein upon movement of said laterally extending sections by the driving means the coupling means between the roof and the two laterally extendable sections cause said roof to move between its extended position and retracted position and said laterally extendable sections being overlapped with one another when in the retracted position beneath said roof and the special positioning of said first pair of struts, the second pair of struts and further strut being such that the first pair of struts, and the second pair of struts and further strut do not interfere in the retracted position of the extendable sections, and the first pair of struts, second pair of struts and further strut pivot in a generally vertical plane when the laterally extending sections move between the overlapped retracted position and the extended position.

4,657,301
VEHICLE BODY SUPPORT STRUCTURE

Georg Eger, Hochdorf, Fed. Rep. of Germany, assignor to Dr. Ing. H.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 17, 1985, Ser. No. 788,583
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1984, 3438012
Int. Cl.⁴ B62D *31/00*
U.S. Cl. 296—188 **16 Claims**



1. A reinforced support structure for supporting an end of a movable wheel guide member in a motor vehicle of the type having a cooling air opening through a vehicle wall panel in the area of a wheel housing, said structure comprising a reinforcing unit disposed adjacent the cooling air opening arranged in the area of the wheel housing for pivotally supporting an end of said movable wheel guide member, said reinforcing unit including support sections forming a U-profile shaped rigid receiving means for said end of the wheel guide member.

4,657,302
LOUNGE CONSTRUCTION

Bobbie L. Snyder, Grandview, Mo., assignor to Fixtures Manufacturing Corporation, Kansas City, Mo.

Filed Mar. 11, 1985, Ser. No. 710,589
Int. Cl.⁴ A47C *15/00*
U.S. Cl. 297—232 **9 Claims**

1. A furniture construction comprising:

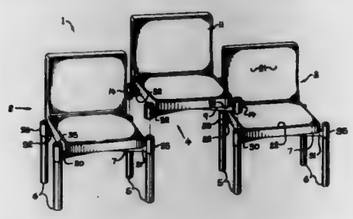
(a) a central frame and two laterally spaced furniture units, each of said furniture units having a frame with supporting outer and inner leg posts, said inner leg posts having an upper portion;

(b) said central frame comprising a support structure for supporting a furniture module and a plurality of terminal members attached to said support structure, said terminal members being spaced apart in a fixed pattern;

(c) said inner leg post upper portions forming a pattern corresponding to said terminal member pattern; and

(d) said terminal members being vertically disposed sockets coaxially receiving said upper portions upwardly there-

into for support of said central frame, thereby simultaneously linking said furniture units by said central frame

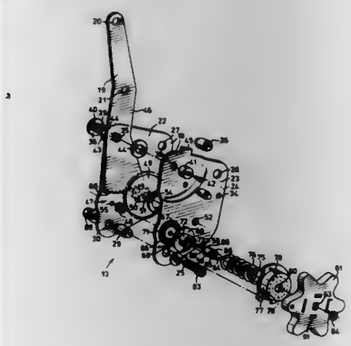


and providing vertical support for said central frame by said furniture units.

4,657,303
INCREMENTAL ADJUSTMENT DEVICE FOR SEAT ASSEMBLIES

George Croft, Mississauga, Canada, assignor to Canadian A.S.E. Limited, Downsview, Canada

Filed Nov. 4, 1985, Ser. No. 794,400
Int. Cl.⁴ B60N *1/02*
U.S. Cl. 297—362 **10 Claims**



1. In a vehicle seat assembly having a backrest member pivotably mounted with respect to a seat member, a device for incrementally adjusting the inclination of the backrest member with respect to the seat member, which device comprises:

(a) a first hinge bracket rigidly secured to one of said members and a second hinge bracket rigidly secured to the other of said members, wherein the one of said first and second hinge brackets which is connected to the backrest member is pivotally moveable with respect to the other of said first and second hinge brackets;

(b) a first gear means mounted on said first hinge bracket and operationally connected to the second hinge bracket so as to effect said pivotal movement upon rotation of said first gear means;

(c) drive means operationally connected to the first gear means for driving rotation of said first gear means;

(d) user activated control means operationally connected to the drive means for selective rotation of the drive means;

(e) position selection means operationally connected to the drive means to define a plurality of bi-directional rotational positions of the drive means and to resist movement of the drive means from a selected one of said rotational positions, said position selection means comprising:

(i) a first abutment face rigidly mounted on the first hinge bracket and adapted for frictional interaction with an opposed second abutment face connected to the drive means for rotation therewith and for limited axial sliding with respect to said first abutment face; and,

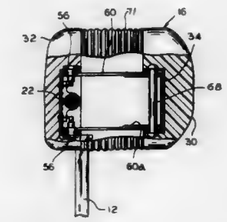
(ii) Spring biasing means for slidingly biasing said second abutment face into said frictional interaction with the first abutment face;

said abutment faces providing respective mutually engageable abutment means which, in response to rotation of the drive means by the control means, and under the influence of said spring biasing means, are brought into and out of mutual binding engagement, thereby defining said plurality of rotational positions of the drive means, which plurality in turn defines a corresponding plurality of inclination adjustment positions of the backrest member.

4,657,304
ADJUSTABLE HEADREST

Max O. Heesch, Ypsilanti, and James T. Baker, Ann Arbor, both of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Jun. 6, 1986, Ser. No. 871,449
Int. Cl.⁴ A47C *7/36*
U.S. Cl. 297—391 **8 Claims**



1. An adjustable headrest for use in an automotive vehicle seat, the headrest being adjustably extensible in a generally horizontal plane comprising:

a rear section affixed above a back portion of said seat of the vehicle stationarily against horizontal movement relative to said back portion;

a padded front section;

means for mounting said padded front section for adjustable positioning relative to said rear section in said horizontal plane including;

at least one pair of elongated links each having one end thereof pivotably attached to said front section at a common pivot point, means associated with said rear section for selectively, adjustably displacing a second end of each of said one pair of links in opposite directions along a common linear axis between fully spaced-apart locations defining a fully retracted position of said front section and locations defining a fully extended position of said front section, at least one additional link having one end thereof pivotably attached to said front section in spaced-apart relationship with said common pivot point of said one pair of links, and said means for displacing said second end of each of said one pair of links further providing for simultaneous displacement of a second end of said one additional link along said common linear axis between locations defining said fully retracted position and said fully extended position.

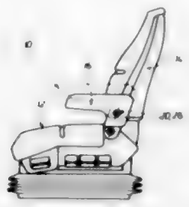
VOL 1077 ISS 2 AP 14 1987 UMI

4,657,305

SEAT WITH ADJUSTABLE ARMREST

Hermann Meiller, Amberg, Fed. Rep. of Germany, assignor to Grammer Sitzsystem GmbH, Fed. Rep. of Germany

Filed Sep. 8, 1986, Ser. No. 904,413
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1985, 3534131
Int. Cl.[4] A47C 7/54
U.S. Cl. 297—417 8 Claims



1. A seat comprising a seat portion, a backrest portion mounted so as to be pivotably adjustable with respect to said seat portion, adjustable armrest means, and armrest mounting means for mounting said armrest means with respect to said seat portion and said backrest portion, said armrest mounting means comprising fixing means slidably mounted on said armrest, said fixing means being slidable in a predetermined direction in which said armrest means is adjustable and including a first fixing means slot and a second fixing means slot, said first fixing means slot comprising a substantially linear slot and said second fixing means slot comprising a substantially linear slot portion and a substantially arcuate slot portion contiguous therewith, mounting means connected to said seat portion, said mounting means including a first mounting means slot and a second mounting means slot, said first and second mounting means slots being parallel to each other and extending in said predetermined direction in which said armrest means is adjustable, first pin means extending through said first fixing means slot and said first mounting means slot, and second pin means extending through said second fixing means slot and said second mounting means slot, and

connecting means carrying said first and second pin means in a fixed relationship with respect to each other, whereby said armrest means is adjustable in a first mode by pivoting said armrest means about said first pin means from a first operating position to a second rest position whereby said first pin means remains in a substantially fixed position within said first fixing means slot and said second pin means moves through said substantially arcuate slot portion of said second fixing means slot, and said armrest means is adjustable in a second mode in which said second pin means is located in said substantially linear slot portion by simultaneously sliding said first and second pin means in said first and second mounting means slots in said predetermined direction, thereby simultaneously slidably carrying said fixing means therewith.

4,657,306

HYDRAULIC ROCK BREAKING TOOL

Robert Koopmans, R.R. #2, Acton, Ontario, Canada (L7J 2L8), and Robin W. Hughes, 65 Waterford Drive, TH 805, Weston, Ontario, Canada (M9R 2N7)

Filed Oct. 18, 1985, Ser. No. 790,234
Int. Cl.[4] E21C 37/10
U.S. Cl. 299—21 7 Claims

1. A hydraulic rock breaking tool comprising

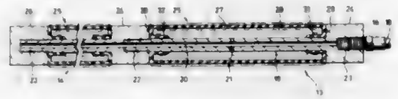
a rigid metal shaft assembly having a longitudinally extending bore therethrough and lateral passages communicating with said bore, the shaft assembly comprising a plurality of modular shaft sections interconnected end to end;

coupling means at one end of the shaft assembly for connecting said bore to a pressurized hydraulic fluid supply;

an end cap at the other end of the shaft assembly closing the bore, the end cap providing a first radial abutment flange;

each shaft section providing at its end remote from said end cap a second radial abutment flange;

a plurality of self-supporting, radially expansible, elastomeric membranes surrounding the shaft sections, each membrane providing a cylindrical portion extending between a respective pair of said radial abutment flanges and



defining with the respective shaft section an annular space communicating with said bore via said lateral passages,

each said membrane providing a pair of radially inwardly directed flanges at the ends of its cylindrical portion, which flanges abut against the pair of radial abutment flanges; and

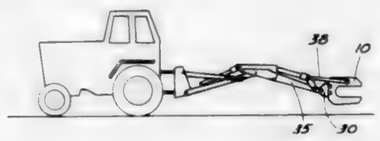
said radially inwardly directed flanges terminating in axially extending retrorse flanges seated against the shaft section for sealing engagement therewith, said retrorse flanges being urged against the shaft by fluid pressure in said annular space.

4,657,307

CONCRETE PAVEMENT BREAKER

Charles L. Staley; John R. Harms, and Ronald L. Anderson, all of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Dec. 16, 1985, Ser. No. 809,044
Int. Cl.[4] E01C 23/12
U.S. Cl. 299—36 14 Claims



1. In a device for breaking and removing concrete payment of the type having means for engaging opposed surfaces of pavement slabs of any thickness thinner than a predetermined dimension, the improvement comprising:

an engagement member having a forward-opening slab-receiving slot bounded by upper and lower opposed edges and a crotch edge therebetween in fixed relative positions, said upper and lower edges being spaced by more than said predetermined dimension and extending forwardly from the crotch edge to terminate in substantially aligned upper and lower forward ends, the distance between the crotch edge and the ends exceeding the spacing between the upper and lower edges;

first and second pivot-mounting means on the engagement member at positions rearward of said ends, said second means being above the upper edge of the slot and above and forward of the first pivot-mounting means; and

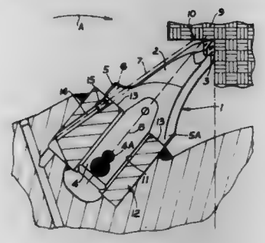
a pair of vehicle-mounted support and control arms attached to the first and second pivot-mounting means, respectively, and extending therefrom in a rearward direction.

4,657,308

MINERAL CUTTER PICK

William S. Clapham, Hoyland, England, assignor to Hall & Pickles Limited, Sheffield, England

Filed Jan. 28, 1986, Ser. No. 823,319
Claims priority, application United Kingdom, Feb. 22, 1985, 8504668
Int. Cl.[4] E21C 35/22; E21F 5/02
U.S. Cl. 299—81 9 Claims



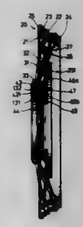
1. A mineral cutter pick for use on a rotary, mineral cutting drum; said pick comprising a pick head, a hard material tip located at one end of said head, an integral, elongate shank extending from an opposite end of said head in a direction away from said tip and having a longitudinal axis, said tip being located forwardly of said longitudinal axis (having regard to the direction or rotation, in use, of said rotary cutting drum), a shoulder provided on said pick head and extending rearwardly of said longitudinal axis (having regard to the direction of rotation, in use, of said rotary cutting drum), said shoulder having, remote from said tip, an inner face (extending laterally with respect to said longitudinal axis) and an outer face longitudinally spaced from said inner face, with a shoulder aperture extending from said inner face to said outer face and generally in the direction of said longitudinal axis, and emerging at said outer face, whereby a water spray or jet may, in use, be directed to and through said aperture to a zone rearwardly of said tip, having regard to the direction of rotation, in use, of said rotary cutting head.

4,657,309

WIRE WHEEL COVER

Lau-Wan Kang, Tainan, Taiwan, assignor to Yi-Ping Lin and Chun-Ming Kang, both of, Taiwan

Filed Apr. 22, 1986, Ser. No. 855,014
Int. Cl.[4] B60B 7/00
U.S. Cl. 301—37 SS 10 Claims



1. A wire wheel cover for a vehicle comprising:

a hub having an annular portion defining a central opening, a first skirt portion which has apertures spaced apart annularly, extending radially outward and axially inward from the outer end of the annular portion, and a second skirt portion extending radially outward and axially inward from the outer end of the first skirt portion, the second skirt portion having notches spaced apart from each other at its edge;

a rim member having an inner portion of truncated cone shape and an outer retention portion for attachment to the wheel of the vehicle, the inner portion having spoke end positioning holes therein;

a first clamping member having a central flat circular portion, a flange portion extending radially and axially outward from the outer end of the central circular portion, and an annular shoulder between the circular portion and the flange portion, the flange portion of the first clamping member abutting against the inner side of the annular portion of the hub and the annular shoulder engaging the inner periphery of the annular portion of the hub; and first spoke members, each of which has a V-shaped portion and two legs diverging out from the V-shaped portion, extending radially outward and axially inward between the hub and the rim member, the V-shaped portions being inserted into the apertures of the hub, the apexes of the V-shaped portions engaging the inner side of the first clamping member, and the ends of the legs being inserted into the holes of the rim member;

second spoke members, each of which has a V-shaped portion extending into the notches of the hub and two legs diverging out from the V-shaped portion for insertion into the spoke positioning holes of the rim member; and

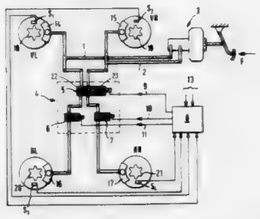
a second clamping member having a central flat circular portion and a flange portion extending radially outward and axially inward from the outer edge of the flat circular portion of the second clamping member, the flange portion engaging the V-shaped portions of the first and second spoke members, the central circular portion of the second clamping member abutting against and being secured to the the central circular portion of the first clamping member so that a clamping force is generated to hold the first and second spoke members, the hub and the rim member firmly together.

4,657,310

BRAKE SYSTEM FOR AUTOMOTIVE VEHICLES WITH CONTROLLABLE BRAKE FORCE DISTRIBUTION

Hans C. Klein, Hattersheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1985, Ser. No. 716,332
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1984, 3411743
Int. Cl.[4] B60T 8/02
U.S. Cl. 303—6 C 10 Claims



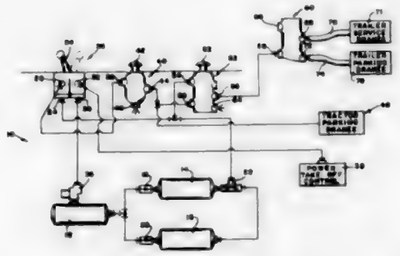
1. A brake system for automotive vehicles comprising a braking pressure generator and a controllable braking pressure modulator which is arranged in the pressure medium conduits leading to both rear-wheel brakes and which allows variation of the apportioning of the braking pressure to the wheel brakes of the front axle and the rear axle for the purpose of approximation to an ideal brake force distribution, wherein the braking pressure modulator (4) comprises valve assemblies (5) which upon the initiation of braking pressure allow braking pressure alternately to the wheel brake of the right rear wheel (HR) and

the left rear wheel (HL) so that one of the two rear wheels furnishes all of the brake force apportioned to the rear axle, which is that portion of brake force that is allotted to the rear axle in the event of approximately ideal brake force distribution.

4,657,311
POWER TAKE-OFF CONTROL WITH PARKING BRAKE INTERLOCK

Richard C. Fannin, Grafton, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 6, 1985, Ser. No. 773,170
Int. Cl.[4] B60T *13/00*
U.S. Cl. 303—71 **6 Claims**



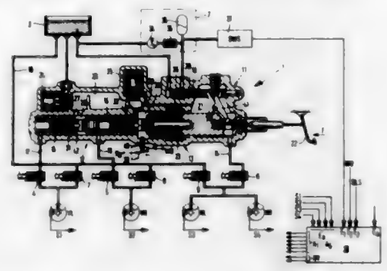
1. Fluid pressure control system comprising a fluid pressure source, control valve means having a pair of supply ports communicated to said pressure source and a pair of delivery ports, said control valve means being operable from a first condition communicating one of said supply ports with a corresponding one of said delivery ports of said control valve means and closing communication between the other supply port and the other of said delivery ports of said control valve means while venting said other delivery port, said control valve means being shiftable to a second condition communicating the other supply port with the other delivery port while closing communication between said one supply port and said one delivery port and venting the latter, parking control valve means having a supply port connected to said one delivery port of said control valve means and a delivery port communicated to parking brake control means, said parking control valve means being responsive to the fluid pressure level at the supply port of the latter to vent the delivery port of the parking control valve means when the pressure level at the supply port drops below a predetermined value, and accessory control means for controlling an accessory other than said parking brake means, said accessory control means being communicated with the other delivery port of the control valve means.

4,657,312
SLIP-CONTROLLED BRAKE SYSTEM FOR MOTOR VEHICLES

Jochen Burgdorf, Offenbach-Pumpenheim, and Lutz Weise, Mainz, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 15, 1985, Ser. No. 734,856
Claims priority, application Fed. Rep. of Germany, May 15, 1984, 3418043
Int. Cl.[4] B60T *17/18*
U.S. Cl. 303—92 **7 Claims**

1. A slip-controlled brake system for motor vehicles having a brake pedal and comprising at least one static brake circuit into which, in the event of control, pressure medium from a dynamic pressure medium circuit is fed through a control valve, a brake pressure generator operably connected to said brake pedal and including a master cylinder arrangement including positioning means which during the dynamically controlled inflow of pressure medium into the static brake circuit is adapted to be moved to a first position wherein said positioning means is set back against the brake pedal force to maintain the master cylinder piston in a defined position, said positioning means also adapted to move to a second position responsive to the reduction of said pressure medium in said master cylinder, said system comprising a monitoring means (39, 40, WU)

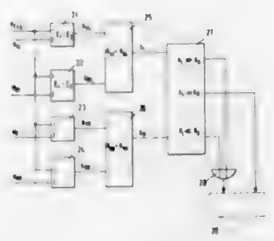


for detecting the relative position of said positioning means in the master cylinder arrangement (12), and means operably connected to the brake slip control system for evaluating the detected position of said positioning means whereby said brake slip control system is rendered substantially ineffective when said positioning means moves to said second position.

4,657,313
SLIP-CONTROLLED BRAKE SYSTEM FOR ROAD VEHICLES

Helmut Fennel, Bad Soden, and Ivica Batistic, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 12, 1985, Ser. No. 722,708
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1984, 3413738
Int. Cl.[4] B60T *8/84, 8/76*
U.S. Cl. 303—96 **7 Claims**



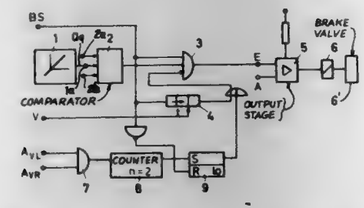
1. A slip-controlled brake system for road vehicles where one front wheel and one rear wheel are respectively connected to each of two common braking pressure control channels and where the individual wheels are equipped with sensors for the detection of the rotational behavior of the wheels, including braking pressure modulators for varying braking pressure and controllable by the signals of said sensors after the handling, logical combination, and processing of said signals by electronic circuits, with the rotational behavior of the individual wheels influencing the braking pressure variation in the braking pressure control channels as a function of predetermined selection criteria the selection criteria being "select-low" and "select-high" criteria and on predetermined slip limit values, wherein a cornering identification (20') is provided which calculates slip limit values of the individual wheels and adds up the slip values (S_{VL}, S_{HL}, S_{VR}, S_{HR}) of the wheels of one side

of the vehicle (respectively VR, HR or VL, HL), comparing them with the slip value sum (S_R or S_L, respectively) of the wheels of the other side of the vehicle, and which temporarily effects a change of the selection criteria when the difference of the slip value sums ($S_R - S_L$) of the two sides of the vehicle exceeds a predetermined limit value and thereby effecting the braking pressure variation in the braking pressure control channels as a function of the rotational behavior of the wheels.

4,657,314
APPARATUS AND METHOD OF CONTROLLING BRAKING OF AN AUTOMOTIVE VEHICLE, OPERATING IN A CURVED PATH

Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 6, 1985, Ser. No. 742,211
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1984, 3421732
Int. Cl.[4] B60T *8/60*
U.S. Cl. 303—100 **14 Claims**



1. Method of controlling braking of an automatic vehicle operating in a curved path, using the steps of

generating front speed behavior signals controlling the braking effort applied to the front wheels of the vehicle (P_{VL}, P_{VR}) and rear speed behavior signals controlling the braking effort of the wheels at the rear axle (P_{HA}) of the vehicle when these signals show a tendency of the wheels to lock generating a limited time duration signal;

generating a "brake applied" signal (BS);

and comprising the steps of sensing and generating a signal when due to operation of the vehicle in the curved path, radial or transverse or centrifugal acceleration of the vehicle exceeds a predetermined level;

and, upon concurrence of conditions:

(1) said signal representing said radial or transverse or centrifugal acceleration exceeding said predetermined level;

(2) presence of the "brake applied" signal; and

(3) said limited time duration signal (t) has not yet elapsed, logically combining said signals to generate a brake control signal for inhibiting application of further pressurized brake fluid to the rear wheel brakes to maintain the pressure level (P_{HAX}) which is below the braking pressure resulting in the braking effort which would be applied to the rear wheels without this effect for at least said limited time duration.

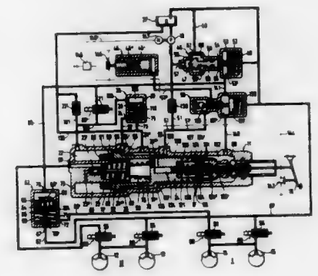
4,657,315
HYDRAULIC MOTOR VEHICLE SERVO BRAKE

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 13, 1985, Ser. No. 744,799
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1984, 3422156
Int. Cl.[4] B60T *8/02*
U.S. Cl. 303—113 **8 Claims**

1. A hydraulic motor vehicle servo brake comprising:

a pedal-actuated master cylinder with at least one master piston, wheel brake cylinders connected thereto by way of at least one brake circuit, a brake valve inserted between the pedal and the master piston, which brake valve upon actuation by the brake pedal feeds pressure medium supplied by a motor-driven hydraulic pump connected to a supply reservoir in a controlled way to the master piston and directly to a brake circuit where it applies a controlled pressure, comprising a pressure accumulator maintained in loading condition by the pump and being of a capacity to ensure that it supplies sufficient pressure during the running-up phase of the pump after the motor is started, comprising a first control valve connected to the pressure side of the pump and provided with a closing member which normally closes a passage to a return conduit leading to the supply reservoir and is pressurized against the force of a closing member spring by the pressure of the pump and in the direction of the force of the closing member spring by the controlled pressure so that it reduces the pressure of the pump when the controlled pressure is low and the pump is in operation, and comprising



a second control valve pressurized by the controlled pressure, which second control valve is connected to the hydraulic conduit from the pump to the master cylinder and in the event of there being no controlled pressure connects the pump to the pressure accumulator and in the event of there being controlled pressure separates the pump from the pressure accumulator, wherein the closing member spring (49) of the first control valve cooperates with the closing member (47) by way of a relief piston (53) disposed in a cylinder (52), wherein the relief piston (53) is pressurized against the action of the closing member spring (49) by the controlled pressure (GD), and a weak auxiliary spring (54) is disposed between the relief piston (53) and the closing member (47) whose force is just sufficient to keep the closing member (47) in closing position when the relief piston (53) is pressurized by the control pressure.

4,657,316
VIEWING SCREEN WITH A SWIVELING SCREEN HOUSING

Walter Hardt; Franz Werner, and Norbert Bonke, all of Paderborn, Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany

Continuation of Ser. No. 672,149, Nov. 16, 1984, abandoned. This application Aug. 14, 1986, Ser. No. 898,722
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1983, 3342741
Int. Cl.[4] A47B *81/06*
U.S. Cl. 312—7.2 **7 Claims**

1. An electronic CRT display assembly having a forward direction corresponding to the projection direction of a CRT and a rearward direction which is opposite to the forward direction, said assembly comprising:

a bottom support plate;

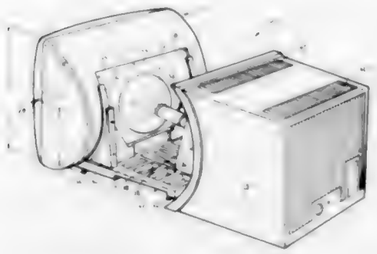
a pair of standards mounted on said support plate in spaced apart and parallel relationships to extend substantially upwardly at right angles from said plate;

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a viewing screen unit having a relatively flat CRT display screen facing in said forward direction;

said screen unit having a rearward facing semi-cylindrical periphery which is contoured in a constant radius curve the axis of which lies in a fixed, parallel and laterally extending spaced relationship with the plane of said plate;

said screen unit being displaceably connected to said standards for rotation about a fixed axis which coincides with the axis of said constant radius curve;



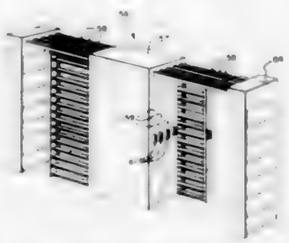
and a receiving housing having forward facing opposite peripheral edges which are contoured in a constant radius curve corresponding to the constant radius curve of the rearward facing periphery of the viewing screen unit, said receiving housing being secured to said bottom plate with the opposite peripheral edges immediately adjacent the rearward facing periphery of said screen unit, to substantially enclose the rearward facing periphery of said screen unit while permitting unimpeded rotation of said screen unit about said axis of rotation.

4,657,317

STORAGE ASSEMBLY

Joseph A. Gemma, 1394 Beattie Ct., San Jose, Calif. 95120

Filed Mar. 27, 1986, Ser. No. 844,576
Int. Cl.[4] A47B *53/00*
U.S. Cl. 312—198 **9 Claims**



1. A storage assembly comprising a protective cabinet adapted to be self-standing on a support surface, a plurality of substantially parallel tracks carried by and adjacent the top of said cabinet to protrude forwardly beyond the front of said cabinet, means standing on said support surface and disposed to extend upwardly therefrom to support the outer ends of said tracks from beneath, a plurality of storage panel assemblies for storing articles therein, said assemblies including and being carried by rollers riding along said tracks so as to hang therefrom and be movable individually therealong, said assemblies being movable between stored and withdrawn positions within and with respect to said cabinet, said panel assemblies being formed to include an elongate rigid member defining the bottom edge thereof, means for guiding said bottom edge during movement of said panels between stored and withdrawn positions, the degree to which said tracks protrude serving to permit the panel assemblies, including said rollers, carried by said tracks to be substantially fully withdrawn to substantially fully expose the sides thereof to provide access to articles carried by each withdrawn panel, said bottom edge extending rearwardly beyond the panel assembly to remain engaged by said means for guiding said edge after said panel assembly has been substantially fully exposed, said continued engagement serving to inhibit lateral swaying of said withdrawn panel assembly.

4,657,318

CABINET HAVING DOOR BRAKING ASSEMBLY

Patrick E. Strange, Jasper, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Continuation of Ser. No. 618,538, Jun. 8, 1984, abandoned. This application Jun. 20, 1986, Ser. No. 877,703
Int. Cl.[4] E06B *9/14*
U.S. Cl. 312—297 **8 Claims**



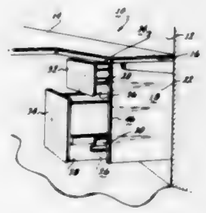
1. A cabinet comprising: an enclosure having an opening therein; a tambour door slidably attached to said enclosure, said door slidable between an open position in which access to the interior of the enclosure is provided through the opening and a closed position in which said door closes the opening; and a brake means for restraining the movement of said door as it travels from the open to the closed position, said brake means comprising a spring means connected to one of said door and enclosure, and a projection means on the other of said door and enclosure for contacting said spring means and resiliently stretching said spring means during a later portion of the travel of said door from the open position to the closed position, said spring means exerting a braking force on said door as the door is closed, said projection means being out of contact with said spring means during an earlier free travel portion of the travel of the door from the open toward the closed position.

4,657,319

EXTRUDED NOSING FOR A FURNITURE PEDESTAL OR THE LIKE

Ralf G. Zacky, Los Angeles, and Gordon L. Alexander, Sylmar, both of Calif., assignors to Aspects, Inc., Redlands, Calif.

Filed Apr. 18, 1985, Ser. No. 724,562
Int. Cl.[4] A47B *88/00*
U.S. Cl. 312—333 **14 Claims**



1. A nosing for a furniture pedestal or the like wherein the pedestal includes sidewalls forming an interior space between the sidewalls and with at least one closure member extending across the sidewalls of a front edge position to at least partially

enclose the interior space and with the nosing extending along the front edge of at least one of the sidewalls, the nosing including

a main portion for overlaying and covering the front edge of the sidewall,

a front extending portion extending angularly from one side of the main portion toward the back of the closure member for acting as a stop for the closure member and for spacing the back of the closure member from the main portion of the nosing a particular distance,

the particular distance of the space formed between the back of the closure member and the main portion of the nosing being sufficient to form a finger recess for allowing the closure member to be pulled forward to expose the interior of the pedestal,

a back extending portion extending at a right angle from one side of the main portion and with the back extending portion for attachment to the inside of the sidewall, and

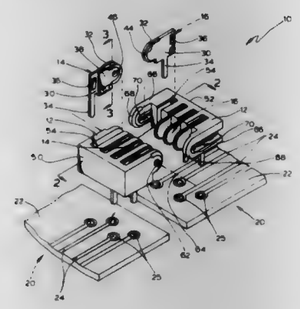
the pedestal including a front rail member extending between the sidewalls and wherein the back extending portion includes a groove for receiving and securing the front rail member.

4,657,320

HINGEABLE ELECTRICAL CONNECTOR

William C. Bamford, Yamato, and Yasuhiro Ichijo, Yokohama, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Aug. 13, 1984, Ser. No. 639,762
Claims priority, application Japan, Sep. 28, 1983, 58-178343
Int. Cl.[4] H01R *39/00*
U.S. Cl. 339—4 **3 Claims**



1. An electrical connector assembly for establishing electrical contact between first and second connector portions associated with one of a pair of pivotally mounted circuit members, said assembly including

each connector portion having a dielectric housing portion, a plurality of terminal receiving cavities formed therein, and first and second sets of terminals mounted within corresponding cavities of the first and second connector portions, respectively, the first set of terminals being mateable with the second set of terminals to form mating terminal pairs, and means for pivotally joining said housing portions together for rotation about an axis,

the improvement in said connector assembly comprising:

each terminal of said first and second sets of terminals having a mating plate-like contact surface located on said axis of rotation; and

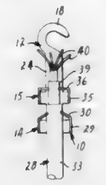
said terminal receiving cavities of said first connector portion are defined by resilient housing walls so configured so as to bias together a mating terminal pair received therein with a compressive bias force extending along said axis of rotation.

4,657,321

TELECOMMUNICATION SERVICE WIRE CONNECTOR

Mark D. Sorlien, White Bear, Minn.; Manuel Filreis, Round Rock, and William J. Seim, Austin, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 27, 1986, Ser. No. 844,941
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—14 R **6 Claims**



1. A telecommunication service wire connector stamped and formed from a sheet of metal, comprising:

a generally planar elongate base,

a ground stud connection tongue extending from one end of said base, formed at its free end with a ground stud connection portion for mechanical connection to a ground stud and including an offset portion between said base and said ground stud connection portion positioning said ground stud connection portion in a plane spaced from and generally parallel to the plane of said base,

a strain relief adjacent the end of said base opposite said ground stud connection tongue comprising mirror image portions having side walls extending upward from opposite edges of said base parallel to each other and strain relief sections extending from one edge of said side walls that is perpendicular to said base and at a nonperpendicular angle to said side walls toward each other, said strain relief sections converging toward said ground stud connection tongue and terminating spaced from each other to define a sheath engaging slot, the facing edges of said strain relief sections defining said sheath engaging slot being formed with teeth inclined toward said base for engaging the service wire sheath, and

a shield connector between said ground stud connection tongue and said strain relief comprising mirror image portions having side walls extending upward from opposite edges of said base parallel to each other and shield connection sections extending from one edge of said side walls that is perpendicular to said base and extending toward each other and terminating spaced from each other to define a shield connection slot, the facing edges of said shield connection sections defining said shield connection slot being formed with small teeth inclined toward said base for scraping the service wire shield upon insertion to make electrical connection thereto.

4,657,322

MICROWAVE INTERCONNECT

H. Erwin Grellmann, Beaverton; Keith E. Jones, Aloha; Carl W. Laakso, and John A. Wright, both of Portland, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 1, 1985, Ser. No. 782,244
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—17 M **9 Claims**

1. An interconnector adapted to provide electrical connection between electrical devices, at least one of which has an electrical circuit mounted on a substrate, comprising:

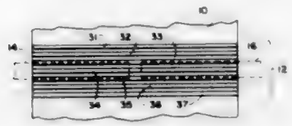
a flexible insulating medium provided thereon with a conductive run for each electrical connection between the electrical devices, the conductive run being separated into a plurality of substantially parallel conductors for each electrical connection and having a width greater than a

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terminal portion of the electrical devices between which it is designed to make connection such that fewer than all said substantially parallel conductors interconnect the electronic devices for each connection while maintaining an electrical width essentially equal to the width of the terminal,

a body of elastomeric material secured to the flexible insulating medium on the side opposite the conductive run, and

a bar for constraining said body of elastomeric material in compressive relationship against said flexible insulating medium for urging said conductive run against said electrical devices for making electrical connection therebetween, the flexible insulating medium conforming to the



conductive surfaces thereof, the bar having downwardly extending indexing legs adapted to closely receive the electrical circuit devices therebetween for aligning the conductive run relative to said electrical devices and having a slot for alignably receiving said body of elatomeric material such that the bar bridges across said one electrical device for providing a connection between said one electrical device and another of said electrical devices disposed proximate one end of said bar, the slot being located in the end of the bar proximate the another of said electrical devices and the conductive run extending in a direction longitudinal of the bar proximate the one end thereof.

4,657,323

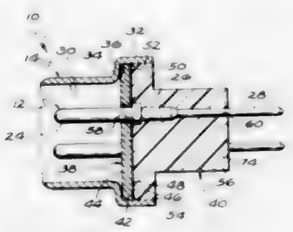
D-SUBMINATURE FILTER CONNECTOR

Alfred R. Erbe, Phoenix, Ariz., assignor to ITT Corporation, New York, N.Y.

Filed Jan. 27, 1986, Ser. No. 822,446

Int. Cl.⁴ H01R *13/66*

U.S. Cl. 339—17 R **7 Claims**



1. A connector comprising:

a plurality of contacts, each having a mating front end, a middle, and a rear end;

a front shell of metal with a hollow front portion which surrounds said mating front ends of said contacts, and an enlarged rear portion of greater width than said front portion, said shell forming a rearwardly-facing ledge between said portions;

a circuit board device which includes a board of insulative material having forward and rearward faces and edges, and a circuit layer on the rearward face of the board, said board lying within said shell with its forward face against said ledge of said shell, said circuit device including holes through which said contacts extend, and said circuit layer including a plurality of capacitors each having a first capacitor terminal adjacent to one of said holes and a second capacitor terminal extending to an edge of the board, and including solder means joining each first capacitor terminal to a contact and joining an edge of the second capacitor terminal to the shell;

a rear insulator having a forward portion molded in place to the circuit board device and to the rear portion of said shell, said contacts molded into said rear insulator with their rear ends extending rearwardly of the rear of said rear insulator.

4,657,324

ELECTRICAL CONNECTOR FOR A CHIP CARRIER

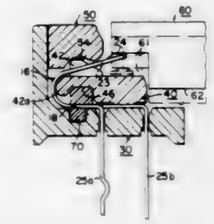
Takashi Kamono, Yokohama, and Akihiko Otsu, Kawasaki, both of Japan, assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 659,609, Oct. 11, 1984, Pat. No. 4,593,463. This application Jan. 31, 1986, Ser. No. 824,746

Claims priority, application Japan, Oct. 31, 1983, 58-204616

Int. Cl.⁴ H01R *9/09*

U.S. Cl. 339—17 CF **6 Claims**



1. An electrical connector for a rectangular chip carrier having electrodes thereon, the connector being of the type comprising an insulating housing having a centrally located carrier receiving zone and contact members in surrounding relationship to the zone, the contact members having spring contact portions for contacting the electrodes, the connector being characterized in that:

the contact members have intermediate portions which are secured in separate elongated dielectric member means, the dielectric member means being mounted on the housing in surrounding relationship to the carrier receiving zone, the contact portions extending inwardly from the dielectric member means and into the zone, the contact portions being in side-by-side parallel relationship and extending normally of the dielectric member means.

each contact member having a terminal portion extending from its intermediate portion, the terminal portions being inclined with respect to the longitudinal axis of the dielectric member means and extending from the dielectric member means at uniform acute angles,

the terminal portions being bent so that they extend normally of the intermediate portions, alternate terminal portions being bent at uniform first distances from the dielectric member means to form a first row, the remaining terminal portions being bent at uniform second distances from the dielectric member means to form a second row in side-by-side alignment with the terminal portions of the first row, the terminal portions extending beyond the housing on the side thereof which is opposite to the side on which the carrier receiving zone is located, the terminal portions being arranged in said two rows by virtue of the fact that alternate terminal portions are bent at the first distance and the remaining terminal portions are bent at the second distance.

4,657,325

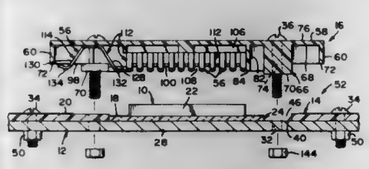
ELECTRICAL CONNECTOR

Richard L. Marks, Mechanicsburg; William S. Scheingold, Palmyra, and Ronald M. Smith, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1986, Ser. No. 835,834

Int. Cl.⁴ H01R *23/72*

U.S. Cl. 339—17 CF **18 Claims**



1. An electrical connector for electrically interconnecting conductive means on the surfaces of a printed circuit board and an electronic package located in an opening in said circuit board and further with both of said circuit board and electronic package being positioned on a cooling substructure, said electrical connector comprising:

dielectric housing means placeable over said electronic package and portions of said circuit board imemdiately surrounding said electronic package;

block means extending outwardly from said housing means for abutting and securing engagement with said substructure through said opening in said circuit board; and

a plurality of conductive contact means having a pair of diverging spring means, said contact means being disposed in said housing means with said spring means extending outwardly therefrom for electrical engagement with respective conductive means on said circuit board and said electronic package.

4,657,326

CURRENT CONDUCTION CONNECTOR FOR THE ELECTRICAL CONNECTION OF GAS BAG COLLISION PROTECTION INSTALLATION

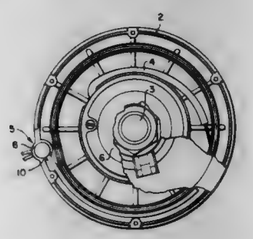
Gregor Zeller, Aschaffenburg, and Helmut Bonn, Haibach, both of Fed. Rep. of Germany, assignors to Petri AG, Fed. Rep. of Germany

Filed Mar. 3, 1986, Ser. No. 835,282

Claims priority, application European Pat. Off., Mar. 1, 1985, 85102304.4

Int. Cl.⁴ H01R *39/02*

U.S. Cl. 339—3 S **11 Claims**



1. A vehicle steering current conducting device comprising:

a current conductor wound a plurality of times in an area between a fixed housing and a centrally arranged steering wheel shaft;

means for connecting an inner end of said current conductor, mounted on and arranged to rotate with the shaft;

means for connecting an outer end of said current conductor associated with the fixed housing comprising a first pivot bearing arranged on and fixed to the fixed housing, a pivotable spindle rotatably arranged within said pivot bearing, wherein said outer end of said current conductor extends in a radial fashion to said pivotable spindle and exhibits an axially extending outer terminal.

4,657,327

ELECTRICAL CONNECTOR ASSEMBLY

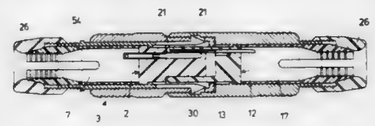
Bernhard Weingartner, Feldkirch, Austria, assignor to Neutrik Aktiengesellschaft, Schaan, Liechtenstein

Continuation of Ser. No. 500,208, Jun. 2, 1983, abandoned. This application Jan. 3, 1986, Ser. No. 817,081

Claims priority, application Austria, Jun. 8, 1982, 2233/82

Int. Cl.⁴ H01R *25/00*

U.S. Cl. 339—49 B **15 Claims**



1. An electrical connector assembly formed of a first and a second connector member adapted to be plugged together to establish electrical connection therebetween, each of said first and second connector members comprising:

housing means;

contact element carrier means made of electrically insulating material mounted within said housing means;

elongate contact elements mounted in said carrier means having longitudinal axes and adapted to be placed in electrically conducting engagement with each other in pairs with said longitudinal axes of each member of a contacting pair extending parallel to each other when said first and second connector members are plugged together;

all of the contact elements in said assembly in both said first and second connector members being identically structured, with each of said contact elements consisting of

a connection part having a generally planar configuration for mounting said contact elements in said carrier means so that the planar configurations of the connection parts of the contact elements in one of said first and second connector members are arranged to extend within planes perpendicular to the planes of the planar configurations of the connection parts of the contact elements in the other of said first and second connector members when said connector members are plugged together, and

contact parts shaped with a generally arched configuration extending outwardly from said connection parts, said arched configuration having a convex side, a concave side and a pair of opposed edges having said convex and concave sides extending therebetween;

means mounting said contact elements in said connector members to enable flexure of said contact parts by application of pressure on said convex side thereof;

said contact elements being arranged in said connector members so that when said connector members are plugged together electrical contact is established between the contact elements thereof by abutting engagement of one of said edges of a contact part of one contact element against said convex side of a contact part of another mating contact element;

said contact elements being rigid against pressure applied to said edges and operating to effect flexure of those of said contact elements upon which pressure is applied against said convex side by an edge of another contact element thereby to enhance electrical contact therebetween;

each of the contact elements in one of said first and second connector members being mounted with an orientation

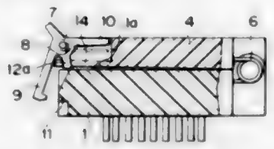
VOL 1077 ISS 2 APR 14 1987 UMI

turned 90° relative to the orientation of the mating contact element in the other of said connector members.

4,657,328
IC SOCKET

Noriyuki Matsuoka, Tokyo, Japan, assignor to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1986, Ser. No. 831,447
Claims priority, application Japan, Feb. 26, 1985, 60-27046[U]
Int. Cl.⁴ H01R *13/629*
U.S. Cl. 339—75 MP **4 Claims**



1. An IC socket comprising:

a socket body having an IC package accommodating section formed on the upper central portion thereof and resilient contacts provided around said IC package accommodating section for contact with terminals of an IC package,

an IC package pressing cover having one end thereof attached pivotally to one end of said socket body so as to be opened and closed relative to the upper surface of said socket body,

hook means pivotally attached to the other end of said IC package pressing cover and adapted to engage with and disengage from the other end of said socket body for closing and opening said IC package pressing cover relative to the upper surface of said socket body,

first spring means disposed between said socket body and said IC package pressing cover for resiliently supporting said IC package pressing cover and urging said IC package pressing cover in a direction of opening said IC package pressing cover,

second spring means disposed between said IC package pressing cover and said hook means for resiliently supporting said hook means and urging said hook means in a direction of engaging said hook means with the other end of said socket body,

said hook means comprising a latch lever being engaged with the other end of said socket body, a push lever being pushed against the urging force of said second spring means in operating said latch lever to be disengaged from the other end of said socket body, and a stopper receiving a pushing force exerted on said push lever in the disengaging operation, colliding with the upper surface of said socket body and raising said IC package pressing cover slightly from the upper surface of said socket body.

4,657,329
BOARD MOUNTED CABLE CONNECTOR

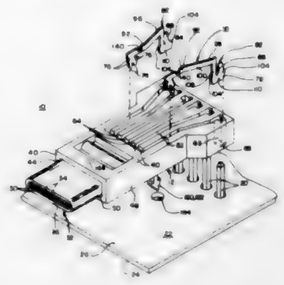
Helen Dechelette, Paris, France, assignor to Molex Incorporated, Lisle, Ill.

Filed Jan. 27, 1986, Ser. No. 822,555
Claims priority, application United Kingdom, Mar. 5, 1985, 8505576
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 339—97 P **10 Claims**

1. A low profile electrical connector for connecting a plurality of printed circuit board mounted pins with the end portion of a flat multi-conductor cable, said connector including,

a dielectric housing having a board engaging surface, an opposed top surface and a conductor receiving end, said housing further having a plurality of terminal receiving cavities extending between a pin receiving opening in said board engaging surface and said conductor receiving end, and

a plurality of metallic stamped terminals mounted in said cavities, each terminal having a conductor engaging portion adjacent the conductor receiving end and a resilient female pin engaging portion adjacent the board engaging surface

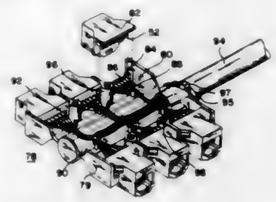


the improvement comprising: said conductor engaging portion of said terminal being positioned laterally adjacent said pin engaging portion and immediately adjacent said board engaging surface, and being adapted to engage a conductor extending generally parallel to said board engaging surface.

4,657,330
FIELD INSTALLABLE MODULAR TELEPHONE CONNECTOR

Sidney Levy, Belle Mead, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Continuation of Ser. No. 577,109, Feb. 6, 1984, abandoned. This application May 8, 1986, Ser. No. 861,191
Int. Cl.⁴ H01R *4/24*
U.S. Cl. 339—99 R **16 Claims**



1. An electrical connector for connecting conductors of a multiconductor cable with plugs or jacks having contacts in modular telephone configuration, comprising:

(a) a base having first and second compartments and a channel for residence of said cable conductors, said channel communicating with and separating said first and second compartments;

(b) a housing in each compartment supporting a plurality of contacts, each contact having a first end portion in modular telephone configuration and facing outwardly of said compartments for connection with said plugs or jacks and a second end portion of insulation-displacing type, in electrical engagement with a selected conductor of said cable each of said housings being selectively insertable in one of said base compartments;

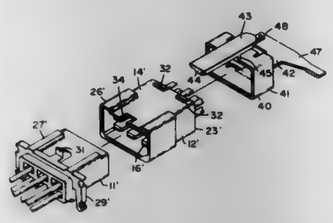
(c) means retaining each of said housings in said base; and

(d) means holding said cable in a fixed position relative to said base.

4,657,331
STRAIN RELIEF FOR ELECTRICAL CONNECTOR ASSEMBLIES

Daniel R. Coldren, Enola, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 21, 1985, Ser. No. 736,615
Int. Cl.⁴ H01R *13/58;* **H02B** *1/02*
U.S. Cl. 339—125 R **11 Claims**

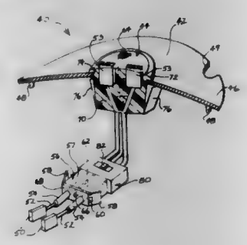


1. An electrical connector assembly for mounting on a panel comprising intermatable first and second connectors having respective insulating housings each moulded in one piece of plastics material with terminal receiving through cavities extending between mating and conductor receiving faces of the housings, intermatable terminals received in the cavities and a one-piece strain relief member located on the second housing at a location remote from the first housing and having means to confine conductors extending from the conductor receiving face, the strain relief member being provided with a releasable latching arm which extends across the second housing into direct latching engagement with a latching abutment integrally formed on the first housing with the second housing trapped therebetween, thereby to secure the strain relief member to the first and second housings and the second housing to the first housing, latching legs projecting from the first housing adjacent the conductor receiving face for mounting the connector on the surface of a panel with the housing axis extending parallel thereto.

4,657,332
METHOD AND APPARATUS FOR CONVENIENTLY PROVIDING A 220 VOLT ELECTRIC OUTLET IN A HOME KITCHEN

Harold M. Stillman, Stamford, Conn., assignor to Cuisinarts, Inc., Greenwich, Conn.

Filed Jul. 5, 1985, Ser. No. 752,135
Int. Cl.⁴ H01R *13/713, 33/72*
U.S. Cl. 339—147 R **16 Claims**



8. An adapter for converting the electrical connections for a removed heater element in a well in the top surface of an electric range energized by a source of 220 Volt AC electric power to a 220 Volt AC electrical outlet comprising:

a cover including an electrical outlet positioned therein and being capable of carrying 220 Volt AC electric power,

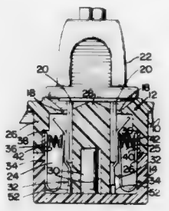
a plug located below said cover electrically connected to said electrical outlet,

said plug being adapted to be coupled to the electrical connections in the well for the removed heater element for supplying 220 Volt AC electric power to said outlet, and said cover fitting over said well.

4,657,333
SAFETY ELECTRICAL RECEPTACLE

Carlton Anderson, 911 E. Wilshire Ave., Fullerton, Calif. 92631

Filed Feb. 2, 1981, Ser. No. 230,444
Int. Cl.⁴ H01R *13/50*
U.S. Cl. 339—164 R **2 Claims**



1. A safety electrical receptacle having at least one socket outlet formed therein including openings to receive prongs of a male electrical plug, said receptacle comprising:

a main body member in which said socket outlet is formed;

a pair of oppositely disposed compartments insulated one from the other, and defining said socket outlet;

a contact finger mounted in each of said compartments, in alignment with said openings, wherein said contact fingers are formed from an elongated metal strip having an outwardly turned lip member on one end thereof, and laterally extended ear members formed on the opposite end thereof;

a pair of bus-bar members, each member being mounted to be exposed in corresponding compartments;

electrically conductive biasing means defined by springs interposed between said bus bars and said respective contact fingers;

means for connecting electrical wiring to said bus bars;

an electrically conductive shunt member adapted to interconnect said bus bar with said contact finger, said shunt member comprising a metal strip bent in a substantially "U"-shaped configuration forming oppositely arranged free ends, and wherein one end contacts said bus bar and the opposite end contacts said contact finger, said coil spring being interposed between said free ends whereby a load force is provided against said contact finger;

said compartments including means for positioning said contact fingers to engageably receive said prongs of said male plug, so as to hold said plug in a substantially fixed position within said socket, and said finger-positioning means comprising a pair of oppositely disposed grooves adapted to receive said ears of said contact fingers.

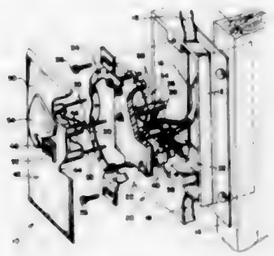
4,657,334
PLUGGABLE ELECTRICAL CONNECTOR

Dennis L. Simmons, 418 Singley Dr., Milpitas, Calif. 95035

Filed Oct. 21, 1985, Ser. No. 789,466
Int. Cl.⁴ H01R *29/00*
U.S. Cl. 339—166 R **5 Claims**

1. A telephone connector assembly, which comprises an electrical receptacle configured for mounting in an electrical receptacle box, said electrical receptacle having a plurality of sockets, a face plate configured for placement on a wall over the electrical receptacle box, said face plate having a front surface and a rear surface, a telephone jack extending from the

front surface through said face plate to the rear surface thereof, and a plurality of electrically conductive members mounted on said face plate and extending away from the rear surface of said face plate, said electrically conductive members being electrically connected to said telephone jack, configured and positioned for overlapped mating engagement along a common axis with said plurality of sockets, said face plate and a wall against which said face plate is positioned in flush engagement coacting to position said said electrically conductive members and said plurality of sockets in the overlapped mating engagement along the common axis when said electrical receptacle is installed in a wall mounted electrical receptacle box and said



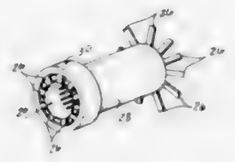
electrically conductive members are inserted in said sockets, said plurality of conductive members and said plurality of sockets being configured to establish electrical contact with different longitudinal overlapped positioning along the common axis with respect to one another by said plurality of sockets each having an open end facing away from said face plate and said plurality of electrically conductive members having a length such that their tips extends beyond the open socket ends when the assembly is used with thinner wall material and are contained entirely within said plurality of sockets when the assembly is used with thicker wall material, the different overlapped positioning varying with thickness of a wall material over which said face plate is mounted on the wall.

4,657,335

RADIALLY RESILIENT ELECTRICAL SOCKET

Joseph J. Koch, Mt. Clemens; Richard N. Koch, St. Clair Shores, and Peter H. Vandekerkhof, Richmond, all of Mich., assignors to K & K Stamping, Fraser, Mich.

Filed Jan. 30, 1986, Ser. No. 824,116
Int. Cl.[4] H01R *13/11*
U.S. Cl. 339—256 R **5 Claims**



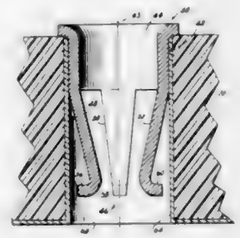
4. A barrel terminal comprising a cylindrical sleeve and a contactor member coaxially received within said sleeve, said contactor member comprising a one-piece member of sheet material including a pair of like, axially spaced coaxial annular web sections of uniform and equal diameter fixedly seated against the inner surface of said sleeve, a plurality of like elongate connector strips integrally joined at one end to one of said web sections an integrally joined at its opposite end to the other of said web sections, said strips being joined to said web sections at uniformly spaced intervals about the respective circumferences of the web sections, the location at which each strip is joined to said one of said web sections being angularly displaced about the common axis of said band sections from the location at which the strip is joined to the other of said web sections and the strip extending along a straight line from one web section to the other.

4,657,336

SOCKET RECEPTACLE INCLUDING OVERSTRESS PROTECTION MEANS FOR MOUNTING ELECTRICAL DEVICES ON PRINTED CIRCUIT BOARDS

Richard E. Johnson, Jamestown, N.Y.; Robert R. Johnson, Ludlow, and Doyle E. Cribbs, Warren, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 18, 1985, Ser. No. 810,158
Int. Cl.[4] H01R *11/22*; **H05K** *3/32*
U.S. Cl. 339—258 R **5 Claims**



1. An elongated, electrical contact receiving, socket receptable formed for insertion and retention in a receiving aperture in a printed circuit board, said socket receptacle comprising: a relatively thin, flexible, hollow body having a longitudinal axis and having a circumferential extent of greater than 180° but less than 360°; said body having a proximal portion having a given external diameter sized to fit said receiving aperture; and a distal portion having an internal diameter less than said given external diameter, said distal portion being formed to provide at least three legs which are substantially parallel to said longitudinal axis, each of said legs being formed to provide a desired amount of stress; said socket receptacle including means to prevent said at least three legs from being overstressed by the application of a force applied thereto in a direction transverse to said longitudinal axis, said means to prevent said at least three legs from being overstressed comprising a flange formed on the terminal end of each of said at least legs, said flange extending in a direction substantially normal to said longitudinal axis and away from said longitudinal axis.

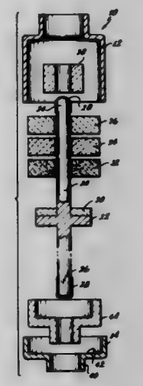
4,657,337

ELECTRICAL CONNECTOR AND METHOD OF PRODUCING ELECTRICAL CONNECTOR

James C. Kyle, 2547 Fisher Rd., Roseburg, Oreg. 97470

Filed Jun. 29, 1984, Ser. No. 625,897
Int. Cl.[4] H01R *3/00*
U.S. Cl. 339—278 C **21 Claims**

1. In combination in an electrical connector,
first and second housings formed into a unitary assembly,
a terminal pin extending through the housings in spaced relationship with the housings,
a flange on the terminal pin at a position adjacent the second housing,
a bead made from a hard insulating material and having a high melting temperature, the bead being disposed on the flange and pressed against the flange and providing insulation between the terminal pin and the housings, and
at least one layer of insulating material disposed on the bead in pressed relationship with the bead and the flange on the terminal pin and the housings and having a reduced melting temperature relative to the bead and providing an electrical insulating relationship between the terminal pin



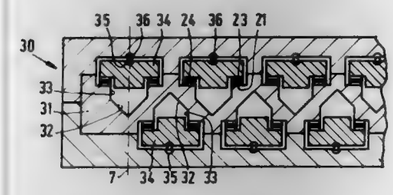
and the housings, the layer of insulating material providing a hermetical seal with the bead, the terminal pin and the housings.

4,657,338

CONNECTOR FOR A PLURALITY OF OPTICAL WAVEGUIDES

Giok D. Khoe, Eindhoven, Netherlands; Dieter Rittich, Overath; Bernhard Schmidt, Neunkirchen, both of Fed. Rep. of Germany, and Johannes H. F. M. van Leest, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 474,623, Mar. 11, 1983, abandoned.
This application May 7, 1985, Ser. No. 731,613
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208797
Int. Cl.[4] G02B *6/38*
U.S. Cl. 350—96.210 **3 Claims**



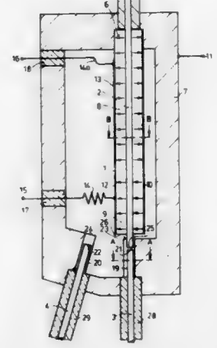
1. A light-waveguide connector comprising:
a housing having a longitudinal axis;
a base in the housing, said base having a V-shaped guide groove therein extending in the longitudinal direction, said groove for receiving a light-waveguide plug;
a clamping bridge arranged in the housing opposite the guide groove, said clamping bridge having a first side facing the guide groove and a second side opposite the first side, the second side of the clamping bridge and the housing defining a longitudinal groove having a height;
a row of balls of uniform diameter arranged between the second side of the clamping bridge and the housing in the longitudinal groove, the diameters of the balls being less than the height of the longitudinal groove;
a pressure member arranged between the second side of the clamping bridge and the housing in the longitudinal groove, said pressure member adapted to slide in the longitudinal direction and to bear on the balls; and
a screw cap arranged to be screwed on the housing around the longitudinal axis, said screw cap bearing on the pressure member and sliding it in the longitudinal direction;
characterized in that:
the V-shaped guide groove has an angle bisector which extends through the centers of the balls;
the base has a guide section above the guide groove, the guide section having sidewalls which extend parallel to the bisector of the groove;
the base has two steps, one on each side of the bisector of the guide groove;
the connector further comprises resilient means arranged on each step between the clamping bridge and the base to urge the clamping bridge and the base away from each other;
the housing comprises a plurality of clamping assemblies, each clamping assembly comprising a base, a clamping bridge, a row of balls, a pressure member, and a screw cap; and
the bases of all of the clamping assemblies are formed of a single common base, the V-shaped guide grooves in the common base being parallel to one another, adjacent V-shaped guide grooves being rotated 180° with respect to each other.

4,657,339

FIBER OPTIC SWITCH

Franz Fick, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 468,811, Feb. 22, 1983. This application Apr. 30, 1985, Ser. No. 728,153
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206919
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 **19 Claims**



1. A fiber optic switch for optically connecting and disconnecting a first and a second light conductor, said first conductor having an axis, said switch comprising:
a transverse adjusting element for moving an end of the first conductor transverse to the conductor axis between first and second fixed transverse switch positions; and
an axial adjusting element for moving the end of the first conductor in the direction of the conductor axis between first and second fixed axial switch positions;
characterized in that:
the transverse adjusting element and the axial adjusting element are separately actuable such that the end of the first conductor can be moved transversely without being moved axially, and the end of the first conductor can be moved axially without being moved transversely; and

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the axial adjusting element moves the end of the conductor by expanding or contracting substantially uniformly in the direction of the conductor axis.

4,657,340

TERMINAL DEVICE FOR OPTICAL FIBERS

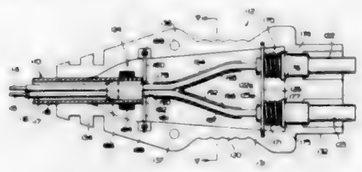
Toshiyasu Tanaka, and Sadakazu Ariga, both of Yokohama, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1984, Ser. No. 683,519

Claims priority, application Japan, Dec. 27, 1983, 58-203334[U]

Int. Cl.⁴ G02B 6/36

U.S. Cl. 350—96.20 **15 Claims**



14. A terminal device for a plurality of optical fibers, comprising:

a plurality of ferrules, each disposed at one end of each optical fiber,

a frame supporting the ferrules,

a positioning member for positioning the ferrules in a predetermined positional relationship;

spring means biased against said positioning member whereby the ferrules are movably supported by the frame, and

a guide member provided on an inner surface of the frame for guiding a portion of each optical fiber extending from its respective ferrule to an exit end of the frame so that said portion of the optical fiber moves only in substantially the axial direction of said guide member.

4,657,341

CONNECTOR FOR LIGHT WAVEGUIDES AND METHOD OF PRODUCING SAME

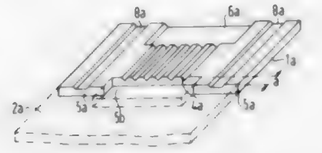
Rudolf Sammueller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 634,468

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328053; Mar. 9, 1984, 3408783

Int. Cl.⁴ G02B 6/36

U.S. Cl. 350—96.22 **33 Claims**



1. In a connector for a plurality of light waveguides, said connector having two carrier plates, each plate having means for guiding the waveguides including V-shaped, parallel centering grooves etched into a surface of the plate, the improvements comprising each plate having an abutting surface extending transverse to the grooves and a joining region being formed adjacent said abutting surface, said grooves in the joining region having dimensions for receiving and positioning the waveguides free of any protective layer and cladding; a cover element for covering the grooves with the waveguides therein; two guide elements extending between the two plates and bridging the abutting surfaces to hold the plates with the grooves aligned; said cover element having a width less than the width of the carrier plate to provide two laterally spaced exposed portions on said plates; both of said laterally exposed portions having at least one auxiliary groove extending parallel to the centering grooves and the two guide elements having a ridge for engagement in the auxiliary groove; and means for holding the carrier plate, the cover element and the guide elements together.

4,657,342

FLEXIBLE POWER CABLE WITH PROFILED CORE AND SUPPORT MEMBER

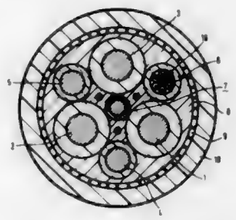
Albert Baüer, Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 651,293

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1983, 3335325

Int. Cl.⁴ G02B 6/44

U.S. Cl. 350—96.23 **8 Claims**



1. In a flexible power cable with conductors twisted about a profiled core, in which the profiled core contains a steel cable as a support member for the cable, the improvement comprising: a profiled core which includes a round strand containing a steel cable and three profiled strands disposed radially thereto adjacent, the cross section of said adjacent profiled strands shaped as a regular rectangle with circularly inwardly curved lateral edges; three current carrying conductors received in said inwardly curved lateral edges of said adjacent strands, said conductors forming, with said strands, at the outer ends of said adjacent strands, a total of three corner spaces one between each two current carrying conductors; and three further stranding elements arranged in the three corner spaces.

4,657,343

OPTICAL FIBER CABLE AND METHOD OF JOINTING TWO CABLE ELEMENTS

Ronald C. Oldham, Chandlers Ford, and Stephen R. Jones, St. Mary Bourne, both of England, assignors to Standard Telephones and Cables, Public Limited Company, London, England

Filed Oct. 6, 1983, Ser. No. 539,561

Claims priority, application United Kingdom, Oct. 6, 1982, 8228604

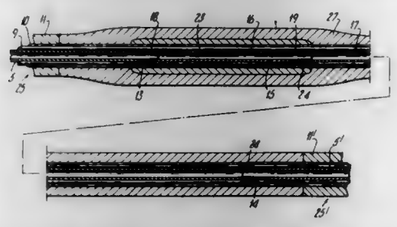
Int. Cl.⁴ G02B 6/44; H02G 3/00; B21D 39/00

U.S. Cl. 350—96.23 **22 Claims**

1. A method of repairing a cable element or jointing two cable elements, the or each cable element including throughout its length a pressure resistant tube having an internal diameter and an external diameter and containing an optical fibre package, comprising the step of providing in place of the pressure resistant tube at the repair or joint, a reinstatement tube with a greater internal diameter than but substantially the same external diameter as the pressure resistant tube, whereby said

greater internal diameter of said reinstatement tube provides a cavity at the repair or joint to accommodate optical fibre slack, which cavity is of such dimensions that optical fibres lie helically therein without exceeding their minimum allowable bending radius.

22. An optical fibre cable reinstatement in which optical fibres lie helically in a reinstatement cavity without exceeding



their minimum allowable bending radius, said reinstatement cavity being provided in a tubular member whose external diameter conforms with that of a tubular member of the cable in which the optical fibres are arranged and whose internal diameter is larger than that of the tubular member whereby optical fibre slack is accommodated in a reinstatement of minimum length.

4,657,344

METHOD OF FABRICATING A LIGHT-DIFFRACTING STRUCTURAL COMPONENT

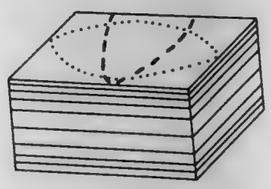
Heinz Böhm, Erlangen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 635,983, Jul. 30, 1984, abandoned. This application Jun. 2, 1986, Ser. No. 871,142

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, 3329510

Int. Cl.⁴ G02B 5/18; B32B 3/00, 15/00

U.S. Cl. 350—162.24 **6 Claims**



1. A method of manufacturing an optical component, said method comprising the steps of:

providing a substantially planar substrate;

successively depositing, from a vapor, a large number of substantially planar thin glass layers on the substrate to form a preform, said layers having different refractive indices and being arranged to form a parabolic refractive index profile along a line perpendicular to the layers; and

cutting the preform across the layers to form optical components with cut faces extending across the layers.

4,657,345

LASER SHIELD AND METHOD OF MAKING SAME

Bruce S. Gordon, Shelton, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Mar. 11, 1985, Ser. No. 710,148

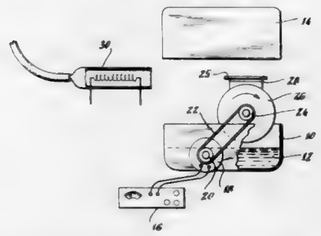
Int. Cl.⁴ G02B 5/22

U.S. Cl. 350—311 **10 Claims**

1. A method of making a laser shield which absorbs narrow band radiation of a laser beam while transmitting broad band radiation comprising the steps of:

combining at least one chromophore selected from one or more porphyrin complexes which may have been modified by metals forming a metallo-porphyrin complex with a solvent capable of dissolving the added porphyrin complexes,

mixing the combined solvent and chromophore for dissolving the chromophore in said solvent to provide a dissolved chromophore solution,



softening at least one surface of a transparent matrix material by bringing the surface of said transparent matrix material into contact with the dissolved chromophore solution at a predetermined temperature for a predetermined time period and thereby diffusing the chromophore in said solvent into said softened surface of said matrix material,

heat annealing said transparent matrix material for increasing the effective concentration of chromophore diffused into said matrix material.

4,657,346

OPTICAL PACKAGES INCLUDING FIBER SEALS

Robert W. Berry, Bethlehem; Stanley Kaufman, Northampton, and Friedrich Zwickel, Whitehall, all of Pa., assignors to American Telephone and Telegraph Company, Berkeley Heights and AT&T Technologies and AT&T Bell Laboratories, Murray Hill, both of, N.J.

Filed Feb. 21, 1984, Ser. No. 581,569

Int. Cl.⁴ G02B 6/36

U.S. Cl. 350—320 **10 Claims**



10. A method of fabricating an optical package including sealing a plurality of optical fibers comprising the steps of:

providing a cylindrical housing including a cylindrical opening therethrough comprising adjacent openings of unequal diameters, the larger diameter opening having a front end adjacent to the smaller diameter opening and a back end;

placing each fiber in a different slot in a cylindrical insert member having a plurality of slots with a front end and a back end around its periphery, the fibers also extending through the opening in the housing and the insert having a diameter slightly less than that of the larger-size opening;

depositing an epoxy material at some area along the fibers

between the front end of the larger diameter opening and the back end of the slots; and

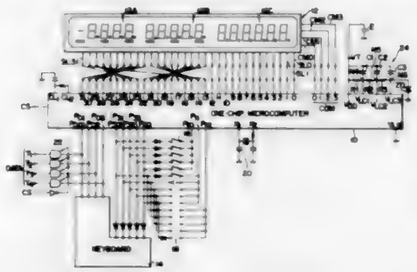
pushing the insert into the larger diameter opening so as to force the epoxy through the smaller diameter opening and through the slots in the insert thereby filling the space between the fibers, the insert, and the opening to seal the fibers.

4,657,347

LIQUID CRYSTAL DISPLAY WITH ZENER DIODE

Yoshiharu Nishimura, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1986, Ser. No. 896,117
Claims priority, application Japan, Aug. 21, 1985, 60-183651
Int. Cl.⁴ G02F *1/133*; G05F *3/18*; G09G *3/00*
U.S. Cl. 350—332 **12 Claims**



1. A liquid crystal display apparatus comprising:

liquid crystal display means having a plurality of display digits;

liquid crystal drive means having a plurality of voltage terminals for driving said liquid crystal display means by selectively supplying voltages applied to said voltage terminals to said liquid crystal display means;

first and second power source terminals; and

a power supply circuit for applying voltages to said voltage terminals, said power supply circuit having resistor means which is connected at one end to said first power source terminal and which has a plurality of nodes connected to said voltage terminals, and a Zener diode which is connected between the other end of said resistor means and said second power source terminal and which is made operative in a saturation region.

4,657,348

ARRANGEMENT TO REMOVE REFLECTION FROM LIQUID CRYSTAL DISPLAYS (LCD'S)

Wolfgang Ziegler, Fürth, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE83/00218, § 371 Date Nov. 15, 1984, § 102(e) Date Nov. 15, 1984, PCT Pub. No. WO84/03778, PCT Pub. Date Sep. 27, 1984
PCT Filed Dec. 24, 1983, Ser. No. 683,267
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3309970
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—347 R **5 Claims**

1. Arrangement to remove reflection from liquid crystal displays (**10**) comprising

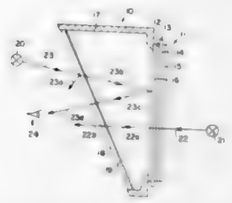
a substantially planar liquid crystal cell (**11**, **11***a*);

a cover disk (**18**) disposed spaced apart from, in front of, and at an oblique angle with respect to the plane of the liquid crystal cell (**11**, **11***a*);

a circular polarizer (**19**) applied to a face of said cover disk closest to said liquid crystal cell (**11**,**11***a*);

and

a λ/4 retarding foil (**16**) disposed on a front face of the liquid crystal cell (**11**, **11***a*) closest to said cover disk (**18**), said λ/4 retarding foil and said circular polarizer, cooperating



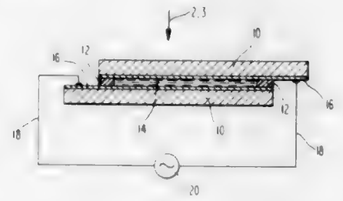
to linearly polarize light which has passed through both the λ/4 retarding foil and the circular polarizer.

4,657,349

ELECTRO- AND MAGNETO-OPTIC DEVICES

Mortimer M. Labes, Philadelphia, and Beverly D. Bostwick, Levittown, both of Pa., assignors to Temple University, Philadelphia, Pa.

Filed Aug. 14, 1984, Ser. No. 640,718
Int. Cl.⁴ G02B *26/00*
U.S. Cl. 350—362 **13 Claims**



1. An electro- or magneto-optic device comprising (a) a fluid suspension of anisotropic platelets in a dielectric medium, said platelets being mobile within said medium, and (b) means for subjecting said suspension to the influence of an electrical or magnetic field, said anisotropic platelets comprising a material having a density equal to or greater than that of nafoxidine hydrochloride and less than or equal to that of guanine.

4,657,350

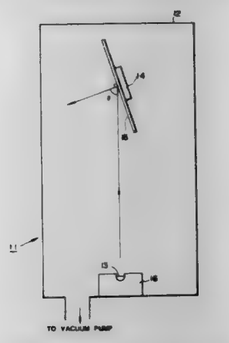
PROCESS FOR MANUFACTURING A DOUBLE REFRACTION PLATE

Toshio Mori, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 530,609, Sep. 9, 1983, abandoned. This application Feb. 18, 1986, Ser. No. 830,242
Claims priority, application Japan, Sep. 14, 1982, 57-158808
Int. Cl.⁴ G02B *5/30*; B05D *5/06*
U.S. Cl. 350—400 **13 Claims**

1. A process for manufacturing a double refraction plate, comprising the steps of: impinging and vapor-depositing dielectric material on a surface of a substrate from an oblique direction of at least 30° relative to a perpendicular to a surface thereof; and controlling the impinging oblique direction and deposited film thickness so that a resulting double refraction layer on the surface has a desired retardation of at least one-eighth of a wavelength.

10. A double refraction plate produced by the steps of: impinging and vapor-depositing dielectric material on a surface of a substrate from an oblique direction of at least 30° relative to a perpendicular to the surface thereof; and controlling the impinging oblique direction and deposited film thickness so that a resulting double refraction layer on the surface has a desired retardation of at least one-eighth of a wavelength.

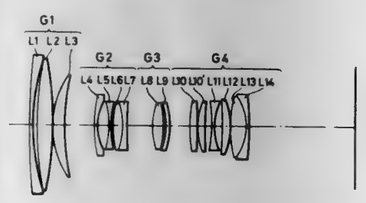


4,657,351

HIGH MAGNIFICATION CHANGE RATE ZOOM LENS SYSTEM

Susumu Mori, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Apr. 4, 1985, Ser. No. 720,083
Claims priority, application Japan, Apr. 16, 1984, 59-75992
Int. Cl.⁴ G02B *9/64, 15/16*
U.S. Cl. 350—427 **10 Claims**



1. In a zoom lens system having, in succession from the object side, a first lens group of positive refractive power, a second lens group of negative refractive power, a third lens group of positive refractive power and a fourth lens group of positive refractive power and including a wide angle of view of 70° or more and having a wide magnification change range of a zoom ratio of four times or more, the improvement residing in that when zooming is effected from the wide angle end to the telephoto end, said first lens group and said fourth lens group are moved linearly on the optic axis toward the object side, and said second lens group is moved nonlinearly on the optic axis in response to the movement of said first and fourth lens groups to maintain the image point constant, and relative to a linear movement locus passing through the position at the wide angle end of the magnification change range and the position at the telephoto end, said second lens group has a movement locus near to the image side from the wide angle end to the vicinity of the intermediate focal length state and has a nonlinear movement locus near to the object side from the vicinity of the intermediate focal length state to the telephoto end, and wherein said zoom lens system satisfies the following conditions:

$$1.0 \leqq f_o/fM \leqq 1.4 \quad (1)$$

$$0.4 \leqq |f_2|/fW \leqq 0.7 \quad (2)$$

$$0.5 \leqq f_3/fM \leqq 1.0 \quad (3)$$

$$0.3 \leqq f_3/f_4 \leqq 1.0 \quad (4)$$

$$0.03 \leqq e/|f_2| \leqq 0.25 \quad (5)$$

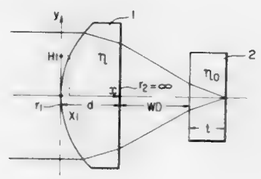
where f_1, f_2, f_3 and f_4 are the focal lengths, respectively, of said first lens group, said second lens group, said third lens group and said fourth lens group, fW is the focal length of the entire system at the wide angle end, fT is the focal length of the entire system at the telephoto end, e is the deviation width of the nonlinear movement locus of said second lens group for magnification change from the linear movement locus thereof, and fM is defined as $fM = \sqrt{fW \cdot fT}$.

4,657,352

IMAGE OPTICAL SYSTEM INCLUDING A NON-SPHERICAL SINGLE LENS

Shigeyuki Suda, Tokyo; Masayuki Suzuki, and Toshinori Ando, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1985, Ser. No. 781,477
Claims priority, application Japan, Oct. 5, 1984, 59-209992
Int. Cl.⁴ G02B *13/08*
U.S. Cl. 350—432 **6 Claims**



1. An imaging optical system having a non-spherical single lens having a first surface of a non-spherical shape in which the radius of curvature becomes gradually greater away from the optic axis and a planar second surface, said imaging optical system satisfying the following conditions:

$$1.2 < q < 1.5$$
$$1.68 < n$$

$$q = \frac{d(1 - NA^2)}{f(n-1)^3}$$

where f is the focal length of said single lens, d is the thickness of said single lens on the optic axis, n is the refractive index of said single lens, NA is the numerical aperture of said single lens and r_1 is the radius of curvature of said first surface in the vicinity of the optic axis.

4,657,353

CONICAL BEAM CONCENTRATOR

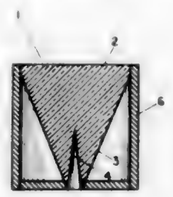
John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Jul. 17, 1985, Ser. No. 755,881
Int. Cl.⁴ G02B *13/18, 17/08*
U.S. Cl. 350—432 **1 Claim**

1. A conical beam concentrator comprising a single lens (**1**) having a planar section (**2**) with receives and transmits an annular incipient beam (**7**) of direct solar radiation, having a concave conical reflective section (**3**) which reflects beam (**7**)

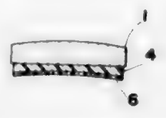
VOL 1077 ISS 2 AP 14 1987 UMI

in toward the optic axis of the lens, forming a convergent conical beam (8), and having a concave conical section (4)



which refracts beam (8), forming concentrated circular whole beam (9) which is emitted parallel to the optic axis.

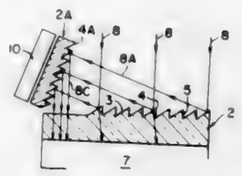
4,657,354
COMPOSITE OPTICAL ELEMENT
Hiroshi Kobayashi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 5, 1984, Ser. No. 647,615
Claims priority, application Japan, Sep. 7, 1983, 58-165738
Int. Cl.⁴ B32B *3/00, 5/00;* **G02B** *13/18*
U.S. Cl. 350—432 **13 Claims**



1. A composite optical element for use in an image forming system comprising:
a substrate of a glass material;
a first thin layer of a first resin material adhered to the glass material substrate, and
a second thin external layer of a second resin material adhered to the first resin layer and molded into a desired optical surface, the first resin material being characterized by a relatively short setting period and slight contraction during its setting period and the second resin material being characterized by a higher degree of contraction during its setting period and greater hardness than the first layer, both layers include an acrylate resin material having a characteristic that permits hardening upon application of ultraviolet rays, the second layer being thinner than the first layer.

4,657,355
DEVICE FOR CHANGING LIGHT WIDTH AND DIRECTION
Masataka Negishi, 1000, Oaza Ryoke, Urawa-Shi, Saitama-Ken, Japan
PCT No. PCT/JP82/00191, § 371 Date Jan. 19, 1983, § 102(e) Date Jan. 19, 1983, PCT Pub. No. WO82/04326, PCT Pub. Date Dec. 9, 1982
PCT Filed May 25, 1982, Ser. No. 463,443
Claims priority, application Japan, May 25, 1981, 56-78149; Oct. 21, 1981, 56-168042
Int. Cl.⁴ G02B *3/08, 5/04*
U.S. Cl. 350—452 **2 Claims**

1. A device for changing the width and direction of light comprising:
a transparent Fresnel plate having a surface with a plurality of minute parallel ridges having sloped faces, said Fresnel plate being positioned with said surface facing a light ray source for receiving incident light rays therefrom across a predetermined width of said plate in a direction transverse to said ridges, said sloped faces of said ridges being oriented in a direction and at an angle to the incident light rays for reflecting the light rays reaching said faces from the light ray source in a path of reflection which has a width transverse to said path which is smaller than said predetermined width and which is at an angle to the incident light rays;



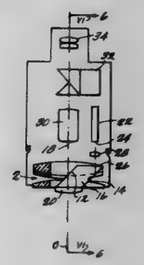
energy collecting means disposed in said path of reflection for receiving the reflected rays from said sloped faces and collecting the energy of the light rays; and
a transparent second Fresnel plate disposed in said path of reflection between the sloped faces and said energy collecting means, said second Fresnel plate having ridges parallel with and facing said sloped faces.

4,657,356
STEREOSCOPIC MICROSCOPE WITH A PAIR OF IMAGE ROTATION CORRECTING MEANS
Isao Matsumura, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 27, 1985, Ser. No. 749,504
Claims priority, application Japan, Jul. 4, 1984, 59-138352; Jul. 4, 1984, 59-138353
Int. Cl.⁴ G02B *21/22*
U.S. Cl. 350—516 **8 Claims**



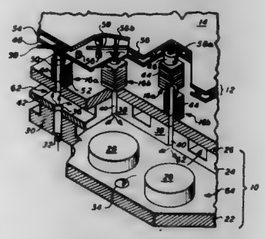
1. A stereoscopic microscope having:
a first optical system including two optical paths defining two optical axes for stereoscopic observing a part to be examined;
a second optical system including two optical paths defining two optical axes for stereoscopically observing said part to be examined, said second optical system being capable of revolving about said first optical system; and
a pair of image rotation correcting means provided in each optical path of said second optical system for the stereoscopic observation, each image rotation correcting means rotating about each optical axis of said second optical system so as to compensate for the revolution of an image observed by said second optical system upon the revolution of said second optical system about said first optical system.

4,657,357
ILLUMINATION SYSTEM FOR SINGLE OBJECTIVE LENS BINOCULAR MICROSCOPE
Shinichi Nishimura, Saitama, and Nobuaki Kitajima, Tokyo, both of Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 22, 1985, Ser. No. 790,217
Claims priority, application Japan, Oct. 23, 1984, 59-222533
Int. Cl.⁴ G02B *21/12, 7/18, 27/10, 21/22*
U.S. Cl. 350—516 **19 Claims**



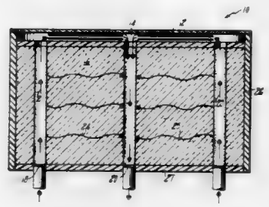
1. An objective lens arrangement, comprising:
an objective lens having a slotted portion;
light flux deflection means disposed within a slot formed by said slotted portion, said deflection means having at least one reflection surface;
means for providing an illuminating light flux at said reflection surface of said deflection means, the light flux passing through said deflection means and exiting at said deflection means via its reflection surface, the deflection means being so shaped and positioned that light flux exiting at the deflection means via its reflection surface illuminates a field of view along an axis of illumination that is approximately coaxial with a viewing axis of the lens.

4,657,358
COOLED DEFORMABLE MIRROR
Frank M. Anthony, Kenmore, N.Y.; Ralph E. Aldrich, Acton, and Steven M. Daigneault, Rockland, both of Mass., assignors to Itek Corporation, Lexington, Mass. and Textron, Inc., Buffalo, N.Y.
Filed Aug. 23, 1985, Ser. No. 768,768
Int. Cl.⁴ G02B *5/08*
U.S. Cl. 350—610 **22 Claims**



1. A cooled deformable mirror having a continuous mirror surface including:
a. a faceplate having on one side thereof a continuous reflecting surface for reflecting an incident beam of electromagnetic radiation, said faceplate being comprised of an upper plate and a lower plate with one or more enclosed spaces between said upper plate and said lower plate for receiving and containing a coolant for cooling said faceplate, said lower plate including two or more apertures located to allow coolant to enter and leave each of said enclosed spaces between said upper and said lower plates;
b. two or more actuators fastened to the lower plate of said faceplate to enable said faceplate to be selectively deformed in response to signals applied to said actuators, each of said actuators further including an aperture extending through the length thereof to permit coolant to be delivered through said actuators toward and away from said enclosed spaces in said faceplate, said actuators being positioned with an aperture in each actuator in fluid-communicating relationship with one of said apertures in the lower plate of said faceplate;
c. a base manifold connected to said apertures in said actuators, said base manifold including means for circulating coolant to an aperture in at least one of said actuators and means for receiving coolant from an aperture in at least another one of said actuators; and
d. means for circulating coolant to and away from said base manifold;
whereby said faceplate is cooled by coolant circulating from said base manifold through the aperture in at least one of said actuators into the enclosed spaces between said upper plate and said lower plate of said faceplate and back to said base manifold through an aperture in at least another one of said actuators.

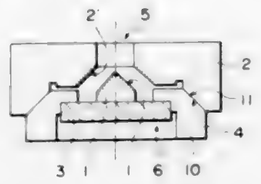
4,657,359
TRANSPIRATIONALLY COOLED LASER MIRROR
Charles C. Thompson, Jupiter, and James R. Bolch, North Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 22, 1986, Ser. No. 854,634
Int. Cl.⁴ G02B *5/08, 7/18*
U.S. Cl. 350—610 **4 Claims**



1. A transpirationally cooled laser mirror comprising:
optical coating means reflecting an optical signal at a first surface generating heat therein, said optical coating means having a thermally conductive opposing second surface providing said heat therethrough;
heat exchanger means receiving said optical coating means second surface at a first surface thereof conducting said heat to coolant means flowing in passages fed by manifolds within said heat exchanger, said manifolds further having source and return openings;
substrate means adapted to receive said heat exchanger means in register with substrate source and return ports corresponding to said manifold source and return openings, said substrate means comprised of porous material additionally enabling said coolant to transpirationally flow between said substrate source and return ports.

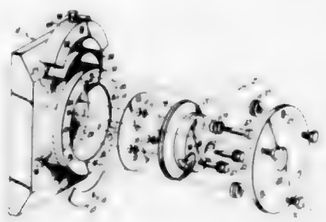
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4,657,360
OPTICAL SYSTEM FOR MAKING AN ANNULAR BEAM
Kazuhiro Izukawa, and Ichiro Okumura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 1, 1985, Ser. No. 697,457
Claims priority, application Japan, Feb. 10, 1984, 59-21932
Int. Cl.[4] G02B *17/06, 7/18, 5/10*
U.S. Cl. 350—620 4 Claims



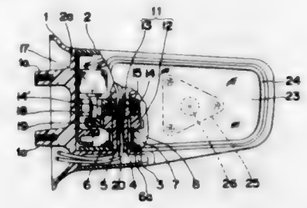
1. An optical system for making an annular beam, comprising:
a first member supporting a convex reflecting surface for reflecting an incident beam and having a first tapered surface; and
a second member having a second tapered surface bearing against said first tapered surface and supporting a concave reflecting surface in an opposed relation relative to said convex reflecting surface so as to reflect the beam reflected by said convex reflecting surface and make it into an annular beam.

4,657,361
MIRROR MOUNTING ARRANGEMENT
Frederick G. Eitel, North Palm Beach, and Robert G. Jaeger, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Mar. 14, 1985, Ser. No. 711,778
Int. Cl.[4] G02B *5/08, 7/18*
U.S. Cl. 350—633 11 Claims



1. In an optical system comprising a mirror subject to vibratory disturbances thereon and means for mounting said mirror to a structure, the improvement characterized by:
a thin layer of viscoelastic damping material disposed between said mirror and mounting means for damping said vibratory disturbance; and
means for positively attaching said mirror to said mounting means while limiting the compressive loading of said viscoelastic damping material resulting from said attachment, thereby reducing the risk of creep of said viscoelastic damping material.

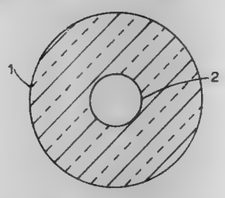
4,657,362
DOOR MIRROR
Masaru Suzuki, Chiryu, Japan, assignor to Kabushiki Kaisha Tokai Riki Denki Seisakusho, Aichi, Japan
Filed Feb. 25, 1985, Ser. No. 705,099
Claims priority, application Japan, Feb. 27, 1984, 59-36964; Jul. 24, 1984, 59-158435
Int. Cl.[4] B60R *1/06;* G02B *5/08, 7/18*
U.S. Cl. 350—637 8 Claims



2. In a door mirror for use in a motor vehicle, the combination which comprises:
a stay having a shaft portion and secured on an outer surface of a door of the vehicle,
a mirror visor pivotally supported on the stay so that the visor may rotate about the shaft portion of the stay between a projected and a retracted position,
a source of DC power for the motor;
power transmission means for transmitting the power developed by the motor to the stay to pivotally move the visor between the projected and retracted position with respect to the stay, the power transmission means including a first gear connected with the motor and a second gear secured on the shaft portion of the stay and arranged to engage the first gear, whereby the motor when driven turns the first gear together with the visor around said second gear and, hence, around the shaft portion of the stay so that the visor moves between the retracted and projected positions;
a switching circuit for connecting the motor to the power source and for selectively reversing the polarity of power applied to the motor to selectively drive the motor in a desired direction;
a manually operable switch for operating the switching circuit to move said visor from the retracted position to the projected position or from the projected position to the retracted position; and
a rotary switch mounted on the shaft portion of the stay and coupled to the switching circuit, the rotary switch being arranged to sense the pivotal movement of visor, and to be turned to one state when the visor is in one of the retracted and projected positions, and to be turned to another state during the time that the visor passes an intermediate position between the retracted and projected positions, whereby the operation of said switching circuit and the motor stops when the rotary switch is turned to said one state.

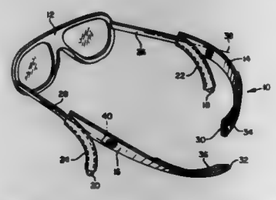
7. In a door mirror for use in a motor vehicle which comprises a stay secured on an outer surface of a door and pivotably supports a mirror visor thereon with the stay having a shaft portion about which the visor rotates, the combination which comprises:
an electrical motor mounted on the visor
a source of DC power for the motor;
power transmission means for transmitting the power developed by said motor to said stay to pivotally move said visor between a projected and retracted position with respect to said stay, the power transmission means including a first gear connected to said motor and a second gear secured on the shaft portion of the stay for engaging the first gear, whereby when the motor is driven, the first gear turns around said second gear and hence, around the shaft portion of said stay,
control means connected between the power source and the motor for applying power to the motor with a selected polarity to cause the motor to move said visor to one of the retracted and projected positions from the other position, and
a rotary switch mounted on the shaft portion of the stay and connected to the control means, the rotary switch being arranged to sense the pivotal movement of said visor and to be turned to one state when the visor has reached the retracted or projected position to thereby terminate the application of power to the motor and stop movement of the visor.

4,657,363
FLUORESCENT CORNEAL COLOR CHANGE DEVICE
Charles W. Neefe, 811 Scurry St., P.O. Box 429, Big Spring, Tex. 79720
Filed Aug. 26, 1985, Ser. No. 769,258
The portion of the term of this patent subsequent to Oct. 7, 2003, has been disclaimed.
Int. Cl.[4] G02C *7/04, 7/10;* D06P *5/00*
U.S. Cl. 351—162 12 Claims



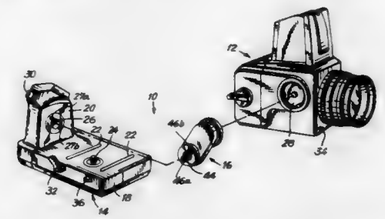
1. A fluorescent cosmetic device for changing the apparent color of the eye substantially the size and shape of the cornea and a daylight fluorescent pigment dispersed within the device is composed of a fluorescent dye in a transparent organic amorphous resin particle capable of fluorescing light of a specific color under visible light, the fluorescent color being visible under daylight conditions changes the apparent color of the eye.

4,657,364
EYEWEAR RETAINER
Edmond E. Murrell, 2204 NE. 87th Ave., Vancouver, Wash. 98662
Filed Sep. 12, 1985, Ser. No. 775,510
Int. Cl.[4] G02C *3/02*
U.S. Cl. 351—156 11 Claims



1. A retainer for holding eyewear including a pair of side members, each including a bow at the rear end thereof, securely in place on a person's head, comprising:
(a) first and second elongate elastic strap members, each having a front end, a rear end, a top margin and a bottom margin, and each defining a respective longitudinal axis thereof;
(b) a pair of elastic tubular members each adapted to extend surroundingly along a respective bow of said eyewear and defining a tube axis and each tubular member being attached to a respective one of said strap members adjacent said front end thereof, the respective tube axis of each tube defining a predetermined acute angle with respect to the longitudinal axis of the respective one of said strap members and each tubular member having a lower end extending rearwardly and downwardly beneath said bottom margin of said respective one of said strap members; and
(c) first and second mating pieces of hook-and-loop fastening material each attached to the rear end of a respective one of said strap members so as to hold said rear ends selectively and adjustably together with an optional amount of overlapping of each relative to the other so as to provide a desired amount of tension in said strap members to retain said eyewear.

4,657,365
AUTOMATIC CAMERA WINDING APPARATUS
Menachem J. Adelman, 1635 E. 10th St., Brooklyn, N.Y. 11223
Filed Dec. 6, 1985, Ser. No. 806,024
Int. Cl.[4] G03B *1/12, 1/18*
U.S. Cl. 354—173.1 11 Claims



1. An automatic winding apparatus for a camera of the type having an internal film advancement mechanism and a drive socket associated with said film advancement mechanism, comprising:
a motor drive including base means for supporting said camera, a drive engagement section having a drive engaging sprocket, motor means for driving said drive engaging sprocket and actuating means for actuating said motor means to drive said drive engaging sprocket; and
a gear assembly including at least first gear means for operatively engaging with said drive socket and second gear means for operatively engaging said drive engaging sprocket with said first gear means such that said motor means drives said internal film advancement mechanism through said drive engaging sprocket, said second gear means, said first gear means and said drive socket.

4,657,366
SHUTTER DEVICE FOR CAMERA
Yoshiaki Tanabe, Tokyo; Akira Katayama, Koganei, and Masanori Hasuda, Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Apr. 23, 1986, Ser. No. 854,886
Claims priority, application Japan, Apr. 30, 1985, 60-93462; Apr. 30, 1985, 60-93463
Int. Cl.[4] G03B *9/40*
U.S. Cl. 354—246 10 Claims

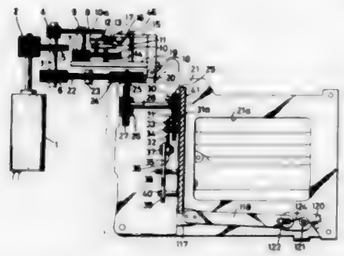
1. A focal plane shutter for camera comprising:
an opening blade group and a closing blade group, each consisting of thin opaque blades to be expanded and foled for closing and opening an exposure aperture;
an opening blade-driving member connected with said opening blade group and movable between the cover position in which the opaque blades of said group are expanded

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and the open position in which said opaque blades are folded up;

a closing blade-driving member connected with said closing blade group and movable between the cover position in which the opaque blades of said group are expanded and the open position in which said opaque blades are foled up;

exposure operation means for moving said opening blade-driving member from the cover position to the open position and the closing blade-driving member from the open position to the cover position for an exposure operation;



a braking member connectable with the closing blade-driving member moving from the open position to the cover position and able to change its position from an initial position while absorbing the kinetic energy of said moving driving member; and

resetting means for moving said opening blade-driving member to the cover position, said closing blade-driving member to a determined position between the cover position and the open position and said braking member to the initial position after the completion of the exposure operation.

4,657,367

ELECTRONIC FLASH APPARATUS

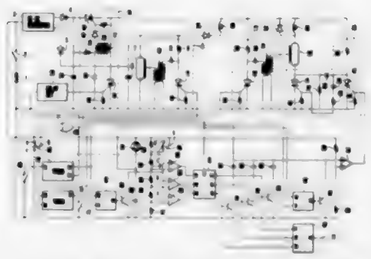
Hiroyuki Katsuka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha

Filed Jul. 29, 1985, Ser. No. 759,908

Claims priority, application Japan, Aug. 6, 1984, 59-163900

Int. Cl.⁴ G03B *15/05*

U.S. Cl. 354—415 **11 Claims**



1. An electronic flash apparatus for carrying out preliminary illumination to determine photographic condition for flash photography prior to making up an exposure and a main illumination for making up the exposure, comprising:

(a) a first light source displaceably mounted on a body of said flash apparatus;

(b) a second light source undisplaceably mounted on the body;

(c) control means operating in such a manner that when said first light source is not displaced, the preliminary illumination is carried out by firing said second light source, and the main illumination is carried out by firing said first light source, and when said first light source is displaced, the preliminary illumination and the main illumination are carried out by said first light source.

4,657,368

AUTOMATIC EXPOSURE CONTROL DEVICE

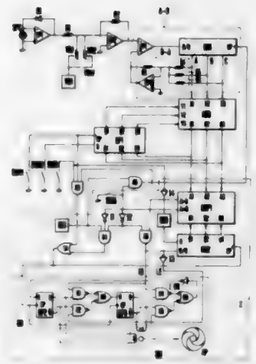
Masaharu Kawamura, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 601,742, Apr. 19, 1984, abandoned, which is a continuation of Ser. No. 452,073, Dec. 22, 1982, abandoned. This application Feb. 10, 1986, Ser. No. 828,578

Claims priority, application Japan, Dec. 24, 1981, 56-208083; Dec. 24, 1981, 56-208084

Int. Cl.⁴ G03B *7/095*

U.S. Cl. 354—452 **18 Claims**



1. In a camera having means for adjusting an aperture opening, by using an electro-driven means and a light metering circuit receptive of light passing through said aperture opening, whereby after a light metering operation has been carried out, an exposure operation is executed, said camera including:

(a) an aperture signal forming circuit for producing an aperture control signal;

(b) means for detecting an aperture opening condition controlled by said aperture adjusting means, said detecting means determining whether or not the aperture opening condition is suited for the light metering operation and producing an output when the aperture opening is not in the condition suited for the light metering operation;

(c) a diaphragm drive circuit responsive to the output of said detecting means for driving said aperture adjusting means in a direction to the aperture opening condition for light metering during the light metering operation before said exposure operation;

(d) inhibiting means for inhibiting the response to the output of the detecting means of the diaphragm drive circuit by a shutter release operation, the camera being shifted from said light metering operation to said exposure operation by the shutter release operation; and

(e) a control circuit for transferring the aperture control signal from said aperture signal forming circuit to said drive circuit when in the exposure operation, thereby the aperture opening is changed to a condition corresponding to said aperture control signal.

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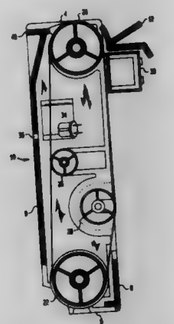
DISPOSABLE PHOTOCONDUCTIVE BELT ASSEMBLY FOR A PRINTER OR A COPIER

Shoji Takeuchi, Allendale, N.J., assignor to Kentek Information Systems, Inc., Allendale, N.J.

Filed Apr. 2, 1985, Ser. No. 718,947

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 BE **15 Claims**



1. A self-contained photoconductive belt assembly for an electrographic printing apparatus, comprising

a frame,

first and second substantialy parallel rollers rotatably mounted within said frame, said first and second rollers being aligned vertically within said frame,

an endless photoconductive belt disposed about and rotating with said first and second rollers,

charging means mounted on said frame for charging said photoconductive belt,

mounting means for slidably and removably mounting said self-contained photoconductive belt assembly vertically within said electrographic printing apparatus, and

sheet guide means mounted integrally on the top of said frame, said sheet guide means and frame defining a horizontal transfer zone for said electrographic printing apparatus on top of said frame,

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4,657,370

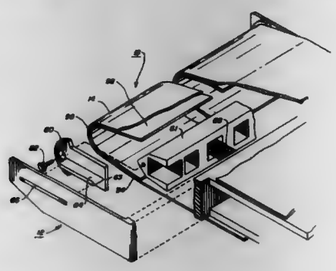
BELT SUPPORT AND TRACKING APPARATUS

Richard L. Forbes, II, Pittsford; James J. Franzen, Rochester; James A. Solomon, Rochester, and Donald J. Weikel, Jr., Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 24, 1985, Ser. No. 813,184

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 BE **22 Claims**



1. Apparatus for supporting a belt arranged to move in an endless predetermined path and for controlling the lateral movement of the belt from the predetermined path, said apparatus comprising a stationary non-rotating arcuate tracking shoe with a belt path defining surface for supporting a belt thereon, said tracking shoe including vertically oriented flanges at opposed sides of said path defining surface and extending from said path defining surface outwardly to provide belt edge guides.

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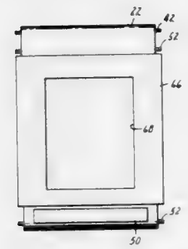
ELECTROPHOTOGRAPHIC COPYING APPARATUS AND PROCESS

James F. Sobieski, Mahtomedi, and Robert A. Muehlhausen, Marine, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 720,089, Apr. 5, 1985. This application Jun. 19, 1986, Ser. No. 876,112

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 R **3 Claims**



1. An electrophotographic copying apparatus including a photosensitive element, an object document, means for providing a light image of said object document, means for conveying said light image to said photosensitive element and means for transferring said light image from said photosensitive element to a receptor sheet, comprising:

light mask means interposed between said object document and said photosensitive element for preventing a portion of said light image from reaching said photosensitive element so that less than all of said light image of said object document is transferred to said receptor sheet.

4,657,372

PRINTER

Kunihiko Ikeda, 89-6 Hanakoganei 6-chome, Kodaira-shi, Tokyo; Shigeru Suzuki, 440 Morooka-cho, Kohoku-ku, Yokohama-shi, Kanagawa; Takashi Yokota, 29-19 Tamazutsumi 1-chome, Setagaya-ku, Tokyo; Akira Shimura, 10-1 Masukata 2-chome, Tama-ku, Kawasaki-shi, Kanagawa; Yutaka Kodama, Room #502, 18-16 Minami-rokugo 1-chome, Ohta-ku, Tokyo; Shigeru Yamazaki, 21-21 Minami-cho, 4-chome, Tanashi-shi, Tokyo; Masaichi Niro, Ricoh Kamiike 5-ryo, 22-10 Kamiikedai 4-chome, Ohta-ku, Tokyo, and Satoru Tomita, 1846 Furuichiba, Saiwai-ku, Kawasaki-shi, Kanagawa, all of Japan

Filed Oct. 15, 1982, Ser. No. 434,701

Claims priority, application Japan, Oct. 16, 1981, 56-165128

Int. Cl.⁴ G03G *15/04, 15/22*

U.S. Cl. 355—3 R **57 Claims**

1. A compact printer which is capable of being easily serviced comprising:

a printer body;

a record unit including a record in the form of an endless belt extending around a plurality of rollers and driven for movement in one direction, said record unit being located substantially centrally within said printer body and capable of being slid out of the printer body for servicing, said printer body having positioning means for positioning the

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record unit back into said substantially central location when the record unit is slid back in;

means for controlling an offsetting of the record;

a charger unit for uniformly charging the record;

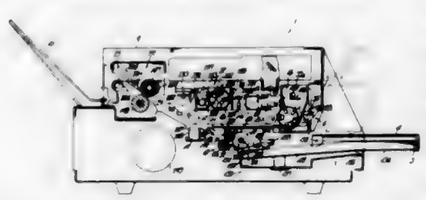
exposure means for irradiating the charged record with light information which corresponds to an image to be recorded to thereby form an electrostatic latent image on the record;

a developer unit including a developer roller which supplies a developer to the record to convert the latent image into a corresponding visual image;

said developing unit having a support unit on which the record unit is detachably mounted, the developing unit and record unit together forming a record/developing unit which is capable of being slid out of the printer body, the printer body having constraining means for constraining the record/developing unit from being fully slid out so that the record unit is protectively kept within the printer body when the developing unit is being replenished with developer, and release means for allowing the entire record/developing unit to slide out when the record unit needs servicing;

a sheet feeder for feeding a record sheet from a stack, as separated one by one, so as to be brought into close contact with the record which carries the visual image;

a transfer unit, located near a driven roller portion at one end of the record unit, for transferring the visual image from the record onto the record sheet, the record sheet with the transferred image thereon being separated from the record around the driven roller portion of the record unit;



a fixing unit, located along a path of movement of the record sheet from the transfer unit, for fixing the visual image on the record sheet;

a delivery means for delivering the fixed record sheet from the fixing unit out of the printer;

wherein the path of movement of the record sheet between the transfer unit and the delivery means is arranged to be a substantially linear path;

a neutralizer for removing any residual charge from the record after the visual image has been transferred therefrom;

a cleaning unit adapted to be brought into contact with the surface of the record after the visual image has been transferred therefrom to remove any residual developer from the surface;

drive means for driving the various component units including the record unit; and

control means for controlling the operation of the various units including the drive means, the control means having sensor means coupled thereto for assuring that the record is properly positioned within the printer body before being driven to produce the visual image on the record sheet;

wherein said sheet feeder, transfer unit, neutralizer, cleaning unit, charger unit, and exposure means are arranged sequentially as recited around the substantially central location of the record unit in the general configuration of the letter U such that the record/developer unit can be slid into or out of a hollow portion defined by the U-shaped configuration of the recited component units.

4,657,373

ELECTROPHOTOGRAPHIC COPYING DEVICE WITH MEANS TO EFFECT UNIFORM AGING OF PHOTOCONDUCTIVE ELEMENT

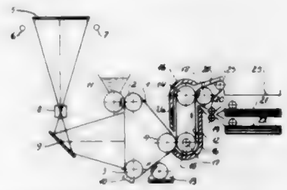
Leon M. W. Winthaegen, Maasbree, and Georgius H. Schipper, Meerlo, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Jul. 12, 1985, Ser. No. 755,949

Claims priority, application Netherlands, Jul. 25, 1984, 8402339

Int. Cl.⁴ G03G *21/00*

U.S. Cl. 355—3 R **4 Claims**



1. In an electrophotographic copying device having a moving, endless photoconductive element, means for forming a powder image on said element by electrostatically charging, image-wise exposing and developing; an endless intermediate support, the movement of which is synchronized with that of said element and which, under the influence of pressure, is able to accept the powder image from said element and thereafter to transfer said image to and fix it on a copy sheet under the influence of pressure and heat; means for pressing the intermediate support against the element in a first zone and against the copy sheet in a second zone; means for heating the intermediate support; and means for moving the copy sheet to the said second zone, the improvement comprising a means for cooling a portion of the surface of said intermediate support when it is moving from said second zone to the first, said surface portion being that which has not been in contact with the copy sheet in the second zone.

4,657,374

DEVELOPMENT SYSTEM FOR PHOTORECEPTOR HAVING SURFACE POTENTIAL AND A LARGE AMOUNT OF CHARGE

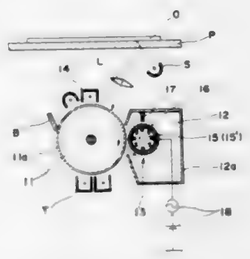
Yukimasa Kuramoto, Takarazuka, and Eiichiro Tanaka, Kishiwada, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 18, 1985, Ser. No. 746,113

Claims priority, application Japan, Jun. 23, 1984, 59-129864; Nov. 10, 1984, 59-235979

Int. Cl.⁴ G03G *15/00, 15/08*

U.S. Cl. 355—3 R **9 Claims**



1. An electrophotographic apparatus comprising: a photoreceptor mainly composed of amorphous silicon having a thickness in the range of 5 to 25 μm and low surface potential, and a developing device employing a developing material including electrically insulative composite components, said developing device having a developing sleeve and means for impressing on said sleeve a developing bias voltage on which an AC voltage is superposed, and a magnetic roller having magnetic poles and accommodated within said developing sleeve.

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PHOTOCOPYING DEVICE WITH SPECIFIED CONDITION CHECKING FUNCTION

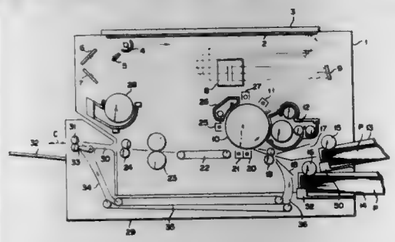
Junji Watanabe, Yokohama, and Masahiko Ogura, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

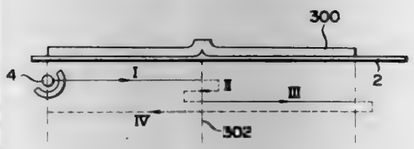
Filed Jul. 11, 1984, Ser. No. 629,976

Claims priority, application Japan, Jul. 18, 1983, 58-130509; Jul. 25, 1983, 58-135407

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—14 R **7 Claims**





1. A copying device comprising:

a photosensitive body;

a document table for supporting a document, said document table including means for defining a dividing line, said document supported by said table being divided into first and second pages by said dividing line, a position of said dividing line being changeable;

exposing means for exposing a document supported on said document table and for froming an image of the document on said photesensitive body, said exposing means initially exposing the first and second pages of said document at a time of a first and second exposure, respectively, to form images of said first and second pages on said photosensitive body at the time of said first and second exposures, respectively;

transfer means for transferring the image formed on said photosensitie body to a copying sheet;

copy number inputting means for inputting a predetermined number of copies;

copy start command inputting means for inputting a start command;

check command inputting means for inputting a check command; and

copying operation control means for interrupting a copying operation after a preset number of copies are obtained if the check command has been input, and for restarting the copying operation to obtain a number of copies equal to the difference between the inputted predetermined number of copies and the preset number of copies in response to input of the check command again during the time the copying operation is interrupted.

4,657,376

IMAGE FORMING APPARATUS IN WHICH AN IMAGE FORMING UNIT AND A DOCUMENT FEEDING UNIT ARE ALTERNATELY OPERATED

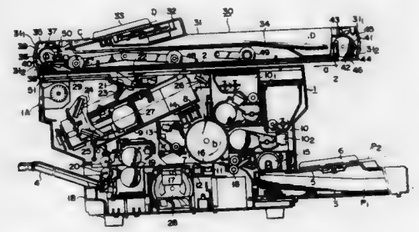
Fumito Ide, Zama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 10, 1985, Ser. No. 786,010

Claims priority, application Japan, Oct. 17, 1984, 59-217809

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—14 R **4 Claims**



1. An image forming apparatus with an automatic document feeder, said apparatus comprising:

a document table;

an image forming body unit comprising optical means for optically scanning a document on said document table to be copied to obtain a document image, image forming means for forming said document image from said optical means on to an image formation medium, and fixing means for fixing said document image which has been formed by said image forming means on said image formation medium;

an automatic document feeder comprising an insertion section provided to cover said document table and through which said document to be copied is inserted, first conveying means for conveying said inserted document to a predetermined position on said document table, discharging means for discharging said document which has been conveyed by said first conveying means, second conveying means for conveying said document from said predetermined position to said discharging means, first detector means for detecting an insertion of the document to be copied through said insertion secton, and second detector means for detecting that said document is conveyed by said first conveying means to said predetermined position on said document table;

means for instructing an image formation;

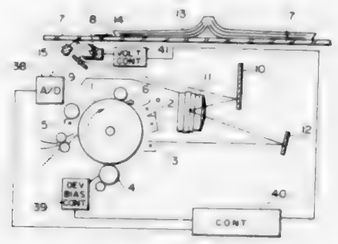
first control means, responsive to an instruction from said image formation instructing means, for supplying a first sequence control signal necessary for an image formation operation to said image forming body unit, and for simultaneously generating a first wait instruction signal for commanding said automatic document feeder to a wait state during the image formation operation;

second control means, responsive to one of (a) said detection signals from said first and second detector means, and (b) said first wait instruction signal from said first control means, for producing a second sequence control signal necessary for one of (a) a document conveying operation and (a) said wait state to a respective associated means of said automatic document feeder, and for generating, during said document conveying operation, a second wait instruction signal for setting a respective means, other than said fixing means of said image forming body unit, in a wait state; and

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power source means having a single power source shared between said image forming body unit and said automatic document feeder.

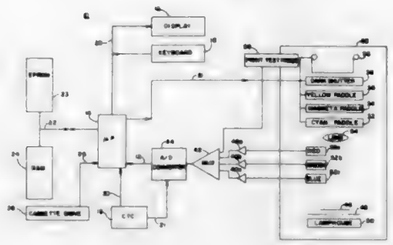
4,657,377
IMAGE FORMATION APPARATUS WITH VARIABLE DENSITY CONTROL
Shinkichi Takahashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 570,518, Jan. 13, 1984. This application May 21, 1985, Ser. No. 736,343
Claims priority, application Japan, Jan. 24, 1983, 58-9699
Int. Cl.⁴ G03G *15/00*
U.S. Cl. 355—14 R **5 Claims**



1. An image forming apparatus comprising:
a reference member for providing reference density information;
illuminating means for illuminating said reference member and an original to be copied;
density detecting means for receiving light from said reference member and light from the original when each is illuminated by said illuminating means;
determining means for determining an image forming condition in accordance with density information detected by said density detecting means from light from the original and predetermined control characteristics;
changing means for changing the control characteristics, prior to determination of the image forming condition, in accordance with density information detected by said density detection means from light from said reference member; and
means for forming an image of the original in accordance with the image formation condition determined by said determining means.

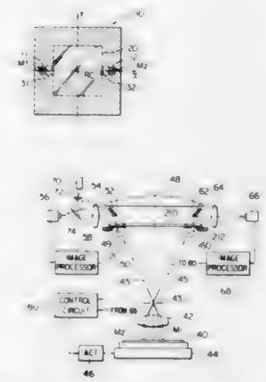
4,657,378
COLOR PRINTING CONTROL SYSTEM AND METHOD
Henry F. Hope; Stephen F. Hope, both of Huntingdon Valley, Pa., and David Fidelman, Roslyn Heights, N.Y., assignors to Hope Industries, Inc., Willow Grove, Pa.
Continuation of Ser. No. 477,824, Mar. 22, 1983, Pat. No. 4,526,462. This application May 30, 1985, Ser. No. 739,187
Int. Cl.⁴ G03B *27/73, 27/80*
U.S. Cl. 355—38 **4 Claims**

1. A method for correcting for ambient light readings of the photocells used in reading light transmitted by a color negative where the ambient light includes lighting around the printer which comprises the steps of:
(a) detecting by way of the photocells the amount of light of each primary color which strikes the printing paper when the lighting around the printer is turned off;
(b) detecting the amount of light of each primary color which strikes the printing paper under ambient light conditions;
(c) storing an ambient light correction related to the difference between the amounts of light in steps (a) and (b); and



(d) applying the stored correction to future photocell readings taken under ambient light conditions.

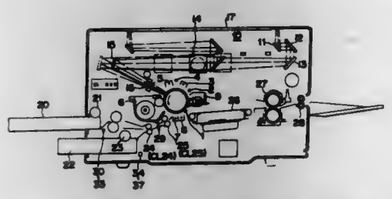
4,657,379
PHOTOMASK AND EXPOSURE APPARATUS USING THE SAME
Kyoichi Suwa, Yokohama, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan
Filed May 3, 1985, Ser. No. 729,970
Claims priority, application Japan, May 11, 1984, 59-94052
Int. Cl.⁴ G03B *27/42*
U.S. Cl. 355—53 **6 Claims**



1. An apparatus for forming a plurality of identical images on a photosensitive substrate, comprising:
a photomask having a pattern region which is formed on a surface of said photomask to locally transmit light therethrough and which has an original pattern formed thereon, first and second mark regions which locally transmit light therethrough and which are formed at opposite sides of said pattern region, said first and second mark regions being provided with first and second reference mark means therein, respectively, and first and second light-shielding regions which are formed between said pattern region and said first mark region and between said pattern region and said second mark region, respectively, said first light-shielding region having at least the same size as that of said second mark region and said second light-shielding region having at least the same size as that of said first mark region;
moving means for moving said substrate and said photomask relative to each other;
a projection optical system provided between said photomask and said substrate;

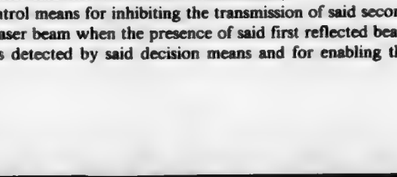
radiating means for supplying a radiation beam to expose said substrate through said photomask and said projection optical system; and
means for controlling said moving means and said radiating means so as to form an image of said original pattern on said substrate at each of a plurality of positions that constitute a matrix, each image of said original pattern having accompanying images of said first and second reference mark means, said images being formed so that a distance is provided between two of said original pattern images adjacent to each other along a first direction on said substrate, so that the image of the first reference mark means accompanying one of said two original pattern images and the image of the second reference mark means accompanying the other of said two original pattern images are located within said distance at discrete positions along said first direction and so that said image of said first reference mark means accompanying said one original pattern image is located between said other original pattern image and said image of said second reference mark means accompanying said other original pattern image.

4,657,380
COPYING MACHINE
Hiroaki Hamano, Toyokawa, and Kenji Shibazaki, Aichi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 726,797, Apr. 24, 1985, abandoned. This application Mar. 13, 1986, Ser. No. 839,780
Claims priority, application Japan, Apr. 25, 1984, 59-84780
Int. Cl.⁴ G03G *15/04, 21/00*; G03B *27/52*
U.S. Cl. 355—55 **5 Claims**



4. A copying machine having a photosensitive drum wherein a magnification ratio of a copy of an original document with indicia having a longitudinal and lateral dimension can be changed within a predetermined range, comprising:
first means for effectuating a copying operation;
means for setting a longitudinal and lateral magnification ratio for a desired copy image relative to original indicia;
paper separation means for separating a copied paper from the photosensitive drum;
image shifting means for shifting an image of the original projected on the photosensitive drum in a direction away from the paper separation means;
second means for efectuating the image shifting operation by the image shifting means;
means for providing a margin on an edge portion of a copy paper;
third means for effectuating the formation of the margin on the copy paper;
means for detecting the size of the copy paper;
first calculating means for calculating a lateral magnification factor (A-a)/A upon operation of the second means, wherein A is a lateral size of the copy paper obtained from the detecting means and a is an amount of image shift;
second calculating means for calculating a longitudinal magnification factor (B-b)/B upon operation of the third means, wherein B is a longitudinal size of the copy paper obtained from the detecting means and b is an amount of image shift, and
means for modifying the set copy magnification ratios respectively by the calculated lateral and longitudinal magnification ratios by using the selected magnification ratio, the longitudinal magnification factor and lateral magnification factor when the second and third means are enabled in the copying cycle.

4,657,381
MOUNTING DEVICE FOR REPRODUCTION APPARATUS
Wolfgang Dinse, Alteaholz, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany
Filed Apr. 6, 1981, Ser. No. 251,054
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014184
Int. Cl.⁴ G03B *27/62, 27/64*
U.S. Cl. 355—76 **3 Claims**



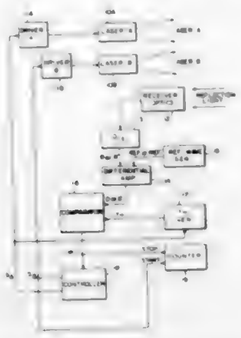
1. A reproduction apparatus mounting device, comprising: first and second separate vacuum receptacles having a receiving surface for an original copy on the first receptacle and a receiving surface for a recording medium on the second receptacle, each of said surface being provided with suction holes; said first and second separate receptacles being arranged in communication with a common vacuum line; and adjustable throttle means for setting an amount of air flow between one of the receptacles and the common vacuum line such that when the recording medium covers suction holes of the receiving surface of one of the receptacles and the original copy covers suction holes of the receiving surface of the other receptacle, the throttle means can be adjusted to permit sufficient suction at the surface associated therewith to retain the respective recording medium or original copy thereon, and such that when the recording medium or original copy is removed therefrom the throttle means limits air flow so that sufficient suction is rectained at the other surfaces to hold the remaining original copy or recording medium thereto.

4,657,382
LASER MEASUREMENT SYSTEM
Hiroshi Busujima, and Hiroyasu Ohtani, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Mar. 29, 1984, Ser. No. 594,899
Claims priority, application Japan, Mar. 31, 1983, 58-55452
Int. Cl.⁴ G01C *3/08*
U.S. Cl. 356—4 **20 Claims**

13. A laser measurement system comprising:
a transmitter unit for transmitting a first laser beam and a second laser beam,
a receiver unit for receiving a first reflected beam of said first laser beam and a second reflected beam of said second laser beam,
decision means for detecting the presence or absence of said first reflected beam during a predetermined time interval after said first laser beam is transmitted,
control means for inhibiting the transmission of said second laser beam when the presence of said first reflected beam is detected by said decision means and for enabling the

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transmission of said second laser beam when the absence of said first reflected beam is detected, and



output means for generating an output indicative of a laser measurement by use of said second reflected beam.

4,657,383

OPTICAL ASSAY METHOD FOR STORED HUMAN PLATELETS

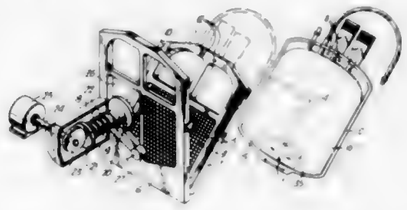
Brian J. Bellhouse, The Lodge, North Street, Islip, Oxfordshire, United Kingdom

Filed Oct. 30, 1984, Ser. No. 666,357

Claims priority, application United Kingdom, Oct. 31, 1983, 8329979

Int. Cl.⁴ G01N *33/49*

U.S. Cl. 356—39 **12 Claims**



1. The method of monitoring non-invasively the viability of a pack of stored blood platelets without removing a sample therefrom, said method comprising periodically agitating said pack, irradiating said pack with a beam of light and detecting solely the amplitude of the fluctuations in the intensity of light transmitted through said pack in a particular direction between maximum and minimum levels at the periodic frequency of agitation of the pack, and comparing this with a datum related to the amplitude of the fluctuations between maximum and minimum levels in the intensity of light transmitted in the same direction through a similar pack of fresh platelets under similar conditions.

4,657,384

PHOTOELECTRIC DEVICE

Satoshi Aoyama, Osaka, Japan, and Hiroshi Furukawa, Ramsey, N.J., assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 25, 1983, Ser. No. 478,917

Claims priority, application Japan, Mar. 27, 1982, 57-49470

Int. Cl.⁴ G01J *5/62*

U.S. Cl. 356—43 **7 Claims**

1. In an improved radiation thermometer for remotely measuring a temperature of a target within the range of 200° C. to 800° C., the improvement of a light measuring apparatus consisting of:

a photovoltaic cell having a light receiving surface for producing an output current which depends on both the intensity of the light received on the light receiving surface and the temperature of the photovoltaic cell, said photovoltaic cell is selected to satisfy the following relationship:

$$i_o = I_o \times (A + BT)$$

$$i_s = \alpha e^{\beta T}$$

wherein

i_o represents output current,

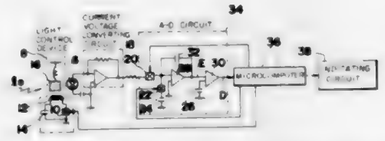
I_o represents the intensity of the light received on the cell,

i_s represents the inverse saturation current,

T represents the absolute temperature of the cell, and

A, B, α and β are constants determined according to the characteristics of the cell respectively;

means for controlling the light receiving condition of the photovoltaic cell to change it at least between two states such that the light amount which would be received on



the light receiving surface of said photovoltaic cell in the two states are made to be different from each other; and

means for detecting a quantity which depends on the intensity of the light to produce an electrical signal representative of said quantity detected including means for detecting a first component which depends on the temperature, means for detecting a second component which depends on both the temperature and the intensity of the light, and means for calculating said quantity based on said first and second components detected, said first and second component detecting means detecting said components based on the change of the output current of the cell due to a change of the light receiving condition thereof, wherein said calculating means calculates the quantity according to an equation as follows:

$$I = i_o/(a + b \ln i_s)$$

wherein

I represents said quantity,

i_o represents said first component,

i_s represents said second component, and

a and b are constants determined according to the characteristics of said photovoltaic cell respectively.

4,657,385

PYROMETER APPARATUS

John Pointer, Tadley, England, assignor to Smiths Industries Public Limited Company, London, England

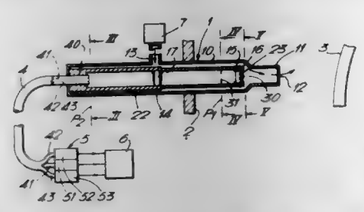
Filed Apr. 22, 1985, Ser. No. 725,685

Claims priority, application United Kingdom, May 12, 1984, 8412218

Int. Cl.⁴ G01J *5/48*

U.S. Cl. 356—43 **14 Claims**

1. Pyrometer apparatus arranged to view an object located forwardly of said pyrometer apparatus, said apparatus comprising first lens means that forms a first image of the object; second lens means that forms a second image of said first image, in an image plane; third lens means located rearwardly of said first lens means, said third lens means having a focal length and being located such that it forms a third image of the forward surface of said first lens means, in said image plane;



and radiation receiving means located substantially in said image plane to receive radiation from said second and third lens means.

4,657,386

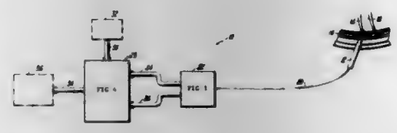
IN-FLIGHT ENGINE CONTROL OPTICAL PYROMETER

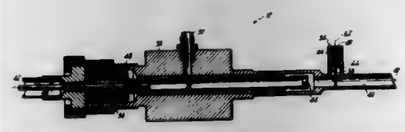
Ernesto Suarez-Gonzalez, Tequesta, and Dean A. Kepple, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 14, 1985, Ser. No. 798,214

Int. Cl.⁴ G01J *5/60*

U.S. Cl. 356—45 **5 Claims**





1. An in-flight engine control optical pyrometer for measuring the temperature of a turbine blade in a jet engine, comprising:

optical probe means positioned in the jet engine so as to gather from the turbine blade an optical beam having a spectral width and having an emitted component from the turbine blade and a reflected component from a fireball having an equivalent black body temperature, said optical probe means includes sight tube means having an inner bore adapted to receive said turbine blade optical beam and positioning an optical guide means therein, said sight tube means further including shutter means responsive to said jet engine air pressure, positioned in said sight tube means and providing said turbine blade optical beam to said optical guide means only above a threshold magnitude of said air pressure;

optical detection module means, including housing means adapted to receive the optical guide means;

first photodetector means contained within said housing means absorbing from the turbine blade optical beam a first optical component having a first spectral width selected to be a portion of the target beam spectral width and passing a remainder optical beam therethrough, said first photodetector means providing an electrical signal equivalent of said first optical component;

second photodetector means contained within said housing means receiving said remainder optical beam and providing an electrical signal equivalent thereof; and

signal processing means receiving said first and second signals and further receiving energy ratio signals, for providing reflection corrected energy signals from the difference between said first signals and the product of said energy ratio signals and said second signal.

4,657,387

METHOD OF AND APPARATUS FOR THE INVESTIGATION OF INACCESSIBLE SUBTERRANEAN SPACES SUCH AS BOREHOLES

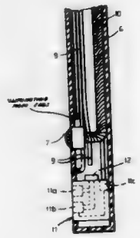
Ferdinand Heising, Werne, and Wilhelm Knickmeyer, Essen, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jun. 7, 1985, Ser. No. 742,281

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1984, 3422271

Int. Cl.⁴ G02B *23/26*

U.S. Cl. 356—72 **3 Claims**



1. A method of investigating a borehole, especially a small or medium caliber borehole in a subterranean structure in bituminous coal mining, which comprises the steps of:

transmitting a light beam into the interior of a subterranean borehole through an optical fiber illuminated by a source external of said borehole;

forming an image of at least a region of said borehole within said borehole;

transmitting said image through a fiber optical cable from the interior of said borehole to a point externally thereof for reevaluation; and

activating an electrically operated sensor within the interior of said borehole by transforming part of the light energy from said optical fiber in the interior of said borehole into electrical energy and utilizing said electrical energy at least in part for electronic detection of data in said borehole independent of the transmission of said image.

4,657,388

METHOD OF AND APPARATUS FOR MEASURING THE CUT-OFF WAVELENGTH OF THE FIRST HIGHER ORDER MODE IN OPTICAL FIBERS

Gianni Coppa, Asti, and Pietro Di Vita, Turin, both of Italy, assignors to CSELT-Centro Studi e Laboratori Telecomunicazioni SpA, Turin, Italy

Filed Jun. 4, 1985, Ser. No. 740,968

Claims priority, application Italy, Jun. 5, 1984, 67580 A/84

Int. Cl.⁴ G01N *21/84*

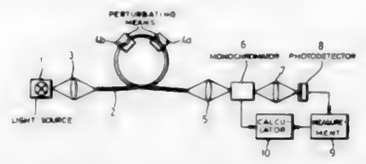
U.S. Cl. 356—73.1 **10 Claims**

1. A method of measuring cutoff wavelengths of the first higher order mode in optical fibers comprising:

illuminating optical fibers at a plurality of different wavelengths;

perturbating said fiber under at least three conditions said conditions comprising absence of perturbation, first mechanical alteration, and second mechanical alteration added to said first mechanical alteration, wherein said first

alteration and said second alteration are of known characteristics and do not promote inversion and attenuation in fundamental mode;
converting output of said fiber at said wavelengths into electrical signals in a spectral scanning of said output;
measuring power from said electrical signals;



calculating a power fraction guided in said fundamental mode as a combination of the power measured for each of said conditions; and
calculating said cutoff wavelength at a wavelength where said power fraction exceeds a predetermined value.

4,657,389

ELECTROTHERMAL ATOMIZER

David Littlejohn, East Kilbride, Scotland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 26, 1985, Ser. No. 749,051
Claims priority, application United Kingdom, Jul. 9, 1984, 8417440
Int. Cl.⁴ G01N *21/74*
U.S. Cl. 356—312 **8 Claims**



1. An electrothermal atomizer for a spectrophotometer comprising a hollow electrically conductive body, probe means for inserting a sample into said hollow body, and means for electrically heating said hollow body to a temperature for atomizing said sample, the improvement comprising
said probe means including a hollow tubular head portion for holding said sample and a stem portion attached to said head portion at a position removed from said sample to prevent sample spreading along said stem portion.

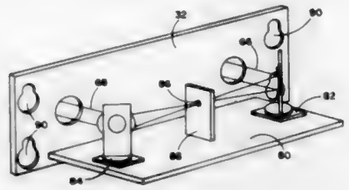
4,657,390

UNIVERSAL SPECTROMETER SYSTEM HAVING MODULAR SAMPLING CHAMBER

Walter M. Doyle, Laguna Beach, Calif., assignor to Laser Precision Corporation, Utica, N.Y.

Filed Feb. 21, 1985, Ser. No. 703,762
Int. Cl.⁴ G01B *9/02*; G01J *3/45*; G01N *21/13*
U.S. Cl. 356—346 **10 Claims**

1. A spectrometer system comprising:
an interferometer sub-assembly from which a first collimated beam is output;
a detector sub-assembly toward which a second collimated beam is input;
the first and second collimated beams being parallel to one another;
means for enclosing the interferometer sub-assembly and the detector sub-assembly, said means providing first and second apertures for the first and second collimated beams, respectively;
a unitary accessory enclosure adapted to be readily attached to, and readily detached from, the enclosing means, said enclosure having apertures aligned with said first and second apertures;
a first mirror which is supported inside the accessory enclosure, and which is arranged to reflect the entire first aperture radiation beam at a ninety degree angle;



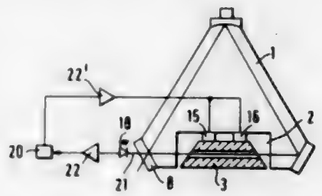
a second mirror which is supported inside the accessory enclosure, and which is arranged to reflect the entire second aperture radiation beam at a ninety degree angle; and
means for purging both the sub-assembly enclosing means and the accessory enclosure so as to replace the normal atmosphere with an optically non-interfering gas.

4,657,391

RING LASER, PARTICULARLY FOR A RING LASER TYPE OF GYRO

Rüdiger K. Rodloff, Meinersen, and Werner W. Jungbluth, Königslutter, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,395
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412016
Int. Cl.⁴ G01C *19/64*; H01S *3/083*
U.S. Cl. 356—350 **5 Claims**



1. A ring laser including a thermally and mechanically highly stable block; three corner mirrors on said block, at least one of said mirrors being adjustable and one of said mirrors being a partially transparent separating mirror; at least one photo-detector arranged behind said partially transparent separating mirror in the beam path of the separated beam portion of a rotating wave train; a gas discharge tube, constituting the optical amplifier medium, arranged in an aperture at one side of said block and longitudinally of the beam path on that side, said gas discharge tube being movable relative to said block for adjustment radially with respect to the plane of said beam path; at least one piezo electric drive interconnecting said gas discharge tube and said block for effecting the movements of said gas discharge tube relative to said block; and a control circuit connected with said at least one photo-detector and said at least one piezo electric drive, said at least one photo-detector

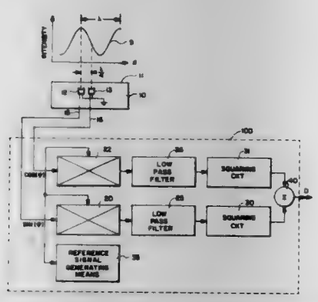
sensing the modulation amplitude of the separated beam portion and providing a corresponding input signal to said control circuit, and said control circuit converting said input signal into a high voltage adjustment signal for said at least one piezo electric drive as a function of the modulation amplitude.

4,657,392

LOCK-IN RATE DISCRIMINATE APPARATUS FOR RING LASER ANGULAR RATE SENSORS

Werner H. Egli, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 5, 1982, Ser. No. 405,452
The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.
Int. Cl.⁴ G01C *19/64*
U.S. Cl. 356—350 **36 Claims**



1. In an angular rate sensor of the class wherein two waves are generated to travel in opposite directions along a closed-loop path, wherein the frequency of each of said waves is a function of rotation of said closed-loop path, wherein said sensor includes a biasing means for introducing a frequency bias in at least one of said waves so as to provide a frequency separation of said waves for at least a majority of the time, wherein said sensor includes means responsive to the frequency difference between said waves to provide a sensor output signals indicative of the angle of rotation of said sensor, and wherein their exists a lock-in rate of rotation below which said frequency of said waves locks in to a common frequency, an apparatus for providing a signal indicative of said lock-in rate of said sensor comprising:
phase detection means responsive to said waves for producing a first phase signal related to the instantaneous phase difference between said waves;
means for providing a reference signal related to the frequency difference between said waves; and
lock-in rate discriminant signal generating means responsive to said first phase signal for providing a discriminant signal indicative of said lock-in rate of said sensor as a function of said first phase signal and said reference signal.

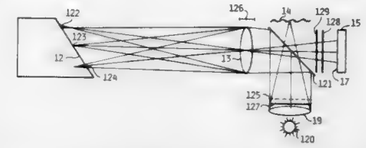
4,657,393

PATTERN OPTIMIZATION WHEN MEASURING DEPTH TO A SURFACE USING LENS FOCUSING

Howard Stern, Greenlawn, N.Y., assignor to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 566,687, Dec. 29, 1983. This application Mar. 4, 1985, Ser. No. 708,156
The portion of the term of this patent subsequent to Dec. 16, 2003, has been disclaimed.
Int. Cl.⁴ G01B *11/24*
U.S. Cl. 356—376 **4 Claims**

1. A method for obtaining three-dimensional measurements on objects which may be devoid of surface detail but have known characteristics, comprising the steps of: projecting a pattern of light with a projector from a light source, said pattern having a relatively high spatial frequency in direction of minimum distance gradient relative to the projector; imaging reflected light from said pattern with a lens on a light sensitive detection surface; said image being sharply focused within a narrow object plane; calibrating by a computer the image of each unique location of the sharply focused narrow



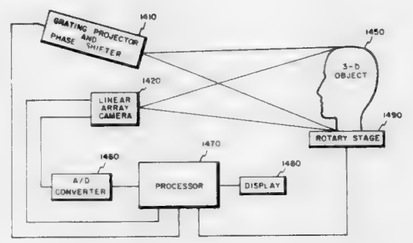
object plane; storing the calibration data in a memory; adjusting said object plane focal distance by said lens to intersect the surface of an object to be measured at an intersection, said intersection containing more than one detectable point on said object; processing the received image by said computer to determine in-focus regions; and converting said in-focus region information into three-dimensional measurement information from said calibration data.

4,657,394

APPARATUS AND METHOD FOR OBTAINING THREE DIMENSIONAL SURFACE CONTOURS

Maurice Halioua, Sea Cliff, N.Y., assignor to New York Institute of Technology, Old Westbury, N.Y.

Continuation-in-part of Ser. No. 650,824, Sep. 14, 1984. This application Jul. 10, 1985, Ser. No. 753,722
Int. Cl.⁴ G01B *11/24*
U.S. Cl. 356—376 **27 Claims**



1. A method of determining a three-dimensional surface profile of an object, comprising the steps of:
(a) directing at said object an incident beam of light having a sinusoidally varying intensity pattern;
(b) modulating the phase of the sinusoidal intensity pattern of said incident beam;
(c) receiving and storing a deformed grating image of a line profile of the object surface for a number of different modulated phases of said incident beam;
(d) determining, for points on the line profile of the object surface, the distance of each such object point from a reference line, each said distance determination including the step of combining intensity values of the received image at the different modulated phases; and
(e) rotating the object by an angular increment at a time, and repeating steps (a) through (d) for each increment to obtain line profile distances for each such increment.

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4,657,395
APPARATUS FOR MEASURING DIAMETER OF CUTTING PORTION OF DRILL

Takashi Shiraishi, Nagaokakyo, and Shirou Kitamura, Kyoto, both of Japan, assignors to Sanko Giken Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 22, 1984, Ser. No. 643,181
Claims priority, application Japan, Aug. 27, 1983, 58-156973
Int. Cl.⁴ G01B 11/10
U.S. Cl. 356—385 1 Claim



1. An apparatus for measuring the diameter of the cutting portion of a drill comprising supporting-rotating means for axially supporting and rotating the drill;

an image sensor having a light receiving surface axially parallel with the drill and composed of a plurality of sensor elements, the sensor elements being arranged in the light receiving surface in a row axially transverse to the drill;

optical means for forming parallel rays propagating toward the cutting portion of the drill and for forming a silhouette of the drill cutting portion on the light receiving surface of the image sensor;

a head adjustment circuit for receiving signal patterns sent one after another from the sensor elements, each signal pattern having a rise portion head;

a shift register for storing a signal pattern;

an OR gate connected at its one input side to the output side of the head adjustment circuit and at its other input side to the output side of the shift register, and operable in response to each said signal pattern sent from the head adjustment circuit and the signal pattern fed back from the shift register;

a timing circuit adapted to send a timing signal to the head adjustment circuit and to the shift register for feeding to the OR gate each said signal pattern from the head adjustment circuit and the signal pattern from the shift register with their rise portion heads in timed alignment;

an AND gate connected at its one input side to the output side of the OR gate, at its other input side to the timing circuit and at its output side to the shift register, each signal pattern sent from the OR gate being fed through the AND gate to the shift register in response to a timing signal from the timing circuit;

and reading-displaying means for reading out the stored data from the shift register and for displaying the data as the diameter of the drill cutting portion.

4,657,396
OPTICAL METHOD FOR DETECTING ERRORS IN SHAPE

Toshio Honda, Yokohama, and Junpei Tsujiuchi, Kawasaki, both of Japan, assignors to Osaka Seimitsu Kikai Kabushiki Kaisha, Osaka, Japan

Filed Mar. 19, 1985, Ser. No. 713,531
Claims priority, application Japan, Mar. 23, 1984, 59-55750
Int. Cl.⁴ G01N 21/88
U.S. Cl. 356—394 5 Claims



1. A method of inspecting a surface of a plurality of gear teeth, which gear teeth are part of a gear affixed to a shaft which is adapted to be rotated, there being a predetermined pitch angle between each of said gear teeth, the purpose of said method being to detect error in the shape of the gear teeth surfaces with respect to a surface of a gear tooth that is chosen because it is closest to an ideal shape, which gear tooth surface is designated the standard surface, said method comprising the steps of:

preparing a special optical element according to said ideal shape;

projecting a collimated light wavefront from a light source onto said standard surface at a sufficiently large angle of incidence so as to result in a specularly reflected light wavefront radiating from said surface;

converting said specularly reflected light wavefront, by means of said special optical element, into a light wavefront that converges to a relatively small point of light;

positioning a convergence measurement means at a location where the convergence of the light wavefront reflected from said standard surface is maximized;

stepwise rotating said shaft rapidly so that said gear advances exactly one pitch angle at a time until all of the gear teeth have had said collimated light wavefront projected thereon;

measuring the convergence of light distribution at said location for each tooth to obtain information about any shape errors of said gear teeth.

4,657,397
LIGHT COLLECTOR AND ITS USE FOR SPECTROSCOPIC PURPOSES

Oskar Oehler, Streulistrasse 24, Zürich; David Sourlier, Zweierstrasse 8, Niederrohrdorf, and Alexis Fries, Dietikon, all of Switzerland, assignors to Oskar Oehler, Zurich and David Sourlier, Niederrohrdorf, both of, Switzerland

PCT No. PCT/CH83/00080, § 371 Date Feb. 9, 1984, § 102(e) Date Feb. 9, 1984, PCT Pub. No. WO84/00217, PCT Pub. Date Jan. 19, 1984
PCT Filed Jun. 23, 1983, Ser. No. 589,087
Claims priority, application Switzerland, Jun. 25, 1982, 3939/82; May 14, 1983, 2654/83
Int. Cl.⁴ G01N 21/31
U.S. Cl. 356—414 39 Claims

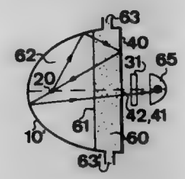
1. An optical device for emitting a substantially parallel light beam bundle, comprising:

a concave reflector having a plane of symmetry;

a light source mounted at a focal point of said reflector and defining a source area;

a retroreflector at least partially covering a concave portion of said reflector and arranged such that at least some light beams emitted from said light source are reflected back into said source area;

an opening in said retroreflector at an intersection of said plane of symmetry and said retroreflector;



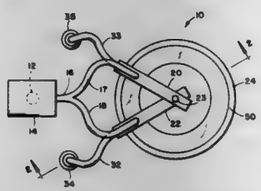
mounting means for supporting said light source in said reflector, said mounting means intersecting said reflector at a location spaced from a point on said reflector in said plane of symmetry and opposite said opening; and

a body influencing characteristics of irradiated light arranged between the light source and the retroreflector.

4,657,398
SIMULTANEOUS MULTIPLE WAVELENGTH PHOTOMETER

Albert Brunsting, Elkhart, Ind., assignor to Miles Laboratories, inc., Elkhart, Ind.

Filed Jun. 10, 1985, Ser. No. 742,775
Int. Cl.⁴ G01J 3/51
U.S. Cl. 356—418 3 Claims



1. Apparatus for simultaneously measuring light at multiple wavelengths which are at least 50 nanometers apart and within the range of 400 to 700 nanometers comprising:

a circularly variable filter;

means for passing the light along multiple light transmission paths to the circularly variable filter;

means for passing said light through the circularly variable filter at at least two separate positions of the circularly variable filter which are at wavelengths 50 nanometers apart and within the range of 400 to 700 nanometers;

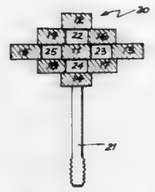
separate detection means for measuring each wavelength of the light passed through the circularly variable filter; and

means for simultaneously moving the means for passing light through the circularly variable filter and the detection means relative to said circularly variable filter.

4,657,399
COLOR MIXTURE INDICATOR DEVICE

Neil R. Hall, 14 Kintore Street, Wahroonga, New South Wales 2076, Australia

Filed Dec. 21, 1984, Ser. No. 685,329
Claims priority, application Australia, Dec. 23, 1983, PG3002
Int. Cl.⁴ G01J 3/52
U.S. Cl. 356—421 12 Claims

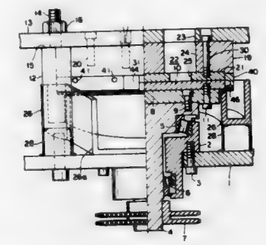


1. A dental colour mixture indicator device comprising a plurality of colour samples located in an array with each sample spaced apart from samples adjacent thereto to define an inter-sample space, with the colour of said samples being representative of colours of a predetermined colour system having a co-ordinate system aligned with said array wherein the colour of each of said samples corresponds to the colour of the corresponding location in said co-ordinate system, so that a patient's tooth can be viewed through said inter-sample space and a desired dental colour intermediate a selected pair of said colour samples can be mixed for fabrication by a mixture of the colouring materials used to fabricate said selected pair.

4,657,400
MIXING DEVICE

Shiro Suehisa, Osaka, and Hideki Kajiwara, Kyoto, both of Japan, assignors to Joto Chemical Co. Ltd, Osaka, Japan

Filed Jun. 20, 1985, Ser. No. 746,736
The portion of the term of this patent subsequent to Oct. 8, 2002, has been disclaimed.
Int. Cl.⁴ B01F 15/06
U.S. Cl. 366—144 8 Claims



1. A mixing device comprising:

a pair of plate means coaxially aligned and spaced apart from each other, each plate means having an operating surface positioned parallel to and facing the other operating surface to define therebetween a mixing zone and being adapted so that, by rotation of one of the plate means, a relative motion between the two operating surfaces may be maintained;

grooves provided in both of said operating surfaces and arranged so that the grooves of one operating surface may cross the grooves of the other operating surface upon the relative motion between the two operating surfaces; and

a collecting ring provided around the periphery of said

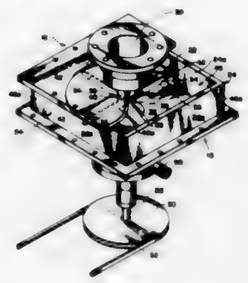
mixing zone, said ring having a groove extending around an inner surface thereof to define an annular passage between the collecting ring and the plate means, said passage being open at its downstream end with respect to the direction of the rotation of the plate means and being closed at it upstream end, so that the mixed product discharged from said mixing zone is collected within said passage, displaced therethrough in the direction of the rotation of the plate means upon rotation of the plate means and discharged from the downstream end of said passage.

4,657,401

LIQUID-LIQUID EXTRACTOR

George M. Galik, 3236 Falcon Ridge Rd., Diamond Bar, Calif. 91765

Division of Ser. No. 647,994, Sep. 5, 1984, Pat. No. 4,595,571. This application Feb. 12, 1986, Ser. No. 828,784
Int. Cl.[4] B01F 5/12
U.S. Cl. 366—263 3 Claims



1. A mixer comprising:
a casing having a square horizontal cross section and including at least two inlets and an outlet, the first inlet for a first liquid and the second inlet for a second liquid;
an impeller assembly mounted in the casing for mixing the first and second liquids to thereby form a dispersion and to pump the dispersion out through the casing outlet, the impeller assembly being generally circular in horizontal cross section and mounted to rotate in a horizontal plane in the casing, said assembly comprising a circular impeller disk and a plurality of blades radially spaced apart from each other on the disk, the blades extending downwardly from the disk towards the bottom of the casing, each of the blades being tapered so that the bottom edge of such a blade is relatively nearer the casing bottom at its end proximal to the center of the disk and is relatively further from the casing bottom at its end remote from the center of the disk.

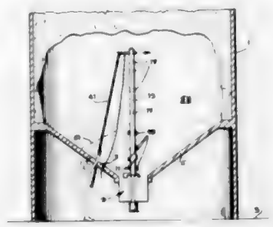
4,657,402

LOOSENING OF COMPACTED MATERIAL IN A SILO

Bruno Dupuis, Quebec, Canada, assignor to Construction Acton Ltee, Acton Vale, Canada

Filed Aug. 30, 1985, Ser. No. 771,239
Int. Cl.[4] B65G 65/46
U.S. Cl. 366—349 9 Claims

1. In a silo constructed for bottom unloading, the combination comprising:
a post vertically extending from the bottom of said silo;
a compacted material loosening chain having a predetermined transverse size;
a ring mounted at one end of said chain, said ring having a diameter greater than said chain transverse size;
means defining a passage across said post, said passage having a diameter greater than said ring diameter;
stop means, within said passage, said stop means having a central bore with a diameter smaller than said ring diameter and greater than said chain transverse size;
a threading needle and means removably mounting the other end of said chain to one of said needle, said threading



needle having a diameter smaller than the diameter of said stop means central bore,
wherein said chain extends out of said passage from one end of said passage and said ring lies within said passage in abutment against said stop means.

4,657,403

AQUATIC EVENT TIMING DEVICE

John A. Morgan, Essex; William Bartula, Manchester, and Richard D. Gilbert, Rockport, all of Mass., assignors to RJB Timing Systems, Inc., Danvers, Mass.

Filed Jul. 16, 1985, Ser. No. 755,431
Int. Cl.[4] G04F 8/00
U.S. Cl. 368—6 12 Claims



1. An apparatus for timing the movement of objects during water-based events, which comprises:
substantially horizontally disposed support means;
at least two substantially vertical members attached to the support means and extending upwardly therefrom;
flotation means coupled to at least one of the vertical members or support means for keeping the apparatus afloat and, in combination with the support means and the vertical members, for maintaining the support means submerged and the vertical members substantially erect when the apparatus is placed in water;
sensing means disposed on the vertical members to detect the passage of an object between two of the members; and
anchoring means for coupling at least one of the vertical members or support means to a substantially stationary object.

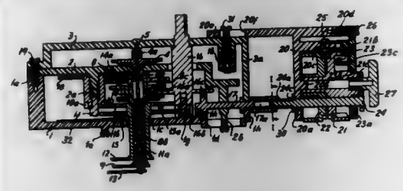
4,657,404

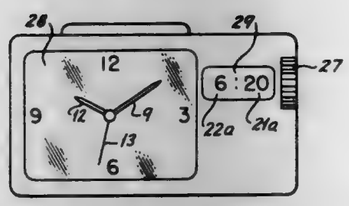
ALARM SIGNALING TIME INDICATING MECHANISM FOR AN ALARM CLOCK

Masao Ogihara, and Tadashi Ishikawa, both of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,823
Claims priority, application Japan, Sep. 21, 1983, 58-175029
Int. Cl.[4] G04B 23/02; G04C 21/00
U.S. Cl. 368—74 10 Claims

1. In an alarm clock having an hour time wheel, a minute time wheel, indication hands for the analog indication of time, and a time signaling mechanism having an hour detection wheel and a minute detection wheel cooperating with said hour time and minute time wheels, respectively, so that the time signaling mechanism is actuated upon the coincidence of the respective phases of two sets of said time wheels and said detection wheels with each other; an alarm signaling time indicating mechanism comprising: a minute indication drum interlocked rotatably with an alarm signaling time setting member and having minute-scale alarm signaling time gradua-





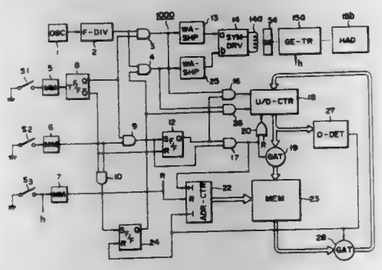
tions marked on the circumference thereof and connected through gear trains comprised of a plurality of transmission wheels with both said detection wheels, and an hour indication drum having hour-scale alarm signaling time graduations on the circumference thereof and connected to be rotated intermittently by said minute indication drum; wherein said minute indication drum, said hour indication drum and some of said transmission wheels are assembled in a block; and means attaching the block to a clock movement including both said time wheels and both said detection wheels.

4,657,405

STOP WATCH CAPABLE OF INDICATING A PLURALITY OF SPLIT TIMES

Eiji Nakazawa, Tokyo, Japan, assignor to Casio Computer Company, Ltd., Tokyo, Japan

Filed Aug. 15, 1986, Ser. No. 897,290
Claims priority, application Japan, Aug. 28, 1985, 60-188777
Int. Cl.[4] G04F 8/00
U.S. Cl. 368—110 13 Claims



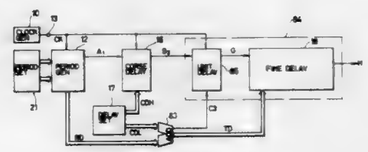
1. A stop watch comprising:
a stepping motor;
a hand drive mechanism coupled to said stepping motor for driving hands of the stop watch;
an oscillator for producing a reference signal;
a stepping motor driving circuit for frequency-dividing the reference signal so as to produce a stepping motor driving signal for driving said stepping motor;
a start/stop control circuit for controlling a supply of the stepping motor driving signal output from said stepping motor driving circuit to said stepping motor;
a split time measurement switch for obtaining a plurality of split times by depressing the same a plurality of times while said stepping motor is driven under the control of said start/stop control circuit;
time measurement means for measuring a time interval between successive split time points at which said split time measurement switch is depressed, to obtain time interval data;
time interval data memory means for storing the time interval data measured by said time measurement means; and
reproducing means for driving said stepping motor for a time period corresponding to the time interval data stored in said time interval data memory means while said stepping motor is stopped under the control of said start/stop control circuit, and for reproducing a split time point at which said split time measurement switch is depressed.

4,657,406

TIMING GENERATING DEVICE

Shigeru Yaeda, Gyoda, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Feb. 13, 1986, Ser. No. 828,971
Claims priority, application Japan, Jul. 10, 1985, 60-151797
Int. Cl.[4] G04F 8/00
U.S. Cl. 368—120 20 Claims



1. A timing generating device for generating timing pulses of a preset period and phase, comprising:
a clock generator for generating reference clock pulses of a period T;
a period setting means in which a period to be generated, $(m+k)T$ (where m is an integer greater than 1 and $0 \leqq k < 1$), is set, for producing preset period data;
a period generator which receives the preset period data from the period setting means and the reference clock pulses from the clock generator, generates a pulse upon each counting of the reference clock pulses by the number corresponding to the m, outputs fractional period data indicative of an accumulated value of the k upon each occurrence of the pulse and delays the generation of the pulse by one reference clock period each time the accumulated value exceeds the period T;
a delay setting means in which a delay time to be provided, $(n+i)T$ (where n is 0 or a positive integer and $\leqq i < 1$), is set, for providing coarse delay data indicating a delay time nT and fractional delay data indicating a delay time iT;
a coarse means connected to the delay period generator, for creating a pulse delayed for the time nT relative to the pulse provided from the period generator;
an adder for adding together the fractional period data from the period generator and the fractional delay data from the delay setting means; and
a fine delay section which is supplied with the output of the

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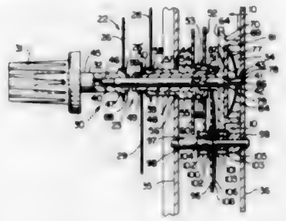
adder and the delayed pulse from the coarse delay means and further delays the delayed pulse for a time corresponding to the added output of the adder, producing a timing pulse.

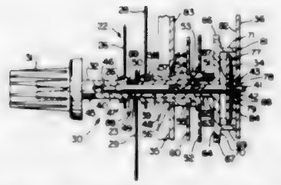
4,657,407

CLOCK CONSTRUCTION AND METHOD OF MAKING THE SAME

Jay L. Lewis, Knox County, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 17, 1984, Ser. No. 651,573
Int. Cl.⁴ G04B *17/02*
U.S. Cl. 368—184 **26 Claims**





1. In a clock construction comprising a frame means, an interval timer means carried by said frame means, and a selector shaft means rotatably carried by said frame means while being axially movable relative thereto and having interconnection means operatively interconnected to said timer means to set the same to a selected time period upon rotation of said selector shaft means, said timer means comprising a cam member rotatably disposed on said shaft means and having a drive slot means in one side thereof, said interconnection means of said shaft means comprising a drive member carried thereby and being disposed in said slot means to rotate said cam member in unison with rotation of said shaft means in any axial position of said shaft means, and spring means disposed between said frame means and said drive member to tend to maintain said shaft means in one axial position thereof, the improvement wherein said cam member and said spring means are so constructed and arranged that said spring means is confined completely within said slot means of said cam member in all axial positions of said shaft means relative to said frame means.

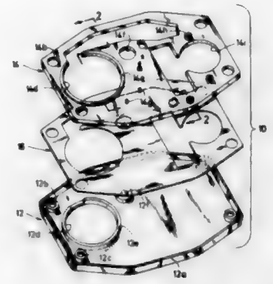
4,657,408

BASE ELEMENT FOR A WRISTWATCH

Joseph Egger, Pforzheim, and Adolf Sedlak, Wurmberg, both of Fed. Rep. of Germany, assignors to Timex Corporation, Waterbury, Conn.

Filed Jan. 13, 1983, Ser. No. 457,820
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206942
Int. Cl.⁴ G04B *37/00*
U.S. Cl. 368—317 **2 Claims**

1. A laminated base element simultaneously serving the purpose of movement plate and a caseback for a wristwatch comprising two integrally joined plates, said plates being bonded together by means of a separate foil disposed between them made out of a thermoplastic material, wherein one of said plates is an inner plate comprising a stamped movement plate element comprising the necessary openings, bores and the like, and wherein the other of said plates is an outer plate designed as a caseback having an upturned peripheral edge running around its periphery and facing inward and surrounding said



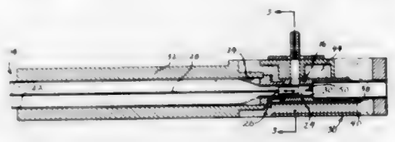
inner plate, said base element further including screw openings provided in its corners to receive fastening screws, which serve to provide a screw connection between the base element and the bezel of the watch, wherein the screw openings are defined as openings stamped into said outer plate and having a circular centering collar on the inside of said outer plate.

4,657,409

METHOD FOR FREEZING-POINT DETERMINATION

Blanton C. Wiggin, Wellesley, and Julian W. Philbrick, Natick, both of Mass., assignors to Advanced Instruments, Inc., Needham, Mass.

Filed Jun. 6, 1984, Ser. No. 617,729
Int. Cl.⁴ G01N *25/04*
U.S. Cl. 374—25 **15 Claims**



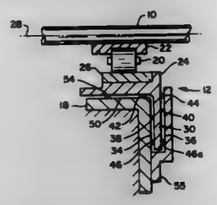
1. A method for measuring the freezing point of a liquid comprising the steps of:
- picking up sample portion of the liquid to be measured in a thermally conductive sample-pickup device;
- reducing the temperature of the sample portion of the liquid to a temperature below the normal freezing point temperature of the liquid while the sample portion is in the sample-pickup device;
- inducing nucleation of the sample portion of the liquid in the sample-pickup device;
- reducing net heat flow from the sample portion of the liquid at least during nucleation of the sample portion of the liquid in order to extend the duration of the plateau portion of the thermodynamic curve and to produce a slope at the end of the plateau portion having an opposite sign to the slope of the approach to the plateau portion; and,
- thereafter measuring the temperature of the nucleated sample portion of the liquid in the sample-pickup device at the plateau maximum.

4,657,410

NUTATION DAMPER

David H. Hibner, Colchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 25, 1986, Ser. No. 844,036
Int. Cl.⁴ F16C *27/00, 3/00*; F16F *15/16*
U.S. Cl. 384—99 **7 Claims**



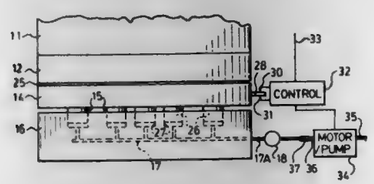
1. A damper arrangement for a rotating shaft subject to nutating motion, comprising:
- a non-rotating, annular outer bearing race disposed coaxially about the rotating shaft,
- bearing means, disposed between the outer bearing race and the rotating shaft, for supporting the shaft and passing the nutating motion thereof to the outer bearing race;
- a frame member, surrounding the outer bearing race and having first and second spaced apart axially facing frame surfaces defining an annular, radially extending gap therebetween;
- a flange, integral with the outer bearing race and extending radially therefrom, the flange being received within the radially extending gap;
- first and second inner annular seals, each disposed axially proximate the flange on axially opposite sides thereof and being sealingly engaged between the frame member and the integral outer bearing race and flange;
- outer means, disposed radially outward of the first and second inner annular seals, for annularly sealing between the flange and the frame member, the outer sealing means, in cooperation with the first and second inner annular seals, the integral outer bearing race and flange, and the frame member, defining first and second radially extending damper volumes on opposite sides of the flange; and
- a damping medium, disposed within the first and second damper volumes.

4,657,411

HYDRAULICALLY SUPPORTED THRUST BEARINGS

Duncan T. Bath, Peterborough, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Aug. 25, 1986, Ser. No. 900,317
Claims priority, application Canada, Sep. 13, 1985, 490652
Int. Cl.⁴ F16C *27/00, 17/06*
U.S. Cl. 384—99 **8 Claims**



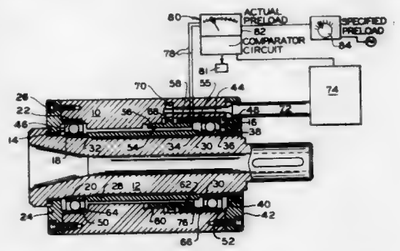
1. A thrust bearing for a rotating shaft, comprising:
- a rotating ring mounted to said shaft for rotation with said shaft and having a bearing surface in a plane at right angles to the axis of said shaft,
- a fixed base ring positioned around said shaft,
- a plurality of segmented bearing shoes, each having a bearing surface facing the bearing surface of said rotating ring,
- a plurality of hydraulic elements for each of said shoes, said hydraulic elements extending from said base ring to a respective shoe for supporting said respective shoe,
- a manifold connected to a source of hydraulic fluid under pressure,
- connection means connecting each said hydraulic element to said manifold to provide hydraulic fluid under pressure to each said hydraulic element for urging the bearing surface of the respective shoe towards the bearing surface of said rotating ring, and
- means for providing a film of oil between said bearing surfaces of said shoes and the bearing surface of said rotating ring,
- said hydraulic elements for each shoe being distributed and arranged to support said respective shoe in a pressure pattern which approximates an ideal oil film pressure pattern for providing a substantially planar bearing surface of said shoe under operating load conditions.

4,657,412

VARIABLE PRELOAD BEARING ASSEMBLY

Daniel R. McLarty, Burlington, and John H. Munson, New Britain, both of Conn., assignors to The Torrington Company, Torrington, Conn.

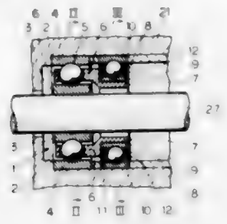
Filed Mar. 25, 1985, Ser. No. 715,517
Int. Cl.⁴ F16C *19/06, 25/08*
U.S. Cl. 384—447 **10 Claims**



1. For supporting a shaft of a spindle, a bearing assembly comprising a pair of bearings with at least one of the bearings having an inner race and an outer race, one of the inner and outer races being mounted for rotation relative to a shaft of a spindle, the other of the inner and outer races being axially displaceable in a direction parallel to the axis of spindle rotation, a pair of race adjustment members, each adjustment member having a threaded section with a pitch different from the pitch of the threaded section of the other adjustment member, a rotatable preload actuator having differential thread portions meshingly engageable with the thread sections of the race adjustment members for adjusting the axial position of said other of the inner and outer bearing races relative to said one thereof, thereby to selectively vary the loading of the bearing, an adjustment control including a bearing load sensing device for determining actual bearing load, and drive means for rotating the preload actuator to control actual bearing load under running conditions by effecting axial positioning of said other of the inner and outer bearing races relative to said one thereof.

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4,657,413
BEARING DEVICE
Juzo Hasegawa; Susumu Kawabata, and Nobuharu Mimura, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan
Filed Jun. 13, 1985, Ser. No. 745,251
Claims priority, application Japan, Jun. 21, 1984, 59-128803
Int. Cl.[4] F16C *33/38*
U.S. Cl. 384—524 15 Claims



1. A bearing device comprising:
a first rolling-element bearing comprising an inner race, an outer race, a plurality of spaced-apart rolling elements inserted between the inner and outer races, and a retainer having first and second ends for holding constant the spacing of the rolling elements; and
a second rolling-element bearing having inner and outer races, the retainer of the first rolling-element bearing being connected to one of the races of the second rolling-element bearing and being supported by the second rolling-element bearing, whereby the second rolling-element bearing prevents the retainer of the first rolling-element bearing from contacting the inner race or the outer race of the first rolling-element bearing.

4,657,414
ROLLER BEARING WITH LUBRICANT RESERVOIR
Leo Stella, Bristol, Conn., assignor to The Torrington Company, Torrington, Conn.
Filed Feb. 24, 1986, Ser. No. 832,017
Int. Cl.[4] F16C *19/26, 33/66, 33/58*
U.S. Cl. 384—548 4 Claims

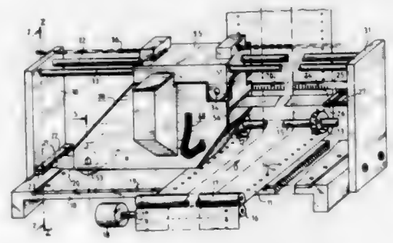


1. A bearing comprising: an outer cup made from flat sheet metal having an annular side wall, an open end, a closed end and an annular shoulder interconnecting the annular side wall and the closed end, the shoulder having a radially inwardly extending surface and an axially extending surface; an inner cup made from flat sheet metal enclosed within the outer cup, and having an annular side wall of less diameter than the diameter of the outer cup side wall to provide an annular space between the outer cup and the inner cup sidewall, the inner cup also having an open end adapted to receive the end of a rotatable member, a closed end axially spaced from the outer cup closed end to provide a lubricant reservoir in communication with said annular space, and a radially outwardly extending flange at its open end, said flange having an axially extending radially outer surface; and rollers located in said annular space, the axial ends of each roller being normally spaced from said outer cup radially extending surface and said inner cup flange, and upon the application of an axial thrust, the inner cup flange contacts one axial end of each roller and the outer cup radially extending surface contacts the other axial end of each roller.

4,657,415
MECHANISM FOR ADJUSTING THE SPACING BETWEEN THE PRINT HEAD AND PLATEN OF A PRINTER
Hiroshi Kikuchi; Yukio Ohta, and Shyoichi Watanabe, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 12, 1985, Ser. No. 743,968
Claims priority, application Japan, Jun. 12, 1984, 59-86128[U]
Int. Cl.[4] B41J *11/20*
U.S. Cl. 400—59 10 Claims

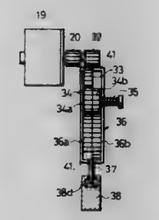
1. A mechanism for adjusting the spacing between the print head and platen in a printer, comprising:
a side frame;
a main guide shaft supported on said side frame;
a carriage for supporting the print head thereon and movable axially along and rotatably about said main guide shaft;
a guide rail extending parallel to said main guide shaft in fixed relation thereto;
a shoe in threaded engagement with said carriage, vertically extending and rotatably threaded through said carriage into sliding contact with said guide rail such that rotation of said shoe in opposite angular directions respectively moved said carriage in respective vertical directions toward and away from said guide rail;
means for holding said shoe in sliding contact with said guide rail;
a gear vertically movably mounted on an end of said shoe for angular movement therewith; and
a gap change lever angularly movable mounted on said carriage and having teeth for mesh with said gear such that angular movement of said gap change lever with said teeth in mesh with said gear rotates said shoe.

4,657,416
NON-IMPACT PRINTING APPARATUS
Jean Magneset, Chaux, France, assignor to Cii Honeywell Bull (Societe Anonyme), Paris, France
Filed Dec. 20, 1985, Ser. No. 811,385
Claims priority, application France, Dec. 20, 1984, 84 19511
Int. Cl.[4] B41J *3/02*
U.S. Cl. 400—119 21 Claims



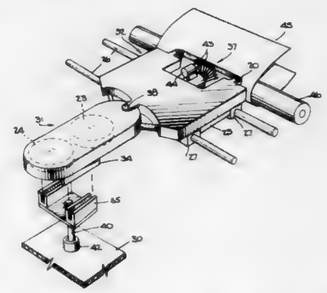
1. A non-impact printing apparatus comprising at least one flexible recording carrier (**20**) provided with a surface for recording latent images, at least one recording device (**57**) cooperating with the recording carrier to form a latent image on the said surface, at least one applicator device (**60**) arranged for depositing particles of developer onto said surface, said particles remaining applied only on this latent image in order to form an image in powder, and at least one transfer device (**53**) for transferring said image in powder onto a print carrier (**11**), said flexible recording carrier (**20**) having at least one end (**21**) fixed with respect to the surface of a stationary support element (**10**) on which said print carrier (**11**) is positioned, said recording carrier (**20**) being taut at least between said recording device (**57**) and said end (**21**) of the recording carrier, and said recording device (**57**), applicator (**60**) and transfer device (**53**) being displaced along said recording carrier (**20**) to form an image in powder upon said recording carrier (**20**) and transfer said image onto the print carrier (**11**), and said transfer device (**53**) being displaceable across the print carrier and having a presser element (**53**) disposed such that in course of displacement of the transfer device, presser (**53**) assures that the recording carrier (**20**) and the print carrier (**11**) are put in contact with each other.

4,657,417
THERMAL PRINTER
Noboru Kikuchi, Iwate; Tadashi Nakamura, Morioka, and Takahito Maruyama, Tamayama, all of Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Mar. 26, 1985, Ser. No. 716,179
Claims priority, application Japan, Mar. 29, 1984, 59-44149[U]
Int. Cl.[4] B41J *3/20, 23/00*
U.S. Cl. 400—185 1 Claim



1. In a printer of the type having a platen for supporting a recording paper thereon, a print head mounted on a carriage in opposing relation to the platen, the carriage being mounted on a carriage guide and being movable reciprocatingly along the platen, carriage moving means for moving the carriage along the platen, and paper feeding means for feeding the recording paper incrementally with respect to the platen,
the improvement comprising:
the carriage guide means being pivotable along an axis thereof for moving the print head away from the platen in one direction and against the platen in the other direction, and having a shaft portion extending therefrom;
cam means movable linearly back and forth and having a ramp-shaped portion engaged with the shaft portion of the carriage guide means to pivot the print head in each direction;
cam operation means for linearly moving the cam means; and
a single drive motor for driving the paper feeding means, the carriage moving means, and the cam operation means,
wherein the cam operation means comprises a drive gear driven by the motor, a connection gear including a fixed gear engaged with the drive gear and an abutment gear urged in frictional contact with the fixed gear by means of a spring, and a rack including two rows of toothed portions, one toothed portion being meshed with the fixed gear and having non-toothed idler sections at each end thereof, and the other toothed portion being meshed with the abutment gear, the rack being connected to the cam means and linearly movable in either direction by rotation of the drive gear.

4,657,418
HIGH CAPACITY RIBBON SUPPLY ARRANGEMENT
Roy J. Lahr, Los Angeles, Calif., assignor to Creative Associates, Los Angeles, Calif.
Continuation of Ser. No. 570,746, Jan. 16, 1984, abandoned. This application Nov. 12, 1985, Ser. No. 797,748
Int. Cl.[4] B41J *33/04, 32/00, 33/26, 33/52*
U.S. Cl. 400—229 11 Claims



1. In a printer comprising a chassis, a paper support platen mounted on said chassis, a printing carriage, means mounting said printing carriage for translation with respect to said chassis and said paper support platen, a ribbon supply system comprising:
a ribbon reel support means
a ribbon feed reel and a ribbon take-up reel both rotatably mounted on said ribbon reel support means in a predetermined orientation with respect to one another;
first means for pivotally mounting said ribbon reel support means to said printing carriage;
second means for pivotally mounting said ribbon reel support means to said chassis wherein at least a portion of the weight of said ribbon reel support means having rotatably mounted thereon said feed reel and said take-up reel is borne by said second means;
means for permitting reciprocating movement of said ribbon reel support means with respect to said chassis responsive to translation of said printing carriage with respect to said chassis.

4,657,419
INFORMATION CARRIER, HAVING A ROUGHENED SURFACE, METHOD OF MANUFACTURING SAME, AND APPARATUS THEREFOR
Masao Takakuwa, Higashimurayama, Japan, assignor to Toho Polymer Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 13, 1984, Ser. No. 670,300
Claims priority, application Japan, Nov. 2, 1984, 59-231633
Int. Cl.[4] B41J *5/12*
U.S. Cl. 400—490 13 Claims

1. An information carrier formed of a vulcanized silicone elastomer base material, the information carrier comprising: (a) a code manifested by a printing ink with a vulcanizing mechanism similar to that of the silicone elastomer base material of the information carrier, the code being embedded in the soft silicone elastomer base material half-vulcanized before vulcanizing the information carrier and completely combined with

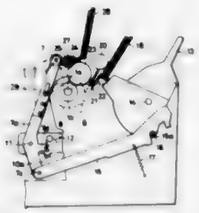
VOL 1077 ISS 2 AP 14 1987 UMI

the base material of said information carrier without distortion; and (b) a label-carrying surface having a roughness so as not to



cause said printing ink to drift due to the flowability of the base material of the information carrier.

4,657,420
PAPER FEED MECHANISM
Hirostsu Kondo, Zushi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1984, Ser. No. 650,853
Claims priority, application Japan, Sep. 20, 1983, 58-172284
Int. Cl.[4] B41J *11/58, 13/042*
U.S. Cl. 400—625 5 Claims



1. A sheet feeding mechanism comprising:
a main apparatus mechanism provided with a first rotating member for advancing a record sheet while the record sheet passes through a recording position; and
an auxiliary mechanism removably mountable to said main apparatus mechanism, said auxiliary mechanism comprising feed means for feeding the record sheet to the first rotating member of the main apparatus mechanism and receiving means for receiving the record sheet having passed through thte first rotating member, said receiving means comprising a second rotating member which generates a force for further advancing the record sheet;
said main apparatus mechanism further comprising pressing means movable between a first position where the pressing means may be urged against said first rotating member to effect the advancement of the record sheet therebetween without a bulge of the record sheet, and a second position where the pressing means may be urged against said second rotating member to effect the further advancement of the record sheet therebetween by transmitting said force of the second rotating member onto the record sheet;
wherein said pressing means comprises a holding member having a first member pivotally mounted to a point so as to be able to swing around said point and a second member joined to said first member by joining means for allowing said second member to extend relative to said first member in a direction crossing the swing of the holding member, and a pinch roller rotatably supported at a swinging end of said holding member;
wherein said joining means comprises a plurality of notches on said second member, and a first projection on said first member removably inserted in one of said notches, and means for slidably affixing said first member relative to said second member to permit said second member to extend relative to said first member.

4,657,421
MECHANICAL PENCIL
Go-Sing Lin, No. 66, Min-Tzu Road, Tainan, Taiwan
Filed Feb. 18, 1986, Ser. No. 830,167
Int. Cl.[4] B43K *21/16*
U.S. Cl. 401—57 1 Claim

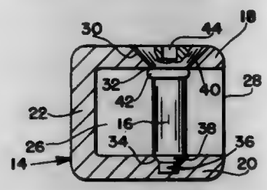


1. A mechanical pencil, comprising:
a tubular outer casing having a cylindrical inner wall and a conical shaped lower end, said lower end having a throat provided with an upper end formed into an annular shoulder to connect with said cylindrical inner wall of outer casing, and a bell-mouth shaped lower opening, said throat also having an inner wall provided with a longitudinal groove;
a coil spring disposed within said outer casing, said coil spring having a last coil at the lower end of said coil spring and a straight tail extending from said last coil to form a lead pushing member extending downwardly and inwardly at a predetermined angle with a longitudinal center axis of said coil spring; and
an inner tube inserted into said outer casing through said throat and said coil spring, said inner tube having an inside channel for storing therein a plurality of presharpened pencil leads, an enlarged lower end having a conical surface to cooperate with said bell-mouth shaped lower opening of said outer casing; said enlarged lower end having a pair of slots, one long and one short, to split said enlarged lower end into two clamping halves, said inner tube also having a first pair of protrusions formed near the upper end of said inner tube and a second pair of protrusions at a predetermined position of a mid-part of said inner tube; said long slot being disposed to correspond with said longitudinal groove of said throat of said outer casing; and
said coil spring having an upper end retained by said second protrusions of said inner tube, with said last coil of said coil spring being seated on said anunular shoulder of said throat of said outer casing to urge said inner tube upward relative to said outer casing, and said lead pushing member of said coil spring being moveably fit into said long slot of said inner tube and also being guided by said longitudinal groove of said throat of said outer casing.

4,657,422
BINDER
Theodore A. Underwood, P.O. Box 1205, South Lancaster, Mass. 01561
Filed Jun. 26, 1986, Ser. No. 878,638
Int. Cl.[4] B42F *13/12, 13/00*
U.S. Cl. 402—61 17 Claims

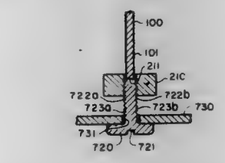
1. A binder comprising
a front wall, a spaced parallel rear wall, a bottom wall connecting the front and rear walls, said walls all being elongated, the front wall being apertured, the rear wall being

continuous and solid, the front and rear walls each having outer sides facing away each other and inner sides facing each other, the outer sides of the rear wall being unimpeded, the outer side of the front wall being countersunk at the apertures, and the inner side of the rear wall having a recess smaller than and axially aligned with each aperture,
a separate pin for each aligned aperture and recess, each pin having an undercut head corresponding to its respective



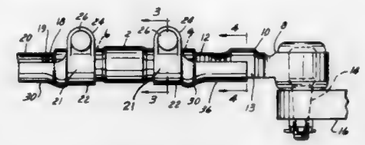
countersunk aperture, and a reduced free end opposite the head corresponding to its respective recess, said heads and reduced ends positioning the respective pin in the binder, an outstanding element on each pin adjacent the head thereof, said element having a radial dimension that snaps under the edge portion of a respective aperture to lodge at the inner side of the front wall and lock the pin in place as the head of the pin is seated in its countersink and the reduced end in its recess.

4,657,423
FASTENER AND RECEPTACLE ARRANGEMENT FOR PERPENDICULARLY CONNECTING PIECES OF FLAT STOCK MATERIAL
Wayne E. Neese, Hoffman Estates, and Charles K. Kubik, Brookfield, both of Ill., assignors to GTE Communications Systems Corp., Northlake, Ill.
Filed Dec. 30, 1985, Ser. No. 814,466
Int. Cl.[4] F16B *9/00*
U.S. Cl. 403—21 10 Claims



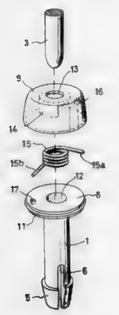
1. A fastener and receptacle arrangement for connecting panels together, said arrangement comprising:
a first panel having a first open area located adjacent to one edge of the first panel, a second open area located adjacent to and wider than said first open area, and a tongue located adjacent to said second open area, said tongue being operated to pivot away from and subsequently into said second open area;
a second panel having a first open area;
a receptacle having a bore internal thereto and a slot formed across said receptacle;
a threaded fastener;
said receptacle being inserted into said second open area when said tongue is pivoted away from said second open area, and said receptacle being secured within said second open area when said tongue is subsequently pivoted into said second open area and engaged with said slot;
said fastener being inserted through said second panel and extending through said first panel first and second open areas and engaged with said receptacle by being inserted into said bore,
whereby said first panel is connected to said second panel.

4,657,424
NONROTATABLE CLAMP FOR AUTOMATIVE STEERING LINKAGE
Yen O. Dong, Troy, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 24, 1985, Ser. No. 813,369
Int. Cl.[4] F16B *7/06*
U.S. Cl. 403—46 4 Claims



1. A nonrotatable clamp, for use with an adjustable linkage bar, comprising:
a U-shaped section comprising a bight for closing upon and gripping a cylindrical body inserted into said bight, said U-shaped section having opposing flanges attached to the ends of said bight for closing said bight; and
a hollow rotation preventing sleeve portion extending axially from said U-shaped section and having a non-circular cross section for at least part of its length, with said non-circular cross section adapted to engage with a mating non-circular cross section of said linkage bar.

4,657,425
DEVICE FOR LOCKING ROD AGAINST MOVEMENT IN EXTENDING AND CONTRACTING DIRECTIONS
Atsushi Takahashi, Fujisawa, Japan, assignor to Nifco, Inc., Yokohama, Japan
Filed Feb. 25, 1986, Ser. No. 832,966
Claims priority, application Japan, Mar. 1, 1985, 60-28115[U]
Int. Cl.[4] F16B *7/10*
U.S. Cl. 403—104 4 Claims



1. A device for locking a rod against movement in extending and contracting directions comprising a receptacle, said rod being slidably fitted in said receptacle, a cap-like operating member rotatably mounted on said receptacle and having a through-hole penetrated by said rod, and a torsion spring accommodated in said operating member and having a coiled portion normally in a small diameter state having an actual inner diameter smaller than the diameter of said rod, said torsion spring being fitted on said rod such that it normally holds said rod locked in a clamped state, said torsion spring having one end held in contact with said receptacle and the

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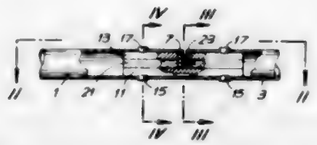
other end held in contact with said operating member, said torsion spring being released from the locked state for movement in the extending or contracting direction by increasing the inner diameter of said coiled portion by turning said operating member, said receptacle being cylindrical and having a disk-like flange provided at the upper end, said flange having an annular ridge provided around the edge, said operating member having an annular groove formed in the inner wall in the vicinity of the open end, said annular ridge being capable of being fitted in said annular groove.

4,657,426

EXPANSION CLAMP FOR THE CONNECTION OF COINCIDING ENDS OF HOLLOW COMPONENTS OF RETICULAR STRUCTURES AND THE LIKE

Giampaolo Targetti, Florence, Italy

Filed Apr. 1, 1986, Ser. No. 846,893
Claims priority, application Italy, Aug. 7, 1985, 9473 A/85
Int. Cl.⁴ F16B *7/00*
U.S. Cl. 403—297 **6 Claims**



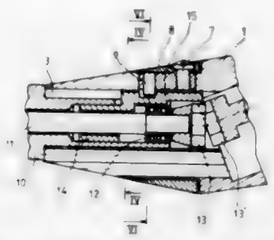
1. A device for interconnecting the ends of hollow components, including: at least two stiff elements that are shaped in correspondence to opposed portions of the inner wall surfaces of the components to be connected; elastic means interposed between said elements to cause resilient separation therebetween; on said elements connecting means for engaging the components to be connected to secure against axial separation; and means for assuring a rigid arrangement of maximum separation between the two said elements after installation inside the abutting components.

4,657,427

SYSTEM OF COUPLING OF THE HEAD OF A COUNTER-ANGLE TO THE BODY OF COUNTER-ANGLE

Jacques Pernot, Geneville, France, assignor to Micro-Mega, Besancon, France

Filed Mar. 1, 1985, Ser. No. 707,459
Claims priority, application France, Mar. 8, 1984, 84 03732
Int. Cl.⁴ F16B *21/00, 21/09*; F16D *1/00*
U.S. Cl. 403—321 **8 Claims**



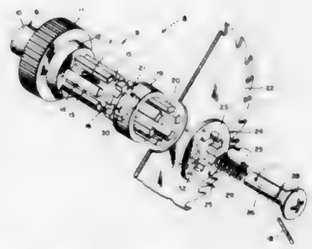
1. A system for coupling the head of a driving unit to the body of a driven unit, comprising: a driving unit having a head having a longitudinal key comprising two slopes inclined in relation to the axis of the head, and a driven unit having a body having a cylindrical opening for receiving therein said head of said driving unit and having a key-way for said key, said body having an arcuate cavity into which said key-way opens, spring means seated in said arcuate cavity, a segment seated in said arcuate cavity to undergo circumferential rotation therein and biased by said spring, a pin carried radially by said segment and positioned such that when said head is engaged with said body and the key engages the key-way, the pin by cooperation with the first of said slopes controls the rotation of the segment, then by cooperation with the second slope controls the interlocking of the head and the body, and said segment can also be moved by hand, so as to free the pin and allow the withdrawal of the head from the body by drawing the key rearwardly.

4,657,428

QUICK CHANGE MECHANISM FOR CIRCULAR SAW BLADES AND OTHER SPINNING DISC DEVICES

Edward R. Wiley, 9020 SE. 51st Pl., Mercer Island, Wash. 98040

Filed Sep. 10, 1985, Ser. No. 774,331
Int. Cl.⁴ F16B *7/00*
U.S. Cl. 403—359 **13 Claims**



1. A quick change mechanism, operable in seconds, to change rotatable work contacting members such as circular saw blades, dado sets, grinders, buffers, brushes, with respect to the drive shafts of power tools, comprising:

a. axial splines on the drive shaft having lands and grooves;

b. a radial slot to receive a rotatable work contacting member in its operational position, formed along these axial splines on the drive shaft, by cutting and removing a short section of all the spline lands to the level of the base of the spline grooves, thereby, in effect, creating receiving spaces, where the cutaway short sections of the spline lands had been located previously;

c. complementary axial splines having lands and grooves on the rotatable work contacting member, thereby permitting the endwise spline mounting on the rotatable work contacting member to the radial slot on the drive shaft, then the rotatable work contacting member is rotated relative to the drive shaft, thereby axially confining the rotatable work contacting member at the radial slot along the drive shaft, as the lands on the rotatable work contacting member are positioned in these receiving spaces, and are thereby aligned with the lands of the axial splines of the drive shaft; and

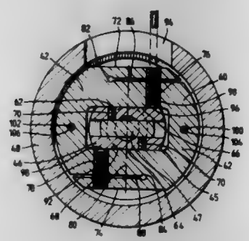
d. a complementary splined locking member having lands and grooves and having extending lands of splines, for axial movement in grooves of the axial splines of the drive shaft, to be passed through the radial slot along the drive shaft, to thereby insure the lands of the splines of the rotatable work contacting member will remain in the receiving spaces of the radial slot, and therefore the rotatable work contacting member will remain axially and radially confined at the radial slot along the drive shaft, being thereby locked in place during the operations of the power tool.

4,657,429

SECURING MEANS

Norman Morris, Buckingham, England, assignor to Leslie Hattridge Limited, Buckingham, England

Filed Jan. 28, 1986, Ser. No. 823,815
Claims priority, application United Kingdom, Feb. 5, 1985, 8502873
Int. Cl.⁴ B25G *3/28*; F16D *1/00*
U.S. Cl. 403—362 **2 Claims**



1. For use in a drive coupling between rotary drive means and a tang-ended shaft of the pump of a fuel injection system, securing means comprising:

(a) a block of solid material;

(b) wall means of said block defining a hole in said block;

(c) mutually inwardly facing surfaces of said wall means which engage the opposite sides of such a tang end when the securing means is in use;

(d) wall means of said block defining two laterally displaced screwthreaded bores extending from opposite outer sides of said block to said hole or recess, opening out respectively on said mutually inwardly facing surfaces;

(e) wall means of said block defining two slots each of which extends, in a plane which is transverse in relation to the respective screwthreaded bore, from a side of said block, at which the slot is open, across the screwthreaded bore and beyond it, to a closed end of the slot, so that stresses in the material of said block tend to shift material of said block on one side of the slot relative to the material of said block on the other side of the slot, and

(f) two fixing screws which extend respectively through said two screwthreaded bores on both sides of the respective slot so that rotation of the screws is resisted by the material of said block, wherein the closed end of each slot is defined by a bore having a cross-sectional diameter which is greater than the width of the slot, the width of the slot in this sense being the shortest distance between the material on one side of the slot and the material on the other side of the slot, and wherein the two slots are open on opposite sides of said block, and extend to their closed ends in respective opposite directions.

4,657,430

ROADWAY AND ROADWAY EXPANSION JOINT

John L. Marionneaux, Rt. 3, Box 212, Prairieville, La. 70769

Continuation-in-part of Ser. No. 460,644, Jan. 24, 1983, abandoned. This application Jun. 8, 1984, Ser. No. 618,328
Int. Cl.⁴ E01C *11/02*
U.S. Cl. 404—74 **1 Claim**

1. A method for prevention of pavement buckling comprising the steps of:

a. constructing a roadway comprising an adjacent series of concrete slabs, each having laterally spaced sides and transverse ends, wherein at least some of said adjacent slabs are parallelogram in shape such that each pair of abutting ends of said adjacent slabs form a joint running obliquely across said roadway.

b. inspecting said roadway for horizontal relative movement between said abutting ends along said oblique joints.



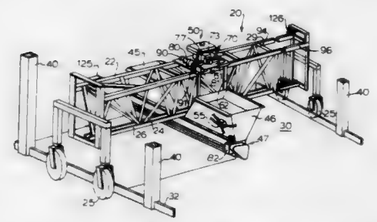
c. constructing at least one additional oblique expansion joint in each area of said roadway where said relative movement is detected before buckling.

4,657,431

NON-UNIFORM SIZE PARTICULATE SPREADER

Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214

Filed Mar. 19, 1986, Ser. No. 841,239
Int. Cl.⁴ E01C *19/06*
U.S. Cl. 404—108 **10 Claims**



1. A material spreader for spreading a layer of particulate material of substantially uniform width and thickness over a defined surface, said spreader comprising:

(a) a hopper assembly including:

(i) an open top hopper structure for receiving and storing material to be spread;

(ii) an upper material dispenser box formed by side and end walls defining an open top communicating with said hopper structure and an open bottom with the length of said box being substantially equal to the width of the layer of material to be spread; and

(iii) a lower material dispensing section secured to and supported below said dispenser box, said lower section being formed by end walls and between said end walls an upwardly curved bottom wall defining an open top of said lower section mating the open bottom of said dispenser box, one side of said bottom wall forming a continuation of one sidewall of said dispenser box and the other side of said bottom wall terminating with an edge extending for the length of said dispenser box and located below and parallel to the bottom edge of the other said sidewall of said dispenser box thereby forming a side discharge dispensing slot located below and laterally offset from the central vertical plane of said dispenser box;

(b) support structure mounting said hopper assembly for movement above and in the direction of the uncovered surface over which a layer of material is to be spread;

(c) a gasoline engine mounted on said support structure and having a drive shaft powered by said engine;

(d) a hydraulic pump mounted on said support structure and coupled to said drive shaft;

(e) a plurality of hydraulic motors fluidly connected for being driven by pressurized fluid produced by said pump;

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(f) a reservoir supported by said support structure for storing hydraulic fluid utilized by said pump and motors;
(g) drive means on said support structure for driving said support structure and thereby moving said hopper assembly over the surface to be covered by said material, said drive means including one or more of said hydraulic motors to drive one or more wheels supporting said support structure;
(h) a paddle member extending for the length of and mounted in said lower dispensing section for ejecting material therefrom through said slot, said paddle member having a drive connection to another of said motors for driving said paddle member to assist the flow of material through said slot during operation of said spreader, said paddle member rotating about an axis laterally offset from the central vertical plane of said dispenser box, said paddle member being mounted for rotation in a circular path adapted to collect material falling by gravity onto said bottom wall and sweeping such material upwardly on said bottom wall to said discharge slot to thereby be discharged; and
(i) control valve and conduit means on said support structure including an operator-control member and conduit interconnecting said pump, motors, reservoir and valve means positioned by said control member to allow selective stopping and reversing of the direction of the motors driving the wheels on said support structure while allowing said paddle member when operating to continuously rotate in the same direction independent of the direction of movement of said support structure and hopper assembly.

4,657,432
INSTALLATION FOR GROUND STABILIZATION IN HYDRAULIC ENGINEERING

Peter W. Restrop, Altena; Günter H. Trapp, Lüdenscheid, and Friedrich W. Danker, Altena, all of Fed. Rep. of Germany, assignors to Joh. Moritz Rump Kommanditgesellschaft, Altena, Fed. Rep. of Germany

PCT No. PCT/DE84/00186, § 371 Date Sep. 30, 1985, § 102(e) Date Sep. 30, 1985, PCT Pub. No. WO85/03539, PCT Pub. Date Aug. 15, 1985
PCT Filed Sep. 11, 1984, Ser. No. 786,954
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1984, 3403165
Int. Cl.⁴ E02B *3/04*
U.S. Cl. 405—24 **20 Claims**

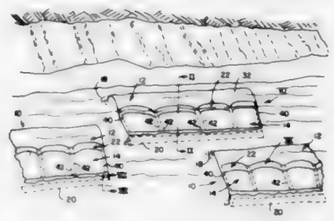


1. A device for ground stabilization in hydraulic engineering, comprising:
a structural steel web mat provided with mutually spaced parallel longitudinal mat bars and mutually spaced parallel transverse mat bars fixed together and adapted to anchor the device to the ground at least by the weight thereof;
grass-like fibers adapted to be held by said mat against said ground;
grass support elements attached to at least some of said mat bars, each of said grass support elements comprising;
a first profile bar having a trough-shaped profile,
a connection means formed on said first profile bar for connection thereof to a mat bar of said structural steel web mat, and
a second profile bar having at least the same length as said first profile bar and having said grass-like fibers extending therearound fitted into said trough and retaining said grass-like fibers on said grass support element.

4,657,433
SHORELINE EROSION CONTROL MAT AND METHOD OF USE THEREFOR

Dick L. Holmberg, P.O. Box 100, Whitehall, Mich. 49461

Filed Jun. 5, 1986, Ser. No. 871,456
Int. Cl.⁴ E02B *3/04*
U.S. Cl. 405—26 **27 Claims**



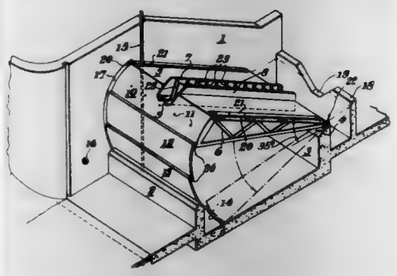
16. An erosion control device for controlling erosion along the seabed of a body of water and shore, comprising:
a base mat having a forward edge and a trailing edge;
a flexible, water permeable membrane that is substantially impermeable to soil particles, said membrane having a forward edge, a trailing edge and sides, and said membrane secured to said base mat at said membrane trailing edge and said membrane sides to form a forwardly opening pocket therebetween; and
means for anchoring said base mat in the seabed of a body of water, said anchoring means extending along substantailly the entirety of said base mat forward edge and along substantially the entirety of said base mat trailing edge, whereby with said base mat anchored with said pocket opening toward shore, said membrane permits water moving toward shore to pass over said membrane and entrained soil particles in water moving away from shore to be collected in said pocket.

4,657,434
RIVER CONTROL STRUCTURES

Anthony L. Woolnough, 6 Lockitt Way, Kingston, Lewes, East Sussex, Great Britain (BN9 3LG)

PCT No. PCT/GB84/00302, § 371 Date May 1, 1985, § 102(e) Date May 1, 1985, PCT Pub. No. WO85/01075, PCT Pub. Date Mar. 14, 1985
PCT Filed Aug. 30, 1984, Ser. No. 732,103
Claims priority, application United Kingdom, Sep. 6, 1983, 8323637
Int. Cl.⁴ E02B *8/08*
U.S. Cl. 405—81 **11 Claims**

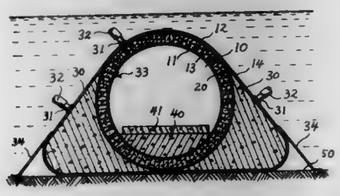
1. A river control structure comprising a chamber having side walls between which a longitudinally extending platform is adapted for orientation across a flowing stream and arranged to pass water across an upper surface of the platform in a flow direction, said platform having an upstream and a downstream end,
the downstream end of said platform having mounting means allowing the platform to rotate about a horizontal axis extending transverse to the stream
the upstream end or said platform being supported by control means adapted to raise and lower the upstream end of said platform from a minimum to a maximum height,
baffled channel means provided for the upper surface of said platform extending in the flow direction, said baffled channel means having baffles disposed therein and arranged such that, when the upstream end of said platform is raised to its maximum height the permitted water flow through said baffled channel means will allow fish to swim upstream through the baffled channel means.



4,657,435
UNDERWATER TUNNEL CONSTRUCTION

Ming Y. Chang, 20 Covered Wagon La., Rolling Hills, Calif. 90274

Filed Dec. 27, 1985, Ser. No. 814,047
Int. Cl.⁴ E21D *9/00*
U.S. Cl. 405—136 **8 Claims**



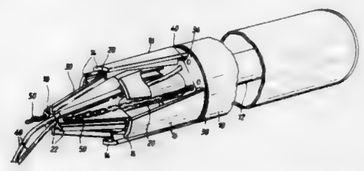
1. A method for the construction of a basic tunnel structure comprising:
first introducing a flexible mold made of double-layered fabrics to contain various compartments of the designated tunnel structure;
then pumping an inert fluid into the compartment representing the tunnel spacing of the structure to produce a simple geometric shape of same;
followed by pumping a reactive fluid into the compartments representing the wall spacings of said tunnel structure until the latter are filled to the predetermined volumes;
allowing the reactive fluid to be cured and solidified in said wall spacings to a rigid structure for said tunnel;
and finally withdrawing said inert fluid from the tunnel spacing to evacuate same for subsequent finishing work and usage of the tunnel structure.

4,657,436
DEVICE AND METHOD FOR REMOVING IRREGULARITIES IN OR ENLARGING AN UNDERGROUND DUCT

Ian R. Yarnell, Haslemere, England, assignor to I.P.D. Systems Limited, Guernsey, Channel Islands

Continuation-in-part of Ser. No. 504,603, Jun. 15, 1983, Pat. No. 4,487,052. This application Dec. 10, 1984, Ser. No. 679,671
Claims priority, application United Kingdom, Jun. 18, 1982, 8217645; Dec. 16, 1983, 8333567
Int. Cl.⁴ F16L *55/18, 1/00*
U.S. Cl. 405—154 **5 Claims**

1. Apparatus for travelling through an underground duct and for enlarging, or removing irregularities, in the duct, wherein the apparatus comprises an expandable segmented shell including a series of shell parts arranged around a longitudinal axis of the apparatus and having respective outwardly facing surface portions for engaging the sides of the duct, wherein the shell parts are movable laterally with respect to the axis from a contracted configuration to an expanded configuration for forcing the sides of the duct away from the axis to enlarge a portion of the duct, and a nose portion extending in a longitudinal direction forwardly of the segmented shell

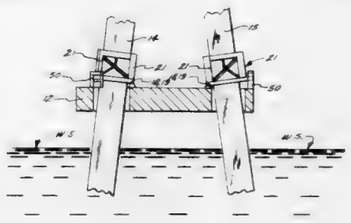


portion and having an outer surface for engaging the sides of the duct ahead of the said segmented shell portion, wherein said nose portion comprises a second expandable and segmented shell including a second series of shell parts arranged around a longitudinal axis and having respective second outwardly facing surface portions for engaging the sides of the duct, the shell parts of the second series being movable transversely with respect to said axis between a contracted configuration and an expanded configuration.

4,657,437
MOBILE, OFFSHORE, SELF-ELEVATING (JACKUP) SUPPORT SYSTEM WITH ADJUSTABLE LEG INCLINATION AND FIXATION

John O. Breeden, 107 Ballentine St., Bay St. Louis, Miss. 39520

Filed Jan. 11, 1985, Ser. No. 690,722
Int. Cl.⁴ E02B *17/08*
U.S. Cl. 405—198 **22 Claims**



1. A marine jack-up platform apparatus with adjustable inclination leg supports comprising:
a. a platform providing a deck structure with an upper work area thereon;
b. at least three support legs, each movably affixed to the vessel platform at varying elevations so that extension of the legs can elevate the vessel platform above a water surface;
c. powered jacking means pivotally mounted on the deck structure in the work area for elevating the vessel platform with respect to the legs;
d. adjustable inclination support means including a pivotal connection of the jacking means with the deck structure for forming a structural support between the vessel platform and at least one of the legs at variable angles of the leg inclination when the platform is being supported by the legs;
e. including extensible means spaced laterally from the pivot and having a longitudinal axis generally parallel to the leg for elevating one lower edge portion of the jacking means

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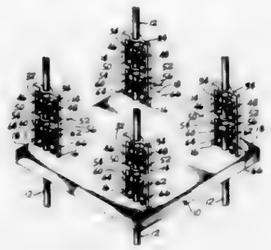
generally opposite the pivotal connection so that an axial load path transfers load between the leg and the platform.

4,657,438

ADVANCING MECHANISM AND SYSTEM UTILIZING SAME FOR RAISING AND LOWERING A WORK PLATFORM

Don A. Gillis, 208 N. Western Ave., Wenatchee, Wash. 98801

Filed Jan. 10, 1986, Ser. No. 817,877
Int. Cl.⁴ E02B *17/08*
U.S. Cl. 405—198 **7 Claims**



1. An advancing mechanism, comprising:
an elongated guide member;
a movable member guided for movement along said guide member;
a pair of supports spaced from each other along the guide member, each said support carrying clamping means operable for clamping the support to the guide member, for unclamping the support so that such support can be moved in position along the guide member, each said clamping means comprising a pair of jaw members, each having an open center in which the guide member is received, said jaw members being pivotally connected together along an axis which extends transversely of the guide member, said jaw members including portion bordering the open center which are brought into gripping contact with the guide member when the jaw members are moved apart, and are moved out from contact with the guide member when the jaw members are moved together; and
a separate extendible/retractable hydraulic cylinder interconnected between each said support and the movable member,
whereby the first one of the supports can be clamped to the guide member, while at the same time the hydraulic cylinder connected to said first support is extended or retracted to move the movable member in position relative to the first support, and at the same time the second support is unclamped from the guide member and the second cylinder is moved to a starting position, so that at the end of the stroke of the first cylinder, the second support can be clamped to the guide member, and the first support unclamped from the guide member, and then the second cylinder can be operated to advance the movable member and the first cylinder can be returned to a start position.

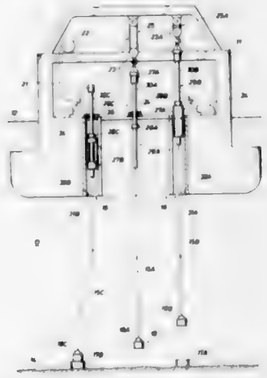
4,657,439

BUOYANT MEMBER RISER TENSIONER METHOD AND APPARATUS

William H. Petersen, Kingwood, Tex., assignor to Shell Offshore Inc., Houston, Tex.

Filed Dec. 18, 1985, Ser. No. 810,126
Int. Cl.⁴ E21B *19/00*
U.S. Cl. 405—200 **19 Claims**

1. A method of supporting the weight of an elongated vertical marine riser in a body of water by use of a buoyant member having a vertical slot defined longitudinally therethrough, said buoyant member positioned within a vertical opening defined through a floating platform and being capable of vertical movement therein,
said floating platform provided with;
riser assembly and support means for assembly of said riser and support of the weight of said riser, and
buoyancy adjustment means for adjustment of the buoyancy of said buoyant member by the addition to and removal of buoyancy means from said buoyant member,
said marine riser provided with;
connection means at its lower end for connection of said lower end to subsea equipment fixedly anchored to the seafloor of said body of water, and



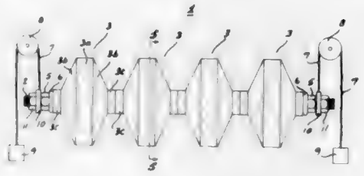
landing shoulder means connected to the upper portion of said riser having an outer dimension greater than the width of said vertical slot of said buoyant member,
said marine riser positioned within said vertical opening and being supported at its upper end by a portion of said riser assembly and support means and extending in tension substantially centrally down through said vertical opening to a point adjacent said seafloor,
said method of supporting the weight of said riser comprising;
moving said riser towards and subsequently into said vertical slot formed through said buoyant member, and
adding buoyancy means from said buoyancy adjustment means to said buoyant member sufficient to support the entire weight of said riser.

4,657,440

FENDER

Juei-Jse Lin, Room C, 11th Floor, No. 122, Sec. 4, Chung-Hsiao E Rd., Taipei, Taiwan

Filed Dec. 24, 1984, Ser. No. 685,495
Int. Cl.⁴ E02B *3/22*
U.S. Cl. 405—213 **5 Claims**



1. A displaceable fender comprising:
a shaft;

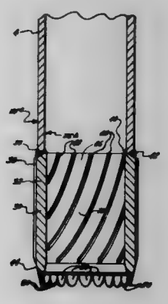
a buffer means rotatably mounted on said shaft;
locking means attached proximal to the ends of said shaft for preventing the release of said buffer means from said shaft;
two pulley members adapted to be mounted to a shore installation;
two suspending means on said pulley members, one end of each of said suspending means being attached to one end of said shaft; and
weighting means attached to the free end of each of said suspending means for permitting displacement of said fender upon impact.

4,657,441

PENETRATION CONDUCTOR PIPE DRIVE SHOE

Louis Horvath, Norwich, England, assignor to HSA, Inc., New Orleans, La.

Filed Oct. 15, 1984, Ser. No. 660,917
Int. Cl.⁴ E02D *7/14*
U.S. Cl. 405—254 **6 Claims**



1. An apparatus for increasing the impact driveability of a piling linearly along an axis through contacting soil comprising:
a. A first, lower, soil displacing section of said piling;
b. soil contacting means, outwardly disposed from (an exterior face of) said section, for intermittently de-cohering said soil; and
c. Means, inwardly disposed from said section, for torsionally disassociating said soil.

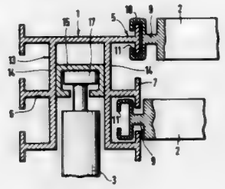
4,657,442

CRIBBING DEVICE FOR TRENCHES

Josef Krings, Heinsberg, Fed. Rep. of Germany, assignor to Krings International GmbH & Co. KG, Heinsberg, Fed. Rep. of Germany

Filed Jun. 27, 1985, Ser. No. 749,572
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1984, 3423853
Int. Cl.⁴ E21D *5/12*
U.S. Cl. 405—282 **5 Claims**

1. A cribbing device for trenches which comprises:
a pair of opposing supports spaced apart by a spreader, each support having a plurality of guide profiles and a crosspiece, said crosspiece being disposed transversely to the longitudinal axis of the trench, said guide profiles being arranged adjacent each other on said crosspiece, and comprising a plurality of legs disposed vertically and extending outward from said crosspiece, and a plurality of flanges disposed vertically and secured to said legs at the ends of said legs opposite said crosspiece and projecting on both sides beyond said legs;
a plurality of cribbing boards each having a guide bar which supports a guide head, said guide head being in the form of a slotted hollow box section and extending vertically beyond said board at its vertical face side;
the width of each of said guide profile flanges being slightly smaller than the inside width of said guide heads with the slot of said guide heads corresponding to the legs of said guide profiles, and the inside spacings between the legs of the adjacent guide profiles and between the crosspiece and the flange of each guide profile being slightly larger than the corresponding dimensions of said guide heads, and the guide bar of said cribbing boards corresponding to the spacings between the flanges of adjacent guide profiles;



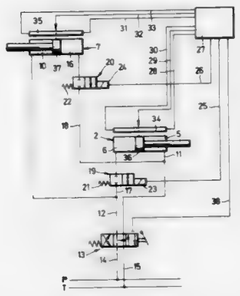
so that said boards may be guided and supported by said supports by engaging said guide heads of said boards with the flanges of said guide profiles or within the spacings between adjacent guide profiles;
thereby permitting said boards to be passed by each other on parallel planes and to be supported by said supports in a form-locked manner with the distance between adjacent supports being adjustable depending upon the engagement of the guide heads of said boards with the guide profiles of the supports.

4,657,443

ARRANGEMENT FOR SUPERVISING SYNCHRONOUS DISPLACEMENT OF THE PISTONS OF TWO CYLINDER-AND-PISTON UNITS

Günter Blumenthal, Herten-Westerholt, Fed. Rep. of Germany, assignor to Bochumer Eisenhuette Heintzmann GmbH & Co., Bochum, Fed. Rep. of Germany

Filed Mar. 11, 1986, Ser. No. 838,555
Claims priority, application Fed. Rep. of Germany, May 21, 1985, 3518162
Int. Cl.⁴ E21D *23/16, 23/26*
U.S. Cl. 405—302 **2 Claims**



1. An arrangement for supervising and controlling synchronous displacement of respective pistons of a first and a second

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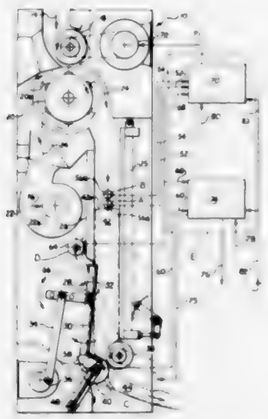
cylinder-and-piston unit, especially of an advancement and a roof cap displacement unit of a roof support assembly for use in underground mining, each of such units including a cylinder bounding a piston space next to one axial face of the respective piston and an annular space surrounding a piston rod which extends from the other end face of the respective piston to the exterior of the respective unit, comprising means for supplying a pressurized hydraulic medium; means for discharging a spent hydraulic medium; first conduit means having two branches each connected with one of the spaces of a different one of the units; second conduit means also having two branches each connected to the other of the spaces of a different one of the units; switching valve means interposed between said supplying and discharging means and said first and second conduit means and operative for simultaneously selectively connecting said supplying means with one, and said discharging means with the other, of said first and second conduit means to subject the respective piston to a pressure differential; first and second shut-off valve means respectively interposed in one of said branches of said first and second conduit means which leads to a different one of the units; means for detecting the extent of displacement of each of the pistons; and means for determining from the output of said detecting means which of the piston leads the other and for causing that of said first and second shut-off valve means which is associated with the leading piston to temporarily close and thus discontinue the action of the pressure differential on the leading piston until synchronism in the displacement of the two pistons is restored.

4,657,444

SYNCHRONIZED CHUTE FEED CONTROL SYSTEM AND METHOD

Akiva Pinto, Gastonia, N.C., assignor to Hergeth Hollingsworth GmbH, Duelmen, Fed. Rep. of Germany

Filed Jul. 24, 1985, Ser. No. 758,343
Int. Cl.⁴ B65G *53/66*
U.S. Cl. 406—23 **17 Claims**



1. A control system for a chute feed of the type which includes a feed roll for feeding fiber to a fiber batt formation chute, an oscillating plate mounted for compacting the fibers in the formation chute, a pair of delivery rolls for discharging the compacted fibers in the form of a fiber batt, and airflow means for delivering a flow of fiber-laden air into said formation chute, said control system comprising a delivery weight signal generator means for sensing a function of the weight of fiber in said fiber batt and generating a delivery weight signal representative of said quantity of fibers, a first fiber quantity signal generator means for sensing a quantity of said fibers in said formation chute and generating a first fiber quantity signal representative of said quantity of fibers, a control means for receiving said delivery weight signal and said first fiber quantity signal for generating an oscillating plate control signal for controlling the rate oscillation of said oscillating plate within said formation chute in response to said delivery weight signal, and for also generating a feed roll control signal for controlling the rate of rotation of said feed roll in response to said first fiber quantity signal, wherein said control system further comprises:

said first fiber quantity signal generator means disposed at a first level of said formation chute for sensing a fiber quantity condition at a prescribed first level in said formation chute and generating said first fiber quantity signal in response to sensing said fiber quantity condition;

second fiber quantity signal generator means disposed at a second level of said formation chute above said first level for sensing a second fiber quantity condition at a second prescribed level in said formation chute physically above said first level and generating a second fiber quantity signal in response to sensing said fiber quantity condition at said second prescribed level;

said control means receiving said first fiber quantity signal to control said feed roll in a normal mode of operation and receiving said second fiber quantity signal for modifying said feed roll control signal and the normal mode of operation of said feed roll in accordance with said second fiber quantity signal to reduce the rotation of said feed roll beyond that provided by said first fiber quantity signal;

said control system including a preset delivery weight signal input to said control means, said control means comparing said preset delivery weight signal and said delivery weight signal for producing an airflow control signal when said delivery weight signal falls below said preset delivery weight signal, said airflow control signal separately controlling the operation of said air flow means at an increased rate when said delivery weight signal falls below said preset delivery weight signal to assist said oscillating plate in the compaction of said fibers in said formation chute so that said fibers are compacted to a required density for providing a prescribed batt weight per unit length discharged from said formation chute.

4,657,445

CORE DRILL AND METHOD OF REMOVING A CORE THEREFROM

Joseph Bossler, 1412 E. Arrow Hwy., Irwindale, Calif. 91760

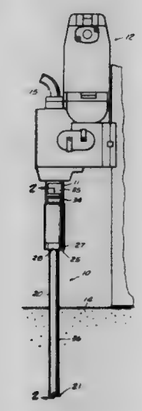
Filed Mar. 12, 1984, Ser. No. 588,230
Int. Cl.⁴ B23B *35/00*
U.S. Cl. 408—1 R **4 Claims**

1. That method of expediting the removal of a core from the interior of a tubular core drill which comprises:

fixedly securing an externally threaded bushing to the rear end of said core drill;

providing a sleeve for detachably coupling said bushing-equipped core drill to the externally threaded drive shank of a power unit for said core drill which coupling sleeve is threaded internally of the opposite ends thereof and respectively sized to mate one with said threaded bushing and one with said threaded drive shank;

providing said sleeve with wrench engaging means for the assembly and disassembly thereof to and from said drive shank; and



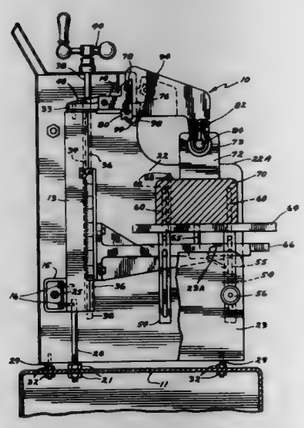
detaching said sleeve from said drive shank and withdrawing by gravity a core through the rear end of said drill stem and coupling sleeve.

4,657,446

BORING MACHINE FOR CAM SHAFT BEARINGS

James F. Flaten, Burnsville, Minn., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Feb. 28, 1983, Ser. No. 470,221
Int. Cl.⁴ B23B *41/12*
U.S. Cl. 408—87 **12 Claims**



1. A boring machine for line boring a plurality of bearing housings in a work piece such as a portion of an internal combustion engine comprising:

a machine frame having front, rear, and spaced sides;

a generally upright support column located adjacent to and extending upwardly along the rear of the machine frame at an intermediate location;

a cross member mounted adjacent to the upper end of said support column and extending across the machine frame;

a pair of spaced generally upright end plates attached respectively to opposite ends of the cross member and defining therewith a work space in front of the support column;

means attachable to the cross member including means for engaging and supporting a generally horizontally extending boring bar between said end plates;

a table structure for supporting a work piece having surfaces thereon to be bored by the boring bar including a generally horizontal table portion extending between the spaced end plates;

means on the cross member adjacent to the support column threadedly engageable with the table structure and rotatable by crank means adjacent to the upper end thereof relative to the cross member to adjust the vertical position of the table portion, said table portion having a first end positioned adjacent to one of said spaced end plates, and a second opposite end positioned adjacent to the other of said spaced end plates; and

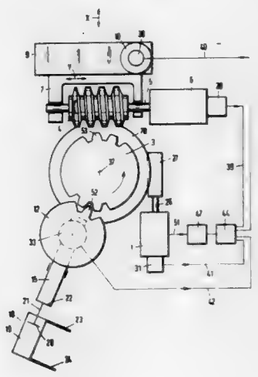
means carried on the table portion adjacent one end thereof for releasably clamping the first end of the table portion to one of said spaced end plates and other means carried on the table portion adjacent the opposite end thereof for releasably clamping the second opposite end of the table portion to the other of said spaced end plates whereby when both ends of the table portion are clamped the table portion is rigidly maintained between the end plates and with respect to the upright support column and the boring bar.

4,657,447

METHOD FOR DETERMINING THE ANGULAR POSITION OF A WORKPIECE AND POSITIONING THE SAME

Hans I. Faulstich, and Wolfgang Müller, both of Ludwigsburg, Fed. Rep. of Germany, assignors to Hermann Pfauter GmbH & Co., Ludwigsburg, Fed. Rep. of Germany

Filed Sep. 12, 1984, Ser. No. 649,914
Int. Cl.⁴ B23F *1/06*
U.S. Cl. 409—12 **2 Claims**



1. A method of automatically and reliably determining an angular position of a workpiece, and positioning said workpiece, relative to at least one tool, said workpiece having at least one set of teeth; said method including the steps of:

first determining the angular position of a reference workpiece, having the same set of teeth as the workpiece to be machined, using a measuring device having a substantially circular cross-section by bringing the measuring device into measuring engagement with the reference workpiece;

then positioning a reference shaft with respect to said reference workpiece and rotating one with respect to each other when said reference workpiece rotates;

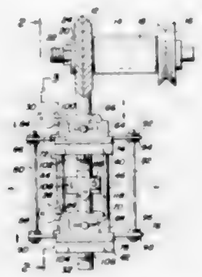
deriving pulses from said reference workpiece and said measuring device as they rotate relative to each other;
undertaking a first phase measurement between said pulses as a reference result;
thereafter storing the reference result of said first phase measurement as a reference value;
completely removing said reference workpiece and replacing said reference workpiece with a further workpiece which is still to be machined subsequently thereto;
undertaking a second phase measurement between further pulses derived from said measuring device and said further workpiece as they rotate relative to each other;
comparing said stored reference value of said first phase measurement with the result of said second phase measurement to determine the difference between the first and second phase measurement; and
accurately positioning said further workpiece prior to machining said further workpiece by turning said further workpiece relative to said measuring device in conformity to the difference between said reference value and said result of said second phase measurement.

4,657,448

PANTOGRAPH ANGULAR BITTED KEY CUTTING MACHINE

Arthur Alexander, 60 Reade St., New York, N.Y. 10007

Filed Apr. 29, 1985, Ser. No. 728,695
Int. Cl.⁴ B23C *3/35*
U.S. Cl. 409—81 **6 Claims**



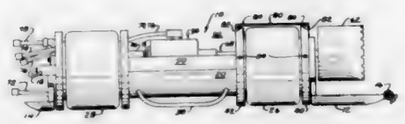
1. a pantograph angular bitted key cutting machine, comprising in combination:
(a) a rotating cutting head capable of notching teeth into a blank duplicate key;
(b) a duplicate key vice which locks said blank duplicate key into said cutting machine;
(c) an original key whose tooth pattern is to be duplicated by notching the teeth of said blank duplicate key;
(d) an original key vice which locks said original key into said cutting machine;
(e) means for coupling said duplicate key vice and said original key vice such that any advancing or receding displacement of either of said keys, which controls the depth of said notching, produces precisely the same advancing or receding displacement of the other of the said keys;
(f) means for coupling said duplicate key vice and said original key vice such that any lateral displacement of either of said keys, which controls the lateral position of said notching, produces precisely the same lateral displacement of the other of the said keys;
(g) means for coupling said duplicate key vice and said original key vice such that any rotational displacement of either of said keys, which controls the angularization of said notching, produces precisely the same rotational displacement of the other of said keys; and,
(h) means for aligning the lateral position of both of said keys and the rotational position of both of said keys such that the depth, spacing and angularization of notches made to said blank duplicate key precisely match the depth, spacing and angularization of pre-existing notches in said original key when said blank duplicate key is notched by said cutting head, wherein said means for coupling said duplicate key vice and said original key vice such that anly lateral displacement of either of said keys, which controls the lateral position of said notching, produces precisely the same lateral displacement of the other of the said keys comprises an original key slide plate to which said origianl key vice is fixedly mounted and an accessory original key slide bracket inside of which said original key slide plate slides laterally; a duplicate key slide plate to which said duplicate key vice is fixedly mounted and an accessory duplicate key slide bracket inside of which said duplicate key slide plate slides laterally; a cantilever arm which is permanently attached to said original key slide plate and extends perpendiculary thereto; a similar cantilever arm which is permanently attached to said duplicaste key slide plate and extends perpendicularly thereto; and, at least one pivot bar which connects said cantilever arms such that both said duplicate key vice and said original key vice maintain equal lateral displacement.

4,657,449

INTERNAL SEWAGE LINE STUB CUTTING TOOL HAVING AUTOMATIC BIT ADJUSTMENT

John J. Marich, Lemont, and Thomas V. Vartanian, LaGrange Park, both of Ill., assignors to J. Marich & Sons, Lemont, Ill.

Filed May 12, 1986, Ser. No. 862,115
Int. Cl.⁴ B23C *3/02;* **E03F** *3/06*
U.S. Cl. 409—143 **7 Claims**



1. A cutter apparatus for remotely severing the ends of branch stub pipes that protrude into the interior of a main pipe, the cutter apparatus being adapted for placement within the main pipe during a severing operation, the cutter apparatus including a housing, the housing defining a longitudinal axis, said axis being aligned substantially parallel to the axis of the main pipe when the cutter apparatus is placed within the main pipe; a pipe cutting bit, the cutting bit adapted to cut upon the rotation thereof about a bit axis; means for mounting the cutting bit in predetermined orientation on the housing wherein the bit axis is substantially parallel to the housing axis; the bit mounting means including bearing means permitting a predetermined first longitudinal movement and a second rotational movement of the cutting bit with respect to the housing; motor means operatively coupled to the cutting bit for rotation the bit; ram means operatively coupled to the cutting bit for applying an axial force to the cutting bit whereby the bit may be moved through the predetermined first longitudinal distance; inflateable sleeve means on the housing for locking the housing in fixed orientation within a main pipe upon inflation thereof, the sleeve means forming a generally annular collar around the housing and adapted for radial outward expansion with respect to the longitudinal axis of the housing; steering means mounted in one of a plurality of fixed positions adjacent the sleeve means for inhibiting expansion of the sleeve means in a first radial direction and for forcing expansion of the sleeve means in a generally opposed second radial direction whereby the housing and cutting bit are urged in the first radial direction into abutting engagement with the interior pipe surface of the

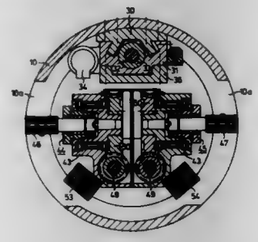
main pipe thereby orienting and aligning the cutting in predetermined fixed relationship to said main pipe interior wall.

4,657,450

MACHINING TOOL FOR PIPES

Siegfried Förner, Erlangen, and Georg Gebald, Kirchehrenbach, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 18, 1986, Ser. No. 840,936
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1985, 3510288
Int. Cl.⁴ B23C *3/00;* **B24B** *5/40*
U.S. Cl. 409—143 **5 Claims**



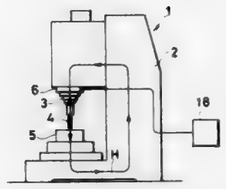
1. Manipulator head for the remotely controlled positioning and operation of a tool in the interior of a pipe or pipeline, comprising:
first and second support flanges having outer surfaces, guiding elements for the rolling advancement of the manipulator head and radially movable, hydraulically operable clamping devices for locking the manipulator head in place;
a tool holder in the form of a tubular support frame having assembly openings formed therein, an inner wall surface, and third and fourth support flanges with outwardly pointing ends adjacent end faces of said tool holder, said tool holder interconnecting said first and second support flanges and being rotatably supported by said first and second support flanges;
a rotating tool including a milling cutter disposed in the vicinity of one of said assembly openings for mechanically machining the inner wall surface of a pipe or pipeline, said milling cutter being disposed laterally of the axis of the manipulator head and coaxial to a radius of the manipulator head;
an axially extended first guide rail attached to said inner wall surface of said tool holder, a first slide axially movable on said first guide rail, a first driving device coupled to said first slide for axially moving said tool;
a second guide rail fastened to said first slide and extended parallel to a radius of the manipulator head, a second slide radially movable on said second guide rail, a second driving device coupled to said second slide for radially setting said tool;
said milling cutter being fastened to said second slide, a third driving device coupled to said milling cutter for performing a working motion of said tool; and
a fourth driving device disposed at one of said first and second support flanges for rotating said tool holder relative to said first and second support flanges, said fourth driving device including a worm gear transmission having a worm gear fastened on said outer surface of said one of said first and second support flanges axially of said outwardly pointing end of one of said third and fourth support flanges, a worm engaging said worm gear, a step-down transmission connected to said worm, and a drive motor connected to said transmission, said worm, transmission and drive motor being transverse to the axis of the manipulator head, and pillow blocks extending over said worm gear supporting said drive motor and said step-down transmission.

4,657,451

CONTACT DETECTOR FOR A MACHINE TOOL

Yuzuru Tanaka, Osaka, Japan, assignor to Daishowa Seiki Co., Ltd., Osaka, Japan

Filed Sep. 11, 1985, Ser. No. 774,758
Claims priority, application Japan, Mar. 15, 1985, 60-53010
Int. Cl.⁴ B23B *39/04*
U.S. Cl. 409—186 **4 Claims**



1. A contact detecting system for detecting the contact of a tool element with a workpiece, which system comprises:
exciting and detecting coil assemblies mounted on a main shaft of a machine while said main shaft loosely extends through said exciting and detecting coil assemblies, said main shaft of the machine being adapted to support the tool element generally in face-to-face relation with the workpiece to be machined by said tool element, said exciting and detecting coil assemblies each further comprising a separate ring-shaped core made of a magnetizable material and a separate winding evenly coiled around the core and said coil of said exciting coil assembly and said coil of said detecting coil assembly being substantially electromagnetically isolated from each other when said tool element is not in contact with said workpiece;
an electric power source for providing the exciting coil assembly with a high frequency electric current;
said exciting coil assembly generating an induction current when an actual contact between the tool element and workpiece takes place, said induction current so generated flowing in a loop circuit constituted by the main shaft, the tool element and a framework of the machine, said detecting coil assembly generating an output signal upon the generation of the induction current; and
a detector unit for generating a detection signal indicative of the actual contact of the tool element with the workpiece when said detector unit has detected the presence in the output signal from the detecting coil assembly of a current component which has resulted from the induction current generated in the exciting coil assembly.

4,657,452

CONTOURING MACHINE FOR PRINTED CIRCUITS

Florio Astigiano, Mondovi', and Ernesto Kaminski, Carcare, both of Italy, assignors to PRT-Pluritec Italia S.p.A., Burolo d'Ivrea, Italy

Filed Feb. 6, 1985, Ser. No. 698,609
Claims priority, application Italy, Feb. 9, 1984, 67118 A/84
Int. Cl.⁴ B23C *9/00*
U.S. Cl. 409—190 **7 Claims**

1. A contouring machine for printed circuits having a workpiece supporting table for supporting the printed circuit boards to be cut, an operating head displaceable in a direction perpendicular to said table between a rest position and an operative position, means for relatively moving said table and said head in a direction parallel to said board to enable said head when in said operative position to cut the contour of the printed circuit, a workpiece clamping member mounted on said operating

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head operable for clamping the circuit during the cutting of a portion of the contour long enough to ensure the rigidity of the circuit with respect to the board before cutting said portion, said clamping member being mounted for limited movement from a starting position parallel to said board to allow a displacement of the operating head with respect to said board, wherein said machine includes

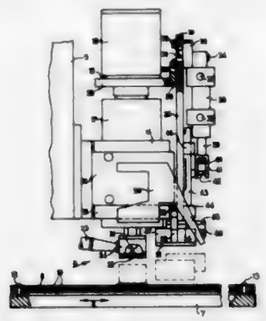
a guide member for slidably guiding said clamping member in said limited movement,

a support secured to said head for mounting said guide member for displacement in said perpendicular direction,

displacing means for additionally displacing said guide member and said clamping member with respect to said support in said perpendicular direction to enable said clamping member to clamp the printed circuit to be cut, whereby said clamping member is moved parallel to said board when said head cuts said portion while said printed circuit is so clamped,

friction means for frictionally connecting said clamping member and said guide member to prevent a dragging of said clamping member on said circuit at the instant said displacing means causes said clamping member to disengage the circuit so cut, and

means effective after said clamping member has disengaged from the so cut circuit for positively engaging said clamping member as to overcome said friction means and for returning said clamping member to said starting position on said guide means.



4,657,453

MILLING DEVICE WITH UNIVERSAL GEAR AND AUTOMATIC INDEXATION

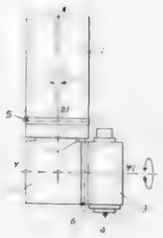
Etienne Goulot, and Jean Kwapisz, both of Albert, France, assignors to Forest-Line, Paris, France

Filed Sep. 11, 1984, Ser. No. 649,498

Claims priority, application France, Sep. 15, 1983, 83 14700

Int. Cl.⁴ B23C *1/12*

U.S. Cl. 409—216 **2 Claims**



1. A milling device with universal gear and automatic indexation, removably mounted on a milling head bearing a machining spindle, comprising a main body mounted on the milling head and capable of occupying several positions of indexation with respect to said head by rotation about on axis XX_1 lying in line with the axis of the spindle of the milling head, said main body laterally bearing a spindle-holder unit capable of occupying several positions of indexation with respect to the main body by rotation about an axis YY_1 perpendicular to axis XX_1, the spindle of the spindle-holder unit itself being perpendicular to axis YY_1, wherein the spindle of the milling head is connected to the spindle of the spindle-holder unit by a kinematic chain comprising a shaft or sleeve disposed along axis YY_1, said shaft or sleeve achieving rotation and indexing of the spindle of the spindle-holder unit, and on which is mounted a gear which is in mesh with a ring gear fast with the spindle-holder unit during the operation of indexation and which is out of mesh with said ring during the work operation, and wherein the body and the spindle-holder unit comprise ring gears which are maintained in mesh in work position and out of mesh for indexation of the unit by jacks acting to separate the spindle-holder unit from the main body or to approach them one to another by translation in the direction of the axis YY_1.

4,657,454

CHUCK FOR HOLDING ROTARY CUTTING TOOL

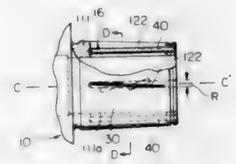
Shuiti Migita, and Hajime Ito, both of Futtsu, Japan, assignors to Kuroda Precision Industries, Ltd., Kanagawa, Japan

Filed Dec. 18, 1985, Ser. No. 810,164

Claims priority, application Japan, May 22, 1985, 60-75048[U]; May 22, 1985, 60-75049[U]

Int. Cl.⁴ B23C *1/00;* **B23B** *31/04*

U.S. Cl. 409—234 **5 Claims**



1. A chuck comprising:

a holding cylinder having a tapered outer circumferential surface and an objective tool or an adapter for holding such a tool inserted therein, a plurality of slits being formed in said holding cylinder to extend from its inner to its outer diameter, and said slits being formed as closed slits which do not open onto a distal end face of said holding cylinder and which are located at a midportion along a longitudinal axis of said holding cylinder;

a clamping cylinder rotatably mounted at a predetermined distance from the outer circumferential surface of said holding cylinder; and

a number of needle rollers arranged in a plurality of stages along the entire circumference of a gap between said cylinders to extend along a direction at a predetermined inclination angle α with respect to the common axis of said cylinders, said plurality of slits crossing the axial direction of said needle rollers at a predetermined angle β, and said needle rollers being rotatable around said holding cylinder and revolvable without being interfered with by said slits, thereby contracting and recovering said holding cylinder.

4,657,455

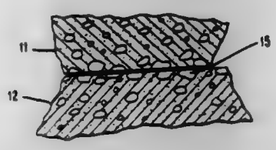
CONCRETE MACHINE TOOLS

Albert J. Rogers, Arlington; Michael E. Smith, Springfield, both of Va., and James E. Trounson, Washington, D.C., assignors to Centronics, Washington, D.C.

Division of Ser. No. 672,200, Nov. 16, 1984, Pat. No. 4,622,194, which is a continuation-in-part of Ser. No. 503,550, Jun. 13, 1983, abandoned. This application Jul. 7, 1986, Ser. No. 882,527

Int. Cl.⁴ B23B *17/00*

U.S. Cl. 409—235 **5 Claims**



1. A machine tool comprising means for holding a workpiece and means for holding a cutting tool, a machine way of at least one of said means for holding comprising a ground concrete surface, and a mated sliding surface of the other means for holding being in direct contact with the ground concrete surface.

4,657,456

BLIND SCREW ANCHOR

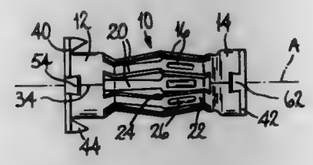
Robert Asquetin, Etrechy, France, assignor to USM Corporation, Farmington, Conn.

Filed May 24, 1984, Ser. No. 613,579

Claims priority, application United Kingdom, Jun. 3, 1983, 8315350

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—38 **11 Claims**



1. A blind screw anchor fabricated from one piece of sheet metal that is bent and folded so as to form the component parts of the blind screw anchor, said blind screw anchor comprising:

a first sleeve portion formed around a common axis for all component parts of the blind screw anchor, said first sleeve portion having abutting lengthwise edges that meet so as to complete a cylindrical shape;

a head flange with a hole therein having a center through which the common axis passes, said head flange being integrally connected to said first sleeve portion by a bent bridge piece so as to cause said head flange to lie in a plane perpendicular to the common axis,

a second sleeve portion formed around the common axis for all component parts of the blind screw anchor, said second sleeve portion having abutting lengthwise edges that meet so as to complete a cylindrical shape;

a plurality of collapsible links spaced symmetrically around the common axis for all component parts of the blind screw anchor, said plurality of collapsible links being integrally connected to said first and second sleeve portions; and

means to engage the screw threads of a screw passing through the head flange, down through the first sleeve portion, the collapsible links, and the second sleeve portion along the common axis for all component parts of the screw anchor, said thread engaging means being integrally connected to said second sleeve portion by a bent bridge piece between said thread engaging means and said second sleeve portion so as to cause said thread engaging means to be in a plane perpendicular to the common axis.

4,657,457

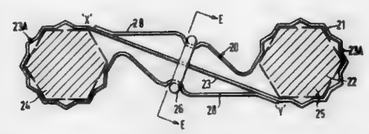
SCREW-ACTION CONNECTORS SECURITY MEANS

Gerald C. Rickwood, 20 Oakfield Drive, Formby, Merseyside, L37 1NR, England

Filed Jun. 26, 1984, Ser. No. 625,001

Int. Cl.⁴ F16B *39/10, 39/20*

U.S. Cl. 411—93 **15 Claims**



1. A locking device for securing at least two screwaction connectors, comprising means for anti-rotationally engaging both of said connectors, and means for interconnecting the engaging means to resist relative rotation of said connectors, wherein the engaging means comprises two resiliently flexible locking elements each having an expanded, relaxed position and a contracted, engaged position, each of which fits around a respective one of said connectors when in the relaxed position and which is embraceable therewith when in the contracted position, wherein the interconnecting means comprises an inextensible member that is tangentially connected to diametrically opposed portions of each of the locking elements, and wherein each of the locking elements additionally comprise a limb, each limb releasably engagable with the interconnecting means or the other limb so as to cause the locking element to move between its expanded, relaxed position and its contracted, engaged position, and further wherein the engaging means includes means for releasably engaging the limbs with respect to each other or the interconnecting means; whereby the locking elements are caused to grippingly engage said connectors when said limbs are so engaged and wherein the engaging means can fit over the screwaction connectors without the user overcoming the resilience of the device when the device is in its expanded, relaxed position.

15. A method of securing at least two screw-action connectors, comprising the steps of locating anti-rotational engaging means about both of said connectors, inextensibly linking said antirotational engaging means by interconnecting means dimensioned to resist relative rotation of said connectors, and bringing limbs of said engaging means into cooperating releaseable engagement with one of said interconnecting means or one another to cause said engaging means to grippingly embrace said connectors.

4,657,458

ANCHOR NUT FOR THREADED MEMBER

Burnell J. Woller, Barrington, and Arthur J. Danko, Oaklawn, both of Ill., assignors to Phillips Plastics Corporation, Phillips, Wis.

Continuation of Ser. No. 549,295, Nov. 7, 1983, abandoned, which is a continuation-in-part of Ser. No. 343,893, Jan. 29, 1982, abandoned. This application Jul. 8, 1986, Ser. No. 883,458

Int. Cl.⁴ F16B *37/02, 37/10*

U.S. Cl. 411—182 **2 Claims**

1. A one-piece reusable molded plastic anchor nut including a head and a shank for removable insertion in a hole in a workpiece and adapted to releasably receive an adjustably position-

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able threaded member in a threaded bore formed in said head and shank, said anchor nut comprising:

a first section including a head portion and a shank portion;

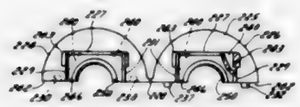
a second section including a head portion and a shank portion;

each section having opposite ends, a substantially flat inside surface and an outside surface, the outside surface of a head portion including an undersurface and the outside surface of a shank portion including an outer face and a pair of side faces, each side face having a predetermined width;

and a flexible non-frangible web connected to and between the head portions of said sections to enable said sections to be swung toward each other from a molded position to an assembled position;

said inside surfaces facing in the same direction when said sections are in said molded position and said inside surfaces confronting each other when said sections are in assembled position;

each inside surface having a depression therein extending from one end toward the opposite end of its section, said depression being threaded for substantially its entire length;



each inside surface having alignment means thereon which engage when said sections are folded into assembled position;

the undersurface of the head portion of each section being engageable with one side of said workpiece to prevent passage of the assembled anchor nut entirely through said hole in the workpiece;

each of side face of a shank portion of each section having releasable latching means formed thereon to prevent unintentional removal of said nut from said hole, said releasable latching means including a projection integrally connected at its opposite ends to said side face and extending outwardly from its respective side face and cooperating with the undersurface of the associated head portion to define a space for receiving an edge of said workpiece adjacent said hole which is releasably engageable with said edge, said projection being resiliently depressible toward a groove extending inwardly from said outer face of a respective shank portion and behind a side face and said projection thereon, the width of said projection and the width of the groove therebehind being about half the depth of the associated side face.

4,657,459

VIBRATION RESISTANT FASTENERS

Richard C. Landt, Souderton, Pa., assignor to SPS Technologies, Inc., Newtown, Pa.

Filed Dec. 10, 1984, Ser. No. 680,212
Int. Cl.⁴ F16B *39/282, 41/00*
U.S. Cl. 411—188 **28 Claims**

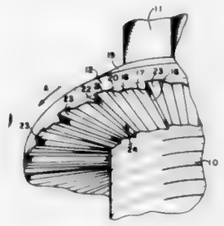
1. A self-locking fastener having a predetermined direction of tightening and a bearing surface, said bearing surface comprising:

a plurality of serrations in the form of teeth when viewed along a cylinder concentric with the longitudinal axis of the fastener, each of said teeth having a root and a crest such that said roots of said teeth generally form a first plane and said crests of said teeth generally form a second plane;

a wall extending from the crest of each said tooth to the root of said tooth; and

a plurality of intermediate surfaces each being disposed between two of said teeth; said intermediate surfaces being generally disposed between said first and second planes and generally parallel thereto; and

and inclined surface extending from each of said crests in the



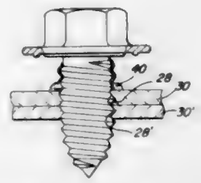
direction of tightening to one of said intermediate surfaces, such that said teeth are adapted to penetrate into a work-piece surface in which said self-locking fastener is being installed and said intermediate surfaces are adapted to control and limit the extent of penetration of said teeth into the work-piece surface when said self-locking fastener is operatively installed and said roots of said teeth do not bear against said workpiece surface.

4,657,460

SELF-BONDING THREADED FASTENERS AND METHOD OF CURING SAME

Alfred A. Bien, W. Bloomfield, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Mar. 17, 1986, Ser. No. 840,303
Int. Cl.⁴ F16B *39/00*
U.S. Cl. 411—258 **1 Claim**



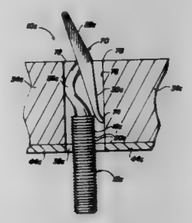
1. An adhesive bonding fastener having a self-tapping thread for reception in an undersized hole formed in a sheet metal member, said fastener including a head, a threaded shank defining an axis of rotation, said shank extending downwardly from said head and formed integrally therewith, and a load transmitting flange formed integrally with said head and extending radially therefrom, said flange having a flat annular bottom surface which extends perpendicular to said shank axis of rotation, said flange bottom surface formed with an annular lip of a predetermined diameter and extending a predetermined axial distance towards said shank, said lip adapted to sealingly engage the upper surface of said sheet metal such that said lip defining an annular chamber of uniform depth with said flange bottom surface and said sheet metal upper surface whereby said chamber disposed in coaxial relationship with said shank axis, said shank having a helical self-tapping thread extending from the free end of said shank to said flange bottom surface, said thread having a controlled quantity of thermo-setting adhesive comprising an epoxy and solvent composition precoated thereon extending a predetermined axial distance from a point adjacent said flange bottom surface towards said shank free end, said precoated adhesive composition having a predetermined thickness, whereby, upon said shank being threaded completely through said undersized hole, said adhesive composition liquifying so as to be stripped clearly from said self-tapping thread, said adhesive composition being transported upwardly on said thread through said undersized hole and deposited to a uniform thickness in said annular chamber between said flange bottom surface and the sheet metal upper surface, said precoated adhesive composition being of a predetermined amount sufficient to completely fill said annular chamber, and whereby upon said adhesive composition being heated to a predetermined curing temperature in the range of 250° F. to 350° F. said solvent evaporates and said epoxy provides a uniform permanent bond solely between said flange bottom surface and said sheet metal upper surface, said cured epoxy having a shear section capable of withstanding the maximum holding torque of said fastener.

4,657,461

ANCHORING BOLT

Gareth J. Smith, 15533 Tupper St., Sepulveda, Calif. 91343

Filed Oct. 26, 1984, Ser. No. 665,460
Int. Cl.⁴ F16B *21/00*
U.S. Cl. 411—340 **8 Claims**



1. An improved anchor bolt device, said device comprising, in combination:

(a) a bolt member adapted to be inserted through an opening in a wall, said bolt including:

(1) an elongated shaft,

(2) a pair of arms pivotally connected to the front end of said bolt and adapted to move between a collapsed position, substantially parallel to said shaft when being passed through an opening in a member, and an operative extended position substantially at a right angle to said shaft after it has passed completely through said opening, and

(3) resilient deformable means interconnecting said shaft and said arms which has an elongated, curved neck when in an at-rest position, said neck further having an elastic memory; and

(b) a closure member adapted to be secured to said bolt to provide a closure assembly.

4,657,462

QUARTER-TURN FASTENER

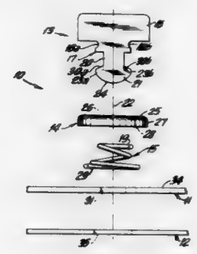
Cuyler Hoes, Reanesselaer, N.Y., assignor to Simmons Fastener Corporation, Albany, N.Y.

Filed Aug. 8, 1985, Ser. No. 763,559
Int. Cl.⁴ F16B *21/02*
U.S. Cl. 411—552 **9 Claims**

1. A fastener system comprising a fastener, a first panel and a second panel, each panel having a top surface and a bottom surface, the fastener removably securing the first panel to the second panel; the first panel having a hole therethrough having width W and additionally a hole slot portion;

the second panel having a hole therethrough having the shape of an elongated slot with a length longer than said width W of the first panel hole;

the fastener comprising a turn member, a spring member and a cap member, said turn member having as portions thereof a turn head means by which the turn member may be gripped and rotated, a shank portion having an imaginary axis, and a nose portion having oppositely extending wing portions extending from said shank portion, the



width W' of said nose portion perpendicular to said axis being greater than the width W of the first panel hole so that said nose portion fits through said hole slot portion only with a tilting action relative to said axis;

said cap member having a hole through which said turn member shank portion extends;

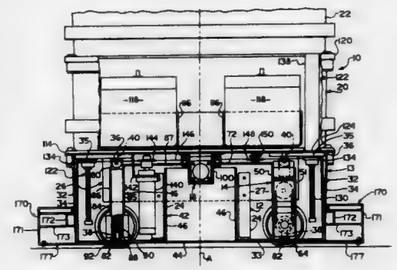
and said spring member being a resilient helical coil spring positioned between said cap member and the top of said first panel.

4,657,463

AUTOMATED GUIDED VEHICLE

George R. Pipes, Salt Lake City, Utah, assignor to Eaton-Kenway, Inc., Salt Lake City, Utah

Continuation of Ser. No. 702,516, Feb. 19, 1985, abandoned. This application Feb. 6, 1986, Ser. No. 827,186
Int. Cl.⁴ B60P *1/02*
U.S. Cl. 414—495 **12 Claims**



11. A vehicle comprising a frame having at least one horizontally disposed element thereof; a drive wheel assembly pivotally mounted on said frame, said drive wheel assembly comprising a first vertically oriented support structure, a pair of wheels mounted for rotation on opposite sides of said support structure, a drive motor attached to said first support structure and operatively connected to at least one of said wheels, first pivot means on said first support structure defining a vertical pivot axis intersecting the axes of rotation of said wheels, and a first moment arm defined by a substantially horizontal extension of said first support structure; a bogey wheel assembly pivotally mounted on said frame, said bogey wheel assembly comprising a second vertically oriented sup-

port structure, a pair of wheels mounted for rotation on opposite sides of said second support structure, pivot means on said second support structure defining a vertical pivot axis intersecting the axes of rotation of said wheels, and a second moment arm defined by a substantially horizontal extension of said second support structure; power steering means centrally mounted on said frame between said drive and bogey wheel assemblies, said power steering means comprising a linear actuating means mounted on said vehicle for movement transversely thereto and connected to said first and second moment arms whereby movement of said linear actuating means is operable to rotate said drive wheel assembly and said bogey wheel assembly in opposite directions about their respective pivot axes; vertically movable load support means mounted on said horizontally disposed element of said frame; and transfer means acting between said frame and said drive and bogey wheel assemblies to transfer loads applied to said load support means to said drive and bogey wheel assemblies, said transfer means comprising roller means on said drive wheel assembly and on said bogey wheel assembly rotatable about axes parallel to the axes of rotation of the wheels on said drive and bogey wheel assemblies and engagable with said horizontally disposed element of said frame.

4,657,464

PROCESS AND APPARATUS FOR STACKING SPENT ANODES

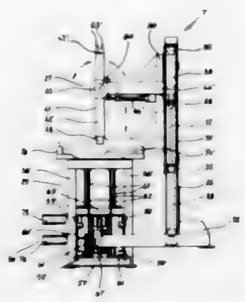
Constant T. Verhoeven, Poederlee, and Carolus M-Th. L. Hens, Olen, both of Belgium, assignors to Metallurgie Hoboken-Overpelt, Hoboken, Belgium

Filed Apr. 5, 1985, Ser. No. 720,188

Claims priority, application Luxembourg, Apr. 17, 1984, 85321

Int. Cl.⁴ B65G *57/081*

U.S. Cl. 414—31 **9 Claims**



5. An apparatus for stacking spent anodes, which comprise a spent electrolytic plate and a pair of suspension lugs and which are vertically suspended by their lugs to hooks, said apparatus comprising

(a) unhooking and rotating means adapted to lift the spent anodes from the hooks by their lugs, to rotate the lifted anodes alternately 90° and −90° around a horizontal axis, which, if the spent anodes were replaced by the new anodes they originate from, would coincide substantially with the horizontal median axis of the new anodes, this latter axis being located in the plane of the new anode and at equal distance from the top of its lugs and from the lower edge of its electrolytic plate, and to release the rotated anodes;

(b) first conveying means adapted to move said unhooking and rotating means vertically between an upper position for unhooking a suspended anode and a lower position for releasing a rotated anode;

(c) supporting means located under the said lower position; and

(d) second conveying means adapted to move said supporting means vertically.

4,657,465

APPARATUS FOR STACKING SMALL BUNDLES OF SIGNATURES

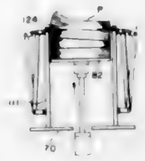
Minoru Aoki, Yokohama, Japan, assignor to Nichiro Kogyo Company, Ltd., Yokohama, Japan

Filed Feb. 20, 1985, Ser. No. 703,491

Claims priority, application Japan, Jul. 13, 1984, 59-145749

Int. Cl.⁴ B65G *57/06*

U.S. Cl. 414—31 **6 Claims**



1. An apparatus for stacking small bundles of signatures, comprising:

means for receiving and stacking signatures;

conveyor means for delivering said signatures to said means for receiving and stacking;

a frame member positioned beneath said means for receiving and stacking;

means for transferring a stack of said signatures to said frame member;

means for rotating said frame member about a vertical axis;

table means;

means for rotating said table means with said frame member and vertically moving said table means;

a plurality of claws including means for positively pivoting said claws about horizontal axes; and

means for substantially horizontally moving said horizontal axes such that said claws move into said frame member and retract from said frame member, whereby said claws when moved into said frame member provide compressive forces on the top surface of a stack supported on said table means when said table means is moved upwardly toward said claws.

4,657,466

APPARATUS FOR MOVING STRIPS USING MECHANICAL MANIPULATOR

Lloyd C. Leeper, Harrisburg, and C. Thomas Mullen, Hummelstown, both of Pa., assignors to Hershey Foods Corporation, Hershey, Pa.

Filed Apr. 15, 1985, Ser. No. 723,085

Int. Cl.⁴ B65G *65/00*

U.S. Cl. 414—416 **17 Claims**

15. Apparatus for transferring strips from a carrier member, said apparatus including:

a. a first conveyor for transporting a carrier member and strips carried thereon along a path to a transfer station;

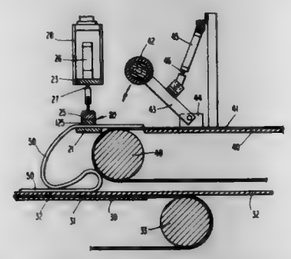
b. a second conveyor having an input end at said transfer station;

c. a mechanical hand at said transfer station, said hand including: a frame member, a spatula blade extending forwardly from a lower part of said hand frame member, a clamping bar positioned relative to said blade and carried from said frame member, and means for effecting relative clamping and unclamping movement between said clamping bar and said blade;

d. means for moving said hand from a withdrawn position relative to the path of strips on a carrier member to an extended position relative thereto in which said blade wedges itself between said strips and the carrier member;

e. means for actuating said means for effecting clamping movement whereby the strips become clamped between said clamping bar and said blade;

f. means for moving said hand with at least a vertical component of movement to thereby raise at least the forward ends of strips and to deliver the forward ends of the strips



to a resting position on the input end of said second conveyor;

g. pressure means for maintaining the strips pressed against the surface of said second conveyor;

h. means for actuating said means for effecting unclamping movement thereby to release the clamping by said hand of the strips; and

i. means for withdrawing the hand to a withdrawn position relative to said second conveyor.

4,657,467

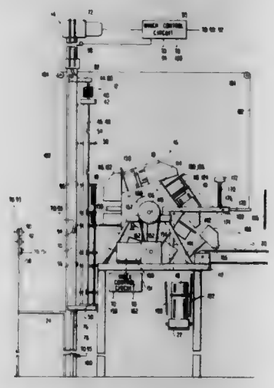
CANISTER HANDLING SYSTEM

Jackson A. Ransohoff, Bethesda; Edward A. Wentz, Gaithersburg, and Walter C. Sayder, Frederick, all of Md., assignors to Neutron Products, Inc., Dickerson, Md.

Continuation of Ser. No. 573,686, Jan. 25, 1984, abandoned. This application Mar. 14, 1986, Ser. No. 840,479

Int. Cl.⁴ B65G *37/00*

U.S. Cl. 414—419 **10 Claims**



8. A canister handling system comprising

a canister for containing material and havng opposite outside vertical cylindrical surface portions defining a first outside diameter of the canister;

said canister having outside vertical rib means defining a second diameter of the canister greater than the first diameter;

rail means;

a movable carrier having a fixed horizontal shelf and vertical, partially cylindrical, fixed, rigid wall means defining a cylindrical compartment with a diameter greater than the second diameter for receiving and transporting the canister along the rail means; and

said vertical, partially cylindrical, rigid wall means having horizontally arcuate cross sections defining a vertical opening extending less than 180° of the cylindrical compartment to define an opening width greater than the first diameter and less than the second diameter such that the canister can be moved through the opening when the first diameter is oriented across the opening and such that the canister is retained in the carrier when the second diameter is oriented across the opening.

4,657,468

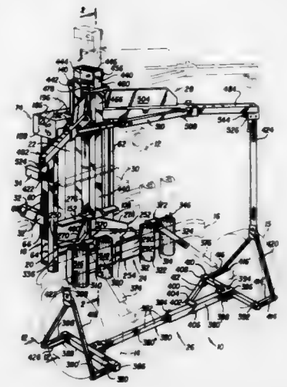
VEHICLE TOWING APPARATUS

Gordon D. Youmans, and Audrey L. Youmans, both of 17375 Hawthorne Ave., Anderson, Calif. 96007

Continuation of Ser. No. 372,702, Apr. 28, 1982, abandoned. This application Nov. 27, 1985, Ser. No. 802,090

Int. Cl.⁴ B60P *3/12*

U.S. Cl. 414—563 **12 Claims**



1. Vehicle towing apparatus, comprising:

elongated mast support members affixed to the floor of the body portion of a motor vehicle;

a mast erected upon said mast support members, said mast including rail members and a head member disposed between said rail members;

a carriage slidably disposed upon said mast, said carriage including a transverse member extending between said rail members and slidably coupled thereto and a including a longitudinal member secured to said transverse member and slidably coupled to said head member

a bumper assembly having a pair of bumper support arms each having a first end coupled to said transverse member at separate, closely adjacent pivots, said bumper support arms each having a second end and a means for adjusting the length of said bumper support arms, said bumper assembly having a selectively elongated bumper, said second ends of the bumper support arms affixed to opposed ends of said elongated bumper at pivots, said bumper having a first means for securing a vehicle to be towed,

a cradle assembly having a means for coupling said cradle assembly to said longitudinal member of the carriage and having a pair of cradle support arms, said cradle support

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arms each having a first end affixed to said means for coupling said cradle assembly at separate, closely adjacent pivots, said cradle support arms having second ends supporting a second means for securing a vehicle to be towed and having a means for adjusting the length of said cradle support arms, and

a power means for slidably positioning said cradle upon said mast.

4,657,469

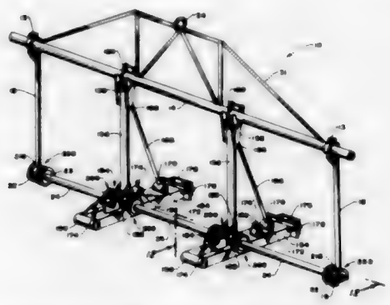
TRESTLE-TYPE REEL CARRIER

Carl F. Beierle, 13424 Beach Ave., Marina del Rey, Calif. 90292, and Harry Irik, 2025 Ashland Ave., Santa Monica, Calif. 90405

Continuation-in-part of Ser. No. 622,979, Jun. 21, 1984, abandoned. This application Jan. 21, 1986, Ser. No. 820,951

Int. Cl.[4] B66F 9/06

U.S. Cl. 414—607 12 Claims



1. An apparatus adapted for use with power equipment such as a fork-lift truck having a pair of forwardly extending, vertically movable lift forks, which enables such truck to handle at least one relatively large, horizontally disposed cylindrical object having a central axially oriented opening therethrough, said apparatus comprising:

a horizontal main support member;

at least two downwardly depending arms attached at an upper end to said horizontal main support member and having means on an opposite lower end of the said arms to retain in a selectively releasable relation an axle member in a generally parallel spaced relation to said horizontal main support member;

rigidifying supporting means attached to said horizontal main support member and extending generally vertically upward therefrom, adapted to support said horizontal main support member from deforming forces; and

means for mounting and supporting said horizontal main support member in a generally horizontal and selectively releasable relation to said lift fork of said truck, comprising (a) means for receiving said lift forks, (b) vertical support means extending upwardly from said lift fork receiving means and (c) bracing members connected at a first end to said vertical support means and at an opposite second end to said means for receiving said lift forks.

4,657,470

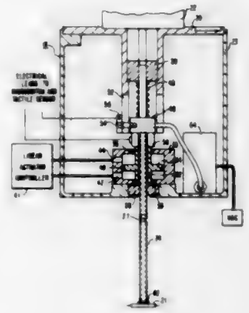
ROBOTIC END EFFECTOR

William F. Clarke, Sykesville, Md., and Mark W. Handlesman, Upper Darby, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 671,670, Nov. 14, 1984, abandoned. This application May 6, 1986, Ser. No. 861,623

Int. Cl.[4] B65H 11/02

U.S. Cl. 414—627 6 Claims



1. An end effector for a robot for placing small components such as flat packs on a surface, comprising:

a housing adapted to be fixed to the movable arm of said robot, said housing including first and second bearings in spaced-apart relationship;

a hollow quill slidably mounted in said bearings and having its bore open at the working end of said quill;

means for coupling a selectively actuable vacuum source to said inner bore;

a train of force responsive and force producing elements in coaxial relation with said quill and including:

a collar fixed to said quill;

a linear bidirectional actuator in coaxial and slidable relation to said quill and coupled to selectively actuable force-source means;

resilient means biasing said collar and quill in a first direction corresponding to extending said quill and toward said actuator;

tactile sensor means interposed in said train and subject to changing forces applied to said quill in a direction opposite said first direction in accordance with said quill being moved by said robot into a position placing a component held by the working end of said quill, said changing forces being used to initiate further action of said end effector including actuating said linear bidirectional actuator to move said quill in a direction opposite said first direction independent of any motion of said robot arm.

4,657,471

LOAD LIFTING UNIT FOR A LIFT TRUCK

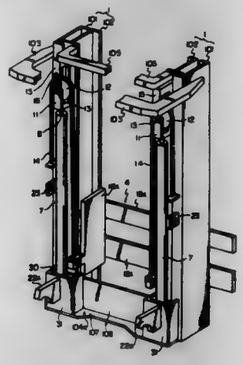
Akifumi Shinoda, Handa; Yukio Yoshioka, Ohbu, and Akio Kato, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Continuation of Ser. No. 660,944, Oct. 15, 1984, abandoned, which is a division of Ser. No. 424,100, Sep. 27, 1982, Pat. No. 4,505,635, which is a continuation of Ser. No. 189,838, Apr. 14, 1980, abandoned. This application Mar. 11, 1986, Ser. No. 838,857

Claims priority, application Japan, Aug. 17, 1978, 53-100137; Mar. 20, 1979, 54-32925; Mar. 21, 1979, 54-32978; Mar. 22, 1979, 54-33989; Mar. 22, 1979, 54-33990; Mar. 23, 1979, 54-34541; Mar. 23, 1979, 54-34542; Mar. 27, 1979, 54-36673; Mar. 27, 1979, 54-36674; Apr. 11, 1979, 54-44780

Int. Cl.[4] B66F 9/08

U.S. Cl. 414—663 4 Claims



1. A lift truck comprising:

a truck body having a pair of front wheels on a front axle and a driver's seat disposed behind and above said front wheels;

a pair of left and right uprights comprising a pair of left and right outer masts provided at front portions of said truck body of said lift truck, and a pair of left and right inner masts arranged to be moved up and down between and along said outer masts;

a lift member;

a lower beam disposed rearward of and extending laterally between the lower ends of said left and right outer masts;

two lift cylinders separately disposed adjacent to and rearward of said left and right uprights, respectively, for lifting and lowering said inner masts and said lift member relative to said outer masts, each of said two lift cylinders having a lower end mounted on said lower beam at the lower end of the corresponding outer mast within a respective area which is surrounded by said corresponding outer mast, said front axle and a corresponding one of said front wheels and within an angular range defined by the innermost point on the respective inner mast and the outermost point on the respective outer mast in the same horizontal plane as viewed from the driver's seat, such that obstruction of the view from the driver's seat of said lift truck by said uprights and said lift cylinders is minimized;

a pair of left and right brackets attached to said lower beam and enclosing the lower ends of said two lift cylinders;

left and right connecting members attached to said left and right brackets, respectively, and rotatably mounted on the front axle;

means for supporting said lift member in a space extending between said pair of left and right inner masts and said pair of left and right outer masts so that said lift member is capable of being moved up and down;

a load handling attachment carried by said lift member; and

an actuating means arranged within said space for actuating said load handling attachment.

4,657,472

MANIPULATOR HEAD ASSEMBLY

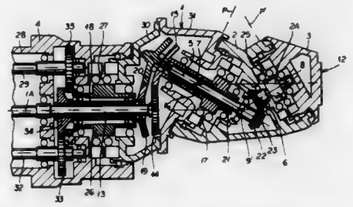
Ernst Zimmer, Friedberg, Fed. Rep. of Germany, assignor to KUKA Schweissanlagen+Roboter GmbH, Augsburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 634,753, Jul. 26, 1984. This application Jun. 7, 1985, Ser. No. 742,280

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328071; Aug. 3, 1984, 3428748

Int. Cl.[4] B25J 17/02

U.S. Cl. 414—735 4 Claims



1. A head assembly for a manipulator, the assembly comprising:

an inner part;

inner pivot means for supporting the inner part on the manipulator for rotation about an inner axis fixed relative to the manipulator and extending through the inner part;

an intermediate part;

intermediate pivot means for supporting the intermediate part on the inner part for rotation about an intermediate axis defined by the inner part and intersecting the inner axis at an intermediate angle not equal to 90° and open away from the inner part;

an outer part having a holder adapted to carry a tool;

outer pivot means for supporting the outer part on the intermediate part for rotation about an outer axis fixed relative to the intermediate part, extending through the outer part, and intersecting the intermediate axis at an outer angle not equal to 180° and open away from the intermediate part;

inner drive means for rotating the inner part on the manipulator about the inner axis defined thereby;

intermediate drive means for rotating the intermediate part on the inner part about the intermediate axis and including

an inner core shaft on the inner axis and having an outer end provided with a bevel gear, an intermediate tube shaft extending along the intermediate axis,

an inner bevel gear on the intermediate tube shaft and meshing with the gear of the inner core shaft, and

a harmonic stepdown transmission connected between the intermediate tube shaft and the intermediate part for relatively slow rotation of the intermediate part relative to the intermediate tube shaft; and

outer drive means for rotating the outer part on the intermediate part about the outer axis and including

an outer shaft extending along the outer axis,

a bevel gear on the outer shaft,

an intermediate core shaft in the intermediate tube shaft and carrying an outer bevel gear centered on the intermediate axis and meshing with the bevel gear of the outer shaft for rotating the outer shaft in the outer part about the outer axis and an inner bevel gear also centered on the intermediate axis,

an inner tube shaft coaxially surrounding the inner core shaft and having an outer end provided with a bevel

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gear meshing with the inner bevel gear of the intermediate core shaft, and

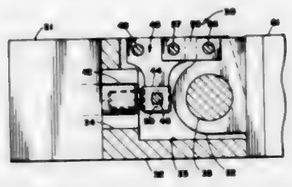
a harmonic stepdown transmission connected between the outer shaft and the outer part for relatively slow rotation of the outer part relative to the outer shaft.

4,657,473

APPARATUS FOR PIVOTING A MANIPULATOR OPERATING HEAD ABOUT A YAW AXIS

Peter Banovic, Columbus, Ohio, assignor to Rimrock Corporation, Columbus, Ohio

Filed Jul. 22, 1985, Ser. No. 757,284
Int. Cl.[4] B25J 15/00
U.S. Cl. 414—739 4 Claims



1. In an apparatus for pivoting an operating head relative to a manipulator arm about a normally vertical yaw axis, said arm having a wrist mechanism at its outer end adapted to rotate said head about a generally horizontal roll axis extending longitudinally relative to said arm and generally perpendicular to said yaw axis, said operating head being carried on a head support member mounted at the forward end of said wrist mechanism for pivotal movement about said yaw axis and adapted to turn said operating head therewith between a normal forwardly facing position and a yawed position whereby when said head support member is rotated about said roll axis such that said yaw axis is not substantially vertical, the weight of said operating head and the load carried thereby applies a torsional force about said yaw axis, the improvement which comprises:

a fluid cylinder mounted on said wrist mechanism in axial alignment with said roll axis and having a piston rod extending forwardly therefrom; and

articulating means connecting said piston rod to said support member; said means including:

a bell crank mounted on said wrist mechanism for pivotal movement about a crank pin with an axis spaced laterally from the roll axis, and having one arm operatively connected to said piston rod; and

link means connecting another arm of said bell crank to said head support member at first and second pivot axes respectively, said first and second pivot axes and said crank pin axis being coplanar in a plane tangent to the circle defined by a radius from said yaw axis to said second pivot avis, when said operating head is in said normal position.

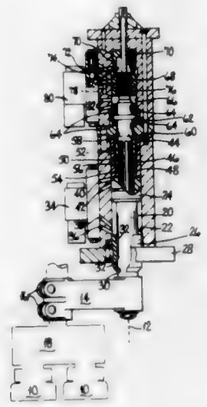
whereby linear movement of said piston rod pivots said operating head about said yaw axis and whereby when said operating head is in said operating position and is pivoted about said roll axis so that said yaw axis is not substantially vertical, said torsional force is applied entirely to said crank pin of said bell crank.

4,657,474

MOVING MEANS FOR USE IN A GLASSWARE MANUFACTURING MACHINE

Hermann H. Nebelung, Zurich, Switzerland, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Jan. 20, 1984, Ser. No. 572,290
Claims priority, application United Kingdom, Jan. 29, 1983, 8302502
Int. Cl.[4] B66C 23/00; F01B 21/00
U.S. Cl. 414—744 A 6 Claims



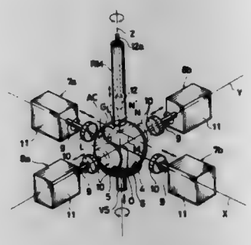
1. Moving means for use in a glassware manufacturing machine for moving an operative member between an out-of-the-way position thereof and an operative position in alignment with an opening of a mould cavity, the operative member making a movement which has a rotary component about a vertical axis and a linear component in a vertical direction, the moving means comprising a horizontally extending arm on which the operative member is mounted a first shaft extending vertically and on which said arm is mounted, a first piston and cylinder assembly comprising a piston which is rigidly connected to the first shaft and a vertically extending cylinder in which the piston is movable to impart vertical movement to the first shaft and therefore to the operative member, a second vertically-extending shaft mounted for rotary movement about a vertical axis and being coaxial with said first shaft, one of said first or second shafts being received within the other shaft, a driving connection between the first and the second shafts operative to transmit rotary movement of the second shaft to the first shaft, the driving connection being arranged to allow vertical movement of the first shaft relative to the second shaft, and a second piston and cylinder assembly comprising a piston which is operatively connected to the second shaft so that rotary movement of the piston causes rotary movement of the second shaft, and a cylinder in which the piston is movable, there being a screw-threaded connection between the piston and the cylinder of the second piston and cylinder assembly such that, when the piston moves in the cylinder, rotary movement is imparted to the piston and therefore to the operative member via the first and the second shafts.

4,657,475

METHOD FOR POSITIONING SEAMED BALLS

Masaru Ohtsuji; Tomonori Itoh, both of Kobe; Takashi Honda, Kakogawa; Shinobu Ando, Toyohashi, and Kazumi Matsui, Aichi, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Sep. 13, 1985, Ser. No. 775,832
Int. Cl.[4] B25J 9/04
U.S. Cl. 414—786 7 Claims



1. In a method for positioning a seamed ball having an endless curved seam line which divides a whole spherical surface of said ball into a pair of identical dumbbell-like parts each having a predetermined maximum longitudinal length F and a predetermined minimum crosswise length D, a sum of said length F and said length D being equal to an entire circumference of said ball, wherein each of said dumbbell-like parts has a pair of identical round hip portions joined by a waist portion which is most reduced at its middle portion, and each of said hip portions is defined by a part of said seam line which is a part of a spherical circle with a predetermined radius which is equal to a distance from said part to a center of said spherical circle referred to as a hip center, said method comprising steps of:

(a) supporting said ball so that its center is located at an origin of a three-dimensional orthogonal coordinate system consisting of three imaginary axes, that is, a first axis, a second axis and a third axis;

(b) rotating said ball on at least one of said first and second axes until an optical sensor arranged on said third axis can detect such a particular locus that is constituted by successive points of intersection of said third axis and said spherical surface of said ball and that intersects said seam line at four points during one full rotation of said ball thereby to provide four arcs located between said four points along said locus;

(c) finding a shortest arc among said four arcs on said locus by means of said sensor and then rotating said ball on said first axis that is perpendicular to a plane including said locus to locate a mid point of said shortest arc on said third axis by the aid of said sensor;

(d) rotating said ball about said second axis that extends in said plane which includes a chord subtending said shortest arc until an intersection of a bisector perpendicular to said chord and said part of said seam line subtended by said bisector is located on said third axis by the aid of said sensor;

(e) rotating said ball about said second axis by an angle of 360R/(D+F) in one direction; and

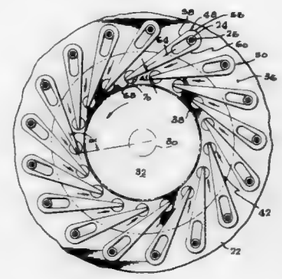
(f) stopping rotation of said ball, locating said hip center on said third axis so that an imaginary polar axis of said ball defined by an imaginary line extending through an opposed pair of said hip centers is located on said third axis.

4,657,476

VARIABLE AREA TURBINE

Paul H. Berg, Simi Valley, Calif., assignor to Turbotech, Inc., Sepulveda, Calif.

Filed Apr. 11, 1984, Ser. No. 599,006
Int. Cl.[4] F01D 9/04, 17/16
U.S. Cl. 415—48 17 Claims



15. In a variable area turbine system having a turbine wheel driven by hot gas including a plurality of nozzles formed by a pair of substantially parallel plates with vanes mounted between the surface of said plates about said turbine wheel, said vanes having a nose end which tapers toward a trailing point at the end thereof closest to said turbine wheel, the improvement comprising:

each of said vanes having a pivot boss mounting at said trailing point;

one of said substantially parallel plates having an annular groove in said surface;

a control ring rotatably mounted in said groove to lie in line with said surface of one of said substantially parallel plates to receive said vane pivot bosses; and

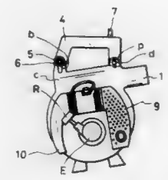
means for rotating said control ring to move said vanes in a substantially linear direction for adjusting the area of said nozzles.

4,657,477

PORTABLE ENGINE-BLOWER SUPPORTING DEVICE

Gen Shinoda, No. 7, Inaoka 7-chome, Chiba-shi, Chiba-ken, Japan

Filed Oct. 4, 1985, Ser. No. 784,700
Claims priority, application Japan, Oct. 15, 1984, 59-154294[U]
Int. Cl.[4] F04D 29/40; A47L 5/24
U.S. Cl. 415—126 1 Claim



1. A portable engine-blower supporting device comprising a fan casing provided with an engine and having a discharge opening on one side thereof, a pair of opposed projecting members on the discharge opening side at both ends of the upper surface of the fan casing, said pair of projecting members being disposed on either side of said discharge opening and defining horizontal circular holes therethrough at right angles to the axis of said discharge opening, a pair of opposed upright members provided on the side opposite the discharge opening,

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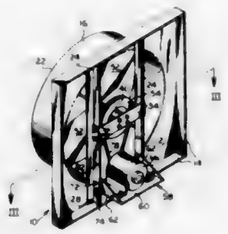
said upright members being disposed on either side of said discharge opening and defining horizontal oblong adjusting holes therethrough at right angles to the axis of said discharge opening, a flat inverted U-shaped handle having in each leg circular through holes respectively registering with the circular holes and the oblong adjusting holes of said projecting and upright members, respectively, a support shaft extending through said circular holes of said projecting members and said handle to permit said handle to pivot vertically with respect to said fan casing, a bolt extending through said oblong adjusting holes of said upright members and said handle and a nut for fastening onto said bolt to hold said handle in a horizontal state with respect to said fan casing.

4,657,478

LOW PROFILE SHROUDED FAN SYSTEM

Robert H. LaZebnik; Frank E. Breining, and Martin J. Toland, all of Jackson, Mich., assignors to Airmaster Fan Company, Jackson, Mich.

Filed Dec. 2, 1985, Ser. No. 803,432
Int. Cl.⁴ F04D *29/60*
U.S. Cl. 415—126 **11 Claims**



1. An axial flow fan assembly characterized by its low profile and compact arrangement of components comprising, in combination, a shroud including a substantially planar apron having a central axis, an open annular tubular throat concentric to said axis having a length subsatntially perpendicular to the plane of said apron and a periphery defined by flanges extending from the plane of said apron in a direction away from said throat, pair of substantially parallel elongated, spaced angle iron support members each having ends, fastening means attaching each support member end to said apron, said support members each lying in a plane subsatntially parallel to and adjacent the plane of said apron within the confines of said flanges and each extending across said thorat on an opposite side of said central axis, a sheet metal bridge affixed to and extending between said support members in alignment with said central axis having an inner side disposed toward said throat, a bearing housing mounted upon said bridge, bearings within said housing, a cantilever shaft rotatably supported within said bearings having an unsupported end extending into said throat and having an axis coaxial with said central axis, an axial flow blade assembly mounted on said shaft end within said throat, a first belt pulley mounted on said shaft, a sheet metal motor bracket extending between said support members and affixed thereto, an electric motor mounted upon said motor bracket having a driveshaft extending toward said throat, a second belt pulley mounted on said motor driveshaft, and a belt interconnecting said first and second pulleys.

4,657,479

ROTOR TIP CLEARANCE CONTROL DEVICES

Michael Brown, Newcastle Upon Tyne; Sharon P. Martin, Derby; Andrew Seaton, York; Phillip J. Saowsill, Nottingham; Mark S. Thomas, Derby, and Hywel Williams, Solihull, all of England, assignors to Rolls-Royce plc, London, England

Filed Oct. 2, 1985, Ser. No. 783,159
Claims priority, application United Kingdom, Oct. 9, 1984, 8425480
Int. Cl.⁴ F01D *11/08*
U.S. Cl. 415—138 **11 Claims**



1. An annular shroud mounted within a fixed casing and coaxially surrounding and supported relative to a rotor in radially spaced relationship, said annular shroud comprising:

a plurality of arcuate abutting segments, each of said arcuate segments having chamfered ends arranged to converge in a direction generally axially of the annular shroud, and causing each segment to have a long end face and a short end face which lie in radial plneas transverse of the axis of the shroud, each of said ends abutting an end of an adjacent one of said arcuate segments;

means urging said arcuate segments together in a direction axially of said annular shroud and causing a resultant hoop load to be generated in said annular shroud through the abutting ends of said arcuate segments to thereby cause said arcuate segments to have radially outward movement; and

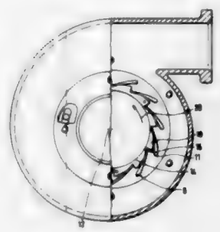
means for controlling said radially outward movement of said arcuate segments.

4,657,480

VARIABLE CONTROL MECHANISM

Horst Pfeil, Darmstadt, Fed. Rep. of Germany, assignor to Aktiengesellschaft Kühnle, Kopp & Kausch, Frankenthal, Fed. Rep. of Germany

Filed Jul. 11, 1984, Ser. No. 629,601
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325756
Int. Cl.⁴ F01D *17/16*
U.S. Cl. 415—147 **16 Claims**



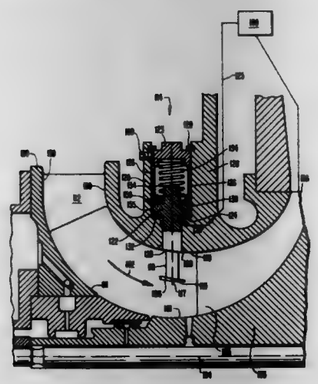
12. A variable control mechanism for a turbine engine having a ring of guide blades arranged concentrically around a rotor, said guide blades being freely pivotable under the influence of applied flow forces between end limits, said control mechanism comprising means for varying one of said end limits to adjust the angular range of freely pivotable motion of said guide blades between said end limits, wherein said control mechanism comprises an adjusting ring arranged in a flow channel of said turbine engine and rotatable around the axis of said rotor, and contact surfaces are formed on said adjusting ring for free ends of the pivotable guide blades, said contact surfaces preventing further pivotable motion of said guide blades when engaged by the free ends of said guide blades.

4,657,481

INSERTABLY ADJUSTABLE AND ANGULARLY ADJUSTABLE INLET GUIDE VANE APPARATUS FOR A COMPRESSOR

Rolf J. Mowill, Olso, and Ivar H. Skoe, Kongsberg, both of Norway, assignors to Kongsberg Vapenfabrikk, Kongsberg, Norway

Continuation of Ser. No. 610,508, May 15, 1964, abandoned. This application Apr. 4, 3019, Ser. No. 858,548
Int. Cl.⁴ F03B *3/14*
U.S. Cl. 415—151 **16 Claims**



1. An inlet guide vane apparatus for adjustable insertion and retraction of a guide vane into the inlet of a radial compressor having a rotor with a rotor axis of rotation and an inlet shroud defining a flow passage to said rotor, said inlet shroud having a generally radial entrance portion smoothly curving to an exit portion oriented generally axially relative to said rotor axis, the apparatus comprising:

an aperture in said inlet shroud adjacent a high mass flow region of the flow passage, said aperture being positioned adjacent said axial exit portion and distant from said rotor axis;

a vane body having a longitudinal axis, the maximum length of said vane body capable of being inserted into the flow passage being significantly less than the cross-sectional width of the flow passage at the location of said aperture;

means for controllably inserting and retracting said vane body in the direction of said vane axis through said aperture and into said region, said vane axis being oriented substantially perpendicular to said rotor axis;

means for controllably varying the flow direction of the fluid downstream of said vane body relative to the flow direction upstream of said vane body in the inlet shroud, said flow direction varying means including means for controllably rotating said vane body about said axis for varying the angle of attack said vane body presents to said fluid at a given axial location along said vane body; and

means for reducing recirculation of the inlet air flow around the end of said vane body inboard the inlet shroud,

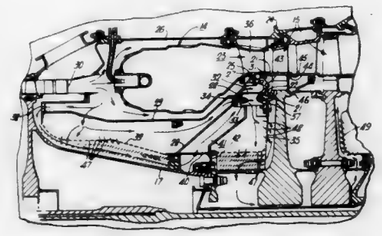
wherein said recirculation reduction means includes a vane winglet connected to said inboard end of said vane body and rotatable with said vane body about said vane axis.

4,657,482

AIR COOLING SYSTEMS FOR GAS TURBINE ENGINES

Peter F. Neal, Derby, England, assignor to Rolls-Royce plc, London, England

Filed Sep. 18, 1981, Ser. No. 308,188
Claims priority, application United Kingdom, Oct. 10, 1980, 8032873
Int. Cl.⁴ F01D *25/08*
U.S. Cl. 415—176 **3 Claims**



1. In a gas turbine engine having a rotating component and a static wall positioned adjacent said rotating component to define a passageway, said engine having a main air flow, means for tapping pressurized air from said main air flow, means for preswirling said tapped air in the same direction as the direction of rotation of said rotating component, and means for directing the preswirled air onto said rotating component through said passageway, the improvement comprising:

a plurality of passages through said static wall, said static wall comprising a perforated or foraminated sheet and having a boundary layer of the preswirled tapped air adjacent thereto; and

supplemental air supply means for supplying pressurized air at a higher pressure than the pressure of the preswirled tapped air to a side of the wall remote from the preswirled tapped air, thereby to induce supplemental air to flow through the passages into the preswirled tapped air such that said induced supplemental air flow causes said boundary layer to move relative to said static wall in the same direction as the direction of swirl, whereby the air flow through said passages reduces windage heating of the preswirled tapped air by reducing viscous drag on the static wall.

4,657,483

SHROUDED HOUSEHOLD FAN

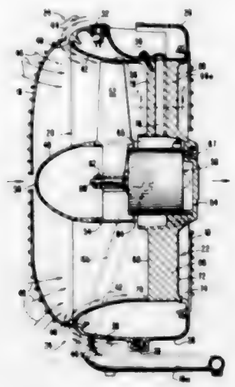
James D. Bede, 24510 Lake Rd., Bay Village, Ohio 44140

Filed Nov. 16, 1984, Ser. No. 671,931
Int. Cl.⁴ F04D *29/52*
U.S. Cl. 415—182 **21 Claims**

1. A portable fan including unitary shroud means having an exterior surface spaced outwardly from and substantially parallel to an interior surface along substantially the entire longitudinal dimension of said shroud means for directing air in a laminar flow pattern into an impeller assembly mounted within said shroud means, said shroud means including intake means extending from said shroud exterior surface to said shroud interior surface having an aerodynamic cross-sectional config-

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urstion for directing air along said exterior surface in a laminar flow pattern into said impeller assembly and discharge means



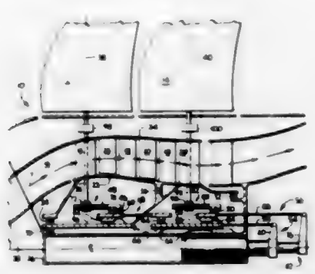
for discharging a substantially homogeneous column of air during fan operation.

4,657,484

BLADE PITCH VARYING MEANS

Thomas G. Wakeman, Greendale, Ind., and Neil Walker, Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 4, 1984, Ser. No. 647,283
Int. Cl.[4] B64C *11/48*
U.S. Cl. 416—127 **5 Claims**



1. In a gas turbine engine including an annular flowpath, a rotor with rotor blades extending into said flowpath, a hollow static structure inward of and coaxial with said flowpath for supporting said rotor, and a plurality of propulsor blades connected to said rotor blades radially outward of said flowpath, propulsor blade pitch varying means comprising:

actuation means located within said static structure along the engine centerline for delivering an axial force;

bearing means for transmitting said axial force into a frame of reference with said rotor;

linkage means for connecting said actuation means with said bearing means, said linkage means including a unison ring with a plurality of inwardly facing teeth adapted to slidingly engage a plurality of axially extending splines coaxial with said static structure; and

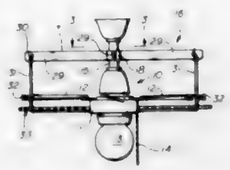
gearing means rotating with said rotor for converting said axial force into a force for varying the pitch of each of said propulsor blades.

4,657,485

CEILING FAN GUARD

Richard K. Hartwig, 5621 Emerson, Morton Grove, Ill. 60053

Filed Apr. 19, 1984, Ser. No. 602,002
Int. Cl.[4] F04D *29/00*
U.S. Cl. 416—247 R **30 Claims**



1. The combination with a ceiling fan suspended from a ceiling by a pipe attached to the ceiling at one end and attached at the other end to the motor of such fan of a guard comprising;

a clamp fitting tightly around and releasably connected to the pipe suspending said ceiling fan at a point below the ceiling and above said motor and being the sole support of said guard,

circumferentially spaced supporting arms with unsupported ends extending radially outward from said clamp and terminating beyond the blades of said fan,

a circular grill member supported from said support arms below the blades of said fan and extending peripherally outward beyond the ends of said blades, and

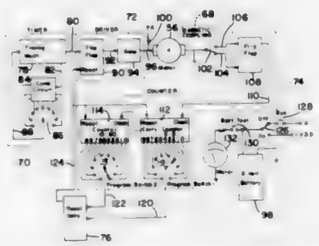
supporting means releasably attached to said supporting arms at one end and at the other end to said grill member.

4,657,486

PORTABLE INFUSION DEVICE

Julius E. Stempfle, 12007 SW. 60 Ave., Portland, Oreg. 97219, and Roger D. Partipilo, Rte. 5, Box 430, Coosbay, Oreg. 97420

Division of Ser. No. 570,327, Jan. 13, 1984, abandoned, Division of Ser. No. 201,113, Oct. 28, 1980, abandoned, which is a continuation of Ser. No. 888,354, Mar. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 614,421, Sep. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 421,031, Dec. 3, 1973, abandoned. This application Jun. 17, 1985, Ser. No. 745,097
Int. Cl.[4] F04B *49/00*; A61M *5/00*
U.S. Cl. 417—12 **5 Claims**



1. An infusion device for infusing a fluid medicine into a body and to be carried thereby comprising;

a case having mounting means thereon;

reservoir means disposed in said mounting means for carrying the fluid medicine, said reservoir means having cap means closing one end thereof and said cap means having bacteria filter means provided therein, tubing means connected to said reservoir means;

pump means provided by said case and having a portion of said tubing means disposed therein; motor means for operating said pump means; and

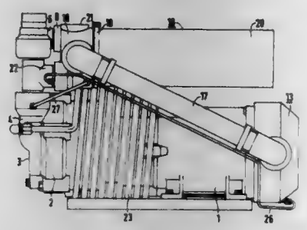
control circuit means connected to motor means for operating said motor means including signal generating means that generate signals according to the rotations of said motor means, programmable means for receiving said signals and for stopping operation of said motor means after a selected number of rotations of said motor means, means for selecting the selected number of rotations of said motor means, and means for automatically operating said motor means at selected times.

4,657,487

VACUUM GENERATING APPARATUS INCLUDING LIQUID RING PUMP, PRE-SEPARATOR, TWO HEAT EXCHANGERS AND FINE SEPARATOR

Siegfried Schöwald; Norbert Schmid, both of Bad Neustadt, and Hans-Georg Trojahn, Saal, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 15, 1985, Ser. No. 798,565
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1984, 3444731
Int. Cl.[4] F04C *19/00*; F04B *39/06*; B01D *50/00*
U.S. Cl. 417—68 **14 Claims**



1. An apparatus for generating vacuum, comprising:

pumping means including a liquid-ring pump utilizing a liquid for pumping a gas from an enclosed space, said pumping means having an output port through which a gaseous mixture of said liquid and said gas passes during operation of said pumping means;

motor means including an electric drive motor operatively connected to said pumping means for driving same;

preseparation means having an input coupled to said output port of said pumping means for separating said mixture into a gaseous component and a liquid component, said gaseous component including particles of said gas and particles of said liquid;

first heat exchange means operatively connected at an input to said preseparation means for cooling said liquid component to a first temperature upon receiving said liquid component from said preseparation means, said first heat exchange means being coupled to said pumping means for delivering the cooled liquid component thereto;

second heat exhange means physically spaced from said first heat exchange means and connected at an input to said preseparation means for cooling said gaseous component to a second temperature lower than said first temperature;

fine separation means physically spaced from said preseparation means and connected at an input to said second heat exchange means for separating said gaseous component into particles of said gas and particles of said liquid upon cooling of said gaseous component by said second heat exchange means, said fine separation means being connected to said pumping means for returning thereto the particles of said liquid separated from said gaseous component by said fine separation means; and

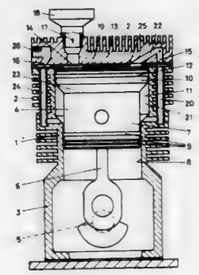
air stream means for generating a stream of air and for passing said stream of air by said motor means to cool same, at least one of said first and said second heat exchange means being disposed along the stream of air generated by said air stream means, said air means including a blower with a blower hood and said second heat exchange means including an inner casing wall and an outer casing wall formed as portions of said blower hood, said inner casing wall and said outer casing wall being spaced from one another to define a cooling chamber, said cooling chamber communicating with said preseparation means for receiving said gaseous component therefrom.

4,657,488

TWO STAGE STEPPED PISTON AIR COMPRESSOR

Franz E. Weishandl, Effretikon, Switzerland, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 103,639, Dec. 14, 1979, abandoned. This application Dec. 16, 1981, Ser. No. 331,096
Int. Cl.[4] F04B *3/00, 25/02*
U.S. Cl. 417—267 **3 Claims**



1. In an air compressor includng a cylinder having two portions of different diameter, a stepped piston reciprocatingly disposed in said cylinder to define low and high compression chambers in which said piston respectively performs compression in opposite stroke directions, a cylinder head closing the low compression chamber at one end of said cylinder, air inlet and outlet openings associated with each compression chamber, at least one inlet and one outlet valve associated with each compression chamber and the outlet opening of the low pressure chamber communicating with the inlet opening of the high pressure chamber, the improvement comprising: all of said inlet and outlet valves (**14–16**; **34–37**) being disposed at said one end of said cylinder proximate said cylinder head to enable easy access to said valves for maintenance and repair by the removal of said cylinder head,

further comprising a valve plate (**32**) disposed between said cylinder head and said cylinder (**1**), and wherein all said valves are disposed in said valve plate (FIG. **2**).

4,657,489

FLUID PUMPING APPARATUS

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Filed Nov. 8, 1985, Ser. No. 796,653
Int. Cl.[4] F04B *19/02*
U.S. Cl. 417—467 **8 Claims**

1. A fluid pumping apparatus for pumping fluid from a fluid supply comprising:

at least two reciprocating pump assemblies;

means for counterbalancing the pump assemblies;

means for counter-reciprocating the pump assemblies between an upper position and a lower position; and

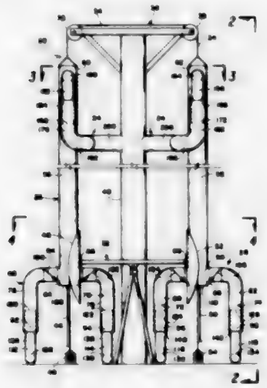
wherein each pump assembly comprises:

A. a generally vertical lifting conduit having a first end and a second end, the first end being the discharge end of the pump assembly, the second end of the lifting conduit comprising:

a dead end, sealingly positioned to provide a surface perpendicular to the column of liquid in the lifting conduit, the surface of the dead end in the lifting conduit of each pump assembly being of equal area;

B. at least two balanced, reciprocating pumps, each pump comprising:

1. a generally vertical traveling conduit having first end and a second end, the first end being connected to the vertical side of the lifting conduit near the second end of the lifting conduit;
2. a traveling check means, located in the traveling conduit near the first end of the traveling conduit, for allowing fluid to flow from the second end of the traveling conduit through the first end of the traveling conduit and not allowing fluid to back flow through the first end to the second end of the traveling conduit;



3. a generally vertical fluid piston conduit for connecting the traveling conduit to the fluid supply, the piston conduit having a first end and a second end, the first end of the piston conduit engaging the second end of the traveling conduit in a sliding and essentially fluid leakage preventive manner, and the second end of the piston conduit connecting to the fluid supply;
4. a stationary check means, located in the piston conduit, for allowing fluid to gravitationally flow through the piston conduit from the fluid supply and not allowing fluid to back flow through the piston conduit into the fluid supply; and
5. wherein the elevation of the traveling check means is equal to or below the elevation of the fluid level in the fluid supply in both positions of the pump assembly.

4,657,490

INFUSION PUMP WITH DISPOSABLE CASSETTE

Martyn S. Abbott, Richardson, Tex., assignor to Quest Medical, Inc., Carrollton, Tex.

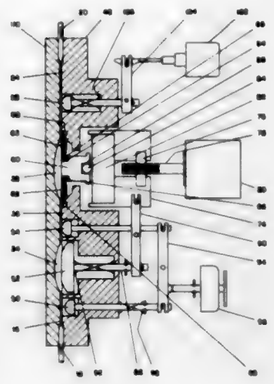
Filed Mar. 27, 1985, Ser. No. 717,131
Int. Cl.[4] F04B *43/08*; A61M *1/00*
U.S. Cl. 417—478 **13 Claims**

1. A pump for parenteral administration of fluid to a patient at a selectable rate comprising:

a flexible cassette formed of a pair of substantially flat flexible sheets defining a flow path between an inlet and an outlet, and a pump chamber located in that flow path;

an instrument body having a compartment receiving the cassette and confining the pump chamber;

pumping means associated with the instrument body adjacent the compartment for confining the pump chamber, comprising a moveable hub circumferentially surrounded by radially extending petal-shaped sections each of which is pivotally mounted to the hub at its inner end and to a portion of the instrument body at its outer end; and



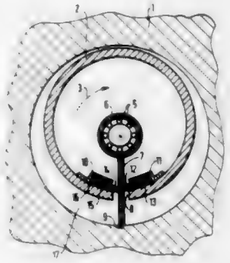
activation means for activating the pumping means to move the hub and the petal-shaped sections into the compartment to reduce the volume of the pump chamber at a rate dependent upon the selected rate.

4,657,491

BLADE SEALING FOR IMPELLER PUMPS

Rüdiger Frank, Brühl, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 17, 1985, Ser. No. 776,955
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1984, 8434465[U]
Int. Cl.[4] F04O *27/00*
U.S. Cl. 418—136 **7 Claims**



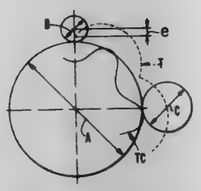
1. A sealing of an impeller blade of an impeller pump having a housing, a rotor eccentrically positioned in said housing, and a least one rotary blade partially extended outwardly of said rotor through a slot formed in said rotor, the sealing comprising sealing strips positioned at said slot and abutting against opposing side faces of said blade, respectively; and supporting elements each being rigidly connected to and supporting an assigned sealing strip and being of high rigidity in a longitudinal and transverse direction thereof.

4,657,492

ROTOR FOR A ROTARY PUMP

Yasuyoshi Saegusa, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 25, 1983, Ser. No. 545,193
Claims priority, application Japan, Oct. 27, 1982, 57-189880
Int. Cl.[4] F01C *1/00*
U.S. Cl. 418—150 **8 Claims**



5. An inner gear rotor for use in a rotary gear pump with an outer gear rotor with the inner gear rotor eccentrically rotatably mounted in the outer rotor, said inner gear rotor having an outer surface whose cross section perpendicular to the rotational axis is an trochoidal envelope determined utilizing the trochoidal curve, said inner gear rotor having trochoidal dimensions defined by a base circle of diameter A, a rolling circle of diameter B, a rotary path of diameter C, an eccentricity of length e, an eccentricity ratio $f_e=e/B$, a rotary path ratio $f_c=C/B$, a base circle ratio $n=A/B$, an inner rotor minor diameter d_4, a number n_i of teeth, and a quantity $K_1=(n+1)\times|1-2f_e|$; said dimensions for said inner inner gear rotor being such that $f_c/K_1 \leq 1.1$.

4,657,493

ROTARY-SLEEVE SUPPORTING APPARATUS IN ROTARY COMPRESSOR

Hiroshi Sekamaki, Utsunomiya; Yukio Horikoshi, Kazo, and Kikuji Yanagihashi, Yono, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

PCT No. PCT/JP84/00253, § 371 Date Jan. 11, 1985, § 102(e) Date Jan. 11, 1985
PCT Filed May 19, 1984, Ser. No. 697,591
Claims priority, application Japan, May 20, 1983, 58-087731
Int. Cl.[4] F04C *18/348*
U.S. Cl. 418—173 **11 Claims**



1. An apparatus for supporting the rotary sleeve in a rotary compressor, comprising:

a center housing;

a rotary sleeve rotatably mounted in said center housing;

a plurality of vanes rotatable with said rotary sleeve;

a rotor eccentrically disposed within said rotary sleeve, wherein said vanes are movably fitted in said rotor;

an air-bearing room disposed between the outer periphery of said rotary sleeve and the inner periphery of said center housing; and

a buffer chamber formed within said center housing;

said buffer chamber being opened to the air-bearing room;

an inlet passage extending to the inner periphery of said center housing from a discharge chamber, wherein said buffer chamber further comprises:

an arcuate groove provided in the compression side end of said center housing;

a plurality of blind holes extending axially from said arcuate groove into the wall of said center housing;

a plurality of tiny bores extending radially from the blind holes to the inner periphery of said center housing;

an arcuate groove provided in the suction side of said center housing;

a plurality of blind holes extending axially from said arcuate groove into the wall of said center housing; a plurality of tiny bores formed in the blind holes opening to the inner periphery of said center housing; and

said working space is connected to said discharge chamber, and

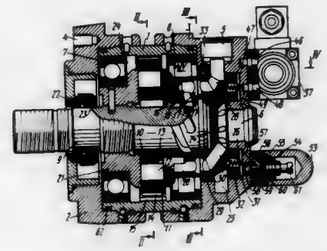
said compression side arcuate groove being internally connected to said discharge chamber.

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PLANETARY-ROTOR HYDRAULIC MOTOR WITH REVERSING MECHANISM

Fedor N. Erasov, Odessa, U.S.S.R., assignor to Zaporozhsky Konstruktorsky Tekhnologichesky Institut Selskokhozyaistvennogo Mashinostroenia, Zaporozhie, U.S.S.R.

Filed Jul. 24, 1985, Ser. No. 758,452
Int. Cl.[4] F03C *2/08*
U.S. Cl. 418—61 B **2 Claims**



1. A planetary-rotor hydraulic motor comprising: a housing, a first cover plate enclosing said housing at one of its ends; a second cover plate enclosing said housing at the other end and having a hole for feeding a fluid and a hole for discharging the fluid; an inner toothing provided on the inside of said housing; a shaft accommodated inside said housing; a gear secured on said shaft; a rotor disposed in said housing with an eccentricity relative to said shaft; an inner toothing provided in said rotor to engage with said gear; variable volume chambers defined by said gear and said inner toothing; an outer toothing made in said rotor to engage with said inner toothing of said housing; a fluid distributor secured on said shaft to adjoin by one end face said rotor; a control valve disposed in said second cover plate and capable of axial displacement, said control valve adjoining said fluid distributor, passages being provided in said fluid distributor and communicable with said holes in said second cover plate for feeding the fluid to and discharging it from the hydraulic motor and with said passages provided in said fluid distributor to deliver the fluid to and evacuate it from said variable volume chambers, said control valve and said second cover plate defining a cavity; a damping passage continuously communicating said cavity with said hole for feeding the fluid provided in said cover plate; a reversing mechanism for adjustably turning said control valve relative to said second cover plate to reverse the rotation of said shaft comprising a toothed rack, a bore made in said second cover plate to receive said toothed rack, pistons secured at the ends of said toothed rack,

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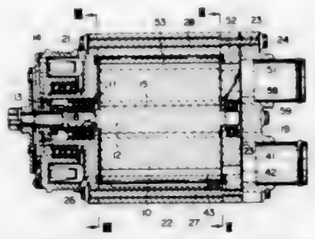
said pistons defining piston spaces in said bore, a toothed sector provided on said control valve and engageable with said toothed rack, a solenoid-controlled fluid distributor secured on said second cover plate and continuosly communicating with said cavity between said control valve and said second cover plate for periodically connecting said cavity with said piston spaces to adjust said toothed rack and turn said control valve relative to said second cover plate, said fluid distributor communicating in its neutral position with said hole for discharging the fluid provided in said second cover plate.

4,657,495

ROTOR-SHAFT BEARING APPARATUS FOR ROTARY COMPRESSORS

Hiroshi Sakamaki, Utsunomiya; Susumu Sugishita, Hanyu, and Yukio Horikoshi, Kazo, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 609,995, May 14, 1984, abandoned. This application Oct. 30, 1985, Ser. No. 792,249
Claims priority, application Japan, May 20, 1983, 58-87738
Int. Cl.[4] F04C *18/344, 29/02*; F16C *35/06*
U.S. Cl. 418—82 **1 Claim**



1. A rotor-shaft bearing apparatus for a rotary compressor having a housing, a rotor contained in said housing, said rotor having a side surface, a rotor shaft fixed to said rotor, a plurality of vane grooves formed in said rotor, means forming a suction chamber for said compressor, said apparatus comprising a grease bearing interposed between said rotor shaft and said housing, said bearing having an outer side surface and an inner side surface, a mechanical seal joined with the outer side surface of said bearing, a pressure-reducing passage for exhausting an annular clearance between the inner side surface of said bearing and the side surface of said rotor to said suction chamber to reduce a pressure difference between the inner and outer side surfaces of said bearing, said pressure-reducing passage comprising an air-accumulating groove formed in a suction side, inner surface of one side of said housing, a low-pressure groove formed in an other side of said housing and internally connected to said air-accumulating groove through at least one of said vane grooves, and a low-pressure bore formed in the other side of said housing and internally connected to said suction chamber.

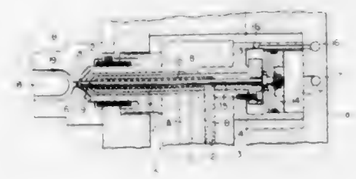
4,657,496

HOT-RUNNER MOLD FOR INJECTION MOLDING

Hirofumi Ozeki, Hashima, and Takahide Kambe, Gifu, both of Japan, assignors to Gifu Husky Co., Ltd., Tokyo, Japan

Filed May 29, 1985, Ser. No. 738,939
Claims priority, application Japan, Jun. 4, 1984, 59-113015; Mar. 11, 1985, 60-47801
Int. Cl.[4] B29C *45/16*
U.S. Cl. 425—130 **5 Claims**

1. In a hot-runner device for injection molding, including: a hot-runner block having therein a first hot-runner passage, said hot runner block having therein a first outlet opening which provides fluid communication between said first hot-runner passage and a location external to said hot-runner block; an outer stem supported in said first hot-runner passage for movement between two positions in which an end thereof is respectively engaging and spaced from a portion of said hot-runner block which has said first outlet opening therein, said outer stem having therein a second hot-runner passage and having in said end thereof a second outlet opening which is aligned with said first outlet opening and which provides fluid communication between said second hot-runner passage and a location external to said outer stem, an outer surface of said outer stem in the region of said end thereof being spaced inwardly from an inner surface of said first hot-runner passage; an inner stem which is smaller in cross-sectional size than said second hot-runner passage and is supported in said second hot-runner passage for reciprocal movement relative to said hot-runner block and said outer stem between first and second positions in which said inner stem is respectively spaced from and obstructing fluid flow through each of said first and second openings, said inner stem being movable to a third position which is between said first and second positions and in which said inner stem is spaced from said first outlet opening but is obstructing fluid flow through said second outlet opening; means for selectively supplying respective moldable materials to said first and second hot-runner passages; and fluid actuated means for selectively effecting movement of said inner and outer stems relative to said hot-runner block and independently of each other; the improvement comprising wherein said fluid actuated means includes said hot-runner block having therein a first chamber, said first hot-runner passage opening into said first



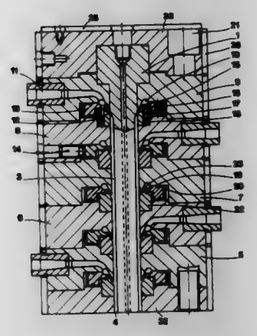
chamber at a location remote from said first outlet opening, includes said outer stem having on an end thereof remote from said second outlet opening a first piston which is movable within and slidably sealingly engages an inner surface of said first chamber and which has therein a second chamber, said second hot-runner passage opening into said second chamber at a location remote from said second outlet opening, includes said inner stem having thereon a second piston which is movable within and slidably sealingly engages an inner surface of said second chamber, and includes means for selectively supplying pressurized fluid to said first and second chambers in a manner effecting reciprocal movement of said first and second pistons therein; wherein said first piston has means for providing fluid communication between said first and second chambers on sides of said first and second pistons remote from said first and second outlet openings, and wherein said means for selectively supplying pressurized fluid to said first and second chambers includes first and second fluid passages which respectively communicate with said first chamber on opposite sides of said first piston, a circumferential groove provided in and encircling said first piston, an opening in said first piston which provides fluid communication between said circumferential groove and said second chamber on a side of said second piston nearest said first and second outlet openings, and a third fluid passage which communicates with said first chamber at a location which is aligned with said circumferential groove in said first piston in all operational positions of said first piston.

4,657,497

DEVICE FOR THE COEXTRUSION OF THERMOPLASTICS

Claude Debeaman, Waterloo; Marc Kerger, and Léon Dubuisson, both of Brussels, all of Belgium, assignors to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Continuation of Ser. No. 591,763, Mar. 20, 1984, abandoned. This application Nov. 22, 1985, Ser. No. 800,899
Int. Cl.[4] B29C *47/06*
U.S. Cl. 425—133.1 **10 Claims**



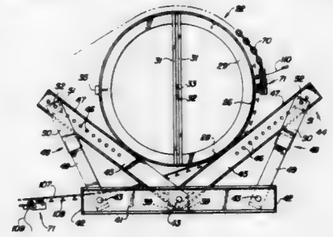
1. In a device for the coextrusion of thermoplastics which comprises an elongate central core and an external structure surrounding the central core and defining, with the latter, a central extrusion channel which runs in the direction of the longitudinal axis of the device towards an outlet orifice, in which device the external structure consists of at least one element, each element comprising a toroid feed chamber surrounding the central extrusion channel and connected to a feed source of molten thermoplastic; an extrusion passage having an external wall and connecting the periphery of the toroid feed chamber to the central extrusion channel, and an adjustment ring, movable linearly and transversely relative to the longitudinal axis of the device, to provide control of the flux of molten thermoplastic flowing from the toroid feed chamber to the central extrusion channel, the improvement wherein the external wall of the extrusion passage has a first portion which is connected to the toroidal feed chamber and a second portion which is connected to the central extrusion channel, and wherein each adjustment ring delimits in combination a portion of the toroid feed chamber in its part which is connected to the extrusion passage and the first portion of the external wall of the extrusion passage in its part which is connected to the toroid feed chamber; and said external structure further comprising a mandrel provided for each adjustment ring, which mandrel has an internal face delimiting the second portion of the external wall of the extrusion passage in its part which is connected to the central extrusion channel, surrounds the central extrusion channel, and against which the adjustment ring can move linearly and transversely; and wherein the linear and transverse movement of the adjustment ring causes a change in the cross-sectional area of both the toroid feed chamber and the extrusion passage.

4,657,498

APPARATUS FOR LINING PIPE

Jon A. Schmidgall, and Hartzell H. Schmidgall, both of Mediapolis, Iowa, assignors to Hawkeye Concret Products Co., Mediapolis, Iowa

Division of Ser. No. 519,350, Aug. 1, 1983, Pat. No. 4,578,235. This application Apr. 7, 1986, Ser. No. 843,426
Int. Cl.[4] B28B *7/36*
U.S. Cl. 425—112 **14 Claims**



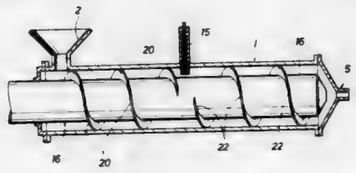
1. In a concrete pipe molding apparatus having jacket mold and a mold core, the improvement comprising:
means for disposing a plastic liner member about a cylindrical member;
work stand for receiving and positioning the cylindrical member adjacent the core; and
means for tightening the liner about the cylindrical member.

4,657,499

SCREW EXTRUDER APPARATUS ADAPTED FOR MIXING ADDITIVE FLUIDS

Philip C. Lewellen, and Jaime S. Son, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 30, 1985, Ser. No. 739,572
Int. Cl.[4] B29B *7/42*
U.S. Cl. 425—208 **20 Claims**



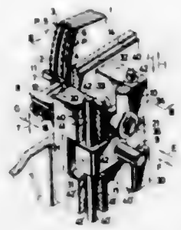
1. A screw-type extrusion apparatus adapted for the extrusion of a viscous primary extrusion stock and particularly adapted for the mixing into said primary extrusion stock of an additive of lower viscosity, which comprises
(a) an elongated barrel,
(b) means for introducing the primary stock into an upstream end of said barrel,
(c) means for discharging extrusion stock from a downstream end of said barrel,
(d) a rotatable screw worm axially disposed within said barrel for advancing the primary stock from the upstream end of said barrel to the downstream end of said barrel, said screw having a screw root and affixed to said root at least two axially separated stages of helically threaded screw flights, and
(e) an injector for introducing the additive into the barrel at an axial position intermediate to the two said stages of screw flights, said injector extending inward through said barrel wall and having an inlet external to said wall and an outlet positioned substantially at the surface of said screw root and directed for flow of injected additive tangential to the direction of rotation of the screw root.

4,657,500

APPARATUS FOR FORMING A ROW OF ZIGZAG COUPLING ELEMENTS FOR SLIDE FASTENERS

Yasuhiko Matsuda, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Apr. 9, 1986, Ser. No. 849,904
Claims priority, application Japan, Apr. 15, 1985, 60-79704
Int. Cl.[4] B29D *5/04*
U.S. Cl. 425—334 7 Claims



1. An apparatus for forming a row of continuous zigzag coupling elements for slide fasteners from a monofilament of thermoplastic synthetic resin, said apparatus comprising:

(a) a frame;

(b) a die wheel mounted on said frame for continuous rotation and having an annular groove in its peripheral surface, and a pair of first and second rows of circumferentially staggered pins disposed one row on each side of said annular groove;

(c) a winding unit disposed in confronting relation to said peripheral surface of said die wheel for winding the monofilament alternately around said staggered pins across said annular groove in a zigzag form;

(d) a bending unit disposed in confronting relation to said peripheral surface of said die wheel and circumferentially spaced from said winding unit in the direction of rotation of said die wheel for forcing the zigzag monofilament into said annular groove so as to shape the same into a row of folded U-shaped zigzag coupling element blanks having parallel legs interconnected at their lower ends by lower connecting portions;

(e) a punching unit disposed in confronting relation to said peripheral surface of said die wheel and circumferentially spaced from said bending unit in the direction of rotation of said die wheel for compressing the lower connecting portions of the U-shaped coupling element blanks into the shape of coupling heads to thereby put the coupling element blanks in a final form of the coupling elements; and

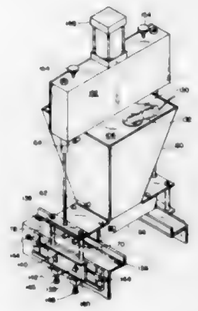
(f) said winding unit including a guide plate having a guide hole through which the monofilament is supplied onto said die wheel, a first drive mechanism operatively connected to said guide plate for imparting to said guide plate reciprocating movement (hereinafter called lateral reciprocating movement) in the direction of a generator of said peripheral surface of said die wheel, a second drive mechanism operatively connected to said guide plate for imparting to said guide plate reciprocating movement (hereinafter called tangential reciprocating movement) in the direction of a tangent of said peripheral surface of said die wheel, said guide plate thereby being movable, as a result of a combination of said lateral reciprocating movement and said tangential reciprocating movement, in such a manner that said guide hole traces a lemniscate as the monofilament is wound around a preceding one of said pins of said first row and a succeeding one of said pins of said second row.

4,657,501

APPARATUS FOR CONTINUOUSLY DEPOSITING SORBITOL SWEETENED HARD CANDY

Kenneth J. Klacik, Spring Valley, N.Y.; Robert J. Vermeah, Stamford, Conn.; Paul R. Froeczkowski, Newton, N.J.; Sigismondo A. DeTora, Pearl River, and Donald Mihalich, Brooklyn, both of N.Y., assignors to Nabisco Brands, Parsippany, N.J.

Filed Jan. 16, 1986, Ser. No. 819,780
Int. Cl.[4] B29C *33/02*
U.S. Cl. 425—379 R 16 Claims



1. Apparatus for depositing a product from a confectionary solution which must be maintained in the depositing apparatus above a given temperature to prevent rapid thickening of the solution at too low temperatures, comprising:

a. a depositing base, through which the solution is deposited, said depositing base having heating medium passageways formed therethrough, and means for circulating a heating medium through said passageways to maintain the solution above said given temperature;

b. a plurality of molds positioned beneath said base to receive the confectionary solution deposited thereby;

c. a plurality of depositing nozzles supported in said depositing base to deposit the solution into said plurality of molds, with each nozzle being secured in a substantially recessed position in said depositing base, such that the nozzles are also heated by the heating medium circulating through said base to maintain the solution in said depositing nozzles above said given temperature while it is being deposited through said depositing nozzles; and

d. a hopper for containing the solution, supported above said deposting base, said hopper including a heating jacket therearound through which a heating medium is circulated to maintain the solution in said hopper above said given temperature.

4,657,502

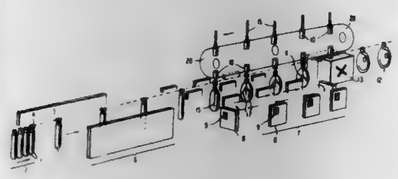
APPARATUS FOR MANUFACTURING HOLLOW BODIES FROM THERMOPLASTIC SYNTHETIC RESINOUS MATERIALS

Theo Rydmann, Hettenleidelheim, Fed. Rep. of Germany, assignor to C.F. Spiess & Sohn Kunststoffwerk GmbH & Co., Fed. Rep. of Germany

Filed Apr. 18, 1984, Ser. No. 601,671
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 3314106
Int. Cl.[4] B29C *49/10*
U.S. Cl. 425—526 20 Claims

1. An apparatus for forming-out hollow-body-shaped preforms having interior walls and made of a material to be deformed, said preforms being provided with an opening connection for producing finished hollow bodies, said apparatus comprising a preheating stage, an intermediate forming stage and a final deformation station, arranged one behind another along a transporting means, the preheating stage including controllable heating means for heating the preforms over their entire part to be formed-out to a temperature within a thermo-elastic range of the material to be deformed, the intermediate forming stage including heat-radiating means and shading means for additional heating of limited areas of the preform walls and nozzle means for introducing supporting air in controlled quantities into the opening connection, the heat-radiating means and shading means being mounted in the intermediate stage to travel together with the preforms.

14. An apparatus for manufacturing hollow bodies from



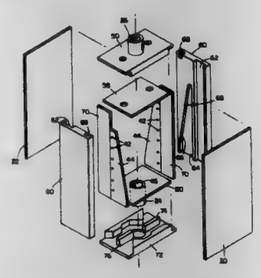
preforms of thermoplastic materials, each preform having an interior wall and an opening connection, said apparatus comprising transporting means for transporting the preforms, preheating means for preheating said preforms, end-station forming means for final forming of said preforms into the hollow bodies, while arranged on mandrel means, and intermediate forming means between said preheating means and said end-station forming means, said intermediate forming means including predetermined heat-radiating means for additional heating of said preforms within only limited areas thereof, said mandrel means having laterally spreadable elements operable to engage the interior preform walls to impart a predetermined shape to said preforms while under the influence of said predetermined heat-radiating means.

4,657,503

BURNER SYSTEM

Merle L. Thorpe, Hopkinton, and Kenneth P. Hanson, Penacook, both of N.H., assignors to Thorpe Corporation, Concord, N.H.

Filed Aug. 8, 1985, Ser. No. 763,818
Int. Cl.[4] F23D *15/00*
U.S. Cl. 431—158 21 Claims



1. An internal combustion burner system comprising:

structure defining a combustion chamber including spaced, opposed, plate type, planar, uncooled sidewalls and peripheral structure secured between said sidewalls and extending around the perimeter of said combustion chamber, said sidewalls being of thin flexible high temperature sheet material and being free to flex outwardly to accommodate thermal stresses during operation of the combustion system,

said peripheral structure including means defining housing inlet port structure, means defining chamber inlet port structure, means defining perimeter flow paths that extend around the perimeter of said combustion chamber and provide communication between said housing inlet port structure and said chamber inlet port structure, and discharge orifice structure secured to said peripheral structure for providing an outlet for combustion products from said combustion chamber, and

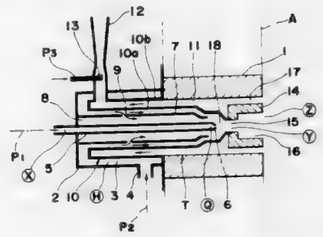
means for feeding an air-fuel mixture through said housing inlet port structure for flow along said perimeter flow paths for cooling said peripheral structure of said combustion chamber and said discharge orifice structure and then into the combustion chamber through said chamber inlet port structure, the air-fuel mixture being burned in said combustion chamber and the resulting combustion products being discharged from said chamber in one or more high velocity jets through said discharge orifice structure such that during operation, said spaced plate type sidewalls of said combustion chamber are at elevated temperature and provide a stable high temperature combustion chamber environment while the peripheral walls of said chamber provide a stable peripheral chamber frame that is regeneratively cooled by said air-fuel mixture.

4,657,504

COMBUSTION BURNER

Tetsuo Akiyama, Nishinomiya, and Saiji Arita, Higashiosaka, both of Japan, assignors to Chugai Ro Co., Ltd., Osaka, Japan

Filed Oct. 21, 1985, Ser. No. 789,942
Claims priority, application Japan, Jun. 28, 1985, 60-143686
Int. Cl.[4] F23D *11/44*
U.S. Cl. 431—166 9 Claims



1. A burner assembly of a type wherein both the combustion air and gaseous fuel are controlled by a pressure equalizing control device, which assembly comprises:

a gas supply tube for the supply of gaseous fuel, said gas supply tube having a gas supply nozzle at a free end thereof;

an inner barrel surrounding the gas supply tube with an annular space formed between said gas supply tube and said inner barrel, said inner barrel having at least one perforation therethrough;

a combustion air preheating passage means for supplying combustion air to mix with the gaseous fuel, said combustion air preheating passage means disposed exteriorily of the inner barrel and in fluid communication with said annular space; and

an exhaust passage means positioned exteriorily of said inner barrel and in heat exchange relationship with said combustion air preheating passage means, said exhaust passage means including an inner wall and an outer wall, said inner wall coaxially arranged with respect to said outer wall to form an exhaust duct therebetween, said exhaust passage means further including an exhaust gas drawing device positioned downstream of said exhaust duct with respect

to the direction of flow of exhaust gases for the discharge of the exhaust gases through said exhaust duct, said inner wall of said exhaust passage means being constricted at an end thereof adjacent said gas supply nozzle to define a throat area downstream of said gas supply nozzle with respect to the direction of supply of combustible gases through said gas supply tube and a mixing chamber being formed radially inward of said inner wall of said exhaust passage means between said gas supply nozzle and said throat area;

whereby combustion air passing through said combustion air preheating passage means is heated by said exhaust gases passing through said exhaust passage means and the thus heated combustion air passes through said at least one perforation in said inner barrel to heat gaseous fuel passing through said gas supply tube which thereby increases the pressure of the gaseous fuel which in combination with back pressure created by said constricted inner wall of said exhaust passage means minimizes the change in air-fuel ratio caused by heating of the combustion air.

4,657,505

DIFFERENT FUELS COMBUSTION BURNER

Shigehiro Miyamae, and Takayuki Abe, both of Yokohama, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1985, Ser. No. 735,636
Int. Cl.⁴ F23Q 9/00
U.S. Cl. 431—284 **2 Claims**



1. A burner for simultaneous combustion of liquid and solid fuels comprising a liquid-fuel combustion nozzle having a liquid fuel injection port for injecting liquid fuel into the burner circumferentially of said liquid fuel nozzle along an arc subtending a predetermined angle and a solid-fuel combustion nozzle having a solid fuel injection port for injecting a solid fuel into the burner circumferentially of said solid-fuel injection nozzle along a different arc subtending a predetermined angle, said solid-fuel nozzle surrounding and being coaxial with said liquid fuel nozzle, and said solid fuel nozzle being circumferentially closed by closing means disposed in substantially opposed relationship with said liquid-fuel injection port to define said solid-fuel injection port, whereby the injection ports of said nozzles are so separated circumferentially from one another that interference is prevented between the streams of solid and liquid fuels formed during injection thereof into the burner.

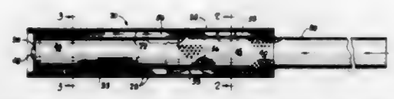
4,657,506

GAS BURNER

Harry Ihlenfield, Strongsville, and George Warsack, Medina, both of Ohio, assignors to GlowCore Corporation, Cleveland, Ohio

Filed Dec. 10, 1984, Ser. No. 680,064
Int. Cl.⁴ F23D 14/14
U.S. Cl. 431—329 **9 Claims**

5. A burner for burning a gaseous combustible fuel including in combination a hollow generally cylindrically shaped metal member having first and second end portions, said cylindrically shaped member comprised of a woven metal fabric having a plurality of openings providing for the passage of a gas therethrough, conduit means providing for the entrance of gas into said first end portion of said hollow generally cylindrically shaped member, a cylindrical plug member extending axially from said second end portion of said hollow generally cylindrically shaped member toward said first end portion thereof and



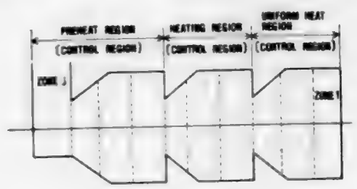
terminating intermediate said first and second end portions, said cylindrical plug member and said second end portion of said hollow generally cylindrically shaped member defining an annular space therebetween, introduction of gas under pressure into said first end portion of said hollow generally cylindrically shaped member through said conduit means causes the gas to flow in said annular space and out through said plurality of openings in said woven metal fabric.

4,657,507

HEATING CONTROL METHOD OF HEAT FURNACE

Satoshi Kohama, Osaka; Yoshinori Wakamiya, and Makoto Tsuruda, both of Hyogo, all of Japan, assignors to Kobe Steel, Ltd., Hyogo and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of, Japan

Filed Feb. 26, 1986, Ser. No. 833,023
Claims priority, application Japan, Feb. 27, 1985, 60-40375; Feb. 27, 1985, 60-40379
Int. Cl.⁴ F27B 9/12
U.S. Cl. 432—18 **2 Claims**



1. Heating control method of a heat furnace, wherein a continuous heat furnace has a plurality of heating control regions, said heating control method comprising:

(a) first step of calculating time variation of furnace temperature based on fuel flow rate by unsteady heat balance system;

(b) second step of calculating time variation of inner temperature of a furnace wall from the furnace temperature;

(c) third step of calculating time variation of inner temperature of material from the furnace temperature;

(d) fourth step of calculating mean temperature of each control region at material extraction state in the existing flow rate, heat uniformity thereof, and each furnace temperature at material passing state, using the calculation values obtained from said first, second and third steps;

(e) fifth step of calculating mean temperature of each control region at material extraction state when the fuel flow rate is varied from the existing flow rate by a definite value, heat uniformity thereof, and each furnace temperature of material passing state, using the calculation value obtained from said first, second and third steps; and

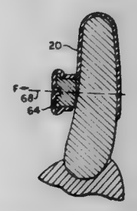
(f) sixth step of calculating linearization coefficient in the existing flow rate based on the calculation values obtained from said fourth and fifth steps, and determining the optimum furnace temperature per material to minimize the fuel under restricting conditions using the linearization coefficient to control the heating regions of said heat furnace.

4,657,508

ORTHODONTIC APPARATUS AND METHOD FOR TREATING MALOCCLUSION

Eugene L. Dellinger, 4606 A. East State St., Fort Wayne, Ind. 46805

Continuation-in-part of Ser. No. 562,858, Dec. 19, 1983, Pat. No. 4,526,540, and a continuation-in-part of Ser. No. 662,727, Oct. 19, 1984, Pat. No. 4,551,096. This application Apr. 30, 1985, Ser. No. 728,856
Int. Cl.⁴ A61C 7/00
U.S. Cl. 433—24 **26 Claims**



1. The method of fabricating an orthodontic appliance and repositioning a patient's teeth, comprising the steps of:

forming a model of the patient's teeth in the shape of a dental arch with replicas of the teeth ideally located;

releaseably mounting brackets on selected replicas in preselected locations, said mounting being accomplished by use of an adhesive which adheres to the brackets with more force than to the replicas, said brackets each having a base portion for mounting to said replicas, said base portion providing a mounting surface that does not conform to the contour of the surface anatomy of the replica in the area of attachment;

allowing said adhesive to fill the gaps and spaces formed between each such base portion and its associated replica, thereby forming a contoured shim conforming to the contours of the surface anatomy of the replica, said adhesive further being of such character as to solidify and, when desired, to separate from said replica flush with such conforming area, thereby leaving the remainder of the adhesive secured to the base portion of the bracket;

forming a fixture over the dental arch model in intimate conformity with the respective replica crowns, lingual and labial surfaces and onto said brackets and contoured shims in securing engagement with said brackets and contoured shims, said fixture being formed of a material which, after being formed, is relatively rigid and in that state not readily removable from said brackets and contoured shims but which material can be subsequently altered as to its physical properties to facilitate removal thereof from said brackets and contoured shims;

removing the thus formed fixture-bracket-shim assembly from the model as a single unit by utilizing the differential in the adhering character of the adhesive to separate said adhesive from the replicas;

utilizing replica portions of said fixture-bracket-shim assembly to locate and bond the respective brackets and contoured shims onto the corresponding teeth in the patient's mouth, said contoured shim forming a surface which precisely fits the corresponding area on the tooth in the patient's mouth; and

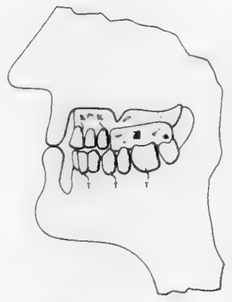
altering the physical properties of the utilized fixture portions while in the patient's mouth for removal from the patient's teeth and said brackets and contoured shims.

4,657,509

DISPOSABLE IMPRESSION TRAY AND METHOD OF USING

Peter Morris, Mississauga, Canada, assignor to Kenneth A. Morrissey, Toronto, Canada

Filed Aug. 15, 1985, Ser. No. 765,818
Claims priority, application Canada, Feb. 22, 1985, 474995
Int. Cl.⁴ A61C 9/00
U.S. Cl. 433—37 **15 Claims**



1. Method of making a denture, comprising:

providing at least one of an upper and lower impression tray made of material which is malleable at temperatures of less than 150° F. and which is substantially rigid at body temperature, which tray has front teeth arranged with said tray to simulate a denture,

heating said at least one tray to a temperature at which it is malleable,

inserting said heated tray at a temperature of less than 150° F. but still in malleable condition into the patient's mouth and conforming at approximately to the ridge of the patient's jaw,

at some time prior to the forming of the final impression, measuring the vertical dimension measure of the said upper and lower jaws,

removing such at least one tray from the patient's mouth,

lining said at least one tray with impression material,

reinserting the tray in the patient's mouth to form final impression of the dental base area with the jaws at said vertical dimension measure,

providing a bite block of material which is malleable at temperatures under 150° F. and rigid at room temperature,

rendering such bite blocks malleable and attaching such bite rims to said at least one tray and inserting the tray with the bite block so attached into the patient's mouth and recording the bite registration with the jaws held to the attitude required by said vertical dimension measure,

using the resultant tray and bite blocks as the basis for forming a customized denture.

4,657,510

HYBRID DENTAL IMPLANT SYSTEM

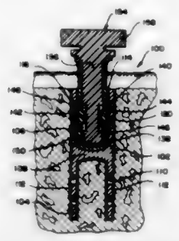
Neal B. Gittleman, Houston, Tex., assignor to Implant Systems, Inc., Philadelphia, Pa.

Filed Mar. 6, 1985, Ser. No. 708,875
Int. Cl.⁴ A61C 8/00
U.S. Cl. 433—173 **12 Claims**

1. A dental implant system for attaching a dental prosthesis to a jawbone underlying gum tissue, said implant system comprising a sleeve member to be secured within an upper portion of said jawbone, fixed implant means to be received by said sleeve member for securing said prosthesis, said fixed implant means including a fixed implant member received by said sleeve member and a fixed implant insert secured to said prosthesis and received by said fixed implant member to prevent movement of said fixed implant insert along the longitudinal

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axis of said sleeve member, and retentive implant means to be alternately received by said sleeve member upon removal of said fixed implant means for retaining said prosthesis while said prosthesis is at least partially supported by said gum tissue, said retentive implant means including a retentive implant member received by said sleeve member, and said retentive implant member including a retentive lip arranged circumscribing the



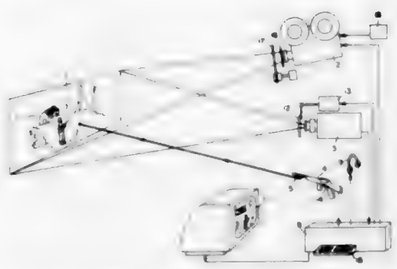
interior surface thereof, and a retentive implant insert secured to said dental prosthesis and received by said retentive implant member for retaining said dental prosthesis while said prosthesis is being supported by said gum tissue, said retentive implant insert having a recess larger than said retentive lip for receiving said retentive lip therein to permit movement of said retentive implant insert along the longitudinal axis of said sleeve member.

4,657,511

INDOOR TRAINING DEVICE FOR WEAPON FIRING

Jean-Claude Allard, Bourg la Reine; René Briard, Orgeval, and Christian Sannier, Ermont, all of France, assignors to Giravions Dorand, Suresnes, France

Filed Dec. 11, 1984, Ser. No. 680,396
Claims priority, application France, Dec. 15, 1983, 83 20137
Int. Cl.⁴ G09B *9/00*
U.S. Cl. 434—20 **7 Claims**



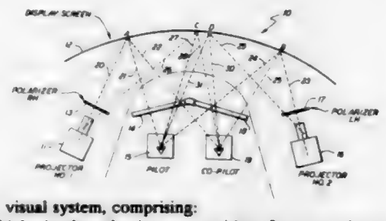
1. An indoor training device for weapon firing, comprising:
a screen;
projection means in front of the screen for displaying a moving image including at least one target on the screen in visible light;
at least one weapon in front of the screen, the weapon having a trigger mechanism for operation by a firer and an infrared-beam emitter;
means responsive to operation of the trigger mechanism for causing the emitter to emit an infrared beam, whereby to simulate a projectile form the weapon with the infrared beam;
a video camera in front of the screen for transcribing a video image of the screen;
a retractable filter for passing at least one radiation wavelength of only the infrared beam so interposed between the screen and the video camera that the video camera transcribes only a video image of a trace of the infrared beam on the screen while the retractable filter is so interposed;
means responsive to operation of the trigger mechanism for stopping the projection means, whereby to arrest the moving image including the at least one target therefrom, and for retracting the retractable filter from being so interposed between the screen and the video camera, whereby the video camera transcribes a video image of the arrested image including the at least one target; and
means for electronically superimposing the transcribed video image of the infrared beam and the video image of the arrested moving image and displaying the same.

4,657,512

VISUAL SYSTEM WITH FILTER FOR A SIMULATOR

Richard A. Mecklenborg, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Jun. 8, 1985, Ser. No. 740,614
Int. Cl.⁴ G09B *9/08*
U.S. Cl. 434—44 **5 Claims**



5. A visual system, comprising:
a vehicle simulator having two positions for two trainees to view a scene through separate windows,
a curved display screen positioned before the windows,
said curved display screen having a surface made of very small particles of a flat metalic, highly-reflective material so as to preserve the polarized nature of light on reflection,
first projector means including a plurality of projectors for projecting a predetermined image for viewing from a first position,
second projector means including a plurality of projectors for projecting a scene for viewing from a second position,
first means to polarize said predetermined image in a preselected circular direction for viewing from said first position,
second means to polarize said scene from said second projector means in a direction opposite from said preselected direction for viewing from said second position,
first analyzer means positioned on and supported by said window viewed from said position the nature of which is to pass light readily that is circularly polarized in a direction opposite from said first means to polarize,
second analyzer means positioned on and supported by said second window for viewing images from said second position the nature of which is to pass light readily that is circularly polarized in a direction opposite from said second means to polarize.

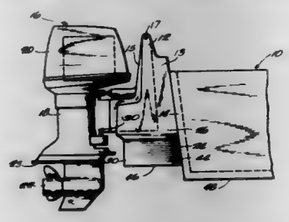
4,657,513

TRANSOM BRACKET WATER DEFLECTOR FOR IMPROVED BOAT PERFORMANCE

Ronald C. Baker, Antioch, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 11, 1985, Ser. No. 710,609
Int. Cl.⁴ B63H *1/18*
U.S. Cl. 440—66 **17 Claims**

7. A combination comprising a boat including a hull having a transom, a propulsion unit including a lower unit having an upper portion and a lower portion, said lower portion supporting a propeller about a rotary axis, and a generally horizontal water deflection plate above said propeller, and means for supporting said propulsion unit rearwardly of said transom, said means for supporting including a transom bracket having a forward portion fixed to said boat transom and including means for deflecting water away from said upper portion of said lower unit, said means for deflecting including a first



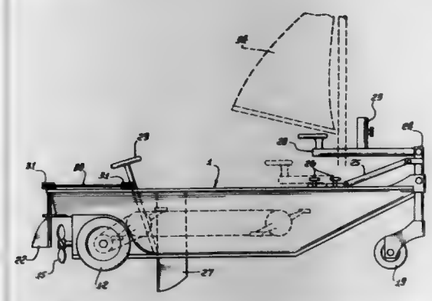
deflection surface and a second deflection surface, each of said first and second deflection surfaces including a lower surface portion and an upper surface portion, said upper surface portions being spaced apart, and said lower surface portions converging downwardly and defining a line extending from adjacent said boat transom toward said lower unit and having a rearward end located adjacent said lower unit and in the area between said water deflection plate and said propeller axis.

4,657,514

AMPHIBIOUS PEDAL POWERED SAILBOAT

Andrew Chan, 2022 N. 153rd Pl., Seattle, Wash. 98133

Continuation-in-part of Ser. No. 524,355, Aug. 18, 1983, Pat. No. 4,533,330. This application Jul. 24, 1985, Ser. No. 758,266
Int. Cl.⁴ B63H *16/00*
U.S. Cl. 440—31 **3 Claims**



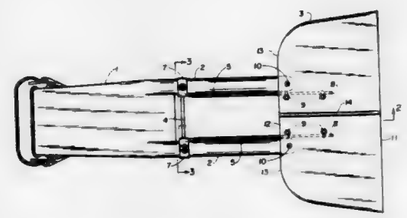
1. An amphibious pedal powdered sailboat apparatus comprising in combination:
a relatively lightweight boat hull having an upper deck portion, a bow portion and a stern portion;
a front pair of wheels mounted on said hull for steering and to provide mobility of said apparatus on land and a rear pair of wheels mounted on said hull, to provide traction and mobility of said apparatus on land;
means for elevating said front pair of wheels mounted on said hull from ground level to deck level;
a first pedalling stand fixedly mounted in the bow portion of said hull and a second pedalling stand fixedly mounted in the stern portion of said hull;
said first and second pedalling stand each comprising a pair of foot pedals mounted on said pedalling stand for rotational movement about a horizontal axis transverse to the longitudinal axis of said hull;
drive means for coordinated operation of said pair of foot pedals on said pedalling stands;
said drive means including plural bevel gears and a transmission shaft connected to a pinion shaft for translating and apportioning the rotational movement of said foot pedals to a screw propeller mounted on said hull and to said pair of rear wheels mounted on said hull;
a sail for optionally powering said apparatus by wind power; and
steering means for controlling directional movement of said apparatus;
wherein rotational movement of said foot pedals by one more occupants is transmitted to said gearing system of said drive means which synchronously powers said screw propeller and powers said rear pair of wheels to provide amphibious operation of said apparatus.

4,657,515

SWIM FIN

Stephen S. Ciccotelli, Box 1414, Deming, N. Mex. 88031

Filed Nov. 15, 1985, Ser. No. 798,676
Int. Cl.⁴ A63B *31/08*
U.S. Cl. 441—64 **2 Claims**



1. In a swim fin, a foot pocket, two flexible beams projecting forwardly along the sides of the foot pocket, a rigid blade, means to attach the ends of the flexible beams to the rigid blade; a U-shaped wire form, means to attach the corners of the wire form to the flexible beams at a point near the foot pocket, and means to attach the ends of the wire form to the rigid blade.

4,657,516

REINFLATABLE LIFE PRESERVER DEVICE

Tomas Tassy, 5221 Marmol Dr., Woodland Hills, Calif. 91364-3332

Filed Dec. 9, 1985, Ser. No. 806,434
Int. Cl.⁴ B64D *25/02*
U.S. Cl. 441—125 **2 Claims**



1. An improved life preserver device for mounting in the back of an aircraft seat, comprising:
an inflatable outer bag for removeable deployment in an uninflated state in said back of said aircraft seat;
an inflatable inner bag located inside said inflatable outer bag;
means operably, removeably connected to said inflatable inner bag for supplying a pressurized gas to said inflatable

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inner bag to cause said inflatable inner bag to fill with pressurized gas, the expansion of said inflatable inner bag causing a corresponding expansion of said inflatable outer bag around said inflatable inner bag, said inflatable inner and outer bags extending from said back of said airline seat to form an impact cushion when said supply means fills said inflatable inner bag, said inflatable inner and outer bags being removeable from said back of said seat when said supply means is disconnected from said inflatable inner bag, said inflatable inner bag and said inflatable outer bag both collapsing when said supply means is disconnected from said inflatable inner bag;

means connected to said inflatable outer bag for securing said inflatable outer bag to a passenger; and

means for selectively inflating said inflatable outer bag to expand said inflatable outer bag while compressing said inflatable inner bag within said inflatable outer bag by causing pressurized gas remaining within said inflatable inner bag to be expelled;

means for supplying pressurized gas through said back of said seat;

a breakaway tube having one end connected to said inner bag through said outer bag, said one end of said breakaway tube being removable from the other end of said breakaway tube;

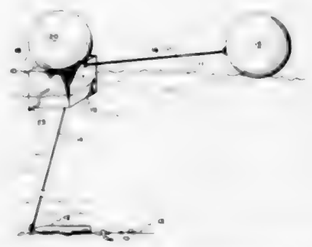
a first one-way valve interposed between said supply means and said other end of said breakaway tube, said first one-way valve allowing pressurized gas to flow from said supply means into said inner bag through said breakaway tube but preventing the flow of gas in the opposite direction therethrough, said inner and outer bags being removeable from the back of said seat when said breakaway tube is broken to separate said one end of said breakaway tube from said other end of said breakaway tube, gas escaping from said inner bag and said inner and outer bags collapsing when said breakaway tube is broken.

4,657,517

APPARATUS FOR AIDING THE ANCHORING OF A BOAT

W. Lee Godwin, Box 222-E, Blountstown, Fla. 32424

Filed May 19, 1986, Ser. No. 864,253
Int. Cl.[4] B63B *22/00*
U.S. Cl. 441—1 **4 Claims**



1. An apparatus for aiding the anchoring of a boat upon the bottom of a body of water comprising:

(a) a floating reel member comprising a housing having a top portion and sidewall portions, a doubly flanged spool mounted in said sidewall portions and positioned to rotate about a horizontal axis, a continuous length of line attached to said spool and spirally wound thereupon, a crank handle protruding from said sidewall portions and extending to operative engagement with said spool, and visibly distinctive flotation means mounted upon said top portion,

(b) a weight having a streamlined elongated contour attached to the free extremity of said line and sufficiently heavy to cause rapid deployment of said line from said spool when said weight descends from the surface of said body of water to the bottom thereof, and

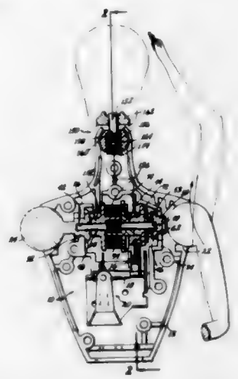
(c) a visibly distinctive current-indicating buoy attached to said housing by a tether of 5–15 foot length.

4,657,518

MOTION DELAY MECHANISM FOR ANIMATED FIGURE TOY

William J. Kelley, Torrance, and Mark Wittenberg, Anaheim, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 13, 1985, Ser. No. 797,589
Int. Cl.[4] A63H *13/00*
U.S. Cl. 446—354 **7 Claims**



1. A motion delay mechanism for a figure toy having a torso and articulated arms, comprising:

a first arm connector rotatably mounted to a supporting web attached to said torso, said first arm connector being coupled to one of said articulated arms and having an aperture passing partially therethrough;

a drive ratchet operably coupled to said first arm connector, said drive ratchet having flexible arms with angled extensions and an aperture passing therethrough;

a drive detent operably coupled to said drive ratchet so that said angled extensions of said drive ratchet operably engage slots in said drive detent, said drive detent having an aperture passing therethrough and an extended portion;

a spring ratchet having an aperture passing therethrough, a plurality of pins, a cylindrical extension and flexible arms with angled extensions, said extended portion of said drive detent operably engaging said aperture of said spring ratchet;

an upper drive gear having a large aperture passing therethrough and a plurality of smaller apertures, said cylindrical extension of said spring ratchet operably engaging said large aperture and said plurality of pins of said spring ratchet operably engaging said plurality of smaller apertures;

an arbor with detents having an aperture passing therethrough, a disk-shaped portion with a plurality of slots, a first extension generally configured as a half-cylinder and a second extension, said second extension operably engaging said aperture in said spring ratchet and said extended portion of said drive detent, said angled extensions of said spring ratchet operably engaging said plurality of slots of said disk-shaped portion;

an arbor with stop having an aperture passing therethrough, an extension generally configured as a half-cylinder and a stop, said extension of said arbor with stop operably engaging said first extension of said arbor with detents;

a second arm connector rotatably mounted to another supporting web attached to said torso, said second arm connector being coupled to the other of said articulated arms and having an aperture passing partially therethrough and a tab operably engaging said stop of said arbor with stop;

a shaft rotatably engaging said apertures in said first and second arm connectors and passing through said apertures of said drive ratchet, said drive detent, said spring ratchet, said arbor with detents and said arbor with stop;

a first spring coiled around said shaft inside said first extension of said arbor with detents and said extension of said arbor with stop;

a second spring coiled around said first extension of said arbor with detents and said extension of said arbor with stop, one end of said second spring being attached to said torso;

a first compound gear rotatably mounted to a support base member attached to said torso, said first compound gear including a lower driven gear and a pinion gear operably engaging said upper drive gear;

a second compound gear rotatably mounted to said support base member, said second compound gear including a lower driven gear and a pinion gear operably engaging said lower driven gear of said first compound gear; and

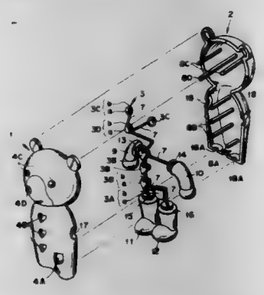
a governor including a worm gear rotatably mounted to said support base member and a rotating vane attached to said worm gear, said worm gear operably engaging said lower driven gear of said second compound gear.

4,657,519

PLASTIC TOY AND METHOD OF MANUFACTURING SAME

Yutaka Kobayashi, 2503, Charamatsubushi, Matsubushi-cho, Kitakatsushika-gun, Saitama-ken, Japan, assignor to Yutaka Kobayashi, Saitama and Marukoshi Co., Ltd., Tokyo, both of, Japan

Filed Sep. 5, 1985, Ser. No. 772,884
Claims priority, application Japan, May 11, 1985, 60-69475[U]
Int. Cl.[4] A63H *3/46*
U.S. Cl. 446—376 **5 Claims**



1. A plastic toy, which comprises:

(a) a pair of front and rear halves so split as to form a single toy body when mated with each other, said two halves being formed with at least two movable toy parts supporting recesses, respectively, arranged on each outer mated surface thereof so as to provide at least two movable toy parts supporting portions when mated, one of said two halves being further formed with at least one hole into which at least one auxiliary toy parts is fitted, and the other of said two halves being further formed with at least one auxiliary toy parts supporting rod; and

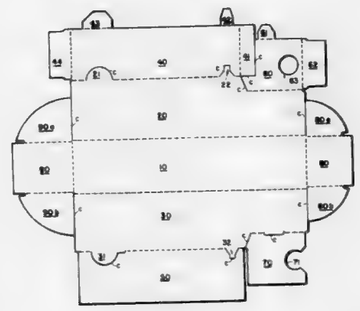
(b) a middle parts set having at least two movable toy parts and at least one auxiliary toy parts all connected by molding gates, the movable toy parts being arranged at such positions as to be supported by the at least two movable toy parts supporting portions of said two halves when said two halves are mated to each other with said middle parts set being sandwiched between said two halves, and the auxiliary toy parts being arranged at such a position as to be fitted to the hole formed in one of said two halves and supported by the supporting rod formed in the other of said two halves when said two halves are mated to each other with said middle parts set being sandwiched between said two halves.

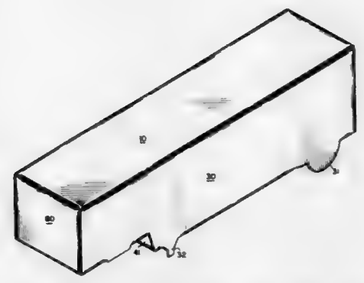
4,657,520

PROMOTIONAL BAY TRAILER ASSEMBLY

Phil B. Sheffer, New Oxford, Pa., assignor to Merchandising Innovations, Inc., Hanover, Pa.

Filed Mar. 5, 1986, Ser. No. 836,295
Int. Cl.[4] A63H *33/16*; G09F *1/08*
U.S. Cl. 446—488 **1 Claim**





1. A bay trailer display assembly means which may be shipped in a flat position and easily assembled by the user thereof comprising:

a single sheet of foldable material having a rectangular central section (10) formed thereon by means of factory applied score lines,

a first trailer side wall panel (20) attached to a first side of said central section (10),

a second trailer side wall panel (30) attached to a second side of said central section (10),

wherein both of said trailer side wall panels (20, 30) have wheel sections (21, 31) and trailer stand means (22, 32) formed therein by means of factory applied cut through portions (C),

a first end panel section means (40) attached to said first trailer side wall panel (20),

a second end panel section means (50) attached to said second trailer side wall panel (30),

means whereby said first end panel section (40) is folded so

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as to overlie said second end panel section means (50) so as to form the bottom wall of the bay trailer assembly,
tab means (42, 43) formed on said first end panel section means (40) for retaining the bay trailer in an assembled position,
rear trailer panel means (90) attached to said rectangular central section (10) at a first end thereof,
front trailer wall means (80) attached to said rectangular central section (10) at a second end thereof(.),
wherein said rear trailer panel means (90) has flap means (90a, 90b) attached thereto,
wherein said front trailer wall means (80) has flap means (90a, 90b) attached thereto,
wherein said first trailer side wall panel (20) has a first hitch section means (60) attached to a forward lateral edge thereof,
wherein said first hitch section means (60) has tab element (61) formed thereon,
wherein said second trailer side wall panel (30) has a second hitch section means (70) attached to a forward lateral edge thereof via a factory applied score line therebetween,
including a cut through portion means (C) formed as a part of said second hitch section (70) for receiver of said tab element (61), formed as a part of said first hitch section (60),
wherein said first and second hitch sections (60, 70) have aperture means (63, 71) formed therein and sized so as to be in alignment upon assembly of the apparatus,
wherein said first end panel section means (40) has flap means (41, 44) formed at both ends thereof,
wherein said first hitch section means (60) has a flap means (62) formed on a forward edge thereof.

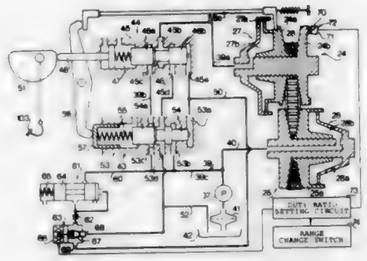
4,657,521
FLEXIBLE CONDUIT
Warren E. Sevrence, Lakeland, Fla., assignor to Acco Babcock Inc., Fairfield, Conn.
Filed Mar. 12, 1984, Ser. No. 588,313
Int. Cl.⁴ F16C *1/10*
U.S. Cl. 464—174 **4 Claims**



1. A flexible cable conduit comprising a plastic tubular anti-friction liner adapted to surround a movable core and a plurality of spiraled lay wires surrounding said liner and adjoining one another; characterized in having a plastic film spiral wound overlap wrap sealingly surrounding said lay wires, without any intervening wires, to prevent radial displacement thereof when said wires are subjected to a compression load and to provide a continuous sealing of said wires along the length of the conduit wherein the overlap of one wrap with an adjacent wrap is substantially 50% of the width of the wrap.

4,657,522
CONTROL SYSTEM FOR AN INFINITELY VARIABLE TRANSMISSION
Motohisa Miyawaki, Chofu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 30, 1984, Ser. No. 645,937
Claims priority, application Japan, Sep. 9, 1983, 58-166336
Int. Cl.⁴ B60K *41/14*; **F16H** *11/06, 55/56*
U.S. Cl. 474—12 **4 Claims**

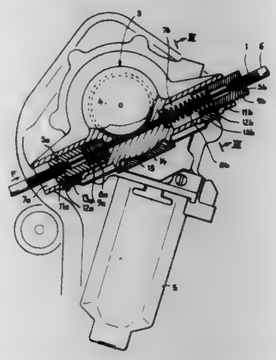
1. In a system for controlling the transmission ratio of an infinitely variable transmission for transmitting power of an internal combustion engine, the transmission comprising a primary pulley having a hydraulically shiftable disc and a hydraulic cylinder for shifting the disc, a secondary pulley having a hydraulically shiftable disc and a hydraulic cylinder for operating the disc, and a belt engaged with both of the pulleys, the system comprising a first hydraulic circuit means having a pump for supplying pressurized oil, and a transmission ratio control valve having a spool responsive to speed of the engine for controlling the pressurized oil so as to move the disc of the primary pulley to change the transmission ratio, the improvement comprising:
a second hydraulic circuit means for applying control oil to one end of the spool of the transmission ratio control valve so as to axially move the spool;
an electronic control circuit means responsive to first pulses proportional to the speed of said engine for producing a first output signal dependent on the engine speed;



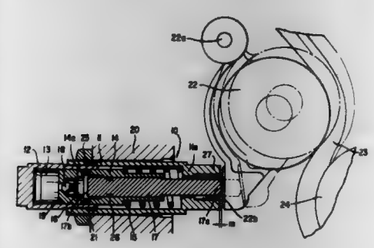
the electronic control circuit means including range change means, the latter for causing the electronic control circuit means to produce a second output signal dependent on said engine speed;
the second hydraulic circuit means including a modulator valve for producing constant pressure control oil; and
the second hydraulic circuit means including an electromagnetic valve having a coil responsive to said first output signal and said second output signal, respectively, for draining a part of the constant pressure control oil so as to control the control oil applied to the end of the spool of the transmission ratio control valve, thereby controlling the transmission ratio.

4,657,523
UNIDIRECTIONAL CABLE-TIGHTENING DEVICE FOR A MOTOR VEHICLE GLASS RAISER
Claude Chevance, Savigny-sur-Orge, and Thierry Pèbre, Paris, both of France, assignors to Compagnie Industrielle de Mecanisme en abrege C.I.M., France
Filed Jul. 2, 1986, Ser. No. 881,411
Claims priority, application France, Jul. 5, 1985, 85 10342
Int. Cl.⁴ F16H *7/08*; **E05F** *11/48*
U.S. Cl. 474—101 **4 Claims**

1. A unidirectional cable-tightening device for a motor vehicle glass raiser, comprising a housing, a cable, driving winch and two end members disposed in the housing, a sheath containing a cable and having one end inserted in one of the end members and an opposite end inserted in the other end member, elastically yieldable means disposed in the housing for elastically biasing each end member, a set of teeth which extends in a direction parallel to said cable and provided on one side of each end member, a shoe associated with each end member and mounted in the housing in such manner as to be slidable transversely of the associated end member, each shoe having a set of teeth complementary to and engaged with the set of teeth of the associated end member in such manner that when the end member is moved in a direction parallel to the cable, the associated shoe is slightly moved transversely of the end member, means being provided for biasing the shoes elastically against the sets of teeth of the associated end members.

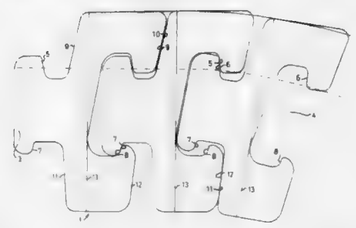


4,657,524
SELF-CONTAINED TENSIONING DEVICE FOR A BELT OR SIMILAR STRUCTURE
Yoshio Okabe, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jul. 19, 1985, Ser. No. 756,648
Claims priority, application Japan, Jul. 25, 1984, 59-113639[U]
Int. Cl.⁴ F16H *7/08*
U.S. Cl. 474—110 **3 Claims**



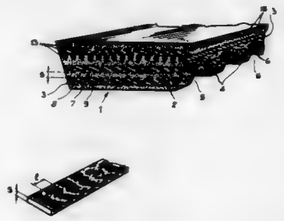
1. A self-contained tensioning device for a belt or similar structure which contacts a movable idler pulley, comprising:
a body member having a shoulder portion;
a plunger slidably mounted in said body member;
a free piston slidably mounted in said plunger and having a head portion extended from said shoulder portion of said body member and contacted with said idler pulley so as to apply a tensioning force to said belt;
a projection provided on said shoulder portion of said body member and projecting axially so as to minimize a distance between a portion of said idler pulley contacting said head portion and said shoulder wherein said plunger is slidably mounted in said body member so as to form a large diameter fluid chamber within said body member and said free piston is slidably mounted in said plunger so as to form a small diameter fluid chamber in said plunger;
a spring for biasing said plunger in the direction of said large diameter fluid chamber; and
a one-way check valve for permitting fluid flow only from said large diameter fluid chamber to said small diameter fluid chamber and wherein said projection comprises stopper means for limiting movement of said movable idler pulley.

4,657,525
TRANSMISSION CHAIN
Lars G. Landerholm, Köping, Sweden, assignor to AB Volvo, Gothenburg, Sweden
Filed Oct. 1, 1985, Ser. No. 782,299
Claims priority, application Sweden, Oct. 1, 1984, 8404903
Int. Cl.⁴ F16G *1/24*
U.S. Cl. 474—242 **9 Claims**



1. Transmission chain for torque transmission from one pair of conical drive discs to another pair of driven conical discs in a continuously variable transmission ratio, said chain comprising hingedly interconnected links and being composed of identical, interlocking links in the form of blocks having opposite end surfaces bevelled at an angle to fit the conical discs, said blocks having opposite longitudinal sides having means with rolling contact surfaces for engagement with rolling contact surfaces on corresponding means of the adjacent links, said end surfaces being also bevelled both forwardly and rearwardly in the direction of movement of the chain to form a contact line on the block for linear contact with the respective discs, said contact line extending transversely of said direction of movement.

4,657,526
V-BELT
Giorgio Tangorra, Monza, and Edoardo Robecchi, Sesto San Giovanni, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy
Filed Sep. 25, 1985, Ser. No. 780,092
Claims priority, application Italy, Sep. 27, 1984, 22869 A/84
Int. Cl.⁴ F16G *5/08*
U.S. Cl. 474—261 **9 Claims**



1. A V-belt comprising a body of polymeric flexible material, a plurality of inextensible cords arranged in parallel to one another on a ring concentric with the belt and oriented according to the longitudinal direction of the belt, a portion of said body disposed below said cords being delimited by flanks adapted to contact corresponding surfaces of the groove of a pulley in a transmission system, said belt being characterized in that at least said portion comprises a plurality of layers, each layer having fibers oriented in a single direction, the layers

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alternatively overlapping with one layer having fibers substantially oriented in the longitudinal direction, and another layer having fibers oriented in a substantially transverse direction, said plurality of layers comprising a first layer with fibers oriented in one of said longitudinal direction and a direction substantially transverse to said longitudinal direction, said first layer being sandwiched between and bonded with two adjacent layers both having fibers oriented in the other of said longitudinal direction and said direction substantially transverse to said longitudinal direction, the thickness of each layer being less than or at most equal to the average length of the fibers present in the layer.

4,657,527

FLAP FOLDING MECHANISM FOR MANUFACTURE OF BOXES WITH INTEGRALLY REINFORCED WALLS

Lenard E. Moen, 7914 Michigan, Whittier, Calif. 90602

Division of Ser. No. 636,917, Aug. 2, 1984, Pat. No. 4,581,005, which is a continuation-in-part of Ser. No. 499,988, Jun. 1, 1983, abandoned. This application Dec. 26, 1985, Ser. No. 813,420

Int. Cl.⁴ B31B *1/28*

U.S. Cl. 493—176 **24 Claims**



1. A machine for forming a post reinforced panel out of portions of a flat preformed blank of a paperboard material, the blank having a first score line defining a junction between wall and flap areas of the material, the flap having a plurality of at least three portions defined by a plurality of at least two score lines parallel to the first score line, said machine comprising:

a framework;

shoe means mounted on said framework for supporting the wall area of a blank during forming of the flap area of the blank into a reinforcing post,

said shoe means having an outer edge beyond which the flap area of a flat blank extends when the blank occupies a static indexed position relative to said shoe means;

indexing means mounted on said framework for retaining a blank in said static indexed positon such that the first score line is in parallel registration with said outer edge of said shoe means;

a mandrel means mounted on said framework that defines the post configuration into which the portions of the flap are to be formed, said mandrel means having a long axis disposed parallel to said outer edge of said shoe means,

said mandrel defining a first edge in spaced parallel superposition adjacent to said outer edge of said shoe means such that the flap can be folded on the first score line about said first edge,

said mandrel means defining an apex parallel to said first edge about which apex the flap can be folded on a second score line of the flap; and

a flap folding means mounted on said framework in operative opposition to said shoe means and to said mandrel means to fold first and second portions of the flap around outside and inside faces of said mandrel means and to fold second and third portions of the flap reversely relative to one another and in opposition to said shoe means and mandrel means to place the third portion in laminar relation against the wall area of the end panel;

said flap folding means having an elongate platen of a length substantially corresponding to the length of the flap and oriented parallel to said shoe means and mandrel means,

said flap folding means having an axis of oscillation between retracted and extended positions of said platen that is parallel to said platen, said shoe means and mandrel means,

said platen when in said retracted position being positioned sidewardly beyond said shoe means in confronting relationship to the flap of a blank occupying said static indexed position in said shoe means,

said flap folding means including means to swing said platen out of said retracted position through the plane of a flat blank in said indexed position on said shoe means and into said extended position,

said platen in said extended position coming into registration with said shoe means to place the third portion of the flap into laminar relation to the the wall area of the end panel.

12. A mechanism for forming a corner post around an alongate fixed mandrel of a paperboard box forming machine comprising:

a support for mounting said mechanism in the machine in spaced apart operative opposite to the mandrel;

a trunnion having an inner end pivotally mounted on said support for reciprocation of an outer end of said trunnion on a first axis;

a first powered means operatively interconnected between said support and said trunnion for reciprocating said outer end of said trunnion through an arc relative to said support;

a platen support means having an inner end pivotally mounted on said outer end of said trunnion on a second axis substantially parallel to said first axis for reciprocation of an outer end of said platen support means relative to said trunnion;

a platen mounted on said outer end of said platen support means having an axis in parallel spaced relation to said second axis and in parallel operative opposition to the mandrel; and

a second powered means operatively interconnected between said trunnion and said platen support means for reciprocating said platen support means and said platen relative to said trunnion,

said second powered means being actuatable independently of actuation of said first powered means whereby to effect movement of said platen relation to said trunnion and the mandrel independently of reciprocatory movement of said trunnion.

4,657,528

APPARATUS FOR STACKING AND CONVEYING FLAT ARTICLES, PREFERABLY BAGS MADE OF PLASTIC FILM

Fritz Achelpohl; Friedhelm Mundus, both of Lengerich, and Werner Krutemeier, Löhne, all of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Nov. 22, 1985, Ser. No. 800,810

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1984, 3442851; Feb. 20, 1985, 3405858

Int. Cl.⁴ B31B *41/02*

U.S. Cl. 493—204 **10 Claims**

1. Apparatus for stacking and conveying flat articles in the form of flat tubular plastic bags that have been produced from a flat tubular or semitubular plastic film web and severed and sealed at a bag severing and sealing station, which apparatus comprises:

(a) a frame;

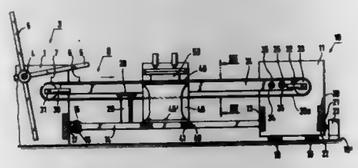
(b) a conveying means;

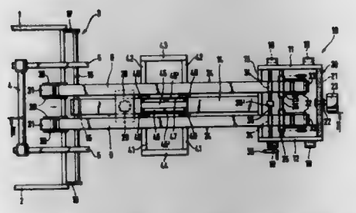
(c) means for transferring the flat tubular plastic bags from the severing and sealing station to said conveying means in stacked relationship, comprising

a wicketer rotatably carried in said frame, said wicketer including a plurality of laterally spaced pairs of transfer arms for carrying the bags;

(d) said conveying means being positioned downstream of said wicketer, said conveying means including a pair of laterally spaced, parallel stacking conveyors for receiving the bags from said wicketer and for intermittently conveying the received bags in a conveying direction away from the wicketer;

(e) said stacking conveyors each including





bag supporting means for supporting and carrying the bags, and stacking pin means extending upwardly from said bag supporting means for retaining a plurality of the bags in stacked relationship on said bag supporting means; and

(f) bag cutting means positioned between said stacking conveyors for performing a cutting operation on the stack of bags, said bag cutting means being spaced laterally from and being independent of said bag supporting means and including a fixed element and a movable element each carried by said frame and cooperable with each other for performing the cutting operation on the stack of bags.

4,657,529

BLOOD EXTRACTION AND REINFUSION FLOW CONTROL SYSTEM AND METHOD

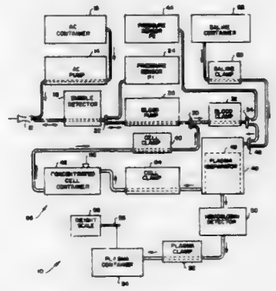
Paul R. Prince, Fountain Valley, and Ronald L. Clark, Westminster, both of Calif., assignors to Hemascience Laboratories, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 626,034, Jun. 29, 1984, abandoned. This application Nov. 22, 1985, Ser. No. 801,131

Int. Cl.⁴ A61M *1/03*

U.S. Cl. 604—6 **48 Claims**

7. The system for controlling according to claim 6 above wherein the digital processor is programmed to execute a repetitive flow rate update cycle in which the processor updates the sensed pressure indication from the pressure sensor, updates the flow rate indication from the flow rate indicator, calibrates the sensed pressure indication with respect to atmospheric pressure, generates an updated compensated pressure indication as a function of the calibrated pressure indication and a prior compensated pressure indication, calculates a pressure error value as a difference between the compensated pressure and the pressure value where the flow rate limit curve intersects the updated flow rate, integrates the pressure error value, additively combines the integral of the pressure error value with a nominal flow rate command to generate a flow rate command, imposes a lower flow rate of zero and a selected maximum upper flow rate upon the flow rate command to generate a limited flow rate command, adjusts the limited flow rate command by limiting a rate of change thereof and applies



the adjusted flow rate command to the flow rate control servo subsystem as a flow rate control signal.

4,657,530

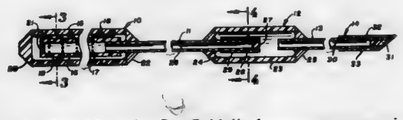
COMPRESSION PUMP-CATHETER

Henry Buchwald, 100 Variety Club Heart Hospital, University of Minnesota, Minneapolis, Minn. 55455; Eugenio Guzman, 1730 Larpenteur Ave., Falcon Heights, Minn. 55113, and Bruce D. Wigness, University of Minnesota, 2630 University Ave. SE., Minneapolis, Minn. 55455

Filed Apr. 9, 1984, Ser. No. 598,243

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—9 **9 Claims**



1. An implantable anti-reflux fluid displacement compression pump-catheter system which comprises:

(A) a double chambered multi-orifice collecting device including:

(1) a first elongated flexible inner tube having a plurality of several hundred small perforations,

(2) a second elongated flexible outer tube of substantially the same length as the first tube surrounding the first tube and substantially concentric therewith, said outer tube having a plurality of several hundred small perforations,

(3) plug means at the distal end of the device closing the ends of the tubes, and

(4) further plug and spacer means at the opposite end of the device closing the end of the outer tube, maintaining the tubes in concentric relationship and connecting the collecting device to tubing extending to the pump,

(B) an anti-reflux anti-backdiffusion tubular compression pump including:

(1) an elongated resilient tubular housing,

(2) the proximal end of the tubing connecting said collecting device fixed substantially concentrically in the distal end of said housing and extending into the housing,

(3) plug and spacer means closing the distal end of the pump housing, maintaining the housing and tubing in concentric relationship and connecting the pump to said tubing,

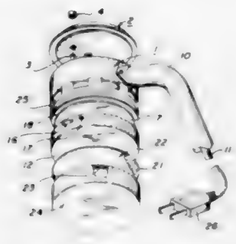
(4) a check valve tip at the end of said tubing, said valve tip comprising:

(a) a closure at the proximal end of said tubing extending into the pump housing,

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(b) at least one port in the wall of the tubing communicating with the bore of the tubing, said port being located upstream from the closed end of the tubing and closely adjacent thereto,
(c) a thin elastic sleeve surrounding the closed end of said tubing in squeezing engagement therewith, said sleeve covering said port, and
(d) means securing the distal end of said sleeve to the tubing upstream from the port,
(5) the distal end of the tubing connecting said pump to said catheter fixed substantially concentrically in the proximal end of said pump housing, and
(6) plug and spacer means closing the proximal end of the pump housing, maintaining the housing and tubing in concentric relationship and connecting the pump to said tubing, and
(C) an anti-reflux anti-backdiffusion non-thrombogenic catheter having a check valve tip and including:
(1) an elongated relatively thick-walled tubular member,
(2) a central bore in said member, said bore being open at the distal end and closed at the proximal end,
(3) at least one port in the wall of the tubular member communicating with said bore, said port being located upstream from said closed proximal end of the tubular member closely adjacent thereto,
(4) a thin elastic sleeve surrounding said tubular member in squeezing engagement therewith, said sleeve conversing said port, and
(5) means securing said sleeve to the tubular member upstream from the port.

4,657,531
THERAPEUTIC HEATING APPARATUS
Jei C. Choi, 491, Seocho-Dong, Kangnam-ku, Seoul, Rep. of Korea
Filed Dec. 19, 1985, Ser. No. 810,580
Claims priority, application Rep. of Korea, Feb. 10, 1985, 12843/1985
Int. Cl.⁴ A61M *37/00*
U.S. Cl. 604—23 **7 Claims**



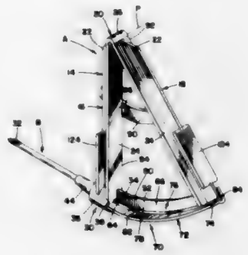
1. A therapeutic heating apparatus for the human body comprising
a base member,
a cotton pad member,
a heater assembled with the base member,
a heat conducting plate assembled with the heater, said heat conducting plate containing spring-biased ball means for attachment to the heater,
said cotton pad member contains a plurality of cotton pills impregnated with mugwort herb or other medicinal ingredient absorbed therein, and
a cotton cover disposed to cover the cotton member and the heat conducting plate whereby upon the heating of the heater, the medicinal ingredients are evaporated to penetrate any desired portion of the body

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4,657,532
INTRA-PERITONEAL PERFUSION OF OXYGENATED FLUOROCARBON
Jewell L. Osterholm, Radnor, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.
Filed Jul. 19, 1985, Ser. No. 757,015
Int. Cl.⁴ A61M *37/00*
U.S. Cl. 604—24 **2 Claims**

1. A method of oxygenating the tissue of a living mammal, comprising the steps of:
(a) providing an oxygenated fluorocarbon containing liquid;
(b) injecting said oxygenated fluorocarbon liquid into the peritoneal cavity of said mammal;
(c) withdrawing said liquid from said cavity;
said injecting and withdrawing being conducted at a rate sufficient to oxygenate at least a portion of the tissue of said mammal, said rate being at least about 20 milliliters per minutes per kilogram of body weight of said mammal.

4,657,533
HYPODERMIC INJECTOR DEVICE
Rolf A. Oscarsson, 1550 Winchell Dr., Hudson, Ohio 44236
Filed May 1, 1986, Ser. No. 857,997
Int. Cl.⁴ A61M *31/00*
U.S. Cl. 604—60 **29 Claims**

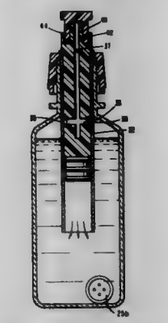


1. A hypodermic injector device comprising a molded plastic member of generally compass like form having a pair of swing arms comprising a support arm and an actuator arm hinged together at one end by a hinged connection and extending radially outward therefrom at an acuate angle to one another for swing movement toward and away from each other, mounting means on the outer end of said support swing arm for securing thereto a hollow hypodermic needle assembly with its needle passageway aligned with an essentially matching diameter bore passageway formed in the outer end of said support swing arm and disposed in the plane of swing movement of said swing arms and extending normal to the radial extent of said support swing arm, and a flexible push rod on the outer end of said actuator swing arm extending in an arcuate path toward the outer end of said support arm and of smaller cross-sectional size than said bore passageway for insertion thereinto and passage therethrough on swing closure of said swing arms.

4,657,534
DUAL COMPARTMENT, DISPOSABLE, MIXING AND DISPENSING CONTAINER
Robert E. Beck, Fort Worth, Tex.; Frank E. Brown, Burbank, Calif., and Michael J. Jobe, Fort Worth, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Nov. 4, 1985, Ser. No. 794,360
Int. Cl.⁴ B67D *5/60*
U.S. Cl. 604—90 **12 Claims**

1. A dual compartment dispensing container for storage of separate substances with internal mixing of same to form a single mixed fluid dispensable from the container at time of use, comprising:

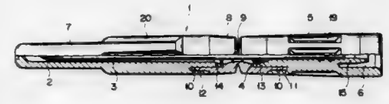
(a) a container side wall forming an interior volumetric region for storage of one of said substances;
(b) a barrel assembly received within said container and formed with a compartment for storage of another substance therein, said barrel assembly including separating means for maintaining said stored substances separate from each other prior to mixing, said barrel assembly further including an inlet port and a piston for isolating said inlet port from said compartment, said barrel assembly defining a mixing region between the container side wall and an outer periphery of the barrel through which mixed fluid travels before entering said inlet port; and
(c) a plunger rod containing a series of passageways therein and disposed within said barrel in coaxial alignment with said compartment, and including said piston advancing into the compartment upon depressing the plunger rod from an extended position into a telescoped position, the



advancing piston exerting hydraulic pressure acting upon the separating means to allow mixing of said substances; said mixed fluid being dispensed from the container through a forward end of the plunger rod located outside the container and in communication with mixed fluid through said series of passageways in the plunger rod and said inlet port formed in the barrel, wherein said series of passageways includes a longitudinal passage formed in the plunger rod and open at one end thereof to the forward end and terminating at an opposite end thereof within the body of said rod, a cross passage interconnecting the longitudinal passage, said cross passage communicating with the container interior through said inlet port when the plunger rod is in the telescoped position, said inlet port being spaced from an end of said barrel assembly located outside the container by a distance sufficient to locate said inlet port in an upper portion of the volumetric region.

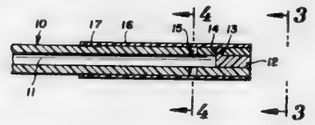
4,657,535
MEDICAL NEEDLE DEVICE AND MEDICAL EQUIPMENT HAVING THE SAME
Tetsuro Nishimura; Nobukazu Tanokura, and Masahiro Urushibata, all of Fujinomiya, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed May 15, 1985, Ser. No. 734,094
Claims priority, application Japan, May 16, 1984, 59-97695
Int. Cl.⁴ A61M *5/32*
U.S. Cl. 604—263 **8 Claims**

1. A heat sterilized medical needle device comprising:
a needle cannula with a pointed distal end,
a hub comprised of a low thermal shrinkable material and supporting a proximal end portion of said needle cannula at one end thereof and allowing connection of a tube at the other end thereof to allow communication between said tube and said cannula therethrough, and
a protector comprised of a low thermal shrinkable material and having a hollow body with a closed distal end and an open proximal end and sealing a portion of said needle cannula which is exposed from said hub within the hollow portion thereof,
said hub having a thin portion to be twisted and broken to disconnect said hub from said protector,
said hub being coupled to said protector to form a liquid-tight joint by heating in heat sterilization of the whole medical needle device carried out at a temperature below the melting point of the midical needle device at a portion



of said hub which is closer to the pointed end of said needle cannula than said thin portion,
wherein said hub includes a tube connecting portion and a coupling portion coupling said tube connecting and said protector, said thin portion is formed at said coupling portion, and said tube connecting portion and said coupling portion are coupled by blocking, said coupling portion being comprised of a large thermal shrinkable material.

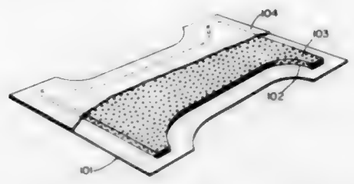
4,657,536
CHECK VALVE CATHETER
Frank D. Dorman, Minneapolis, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.
Continuation-in-part of Ser. No. 29,640, Jul. 13, 1979, abandoned. This application Mar. 19, 1981, Ser. No. 245,379
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—247 **8 Claims**



1. A check valve catheter tip for unidirectional high velocity jet flow for an infusion catheter for implantation within a living body for long-time residence therein for the low flow rate infusion of a liquid drug into the body, said catheter tip comprising:
(A) an elongated relatively thick-walled, small diameter, bio-compatible, flexible tubular member,
(B) a central bore in said member, said bore being open at the upstream end and closed at the downstream end,
(C) a radial hole in said tubular member communicating with the bore adjacent to the closed end,
(D) a plug in the closed end of the bore in fluid-tight sealing engagement with the bore wall, said plug having a radial spur engaging said radial hole in the tubular member in fluid-tight sealing engagement,
(E) at least one port in the wall of the tubular member communicating with said bore, said port being located upstream from said plug and closely adjacent thereto,
(F) a thin elastic sleeve surrounding said tubular member in squeezing engagement therewith, the diameter of said sleeve being about 5 to 30 percent less than the outside diameter of said tubular member, said sleeve covering said port and being relatively long compared to the diameter of the catheter to provide a relatively long flow channel, and
(G) means securing the upstream end of said sleeve to the tubular member upstream from the port, the downstream end of the sleeve and the closed end of the catheter tip

terminating in a plane transverse to the longitudinal axis of the catheter to provide a high velocity jet port.

4,657,537
DISPOSABLE ABSORBENT ARTICLES
Roger E. Zimmerer, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 734,425, May 15, 1985, abandoned. This application Aug. 11, 1986, Ser. No. 895,527
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—360 20 Claims



1. In a disposable absorbent article suitable for absorbing discharged body fluids while tending to lower skin pH, said article comprising a liquid impervious backing sheet, a relatively hydrophobic, liquid pervious topsheet and a flexible absorbent core containing hydrophilic fiber material, said absorbent core being positioned between said backing sheet and said topsheet, the improvement which comprises constructing said relatively hydrophobic topsheet at least in part from polymeric non-woven fabric or film material which in its polymer structure contains acidic moieties in an amount sufficient to impart an ion-exchange capacity of at least about 0.25 meq/g to said topsheet such that said topsheet, upon exposure to discharged body fluid, releases protons in an amount which is effective to lower skin pH to within the range of from about 3.0 to 5.5.

4,657,538
PANTY LINER WITH FLOW RETARDING LAYER
Patricia E. Becker, Manalapan Township, Monmouth County, and Kenneth J. Molee, Hightstown, both of N.J., assignors to Personal Products Company, Milltown, N.J.
Filed Jul. 29, 1985, Ser. No. 760,004
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—381 11 Claims



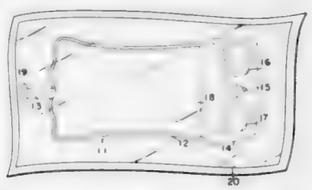
1. A product for absorbing body fluids comprising a body side absorbent layer, a garment side absorbent layer and having therebetween a liquid for retarding means for retarding the flow of liquid from passing from said body side absorbent layer to said garment side absorbent layer; said liquid flow retarding means comprising one or more plies of a web of hydrophobic fibers, said means having a Rising Column Strike Through Value of at least 10 inches of water and an air permeability of at least 20 ft^3/ft^2—min.

4,657,539
WASTE CONTAINMENT GARMENT HAVING ELASTICIZED BARRIER WALL LEG FLAPS
Margaret H. Hasse, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 26, 1985, Ser. No. 727,490
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—385 A 14 Claims



1. A disposable waste containment garment comprising:
a liquid permeable topsheet;
an absorbent core, said absorbent core having side edges;
a liquid impermeable backsheet;
said topsheet being secured to said backsheet, and said absorbent core being positioned between said topsheet and said backsheet;
elastically contractible and longitudinally extending leg flaps, said leg flaps comprising those portions of said backsheet which extend outwardly beyond said side edges of said absorbent core;
an elastic means for rendering said leg flaps longitudinally elastically contractible; and
a leg cuff member affixed to each of said leg flaps, each of said leg cuff members having an inboard facing barrier wall at least ¾ inches from said side edges of said absorbent core,
said barrier wall having a height of at least about 1 mm.

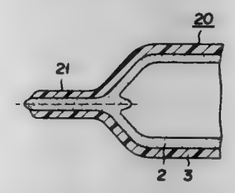
4,657,540
HIGH PRESSURE STEAM STERILIZED PLASTIC CONTAINER HOLDING INFUSION SOLUTION AND METHOD FOR MANUFACTURING THE SAME
Tomiyaki Iwamoto, Tokyo; Naoki Hayakawa, Kashiwa, and Shigeru Matsubara, Tokyo, all of Japan, assignors to Terumo Corporation, Tokyo, Japan
Continuation of Ser. No. 384,190, Jun. 3, 1982, abandoned. This application Jul. 23, 1985, Ser. No. 757,770
Claims priority, application Japan, Jun. 12, 1981, 56-90392
Int. Cl.[4] A61B *19/00*
U.S. Cl. 604—408 21 Claims



1. A high pressure steam sterilized plastic container holding an infusion solution, comprising:
a flexible container of a plastic material,

an infusion solution contained in said flexible container, said infusion solution containing at least one component which is deteriorated substantially upon contact with oxygen, said infusion solution being selected from the group consisting of a concentrated amino acid solution containing tryptophane and a fat emulsion, and
a gas-impermeable package made of gas-impermeable material and within which said flexible container with said infusion solution therein is contained after sterilization of said flexible container, said gas-impermeable package preventing deterioration of said infusion solution over a period of time,
the container being sterilized with said infusion solution contained therein, by:
placing said container with said infusion solution therein in a substantially oxygen-free sterilization atmosphere consisting essentially of saturated steam and nitrogen gas which is inert to said infusion solution, said nitrogen gas pressurizing said saturated steam so that said container with said infusion solution therein is sterilized in said sterilization atmosphere without substantially deteriorating said infusion solution in said container.

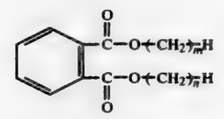
4,657,541
MEDICAL INSTRUMENT
Toshiji Ichikawa, Chofu, and Yoshinori Ohuchi, Fujinomiya, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 4, 1985, Ser. No. 741,000
Claims priority, application Japan, Jun. 7, 1984, 59-115401
Int. Cl.[4] A61B *19/00*
U.S. Cl. 604—408 17 Claims



1. A medical tubular instrument formed of a wall of flexible vinyl chloride resin and enabled to be flattened, which instrument is characterized by the fact that the inner wall thereof whose opposed surfaces come into mutual contact when said instrument is flattened is made of a flexible vinyl chloride resin composition containing cross-linked vinyl chloride resin particles and enabled to form minute protuberances and depressions in said inner wall surfaces, said cross-linked vinyl chloride resin particles having an average diameter of from 0.5 to 150 μm and being in a concentration of from 1.5 to 60% by weight based on the total amount of vinyl chloride resin present in said flexible vinyl chloride resin composition.

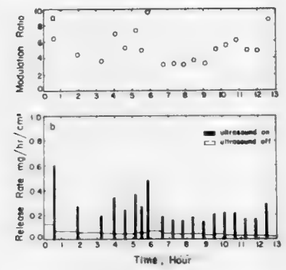
4,657,542
MEDICAL INSTRUMENT USED FOR STORAGE OF BLOOD
Yoshinori Ohuchi, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 25, 1985, Ser. No. 695,052
Claims priority, application Japan, Feb. 2, 1984, 59-17621
Int. Cl.[4] A61B *19/00*
U.S. Cl. 604—410 17 Claims

1. A medical instrument used for at least one of storage of blood and as a conduit for blood, said medical instrument having at least a part thereof which is in contact with blood when said medical instrument is in service, said part comprising a shaped resin composition, said composition comprising 100 parts by weight of a vinyl chloride type resin,
from 10 to 80 parts by weight of a di-n-alkyl ester of phthalic acid of the formula



wherein,
m and n each is an integer of from 8 to 14 and (m+n)/2 has a value of from 9 to 14,
from 1 to 15 parts by weight of an epoxy compound; and
from 0.01 to 8 parts by weight of a metallic soap;
the permeability coefficient of said shaped resin composition to carbon dioxide gas is not less than 2.5×10^3 ml·mm/m^2·day·atm (at 30° C.).

4,657,543
ULTRASONICALLY MODULATED POLYMERIC DEVICES FOR DELIVERING COMPOSITIONS
Robert S. Langer, Somerville, and Joseph Kost, Brookline, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jul. 23, 1984, Ser. No. 633,366
Int. Cl.[4] A61K *9/22*
U.S. Cl. 604—891 6 Claims



1. A process for delivering a biologically active substance on demand comprising the steps of:
combining a biologically active substance with a biocompatible polymeric composition as an admixture;
forming said admixture into a shaped, solid polymeric matrix;
implanting said solid polymeic matrix in-vivo at a preselected site such that said solid implanted matrix is in a liquid environment; and
exposing said implanted solid polymeric matrix to ultrasonic energy for a predetermined time to effect cavitation of said solid polymeric matrix by rapid compression with subsequent expansion of liquid or solid surrounding said solid polymeric matrix thereby to control the rate of release of said biologically active substance from said matrix over a specific time period wherein the rate of release is changed during said time period.

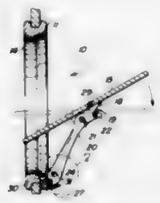
VOL 1077 ISS 2 APR 14 1987 UMI

4,657,544
CARDIOVASCULAR GRAFT AND METHOD OF FORMING SAME
Leonard Pinchuk, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.
Filed Apr. 18, 1984, Ser. No. 601,676
Int. Cl.[4] A61F 2/06
U.S. Cl. 623—1 16 Claims



1. A graft particularly adapted for cardiovascular use, said graft comprising a tube which has been reaction injection molded, cast molded, or extruded from a nonsolvent, two component hydrophobic biocompatible polymer system, which is initially formed with water soluble inorganic salt crystals mixed with the system, and which has a honeycomb of interconnecting cells throughout the thickness of the wall of the tube formed by the leaching of said water soluble inorganic salt crystals from the tube.

4,657,545
HEART VALVE
Henry S. Zibelin, 1423 26th St., Winter Haven, Fla. 33881
Filed Apr. 29, 1986, Ser. No. 857,188
Int. Cl.[4] A61F 2/24
U.S. Cl. 623—2 15 Claims



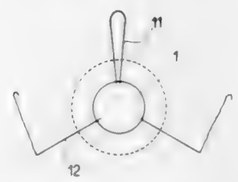
1. A heart valve comprising in combination:
a circular valve ring having a passageway therethrough and forming a valve seat around the periphery of the passageway therethrough;
a disk shaped valve element shaped to cover the passageway through the valve ring and to seat in the valve seat formed therein;
a valve element link bracket fixably attached to one side of the valve element;
a valve link member movably attached to said valve element link bracket; said valve link member having a magnet formed in one end portion thereof;
a valve ring link bracket fixably attached to said valve ring and having said link movably attached thereto; whereby said valve element can move on said link member and said link member can move on said ring during the opening and closing of said valve element; and
said circular valve ring having a valve link member attaching bracket formed thereon for movably supporting the valve link member thereto.

4,657,546
INTRAOCULAR LENS
Steven P. Shearing, 3220 W. Charleston Blvd., Las Vegas, Nev. 89102
Continuation-in-part of Ser. No. 511,906, Jul. 8, 1983, abandoned. This application Jan. 22, 1985, Ser. No. 693,108
Int. Cl.[4] A61F 2/16
U.S. Cl. 623—6 22 Claims



1. An intraocular lens comprising a segmented lens body comprising a plurality of lens segments normally held in a planar and abutting relationship, and a flexible, distortable and memory-retaining frame member separate from said lens segments and in which said lens segments are secured, said frame member having fold lines which partially overlie interfacing edges of said segments, whereby said lens segments may be temporarily overlapped for insertion through a corneal incision into the eye by folding said frame member along said fold lines.

4,657,547
INTRAOCULAR LENS
Carlo Maggi, Rome, Italy, assignor to Surgivision Limited, St. Helier Jersey, Channel Islands
Continuation of Ser. No. 386,943, Jun. 10, 1982, abandoned. This application Apr. 16, 1986, Ser. No. 852,371
Claims priority, application Italy, Jun. 18, 1981, 35872/81[U]
Int. Cl.[4] A61F 2/16
U.S. Cl. 623—6 11 Claims

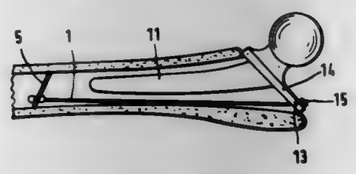


1. An intraocular lens comprising a lens body and a supporting haptic part whereby the lens body is adapted to be positioned in the anterior chamber of the eye, said lens having a total length greater than 19 mm, said haptic part including at least three flexible filiform elements fixably attached to the edge of said lens body, each of said filiform elements extending from said lens body a length of at least 7 mm and adapted to allow at least one length of said filiform elements to be embedded in a surgically made non-perforating incision located on the outer surface of the sclera wall.

4,657,548
DELIVERY SYSTEM FOR IMPLANTATION OF FINE PARTICLES IN SURGICAL PROCEDURES
Joseph Nichols, Princeton, N.J., assignor to Helitrex, Inc., Princeton, N.J.
Continuation of Ser. No. 649,281, Sep. 11, 1984, abandoned. This application May 1, 1986, Ser. No. 858,041
Int. Cl.[4] A61F 1/00
U.S. Cl. 623—10 13 Claims

1. A delivery system for implantation of fine particles in surgical procedures comprising a collagen tube or pouch filled with said particles, said collagen tube or pouch comprising a cast collagen film having a plurality of perforations therein, said perforations being larger than the size of said particles, said tube or pouch being sealed.

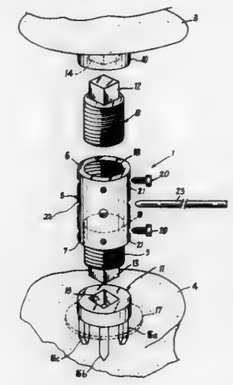
4,657,549
ANCHORING ROD FOR TUBULAR BONES
Arnold Keller, Kayhude, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Fed. Rep. of Germany
Continuation of Ser. No. 630,037, Jul. 12, 1984, abandoned. This application Aug. 7, 1985, Ser. No. 763,751
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1983, 3330062
Int. Cl.[4] A61F 2/28, 5/04
U.S. Cl. 623—16 7 Claims



1. Apparatus for anchoring a tubular bone having a medullary cavity of a given diameter, said apparatus comprising:
a tension rod;
an ablong plate having a longitudinal axis greater than said given diameter, a transverse axis less than said given diameter, and an eccentric hole sized for loose passage of said tension rod therethrough; and
first and second heads along said tension rod capable of retaining said oblong plate therebetween.

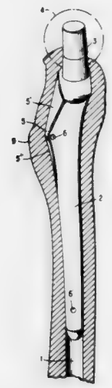
4,657,550
BUTTRESSING DEVICE USABLE IN A VERTEBRAL PROSTHESIS
Youssef H. Daher, 9 Ter Avenue de la Guillarde, 34000 Montpellier, France
Filed Jan. 16, 1986, Ser. No. 819,353
Int. Cl.[4] A61F 2/44, 5/04
U.S. Cl. 623—17 8 Claims

1. A device for maintaining the normal spacing between two vertebrae defining, in the vertebral column, the ends of a cavity resulting from the removal of at least a part of a vertebra, said device comprising:
buttressing means including a connecting piece in the form of an elongated nut and a pair of threaded rods engaging said nut, each rod having a free end extending from said nut, said rods being movable with respect to each other in the connecting piece in a direction parallel to the axis of the vertebral column, and
anchorage means including a base provided with a plurality of anchorage points, said base being attached to each of said free ends for anchoring said device between said vertebrae,
at least one of said bases being removably attached to its associated free end by connecting means including a tenon on one of said free end and said associated base and a mortice on the other of said free end and said base, said



mortice and said tenon having corresponding cross-sections such that said tenon fits into said mortice.

4,657,551
SHAFT FOR COLLARLESS HIP JOINT PROSTHESIS
Hermann Ecke, Giessen, Fed. Rep. of Germany, assignor to Mecron Medizinische Produkte GmbH, Berlin, Fed. Rep. of Germany
Filed May 23, 1983, Ser. No. 497,250
Claims priority, application Fed. Rep. of Germany, May 21, 1982, 3219681; Oct. 10, 1982, 3237203
Int. Cl.[4] A61F 2/32
U.S. Cl. 623—23 9 Claims



1. A collarless hip prosthesis comprising a support for a joint head formed at a proximal end of a shaft, said shaft having proximal and distal regions wherein said shaft is shaped to be inserted into a femur channel and wherein said distal and proximal regions of said shaft define longitudinal axes therethrough whereby said axes intersect in said proximal region forming an obtuse angle therebetween in the direction of the lateral-medial plane of the femur;
said shaft having a substantially elliptical cross section defined by a major and minor axis wherein said major axis lies in the lateral-medial plane; and said shaft further comprising, in said proximal region, a unilateral surface pro-

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jection forming a shoulder, said shoulder having a slightly concave, essentially broad and flat upper end surface extending from said proximal end to a crest line located to be adjacent the lesser trochanter of the femur and in the vicinity of said intersection after said shaft has been inserted, said crest line defining a maximum cross section of said shaft and wherein the shaft defines a substantially smooth and continuous downward taper extending from said crest line to said distal end; whereby

said shaft can be initially inserted into a femur channel having a generally oval opening in such a manner that the region of said unilateral projection is located so that said major axis is aligned with a major axis of the opening, and then further inserted and rotated to permit passage of the proximal region of the shaft through the opening, with the rotation serving to lock said shaft in said channel by allowing said shoulder to seat in a thickened portion of the lesser trochanter creating a unilateral bayonet connection such that minimum additional fixation is required to retain said prosthesis in the channel.

4,657,552

PROSTHESIS OF THE HIP

Kurt Karpf, Holderbank, Switzerland, assignor to Emil Schenker AG, Schönenwerd, Switzerland

Filed Mar. 28, 1985, Ser. No. 716,834

Claims priority, application Switzerland, Apr. 2, 1984, 1656/84

Int. Cl.⁴ A61F *2/32*

U.S. Cl. 623—23 **11 Claims**

1. In a hip prosthesis, a cephalic femoral component comprising an elongated stem which is implantable in the medullar canal of the femur and has a relatively wide longitudinally extending front and rear surfaces which are disposed opposite each other and relatively narrow longitudinally extending lateral and medial surfaces which are disposed opposite each other, said stem having a rounded tip which is distal from the hip when the stem is implanted in the medullar canal and the width of said front and rear surfaces decreasing in a direction toward said tip, at least one of said lateral and medial surfaces having a convex outline and the radius of curvature of said one surface in each of a plurality of planes which extend transversely to the longitudinal axis of said stem at least approximating the shortest distance between said one surface and that point of the other of said lateral and medial surfaces which is located in the respective plane substantially midway between said front and rear surfaces, the radius of curvature of said one surface decreasing in a direction toward said tip.



4,657,553

CHEMICAL SUBSTANCES

David E. M. Taylor, Royal College of Surgeons of England, 35/43 Lincoln's Inn Fields, London WC2A 3PN, England

Filed Jul. 23, 1985, Ser. No. 758,060

Claims priority, application United Kingdom, Jul. 24, 1984, 8418772

Int. Cl.⁴ A61F *2/00*

U.S. Cl. 623—66 **8 Claims**

1. Soft tissue implants, for the replacement and/or enhancement of human or animal soft tissue, composed of a hydrogel comprising (a) a gelable polysaccharide and/or protein or polypeptide and (b) a polymer of a hydrophilic acrylic and/or methacrylic acid derivative.

4,657,554

WATER-SOLUBLE AZAPHTHALOCYANINES AND THEIR USE AS PHOTOACTIVATORS IN BLEACHING

Gerhard Reinert, Allschwil; Gerd Hölzle, Liestal, and Gregor Graf, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

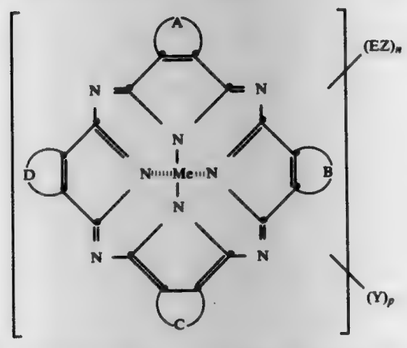
Filed May 22, 1985, Ser. No. 736,913

Claims priority, application Switzerland, May 28, 1984, 2609/84

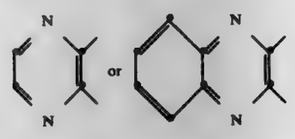
Int. Cl.⁴ A01N *55/02*; C07D *487/22*; C09B *47/04*; D06L *3/02*

U.S. Cl. 8—107 **4 Claims**

1. A process for carrying out a reaction with singlet oxygen, which comprises bringing a compound of the formula



in which Me is Al(III), Zn(II), Ge(IV) or Sn(IV), E is a sulfo, carboxyl, phosphate, sulfate, sulfinyl, disulfimide or sulfocyanimide group or a radical containing one or more of the above mentioned groups, Z is a cation, Y is halogen, n is a 1 to 3 and p is a 0 to 2, the sum n+p being at most 8 and A, B, C and D independently of one another completing a benzene ring or a ring of the formula



at leat one of the rings completed by A, B, C, or D being one of the said heterocyclic rIngs into contact with a substrate in the presence of oxygen and water and irradiating with light.

4,657,555

PROCESS FOR RENDERING WOOL SLIVER SHRINKPROOF, AND APPARATUS FOR PERFORMING THE PROCESS

Gerold Fleissner, Chur, Switzerland, assignor to Fleissner GmbH & Co., Maschinenfabrik, Fed. Rep. of Germany

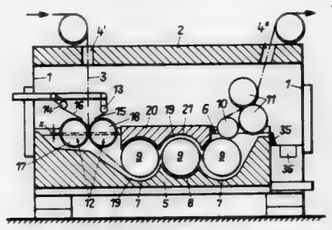
Filed Dec. 24, 1984, Ser. No. 685,853

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1984, 3403593

Int. Cl.⁴ D06M *3/12*

U.S. Cl. 8—128 R **6 Claims**

1. A process for rendering wool slivers shrinkproof in an aqueous solution of a hypochlorous acid and with subsequent squeezing out, washing, and drying, wherein an aqueous solution of hypochlorous acid having a pH of 2.0–3.0 is initially applied to the wool slivers on both sides and the initially treated slivers are introduced into a bath made up of a solution of said hypochlorous acid having a reduced acid concentration, said process being characterized in that a fresh aqueous solution of hypochlorous acid is obtained from reaction of gaseous chlorine and water; the fresh aqueous solution of hypochlorous acid is continuously applied and is brought into all-around contact with the slivers at a temperature of about 10°–25° C. with a multi-fold excess, based on the weight of the dry slivers; the slivers are passed immediately thereafter through a guide slot, together with the applied excess quantity of the solution to remove any occluded gas bubbles from the slivers and the slivers are thus completely wetted; the wetted



slivers are then transported continuously to a squeezing-out zone through the bath made up of an aqueous solution of hypochlorous acid wherein the concentration of acid is reduced via a small-volume guide channel together with a portion of the applied solution; and the slivers are passed to a squeezing-out zone wherein the aqueous solution is squeezed from the slivers.

4,657,556

HAIR COMPOSITION AND METHOD CONTAINING GLYCOSYLATED POLYETHERS

Henri Sebag, Paris, and Guy Vanlerberghe, Claye Souilly, both of France, assignors to L'Oreal, Paris, France

Filed Mar. 6, 1985, Ser. No. 708,886

Claims priority, application France, Mar. 7, 1984, 84 03536

Int. Cl.⁴ A61K *7/00, 7/06, 7/08, 7/13*

U.S. Cl. 8—405 **15 Claims**

1. A cosmetic composition for the hair selected from the group consisting of shampoo, after shampoo composition, conditioner, rinse, coloring shampoo and dyeing composition comprising from 0.1 to 30 weight percent based on the total weight of the composition of a surfactant or mixture of surfactants having the formula

$$R\text{-}CH(O\text{-}C_3H_6O_2(G)_{c/y})_{\overline{u}}O\text{-}C_3H_6O_2(G)_{c/y})_{\overline{u}}(G)_d\text{-}H$$
$$O\text{-}C_3H_6O_2(G)_{a/x})_x\text{-}(G)_b\text{-}H$$

wherein

R represents a C_{10}–C_{20} alkyl, alkenyl or alkylaryl radical,

G represents a $C_6H_{10}O_5$ radical derived from a hexose having the formula $C_6H_{12}O_6$,

u represents 0 or 1,

x represents 0 or an integer or decimal number less than or equal to 10,

y represents an integer or decimal number equal to or less than 10,

with the proviso that $1 \leqq x+y \leqq 10$,

a, b, c and d each independently represent 0 or an integer or decimal number less than or equal to 5,

with the proviso that $1 \leqq a+b+c+d \leqq 5$ and

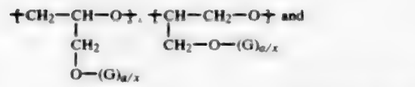
$$0.7 \leqq \frac{x+y}{a+b+c+d} \leqq 4$$

when u represents 0, each of x, a and b represents 0, and y represents an integer or decimal number ranging from 1.5 to 10;

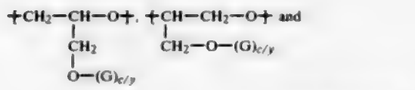
VOL 1077 ISS 2 AP 14 1987 UMI

when R represents alkylaryl, each of u, x, a and b represents 0;

the units $-C_3H_6O_2(G)_{a/x}]$ mainly represent the following three structures:



and the units $-C_3H_6O_2(G)_{c/y}]$ mainly represent the following three structures:



in a cosmetically acceptable vehicle selected from the group consisting of aqueous solution, hydroalcoholic solution, aqueous dispersion, hydroalcoholic dispersion, paste, gel, emulsion, solid and aerosol.

4,657,557

SHEETS FOR SUBLIMATION TRANSFER RECORDING

Toshio Niwa, Yokohama; Yukichi Murata, Sagamihara, and Takashi Morishima, Machida, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Apr. 8, 1985, Ser. No. 720,758

Claims priority, application Japan, Apr. 23, 1984, 59-81617

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 8—471 **4 Claims**

1. A sheet for sublimation transfer recording composed of a base coated with an ink containing non-ionic sublimable dye for sublimation heat-sensitive transfer and further coated with a heat-resistant resin characterized by using water-soluble cellulose type derivative as the het-resistant resin.

4,657,558

METHOD FOR CONTINUOUS DYEING POLYESTER PILE FABRICS: AROMATIC NITRILE ETHER OR OXYETHYLATED CHLOROPHENOL FIXING ACCELERATOR

Dieter Huzoll, Leverkusen, Fed. Rep. of Germany, assignor to Collins & Aikman Corporation, New York, N.Y.

Filed Sep. 20, 1984, Ser. No. 653,941

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1984, 3414306

Int. Cl.⁴ D06P *1/62, 3/54, 5/20*

U.S. Cl. 8—603 **16 Claims**

1. A method of dyeing textile fabrics formed at least partially of polyester fibers comprising

(1) impregnating the fabric in a dyestuffs applicator with an aqueous dyebath which comprises:

(a) 0.5 to 5 g/l of a thickener;

(b) disperse dyestuffs in an amount sufficient to dye the fibers to the desired depth of color;

(c) 2 to 100 g/l of a partially sulfated adduct of ethylene oxide with an alkyl phenol or C_8 to C_{16} fatty alcohols;

(d) 2 to 60 g/l of nonionic or anionic surfactants; and

(e) 5 to 50 g/l of at least one organic compound selected from the group consisting of aromatic nitrile ethers and ethoxylated chlorophenols;

(2) transferring the fabric from the dyestuff applicator to a heater and heating the wet, impregnated fabric for a time and at a temperature sufficient to fix the dyestuffs on the fabric; and

(3) washing and drying the thus dyed fabric.

4,657,559

PROCESS FOR SEED CRYSTAL PREPARATION FOR PHOSPHORIC ACID CRYSTALLIZATION

Phillip D. Mollere; Vivian C. Astley, both of New Orleans, and Jody J. Taravella, Harvey, all of La., assignors to 501 Freeport Research and Engineering Company, New Orleans, La.

Filed May 8, 1985, Ser. No. 731,969

Int. Cl.⁴ B01D *9/02*

U.S. Cl. 23—297 **5 Claims**



1. A method for continuously preparing ultra fine crystals of phosphoric acid hemihydrate suitable for use as seed crystals in a crystallization process, which method comprises;

(a) cooling a phosphoric acid liquid containing between 60% and 66% P_2O_5, and less than 0.1% iron (as Fe_2O_3) to a temperature below −5° C. without nucleation thereof, so as to produce a subcooled solution of phosphoric acid;

(b) continuously supplying said subcooled solution to a crystallization vessel containing crystallized orthophosphoric acid hemihydrate, which vessel is of a small size relative to the rate at which said subcooled acid is supplied thereto, so that said phosphoric acid is retained therein for a period of time not to exceed 10 minutes and in which the phosphoric acid is rapidly agitated, whereby ultra fine crystals of phosphoric acid hemihydrate are obtained, the majority of which are of a length of less than 0.3 mm and

(c) continuously withdrawing from said crystallization vessel a magma containing said ultra fine orthophosphoric acid hemihydrate crystals.

4,657,560

AQUEOUS COAL DISPERSIONS

Knut Oppenlaender, Ludwigshafen; Karl Stork, Lampertheim; Friedrich Hovemann, Hockenheim, and Erich Schwartz, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 30, 1985, Ser. No. 781,888

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1984, 3435945

Int. Cl.⁴ C10L *1/32*

U.S. Cl. 44—51 **8 Claims**

1. An aqueous, pumpable, free-flowing coal dispersion containing from 65 to 80% by weight of ground coal, and from 35 to 20% by weight of water, the percentages being based on the total weight, wherein the dispersion contains, as a nonionic dispersant, from 0.1 to 1.5% by weight, based on the total weight of the mixture, of an oxyethylation product of a mixture of straight-chain, saturated primary fatty alcohols which consists of from 0.1 to 2.0% by weight of a C_{12}-alcohol, from 3.0 to 6.0% by weight of a C_{14}-alcohol, from 20.0 to 35.0% by weight of a C_{16}-alcohol, from 55.0 to 75.0% by weight of a C_{18}-alcohol and from 0.5 to 3.0% by weight of a C_{20}-alcohol, containing from 180 to 230 ethylene oxide units, based on the mean molecular weight of the alcohols.

4,657,561

METHOD OF RECOVERING FUEL FROM COAL ASH

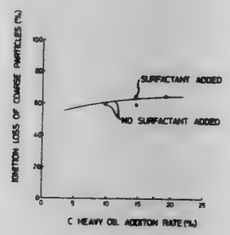
Hayami Itoh, Himeji, and Chiaki Nagai, Kobe, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation of Ser. No. 451,626, Dec. 20, 1982. This application Sep. 26, 1984, Ser. No. 655,981

Claims priority, application Japan, Dec. 22, 1981, 56-207313

Int. Cl.⁴ C10L *1/32*

U.S. Cl. 44—51 **11 Claims**



1. A method for recovering useful solid fuel from coal ash of combustion which comprises:

(a) collecting ash of combustion separately from exhaust gases both formed in a thermal recovery unit where previously comminuted solid particulate coal is combusted with air whereby heat is generated, which ash of combustion consists essentially of non-combusted carbon and non-carbon ash product both in solid particulate form, the non-combusted carbon having undergone denaturation caused inherently by the heat;

(b) adding water, a binder, and a surfactant to the collected ash of combustion, the amount of said water added to said ash being greater than a 1:1 weight ratio with respect to said ash, said binder being a high viscosity heavy hydrocarbon oil, the amount of said oil added to said ash being in the range between about 1 to 50 weight percent with respect to the amount of non-combusted carbon in said ash, said surfactant being selected from the group consisting of an anionic surfactant, a cationic surfactant, a nonionic surfactant, an ampholytic surfactant, and mixtures thereof, the amount of said surfactant added to said ash being in the range between about 0.01 to 5.0 weight percent with respect to the amount of non-combusted carbon in said ash;

(c) agitating the mixture formed by step (b) thereby to produce preferential agglomeration of the non-combusted carbon in particulate form into coarse particles of high carbon content leaving the non-carbon ash product substantially as it stands;

(d) subjecting the mixture formed by step (c) to separation so that the coarse particles of high carbon content are collected separately from the non-carbon ash product;

(e) recovering the coarse particles of high carbon content for use as a solid fuel; and

(f) recovering the non-carbon ash product.

4,657,562

COLD FLOW IMPROVING FUEL ADDITIVE COMPOUND AND FUEL COMPOSITION CONTAINING SAME

Joan C. Axelrod, Media, Pa., and Sheldon Chibnik, Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 21, 1985, Ser. No. 789,815

Int. Cl.⁴ C10L *1/22*

U.S. Cl. 44—71 **20 Claims**

1. A product of reaction useful for improving the low temperature characteristics of hydrocarbyl distillate fuels produced from the reaction of (1) an amide derivative of a branched chain monocarboxylic acid having at least one tertiary amine group, (2) an epoxide having from 2 to about 18 carbon atoms and (3) an additional carboxylic acid selected from branched chain monocarboxylic acids or linear monocarboxylic acids and wherein said reactants are reacted in substantially stoichiometric or equimolar amounts at temperatures ranging from about 50° to about 175° C. under autogenous pressure in 0.5 to about 3 hours or more.

4,657,563

RESIN BONDED GRINDING WHEELS WITH FILLERS

Robert H. Licht, Hudson, and Robert L. Holden, Auburn, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Oct. 31, 1985, Ser. No. 793,440

Int. Cl.⁴ B24D *3/00*

U.S. Cl. 51—308 **9 Claims**

1. A resin bonded grinding wheel containing an abrasive grain adapted for grinding metal, said wheel containing grinding aid means including a grinding aid which is a particulate alumino-silicate selected from the group consisting of sillimanite, mullite, kyanite, andalusite, and mixtures thereof.

4,657,564

FLUORINATED POLYMERIC MEMBRANES FOR GAS SEPARATION PROCESSES

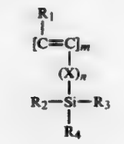
Michael Langsam, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 13, 1985, Ser. No. 808,784

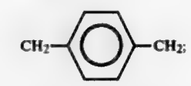
Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 **29 Claims**

1. A process for separating a feed gas mixture containing at least two components, said process comprising bringing said feed gas mixture into contact with a treated, semi-permeable, polymeric membrane comprising a polymer, cast into membrane form, having the general structural formula:

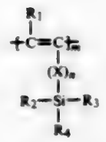


wherein R_1 is a linear or branched C_1–C_4 alkyl group; R_2 and R_3 are independently linear or branched C_1–C_6 alkyl groups; R_4 is a linear or branched C_1–C_{12} alkyl or aryl group; X is a C_1–C_3 alkyl group or

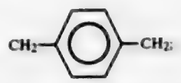


m is at least 100; and n is 0 or 1, which has been treated with a reactive source of fluorine for a time sufficient to modify the membrane such that the O_2/N_2 selectivity ratio of the membrane is increased by at least 50% over that of the membrane prior to treatment with the reactive elemental fluorine source.

10. A treated, semi-permeable, polymeric membrane having improved selectivity for use in separating components of a feed gas mixture, said membrane comprising a polymer, cast into membrane form, having the general structural formula:



wherein R_1 is a linear or branched C_1–C_4 alkyl group; R_2 and R_3 are independently linear or branched C_1–C_6 alkyl groups; R_4 is a linear or branched C_1–C_{12} alkyl or aryl group; X is a C_1–C_3 alkyl group or



m is at least 100; and n is 0 or 1, which has been treated with a reactive source of flourine for a time sufficient to modify the membrane such that the O_2/N_2 selectivity ratio of the membrane is increased by at least 50% over that of the membrane prior to treatment with the reactive elemental fluorine source.

4,657,565

PROCESS FOR THE SEPARATION OF FLUIDS OF DIFFERENT VAPOR PRESSURES

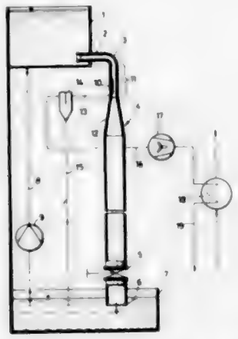
Helmut E. Siekmann, Berlin/Zehlendorf; Jürgen Bässler, Dortmund, and Winfried Liebig, Iserlohn, all of Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund and Helmut E. Siekmann, Berlin, both of, Fed. Rep. of Germany

Filed Jul. 31, 1985, Ser. No. 761,192

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1984, 3428534

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—55 **4 Claims**



1. Process for the separation of fluids of different vapor pressures, comprising the steps of withdrawing the fluid to be treated from a high-level reservoir, passing said fluid through at least one pipe bend, and then passing said fluid to a drop-pipe in such a way that a cavitation zone is formed at least in areas in the flow upstream, within and downstream of said pipe bend, a cavitated partial flow being withdrawn in said cavitation zone.

4,657,566

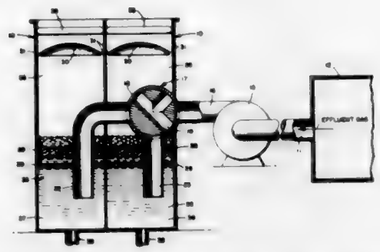
EFFLUENT CLEANSING METHOD AND DEVICE

Joseph G. Wintering, 683 Clover Rd., Wauconda, Ill. 60084, and William C. Werle, 342 N. Arsenal St., Indianapolis, Ind. 46201

Filed Nov. 12, 1985, Ser. No. 796,996

Int. Cl.⁴ B01D *47/02*

U.S. Cl. 55—73 **4 Claims**



1. An apparatus for cleansing the effluent from a combustible gas zone of a chimney so as to substantially reduce the amount of pollutant gas passing into the atmosphere from said effluent, said apparatus comprising:

a substantially inert-compositioned inlet flue positioned in said combustible gas zone;

a centrifugal air pump disposed in said flue, said air pump adapted to move effluent from said zone into the liquid portion of a reservoir having a liquid portion and a non-liquid portion;

a plurality of vertically spaced filters disposed within said liquid portion, said filters adapted to trap contaminants and dissipate bubbles that may form in said liquid portion when effluent is moved therein;

a cone-shaped baffle disposed in said non-liquid portion, said baffle trapping contaminated vapor escaping from said liquid portion, condensing the vapor, and returning the condensed vapor to the liquid portion for further cleansing; and

a sensor disposed upwardly of said baffle, said sensor detecting pollutant gas escaping through said baffle.

4,657,567

DUST SEPARATION APPARATUS

Bo Callgren, Strömbågen 3,, 803 45 Gävle, and Eric Svensson, Gävle, both of Sweden, assignors to Bo Callgren, Gävle, Sweden

Filed Jun. 18, 1985, Ser. No. 746,243

Claims priority, application Sweden, Jul. 4, 1984, 8403563

Int. Cl.⁴ B03C *3/10, 3/14, 3/74*

U.S. Cl. 55—109 **8 Claims**

1. A dust separation apparatus of the type having a cyclone consisting of a first cylindrical section (1) provided with a tangentially located inlet duct (4) for dust-loaded waste gases, a second cylindrical section (2) therebelow, below that a third cone-shaped section (3) having a dust outlet (6) and a chimney drum (8) through which gas leaves the apparatus; comprising in combination:

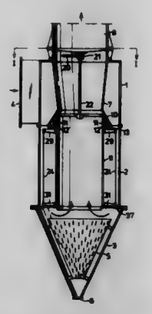
a rotor (9) located rotatably in said second section (2) and having a diameter smaller than that of said second section;

means connected to said rotor for effecting rotation of said rotor;

at least one emission electrode (24) carried on the outside of said rotor;

a scraping device (40); and

mounting means for mounting said scraping device on the outside of said rotor (9) such that said scraping device scrapes against the inner surface of said second section (2),



which inner surface constitutes a precipitation electrode for dust particles charged by the emission electrode.

4,657,568

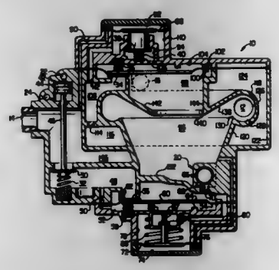
APPARATUS FOR VOLUMETRICALLY CONTROLLING THE FLOW OF A GAS AND LIQUID MIXTURE

James S. Jones, 45 Crown Place, Richardson, Tex. 75080

Filed Oct. 2, 1985, Ser. No. 782,971

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—166 **6 Claims**



1. Apparatus for volumetrically controlling the flow of a vapor and liquid mixture comprising:

an inlet and at least two outlets, a first outlet being a liquid outlet and the second outlet being a vapor outlet;

volumetric liquid control means for maintaining a predetermined constant volume of liquid flowing between the inlet and liquid outlet independent of changes in liquid pressure;

separation means for separating liquid from vapor and located between the inlet and the liquid control means;

liquid back pressure sensing means for sensing liquid back pressure downstream of the volumetric liquid control means;

vapor dump control means for controlling the dumping of vapor through the vapor outlet and located between the separation means and the vapor outlet;

vapor pressure sensing means for sensing pressure between the separation means and vapor control means; and

the vapor dump control means adapted for operating in response to the liquid back pressure sensing means and vapor pressure sensing means to progressively increase vapor flow through the vapor outlet at higher liquid back pressures.

4,657,569

EQUIPMENT FOR THE GENERATION OF CAVITATION

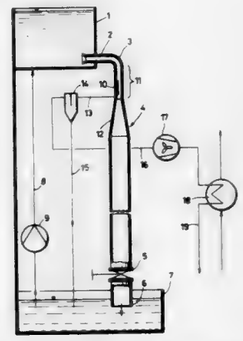
Helmut E. Siekmann, Hermannstrasse 3A, 1000 Berlin 37/Zehlendorf (West), Fed. Rep. of Germany, assignor to Uhde GmbH, Dortmund and Helmut E. Siekmann, Berlin, both of, Fed. Rep. of Germany

Filed Jul. 31, 1985, Ser. No. 761,186

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1984, 3428540

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—189 **6 Claims**



1. Apparatus for the generation of cavitation within a flowing liquid, comprising a high-level reservoir containing said liquid, and means defining a flow path extending vertically downward from said reservoir for said liquid, said means comprising an outlet nozzle from said reservoir, at least one pipe bend connected to said outlet nozzle and a drop-pipe and control valve in the vicinity of a lower end of said drop-pipe.

4,657,570

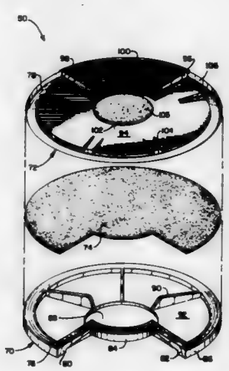
AIR FILTER DEVICE

Donald D. Gronholz, Bloomington; Kirk A. Schneider, Eden Prairie, and James R. Scott, Chanhassen, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 20, 1985, Ser. No. 714,040

Int. Cl.⁴ B01D *46/10*

U.S. Cl. 55—385 E **2 Claims**



1. A filter device for a sealed disk drive system, said system including a magnetic disk and a rotatable spindle for receiving the disk, said spindle having a free end, said system further including a housing having a wall spaced apart from the free

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end of said spindle, said wall having a first opening therein, said wall having a flat interior surface, said device comprising:

a recirculating filter media with a cut edge;

a body member having a bottom with an outlet opening therein and first gusset members rising above said bottom for supporting said recirculating filter media spaced outwardly from said outlet opening, said body member further having a first endless mating structure;

a cover member having a top with a flat upper surface and a second opening therein, said cover member further having second gusset members extending beneath said top to aid in maintaining upper surface flatness, said cover member also further having a second endless mating structure extending beneath said top to mate with said first endless mating structure of said body member, said cover member still also having inlet openings between said top and said second endless mating structure;

first means for sealing said first and second mating structures together;

means for holding said recirculating filter media such that air flowing through said inlet openings must go through said recirculating filter media to reach said outlet opening;

means for encapsulating the cut edge of said recirculating filter media;

a breather filter media;

second means for sealing said breather filter media to said cover member so that said breather filter media extends across said second opening; and

third means for sealing the flat upper surface of said cover to the flat interior surface of said housing so that air may pass through said first and second openings and said breather filter media;

whereby air enters and exits said sealed disk drive system through said first and second openings and said breather filter media and recirculates within said housing as a result of said rotating disk to pass through said inlet openings, said recirculating filter media and said outlet opening.

4,657,571

PROCESS FOR THE RECOVERY OF HEAVY CONSTITUENTS FROM HYDROCARBON GASEOUS MIXTURES

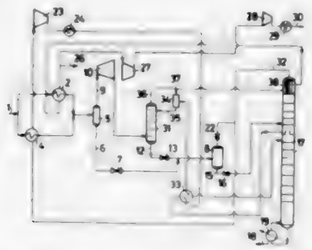
Luigi Gazzi, Milan, Italy, assignor to Snamprogetti S.p.A., Milan, Italy

Filed Jun. 19, 1985, Ser. No. 746,331

Claims priority, application Italy, Jun. 29, 1984, 21652 A/84; Oct. 24, 1984, 23287 A/84

Int. Cl.⁴ F25J *3/00*

U.S. Cl. 62—17 **18 Claims**



1. Process for the recovery of heavy constituents from a high-pressure hydrocarbon gaseous mixture comprising the following steps:

(a) cooling and partial condensation of the hydrocarbon gaseous mixture;

(b) separation of the liquid condensed from the gaseous mixture and feeding of the same liquid to a fractionation column;

(c) turbo-expansion of non-condensed gaseous mixture;

(d) separation of the liquid condensed on turbo-expansion of the gaseous mixture and feeding of the same liquid to the said fractionation column, from whose bottom the heavy constituents are recovered;

(e) recompression both of the gases streaming from the fractionation column and of the gases separated in the step (d), separately or together, up to the consignment pressure of the treated gas,

characterized in that the separation of the liquid condensed on the turbo-expansion of the gaseous mixture is carried out in a separator-absorber in whose lower portion in addition to the condensed liquid a liquid is collected, which is obtained by means of the absorption of non-condensed heavy constituents by means of an absorbent oil constituted by a hydrocarbon liquid, substantially free from the heavy constituents to be recovered, obtained from the cooling and the at least partial condensation of the gases streaming from the fractionation column, previously deprived of at least a portion of the heavy constituents by means of a dephlegmator with which the same fractionation column is provided and compressed to a pressure above that of said fractionation column.

4,657,572

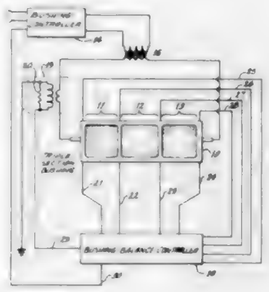
BUSHING BALANCE CONTROLLER AND METHOD FOR USING SAME

Avinash J. Desai, Reynoldsburg, Ohio, and Gerhard Kreikebaum, Knoxville, Tenn., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 14, 1986, Ser. No. 839,676

Int. Cl.⁴ C03B *5/02*

U.S. Cl. 65—1 **5 Claims**



1. An apparatus for balancing the temperature in each segment of a multiple segment glass fiber forming bushing comprising:

(a) a means to develop an error signal for each segment of the bushing, each said error signal being proportional to the difference in the temperature of that segment of the bushing and a set point temperature;

(b) a means to sum all said error signals;

(c) a means to develop an average of all said error signals;

(d) a means to divert current from each segment of the bushing whose error signal is greater than said average error signal; and

(e) a means to supply current to the bushing when said sum of the error signals is greater than a preset value.

4,657,573

MOULD ARRANGEMENT FOR A GLASSWARE FORMING MACHINE

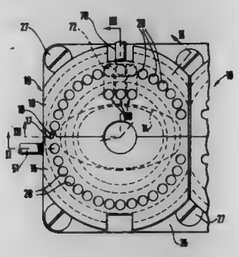
Stanley P. Jones, Tickhill, United Kingdom, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Feb. 13, 1986, Ser. No. 829,370

Claims priority, application United Kingdom, Feb. 13, 1985, 8503604

Int. Cl.⁴ C03B *9/20*

U.S. Cl. 65—265 **2 Claims**



1. A mould arrangement for use in a cyclically operating glassware forming machine, the arrangement comprising a mould comprising a bottom plate defining a bottom portion of a cavity of the mould in which molten glass is moulded in the operation of the machine, and two side portions defining side portions of the cavity, each side portion being movable in a cycle of operation of the machine to a first portion thereof in which it engages the bottom plate and the other side portion to co-operate in defining the mould cavity so that moulding can take place and to a second position thereof in which the side portions are separated to allow moulded glass to be removed from the mould cavity, the side portions also defining cooling passages passing upwardly through the side portions through which air can pass to cool the side portions, the cooling passages in each side portion each having an entrance in a bottom surface of that side portion, and the mould arrangement also comprising a plenum chamber extending beneath the first or the second position of each side portion and having one or more exits which open upwardly and communicate, when the side portion is above the plenum chamber, either directly or through vertical passages in the bottom plate, with the entrances of the cooling passages so that air is supplied to each cooling passage at substantially the same pressure, the plenum chamber also having an entrance connected to air supply means operable to blow air into the plenum chamber, wherein the exit or exits of the plenum chamber are formed in a distribution plate which extends above the plenum chamber and beneath the bottom plate and at least one air supply passage extends in the thickness of the distribution plate from a connection with further air supply means operable to blow air into the air supply passage and an exit defined by the distribution plate which opens upwardly and communicates, when a side portion is above the plenum chamber, either directly or through a vertical passage in the bottom plate, with one or more further cooling passages in the side portion.

4,657,574

MOULD PORTION WITH COOLING MEANS FOR USE IN MOULDING MOLTEN GLASS

Thomas V. Foster, Doncaster, England, assignor to Emhart Industries, Inc., Farmington, Conn.

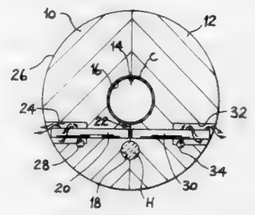
Filed Jan. 24, 1986, Ser. No. 821,944

Claims priority, application United Kingdom, Jan. 26, 1985, 8501993

Int. Cl.⁴ C03B *9/38, 11/12*

U.S. Cl. 65—265 **4 Claims**

1. A mould portion for use in moulding molten glass in the manufacture of glass containers, the mould portion having one or more inner surface portions arranged to define a portion of a mould cavity in which molten glass can be moulded, the mould portion comprising a rod of a material having a higher thermal conductivity than the remainder of the mould portion, the rod extending from a region of the mould portion requiring



enhanced heat extraction into a recess in an outer surface of the mould portion, wherein a passage extends through the mould portion and enters said recess, the arrangement being such that causing cooling fluid to flow through the passage causes the fluid to flow through the recess thereby cooling the rod.

4,657,575

METHOD OF FABRICATING ALUMINA-DOPED SILICA FIBERS

Giacomo Roba, Cogoleto, Italy, assignor to Cselt Centro Studie Laboratori Telecomunicazioni Spa, Torino, Italy

Filed Sep. 20, 1985, Ser. No. 779,081

Claims priority, application Italy, Nov. 13, 1984, 68135 A/84

Int. Cl.⁴ C03C *25/02;* **C03B** *37/025*

U.S. Cl. 65—3.12 **2 Claims**

1. In a method of fabricating alumina doped silica optical fibers wherein silica and dopant are obtained by a reaction between gaseous compounds, the improvement which comprises generating alumina dopant by effecting a reaction between an organometallic compound of the formula $Al(C_aH_b)_z$ or of the formula $AlCl(C_aH_b)_p$ where a and b are atomic coefficients of carbon and hydrogen in the molecule and z and p are molecular coefficients of C_aH_b in the molecule, and oxygen to produce Al_2O_3 and gaseous products which are carried away.

4,657,576

GRANULAR FERTILIZER COMPOSITION HAVING CONTROLLED RELEASE AND PROCESS FOR THE PREPARATION THEREOF

Johannes M. H. Lambie, Eckelrade, Netherlands, assignor to Sierra Chemical Company, Milpitas, Calif.

Filed Nov. 13, 1985, Ser. No. 797,501

Claims priority, application Netherlands, Nov. 16, 1984, 8403505

Int. Cl.⁴ C05G *3/00, 5/00*

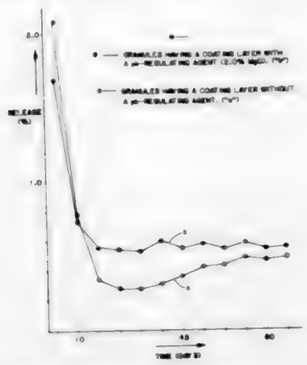
U.S. Cl. 71—64.07 **28 Claims**

1. Fertilizer composition in granular form having a regulated release of water-soluble fertilizer agents such as nitrogen, phosphorous, and potassium compounds, each granule having

a core comprising fertilizer substances having a known pH value, and

a coating encapsulating the core, said coating being based on a dicyclopentadiene and linseed oil or a soy bean oil alkyd, said coating serving as a pH-regulator, so that for a core having a pH value below 6.0 the pH of the coating is

regulated to be in the range of 6.0 to 9.0 while for a core having a pH value higher than 6.0 the coating includes a



mixture of trace element compounds and has a pH value lying between 4.5 and 9.0.

4,657,577

PYRIDYLOXY-PHENOXY-PROPIONIC ACID PHOSPHOROATES HAVING HERBICIDAL ACTIVITY

Heinz Förster, Wuppertal; Erich Klauke, Odenthal; Uwe Priesnitz, Solingen; Hans-Jochem Riebel, Wuppertal; Ludwig Ese, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

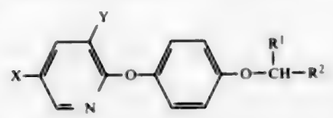
Division of Ser. No. 577,902, Feb. 7, 1984, Pat. No. 4,585,870, which is a division of Ser. No. 495,883, May 18, 1983, Pat. No. 4,518,416. This application Mar. 28, 1985, Ser. No. 716,875

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221214; Jan. 4, 1983, 3300141

Int. Cl.[4] A01N *43/40*; C07F *9/58*

U.S. Cl. 71—86 **12 Claims**

1. A racemate or the K- or S-enantiomer of a substituted pyridyl-phenyl ether compound of the formula



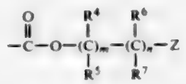
in which

X represents trifluoromethyl or chlorine,

Y represents hydrogen or chlorine

R^1 represents hydrogen or methyl and

R^2 represents the radicals of the formula



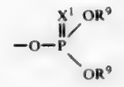
wherein

R^4, R^5, R^6 and R^7 independently of one another represent hydrogen or methyl,

m represents 1 to 2

n represents 0 or 1 and

Z represents a radical of the formula



in which

R^9 represents alkyl with 1 to 4 carbon atoms

X^1 represents oxygen or sulfur

R^{10} and R^{11} independently of one another represent hydrogen or alkyl with 1 to 4 carbon atoms.

4,657,578

HERBICIDAL ORTHO-HETEROCYCLIC SULFONAMIDES

Mark E. Thompson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 671,851, Nov. 15, 1984, abandoned. This application Jul. 11, 1985, Ser. No. 753,118

Int. Cl.[4] C07D *405/14, 417/14, 419/14*; A01N *47/36*

U.S. Cl. 71—90 **32 Claims**

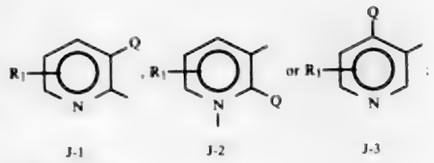
1. A compound of the formula



1

wherein

J is



J-1 J-2 J-3

W_1 is O or S;

R is H or CH_3;

R_1 is H, C_1–C_3 alkyl, C_1–C_3 haloalkyl, halogen, nitro, C_1–C_3 alkoxy, $SO_2NR^{I}R^{II}$, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CO_2R^{III}, C_1–C_3 haloalkoxy, amino, C_1–C_3 haloalkylthio, di(C_1–C_3 alkyl)amino, CH_2CN, CH_2OCH_3 or CH_2SCH_3;

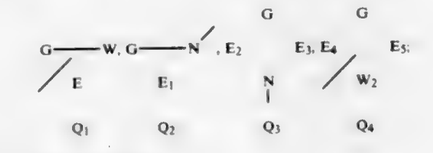
R^I is H, C_1–C_4 alkyl, C_2–C_3 cyanoalkyl, methoxy or ethoxy;

R^{II} is H, C_1–C_4 alkyl or C_3–C_4 alkenyl; or

R^I and R^{II} may be taken together as $-(CH_2)_3-$, $-(CH_2)_4-$, $-(CH_2)_5-$ or $-CH_2CH_2OCH_2CH_2-$;

R^{III} is C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_2–C_4 haloalkyl, C_2–C_3 cyanoalkyl, C_5–C_6 cycloalkyl, C_4–C_7 cycloalkylalkyl or C_2–C_4 alkoxyalkyl;

Q is



Q1 Q2 Q3 Q4

G is C=O or SO_2;

W is O, S, CHR_2 or NR_3;

W_2 is O, S, SO_2, CHR_2 or NR_3;

R_2 is H, C_1–C_2 alkyl, Cl, F or Br;

R_3 is H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkoxyalkyl, C_2–C_4 cyanoalkyl, C_3–C_4 alkenyl or C_3–C_4 alkynyl;

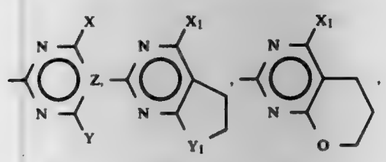
E and E_1 independently are C_3–C_4 alkylene, alkenylene or alkenyldienyl;

E_2 and E_4 independently are C_1–C_2 alkylene or C_2 alkenylene;

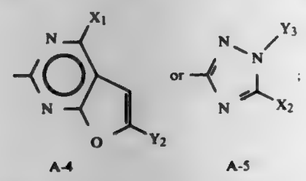
E_3 and E_5 independently are C_2–C_3 alkylene or alkenylene; and

E, E_1, E_2, E_3, E_4 and E_5 may optionally be substituted by 1–4 groups selected from C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkenyl, OH, halogen or C_1–C_4 haloalkoxy; further, when W is O, CHR_2 or NR_3, one of the carbon atoms of E may be in the form of a carbonyl group, and when W_2 is O, CHR_2 or NR_3, one of the carbon atoms of E_4 or E_5 may be in the form of a carbonyl group, provided that said carbonyl groups are not bonded directly to G;

A is



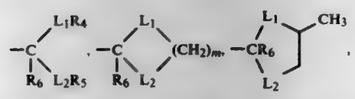
A-1 A-2 A-3



A-4 A-5

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino;

Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_1–C_4 haloalkyl, C_3–C_5 cycloalkyl, C_2–C_4 alkynyl, C(O)R_6,



$N(OCH_3)CH_3$, C_2–C_5 alkysulfinylalkyl or C_2–C_5 alkylsulfonylalkyl;

m is 2 or 3;

L_1 and L_2 are independently O or S;

R_4 and R_5 are independently C_1–C_2 alkyl;

R_6 is H or CH_3;

Z is CH;

Y_1 is O or CH_2;

X_1 is CH_3, OCH_3, OC_2H_5 or OCF_2H;

Y_2 is H or CH_3;

X_2 is CH_3, OCH_3 or SCH_3;

Y_3 is CH_3, CH_2CH_3 or CH_2CF_3; and

X_3 is CH_3 or OCH_3;

and their agriculturally suitable salts; provided that

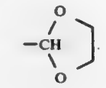
(a) when G is SO_2, then W is O, CHR_2 or NR_3;

(b) when E_2 and E_4 are C_2 alkylene or C_2 alkenylene, then E_3 and E_5 are C_2 alkylene or alkenylene;

(c) when X is Cl, F, Br or I, then Y is OCH_3, OC_2H_5, $N(OCH_3)CH_3$, $NHCH_3$, $N(CH_3)_2$ or OCF_2H;

(d) when the total number of carbon atoms of X and Y is greater than four, then the number of carbons of R_1 is less than or equal to two and the number of carbons of Q is less than or equal to eight; and

(e) when W_1 is S, then R is H, A is A-1, and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or



4,657,579

NOVEL N-(5-PYRIMIDINYL)-CHLOROACETAMIDES

Karlheinz Milzner, Basel, Switzerland; Fred Kuhnen, Weil, and Karl Seckinger, Riegel, both of Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

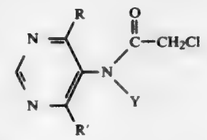
Continuation of Ser. No. 529,400, Sep. 6, 1983, abandoned. This application Mar. 6, 1985, Ser. No. 708,694

Claims priority, application United Kingdom, Sep. 13, 1982, 8226004; Switzerland, Sep. 1, 1983, 04800/83; United Kingdom, Feb. 22, 1985, 8504609

Int. Cl.[4] C07D *239/42, 239/47*; A01N *43/54*

U.S. Cl. 71—92 **19 Claims**

1. A compound of the formula:



wherein

R and R′ are independently F, Cl, Br, C_{1-4}alkyl, C_{1-8}alkoxy, C_{3-5}alkenyloxy, C_{3-5}alkinyloxy, C_{1-8}alkylthio or di(C_{1-4} alkyl) amino, and

Y is

(a′) a hydrocarbon selected from the group consisting of C_{3-5}alkenyl and C_{3-5}alkinyl, which hydrocarbon is optionally mon-substituted by F, Cl or Br;

(b′) C_{1-3}alkoxy-C_{1-3}alkylene optionally mono-substituted by C_{1-4}alkoxy;

(c′) C_{3-5}alkinoxy-C_{1-3}alkylene;

(d′) C_{3-5}alkenoxy-C_{1-3}alkylene;

(e′) $CH_2{-}CH{=}CH{=}CH_2$;

(f′) $CH(R_6')A_z'$

wherein

R_6' is H or CH_3 and

A_z' is

(i) 1-pyrazolyl, 3,5-dimethyl-1-pyrazolyl, 1-imidazolyl, 1,2,3-triazol-1-yl or 1,2,4-triazole-1-yl;

(ii) a 5-membered aromatic heteroring linked by a C-atom thereof to the $CH(R_6')$ group of $CH(R_6')A_z'$ and having 1 to 3 heteroatoms selected from the group consisting of O, S and N; or

(iii) 2-pyrimidinyl; such A_z' heteroring being optionally mono- or di-substituted on a ring C-atom thereof by C_{1-4}alkyl;

(g′) $CHR_5{-}CHR_5'{=}NO(C_{1-4}$alkyl);

(h′) $CH(R_6)B'$

wherein

B′ is

(i) $N(CH_3)COCH_3$; or

(ii) 2-oxo-3-benzthiazolidinyl optionally mono-substituted by F, Cl or Br; or

(i′) $CH(R_6)COY_1'$ in which Y_1' is di(C_{1-4}alkyl)amino or C_{1-4}alkoxy,

wherein

R_5 and R_5' are independently H or CH_3 or R_5 together with R_5' are $(CH_2)_3$ or $(CH_2)_4$, and
R_6 is H or C_{1-3}alkyl,
in free base or in acid addition salt form.

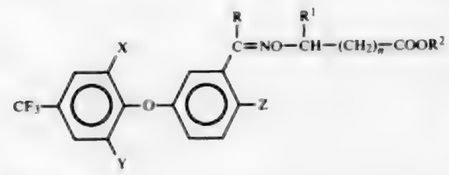
4,657,580

HERBICIDALLY ACTIVE SUBSTITUTED DIPHENYL ETHER OXIME DERIVATIVES

Dennis K. Kraus, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 695,500, Jan. 28, 1985, Pat. No. 4,564,385, which is a continuation-in-part of Ser. No. 373,815, Apr. 30, 1982, abandoned, which is a division of Ser. No. 136,171, Apr. 15, 1980, Pat. No. 4,344,789, which is a continuation-in-part of Ser. No. 38,043, May 11, 1979, abandoned. This application Dec. 16, 1985, Ser. No. 809,380
The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.
Int. Cl.⁴ A01N *37/42*
U.S. Cl. 71—98 **4 Claims**

1. A compound of the formula:



wherein:
X and Y are the same or different halogen selected from flourine or chloride;
Z is nitro, halogen or cyano;
R is hydrogen, halogen, C_1 to C_4 alkyl or haloalkyl, C_1 to C_4 alkoxy or alkylthio, or mono or dialkylamino;
R^1 is hydrogen, or C_1 to C_4 alkyl;
R^2 is hydrogen or C_1 to C_{10} alkyl, haloalkyl or alkoxyalkyl; and
n is 0, 1, 2 or 3.

4. In a method of controlling weeds wherein a herbicidally effective amount of herbicide is applied to a growth medium prior to emergence of the weeds therefrom or to the weeds subsequent to their emergence from the growth medium, wherein the improvement resides in using as the herbicide a compound or mixture of compounds defined by claim 1.

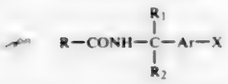
4,657,581

HERBICIDAL AMIDE COMPOUNDS AND THEIR USES

Tetsuo Takematsu; Yasutomo Takeuchi, both of Utsunomiya; Kozo Hiraishi, Nagaokakyo; Toshikazu Fujii, Neyagawa; Shoji Nishimura, Joyo; Motoyuki Suzuki, Shiga; Masahiro Sato, Kyoto, and Hiroshi Hayashi, Otsu, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

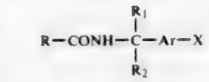
Filed May 13, 1985, Ser. No. 733,244
Claims priority, application Japan, May 18, 1984, 59-100898; Aug. 30, 1984, 59-181683; Sep. 27, 1984, 59-203190; Sep. 27, 1984, 59-203191
Int. Cl.⁴ A01N *37/38, 37/18;* **C07C** *103/76, 103/737*
U.S. Cl. 71—118 **13 Claims**

1. A compound of the formula:



wherein R is 1,2,3,4-tetrahydro-1-naphthyl, 1,4-dihydro-1-naphthyl or 3,4-dihydro-1-naphthyl; R_1 is methyl; R_2 is methyl or ethyl; Ar is a phenylene group; and X is hydrogen, a halogen, methyl or methoxy.

10. A herbicidal composition, which comprises a herbicidally effective amount of at least one herbicide comprising a compound of the formula:



wherein R is 1,2,3,4-tetrahydro-1-naphthyl, 1,4-dihydro-1-naphthyl or 3,4-dihydro-1-naphthyl; R_1 is methyl; R_2 is methyl or ethyl; Ar is a phenylene group; and X is hydrogen, a halogen, methyl or methoxy; in admixture with at least one agricultural adjuvant selected from the group consisting of surfactants, water-soluble polymers and carriers.

4,657,582

POLYHYDROXY POLYMER DELIVERY SYSTEMS

Ludwig K. Huber, Wayne, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed May 30, 1985, Ser. No. 739,264
Int. Cl.⁴ A01N *25/12*
U.S. Cl. 71—121 **16 Claims**

1. A method of preparing a slow release, pest control agent-containing composition consisting essentially of the steps of:
(a) preparing an aqueous emulsion or dispersion of suitable pest control agent and an optional filler in a matrix-forming material comprising an aqueous solution or gel of a polyhydroxy polymer (PHP) selected from the group of polyvinyl alcohols and starches, wherein said solution or gel has a solids concentration of said PHP of from about 3-40%, and wherein the relative amount of said PHP with respect to said pest control agent is sufficient to entrap said agent within a matrix of said PHP,
(b) blending into said emulsion or dispersion a salt selected from the group consisting of ammonium, alkali and alkaline earth sulfates, phosphates, chlorides, carbonates, nitrates, formates, and acetates for a sufficient time to distribute throughout the aqueous emulsion or dispersion, wherein the salt comprises 1-30% by weight of the product of step b,
(c) reacting the product of b at an alkaline pH with boric acid or at an essentially neutral or alkaline pH with an inorganic boric acid derivative to form an insolubilized matrix phase having entrapped therein uniformly dispersed, discontinuous domains of said agent and an optional aqueous phase that separates out from said matrix phase, and
(d) recovering free-flowing particles of said entrapped pest control agent.

4,657,583

METHOD OF PRODUCING FERROMAGNETIC PARTICLES

Jacob Crane, Woodbridge; George J. Muench, West Haven; Yousef Saleh, Branford, and Lifun Lin, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 2, 1985, Ser. No. 803,379
Int. Cl.⁴ C22C *1/04*
U.S. Cl. 75—0.5 AA **15 Claims**

1. A method of producing free metallic magnetic particles, said method comprising:
providing an alloy capable of forming a magnetic precipitate by aging;
thermally aging said alloy to form said magnetic precipitate in a matrix, said precipitate comprising a plurality of acicular magnetic particles dispersed in said matrix; and
dissolving said matrix to leave said magnetic particles and to form a passive layer about each said magnetic particle.

4,657,584

EFFECT OF MGO SOURCE ON SINTER PROPERTIES

Eugene A. Bogdan, North Huntingdon Township, Westmoreland County, and Eugene N. Silverman, Churchill Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 20, 1985, Ser. No. 703,586
Int. Cl.⁴ C22B *1/16*
U.S. Cl. 75—5 **6 Claims**

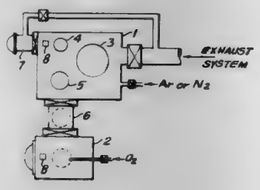
1. In a process for the production of blast furnace sinter, said process including providing a mixture of particulated materials consisting essentially of an iron-bearing constituent and a slag former in sufficient amounts to provide a final sinter product having Fe within the range of 45/60%, the sum of $CaO+MgO+SiO_2+Al_2O_3$ within the range of 16 to 35% and the balance being essentially oxygen, and heating said particulated mixture to an elevated temperature at the point of incipient fusion of the iron so as to cause agglomeration and sintering of the materials in said particulate mixture into coarse lump form; the improvement in said process for producing a high-strength sinter product which comprises:
providing in said mixture of particulate materials as a portion of said slage former sufficient MgO-bearing material to provide a final sinter product which contains 3.0 to 5.5% MgO, and wherein (a) at least 20% of the MgO is provided by utilizing in said mixture to be sintered a free MgO-bearing material other than dolomite, said free MgO-bearing material having a particulate size less than ¼ inch but not more than 20% being smaller than 1/64 inch, and (b) not more than 25% of the MgO in the final sinter product is provided by dolomite.

4,657,585

METHOD FOR SEPARATING COBALT, NICKEL AND THE LIKE FROM ALLOYS

Akira Yazawa; Kimio Itagaki, both of Sendai; Kazuo Sezaki, Funabashi; Kenji Matsuda, Matsuko; Kazuo Kanazawa; Mitsuo Hayashi, both of Yokohama, and Katsuo Katada, Kamakura, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushi Kaisha, Tokyo, Japan

Filed Nov. 27, 1985, Ser. No. 802,248
Claims priority, application Japan, Nov. 29, 1984, 59-252474; Nov. 29, 1984, 59-252475; Nov. 29, 1984, 59-252476
Int. Cl.⁴ C21C *7/00*
U.S. Cl. 75—63 **11 Claims**



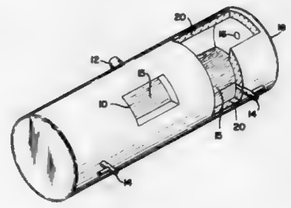
1. A method for concentrating and separating cobalt and nickel from an alloy comprising cobalt, nickel and iron, comprising the steps of melting the alloy in a molten bath of tin, lead and/or an alloy thereof whose weight is more than 10 times as heavy as said alloy and adding silicon into said molten bath, thereby causing a first separation of a Fe-Si phase to float up and separating said fiirst supernatant phase.

4,657,586

SUBMERGED COMBUSTION IN MOLTEN MATERIALS

Ian F. Masterson, Danbury, Conn.; David B. George, and Frederick A. Rudloff, both of Salt Lake City, Utah, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 25, 1985, Ser. No. 791,514
Int. Cl.⁴ C22B *15/00*
U.S. Cl. 75—76 **53 Claims**



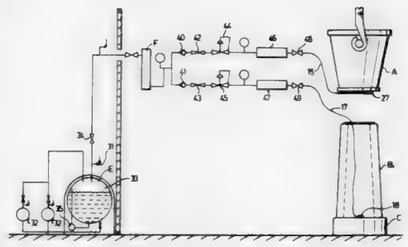
1. A process for heating a molten material by oxygen and a fluid fuel comprising the steps of:
(a) providing a bath containing molten material at a bath temperature at or above the spontaneous combustion temperature of said fuel, said molten material having at least the same resistance to oxidation by carbon dioxide and water at bath temperature as nickel;
(b) injecting oxygen and said fuel into said bath through a tuyere below the surface of said bath, at least a portion of said fuel forming a shroud surrounding the injected oxygen;
(c) controlling the amount of said oxygen injected relative to said fuel to no greater than about 150% of that required for complete combustion of said fuel; and
(d) combusting said fuel to provide heat to said molten material.

4,657,587

MOLTEN METAL CASTING

Guy Savard, Westmount, and Robert Lee, Montreal, both of Canada, assignors to Canadian Liquid Air Ltd./Air Liquide Canada Ltee, Montreal, Canada

Continuation-in-part of Ser. No. 703,751, Feb. 21, 1985, Pat. No. 4,657,587. This application Nov. 19, 1985, Ser. No. 799,587
Int. Cl.⁴ C22B *9/00*
U.S. Cl. 75—96 **13 Claims**



1. A method of protecting a body of steel from the atmosphere as it passes therethrough as a gravitating liquid stream, comprising,
placing a gas containing a major amount of carbon dioxide in contact with the molten steel in such quantities as to form a shroud providing a barrier between the steel and the atmosphere,
the steel containing up to 1% C, up to 1.5% Mn, 0.00 to

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0.02% Al, up to 0.05% S, up to 0.4% Si, up to 0.05% P, 0.000 to 0.005% Ti, 0.000 to 0.005% B, and 0.0 to 1.0% of each of Cu, Ni and Co,

the gas being exposed to the molten steel for less than 0.15 seconds and the gas kept at a temperature below 700° C.

the gas stream being dispersed so that its downward velocity differs from that of the molten metal by at least 5 feet per second and the partial pressure of the carbon dioxide is not higher than 1 atmosphere.

4,657,588

METHOD OF KEEPING INDUCTOR SPOUTS, DOWNGATES AND OUTLET CHANNELS FREE OF DEPOSITS IN CONNECTION WITH A CAST IRON MELT

Karl Gut, Bonken, and Ivo Heuych, Stetten, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Feb. 12, 1986, Ser. No. 828,958

Claims priority, application Switzerland, Feb. 14, 1985, 679/85

Int. Cl.⁴ C22C *33/08*

U.S. Cl. 420—20 **8 Claims**

1. Method of keeping inductor spouts, downgates and outlet casting channels free of deposits in the production of cast iron melt treated with magnesium in a casting process, comprising the steps of using a predetermined amount of pure magnesium for a magnesium treatment of the cast iron melt for effecting a very high degree of desulfurization with a residual sulfur content of approximately 0.005% and providing pure magnesium in addition to the predetermined amount not required for the desulfurization and utilizing the additional magnesium for rinsing and cleansing suspended highly basic reaction products from the cast iron melt.

4,657,589

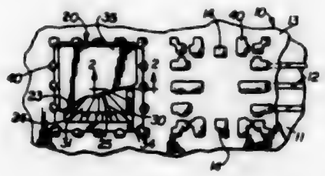
SOLDER CREAM

Felix Barajas, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Feb. 3, 1986, Ser. No. 825,155

Int. Cl.⁴ C09D *5/00*; **B23K** *35/34*

U.S. Cl. 106—1.13 **20 Claims**



1. In a solder composition especially adapted for soldering components in electronic circuits to form solder joints substantially free from cracking, which comprises a major portion of finely divided solder metal and a minor portion of a vehicle, for said solder metal the improvement comprising about 0.2 to about 3% of particulate gold, by weight of the solder metal.

4,657,590

BASIC DYE INK FORMULATIONS AND METHODS

Rodger L. Gamblin, Dayton, Ohio, assignor to The First National Bank of Cincinnati, Cincinnati, Ohio

Filed Oct. 22, 1984, Ser. No. 663,230

Int. Cl.⁴ C09D *11/00, 11/14*; **C08L** *1/26*

U.S. Cl. 106—22 **20 Claims**

1. An ink comprising:

a basic dye in an amount effective to provide a visible mark on a substrate, said basic dye dissolved in a solution,

said solution comprising at least about 40% by weight to about 98% by weight of a plyhydric alcohol having at least one hydroxyl group per 4 carbon atoms of said alcohol or a water-soluble ether derivative of said polyhydric alcohol, and a water soluble polymeric acid present in an amount effetive to maintain said basic dye dissolved in said solution, said amount being at least about 0.2% by weight said ink having a pH less than 8 at which the basic dye is prevented from changing its leuco form.

4,657,591

INK COMPOSITION

Keiko Shioi, and Yasushi Okuda, both of Osaka, Japan, assignors to Sakura Color Products Corp., Osaka, Japan

Filed Mar. 15, 1984, Ser. No. 590,913

Claims priority, application Japan, Mar. 18, 1983, 58-046861

Int. Cl.⁴ C09D *11/00*

U.S. Cl. 106—23 **17 Claims**

1. An ink composition for writing on an absorbent or pervious writing surface to form thereon a writing or marking composed of an inner portion of a metallic color with outer contour portions therearound of a dyestuff-based color, which composition consists essentially of:

a nonleafing metal powder pigment as a first pigment,

an inorganic pigment other than a metal powder or organic pigment as a second pigment,

a dyestuff, and

a solvent,

the nonleafing metal powder pigment being dispersed in the solvent and having a particle size sufficiently large so as to substantially not permeate or be absorbed into the writing surface, and

the second pigment being dispersed in the solvent and either having a particle size sufficiently large so as to substantially not permeate or be absorbed into the writing surface, or having a particle size sufficiently large so as to substantially be absorbed on the nonleafing metal powder pigment,

the dyestuff being dissolved in the solvent, being capable of substantially permeating or being absorbed into the writing surface and diffusing into the area on the writing surface proximate to the writing,

whereby the nonleafing metal powder pigment forms in conjunction with the second pigment the inner portion of the metallic color, and the dyestuff forms the outer contour portions of the dyestuff-based color around the inner portion.

4,657,592

ROOT CANAL SEALER

Masayoshi Takubo, No. 19-1, Ozasa 3-chome, Chuo-ku, Fukuoka-shi, Fukuoka-ken, Japan, assignor to Masayoshi Takubo and Michihiro Takubo, both of Fukuoka, Japan

Filed Sep. 30, 1985, Ser. No. 782,216

Claims priority, application Japan, Oct. 4, 1984, 59-208698

Int. Cl.⁴ C09K *3/00*

U.S. Cl. 106—35 **4 Claims**

1. In the root canal filling wherein a root canal sealer is used with a gutta percha cone and a heating device, and wherein the root canal sealer contains calcium hydroxide or calcium oxide and beeswax together with zinc oxide and an accelerator, the improvement comprising, as the accelerator, a medium chain fatty acid triglyceride and the blending ratio between said medium chain fatty acid triglyceride and beeswax is 5:95–30:70 by weight.

4,657,593

MODIFYING SURFACE TENSION OF FINELY-DIVIDED MATERIALS IN A LIQUID

Alois Aignesberger, Trostberg, and Johann Plank, Saal/Donau, both of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Continuation of Ser. No. 439,253, Nov. 4, 1982, abandoned. This application Jul. 15, 1985, Ser. No. 755,224

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1981, 3144673

Int. Cl.⁴ B01J *13/00*; **C04B** *7/02, 24/22*

U.S. Cl. 106—90 **6 Claims**

1. A method of modifying the surface tension of a mixture of finely divided materials in a liquid comprising adding, to the mixture, an acid group-containing, thermostable, hydrophilic condensation product of

an aldehyde having up to 11 carbon atoms and the formula R-CHO wherein R is hydrogen or an aromatic or non-aromatic cyclic or acyclic carbo- or hetero-radical or araliphatic radical with a total of up to 10 combined carbon and hetero-atoms in each; and

a ketone having 3 to 12 carbon atoms and the formula R_1—(CO)—R_2 wherein R_1 and R_2 are individually selected from the group consisting of acyclic aliphatic, araliphatic and aromatic hydrocarbon radicals of up to 10 carbon atoms and with the proviso that at least one of R_1 and R_2 must be non-aromatic; and

as acid group-containing compound, a compound containing, as acid groups, carboxyl, phosphono, sulphino and sulpho, sulphamido, sulphooxy, sulphalkoxy, sulphinoalkoxy and/or phosphonoxy, wherein alkyl groups contain up to 5 carbon atoms; and wherein the mole ratio of ketone/aldehyde/acid group is 1/1:6/0.02:2, and the condensation is an aldol reaction accomplished at a pH of 8 to 14 in aqueous medium.

5. The method of claim 1 wherein portland cement is dispersed in water using a condensation product of acetone and formaldehyde or glyoxal.

4,657,594

LIGHTWEIGHT JOINT COMPOUND

Arthur W. Struss, Libertyville, Ill., assignor to USG Corporation, Chicago, Ill.

Filed Jul. 5, 1985, Ser. No. 752,268

Int. Cl.⁴ C04B *14/18*

U.S. Cl. 106—308 N **20 Claims**

1. Expanded perlite which has been treated with an amino-functional silicone compound to render it water-insensitive while still providing good bonding properties to a joint compound into which it is formulated.

5. A lightweight joint compound having properties suitable for use in finishing joints between the edges of adjacent wallboards, and having improved bonding to paper tape and paper cover sheets provided on said wallboard, said joint compound comprising:

(1) a filler selected from the group consisting of calcium carbonate and calcium sulfate,

(2) a non-leveling agent,

(3) expanded perlite which has been treated with an amino-functional silicone compound to render said perlite water-insensitive and improving the joint compound to paper bond, said perlite being present in an amount of from about 3.5% to about 25% based on the dry weight of said joint compound,

(4) a thickener,

(5) a binder, and

(6) sufficient water to adjust the viscosity to render said joint compound suitable for use.

4,657,595

QUICK SETTING ANIONIC BITUMINOUS EMULSIONS

Alan Russell, Corsicana, Tex., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 16, 1985, Ser. No. 776,278

Int. Cl.⁴ C08L *95/00*

U.S. Cl. 106—277 **11 Claims**

1. A bituminous emulsion comprising:

(a) from about 50% to about 70% by weight of non-coal tar bitumen;

(b) from about 0.1% to about 3% by weight of an emulsifier which is the amine salt of an alkylbenzene sulfonic acid in which the alkyl contains from about 8 to about 16 carbon atoms and wherein the salt-forming amine is selected from amines having the formula:

$$R_2—\overset{R_1}{\underset{|}{N}}—R_3$$

wherein R_1 is selected from the group consisting of aminoalkyl and monohydroxyalkyl radicals containing from 1 to about 6 carbon atoms and R_2 and R_3 are each selected from the group consisting of hydrogen, alkyl, aminoalkyl and monohydroxyalkyl radicals containing from 1 to about 6 carbon atoms and wherein the molar ratio of alkylbenzene sulfonic acid to amine in the amine salt is 1:1; and

(c) from about 30% to about 50% water,

the said composition having a pH of from about 2.5 to about 10.

4,657,596

CERIC ACID DECONTAMINATION OF NUCLEAR REACTORS

Alexander P. Murray, Murrysville Boro; Clifton G. Slater, Wilkinsburg, and Robert W. White, New Kensington, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 615,018, May 29, 1984, abandoned. This application Nov. 26, 1985, Ser. No. 802,132

Int. Cl.⁴ C23G *1/02*; **C21C** *19/42*; **G21F** *9/00*

U.S. Cl. 134—3 **11 Claims**

1. A method of decontaminating a surface contaminated with radioactive substances comprising contacting said surface with an aqueous solution containing from 0.5 to about 3% of a ceric acid selected from the group consisting of tetrasulfato ceric acid, hexasulfamato ceric acid, hexaperchlorato ceric acid, and mixtures thereof, and about 1 to about 5% of inorganic acid which forms a complex with said ceric acid.

4,657,597

CHIMNEY CLEANER

Roger H. Wolf, Rte. 1, Box 222, and Bruce L. Johnson, Rte. 1, Box 59, both of Wrenshall, Minn. 55797

Continuation of Ser. No. 631,324, Jul. 16, 1984, abandoned. This application Oct. 4, 1985, Ser. No. 783,267

Int. Cl.⁴ B08B *9/04*

U.S. Cl. 134—8 **26 Claims**

1. A chimney cleaner for cleaning a chimney flue wall, comprising:

a plate having a scraping edge; and

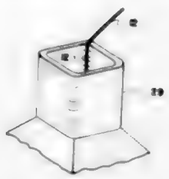
support means for suspending the plate between a weight and a flexible member, the support means comprising means for permitting the plate to pivot between the weight and the flexible member and for holding the plate generally normally to the chimney flue wall.

13. A chimney cleaner for cleaning a chimney flue wall, comprising:

a plate having four substantially perpendicular edges, each of the substantially perpendicular edges being joined by a radius which substantially conforms to a radius of a chim-

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ney flue corner, the four edges and the radii comprising a bevelled scraping edge; and
a support means for suspending the plate between a weight



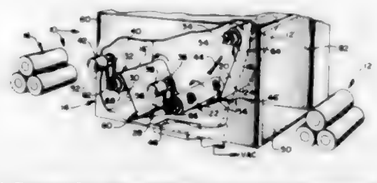
and a flexible member, the support means comprising means for permitting the plate to pivot between the weight and the flexible member and for holding the plate generally normally to the chimney flue wall.

4,657,598

REJUVENATING NEWSPAPER FILM PROCESS

Kendell L. Green, Odessa, Tex., assignor to The Odessa American, a subsidary of Freedom Newspapers, Inc., Odessa, Tex.

Continuation-in-part of Ser. No. 496,947, May 23, 1983, abandoned. This application Jul. 19, 1985, Ser. No. 757,066
Int. Cl.⁴ B08B *1/02, 1/04, 5/02, 5/04*
U.S. Cl. 134—9 **3 Claims**



1. Process for rejuvenating a used roll of photosensitive film in the form of an elongate plastic web about one and one-half feet wide and several hundred feet long and having an image side opposed to a metallic back side, wherein means forming indicia on the image side must be removed without creasing the metallic back side during the rejuvenation process, comprising the steps of
(1) arranging the web to move along its length from a roll located at a loading station to a roll located at a processed station;
(2) engaging a marginal length of the image side of the web at a location between the loading and the processed stations with guide means consisting essentially of only two spaced guide rollers;
(3) engaging a marginal length of the image side of the web at a location between said guide means with cleaning means consisting essentially of the outer surface of only one cylindrical wiping cloth;
(4) arranging the spaced guide rollers parallel to the cylindrical wiping cloth and laterally respective to the web;
(5) urging the image side of the web to bear against the outer periphery of the cylindrical wiping cloth by arranging the relative position of the longitudinal axis of the two spaced guide rollers and the longitudinal axis of the cylindrical wiping cloth whereby the image side of the web curves about a segment formed by the circumference of the cylindrical wiping cloth;
(6) rotating said cylindrical wiping cloth at a sufficient peripheral velocity to provide a wiping motion between the image side of the web and the outer surface of the wiping cloth;
(7) moving the web along its length so that the web travels from the loading to the processed stations;
(8) arranging the loading station roll, the cylindrical wiping cloth, the spaced guide rollers, and the processed station roll so that the length of the web between the loading and processed rolls enables removing the material which forms the indicia from the image side of the web without substantial loss of the usable image side of the web material;
(9) supplying a current of air adjacent to the contact area between the web and wiping cloth; and providing a suction means adjacent the edge portions of the web to thereby translocate the removed particles of the material forming the indicia to a location spaced from the web;
(10) whereby said web material, while traveling between the loading and the processed stations, is contacted only on the image side thereof, thereby avoiding damage to the metallic back side thereof.

4,657,599

PROCESS FOR IMPROVING CORROSION RESISTANCE OF ZINC OR CADMIUM PLATED METAL ARTICLES

James A. Sutherland, Toronto, Canada, assignor to Torcad Limited, Toronto, Canada

Filed Oct. 21, 1985, Ser. No. 789,694
Int. Cl.⁴ C23C *22/14, 22/82*
U.S. Cl. 148—6.2 **8 Claims**

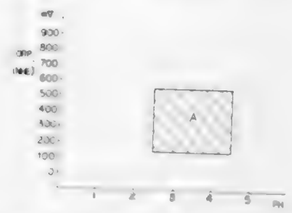
1. A process for improving corrosion resistance of a metal article plated with zinc or cadmium, comprising coating the plated articles with a chromium solution to provide the article with a chromate coating having a yellow to olive-drab colour, and contacting the chromate coating witha silicate solution and maintaining said contact for a sufficient time to cause the colour of the coating to be leached back to an acceptable white to grey colour and also increase the corrosion resistance of the article.

4,657,600

METHOD OF FORMING A CHEMICAL PHOSPHATE COATING ON THE SURFACE OF STEEL

Shigeki Matsuda, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 7, 1985, Ser. No. 731,523
Claims priority, application Japan, May 9, 1984, 59-93643
Int. Cl.⁴ C23C *22/12*
U.S. Cl. 148—6.15 R **3 Claims**



1. A method for providing a phosphate coating on a succession of steel articles, comprising:
(a) constituting a treatment bath by introducing a principal and an auxiliary bath component into a bath container, wherein:
(i) said principal bath component is an acidic aqueous solution consisting mainly of $H_2PO_4^-$, oxo acid ions and metal ions; and
(ii) said auxiliary bath component is an aqueous alkaline solution containing hydroxide ions,
the relative concentrations of said principal and auxiliary bath components being such that at a temperature in the range of 0° C. to 40° C., said treatment bath has a pH range of 2.5 to 4.5 and an ORP range, in terms of normal hydrogen electrode potential, of 150 to 550 mV, said treatment bath containing at least 2 g of phosphoric ions per liter and no more than 10 ppm free NO_2^-;
(b) wetting an exposed surface of each of a succession of steel articles with said treatment bath within said temperature range in order to generate a phosphate coating on said exposed surface of each said steel article,
(c) while conducting said wetting,
(i) monitoring the pH of said treatment bath and adding more of said principal component thereto in order to maintain the pH of said treatment bath lowered to within said pH range,
(ii) monitoring the ORP of said treatment bath and adding more of said auxiliary component thereto in order to maintain the ORP of said treatment bath lowered to within said ORP range,
(iii) without adding to said treatment bath either for constituting said treatment bath or for maintaining said pH or ORP thereof any oxidizing agent which reacts within one hour if added to said principal component so as to fail to retain the chemical formula which represented such oxidizing agent prior to its mixture with said principal component.

4,657,601

THERMOMECHANICAL PROCESSING OF BERYLLIUM-COPPER ALLOYS

Amitava Guha, Cleveland Heights, Ohio, assignor to Brush Wellman Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 550,631, Nov. 10, 1983, abandoned. This application Aug. 8, 1985, Ser. No. 763,709
Int. Cl.⁴ C22F *1/08*
U.S. Cl. 148—12.7 C **14 Claims**



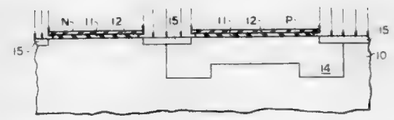
1. A thermomechanical process for obtaining improved combinations of properties in beryllium copper alloys essentially of at least about 1.0 wt. % to about 3.5 wt. % nickel and cobalt in the aggregate, with at least about 1 wt. % nickel; about 0.2 wt. % to about 0.7 wt. % beryllium; up to about 1.0 wt. % zirconium; up to about 0.005 wt. % lead; up to 0.1 wt. % magnesium; up to about 1.5 wt. % silver; and up to about 0.5 wt. % incidental impurities including lead; and the balance essentially copper; which comprises the steps of solution treating the alloy at a temperature within about 90% of the incipient melting temperature thereof expressed in degrees Fahrenheit, to effect precipitation of a fine dispersion of a nickel-rich phase, cold working the solution treated alloy to reduce the section thickness thereof at least about 60% and thereafter aging the cold worked alloy at a temperature of about 600° F. to about 900° F. to produce in said alloy in the condition resulting from said aging an improved combination of properties including strength, ductility and electrical conductivity; which on a graph of ultimate tensile strength versus elongation lie along or above a line connecting the points defined by 150 ksi ultimate tensile strength at 3.5% elongation and 120 ksi ultimate tensile strength at 15% elongation.

4,657,602

INTEGRATED COMPLEMENTARY TRANSISTOR CIRCUIT AT AN INTERMEDIATE STAGE OF MANUFACTURING

Donald L. Henderson, Sr., Encinitas, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 204,725, Nov. 6, 1980, abandoned, which is a continuation of Ser. No. 17,841, Mar. 6, 1979, abandoned. This application Jun. 10, 1983, Ser. No. 698,657
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.⁴ H01L *21/263*
U.S. Cl. 148—33.3 **5 Claims**



1. An integrated complementary transistor circuit at an intermediate state of manufacturing, comprising:
a semiconductor substrate having dopant atoms of a first conductivity type and having a major surface that is substantially flat;
a patterned layer of material that is essentially impervious to oxygen diffusion covering first and second spaced apart areas on said surface and having openings which expose said surface between said areas;
a channel stop region throughout the portion of said surface which is exposed by said openings having dopant atoms of said first conductivity type with a larger doping concentration than said substrate; and
a well region in said substrate having dopant atoms of a second conductivity type opposite to said first type which underlies all of said second area and extends under an adjacent portion of said channel stop region but terminates before reaching said first area;
said well region having a depth and doping concentration at the center of said second area which is substantially smaller than the depth and doping concentration of said well below said channel stop region and an adjacent portion of said second area.

4,657,603

METHOD FOR THE MANUFACTURE OF GALLIUM ARSENIDE THIN FILM SOLAR CELLS

Wolfgang Kruehler, Unterhaching, and Josef Grabmaier, Berg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 20, 1985, Ser. No. 778,487
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1984, 3437233
Int. Cl.⁴ H01L *31/18*
U.S. Cl. 148—175 **20 Claims**



1. A method for the manufacture of gallium arsenide thin film solar cells comprising:
depositing a highly doped amorphous germanium layer on a substrate;

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dividing said germanium layer into zones at prescribed points, said zones having a defined crystal orientation; and performing a vapor phase epitaxy of gallium arsenide.

4,657,604

FINE AMORPHOUS METAL WIRES

Isamu Ogasawara; Kiyotsugu Maekawa; Hiroyuki Tomioka, and Shinji Furukawa, all of Kyoto, Japan, assignors to Unitika Ltd., Japan

Filed Jul. 28, 1986, Ser. No. 889,709

Claims priority, application Japan, Jul. 26, 1985, 60-166560; Jul. 26, 1985, 60-166561

Int. Cl.⁴ H01F 1/04

U.S. Cl. 148—304 **10 Claims**

1. A fine magnetic amorphous metal wire having a circular cross section and stability to a bias magnetic field, said wire being composed of an alloy having the composition formula

$$(Co_{1-a-b}Fe_aM_b)_{100-x-y}Si_xB_y$$

wherein M is at least one element selected from Cr, Mo, Ni, Nb, Ta, Pd, Pt, and Cu, $x<20$ atomic%, 7 atomic% $\leq y<35$ atomic%, 7 atomic% $<x+y\leq 35$ atomic%, $0.01\leq a\leq 0.1$, and $0.001\leq b\leq 0.05$.

4,657,605

FINE AMORPHOUS METAL WIRES

Isamu Ogasawara; Kiyotsugu Maekawa; Hiroyuki Tomioka, and Shinji Furukawa, all of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Jul. 28, 1986, Ser. No. 889,973

Claims priority, application Japan, Jul. 26, 1985, 60-166559

Int. Cl.⁴ H01F 1/04

U.S. Cl. 148—304 **12 Claims**

1. A fine magnetic amorphous metal wire having a circular cross section and stability to a bias magnetic field, said wire being composed of an alloy having the composition formula

$$(Co_{1-a}Fe_a)_{100-x-y-z}Si_xB_yMn_z$$

wherein $x<20$ atomic%, 7 atomic% $\leq y<35$ atomic%, 7 atomic% $<x+y\leq 35$ atomic%, 0.1 atomic% $\leq z\leq 3$ atomic%, and $0.01\leq a\leq 0.1$.

4,657,606

HIGH CHROMIUM DUPLEX STAINLESS STEEL

Prodyot Guha, High Wycombe, England, assignor to Bonar Langley Alloys Limited, Slough, United Kingdom

PCT No. PCT/GB85/00179, § 371 Date Dec. 20, 1985, § 102(e) Date Dec. 20, 1985, PCT Pub. No. WO85/05129, PCT Pub. Date Nov. 21, 1985

PCT Filed Apr. 26, 1985, Ser. No. 816,124

Claims priority, application United Kingdom, Apr. 27, 1984, 8410859

Int. Cl.⁴ C22C 38/42, 38/58

U.S. Cl. 148—327 **2 Claims**

1. A high chromium, copper containing duplex steel alloy having a microstructure in which 40% to 60% is a ferritic matrix, the matrix having austenite grains embedded therein, the structure being substantially free of precipitated particles of other phases, and the steel consisting of a balance of iron together with the following elements in proportion by weight:

Chromium	23–27%
Nickel	4–7%
Molybdenum	2–4%
Silicon	0.2–2%
Carbon	0.08% maximum.

and the invention being characterized by controlled additions of:

manganese in an amount of 5% to 7% by weight;

copper in an amount of 1.1% to 3% by weight; and

nitrogen in an amount of 0.1% to 0.4% by weight; and the percentage of chromium, plus three times the percentage of molybdenum, being greater than 32%, said alloy having good resistance to pitting corrosion both in the as-cast condition and after solution heat treatment.

4,657,607

PROCESS FOR THE SOLVENT-FREE MANUFACTURE OF COMPOUND PYROTECHNIC PRODUCTS CONTAINING A THERMOSETTING BINDER AND PRODUCTS THUS OBTAINED

Christian Perotto, Ballancourt, and Philippe Ragon, Ris Orangis, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Feb. 26, 1986, Ser. No. 833,142

Claims priority, application France, Feb. 27, 1985, 85 02796

Int. Cl.⁴ C06B 45/10

U.S. Cl. 149—19.4 **16 Claims**

1. Process for the manufacture of compound pyrotechnic products consisting essentially of, a polyurethane binder obtained by the reaction of a polyhydroxylated prepolymer with a diisocyanate and at least one inorganic or organic energetic charge, wherein said polyhydroxylated prepolymer has a weight average molecular mass between 2,000 and 5,000 and an average hydroxyl OH group functionality greater than 2 and less than 3 and said process being comprised of the steps of (1) mixing said polyhydroxylated prepolymer with said energetic charge and with a quantity of diisocyanate which is between 50% and 90% by weight of the stoichiometric quantity required for complete polymerization of all the hydroxyl OH groups of said prepolymer, such that the condensation reaction of the isocyanate NCO groups with the hydroxyl OH groups produces a partially polymerized paste; (2) mixing said partially polymerized paste with the remainder of the diisocyanate required to attain the said stoichiometric quantity required for complete polymerization, and extruding the resultant paste mixture; and (3) hot curing said pasty mixture so as to complete the condensation reaction of the isocyanate NCO groups added during the second step with the hydroxyl groups of said prepolymer which are still free.

4,657,608

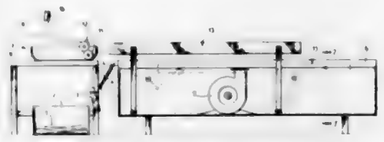
LAMINATING APPARATUS AND METHOD

Wilbur A. Schebler; Leslie W. Smith, and Carl A. Wettering, all of Batesville, Ind., assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed Oct. 23, 1985, Ser. No. 790,567

Int. Cl.⁴ B32B 31/00

U.S. Cl. 156—64 **7 Claims**



1. An improved laminating apparatus for eliminating bubbling and marring of fabric material laminated to a substantially non-porous substrate comprising:

(a) an adhesive applicator means for receiving a substantially non-porous substrate being fed thereto and applying an adhesive coating to said substrate on a substantial portion of one side thereof, leaving the edge portions along the length of said one side of said substrate uncoated;

(b) means for feeding a fabric material onto a laminating surface;

(c) transfer means for receiving said substrate from said adhesive applicator and transferring said substrate to said laminating surface whereby the adhesive-coated side of said substrate is placed into contact with said fabric material, said transfer means being capable of supporting said substrate on the uncoated edge portions thereof during receipt and transfer of said substrate, said transfer means comprising a pair of transfer bars, one transfer bar mounted along each length side of said laminating surface and above said laminating surface, said transfer bars being mounted on movable support arms whereby said transfer bars are capable of being moved to a first position for placing the substrate onto the fabric material ont he laminating surface and to a second position below the plane of the laminating surface;

(d) vacuum means for retaining said fabric material on said laminating surface and for applying a uniform vacuum pressure to said adhesive-coated substantially non-porous substrate and said fabric material to form a uniform, unbubbled fabric/substrate laminate, said vacuum means providing the only force to hold said substrate and said fabric material in contact; and

(e) means for sensing the leading and trailing edges of said substrate being fed to said adhesive applicator means, said sensing means initiating movement of said transfer means to transfer said substrate to said laminating surface and into contact with said fabric material in response to sensing the trailing edge of said substrate and initiating movement of said transfer means to reposition said transfer means for receiving another substrate to be laminated in response to sensing the leading edge of another substrate to be laminated.

4,657,609

PROCESS FOR PRODUCING CUSHIONINGS FOR SKI BOOTS, IN PARTICULAR FOR THE PRODUCTION OF INNER BOOTS OF SKI BOOTS

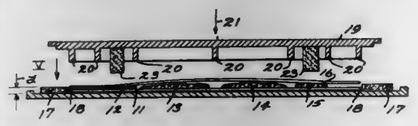
Adolf Hensler, Köflach, Austria, assignor to Koflach Sportgerate Gesellschaft, Vienna, Austria

Filed Sep. 6, 1985, Ser. No. 773,366

Claims priority, application Austria, Sep. 13, 1984, 2921/84

Int. Cl.⁴ B29C 65/02

U.S. Cl. 156—70 **8 Claims**



1. Process for producing a cushioning material for ski boots, in particular for producing inner boots for ski boots, comprising an outer layer and an inner layer of weldable, thermoplastic synthetic material and intermediate layers of padding material, in which process the padding material is placed on one of the layers, whereupon the other layer is placed thereon and the padding material is fixed in its position by directly welding both layers at areas which are free of cushioning intermediate layers, characterized in that said first layer is inserted into a templet corresponding to the outer contour of this layer and that subsequently the cushioning intermediate layers are placed thereon and said other layer is placed into the templet, whereupon welding is effected by means of a welding stencil corresponding to the inner contour of the templet.

4,657,610

METHOD FOR MANUFACTURING GAS PERMEABLE PACKAGING MATERIAL

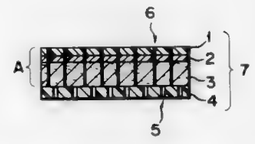
Toshio Komatsu, and Hideyuki Takahashi, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 5, 1986, Ser. No. 836,501

Claims priority, application Japan, Mar. 6, 1985, 60-44440

Int. Cl.⁴ B32B 31/14

U.S. Cl. 156—87 **19 Claims**



1. A method of manufacturing a gas permeable packaging material, comprising the steps of:

forming a laminate by heating an outer plastic film and a gas permeable inner sheet, with a first heat-sealable layer interposed between the film and sheet;

forming a large number of small-pores in the laminate, extending from the outer film to at least the inner sheet; and

placing, on the inner sheet of the laminate, a second heat-sealable film having a number of small-pores and a pore ratio greater than that of the outer plastic film, and heating the second heat-sealable film, thereby adhering the second heat-sealable film to the inner sheet of the laminate.

4,657,611

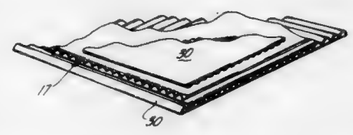
CROSS CORRUGATED FIBERBOARD AND METHOD AND APPARATUS FOR MAKING THE SAME

Sergei G. Guins, Okemos, Mich., assignor to Kaser Associates, Inc., Okemos, Mich.

Filed Nov. 28, 1984, Ser. No. 675,881

Int. Cl.⁴ B32B 3/28, 31/04

U.S. Cl. 156—157 **4 Claims**



1. A method of manufacturing a fiberboard having one layer of corrugations, said method including the steps of:

(a) forming a longitudinally corrugated fiberboard layer by;

(i) joining an upper facing material to a transversely corrugated fiberboard member of equal width in alignment therewith;

(ii) joining a lower facing material, also of equal width, to the underside of said corrugated fiberboard in an offset manner to produce exposed corrugations adjacent one edge of said lower facing, and exposed lower facing adjacent the opposite edge of said lower facing;

(iii) cutting the product so produced into predetermined lengths;

(iv) applying adhesive to said corrugations; and

(v) continually joining said pieces seriatum.

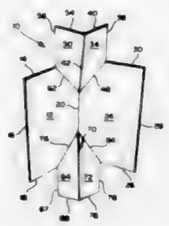
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4,657,612

METHOD OF MAKING TWO-DIRECTIONAL POP-UP

Donald W. Schoenleber, Bellemead, and D. Mark Bosler, Trenton, both of N.J., assignors to Webcraft Technologies, Inc., No. Brunswick, N.J.

Filed Mar. 19, 1985, Ser. No. 713,601
Int. Cl.⁴ B31F *1/00*; B32B *31/00*
U.S. Cl. 156—227 **7 Claims**



1. A method of making a double pop-up pamphelt, comprising:

(a) passing a web of sheet material through a press and printing along the length of the web successive pop-up pamphlets each of which include two sets of adjacent pop-up panels and two cover page panels all of which are longitudinally aligned, each of the sets of pop-up panels being disposed adjacent a different longitudinal side of a cover page panel,

(b) applying plural gule lines to the panels of each pamphlet of the web adjacent a transverse edge thereof for holding the pop-up panels to the cover page panels, and also for holding the cover page panels together along a common edge,

(c) separating one of the cover panels from the web,

(d) edge folding the outer of each set of pop-up panels over the other and along a longitudinal line between them,

(e) folding the folded pop-up panels over the adjacent cover page panel along a longitudinal line between the adjacent cover panel and pop-up panels,

(f) placing one of the cover page panels above and directly over the other cover page panel such that each of the folded sets of pop-up panels are covered and adhere to an adjacent panel aling the transverse line,

(g) cutting the pop-up panels free of the cover page panels along the fold lines between the cover panels and the sets of pop-up panels so that when the two adjacent cover page panels are opened one set of pop-up panels extends upwardly and outwardly and the other set of pop-up panels extend downwardly and inwardly with respect to the joined cover page panels, and

(h) cutting the web along the transverse edge of successive pop-up pamphlet section to provide a plurality of individual finished pamphlets.

4,657,613

COATING COMPOSITIONS CONTAINING SOLVENTS AND CROSSLINKING AGENTS AND THEIR USE FOR HEAT-ACTIVATED ONE-COAT REVERSE COATING

Wilhelm Thoma, Leverkusen; Josef Pedain, Cologne; Walter Schröer, Leverkusen, and Waldemar Kling, Kaerten, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 599,027, Apr. 11, 1984, Pat. No. 4,588,761. This application Feb. 7, 1986, Ser. No. 826,945
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313236
Int. Cl.⁴ B32B *27/12*
U.S. Cl. 156—238 **10 Claims**

1. A process for preparing coated textiles by the one-coat, heat-activated reverse coating process which comprises applying a polyurethane coating composition having a solids content of about 20 to 60% by weight and at least one organic solvent wherein the solids comprise

(I) about 60 to 97.5 parts of a polyurethane mixture of

(A) about 60 to 90% by weight, based on I, of a relatively soft, substantially linear polyurethane of moderately high molecular weight based on

(a) a hydroxy polyester and/or polyether having a molecular weight of about 600 to 6000,

(b) 0 to 1.5 mols based on (a), of a chain extending agent comprising a member selected from the group consisting of dialcohols, amino-alcohols, diamines, hydrazine hydrate, dihydrazide compounds and mixtures thereof, and

(c) an aromatic and/or aliphatic polyisocyanate,

(B) about 10 to 40% by weight, based on I, of a high molecular weight, relatively hard one-component polyurethane based on

(a) a hydroxy polyester and/or polyether having a molecular weight of about 600 to 6000,

(b) about 1.5 to 6 mols, based on (a) of a chain-extending agent selected from the group consisting of dialcohols, amino alcohols, diamines, hydrazine hydrate, dihydrazide compounds and mixtures thereof and

(c) an aromatic and/or aliphatic polyisocyanate,

(II) about 2.5 to 15 parts of a crosslinker combination of

(C) about 10 to 60% by weight, based on II, of a formaldehyde-urea and/or formaldehyde-melamine resin and

(D) about 40 to 90% by weight, of an aliphatic and/or aromatic, unblocked or blocked polyisocyanate containing at least two isocyanate functions and

(III) said coating composition additionally containing

(E) from about 0.1 to 5 parts of a cellulose acyl alkyl ester or a cellulose mixed acyl alkyl ester,

(F) about 0.3 to 3 parts of a handle-improving agent,

(G) 0 to 5 parts of a silicone and

(H) 0 to about 20 parts of a pigment, filler and/or stabilizer

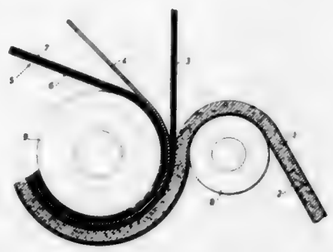
to a temporary support, drying the coating composition at temperatures of up to about 120° C., laminating the textile substrate to the dried polyurethane coating composition on pressure rolls heated to between about 20° and 160° C., followed by heating at about 120° C. to 180° C. and separating the coated textile from the temporary support.

4,657,614

METHOD FOR MAKING A LAMINATED MATERIAL

Thorbjörn Andersson, Södra Sandby, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Apr. 8, 1985, Ser. No. 720,871
Claims priority, application Japan, Apr. 16, 1984, 59-077008; Sweden, Nov. 22, 1984, 8405885
Int. Cl.⁴ B29C *47/06*; B32B *31/20*
U.S. Cl. 156—244.11 **9 Claims**



1. A method of forming a packing web, comprising the steps of:

providing a first laminate including a thermoplastic film and a first binder layer, said first binder layer having a softening temperature;

providing a second laminate including a carrier layer;

interposing a layer of metallic foil between said first binder layer and said carrier layer while extruding a second binder layer of thermoplastic material in a heated condition between said layer of aluminum foil and said carrier layer to form an intermediate web;

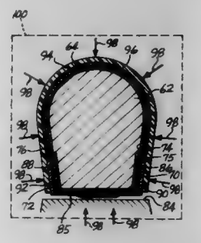
bonding said first and second laminates with said layer of metallic foil by compressing said intermediate web while conducting heat from said second binder layer to said first binder layer through said metallic foil to raise said first binder layer to at least said softening temperature.

4,657,615

COMPOSITE LEADING EDGE/SPAR MEMBER FOR AN AIRCRAFT CONTROL SURFACE

Rudolf Braun, and Richard Jensen, both of Winnipeg, Canada, assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 20, 1984, Ser. No. 642,572
Int. Cl.⁴ B61H *81/00*
U.S. Cl. 156—245 **4 Claims**



1. A method of fabricating an aircraft control surface, or the like, the method comprising the following steps:

(a) Providing a mandrel shaped to have a rounded leading edge forming portion and a spar forming portion, said spar forming portion including first and second rebate forming portions each of which is connected to said rounded leading edge portion, said spar forming portion further including a web forming portion which interconnects said first and second rebate forming portions;

(b) applying a composite material to said mandrel, with said material perimetrically surrounding and covering said rounded leading edge portion and said spar forming portion;

(c) positioning said covered mandrel in abutting relationship adjacent a supporting surface, so that the covered web forming portion of said spar forming portion abuts said surface, and positioning a separate caulplate against each of the covered rebate forming portions of said spar forming portion, and positioning still another caulplate against the covered rounded leading edge forming portion of said mandrel, wherein said caulplates and said supporting surface cooperate with each other to substantially surround said covered mandrel;

(d) curing said composite material to set in the shape of said mandrel, to form a one-piece leading edge/spar member, including applying forming pressure to said caulplates and to said supporting surface in a manner so as to force said caul plates and said supporting surface against said composite material, and including heating and thermally expanding said mandrel at the same time said forming pressure is applied, such expansion forcing said composite material outwardly and against said caulplates and said supporting surface, wherein said forming pressure applied to said caulplates and to said supporting surface together with said thermal expansion shape and mold said material into the same shape as said mandrel;

(e) after forming said one-piece leading edge/spar member, attaching a leading side of a first skin member to one of the formed rebate portions of said leading edge/spar member, in a manner so that the formed rounded leading edge portion of said leading edge/spar member and said first skin surface member form a substantially continuous aerodynamic surface;

(f) attaching a generally wedge-shaped trailing edge member to a trailing side of said first skin surface member;

(g) attaching a generally wedge-shaped honeycomb core member to said leading edge/spar member, and to said first skin surface member, and to said trailing edge member, wherein said honeycomb member includes a forward end surface connected to the web portion of said leading edge/spar member, and an aft end surface connected to said trailing edge member, and upper and lower honeycomb side surfaces, wherein one of said side honeycomb surfaces is connected to said first skin surface member;

(h) attaching a leading side of a second skin surface member to the other of said rebate portions of said leading edge/-spar member, in a manner so that said rounded leading edge portion of said leading edge/spar member and said second surface member form a substantially continuous aerodynamic surface, and attaching said second skin surface member to the other of said honeycomb side surfaces, and to said trailing edge member, and wherein said leading edge/spar member, said honeycomb member, said trailing edge member, and said first and second skin surface members together form said control surface; and

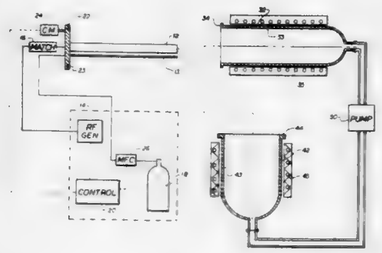
(i) curing said control surface.

4,657,616

IN-SITU CVD CHAMBER CLEANER

David W. Benzing; Jeffrey C. Benzing; Arthur D. Boren, all of San Jose, and Ching C. Tang, San Francisco, all of Calif., assignors to Benzing Technologies, Inc., San Jose, Calif.

Filed May 17, 1985, Ser. No. 735,821
Int. Cl.⁴ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—345 **19 Claims**



1. A chemical vapor deposition chamber cleaning system for the in-situ cleaning of LPCVD tube chambers or RPE bell jar chambers comprising:

a base member formed to create a vacuum seal upon engagement with the loading end of said chamber;

at least one powered electrode formed to protrude from said base member into said chamber and to extend substantially throughout the length of said chamber;

at least one grounded electrode formed to protrude from said base member into said chamber and to extend substantially throughout the length of said chamber;

a means for introducing a plasma forming gas into said chamber;

a means to evacuate said chamber such that a plasma can be created within said chamber;

an electrical network formed to create a radio frequency electrical field between said powered electrode and said grounded electrode, whereby a plasma is created in said chamber by the interaction of said gas and said RF field,

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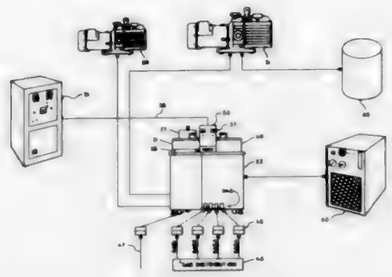
said plasma acting to etch unwanted deposits from the inner wall of said chamber.

4,657,617

ANODIZED ALUMINUM SUBSTRATE FOR PLASMA ETCH REACTOR

Randall E. Johnson, Carrollton, and John E. Spencer, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 22, 1984, Ser. No. 663,907
Int. Cl.[4] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*
U.S. Cl. 156—345 **14 Claims**



1. An apparatus for the manufacturing of semiconductor devices from semiconductor wafers having a plurality of semiconductor circuit patterns on at least a reacting surface of the semiconductor wafer, the apparatus comprises:

reacting means for providing a stream of reacting gases to react with the semiconductor wafer to create circuit elements according to the semiconductor circuit pattern thereby;

handling means for handling the wafers and includes a chamber means for bringing the wafers into contact with the reacting gas, and includes a support means having a protected prop for protecting the apparatus from the reacting gases, degassing means for degassing of the semiconductor wafers, port means for preventing the contamination of the chamber means and to provide a port for the transfer of the semiconductor wafers from the degassing means to the chamber means; exit means for isolating the semiconductor wafers and the circuit elements from the chamber means, second port means for providing a port for the transfer of the semiconductor wafer between the chamber means and the exit means, and transfer means for transferring the semiconductor wafer from the degassing means to the chamber means and

for isolating the semiconductor wafers and the circuit elements from the chamber means, second port means for providing a port for the transfer of the semiconductor wafer between the chamber means and the exit means, and transfer means for transferring the semiconductor wafer from the degassing means to the chamber means.

4,657,618

POWERED LOAD LOCK ELECTRODE/SUBSTRATE ASSEMBLY INCLUDING ROBOT ARM, OPTIMIZED FOR PLASMA PROCESS UNIFORMITY AND RATE

John E. Spencer, Plano; Randall E. Johnson, Carrollton; Dan T. Hockersmith, Garland; Randall C. Hildenbrand, Richardson; John I. Jones, Plano, and William S. Jaspersen, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 22, 1984, Ser. No. 663,804
Int. Cl.[4] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*
U.S. Cl. 156—345 **28 Claims**

1. An apparatus for the manufacturing of semiconductor devices from semiconductor wafers having a plurality of semiconductor circuit patterns on at least a reacting surface of the semiconductor wafer, the apparatus comprises:

reacting means for providing a stream of reacting gases to react with the semiconductor wafer to create circuit elements according to the semiconductor circuit pattern thereby;

handling means for handling the wafers and includes a chamber means for bringing the wafers into contact with the reacting gas, degassing means for pretreating of the semiconductor wafers, port means for preventing the contamination of the chamber means and to provide a port for the transfer of the semiconductor wafers from the degassing means to the chamber means; exit means for post-treating of the semiconductor wafers and the circuit elements from the chamber means, second port means for providing a port for the transfer of the semiconductor wafer between the chamber means and the exit means, and transfer means for transferring the semiconductor wafer from the degassing means to the chamber means and from the chamber means to the exit means; and

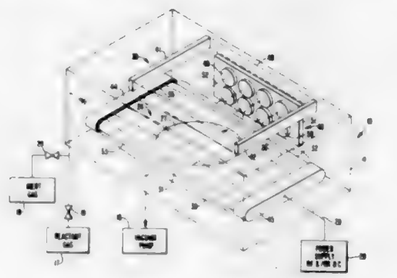
means for controlling the operation of the apparatus.

4,657,619

DIVERTER MAGNET ARRANGEMENT FOR PLASMA PROCESSING SYSTEM

Kevin P. O'Donnell, 1108 Interlaken Ave., Wanamassa, N.J. 07712

Filed Nov. 29, 1985, Ser. No. 802,896
Int. Cl.[4] C23C *14/50, 14/36*
U.S. Cl. 156—345 **5 Claims**



1. A magnetically enhanced plasma processing apparatus, the apparatus including a vacuum chamber, a workpiece support electrode disposed within the chamber, the electrode having a length dimension between first and second ends thereof, a width dimension between first and second side edges

of said electrode, a thickness dimension smaller than the length and width dimensions, and a processing surface for supporting a flat workpiece between the first and second ends and first and second side edges;

primary magnet means, including first and second magnetic members disposed at the first and second ends of the electrode, respectively, the first magnetic member constituting a first magnetic pole of one polarity and the second magnetic member constituting a second magnetic pole of opposite polarity, the first and second magnetic poles generating a primary magnetic field that extends between the poles in the direction of the length dimension of the electrode in front of the processing surface and extends continuously around the electrode;

auxiliary magnet means spaced from the processing surface and having third and fourth magnetic poles disposed above, parallel to, and opposite the first and second magnetic poles, respectively, of the primary magnet means, said auxiliary magnet means being disposed for generating an auxiliary magnetic field that tends to flatten the primary magnetic field in front of the processing surface;

means for evacuating the vacuum chamber;

means for delivering at least one preselected gas to the chamber; and

means for delivering electrical energy to the electrode sufficient to generate a plasma of ionized particles of said gas within the magnetic field in front of the processing surface, the polarity of the magnetic members being predetermined such that electron drift within said plasma occurs generally in the direction from the first edge of the electrode toward the second edge thereof, wherein the improvement comprises:

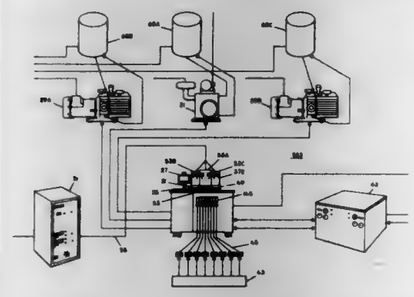
diverter magnet means for generating a third magnetic field having curved lines of force centered on an axis spaced from the first edge of the electrode such that the third magnetic field interacts with the result of the primary field and the auxiliary field at the first edge of the electrode and acts to stabilize the plasma in this region.

4,657,620

AUTOMATED SINGLE SLICE POWERED LOAD LOCK PLASMA REACTOR

Cecil J. Davis, Greenville; John E. Spencer, Plano; Dan T. Hockersmith, Garland; Randall C. Hildenbrand, Richardson; Frederick W. Brown, Colleyville, and Stanford P. Kohan, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 22, 1984, Ser. No. 663,905
Int. Cl.[4] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*
U.S. Cl. 156—345 **34 Claims**



1. An apparatus for the manufacturing of semiconductor devices from semiconductor wafers having a plurality of semiconductor circuit patterns on at least a first surface of the semiconductor wafer, the apparatus comprises:

first means for providing a stream of reacting gases to react with the semiconductor wafer to create circuit elements according to the semiconductor circuit pattern thereby;

second means for handling the wafers and includes a third means for bringing the wafers into contact with the reacting gas, fourth means for prereacting with a second group of reactant gases of the semiconductor wafers, fifth means for preventing the contamination of the third means and to provide a port for the transfer of the semiconductor wafers from the fourth means to the third means; sixth means for isolating the semiconductor wafers and the circuit elements from the third means and to perform a post reactant with a third group of reactant gases, seventh means for providing a port for the transfer of the semiconductor wafer between the third means and the sixth means, and eighth means for transferring the semiconductor wafer from the fourth means to the third means and from the third means to the sixth; means and

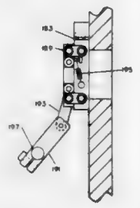
ninth means for controlling the operation of the apparatus.

4,657,621

LOW PARTICULATE VACUUM CHAMBER INPUT/OUTPUT VALVE

Randall E. Johnson, Carrollton; Louis E. Peters, Dallas, and Lowell E. Simmons, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 22, 1984, Ser. No. 663,908
Int. Cl.[4] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*
U.S. Cl. 156—345 **6 Claims**



1. An apparatus for the manufacturing of semiconductor devices from semiconductor wafers having a plurality of semiconductor circuit patterns on at least a reacting surface of the semiconductor wafer, the apparatus comprises:

reacting means for providing a stream of reacting gases to react with the semiconductor wafer to create circuit elements according to the semiconductor circuit pattern thereby;

handling means for handling the wafers and includes a chamber means for bringing the wafers into contact with the reacting gas, degassing means for degassing of the semiconductor wafers, port means for preventing the contamination of the chamber means and to provide a port for the transfer of the semiconductor wafers from the degassing means to the chamber means; port means for isolating the semiconductor wafers and the circuit elements from the chamber means, second port means for providing a port for the transfer of the semiconductor wafer between the chamber means and the port means, and transfer means for transferring the semiconductor wafer from the degassing means to the chamber means and from the chamber means to the port means; and wherein the transfer means includes;

a reacting opening into the chamber means, and a valve for opening and closing of the opening into the chamber means;

means for controlling the operation of the apparatus.

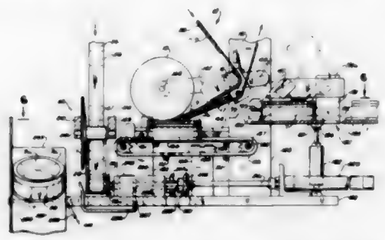
VOL 1077 ISS 2 APR 14 1987 UMI

4,657,622

PRECISION CAN LABELER WITH OPTIONAL TAX STAMP APPLICATOR

Eugene H. Paules, Huntington, Conn., assignor to United States Tobacco Company, Greenwich, Conn.

Filed Jan. 21, 1986, Ser. No. 820,940
Int. Cl.[4] B32B *31/00*; B65H *26/00*; G05G *15/00*; B65G *15/00*
U.S. Cl. 156—361 21 Claims



1. In a machine for labeling containers, the combination comprising:
(a) means for feeding a container to a conveying zone;
(b) a top or bottom label supply;
(c) means for detecting a container in said feed zone, interrelated to said means for feeding said container;
(d) means for conveying a container to a labeling zone, interrelated to said means for detecting said container and further synchronously interrelated to means for advancing a label onto a top or bottom surface of said container from said top or bottom label supply, said means for advancing said label including means for disabling said means for advancing said label without disabling said means for conveying said container;
(e) means for placing said container on side of said container relative to said surface on which said top or bottom label is located for said container, interconnected to said means for conveying said container, said means for placing comprising a gate disc for bringing said container into engagement with a restraining means;
(f) means for rotating said container on said side;
(g) a side label supply;
(h) means for feeding from said side label supply a side label onto said container in said means for rotating said container on said side, said means for feeding said side label interconnected to said means for conveying said container;
(i) means for bearing down container interconnected with said means for rotating said container and means for feeding a side label onto said container; and
(j) means for ejecting said container from said means for rotating said container on said side.

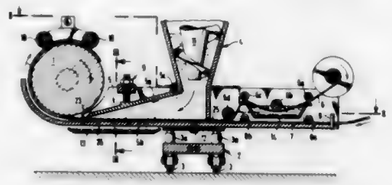
4,657,623

PROCESS AND APPARATUS FOR THE MANUFACTURE OF TUBULAR HOLLOW BODIES AND THE USE THEREOF

Ludwig Weach, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Zement AG, Heidelberg, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,219
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2903019
Int. Cl.[4] B32B *31/00*
U.S. Cl. 156—429 7 Claims

1. An improved apparatus for manufacturing tubular hollow bodies and particularly fiber-reinforced tubular hollow bodies, said bodies comprising at least one cover layer and at least one core layer, said apparatus comprising a means for supporting and rotating a mandrel upon which the core and cover layers are to be wrapped, means for guiding said core and cover layers to said rotating mandrel, a hopper adapted to receive and deliver a core material to said cover and core layer, wherein the improvement comprising a control unit which includes a compression tunnel having a free cross-section of passage defined by lower and opposite adjustable walls and side walls which taper down substantially continuously in the direcion of conveyance of the core layer to considerably reduce the thickness of the cover and core layers, said compression tunnel having at least one side channel extending in longitudinal direction through which the edge portion of the cover layer travels and is deflectable from the plane of the said compression tunnel, said compression tunnel further being adapted to apply compression forces perpendicular to the core layer, as well as tensile forces which act continuously and simultaneously on said core layer, both of which result in the formation of a uniform, homogenous, and stronger bond between said core and cover layers.

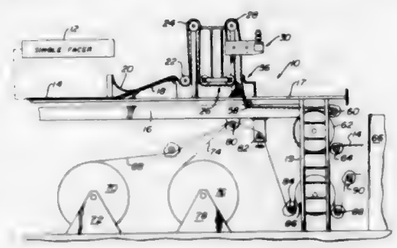


4,657,624

APPARATUS FOR PROCESSING CORRUGATED PAPERBOARD

Benedict R. Buinewicz, Villanova, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Division of Ser. No. 550,708, Nov. 14, 1983, Pat. No. 4,529,462. This application Jan. 23, 1985, Ser. No. 693,919
Int. Cl.[4] B31F *1/20*; B32B *3/28*
U.S. Cl. 156—470 6 Claims



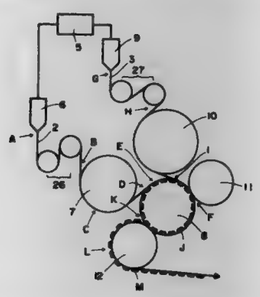
1. In a corrugator wherein a bridge is located between a single facer machine and a glue machine and adapted to feed a web of single face paperboard to the glue machine, means located between the single facer machine and the glue machine for longitudinally crushing a narrow portion of the flutes on the flute side of the web, and means associated with the glue machine for applying at least two liners to the uncrushed flutes on the web so that only crushed flutes are uncovered between adjacent longitudinal sides of the liners and said liners being side-by-side and transversely spaced by said narrow portion of crushed flutes.

4,657,625

APPARATUS FOR PRODUCING SHEET HAVING MANY HOLLOW BODIES FROM THERMOPLASTIC MATERIAL

Hajime Kawakami, Nagoya, Japan, assignor to Kawakami Sangyo Kabushki Kaisha, Nagoya, Japan

Filed Jun. 17, 1985, Ser. No. 745,159
Claims priority, application Japan, Jun. 20, 1984, 59-125099
Int. Cl.[4] B32B *31/00*; B31F *1/00*
U.S. Cl. 156—471 3 Claims



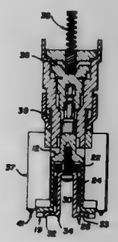
1. An apparatus for producing a sheet having many seperate hermetically sealed hollow bodies therein, said apparatus comprising a first film supply means for supplying a first plastic film; a second film supply means for supplying a slat plastic film; two roller means for receiving the first plastic film and the flat plastic film therebetween and for fusing thereof, one of the roller means having a series of indentations and suction means for forming projecting by vacuum suction in the first plastic film; two induction heating roller means respectively positioned between the first and second film supply means and one of each of the two roller means; and two cooling roller means respectively positioned between the first and second film supply means and one of the two induction heating roller means; each induction heating roller means having a roller shell, a jacket under the roller shell, an induction coil for heating the roller shell and jacket, a heat transfer medium hermetically sealed between the jacket and the induction coil, and a cooling means for cooling the heat transfer medium.

4,657,626

FRICTION WELDING TOOL

Steven V. Cearlock, Batavia; Francis C. Peterson, St. Charles, and Gene S. Kunos, Elgin, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 446,899, Dec. 6, 1982, Pat. No. 4,477,307. This application Aug. 6, 1984, Ser. No. 637,347
Int. Cl.[4] B30B *3/00*
U.S. Cl. 156—580 10 Claims



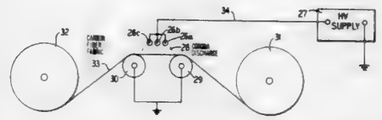
1. Tool for friction welding an article having drive means and a surface adapted to be fused to a workpiece, said tool comprising a rotary drive member including rotary torque applying means for contacting a portion of said article and for causing rotation of said article through engagement with said drive means, and a pressure applying member, said pressure applying member being continuously freely rotatably supported by said rotary drive member, said pressure applying member including pressure applying means for contacting another portion of said article and for applying axial pressure to said article against said workpiece to assure proper contact between said article and said workpiece both during and after rotation of said fastener.

4,657,627

CARBON FIBER SUBSTRATE PRETREATMENT FOR MANUFACTURING CRACK-FREE, LARGE-SURFACE SILICON CRYSTAL BODIES FOR SOLAR CELLS

Lore Bernewitz, Munich; Richard Falckenberg, Wald; Gerhard Hoyler, Munich, and Josef Grabmaier, Starnberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 22, 1985, Ser. No. 714,842
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1984, 3413355
Int. Cl.[4] B05D *5/12*; H01L *31/18*; C30B *29/00, 19/12*
U.S. Cl. 156—607 6 Claims



1. In a method for manufacturing crack-free, quasi-monocrystalline, large-surface silicon crystal bodies for solar cells by continuous coating of a planar carrier member having a net-like structure and comprised of a carbon fiber fabric, and wherein a molten silicon is brought into contact with said carrier member such that said carrier member becomes integrated in a silicon body when said silicon crystallizes, wherein the improvement comprises the steps of:
improving wettability of the carrier member comprising carbon fiber fabric by subjecting the carrier member, prior to coating with molten silicon, to an activating surface treatment in such fashion that non-saturated C-bonds arise at a surface of the carrier member, said activating surface treatment being carried out at least in those regions on which the silicon coating will be provided, and the activating surface treatment comprising subjecting the carrier member to a temperature treatment of about 2500° C. in a flowing halogen gas atmosphere.

4,657,628

PROCESS FOR PATTERNING LOCAL INTERCONNECTS

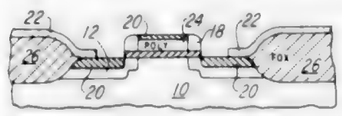
Thomas C. Holloway; Thomas E. Tang, both of Dallas; Che-Chia Wei, Plano; Roger A. Haken, Richardson, and David A. Bell, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 729,318, May 1, 1985. This application Mar. 7, 1986, Ser. No. 837,468
Int. Cl.[4] C23F *1/02*; B44C *1/22*; H01L *21/306*; C03C *15/00*
U.S. Cl. 156—643 11 Claims

1. A process for fabricating integrated circuits including local interconnect, comprising the steps of:
(a) providing a partially fabricated integrated circuit structure including moat regions, said moat regions incorporating active devices therein;
(b) depositing a thin layer of metal consisting predominantly of titanium overall;
(c) depositing a relatively inert material over said titanium in locations defining local interconnect pathways and/or locations of contacts to moat;

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(d) reacting said partially fabricated structure in an atmosphere containing a high portion of nitrogen, whereby portions of said titanium metal over moat regions are predominantly converted to titanium silicide, and portions



of said titanium metal over oxide regions are converted predominantly to titanium nitride;

(e) etching away exposed portions of said titanium and of said titanium nitride, to define local interconnects in predetermined local interconnect locations.

4,657,629

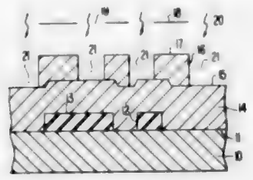
BILEVEL RESIST PROCESS

Mark G. Bigelow, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 27, 1986, Ser. No. 844,504

Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00*; B29C *37/00*

U.S. Cl. 156—643 **17 Claims**



1. For use in a process for manufacturing a semiconductor device, a method of forming a masking layer on an underlying semiconductor structure to be selectively patterned through apertures in said masking layer comprising the steps of:

(a) forming a first layer of photoresist material on said semiconductor structure;

(b) desensitizing said first layer of photoresist material to the action of developing agent;

(c) forming a second layer of photoresist material on said first layer of desensitized photoresist material;

(d) photolithographically patterning said second layer of photoresist material so as to expose prescribed surface portions of said first desensitized layer of photoresist material; and

(e) removing from said first layer desensitized photoresist material portions beneath said prescribed surface portions.

4,657,630

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE HAVING ISOLATING GROOVE

Takashi Agatsuma, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,322

Claims priority, application Japan, Jan. 31, 1983, 58-12744

Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

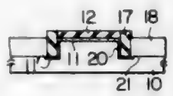
U.S. Cl. 156—643 **24 Claims**

1. A method for manufacturing a semiconductor device comprising a semiconductor substrate, at the principal surface of which semiconductor substrate a groove is provided, comprising the steps of:

(a) forming a step at said principal surface;

(b) selectively forming a first mask at the side wall of said step;

(c) selectively forming a second mask at said principal surface using said first mask as a mask; and



(d) selectively removing said first mask to selectively expose said principal surface.

4,657,631

PROCESS FOR PRODUCING A LIQUID JET RECORDING HEAD

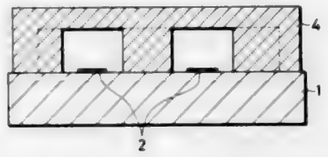
Hiromichi Noguchi, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1985, Ser. No. 811,460

Claims priority, application Japan, Dec. 28, 1984, 59-274689

Int. Cl.⁴ B44C *1/22*; B29C *17/08*; C03C *15/00, 25/06*

U.S. Cl. 156—655 **27 Claims**



1. A process for producing a liquid jet recording head comprising a liquid flow path, a liquid ejection port communicating with the liquid flow path, and a liquid ejection energy generating member arranged along the liquid flow path which comprises the steps of:

(a) forming a solid layer comprising a photoresist of a positive type photosensitive material on a substrate in accordance with the pattern of the liquid flow path,

(b) filling up the recess on the substrate where the solid layer is not present, with a liquid flow path wall forming material, and

(c) removing the solid layer from the substrate.

4,657,632

USE OF IMMERSION TIN COATING AS ETCH RESIST

Abraham M. Holtzman, Bat Yam, and Joseph Relis, Ramat Gan, both of Israel, assignors to Techno Instruments Investments 1983 Ltd., Bat Yam, Israel

Continuation-in-part of Ser. No. 770,842, Aug. 29, 1985. This application Dec. 13, 1985, Ser. No. 808,879

Int. Cl.⁴ B44C *1/22*

U.S. Cl. 156—659.1 **26 Claims**

1. A process for manufacturing a device having a metal surface in which a portion of said metal surface is removed by etching comprising selectively applying an etch resist immersion composition to said metal surface to leave areas of coated and uncoated metal followed by etching said metal not coated with said etch resist, said etch resist comprising:

(a) a thiourea compound

(b) a urea compound

(c) a metal salt.

4,657,633

DELIGNIFICATION AND BLEACHING OF A CELLULOSE PULP WITH AN ALKALIOXYGEN-HYPOCHLORITE SINGLE STAGE SEQUENTIAL EXTRACTION

David F. Dwiggins, Goose Creek, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed May 24, 1985, Ser. No. 737,463

Int. Cl.⁴ D21C *9/12, 9/14, 9/147*

U.S. Cl. 162—65 **14 Claims**

1. In a multi-stage process for bleaching and delignifying cellulose pulp in which the pulp is subjected to a bleaching stage and to a subsequent caustic extraction stage, the improvement in the caustic extraction stage for achieving enhanced lignin extraction with high brightness and high viscosity, which comprises contacting the bleached pulp as received from the bleaching stage with oxygen and hypochlorite by the steps of first mixing the oxygen with the pulp in the presence of caustic under superatmospheric pressure wherein the pressure is maintained for at least three minutes and the pulp is partially extracted, and then, without intermediate washing of the pump, mixing the hypochlorite with the pulp in the presence of caustic and allowing the extraction to be completed.

4,657,634

FRAME CONSTRUCTION AND METHOD IN A PAPER MACHINE PRESS SECTION FOR FACILITATING REPLACEMENT OF PRESS ROLLS AND FABRICS

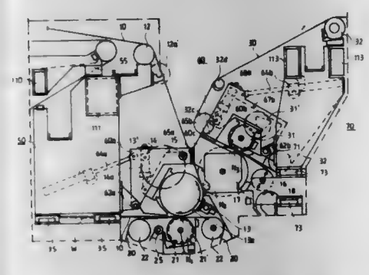
Markku Autio, Jyviskylä, Finland, assignor to Valmet Oy, Finland

Continuation-in-part of Ser. No. 727,104, Apr. 25, 1985, Pat. No. 4,608,125. This application May 7, 1986, Ser. No. 860,503

Claims priority, application Finland, Nov. 29, 1984, 844693; Fed. Rep. of Germany, Nov. 27, 1985, 3541943; Finland, Dec. 13, 1985, 854959

Int. Cl.⁴ D21F *3/04*; D21G *9/00*

U.S. Cl. 162—199 **8 Claims**



1. In a paper machine press section having a compact press roll combination including three press rolls which form at least two press nips with each other between which a web is adapted to run in a longitudinal machine direction and press fabrics passing through said press nips, a frame construction on which said press rolls are mounted, comprising:

a front frame situated before said roll combination in the direction of web run through the press section;

a rear frame separate from said front frame situated after said roll combination in the direction of web run through the press section; and

an intermediate frame arrangement situated above said roll combination interconnecting said front and rear frames, said intermediate frame arrangement being pivotal from a closed position to an open position by actuating means to create an open space above said roll combination so that at least one of said press rolls and press fabrics can be removed and replaced through said open space when said intermediate frame arrangement is in said open position, said intermediate frame arrangement including,

a front intermediate frame pivotally mounted to said front frame by first pivot means having an axis transverse to the longitudinal machine direction,

a rear intermediate frame pivotally mounted to said rear frame by second pivot means having an axis transverse to the longitudinal machine direction, a stationary intermediate frame part located between said front intermediate frame and said rear intermediate frame,

means for locking said front and rear intermediate

frames to said stationary intermediate frame part when said intermediate frame arrangement is in its closed position,

first actuating means coupled to said front intermediate frame for pivoting the same between closed and open positions, and

second actuating means coupled to said rear intermediate frame for pivoting the same between closed and open positions;

whereby said front and rear intermediate frames are separately openable and closeable independently of each other.

4,657,635

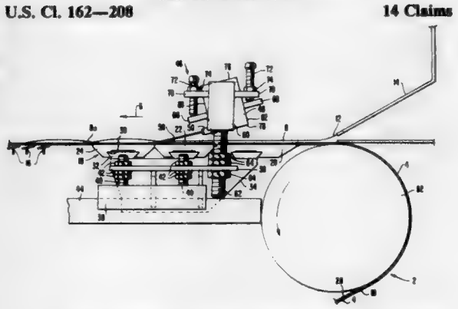
METHOD AND APPARATUS FOR THE DEFLOCCULATION OF STOCK

Otto J. Kallmes, Marblehead, Mass., assignor to M/K Systems, Danvers, Mass.

Filed May 15, 1985, Ser. No. 734,114

Int. Cl.⁴ D21F *1/00*

U.S. Cl. 162—208 **14 Claims**



1. In a papermaking machine including an endless forming medium travelling in a machine direction carrying stock deposited on one surface thereof from a slice of a headbox and including a plurality of dewatering elements downstream of said slice, the improvement comprising:

(a) means for forming a substantially continuous undersurface to the forming medium to prevent the drawing of water through the forming medium and to allow substantial dissipation of flow disturbances of the stock, including a first blade and at least one other contiguous succeeding blade extending in a cross machine direction adjacent a second surface of said forming medium opposite said one surface, each of said contiguous succeeding blades being downstream of said first blade, said means being positioned between said slice and said dewatering elements; and,

(b) means extending in a cross machine direction adjacent said one surface of said forming medium for showering said stock with a plurality of needle jets of water spaced along said showering means in the cross machine direction, each of said needle jets of water extending in a downstream direction, forming a small acute angle with said stock, and being in close proximity with said stock so that said needle jets of water gently impinge upon said stock as continuous streams at a position where said flow disturbance have substantially dissipated and as said stock on said forming medium is being carried over said forming

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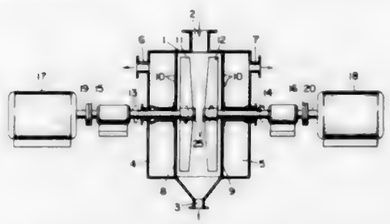
means by said forming medium so as to form a uniform flow pattern in said stock.

4,657,636

HIGH DENSITY PULP SCREENING APPARATUS

Hitoshi Satomi, 12-25, Toro 2-chome, Shizuoka-shi, Shizuoka-ken, Japan

Filed Sep. 16, 1985, Ser. No. 776,455
Claims priority, application Japan, Jan. 28, 1985, 60-14023
Int. Cl.⁴ D21D *5/04*; **B07B** *1/04, 1/42*
U.S. Cl. 162—261 **5 Claims**



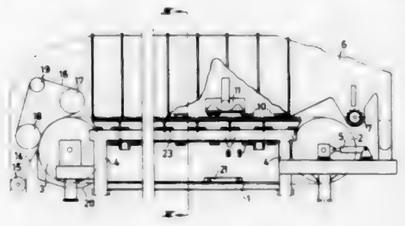
1. A high density pulp screening apparatus comprising:
a casing of generally cylindrical configuration provided with a first chamber having an intake port for introducing pulp slurry to be screened and a discharge port for discharging undesired substances separated from the pulp slurry and a pair of second chambers disposed on both sides of said first chamber for accepting refined pulp slurry each one of said second chambers having a delivery port;
a pair of screen plates each disposed between said first chamber and the respective second chambers to define said first and second chambers in said casing, said pair of screen plates being provided with a plurality of apertures through which the refined pulp slurry passes from said first chamber into said respective second chambers;
a pair of impellers provided in the first chamber and disposed adjacent to said screen plates, respectively; and
drive means operatively connected to said impellers to rotate the same in opposite directions to each other through drive shafts disposed across said second chambers.

4,657,637

PULP TREATMENT APPARATUS HAVING LOWERABLE VACUUM CONTAINERS TO FACILITATE REMOVAL THEREOF

Alf I. Lindström, Sundsbruk, Sweden, assignor to Sunds Defibrator Aktiebolag, Sweden

Filed Sep. 13, 1985, Ser. No. 775,585
Claims priority, application Sweden, Sep. 17, 1984, 8404655
Int. Cl.⁴ D21D *1/40*; **D21F** *7/00*
U.S. Cl. 162—272 **8 Claims**



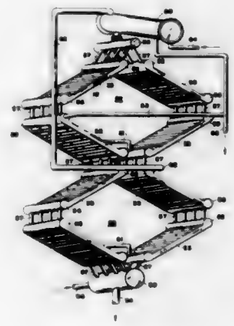
1. An apparatus for liquid treatment of pulp, said apparatus comprising a stand having an upper support and a lower support, a liquid-permeable web having a longitudinal axis, means for supporting said web within said stand, means for supplying pulp to said web, a plurality of containers arranged in an upper position adjacent an underlying portion of said web for collecting liquid penetrating said web, said containers removably supported by said upper support of said stand and extending transversely of the longitudinal axis of said web and across substantially the entire width thereof, said containers structured in relationship to said stand to be individually lowerable from said upper position to a lower position movable along the longitudinal axis of said web to a predetermined location within said stand, and moving means for moving said containers along the longitudinal axis of said web when in said lower position, said moving means supported by said lower support of said stand, said stand being constructed and arranged in relationship to said containers to permit the movement of said containers, when in said lower position, along the longitudinal axis of said web and underlying said containers being supported in said upper position by said upper support of said stand, whereby selected ones of said containes can be individually removed from said stand at said predetermined location.

4,657,638

DISTILLATION COLUMN

Ferdinand le Grand, Gainesville, and Carlos E. Odio, Clearwater, both of Fla., assignors to University of Florida, Gainesville, Fla.

Filed Jul. 29, 1985, Ser. No. 760,119
Int. Cl.⁴ B01D *3/16*
U.S. Cl. 202—158 **3 Claims**



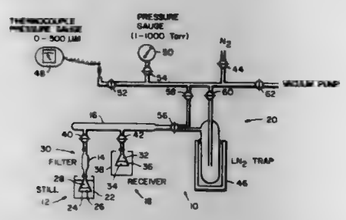
1. A distillation column for the separation of a vapor from a mixture of liquid and vaporizable components comprising four substantially identical column sections arranged in the shape of a parellelogram symmetrical about a central vertical plane, each column section forming one side of the parallelogram with the two columns on each side of said plane forming two parallel flow halves of said column, each section having a thin elongated ribbon channel for vapor-liquid flow formed by spaced angularly corrugated top and bottom walls oriented with one end of the channel at an elevation higher than the other end such that the channel will form a consecutive series of pools of liquid flowing downwardly by gravity, each pool separated from the next adjacent pool by a vapor space through which vapor flows upwardly, means for introducing said mixture of liquid and vaporizable components at the top of said halves, means for introducing heated vapor at the bottom of said halves, means for removing vapor at the top of said halves, and means for removing liquid at the bottom of said halves.

4,657,639

APPARATUS FOR ELECTROSTATIC FILTRATION OF N_2O_4 FOR REMOVAL OF SOLID AND VAPOR CONTAMINANTS

Parameswar Mahadevan, Fullerton; Elfreda T. Chang, Los Angeles, and Peter Breisacher, Palos Verdes Peninsula, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 31, 1985, Ser. No. 740,107
Int. Cl.⁴ B01D *3/00, 13/02, 46/00*
U.S. Cl. 202—182 **1 Claim**



1. An apparatus for the electrostatic filtration of vaporous N_2O_4, said apparatus removing substantial amounts of iron contaminants, said apparatus comprising:
a still for forming a vapor of said N_2O_4, said still operating at about ambient temperatures, said vapor flowing from said still by a first pipe;
an electret vapor filter for receiving said vapor from said still by said first pipe, said electret vapor filter comprising a filtering section receiving vapor from said still and outputting a filtered vapor, said filtering section having therein a plurality of electret filter layers separated by washers, said filter having a blocking filter layer positioned downstream of said plurality of electret filter layers to increase the resident time that said vapor interacts with said filter, said filtered vapor flowing from said filter by a second pipe;
a first flow control means for receiving said filtered vapor by said second pipe and outputting said filtered vapor by a third pipe;
a manifold for receiving said filtered vapor from said first flow control means by said third pipe;
a second flow control means for receiving said filtered vapor from said manifold by a fourth pipe;
a receiver, said receiver connected to receive said filtered vapor from said second flow control means by a fifth pipe, said receiver having therein a container for receiving said filtered vapor, said container being at a temperature to condense said filtered vapor into a filtered fluid of N_2O_4, and
a means for cleansing said manifold, and said first and said second flow control means of N_2O_4, NOCl and NO, said cleansing means connected to said manifold by a sixth pipe having flow control means therein.

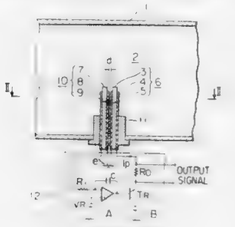
4,657,640

METHOD OF SENSING AIR-TO-FUEL RATIO SENSOR OF AN ENGINE

Yoshiaki Asayama, Himeji, and Seiya Kominami, Takasago, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and NGK Spark Plug Co., Ltd., Japan

Division of Ser. No. 606,926, May 4, 1984. This application Aug. 28, 1985, Ser. No. 770,655
Claims priority, application Japan, May 11, 1983, 58-83587
Int. Cl.⁴ G01N *27/46*
U.S. Cl. 204—1 T **1 Claim**

1. A method of determining the air-to-fuel ratio A/F of an engine using a sensor unit mounted in an exhaust gas passage of the engine having a sensor and an oxygen pump separated by a gap, said oxygen pump comprising a solid electrolyte oxygen pump supplied with current from a source to control the partial pressure of oxygen in the gap, said sensor comprising a solid electrolyte oxygen sensor for producing an electromotive force corresponding to the difference between the partial pressure of the oxygen in the gap and the partial pressure of the oxygen in the exhaust gas flowing through the passage outside of the gap, said method comprising the steps of:
introducing exhaust gas from the passage into said gap;
controlling the current Ip to said oxygen pump so as to maintain the electromotive force produced by said oxygen sensor at a constant predetermined value of about 100 Mv to produce a mode of operation of the oxygen pump in



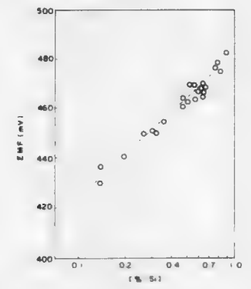
which the magnitude of the pump current Ip as a function of the air-to-fuel ratio A/F remains substantially constant at low A/F ratios below stoichiometric A/F, changes abruptly in the vicinity of the stoichiometric A/F, and increases linearly at lean A/F ratios higher than the stoichiometric A/F and
producing an output signal corresponding to the pump current Ip and detecting the air-to-fuel ratio A/F of the engine at the stoichiometric point and at lean A/F ratios by the abrupt change in the output signal occurring at the stoichiometric point and by the linear change occurring above that point.

4,657,641

DETERMINATION OF SILICON IN MOLTEN METAL

Hajime Nakamura, Hiroshima; Masanori Iwase; Eiji Ichise, both of Kyoto; Takaharu Moriya, Hiroshima, and Shigeaki Maruhashi, Tokyo, all of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Filed May 1, 1986, Ser. No. 858,175
Claims priority, application Japan, May 15, 1985, 60-101373
Int. Cl.⁴ G01N *27/58*
U.S. Cl. 204—1 T **3 Claims**



1. A method for the electro-chemical determination of silicon dissolved in a molten metal, comprising the steps of placing a solid auxiliary electrode comprising SiO_2 in the molten metal to form a chemical quasi-equilibrium zone wherein the activity of SiO_2 is substantially constant, and measuring a

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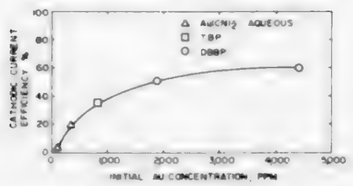
potential difference between the molten metal and a reference electrode providing a constant oxygen potential at a particular temperature of measurement separated from each other by a solid eletrolyte capable of conducting oxygen ions.

4,657,642

DIRECT GOLD ELECTROLYSIS FROM A LOADED ORGANIC PHASE

Jan D. Miller, and Rong-yu Wan, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Continuation-in-part of Ser. No. 527,311, Aug. 26, 1983, Pat. No. 4,540,435. This application Sep. 10, 1985, Ser. No. 774,548
The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.
Int. Cl.⁴ C25C *1/00*
U.S. Cl. 204—59 M **15 Claims**



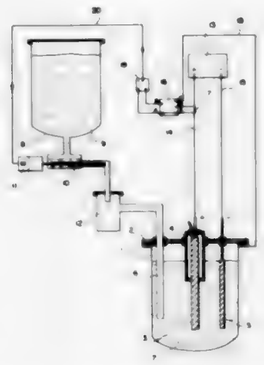
1. A method for recovering gold or silver values from an organic liquid containing gold or silver cyanide complexes, comprising electrodepositing said gold or silver values onto a cathode immersed in said organic liquid.

4,657,643

PROCESS FOR CONTINUOUSLY CONTROLLING THE PROPORTION OF METAL DISSOLVED IN A BATH OF MOLTEN SALTS AND THE APPLICATION THEREOF TO THE CONTINUOUS FEED OF AN ELECTROLYSIS CELL WITH SALTS OF SAID METAL

Marcel Armand, Meylan, and Jean-Pierre Garnier, Rugles, both of France, assignors to Pechiney, Paris, France

Filed Mar. 12, 1986, Ser. No. 839,131
Claims priority, application France, Mar. 28, 1985, 85 05196
Int. Cl.⁴ C25C *3/26, 3/28*
U.S. Cl. 204—64 R **5 Claims**



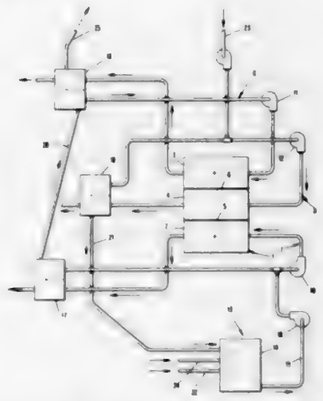
1. A process for continuously controlling the proportion of transition metal dissolved in a bath of molten chlorides which is disposed in an electrolysis cell and which is intended for the production of said metal, from one at least of the chlorides thereof, wherein the potential of an indicator electrode of the transition metal which dips into the bath is measured with respect to a reference electrode, characterised by introducing into the bath an amount of alkali metal and/or alkaline earth fluorides such that the molar ratio of the fluorine contained in the bath to the amount of dissolved transition metal is between 2.5 and 15.

4,657,644

ELECTROLYTIC OXIDATION

Jean Bachot, Fontenay-aux-Roses, and Jean-Yves Dumousseau, Paris, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Sep. 13, 1985, Ser. No. 775,771
Claims priority, application France, Sep. 13, 1984, 84 13641
Int. Cl.⁴ C25B *1/00*
U.S. Cl. 204—91 **11 Claims**



1. A process for oxidizing an ionic compound, which comprises electrolytically oxidizing a solution of said compound in a first anode compartment of an electrolytic cell, said electrolytic cell further comprising a second anode compartment, a cathode compartment, and a pair of cationic membranes respectively separating said cathode compartment from said first and second anode compartments; transferring a portion of said solution electrolytically oxidized in said first anode compartment to said second anode compartment and there continuing the electrolytic oxidation thereof; and thence recovering product of electrolytic oxidation from said second anode compartment wherein the anode current density in said first anode compartment is greater than that in said second anode compartment.

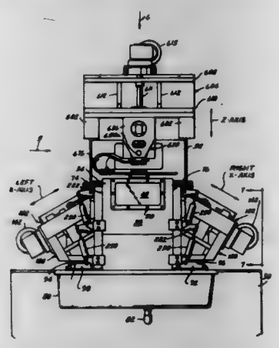
4,657,645

ECM MACHINE WITH WORKPART SHROUD AND ARBOR ASSEMBLY

Edmund R. Hinman, Monroe, Conn., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Nov. 27, 1985, Ser. No. 802,510
Int. Cl.⁴ B23H *3/00, 9/10*
U.S. Cl. 204—129.1 **17 Claims**

15. In a method for electrochemically machining a workpart, the steps of enclosing the workpart in a shroud except for a portion of the workpart to be received in an electrolyte chamber including mounting the workpart and shroud on a common carrier means, carrier means and an electrolyte chamber to position said portion in the electrolyte chamber, sealingly engaging the shroud and means forming the electrolyte



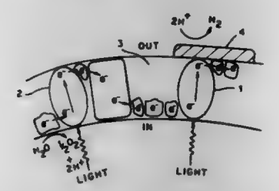
chamber and making said portion an anode relative to cathode tool means in the electrolyte chamber.

4,657,646

METHOD OF PRODUCING METALLIZED CHLOROPLASTS AND USE THEREOF IN THE PHOTOCHEMICAL PRODUCTION OF HYDROGEN AND OXYGEN

Elias Greenbaum, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 25, 1985, Ser. No. 802,097
Int. Cl.⁴ B01J *19/12*
U.S. Cl. 204—157.5 **16 Claims**



14. A process for converting light energy to stored chemical energy comprising:

(a) preparing metallized chloroplasts by isolating chloroplasts, introducing a solution of a soluble compound of a metal catalyst to said isolated chloroplasts, chemically binding a colloidal metal catalyst from said soluble compound onto the surface of said isolated chloroplasts at locations of photosynthetic reduction by reducing said metal resulting in metallized chloroplasts;

(b) depositing said metallized chloroplasts on a nonreacting solid support medium;

(c) placing said metallized chloroplasts and said solid support medium within an enclosed chamber having an inlet for introducing reactant and an outlet for removing products;

(d) directing light including wavelengths from 400 to 700 nm onto said metallized chloroplasts;

(e) introducing into said chamber a reactant capable of undergoing a reaction in the presence of said light and said metallized chloroplast to produce stored chemical energy in the form of a product or products of said reaction; and

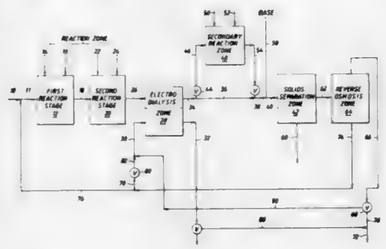
(f) removing said product or products from said chamber.

4,657,647

PROCESS FOR THE PRODUCTION OF DICHLOROHYDRIN AND THE ELECTRODIALYSIS THEREOF

George C. Blytas, and F. Norman Grimsby, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 14, 1986, Ser. No. 885,514
Int. Cl.⁴ B01D *13/02, 57/02*
U.S. Cl. 204—182.4 **12 Claims**



1. A continuous process for the production of dichlorohydrin which comprises in sequence

(a) reacting allyl chloride, water and chlorine in a first reaction to form an aqueous reaction mixture of dichlorohydrin and reaction by-products,

(b) passing the reaction mixture as feed to an electrodialysis zone, said electrodialysis zone having a feed inlet and a diluate (product) outlet, a concentrate inlet and a concentrate outlet,

(c) electrodialyzing said feed in said electrodialysis zone to remove ions formed during the reaction from said feed into a concentrate stream and to obtain a diluate stream containing dichlorohydrin and having a lower ion content than said feed,

(d) adding a basic material to said diluate stream to neutralize at least a majority of the hydrogen ions present in said diluate while maintaining the pH of said diluate below about 6.9,

(e) subjecting said diluate to reverse osmosis in a reverse osmosis zone to obtain: (1) an retentate stream having a higher dichlorohydrin concentration than said diluate, and (2) a permeate stream of relatively pure water,

(f) recycling a major portion of said permeate stream to the reaction zone,

(g) passing at least a portion of at least one of: (1) said permeate stream and/or (2) said retentate stream, to the concentrate inlet of said electrodialysis zone,

(h) withdrawing an ion concentrate stream from said electrodialysis zone, and

(i) withdrawing any retentate stream which was not passed to said electrodialysis zone.

4,657,648

METHOD OF MANUFACTURING A MASK BLANK INCLUDING A MODIFIED CHROMIUM COMPOUND

Osamu Nagarekawa, and Shigekazu Matsui, both of Yamanashi, Japan

Division of Ser. No. 550,006, Dec. 29, 1983, Pat. No. 4,530,891, which is a continuation of Ser. No. 357,878, Mar. 15, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,353
Claims priority, application Japan, Mar. 17, 1981, 56-37202
Int. Cl.⁴ C23C *14/36*
U.S. Cl. 204—192.26 **7 Claims**

1. A method of manufacturing a photo-mask blank which comprises a substrate transparent to light in a predetermined wavelength region and having a principal surface, a shading layer on said principal surface for shading the light in said predetermined wavelength region, and an antireflection layer on said shading layer for reducing reflection of light in at least

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a part of said predetermined wavelength region, said shading and said antireflection layers being deposited onto said substrate in a hollow space by sputtering, said method comprising the steps of:

positioning a target of chromium and said substrate in said hollow space;

filling said hollow space with a first gas including methane and an inert gas;

sputtering particles of said target onto said principal surface



to deposit, as said shading layer, a layer including chromium and chromium carbide resulting from the reaction of said particles with carbon from said methane in said hollow space;

filling said hollow space with a second gas including oxygen after deposition of said shading layer; and

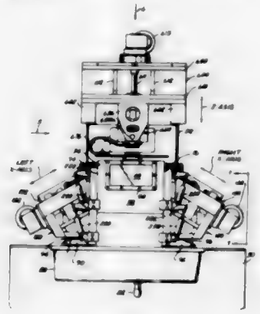
sputtering the particles of said target onto said shading layer to deposit, as said antireflection layer, a layer including chromium oxide resulting from the reaction of said particles with said oxygen in said hollow space.

4,657,649

ECM MACHINE WITH SKEWED WORKPART AND POCKETED CATHODES

Edmund R. Hinman, Monroe, Conn., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Nov. 27, 1985, Ser. No. 802,141
Int. Cl.[4] B23H *9/10, 3/04, 7/30*
U.S. Cl. 204—224 M **17 Claims**



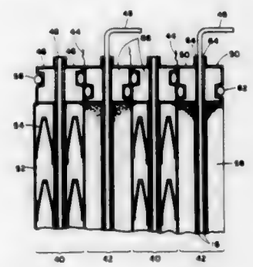
1. In an apparatus for electrochemically machining a workpart having appendages extending from and spaced thereabout, the combination of means for forming an electrolyte chamber, means for positioning an individual appendage as an anode at a workpart machining position in the electrolyte chamber with an adjacent appendage extending into the electrolyte chamber, cathode means movable in the electrolyte chamber and having an inner working face in spaced facing relation to the individual appendage at the workpart machining position and another face extending transverse to the inner working face, means for relatively positioning said cathode means and workpart in skewed relation at an angle at the workpart machining position with the inner working face in the space between the individual appendage and adjacent appendage and with the adjacent appendage extending toward said another face, said cathode means having pocket means in said another face spaced behind the inner working face to receive said adjacent appendage without contact as the cathode means is moved toward the workpart machining position and the workpart is positioned at the workpart machining position in the electrolyte chamber, and means for moving the cathode means in the electrolyte chamber.

4,657,650

ELECTROCHEMICAL CELL HAVING RETICULATED ELECTRICAL CONNECTOR

Elvin M. Vauss, Jr., Cleveland, and Andrew J. Niksa, Concord, both of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Continuation-in-part of Ser. No. 617,489, Jun. 8, 1984, abandoned, filed as PCT US83/01926 on Dec. 8, 1983, published as WO84/02615 on which is a continuation-in-part of Ser. No. 453,573, abandoned. This application Jun. 22, 1984, Ser. No. 623,837
Int. Cl.[4] C25B *9/04*
U.S. Cl. 204—242 **4 Claims**



1. An electrolytic cell comprising electrode assemblies, a current distributor, means for mechanically maintaining the current communicative cooperations, and a continuously openly porus reticulated electrical interface of electrically conductive strands having pore size ranging from 5 pores per inch to 80 pores per inch and having strands constructed of at least one conductive metal selected from platinum, gold, silver, cooper, aluminum, nickel, palladium, or combinations thereof, wherein the interface is compressed between an electrode assembly and said current distributor, or compressed between two electrode assemblies, with there being side wall portion raised projection multiple point contact between the mating faces of the reticulated interface and the electrode assemblies, and with there being a sealing means disposed peripherally about said reticulated interface to seal said interface.

4,657,651

VERTICAL GAS ELECTRODE OPERATION

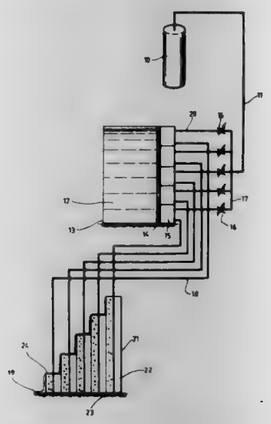
Thomas J. Wainerdi, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 4, 1986, Ser. No. 848,098
Int. Cl.[4] C25B *9/00, 11/03, 11/12*
U.S. Cl. 204—265 **25 Claims**

1. An apparatus for equalizing varying gas and liquid electrolyte interface pressures within the pores of a vertically positioned, porous gas electrode in an electrolytic cell, comprising:

a porous, vertical gas electrode, sectioned into laterally disposed horizontal compartments down its vertical length and adapted to separate said cell into a gas zone and a liquid electrolyte zone, each said horizontal compartment being separately connectable to a source of gas; and

a weir system comprising a plurality of vertical chambers each with an overflow weir, each said chamber being connected by a conduit to a separate one of said compartments, the weir of each chamber being at a height to provide a fluid head within its chamber to substantially



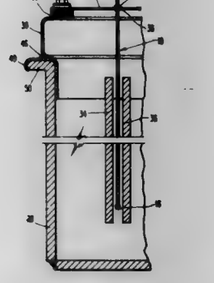
balance the fluid head of said liquid electrolyte exerted on the said compartment to which said chamber is connected.

4,657,652

ELECTROLYTIC CELL AND ANODE FOR BRINE ELECTROLYTES

Jimmie R. Hodges, Federal Way, Wash., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 28, 1986, Ser. No. 834,719
Int. Cl.[4] C25B *11/08, 11/10*
U.S. Cl. 204—269 **20 Claims**



1. An electrolytic cell for the production of halogens or halates from their corresponding brine electrolytes, consisting essentially of:

(a) an electrically conductive container for said electrolytes having a removable cover electrically insulated from a lower portion of the container;

(b) an anode affixed to said cover and associated pairs of cathodes that are electrically connected to said lower portion of the container with said anode and cathodes being adapted to be operatively positioned within said container such that at least a portion of the anode is overlapped by each adjacent cathode and the cathodes and anode are adapted to be immersed in said electrolytes, said anode consisting essentially of:

(i) a self supporting aluminum core,

(ii) a sheath of metal from the titanium group completely covering at least that portion of said core that is disposed to be located within the interior of the container during cell operation, and

(iii) an electroconductive coating of precious metal covering at least that portion of said anode and sheath that is overlapped by an adjacent cathode in (b);

(c) means for applying a DC voltage between the anode and said lower portion of the container;

(d) means for introducing brine electrolyte into said lower portion of the container, and

(e) means for withdrawing from said container halogens or halates produced by electrolysis of said brine.

4,657,653

CATALYST FOR A BASIC SOLUTION ELECTROLYZER

Jacques Bouet, Paris, France, assignor to Alsthom-Atlantique, Paris, France

Filed May 29, 1985, Ser. No. 738,715
Claims priority, application France, May 29, 1984, 84 08428
Int. Cl.[4] C25B *11/06;* **C25D** *17/10;* **B05D** *5/12*
U.S. Cl. 204—290 R **3 Claims**



1. An electrode catalyst for an electrolyzer of basic solutions comprising a mixed oxide represented by $(Ni_{1-x}Cd_x)\ MoO_4$ where $0.02 \leqq X \leqq 0.06$ prepared by impregnating an electrode support with a solution containing ammonium paramolybdate and nickel and cadmium salts selected from the group consisting of nitrates and sulfates,

air roasting said impregnated support at a temperature of between 400° C. and 550° C.,

carrying out partial reduction of said impregnated and air roasted support under a nitrogen and hydrogen atmosphere at a temperature of between 400° C. and 550° C., and

cooling under a neutral atmosphere.

2. The catalyst in accordance with claim **1**, wherein said impregnation solution is stabilized with ammonia.

3. The catalyst in accordance with claim **1**, wherein after said impregnation, precipitation is carried out with soda to form the corresponding hydroxides, and then the electrode catalyst is dried and washed prior to said air roasting.

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TARGETS FOR MAGNETRON SPUTTER DEVICE HAVING SEPARATE CONFINING MAGNETIC FIELDS TO SEPARATE TARGETS SUBJECT TO SEPARATE DISCHARGES

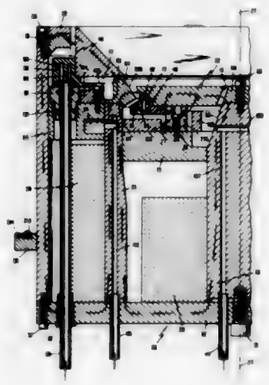
Donald M. Mintz, Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 759,722, Jul. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 611,435, May 17, 1984, Pat. No. 4,595,482. This application Apr. 18, 1986, Ser. No. 856,430

The portion of the term of this patent subsequent to Jun. 17, 2003, has been disclaimed.

Int. Cl.[4] C23C *14/00*

U.S. Cl. 204—298 20 Claims



1. A central target for use in a magnetron sputter device having separate coaxial confining magnetic fields for separate coaxial targets subject to separate discharges, said central target comprising:

an annular target structure generally symmetric about a central axis and having a substantially planar, annular emitting surface substantially perpendicular to said axis, said annular emitting surface being limited by an inner radius R1 and an outer radius R2, and having a planar annular rear face, said rear face being substantially parallel to and concentric with said emitting surface, said annular rear face being limited by an inner radius R5 and an outer radius R6, R5 being greater than R1, R6 being less than R2, said emitting surface and said rear face limiting a thickness of target therebetween said target structure including a tapered interior face that flares outwardly from said axis as it extends generally from said emitting surface to said rear face, said target structure including an outer perimeter face having three segments, a first segment of said outer perimeter face being parallel to said axis and intersecting said rear face at a first end, a second segment beginning at a second end of said first segment and extending parallel to said emitting surface and outward from said axis, a third segment beginning at the outer end of said second segment and extending toward said emitting surface with a taper that flares outwardly from said axis as it extends toward said emitting surface.

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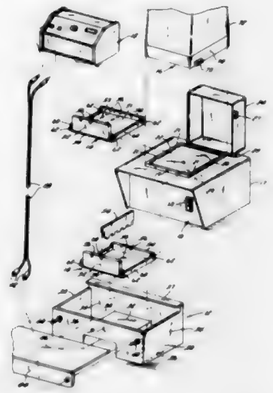
FOTO/PHORESIS APPARATUS

Jeffrey B. Smoot, Wauwatosa; Richard K. Vitek, Brookfield; William R. Gette, Milwaukee, and Thomas E. Prieto, Cedarburg, all of Wis., assignors to Fotodyne, Inc., New Berlin, Wis.

Filed Jan. 30, 1986, Ser. No. 824,133

Int. Cl.[4] B01R *5/00*

U.S. Cl. 204—299 R 18 Claims



1. An apparatus for separating and identifying DNA fragments in agarose gels comprising

a tray having a front wall and a back wall,

gate means mounted on each side of the tray for defining an enclosure within said walls for the agarose gel,

means positioned in said tray for defining wells in the agarose gel for DNA fragments,

an electrophoresis chamber having a platform and a buffer well on each side of the platform, said gate means being movable to positively locate the tray on said platform,

means in said chamber for establishing an electric field across said tray,

and means for illuminating said tray to visually observe the migration of said DNA fragments in the agarose gel.

4,657,656

POLYACRYLAMIDE MEDIUM FOR ELECTROPHORESIS HAVING IMPROVED ELASTICITY

Masashi Ogawa, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 14, 1984, Ser. No. 651,120

Claims priority, application Japan, Sep. 14, 1983, 58-169578

Int. Cl.[4] G01N *27/26*

U.S. Cl. 204—299 R 5 Claims

1. In a medium for electrophoresis comprising a polyacrylamide gel formed by crosslinking polymerization of an acrylamide compound and a crosslinking agent in the presence of water and a modifier selected from the group consisting of urea and formamide, the improvement which comprises said medium containing a water-soluble polymer having a molecular weight in the range of 10,000 to 1,000,000 selected from the group consisting of an addition type polymer and a polycondensation type polymer, said water-soluble polymer being incorporated into the medium in the form of a polymer in an amount of 1 to 50 wt.%, based on the total weight of the acrylamide compound and crosslinking agent.

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MULTIPLE COMBINATION ELECTRODE WITH ASSOCIATED MULTI-POINT PLUG MOUNT

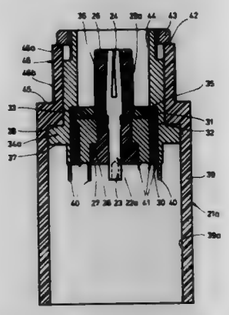
Klaus Stellmacher, Calw, Fed. Rep. of Germany, assignor to Conducta Gesellschaft fur Mess-und Regeltechnik mbH & Co., Gerlingen, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 627,846

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 3324297

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—400 8 Claims



1. A multiple combination electrode system for electro-analysis apparatus, comprising an elongated electrode shaft, three measuring systems within said electrode shaft having four wires for connection thereto, and a plug mount on the end of said shaft, the improvement comprising connecting means for connecting together two selected ones of said four wires to provide a three-wire system having a reference lead corresponding to the connected together wires which are adapted to receive reference potential thereon, and contact means including three corresponding concentric contact units within said plug mount; each of said concentric contact units connecting with a respective one of said three-wires to provide a unitary triple plug structure and insulating means between said concentriac contact units to insulate each one from the others, wherein the plug mount includes a first plug mount part connected to the electrode shaft and a second plug mount part connected to a cable, and wherein the contact means includes concentrical contact members separated by annular or cylindrical insulators in the first plug mount part and complementary contact members of matching shape and separated by annular or cylindrical insulators in the second plug mount part.

4,657,658

SEMICONDUCTOR DEVICES

Alastair Sibbald, 38 St. Lukes Road, Maidenhead, Berkshire SL6 7DP, England

Filed Nov. 7, 1985, Ser. No. 795,835

Claims priority, application United Kingdom, Nov. 7, 1984, 8428138

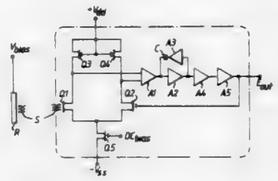
Int. Cl.[4] G01N *27/30*

U.S. Cl. 204—406 8 Claims

1. A semiconductor integrated circuit including:

a first semiconductor device sensitive to a physico-chemical property of an ambient to which it is exposed and capable of producing an output signal dependent on said physico-chemical property,

a second semiconductor device insensitive to said physico-chemical property but having a geometry and physical structure substantially identical with that of said first semiconductor device and being substantially in isothermal contact with said first semiconductor device, and differential amplifier means having an input coupled to outputs of said first and second semiconductor devices



and having an output coupled to an input of one of said first and second semiconductors.

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ELECTROCHEMICAL ELEMENT

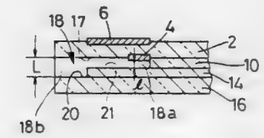
Syunzo Mase, Tobishima, and Shigeo Soejima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 5, 1986, Ser. No. 859,785

Claims priority, application Japan, May 9, 1985, 60-98784

Int. Cl.[4] G01N *27/58*

U.S. Cl. 204—410 7 Claims



1. An electrochemical element for detecting a component in a gaseous fluid in an external space, comprising a first planar solid electrolyte body, a first and a second electrode disposed in contact with said first planar solid electrolyte body and cooperating with said first planar solid electrolyte body to form an electrochemical cell, and means for defining a thin flat space which communicates with said external space and which has a predetermined diffusion resistance to the molecules of said component, said first electrode being substantially exposed to said thin flat space, characterized in that a thickness of said thin flat space as measured perpendicularly to a plane of said first planar solid electrolyte body is larger at an inlet portion thereof which is open to said external space, than at a remote portion thereof remote from said inlet portion, said first electrode being located at said remote portion.

4,657,660

APPARATUS FOR SENSING OXYGEN CONCENTRATION

Kanemasa Sato; Sadayasu Ueno, both of Katsuta, and Norio Ichikawa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 16, 1985, Ser. No. 776,663

Claims priority, application Japan, Sep. 14, 1984, 59-193265

Int. Cl.[4] G01N *27/58*

U.S. Cl. 204—427 11 Claims

1. An apparatus for sensing oxygen concentration comprising: a cylindrical solid electrolyte which is open at one end and closed at the other end; a heater disposed on the inner peripheral side of said cylindrical solid electrolyte, the heater having an end positioned at the open end of the solid electrolyte; a supporting member disposed at the end of said heater which is positioned at the open end of said solid electrolyte, said supporting member being disposed so as to support said heater on the inner peripheral side of said solid electrolyte; lead members connected to said end of said heater which is positioned at the

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open end of said solid electrolyte, for supplying power to said heater; detecting electrode means formed on a part of said solid electrolyte; and an outer electrode connection lead means and



an inner electrode connection lead means for taking out an output from said detecting electrode means, wherein said supporting member is integrally bonded to said heater by means of an inorganic bonding member.

4,657,661

PROCESS FOR IMPROVING THE STORAGE STABILITY AND BULK OXIDATION STABILITY OF LUBE BASE STOCKS DERIVED FROM BRIGHT STOCK

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 11, 1985, Ser. No. 807,920
Int. Cl.[4] C10G *65/12, 67/02, 69/12*
U.S. Cl. 208—58 **22 Claims**

1. An improved process for stabilizing a nitro-aromatic-containing lubricating oil base stock derived from a hydrocrack bright stock, comprising:

(a) contacting said hydrocracked bright stock with hydrogen in the presence of a catalyst having hydronitrification activity under conditions effective to reduce the nitrogen content of said stock and to minimize cracking to produce a substantially nitrogen-free product;

(b) contacting said substantially nitrogen-free product with hydrogen in the presence of a catalyst having hydrogenation activity under mild conditions to produce a stabilized lubricating oil base stock having improved oxidation stability as shown by oxidator BN; and

(c) contacting the product of step (b) with a minor amount of an olefinic stabilizing agent in the presence of a heterogeneous acidic catalyst substantially free of hydrogenation activity.

4,657,662

HYDROCARBON COMPOUND DEWAXING

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 682,492, Dec. 18, 1984, which is a continuation of Ser. No. 541,618, Oct. 13, 1983, abandoned. This application Feb. 5, 1986, Ser. No. 826,405
Int. Cl.[4] C10G *47/16*
U.S. Cl. 208—111 **6 Claims**

1. A process for dewaxing a feedstock comprising hydrocarbon compounds to a dewaxed product comprising hydrocarbon compounds of lower molecular weight than feedstock hydrocarbon compounds which comprises contacting said feedstock at dewaxing conditions with a catalyst composition comprising an active form of a crystalline layered silicate having a X-ray diffraction pattern substantially as shown in Table 1 of the specification and a composition as synthesized on an anhydrous basis in terms of moles of oxides per mole of silica expressed by the formula.

$$(0.01\text{-}10)R_2O:(0\text{-}2)M_{2/n}O:(0\text{-}2.5)Al_2O_3:100\ SiO_2$$

wherein R is at least one cation of an organic directing agent selected from the group consisting of tert-butyl-trimethylanalinium hydroxide, tert-butyl-trimethylanalinium halide, N-methyl-3,5-dimethylpyridinium hydroxide, N-methyl-3,5-dimethylpyridinium halide, $((CH_3)_3N^+(CH_2)_4N^+(CH_3)_3)(X^-)_2$, where X is a halide, and mixtures thereof, M is at least one cation selected from the group consisting of alkali and alkaline earth metals and mixtures thereof and n is the valence of M, said dewaxing conditions including a temperature of from about 230° C. to about 500° C., a pressure of from about 0.1 atmosphere to about 200 atmospheres, a weight hourly space velocity of from about 0.08 hr^- to about 2000 hr^{-1} and a hydrogen/feedstock hydrocarbon mole ratio of from greater than 0 to about 20.

4,657,663

HYDROTREATING PROCESS EMPLOYING A THREE-STAGE CATALYST SYSTEM WHEREIN A TITANIUM COMPOUND IS EMPLOYED IN THE SECOND STAGE

Lloyd E. Gardner; Robert J. Hogan; Edward L. Sughrue, II, and John W. Myers, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 24, 1985, Ser. No. 726,759
Int. Cl.[4] C10G *65/04;* **B01J** *23/74*
U.S. Cl. 208—210 **15 Claims**

7. A process for the catalytic hydrotreating of a residual oil-containing feedstock comprising the use of a catalyst bed system comprising:

(a) a first catalyst in a first catalyst bed consisting essentially of alumina promoted with about 0.5 to about 2 weight percent cobalt, about 7 to about 10 weight percent molybdenum, and about 0.5 to about 2 weight percent nickel, based on the total weight of said first catalyst, followed by

(b) a second catalyst in a second catalyst bed consisting essentially of alumina promoted with about 6 to about 12 weight percent molybdenum, about 2 to about 5 weight percent nickel, and about 3 to about 10 weight percent titanium, based on the total weight of said second catalyst, which is followed by

(c) a third catalyst in a third catalyst bed consisting essentially of alumina promoted with about 2 to about 6 weight percent nickel, and about 5 to about 20 weight percent molybdenum, based on the total weight of said third catalys,,

wherein said feedstock is first contacted with said first catalyst bed, then with said second catalyst bed, and then with said third catalyst bed under suitable hydrotreating conditions.

4,657,664

PROCESS FOR DEMETALLATION AND DESULFURIZATION OF HEAVY HYDROCARBONS

April J. Evans, Naperville, Ill., and Albert L. Hensley, Munster, Ind., assignors to Amoco Corporation, Chicago, Ill.

Filed Dec. 20, 1985, Ser. No. 811,492
Int. Cl.[4] C10G *45/00, 45/60*
U.S. Cl. 208—211 **14 Claims**

1. A process for the hydrodemetallation, hydrodesulfurization, and hydrocracking of a hydrocarbon feedstock containing asphaltenes, metals, and Shell hot filtration solids precursors and the conversion of at least 30 vol. % of the feedstock fraction boiling over 1,000° F. to material boiling below 1,000° F. which comprises:

(a) contacting said feedstock in a first reaction zone with hydrogen and a demetallation catalyst comprising a Group VIB hydrogenation metal component on a porous inorganic oxide support, wherein said Group VIB metal is present in an amount rangin from about 3.0 to about 8.0 wt. % calculated as an oxide and based on total demetallation catalyst weight, and wherein said catalyst has a surface area of about 150 m^2/gm to about 220 m^2/gm; a total pore volume of about 0.85 to about 1.5 cc/gm; and a pore volume in pores having diameters larger than 1,200 Å of about 0.15 to about 0.4 cc/gm; and

(b) contacting the effluent from said first reaction zone in a second reaction zone with a desulfurization catalyst comprrsing a hydrogenation metal component comprising a Group VIB metal and a Group VIII metal on a porous inorganic oxide support, wherein said Group VIB metal is present in an amount ranging from about 10.0 to about 20.0 wt. % calculated as an oxide and based on total desulfurization catalyst weight, and said Group VIII metal is present in an amount ranging from about 2.0 to about 5.0 wt. % calculated as an oxide and based on total desulfurization catalyst weight, and wherein said catalyst has a surface area of about 250 m^2/gm to about 350 m^2/gm, a total pore volume of about 0.7 to about 1.1 cc/gm and a pore volume in pores having diameters larger than 1,200 Å of about 0.1 to about 0.25 cc/gm.

4,657,665

PROCESS FOR DEMETALLATION AND DESULFURIZATION OF HEAVY HYDROCARBONS

William I. Beaton, Wheaton, Ill.; Albert L. Hensley, Munster, Ind., and April J. Evans, Naperville, Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Dec. 20, 1985, Ser. No. 811,724
Int. Cl.[4] C10G *45/04*
U.S. Cl. 208—216 R **5 Claims**

1. A process for the hydrodemetallation, hydrodesulfurization and hydrocracking of a hydrocarbon feedstock containing asphaltenes, metals, and Shell hot filtration solids precursors and the conversion of at least 30 vol.% of the feedstock fraction boiling over 1,000° F. to material boiling below 1,000° F. which comprises contacting said feedstock in at least one ebullated bed reaction zone with hydrogen and a hydrocracking catalyst comprising a Group VIB metal component and a cobalt component on a porous inorganic oxide support, wherein said Group VIB metal is present in an amount ranging from about 3.5 to about 5.0 wt.% calculated as an oxide and based on total catalyst weight, wherein said cobalt is present in an amount ranging from about 0.4 to about 0.8 wt.% calculated as an oxide and based on total catalyst weight, and wherein said catalyst has a surface area of about 150 to about 220 m^2/gm, a total pore volume of about 0.85 to about 1.5 cc/gm, and a pore volume in pores having diameters larger than 1,200 Å of about 0.15 to about 0.4 cc/gm.

4,657,666

MAGNETIC FLOTATION

Harvey Snook, Aspendale, and Terence C. Hughes, North Carlton, both of Australia, assignors to W.S.R. Pty. Ltd., Australia

PCT No. PCT/AU82/00174, § 371 Date Jun. 7, 1983, § 102(e) Date Jun. 7, 1983, PCT Pub. No. WO83/01397, PCT Pub. Date Apr. 28, 1983
Continuation of Ser. No. 511,136, Jun. 7, 1983, abandoned. This PCT application Oct. 26, 1982, Ser. No. 759,917
Claims priority, application Australia, Oct. 26, 1981, PF1302/81
Int. Cl.[4] B03G *1/00*
U.S. Cl. 209—8 **7 Claims**

1. A method for mineral upgrading or concentration comprising the following steps:

providing a gangue associated mineral having a hydrophobic surface and in particulate form,

providing a magnetic material in particulate form,

silanizing the magnetic material in order to provide a hydrophobic surface,

contacting the gangue associated mineral with the magnetic material in an aqueous liquid, whereby the mineral particles become attached to the surface of the magnetic particles by virtue of interaction between the hydrophobic surfaces of the particles,

separating the magnetic particles with attached mineral particles from gangue by magnetic means,

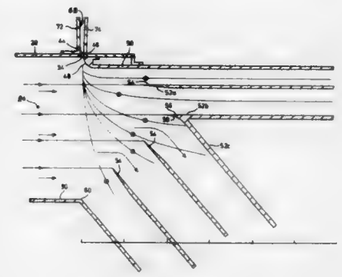
detaching the mineral particles from the magnetic particles.

4,657,667

PARTICLE CLASSIFIER

Bernard Etkin, Willowdale, Canada, assignor to The University of Toronto Innovations Foundation, Toronto, Canada

Filed Apr. 5, 1984, Ser. No. 596,952
Int. Cl.[4] B07B *7/086, 11/04, 11/06*
U.S. Cl. 209—135 **12 Claims**



1. A classifier for particulate material comprising a housing having an inlet to receive a classifying air flow flowing in a given direction, collection means downstream of said inlet to receive material classified by said air flow, and material introduction means intermediate said inlet and said collection means to introduce particles entrained in a secondary air stream into said housing in a direction other than said given direction, said material introduction means including a material outlet aperture in a wall of said housing extending generally perpendicular to said given direction, conveying means to convey material and said secondary air stream to said material outlet and diverting means to divert said secondary air stream to a direction generally parallel to said classifying air flow flowing in said given direction, said diverting means including a surface extending downstream from said outlet and adjacent thereto and being dimensioned to divert said secondary airstream by a Coanda effect generally parallel to said given direction and thereby segregate said secondary air/stream from said particles and permit continued movement of said particles along predictable trajectories.

4,657,668

APPARATUS FOR THE SEPARATION OF SLURRY WITH DIFFERENT GRAIN SIZE INTO TWO PHASES IN A TANK

József Harsányi; Zoltán Kiss, both of Budapest; Ferenc Kukonya, Mosonmagyaróvár; János Pintér, Mosonmagyaróvár; Alajos Suri, Mosonmagyaróvár, and András Tóth, Mosonmagyaróvár, all of Hungary, assignors to Magyar Alumíniumipari Troszt, Budapest, Hungary

Filed Feb. 25, 1985, Ser. No. 704,733
Claims priority, application Hungary, Feb. 28, 1984, 800/84
Int. Cl.[4] B03B *5/62, 5/64*
U.S. Cl. 209—158 **14 Claims**

1. An apparatus for separating a slurry containing a particulate of a range of grain sizes into a first phase containing relatively large-grain particles and a second phase containing relatively small-grain particles, said apparatus comprising:

an upright tank having a vertical axis;

means forming an outlet for said first phase at a lower portion of said tank;

means forming an outlet for said second phase at an upper portion of said tank;

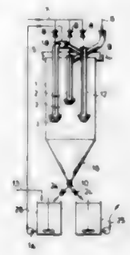
a plurality of inlet pipes in mutually spaced relation extend-

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ing downwardly into said tank generally parallel to said axis and having lower ends opening in said tank between said inlet and said outlet for discharging said slurry downwardly into said tank;

a respective upwardly open deflector cup aligned with and surrounding each of said lower ends and receiving said slurry therefrom, each of said cups frustoconically widening upwardly from a bottom confronting the respective opening at the end of the respective pipe whereby each cup reverses the downward flow of slurry and redirects each downward flow upwardly and outwardly into said tank, and

swirl vanes in each of said cups for imparting a swirl to the reversed flow of said slurry redirected by said cups into said tank.



4,657,669

DEPRESSANTS FOR FROTH FLOTATION

Peter Shaw, Randburg, and Jan Coetzee, Pretoria, both of South Africa, assignors to Sentrachem Limited, Marshalltown, South Africa

Division of Ser. No. 504,533, Jun. 15, 1983, abandoned. This application Jul. 19, 1985, Ser. No. 757,513

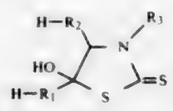
Claims priority, application South Africa, Jun. 17, 1982, 82/4283

Int. Cl.⁴ B03D *1//14*

U.S. Cl. 209—167 **7 Claims**

1. A process for the separation of copper sulfide from a material containing molybdenum, lead, or zinc and copper sulfide or a sulfidized material containing copper and one or more of lead, molybdenum or zinc comprising

(a) depressing the copper sulfide with a depressant chosen from compounds of the general formula



in which $R_1=(CHOH)_m$, $R_2=(CHOH)_n$ where $(m+n)=0$ to 6, and R_3 is alkyl or hydroxy-alkyl;

(b) in the presence of a collector and (c) recovering the molybdenum, lead or zinc in the froth.

4,657,670

AUTOMATIC DEMAND CHLORINATION SYSTEM

Ronald R. Newton, Stateline, Nev., assignor to Sierra Design and Development, Inc., Reno, Nev.

Filed Jul. 11, 1985, Ser. No. 754,021

Int. Cl.⁴ C02f *1//76;* **G05D** *11/08*

U.S. Cl. 210—85 **31 Claims**

1. For use with a recirculation unit for a body of fluid, said body of fluid having a chemical therein, an automatic demand chlorination system, comprising

a chemical sensing unit for detecting the amount of said chemical and producing a signal, wherein said chemical sensing unit is a liquidless, solid state device;

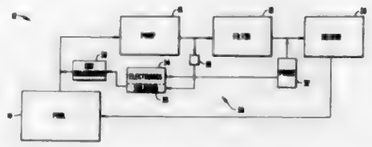
a chemical feed unit for feeding said chemical into said recirculation unit;

an electronics unit for controlling said feeding of said chemical; and

a solenoid unit for actuating said chemical feed unit,

said electronics unit comprises

input signal regulation means for receiving said signal of said chemical sensing unit and generating a regulated signal, wherein said input signal regulation means includes



buffer means for receiving said chemical sensing unit signal and generating a signal representative of said chemical sensing unit signal,

filter means for receiving said buffer means signal and generating a filtered signal, and

amplifier means for receiving said filtered signal and generating said regulated signal;

comparator means for comparing said regulated signal with a predetermined signal representative of the desired amount of said chemical in said recirculation unit and generating a chemical infeed signal; and

solenoid timer means for receiving said chemical infeed signal and activating said solenoid unit.

4,657,671

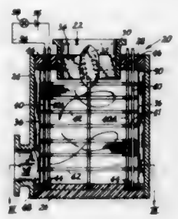
LIQUID FILTER WITH CHIP DETECTING MEANS

Dietrich W. Botstiber, Haverford, and David A. Nielsen, Springfield, both of Pa., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Mar. 19, 1984, Ser. No. 591,040

Int. Cl.⁴ B01D *29/38*

U.S. Cl. 210—86 **11 Claims**



1. A filter for the capturing and indication of, metallic nonferrous, electrically conductive and ferrous, magnetically and electrically conductive respectively particles of varying magnitudes suspended in nonconductive liquids, comprising:

a substantially cylindrical, preferably metal housing having an upper opening, and solid bottom, and an outlet formed therein,

a rotation-inducing member having an inlet shape mounted within said upper opening,

a cylindrical strainer mounted inside of and near the lateral inside surface of said cylindrical metal housing to strain and confine said electrically conductive particles within the intended rotational liquid travel,

at least one pair of rods of an electrically conductive material positioned axially, but radially with respect to each other, concentric with and near the inside perimeter of said strainer so that the gap aspect area between said rods is radially with respect to the tangential liquid flow,

said at least one pair of rods of an electrically conductive material consisting of a pair of electric contacts connected with a signal circuit,

a plurality of spacer rings, having holes formed therein, of an electrically nonconductive material arranged axially and spaced apart from each other axially within said filter housing and inside of said cylindrical strainer so as to secure said pairs of electrically conductive rods, within said holes formed in said spacer rings and to provide horizontal areas for the capturing and the collection of said conductive particles, to expose them to the static pressure exerted by the passing liquid, to establish a dependable electric contact among each said rod pair to result in the closing of an electric circuit and a reliable signal and alarm, respectively.

4,657,672

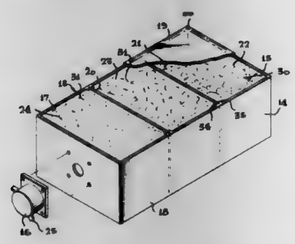
IMMERSION TYPE WATER FILTER

Raymond A. Allen, 7513 Whitaker Ave., Van Nuys, Calif. 91406

Filed Jun. 3, 1985, Ser. No. 740,346

Int. Cl.⁴ C02F *9/00*

U.S. Cl. 210—94 **1 Claim**



1. In an out-of-doors aquarium or pond for holding and displaying live fish and plants, the combination which comprises:

an immersion filter submerged in the body of water intended to be filtered;

said filter including a housing of transparent composition having a mesh grid at one end and a pump means at its other end;

said filter further including a plurality of chambers including a middle chamber between the opposite ends of said housing separated by meshed partitions so as to allow water flow through said housing from said grid at one end to said pumping means;

water filtering material occupied in each of said chambers for removing chloramines from the water;

said filter material includes filter floss and activated carbon;

guide means for retaining said grids and said partitions in place to define said chambers;

said meshed partitions are composed of crossed plastic louvers forming a grill of unrestricted openings for the passage of water at the bottom of said housing;

said pump means is operably coupled to said middle chamber and includes a submerged motor.

4,657,673

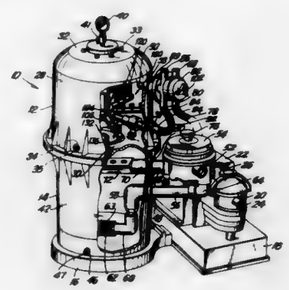
DUAL FILTERING SYSTEM FOR SWIMMING POOLS

Emerich Kessler, 28 Lakeview Dr., West Orange, N.J. 07052

Filed Nov. 13, 1985, Ser. No. 799,636

Int. Cl.⁴ B01D *29/38*

U.S. Cl. 210—108 **9 Claims**



1. A dual filtering system comprising means designed for providing sand and diatomaceous earth filtration of fluids containing particulate matter suspended therein to separate the particulate matter from the fluids, the filtering system including:

a vessel having a first body portion disposed above a second body portion in a spaced, coaxial arrangement, said first body portion having a side wall, an open top and bottom, an inlet in an upper end of its side wall for receiving fluids to be filtered, and an outlet in a lower end of its side wall for discharging filtered fluids, said second body portion having a base, a side wall, an open top, an inlet in an upper end of its side wall for receiving fluids to be filtered, and an outlet in a lower end of its side wall for discharging filtered fluids;

a plate interposed between the lower end of said first body portion and the upper end of said second body portion, said plate having an opening therein;

a check valve means interposed in the plate openings and capable of permitting flow of fluids through said plate opening from the interior of said second body portion into the interior of said first body portion when the pressure in said second body portion exceeds the pressure in said first body portion by a preselected amount, said check valve means including a seal means for separating and sealing said first body portion from said second body portion;

said first body portion containing a filter grid unit and manifold assembly removably positioned on the lower end of said first body portion and comprising a central manifold having a hollow hub and a plurality of hollow support arms and a hollow conduit arm extending radially from, and symmetrically about, said hub in a plane perpendicular to the longitudinal axis of said manifold, said conduit arm being open at both ends and said support arms being open at one end, an open end of said conduit arm and the open end of each of said support arms being removably connected to said hub, each support arm having a plurality of threaded openings which are spaced apart from one another in an upper portion of said support arm said threaded openings adapted to be removably connected to respective threaded ends of a plurality of filter grid units and align said filter grid units vertically within said vessel and spaced apart from one another;

each of said filter grid units comprised of a perforated, tubular support frame open at both ends and having a rigid, non-flexible side wall, the perforations being large enough to pass unfiltered water therethrough, and a flexible outer sleeve encasing said tubular support frame, said outer sleeve formed of a synthetic plastic fiber braided or woven

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into a tubular shape and having a multiplicity of interstices therein which pass pool water therethrough but are small enough to prevent diatomaceous earth particles from passing through, said outer sleeve being tightly wrapped over, and sealed at both ends to said inner support frame providing a rigid, unitary structure therewith, said outer sleeve being open at one end and adapted at said open end to thread into an opening in one of said support arms, and said outer sleeve being closed at its other end;

means communicating the outlet of said second body portion with the open end of said conduit arm of said central manifold which is not connected to said hub;

said second body portion having disposed therein: a filter bed of sand, a diffuser element adapted for distributing fluids to be filtered into said second body portion, said diffuser element being close to the upper end of, and in communication with the inlet of, said second body portion, and an underdrain for removing filtered fluids but not the filtration material from the second body portion, said underdrain being close to the base of, and in communication with the outlet of, said second body portion;

pump means and associated conduit lines for causing said fluids to flow into and out of said first and second body portions and to first, second, third and fourth, outlet lines;

first valve means and associated conduit lines for controlling flow of fluids into and out of said first body portion and through said filter grid unit and manifold assembly into said first or second outlet lines and for controlling flow of fluids, by-passing said first body portion, into said first or second outlet lines;

second valve means and associated conduit lines for controlling flow of fluid into and out of said second body portion and through said sand filter bed into said third or fourth outlet lines or into said first valve means and for controlling flow of fluids by-passing said second body portion, into said first valve means or into said third or fourth outlet lines;

means separate from said first and second body portions for sealably attaching the bottom of said first body portion to the top of said second body portion; and

means separate from said first body portion for providing a seal-tight cover for the upper end of said first body portion.

4,657,674

REVERSE OSMOSIS ASSEMBLY INCLUDING AN OPERATING VALVE

Bruce D. Burrows, 25530 Via Brava, Valencia, Calif. 91355

Filed Dec. 24, 1984, Ser. No. 685,546

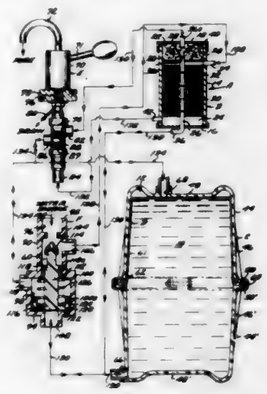
Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—110 **4 Claims**

1. In combination with a source of feed water for providing feed water at a first pressure; a reverse osmosis membrane containing cartridge that includes a feed water inlet, a reject water outlet, and a purified water outlet; a reservoir container that includes a movable barrier that subdivides an interior of said reservoir container into first and second confined spaces of variable volume that are in communication with first and second passages in said reservoir container; a purified water dispensing valve that includes a purified water inlet, a purified water dispensing outlet, a reject water inlet, a reject water drain outlet, a reject water passage, first and second flow restrictors, and a movable two position actuator, said actuator when in a first position obstructing communication between said purified water inlet and said purified water dispensing outlet and providing a flow path for reject water that enters said purified water dispensing valve through said reject water inlet to flow through said first and second flow restrictors to said reject water drain outlet, and said actuator when in a second position providing a flow path for purified water to flow from said purified water inlet to said purified water dispensing outlet and for reject water entering said reject water inlet to bypass said first and second flow restrictors and flow outwardly through said reject water passage; and a control valve and a plurality of conduit means associated therewith and with said reverse osmosis cartidge, said reservoir container, and said purified water dispensing valve whereby subsequent to said first confined space being substantially filled with purified water, said control valve throttles and reduces rate of flow of feed water at said first pressure to said reverse osmosis cartridge to minimize a quantity of feed water required to provide said reservoir container with stored purified water that may be intermittently withdrawn therefrom by use of said purified water dispensing valve, said control valve including:

(a) an elongate vertically positionable valve body having an upper end and a bottom, an elongate passage that extends downwardly from said upper end to develop into an axially aligned elongate chamber of substantially greater transverse area than that of said passage, said chamber partially defined by said bottom and a body shoulder at a junction of said passage and chamber, said elongate passage in communication with said source of feed water at said first pressure; a ring shaped valve seat in said elongate passage; a pressurized feed water outlet in said valve body in communication with said elongate passage below said valve seat; a purified water passage in said bottom; a reject water passage in said valve body that communicates with said chamber a substantial distance above said bottom;

(b) an elongate valve member movably disposed in said



valve body, said valve member including upper and lower ends, said upper end defining an upper end surface and sealing with said valve seat when said valve member is in a first position, said valve member including a first piston intermediate said upper and lower ends that slidably and sealingly engages said elongate passage, said first piston having an upper end surface, and a second piston on said lower end of said valve member that slidably and sealingly engages said chamber, said second piston having a lower end surface defining a lower end surface area and a ring shaped upper end surface defining an upper end surface area being of less area than said lower end surface area of said second piston, means for providing communication between said source of feed water and both said elongate passage and said valve member for providing said feed water at said first pressure contacting said upper end surfaces of said valve member and first piston to exert a first downward force on said valve member that moves said valve member from said first to a second position where said feed water is free to flow from said feed water outlet in said valve body;

(c) conduit means that include a first conduit that connects said feed water outlet in said valve body and said feed water inlet in said cartridge; a second conduit that extends between said purified water outlet, said first passage in said reservoir container, said purified water passage in said valve body, and said purified water inlet in said purified water dispensing valve; a third conduit that extends between said reject water outlet of said reverse osmosis cartridge and said reject water inlet in said purified water dispensing valve; a fourth conduit that connects said reject water passage in said purified water dispensing valve and said reject water passage in said control valve to said second passage in said reservoir container, said actuator when in said first position obstructing communication between said purified water inlet and purified water dispensing outlet while providing a flow path for reject water from said reject water outlet flowing through said third conduit to said reject water inlet in said purified water dispensing valve to thereafter flow through said first and second flow restrictors to said drain outlet and for reject water entering said reject water passage in said purified water dispensing valve to flow through said second flow restrictor to said drain outlet, while purified water from said purified water outlet flows through said second conduit to said first passage in said reservoir container and to said purified water inlet in said purified water dispensing valve; and said actuator when moved to said second position establishing communication between said purified water inlet and said purified water dispensing outlet and providing a flow path for reject water from said reject water outlet through said third conduit to said reject water inlet to bypass said first and second flow restictors to enter said fourth conduit to expand said second confined space and to said reject water passage in said control valve to exert a second downward force on said upper surface of said second piston, with said first and second forces when combined being of greater magnitude than a third upward force exerted on said lower end surface of said second piston by purified water that has been pressurized by the expansion of said second confined space, with said actuator when returned to said first position terminating flow of purified water from said purified water dispensing outlet, with purified water from said purified water outlet discharging through said second conduit to said first confined space and chamber to expand said first confined space and force reject water from said second confined space, with flow of purified water so continuing until pressure of purified water in said chamber increases to the extent that it exerts a third force on said lower surface of said second piston of a magnitude greater than said combined first and second forces and said valve member moving upwardly from said second towards said first position to throttle and reduce a rate of flow of said pressurized feed water to said reverse osmosis cartidge.

4,657,675

SOLAR WATER CONDITIONING APPARATUS FOR FISHPOND

Ja D. Zan, 7-6th Fl., No. 190, Sec. 2, Kee Lung Rd., Taipei, Taiwan

Filed Dec. 23, 1985, Ser. No. 812,189

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1985, 8516926[U]

Int. Cl.⁴ C02F *7/00*

U.S. Cl. 210—170 **6 Claims**

1. A solar water conditioning apparatus for a fishpond comprising:

a top container having an air inlet for exposure to the atmosphere;

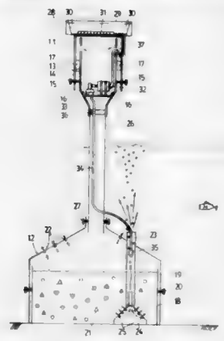
a bottom container for being immersed in water which has a water inlet and contains a filtering material which fills a part of said lower container;

an elongated member for supporting said top container which interconnects said top and bottom containers;

means for converting solar energy into electric power provided at the top of said top container;

a motor actuated by said converting means mounted in said top container and connected to said converting means;

an air receiving hollow column provided in said lower container, said column having its lower portion embedded in said filtering material and its upper portion opened and



extended outward from said lower container, said lower portion being provided with an opening for the admission of water; and

an air pump mounted in said top container and connected to said motor, said air pump having an air conduit extended into said air receiving column.

4,657,676

SEDIMENTATION FIELD FLOW FRACTIONATION

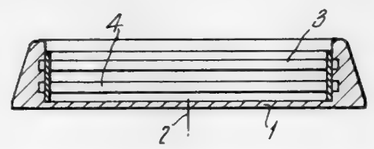
Colin M. Keary, Aberdeen, Scotland, and David Shepherd, Thelwall, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 8, 1982, Ser. No. 447,941

Claims priority, application United Kingdom, Dec. 8, 1981, 8136982

Int. Cl.⁴ B03B *5/62;* **B01D** *15/08*

U.S. Cl. 210—198.2 **14 Claims**



1. Sedimentation field flow fractionation apparatus comprising a rotor rotatable about an axis, a fractionation column mounted on or integral with the rotor, spaced inlet and outlet means mounted in or integral with the rotor for enabling fluid eluent to be fed to the column and to flow therethrough, means for feeding a sample into the eluent so that the sample and eluent are caused to flow together through the column while the rotor rotates and subjects the flowing eluent/sample mixture to a transverse gravitational field, and means for detecting the sample or component therefore in the fluid leaving the column, characterised in that the detecting means comprises means for responding to the presence of the sample or component therefore within the fluid while the fluid flows through the outlet means in the rotor.

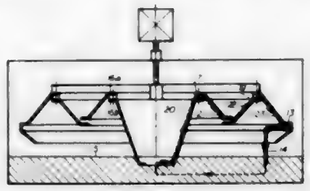
VOL 1077 ISS 2 AP 14 1987 UMI

4,657,677

EQUIPMENT FOR ENHANCED MASS TRANSFER AND IN CHEMICAL AND BIOCHEMICAL PROCESSES

Rudolf V. Roubicek, 1304 Delano, Las Cruces, N. Mex. 88001, and Vaclav Feres, Haid und Neu-Strasse 14, 7500 Karlsruhe 1, Fed. Rep. of Germany

Filed Feb. 15, 1985, Ser. No. 702,333
Int. Cl.[4] B01D *00/00*
U.S. Cl. 210—219 16 Claims



1. Equipment for improved mass transfer between gaseous and liquid phases, and for control of foaming, comprising:

a truncated conical mass transfer surface, having a greatest and a least periphery, axially connected to rotation means through shaft means, liquid containment means, liquid transport means for transporting said liquid phase from said liquid containment means to said least periphery, and for returning said liquid phase from said greatest periphery to said liquid containment means.

10. Equipment for improved mass transfer between gaseous and liquid phases, and for control of foam comprising:

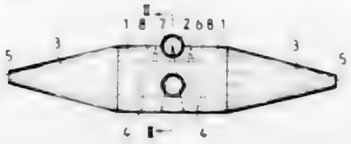
a plurality of truncated conical mass transfer surfaces having greatest and least peripheries, spaced apart, and coaxially connected to rotation means through shaft means, liquid containment means, liquid transport means for transporting said liquid phase form said liquid containment means to and from successive truncated conical mass transfer surfaces, and from the last truncated conical mass transfer surface to said liquid containment means.

4,657,678

TWIN HYDROCYCLONE

Antti Kuhanalo, and Pentti Vikiö, both of Savonlinna, Finland, assignors to Enso-Gutzeit Oy

Filed Mar. 19, 1985, Ser. No. 713,438
Claims priority, application Finland, Mar. 19, 1984, 841099
Int. Cl.[4] B01D *17/038*
U.S. Cl. 210—512.2 7 Claims



1. A twin hydrocyclone, used in cellulose and paper mills towards the purifying of pulp suspension, said twin hydrocyclone comprising a first and second cone placed with their larger ends against each other and which have one common infeed connector and one common discharge connector for the purified fraction, wherein the improvement comprises an axially extending cylindrical part (1) having a first end and a second end, said first cone (3) extending outwardly from the first end of said cylindrical part in the axial direction of said cylindrical part, said second cone (3) extending outwardly from the second end of said cylindrical part in the axial direction of said cylindrical part, said two hydrocyclones having a line of symmetry extending transversely of said cylindrical part and spaced between the first and second ends thereof, an accepted fraction discharge tube (4) located within and arranged coaxially with said cylindrical part, said accepted fraction discharge tube (4) spaced inwardly from said cylindrical part and forming therebetween an annular passage, said cylindrical part has a common infeed connector (2) located at the line of symmetry of the two hydrocyclones and directed tangentially to said cylindrical part and in fluid communication with said annular passage, a helical member located within said annular passage and extending transversely between the inner surface of said cylindrical part and the outer surface of said accept fraction discharge tube, said helical member comprises a first and a second helix each extending in an opposite direction around the axis of said cylindrical part from a juncture of said first and second helices formed on the line of symmetry so that said first helix extends from the line of symmetry toward the first end of said cylindrical part and said second helix extends from the line of symmetry toward the second end of said cylindrical part, said first and second helices in combination with the inner surface of said cylindrical part and the outer surface of said accept fraction discharge tube each forming a separate feeding duct extending from said juncture at the line of symmetry.

4,657,679

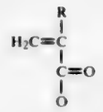
AMPIQ COPOLYMERS AS SCALE INHIBITORS

Dodd W. Fong, Naperville, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 13, 1986, Ser. No. 839,236
Int. Cl.[4] C02F *5/12*
U.S. Cl. 210—701 8 Claims

1. A method of inhibiting the formation of calcium phosphate scales on surfaces exposed to industrial waters which comprises treating said industrial waters with an effective amount of an ampholytic polymer comprising randomly distributed monomer units of:

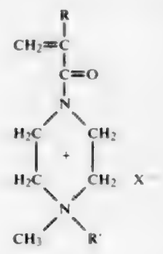
a. an acidic monomer having the structure:



M

wherein R is independently chosen, at each occurrence, from H, $-CH_3$, and $-C_2H_5$, and mixtures thereof; and M is chosen from hydrogen, ammonium, alkali metals, and ½ alkaline earth metals, and mixtures thereof; and

b. a cationic monomer having the structure:



wherein

R is independently chosen, at each occurrence, from H, $-CH_3$, $-C_2H_5$, and mixtures thereof;

R' is is chosen from lower alkyl, linear or branched, groups having from 1 to 4 carbon atoms; and

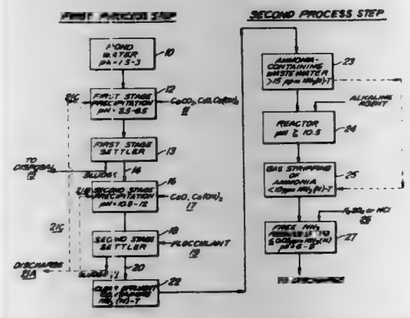
X is chosen from Cl^-, Br^-, I^-, OH^-, $-CH_3SO_4^-$, $-NO_3^-$, sulfite, bisulfite, sulfate, bisulfate, and mixtures thereof; and wherein the ampholytic polymer contains from 50:1 to 1:10 mole ratios of monomers a:b, and has a molecular weight ranging between about 1,000–75,000.

4,657,680

WASTEWATER TREATMENT

John F. Zibrida, St. Petersburg, Fla., assignor to AMAX Inc., Greenwich, Conn.

Filed Nov. 12, 1985, Ser. No. 796,825
Int. Cl.[4] C02F *1/20, 1/52*
U.S. Cl. 210—713 17 Claims



1. A method for the treatment of wastewater of pH ranging from about 1.5 to 3 containing at least about 100 ppm phosphorus as phosphate ions, at least about 50 ppm fluorine as fluoride ions and ammonia as ammonium ions in excess of about 15 ppm $NH_3(N)$—T which comprises:

removing said phosphate and said fluride ions from said wastewater in a two-stage precipitation step; the first stage precipitiation being conducted at pH ranging from about 3.5 to 6.5 using an alkaline material selected from the group consisting of limestone ($CaCO_3$) and lime sufficient to form a precipitate which is removed in a first stage settler to provide an effluent which is treated in a second stage precipitation at a pH of at least about 10.5 using lime as the alkaline material sufficient to form a precipitate which in removed in a second stage settler to provide substantially clear effluent containing said ammonia;

maintaining the pH of said ammonia-containing effluent at a level sufficient to provide a free ammonia equivalence (FAE) of at least about 12.4;

said free ammonia equivalence being determined as follows:

$$FAE = pH + (\theta/15)0.5,$$

wherein pH is the pH value of the effluent and θ is the temperature of said effluent in degrees Fahrenheit,

gas stripping said effluent to lower the total ammonia content thereof to a value of less than about 10 ppm $NH_3(N)$—T,

said gas stripping being controlled to maintain the free ammonia equivalence of the effluent at a value of at least about 12.4

and then acidifying the stripped effluent to lower the un-ionized ammonia content to less than about 0.05 ppm $NH_3(N)$, the amount of acid added being sufficient to provide a pH value such that the free ammonia equivalence does not exceed that value determined as follows:

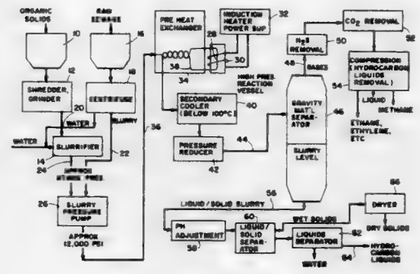
$$FAE = 10.2 - \log_{10} \text{ppm } NH_3(N)—T.$$

4,657,681

METHOD OF CONVERTING ORGANIC MATERIAL INTO USEFUL PRODUCTS AND DISPOSABLE WASTE

William L. Hughes, Rte. 1 Box 641, and Rama G. Ramakumar, 2623 N. Husband, both of Stillwater, Okla. 74074

Filed Apr. 22, 1985, Ser. No. 725,661
Int. Cl.[4] C02F *11/12*
U.S. Cl. 210—769 8 Claims



1. A method of converting organic waste material in the form of organic solids consisting of household and industrial trash into useful products and disposable water, comprising:

(a) shredding the organic material into pre-selected maximum size particles;

(b) mixing water with the shredded particles to obtain a pumpable slurry;

(c) increasing the temperature of the slurry to about 300° to about 500° C. and the pressure to about 8000 to about 12,000 PSIG in a reaction vessel to cause the slurry to hydropyrolyize;

(d) conveying the products of hydropyrolysis to a separator wherein gases are extracted from the liquids and solids;

(e) separating the liquids and solids; and

(f) separating hydrocarbon liquids from the separated liquid (residue; and

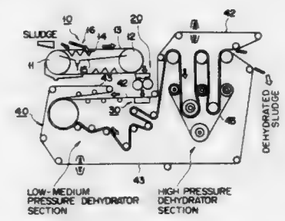
(g) drying the solids for use as a fuel).

4,657,682

METHOD FOR DEHYDRATING SLUDGE

Kiyoshi Uyama, Kawasaki, and Yasuhiko Kihara, Yokohama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1984, Ser. No. 674,543
Claims priority, application Japan, Jun. 11, 1984, 59-119521; Jun. 11, 1984, 59-119522
Int. Cl.[4] C02F *11/12*
U.S. Cl. 210—770 5 Claims



1. A method of dehydrating a wet sludge, comprising the steps of:

performing a preliminary dehydration by charging a predehydrator with the wet sludge;

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pelletizing the sludge after the preliminary dehydration with a pelletizer;
removing the excess water content of the pellets of the sludge; and
performing with an endless filter fabric a compression dehydration of the pellets from which the excess water content is removed.

4,657,683

BEARING MATERIAL OF POLYTETRAFLUROETHYLENE INCORPORATING A FILLER

Glyndwr J. Davies, Uxbridge, England, assignor to AEPLC, Rugby, England

Filed Mar. 13, 1986, Ser. No. 839,429
Claims priority, application United Kingdom, Mar. 15, 1985, 8506807
Int. Cl.⁴ F16C *33/12*
U.S. Cl. 252—12 **12 Claims**

1. A bearing material comprising polytetrafluroethylene intimately admixed with 1 to 50 percent by volume of a hydroxide additive containing hydroxide ions or hydroxyl groups said additive being chemically stable under normal polytetrafluroethylene processing conditions.

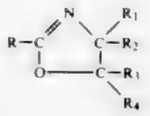
4,657,684

MULTIFUNCTIONAL ANTIWEAR ADDITIVES AND COMPOSITIONS THEREOF

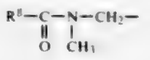
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 19, 1985, Ser. No. 746,484
Int. Cl.⁴ C10M *129/00, 137/00*
U.S. Cl. 252—32.5 **16 Claims**

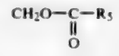
1. A composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor antiwear or friction reducing proportion of an oxazoline derived internal acid phosphate prepared by reacting a hydroxyalkyl hydrocarbyl oxazoline having the following generalized structure with phosphorus pentoxide



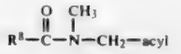
wherein R is from about C_8 to about C_{30} hydrocarbyl, or R is an acyl sarcosine-derived group consisting of



where R^8 is from about C_8 to about C_{30} hydrocarbyl, and at least one of R_1, R_2, R_3 and R_4 is hydroxyalkyl having from 1 to about 6 carbon atoms and the remaining R_1, R_2, R_3 and R_4 are independently selected from the group consisting of C_1 to about C_{30} hydrocarbyl, C_1 to about C_6 hydroxyalkyl, hydrogen or



where R_5 is hydrogen or C_1 to about C_{30} hydrocarbyl, or



sarcosine-derived grouping.

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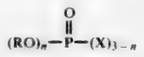
EMULSION TYPE LIQUID LUBRICANT FOR METAL FORMING, PROCESS FOR PREPARING THE LUBRICANT AND PROCESS FOR METAL FORMING WITH THE LUBRICANT

Takao Uematsu, Hitachi; Shigeki Komatsuzaki, Mito; Fumio Nakano, and Tomoe Takamura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 19, 1984, Ser. No. 683,639
Claims priority, application Japan, Dec. 19, 1983, 58-237826; Feb. 29, 1984, 59-36061
Int. Cl.⁴ C10M *137/04*
U.S. Cl. 252—32.5 **10 Claims**



1. A substantially water-free, emulsion type liquid lubricant for metal forming, which comprises:
(a) 100 parts by weight of a lubricating oil having a viscosity of 50 to 200 mm^2/sec at 40° C.,
(b) 2 to 30 parts by weight of at least one of the phosphoric acid esters represented by the general formula:



wherein R is selected from the group consisting of alkyl, alkylalkenyl and aryl; X is selected from the group consisting of H or OH; n is an integer of 1 to 2 when X is OH and n is 2 when X is H, and
(c) at least 2 parts by weight of at least one selected from the group consisting of (A) polymethacrylate, polyisobutylene, olefin copolymer and polyalkylstyrene, and 0.04 to 5 parts by weight of (B) at least one selected from the group consisting of polybutenylsuccinic acid anhydride, polymeric succinic acid derivatives and copolymers of alkylacrylate and methacrylate monomer having a polar group, the at least one of the phosphoric acid esters being dispersed in the lubricating oil and an average particle size of the phosphoric acid ester being 0.3 to 120 μm.

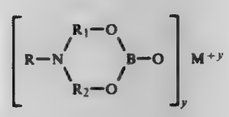
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LUBRICATING COMPOSITIONS

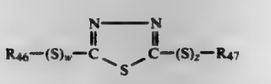
Richard A. Hoistedt, Whittier, and Peter J. Jessup, Santa Ana, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 525,718, Aug. 23, 1983, Ser. No. 525,691, Aug. 23, 1983, Ser. No. 525,719, Aug. 23, 1983, Ser. No. 418,196, Sep. 15, 1982, Ser. No. 476,513, Mar. 1, 1983, Ser. No. 329,385, Dec. 10, 1981, and Ser. No. 525,720, Aug. 23, 1983, said Ser. No. 525,718, is a continuation-in-part of Ser. No. 158,981, Jun. 12, 1980, Ser. No. 158,828, Jun. 12, 1980, Pat. No. 4,400,284, and Ser. No. 418,196, , which is a continuation-in-part of Ser. No. 158,981, , and Ser. No. 158,828, , said Ser. No. 525,720, is a continuation-in-part of Ser. No. 319,073, Nov. 9, 1981, Pat. No. 4,410,436, Ser. No. 329,384, Dec. 10, 1981, Pat. No. 4,427,560, Ser. No. 329,385, Dec. 10, 1981, Ser. No. 333,998, Dec. 23, 1981, Pat. No. 4,412,928, Ser. No. 434,602, Oct. 15, 1982, Pat. No. 4,490,265, and Ser. No. 478,513, Mar. 1, 1983.
This application Jan. 29, 1985, Ser. No. 696,025
The portion of the term of this patent subsequent to Dec. 10, 2002, has been disclaimed.
Int. Cl.⁴ C10M *133/38, 133/36, 135/26, 135/20*
U.S. Cl. 252—47.5 **21 Claims**

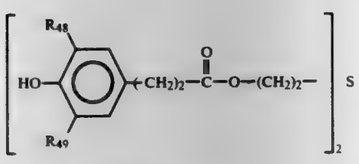
1. A composition comprising:
(A) a major amount of a lubricating oil;
(B) a minor amount of a boron-containing heterocyclic compound of the formula:



wherein:
y is an integer;
M is a metal, metalloid, semi-metal, or organic or radical;
R is an organic or inorganic radical; and
R_1 and R_2 are the same or different organic radical;
(C) a minor amount of a compound of the formula



wherein R_{46} and R_{47} are moieties selected from hydrogen or straight or branched chain alkyl, cyclic, alicyclic, aryl, alkylaryl or arylalkyl radicals having from 2 to about 30 carbon atoms, provided that R_{46} and R_{47} are not both hydrogen and w and z are numbers from 1 to about 8;
(D) a minor amount of terephthalic acid; and
(E) a minor amount of a compound of the formula:



wherein R_{48} and R_{49} are the same or different alkyl radical having from 1 to 6 carbon atoms.

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LUBRICATING COMPOSITIONS HAVING IMPROVED FILM-FORMING PROPERTIES

Gerardo Caporiccio, and Mario A. Scarati, both of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Feb. 12, 1986, Ser. No. 828,683
Claims priority, application Italy, Feb. 14, 1985, 19525 A/85
Int. Cl.⁴ C10M *147/04*
U.S. Cl. 252—54 **7 Claims**

1. Lubricating compositions having improved film-forming properties comprising:
(A) a perfluoropolyether having a viscosity ranging from 150 to 2,000 cSt (at 20° C.);
(B) a perfluoropolyether having a viscosity lower than or equal to 50 cSt (at 20° C.);
and in which compound (B) is utilized in amounts ranging from 2 to 20% by weight with respect to the sum of (A) and (B).

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NEUTRAL HYDROCARBOXYCARBONYL THIONOCARBAMATE SULFIDE COLLECTORS

Yun-Lung Fu, Milford, and Samuel S. Wang, Cheshire, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 641,657, Aug. 17, 1984, Pat. No. 4,584,097.
This application Dec. 9, 1985, Ser. No. 806,585
Int. Cl.⁴ C09K *3/00*
U.S. Cl. 252—61 **14 Claims**

1. A collector composition for froth flotation of sulfide minerals comprising at least one hydrocarboxycarbonyl thionocarbamate selected from the group consisting of:
N-ethoxycarbonyl-O-n-butyl thionocarbamate;
N-ethoxycarbonyl-O-isobutyl thionocarbamate;
N-ethoxycarbonyl-O-sec. butyl thionocarbamate;
N-ethoxycarbonyl-O-n-amyl thionocarbamate;
N-ethoxycarbonyl-O-isoamyl thionocarbamate;
N-ethoxycarbonyl-O-phenyl thionocarbamate;
N-phenoxycarbonyl-O-ethyl thionocarbamate;
N-phenoxycarbonyl-O-isopropyl thionocarbamate;
N-phenoxycarbonyl-O-n-butyl thionocarbamate;
N-phenoxycarbonyl-O-isobutyl thionocarbamate;
N-phenoxycarbonyl-O-sec. butyl thionocarbamate;
N-phenoxycarbonyl-O-n-amyl thionocarbamate and
N-phenoxycarbonyl-O-isoamyl thionocarbamate.

4,657,689

CORROSION-INHIBITED ANTIFREEZE/COOLANT COMPOSITION CONTAINING HYDROCARBYL SULFONATE

Jerome W. Darden, Thousand Oaks, Calif., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 1, 1986, Ser. No. 847,076
Int. Cl.⁴ C09K *5/00*
U.S. Cl. 252—75 **14 Claims**

1. A corrosion-inhibited antifreeze composition for use in the cooling system of a water cooled internal combustion engine comprising:
(a) from 80–99 weight percent of a water soluble liquid alcohol freezing point depressant;
(b) from 0.1–15.0 weight percent of a C_5–C_{16} aliphatic monobasic acid or the alkali metal, ammonium, or amine salt of said acid;
(c) from 0.1–15.0 weight percent of a C_5–C_{16} hydrocarbyl dibasic acid or the alkali metal, ammonium, or amine salt of said acid;
(d) from 0.1–0.5 weight percent of a hydrocarbyl azole; and
(e) from 0.1–0.5 weight percent of a hydrocarbyl alkali metal sulfonate selected from the group consisting of:
(i) a C_{10}–C_{20} monoalkyl benzene alkali metal sulfonate; and
(ii) a C_{10}–C_{20} alpha-olefin alkali metal sulfonate having an average molecular weight in the range of 200–2000.

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4,657,690

WASHING AND FOAMING COMPOSITION BASED ON NON-IONIC SURFACE-ACTIVE AGENTS AND ANIONIC POLYMERS

Jean F. Grollier, Paris, and Claude Dubief, Le Chesnay, both of France, assignors to L'Oreal, Paris, France

Filed Apr. 13, 1984, Ser. No. 599,975

Claims priority, application Luxembourg, Apr. 15, 1983, 84753

Int. Cl.⁴ C11D *1/835, 3/37*

U.S. Cl. 252—90 **25 Claims**

1. A washing and foaming composition for hair or skin which comprises

in a cosmetically acceptable medium

at least one member selected from the group consisting of polyoxyethyleneated, polyglycerolated, polyglycidolated and polyglycosylated non-ionic surface-active agents which, as a 10% by weight aqueous solution, has a detergency which is greater than or equal to that of a 2% by weight aqueous solution of sodium laurylsulphate, and

at least one anionic polymer in proportions such that the weight ratio of anionic polymer:non-ionic surface-active agent is greater than 0.1:1, said anionic polymer being a polymer having a molecular weight of from 500 to 6,000,000 and containing carboxylic acid groups or a salt of polyacrylamido sulphonic acid; said composition containing no polymers which carry a cationic group.

4,657,691

COMPOSITION FOR CLEANSING AND WIPING SKIN

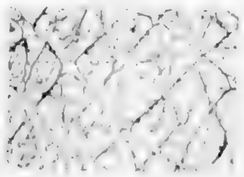
Kenji Hara, Ichikaimachi, and Yasuteru Eguchi, Utsunomiya, both of Japan, assignors to KAO Corporation, Tokyo, Japan

Division of Ser. No. 615,761, May 31, 1984, abandoned. This application Apr. 25, 1986, Ser. No. 842,160

Claims priority, application Japan, Jun. 8, 1983, 58-102505

Int. Cl.⁴ C11D *17/00*

U.S. Cl. 252—91 **6 Claims**



1. A product for cleansing and wiping skin, which comprises a solid support selected from the group consisting of paper, non-woven fabric, cloth, polymer film, sponge and formed plastics, wherein said support is impregnated with a cleansing composition which consists essentially of at least one oil selected from the group consisting of jojoba, natural squalane and glycerin tri-2-ethylhexanoate.

4,657,692

THICKENED AQUEOUS ABRASIVE SCOURING CLEANSER

Clement K. Choy, Walnut Creek, and Frederick I. Keen, Manteca, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Continuation-in-part of Ser. No. 603,266, Apr. 20, 1984, Pat. No. 4,599,186. This application Apr. 26, 1985, Ser. No. 727,702

The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.

Int. Cl.⁴ C11D *1/75, 1/83, 3/14, 3/395*

U.S. Cl. 252—99 **20 Claims**

1. A hard surface abrasive scouring liquid cleanser without substantial syneresis and which does not require shaking before use in order to fluidize comprising

(a) a colloidal aluminum oxide thickener having an average particle size, in dispersion, of no greater than about 1 micron, and present in a thickening effective amount;

(b) an electrolyte/buffer present in an amount sufficient to promote the environment in which the aluminum oxide and at least one surfactant can associate to provide proper rheology;

(c) at least one bleach-stable surfactant selected from the group consisting essentially of betaines, amine oxides,



imidazolines, quaternary ammonium and tertiary sulphonium compounds, and mixtures thereof, which, in association with the aluminum oxide, provides a plastic flowable rheology and proper cleaning, the surfactant being present in a cleaning-effective and abrasive-suspending amount;

(d) a halogen bleach; and

(e) a particulate abrasive having an average particle size of about 1 to 400 microns to provide scouring action.

4,657,693

SPRAY-DRIED GRANULAR DETERGENT COMPOSITIONS CONTAINING TRIPOLYPHOSPHATE DETERGENT BUILDER, POLYETHYLENE GLYCOL AND POLYACRYLATE

Rodney M. Wise, Cincinnati, and Robert R. Ziek, Jr., Mariemont, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 664,905, Oct. 26, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 814,021

Int. Cl.⁴ C11D *11/00*

U.S. Cl. 252—174.21 **16 Claims**

1. A spray-dried granular detergent composition comprising:

(a) from about 5% to about 50% of a nonsoap anionic surfactant or mixtures thereof;

(b) from about 20% to about 60% of an alkali metal tripolyphosphate builder or mixtures thereof;

(c) from about 1% to about 10% of a mixture of polyethylene glycol and a polyacrylate,

said mixture having a polyethylene glycol to polyacrylate weight ratio of from about 1:3 to about 3:1, said polyethylene glycol having a weight average molecular weight of from about 1,000 to about 50,000, and said polyacrylate having a weight average molecular weight of from about 1,000 to about 20,000.

4,657,694

ELECTRICALLY CONDUCTIVE LIQUID CRYSTALLINE SUBSTANCE AND POLYMER

Alan J. Heeger, Santa Barbara, Calif.; Haruo Yoshida, Oita; Kazumi Naito, Kanagawa, and Yukio Kobayashi, Tokyo, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 537,210

Claims priority, application Japan, Sep. 30, 1982, 57-169882; Sep. 30, 1982, 57-169883

Int. Cl.⁴ C09K *19/58, 19/54*

U.S. Cl. 252—299.01 **11 Claims**

1. An electrically conductive liquid crystalline polymer having in the side chain of the polymer a moiety derived from an electrically conductive liquid crystalline compound represented by the following general formula (I) or (II)

$L\text{-}S_1\text{-}C_T$

$L\text{-}C_T$

wherein L is an organic residue with liquid crystalline characteristics, S_1 is an atom or atomic grouping which becomes a spacer, and C_T is a charge-transer complex comprising a guest component and a host component covalently bonded directly to said L or through a spacer to said L, said electrically conductive liquid crystalline polymer having an electrically conductivity of 10^{-8} to 1 $ohm^{-1}.cm^{-1}$.

4,657,695

SUBSTITUTED PYRIDAZINES

Shinichi Saito; Hiromichi Inoue; Kanetsugu Terashima; Takashi Inukai, and Kenji Furukawa, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

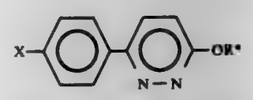
Filed Mar. 28, 1985, Ser. No. 717,097

Claims priority, application Japan, Apr. 3, 1984, 59-66288

Int. Cl.⁴ C09K *19/34;* **C07D** *237/14;* **G02F** *1/13*

U.S. Cl. 252—299.61 **6 Claims**

1. An optically active pyridazine compound of the formula



wherein X represents an alkyl group having 5 to 15 carbon atoms or an alkoxy group having 8 to 14 carbon atoms and R* represents an optically active alkyl group of up to 8 carbon atoms and having one methyl group as its side chain.

4,657,696

SCINTILLATION COUNTING MEDIUM AND COUNTING METHOD

James Thomson, Coalville, England, assignor to Fisons plc, Ipswich, England

Filed Sep. 16, 1985, Ser. No. 776,615

Claims priority, application United Kingdom, Sep. 19, 1984, 8423636

Int. Cl.⁴ C09K *11/06;* **G01T** *1/20*

U.S. Cl. 252—301.17 **8 Claims**

1. A scintillation medium comprising at least one diisopropylnaphthalene and an additional fluor, wherein said at least one diisopropylnaphthalene is liquid at a temperature of 5° C.

4,657,697

PREPARATION OF FLUORESCENT THERMAL TRANSFER SHEET BY MONOMER POLYMERIZATION METHOD

Albert C. Chiang, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

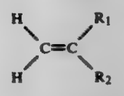
Filed Jan. 15, 1986, Ser. No. 818,937

Int. Cl.⁴ C09K *11/02*

U.S. Cl. 252—301.35 **14 Claims**

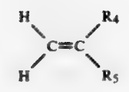
1. A method for the preparation of a fluorescent ink layer for a flouorescent thermal transfer sheet comprising:

(a) forming a solution of a mixture comprising at least one acidic monomer having the basic formula:



where R_1=H, CH_3 and R_2 is COOH, R_3 COOH wherein R_3 is C_1–C_8

at least one basis monomer and at least one fluorescent dye the basic monomer having the basic formula:



wherein R_4 is H, CH_3 and R_5 is OH, R_6 OH wherein R_6 is C_1–C_8

(b) forming an emulsion of the solution formed in step (a); and

(c) polymerizing the emulsion formed in step (b).

4,657,698

PARTIAL OXIDATION PROCESS

Mitri S. Najjar, Hopewell Junction, N.Y.; Michael W. Becker, Long Beach, Calif., and Arnulf Muan, State College, Pa., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1985, Ser. No. 803,470

Int. Cl.⁴ C01B *3/36*

U.S. Cl. 252—373 **24 Claims**

1. A process for the production of gaseous mixtures comprising H_2+CO comprising:

(1) mixing together (i) an ash fusion temperature reducing agent comprising a comminuted mixture of about 70–97 wt. % of an iron compound, and the remainder of said agent comprising a silicon compound, with (ii) an ash-containing fuel comprising a liquid hydrocarbonaceous material and/or petroleum coke; wherein said ash-containing fuel contains sulfur and the ash in said ash-containing fuel substantially comprises the oxides of Ni, V, Fe, Al, Ca and Si, and wherein the weight ratio of said ash fusion temperature reducing agent to the ash in said ash-containing fuel is in the range of about 0.5 to 10;

(2) reacting said mixture from (1) in a free-flow partial oxidation reaction zone with a free-oxygen containing gas in the presence of a temperature moderator to produce a hot raw effluent gas stream comprising H_2+CO along with molten ash having a reduced initial deformation temperature and wherein the weight ratio of iron oxide to SiO_2 in said molten ash is about 1.5, or more; and

(3) separating said molten ash from said hot raw effluent gas stream.

4,657,699

RESISTOR COMPOSITIONS

Kumaran Nair, East Amherst, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1984, Ser. No. 682,297

Int. Cl.⁴ H01B *1/02*

U.S. Cl. 252—513 **6 Claims**

1. A thick film resistor composition for firing in a low oxygen-containing atmosphere comprising finely divied particles of (a) a semiconductive material consisting essentially of a refractory metal carbide, oxycarbide or mixture thereof, the refractory metal being selected from Al, Zr, Hf, Ta, W, Mo and mixtures thereof; and (b) a nonreducing glass having a softening point below that of the semiconductive material, both (a) and (b) being dispersed in (c) organic medium.

4,657,700

FRAGRANCE COMPOSITIONS CONTAINING BENZYL ETHERS

Paul A. Ochsner, Geneva, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Filed Sep. 21, 1984, Ser. No. 653,648

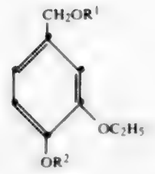
Claims priority, application Switzerland, Oct. 7, 1983, 5460/83; Jul. 12, 1984, 3387/84

Int. Cl.⁴ A61K *7/46*

U.S. Cl. 252—522 R **21 Claims**

1. A fragrance composition comprising an olfactorily effective amount of a compound of the formula —

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wherein:
R^1 represents an alkyl group containing one to three carbon atoms, and
R^2 represents hydrogen or an alkanoyl group containing one to four carbon atoms,
and at least one other olfactory agent.

4,657,701
PERFUMERY COMPOSITIONS, PRODUCTS AND METHODS
Gerko C. Pietzsch, Cambridge, England, assignor to Bush Boake Allen Limited, London, England
Filed Jul. 5, 1985, Ser. No. 752,134
Claims priority, application United Kingdom, Jul. 5, 1984, 8417183
Int. Cl.⁴ A61K *7/46;* **C11B** *9/00*
U.S. Cl. 252—522 A **12 Claims**

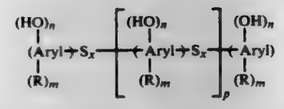
1. A perfume composition comprising a water immiscible film-forming solution of a perfume in a water immiscible solvent which is an aliphatic branched chain hydrocarbon containing at least 10 carbon atoms; and substantially homogeneously mixed with the solution, at least one water soluble additive selected from foaming agents, colourants and antibacterial agents, whereby upon agitating the composition with water the at least one additive dissolves into the water and the perfume and solvent form a film on the water.

4,657,702
PARTIAL OXIDATION OF PETROLEUM COKE
Stephen R. Vasconcellos, Langhorn, Pa.; Mitri S. Najjar, Hopewell Junction, and James R. Pascoe, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Apr. 26, 1985, Ser. No. 727,955
Int. Cl.⁴ C10J *3/00*
U.S. Cl. 252—373 **10 Claims**

1. In a process for the partial oxidation of particulate petroleum coke substantially comprising carbon and containing a small amount of ash comprising vanadium constituents and other materials to produce in a gas generating zone a raw gaseous stream comprising hydrogen and carbon monoxide and containing entrained unconverted particulate petroleum coke comprising carbon and vanadium containing ash, and said gaseous stream is cooled and scrubbed with water in gas cooling and scrubbing zones to produce a cooled and scrubbed clean gas stream and an aqueous dispersion of unconverted particulate petroleum coke; the improvement comprising:
(1) mixing said aqueous dispersion of unconverted particulate petroleum coke having a solids concentration in the range of about 0.5 to 20.0 weight percent and a particle size so that 100% passes through ASTM E11-70 Standard Sieve Designation in the range of about 37 microns to less than about 1700 microns with about 0.10 to 0.50 weight percent (basis weight of said aqueous dispersion of unreacted petroleum coke) of a vanadium collection agent to selectively change the amount of vanadium constituents in the unconverted petroleum coke fractions in the froth and bottom layers in step (2); said collection agent being selected from the group consisting of K^+ amyl xanthate, K^+ sec-amyl xanthate, and mixtures thereof, and about 0.5 to 5.0 weight percent of a frothing agent to produce froth and selected from the group consisting of pine oil, cresylic acid, C_5 to C_8 carbon aliphatic alcohols, polypropylene glycol, and mixtures thereof; and adjusting the pH of said mixture to a value in the range of about 3 to 10, providing the mixture is not already at said pH;
(2) aerating the mixed aqueous dispersion from (1) in a froth flotation zone with a gaseous material from the group consisting of air, nitrogen, carbon monoxide, steam, gaseous mixtures of H_2 and CO, and mixtures thereof, and with or without mechanical agitation, forming a layer of froth which floats on a bottom layer of aqueous dispersion, wherein;
(a) said aeration is continued until no more solid particles are visible in the foam and from about 70 to 95 weight percent of the unconverted particulate petroleum coke particles (basis carbon) have floated off in the froth, and said unconverted particulate petroleum coke substantially comprises carbon and also contains a small amount of ash with a decreased amount of vanadium constituents; and
(b) the remainder of the unconverted particulate petroleum coke is suspended in the bottom layer of aqueous dispersion and substantially comprises carbon and also contains a small amount of ash with an increased amount of vanadium constituents; where in comparison with the vanadium content of the ash in the unconverted particulate petroleum coke prior to the froth flotation treatment the vanadium content of the ash in the floated portion of unconverted particulate petroleum coke has been decreased about 50 to 85 weight percent; and
(3) concentrating the froth layer from (2) (a) in a solids-liquid separation zone to produce a concentrated aqueous slurry of unconverted particulate petroleum coke having a solids concentration in the range of about 10 to 70 weight percent, or alternatively 100 weight percent solids, and said concentrated aqueous slurry or alternatively 100 weight percent solids is mixed with either, (1) dry fresh particulate petroleum coke substantially comprising carbon and a small amount of ash comprising vanadium constituents, or (2) slurries of said fresh particulate petroleum coke in water or in a liquid hydrocarbon fuel, or mixtures thereof;
(4) recycling to said partial oxidation gas generating zone at least a portion of the mixture from (3) either with or without a carrier; and
(5) separating at least a portion of the water from the bottom layer of aqueous dispersion in a solids-liquid separation zone, and introducing the unconverted particulate petroleum coke substantially comprising carbon and also containing a small amount of ash with an increasing amount of vanadium to a conventional metals recovery zone to recover vanadium.

4,657,703
METHOD OF IMPROVING THE COLOR OF TALL OIL ROSIN ESTERS
Susan C. Durkee, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Jun. 30, 1986, Ser. No. 880,523
Int. Cl.⁴ C09F *1/04, 7/00;* **C08L** *93/04*
U.S. Cl. 260—104 **12 Claims**

1. A method of improving the color of tall oil rosin esters comprising the sequential steps of:
(a) heating and stirring a tall oil rosin in the presence of a Lewis acid catalyst to form a mixture;
(b) distilling the mixture to provide a tall oil rosin distillate; and
(c) esterifying the tall oil rosin distillate with a polyol in the presence of a phenol sulfide having the formula:



wherein n is an integer from 1 to 3, p is an integer from 0 to 100, x is 1 to 3, the sum of m and n on each Aryl is between 1 and 5, and R is a C_{1-22} hydrocarbon group.

4,657,704
PRODUCTION OF AMINOALKYLSULFONIC ACIDS
Isamu Yamamoto, Zushi; Yoshiaki Noguchi, Yokohama; Kouzou Iwasaki, and Kenichi Arai, both of Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
PCT No. PCT/JP83/00301, § 371 Date May 2, 1984, § 102(e) Date May 2, 1984, PCT Pub. No. WO84/00958, PCT Pub. Date Mar. 15, 1984
Continuation of Ser. No. 610,298, May 2, 1984, abandoned. This PCT application Sep. 8, 1982, Ser. No. 824,947
Claims priority, application Japan, Sep. 8, 1982, 57-155284; Jul. 19, 1983, 58-130160
Int. Cl.⁴ C07C *143/02*
U.S. Cl. 260—513 B **4 Claims**

1. Process for preparing an aminoalkylsulfonic acid represented by the general formula (III):

$$HO_3S—CH_2)_nNHR_3 \quad \text{(III)}$$

wherein R_3 is a hydrogen atom or an alkyl group having 1 to 3 carbon atoms and n stands for an integer of 2 or 3, which process comprises reacting, under a nitrogen atmosphere, a sulfite represented by the general formula (I):

$$M_2SO_3 \quad \text{(I)}$$

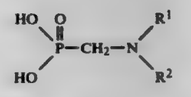
wherein M denotes an alkali metal or ammonium, with a chloroalkylamine represented by the general formula (II):

$$Cl—CH_2)_nNHR_3.HCl \quad \text{(II)}$$

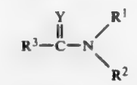
wherein R_3 and n have the same meanings as defined above, by adding the chloroalkylamine either continuously or intermittently to an aqueous solution of the sulfite which aqueous solution contains the sulfite in an amount of 1 to 1.5 times the equivalent of the chloroalkylamine and has been heated to a temperature of 50° to 60° C., and the reaction temperature, after the addition of the chloroalkylamine, is raised stepwise so as to complete the reaction.

4,657,705
PROCESS FOR THE PREPARATION OF N-SUBSTITUTED AMINOMETHYLPHOSPHONIC ACIDS
William H. Miller, Glendale; David B. Reitz, and Mitchell J. Pulwer, both of St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Sep. 23, 1985, Ser. No. 778,839
Int. Cl.⁴ C07F *9/38*
U.S. Cl. 260—502.5 F **5 Claims**

1. A process for the preparation of an N-substituted aminomethylphosphonic acid represented by the formula:



wherein R^1 is alkyl or carboxyalkyl, and R^2 is carboxyalkyl, which comprises:
preparing a mixture of an aqueous acidic medium comprising phosphorous acid; an acid selected from the group consisting of sulfuric acid, hydrochloric acid and hydrobromic acid; and a substituted substrate compound represented by the formula:



wherein R^1 and R^2 are as defined above, Y is oxygen or sulfur, and R^3 is selected from the group consisting of alkyl and carboxyalkyl;
heating the mixture to a temperature between about 70° C. and 120° C.; and
thereafter slowly adding formaldehyde to the mixture.

4,657,706
METHOD OF IMPROVING THE COLOR OF TALL OIL ROSIN ESTERS
Susan C. Durkee, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Jun. 10, 1986, Ser. No. 872,581
Int. Cl.⁴ C09F *1/04, 7/00;* **C08L** *93/04*
U.S. Cl. 260—104 **12 Claims**

1. A method of improving the color of tall oil rosin esters comprising the sequential steps of:
(a) heating the tall oil rosin in the presence of a carboxylic acid anhydride and a Lewis acid catalyst;
(b) distilling the resultant reaction mixture; and
(c) esterifying the distilled tall oil rosin with a polyol.

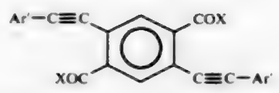
4,657,707
PROCESS FOR THE PREPARATION OF AROMATIC HYDROXY COMPOUNDS
Rolf Müller, Aesch, and Maurice Grélat, Bettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 22, 1985, Ser. No. 736,911
Claims priority, application Switzerland, May 29, 1984, 2633/84
Int. Cl.⁴ C07C *50/18, 50/12, 39/04*
U.S. Cl. 260—383 **8 Claims**

1. A process for the preparation of a hydroxy substituted anthraquinone, naphthoquinone or phenol compound, starting from a corresponding halogenated compound and replacing the halogen atom or atoms by a hydroxyl group, which process comprises reacting a halogenated anthraquinone, naphthoquinone or phenol compound with concentrated sulfuric acid, with the addition of an aldehyde, at a temperature of 50° to 200° C.

4,657,708
ETHYNYL-CONTAINING PHTHALOYL HALIDES
Robert C. Evers, and George J. Moore, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Dec. 10, 1985, Ser. No. 807,155
Int. Cl.⁴ C07C *63/24, 63/30*
U.S. Cl. 260—544 D **4 Claims**

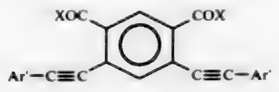
1. A 2,5-bis(arylethynyl)terephthaloyl halide of the general formula

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wherein X is Cl or Br and Ar' is a monovalent aromatic radical selected from the group consisting of phenyl and C_1 to C_3-substituted phenyl.

3. A 2,4'-bis(arylethynyl)isophthaloyl halide of the general formula



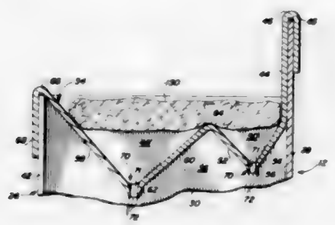
wherein X is Cl or Br and Ar' is a monovalent aromatic radical selected from the group consisting of phenyl and C_1 to C_3-substituted phenyl.

4,657,709

WATER DISTRIBUTION TROUGH FOR EVAPORATIVE COOLER PAD

Adam D. Goettl, 4960 E. Palomino Rd., Phoenix, Ariz. 85018

Filed Oct. 30, 1985, Ser. No. 792,843
Int. Cl.⁴ B01F *3/04*
U.S. Cl. 261—3 **12 Claims**



1. A cooler pad assembly for use in an evaporative cooler, said pad assembly comprising in combination:

(a) a frame defining an air inlet face and an air outlet face with a cavity therebetween;

(b) a wettable pad medium in the cavity defined by said frame: and

(c) an elongated upwardly open water distribution trough mounted so as to extend across the upper end of said frame above said pad medium for receiving water from the plumbing system of the evaporative cooler and distributing it along the top of said pad medium for wetting thereof, said trough including,

i. a front flange attached to the upper end of the air inlet face of said frame,

ii. a rear flange spaced from and substantially parallel with said front flange and disposed proximate the air outlet face of said frame,

iii. an elongated primary channel in the bottom of said trough proximate said rear flange,

iv. at least one elongated secondary channel in the bottom of said trough and coextensive with said primary channel and disposed proximate said front flange,

v. said primary and said secondary channels extending longitudinally in the bottom of said trough in a parallel side-by-side relationship and being separated by an upstanding ridge the top of which is lower than the tops of said front and rear flanges, said primary and said secondary channels each configured to define a plurality of water outlet means which are located in spaced increments in the bottoms thereof,

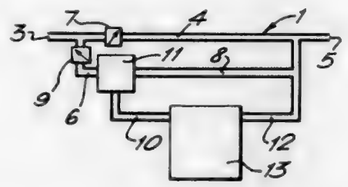
vi. said primary channel being larger than said secondary channel to provide a larger water handling capability for accomplishing the normal water distribution functions of the evaporative cooler.

4,657,710

VAPORIZERS

John M. Smith, Keighley, and James J. Miles, Wilmslow, both of England, assignors to The BOC Group plc, Windlesham, England

Filed Oct. 15, 1984, Ser. No. 660,616
Claims priority, application United Kingdom, Nov. 19, 1983, 8330948
Int. Cl.⁴ B01D *47/00*; C10J *1/00*; C10K *1/08*; F24M *3/14*
U.S. Cl. 261—46 **6 Claims**



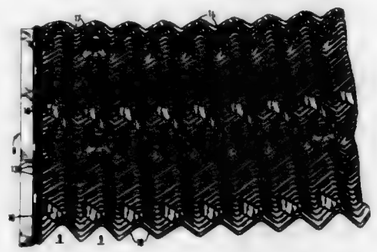
1. A vaporisor comprising a vaporising chamber for volatile liquid to be vaporised, an inlet for carrier gas, an outlet for carrier gas and vapour and means for diverting repeatedly the total flow of the carrier gas either along a first path which by-passes the vaporising chamber or a second path which passes through the vaporising chamber for entraining vapour of the volatile liquid and means for controlling automatically said diverting means to vary the output concentration of the vapour of the volatile liquid in the carrier gas.

4,657,711

GAS/LIQUID CONTACT DEVICE

Albert F. Wigley, Stafford Road, Croydon, CR9 4DT, United Kingdom

Filed Sep. 17, 1984, Ser. No. 651,280
Claims priority, application United Kingdom, Oct. 15, 1983, 8327664; Feb. 29, 1984, 8405224
Int. Cl.⁴ B01F *3/04*
U.S. Cl. 261—79.2 **8 Claims**



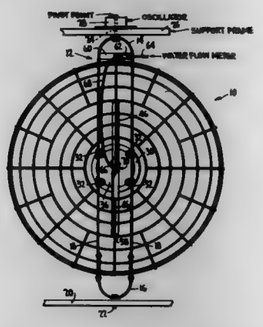
1. An improved packing sheet for use in a device wherein a film of liquid and a gas stream are brought into contact to effect heat exchange therebetween, said sheet being continuously corrugated to define a plurality of parallel depressions having walls, said depressions being generally V-shaped in cross-section, said sheet being formed in said walls of said depressions with angled projections which extend continuously between two adjacent crests of said depressions, said angled projections being so disposed on the sheet that each angled projection has one end adjacent to a middle portion of an adjacent angled projection and so that adjacent projections project from opposite sides of the sheet.

4,657,712

HUMIDIFIER

Daniel C. Milbocker, 5397 Challedon Dr., Virginia Beach, Va. 23462

Continuation of Ser. No. 506,217, Jun. 21, 1983, abandoned. This application Feb. 25, 1986, Ser. No. 833,676
Int. Cl.⁴ B01F *3/04*
U.S. Cl. 261—90 **19 Claims**



1. A humidifier comprising a bladed fan including at least two blades, each of said blades having a liquid passage closed through the entire length and terminating at the outermost free end of each blade with an opening of generally the same direnSion as said liquid passage, drive means for rotating said fan about an axis to generate an air flow, means for supplying a liquid to said liquid passages generally from the center of said fan; the axial length of each blade, the speed of rotation of said fan, and the pitch of each blade being such that droplets of the liquid are directed out of said liquid passage and then drawn around and through said fan to vaporize said liquid droplets and distribute the same with said air flow from said fan in an open unconfined and unobstructed environment relative to the air and liquid flow.

12. A method of humidifying comprising the steps of rotating a fan having plural blades to generate an air flow, each of said blades having a liquid passage closed through its entire length and terminating at the outermost free end of said blade with an opening of generally the same dimension as said liquid passage, supplying liquid to the center of the fan and distributing the liquid in the form of droplets from said free opening liquid passage at the tip of each blade, and using the fan to draw the distributed liquid droplets around behind the fan and through the fan wherein the fan breaks up the distributed liquid droplets and forces the same forward together with said air flow in an open unconfined and unobstructed environment relative to the air and liquid flow.

4,657,713

HEATED RESPIRATORY THERAPY HUMIDIFIER

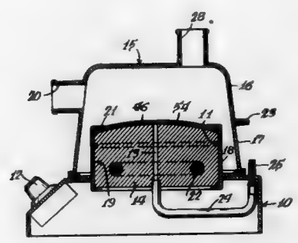
Kenneth G. Miller, Palatine, Ill., assignor to Intertech Resources Inc., Bannockburn, Ill.

Division of Ser. No. 496,103, May 19, 1983, Pat. No. 4,532,088. This application Apr. 3, 1985, Ser. No. 719,886
Int. Cl.⁴ A61M *16/18*; B01F *3/04*
U.S. Cl. 261—142 **6 Claims**

1. A disposable canister for use in a humidifier assembly for humidifying a breathable gas to be inhaled by a patient undergoing inhalation therapy; said humidifier assembly including a heater means mounted on a housing and having an exposed heated surface adapted to receive liquid water in direct heat transfer relationship therewith, and liquid water supply means for the exposed heated surface; and said canister comprising

a hollow shell having an open end adapted for removably mounting on said housing and provided with a gas inlet and a gas outlet; and

a porous, vapor-permeable but hydrophobic filter membrane mounted within said hollow shell across said open end but



at a position substantially uniformly spaced from said open end and said exposed heated surface when the shell is mounted on said housing;

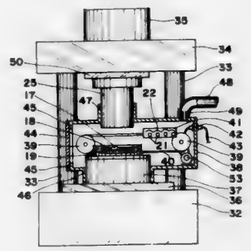
said hollow shell together with said hydrophobic filter membrane together defining a humidification chamber on one side of the filter membrane that communicates with the gas inlet and the gas outlet in the shell and through which said breathable gas is adapted to pass between the inlet and the outlet, and defining a heater-receiving cavity on the other side of the filter membrane.

4,657,714

METHOD AND PRESS MOLDING APPARATUS FOR FORMING INFORMATION CARRIER DISCS OF GRANULAR THERMOPLASTIC MATERIAL

Kazuei Kenmochi, Hirakata; Tadashi Sakairi, Katano, and Masamitsu Miyazaki, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 10, 1985, Ser. No. 753,575
Claims priority, application Japan, Jul. 11, 1984, 59-143544
Int. Cl.⁴ B29D *11/00*
U.S. Cl. 264—1.3 **9 Claims**



1. A press molding apparatus for making an information carrier disc comprising:

a vacuum box having an access opening into an interior of said vacuum box and an access door for opening and closing said access opening;

means connected to said vacuum box for evacuating the interior of said vacuum box and establishing a vacuum therein;

a mold disposed in the interior of said vacuum box, said mold having a molding cavity defined therein for receipt of

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granular thermoplastic synthetic material which is heated and pressed to form an information carrier disc;

a rammer disposed in the interior of said vacuum box, said rammer being movable into and out of said molding cavity of said mold for pressing heated thermoplastic synthetic material into a molded shape of an information carrier disc;

means connected to said rammer for moving said rammer into and out of said molding cavity;

infrared heating means movably mounted in the interior of said vacuum box, said infrared heating means being movable between a retracted position and a heating position, said infrared heating means facing said molding cavity in said heating position to heat thermoplastic synthetic material in said molding cavity and said infrared heating means located away from said molding cavity in said retracted position to allow said rammer to be moved into said cavity; and

means connected to said infrared heating means for moving said infrared heating means between said retracted position and said heating position.

9. A method of making an information carrier disc by use of a press molding apparatus which includes a vacuum box having an access opening into an interior of said vacuum box and an access door for opening and closing said access opening; means connected to said vacuum box for evacuating the interior of said vacuum box and establishing a vacuum therein; a mold disposed in the interior of said vacuum box, said mold having a molding cavity defined therein for receipt of granular thermoplastic synthetic material which is heated and pressed to form an information carrier disc; a rammer disposed in the interior of said vacuum box, said rammer being movable into and out of said molding cavity of said mold for pressing heated thermoplastic synthetic material into a molded shape of an information carrier disc; means connected to said rammer for moving said rammer into and out of said molding cavity; infrared heating means movably mounted in the interior of said vacuum box, said infrared heating means being movable between a retracted position and a heating position, said infrared heating means facing said molding cavity in said heating position to heat thermoplastic synthetic material in said molding cavity and said infrared heating means located away from said molding cavity in said retracted position to allow said rammer to be moved into said cavity; and means connected to said infrared heating means for moving said infrared heating means between said retracted position and said heating position, comprising:

placing a mass of granular thermoplastic synthetic material within the molding cavity;

evacuating the vacuum box to establish a vacuum within the vacuum box;

moving the infrared heating means to the heating position and energizing the infrared heating means to heat the mass of synthetic material to plasticize the synthetic material within the molding cavity while maintaining the vacuum within the vacuum box;

moving the infrared heating means to the retracted position after the synthetic material within the molding cavity has been plasticized;

driving the rammer from out of the molding cavity into an operative position within the molding cavity to compress the plasticized synthetic material; and

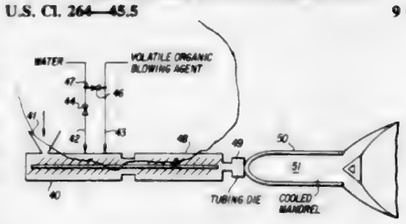
allowing the compressed synthetic material to cool while the rammer is maintained at the operative position, thereby completing the information carrier disc.

4,657,715

PROCESS FOR PREPARING SMOOTH SKINNED EXTRUDED FOAMS WITH WATER-ORGANIC BLOWING AGENT

Donald W. Myers, Canandaigua, and Dennis O'Brien, Rochester, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1984, Ser. No. 687,680
Int. Cl.⁴ C08J 9/14, 9/34; B29C 47/20
U.S. Cl. 264—45.5 **9 Claims**



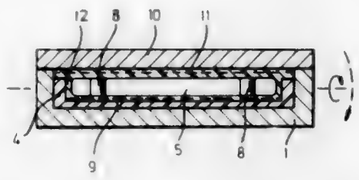
1. A method for producing a thermoplastic foam sheet having a smooth, lustrous surface by extruding a foamed tube of thermoplastic material, water and a volatile organic blowing agent; drawing the foam tube over the cylindrical surface of a cooling drum; and slitting the tube; in which said smooth, lustrous surface is on the surface drawn over said cooling drum and has a smoothness and luster which is greater than obtained absent the water.

4,657,716

METHOD OF MAKING ELASTOMERIC SHOE SOLES

Oskar J. Schmidt, Bruck/Leitha, Austria, assignor to Lim Kunststoff Technologie Gesellschaft, Kittsee, Austria

Filed Nov. 30, 1984, Ser. No. 676,732
Claims priority, application Austria, Mar. 19, 1984, 921/84
Int. Cl.⁴ B29C 67/22, 41/06, 41/20
U.S. Cl. 264—45.7 **5 Claims**



1. A method of making a shoe sole having a heel portion, an arch portion, a foot-ball portion, and a ground-engaging surface, which comprises the steps of:

molding in a mold formed with a cavity shaped as a shoe sole and having a first recess-forming removable cover a wear layer of an elastomeric material in the shape of a shoe sole with a recess being formed at at least one of said portions said recess being elliptical and having a major axis thereof extending in a longitudinal direction of said shoe sole;

removing said first cover from said mold;

disposing a layer of substantially nonextensible reinforcing material against said wear layer along a botton wall of said recess, lying substantially parallel to said surface, said reinforcing layer having the same outline as said recess and extending to a boundary thereof; and

rotationally casting in said mold provided with a second removable cover spaced from said wear layer a flowable elastomeric material on said wear layer so that said flowable elastomeric material penetrates into said reinforcing material and said reinforcing material is embedded in said flowable elastomeric material, while lining said recess and an inner surface of said second cover and defining in said recess a sealed gas-enclosing cell substantially coextensive with said recess.

4,657,717

FORMING FIBRE-PLASTICS COMPOSITES

James B. Cattanach, Middlesbrough, and Anthony J. Barnes, Malvern, both of England, assignors to Alcan International Limited, Montreal, Canada

Filed Mar. 15, 1985, Ser. No. 712,009
Claims priority, application United Kingdom, Mar. 16, 1984, 8406869; Nov. 27, 1984, 8429906
Int. Cl.⁴ B29C 43/02
U.S. Cl. 264—10.2 **22 Claims**



1. A method of forming a three dimensional shaped article of a plastics composite comprising superimposed layers of fibers dispersed in a matrix of a thermoformable material, comprising the steps of

providing a body of said composite to be reshaped and having a first side and a second side;

contacting at least the first side of said body of said composite with a sheet of a metal which is capable of being plastically deformed at an elevated temperature,

clamping edges of said metal sheet to prevent movement of said edges during subsequent deformation, and applying vacuum to remove air from between said metal sheet and said body to bring the composite body tightly against the metal sheet and to provide support for said body;

bringing the metal sheet and the composite body to an elevated temperature at which the metal sheet can be substantially plastically deformed and at which the composite body can conform to the plastically deformed shape of the metal sheet, and

applying fluid pressure to the metal sheet while the second side of the composite body is at least partly reshaped by a mold so that the metal sheet becomes substantially plastically deformed to a relatively new deep shaped geometry and the first side of the composite body is formed to the relatively deep shaped new geometry by the plastic deformation of the metal sheet, including relative movement of the fibers of the superimposed layers to accommodate themselves to the new geometry without buckling, the shape of the plastics composite thereby obtained being defined on at least said first side by the plastic flow of the metal sheet.

4,657,718

COEXTRUSION METHOD

Richard W. Sicka, Brecksville, and Dale A. Tompkins, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 704,243, Feb. 22, 1985, Pat. No. 4,578,024. This application Dec. 9, 1985, Ser. No. 807,076
Int. Cl.⁴ B29C 47/02
U.S. Cl. 264—146 **14 Claims**

1. A method of coextruding an annular seamless elastomeric component made up of first and second independent coaxial juxtapositioned hollow layers of elastomeric materials having interposed, adjacent to their interface, a closely and uniformly spaced array of adjacent independent, and endless filament-type of reinforcing elements parallel to the direction of coextrusion, comprising the steps of:

(a) producing a first independently controlled annular hollow stream of elastomeric material within a coextrusion head;

(b) producing a second independently controlled annular hollow stream of elastomeric material concentric with said first stream, within said coextrusion head;

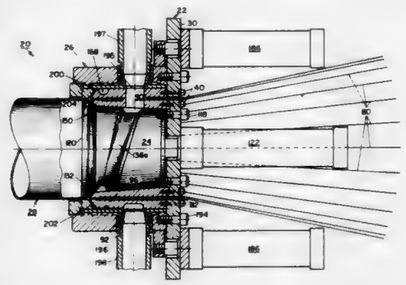
(c) producing, within said coextrusion head, a third annular hollow stream of elastomeric material, concentric with said first and second streams, by smoothly coaxially merging together said first and second streams, said third stream including, due to said merging, a common annular and concentric and merger interface between said former first and second streams;

(d) introducing into said coextrusion head a plurality of closely adjacent, independent and endless filament-type reinforcing elements in the direction of coextrusion;

(e) individually, totally enveloping each of said reinforcing elements within said coextrusion head and individually and independently directing said reinforcing elements to said third stream, via a closely spaced array of axially directed fixed guide means, in a closely, uniformly and circumferentially spaced annular array;

(f) accurately positioning said annular array of reinforcing elements at and substantially coaxial with said merger interface; and

(g) interposing said annular array of reinforcing elements



into said third stream, at said merger interface as it is produced, via the movement of said first and second streams for drawing said array of reinforcing elements into said merger interface, parallel to and synchronous with said third stream.

12. A method of producing annular seamless filament reinforced elastomeric body plies for use in manufacturing radial tires comprising the steps of:

(a) producing, within a coextrusion head and using a first extruder, a first annular hollow stream of elastomeric material having a circumferentially uniform wall thickness and velocity;

(b) producing, within said coextrusion head and using a second extruder, a second annular hollow stream of elastomeric material, concentric with said first stream, and having a circumferentially uniform wall thickness and velocity;

(c) producing, within said coextrusion head a third annular hollow stream of elastomeric material from and concentric with said first and second streams by smoothly merging together said first and second streams, said third stream due to said merging having a common, annular and concentric stock junction between said previous first and second streams, with the velocities of each of said first and second streams, at said merging step, being substantially similar;

(d) introducing into said coextrusion head a plurality of

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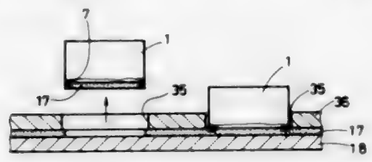
adjacent independent and endless filament type reinforcing elements in the direction of coextrusion;
(e) individually, totally enveloping of said reinforcing elements within said coextrusion head;
(f) individually and independently directing said reinforcing elements to said third stream, via a closely spaced array of axially directed fixed guide means, in a closely, uniformly and circumferentially spaced annular array;
(g) accurately positioning said annular array of reinforcing elements at said stock junction;
(h) interposing said annular array of reinforcing elements into the said third stream, at said stock junction as it is produced, via the movement of said first and second streams for drawing said array of reinforcing elements into said stock junction, parallel to and synchronous with said third stream, thereby producing a continuous annular seamless filament reinforced elastomeric component; and
(i) sequentially circumferentially severing said annular seamless component, as it emanates from said coextrusion head, into predetermined lengths for use as body plies in manufacturing radial tires.

4,657,719

METHOD OF FORMING COVER SHEET IN OPENING OF ROTARY ELECTRIC DEVICE

Yukihiro Azuchi, Sobae, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 6, 1984, Ser. No. 678,695
Claims priority, application Japan, Dec. 12, 1983, 58-234685
Int. Cl.[4] B29C *39/10*
U.S. Cl. 264—153 **16 Claims**



1. A method of forming a cover sheet over an opening defined in an electric device, said method comprising the steps of:
forming a thin film of hardenable resin over a base plate, said resin being a thermosetting resin that is sufficiently rigid to maintain its form upon being removed from said plate before being fully hardened, and remains both elastic and heat-resistant after hardening;
pressing said electric device against said film with said opening facing said film, said electric device being pressed with sufficient force to cause at least a portion of said film to intrude into said opening and to engage inner peripheral surfaces of said electrical device which define said opening and to adhere thereto;
separating said electric device, and a portion of said film which faces and is substantially coextensive with said opening, from said base plate and from the portion of said film that is not substantially coextensive with said opening; and
hardening said portion of film which has been removed from said plate, to form said cover sheet.

4,657,720

METHOD AND APPARATUS FOR LOCATING AND EMBEDDING A SPECIMEN

Tohru Inouye, 175 E. Delaware Pl., Chicago, Ill. 60611

Filed May 2, 1985, Ser. No. 729,949
Int. Cl.[4] A01N *1/00;* **B29C** *39/02, 39/36;* **B32B** *31/00*
U.S. Cl. 264—275 **17 Claims**

1. A method for forming an embedded specimen suitable for sectioning with a microtome machine or the like in a capsule having open, opposite specimen and pouring ends, from a slide mounted specimen or the like, comprising the steps of:
A. locating the desired to be embedded specimen on the slide specimen,
B. mechanically holding the embedded capsule adjacent the slide in substantially perpendicular relationship to the slide,
C. viewing the specimen from the side of the slide opposite the capsule,
D. aligning the to be embedded specimen with the open specimen end of the capsule,
E. moving the capsule relatively toward the slide to hold the open specimen end of the capsule in substantially sealed contact with the specimen on the slide,
F. positioning the slide and capsule with the open pouring end of the capsule above the specimen end and the slide, and
G. pouring embedding material into the open pouring end of the capsule and permitting the embedding material to flow downwardly toward the specimen end and harden about the to be embedded specimen while the capsule is still being held mechanically substantially perpendicular to the slide.



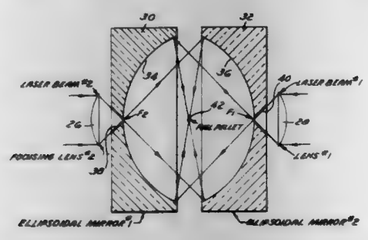
3. Apparatus for forming an embedded specimen for sectioning with a microtome machine or he like, with a capsule having opposite, open specimen and pouring ends and a slide mounted specimen or the like, comprising capsule holding means for holding said capule in which the embedded sepcimen is to be embedded, locator means for locating said capsule holding means at a spaced distance from the slide mounted specimen, a base plate for holding the slide substantially perpendicular to said capsule holding means, said capsule holding means permitting relative movement of the capsule into sealed contact with the slide specimen and removal of the capsule from the capsule holding means, said locator means and base plate having cooperating portions for holding the two together so that the slide closely adjacent said capsule holding means is well supported, said capsule holding means being open adjacent the pouring end of the capsule so that light may enter the capsule, said base plate having a viewing opening aligned with said capsule holding means for ascertaining the alignment of the to be embedded specimen and the specimen end of the capsule, said apparatus being positionable to locate the capsule holding means above said base plate so that embedding material can be poured through said open capsule holding means, into the open pouring end of hte capsule and into the capsule, whereby accurate embedded specimens can be quickly formed.

4,657,721

TARGET ILLUMINATION

Carlton E. Thomas, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 365,092, May 21, 1973, abandoned. This application Dec. 22, 1978, Ser. No. 972,504
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—104 **13 Claims**



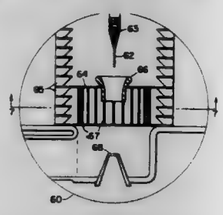
1. In a system for illuminating a minute target with a laser energy source to achieve fusion conditions that improvement which comprises:
a pair of concave ellipsoidal mirrors positioned in opposed relation and spaced to have a common reflective focal point, said mirrors each having a central aperture on a common axis including said focal point to admit a laser beam through the back of each toward the reflective surface of the other with a second focal point of each said ellipsoidal mirror being disposed on said axis adjacent the said aperture in the opposing mirror, and an optical system positioned at each of said apertures on axis with said focal point having the optical function of focusing a laser beam entering on said common axis at the second focal point of the opposing ellipsoidal mirror.

4,657,722

ION CLUSTER ACCELERATION

Willard H. Bennett, 1609 Glengarry Dr., Cary, N.C. 27511

Continuation-in-part of Ser. No. 415,120, Sep. 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 219,619, Dec. 24, 1980, Pat. No. 4,428,901, which is a continuation-in-part of Ser. No. 149,163, May 14, 1980, Pat. No. 4,363,779, which is a continuation-in-part of Ser. No. 871,868, Jan. 24, 1980. This application Nov. 21, 1984, Ser. No. 673,765
Int. Cl.[4] G21B *1/00;* **G21G** *4/02*
U.S. Cl. 376—105 **11 Claims**



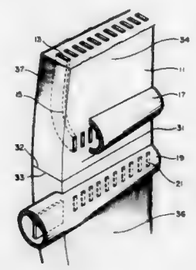
1. An ion accelerating device comprising:
a cathode,
an anode,
said anode comprising tubular conducting means having its centerline along the centerline of the beam,
a target,
means for accelerating a beam of electrons from the cathode through the anode to the target, including means for placing a potential difference between the cathode and the anode,
means for supplying ions to the beam so that the ions are accelerated toward the target,
the improvement wherein:
the target being positioned across the end of the tubular anode that is farthest from the cathode,
a return path for the electrons reaching the target for conducting the electrons that reach the target,
said anode comprising means for forming a potential trough that collects and accelerates ions toward the target.

4,657,723

METHOD AND APPARATUS FOR DISTRIBUTING COOLANT IN TOROIDAL FIELD COILS

John R. Schuster, Encinitas; Char Y. Lee, Solana Beach, and Carl F. Weggel, San Diego, all of Calif., assignors to FDX Patents Holding Company, N.V., New York, N.Y.

Continuation of Ser. No. 346,843, Feb. 8, 1982, abandoned. This application Feb. 1, 1985, Ser. No. 696,897
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—146 **8 Claims**



1. In a tokamak reactor having a toroidal field coil assembly enclosing a generally toroidal shaped region having a toroidal axis, said toroidal field coil assembly comprising a plurality of generally flat-washer shaped magnetic coils having generally flat opposing radial faces with respect to said toroidal axis, a cooling arrangement for distributing coolant in said toroidal field coil assembly, said cooling arrangement comprising, for each coil:
(a) a plurality of coolant channels for flowing coolant in the same direction through an interior of said coil, said coolant channels embedded within said coil and having inlets and outlets opening on a face of said coil,
(b) said inlet and oulet openings disposed adjacent opposite ends of said coil and arranged radially along said coil face with respect to the toroidal axis,
(c) a single inlet header formed in part by said coil face containing said inlet openings and in part by a curved supply conduit having a longitudinal opening along the length thereof,
(d) a single outlet header formed in part by said coil face containing said outlet openings and in part by a curved return conduit having a longitudinal opening along the length thereof, and
(e) said supply and return conduits each having longitudinal edges along their longitudinal openings, said edges being secured to respective portions of said coil face containing said inlet and outlet openings, such as by welding or brazing.

4,657,724

NEUTRON GENERATOR ION SOURCE PULSER

Harold E. Peelman, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 6, 1984, Ser. No. 597,296
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—119 **13 Claims**

1. For use with a pulsed neutron generator in a logging tool lowered in a borehole, a pulsed high voltage source having an

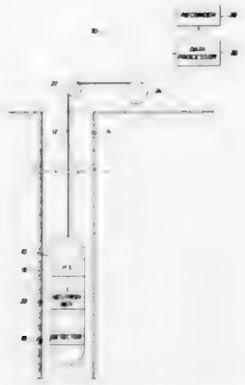
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output terminal adapted to be connected to pulse neutron generator, the power supply comprising:

(a) high voltage supply means;

(b) field effect transistor means comprising at least a pair of field effect transistors serially connected between said high voltage supply means and ground;

(c) an output terminal between the two transistors of said field effect transistor means, said output terminal adapted



to be connected by a conductor to provide pulsed high voltage to a neutron generator;

(d) control pulse forming means connected to the gates of the respective two transistors, said pulse forming means forming control pulses selectively switching said transistors off and on in timed sequence to thereby connect the output terminal to said high voltage supply means, and

(e) diode means connected to said gates of said transistors to limit gate voltage for operation of said transistors.

4,657,725

CORE FOR A NUCLEAR REACTOR COOLED BY WATER UNDER PRESSURE

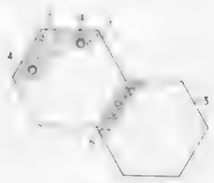
Jean-Paul Millot, Elancourt, France, assignor to Framatome & Cie, Courbevoie, France

Filed Sep. 24, 1984, Ser. No. 653,804

Claims priority, application France, Sep. 30, 1983, 83 15591

Int. Cl.⁴ G21C *7/00, 1/00*

U.S. Cl. 376—209 **5 Claims**



1. A nuclear reactor having a core and water coolant flowing therethrough, said core consisting of prismatic assemblies of identical cross-section arranged vertically and side by side and each comprising a cluster of vertical fuel rods spaced to permit circulation of the water coolant, said fuel assemblies comprising:

a plurality of first fuel assemblies whose fuel rods contain initially contain enriched uranium only, certain of the fuel rods being substituted which guide tubes in the cluster and said fuel rods being sufficiently spaced for the neutron energy spectrum within said furst fuel assemblies to be thermal at least when there is water within said guide tubes, and

a plurality of second fuel assemblies in which all fuel rods initially contain recovered plutonium only and are so spaced that the neutron energy spectrum within said second fuel assemblies is higher than thermal,

said first and second fuel assemblies being distributed throughout the reactor core.

4,657,726

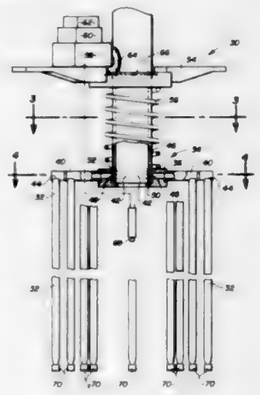
MODERATOR CONTROL APPARATUS FOR A NUCLEAR REACTOR FUEL ASSEMBLY

Dale B. Lancaster, Monroeville, and Edmund E. DeMario, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 22, 1984, Ser. No. 623,744

Int. Cl.⁴ G21C *7/26*

U.S. Cl. 376—209 **12 Claims**



1. In combination with a fuel assembly for a nuclear reactor including an organized array of upstanding fuel rods, a number of elongated guide thimbles strategically located within the fuel rod array, and a moderator/coolant flowing upwardly along the fuel rods to above said fuel assembly, an apparatus to control the nuclear reactivity for improving fuel utilization and thereby reducing fuel cycle costs, said control apparatus comprising:

(a) a plurality of hollow displacer rods inserted into respective ones of said guide thimbles, displacing a predetermined volume of said moderator/coolant associated with said fuel rods to decrease the hydrogen/uranium ratio from a given level;

(b) a manifold disposed on the top of said fuel assembly in fluid flow communication with said moderator/coolant and having a plurality of inlet ports and a plurality of exit ports connected to and in fluid flow communication with respective ones of said displacer rods, each inlet port being in fluid flow communication with at least one of said exit ports; and

(c) valve means operably associated with said manifold inlet ports for controlling the flow and non-flow of said moderator/coolant through said inlet ports and into said displacer rods via said exit ports of said manifold, said flow of said moderator/coolant through said inlet ports and into said displacer rods increasing the moderator/coolant volume in thereby shifting the hydrogen/uranium ratio back to its given level.

4,657,727

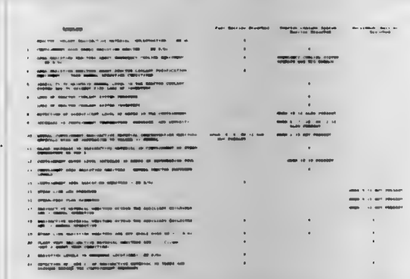
FISSION PRODUCT BARRIER EMERGENCY EVENT CLASSIFICATION AND RESPONSE SYSTEM

Margaret M. Mlynczak, and Michael E. Stern, both of P.O. Box 892, McLean, Va. 22101, assignors to Michael E. Stern and Margaret M. Mlynczak, both of Charlottesville, Va.

Filed Oct. 18, 1984, Ser. No. 662,088

Int. Cl.⁴ G21C *17/00, 7/36*

U.S. Cl. 376—217 **7 Claims**



5. The method of calculating concentration of radioactive material within a coolant barrier corresponding to fuel barrier breach for the purpose of initial designation of criterion of fuel breach according to the equation

$$C_{RCS} \alpha D/f(L_C)$$

where

D = Dose at the site boundary, set at 500 millirems per year;

$f(L_C)$ = function of the leak rate of the containment;

C_{RCS} = Concentration of radioactive material in reactor coolant system.

4,657,728

MACHINE FOR EXAMINING A NUCLEAR REACTOR FUEL ASSEMBLY

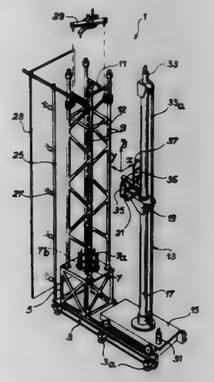
Louis Coppa, Aix en Provence; Christian Mesgual, Manosque; Alain Ripart, Meudon la Foret, and Francis Zava, Manosque, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 11, 1984, Ser. No. 599,070

Claims priority, application France, Apr. 13, 1983, 83 06027

Int. Cl.⁴ G21C *17/00, 17/08, 19/06;* **B25J** *19/02*

U.S. Cl. 376—248 **2 Claims**



1. A machine for examining a nuclear reactor fuel assembly, said machine comprising: a flooring having a generally elongated shape, a support located at one end of said flooring, a rotary container located on said support for receives said fuel assembly, two rigid structures arranged in vertical position and parallel to each other for positioning the fuel assembly, each of said structures having an upper end and a lower end, said lower ends resting on said support, each rigid structure being constituted by two parallel tubes connected to each other, means for rotating said rotary container, latch means for connecting the fuel assembly to the upper ends of said structures and having a large branch and a small branch, the small branch being rotatably fitted to the large branch, two pins respectively located at opposite ends of the large branch, two pins respectively located at opposite ends of the small branch, a fixing block at each of the upper ends of the rigid structures, each fixing block having an orifice for receiving the respective pin of the large branch, a plate fixed to the small branch and having orifices at predetermined positions; a device for immobilizing the small branch so as to prevent the same from rotating relative to the large branch; a trolley displaceable along said flooring towards and away from said support, a vertically extending column resting on said trolley and carrying a bracket, the bracket being vertically displaceable along the column, the bracket supporting a carriage, said carriage being transversally displaceable with respect to the bracket, said carriage supporting means for examining said fuel assembly.

4,657,729

SOLID TAGS FOR IDENTIFYING FAILED REACTOR COMPONENTS

Wilbur L. Bunch, and Robert E. Schenter, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 19, 1984, Ser. No. 622,299

Int. Cl.⁴ G21C *17/00, 3/10*

U.S. Cl. 376—251 **18 Claims**

1. A solid tag material for identifying a nuclear reactor component when placed within the component; comprising solid materials which contain at least one non-gaseous element that undergoes nuclear transmutation into one or more detectable, identifiable, and measurable tag gases on irradiation in a nuclear reactor; wherein the tag gases generated are stable, are not fission products, and are generated in predetermined proportions different from their natural occurrence; whereby on the failure of a component the tag gases can be detected in the reactor cover gas and the failed component identified according to the tag gas composition.

4,657,730

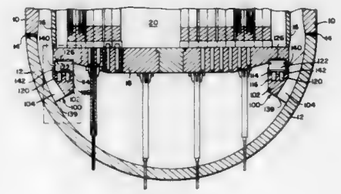
LOW STRESSED RATIONALLY SHAPED CORE SUPPORT

Ronald M. Blaushild, Pittsburgh, and Luciano Veronesi, O'Hara Twp., Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 28, 1983, Ser. No. 547,294

Int. Cl.⁴ G21C *9/00, 13/00*

U.S. Cl. 376—285 **13 Claims**



1. A nuclear reactor, comprising:

a reactor pressure vessel, having a vertically oriented cylin-

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drical tubular shell portion, the bottom of which is closed by a hemispherical shell portion having upper sidewalls;

a core barrel disposed internally within said reactor pressure vessel;

means mounted upon said reactor pressure vessel for engaging the periphery of said core barrel, comprising a cross beam member, and a pair of brackets connected to the opposite ends of said crossbeam member, said pair of brackets extending radially outwardly of said crossbeam member and engaging said reactor pressure vessel at the upper sidewalls of said hemispherical shell portion so as to radially space said crossbeam member from said reactor pressure vessel; recess means defined within said crossbeam member of said engaging means; key means secured to said core barrel and disposed within said recess means and

vertically oriented channel means defined within the confines of said crossbeam member and said brackets of said engaging means for providing a vertically directed fluid conduit for coolant flow through said engaging means.

4,657,731

METHOD FOR REMOVING CESIUM FROM AN AQUEOUS LIQUID AND PURIFYING THE REACTOR COOLANT IN BOILING WATER AND PRESSURIZED WATER REACTORS

Joseph A. N. Otte, Ruisbroek, and Dennis Liebman, Sinzheim, both of Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 13, 1984, Ser. No. 579,623

Claims priority, application European Pat. Off., Feb. 11, 1983, 83-200224.2

Int. Cl.⁴ G21C *19/42*

U.S. Cl. 376—313 **7 Claims**

1. A method for removing cesium isotopes from an aqueous liquid, the method comprising contacting the cesium containing aqueous liquid with a strong acid, cation exchange resin of a highly cross-linked, macroporous copolymer derived from styrene and divinylbenzene, wherein the styrene is employed in an amount ranging from 76 to 82 weight percent and the divinylbenzene is employed in an amount ranging from 18 to 24 weight percent based on the weight of the styrene and divinylbenzene.

2. A method for purifying cesium containing rector coolant of a pressurized water or boiling water reactor, said method comprising contacting the cesium containing reactor coolant with a strong base anion exchange resin and a strong acid cation exchange resin of a highly crosslinked, macroporous copolymer derived from styrene and divinylbenzene, wherein the styrene is employed in an amount ranging from 76 to 82 weight percent and the divinylbenzene is employed in an amount ranging from 18 to 24 weight percent based on the weight of the styrene and divinylbenzene.

4,657,732

HIGH TEMPERATURE REACTOR WITH SPHERICAL FUEL ELEMENTS

Josef Schoening, Hambruecken, and Claus Elter, Bad Durkheim, both of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Fed. Rep. of Germany

Filed Dec. 31, 1984, Ser. No. 687,963

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1984, 3401498

Int. Cl.⁴ G21C *13/10*

U.S. Cl. 376—314 **10 Claims**

1. A high temperature nuclear reactor barrier system comprising a plurality of barriers to prevent a release of radioactivity wherein;

a first barrier comprises a coating over fissionable material in reactor fuel elements;

a second barrier comprises a graphite matrix in which said fuel elements are embedded;

a third barrier comprises a pressure vessel metal liner;

a fourth barrier comprises in combination a concrete body of a prestressed concrete pressure vessel, a plurality of closure devices affixed to passages in the concrete pressure vessel, wherein said closure devices include inner and outer covers defining intermediate spaces therebetween, said inner covers forming a primary gas seal, and a plurality of conduits connected to said intermediate spaces for removing exhaust leakage of primary gas passing into said intermediate space;

means for retention of fission products in said conduits, wherein said means for retention of fission products is a filter and further comprising means for exhausting filtered gas in said conduits outside said prestressed concrete pressure vessel,

said means for exhausting comprises an exhaust stack attached to said conduits downstream from said filter and extending outside said prestressed concrete pressure vessel; and

wherein the conduits are positioned within the concrete body of the prestressed concrete pressure vessel up to their connection with the exhaust stack.

4,657,733

FUEL ASSEMBLY FOR A NUCLEAR REACTOR

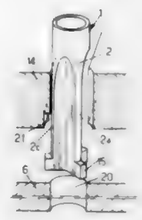
Jean-Paul Millot, Elancourt; Guy Desfontaines, Puteaux, and Michel Babin, Pantin, all of France, assignors to Framatome & Cie., Courbevoie, France

Filed Feb. 14, 1984, Ser. No. 579,940

Claims priority, application France, Feb. 25, 1983, 83 03154

Int. Cl.⁴ G21C *1/06, 3/10*

U.S. Cl. 376—178 **6 Claims**



1. A nuclear fuel assembly for use in upright position, comprising:

(a) a bundle of vertical fuel rods distributed in a regular array and each having a closure plug at the lower end thereof;

(b) a structure having

(i) an upper end plate;

(ii) a lower end plate;

(iii) a plurality of guide tubes substituted for certain of said fuel rods in the bundle;

(iv) a plurality of grids located transverse to said fuel rods and guide tubes, distributed along said bundle and secured to said guide tubes; and

(c) an attachment plate secured against an upper surface of said lower end plate, formed with individual flow openings in alignment with said fuel rods, having a circular cross-section corresponding to that of said fuel rods and formed with a plurality of parallel downwardly facing grooves each corresponding to a row of said rods in said bundle and each communicating with a plurality of said openings;

(d) wherein each of said closure plugs is formed with axially extending recesses defining at least three branches distributed angularly at equal intervals, and each of said branches has a lower radially outwardly projecting extension having a height corresponding to the depth of said grooves and projecting from the cross section of said plug by an amount proportioned to the width of said grooves for preventing rotation of said plugs in said grooves.

4,657,734

METHOD FOR PREPARING A SLIDING FACE OF A MACHINE TOOL

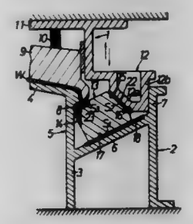
Hiroyasu Yamada, Kawagoe, and Motoatsu Shiraishi, Sakado, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1985, Ser. No. 723,675

Claims priority, application Japan, Apr. 17, 1984, 59-77119

Int. Cl.⁴ B22F *7/00*

U.S. Cl. 419—9 **21 Claims**



1. A method of preparing a sliding face of a machine tool comprising the steps of:

preparing a plastic material by kneading together a metal powder capable of being sintered and a synthetic resin binder;

glueing the plastic material to a slide surface of a slide component of the machine tool;

flattening an external surface of the plastic material;

applying a back up to the external surface of the plastic material to supress dimensional change;

heating the slide component with the plastic material on the slide surface thereof to thermally dissolve out the synthetic resin binder; and

further heating the slide component to sinter the metal powder in place.

4,657,735

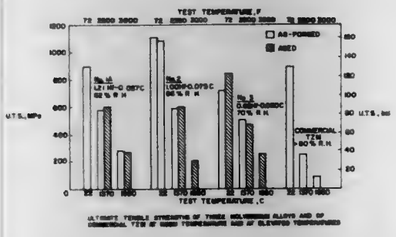
MO-HF-C ALLOY COMPOSITION

Edward P. Whelan, Ann Arbor, Mich., and Eric Kains, Corvallis, Oreg., assignors to AMAX Inc., Greenwich, Conn.

Filed Oct. 2, 1985, Ser. No. 782,784

Int. Cl.⁴ C22C *27/04*

U.S. Cl. 420—429 **4 Claims**



3. As an article of manufacture, a cast ingot of a molybdenum-hafnium-carbon alloy consisting essentially by weight of about 0.6% to about 1% Hf, about 0.045% to about 0.08% C, and the balance essentially molybdenum,

the amount of Hf and C present being substantially stoichiometric with respect to HfC and within about ±15% of stoichiometry,

the ingot being characterized in that it has a substantially less tendency to crack compared to alloys containing Hf in excess of about 1% by weight and carbon in excess of 0.08% by weight, without substantial diminution in strength properties of said alloy.

4,657,736

SENSOR ELEMENT FOR DETERMINING THE OXYGEN CONTENT AND A METHOD OF PREPARING THE SAME

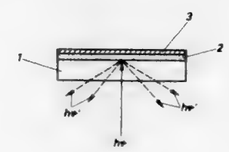
Hermann Marsoner; Herbert Kroneis, and Otto Wolfbeis, all of Graz, Austria, assignors to AVL AG, Schaffhausen, Switzerland

Continuation of Ser. No. 553,385, Nov. 18, 1983, abandoned. This application Jul. 14, 1986, Ser. No. 883,430

Claims priority, application Austria, Nov. 23, 1982, 4265/82

Int. Cl.⁴ G01J *3/30;* **G01N** *21/26, 21/48, 33/16*

U.S. Cl. 422—56 **18 Claims**



1. A sensor element which, when placed in contact with a sample containing oxygen, is capable of indicating the oxygen content in said sample, said sensor element comprising a cured silicone polymer carrier matrix which is permeable to oxygen molecules and a chemically modified, solubilized, oxygen-sensitive fluorescent indicator substance which is generally homogeneously embedded within said cured silicone polymer carrier matrix, said oxygen-sensitive fluorescent indicator substance, upon excitation, emitting light of a certain wavelength and of varying intensity depending on the amount of oxygen from said sample in contact therewith, said sensor element being produced by a method which comprises the steps of

(a) combining an oxygen-sensitive fluorescent indicator substance with tertiary butyl chloride,

(b) catalytically reacting said oxygen-sensitive fluorescent indicator substance and said tertiary butyl chloride and recovering a solubilized fluorescent indicator substance,

(c) mixing said solubilized fluorescent indicator substance with an uncured silicone polymer to form a homogeneous mixture, and

(d) curing said mixture to form said sensor element.

11. A method of producing a sensor element which, when placed in contact with a sample containing oxygen, is capable of indicating the oxygen content in said sample, said sensor element comprising a cured silicone polymer carrier matrix which is permeable to oxygen molecules and a chemically modified, solubilized, oxygen-sensitive fluorescent indicator substance which is generally homogeneously embedded within said cured silicone polymer carrier matrix, said oxygen-sensitive fluorescent indicator substance, upon excitation, emitting light of a certain wavelength and of varying intensity depending on the amount of oxygen from said sample in contact therewith, said method comprising the steps of

(a) combining an oxygen-sensitive fluorescent indicator substance with tertiary butyl chloride,

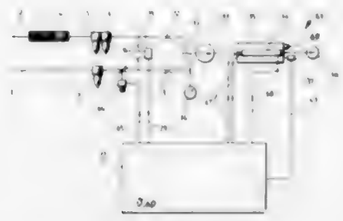
(b) catalytically reacting said oxygen-sensitive fluorescent indicator substance and said tertiary butyl chloride and recovering a solubilized fluorescent indicator substance,

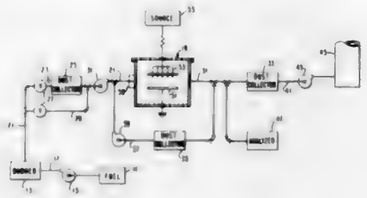
(c) mixing said solubilized fluorescent indicator substance with an uncured silicone polymer to form a homogeneous mixture, and

(d) curing said mixture to form said sensor element.

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4,657,737
APPARATUS FOR DETERMINING THE FUEL-AIR RATIO OF OTTO ENGINES
Franz Kampelmühler, Tamm, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co KG, Neuss, Fed. Rep. of Germany
Filed Mar. 28, 1985, Ser. No. 716,953
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412166
Int. Cl.⁴ G01N *25/26, 31/12, 33/22*
U.S. Cl. 422—94 **16 Claims**





1. Apparatus for measuring a single component of exhaust gas from an engine such as an Otto engine to enable the air coefficient or mixture composition of said engine to be determined, said apparatus comprising a first line for supplying a stream of an exhaust gas from an engine with said first line having an inlet end and an outlet end, a second line for supplying a stream of air with said second line having an inlet end and an outlet end, a mixing apparatus connected to the outlet end of each of said first line and second line, a common outlet line for receiving a mixture of the exhaust gas and air from said mixing apparatus, a burner located in said common outlet line for receiving and burning the mixure to complete oxidation and an analyzing unit for measuring at least one component of the mixture including the exhaust gas, wherein the improvement comprises a cooler (**4**) in said first line followed in the downstream direction by a water separator (**5**) and a fine filter (**6**) for filtering out solid and liquid constituents of the exhaust gas, a fine filter (**7**) in said second line for filtering out impurities, said mixing apparatus comprising a first metering nozzle (**12**) connected to the outlet end of said first line, a second metering nozzle (**13**) connected to the outlet end of said second line, said first and second metering nozzles (**12, 13**) connected to said common outlet line, said burner (**35**) located in said common outlet line downstream from said first and second nozzles, an intermediate line (**14**) interconnecting said first and second lines (**2, 3**) upstream from said first and second metering nozzles, a pressure difference sensor (**15**) in said intermediate line, controlled throttle valve means (**28**) in one of said first and second lines, and means connecting said pressure difference sensor to said controlled throttle valve means to adjust said throttle valve means to obtain a constant mixture ratio of said exhaust gas and said air in said common outlet line.

4,657,738
STACK GAS EMISSIONS CONTROL SYSTEM
Ira E. Kanter, Monroeville, and Richard L. Hundstad, Forest Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 605,348, Apr. 30, 1984, abandoned. This application Apr. 21, 1986, Ser. No. 857,508
Int. Cl.⁴ B01J *19/08,* **B03C** *3/40*
U.S. Cl. 422—186.04 **3 Claims**

1. A system for controlling SO_x and NO_x emissions of an exhaust gas flow generated by a combustion apparatus comprising an electrochemical reactor in communication with said combustion apparatus so that the exhaust gas generated thereby circulates through said electrochemical reactor which includes an inlet and an outlet with the inlet coupled to a fan means whereby the exhaust gas from the combustion apparatus is circulated through said electrochemical reactor at a flow rate of from about 0.5 to 1 Mach number, which reactor includes a predetermined number of hexagonal modular units each comprising electronic cathode means spaced from anode means, each of which are disposed within said reactor to effect substantial contact with the exhaust gas circulated therethrough, said electronic cathode means comprising an array of spaced-apart pin-type cathode members spaced from a planar anode member, and means for providing a d.c. potential between said cathode means which are resistively balanced, and said anode means for establishing a uniform stable glow discharge current such as to provide efficient electronic activation of SO_x and NO_x whereby a field gradient of between about 7 to 20 kV per centimeter is established such that arcing does not occur and whereby the higher the velocity of flow rate of the exhaust gas through said electrochemical reactor, the higher the glow discharge current possible without arc breakdown in the exhaust gas wherein SO_x and NO_x are electronically activated or reacted to effect the chemical modification thereof, thus rendering a thermodynamically stable solid product, and filter means in communication with said electrochemical reactor outlet means for filtering the stable solid product from the electrochemically treated exhaust gas.

4,657,739
INTEGRAL ELEMENT FOR BIOLOGICAL REACTION AND PROCESS FOR THE PREPARATION THEREOF
Yukio Yasuda, and Nobuhito Masuda, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 19, 1984, Ser. No. 590,729
Claims priority, application Japan, Mar. 17, 1983, 58-45060
Int. Cl.⁴ C12Q *1/00;* **G01N** *33/52, 33/543, 33/548*
U.S. Cl. 422—56 **5 Claims**

1. In an integral element for quantitative analysis of biochemically active components in a liquid sample which comprises a porous reaction layer comprising a fibrous material and an active substance being active to said biochemically active components and a second porous layer superposed on the porous reaction layer, the improvement which comprises:

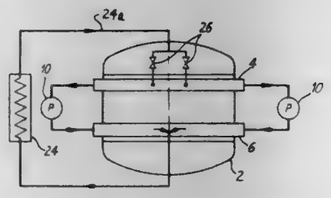
said porous reaction layer containing a particulate material in an amount ranging from 1 to 60 g/m², the weight ratio of the particulate material to fibrous material being from 1:20 to 1:0.3 on a dry basis, the active substance being fixed to the particulate material,

the porous reaction layer and the second porous layer being superposed under the condition that the fibrous material of the reaction layer and the fibrous material of the second porous layer are tangled with each other on the interface between these layers.

4,657,740
METHOD OF SCAVENGING OXYGEN FROM AQUEOUS MEDIUMS
Nancy A. Feldman, Philadelphia, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.
Filed Nov. 21, 1984, Ser. No. 673,693
Int. Cl.⁴ C23F *11/06*
U.S. Cl. 422—13 **9 Claims**

1. A method for reducing the amount of oxygen in an oxygen containing aqueous medium comprising adding to said aqueous medium, as the sole oxygen scavenger, an oxygen scavenging amount of a polyethyleneamine solution comprising a member selected from the group consisting of tetraethylenepentamine, and triethylenetetramine or water soluble salt forms or mixtures thereof.

4,657,741
REACTOR CONSTRUCTION
Rudolf Vogl, Deggendorf, Fed. Rep. of Germany, assignor to Deggendorfer Werft und Eisenbau GmbH, Fed. Rep. of Germany
Filed Mar. 13, 1985, Ser. No. 711,410
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1984, 3409159
Int. Cl.⁴ B01J *8/06;* **F28D** *21/00*
U.S. Cl. 422—202 **14 Claims**



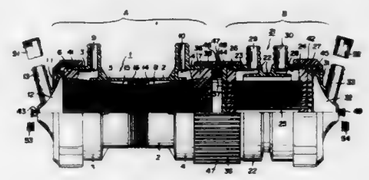
1. A reactor carrying out exothermic and endothermic catalytic reactions, comprising a reactor housing an axial direction, a contact tube bundle in the reactor housing, at least one pair of axially spaced annular ducts extending around said housing at two axially spaced locations, said housing having a plurality of circumferentially spaced radially extending admission and discharge passages adjacent each of said pair of annular ducts for communicating an interior of each duct with an interior of said reactor housing, said admission and discharge passages provided for the passage of a heat transfer medium to and from said tube bundle, each annular duct having at least one exchanger junction, and external heat exchanger which is external of said reactor housing, connected between said heat exchanger junction of one annular duct and said heat exchanger junction of the other annular duct in said pair of annular ducts, each annular duct having a plurality of pump junctions circumferentially distributed around, and a plurality of pumps each effective in a common axial direction, each pump having an inlet connected to one of said plurality of pump junctions of one of said at least one pair of annular ducts and an outlet connected to one of said plurality pump junctions of the other of said at least one pair of annular ducts so that all of said plurality of pumps are effective to pump heat transfer medium from each of said ducts of said at least one pair of annular ducts in said common axial direction.

4,657,742
PACKED FIBER GLASS REACTION VESSEL
Richard P. Beaver, Library, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jul. 1, 1985, Ser. No. 750,445
Int. Cl.⁴ B01J *19/00;* **B01D** *29/10*
U.S. Cl. 422—240 **14 Claims**



1. A packed column consisting essentially of a tube having two ends and being open at both of said ends, a plurality of glass fibers packed in a triangular pitch pattern parallel to each other in said tube with the longitudinal axis of the fibers aligned parallel to the longitudinal axis of said tube, the fiber packing density inside the tube being 70 to 100 percent of the theoretical maximum packing density based on the fiber diameter of said glass fibers, the tube diameter and the triangular pitch pattern of the packing, and wherein, said fibers fill the tube between said ends.

4,657,743
HEAT EXCHANGER-INCORPORATED HOLLOW FIBER TYPE ARTIFICAL LUNG
Michio Kanno, Miyoshi, Japan, assignor to Terumo Corporation, Tokyo, Japan
Continuation of Ser. No. 440,578, Nov. 10, 1982, abandoned. This application Jul. 8, 1985, Ser. No. 753,348
Claims priority, application Japan, Nov. 18, 1981, 56-183713
Int. Cl.⁴ A61M *1/03*
U.S. Cl. 422—46 **9 Claims**



1. A heat exchanger-incorporated hollow fiber type artificial lung, comprising:

a hollow fiber type artificial lung including:

a first generally cylindrical housing having an inner wall,

a hollow fiber bundle of a plurality of gas-exchange hollow fiber membranes mutually separated and parallelly disposed within said first housing in the axial direction of said first housing, said fiber membranes having respective openings,

a first and a second partition at opposite ends of said first housing for water-tightly supporting said hollow fiber membranes at the opposite ends of said membranes without blocking the openings of the membranes and for defining an oxygen chamber in conjunction with the inner wall of said first housing and the outer surfaces of said hollow fiber membranes,

an oxygen inlet and an oxygen outlet each for communicating with said oxygen chamber, and

a first blood manifold for communicating blood to and from the interiors of said hollow fiber membranes at the openings thereof on the side of said first partition;

a shell-and-tube type heat exchanger part including:

a second generally cylindrical housing having an inner wall,

a plurality of tubes mutually separated and parallelly disposed inside said second housing in the axial direction of said second housing, said tubes having respective openings,

a third and a fourth partition at opposite ends of said second housing for water-tightly supporting said tubes at the opposite ends of said tubes without blocking the openings of said tubes and for defining a heat-exchange medium chamber in conjunction with the inner wall of said second housing and the outer surfaces of said tubes,

a heat-exchange medium inlet and a heat-exchange medium outlet each for communicating with said heat-exchange medium chamber, and

a second blood manifold for communicating blood to and from the interiors of said tubes at the openings thereof on the side of said fourth partition; and

connecting means for joining said first and said second housings coaxially to one another so that said second partition at a connecting end of said first housing remote from said

first blood manifold faces said third partition at a connecting end of said second housing remote from said second blood manifold, said connecting means forming at least a part of a blood chamber formed between said second partition and said third partition,

said connecting means including:

an annular spacer interposed between said third partitions, and abutting confronting faces of said second and said third partitions, said annular spacer having an inner wall defining a circumferential inner wall of said blood chamber formed between said second and third partitions, and said annular spacer having an outer periphery, said outer periphery having an annular protuberance thereon,

a connecting ring arranged to be fitted across the outsides of said connecting ends of said first and said second housings, said connecting ring surrounding said annular spacer and being spaced outwardly of said outer periphery of said annular spacer, to form an annular space between said connecting ring and said annular spacer, said connecting ring having at least two injection holes therein to communicate with said annular space interior of said connecting ring, said annular space being defined by the inner periphery of said connecting ring, portions of confronting faces of said third and second partitions, and the outer periphery of said annular spacer, and

an adhesive sealing agent injected through said injection holes of said connecting ring and filling up and sealing said annular space interior of said connecting ring and adhesively and liquid tightly fastening said first and second housings, said annular spacer, and said connecting ring to one another;

whereby said artificial lung part and heat exchanger part are coaxially connected together so as to form a liquid tight blood chamber between said second partition and said third partition interior of said inner wall of said annular spacer

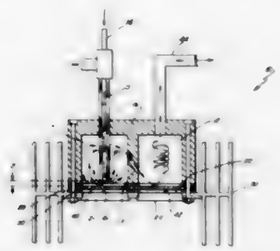
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4,657,744

CHEMILUMINESCENT GAS ANALYZER FOR MEASURING THE OXIDES OF NITROGEN

Charles P. Howard, Ann Arbor, Mich., assignor to Sensors, Inc., Saline, Mich.

Filed Jul. 2, 1985, Ser. No. 751,215
Int. Cl.⁴ G01N *21/76*
U.S. Cl. 422—52 **48 Claims**



1. A gas analyzer for determining the concentration of an oxide of nitrogen in a sample gas comprising:

a sample chamber;

means for delivering sample gas to said sample chamber, said sample gas containing an oxide of nitrogen;

means for delivering ozone to said sample chamber for reacting with said oxide of nitrogen and producing a chemiluminescence;

a reference chamber;

means for discharging said sample gas from said sample chamber to said reference chamber;

a sample photodiode disposed adjacent said sample chamber for receiving light emitted from said sample chamber and producing a sample signal representative of the photoemissivity of said sample gas disposed in said sample chamber;

a reference photodiode disposed adjacent said reference chamber for receiving light emitted from said reference chamber and providing a reference signal representative of the dark current of said sample photodiode and the background photoemissivity of said sample gas; and

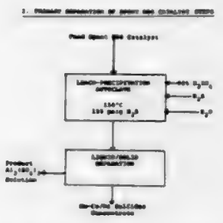
means for subtracting said sample signal and said reference signal to produce an output representative of the concentration of said oxide of nitrogen in said sample gas.

4,657,745

VALUE RECOVERY FROM SPENT ALUMINA-BASE CATALYST

David E. Hyatt, Northglenn, Colo., assignor to Chemical & Metal Industries, Inc., Denver, Colo.

Filed Mar. 31, 1986, Ser. No. 846,125
Int. Cl.⁴ C01G *39/00, 51/00, 53/00*; C01F *7/00*
U.S. Cl. 423—53 **12 Claims**



1. A process for the recovery of aluminum, molybdenum and at least one other metal selected from the group consisting of nickel and cobalt from a spent catalyst comprising molybdenum, said at least one metal and carbonaceous matter deposited on a refractory alumina-containing inorganic oxide support, said process comprising:

(1) adding about 1 to 3 parts of H_2SO_4 to each part of spent catalyst in a reaction zone at about 20° to 200° C. in the presence of elemental sulfur or under hydrogen sulfide gas pressure between about 1 and about 35 atmospheres and maintaining the resulting mixture in said reaction zone until the alumina is substantially completely dissolved and a metal sulfide precipitate is formed from the molybdenum and said at least one other metal,

(2) mechanically separating the resultant $Al_2(SO_4)_3$ solution from the sulfide precipitate in the mixture,

(3) oxidizing the remaining sulfide precipitate as an aqueous slurry at about 20° to 200° C. in an oxygen-containing atmosphere at a pressure between about 1 and about 35 atmospheres,

(4) mechanically separating the slurry to obtain solid molybdic acid and a sulfate liquor containing soluble molybdenum and said at least one metal, and

(5) separating and recovering said at least one metal from the molybdenum-containing sulfate liquor.

4,657,746

SCRUBBING OF SULFUR DIOXIDE WITH LIME SLAGS

James A. E. Bell, and Eberhard Krause, both of Oakville, Canada, assignors to Inco Limited, Toronto, Canada

Filed Feb. 5, 1986, Ser. No. 826,303
Claims priority, application Canada, Feb. 18, 1985, 474513
Int. Cl.⁴ B01J *8/00*; C01B *17/00*
U.S. Cl. 423—242 **5 Claims**

1. A scrubbing process for removing sulfur dioxide from a gas stream, the process comprising:

(a) forming a slurry of lime slags having an initial alkaline pH including $2CaO.Fe_2O_3$ and water therin,

(b) maintaining the slurry at a temperature range of about 40° C. to about 100° C.,

(c) sparging an oxygen-sulfur dioxide mixture drawn from the gas stream into the slurry to lower the pH level of slurry to below 4, and

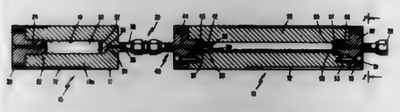
(d) precipitating gypsum therefrom.

4,657,747

RECOVERY OF TRITIUM FROM TRITIATED MOLECULES

William A. Swansiger, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 17, 1984, Ser. No. 661,852
Int. Cl.⁴ C01B *3/10, 4/00*
U.S. Cl. 423—249 **7 Claims**



1. A method of removing tritium from a mixture of tritiated molecules of primarily water comprising the steps of:

(a) Precharging a reactor chamber having first and second ends with a mixture of uranium particles and an inert substance within the side walls thereof;

(b) Preheating the reactor chamber to at least 500° C.;

(c) Preheating the tritiated water to a temperature of at least 500° C. to convert said water to superheated steam;

(d) Injecting the steam into the first end of the reactor chamber to produce a traveling front, highly excelthermic reaction zone of temperatures in excess of 900° C. from the first end of the reactor to the second end thereof, resulting in substantially complete decomposition of the steam to remove tritium therefrom, and substantially complete conversion of the uranium to uranium dioxide, said inert substance serving as an insulator and a diluent to allow for volumetric expansion of the uranium as it reacts with the steam; and

(e) Recovering tritium from the second end of the reactor chamber.

4,657,748

CRYSTALLINE ZEOLITE (ECR-1) AND PROCESS FOR PREPARING IT

David E. W. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Mar. 18, 1985, Ser. No. 713,050
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—328 **15 Claims**

1. A synthetic crystalline zeolite characterized by having a composition, in terms of mole ratios of oxides, in the range:

$$0.5 \text{ to } 0.02R_2O{:}0.90 \text{ to } 0.98Na_2O{:}Al_2O_3{:}5 \text{ to } 20SiO_2{:}xH_2O$$

wherein R is a tetraalkyl ammonium cation of the type $(CH_3)_2R_2^1N$, wherein R^1 is ethyl, propyl, butyl, hydroxyethyl or hydroxypropyl, and x represents 0 or an integer from 1 to 8, and characterized by an x-ray powder diffraction pattern is essentially identical to that given in Table 1.

4,657,749

STOICHIOMETRIC PROCESS FOR PREPARING A ZEOLITE OF THE L TYPE

David E. Vaughan, Flemington, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 550,896, Nov. 10, 1983, abandoned. This application May 13, 1986, Ser. No. 865,912
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—329 **7 Claims**

1. A process for preparing a crystalline, potassium-containing L zeolite having a composition, in terms of mole ratios of oxides, in the range:

$$0.9 \text{ to } 1.3(M_2O){:}Al_2O_3{:}5.2 \text{ to } 6.9SiO_2{:}0.9H_2O$$

where M is either K or a mixture of K and Na where Na is no more than 20 mole percent of the mixture, which process comprises:

(a) preparing with agitation a reaction mixture comprising water, and feed materials of potassium silicate, metakaolin, KOH and up to about 30% by mole fraction of NaOH based on total KOH and NaOH, and whereon potassium silicate and metakaolin are the only sources of silica in the reaction mixture, said reaction mixture having a composition, in terms of mole ratios of oxides, within the following ranges:

$K_2O:Al_2O_3$	1.0 to 3.0
$Na_2O:Al_2O_3$	0 to 1.0
$SiO_2:Al_2O_3$	5 to 9
$H_2O:Al_2O_3$	110 to 140

said ratios being selected to permit recovery of essentially a stoichiometric amount of L zeolite crystals in step (c);

(b) maintaining the reaction mixture in a substantially homogeneous state, at between about 80° and 260° C. for between about 1 and 10 days until essentially a stoichiometric amount of crystals of said L zeolite are formed, and

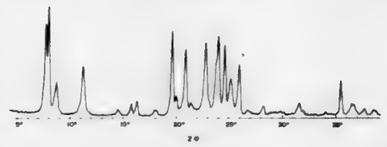
(c) recovering L zeolite crystals.

4,657,750

PROCESS FOR THE PRODUCTION OF CRYSTALLINE SILICATE ISI-4 USING ETHYLENE GLYCOL

Kozo Takatsu, Sodegaura, and Noboru Kawata, Ichihara, both of Japan, assignors to Research Association for Petroleum Alternatives Development, Tokyo, Japan

Division of Ser. No. 512,996, Jul. 12, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 713,086
Claims priority, application Japan, Jul. 30, 1982, 57-132143
Int. Cl.⁴ C01B *33/28*
U.S. Cl. 423—329 **8 Claims**



1. A process for producing a crystalline silicate, when determined after calcination in the air at 550° C., having a composition represented by the general formula (I),

$$pM_{2/n}O.Al_2O_3.qSiO_2 \quad (I)$$

wherein M represents at least one element selected from hydrogen, alkali metals, and alkaline earth metals, n represents the valence of M, and p and q each represent a molar ratio and are chosen within the ranges of $0.3 \leqq p \leqq 3.0$, $q \geqq 10$, and giving a principal X-ray diffraction pattern as shown in Table 1, below:

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TABLE I

Lattice Spacing d (Å)	Relative Intensity
11.31 ± 0.2	strong
10.92 ± 0.2	very strong
7.83 ± 0.2	medium
4.51 ± 0.15	very strong
4.24 ± 0.1	strong
3.89 ± 0.1	strong
3.73 ± 0.1	medium
3.69 ± 0.1	very strong
3.61 ± 0.1	very strong
3.53 ± 0.07	medium
3.43 ± 0.07	strong
2.52 ± 0.05	medium

which process consists essentially of reacting an aqueous mixture consisting esaentially of (a) a silica source, (b) an alumina source, (c) an alkali metal and/or alkaline earth metal source, and (d) ethylene glycol in the following molar ratios:

silica/alumina ≧ 10/1,

ethylene glycol/water = 0.05/1 to 10/1,

ethylene glycol/silica = 5.5/1 to 10/1,

hydroxyl ion/silica = 0.01/1 to 0.5/1 excluding hydroxyl ions resulting from organic bases, at a temperature of 100° to 300° C. until the desired crystalline silicate is formed.

4,657,751

PROCESS FOR PURIFYING AQUEOUS HYDRAZINE HYDRATE SOLUTIONS

Michel Alicot, and Jacky Pierre, both of La Barte De Neste, France, assignors to ATOCHEM, France

Filed Feb. 7, 1985, Ser. No. 699,043

Claims priority, application France, Feb. 14, 1984, 84 02194

Int. Cl.⁴ C01B *21/16*

U.S. Cl. 423—407 **7 Claims**

1. The process of purifying an impure aqueous hydrazine hydrate solution comprising treating said solution with a solid absorbent material devoid of functional groups reactive with hydrazine and having a mean granulometry smaller than 5 mm. with the pore volume of said particles being between 10 and 70% and the mean diameter of the pores being below 500 Å; said absorbent material consisting essentially of microporous particles of a carbonaceous compound resulting from the pyrolysis of a synthetic or naturally occurring hydrocarbon compound or a polymer devoid of functional groups reactive with hydrazine having a mean granulometry smaller than 5 mm.

4,657,752

PROCESS FOR PREPARING FERROUS CARBONATE

William G. Lyon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 16, 1985, Ser. No. 723,974

Int. Cl.⁴ C01B *31/24*

U.S. Cl. 423—419 R **9 Claims**

1. A process for making ferrous carbonate, said process being carried out in a sealed vessel, wherein said process comprises:

(a) heating a mixture of an alkali metal bicarbonate having the formula $XHCO_3$, where X is an alkali metal, and a ferrous compound in solution at a temperature in the range of about 100° C. to about 300° C. for a sufficient time to allow the formation of a precipitate, wherein said ferrous compound is capable of reacting in solution with said alkali metal bicarbonate to produce ferrous carbonate, and wherein the mole ratio of alkali metal bicarbonate to ferrous compound is at least 2:1;

(b) separating said precipitate from said solution;

(c) washing said precipitate, the thus washed precipitate being ferrous carbonate of at least about 98% purity.

4,657,753

STABILIZATION OF PITCH FIBER

John D. Bolt, Landenberg, Pa., and Mark H. Lukhard, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 29, 1985, Ser. No. 728,519

Int. Cl.⁴ D01F *9/12*

U.S. Cl. 423—447.6 **3 Claims**

1. In a process of producing a carbon fiber from pitch wherein pitch is melt-spun through a spinneret to form pitch fiber, the fiber is stabilized in an oxidizing atmosphere at elevated temperature and then the stabilized fiber is carbonized to produce the carbon fiber, the improvement comprising performing at least part of the stabilization in air or oxygen at a pressure of at least two atmospheres whereby the time necessary to achieve stabilization is reduced.

4,657,754

ALUMINUM OXIDE POWDERS AND PROCESS

Ralph Bauer, Niagara Falls, Canada; Arup K. Khaund, Worcester, Mass.; Ronald W. Trischuk, Niagara Falls, Canada, and Joseph Similia, Leominster, Mass., assignors to Norton Company, Worcester, Mass.

Filed Nov. 21, 1985, Ser. No. 800,494

Int. Cl.⁴ C01F *7/02*

U.S. Cl. 423—625 **12 Claims**

1. A method of preparing an alumina powder containing alpha alumina crystals having a size below 1 micron comprising seeding an alumina gel precursor of alpha alumina with submicron alpha alumina seed particles, sintering the seeded precursor at 900° to 1350° C. for a time sufficient to convert at least a portion of the non-alpha alumina to alpha alumina, and crushing the sintered product to a powder having a particle size of less than 1 micron.

4,657,755

COMPOSITION AND METHOD FOR INVESTIGATING ALIMENTARY FUNCTIONS

Finn N. Christensen, Copenhagen; Jens R. Jensen, Stenlose, and Helle Bechgaard, Hellerup, all of Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark

PCT No. PCT/DK83/00047, § 371 Date Dec. 21, 1983, § 102(e) Date Dec. 21, 1983, PCT Pub. No. WO83/03762, PCT Pub. Date Nov. 10, 1983

PCT Filed Apr. 22, 1983, Ser. No. 568,184

Claims priority, application Denmark, Apr. 23, 1982, 1839/82

Int. Cl.⁴ A61K *43/00, 49/00, 49/02*

U.S. Cl. 424—1.1 **22 Claims**

1. An enterically administrable multiple-unit diagnostic composition for investigating alimentary functions, the composition comprising at least two units, each unit comprising:

(a) a core comprising a substance for binding a diagnostically acceptable radioactive tracer substance having a half-life of five days or less and being suitable for detection of the position of the unit in the alimentary system;

(b) the radioactive tracer substance associated with said binding substance in the core; and

(c) a pharmaceutically acceptable coating on the core, the coating being substantially insoluble in gastrointestinal fluids and allowing diffusion of the radioactive tracer substance through the coating for association with said binding substance.

4,657,756

MICROBUBBLE PRECURSORS AND APPARATUS FOR THEIR PRODUCTION AND USE

Julia S. Rasor, Cupertino, and Ernest G. Tickner, Gilroy, both of Calif., assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 322,138, Nov. 17, 1981, Pat. No. 4,442,843, which is a continuation-in-part of Ser. No. 207,741, Nov. 17, 1980, abandoned. This application Sep. 8, 1983, Ser. No. 530,301

Int. Cl.⁴ A61K *49/00; A61B 10/00*

U.S. Cl. 424—9 **17 Claims**

1. A sterile injectable fluid composition of matter in unit dosage form and adapted for injection into the blood stream of a living being and generating microbubbles therein, comprising a suspension of (a) a particulate solid which is a non-toxic, physiologically acceptable material, soluble in blood and substantially free of microbubbles, whose particles are aggregates having gas filled voids therebetween of smaller particles having an average size in the range of from 1 to 250 micrometers, with the ratio of the mass of the smaller particles to the volume of gas in the voids therebetween effective to render blood in which the composition of matter is dissolved supersaturated with respect to the gas in the area of the blood surrounding the microbubbles when they form therein, in (b) an amount of a carrier liquid which is non-toxic and physiologically acceptable and in which the particulate material is at least temporarily stable.

4,657,757

CONTROLLED RELEASE DOSAGE FORM COMPRISING ACETAMINOPHEN, PSEUDOEPHEDRINE SULFATE AND DEXBROMPHENIRAMINE MALEATE

Gayda Hanna, Berwyn, Pa., and Winston A. Vadino, Bridgewater, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 718,036, Mar. 29, 1985, Pat. No. 4,601,894. This application Dec. 4, 1985, Ser. No. 804,707

Int. Cl.⁴ A61K *9/22, 9/26*

U.S. Cl. 424—488 **15 Claims**

1. A controlled release oral dosage form comprising an analgesic-effective amount of acetaminophen, an amount of pseudoephedrine or a pharmaceutically acceptable salt thereof effective in reducing nasal congestion, and an antihistaminic effective amount of dexbrompheniramine or a pharmaceutically acceptable salt thereof in a single homogeneous matrix, said matrix comprising a polymer mixture comprising hydroxypropyl methylcellulose and 1 to 45% by weight of the polymer mixture of methylcellulose, sodium carboxymethylcellulose or other cellulose ethers or combinations thereof, provided that the other cellulose ether is not ethylcellulose, wherein the polymer mixture constitutes 8–15% by weight of the uncoated doseage form.

4,657,758

DENTAL RINSE

Robert L. Goldemberg; Allan J. Lazare, and Richard Berger, all of New York, N.Y., assignors to Oral Research Laboratories, Inc., New York, N.Y.

Filed Jan. 27, 1984, Ser. No. 574,350

Int. Cl.⁴ A61K *7/16*

U.S. Cl. 424—49 **24 Claims**

1. A method for loosening and removing plaque present on dental surfaces comprising rinsing said dental surfaces with a dental rinse composition, wherein the dental rinse composition comprises an aqueous or an aqueous and alcoholic orally compatible carrier for the ingredients of said dental rinse composition, wherein said ingredients include: about 0.1 to about 10% by weight of said dental rinse composition of an oral surfactant, at least about 1% by weight of said composition of sodium benzoate effective to increase the amenability of said plaque to removal, said composition including an effective amount of a detergent builder, and having a pH of about 7.5 to about 10; and said method further comprising the step of brushing the dental surfaces to which said dental rinse has been previously applied.

4,657,759

METHOD AND MEANS FOR REPELLING ANIMALS

Helge Hansen; Borje Nystrom, both of Stavanger, and Eyvin Torneng, Hinna, all of Norway, assignors to Nordtend A/S, Stavanger, Norway

Division of Ser. No. 519,182, Aug. 1, 1983, Pat. No. 4,534,976, which is a continuation-in-part of Ser. No. 474,588, Feb. 23, 1983, Pat. No. 4,451,460. This application Jul. 13, 1984, Ser. No. 630,728

The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.

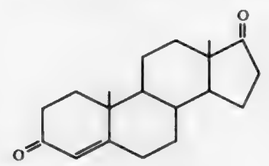
Int. Cl.⁴ A01N *11/04; A61K 31/56*

U.S. Cl. 424—83 **2 Claims**

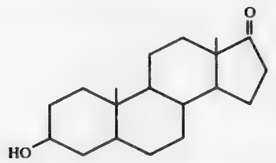


1. A matrix composition for use as a non-predatory animal repellent comprising a thermoplastic polymer and intimately admixed therewith one or more steroids selected from the group consisting of:

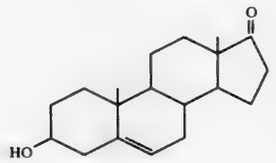
(i) androst-4-en-3,17-dione having the structure:



(ii) androsterone having the structure:

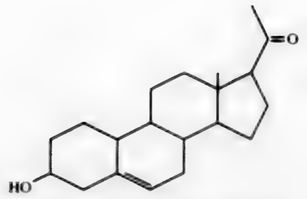


(iii) dehydroepiandrosterone having the structure:

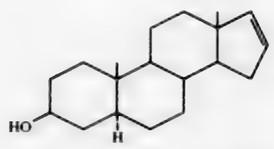


(iv) preg-5-en-3β-ol-20-one having the structure:

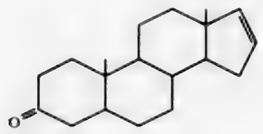
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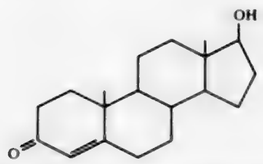
(v) 5α-androst-16-en-3α-ol having the structure:



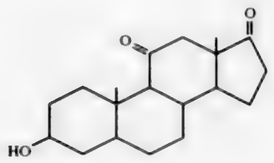
(vi) 5α-androst-16-en-3-one having the structure:



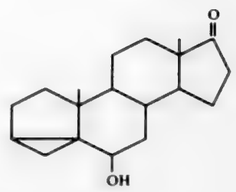
(vii) testosterone having the structure:



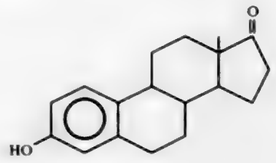
(Viii) 11-keto-aethiocholanalone (3α-hydroxy-5α-androstan-11,17-dione) having the structure:



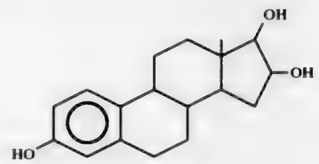
(ix) iso-androstanalone (6-β-hydroxy-3,5-cycloandrostan-17-one) having the structure:



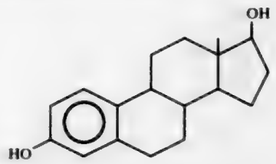
(x) estrone having the structure:



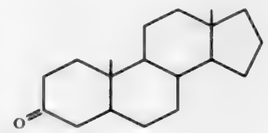
(xi) estriol having the structure:



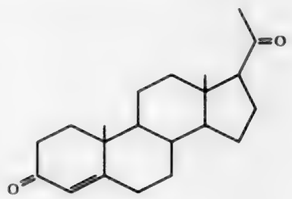
(xii) estradiol having the structure:



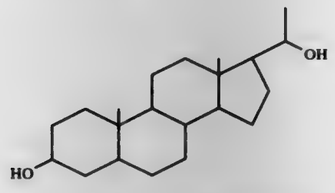
(xiii) androstan-3-one having the structure:



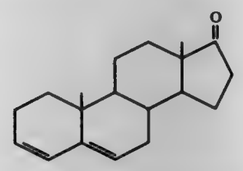
(xiv) progesterone having the structure:



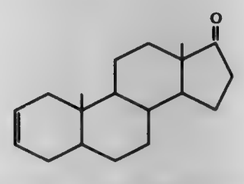
(xv) pregnandiol (5β-pregnane-3α,20α-diol) having the structure:



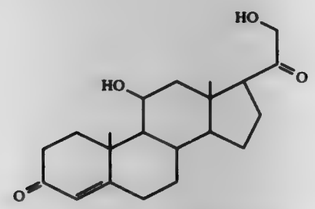
(xvi) 3,5-androstadien-17-one having the structure:



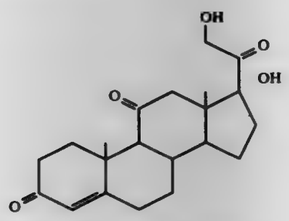
(xvii) androst-2-en-17-one having the structure:



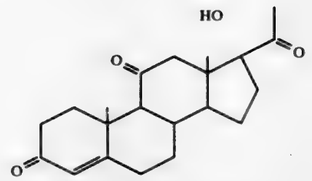
(xviii) corticosterone (11β,21-dihydroxypregn-4-ene-3,20-dione) having the structure:



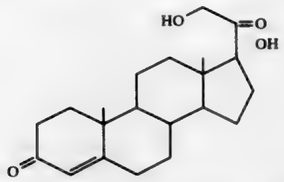
(xix) cortisone (17α,21-dihydroxy-4-pregnane-3,11,20-trione) having the structure:



(xx) 21-desoxycortisone having the structure:



and (xxi) 11α-desoxycortisol having the structure:



the concentration of the repellent substance in the polymer matrix being such as to provide in the surrounding environment a concentration perceptible to the sense of smell of the non-predatory animals.

2. The matrix of claim 1 wherein the polymer is low density polyethylene.

4,657,760

METHODS AND COMPOSITIONS USING MONOCLONAL ANTIBODY TO HUMAN T CELLS

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 432,453, Oct. 4, 1982, Pat. No. 4,515,894, which is a division of Ser. No. 22,132, Mar. 20, 1979, Pat. No. 4,363,799. This application Mar. 4, 1985, Ser. No. 708,305

The portion of the term of this patent subsequent to Mar. 31, 2004, has been disclaimed.

Int. Cl.[4] A61K *39/395;* **G01N** *33/54;* **C12N** *15/00*

U.S. Cl. 424—85 **12 Claims**

2. A therapeutic composition of matter comprising, in admixture with a pharmaceutically acceptable carrier, a therapeutically-effective amount of a mouse monoclonal antibody which reacts with essentially all normal human peripheral T cells, said amount being effective to reduce or eliminate the rejection of a transplant by an organ transplant recipient.

8. A method of treatment of an organ transplant recipient to reduce or eliminate rejection of said transplanted organ which comprises administration to said recipient of an amount of mouse monoclonal antibody effective to cause said reduction or elimination, said antibody reacting with essentially all normal human peripheral T cells.

11. A method of differentiating between patients having a T cell acute lymphoblastic leukemia (T-ALL) and T cell chronic lymphoblastic leukemia (T-CLL) which comprises mixing leukemic cells from a patient having one of said diseases with monoclonal antibody and observing whether a reaction occurs, said monoclonal antibody being one which:

(a) reacts with essentially all normal human peripheral T cells but not with normal human peripheral B cells, null cells or macrophages;

(b) reacts with from about 5% to about 10% of normal human thymocytes;

(c) reacts with leukemic cells from humans with T cell chronic lymphoblastic leukemia but does not react with leukemic cells from humans with T cell acute lymphoblastic leukemia;

(d) exhibits a pattern of reactivity with the human T cell lines HJD-1, CEM, and HSB-2 shown in FIG. 4; and
(e) does not react with Epstein-Barr virus-transformed human B cell lines.

4,657,761
POLYVALENT NON-SPECIFIC IMMUNO-STIMULATING VACCINE AND METHOD
Cesar M. Pinto, 10 Calle 3-01 Zona 14, Guatemala C, Guatemala
Filed Jun. 5, 1985, Ser. No. 741,344
Int. Cl.[4] A61K *39/00*
U.S. Cl. 424—88 **8 Claims**

1. A non-specific therapeutic polyvalent vaccine for stimulating the immuno-defense system of a patient suffering from neuralgia, herpes complex, measles, mumps, psoriasis, arthritis, multiple sclerosis, viral hepatitis, and acne and providing symptomatic relief therefor, which consists essentially of a therapeutic amount of a mixture of a purified protein derivative (PDD) vaccine, a rabies vaccine, and snake vemom vaccine.

4,657,762
ANAEROBIC BACTERIAL PREPARATIONS OF INTESTINAL ORIGIN AND THEIR USE
Aatti R. Mikkola, Kerava; Heli-Riitta M. Hakkinen, Helsinki; Lasse O. Nuotio, Helsinki; Esko V. Nurmi, Helsinki, and Carita E. Schneltz, Helsinki, all of Finland, assignors to Farmos-Yhtyma Oy, Turku, Finland
Filed Feb. 25, 1985, Ser. No. 705,255
Claims priority, application Finland, Mar. 1, 1984, 840816
Int. Cl.[4] A61K *35/74, 35/12;* **C12N** *1/20*
U.S. Cl. 424—93 **6 Claims**

1. A method for the treatment or prophylaxis of intestinal disturbances in poultry which comprises administering to said poultry in water an effective amount of a bacterial preparation comprising at least one strain of anaerobic bacteria of intestinal origin and an agent which is non-toxic to the said bacteria and which reacts with any oxygen present without generating any product toxic to the said bacteria, said agent being present in an amount effective to prolong the effectiveness of the said preparation.

4,657,763
COMBINED CHRYSOTHERAPEUTIC AGENTS FOR AUTOIMMUNE DISEASES
Abraham E. Finkelstein, Buenos Aires, Argentina, assignor to Michael Ebert, Mamaroneck, N.Y.
Filed Sep. 3, 1985, Ser. No. 772,057
Int. Cl.[4] A61K *31/28, 33/24*
U.S. Cl. 424—131 **5 Claims**

1. A method for treating an autoimmune disease comprising the step of administering to a patient suffering from the disease the combination of a first gold compound which is soluble in the lipid layers of the cellular membrane and a second gold compound which is water soluble, said two compounds being administered in respective amounts at which the two compounds function concurrently and act synergistically, said first compound being auranofin and the second compound being selected from a group consisting of gold sodium thiosulphate, gold sodium thiomalate and gold sodium thioglucose, the combination having dosage sufficient to effect a substantial remission of the disease.

4,657,764
TREATMENT OF ARTHRITIS AND ARTHRITIC CONDITIONS WITH SULFITES AND BISULFITES
Antonio J. Arias-Alvarez, Carpatos, Mexico, assignor to T & R Chemicals, Inc., Clint, Tex.
Continuation-in-part of Ser. No. 498,488, May 26, 1983, Pat. No. 4,464,357, and a continuation-in-part of Ser. No. 498,489, May 26, 1983, Pat. No. 4,462,988. This application May 8, 1984, Ser. No. 608,122
The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.
Int. Cl.[4] A61K *33/04*
U.S. Cl. 424—162 **6 Claims**

1. A method of treating arthritis and arthritic conditions in a person suffering from the symptoms of arthritis comprising orally administering to said person a symptom-alleviating amount of a compound which in aqueous solution furnishes sulfite ions, bisulfite ions or both sulfite and bisulfite ions.

4,657,765
METHOD FOR IMPARTING SMOKE COLOR AND FLAVOR TO FOOD
Myron D. Nicholson, Lockport, and John H. Beckman, Downers Grove, both of Ill., assignors to Viskase Corporation, Chicago, Ill.
Division of Ser. No. 465,924, Feb. 14, 1983, Pat. No. 4,540,613. This application Jun. 14, 1985, Ser. No. 744,682
Int. Cl.[4] A22C *13/00;* **A23L** *1/272*
U.S. Cl. 426—250 **5 Claims**

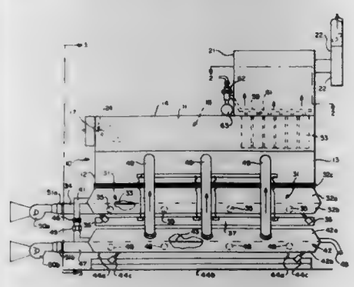
1. A method for imparting smoke color, odor, and flavor to a foodstuff comprising contacting a surface of a food casing with a tar-depleted, concentrated, liquid smoke composition having a total acid content less than about 40 weight percent, made by contacting an aqueous, substantially unneutralized, tar-containing, liquid smoke solution and a liquid solvent at a volume ratio of about 1:1 to about 65:1, respectively, under conditions to form a tar-enriched, liquid solvent fraction and an aqueous, substantially unneutralized, tar-depleted, liquid smoke fraction, the tar-depleted, liquid smoke fraction having an absorptive power of at least about 0.15 at a wave length of 340 nm and a light transmittance of at least about 50%, the tar-containing liquid smoke solution having an absorptive power of at least about 0.25 at a wave length of 340 nm, the liquid solvent being nonreactive with the liquid smoke solution or reactive with the liquid smoke solution to form a derivative liquid solvent, the liquid solvent being immiscible in the liquid smoke solution, the liquid solvent having a hydrogen bonding solubility parameter in the environment of the liquid smoke solution of at least about 2.7; separating the tar-depleted, liquid smoke fraction from the tar-enriched liquid solvent fraction, and concentrating the tar-depleted, liquid smoke fraction at a temperature less than about 70° C. to a concentration ratio of between about 2:1 to about 5:1 to form the tar-depleted, concentrated, liquid smoke composition, said thus-treated food casing having an absorptive index of from about 0.25 to about 0.9 at a wavelength of 340 nm; stuffing said casing with a foodstuff; and processing said casing with said foodstuff therein under conditions sufficient to transfer smoke color, smoke odor, and smoke flavor constituents from said casing to the encased foodstuff.

4,657,766
YUCCA EXTRACT GRAIN TEMPERING MIXTURE AND PROCESS
S. Richard Goodall, Windsor, Colo., assignor to Distributors Processing Inc., Porterville, Calif.
Filed Apr. 15, 1985, Ser. No. 723,177
Int. Cl.[4] A23B *9/00*
U.S. Cl. 426—309 **6 Claims**

1. A grain conditioning mixture for treating feed grain being processed into flakes to increase water intake of the grain improving gelatinization and digestibility comprised of;

a Yucca extract containing sarsasaponin mixed with approximately 2.75% propylene glycol, and 20 to 100 parts water per part of said Yucca extract whereby said mixture improves. grain wetability, moisture intake and gelatinization when sprayed onto said feed, thereby increasing the volume of processed grain.

4,657,767
SPRAY DRYING APPARATUS AND METHOD
Reginald E. Meade, Tulare, Calif., assignor to Dairyman's Cooperative Creamery Assoc., Tulare, Calif.
Filed Nov. 7, 1985, Ser. No. 795,935
Int. Cl.[4] A23C *1/05;* **F26B** *3/08*
U.S. Cl. 426—471 **9 Claims**



1. A method of producing discrete dried material from liquid food materials containing solid constituents, the method making use of a horizontally extended chamber having means for introducing and removing drying gas from the same and means for introducing liquid feed material in atomized droplet form into a region adjacent one end of the chamber, the method comprising:
a. spraying atomized droplets of the liquid food material in one portion of the chamber;
b. causing the droplets to be dispersed in the drying gas to effect evaporation of moisture in an initial spray drying zone whereby a dispersion consisting of moist discrete particles having adherent surfaces is formed;
c. causing such moist discrete particles to form moist porous agglomerates by random contact between the particles;
d. causing the agglomerates to progress downwardly by gravity and to merge with a horizontal fluidized bed of agglomerates maintained at the lower end of the chamber;
e. subjecting the agglomerates in the fluidized bed to further drying by passing drying gas upwardly through the bed;
f. exhausting gas from another region of the chamber displaced horizontally from the first named region and adjacent the other end of the chamber and above the fluidized bed;
g. causing the exhausting gas being removed to be directed through filter membranes whereby solids dispersed in the exhausting gas are deposited thereon, the deposited solids comprising some moist particles and agglomerates from said first named region and from the region intermediate said first named region and the fluidized bed;
h. causing the solids as deposited on the filter membranes to effect further formation of agglomerates and to provide deposited layers that are porous and which comprise porous aggregates;
i. cyclically flexing the filter membranes whereby solids collected on the membranes are recurrently dislodged;
g. causing the dislodged solids to be dispersed in the drying gas and to be merged with the fluidized bed; and
h. then removing the final product from one end of the fluidized bed.

4,657,768
FREEZING METHOD FOR PERISHABLE FOODS
Kazunori Nagoshi, Ehime, Japan, assignor to Tadaaki Sakai, Osaka, Japan
Filed Oct. 2, 1985, Ser. No. 782,995
Int. Cl.[4] A23L *3/36*
U.S. Cl. 426—524 **2 Claims**



1. A method for freezing perishable food articles comprising the steps of causing one surface of each of a heat conducting means having an open end to contact with a cooled brine or a liquified gas of a low boiling point which is contained within an open tank, and keeping a food article to be frozen in contact with the one surface of the heat conducting means, thereby causing said food article to be frozen only from the surface of the food article contacting said one surface of said heat conducting means whereby the formation of ice crystals in the interior of the food article is avoided.

4,657,769
METHOD OF MANUFACTURING FROZEN BAGEL DOUGH PRODUCTS
David Petrofsky, 14 Bal Harbour, and Robert Petrofsky, 1393 Orchard View Dr., both of St. Louis, Mo. 63146, assignors to Leonard Petrofsky; Robert Petrofsky; David Petrofsky and Jerry Shapiro, all of St. Louis, Mo.
Filed Feb. 22, 1984, Ser. No. 704,168
Int. Cl.[4] A21D *6/00*
U.S. Cl. 426—549 **9 Claims**

1. A process for manufacturing frozen dough products comprising the steps of:
(a) mixing the ingredients which contain a first oxidizer that reacts with the flour during the early mixing stage and a second oxidizer which reacts with the flour during baking until said dough develops a workable feel;
(b) dividing and forming the dough into product shapes;
(c) proofing said product shapes until said dough is relaxed;
(d) boiling said shapes; and
(e) freezing said shapes.

4,657,770
ACCELERATED STALING OF STARCH BASED PRODUCTS
Louise Slade, Monsey; Rhoda Oltzik, Spring Valley; Robert E. Altomare, Yonkers, all of N.Y., and Darrell G. Medcalf, Hummelstown, Pa., assignors to General Foods Corporation, White Plains, N.Y.
Filed Jun. 27, 1985, Ser. No. 749,372
Int. Cl.[4] A21D *13/00*
U.S. Cl. 426—549 **26 Claims**

1. The process for the accelerated staling of starch based products by crystallization after partial or full gelatinization comprising the steps of:
(a) maintaining said starch based product at a temperature of about −10° C. to about 21° C. for a period of time sufficient to allow the formation of minute pre-crystals within said starch based product; and
(b) heating said starch based product from step (a) to a temperature of about 30° C. to about 80° C. for a period sufficient to form crystals from said pre-crystals at a relative humidity of about 60% to about 100% RH.

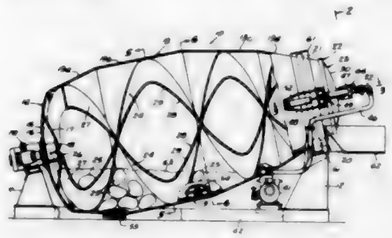
VOL 1077 ISS 2 AP 14 1987 UMI

4,657,771

METHOD FOR KNEADING FOOD PIECES

Bruce M. Gould, Fullerton, Calif., assignor to Challenge-Cook Brothers, Inc., City of Industry, Calif.

Division of Ser. No. 605,990, May 2, 1984, Pat. No. 4,517,888, which is a continuation of Ser. No. 196,875, Oct. 14, 1980, abandoned. This application Mar. 4, 1985, Ser. No. 707,506
Int. Cl.[4] A22C 5/00; A23P 1/00
U.S. Cl. 426—641 30 Claims



1. A method of kneading a multiplicity of integral food pieces comprising:

(a) feeding the food pieces into a rotatable drum having a sidewall, a closed end to the drum, and an opened end, the opened end being opposite the closed end, the drum being mounted at an inclined axis and having a spiralling flight means mounted on the inside of the sidewall of the drum and extending over substantially the length between the closed end and the opened end of the drum;

(b) rotating the drum in a first direction about the axis whereby the food pieces contact each other, the rotation of the drum and the action of the flight means tending to draw the food pieces inwardly into the drum and causing continuous movement of substantially all the food pieces throughout the drum; and then

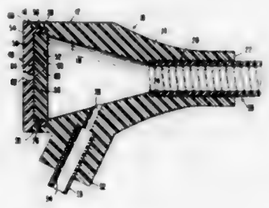
(c) reversing the direction of the rotation of the drum to a second direction opposite from the first direction thereby to discharge food pieces from the drum under the action of the spiralling flight means.

4,657,772

INTRODUCER SHEATH ASSEMBLY

Nuri Kocak, 296 Lafayette Ave., Cliffside Park, N.J. 07010

Division of Ser. No. 733,556, May 13, 1985. This application Jul. 15, 1986, Ser. No. 885,956
Int. Cl.[4] A01N 1/02; A61M 5/00; B05D 1/18, 3/02
U.S. Cl. 427—2 6 Claims



1. A method of forming a flexible tube for the introduction of catheters and like devices into a vascular system, comprising the steps of:

a. preparing a liquid coating composition by dissolving 4–18% by weight of a thermoplastic polymeric material in a solvent solution comprisung solvents selected from the group consisting of tetrahydrofuran, dioxane, methyl ethyl ketone, dimethylformamide, cyclohexane and mixtures;

b. dipping a helical coiled spring having a plurality of coils into said composition each of a plurality of said coils being spaced from at least one adjacent coil;

c. withdrawing said spring from said composition at a rate ranging from one foot per minute to eight feet per minute; and

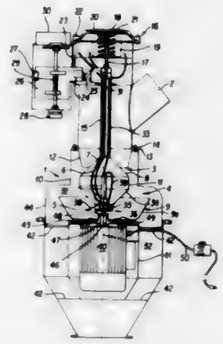
d. drying said coating at room temperature to form a cylindrical wall completely surrounding said spring and which defines an inner wall surface and an outer wall surface lining, such that the portion of said cylindrical wall surrounding each coil has a first thickness and the portion of said cylindrical wall between said spaced coils has a second, smaller thickness, with said inner and outer wall surfaces being indented thereat.

4,657,773

PROCESS AND AN APPARATUS FOR DRESSING SEED

Roman Mueller, Niederuzwil, Switzerland, assignor to Gebruder Buhler AG, Switzerland

PCT No. PCT/EP85/00103, § 371 Date Oct. 21, 1985, § 102(e) Date Oct. 21, 1985, PCT Pub. No. WO85/04072, PCT Pub. Date Sep. 26, 1985
PCT Filed Mar. 14, 1985, Ser. No. 793,063
Claims priority, application Switzerland, Mar. 15, 1984, 1300/84; Fed. Rep. of Germany, Mar. 31, 1984, 3412037
Int. Cl.[4] A01C 1/06; A01G 5/06; B05B 17/00; B05C 5/00
U.S. Cl. 427—4 23 Claims



1. A process for dressing seed which is subjected to dressing while in freefall towards a rotary table and which is subsequently ejected outwardly into a dressing chamber from the rotary table, comprising the steps of:

(a) introducing the seed continuously, in the form of a free-falling veil, onto a trough-shaped rotary table, said table having an upper edge and a bottom surface,

(b) during the freefall, conveying the seed through a two-dimensional jet of dressing thrown outwardly from the interior of the annular veil at a height intermediate said upper edge and bottom surface,

(c) prior to said outward ejection, finely distributing the dressing and massaging it into the surface of the grains as a result of the individual seed grains being rolled on the rotary table continuously and at the same time striking against one another and rubbing on one another, and

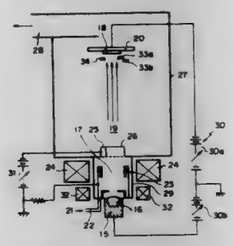
(d) subsequently subjecting the wetted seed to dressing again on the rotary table during outward ejection.

4,657,774

METHOD FOR THIN FILM FORMATION

Mamoru Satou, Kawanishi, and Kouichi Yamaguchi, Hayato, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo and Kyocera Corporation, Osaka, both of, Japan

Filed Apr. 17, 1985, Ser. No. 724,188
Claims priority, application Japan, Apr. 18, 1984, 59-79231
Int. Cl.[4] B05D 3/06
U.S. Cl. 427—38 11 Claims



1. A method for forming a thin film on a substrate, comprising the steps of:

(i) evaporating a supply of evaporatable material to be deposited on the substrate;

(ii) introducing an ion-forming gas into a plasma generating zone to dissociate the ion-forming gas into ions and electrons;

(iii) accelerating the ions resulting from step

(ii) in an ion beam accelerating zone and irradiating said accelerated ions onto the substrate;

(iv) irradiating the electrons resulting from step (ii) onto the supply of evaporatable material in the form of beams;

(v) arranging the supply of evaporatable material, the plasma generating zone, the ion beam accelerating zone and the substrate in a substantially straight line in the recited order; and

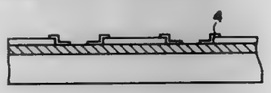
(vi) depositing a vapor of the evaporated material on the substrate through the plasma generating zone and the ion beam accelerating zone.

4,657,775

METHOD FOR PRODUCTION OF SILICON THIN FILM PIEZORESISTIVE DEVICES

Hisanori Shioiri; Mitsuhiro Kiuchi; Mineo Takayama; Toshio Homma; Hiroshi Nagasaka, all of Ueda, and Yoshikazu Kaneko, Togura, all of Japan, assignors to Kabushiki Kaisha Nagano Keiki Seisakusho, Tokyo, Japan

Continuation of Ser. No. 681,105, Dec. 12, 1984, abandoned. This application Dec. 30, 1985, Ser. No. 815,305
Claims priority, application Japan, Sep. 13, 1984, 59-192336
Int. Cl.[4] B05D 3/06
U.S. Cl. 427—38 4 Claims



1. A method for producing silicon thin film piezoresistive devices comprising:

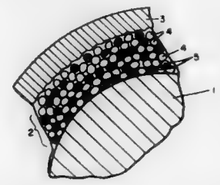
exposing a substrate to a plasma atmosphere produced from silicon hydride gas containing boron hydride, and depositing on the substrate, at a substrate temperature of between 500° C. and 650° C., a thin film of crystalline silicon as a piezoresistive material.

4,657,776

CVD PROCESS FOR THE PRODUCTION OF A SUPERCONDUCTING FIBER BUNDLE

Manfred Dietrich, Karlsruhe; Cord-Heinrich Dustmann, Weinheim; Franz Schmaderer, Heidelberg, and Georg F. H. Wahl, Eppelheim, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim and Kernforschungs-Zentrum Karlsruhe GmbH, Eggenstein-Leopoldshafen, both of, Fed. Rep. of Germany

Division of Ser. No. 518,381, Jul. 29, 1983, Pat. No. 4,581,289. This application Dec. 3, 1984, Ser. No. 677,176
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228729; Oct. 6, 1982, 3236896
Int. Cl.[4] B05D 3/06; C23C 16/36
U.S. Cl. 427—38 13 Claims



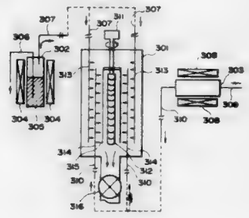
1. Method for manufacturing a superconducting fiber bundle formed of a multiplicity of carrier fibers coated with a superconducting layer of a niobium compound of niobium carbonitride of the general formula NbC_xN_y wherein $x+y$ is equal to or less than 1, said superconductive layer of niobium compound having a fine grained B1-structure and a mean grain size between 3 and 50 nm, which comprises reacting niobium chloride, carbon and nitrogen compounds in a CVD (chemical vapor deposition) reactor to produce the niobium compound, depositing the niobium compound from the gaseous phase on the carrier fiber in the reactor to form a superconducting layer thereon, maintaining a low total gas pressure of between 0.1 and 5 m bar, and during the deposition using plasma activation to effect grain size reduction to said grain size of between 3 and 50 nm, wherein precipitations of insulating material are uniformly distributed between the B1-structure niobium compound grains of the superconducting layer by depositing the insulating material from the gaseous phase in the CVD reactor simultaneously with the niobium compound deposition.

4,657,777

FORMATION OF DEPOSITED FILM

Masaaki Hirooka, Toride; Shunichi Ishihara, Ebina; Junichi Hanna, and Isamu Shimizu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 682,367, Dec. 17, 1984, abandoned. This application Jan. 22, 1986, Ser. No. 821,134
Int. Cl.[4] B05D 3/06
U.S. Cl. 427—39 23 Claims



1. A method for forming a deposited film, which comprises forming a gas atmosphere containing an active species (a) obtained by decomposition of a silicon halide represented by

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the formula Si_nX_{2n+2} (n is an integer of 1 or more and X represents a halogen atom) and at least one compound selected from the group of the compounds (A) consisting of acyclic silanes, silanes having cyclic structures, silanes containing an alkyl group and halo-substituted derivatives thereof in a film forming space (A) where a silicon-containing film is to be formed on a desired substrate, and then carrying out at least one of (1) exciting discharging in said gas atmosphere and (2) giving heat energy to said gas atmosphere, thereby forming a silicon-containing deposited film.

4,657,778

MULTILAYER SYSTEMS AND THEIR METHOD OF PRODUCTION

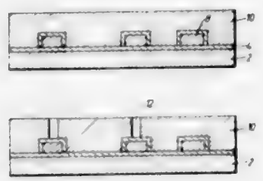
Peter L. Moran, 3 Falcon Hill, Lover's Walk, Montenotte, Cork, Ireland

Filed Jul. 18, 1985, Ser. No. 756,818

Claims priority, application United Kingdom, Aug. 1, 1984, 8419649; Oct. 31, 1984, 8427578

Int. Cl.⁴ H05K *3/46*

U.S. Cl. 427—53.1 **16 Claims**



1. A method of producing a multilayer system comprising the steps of

bonding a solid pattern of electrically conductive oxidisable material to an electrically insulating surface of a substrate,

coating the pattern and the parts of the said surface not bonded to the pattern with an air firing dielectric, and

firing the dielectric in air to a temperature sufficient to cause oxygen diffusing through the dielectric to oxidise the outer layer of the pattern, and thereafter cause fusion of the dielectric whereby a bond is formed between the fused dielectric and the oxidised outer layer and further diffusion of oxygen into the pattern is inhibited.

4,657,779

SHRINKAGE-RESISTANT ULTRAVIOLET-CURING COATINGS

Joseph E. Gaske, Mt. Prospect, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Mar. 19, 1986, Ser. No. 841,216

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—54.1 **14 Claims**

1. An ultraviolet-curable liquid coating composition which possesses minimal deformational shrinkage on cure comprising: (A) a cationically curable polyepoxide having a 1,2-epoxy equivalency of at least 1.3; (B) an acrylate-functional compound carrying at least one reactive group selected from: (1) a monoacrylate-functional compound carrying at least two primary hydroxy groups; and (2) an epoxy-functional monoacrylate in admixture with a compound carrying a plurality of primary hydroxyl groups; (C) an acrylate-functional liquid, preferably a monoacrylate, in an amount providing coating viscosity; and (D) a catalyst component capable of initiating, on ultraviolet exposure, both the conventional free-radical polymerization of ethylenically unsaturated monomers, and the cationic polymerization of polyepoxides in the presence of a compound carrying the primary hydroxy group, the ratio of epoxy groups provided by component (A) to primary hydroxy groups provided by component (B) being in the range of from 0.5:1 to 6:1.

12. A method of coating an easily deformable substrate with a liquid ultraviolet curable coating composition which cures to a solid adherent film with minimum deformational shrinkage comprising applying the liquid coating composition of claim 1 and exposing the applied coating to ultraviolet light.

4,657,780

MANUFACTURE OF DIFFRACTION GRATINGS

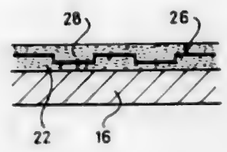
Robert M. Pettigrew, Foxton, and Robert J. Longman, Coton, both of England, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jul. 29, 1985, Ser. No. 759,699

Claims priority, application United Kingdom, Aug. 8, 1984, 8420182

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—54.1 **13 Claims**



1. A method of manufacturing a diffraction grating comprising the steps of:

(1) coating with a release agent the surface of a light-transmitting master grating which bears a non-light transmitting grating pattern;

(2) applying ultraviolet sensitive liquid resin to an opaque, rigid substrate and bringing the master grating and the substrate together to trap a film of liquid resin between the substrate and the grating-bearing surface;

(3) curing the resin film by exposure thereof to ultraviolet light transmitted through the master grating, which ultraviolet light passes through the light transmitting regions of said surface thereof and is scattered from said regions throughout the resin film including the regions thereof beneath the non-light transmitting grating pattern;

(4) separating the master grating and resin-profiled substrate at the grating-bearing surface of the master grating coated with release agent; and

(5) depositing a thin metal film on to the resin-profiled surface of the substrate.

4,657,781

PROCESS FOR CROSSLINKING ETHYLENE POLYMERS CONTAINING ANHYDRIDE FUNCTIONS, CROSSLINKABLE POLYMERS COMPOSITIONS AND THE APPLICATION OF THESE COMPOSITIONS TO THE COATING OF SUBSTRATES

Adrien Nicco, Bethune; Jerome Hubert, Paris; Jacques Druz, Strasbourg, and Morand Lambla, Bischheim, all of France, assignors to Societe Chimique des Charbonnages S.A., France

Division of Ser. No. 666,228, Oct. 29, 1984, Pat. No. 4,612,349. This application Jul. 10, 1986, Ser. No. 884,204

Claims priority, application France, Oct. 28, 1983, 83 17273

Int. Cl.⁴ B05D *5/12*

U.S. Cl. 427—117 **3 Claims**

1. A method of coating a substrate comprising the steps of:

(1) applying to said substrate a crosslinkable composition comprising:

(A) a polymer of ethylene and maleic anhydride containing

(a) from about 42 to 99% by weight of structural units derived from ethylene;

(b) from about 1 to 8% by weight of structural units derived from maleic anhydride; and

(c) from 0 to about 50% by weight of structural units derived from at least one additional monomer selected from an ester of an unsaturated carboxylic acid with an alcohol containing from 1 to 12 carbon atoms; and

(B) from about 1 to 10 parts by weight, based on 100 parts by weight of the polymer (A), of at least one polyepoxide compound; and

(C) from about 0.02 to 2 parts by weight, based on 100 parts by weight of the polymer (A), of at least one catalyst suitable for reacting said anhydride functions with said epoxide functions to said substrate; and

(2) reacting said crosslinkable composition at a temperature of from about 10° to 160° C., under a pressure of from about 1 to 300 bars and for at least about 0.5 hour.

4,657,782

METHOD OF FORMING A RARE EARTH-IRON-GARNET VERTICALLY MAGNETIZED FILM

Manabu Gomi, Ichikawa, and Masanori Abe, Nishimine, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Mar. 18, 1986, Ser. No. 840,875

Claims priority, application Japan, Mar. 27, 1985, 60-62737

Int. Cl.⁴ H01F *10/02*

U.S. Cl. 427—130 **9 Claims**

1. A method of forming a rare earth-iron-garnet vertically magnetized film by applying a coating solution containing Fe^{3+} and rare earth ions on an amphorous substrate to form a coating film, and firing the coating film to cause thermal decomposition and crystallization of the film to form a rare earth-iron-garnet film, wherein the coating solution contains Bi^{3+} and ions substitutable for Fe^{3+} in the garnet.

4,657,783

PROCESS AND APPARATUS FOR COATING PAPER

Christopher F. Tatt, Bonvilston, Near Cowbridge, Wales; Kenneth Richards, Ascot, and Michael R. Chamberlain, Hazlemere, both of England, assignors to The Wiggins Teape Group Limited, Basingstoke, England

Filed Jan. 25, 1985, Ser. No. 694,783

Claims priority, application United Kingdom, Jan. 27, 1984, 8402190

Int. Cl.⁴ B05D *1/28*

U.S. Cl. 427—211 **12 Claims**

1. A process for effecting the high speed coating of both sides of a lightweight paper sheet with coating of low dry coatweight, whilst maintaining good coating pattern and control over the degree of curl in the sheet when dried, comprising the steps of:

moving an endless transfer surface sequentially through first, second and third stations,

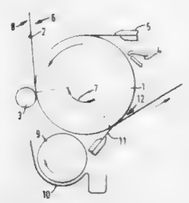
at the first station, forming on said transfer surface a smooth continuous film of a first coating mix having a predetermined fluid content and rheology,

at the second station, bringing a first side of said paper sheet into contact with said transfer surface and simultaneously subjecting the sheet to pressure of about 0.5 kilograms per linear centimeter with a pressure roll which is softer than said transfer surface without substantial sheet distortion, so as to promote substantially complete absorption by the sheet of the fluid content of the first coating mix whilst in engagement with the transfer surface and prior to passage of the sheet and transfer surface through the third station,

at the third station, applying to the second side of the sheet a second coating mix having a predetermined fluid content and rheology, and

separating the sheet from the transfer surface for drying.

2. Apparatus for forming a low coatweight coating on each side of a lightweight paper sheet whilst predetermining the degree of curl in the sheet when dried, comprising a backing roll for supportive engagement with a first side of a paper sheet



and transferring thereto a film coating mix, means for forming a continuous film of the first coating mix on said backing roll, a trailing blade metering device for metering and smoothing the film on the backing roll, a pressure roll forming a nip with the backing roll, the pressure roll having a softer surface than the backing roll, the pressure and backing rolls being adapted to apply a nip pressure of about 0.5 kilograms per linear centimeter transversely of the sheet so as to conform the sheet, without substantial distortion, to the profile of the backing roll and so as to promote absorption by the paper sheet of the fluid content of the film, and means for applying a coating of a second coating mix to the second side of the sheet while the sheet engages the backing roll after the fluid content of the film has been absorbed, the means for applying the coating being spaced from the pressure roll.

4,657,784

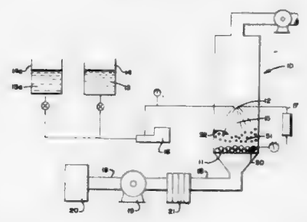
PROCESS FOR ENCAPSULATING PARTICLES WITH AT LEAST TWO COATING LAYERS HAVING DIFFERENT MELTING POINTS

Keith E. Olson, Apple Valley, Minn., assignor to Ecolab Inc., St. Paul, Minn.

Filed Mar. 10, 1986, Ser. No. 838,276

Int. Cl.⁴ B05D *1/02, 1/36, 3/02*; C11D *11/00*

U.S. Cl. 427—213 **23 Claims**



1. A process for encapsulating a reactive core particle to protect the particle from degradative interaction when contacted with reactive compounds by improving coating encapsulation efficiency, which comprises:

(a) contacting the core particle with a sufficient amount of a

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first coating material to form a single coating on the core particle;
(b) contacting the single coating with a second coating material, wherein the second coating material has a melting point higher than the melting point of the first coating material, to form a coated particle having at lesat two layers of coating;
(c) heating the coated particle to a temperature above the melting point of the first coating material but below the melting point of the second coating material to form a liquid first coating layer; and
(d) solidifying the liquid first coating layer.

23. A process for encapsulating particles in a fluidized bed comprising:
(a) fluidizing about 10 to 60 U.S. mesh solid active halogen bleach particles in a fluidized bed;
(b) adjusting the temperature of the fluidized bed to the fluidization temperature of an initial coating material;
(c) contacting the particles with a slurry or solution of a normally solid initial coating material until substantially all particles are coated with the initial coating material to form particles having an initial coating, the initial coating material selected from the group consisting of alkali metal sulfates, alkali metal phosphates and mixtures thereof;
(d) solidifying the initial coating;
(e) spraying the particles having an initial coating with a slurry or solution of a normally solid first coating material until substantially all the particles having an initial coating are coated with the first coating material to form particles having an initial coating and a first coating, the inner coating material selected from the group consisting of 12–20 carbon fatty acids, microcrystalline waxes, 12–20 carbon alcohols, and mixtures thereof;
(f) solidifying the inner coating;
(g) spraying the particles having an initial coating and a first coating with a slurry or solution of a normally solid second coating material until substantially all the particles having an initial coating and a first coating are coated with the second coating material to form heat treatable particles, the second coating material having a melting point above the melting point of the first coating material and selected from the group consisting of alkali metal sulfates, alkali metal phosphates, and mixtures thereof;
(h) solidifying the outer coating;
(i) heating the heat treatable particles to a temperature between the melting points of the first and the second coating materials to form the first coating material into a liquid layer; and
(j) solidifying the liquid layer to form a solid seal; whereby a heat treated halogen bleach encapsulate is formed comprising:
(i) about 30 to 95 wt-% active halogen bleach core;
(ii) about 1 to 20 wt-% initial coating material;
(iii) about 2 to 40 wt-% first coating material; and
(iv) about 2 to 30 wt-% second coating material.

4,657,785

USE OF BENZO AND TOLYLTRIAZOLE AS COPPER CORROSION INHIBITORS FOR BOILER CONDENSATE SYSTEMS

John A. Kelly, Woodridge; David A. Grattan, LaGrange Highlands, and Alfred W. Oberhofer, Downers Grove, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 11, 1985, Ser. No. 807,639
Int. Cl.⁴ C04B *9/02*; C23C *16/00*; C23F *11/04*
U.S. Cl. 427—255.6 **2 Claims**

1. A method of reducing copper corrosion in a boiler condensate system operating at a pressure of at least 600 psi, which contains at least one steam header, which comprises feeding into said steam header a corrosion inhibiting amount of a triazole from the group consisting of benzotriazole, tolyltriazole or their alkali metal salts, whereby said triazoles are mixed with said steam and transported through said system to treat the copper surface to inhibit corrosion.

4,657,786

BLACK-METALLIZED SUBSTRATE SURFACES

Kirkor Sirinyan; Rudolf Mertes, both of Leverkusen, and Henning Giesecke, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 539,034, Oct. 5, 1983, Pat. No. 4,535,032. This application Apr. 12, 1985, Ser. No. 722,929
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239090
Int. Cl.⁴ C23C *18/30*
U.S. Cl. 427—304 **11 Claims**

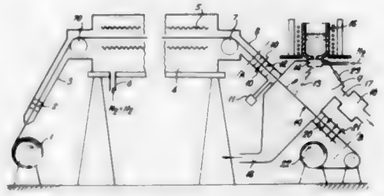
1. A process for preparing black metallized substrate surfaces comprising activating substrate surfaces with metals of auxiliary groups 1 or 8 of the periodic system of the elements and metallizing said surfaces in a currentless fashion in a metallizing bath, said bath containing a polymeric organic surface-active compound having a molecular weight of at least 400 and said compound being completely or partially swellable in aqueous media.

4,657,787

FLOW COATING OF METALS

Alfred R. E. Singer; Walter N. Jenkins, and Asgar M. H. Alibhai, all of Swansea, Wales, assignors to National Research Development Corporation, London, England

Filed Jul. 31, 1985, Ser. No. 760,983
Claims priority, application United Kingdom, Aug. 15, 1984, 8420699
Int. Cl.⁴ C23C *4/18*
U.S. Cl. 427—319 **5 Claims**



1. A process for making a metal-coated product, comprising:
applying a coating metal to a metal base product in the form of a spray of molten atomised metal particles, the coating metal having a lower melting temperature than the base product, the base product presented to the spray having a surface free from oxide and being at a temperature which, on an absolute temperature scale, is within 5% of the melting point of the coating metal, such that the liquid splats formed by the spray impacting the base product fuse together to form a smooth flowed coating; gas cooling the base product and the thus-coated product while and after applying the coating at such a rapid rate as to freeze the coating at any given site on the product within one second of the impact of the first liquid splat at such site so as to inhibit coating/base product intermetallic and alloy formation and obtain a fully-dense metallurgically-bonded product.

4,657,788

PROCESS FOR MULTIPLE STAGE AUTODEPOSITION OF ORGANIC COATINGS ONTO METALS

Kenneth C. Beaton, Macedonia, Ohio, and Raymond J. Weinert, Jr., West Chester, Pa., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 31, 1986, Ser. No. 846,324
Int. Cl.⁴ B05D *1/18, 3/02*
U.S. Cl. 427—354 **35 Claims**

1. A process for applying a polymeric coating to a metal surface comprising:
(a) immersing a metal substrate in an organic coating composition bath,
(b) withdrawing the film coated metal substrate from the organic coating composition bath,
(c) rinsing the film,
(d) repeating the cycle of immersing and rinsing two to ten times, and
(e) curing the coated metal substrate.

4,657,789

METHOD FOR THE PRODUCTION OF A VENEER

Nilsson Lars, Richters Gata 4A, S-541 31 Skovde, Sweden

Filed Oct. 15, 1985, Ser. No. 787,683
Int. Cl.⁴ B05D *1/18, 1/28, 3/02*
U.S. Cl. 427—372.2 **11 Claims**



1. A method for the production of a veneer resistant to micro-organisms, insects and other harmful products, which is suitable for use in constructions intended for joinery, construction, packaging, and installation applications, the method comprising impregnating a wood veneer which is cut or sliced from a piece of timber, with a concentrated solution of an impregnation salt or other impregnation medium by applying the impregnation salt or other impregnation medium to the surface of the veneer while the veneer is still moist, under no mechanical pressure and before the ring pores thereof have become sealed, so that a controlled quantity of the solution of the impregnation salt or other impregnation medium is distributed in the veneer by chemical osmotic overpressure diffusion through the cell walls thereof, and drying the impregnated veneer by heating the veneer so that the ring pores of the cell walls thereof are sealed.

8. The method according to claim 1, wherein the veneer, after absorbing the impregnation solution, is dried in a heating oven.

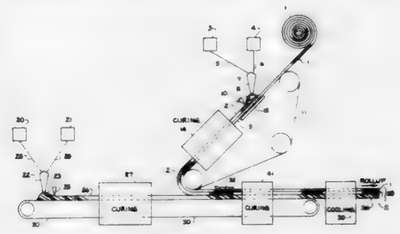
4,657,790

POLYURETHANE BACKED CARPET

Phillip L. Wing, Cohutta; James K. Jennings, Rocky Face, and Terry L. Lamb, Ringgold, all of Ga., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 8, 1985, Ser. No. 752,868
Int. Cl.⁴ B05D *3/02*
U.S. Cl. 427—374.1 **18 Claims**

1. A process for preparing a substrate backed with a polymer derived from an organic polyisocyanate, said process comprising the steps of
(a) forming a precoat layer of a precoat reaction mixture comprising a substantially difunctional polyahl and a substantially difunctional organic polyisocyanate,
(b) separately forming a capcoat layer of a capcoat reaction mixture comprising a polyahl and a polyisocyanate,
(c) contacting said precoat layer with one surface of said substrate before said precoat layer is cured to a tack-free state,
(d) contacting said capcoat layer with one surface of said precoat layer before at least one of said precoat layer and capcoat layer is cured to a tack-free state,
(e) completing curing said capcoat and precoat layer, and



(f) cooling the resulting polymer-backed substrate to a temperature less than about 35° C. before any mechanical distortion thereof, wherein steps (a)–(f) are carried out under conditions such that mechanically induced stress in the substrate, precoat layer and capcoat layer is minimized.

4,657,791

PRODUCT MANUFACTURED OF A ROCK MATERIAL AND A METHOD FOR ITS MANUFACTURING

Markku Ukkonen, Kotkankatu 4 B 25, SF-00510 Helsinki, Finland

Filed Jan. 2, 1986, Ser. No. 815,590
Claims priority, application Finland, Jan. 8, 1985, 850090
Int. Cl.⁴ B44F *9/04*
U.S. Cl. 428—15 **20 Claims**



1. A method for manufacturing a product from a rock material characterized in that a mainly transparent synthetic resin and a nontransparent, opaque, preferably light reflecting, crystalline and granular rock material, the size of which granules corresponds to the natural size of the crystals of the rock material in question, with the granules being larger than 1 mm, are spread in a mould so that the smooth surface of the cast, formed against the surface of the mould, forms as such and without any working a smooth coating of the nontransparent product so that the product corresponds to the natural rock material with respect to its reflective properties and its impression of colour and depth.

4,657,792

FUNNEL MATERIAL FOR BAGS AND METHOD

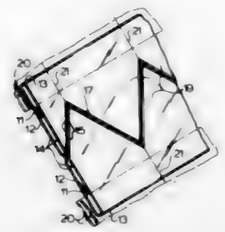
Steven Ausnit, New York, N.Y., assignor to Minigrip, Incorporated, Orangeburg, N.Y.

Filed May 17, 1985, Ser. No. 735,277
Int. Cl.⁴ B32B *1/02, 1/04*
U.S. Cl. 428—35 **19 Claims**

1. Funnel material for bags, comprising:
a pair of elongated sheet panels in face-to-face relation and having opposite side edges;
respective sets of separable fastener profiles carried by said

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panels and extending in adjacently spaced parallel relation to said edges, there being one set of the profiles adjacent to one of said edges and another set of the profiles adjacent to the opposite of said edges;



and means securing said panels along longitudinally extending zig-zag joinder and separation line intermediate said sets of profiles for providing a pair of funnel strips each of which has a set of said profiles and a series of funnel pockets at an edge along said line and without wasting material.

4,657,793

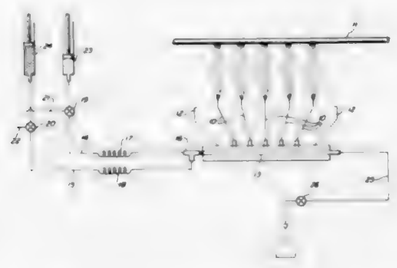
FIBROUS STRUCTURES

Anthony C. Fisher, Willaston, England, assignor to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 631,046, Jul. 16, 1984, abandoned. This application Feb. 25, 1986, Ser. No. 833,307

Int. Cl.⁴ B32B *27/00;* **D02G** *3/00*

U.S. Cl. 428—36 **7 Claims**



1. An integral fibrous structure comprising a plurality of a polymeric filaments, at least some of said filaments being continuous and extending from one side of the structure to the opposite side of the structure, the portions of said continuous filaments on one side of the structure being of a first polymeric composition and the portions of said continuous filaments on the opposite side of the structure being of a second polymer composition different from the first polymeric composition.

4,657,794

BINDERLESS CERAMIC OR CERAMIC OXIDE HOLLOW BODY AND METHOD FOR ITS MANUFACTURE

Werner Schultze, Bonn, and Knut Weber, Jr., Wiehl, both of Fed. Rep. of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 510,876, Sep. 27, 1983, Pat. No. 4,547,415, which is a division of Ser. No. 225,191, Jan. 15, 1981, Pat. No. 4,460,529. This application Aug. 23, 1985, Ser. No. 768,612

The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.⁴ B07D *7/22, 1/36;* **B05D** *3/02*

U.S. Cl. 428—36 **5 Claims**



1. A hollow body comprising layers of fused particles, said particles being selected from the group consisting of ceramic and ceramic oxide particles, said particles being free of any binding agent, said body being porous, free of internal adhering supports, and having been produced by exposing said layers to a temperature gradient which does not exceed 2° C. per millimeter of layer thickness.

4,657,795

TUBULAR MATERIAL BASED ON A FABRIC-REINFORCED RESIN, AND A BICYCLE OR SIMILAR VEHICLE FRAME CONSTRUCTED WITH SUCH A MATERIAL

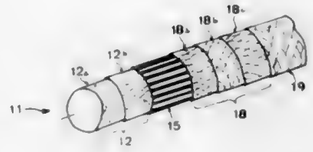
Régis Foret, Brindas, France, assignor to Technique du Verre Tisse S.A., Lyons, France

Continuation of Ser. No. 611,210, May 17, 1984, abandoned. This application Sep. 5, 1985, Ser. No. 772,202

Claims priority, application France, May 24, 1983, 83 08764

Int. Cl.⁴ B32B *5/22, 1/08;* **B63B** *15/00*

U.S. Cl. 428—36 **21 Claims**



1. A tubular material comprising a plurality of superimposed layers of fabric, said plurality of superimposed layers including an inside layer, an intermediate layer and an outside layer, said inside layer and said outside layer comprising bidirectional braided sheets, said inside layer and said outside layer comprising a material selected from the group consisting of glass fibers, carbon fibers and boron fibers, said intermediate layer comprising at least one layer of parallel, high-strength longitudinal yarns, at least 10% of said longitudinal yarns being high tensile strength yarns having a higher tensile strength than the remaining longitudinal yarns, said high tensile strength yarns comprising aramid fibers.

4,657,796

COATING LAYER WITH SELF-REPAIRING PROPERTIES FOR PANES EXPOSED TO ATMOSPHERIC AGENTS

Ingrid Musil; Gerhard Holzer, and Helmer Raedisch, all of Aachen, Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Dec. 6, 1985, Ser. No. 805,784

Claims priority, application France, Dec. 6, 1984, 84 18603

Int. Cl.⁴ B32B *17/10, 27/40;* **C03C** *17/32*

U.S. Cl. 428—38 **8 Claims**

1. A transparent polyurethane coating layer with self-repairing properties for panes or transparent objects made of glass or plastic material, formed from a reactive mixture comprising a plurifunctional isocyanate component and a plurifunctional polyalcohol component, wherein the isocyanate component of the reactive mixture is chosen from the essentially trifunctional aliphatic polymers formed from 1,6-hexamethylenediisocyanate monomer, having an NCO radical content of 15 to 25% by weight and the polyalcohol component of the reactive mixture is a plurifunctional polyester polyalcohol having an OH radical content of 3 to 12% by weight.

4,657,797

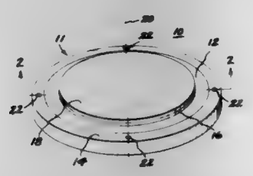
SUBSTRATE FOR A SEMICONDUCTOR CHIP PACKAGE AND A METHOD OF FABRICATING THE SAME

Herman F. Nied, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 30, 1985, Ser. No. 781,592

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—64 **12 Claims**



1. A substrate for a semiconductor chip package comprising:
a metal layer having a high coefficient of thermal conductivity and including a substantially flat surface for bonding to a semiconductor chip;
a restraining wrapper girding the peripheral edge of said metal layer and comprising a material having both a low coefficient of thermal expansion and a high ultimate tensile strength; and
said restraining wrapper comprising carbon fiber-epoxy composite or boron fiber-epoxy composite.

5. A semiconductor chip package comprising:
a metal layer having a high coefficient of thermal conductivity and including a substantially flat surface;
a restraining wrapper girding the peripheral edge of said metal layer and comprising a material having both a low coefficient of thermal expansion and a high ultimate tensile strength;
a layer of solder on said flat metal layer surface; and
a semiconductor chip bonded to said flat metal layer surface by said solder layer.

4,657,798

FLAT COMPOSITE BOARD

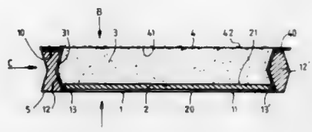
Jacques M. Guilhem, Domaine du Val Martin, 06560 Valbonne, France

Filed Sep. 26, 1985, Ser. No. 780,558

Claims priority, application France, Sep. 28, 1984, 84 14963

Int. Cl.⁴ B32B *3/00*

U.S. Cl. 428—71 **11 Claims**



1. A flat composite board or panel intended, in particular, for covering the vertical walls of rooms in dwelling-places or in commercial or industrial premises, which consists of a core of synthetic foam produced in situ by expansion starting from a liquid resin to which conventional additives have been added, an outer layer having a decorative front surface and a rear surface to which the foam adheres, together with a synthetic inner layer which adheres to the foam by its front surface and the rear surface of which is covered with a web of fibres intended to enable the board to be secured in a mechanically reliable and physically strong manner to the vertical walls to be covered, the decorative front surface of the board and also its edges being covered with a sealed protective thermoplastic film, cooperating with the front surface of the inner layer, to which it is secured at its ends so as to form a sheath limiting the expansion of the foam and designed to be removed, after the board has been fitted in position.

4,657,799

SHEET MATERIAL FOR THE PRODUCTION OF SEPARATOR POCKETS FOR LEAD ACCUMULATORS

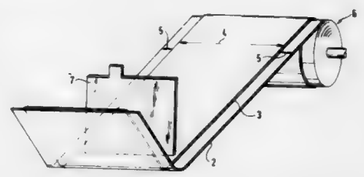
Eberhard Naan, Soest-Deiringsen, and Walter Bernardi, Fuldatal, both of Fed. Rep. of Germany, assignors to Hagen Batterie AG, Soest, Fed. Rep. of Germany

Continuation of Ser. No. 654,330, Sep. 25, 1984, abandoned. This application Feb. 14, 1986, Ser. No. 829,852

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1983, 3335547

Int. Cl.⁴ B32B *3/14*

U.S. Cl. 428—77 **4 Claims**



1. In a jacketed battery plate for a lead-acid battery of the type including a battery plate and a separator jacket on said battery plate, wherein said jacket comprises a thin flexible sheet material and a layer of a flexible web material bonded to said sheet material, said sheet material and said web material being folded around an edge of said battery plate and being bonded together to form said jacket so that it contains said battery plate, the improvement comprising the width of said sheet material being greater than the width of said web layer, said web material being oriented with respect to said sheet material to define bonding areas along the opposite side edges

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of said sheet material which extend beyond said web material, said bonding areas being bonded together to form said jacket.

4,657,800

MURAL TYPE HANGING AND METHOD MAKING SAME

Jutta M. Long, 161 Ellsworth St., Bridgeport, Conn. 06605

Filed Aug. 20, 1985, Ser. No. 608,866
Int. Cl.⁴ A47G *33/06*; B44F *3/00*
U.S. Cl. 428—102 **5 Claims**



1. A mural type hanging comprising:
a sheet of flexible fabric type material, means defining a hem extending along a peripheral portion of said sheet,
means defining a predetermined pattern formed on a surface portion of said sheet;
strands of fibrous yarn looped to define an elongated series of spirals disposed coincidental to the form of said pattern so as to conform generally to the shape of said pattern,
means for fixedly securing said strands of looped yarn to said sheet at the base end of the respective loops,
said last mentioned means including a sewn seam for securing said looped strands to said sheet, whereby said loops are cut, the respective free ends being disposed to either side of said seam, to impart a 3-dimensional effect to said pattern;
illuminating means located at pre-selected points along said pattern,
and decorative means disposed along said pattern in a predetermined manner.

4,657,801

NONWOVEN WITH FIBROUS COATING

Peter Heidel; Franz Kaulich, and Heinz Artus, all of Boblingen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 26, 1985, Ser. No. 780,556
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1984, 3435640
Int. Cl.⁴ B32B *3/10*
U.S. Cl. 428—137 **6 Claims**

1. A nonwoven comprising a fiber web layer with holes extending therethrough, a layer of fibrous solid particles attached to the fiber web layer, the fibrous particles having a longitudinal extension larger than the effective hole size of the fiber web layer and a binder consolidating and fixing both layers to each other.

4,657,802

COMPOSITE NONWOVEN ELASTIC WEB

Michael T. Morman, Alpharetta, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 30, 1985, Ser. No. 760,449
Int. Cl.⁴ B32B *31/00*
U.S. Cl. 428—152 **46 Claims**

1. A process for producing a composite nonwoven elastic web comprising a nonwoven elastic web joined to a fibrous nonwoven gathered web, said process comprising the steps of:
providing a nonwoven elastic web;
stretching said nonwoven elastic web;
forming a fibrous nonwoven gatherable web directly upon a surface of the stretched nonwoven elastic web;



joining the fibrous nonwoven gatherable web to the stretched nonwoven elastic web so as to form a composite nonwoven elastic web; and
relaxing the composite elastic web to gather the fibrous nonwoven gatherable web.

4,657,803

STRETCH TRANSFER AND METHOD OF MAKING SAME

Vincent S. Pernicano, 2833 Railroad St., Boyne Falls, Mich. 49713

Filed May 9, 1983, Ser. No. 492,948
Int. Cl.⁴ B32B *3/18, 5/16*; C09J *7/02*
U.S. Cl. 428—200 **30 Claims**



1. A heat transfer sheeting combination of the type for being applied onto a fibrous article (**10**) to imprint a design thereon, said combination comprising: a substrate (**12**); a design coating (**14**) disposed on said substrate (**12**); and an adhesive layer (**24**) disposed on said design coating (**14**) and being responsive to heat and pressure for adhesively securing said design coating (**14**) to the article (**10**) and characterized by said adhesive layer comprising essentially a styrene block copolymer and being transformable in response to the application of heat and pressure to a stretchable adhesive layer.

4,657,804

FUSIBLE FIBER/MICROFINE FIBER LAMINATE

Alfred T. Mays, and Ching-Yun M. Yang, both of East Windsor, N.J., assignors to Chicopee, New Brunswick, N.J.

Filed Aug. 15, 1985, Ser. No. 765,633
Int. Cl.⁴ A61B *19/02*; B32B *5/26*; B65B *55/02*; B65D *5/62*
U.S. Cl. 428—212 **29 Claims**

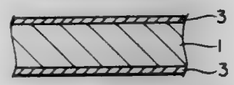
1. A water-impervious, smooth-surfaced, gas-permeable, bacterial barrier, laminated material comprising at least one layer of conjugate fibers, said layer of conjugate fibers having a first face and an opposite face, said conjugate fibers being composed of a lower melting component and a higher melting component, wherein a substantial proportion of the surfaces of said conjugate fibers comprises said lower melting component, said lower melting component of said conjugate fibers which lie on said first face being fuse bonded to at least one compatible hydrophobic ply of theremoplastic microfine fibers having a fiber diameter of up to 50 microns, said lower melting component of said conjugate fibers having been fuse bonded at a temperature below the melt temperature of said higher melting component of said conjugate fibers so that the latter component retains its initial fiber-like integrity, said material having been treated with a water repellent finish and impregnated with a repellent binder.

4,657,805

DUST COVER SUPERIOR IN TRANSPARENCY FOR PHOTOMASK RETICLE USE AND PROCESS FOR PRODUCING THE SAME

Yasunori Fukumitsu, Yokosuka, and Mitsuo Kohno, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP84/00485, § 371 Date Jun. 13, 1985, § 102(e) Date Jun. 13, 1985
PCT Filed Oct. 12, 1984, Ser. No. 749,623
Claims priority, application Japan, Oct. 13, 1983, 58-189892
Int. Cl.⁴ B32B *7/02*
U.S. Cl. 428—215 **24 Claims**



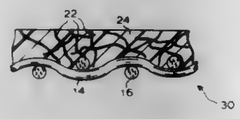
1. A dust cover superior in transparency for photomask reticle purposes, which consists essentially of a supporting frame and a thin film bonded to edge areas thereof, said thin film consisting of either a single layer of a fluoropolymer which exhibits an average transmittance at least 90% for rays of wavelengths from 240 to 290 nm and an average transmittance of at least 93.5% for rays of wavelengths from 290 to 500 nm, when having a thickness of 10 μm, and has a refractive index of up to 1:42 or three or more multilayers both the outermost layers of which are formed of the above-defined fluoropolymer.

4,657,806

WET PRESS PAPERMAKERS FELT

William H. Dutt, Rensselaer, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Mar. 25, 1985, Ser. No. 715,828
Int. Cl.⁴ D03D *3/00*
U.S. Cl. 428—226 **2 Claims**



1. A papermakers wet-press felt, which comprses:
a base layer, which comprises a woven fabric of interwoven machine and cross-machine direction textile yarns; and
a top layer coated on the base layer, said coating comprising a resilient, water-resistant, elastomeric, non-cellular, synthetic polymeric resin bonded to the base layer;
said resin coating being characterized in part by homogeneously distributed voids and being water permeable by virtue of a plurality of channels penetrating the body of the coating top layer.

4,657,807

BRIGHT METALIZED FABRIC AND METHOD OF PRODUCING SUCH A FABRIC

Myron M. Fuerstman, 21 Suburban Ave., Pelham, N.Y. 10803

Continuation of Ser. No. 627,490, Jul. 5, 1984, abandoned, which is a continuation-in-part of Ser. No. 340,539, Jan. 19, 1982, abandoned. This application Jul. 14, 1986, Ser. No. 885,383
Int. Cl.⁴ B32B *7/00, 15/00*
U.S. Cl. 428—263 **30 Claims**

1. A method of producing a fabric having a bright-finish metallic appearance, comprising:
(a) providing a fabric comprising fibers which can be flattened by heat or pressure,
(b) flattening or polishing a surface of said fabric by pressing it against a smooth heated surface, and
(c) then depositing a reflective metal material directly onto the flattened or polished surface.

4,657,808

ACTIVATED CARBON PRODUCTS AND THEIR MANUFACTURE

Frederick A. P. Maggs, Salisbury, England, assignor to Charcoal Cloth Ltd., Maidenhead, England

Division of Ser. No. 531,936, Sep. 13, 1983, Pat. No. 4,529,623. This application Mar. 19, 1985, Ser. No. 713,446
Claims priority, application United Kingdom, Sep. 13, 1982, 8226038
Int. Cl.⁴ B32B *7/00*
U.S. Cl. 428—263 **2 Claims**

1. A surgical dressing which consists essentially of an activated charcoal cloth or felt having uniformly dispersed therein at least one first activating metal element selected from Zn, Al, Ca, Mg and Fe, and Ag as a second metal element.

4,657,809

FIRE RETARDANT COMPOSITIONS AND USE THEREOF

Larry G. Eskind, 1050 Vaquero Rd., Pebble Beach, Calif. 93953

Continuation-in-part of Ser. No. 777,159, Sep. 18, 1985, abandoned. This application Aug. 12, 1986, Ser. No. 895,763
Int. Cl.⁴ B32B *3/26, 27/18*; B05D *1/02*; C08K *3/10*
U.S. Cl. 428—304.4 **22 Claims**

11. A resilient foamed combustible substrate containing an effective amount sufficient to impart fire retardancy thereto of a fire retardant composition comprising, in percent by weight of the non-volatile solids therein, an aqueous mixture of:
(a) 25–90% of an emulsified halogen containing vinyl polymer selected to bind the composition to a combustible, resilient, foamed or fibrous substrate;
(b) 0–4.8% of a metal oxide gas and fume limiting compound; and
(c) 1–40% of an afterglow limiting component selected from halogenated naturally occurring oils and fats, containing a maximum of 50% bound chlorine and organo phosphonates, halogenated organo phosphonates and substituted organo phosphonates.

4,657,810

FIRED HOLLOW CERAMIC SPHEROIDS

David K. Douden, Richfield, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 15, 1985, Ser. No. 787,628
Int. Cl.⁴ B32B *3/26*
U.S. Cl. 428—313.9 **4 Claims**



1. A fired, hollow, ceramic spheroid comprising:
A. a continuous phase made of a material selected from the group consisting of aluminum phosphate, sodium silicate $Na_2Ox_1SiO_2$ in which x_1, the molar ratio of SiO_2 to Na_2O, is between about 2.75 and 3.7 and potassium silicate

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$K_2Ox_2SiO_2$ in which x_2 the molar ratio of SiO_2 to K_2O, about 2.5 and 4; and

B. an insolubilizing agent, selected from the group consisting of kaolin clay, iron oxide, titanium dioxide, alumina trihydrate and zinc oxide, which combines with the continuous phase during firing to make the continuous phase insoluble in water;

said hollow, ceramic spheroid having a cellular shell, in which the shell material itself contains a multiplicity of irregular, non-spherical, hollow cells.

4,657,811

HIGH PERFORMANCE THREE LAYER POLYOLEFIN FILM

Dana M. Boyd, Rushville; Edward A. Colombo, Fairport, both of N.Y., and William H. Lashway, Pittsfield, Mass., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 527,933, Aug. 30, 1983, Pat. No. 4,533,578. This application May 23, 1985, Ser. No. 737,008

Int. Cl.[4] B32B *3/26, 27/08, 27/32;* **B29C** *47/00*

U.S. Cl. 428—318.6 **22 Claims**

1. A three-ply plastic film comprising:

(i) outermost and innermost skin layers manufactured from linear low density polyethylene or linear high density polyethylene, said skin layers being of equal or different thickness, said skin layers each having a thickness of between about 0.25 and about 0.50 mils; and

(ii) a middle foamed thermoplastic layer having a density of at least 25% less than the density of the corresponding unfoamed version of said layer, the thickness of said foamed layer being between about 0.25 and about 1.5 mils, the film exhibiting an independent tearing mechanism for each of the skin layers and substantially improved TD tear strength as compared to a substantially identical comparative three-ply plastic film comprising outermost and innermost skin layers manufactured from linear low density polyethylene or linear high density polyethylene and a middle non-foamed thermoplastic layer.

4,657,812

RECORDING MEDIUM FOR PERPENDICULAR MAGNETIZATION

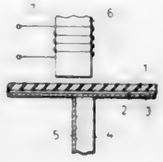
Takashi Hatanai, Nagaoka; Koichi Mukasa, Koide; Keiichi Nakashima, and Hiroshi Sato, both of Nagaoka, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 31, 1984, Ser. No. 687,637

Claims priority, application Japan, Dec. 29, 1983, 58-247368

Int. Cl.[4] B32B *15/02*

U.S. Cl. 428—328 **3 Claims**



1. A magnetic recording medium for perpendicular magnetization, comprising:

(a) a base of a nonmagnetic material;

(b) a magnetic layer having perpendicular magnetic anisotropy on at least a face side of said base; and

(c) said magnetic layer being composed of a cobalt-carbon alloy with cobalt as a main component with carbon added thereto.

4,657,813

MAGNETIC RECORDING MEDIUM

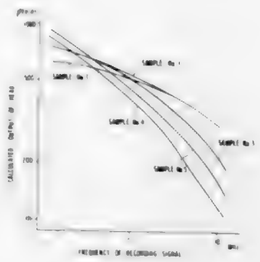
Takamitsu Asai, and Masaaki Fujiyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 21, 1985, Ser. No. 714,282

Claims priority, application Japan, Mar. 22, 1984, 59-55066

Int. Cl.[4] G11B *5/714*

U.S. Cl. 428—328 **5 Claims**



1. A magnetic recording medium comprising a non-magnetic support having provided thereon a magnetic layer containing magnetic particles and a binder, wherein the magnetic particles comprise (1) ferromagnetic hexagonal crystallized tabular shape particles having an axis of easy magnetization in a direction vertical to the tabular plane thereof, a coercive force of 200 to 2,000 Oersteds and a tabular diameter of from 0.01 to 10 μm, a tabular thickness of from 0.005 to 5 μm, and a tabular ratio of 2/1 or more, and (2) ferromagnetic ellipsoidal particles having an acicular ratio of 1.5/1 to 10/1 having a saturation magnetization of 60 emu/g or more, the ferromagnetic ellipsoidal particles (2) having a length of from 0.05 to 1 μm and a width of from 0.01 to 0.5 μm wherein the mixing weight ratio of the ferromagnetic hexagonal crystallized tabular particles (1) to the ferromagnetic ellipsoidal particles (2) is from 95/5 to 20/80.

4,657,814

MAGNETIC RECORDING MEDIUM

Takamitsu Asai, and Masaaki Fujiyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 21, 1983, Ser. No. 553,945

Claims priority, application Japan, Nov. 22, 1982, 58-203737

Int. Cl.[4] G11B *5/706*

U.S. Cl. 428—329 **20 Claims**

1. A magnetic recording medium having reduced drop out, comprising:

a non-conductive support base having provided thereon;

a non-magnetic metal layer which reduces static charge accumulation; and

a magnetic layer containing plate-shaped magnetic particles having an axis of easy magnetization perpendicular to the plane of the plate-shaped magnetic particles, the particles being dispersed in a binder.

4,657,815

SURFACE MODIFICATION OF INORGANIC FILLERS BY TREATMENT WITH BICYCLIC AMIDE ACETALS

Anil B. Goel, Worthington; Robert A. Grimm, Columbus; Peggy A. Blackburn, Plain City, and Harvey J. Richards, Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 2, 1986, Ser. No. 858,780

Int. Cl.[4] B05D *7/00;* **B32B** *5/16;* **C03C** *17/00;* **C07D** *498/00*

U.S. Cl. 428—403 **6 Claims**

1. The process for modifying the surface of a filler or reinforcing material comprising contacting said surface with a bicyclic amide acetal at a temperature ranging from 60 degrees C. to about 350° C.

6. The product of the process of claim 1.

4,657,816

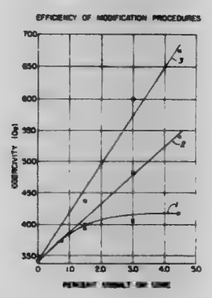
FERROMAGNETIC RECORDING MATERIALS

Mohammed Siddiq, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Apr. 19, 1982, Ser. No. 369,628

Int. Cl.[4] B05D *5/12*

U.S. Cl. 428—403 **37 Claims**



1. A method of converting low performance ferromagnetic oxides into high performance ferromagnetic oxides adapted for a prescribed magnetic recording media coating comprising:

a. Suspending low performance ferromagnetic oxide particles in an aqueous medium;

b. Adding a first magnetic metal moiety and treating to form a layer of a first metal compound on the surfaces of the particles;

c. Adding a second magnetic metal moiety and treating to form a layer of a second metal compound on the surfaces of the first metal; and

d. Adding a third magnetic metal moiety and treating to form a layer of a third metal compound on the surfaces of the second metal compound; and

e. Preparing the resultant particles for inclusion in said coating.

14. A high performance ferromagnetic oxide particle comprising a ferromagnetic oxide core, and coatings of three metal compounds thereon wherein the second metal compound coating is dissimilar to the first and third metal compound coatings.

4,657,817

MAGNETIC RECORDING MATERIAL

Tsutomu Okita, Kanagawa; Kyoichi Narso, Shizuoka; Nobuo Tsuji, Kanagawa; Teruo Nakagawa, Aichi; Kiyoshi Murase, Aichi, and Takahisa Ogasawara, Aichi, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Toagosei Chemical Industry Co., Ltd., Tokyo, both of, Japan

Filed Dec. 6, 1983, Ser. No. 558,673

Claims priority, application Japan, Dec. 6, 1982, 57-212776

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—425.9 **11 Claims**

1. A magnetic recording material comprising:

a support base having thereon;

a magnetic layer comprised of a magnetic powder dispersed in a setting binder, the binder being hardened by irradiation with electron beams, the binder being a urethane acrylate having a number average molecular weight of from 500 to 100,000 obtained by reacting a hydroxyl group-containing (meth)acrylate, a polyisocyanate and a polyester polyol with one another, wherein a dihydric alcohol selected form class (A) described below accounts for 50 mole% or more of the polyhydric alcohol component which constitutes the polyester polyol, and further wherein each molecule of said urethane acrylate includes two or more (meth)acryloyl groups and class (A) is selected from the group consisting of alkyl-substituted aliphatic dihydric alcohols, alicyclic dihydric alcohols, and dihydric alcohols made by addition of alkylene oxides to alicyclic or aromatic dihydric alcohols, wherein the polyester polyol comprises a polyhydric alcohol component which contains 0 to 10 mole% of a polyhydric alcohol component having 3 or more hydroxyl groups.

4,657,818

SLIDING CURRENT COLLECTOR

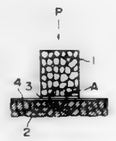
Nobuyuki Yamashita; Kazuo Tahara; Masatoshi Watanabe, and Noriyoshi Takahashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 13, 1985, Ser. No. 744,194

Claims priority, application Japan, Jun. 18, 1984, 59-123845

Int. Cl.[4] B32B *9/04*

U.S. Cl. 428—446 **7 Claims**



1. A sliding current collector comprising a pair of sliding members which are slidable relative to each other for transmitting a current through sliding surfaces of said paired sliding members from one to the other member, said two sliding members being made of conductive ceramics and each coated at its sliding surface with a film made of a soft conductive material which is softer than the conductive ceramics.

4,657,819

FLEXIBLE MAGNETIC RECORDING MEDIUM COMPRISING AN UNDERLYING FILM HAVING REDUCED IN-PLANE MAGNETIC ANISOTROPY UNDER A SURFACE FILM HAVING PERPENDICULAR MAGNETIC ANISOTROPY

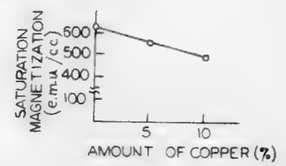
Hidefumi Funaki, Tokyo, Japan, assignor to Aneiva Corporation, Japan

Filed Mar. 12, 1985, Ser. No. 710,923

Claims priority, application Japan, Mar. 13, 1984, 59-47882

Int. Cl.[4] G11B *7/24*

U.S. Cl. 428—458 **5 Claims**



1. In a magnetic recording medium comprising a substrate having a principal surface, a first film formed on said principal surface, and a second film which is formed on said first film and which has magnetic anisotropy perpendicular to said principal surface so that said second film is magnetizable perpendicular to said principal surface, said first film comprising an alloy of nickel and iron and having high magnetic permeability, said first film having magnetic anisotropy parallel to said principal surface, the improvement wherein said first film further com-

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prises a magnetization adjusting element in an amount effective to adjust the saturation magnetization of the alloy to a value less than or equal to 500 e.m.u./cc.

4,657,820

PLASTIC ARTICLE CONTAINING A TOP COAT COMPRISING AN ALBUMIN AND POLYSACCHARIDE MIXTURE

Gregory Halpern, Wilson Park Dr., Tarrytown, N.Y. 10591, and Jack U. Gould, 500 E. 85th St., New York, N.Y. 10028

Filed Apr. 16, 1986, Ser. No. 852,602
Int. Cl.[4] B32B *9/02*
U.S. Cl. 428—476.6 **3 Claims**

1. A plastic object coated with:
(a) an acrylic polymer solution permitted to dry as an anchor coat, and
(b) an aqueous solution containing 1% sodium hyaluronate, and 0.1 to 15% albumin w/w on said hyaluronate, applied as a top-coat to said anchor coat.

4,657,821

PAPER COATING COMPOSITION

Shigeru Ura, Nara; Mikio Iwata; Haruo Tanaka, both of Osaka, and Hiroyuki Shioso, Chiba, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Dec. 11, 1985, Ser. No. 807,558
Int. Cl.[4] C08F *218/04*; D21H *1/28*
U.S. Cl. 428—510 **13 Claims**

1. A paper coating composition comprising:
(A) a pigment, and
(B) a copolymer emulsion prepared by polymerizing a monomer mixture containing:
(i) 5 to 40 wt% of an α-olefin of the formula:

$$CH_2=CH-R_1$$

wherein R_1 is a hydrogen atom or an alkyl group having 1 to 12 carbon atoms;
(ii) 30 to 90 wt% of a vinyl ester of the formula:

$$CH_2=CH-OCO-\underset{\displaystyle R_4}{\overset{\displaystyle R_2}{\overset{|}{\underset{|}{C}}}}-R_3$$

wherein R_2, R_3 and R_4 are each a hydrogen atom or an alkyl group having 1 to 18 carbon atoms;
(iii) 1 to 30 wt% of at least one unsaturated carboxylic acid ester selected from the group consisting of an acrylic acid ester in which the alkyl moiety thereof has 1 to 18 carbon atoms and a methacrylic acid or dibasic unsaturated carboxylic acid ester in which the alkyl moiety thereof has 1 to 18 carbon atoms; and
(iv) 0.1 to 10 wt% of an unsaturated carboxylic acid.

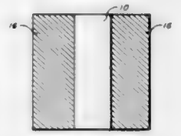
4,657,822

FABRICATION OF HOLLOW, CORED, AND COMPOSITE SHAPED PARTS FROM SELECTED ALLOY POWDERS

David Goldstein, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1986, Ser. No. 887,407
Int. Cl.[4] B22F *3/00*
U.S. Cl. 428—552 **12 Claims**

1. A method for producing objects of shape memory alloys comprising the following steps in order:
(a) placing unconsolidated powder alloy comprising from 38 to 47 weight percent of titanium, from zero to 6 weight percent of an additive metal selected from the group consisting of cobalt, iron, and mixtures thereof with the remainder of the alloy being essentially nickel in a mold comprising a solid graphite core, a sealable glass outer wall which becomes plastic when heated, and space provided between the solid graphite core and the glass wall for the alloy powder;
(b) evacuating the atmosphere from the alloy powder filled mold;
(c) sealing the mold;
(d) placing the mold in an open top refractory container and packing with free flowing refractory powder selected to freely flow at all the temperatures in the process;



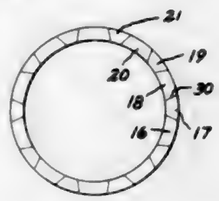
(e) heating the mold and the alloy contents of the mold to a temperature at which sintering of the alloy powder takes place and holding at this temperature for a time sufficient to cause substantially complete densification of the powder alloy, during which step the mold is supported by the free flowing refractory powder as the glass wall of the mold becomes plastic and shrinks in volume as its alloy contents densify putting pressure against the solid graphite core; and
(f) cooling and removing the glass portion of the mold to leave a composite article comprising the consolidated alloy and the graphite core.

4,657,823

ALTERNATING SEGMENT RING STRUCTURE

Paul A. Siemers, Clifton Park; Robert W. Kopp, Ballston Lake, and Melvin R. Jackson, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1984, Ser. No. 653,107
Int. Cl.[4] B22D *25/00*
U.S. Cl. 428—610 **4 Claims**



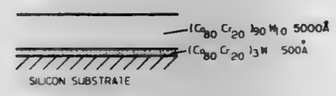
1. A ring structure resistant to stress comprising a ring formed of bonded circumferentially alternating wedge segments of magnetic steel and of a plasma deposited paramagnetic metal which forms carbides,
the bonds between said segments being formed through a plasma deposited graded interface containing a metal which does not form carbides,
the carbide forming metal being free of carbides at the surfaces where it is bonded to the graded interface and in turn to the steel, and
said ring being capable of withstanding stress to over 100 ksi.

4,657,824

VERTICAL MAGNETIC RECORDING MEDIUM WITH AN INTERMETALLIC COMPOUND NUCLEATING LAYER

James K. Howard, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1985, Ser. No. 791,963
Int. Cl.[4] G11B *5/66*
U.S. Cl. 428—611 **11 Claims**



1. A magnetic recording disk for vertical recording comprising:
a substrate;
a nucleating layer formed on the substrate comprising a first constituent of an element selected from the group consisting of tungsten (W), molybdenum (Mo), niobium (Nb), titanium (Ti), vanadium (V), iridium (Ir), and zirconium (Zr), and a second constituent consisting of either cobalt (Co), chromium (Cr), or a solid substitutional solution alloy of CoCr, wherein the amounts of the first and second constituents are present in a fixed stoichiometric ratio so as to form an intermetallic compound with a hexagonal crystalline structure; and
a magnetic layer formed on the nucleating layer comprising a ternary alloy of the form $(Co_{100-y}Cr_y)X$, wherein y is approximately in the range of 14 to 22 and wherein X is selected from the group consisting of W, Mo, Nb, Ti and V, the magnetic layer having a hexagonal crystalline structure with its C-axis oriented generally perpendicular to the substrate, the hexagonal cell constant a_0 of the nucleating and magnetic layers being related by approximate integral multiples so as to enhance the hexagonal crystalline orientation of the magnetic layer formed on the nucleating layer.

4,657,825

ELECTRONIC COMPONENT USING A SILICON CARBIDE SUBSTRATE AND A METHOD OF MAKING IT

Atsushi Kanda; Shunichi Takagi, and Rokuro Kambe, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Dec. 23, 1985, Ser. No. 812,634
Claims priority, application Japan, Dec. 24, 1984, 59-272397; Dec. 24, 1984, 59-272398
Int. Cl.[4] B32B *15/04*
U.S. Cl. 428—627 **16 Claims**

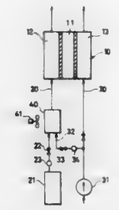
1. An electronic device comprising:
a sintered substrate consisting essentially of silicon carbide;
an intermediate layer consisting essentially of a material selected from the group consisting of silicon, molybdenum disilicide and mixtures thereof, said material being applied to a surface of said substrate, said intermediate layer having a thickness in the range of from about 500 Å to 5000 Å; and
a metal layer applied to the surface of said intermediate layer.

4,657,826

FUEL CELL SYSTEM FOR REPLACEMENT OF FUEL GAS

Hiroyuki Tajima, Kanagawa, Japan, assignor to Fuji Electric Company Ltd., Kawasaki, Japan

Filed Apr. 8, 1986, Ser. No. 849,394
Claims priority, application Japan, Apr. 10, 1985, 60-75580
Int. Cl.[4] H01M *8/06*
U.S. Cl. 429—12 **4 Claims**



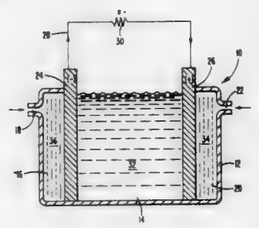
1. A fuel cell system for replacement of fuel gas comprising;
a fuel cell having a fuel chamber;
a fuel supply subsystem communicating with said fuel chamber; and
burning means provided in said fuel supply subsystem for burning, with air, fuel gas derived from said fuel supply subsystem, wherein at the time of start of operation of said fuel cell, a feed quantity of the fuel gas to be introduced into said burning means is gradually increased while a feed quantity of the air to be introduced into said burning means is decreased from 100% to 0% during working of said burning means so that the air in said fuel chamber is replaced with the fuel gas, and at the time of stop of operation of said fuel cell, the feed quantity of the fuel gas to be introduced into said burning means is gradually decreased while the feed quantity of the air to be introduced into said burning means is increased from 0% to 100% during working of said burning means so that the fuel gas in said fuel chamber is replaced with the air.

4,657,827

HYDROGEN-OXYGEN FUEL CELL AND METHOD FOR GENERATING ELECTRICITY IN SAID FUEL CELL

Erich F. Kujas, Philadelphia, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 28, 1986, Ser. No. 834,390
Int. Cl.[4] H01M *8/22*
U.S. Cl. 429—12 **6 Claims**



1. In a hydrogen-oxygen fuel cell containing an electrolyte, an anode and a cathode immersed in said electrolyte in a spaced-apart relationship, a supply of fuel in communication with the anode and a supply of oxidant in communication with the cathode, the improvement which comprises said fuel being a mixture comprised of about 40 to 60% by volume of formaldehyde and about 60 to 40% by volume of propionaldehyde.

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4,657,828

FUEL CELL SYSTEM

Hiroyuki Tajima, Kanagawa, Japan, assignor to Fuji Electric Company Ltd., Kawasaki, Japan

Filed Apr. 8, 1986, Ser. No. 849,395
Claims priority, application Japan, Apr. 10, 1985, 60-75579
Int. Cl.⁴ H01M 8/06
U.S. Cl. 429—12 **6 Claims**



1. A fuel cell system comprising:

a fuel cell, said fuel cell having a fuel supply subsystem including a fuel chamber and an air or oxygen supply subsystem including an air or oxygen chamber;

burning means for burning, with air or oxygen, a fuel derived from said fuel subsystem; and

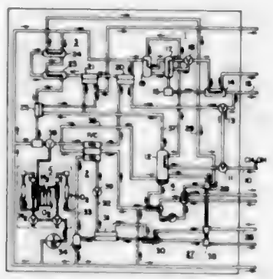
storage means for storing combustion gas produced in said burning means as a replacement gas, wherein the combustion gas is fed as replacement gas from said storage means to said fuel chamber and said air or oxygen chamber at the time of start and stop of operation of said fuel cell.

4,657,829

FUEL CELL POWER SUPPLY WITH OXIDANT AND FUEL GAS SWITCHING

James F. McElroy, Hamilton; Paul J. Chludzinski, Swampscott, and Philip Dantowitz, Peabody, all of Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1982, Ser. No. 453,249
Int. Cl.⁴ H01M 8/06
U.S. Cl. 429—19 **3 Claims**



1. A continuously operable fuel cell power system operating with reformate hydrogen as the fuel gas and air as an oxidant gas during normal power intervals and including oxidant and fuel gas switching for operating with pure hydrogen and pure oxygen during peak power intervals comprising:

(a) a fuel cell stack,

(b) means for providing reformate hydrogen as a fuel gas to said stack including means for converting a hydrocarbon to produce hydrogen fuel gas,

(c) means for supplying air as an oxidant gas for said fuel cell stack,

(d) means for switching the fuel and oxidant gases supplied to said fuel stack from reformate hydrogen and air to pure oxygen as an oxidant and pure hydrogen as a fuel gas whenever the power demands from said stack exceeds a predetermined level including:

1. an electrolysis stack for electrolyzing water to produce pure hydrogen and pure oxygen,
2. means to supply an electrolysis current to said electrolysis stack from a portion of said fuel cell stack when the power demand from said stack is below said predetermined level,
3. means to store said oxygen and hydrogen from said electrolyzer,
4. means responsive to the power output level from said fuel cell stack for interrupting flow of air and reformate hydrogen fuel gas to said fuel stack and means for supplying pure oxygen and pure hydrogen from said storage means to at least a portion of said fuel cell stack when power demand from said fuel cell stack exceeds said predetermined level.

4,657,830

SODIUM-SULFUR STORAGE BATTERY

Hiroshi Kagawa, Takatsuki, Japan, assignor to Yuasa Battery Co. Ltd., Osaka, Japan

Filed Feb. 10, 1986, Ser. No. 827,917
Claims priority, application Japan, Feb. 19, 1985, 60-30726
Int. Cl.⁴ H01M 4/36
U.S. Cl. 429—104 **9 Claims**



1. A sodium-sulfur storage battery comprising a solid electrolyte tube; metallic fiber filled in said solid electrolyte tube; a powder, grain or mixture thereof of a substance resistant to attack by molten sodium which has a porosity smaller than that of the metallic fiber and is filled in a first space above the metallic fiber; a battery housing; a positive electroconductive material disposed in a space between the battery housing and the solid electrolyte tube; a ring disposed on the upper surface of the positive electroconductive material; a powder, grain or mixture thereof of a substance resistant to attack by molten sulfur which is filled in a second space above said ring and is prevented from dropping by said ring; and a solder glass layer arranged on a portion of the outer peripheral surface of the solid electrolyte tube in said second space.

4,657,831

COLOR PROOFING METHOD AND ARTICLE

Joseph H. Ambro, and Lawrence E. Contois, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 11, 1986, Ser. No. 838,486
Int. Cl.⁴ G03G 13/01; G03C 7/00
U.S. Cl. 430—14 **10 Claims**

9. A color proof comprising a reflective substrate, a composite color proof toner dot pattern on the substrate, a thin transparent layer laminated to the substrate and covering the entire composite dot pattern, and a thicker transparent layer laminated to the thin layer, the thicker layer having a thickness of at least about 15 μm and a refractive index of at least about 1.3,



and the thin transparent layer having a thickness no greater than 3 μm.

4,657,832

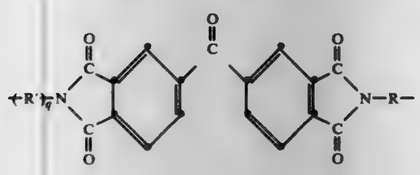
PHOTOSENSITIVE POLYMERS AS COATING MATERIALS

Josef Pfeifer, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 10, 1984, Ser. No. 608,754
Claims priority, application Switzerland, May 18, 1983, 2690/83; Oct. 12, 1983, 5569/83
Int. Cl.⁴ G03C 5/16, 1/71
U.S. Cl. 430—18 **17 Claims**

1. A process for the preparation of a relief image on a carrier which comprises

exposing a coating of a radiation-sensitive polymer applied on said carrier whereein the polymer is a homopolymer or copolymer with at least 5 mol %, based on the polymer, of structural units of the formula I



(I)

in which R is a divalent unsubstituted or substituted aliphatic radical or said radical interrupted by hetero-atoms or aromatic, heterocyclic or cycloaliphatic groups, an unsubstituted or substituted cycloaliphatic or araliphatic radical, an aromatic radical in which two aryl nuclei are linked via an aliphatic group, or an aromatic radical which is substituted by at least one alkyl, cycloalkyl, alkoxy, alkoxyalkyl, alkylthio, alkylthioalkyl, hydroxyalkyl, hydroxyalkoxy, hydroxalkylthio or aralkyl group or in which two adjacent C atoms of the aromatic radical are substituted by an alkylene group, R' independently has the same meaning as R and q is 0 or 1, an aromatic radical R not being substituted by alkylene or not being substituted by the abovementioned radicals in both ortho-positions relative to the N atom if q is 0, imagewise to actinic or high-energy radiation through a photomask, and then removing the non-exposed portions with a developer.

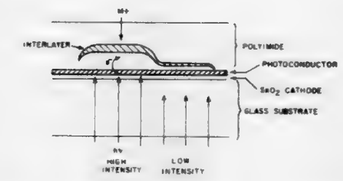
17. A relief image which is obtained by the process according to claim 1.

4,657,833

PHOTOSENSITIVE CATHODE FOR DEPOSITION OF METAL STRUCTURES WITHIN ORGANIC POLYMERIC FILMS

Henry C. Hadley, Jr., Elkton, Md., and Stephen Mazur, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1986, Ser. No. 828,405
Int. Cl.⁴ G03G 17/02
U.S. Cl. 430—52 **10 Claims**



1. In a metal layer deposition process by means of which a metal having a redox potential $E_m°$ is deposited in its zero valent state within a preformed film of an organic polymer having a redox potential $E_p°$ which is more negative than or equal to $E_m°$, the film having first and second surfaces, the process comprising:

(1) supplying ions of the metal to be deposited to at least a portion of the first surface, the metal ions being in a positive oxidation state and in a coordination state such that they are mobile within the polymeric film and are transported through the film in a general direction toward the second surface; and

(2) supplying electrons to at least a portion of the second surface by a cathode in an electrochemical circuit comprising the cathode and an anode in electrical communication with the ions of the metal to be deposited, the polymeric film being capable of accepting electrons in a reversible manner at the second surface, and the electrons being mobile within the polymeric film and being transported through the film in a general direction toward the first surface;

the improvement comprising:

(1) utilizing a cathode comprising an optically transparent primary electrode and a photosensitive layer interposed between the primary electrode and the second surface of the polymeric film; and

(2) illuminating the photosensitive layer through the optically transparent primary electrode at a preselected spatial and temporal intensity distribution,

thereby imparting to the process the ability to vary the dimensions, topography, metal density and position of the metal layer within the preformed polymeric film.

4,657,834

ELECTROPHOTOGRAPHIC PLATE HAVING A CHARGE GENERATING LAYER CONTAINING AN ORGANIC PIGMENT FOR CHARGE GENERATION

Shigeo Tachiki; Ikutoshi Shibuya, both of Hitachi; Makoto Fujikura, Matsudo, and Atsushi Kakuta, Hitachiota, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 627,890, Jul. 5, 1984, Pat. No. 4,565,758, which is a continuation of Ser. No. 420,888, Sep. 21, 1982, abandoned. This application Dec. 18, 1985, Ser. No. 810,298
Claims priority, application Japan, Sep. 22, 1981, 56-150095; May 14, 1982, 57-82235
Int. Cl.⁴ G03G 5/10
U.S. Cl. 430—58 **19 Claims**

1. In an electrophotographic plate comprising an electroconductive layer, a charge generating layer containfing one or more organic pigments for charge generation and a charge

transport layer containing one or more charge transport materials, the improvement wherein a silane coupling agent is present in the charge transport layer in an amount of 0.05% to 30% by weight based on the weight of the charge transport layer.

4,657,835

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER HAVING AN INTERMEDIATE LAYER OF CONDUCTIVE POWDER AND RESIN OR OLIGIMER

Yuichi Yoshiki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1985, Ser. No. 739,067

Claims priority, application Japan, May 31, 1984, 59-109684; Nov. 5, 1984, 59-232851

Int. Cl.⁴ G03G 5/14

U.S. Cl. 430—60 **51 Claims**

1. An electrophotographic photosensitive member having at least a substrate, a photosensitive layer, and an intermediate layer therebetween, characterized in that the intermediate layer is a hardened coating film formed from a liquid dispersion comprising

(a) an electro-conductive powder adaptive to lower the electrical resistance of the intermediate layer and

(b) a composition which contains either a resin or an oligomer and a crosslinking agent and is liquid at ordinary temperature in the absence of solvent.

4,657,836

ELECTROPHOTOGRAPHIC MATERIAL SENSITIZED BY 3,3'-DIMETHYLINDOLENINE CYANINE DYES

Werner Franke, Wiesbaden, and Richard Brahm, Ingelheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 5, 1986, Ser. No. 836,419

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1985, 3509147

Int. Cl.⁴ G03G 5/09

U.S. Cl. 430—83 **24 Claims**

1. An electrophotographic recording material comprising an electrically conductive base material and at least one photoconductive layer containing a photoconductor, a binder and at least three sensitizing dyes, wherein at least two of said sensitizing dyes comprise cyanine compounds containing 3,3'-dimethylindolenine moieties at each end of the cyanine chain and having a sensitizing action in the red and green wavelength regions, respectively.

5. A recording material as claimed in claim 1, wherein said photoconductor is an organic compound.

4,657,837

TONER FOR DEVELOPING AN ELECTROSTATICALLY CHARGED IMAGE

Hideaki Morita; Takahira Kasuya; Goichi Yamakawa; Makoto Tomono, all of Hachioji, and Shinichiro Yasuda, Wakayama, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

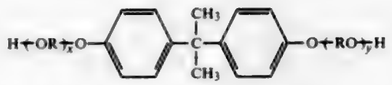
Continuation of Ser. No. 576,217, Feb. 2, 1984, abandoned, which is a continuation of Ser. No. 309,840, Aug. 11, 1980, abandoned. This application Nov. 6, 1985, Ser. No. 800,081

Claims priority, application Japan, Aug. 15, 1980, 55-112836

Int. Cl.⁴ G03G 9/08

U.S. Cl. 430—109 **6 Claims**

1. A toner for developing an electrostatically charged image which comprises a binder polyester resin which was condensedly polymerized from a diol represented by the following general formula



wherein R represents ethylene group or propylene group, x and y are respectively integers of which average value of the sum thereof is 2 to 7; and a polyhydric carboxy acid or a derivative thereof, which is a mixture of dihydric carboxylic acid or lower alkylester thereof and trihydric or more polyhydric carboxylic acid or an acid anhydride thereof, wherein the content of said trihydric or more polyhydric carboxylic acid or the acid anhydride thereof is within the range of 30 to 80 mole percent of said polyhydric carboxy acid or derivative thereof.

4,657,838

TONER, CHARGE-IMPARTING MATERIAL AND COMPOSITION CONTAINING ORGANOTIN ALKOXIDE

Hiroshi Fukumoto, Kawasaki; Katsuhiko Tanaka, Tokyo, and Eiichi Imai, Narashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1986, Ser. No. 857,133

Claims priority, application Japan, Apr. 3, 1985, 60-91054; May 28, 1985, 60-115772; May 31, 1985, 60-116655; May 31, 1985, 60-116656; May 31, 1985, 60-116657; May 31, 1985, 60-116658; Jun. 4, 1985, 60-120962; Jun. 4, 1985, 60-120963; Jun. 4, 1985, 60-120964; Jun. 4, 1985, 60-120965; Jun. 4, 1985, 60-120966

Int. Cl.⁴ G03G 9/08

U.S. Cl. 430—110 **13 Claims**

1. A positively chargeable toner for developing electrostatic latent images, comprising: a binder resin, a colorant and a positively chargeable organotin alkoxide compound having at least one alkoxy group directly connected to the Sn atom.

4,657,839

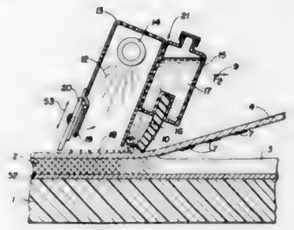
PHOTOPRINTING PROCESS AND APPARATUS FOR EXPOSING PASTE-CONSISTENCY PHOTOPOLYMERS

Donald F. Sullivan, 115 Cambridge Rd., King of Prussia, Pa. 19406

Continuation-in-part of Ser. No. 313,609, Oct. 21, 1987, Pat. No. 4,424,089, which is a division of Ser. No. 147,726, May 8, 1980. This application Aug. 25, 1983, Ser. No. 526,455

Int. Cl.⁴ G03C 1/74, 5/16, 11/12, 9/00

U.S. Cl. 430—258 **21 Claims**



1. The method of producing from liquid photopolymers a photo curable polymer image developing medium of high fidelity capabilities when exposed through a photoimage from a non-collimated radiation energy source photoactively curing said photopolymer, comprising the steps of:

(a) disposing on a first carrying surface a substantially constant thickness thin film layer of non-volatile image-quality liquid photopolymer with a paste like consistency of a thickness less than about 0.002 inches (0.05 mm),

(b) retaining a second carrying surface in substantially parallel relationship to the first surface with the photopolymer therebetween to position between the two surfaces said photopolymer thin film layer of substantially constant thickness and confining the photopolymer layer in air excluding contact between the first and second carrying surfaces,

(c) disposing on one of said carrying surfaces before contacting the photopolymer therewith said photoimage comprising a light contrasting image transparency pattern thereby for an air excluding surface contact forming said image developing medium from said thin photopolymer film with said photoimage in contact with one said surface to be disposed between said two carrier surfaces in said air excluding contact with the paste-like photopolymer layer, and

(d) exposing said polymer image developing medium through said photoimage to form in said polymer image developing medium a corresponding pattern of resolution substantially greater than 105 lines per inch by selectively curing and hardening portions of the photopolymer film layer.

4. The method defined by claim 1 including the steps of providing the image transparency on a flexible thin film comprising one of said carrier surfaces and stripping the flexible thin film image transparency from the paste consistency photopolymer without damage to the image transparency for repeated use in a plurality of image developing cycles.

4,657,840

GRAPHIC ARTS IMAGING CONSTRUCTIONS USING VAPOR-DEPOSITED LAYERS

Richard S. Fisch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 631,531, Jul. 16, 1984, Pat. No. 4,599,298. This application Jul. 8, 1986, Ser. No. 883,140

Int. Cl.⁴ G03C 5/50, 1/72; G03F 7/26

U.S. Cl. 430—201 **4 Claims**

1. A process for providing a color image from an imageable article comprising in sequence a substrate, a vapor-deposited dye or pigment, and a vapor-deposited graded metal/metal or metal sulfide layer, said process comprising:

(a) providing a receptor layer,

(b) exposing said metal/metal oxide or metal sulfide layer of said imageable article to an imagewise distribution of radiation which ablates said metal/metal oxide or metal sulfide layer imagewise to provide a metal image in the same mode as said imageable article,

(c) bringing said receptor layer and said exposed metal/-metal oxide or metal sulfide layer into intimate contact under sufficient pressure and heat and for a sufficient length of time to transfer a dye or pigment image to said receptor layer to provide a transfer image in the opposite mode of said imageable article, and

(d) removing said receptor layer.

4,657,841

ELECTRON BEAM SENSITIVE POSITIVE RESIST COMPRISING THE POLYMERIZATION PRODUCT OF AN ω-ALKENYLTRIMETHYL SILANE MONOMER WITH SULFUR DIOXIDE

Murrae J. S. Bowden, Summit, and Antoni S. Gozdz, Princeton, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

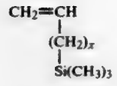
Filed Oct. 28, 1985, Ser. No. 791,775

Int. Cl.⁴ G03C 1/495, 5/16

U.S. Cl. 430—270 **8 Claims**

1. Method for formation of a positive patterned layer upon a substrate which comprises the steps of

(a) coating the substrate with a composition obtained by the polymerization of ω-alkenyltrimethylsilane of the formula



wherein x is an integer greater than or equal to 1, and when x is one, a second solubilizing olefin with sulfur dioxide, said solubilizing olefin being selected from the group consisting of

(1) ω-alkenyltrimethylsilanes having x≧2

(2) cyclic olefins, or

(3) olefins of the formula

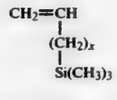


wherein R_1 represents hydrogen or a methyl group and R_2 represents a straight chain hydrocarbon having from 2 to 6 carbon atoms

(b) irradiating selected portions of said composition, and

(c) removing the irradiated portions of said medium with a suitable developing solvent.

8. Electron beam sensitive positive resist comprising the polymerization product of ω-alkenyltrimethylsilane of the formula



wherein x is an integer greater than or equal to 1, with sulfur dioxide and when x is one, a second solubilizing olefin, said solubilizing olefin being selected from the group consisting of

(a) ω-alkenyltrimethylsilane having x≧2

(b) cyclic olefins, or

(c) olefins of the formula



wherein R_1 represents hydrogen or a methyl group and R_2 represents a straight chain hydrocarbon having from 2 to 6 carbon atoms.

4,657,842

PHOTOSENSITIVE COMPOSITIONS OF MATTER COMPRISING EPOXIDE COMPOUNDS AND FUNCTIONAL ANTHRAQUINONES

Jürgen Finter, Freiburg, Fed. Rep. of Germany; Walter Fischer, Reinach, and Friedrich Lohse, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 551,767, Nov. 14, 1983, abandoned. This application Nov. 4, 1985, Ser. No. 795,029

Claims priority, application Switzerland, Nov. 25, 1982, 6870/82

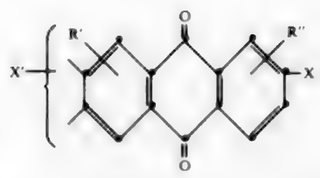
Int. Cl.⁴ G03C 1/72

U.S. Cl. 430—280 **15 Claims**

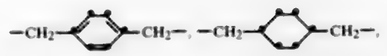
1. A photosensitive composition of matter which is capable of undergoing a condensation or addition reaction consisting essentially of

(1) an anthraquinone of the formula I

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(I)



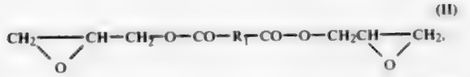
or a group of the formula



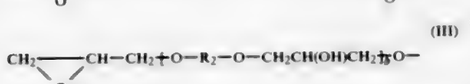
and

(2) one or more compounds selected from di- to poly-glycidyl ethers of phenol and cresol novolaks and compounds of the formulae II to VIII

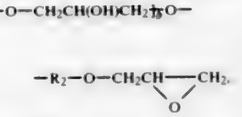
Y is hydrogen or methyl, Y_1 and Y_2 independently of one another are hydrogen, chlorine or bromine, Y_3 is $-(CH_2)_2-$, $-CH_2CH(CH_3)-$ or $-(CH_2)_4-$, o is a number from 1 to 50 and R_3 is

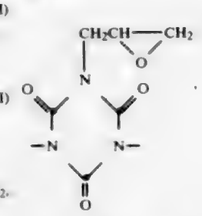


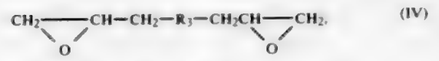
(II)



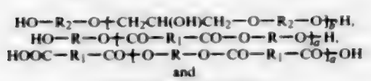
(III)







(IV)

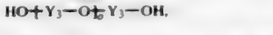


(V)

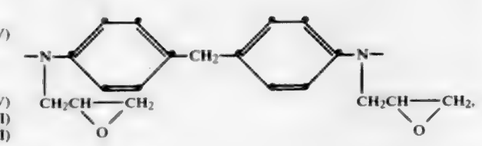
(VI)

(VII)

and



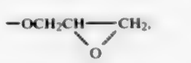
(VIII)



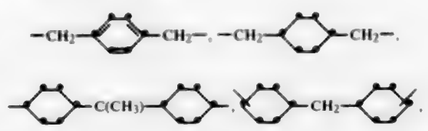
or the radical of ethyleneurea, 1,3-propyleneurea, 5,5-dimethylhydantoin, 2-hydroxyethyl-5,5-dimethylhydantoin or 2-hydroxypropyl-5,5-dimethylhydantoin.

the amount of compounds of the formulae VI, VII and/or VIII being not more than 80 mol %, based on all the reactants mentioned under (2),

in which R' and R'' independently of one another are hydrogen, methyl, halogen or a nitro, phenylsulfonyl or methoxy group, X is —COOH, —COCl, $-O-C_pH_{2p}-COOH$, where p=1 to 4, $-NH_2$, —OH, $-CH_2NH_2$, $-CH_2OH$ or



X' is hydrogen or has the same meaning as X, a is a number from 1 to 100, b is a number from 0 to 150, b' is a number from 0.1 to 150, R is $-C_mH_{2m}-$, where m=2–12, $(CH_2CH_2O)_r-CH_2CH_2-$, where r=1–40, $-CH(CH_3)CH_2OCH_2CH(CH_3)-$, cyclohexylene, $-CH_2-C(CH_3)_2-OCOC(CH_3)_2CH_2-$,



naphthylene, biphenylene, or phenylene which is unsubstituted or substituted by a methyl, methoxy or nitro group, R_1 is a direct bond, $-C_mH_{2m}-$, where m=2–12, or cyclohexylene, cyclohexenylene, phenylene or endomethylenecyclohexenylene, each of which is unsubstituted or substituted by a methyl group, R_2 is $-C_mH_{2m}-$, where m=2–12, phenylene,

4,657,843

USE OF POLYSILSESQUIOXANE WITHOUT HYDROXYL GROUP FOR FORMING MASK

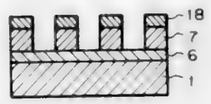
Shun-ichi Fukuyama, Atsugi; Yasuhiro Yoneda, Machida; Masashi Miyagawa, and Kota Nishii, both of Isehara, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 739,158, May 30, 1985. This application Mar. 3, 1986, Ser. No. 835,741

Claims priority, application Japan, May 30, 1984, 59-108521; May 31, 1984, 59-109503

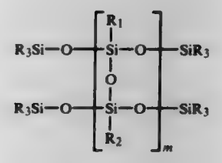
Int. Cl.[4] G03C 5/16; G03F 7/26

U.S. Cl. 430—323 10 Claims



3. A process for the formation of a resist pattern on a substrate, which comprises the steps of:

coating on the substrate a solution of a resist material of which said resist pattern is to be formed, said resist material consisting of silylated polysilsesquioxane of the formula:



in which

R_1 and R_2 are the same or different and each represents a substituted or unsubstituted alkyl, aryl or vinyl group,

R_3 is a substituted or unsubstituted alkyl or aryl group, and

m is a positive integer in the range of 25 to 4,000;

drying the coated resist material in an inert gas;

exposing the dried coating of the resist material to a desired pattern of high-energy radiation for patterning; and

developing the patterned coating of the resist material.

4. A pattern formation process as in claim 3, which further comprises dry etching the underlying substrate through the developed patterned coating of the resist material which acts as a mask.

4,657,844

PLASMA DEVELOPABLE NEGATIVE RESIST COMPOSITIONS FOR ELECTRON BEAM, X-RAY AND OPTICAL LITHOGRAPHY

Jing S. Shu, Plano; Johnny B. Covington; Wei Lee, both of Richardson; Larry G. Venable, Grand Prairie, and Gilbert L. Varnell, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 507,656, Jun. 27, 1983, abandoned. This application May 14, 1985, Ser. No. 734,357

Int. Cl.[4] G03C 5/16

U.S. Cl. 430—325 1 Claim

1. A method of forming a patterned, high resolution, radiation sensitive negative resist comprising the steps of:

forming a thin film of a negative resist composition in cyclopentanone as a solvent comprising poly(vinyl formal), 4,4'-dibutyldiphenyl-iodonium hexafluoroantimonate, and vinyl carbazole;

selectively exposing said thin film to a predetermined pattern of x-ray, e-beam, or ultraviolet radiation;

heating the irradiated film; and

developing the resist image by exposing said film to oxygen plasma, which selectively removes the areas of the film unexposed to the ultraviolet radiation.

4,657,845

POSITIVE TONE OXYGEN PLASMA DEVELOPABLE PHOTORESIST

Jean M. J. Frechet, Ottawa, Canada; Hiroshi Ito, San Jose, Calif.; Scott A. MacDonald, San Jose, Calif., and Carlton G. Willson, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 14, 1986, Ser. No. 818,584

Int. Cl.[4] G03C 5/00; B44C 1/22

U.S. Cl. 430—326 10 Claims

1. A process for producing a positive tone oxygen plasma developable photoresist, said process comprising the steps of:

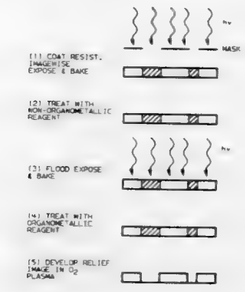
(1) coating a substrate with a polymer containing a masked reactive functionality,

(2) exposing to radiation and processing said polymer in an imagewise manner to unmask selected portions of said reactive functionality,

(3) treating the polymer with a non-organometallic species which reacts with the unmasked functionality,

(4) flood exposing to radiation the polymer and processing it to unmask the reactive functionality which remains in the polymer,

(5) treating the polymer with an organometallic material



containing an element which forms a non-volatile oxide, and

(6) developing the system by oxygen etching to obtain a positive tone relief image.

4,657,846

SILVER HALIDE PHOTOGRAPHIC PRINTING PAPER

Tadayoshi Kokubo; Tadashi Ikeda; Keiichi Adachi; Masaki Okazaki, and Tetsuo Yoshida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

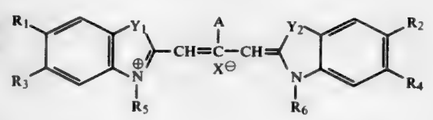
Filed Dec. 20, 1984, Ser. No. 684,318

Claims priority, application Japan, Dec. 22, 1983, 58-242718

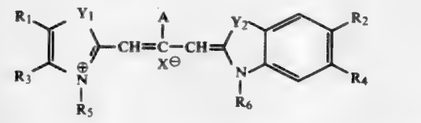
Int. Cl.[4] G03C 1/19, 1/06

U.S. Cl. 430—434 19 Claims

1. In silver halide photographic printing paper comprising at least one silver halide photographic emulsion layer applied to a water impermeable reflective base, the improvement wherein said silver halide emulsion layer is spectrally sensitized with at least one cyanine dye represented by general formulae I and II, and an emulsified dispersion or latex dispersion of a water insoluble fluorescent whitening agent contained in a hydrophilic vehicle of at least one layer applied to the base on the same side as said silver halide emulsion layer:



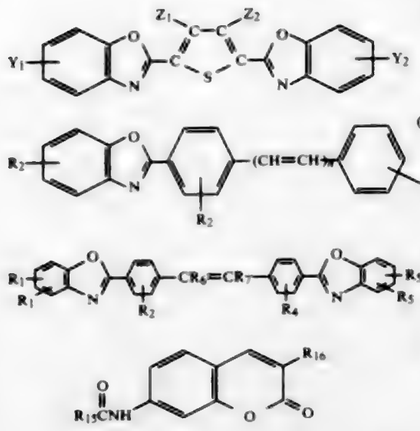
I



II

wherein Y_1 and Y_2 each represents an O atom, —N—R_7 or a S atom, wherein R_7 represents a lower alkyl group, A represents H or a lower alkyl group having 4 or less carbon atoms, R_1, R_2, R_3 and R_4 each represents —H, $-CH_3$, $-OCH_3$, $-CH_2H_5$, $-OC_2H_5$, —CN, —Cl, —F, $-CF_3$, —COOH, $-COOCH_3$ or $-COOC_2H_5$, R_5 and R_6 each represents a substituted or non-substituted lower alkyl group, but at least one of R_5 and R_6 is substituted by a sulfo group, and X represents an anionic residue, and wherein the water insoluble fluorescent whitening agent is selected from the compounds represented by the following formulae:

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wherein Y_1 and Y_2 each represents an alkyl group, Z_1 and Z_2 each represents hydrogen or an alkyl group, n is 1 or 2, R_1, R_2, R_3, R_4 and R_5 each represents an aryl group, an alkyl group, an alkoxy group, an aryloxy group, a hydroxyl group, an amino group, a cyano group, a carboxyl group, an amide group, an ester group, an alkylcarbonyl group, an alkylsulfo group, a dialkylsulfonyl group or a hydrogen atom, R_6 and R_7 each represents a hydrogen atom, an alkyl group, or a cyano group, R_{16} represents a phenyl group, a halogen atom or an alkyl substituted phenyl group, a halogen atom or an alkyl substituted phenyl group, and R_{15} represents an amino group or an organic primary or secondary amino group.

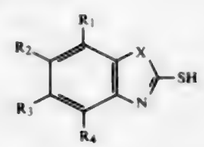
4,657,847

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Hideo Ikeda, Minami-ashigara; Shigeru Ohno, Odawara; Koki Nakamura, and Nobuaki Miyasaka, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 13, 1985, Ser. No. 765,238
Claims priority, application Japan, Aug. 16, 1984, 59-170588
Int. Cl.[4] G03C *1/34*
U.S. Cl. 430—523 **15 Claims**

1. A silver halide photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer and a surface protecting layer, said silver halide photographic light-sensitive material comprising unfogged surface latent image silver halide grains and internally fogged silver halide grains, said internally fogged silver halide grains having adsorbed thereon at least one compound represented by the formula (I):



wherein X represents —O—, —NH— or —S—, R_1, R_2, R_3 and R_4 represent hydrogen atom or a substituent, and at least one of R_1, R_2, R_3 and R_4 is substituted or unsubstituted alkyl or aryl group having up to 13 carbon atoms, which is bonded directly or through a divalent linkage group, to the aromatic nucleus, in an amount sufficient to inhibit irregular stains formed in the processing of the silver halide photographic light-sensitive material by an automatic developing processor and sufficient to stabilize the photographic properties of the material when stored under conditions of high temperature and moisture.

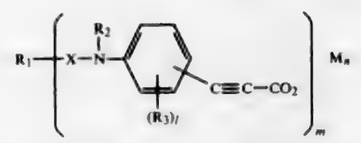
4,657,848

HEAT-DEVELOPABLE LIGHT-SENSITIVE MATERIAL

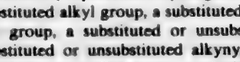
Kozo Sato; Yoshiharu Yabuki; Hiroyuki Hirai, and Ken Kawata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 2, 1985, Ser. No. 782,811
Claims priority, application Japan, Oct. 2, 1984, 59-206833
Int. Cl.[4] G03C *1/02*
U.S. Cl. 430—617 **16 Claims**

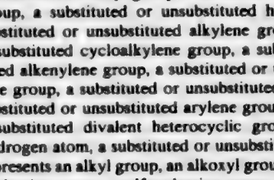
1. A heat-developable light-sensitive material containing a compound represented by formula (I) as a base precursor



wherein R_1 represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted alkynyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted heterocyclic group, a substituted or unsubstituted alkylene group, a substituted or unsubstituted cycloalkylene group, a substituted or unsubstituted alkenylene group, a substituted or unsubstituted alkynylene group, a substituted or unsubstituted aralkylene group, a substituted or unsubstituted arylene group, or a substituted or unsubstituted divalent heterocyclic group; R_2 represents a hydrogen atom, a substituted or unsubstituted alkyl group; R_3 represents an alkyl group, an alkoxyl group, a halogen atom, an acylamino group, a sulfonylamino group, an alkylamino group, a dialkylamino group, an alkylsulfonyl group, an arylsulfonyl group, a cyano group, a substituted or unsubstituted carbamoyl group, a substituted or unsubstituted sulfamoyl group or an alkoxycarbonyl group; X represents a divalent group selected from



(wherein R_4 represents a hydrogen atom, a substituted or unsubstituted alkyl group),



(wherein R_5 represents a substituted or unsubstituted alkyl group), and



M represents an alkali metal, an alkaline earth metal, a quaternary ammonium group, or an ammonium group represented by BH (wherein B represents an organic base); l is an integer of 0 to 3; and m and n are each an integer of 1 or 2, such that the electric charge of carboxylate anion is equivalent to that of M.

4,657,849

COMPOSITIONS AND METHODS USEFUL FOR UROPATHOGENIC BACTERIAL IDENTIFICATION OR DIAGNOSIS AND INHIBITION OF ADHERENCE OF UROPATHOGENIC BACTERIA TO CELLS HAVING A STRUCTURAL ELEMENT SIMILAR TO THAT OF THE ACTIVE PRINCIPLE OF THE INVENTION

Gunilla P. Källenius, Enskede; Karl A. Lundblad, Upsala; Nils R. Möllby, Gustavsberg; Stefan B. Svensson, and Jan Winberg, both of Stockholm, all of Sweden, assignors to Svenska Sockerfabriks AB, Malmö, Sweden

PCT No. PCT/SE81/00065, § 371 Date Nov. 2, 1981, § 102(e) Date Nov. 2, 1981, PCT Pub. No. WO81/02520, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 5, 1981, Ser. No. 317,894
Claims priority, application Sweden, Mar. 5, 1980, 8001748
Int. Cl.[4] G01N *33/53*
U.S. Cl. 435—7 **20 Claims**

1. A composition useful for uropathogenic bacterial identification or diagnosis containing, as active principle, an oligosaccharide, compound comprising, in terminal position, a structural element consisting essentially of

α—D—Gal—(1-4)—D—Gal (I),

which structural element is recognized by the uropathogenic bacterial receptor system, wherein the oligosaccharide compound consists essentially of

α—D—Gal—(1-4)—D—Gal—$(S)_n$—L—MMB (II),

wherein $(S)_n$ represents one or more optional additional saccharide moieties, L represents a linking arm covalently attached to the adjacent saccharide moiety, and MMB represents a nontoxic and noninterfering macromolecular carrier covalently attached to said linking arm and selected from the group consisting of proteins, polypeptides, polysaccharides, aliphatic hydrocarbons, and natural and synthetic polymers.

4,657,850

SERODIAGNOSIS OF HEARTWORM INFECTION

Robert B. Grieve, Radnor, Pa., assignor to University Patents, Inc., Westport, Conn.

Filed Dec. 28, 1981, Ser. No. 335,179
Int. Cl.[4] G01N *33/54, 01/18, 33/545*
U.S. Cl. 435—7 **4 Claims**

1. In an immunological method for the quantitative detection of adult *Dirofilaria immitis*-associated antibodies in a fluid sample of canine origin wherein said sample is contacted with adult *Dirofilaria immitis*-associated antigen and *Dirofilaria immitis* antibodies in said sample are determined on the basis of a selective immunological reaction with said antigen, the improvement comprising:

treating said sample, prior to contact with *Dirofilaria immitis* antigen, with a soluble *Toxocara canis*-derived antigen preparation non-immunologically reactive with *Dirofilaria immitis* antibodies, but capable of selectively immunologically reacting with antibodies in said sample which are cross-reactive with *Dirofilaria immitis* antigen.

4,657,851

BREAST CANCER DIAGNOSTIC BLOOD TEST

William F. Feller, Bethesda, and Judith A. Kantor, Rockville, both of Md., assignors to Georgetown University, Washington, D.C.

Filed Jan. 3, 1984, Ser. No. 567,671
Int. Cl.[4] G01N *33/53, 1/00, 33/48, 33/566*
U.S. Cl. 435—7 **8 Claims**

1. A method for the detection of a human mammary epithelial differentiation antigen in a blood sample, which comprises:

(a) conditioning said sample, by dissociating said antigen in said sample from binding proteins by adjusting the pH of said sample to within a range of from about 2 to 5;

(b) drying said conditioned sample onto the surface of a test container to give a dried sample; and

(c) adding a labeled antibody and detecting the label.

4,657,852

METHOD FOR B CELL TYPING OF TOTAL HUMAN LYMPHOCYTE SAMPLE

Frank C. Grumet, Stanford, and Edgar G. Engleman, Atherton, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Division of Ser. No. 364,997, Apr. 2, 1982, Pat. No. 4,471,056.
This application Jun. 4, 1984, Ser. No. 616,574
Int. Cl.[4] G01N *33/53, 33/554, 33/577*
U.S. Cl. 435—7 **17 Claims**

1. A method for typing an individual for an antigen that is present on B cells but not T cells comprising:

(a) incubating a total human lymphocyte sample from the individual with:

(i) an antibody against said antigen that activates complement;

(ii) an anti-human T cell antibody that activates complement; and

(iii) complement; and

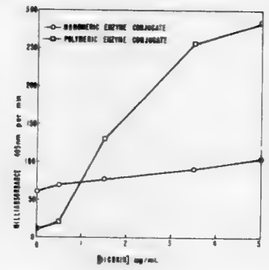
(b) determining whether the antigen is present on the B cells in the sample by comparing the viable B cell content of the incubated sample with a negative control.

4,657,853

IMMUNOASSAYS UTILIZING COVALENT CONJUGATES OF POLYMERIZED ENZYME AND ANTIBODY

J. William Freytag, Wilmington, Del., and Eiji Ishikawa, Miyazaki, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 14, 1984, Ser. No. 650,868
Int. Cl.[4] G01N *33/50, 33/563;* C12Q *1/00;* C12N *9/96*
U.S. Cl. 435—7 **22 Claims**



1. A method for producing a polymeric-enzyme/antibody conjugate, comprising:

(1) covalently coupling at least two enzyme molecules to produce a prepolymerized enzyme; and

(2) coupling covalently the prepolymerized enzyme to an antibody or fragment thereof.

16. In an immunoassay for the determination of an analyte in a liquid sample, said immunoassay comprising:

(1) contacting the sample with an enzyme-labeled anti-analyte antibody to form (i) a complex comprising enzyme-labeled anti-analyte antibody and analyte and (ii) free enzyme-labeled anti-analyte antibody;

(2) separating the complex from the free enzyme-labeled anti-analyte antibody;

(3) measuring the enzymatic activity of either the complex or the free enzyme-labeled anti-analyte antibody; and

(4) relating the enzymatic activity to the amount of analyte initially present in the sample,

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the improvement comprising:

using as the enzyme-labeled anti-analyte antibody, a covalent conjugate of a prepolymerized enzyme and an antibody or fragment thereof.

4,657,854

ASSAY SYSTEMS BASED ON MAGNESIUM-RESPONSIVE ENZYMES

Paul F. Wegfahrt, Jr., Camarillo, Calif., assignor to Ivan Endre Modrovich, Camarillo, Calif.

Filed May 5, 1983, Ser. No. 491,713

Int. Cl.⁴ C12Q *1/54, 1/00, 1/48, 1/50, 1/42, 1/36, 1/32*

U.S. Cl. 435—14 **14 Claims**

1. A method for determining the concentration of magnesium in biological fluids which comprises:

(a) combining a predetermined amount of a biological fluid with a predetermined amount of a substantially magnesium free enzyme assay solution comprising at least one reactant and at least one enzyme capable of inating a reaction with said reactant contained in the solution leading to the formation of a product, to form a mixture wherein an enzymatically controlled reaction occurs, the rate of which is dependent upon the amount of magnesium introduced by the bilogical fluid;

(b) determining the rate of reaction; and

(c) establishing magnesium concentration in the biological fluid from the determined rate of reaction.

10. A method for determining the concentration of magnesium in biological fluids which comprises:

(a) combining a predetermined amount of an aqueous substantially magnesium-free enzyme assay solution comprising glucose, ATP, NAD, hexokinase and G-6-PDH with a predetermined amount of a biological fluid containing magnesium to initiate the reaction sequence:

$$\text{glucose} + \text{ATP} \xrightarrow[\text{Mg}]{\text{HK}} \text{G-6-P} + \text{ADP} \quad (1)$$

$$\text{G-6-P} + \text{NAD} \xrightarrow{\text{G-6-PDH}} \text{gluconate-6-phosphate} + \text{NADH}^+ + \text{H}^+ \quad (2)$$

wherein:

ADP = adenosine-5'-diphosphate

ATP = adenosine triphosphate

G-6-P = glucose-6-phosphate

G-6-PDH = glucose-6-phosphate dehydrogenase

HK = hexokinase

NAD = nicotinamide-adenine dinucleotide

NADH = nicotinamide-adenine dinucleotide, reduced; and

(b) determining the rate of formation of $NADH^+$ and determining magnemium introduced by the biological fluid from the rate of formation of $NADH^+$.

4,657,855

COMPOSITION AND TEST DEVICE FOR DETERMINING THE PRESENCE OF LEUKOCYTES, ESTERASE AND PROTEASE IN A TEST SAMPLE

Paul F. Corey; A. Christopher Skjold, both of Elkhart; James H. Pendergrass, South Bend, and Lonnie Stover, Elkhart, all of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

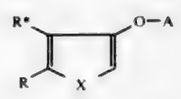
Filed Apr. 6, 1984, Ser. No. 597,338

Int. Cl.⁴ C12Q *1/44, 1/38*

U.S. Cl. 435—19 **33 Claims**

1. A composition for determining the presence of leukocytes, esterase or protease in a test sample, the composition comprising

an ester having the structure



in which:

A is an N-blocked-α-L-amino acid residue or an N-blocked-α-L-peptide acid residue,

X is O, S, or NR',

R is aryl, or lower alkyl group having 1 to 6 carbon atoms,

R* is H, or lower alkyl group having 1 to 6 carbon atoms, and

R' is H, lower alkyl group having 1 to 6 carbon atoms or aryl; and

a suitable buffer substance which when in contact with an aqueous test sample will provide a resultant pH of at least about 7.

4,657,856

GLUTATHIONE PEROXIDASE, PROCESS FOR PRODUCTION THEREOF, METHOD AND COMPOSITION FOR THE QUANTITATIVE DETERMINATION OF LIPID PEROXIDE

Osamu Terada, and Kazuo Aizaka, both of Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1981, Ser. No. 303,137

Claims priority, application Japan, Sep. 25, 1980, 55-132301

Int. Cl.⁴ C12Q *1/28, 1/32;* **C12N** *9/08;* **C12R** *1/785*

U.S. Cl. 435—28 **8 Claims**

1. A process for the production of glutathione peroxidase which comprises culturing a microorganism capable of producing glutathione peroxides and selected from the group consisting of the species *Mucor hiemalis, Mucor circinelloides* and *Mucor rouxianus* in a culture medium, producing and accumulating glutathione peroxidase in the culture liquor and recovering the same therefrom.

4,657,857

YEAST OF THE GENUS KLUYVEROMYCES MODIFIED FOR THE EXPRESSION OF PREPROTHAUMATIN OR ITS VARIOUS ALLELIC AND MODIFIED FORMS OR THEIR MATURATION FORMS, AND THE PROTEINS OBTAINED BY THAT EXPRESSION

Luppo Edens, Maassluis; Adrianus Ledeboer, Rotterdam; Cornelis Verrips, Maassluis, and Johannes A. Van den Berg, Reeuwijk, all of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

PCT No. PCT/EP83/00129, § 371 Date Jan. 18, 1984, § 102(e) Date Jan. 18, 1984, PCT Pub. No. WO83/04051, PCT Pub. Date Nov. 24, 1983

PCT Filed May 19, 1983, Ser. No. 570,984

Claims priority, application Netherlands, May 19, 1982, 8202091

Int. Cl.⁴ C12P *21/00;* **C12N** *15/00, 1/00*

U.S. Cl. 435—68 **9 Claims**

1. Yeast of the genus Kluyveromyces containing a recombinant DNA plasmid comprising

(i) a structural gene coding for a thaumatin-like product selected from the group consisting of

(a) preprothaumatin,

(b) prethaumatin,

(c) prothaumatin, and

(d) thaumatin,

(ii) an autonomously replicating sequence from *Kluyveromyces lactis* CBS2360 (so-called KARS), and

(iii) a yeast regulon from the glyceraldehyde-3-phosphate dehydrogenase (GAPDH) genes of *Saccharomyces cerevisiae,*

said yeast being capable of expressing the thaumatin-like product coded for in the recombinant DNA plasmid.

4,657,858

CLONING VECTORS COMPRISING A RESTRICTION SITE BANK AND THE CONSTRUCTION THEREOF

John R. N. Davison, Brussel, Belgium, assignor to Labofina, S.A., Brussels, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,550

Claims priority, application European Pat. Off., May 11, 1983, 83104665.1

Int. Cl.⁴ C12P *21/00;* **C12N** *15/00, 1/00, 1/20*

U.S. Cl. 435—68 **43 Claims**

1. A cloning vehicle comprising a restriction site bank which is the product of a process comprising the steps of (1) digesting the T5 phage genome with HindIII endonuclease into a plurality of fragments and (2) isolating from said plurality the HindIII-L fragment, said restriction bank comprising a first sequence, in the following order, of sites for the restriction enzymes HindIII, Z, KpnI, AsuII, PstI, BglII, XbaI, F, PvuII, BalI, MstII and G, where

Z denotes either a SacI site or a DNA segment lacking a site for a restriction enzyme,

F denotes either a HincII site or a DNA segment lacking a site for a restriction enzyme, and

G denotes an AvaI site or a XhoI site.

42. A method for producing a selected polypeptide, comprising the steps of:

(a) inserting a DNA segment coding for a polypeptide at a first predetermined restriction site in a vector which comprises a restriction site bank derived from the HindIII-L fragment of bacteriophage T5, said restriction site bank containing at least 10 unique sites for restriction enzymes selected from the group consisting of EcoRI, ClaI, HindIII, EcoRV, BamHI, SphI, Y, XmaIII, NruI, SacI, KpnI, AsuII, PstI, BclI, BglII, XbaI, PvuII, BalI, MstII, AvaI, and XhoI, where Y denotes SalI, AccI, or HincII; and, thereafter,

(b) transforming with said vector a cell with which said vector is compatible, said cell being capable of expressing said DNA segment after transformation; and then

(c) culturing said cell to produce said polypeptide,

said first predetermined restriction site having been selected so that cleavage of said DNA segment by a restriction enzyme recognizing said first predetermined restriction site is avoided.

4,657,859

PROCESS FOR THE TREATMENT OF FERMENTATION BROTH CONTAINING VITAMIN B_{12} AND OTHER CORRINOIDS AND FOR THE PREPARATION OF VITAMIN B_{12} CONCENTRATES

Ágnes Kelemen, VII. Virányos út 21a.; István Jaksa, XVI. Ságvári Endre út 9.; Béla Stefkó, XII. Orlay út 2b., and Eva Udvardy Nagy nee Cserey Pechany, XII. Böszörményi út 40., all of Budapest, Hungary

Filed Feb. 6, 1984, Ser. No. 577,189

Claims priority, application Hungary, Feb. 11, 1983, 469/83

Int. Cl.⁴ C12P *19/42;* **A23K** *1/16;* **A23L** *1/302;* **B01D** *15/00*

U.S. Cl. 435—86 **10 Claims**

1. A process for the treatment of a fermentation broth containing Vitamin B_{12} to prepare a vitamin B_{12} concentrate, which comprises the steps of:

(a) purifying a fermentation broth containing Vitamin B_{12} within intact microorganism cells by contacting the fermentation broth with a nonionic, macroreticular adsorption resin having a pore size of 10^{-8} to 10^{-7} m, a grain diameter of at least 10^{-4} m, and a specific surface area of at least 200 m^2/g so that the macroreticular adsorption resin adsorbs fermentation broth additives and metabolites of fermentation, whereas the intact microorganism cells containing the Vitamin B_{12} remain in solution;

(b) disrupting the cells in the fermentation broth purified during the step (a) so that the Vitamin B_{12} is released into solution while debris of the disrupted cells remain suspended in the fermentation broth;

(c) purifying the fermentation broth treated according to step (b) by contacting the fermentation broth with a nonionic adsorption resin having a pore size of 10^{-8} to 10^{-7} m, a grain size of at least 10^{-4} m, and a specific surface area of at least 200 m^2/g, directly without elimination of the cell debris, so that the Vitamin B_{12} is adsorbed on the nonionic adsorption resin; and

(d) eluting the Vitamin B_{12} from the nonionic adsorption resin with an organic solvent to provide a concentrated Vitamin B_{12} eluate.

4,657,860

PROCESS FOR PRODUCING L-LYSINE BY FERMENTATION

Toshihide Nakanishi; Toshihiko Hirao, and Minoru Sakurai, all of Hofu, Japan, assignors to Kwowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 405,406, Aug. 5, 1982, abandoned. This application Jul. 15, 1985, Ser. No. 754,923

Claims priority, application Japan, Aug. 10, 1981, 56-125006

Int. Cl.⁴ C12P *13/08;* **C12N** *15/00;* **C12R** *1/13, 1/15*

U.S. Cl. 435—115 **8 Claims**

8. A process for producing L-lysine by fermentation, which comprises culturing *Corynebacterium glutamicum* H-3107 (FERM BP-144), *Corynebacterium glutamicum* H-3106 (FERM BP-143), *Corynebacterium glutamicum* H-3290 (FERM BP-156), *Corynebacterium glutamicum H*-3289 (FERM BP-157), *Brevibacterium lactofermentum* H-3114 (FERM BP-146), *Brevibacterium lactofermentum* H-3113 (FERM BP-145) or *Brevibacterium lactofermentum* H-3291 (FERM BP-155) in a nutrient medium, forming and accumulating L-lysine in the resulting culture liquor, and recovering the L-lysine therefrom.

4,657,861

S-TETRAHYDROPROTOBERBERINEOXIDASE, PROCESS FOR PRODUCING THE SAME AND USE THEREOF

Manfred Amann, Grunwald, Fed. Rep. of Germany; Naotaka Nagakura, Kobe, Japan, and Meinhart H. Zenk, Munich, Fed. Rep. of Germany, assignors to Consortium fur elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 12, 1985, Ser. No. 700,510

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406774

Int. Cl.⁴ C12P *17/10;* **C12N** *9/02;* **C07B** *19/02*

U.S. Cl. 435—121 **19 Claims**

1. The compound s-tetrahydroproberberineoxidase having the following parameters:

(a) molar weight: 100,000±10% as determined by gel filtration;

(b) isoelectric point is 5.7;

(c) catalytic activity occurs at 40° C.;

(d) catalytic activity occurs at pH of 6–10;

(e) K_M value for R,S-corypalmine at 40° C. and pH 8.9 is 1.3 μMoles;

(f) Intensity maximum of the fluorescense-emission spectrum is 520 nm at an excitation wavelength of 450 nm;

(g) complete and reversible inhibition is exhibited in the presence of a member selected from the group consisting of acetylacetone and morin; and

(h) prosthetic group flavin.

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4,657,862

PREPARATION OF NATURALLY-OCCURRING C2-C5 ALKYL ESTERS OF C4-C5 CARBOXYLIC ACIDS BY MEANS OF FERMENTATION OF C5-C6 AMINO ACIDS IN THE PRESENCE OF C2-C5 ALCOHOLS

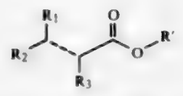
Mohamad I. Farbood, Holmdel; James A. Morris, Belmar, and Eugene W. Seitz, Middletown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jul. 31, 1984, Ser. No. 636,225

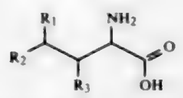
Int. Cl.⁴ C12P *7/62, 7/40, 7/52;* **C12N** *1/14*

U.S. Cl. 435—135 **8 Claims**

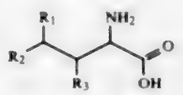
1. A process for producing esters defined according to the generic structure:



wherein R_1, R_2 and R_3 each represents methyl or hydrogen; wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond and wherein R′ represents C_2–C_5 alkyl comprising the step of reacting an amino acid having the structure:



with a C_2–C_5 alkanol in the presence of the fermentation organism, *Geotrichum fragrans*, ATCC 11247, said reaction taking place by bubbling air through the reaction mass containing one or a mixture of amino acids defined according to the structures:



and a C_2–C_5 alkanol, said reaction taking place in the presence of a carbon source selected from the group consisting of:

Dextrose;
Maltose;
Lactose;
Fructose;
Sucrose;
Black strap molasses;
Corn syrup;
Corn syrup solids; and
Corn starch,

the concentration range of the amino acids or mixture of amino acids varying from about 0.1% by weight of the total contents of the reaction mass up to about 1.0% by weight; the concentration of carbon source in the reaction mass varying from about 0.5% up to about 8.0%; the reaction taking place at a pH of from about 4.0 up to about 7.5 at a temperature of from about 20° C. up to about 35° C.; the time of fermentation varying from about 20 hours up to about 100 hours.

4,657,863

STABILIZATION OF A MUTANT MICROORGANISM POPULATION

Peter C. Maxwell, New Providence; Jin-Han Hsieh, Parsippany, and John C. Fleschko, Iselin, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 394,744, Jul. 2, 1982, abandoned. This application Apr. 11, 1983, Ser. No. 483,796

The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.

Int. Cl.⁴ C12N *11/00, 1/20;* **C12P** *7/40, 7/44*

U.S. Cl. 435—142 **4 Claims**

1. A method of stabilizing a homogeneous population of a *Pseudomonas putida* Biotype a mutant microorganisms in a bioconversion system whereby growth of revertant cells is suppressed, which comprises cultivating the mutant under nitrogen limited conditions and maintaining the concentration of the nitrogen such that the growth rate is nitrogen controlled and results inthe enhanced stability of said mutant and the substantially retained ability of said mutant to convert a non-growth toluene carbon source by the ortho metabolic pathway to muconic acid, and wherein said *Pseudomonas putida* Biotype A microorganism is a mutant strain having the following characteristics:

(a) Possesses catechol 1,2-oxygenase enzyme with activity that is not inhibited in the presence of a low level of muconic acid in a growth medium;
(b) lacks active catechol 2,3-oxygenase enzyme;
(c) lacks active muconate lactonizing enzyme; and
(d) cells are rod shaped, vigorously motile and polarly flagellated.

4,657,864

METHOD FOR STABILIZING PEROXIDASE SOLUTIONS

David K. Lo, Silver Spring, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed Jun. 18, 1985, Ser. No. 745,953

Int. Cl.⁴ C12N *9/08;* **C12Q** *1/28*

U.S. Cl. 435—192 **2 Claims**

1. Process for the stabilization of peroxidase containing solutions comprising:

(a) preparing a peroxidase solution to achieve a protease activity of from about 0.02 to 0.5 U/mg dry weight;
(b) filtering the solution through a membrane having a pore size in the range of from about 0.20 to 0.45 μm to produce a sterilized solution; and,
(c) storing the sterilized solution in sterile containers at a temperature of between about 10–30 degrees C.

4,657,865

PULLULANASE-LIKE ENZYME, METHOD FOR PREPARATION THEREOF, AND METHOD FOR SACCHARIFICATION OF STARCH THEREWITH

Yoshiyuki Takasaki, Matsudo, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Apr. 2, 1985, Ser. No. 719,244

Claims priority, application Japan, Jan. 7, 1985, 60-588

Int. Cl.⁴ C12N *9/28, 9/44;* **C12P** *19/16, 19/14;* **C12R** *1/125*

U.S. Cl. 435—202 **3 Claims**

1. A method for the production of a pullulanase-like enzyme possessing an α-amylase activity, comprising the steps of culturing a strain of genus *Bacillus subtilis* (FERM BP-672) on a derviative thereof capable of producing a pullulanase-like enzyme possessing an α-amylase activity to hydrolyze starch chiefly into maltose and maltotriose and collecting said enzyme from the culture broth.

4,657,866

SERUM-FREE, SYNTHETIC, COMPLETELY CHEMICALLY DEFINED TISSUE CULTURE MEDIA

Sudhir Kumar, 18901 Springfield, Flossmoor, Ill. 60422

Continuation-in-part of Ser. No. 438,159, Dec. 21, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 769,708

Int. Cl.⁴ C12N *5/00, 5/02;* **C12R** *1/91*

U.S. Cl. 435—240 **11 Claims**

1. (a) A cell culturing medium comprising an amino acid composition containing:

Item	mg/liter
Alanine	60
Alpha-Amino-n-butyric Acid	5
Arginine	150
Asparagine	5
Aspartic Acid	75
Cysteine-HCl	100
Cystine	25
Ergothionine	10
Glutamic Acid	500
Glutamine	800
Glycine	500
Histidine, HCl	50
Homocysteine	20
Isoleucine	75
Leucine	300
Lysine HCl	300
Methionine	50
Ornithine HCl	10
Phenylalanine	100
Proline	100
Serine	75
Taurine	50
Threonine	100
Tryptophane	50
Tyrosine	100
and Valine	200,

(b) a vitamin mixture containing:

Item	mg/liter
DL-Alpha-Tocopherol	2.5
Ascorbic Acid	25
Biotin	20
Calciferol	2.5
Calcium-pentothenate	25
Choline Chloride	25
Cocarboxylase	20
Folic Acid	20
i-Inositol	15
Menadione	2.5
Niacin	5.0
Niacinamide	20
p-Aminobenzoic Acid	1.0
Pyridoxal HCl	20
Pyridoxine HCl	5.0
Riboflavin	20
Thiamine HCl	20
Vitamin B12	50
Vitamin A	10
and Citric Acid	20,

(c) other components containing:

Item	mg/liter
Na—Acetate, 3 H_2O	100
ATP (Sodium Salt)	20
Estradiol	20
Cholate	25
Deoxyadenosine	15
Deoxyguanosine	15
Dextrose	1500
Flavin Adenine Dinucleotide	20
Galactosamine	120

-continued

Item	mg/liter
Glucose-1-phosphate	25
Glucuronolactone	25
Hypoxanthine	100
5-Methyl-deoxycytidylic Acid	5
Phenol Red	15
Thioactic Acid	2
Thyroxine	20
UTP	20
PRPP	50
Acetylcholine	25
Adenosine-5′-phosphate	5
Cholesterol	5
Coenzyme A	50
Deoxycytidine HCl	15
Deoxyribose	50
DPN	10
Fructose-1-6-diphosphate	120
Glucosamine	50
Glucuronate	25
Glutathione	20
Guanine	50
D-Ribose	5
Sodium pyruvate	150
Thymidine	25
TPN	20
Xanthine	25
Glycogen	250
Calcium Chloride	150
Potassium Chloride	500
Magnesium Sulfate	250
Ferric Ammonium Sulfate	20
KH_2PO_4	75
Sodium Chloride	6500
Sodium Hydrogen Phosphate, disodium	15
Magnesium Chloride	500
L-Lecithin	150
and Sphingomyelin	75,

and Sodium bicarbonate—upto 1500 mg/liter, sufficient to adjust final pH to 7.4.

4,657,867

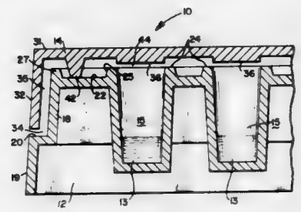
MULTIWELL TISSUE CULTURE ASSEMBLY WITH FEATURES FOR REDUCED MEDIA EVAPORATION

T. Andrew Guhl, Oxnard, and Luther R. Johnson, Thousand Oaks, both of Calif., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Nov. 1, 1984, Ser. No. 667,319

Int. Cl.⁴ C12M *3/00, 1/20;* **B65D** *51/16*

U.S. Cl. 435—284 **9 Claims**



1. A multiwell tissue culture assembly comprising a plate and a lid, said plate including:

a plurality of wells having openings therein for receiving tissue culture media;

upstanding side walls forming a quadrilateral outside border of said plate; and

a ledge spaced inwardly of said side walls and extending around said plate between said side walls and said wells the upper portion of said side walls extending to a position

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raised above said ledge forming a rim surrounding said ledge;

said lid removably positioned on said plate and including:

a substantially planar cover extending over said wells;

a skirt surrounding said cover defining a plurality of corners on said cover and extending downwardly in spaced relation with respect to the side walls of said plate; and

a plurality of flanges each of said flanges being inwardly spaced from said skirt and extending downwardly from each corner of said cover in contact with the ledge of said plate so that the cover is raised in spaced relation over the openings into said wells and said rim is positioned between said skirt and said flanges;

whereby during use of said assembly air exchange is permitted between said wells and the external environment by virtue of the spaces between said lid and said plate with said flanges causing a partial blockage of air exchange with respect to the wells thereby minimizing evaporation of media in the wells.

4,657,868

APPARATUS FOR TESTING REACTIONS

Rolf Saxholm, Box 3, 1362 Billingstad, Norway

Division of Ser. No. 112,407, Jan. 15, 1980, Pat. No. 4,371,624, which is a division of Ser. No. 716,684, Aug. 23, 1976, Pat. No. 4,213,825, which is a continuation-in-part of Ser. No. 502,107, Aug. 30, 1974, Pat. No. 3,981,776, which is a continuation-in-part of Ser. No. 156,738, Jun. 25, 1971, Pat. No. 3,843,450, which is a continuation-in-part of Ser. No. 705,539, Feb. 14, 1968, abandoned. This application Sep. 29, 1982, Ser. No. 428,172

The portion of the term of this patent subsequent to Feb. 12, 1991, has been disclaimed.

Int. Cl.⁴ C12M *1/00, 1/28;* **G01N** *33/54;* **C12Q** *1/22*

U.S. Cl. 435—287 **6 Claims**



1. The combination comprising: an article for carrying out testing, said article comprising a test dose of an active substance which may react with an agent of a medium when the article is brought into contact with the medium, and metallic magnetically responsive means incorporated with said test dose in a solid porous inert carrier as a unitary body; and means for applying a magnetic force to said metallic magnetically responsive means.

4,657,869

SELF-CONTAINED DEVICE FOR CARRYING OUT SPECIFIC BINDING ASSAYS

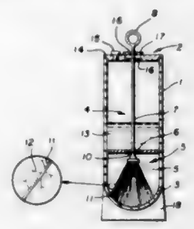
James C. Richards, Wilmington, and Robert B. Taylor, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 18, 1984, Ser. No. 611,589

Int. Cl.⁴ A16B *10/00*

U.S. Cl. 435—287 **4 Claims**

1. A device for detecting an analyte in a test sample comprising a tube member having an upper and a closed lower end, the tube member being subdivided into an upper and an initially dry lower internal compartment, the compartments being separated by a first breakable seal having extended therethrough a rod member having an upper and lower terminus, the lower terminus initially extending into the lower compartment, the lower terminus having attached thereto means for puncturing the first seal and a plurality of filaments, the filaments having attached thereto a binding partner specific for the analyte, the first seal having the rod extended therethrough being capable of preventing fluid communication between the upper and lower compartments when the puncture means resides initially in the lower compartment, the upper compartment having contained therein a solution for suspending the analyte, the upper end of the tube having disposed thereon a cover having means for introducing the test sample into the upper compartment, the cover further having a second breakable seal having the rod extended therethrough, the device being such that after the sample is introduced into the solution in the upper compartment, the upper terminus of the rod can be pulled away from the tube by a distance sufficient to cause



the puncture means to break the first seal thereby causing the solution to flow into the lower compartment where the analyte and the binding partner can react to form a complex on the filaments, the device further being such that the rod can then be pulled outside the tube causing the puncture means and filaments to pass through the first seal and to break and pass through the second seal, the broken seals being capable of wringing excess solution from the filaments.

4,657,870

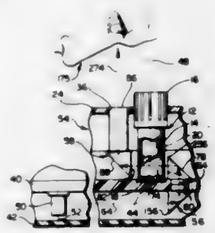
INCUBATOR OPTICAL SYSTEM FOR VIEWING STERILIZATION INDICATOR

Francis E. Ryder, and Larry T. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Apr. 23, 1984, Ser. No. 603,234

Int. Cl.⁴ C12M *1/12*

U.S. Cl. 435—311 **29 Claims**



1. An incubator optical system for viewing a sterilization indicator, which sterilization indicator includes a receptacle having a translucent portion and being carried interiorly of an incubator, said optical system comprising: a light source, first light transmission means located intermediate said light source and said receptacle for redirecting light from said light source through said translucent portion of said receptacle; a viewing window located in an external surface of said incubator; and second light transmission means located on a side of said receptacle generally opposite said first light transmission means for redirecting light transmitted through said translucent portion of said receptacle to said viewing window; wherein said first light transmission means comprises first and second light redirecting means, said first light redirecting means being oriented for receiving light directly from said light source and for redirecting said received light to said second light redirecting means, and said second light redirecting means being oriented for redirecting light received from said first light redirecting means through said translucent portion of said receptacle.

4,657,871

MIXING POLYMERS SUCH AS RUBBER

Philip K. Freakley, Southcroft, Victoria Road, Burbage, Leicestershire LE12 2JT; Bernard R. Matthews, 12 Truro Close, East Leake, Loughborough, Leicestershire LE12 6HB, and Henry D. Giffin, 6 Riverside, Chadderton, Oldham, Lancashire OL1 2TX, all of England

Filed Aug. 14, 1985, Ser. No. 765,540

Claims priority, application United Kingdom, Aug. 14, 1984, 8420648

Int. Cl.⁴ C08F *2/00;* **G01N** *35/00*

U.S. Cl. 436—55 **3 Claims**

1. A process for mixing rubber, said process comprising the steps of:

(i) deforming raw rubber in a mixer under pressure applied by a resilient ram until said rubber is estimated to attain a first predetermined viscosity, then

(ii) adding filler and deforming the resulting rubber-filler mixture under pressure applied by said ram until the rubber-filler mixture is estimated to attain a second predetermined viscosity, then

(iii) adding oil or plasticizer, and deforming the resulting mixture under pressure applied by said ram until the mixture is estimated to attain a third predetermined viscosity, then

(iv) at a predetermined length of time before step (iii) is completed, adding to the mixture all of, or the last of, an additive which when all present promotes cross-linking, then

(v) discharging the resulting mixture from the process, the attainment of each said predetermined viscosity being estimated by:

measuring at least twice a mixing torque applied by said mixer at a fixed mixer-rotor speed and correcting to a reference batch temperature;

determining the rate of change of said mixing torque;

predicting the time or deforming energy to reach a torque characteristic of the respective predetermined viscosity; and

continuing said deforming for said predicted time or predicted deforming energy;

said process further including monitoring cyclic movement of said ram during mixing and increasing the ram pressure when the monitored cyclic movement is excessive compared with a maximum permissible movement predetermined for the process.

4,657,872

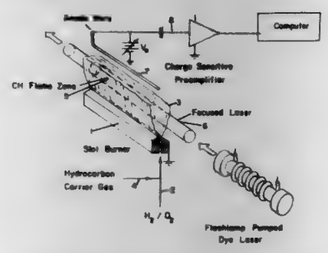
LASER-ENHANCED FLAME IONIZATION DETECTION

Terrill A. Cool, Trumansburg, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,798

Int. Cl.⁴ G01N *27/62*

U.S. Cl. 436—154 **7 Claims**



1. In a method of flame ionization detection wherein a chemical compound or mixture thereof capable of generating CH radicals is ionized in a non-interfering flame zone to generate charged particles and the charged particles sensed in an electrical circuit to determine the amount of chemical compound or compounds present in the flame zone, the improvement which comprises:

Periodically electronically exciting the CH radicals within the ionizing region of the flame zone to either the $A^2\Delta$ or $B^2\Sigma^-$ state with a pulsed or discontinuous laser beam having a light wavelength adapted to enhance the chemi-ionization reaction, and sensing the charged particles created during the laser beam excitation periods, thereby increasing the desired signal-to-noise ratio read by the sensing means.

4,657,873

PREACTIVATED PLASTICS SURFACES FOR IMMOBILIZING ORGANO-CHEMICAL AND BIOLOGIC MATERIALS

André Gadow, Lubeck, and W. Graham Wood, Gross-Grönau, both of Fed. Rep. of Germany, assignors to Henning Berlin GmbH, Berlin, Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 635,224

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327327; European Pat. Off., Nov. 8, 1983, 83111144.8

Int. Cl.⁴ G01N *33/549*

U.S. Cl. 436—532 **9 Claims**

1. A process for preactivating a hydrophobic plastic surface for the immobilization of organo-chemical and biologic materials which comprises contacting the plastic surface with a solution or suspension of a polypeptide to form a coating on the plastic surface, said polypeptide comprises a hydrophobic amino acid capable of being adsorbed by the plastic surface and an amino acid having a side chain capable of activation and coupling with said organo-chemical and biologic materials, and washing the thus coated surface.

3. A process according to claim 1 wherein the polypeptide is a phenylalanine-lysine copolymer.

4,657,874

REDISPERSION OF AGGLOMERATED NOBLE METALS ON ZEOLITE CATALYSTS

William S. Borghard, Yardley, Pa.; Tracy J. Huang, Lawrenceville, N.J.; Sharon B. McCullen, Newtown, Pa.; Hans J. Schoennagel, Lawrenceville, N.J.; Ying-Yen P. Tsao, Langhorne, Pa., and Stephen S. Wong, Medford, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 778,299, Sep. 23, 1985, abandoned, which is a continuation of Ser. No. 710,515, Mar. 11, 1985, abandoned, which is a continuation of Ser. No. 571,760, Jan. 18, 1984, abandoned. This application Jan. 15, 1986, Ser. No. 819,074

Int. Cl.⁴ B01J *38/42, 38/44, 29/38;* **C10G** *35/095*

U.S. Cl. 502—35 **23 Claims**

1. A process for rejuvenating a deactivated noble metal-containing zeolite catalyst in apparatus containing iron, said catalyst having a framework silica to alumina ratio of at least about 20 and containing agglomerated noble metal, which comprises dispersing said agglomerated metal associated with the deactivated catalyst by contacting said catalyst with a stream of inert gas containing molecular chlorine at a partial pressure of from about 6 to about 15 Torr and water in a concentration of

$$0.01 \leqq \frac{P_{Water}}{P_{Chlorine}} \leqq 2$$

where P_{Water} is the partial pressure of water and $P_{Chlorine}$ is the partial pressure of chlorine at elevated temperature for a period of time sufficient to achieve dispersion of the noble metal; subsequently purging said catalyst with an inert purging gas; and reducing said purged catalyst in the presence of dry hydrogen at elevated temperature.

12. The process of claim 1 wherein said zeolite is selected from the group consisting of ZSM-5, ZSM-5/ZSM-11 interme-

diate, ZSM-11, ZSM-12, ZSM-22, ZSM-23, ZSM-35, ZSM-38 and ZSM-48.

13. The process of claim 1 wherein said zeolite is selected from the group consuting of zeolite beta, Zeolite Y, ZSM-3, ZSM-4, ZSM-18 and ZSM-20.

4,657,875

ARTICLES OF POROUS GLASS AND PROCESS FOR PREPARING THE SAME

Tadao Nakashima; Masataka Shimizu, and Mikio Kawano, all of Miyazaki, Japan, assignors to Miyazaki Prefecture, Miyazaki, Japan

Filed Jul. 22, 1985, Ser. No. 757,313
Claims priority, application Japan, Jul. 31, 1984, 59-162065
Int. Cl.[4] C03C *11/00, 17/00*
U.S. Cl. 501—39 15 Claims



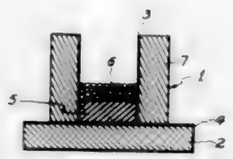
1. An article of porous glass consisting essentially of about 63 to about 70% by weight of SiO_2, about 10 to about 14% by weight of Al_2O_3, about 8 to about 12% by weight of B_2O_3, about 4 to about 6% by weight of Na_2O and about 3 to about 6% by weight of CaO.

4,657,876

COMPOSITE BY INFILTRATION

William B. Hillig, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 759,815, Jul. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 692,468, Jan. 18, 1985, abandoned. This application Feb. 18, 1986, Ser. No. 830,415
Int. Cl.[4] C04B *35/56, 35/58*
U.S. Cl. 501—87 24 Claims



1. A process for producing a polycrystalline composite having a porosity of less than about 10% by volume comprised of a ceramic member and an infiltrant member wherein said ceramic member is selected from the group consisting of boron carbide, hafnium carbide, hafnium nitride, niobium carbode, niobium nitride, silicon carbide, silicon nitride, tantalum carbide, tantalum nitride, titanium carbide, titanium nitride, vanadium carbide, vanadium nitride, zirconium carbide, zirconium nitride, and mixture thereof and wherein said ceramic member ranges in amount from about 5% by volume to about 70% by volume of the composite, which comprises providing a compact or preform of said ceramic member having a porosity ranging from about 30% by volume to about 95% by volume of the compact, contacting said ceramic member compact with an infiltrant member selected from the group consisting of barium fluoride, calcium fluoride, magnesium fluoride, strontium fluoride, cerium fluoride, dysprosium fluoride, gadolinium fluoride, lanthanum fluoride, samarium fluoride, yttrium fluoride, a mixture thereof and a mixture of at least about 10% by volume of said fluoride and a metal oxide wherein said mixture of said fluoride and metal oxide has a liquidus temperature ranging from above 1000° C. to below about 1500° C., heating the resulting structure to a temperature ranging from the liquidus temperature of said infiltrant member to below the temperature at which there is significant vaporization of said infiltrant member, infiltrating the resulting molten infiltrant member into said ceramic member compact to produce said composition of said composite and allowing the resulting infiltrated compact to solidify producing said composite.

4,657,877

SILICON CARBIDE WHISKER-ZIRCONIA REINFORCED MULLITE AND ALUMINA CERAMICS

Paul F. Becher, Oak Ridge, and Terry N. Tiegs, Lenoir City, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 21, 1986, Ser. No. 865,313
Int. Cl.[4] C04B *35/56*
U.S. Cl. 501—89 8 Claims

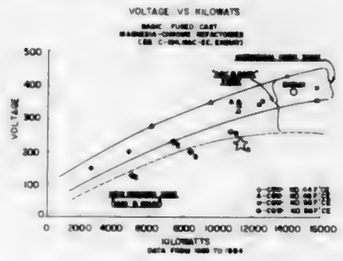
1. A SiC whisker-reinforced ceramic composite characterized by at least one of increased flexural strength and resistance to fracture, comprising a composite defined by a matrix of mullite or alumina with an adequate concentration of zirconia in a monoclinic phase or a tetragonal phase to provide an increase in at least one of flexural strength and fracture toughness of the SiC whisker-reinforced composite over SiC whisker-reinforced composites provided without the zirconia addition, and with about 5 to 30 vol. % SiC whiskers homogenously dispersed therein, said SiC whiskers having a monocrystalline structure and a size range of about 0.6 micrometer in diameter and a length of about 10 to 80 micrometers with said whiskers being characterized in the composite by causing crack deflection and crack bridging and by whisker pull-out from the matrix when the composite is subjected to crack-forming stresses.

4,657,878

METHOD OF MAKING HIGH DENSITY, FUSION CAST BASIC METALLURGICAL REFRACTORY AND THE REFRACTORY ITSELF

Thomas A. Clithero, and Leonard W. Pokallus, both of Louisville, Ky., assignors to Corhart Refractories, Boston, Mass.

Filed Feb. 8, 1985, Ser. No. 699,911
Int. Cl.[4] C04B *35/04*
U.S. Cl. 501—115 36 Claims



1. A method for making fused refractory material, comprising the steps of:

(a) providing an electrical arc melting furnace;

(b) charging that furnace with a charge comprising refractory oxide;

(c) selecting voltage, amperage and electrode spacings to create a hum and scum melt condition; and

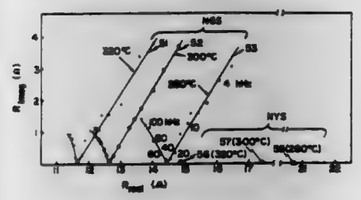
(d) maintaining said hum and scum condition until said charge is substantially melted, whereby a said melted charge may be cast to form refractory material.

4,657,879

SILICATE SUPERIONIC CONDUCTORS AND METHOD OF MAKING SAME

Patrick S. Nicholson, Ancaster, and Kimihiro Yamashita, Hamilton, both of Canada, assignors to Canadian Patents and Developments Limited, Ottawa, Canada

Filed Sep. 25, 1984, Ser. No. 653,889
Int. Cl.[4] C04B *35/16, 35/50*
U.S. Cl. 501—152 16 Claims



2. A method of producing a ceramic as solid polycrystalline rare earth sodium silicate by;

(a) selecting, as a feed material, water soluble compounds of sodium, and of a rare earth, that is selected either as a water soluble compound of Gd or of Y;

(b) dissolving in solution, the selected feed materials wherein rare earth atoms are in concentrations ranging from 0.1M and 0.3M;

(c) spraying the dissolved solution of step (b) into a hot air stream whereupon the solution is dried into minute powder;

(d) calcinating the resultant powders of step (c);

(e) reducing the physical size of the powders to at least 200 mesh;

(f) compressing the powder of step (e) isostatically at between 30 to 60 kpsi; and,

(g) sintering the pressed items of step (f) at between 1100° C. to 1180° C. for less than 30 minutes.

4,657,880

PREPARATION OF HIGH SURFACE AREA AGGLOMERATES FOR CATALYST SUPPORT AND PREPARATION OF MONOLITHIC SUPPORT STRUCTURES CONTAINING THEM

Irwin M. Lachman, and Carlo Golino, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 18, 1985, Ser. No. 712,886
Int. Cl.[4] B01J *29/06, 20/12, 21/16, 35/04*
U.S. Cl. 502—64 22 Claims

15. A monolithic catalyst support structure having a first substantially continuous high-strength ceramic phase and a second discontinuous catalyst-support phase of high surface area porous oxide embedded therein, the catalyst support structure being characterized in that (1) said high surface area catalyst-support phase consists of a porous oxide selected from alumina, spinel, silica, titania, zeolite, zirconia, or mixtures or these, (2) said high surface area catalyst-support phase is in the form of agglomerates having a median diameter of 50–250 microns and a surfaces area of at least 20 m^2/g, and (3) the structure contains 50–85 parts by weight of the ceramic phase and 15–50 parts by weight of the high surface area porous oxide phase.

16. A catalyst support of claim 15 wherein the sintered ceramic phase consists of cordierite, mullite, clay, talc, zircon, zirconia-spinel, alumina, silica, lithium aluminosilicate, alumina-zirconia composite, or mixture of these.

4,657,881

ABSORBENT MATERIALS

John R. Crampton, East Grinstead, and Howard Whiting, Redhill, both of United Kingdom, assignors to Laporte Industries Limited, London, England

Division of Ser. No. 461,737, Jan. 28, 1983, Pat. No. 4,591,581. This application Feb. 10, 1986, Ser. No. 827,618
Claims priority, application United Kingdom, Feb. 19, 1982, 8204923
Int. Cl.[4] B01J *20/12;* A01K *45/00*
U.S. Cl. 502—80 5 Claims

1. A process for the manufacture of adsorbent clay mineral particles suitable for use as a litter, comprising selecting particles of the clay mineral smaller than 2 mm in size and containing a quantity of moisture not exceeding 15% by weight but at least an effective quantity to allow the formation of compacted masses therefrom, compacting the so selected clay mineral particles, consisting essentially of the clay mineral and moisture, in a press selected from the group consisting of roller presses and static presses to form compacted masses thereof and breaking the compacted masses into particles larger in size than the selected clay mineral particles and in the 710 micron to 4 mm size range, said clay mineral being selected from the group consisting of smectites and hormites.

4,657,882

SUPPORTED OLEFIN POLYMERIZATION CATALYST PRODUCED FROM A MAGNESIUM ALKYL/ORGANOPHOSPHORYL COMPLEX

Nicholas M. Karayannis; John S. Skryantz, both of Naperville, and Bryce V. Johnson, Elburn, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 674,996, Nov. 26, 1984, Pat. No. 4,581,342. This application Dec. 26, 1985, Ser. No. 813,603
Int. Cl.[4] C08F *4/64*
U.S. Cl. 502—115 27 Claims

1. A solid, hydrocarbon-insoluble, alpha-olefin polymerization catalyst component comprising the product formed by:

A. complexing a magnesium alkyl composition with an organophosphoryl compound having a structure:



wherein X=—R or —OR; Y=—R or —OR; and Z=—NR_2, —Cl, —Br, —R, —OR, $(RO)_2P(O)$— or $(RO)_2P(O)O$—; and in which R represents a hydrocarbyl radical containing 1 to about 12 carbon atoms.

B. reacting the resulting stable complex with a compatible precipitation agent to form a solid component; and

C. reacting the resulting solid with a titanium(IV) compound in a suitable diluent containing a suitable electron donor compound.

17. The catalyst component of claim 1 wherein the magnesium alkyl composition contains an aluminum alkyl.

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4,657,883

ESTER-MODIFIED OLEFIN POLYMERIZATION CATALYST

Gregory G. Arzoumanidis, Naperville; Sam S. Lee, Hoffman Estates; Thomas E. Wolff, Elmhurst, and Linda Ornellas, Woodridge, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Oct. 7, 1985, Ser. No. 784,934

Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—127 **20 Claims**

1. An olefin polymerization catalyst component comprising an organoaluminum-reduced titanium trihalide, on which a pretreatment amount of olefin polymer has been placed, complexed with an alkyl aliphatic carboxylic acid ester containing 7; to 22 carbon atoms having a structure:

$$R—CO_2R'$$

wherein R' is an alkyl group containing 3 to about 8 carbon atoms and R is an alkyl group containing 3 to 17 carbon atoms, and treated with a Lewis acid, a chlorocarbon or an haloalkylchlorosilane.

4,657,884

CARRIER-SUPPORTED CATALYST FOR MAKING MONOCARBOXYLIC ANHYDRIDES

Gerhard Luft, Mühltal, and Gebhard Ritter, Schutterwald, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

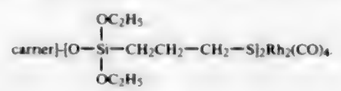
Filed Oct. 24, 1985, Ser. No. 790,726

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1984, 3440646

Int. Cl.⁴ B01J *31/20*

U.S. Cl. 502—161 **1 Claim**

1. A carrier-supported catalyst for making monocarboxylic anhydrides by carbonylation of a suitable ester or ether, the carrier-supported catalyst corresponding to the formula



4,657,885

CERIUM PROMOTED FISCHER-TROPSCH CATALYSTS

Rocco A. Fiato, Scotch Plains, N.J.; Ronny Bar-Gadda, Palo Alto, Calif., and Sabato Miseo, Pittstown, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 11, 1985, Ser. No. 754,004

Int. Cl.⁴ B01J *21/00, 23/24*

U.S. Cl. 502—241 **20 Claims**

7. A hydrocarbon synthesis catalyst composition comprising sintered combination metal oxides having the following components in the stated weight percentage of the catalyst composition:

(a) about 5 to about 80 weight percent Fe oxide;
(b) about 4 to about 20 weight percent Zn oxide;
(c) about 10 to about 40 weight percent Ti and/or Mn oxide;
(d) about 1 to about 5 weight percent K, Rb, and/or Cs oxide; and
(e) about 1 to about 10 weight percent Ce oxide,

such that where the catalyst contains Fe, said sintered combination comprises a series of Fe, Zn, and/or Ti and/or Mn spinels and oxides of K, Rb and/or Cs, dispersed in a Ce oxide matrix.

15. The catalyst composition of claim 7 supported on an inert support.

16. The catalyst composition of claim **15** wherein the inert support is selected from the group consisting of alumina, silica and magnesia.

4,657,886

CATALYST FOR CONVERSION OF C_3 AND C_4 HYDROCARBONS

John H. Kolts, Ochelata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 758,937, Jul. 25, 1985, Pat. No. 4,579,997. This application Dec. 23, 1985, Ser. No. 812,021

Int. Cl.⁴ B01J *23/10, 23/20, 23/34*

U.S. Cl. 502—303 **3 Claims**

1. A catalyst composition, consisting essentially of:

(a) about 0.1 to about 30 wt. % of at least one oxide of manganese and
(b) the balance of at least one oxide of at least one metal selected from the group consisting of lanthanum and niobium,

said wt % being expressed in terms of the element based on the total weight of the catalyst composition.

4,657,887

CATALYST COMPOSITION FOR THE PREPARATION OF ALCOHOLS

Harley F. Hardman, Lyndhurst; Terry J. Mazanec, and John G. Frye, Jr., both of Solon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jul. 15, 1985, Ser. No. 754,879

Int. Cl.⁴ B01J *21/04, 23/02, 23/12, 23/72*

U.S. Cl. 502—303 **7 Claims**

1. A catalyst composition suitable for the conversion of mixtures of carbon monoxide and hydrogen to alcohols, said catalyst composition having the formula:

$$Cu_aUM_bA_cO_x$$

where M is one or more metals selected from the group consisting of Al, Pd, Mn, Cr, Fe, Co, Zn, Ce, V, Ru, Rh, Re, Os, Pt, Ir, Ag, Ti, La, and Zr; A is an alkali of alkaline earth metal or mixture thereof;

a is from 0.01 to 5.0;
b is a positive number up to 5.0;
c is a positive number up to 5.0 selected so that the catalyst composition contains more than 2% by weight of metal A; and x is a number such that the valence requirements of the other elements for oxygen are satisfied.

4,657,888

PROCESS FOR THE PRODUCTION OF A CATALYST

Carolus M. A. M. Mesters, Utrecht; John W. Geus, Bilthoven; Eugène G. M. Kuijpers, Apeldoorn, and Onno L. J. Gijzeman, Utrecht, all of Netherlands, assignors to VEG-Gasinstituut N.V., Del.X

Filed Dec. 21, 1984, Ser. No. 684,621

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347677

Int. Cl.⁴ B01J *23/48, 23/72, 23/76, 23/89*

U.S. Cl. 502—331 **19 Claims**

1. A process for the production of a catalyst containing metallic copper, silver, gold, platinum or palladium, in finely divided form as basis metal and at least one metal of Group VIII of the Periodic System of Elements as active component on an inert, refractory support, characterised in that the catalyst containing the basis metal is heated to a temperature above 100° C. and one or more carbonyls of metals different from the basis metal and belonging to Group VIII of the Periodic System is/are allowed to act on the heated catalyst to alloy those metals into the basis metal.

4,657,889

NICKEL/ALUMINA CATALYST AND PROCESS FOR ITS PREPARATION

Keshab L. Ganguli, Bleiswijk; Peter Nootenboom, Oud-Beyerland, and Cornelis M. Lox, Rockanje, all of Netherlands, assignors to Internationale Octrooi Maatschappij "octropa" B.V., Rotterdam, Netherlands

Filed Jun. 21, 1985, Ser. No. 747,440

Claims priority, application Netherlands, Jun. 21, 1984, 8401965

Int. Cl.⁴ B01J *21/04, 23/74*

U.S. Cl. 502—335 **13 Claims**

1. A nickel alumina catalyst which includes 75% to 90% by weight of nickel and wherein the atomic ratio of nickel-/aluminium is between 10 and 2, the active nickel surface area is between 90 and 150 m^2/g nickel, the averge pore size, depending on the above atomic ratio, is between 4 and 20 nanometers and the nickel crystallites have an average diameter between 1 and 5 nanometers.

4,657,890

CATALYST FOR PREPARING P-ISOPROPENYL PHENOL

Juan M. Garces, Midland, Mich., and John W. Robinson, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 20, 1985, Ser. No. 778,040

Int. Cl.⁴ B01J *21/06, 23/02, 23/06, 23/10*

U.S. Cl. 502—340 **18 Claims**

1. A catalyst composition of the formula $[AO_x]_{1-y}[A(OH)_n]_y[Z_2O]_z \cdot qH_2O$ wherein A is a metal of Group IIA, IIB, IIIB, IVA, IVB or VIIB; $[AO_x]_{1-y}$ is a metal oxide support component; Z is an alkali metal; n and x are numbers sufficient to satisfy the valence of A; q is a non-negative number; z is greater than zero, and y is a positive number ≤ 1, with the proviso that said catalyst composition contains less than about 5 weight percent alkali metal hydroxide.

4,657,891

DIURETIC PEPTIDE, AND PRODUCTION AND USE THEREOF

Hisayuki Matsuo, 6653, Oaza-Kihara, Kiyotake-cho, Miyazaki-gun, Miyazaki-ken, and Kenji Kangawa, Miyazaki, both of Japan, assignors to Suntory Limited, Osaka and Hisayuki Matsuo, both of, Japan

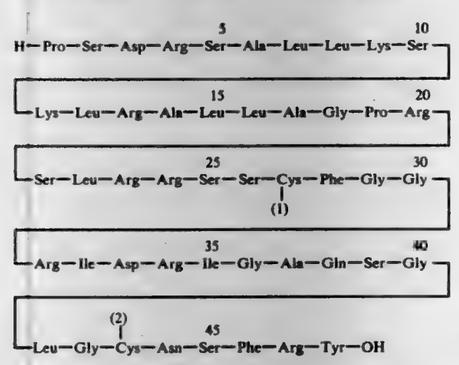
Filed Feb. 27, 1985, Ser. No. 706,381

Claims priority, application Japan, Mar. 2, 1984, 59-38816

Int. Cl.⁴ A61K *37/24;* **C07K** *7/10*

U.S. Cl. 514—11 **13 Claims**

1. A peptide β-rANP having the following formula:



wherein (1) and (2) are bonded through a disulfide bond formed by two sulfur ations of two cysteines, Pro represents L-proline, Ser represents L-serine, Asp represents L-asportic acid, Arg represents L-arginine, Ala represents L-alanine, Leu represents L-leucine, Lys represents L-lysine, Gly represents glycine, Cys represents L-cysteine, Phe represents L-phenylalanine, Ile represents L-isoleucine, Gln represents L-glutamine, Asn represents L-asparagine, and Try represents L-tyrosine, and wherein the amino acid chain has an amino-terminal at the left end and carboxy-terminal at the right end, and an acid addition salts thereof.

4,657,892

PHARMACOLOGICALLY ACTIVE PEPTIDES

Victor Brantl, Frauenplatz 10, D-8000 München 2, Fed. Rep. of Germany

PCT No. PCT/DE84/00191, § 371 Date May 13, 1985, § 102(e) Date May 13, 1985, PCT Pub. No. WO85/01292, PCT Pub. Date Mar. 28, 1985

PCT Filed Sep. 13, 1984, Ser. No. 740,066

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1983, 3333752

Int. Cl.⁴ A61K *37/24;* **C07K** *7/06, 7/44*

U.S. Cl. 514—16 **6 Claims**

1. Pharmacologically active peptides of the following formulas:

L—Tyr—X—L—Phe—X—A—T

L—Tyr—X—L—Phe—X—A—X—T

L—Tyr—X—L—Phe—X—A—X—B—T

wherein:

L—Tyr is the N-terminal amino acid residue L-tyrosine;
X is any amino acid of the group consisting of D-alanine, D-threonine, D-serine, D-methionine, D-valine, D-phenylalanine, D-leucine, D-isoleucine, D-arginine, D-histamine, D-proline, D-hydroxyproline, D-lysine, D-glutamine, D-glutamic acid, D-asparagine and D-aspartic acid;
L—Phe is the amino acid residue of L-phenylalanine;
A represents an aromatic amino acid selected from the group consisting of tyrosine and phenylalanine;
B represents tyrosine, phenylalanine or glycine;
T represents OH, OR, NH_2, NHR, NR_2 OR NH—NHR' in which R is a substituted linear or branched 1–10C-alkyl, adamantyl, 1–10C-cycloalkyl or 6–8C aralkyl, phenyl, benzyl or phenylethyl and R' represents hydrogen, linear or branched 1–10C alkyl, cycloalkyl or 6–8C-aralkyl, 2–8C-alkenyl, linear, branched or cyclic aliphatic 1–16C-acyl, which can be substituted by OH, NH_2, 1–4C-alkoxy or halogen, aromatic acyl which can be substituted by OH, NH_2, halogen, or 1–4C-alkoxy; linear, branched or cyclic 3–11C-aliphatic urethane or aromatic urethane, and their pharmaceutically acceptable salts.

4,657,893

4H-3,1-BENZOXAZIN-4-ONES AND RELATED COMPOUNDS AND USE AS ENZYME INHIBITORS

Alexander Krantz, Toronto; Robin Spencer, and Tim Tam, both of Mississauga, all of Canada, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

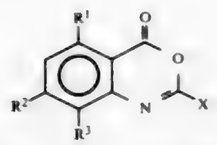
Continuation-in-part of Ser. No. 608,609, May 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 566,129, Dec. 27, 1983, abandoned. This application Nov. 26, 1984, Ser. No. 673,996

Int. Cl.⁴ A61K *37/02, 31/535;* **C07D** *265/06*

U.S. Cl. 514—18 **40 Claims**

1. A compound of the formula:

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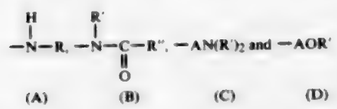
(I)

or a pharmaceutically acceptable ester or salt thereof, wherein:

R^1 is hydrogen or lower alkyl;

R^2 and R^3 are each independently hydrogen, lower alkyl, hydroxy, lower alkoxy, lower thioalkyl, $-NO_2$, $-N(R')_2$, $-NR'COR'$, $-NHCON(R')_2$ or $NHCOOR'$, with the proviso that at least one of R^1, R^2 and R^3 is not hydrogen when X is NHR or NR'COR''; and

X is a radical chosen from the group consisting of:



(A) (B) (C) (D)

in which:

R is ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, sec-butyl, pentyl, hexyl, octyl, lower alkenyl, lower alknyl, a saturated hydrocarbon ring of 3 to 6 carbon atoms, either unsubstituted, or substituted with 1 to 5 substituents selected independently from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, amino, halo, nitro, lower alkyl amino, or lower dialkylamino; or a phenyl ring attached to an alkyl chain of one to six carbon atoms, wherein the phenyl ring is either unsubstituted, or substituted with one to three substituents selected independently from the group consisting of lower akyl, lower alkenyl, lower alkoxy, amino, halo, nitro, lower alkyl amino, or lower dialkylamino;

each R' is independently hydrogen or lower alkyl, or lower alkenyl or lower alkynyl where the unsaturated bond is at least one carbon removed from the O or N atom;

each R'' is independently R, lower alkoxy, NHR' or AOR'; and

A is an amino acid residue, or a peptide of 2 to 3 amino acid residues.

36. A method of inhibiting serine proteases in animals which method comprises administering to a subject in need of such treatment a therapeutically effective amount of, or a pharmaceutically composition containing a therapeutically effective amount of, the compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof.

4,657,894

NEW FACTOR VIII COAGULANT POLYPEPTIDES

Theodore S. Zimmerman, and Carol A. Fulcher, both of La Jolla, Calif., assignors to Scripps Clinic & Research Foundation, La Jolla, Calif.

Continuation-in-part of Ser. No. 481,105, Mar. 31, 1983, and Ser. No. 556,508, Nov. 30, 1983, abandoned. This application Nov. 21, 1984, Ser. No. 673,916

Int. Cl.[4] A61K *37/02*; **C07K** *15/06*

U.S. Cl. 514—21 **21 Claims**

1. The active factor VIII:C coagulant fragment having a molecular weight of about 92,000 and having the partial protein amino acid sequence at the N-terminus as follows:

X—THR—ARG—ARG—TYR—TYR—LEU—GLY—ALA—
1 2 3 4 5 6 7 8 9

-continued

(I)

—VAL—GLU—LEU—Y—TRP—ASP—TYR—MET—GLN.
10 11 12 13 14 15 16 17 18

wherein X and Y are amino acids ALA and SER, respectively, and terminating at the thrombin cleavage site of a factor VIII:C precursor, said coagulant fragment having at least two epitopes being capable of binding with a monoclonal antibody that neutralizes human factor VIII:C activity.

4,657,895

PHARMACEUTICAL COMPOSITION CONTAINING PARA-AMINOBENZOIC ACID-N-L-RHAMNOSIDE AS AN ACTIVE INGREDIENT

Chikao Yoshikumi, Kunitschi; Yoshio Ohmura, Funabashi; Fumio Hirose, Shinjuku; Masanori Ikuzawa, Tachikawa; Kenichi Matsunaga, Shinjuku; Takayoshi Fujii, Adachi; Minoru Ohkura, Itabashi, and Takao Ando, Nerima, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 484,592, Apr. 13, 1983, Pat. No. 4,559,327, which is a continuation-in-part of Ser. No. 289,226, Aug. 3, 1981, abandoned, which is a division of Ser. No. 102,535, Dec. 11, 1979, Pat. No. 4,313,939, which is a continuation-in-part of Ser. No. 39,218, May 15, 1979, abandoned. This application Sep. 4, 1985, Ser. No. 772,477

The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.

Int. Cl.[4] A61K *31/70*

U.S. Cl. 514—42 **6 Claims**

1. A pharmaceutical composition in dosage unit form which comprises a dosage of p-aminobenzoic acid-N-L-rhamnoside or pharmaceutically acceptable salt thereof effective for the treatment of a tumor growth.

4,657,896

METHOD FOR THE TREATMENT OF DIGESTIVE ULCERS

Osamu Yano, and Takafumi Kitano, both of Chiba, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,160

Claims priority, application Japan, May 30, 1983, 58-94141

Int. Cl.[4] A61K *31/73*

U.S. Cl. 514—44 **9 Claims**

1. A method for the treatment of digestive ulcers comprising administering to a patient having a digestive ulcer an amount effective to ameliorate the symptoms of digestive ulcers of a nucleic acid or salt selected from the group consisting of deoxyribonucleic acid, a pharmaceutically acceptable salt of deoxyribonucleic acid, ribonucleic acid, a pharmaceutically acceptable salt of ribonucleic acid, and a combination thereof.

4,657,897

N[6]-SUBSTITUTED ADENOSINES FOR TREATING PAIN

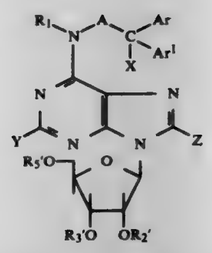
James A. Bristol; Walter H. Moos, both of Ann Arbor, and Bharat Trivedi, Canton, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 621,943, Jun. 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 519,284, Aug. 1, 1983, abandoned. This application Jul. 17, 1985, Ser. No. 756,004

Int. Cl.[4] A61K *31/70*; **C07H** *19/20, 19/167*

U.S. Cl. 514—47 **12 Claims**

1. A method for treating pain in a mammal suffering therefrom, which comprises administering to such mammal an analgesic effective amount of a compound of the formula



or a pharmaceutically acceptable addition salt thereof, wherein R_1 is hydrogen or lower alkyl; Ar and Ar^1 are each independently phenyl, phenyl substituted by halogen, hydroxy, thiol, lower alkoxy, lower thioalkoxy, lower alkanoyloxy, lower alkyl, nitro, amino, lower $S(O)_n$-alkyl in which n is zero, one, or two, sulfonamide or trifluoromethyl, or 2-, 3-, or 4-pyridyl, 2- or 3-thienyl or -furanyl; A is straight or branched alkylene of one to eight carbon atoms which may be interrupted by oxygen, sulfur, or NH between two and seven carbons of the alkylene chain; X is hydrogen, hydroxy, lower alkyl, lower carboalkoxy, or lower alkanoyloxy; Y is hydrogen, halogen, $-NR_2R_3$, $-OR_2$ or $-SR_2$ in which R_2 and R_3 are independently hydrogen, lower alkyl or phenyl lower alkyl; Z is hydrogen or halogen; R_2', R_3', and R_5' are each independently hydrogen, alkanoyl having two to twelve carbon atoms in a straight or branched alkyl chain which may be substituted by amino, benzoyl or benzoyl substituted by lower alkyl, lower alkoxy, halogen, or trifluoromethyl; R_2' and R_3' may be linked together to form a five-membered alkylidene ring having a total of up to twenty carbons, and with the proviso R_5' may also be phosphate, hydrogen phosphate, dihydrogen phosphate, an alkali or dialkali metal phosphate, or ammonium or diammonium phosphate.

4,657,898

N[6]-SUBSTITUTED ADENOSINES AND METHOD OF USE

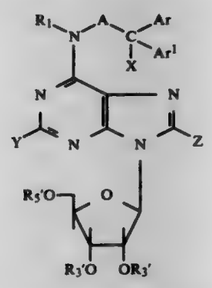
James A. Bristol; Walter H. Moos, both of Ann Arbor, and Bharat Trivedi, Canton, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 621,943, Jun. 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 519,284, Aug. 1, 1983, abandoned. This application Jul. 18, 1985, Ser. No. 756,922

Int. Cl.[4] A61K *31/70*; **C07H** *19/167*

U.S. Cl. 514—47 **14 Claims**

13. A method for treating psychosis in a mammal suffering therefrom comprising administering an anti psychotic effective amount to such mammal a compound of the formula



or a pharmaceutically acceptable addition salt thereof, wherein R_1 is hydrogen or lower alkyl; Ar and Ar_1 are each independently phenyl phenyl substituted by halogen, hydroxy thiol, lower alkoxy, lower thioalkoxy, lower alkanoyloxy, lower alkyl, nitro, amino, lower $S(O)_n$-alkyl in which n is zero, one, or two, sulfonamide or trifluromenthyl, or 2-, 3-, or 4-pyridyl, 2- or 3-thienyl or -furanyl; A is straight or branched alkylene of one to eight carbon atoms which may be interrupted by oxygen, sulfur, or NH between two and seven carbons of the alkylene chain; X is hydrogen, hydroxy, lower alkyl, lower carboalkoxy, or lower alkanoyloxy; Y is hydrogen, halogen, —NR 2R 3, —OR 2, or —SR 2 in which R_2 and R_3 are independently hydrogen, lower alkyl or phenyl lower alkyl; Z is hydrogen or halogen; R_2' and R_3' are each independently hydrogen, alkanoyl having two to twelve carbon atoms in a straight or branched alkyl chain which may be substituted by amino, benzoyl or benzoyl substituted by lower alkyl, lower alkoxy, halogen, or trifluromethyl; R_2' and R_3' may be linked together to from a five-membered alkylidene ring having a total up to 20 carbons, and R_5' is hydrogen, alkanoyl having two to twelve carbons in a straight or branched alkyl chain which may be substituted by amino, benzoyl or benzoyl substituted by lower alkyl; lower alkoxy, halogen, or trifluromethyl; phosphate; hydrogen phosphate; dihydrogen phosphate; an alkali or dialkali metal phosphate; ammonium or diammonium phosphate; with the overall proviso that A cannot be a branched alkylene of two to eight carbon atoms in unit dosage forms.

4,657,899

ANTAGONISTS OF SPECIFIC EXCITATORY AMINO ACID NEUROTRANSMITTER RECEPTORS

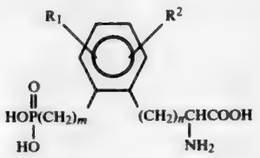
Waclaw J. Rzeszotarski, Millersville; Robert L. Hudkins, and Maria E. Guzewska, both of Baltimore, all of Md., assignors to Nova Pharmaceutical Corporation, Baltimore, Md.

Filed Apr. 9, 1986, Ser. No. 849,696

Int. Cl.[4] C07F *9/38*; **A61K** *31/04, 31/135, 31/195*

U.S. Cl. 514—120 **14 Claims**

1. A potent selective excitatory amino acid neutrotransmitter receptor antagonist having the general formula:



wherein R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, halogen, amino, nitro, triflouromethyl or cyano, or taken together are —CH=CH—CH=3 CH—; n an m=0, 1, 2, or 3; and the pharmaceutically acceptable salts and the 2-acetamido-2-carboethoxy esters thereof.

10. A process of relieving pain in an animal in need thereof which comprises administering said compound of claim 1 parenterally, nasally, orally, rectally or a combination thereof to said animal in need thereof.

12. A process for treating convulsions or epilepsy which comprises administering said compound of claims 1 parenterally, orally, nasally, rectally or a combination thereof to said animal in need thereof.

14. A process for enhancing cognition which comprises administering said compound of claim 1 parenterally, orally, nasally, rectally or a combination thereof to said animal in need thereof.

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4,657,900

PHARMACEUTICAL ARTICLE OF MANUFACTURE COMPRISING A BISULFITE STABILIZED AQUEOUS SOLUTION OF 5-AMINOSALICYLIC ACID AND METHOD

David R. Powell, and Vithal K. Patel, both of Bandette, Minn., assignors to Rowell Laboratories, Bandette, Minn.

Continuation-in-part of Ser. No. 536,428, Sep. 27, 1983, abandoned. This application Mar. 28, 1985, Ser. No. 717,062

Int. Cl.[4] A61K *31/615*

U.S. Cl. 514—166 **20 Claims**

1. A pharmaceutical article of manufacture comprising:

(a) a first sealed container, adapted for storing aqueous liquids, substantially free of atmospheric oxygen;

(b) contained in the first sealed container, a stable suspension adapted for rectal administration of substantially pure 5-aminosalicylic acid in a saturated, substantially colorless and substantially oxygen-free aqueous solution of 5-aminosalicylic acid of pharmaceutical grade purity having a pH of from about 3 to 5 and rendered resistant to color formation upon storage by the presence dissolved therein at a concentration of up to about 0.25% w/w, of an amount of bisulfite effective to stabilize the solution against color formation and degradation of the 5-aminosalicylic acid by the reaction with any trace amount of oxygen in the solution or the container; and;

(c) a second sealed container containing the first container stored therein in substantially oxygen-free atmosphere, and comprising an oxygen barrier effective to prevent transmission into the interior of the second container upon prolonged storage of atmospheric oxygen in an amount sufficient to exhaust the bisulfite dissolved in the solution contained in the first container.

4,657,901

PHARMACEUTICAL COMPOSITION

Haruhiko Ueda, Yokohama; Hidekazu Toyoda, Urawa, and Minoru Fukuda, Soganihara, all of Japan, assignors to Shiseido Company, Ltd., Tokyo and Takeda Chemical Industries, Ltd., Osaka, both of, Japan

Filed Sep. 7, 1984, Ser. No. 648,276

Claims priority, application Japan, Sep. 7, 1983, 58-164356; Jul. 27, 1984, 59-157009

Int. Cl.[4] A61K *31/56*

U.S. Cl. 514—171 **18 Claims**

1. A composition for the topical treatment of acne, which comprises

(1) an effective amount for treating acne of oxendolone or its ester or ether, (2) a keratolytic agent, and (3) a pharmaceutically acceptable carrier.

4,657,902

THERAPEUTIC USE OF TIN MESOPORPHYRIN

Attallah Kappas, and George S. Drummond, both of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Filed Mar. 25, 1985, Ser. No. 715,515

Int. Cl.[4] A61K *31/40*; **C07D** *209/94*

U.S. Cl. 514—185 **11 Claims**

1. A pharmaceutical composition for parenteral administration comprising tin mesoporphyrin and pharmaceutically acceptable carrier.

3. A pharmaceutical composition useful for decreasing the rate of metabolism of heme in mammals in need of such decreased rate comprising a buffered isotonic aqueous saline solution containing an amount of tin mesoporphyrin which is effective to decrease said rate.

4,657,903

TRANSITION METAL COMPLEXES OF THE SELENIUM ANALOGS OF 2-ACETYL- AND 2-PROPIONYLPYRIDINE THIOSEMICARBAZONES USEFUL FOR TREATING MALARIAL INFECTIONS AND LEUKEMIA

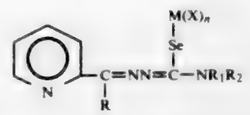
John P. Scovill, Silver Spring; Daniel L. Klayman, Chevy Chase, both of Md., and Charles F. Franchino, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1982, Ser. No. 364,089

Int. Cl.[4] A61K *31/44*; **C07F** *15/00, 1/08*

U.S. Cl. 514—185 **23 Claims**

1. The compound of a formula



or a pharmaceutically-acceptable acid addition salt wherein X represents a negative radical selected from the group consisting of a halogen atom, or a thiocyanate group; M represents a transition metal selected from the group consisting of Cu(II), Ni(II), Fe(III), or Mn(II); n is 1 or 2; R is a lower alkyl selected from the group consisting of methyl and ethyl; R_1 is hydrogen, alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 10 carbon atoms; substituted alkyl of 1 to 12 carbon atoms (wherein the substituent is amino, alkylamino of 1 to 4 carbon atoms, dialkylamino of 1 to 4 carbon atoms in each alkyl, cycloalkyl of 3 to 10 carbon atoms, hydroxy, C(0)0alkyl containing from 1 to 4 carbon atoms in each alkyl, phenyl, or pyridyl; alkenyl of 2 to 6 carbon atoms; alkynyl of 3 to 6 carbon atoms; substituted benzyl (wherein the substituent is methyl or phenyl on the alpha carbon atom, or the substituent is methyl, dimethyl, halo, dihalo, or ethoxy on the phenyl ring); adamantyl; phenyl; naphthyl; substituted phenyl or substituted naphthyl (wherein the ring is mono-, di-, or trisubstituted and the substituents are alkyl of 1 to 4 carbon atoms, fluoro, alkoxy of 1 to 4 carbon atoms, hydroxy, phenoxy, trifluoromethyl, dimethylamino, diethylaminomethyl, or C(0)0alkyl of 1 to 4 carbon atoms in the alkyl group); pyridyl; thienyl; indolyl, furyl; acridyl; quinolyl; or pyridazinyl; and R_2 is hydrogen or is selected from the group of radicals listed above for R_1, in which case R_1 and R_2 may be the same or different; or R_1 and R_2 are taken together with the nitrogen atom to which they are attached to form a heterocyclic ring selected from the group consisting of:

(1) alkylenimino which is either bridged by an alkylene group of 3 to 12 carbon atoms, or is fused to a phenyl ring, or is attached by a spiro linkage to an ethylene ketal group;

(2) homopiperazinyl; homopiperazinyl substituted with alkyl of 1 to 4 carbon atoms; piperazinyl; or piperazinyl substituted with alkyl of 1 to 4 carbon atoms, dialkyl of 1 to 4 carbon atoms in each alkyl, phenyl, C(0)0alkyl of 1 to 4 carbon atoms in the alkyl group, trifluoromethylphenyl, halophenyl, benzyl, or pyridyl;

(3) alkylenimino having 3 to 12 carbon atoms;

(4) alkylenimino 3 to 12 which may contain one double bond and/or is mono- or disubstituted with alkyl of 1 to 4 carbon atoms in each alkyl, hydroxy, phenyl, or benzyl; and

(5) morpholino; or dialkylmorpholino having 1 to 4 carbon atoms in each alkyl.

22. A method of treating an animal which has a malarial infection by administering to said animal a therapeutically-effective amount of a compound or pharmaceutically-acceptable acid addition salt of claim 1.

23. A method of treating an animal which has leukemia by administering to said animal a therapeutically-acceptable acid addition salt of claim 1.

4,657,904

SULFUR-CONTAINING BIS-IMINO CARBAMATE COMPOUNDS, PESTICIDAL COMPOSITION AND USE

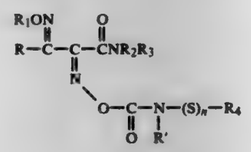
Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 389,980, Jun. 18, 1982, Pat. No. 4,612,426, which is a division of Ser. No. 957,561, Nov. 3, 1978, Pat. No. 4,435,421. This application May 19, 1986, Ser. No. 864,274

Int. Cl.[4] A01N *47/24*; **C07D** *295/22*

U.S. Cl. 514—229 **3 Claims**

1. A compound of the formula:



wherein:

n = 1 or 2;

R, R', R_1, R_2, and R_3 are individually alkyl groups of one to four carbon atoms;

R_4 is: piperidino, pyrrolidino or morpholino group each of which may be unsubstituted or substituted with one or two alkyl groups.

2. A pesticidal composition comprising an acceptable carrier and as the active toxicant an acaricidally, nematocidally or insecticidally effective amount of at least one compound of claim 1.

4,657,905

NOVEL HYPOTENSIVE IMIDAZOTHIADIAZOLEALKANECARBOXAMIDES

Axel Ingendoh, Velbert; Horst Meyer, Wuppertal, and Bernward Garthoff, Hilden, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

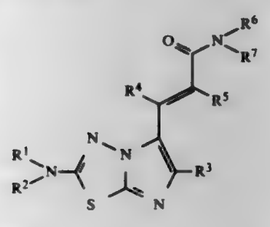
Division of Ser. No. 468,737, Feb. 22, 1983, Pat. No. 4,585,873. This application Oct. 21, 1985, Ser. No. 789,689

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208437

Int. Cl.[4] A61K *31/41, 31/55, 31/445, 31/535*

U.S. Cl. 514—231 **4 Claims**

1. A hypotensive, diuretic and uricosuric composition comprising a hypotensive, diuretic or uricosuric effective amount of a compound or a pharmaceutically acceptable acid addition salt of the formula



in which

R^1 represents hydrogen, phenyl, or phenyl substituted by halogen, trifluoromethyl, alkyl, alkoxy, alkylmercapto or alkylamino, each having 1 to 4 carbon atoms in the alkyl and alkoxy radicals, or by amino, or

R^1 represents an unsubstituted hydrocarbon radical having up to 12 carbon atoms which is uninterrupted by hetero atoms or interrupted once or twice by O, N, NH, N-alkyl having 1 to 4 C atoms, N-phenyl or N-benzyl, and being unsubstituted or substituted by hydroxyl, alkyl having 1 to 4 C atoms, trifluoromethyl, halogen, phenyl or alkoxycarbonyl having up to 5 C atoms or by dialkylamino, each alkyl radical containing 1 to 4 carbon atoms, the two alkyl radicals being unconnected or forming with the nitrogen atom a 5 to 7-membered ring, containing no further heteroatoms or said 5 to 7 membered ring containing a further heteroatom from the group comprising O, NH or N-alkyl having 1 to 4 C atoms, and which is unsubstituted or substituted by halogen or alkyl having 1 to 4 C atoms,

R^2 represents the radical R^8XC— wherein

R^8 has the meaning indicated for R^1 and being identical to or different from R^1, and

X representing oxygen, sulphur or the radical NR^9R^{10},

R^9 and R^{10} being identical or different and representing hydrogen, phenyl, benzyl or alkyl having 1 to 6 carbon atoms, the alkyl and phenyl radicals being unsubstituted or substituted by halogen or alkoxy having 1 to 4 carbon atoms; or represents the radical SO_nR^{11}, n denoting 1 or 2 and R^{11} having the meaning indicated for R^1 and being identical to or different from R^1, or R^1 and R^2 together represent a group of the formula $=C(R^{12})(Y—R^{13})$, Y representing oxygen, sulphur, NH or N-alkyl having 1 to 4 C atoms, and R^{12} and R^{13} each having the meaning indicated for R^1 and being identical to or different from R^1, R^{12} and R^{13} being unconnected or R^{12} and R^{13} connected together to form, with inclusion of =C—Y, or 5 to 7-membered ring having no further heteroatom or contains a further heteroatom from the group comprising O, S, NH or N-alkyl having 1 to 4 C atoms,

R^3 has the meaning indicated for R^1 and is identical to or different from R^1 or represents unsubstituted phenyl, furyl, thienyl, pyrimidyl or pyridyl, or phenyl, furyl, thienyl, pyrimidyl or pyridyl substituted by 1, 2 or 3 identical or different substituents from the group comprising halogen, nitro, trifluoromethyl, phenyl, alkyl, alkoxy, dialkylamino or SO_n-alkyl, wherein n is 0, 1 or 2, the alkyl and alkoxy radicals mentioned each containing 1 to 4 carbon atoms,

R^4 represents hydrogen, trifluoromethyl or alkyl,

R^5 represents hydrogen, cyano, halogen, nitro, alkyl, SO_n-alkyl or CXR^8, the alkyl radicals mentioned containing 1 to 4 carbon atoms and n, X and

R^8 having the meaning indicated above, and

R^6 and R^7 each have the meaning indicated for R^1 and are identical to or different from R^1 or,

R^6 and R^7 being unconnected or connected with the nitrogen atom form a 5 to 7-membered saturated or unsaturated ring, the ring containing no further heteroatoms or contains 1 or 2 further heteroatoms from the group comprising oxygen, sulphur or nitrogen, the nitrogen being unsubstituted or substituted by hydrogen, alkyl having 1 to 4 carbon atoms, phenyl or benzyl and this 5 to 7-membered ring being unsubstituted or substituted by 1, 2 or 3 identical or different substituents from the group comprising halogen, trifluoromethyl, phenyl, benzyl, alkyl, alkoxy, alkoxyalkyl, hydroxyalkyl or alkoxycarbonyl, the alkyl and alkoxy radicals mentioned each containing 1 to 4 C atoms, this 5 to 7-membered ring being uncondensed or condensed with an aromatic ring having 6 to 10 carbon atoms, which in turn is unsubstituted or substituted by halogen, trifluoromethyl, nitroalkyl or alkoxy each having 1 to 4 C atoms,

in admixture with a diluent.

VOL 1077 ISS 2 AP 14 1987 UMI

4,657,906

HETEROCYCLIC COMPOUNDS HAVING INOTROPIC ACTIVITY

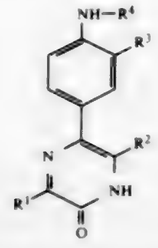
John C. Emmett, Welwyn; Robert A. Slater, Letchworth, and Brian H. Warrington, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Ltd., Welwyn Garden City, England

Division of Ser. No. 500,486, Jun. 2, 1983, Pat. No. 4,556,711. This application Sep. 19, 1985, Ser. No. 777,651

Int. Cl.[4] A61K *31/50, 31/495, 31/535*

U.S. Cl. 514—234 **10 Claims**

1. A pharmaceutical composition comprising a therapeutically effective amount of a compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein R^1, R^2 and R^3 are independently hydrogen or C_{1-4}alkyl, and R^4 is hydrogen; or R^4 is a C_{1-5}alkoxycarbonyl group optionally substituted by amino, hydroxy, C_{1-4}alkoxy or carboxy (wherein the substituent is not on the carbon atom adjacent to the —CO—O— moiety); or R^4 is a group $—CO—(NR^5)_n—R^6$ wherein n is zero or one, R^6 is hydrogen; or R^6 is optionally substituted C_{1-6}alkyl wherein the optional substituent is up to three groups or atoms selected from carboxy, chloro, bromo, fluoro, amino, hydroxy, C_{1-4}alkoxy, C^{1-6}alkanoylamino, phenyl and phenyl substituted with amino, chloro, fluro, bromo, or C_{1-4}alkyl; or R^6 is optionally substituted phenyl wherein the optional substituent is amino, chloro, fluoro, bromo, C_{1-4}alkyl or C_{1-4}alkoxy; or R^6 is optionally substituted pyridyl wherein the optional substituent is amino, hydroxy, C_{1-4}alkyl or C_{1-4}alkoxy, and and R^5 is hydrogen, or C_{1-6}alkyl or R^5 and R^6 form together with the nitrogen atom to which they are attached a piperidine, morpholino, piperazine or N-(C_{1-6})alkylpiperazine ring; and a pharmaceutically acceptable carrier.

4,657,907

LOW DOSAGE COMPOSITIONS OF FINELY PULVERIZED 2,4-DIAMINO-6-(2,5-DICHLOROPHENYL)-1,3,5-TRIAZINE AND PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF AND ADMINISTRATION THEREOF

Hiroshi Enomoto, Magaokakyo; Masanobu Kawamata, Kyoto; Akira Nomura, Hirakata; Yoshiaki Aoyagi, Otsu, and Fusao Ueda, Shige, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Continuation-in-part of Ser. No. 403,702, Jul. 3, 1982, Pat. No. 4,532,238. This application Apr. 12, 1985, Ser. No. 722,710

Claims priority, application Japan, Aug. 4, 1981, 56-122876

The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.

Int. Cl.[4] A61K *31/53*

U.S. Cl. 514—245 **24 Claims**

1. A pharmaceutical composition in unit dosage form useful for the treatment of peptic ulcers in humans wherein each dosage unit comprises 1 to 4 mg of 2,4-diamino-6-(2,5-dichlorophenyl)-1,3,5-triazine or a pharmaceutically acceptable acid addition salt thereof in finely pulverized form so that the average particle diameter is 20 microns or less, in combination with a pharmaceutically acceptable carrier.

4,657,908

CARBONYL DERIVATIVES

Tobias O. Yellin, Fremont, Calif.; David J. Gilman, Tytherington, England; Philip N. Edwards, Bramhall, England; Michael S. Large, Congleton, England; Derrick F. Jones, Tytherington, England, and Keith Oldham, Cheadle, England, assignors to ICI Americas, Inc., Wilmington, Del. and Imperial Chemical Industries PLC, England

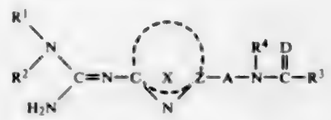
Division of Ser. No. 353,422, Mar. 1, 1982, Pat. No. 4,496,571. This application Feb. 12, 1985, Ser. No. 700,959

Claims priority, application United Kingdom, Feb. 27, 1981, 8106376; May 5, 1981, 8113664

Int. Cl.[4] A61K *31/53, 31/505, 31/495, 31/455, 31/445, 31/44, 31/47;* **C07D** *251/40, 251/16, 241/16, 241/20, 239/42, 217/22, 215/18, 215/28, 401/12*

U.S. Cl. 514—245 **10 Claims**

1. A guanidine derivative of the formula I:



I

in which R^1 and R^2, which may be the same or different, are hydrogen atoms or branched or unbranched 1–10C alkyl, 3–8C cycloalkyl or 4–14C cycloalkylalkyl radicals, each alkyl, cycloalkyl or cycloalkylalkyl radical being optionally substituted by one or more halogen atoms selected from fluorine, chlorine and bromine atoms, provided that at least one of R^1 and R^2 is a halogen-substituted alkyl, cycloalkyl or cycloalkylalkyl radical and provided that there is no halogen substitutent on the carbon atom of the alkyl, cycloalkyl or cycloalkylalkyl radical which is directly attached to the nitrogen atom;

ring X is selected from a pyrazine, pyridine, pyrimidine and 1,3,5-triazine ring and may, where possible, carry one or two optional substituents, the optional substituents on ring X being selected from fluorine, chlorine and bromine atoms and 1–6C alkyl, 1–6C alkoxy, 1–6C alkylthio, trifluoromethyl, hydroxy and amino radicals;

—A— is a phenylene or a 5–7C cycloalkylene radical or a 1–8C alkylene chain which is optionally substituted by one or two 1–3C alkyl radicals and into which is optionally inserted, as part of the backbone of the chain, one or two groups selected from oxygen and sulphur atoms and NH, 1–6C N-alkyl, cis or trans vinylene, ethynylene, phenylene and 5–7C cycloalkylene radicals, provided that the shortest link between ring X and NR^4 is of at least 3 atoms, provided that when the optional insertion is made in chain A which results in the inserted group being directly attached to NR^4 the inserted group is other than an oxygen or sulphur atom or an NH and N-alkyl radical, and provided that no two insertions selected from oxygen and sulphur atoms and NH and N-alkyl radicals are directly attached one to the other;

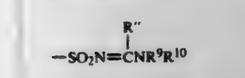
D is an oxygen or sulphur atom;

R^3 is a 1–6C alkyl radical which is substituted by one, two or three halogen atoms or by one or two substituents selected from hydroxy, amino, cyano, nitro, carboxy, carbamonyl, 1–6C alkoxy, 1–6 alkylthio, 1–6C alkylamino, 2–10C dialkylamino, 1–6C alkanoylamino, phenoxy, heteroaryl, heteroaryloxy, benzoylamino, 1–6C alkanoyl, benzoyl and 2–6C alkoxycarbonyl radicals;

or R^3 is a 2–6C alkenyl radical optionally substituted by one or two radicals selected from carboxy, carbamoyl, cyano, nitro, 2–6 alkoxycarbonyl, phenyl and heteroaryl radicals;

or R^3 is a 2–6C alkynyl, phenyl, 7–11C phenylalkyl or heteroaryl radical or a radical of the formual COR^7 or $CONR^7R^8$ in which R^7 and R^8 are selected from hydrogen atoms and 1–6C alkyl and phenyl radicals, wherein when R^3 is or contains a heteroaryl radical that radical is furyl, thienyl, pyrrolyl, thiazolyl, oxazolyl, imidazolyl, thiadiazolyl, oxadiazolyl, triazolyl, pyrazolyl, pyridyl or pyrimidyl radical, or such a radical fused with a benzene ring;

and wherein R^3 is or contains an phenyl or heteroaryl radical, that radical may optionally be substituted by one or two substituents selected from halogen atoms and 1–6C alkyl, 1–6C alkoxy, 1–6C alkylthio, trifluoromethyl, hydroxy, amino, carbamoyl, 2–6C alkylcarbamoyl, 3–10C dialkylcarbamoyl, phenylcarbamoyl, diphenylcarbamoyl, sulphamoyl, 1–6C alkylsulphamoyl, 2–10C dialkylsulphamoyl, phenylsulphamoyl, diphenylsulphamoyl, 1–6C aminoalkyl, 2–10C alkylaminoalkyl, 3–15C dialkylaminoalkyl, 1–6C hydroxyalkyl and 2–10C alkoxyalkyl radicals and radicals of the formula III:



III

in which R^9 and R^{10} are 1–6C alkyl radicals and R^{11} is a hydrogen atom or R^9 is a 1–6C alkyl radical and R^{10} and R^{11} are joined to form, together with the nitrogen and carbon atoms to which they are attached, a pyrrolidine or piperidine ring,

and, when the group inserted in A is an ethynylene radical, R^3 may also be a 1–6C alkyl radical;

R^4 is a hydrogen atom or a 1–6C alkyl radical;

and the pharmaceutically-acceptable acid-addition salts thereof.

9. A pharmaceutical composition which comprises a guanidine derivative as claimed in claim 1 in an amount effective to inhibit gastric acid secretion in a living animal and in association with a pharmaceutically-acceptable diluent or carrier.

4,657,909

ANTIMICROBIAL AND ANTITUMOR PHENAZINE CARBOXALDEHYDES AND DERIVATIVES

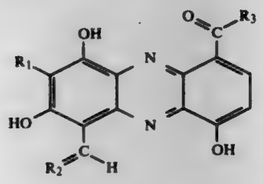
Christopher F. Bigge, Ypsilanti; Edward F. Elslager, Ann Arbor; James C. French, Ann Arbor; Blanche D. Graham, Ann Arbor; Gerard C. Hokanson, Ann Arbor; Stephen W. Mamber, Ann Arbor; Tim A. Smitka, Ann Arbor; Josefino B. Tunac, Troy, and John H. Wilton, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 10, 1985, Ser. No. 743,321

Int. Cl.[4] C07D *241/46, 401/12, 403/12;* **A61K** *31/495*

U.S. Cl. 514—249 **14 Claims**

1. A compound having the structural formula I



I

wherein R_1 is hydrogen or methyl; R_2 is $=N—Y—NR_4R_5$, where Y is a straight or branched alkylene group of from one to six carbon atoms optionally substituted with hydroxyl; R_4 and R_5 are independently hydrogen, alkyl of from one to four carbon atoms optionally substituted with hydroxyl; or alternatively, R_2 is $=N(CH_2)_n—W$ where n equals zero to four and W is a pyrrolidinyl or piperidinyl ring optionally substituted with alkyl of from one to four carbon atoms which may be further substituted with hydroxyl; R_3 is hydroxy, alkoxy of from one to four carbon atoms or $—NH—Y'—NR_4'R_5'$ where Y' is a straight or branched alkylene group of from one to six carbon atoms optionally substituted with hydroxyl; and R_4' and R_5' are independently hydrogen, alkyl of from one to four carbon atoms optionally substituted with hydroxyl; or alternatively, R_3 is $—NH(CH_2)_{n'}—W'$ where n' equals zero to four and W' is pyrrolidinyl or piperidinyl ring optionally substituted with alkyl of from one to four carbon atoms which may be further substituted with hydroxyl; or a pharmaceutically acceptable salt thereof.

6. A pharmaceutical composition useful in the treatment of microbial infections in a mammal comprising an antimicrobially effective amount of a compound in accordance with claim 1 in combination with a pharmaceutically acceptable carrier.

4,657,910

TREATMENT OF CEREBROVASCULAR DISORDERS AND/OR DISORDERS ASSOCIATED WITH CEREBRAL SENILITY

Brian Morgan, Reigate, England, assignor to Beecham-Wuelfing GmbH & Co. KG, Fed. Rep. of Germany

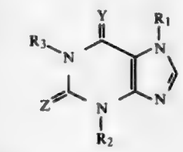
Continuation of Ser. No. 756,015, Jul. 17, 1985, abandoned. This application Mar. 6, 1986, Ser. No. 837,014

Claims priority, application United Kingdom, Jul. 19, 1984, 8418430

Int. Cl.[4] A61K *31/52*

U.S. Cl. 514—263 **8 Claims**

1. A method for the treatment of cerebrovascular disorders and/or disorders associated with cerebral senility in mammals, which comprises administering to the mammal in need of such treatment an effective amount of a compound of formula (I):



(I)

wherein

(i) R_1 is a group —X—CO—CH_3 where X is a hydrocarbon radical having up to 4 carbon atoms which may be substituted by a methyl group,
R_2 and R_3, which may be the same or different, each represents a straight-chain or branched-chain alkyl radical of 2 to 6 carbon atoms, or a cyclohexyl, alkoxyalkyl or hydroxyalkyl radical, and
Y and Z each represent oxygen;

(ii) R_1 is a group $—CH_2(OR_4)(OR_5)CH_3$ wherein R_4 is an alkyl radical of 1 to 4 carbon atoms and R_5 is an alkyl radical of 1 to 4 carbon atoms or R_4 is linked to R_5 so that the OR_4 and OR_5 moieties and the carbon atoms to which they are attached form a 1,3-dioxacylohexa-2,2-diyl,1,3-dioxacyclopenta-2,2-diyl or 1,3-dioxacyclohepta-2,2-diyl diradical,
R_2 and R_3 are the same or different and are each an alkyl radical of 1 to 4 carbon atoms, and
Y and Z each represent oxygen;

(iii) R_1 is a group $—CH_2COCH_3$,
R_2 is an alkyl radical of 1 to 6 carbon atoms,
R_3 is an alkyl radical of 1 to 6 carbon atoms,
Z is sulphur and Y is oxygen or sulphur;

(iv) R_1 is a group $—(CH_2)_nCOCH_3$ where n is 1 or 2,
one of R_2 and R_3 is an alkyl radical of 1 to 6 carbon atoms and the other is an alkyl radical of 2 to 6 carbon atoms,
Z is oxygen and Y is sulphur; or

(v) R_1 is a group $—CH_2COCH_3$,
R_2 is an alkyl radical of 1 to 4 carbon atoms,
R_3 is a group $CH_3CO(CH_2)_4—$, and
Y and Z each represent oxygen.

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4,657,911

3-AMINO QUINUCLIDINE DERIVATIVES AND THE APPLICATION THEREOF AS ACCELERATORS OF GASTRO-INTESTINAL MOTOR FUNCTION

Thierry F. Imbert, Noisy Le Roi; Nicole A. M. Dorme, Paris, and Michel Langlois, Buc, all of France, assignors to Delalande S.A., Courbevoie, France

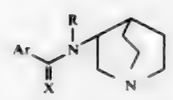
Filed Jun. 29, 1983, Ser. No. 509,022

Claims priority, application France, Jul. 2, 1982, 82 11670

Int. Cl.⁴ C07D *453/02, 239/02;* **A61K** *31/445, 31/505*

U.S. Cl. 514—272 **6 Claims**

1. 3-amino quinuclidine derivatives corresponding to the formula:

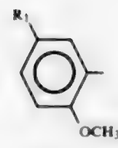


(I)

in which X represents a sulfur or oxygen atom, R designates a hydrogen atom, an alkyl group with 1 to 4 carbon atoms or the benzyl group, and Ar designates:

a phenyl nucleus substituted by a halogen atom or a lower alkyloxy group,

a phenyl nucleus of structure

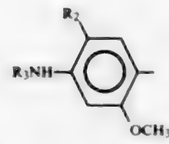


in which R_1 represents a halogen atom or an alkylcarbonyl group whose alkyl residue comprises 1 to 4 carbon atoms,

the (3-fluoro 2-methoxy)phenyl group,

the (2-amino 4-methoxy)5-pyrimidinyl group, or

a phenyl nucleus of structure



in which R_2 represents a halogen atom and R_3 represents a hydrogen atom or an alkylcarbonyl group whose alkyl residue comprises 1 to 4 carbon atoms,

as well as the dextrorotatory or levorotatory optical isomers corresponding to these derivatives, the organic or mineral acid addition salts of these derivatives and optical isomers, the hydrates of these derivatives, optical isomers and salts and the N-oxides corresponding to these derivatives and optical isomers.

6. A method of use of a therapeutically effective amount of a compound of any one of claims 1, 2, 3 or 4 as an accelerator of the gastro-intestinal motor function.

4,657,912

GRANULAR BAIT COMPOSITIONS FOR THE CONTROL OF ANTS EMPLOYING A PYRIMIDINONE DERIVATIVE IN COMBINATION WITH GROUND PUPA OF SILKWORM

Munehiro Suzuki, Toyohashi; Masaomi Kimpara, Hamamatsu, and Kiyoshi Tsuda, Kagoshima, all of Japan, assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 723,401, Apr. 15, 1985, abandoned. This application Mar. 18, 1986, Ser. No. 839,774

Int. Cl.⁴ A01N *25/00, 43/54*

U.S. Cl. 514—275 **12 Claims**

1. A granular insecticidal bait composition comprising 0.5% to 5% tetrahydro-5,5-dimethyl-2-(1H)-pyrimidinone-{3-[4-(trifluoromethyl)phenyl]-1-{2-[4-(trifluoromethyl)-phenyl]ethenyl}-2-propenylidene}hydrazone having the formula (I)



(I)

or fatty acid salt thereof and 95% to 99.5% ground dry pupa of silkworms.

4,657,913

TRIFLUORO- QUINOLINE -3- CARBOXYLIC ACIDS AND THEIR USE AS ANTI-BACTERIAL AGENTS

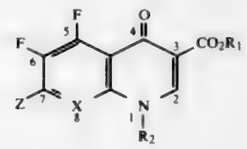
Thomas F. Mich, Ann Arbor; John M. Domagala, Canton, and Jeffrey B. Nichols, Ypsilanti, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 18, 1985, Ser. No. 724,642

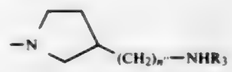
Int. Cl.⁴ A61K *31/47;* **C07D** *215/00*

U.S. Cl. 514—278 **13 Claims**

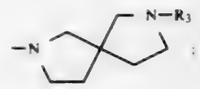
1. A compound of the formula:



wherein Z is



in which n'' is zero or one and R_3 is hydrogen, methyl, ethyl, 1- or 2-propyl; or



and R_3 is hydrogen, methyl or ethyl; X is CF R_2 is ethyl, vinyl, 2-fluoroethyl or cyclopropyl; R_1 is hydrogen, or a pharmaceutically acceptable acid addition or base salt thereof.

12. An antibacterial composition comprising an antibacterially effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable carrier.

4,657,914

ERGOLINE DERIVATIVES

Luigi Bernardi; Aldemio Temperilli; Sergio Mantegani, all of Milan; Gabriella Traquandi, Cornate d'Adda, and Patricia Salvati, Bologna, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Apr. 25, 1983, Ser. No. 488,168

Claims priority, application United Kingdom, Apr. 30, 1982, 8212653

Int. Cl.⁴ A61K *31/48;* **C07D** *457/02*

U.S. Cl. 514—288 **4 Claims**

1. Ergoline compounds of formula (I) selected from the group consisting of:

1,6-dimethyl-8β-(3,5-dimethyl-4-pyrazolylmethyl)-ergoline,

6-methyl-8β-[2-(3,5-dimethyl-4-pyrazolyl)-ethyl]-ergoline,

6-methyl-8β-(1,3,5-trimethyl-4-pyrazolylmethyl)-ergoline,

6-methyl-8β-(3,5-dimethyl-4-isoxazolylmethyl)-ergoline,

6-methyl-8β-(2-amino-4,6-dimethyl-5-pyrimidinylmethyl)-ergoline,

6-allyl-8β-(3,5-dimethyl-4-isoxazolylmethyl)-ergoline,

6-propyl-8β-(3,5-dimethyl-4-isoxazolylmethyl)-ergoline,

6-methyl-8β-(3,5-dimethyl-4-pyrazolylmethyl)-ergoline,

6-methyl-8β-[2-(1,3,5-trimethyl-4-pyrazolyl)-ethyl]-ergoline,

6-methyl-8β-[2-(1,3,5-trimethyl-4-isoxazolyl)-ethyl]-ergoline,

6-methyl-8β-[2-(2-amino-4,6-dimethyl-5-pyrimidinyl)-ethyl]-ergoline,

6-methyl-8β-(5-hydroxy-3-methyl-4-pyrazolylmethyl)-ergoline,

6-methyl-8β-(4-hydroxy-2,6-dimethyl-5-pyrimidinylmethyl)-ergoline,

6-propyl-8β-(3,5-dimethyl-4-pyrazolylmethyl)-ergoline,

6-allyl-8β-(3,5-dimethyl-4-pyrazolylmethyl)-ergoline,

6-methyl-8α-(3,5-dimethyl-4-pyrazolylmethyl)-ergoline,

6-methyl-8α-(3,5-dimethyl-4-isoxazolylmethyl)-ergoline,

6-methyl-8β-(2-phenyl-4,6-dimethyl-5-pyrimidinylmethyl)-ergoline,

6-allyl-8β-(2-amino-4,6-dimethyl-5-pyrimidinylmethyl)-ergoline,

6-methyl-8β-(2-dimethylamino-4,6-dimethyl-5-pyrimidinylmethyl)-ergoline,

6-methyl-8β-[2-(2-dimethylamino-4,6-dimethyl-5-pyrimidinyl)-ethyl]-ergoline, and

6-methyl-8β-[2-(2-phenyl-4,6-dimethyl-5-pyrimidinyl)-ethyl]-ergoline.

4,657,915

1,6-NAPTHYRIDINE-2(1H)-ONES AND THEIR USE AS CARDIOTONIC AGENTS

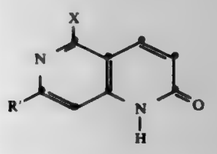
George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 737,129, May 23, 1985, abandoned, and a continuation-in-part of Ser. No. 816,591, Jan. 6, 1986, which is a continuation-in-part of Ser. No. 811,040, Dec. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 765,900, Aug. 14, 1985, abandoned, which is a continuation-in-part of Ser. No. 695,603, Jan. 28, 1985, abandoned. This application Jan. 31, 1986, Ser. No. 824,491

Int. Cl.⁴ A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—300 **6 Claims**

1. 5-X-7-R'-1,6-naphthyridin-2(1H)-one having the formula II



II

or pharmaceutically acceptable or cationic salt thereof, where X is bromo, chloro or hydrazino and R' is hydrogen or methyl.

5. A cardiotonic composition for increasing cardiac contractility which comprises a pharmaceutically acceptable carrier and, as the active component thereof, a cardiotonically effective amount of 5-X-7-R'-1,6-naphthyridin-2(1H)-one of claim 1 or pharmaceutically acceptable acid-addition or cationic salt thereof, where X is bromo or chloro and R' is hydrogen or methyl.

4,657,916

QUINOLINE-N-OXIDE DERIVATIVE AND PHARMACEUTICAL COMPOSITION

Masayuki Teranishi; Koji Suzuki, both of Machida; Hiroshi Kase, Koganei; Shigeto Kitamura, Machida; Katsuichi Shuto, Shizuoka, and Kenji Omori, Mishima, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

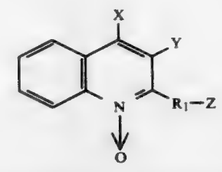
Filed Sep. 5, 1985, Ser. No. 772,693

Claims priority, application Japan, Sep. 7, 1984, 59-187752

Int. Cl.⁴ A61K *31/47;* **C07D** *215/60*

U.S. Cl. 514—312 **4 Claims**

1. A quinoline-N-oxide derivative represented by the formula:



wherein X is hydroxy; lower alkoxy, lower alkylthio, unsubstituted or substituted aralkyloxy, or unsubstituted or substituted aralkylthio; Y is a hydrogen atom or halogen atom;

R_1 is alkylene or alkenylene having 3 to 15 carbon atoms; Z is hydroxymethyl, lower alkoxymethyl, unsubstituted or substituted aryloxymethyl, tetrahydropyranyloxymethyl, tetrahydrofuranyloxymethyl, lower alkylthiomethyl, unsubstituted or substituted arylthiomethyl, aminomethyl,

$—CH_2NHR_2$

wherein R_2 is lower alkyl, unsubstituted or substituted aralkyl, or unsubstituted or substituted aryl,

—CH2NR3R4

wherein R3 and R4 are lower alkyl, unsubtituted or substituted aralkyl, or unsubstituted or substituted aryl,

$—CH_2N^+R_5R_6R_7$

wherein R_5, R_6 and R_7 are lower alkyl, unsubstituted or substituted aralkyl, or unsubstituted or substituted aryl, where the counterion is a pharmacologically acceptable anion of an acid or a hydroxyl ion,

COR_8

wherein R_8 is a hydrogen atom, lower alkyl or hydroxy

$—CH(OR_9)_2$

wherein R_9 is lower alkyl, iminomethyl, hydroxyiminomethyl, or a halogen atom, provided that the substituent in the substituted aralkyloxy, the substituted aralkylthio, the substituted aralkyl, the substituted aryloxymethyl, the substituted arylthiomethyl, and the substituent aryl is a substituent on the aryl ring and is selected from the group consisting of lower alkyl, lower alkoxy, halogen atom, nitro and hydroxy, and pharmacologically acceptable salts thereof.

4. A preventive and healing composition for diseases due to lipoxygenase metabolic products, which comprises an effective amount of a compound defined by claim 1, and at least one pharmaceutically acceptable carrier.

4,657,917

PLATELET AGGREGATION INHIBITORY AGENTS

Andrew Lasslo, Memphis; Ronald P. Quintana, Germantown, and Marion Dugdale, Memphis, all of Tenn., assignors to Research Corporation, New York, N.Y.

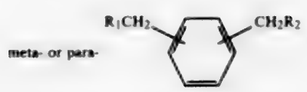
Continuation of Ser. No. 347,037, Feb. 8, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 662,533

Int. Cl.⁴ A61K *31/445, 31/44*

U.S. Cl. 514—315 **22 Claims**

1. A method for the inhibition of blood platelet aggregation comprising administering to an animal in need thereof a blood platelet aggregation inhibiting amount of a compound selected from the group consisting of:

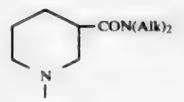
[A] A compound having the structural formula:



wherein

R_1 is

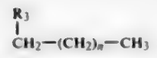
R_2 is H or



and

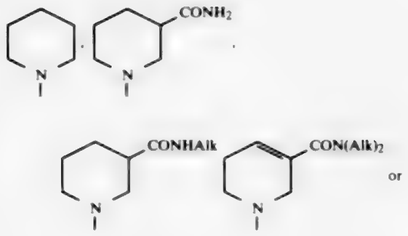
Alk is lower alkyl;

[B] A compound having the structural formula:

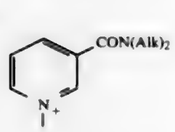


wherein

when R_3 is



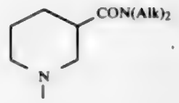
-continued



n is 8,

and

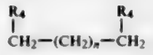
when R_3 is



n is 4 or 8, and

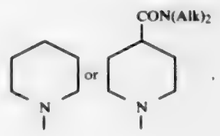
Alk is lower alkyl;

[C] A compound having the structural formula:



wherein

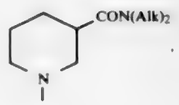
when R_4 is



n is 8,

and

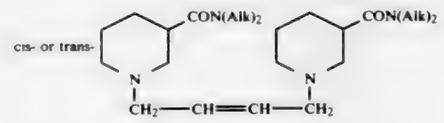
when R_4 is



n is 0, 1, 4 or 8, and

Alk is lower alkyl;

[D] A compound having the structural formula:



wherein

Alk is lower alkyl; and

[E] Addition salts thereof with pharmaceutically acceptable acids.

4,657,918

3-[6-[3-PYRROLIDINO-1-(4-TOLYL)PROP-1E-ENYL]-2-PYRIDYL]PROPIONIC ACID AND DERIVATIVES HAVING ANTI-HISTAMINIC ACTIVITY

John W. A. Findlay, Chapel Hill, N.C., and Geoffrey G. Coker, Bromley, England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

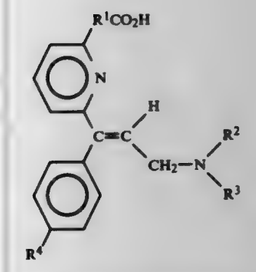
Division of Ser. No. 462,874, Feb. 1, 1983, Pat. No. 4,562,258. This application Sep. 25, 1985, Ser. No. 779,877

Claims priority, application United Kingdom, Feb. 4, 1982, 8203261

Int. Cl.⁴ C07D *401/06;* A61K *31/44, 31/435*

U.S. Cl. 514—318 **7 Claims**

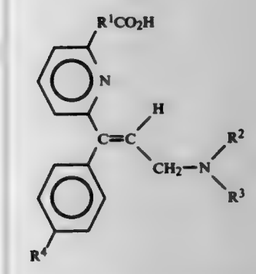
1. A compound of formula (I)



I

a straight or branched lower alkyl (1–4 carbon atoms) ester, or a pharmaceutically acceptable salt thereof; wherein R^1 is $(CH_2)_n$, n is an integer 1–7, or R^2 and R^3 are the same or different and are hydrogen, C_{1-4} alkyl or taken together with the nitrogen to which they are attached form a azacyclobutane, pyrrolidine or piperdine ring; R^4 is hydrogen, halogen, C_{1-4} alkoxy or C_{1-4} alkoxy or C_{1-4} alkyl optionally substituted by one to three halogen atoms.

5. A method of providing an antihistiminic effect in a mammal in need thereof comprising administering to said mammal an effective antihistimatic amount of the compound of formula (I),



I

or a pharmaceutically acceptable salt thereof; wherein R^1 is $(CH_2)_n$, n is an integer 1–7; R^2 and R^3 are the same or different and are hydrogen, C_{1-4} alkyl or taken together with the nitrogen to which they are attached form a azacyclobutane, pyrrolidine, or piperdine ring; R^4 is hydrogen, C_{1-4} alkoxy or C_{1-4} alkyl optionally substituted by one to three halogen atoms.

4,657,919

PYRIDONE ESTERS AS INOTROPIC AGENTS

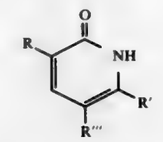
David M. Stout, Vernon Hills; Diane M. Yamamoto, Gurnee, both of Ill., and Cynthia Barcelon-Yang, Kenosha, Wis., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 637,352, Aug. 3, 1984, Pat. No. 4,555,517. This application Jul. 12, 1985, Ser. No. 754,322

Int. Cl.⁴ C07D *401/06;* A61K *31/44*

U.S. Cl. 514—335 **2 Claims**

1. A compound of the formula



I

wherein R is cyano, R′ is methyl, and R‴ is —COOR″, where R″ is —(W)nY wherein W is —CH_2, n is 1, Y is 2 or 3 pyridyl.

4,657,920

(1,2,4-TRIAZOL-1-YL)-2-THIAZOL-2-YL ETHANOL AS FUNGICIDES

Jan Gajowski, Oldenburg; Erik Regel, Wuppertal; Karl H. Büchel, Burscheid; Wilhelm Brandes, Leichlingen, and Paul Reinecke, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

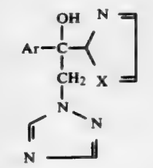
Filed Mar. 22, 1985, Ser. No. 715,144

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1984, 3413173

Int. Cl.⁴ A01N *43/653;* C07D *249/08*

U.S. Cl. 514—365 **9 Claims**

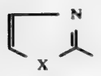
1. A 1,2,4-triazol-1-yl-methyl-carbinol of the formula



I

in which

Ar is phenyl or naphthyl which is optionally mono- , di- or tri-substituted by fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, propyl, butyl, methoxy, ethoxy, methylthio, trifluoromethyl, trifluoromethoxy and/or trifluoromethylthio.



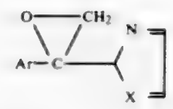
can optionally be benzo-fused and optionally mono-, di-, or tri-substituted by methyl, ethyl, cyclopropyl, cyclohexyl, fluorine, chlorine, bromine, trifluoromethyl, chlorodifluoromethyl, dichlorofluoromethyl, trichloromethyl, dichloromethyl, chloromethyl and/or phenyl optionally mon-, di- or tri-substituted by those substituents mentioned in the case of Ar, and

X is oxygen or sulphur,

or an addition product thereof with a plant-tolerated acid or metal salt.

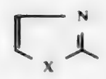
9. An oxirane of the formula

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in which

Ar is phenyl or naphthyl which is optionally mono-, di- or tri-substituted by fluorine, chlorine, bromine cyano, nitro, methyl, ethyl, propyl, butyl, methoxy, ethoxy, methylthio, trifluoromethyl, trifluoromethoxy and/or trifluoromethylthio, and



can optionally be benzo-fused and optionally mono-, di-, or tri-substituted by methyl, ethyl, cyclopropyl, cyclohexyl, fluorine, chlorine, bromine, trifluoromethyl, chlorodifluoromethyl, dichlorofluoromethyl, trichloromethyl, dichloromethyl, chloromethyl and/or phenyl optionally mon-, di- or tri- those substituents mentioned in the case of Ar.

4,657,921

2,2-DIPHENYL-1-FLUORO-1-AZOLYLETHANEMICROBICIDES

Willy Frick, Pfeffingen; Alfred Meyer, and Robert Nyfeler, both of Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

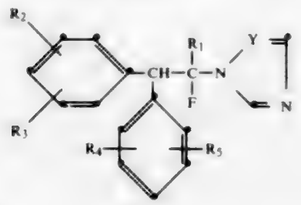
Filed May 16, 1985, Ser. No. 734,643

Claims priority, application Switzerland, May 23, 1984, 2534/84

Int. Cl.⁴ A01N *43/50, 43/653;* **C07D** *233/56, 249/08*

U.S. Cl. 514—383 **7 Claims**

1. A compound of the formula I



(I)

wherein

Y is —CH= or —N=, R_1 is hydrogen or C_1-C_3-alkyl, and R_2, R_3, R_4 and R_5 independently of one another are each hydrogen, halogen, methyl, methoxy, CF_3, OCF_3, $OCHF_2$, cyano, or phenoxy which is unsubstituted or substituted by fluorine, chlorine or bromine.

6. A method of treating microbial infections which comprises administering an effective amount of a compound according to claim 1 to a warm-blooded animal which is infected or liable to be infected.

4,657,922

ANXIOLYTIC 4,5-DIHYDRO-4-OXO-1H-IMIDAZOL-2-YL UREA DERIVATIVES

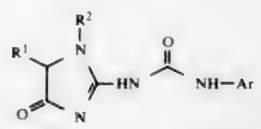
Chris R. Rasmussen, North Wales, and Frank J. Villani, Jr., Hatfield, both of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Filed May 24, 1985, Ser. No. 737,849

Int. Cl.⁴ A61K *31/415;* **C07D** *233/88*

U.S. Cl. 514—390 **19 Claims**

1. A urea of the following formula (I):



(I)

wherein

R^1 is alkoxy or alkylthio of about 1–5 carbons each;

R^2 is alkyl of 1–3 carbons; and

Ar is phenyl or 3-substituted phenyl wherein said substitution is selected from the group consisting of halo, trifluoromethyl, alkyl of 1–3 carbons, methoxy or methylthio.

13. A pharmaceutical composition for reducing anxiety comprising an anxiety reducing amount of a urea of claim 1 in association with a pharmaceutically acceptable diluent or carrier.

4,657,923

ECONAZOLE-ACEXAMIC ACID ADDITION COMPOUND HAVING ANTIMYCOTIC, CICATRIZING AND ANTIINFLAMMATORY ACTIVITY

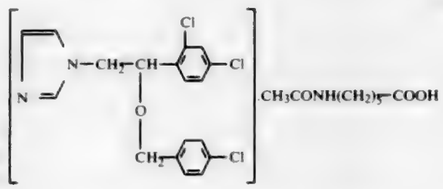
Michele G. Di Schiena, Trezzano Sul Naviglio, Italy, assignor to Chinoin S.p.A., Milan, Italy

Filed Jul. 30, 1985, Ser. No. 760,359

Int. Cl.⁴ A61K *31/415;* **C07D** *233/60*

U.S. Cl. 514—399 **2 Claims**

1. The addition compound between econazole and acexamic acid, of formula (I):



(I)

2. A pharmaceutical composition having antimycotic, cicatrizing and antiinflammatory activity for topical administration in human and veterinary use comprising as the principal active ingredient an effective amount of a compound according to claim 1 in admixture with a pharmaceutically acceptable carrier.

4,657,924

NAFAZATROM AS A LIPOXYGENASE INHIBITOR

Mithat Mardin, Wuppertal, Fed. Rep. of Germany; Wolf-Dieter Basse, West Haven, Conn.; Friedrich Hoffmeister, Wuppertal, Fed. Rep. of Germany; Friedel Seuter, Wuppertal, Fed. Rep. of Germany; Elisabeth Perzborn, Wuppertal, Fed. Rep. of Germany; Klaus Schlossmann, Wuppertal, Fed. Rep. of Germany; Dieter Mayer, Werne, Fed. Rep. of Germany, and Volker Fiedler, Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 486,175, Apr. 18, 1983, Pat. No. 4,540,707. This application Mar. 25, 1985, Ser. No. 715,438

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302811; Mar. 12, 1983, 3308880

Int. Cl.⁴ A61K *31/415*

U.S. Cl. 514—404 **11 Claims**

1. A method for the prophylaxis and/or treatment of asthmatic diseases in a patient suffering therefrom or in need of such treatment which comprises administering to such patient a medicament comprising an effective amount therefor of nafazatrom.

4,657,925

METHOD AND COMPOSITIONS FOR REDUCING THE INTRAOCULAR PRESSURE OF MAMMALS

Alan S. Horn, Noordhorn, Netherlands, assignor to Nelson Research & Development Co., Irvine, Calif.

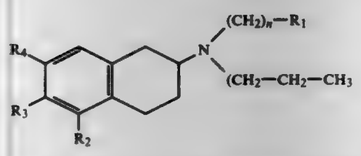
Continuation-in-part of Ser. No. 640,685, Aug. 13, 1984, Pat. No. 4,564,628. This application Dec. 20, 1985, Ser. No. 811,768

The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.

Int. Cl.⁴ A61K *31/38, 31/40, 31/34;* **C07D** *333/12*

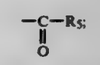
U.S. Cl. 514—438 **19 Claims**

1. A method for reducing the intraocular pressure in mammals which comprises administering an effective amount of a compound selected from the group consisting of compounds represented by the general formula:

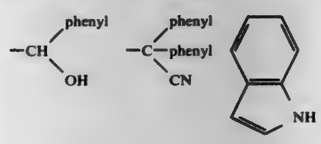


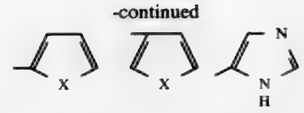
I

wherein R_2, R_3 and R_4 are each selected from the group consisting of H, and OA; A is H or



R_5 is selected from the group consisting of alkyl and aromatic residues; n is 2 or 3; and R_1 is selected from the group consisting of 3-pyridyl, 4-pyridyl,





where X is S, O or NH, with the proviso that at least one of R_2, R_3 and R_4 is H, that at least one of R_2, R_3 and R_4 is not H and that R_2 and R_4 are not both OA; and pharmaceuticaly-acceptable salts thereof.

4,657,926

BEHAVIOR MODIFYING COMPOUNDS

John A. Pickett, and Ewen D. M. Macaulay, both of Hitchin, England, assignors to National Research Development Corporation, London, England

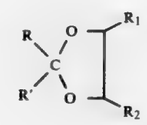
Filed May 14, 1984, Ser. No. 609,864

Claims priority, application United Kingdom, May 25, 1983, 8314521

Int. Cl.⁴ A61K *31/335*

U.S. Cl. 514—467 **14 Claims**

1. In a method for influencing insect behavior by the application to a selected locus of an insect behavior modifying compound containing a carbonyl group, the improvement comprising using the said compound in the form of a photolabile derivative of formula



wherein



represents the residue of the carbonyl group-containing and R_1 and R_2 each individually represent a substituted or insubstituted phenyl group, or R_1 represents hydrogen, and R_2 represents a substituted or unsubstituted phenyl group.

14. In themethod of claim 1, the improvement comprising using as the photolabile derivative 2[(Z)-10′-pentadecenyl]-4-(o-nitrophenyl)1,3-dioxolane or 2-[(Z)-10′-pentadecenyl]-4-(p-nitrophenyl)-1,3-dioxolane.

4,657,927

MALONATO PLATINUM COMPOUNDS

Michael J. Cleare; James D. Hoeschele; Barnett Rosenberg, and Loretta Van Camp, all of East Lansing, Mich., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 902,706, May 4, 1978, abandoned. This application May 25, 1983, Ser. No. 497,806

Int. Cl.⁴ A61K *31/28*

U.S. Cl. 514—492 **4 Claims**

1. A method for treating malignant tumors sensitive to a planar dsp^2 platinum(II) coordination compound or an octahedral d^2sp^3 platinum(IV) coordination compound in animals which comprises parenterally administering to an animal affected with said malignant tumor a solution containing in an amount sufficient to cause regression of the tumor a platinum coordination compound of the formula:

$$[Pt(II)A_x(OOC)_2—CRR_1]$$

or

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cis or trans $[Pt(IV)A_xA_y((OOC)_2—CRR_1)_zL_{-z}]$

wherein:
x=1 or 2;
y=1 or 2;
z=0, 1 or 2, provided that when y=2, z=0, and when y=1, z is greater than 0;
R and R_1 are selected from the group consisting of H, lower alkyl, aryl, aralkyl, alkenyl, cycloalkyl, cycloalkenyl, alkoxy, OH and combine with the carbon atom to form a cycloalkyl or cycloalkenyl group;
when x=1, A is $HR_2N—CHR_3—CHR_4—NR_5H$ and when x=2, A is H_2NR_6 or an amino acid; wherein R_2, R_3, R_4 and R_5 are the same or different and are selected from the group consisting of H, CH_3, C_2H_5, hydroxy and lower alkoxy, provided that R_2 and R_5 may also be aryl or aralkyl and each R_6 is the same or different and is selected from the group consisting of H, lower alkyl, aryl, aralkyl, hydroxy lower alkyl, hydroxy- and alkoxyl-amines and alkoxyl alkyl amines;
when z=1, L is a bidentate anionic ligand, and
when z=2, L is a monodentate anionic ligand.

4,657,928
ORGANIC COPPER COMPLEXES AS RADIOPROTECTANTS

John R. J. Sorenson, Little Rock, Ark., assignor to International Copper Research Association, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 382,557, May 27, 1982, abandoned. This application Sep. 25, 1984, Ser. No. 654,086
Int. Cl.⁴ C07F *1/08;* **A01N** *55/02;* **A61K** *31/30*
U.S. Cl. 514—499 **37 Claims**

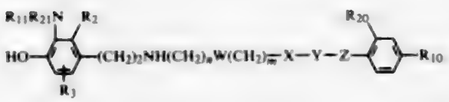
1. A method of providing radioprotection, comprising: administering a radioprotective amount of an organic copper complex, or a solvate thereof, having superoxide dismutase activity to a human being or animal within about two weeks of exposing said human being or animal to therapeutic doses of gamma-rays or X-rays.

4,657,929
COMPOUNDS

Francis Ince, and Alan C. Tinker, both of Loughborough, England, assignors to Fisons plc, Ipswich, England

Filed Oct. 18, 1984, Ser. No. 662,348
Claims priority, application United Kingdom, Oct. 25, 1983, 8328489; Oct. 25, 1983, 8328490
Int. Cl.⁴ A61K *31/135, 31/18, 31/25, 31/165, 31/104;* **C07C** *87/62, 87/60, 103/85, 143/74, 103/50, 149/273, 157/09*
U.S. Cl. 514—524 **11 Claims**

1. A compound of formula I,



I

in which
R_2 andd R_3, which may be the same or different, each independently represent hydrogen, fluorine, chlorine, bromine, alkyl C_1 to C_6, nitro, nitrile, $(CH_2)_pR_9$ or SR_9,
R_{11} represents hydrogen, CHO, COR_{13}, $COOR_{13}$, $CONH_2$, SO_2R_{13}, CH_2R_{14} or alkyl C_1 to C_6,
R_{21} represents hydrogen,
R_{13} represents alkyl C_1 to C_6,
R_{14} represents phenyl or alkoxy C_1 to C_6 phenyl,
W represents a single bond, a 1,2; 1,3; or 1,4-disubstituted benzene ring; a —CH=CH— group or a 1,4-cyclohexanediyl group;
X represents NH, O, S, SO_2, CO, CH_2, CONH or —COO;
Y represents $(CH_2)q$, CO, CS, SO_2 and R_{20} reppresents hydrogen, or Y represents $CR_{15}R_{16}CR_{17}R_{18}$, wherein the carbon atom bearing R_{15} and R_{16} is adjacent to X and in which
R_{17} and R_{18}, together with the carbon atom to which they are attached form a carbonyl group, and R_{15}, R_{16}, and R_{20} each represent hydrogen, or
R_{15} and R_{20} together form a chain —CH_2—, and R_{16} and R_{17} and R_{18} each represent hydrogen, or
R_{15}, R_{16}, R_{17} and R_{18} each independently represent hydrogen or alkyl C_1 to C_6 and R_{20} represents hydrogen;
Z represents a single bond, NR_{19}, CH_2, O, CO, S or SO_2, in which R_{19} represents hydrogen or alkyl C_1 to C_6;
n, and m each independently represents an integer from 1 to 4 inclusive;
q represents an integer from 1 to 3 inclusive;
p represent 0 or an inteeger from 1 to 3 inclusive;
R_9 represents phenyl or phenyl substituted by hydroxy, and R_{10} represents hydrogen or chlorine, provided that
(i) when X represents SO_2, CO, COO or CONH, Y does not represent CO, CS or SO_2;
(ii) when Y represents CO, CS or SO_2, then Z does not represent CO or SOhd 2,
and pharmaceutically acceptable derivatives thereof.

10. A method of treatment of congestive heart failure, angina pectoris, ischaemic heart disease or hypertension, which comprises administration of an effective amount of a compound according to claim 1 to apatient suffering from such a condition.

4,657,930
MITOTIC INHIBITORS PREVENTING POSTERIOR LENS CAPSULE OPACIFICATION

Jared M. Emery, Houston, Tex., and Raymond Y. Chan, San Diego, Calif., assignors to Baylor College of Medicine, Houston, Tex.

Division of Ser. No. 516,166, Jul. 20, 1983, Pat. No. 4,515,794, and a continuation-in-part of Ser. No. 310,159, Oct. 9, 1981, abandoned. This application Mar. 6, 1985, Ser. No. 708,753
Int. Cl.⁴ A61K *31/19*
U.S. Cl. 514—557 **3 Claims**

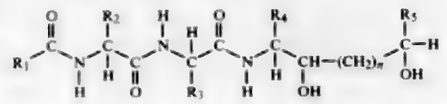
1. A mitotic inhibitor effective to prevent proliferation of remnant lens epithelial cells when intraocularly instilled into the anterior chamber of the eye after extracapsular extraction comprising,
an osmotically balanced solution containing a minimum concentration of 0.033 mg of retinoic acid per cc of solution.

4,657,931
N-(ACYLDIPEPTIDYL)-AMINOGLYCOLS

John S. Baran, Wianetka, and Gunnar J. Hanson, Skokie, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed May 15, 1985, Ser. No. 734,296
Int. Cl.⁴ A61K *31/16;* **C07K** *7/02;* **C07C** *103/20*
U.S. Cl. 514—616 **11 Claims**

1. A compound of the formula:



wherein R_1 is alkoxy containing one to six carbon atoms or alkyl containing one to six carbon atoms; R_2 is benzyl or naphthylmethyl, R_3 is lower alkyl containing one to six carbon atoms or imidazolemethyl; R_4 is benzyl, R_5 is hydrogen or lower alkyl and n is 0 or 1.

4,657,932
METHOD OF TREATING PROLACTIN-RELATED DISORDERS

Joseph B. Martin, Belmont; William Millard, Quincy, and Stephen Sagar, Boston, all of Mass., assignors to Massachusetts General Hospital, Boston, Mass.

Continuation of Ser. No. 375,540, May 6, 1982, abandoned. This application Aug. 24, 1984, Ser. No. 643,761
Int. Cl.⁴ A61K *31/13*
U.S. Cl. 514—665 **5 Claims**

1. A method of decreasing the concentration of prolactin in a hyperprolactinemic animal, which comprises:
administering to said animal a prolactin-decreasing amount of cysteamine.

4,657,933
TOPICAL PREPARATION AND METHOD FOR TREATING HERPES SIMPLEX VIRUS INFECTION

Harvey T. Collins, 1486 E. 56th St., Chicago, Ill. 60637

Continuation of Ser. No. 410,492, Aug. 23, 1982, abandoned, and a continuation of Ser. No. 410,493, Aug. 23, 1982, abandoned, and a continuation-in-part of Ser. No. 122,307, Feb. 19, 1980, abandoned, which is a continuation-in-part of Ser. No. 941,043, Sep. 11, 1978, abandoned. This application Mar. 13, 1985, Ser. No. 711,130
The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.
Int. Cl.⁴ A61K *31/08*
U.S. Cl. 514—722 **32 Claims**

1. A method for treating, in vivo, an epidermal area of a human being infected with Herpes simplex virus, comprising the steps of: applying to the infected area, in an amount sufficient to cover the infected area, a topical preparation in the form of a stable emulsion having from approximately 30% by volume to approximately 50% by volume of anhydrous ethyl ether in a pharmaceutically acceptable refined coconut oil carrier, said oil carrier being generally free of free fatty acids and essentially free of water, soaps and stabilizers, said emulsion having a boiling point of at least 100° F.

4,657,934
METHOD FOR TREATING HERPES SIMPLEX VIRUS INFECTION AND TOPICAL PREPARATION USED THEREIN

Harvey T. Collins, 1486 E. 56th St., Chicago, Ill. 60637

Continuation-in-part of Ser. No. 410,492, Aug. 23, 1982, abandoned, and a continuation-in-part of Ser. No. 410,493, Aug. 23, 1982, abandoned, each is a continuation-in-part of Ser. No. 122,307, Feb. 19, 1980, abandoned, and a continuation-in-part of Ser. No. 941,043, Sep. 11, 1978, abandoned. This application Mar. 13, 1985, Ser. No. 711,132
Int. Cl.⁴ A61K *31/08*
U.S. Cl. 514—722 **32 Claims**

1. A method for treating, in vivo, an epidermal area of a human being infected with Herpes simplex virus, comprising the steps of: applying to the infected area, in an amount sufficient to cover the infected area, a topical preparation in the form of a stable emulsion having from approximately 30% by volume to approximately 50% by volume of anhydrous ethyl ether in a pharmaceutically acceptable refined oil carrier of vegetable oil origin, said oil carrier being generally free of free fatty acids and essentially free of water, soaps and stabilizers, said emulsion having a boiling point of at least 100° F.

4,657,935
REAL ACNE CONTROL (RAC)

Carlos Teplicki, 20310 NE. 2nd Ave. #K14, N. Miami, Fla. 33179

Filed Jul. 22, 1985, Ser. No. 757,806
Int. Cl.⁴ A61K *7/16, 33/00, 33/18*
U.S. Cl. 514—724 **3 Claims**

1. The process of treating acne on the outside of the face and throat of human beings affected with acne which comprises using a mixture comprised of alcohol and water inside the mouth and throat in a rinsing and gargling fashion.

4,657,936
HALOGENATED SATURATED HYDROCARBONS AS ACARICIDAL COMPOUNDS

Jing-Jong Lu, and Radmilo A. Todorovic, both of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

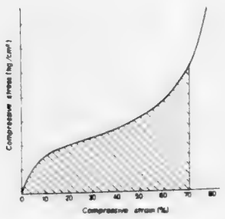
Filed Oct. 18, 1985, Ser. No. 789,100
Int. Cl.⁴ A01N *29/02*
U.S. Cl. 514—758 **4 Claims**

1. A method for treating infested animals to eliminate acarids comprising: applying at least one compound selected from the group consisting of 1-chloroundecane, 1-chlorooctadecane, 1-chlorotetradecane, and 1-chlorohexadecane topically to said animals at an effective concentration.

4,657,937
ENERGY ABSORBER

Hideki Kuwabara, Hadano, and Masato Naito, Hiratsuka, both of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed Jan. 30, 1986, Ser. No. 824,269
Claims priority, application Japan, Feb. 4, 1985, 60-19659
Int. Cl.⁴ C08J *9/18, 9/22, 9/24;* **B32B** *3/26*
U.S. Cl. 521—56 **5 Claims**



1. An energy absorber comprising an expansion-molded article of prefoamed particles which use, as the base resin thereof, a resin obtained by impregnating high-density polyethylene with an aromatic vinyl monomer and polymerizing the monomer, said absorber having a density (ρ) of 0.015–0.15 g/cm³ and satisfying the following relation:

$$E_{20}/\rho \geqq 45 \text{ kg-cm/g}$$

wherein E_{20} (kg-cm/cm³) means the quantity of energy absorbed upon 70% compression at 20° C. and ρ has the same meaning as defined above.

4,657,938
SPRAYABLE AND FOAMABLE INSULATING COMPOSITION

Luke E. Fithian, Cheshire, and Frank C. Cesare, Woodbury, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Aug. 26, 1985, Ser. No. 769,814
Int. Cl.⁴ C08J *9/30*
U.S. Cl. 521—96 **9 Claims**

1. A sprayable non aqueous and foamable composition comprising:
(A) at least one polymer selected from the group consisting of ethylene/alphaolefin copolymer, ethylene/alphaolefin/nonconjugated polyene terpolymer, polyacrylate, polymethacrylate, polyisoprene, polyacrylonitrile, polymethacrylonitrile and polybutadiene; said polymer

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having a number average molecular weight of between about 500 and about 10,000;

(B) an effective amount of organic peroxide curative; and

(C) an effective amount of a blowing agent having an activation temperature which less than or about equal to the curing temperature of component (B);

said composition possessing a Brookfield viscosity of less than about 100,000 centipoise at shear rates of 5 sec^{-1} or greater.

4,657,939

TRIOLS FROM BICYCLIC AMIDE ACETALS AND CYANURIC ACID AND POLYURETHANES THEREFROM

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 722,822, Sep. 5, 1985, Pat. No. 4,617,391. This application Jun. 13, 1986, Ser. No. 874,192

Int. Cl.⁴ C08G *18/14, 18/38, 18/20*

U.S. Cl. 521—163 **5 Claims**

1. The polyurethane produced by the reaction of a polyisocyanate with a triol resulting from the reaction of a bicyclic amide acetal with cyanuric acid at a temperature of from about 20° C. to about 200° C. and at a pressure in the range of from about 1 atmosphere to about 50 atmospheres.

4,657,940

4,4'-DIISOCYANTO-PHENYLBENZYLETHER, A PROCESS FOR THE PREPARATION THEREOF AND USE IN THE PRODUCTION OF POLYURETHANE PLASTICS

Klaus König, Leverkusen, and Peter Heitkämper, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 13, 1986, Ser. No. 829,041

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1985, 3507021

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—164 **4 Claims**

1. 4,4'-diisocyanato phenylbenzylether.

4,657,941

BIOLOGICALLY COMPATIBLE ADHESIVE CONTAINING A PHOSPHORUS ADHESION PROMOTER AND A SULFINIC ACCELERATOR

Gordon B. Blackwell, Camberley, England, and Chin-Teh Huang, Dover, Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Nov. 29, 1984, Ser. No. 676,135

Int. Cl.⁴ A61K *5/06*; **C08K** *5/41, 5/52*; **C08F** *230/02*

U.S. Cl. 522—14 **31 Claims**

1. A shelf stable one component polymerizable adhesive composition comprising a mixture of:

(a) adhesion promoting and polymerizable monomer system selected from the group consisting of at least one free radical polymerizable monomer or prepolymer having ethylenic unsaturation and a phosphorus-containing adhesion promoter and mixtures thereof, said phosphorus-containing adhesion promoter optionally containing ethylenic unsaturation and thereby optionally forming part or all of said polymerizable monomer or prepolymer;

(b) free radical polymerization catalyst; and

(c) accelerator for said catalyst, said accelerator being selected from the group consisting of sulfinic acid or sulfinic acid salt thereof and mixtures thereof, said catalyst and said accelerator being present in said composition in relative amounts such that said composition will not selfcure in less than about 3 months when stored at 20° C. and less than about 2 days when stored at 50° C.

4,657,942

PHOTOPOLYMERIZABLE COMPOSITION

Masayuki Iwasaki; Minoru Maeda, and Sadao Fujikura, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

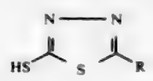
Filed Jan. 27, 1986, Ser. No. 822,499

Claims priority, application Japan, Jan. 25, 1985, 60-12275

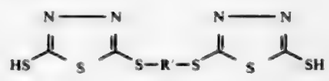
Int. Cl.⁴ C08F *2/50*; **C08J** *3/28*

U.S. Cl. 522—16 **17 Claims**

1. A photopolymerizable composition comprising an addition polymerizable compound having at least two ethylenically unsaturated bonds in the molecule, at least one photopolymerization initiator and at least one of 2-mercapto-5-substituted thiadiazole compounds represented by formulae (I) and (II)



(I)



(II)

wherein R represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted alkylthio group, or a substituted or unsubstituted aralkylthio group; and R' represents a substituted or unsubstituted alkylene group.

4,657,943

THICKENERS

Popke Wietsma, Velp, Netherlands, assignor to Polysar Financial Services S.A., Fribourg, Switzerland

Filed Sep. 3, 1985, Ser. No. 771,583

Claims priority, application Netherlands, Sep. 10, 1984, 8402756

Int. Cl.⁴ C08L *33/04*; **C08K** *9/00, 3/34*

U.S. Cl. 523—216 **9 Claims**

1. A thickening agent comprising a dispersion of at least one polymer having a molecular weight from about 85,000 to 120,000, and being selected from the group consisting of:

(A) a copolymer consisting essentially of

(i) 60–100 weight percent of at least one monomer of an ester selected from the group consisting of C_{1-8} alkyl esters of C_{3-8} ethylenically unsaturated carboxylic acids; and

(ii) 40–0 weight percent of at least one monomer selected from the group consisting of C_{3-8} ethylenically unsaturated carboxylic acid monomers, and

(B) polymers of 100 weight percent of at least one monomer selected from the group consisting of C_{3-8} ethylenically unsaturated carboxylic acid monomers; and from about 15 to about 45 parts by dry weight per 100 parts by dry weight of said polymer of at least one clay selected from the group consisting of aluminum silicate clays, montmorillonite clays and bentonite;

said thickener being adjusted to a pH of greater than 6.5 subsequent to the mixing of said polymer and said clay.

4,657,944

CO_2-INDUCED IN-SITU GELATION OF POLYMERIC VISCOSIFIERS FOR PERMEABILITY CONTRAST CORRECTION

Donald D. Bruning, Houston, and Donald R. Weir, Borger, both of Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 578,393, Feb. 9, 1984, Pat. No. 4,569,393. This application Dec. 6, 1985, Ser. No. 805,519

Int. Cl.⁴ C09K *7/00*

U.S. Cl. 523—130 **10 Claims**

1. A gelable composition comprising effective ratios of:

(a) water,

(b) at least one polymer capable of gelling with a crosslinking agent within a gelation pH range,

(c) at least one polyvalent metal cation, selected from the group consisting of Fe^{2+}, Fe^{3+}, Al^{3+}, Ti^{4+}, Zn^{2+}, Sn^{4+}, Ca^{2+}, Mg^{2+}, Cr^{3+}, and mixtures thereof;

(d) at least one chelating/sequestering anion selected from the group consisting of acetate, nitrolotriacetate, tartrate, citrate, tripolyphosphate, metaphosphate, gluconate, phosphate, and mixtures thereof, and

(e) carbon dioxide.

4,657,945

FIBRE-REINFORCED OR FILLED POLYPHENYLENE SULPHIDE

Karl-Heinz Reichert, and Ingo Koschinski, both of Berlin, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 10, 1985, Ser. No. 753,385

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1984, 3426918

Int. Cl.⁴ C08K *7/02, 9/02*; **C08L** *81/02*; **C08G** *75/02*

U.S. Cl. 523—200 **6 Claims**

1. A fiber-reinforced or filled polyphenylene sulphide containing chemically-active fiber which have been activated by a pretreatment with bromine vapor, chlorine gas, thionyl chloride or ozone wherein the fibers pretreated are carbon fiber, pitch fiber, glass fiber, aluminum fiber or asbestos fiber material.

4,657,946

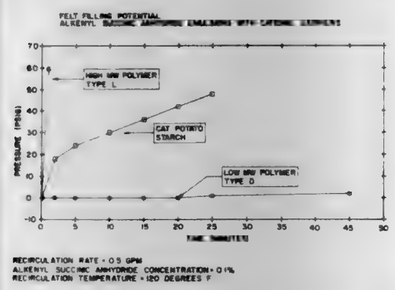
PAPER SIZING METHOD AND EMULSION

Dominic S. Rende, Woodridge, and Michael D. Breslin, Downers Grove, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 625,476, Jun. 25, 1984, abandoned, which is a continuation-in-part of Ser. No. 574,324, Jan. 27, 1984, abandoned. This application Jul. 16, 1985, Ser. No. 755,503

Int. Cl.⁴ B05D *3/02*; **D21D** *3/00*

U.S. Cl. 523—402 **12 Claims**



1. In the process of preparing sized paper products, which process uses an effective amount of an emulsified alkenyl succinic anhydride sizing agent containing water, alkenyl succinic anhydride, surfactants, and a cationic polymer, the improvement which comprises the use as the cationic polymer of a water-soluble cationic vinyl addition polymer having a molecular weight below about 1,000,000; the use as the surfactant of a phosphated ethoxylate or sulfonated emulsifier at a concentration of from 0.0 to about 2.0 weight percent; and the use of pre-application agitation having sufficient energy to achieve an alkenyl succinic anhydride particle size not exceeding 5 micron in diameter, and wherein the weight ratio of active alkenyl succinic anhydride to active cationic vinyl polymer ranges between about 1:1 to about 15:1.

8. An emulsion of alkenyl succinic anhydride comprising:

a. 50–99.9 percent by weight water

b. 0.01–40 percent by weight of an alkenyl succinic anhydride

c. 0.001–10.0 percent by weight of a water soluble cationic vinyl addition polymer having a molecular weight greater than 10,000.

4,657,947

ANTICORROSIVE COATING COMPOSITION CONTAINING POLYOL RESIN, ISOCYANATE HARDENER AND DILUENT

Hidehiko Kojo, Koshigaya, and Koji Akimoto, Tokyo, both of Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Division of Ser. No. 603,396, Apr. 24, 1984, Pat. No. 4,530,947. This application Mar. 6, 1985, Ser. No. 708,762

Int. Cl.⁴ C08K *5/01, 5/12*; **C08L** *57/00, 63/00*

U.S. Cl. 523—455 **8 Claims**

1. A coating composition which comprises a mixture of

(A) a polyol resin obtained by the reaction of an amino compound having at least one primary or secondary amino group with a prepolymer containing epoxy groups which prepolymer has been prepared by reacting

an epoxy resin, with

a polyhydroxy phenolic compound selected from the group consisting of polynuclear polyhydroxy phenols having adjacent hydroxy groups, polyol esters of polyhydroxy phenolic carboxylic acids having adjacent hydroxy groups, and mixtures thereof,

said prepolymer containing at least 0.05 mole of said polyhydroxy phenolic compound, per molecule, and having an average epoxide equivalent of less than 3000;

(B) a compound having more than one isocyanate group or groups which change to isocyanate groups under conditions effective for hardening the coating composition; and

(C) a material selected from the group consisting of coumarone resin, petroleum resin, dioctyl phthalate, dibutyl phthalate and high boiling point neutral oil,

wherein the reaction ratio of said amino compound to said prepolymer, by equivalents of groups of said amino compound that are reactive with the epoxy groups of said prepolymer, is from 1.1 to 0.7; the ratio of (A) to (B), by equivalents of the hydroxy groups of (A) to the isocyanate groups of (B), is from 0.4 to 1.2; and the weight ratio of (C) to (A) is from 0.5 to 2.

4,657,948

FLUID LOSS CONTROL IN WELL CEMENT SLURRIES

David N. Roark; Adam Nugent, Jr., and Baldev K. Bandlish, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 732,096, May 9, 1985. This application Sep. 23, 1985, Ser. No. 779,140

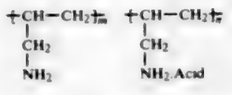
Int. Cl.⁴ C09K *7/00*

U.S. Cl. 523—130 **66 Claims**

1. A fluid-loss-control additive adapted for use in cementing subterranean well formations with an aqueous well cement slurry, which additve comprises in combination, an anydrous mixture of (i) a lignosulfonate polymer or a condensed naphthalene sulfonate polymer or a sulfonated vinylaromatic polymer or any combination thereof and (ii) an unmodified or a

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chemically modified polymer of monoallylamine represented by the general formula:



where m is a number from zero to 100,000 and n is a number from zero to 100,000, the sum of m plus n being in the range of about 10 to about 100,000, said polymer of monoallylamine, when chemically modified, being further characterized by (a) containing small quantities of polymerizable comonomer containing two or more double bonds in the molecule, or (b) being crosslinked or bridged with small quantities of a crosslinking agent having two or more groups reactable with the amino group.

4,657,949

GAMMA RADIATION RESISTANT CARBONATE POLYMER COMPOSITIONS WITH SORBATES

Vaughn M. Nace, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 5, 1985, Ser. No. 805,003

Int. Cl.⁴ C08K *5/20, 5/10*

U.S. Cl. 523—137 **13 Claims**

1. A carbonate polymer composition with improved resistance to gamma radiation which comprises a carbonate polymer and a gamma radiation resistance improving amount of one or more of the sorbate compounds having the formula



where X is a member of the group consisting of —OH, $—NR_1R_2$, $—OR_3$, —O—R_4—OH, and —O—R_4—OR_5 where R_1 and R_2 are hydrogen or a lower alkyl group of 1–8 carbons, R_3 is a hydrocarbon group of 1–18 carbons, R_4 is an alkylene group of 2–10 carbons, and R_5 is the sorbate radical.

4,657,950

REFRACTORY BINDERS

Raja Iyer, Hazelcrest; Ranik C. Shah, Des Plaines, and Robert A. Laitar, Woodridge, all of Ill., assignors to Acme Resin Corporation, Westchester, Ill.

Filed Oct. 12, 1984, Ser. No. 660,169

Int. Cl.⁴ C08K *3/22;* **C08L** *61/14;* **C04B** *26/12*

U.S. Cl. 523—145 **14 Claims**

1. A refractory mix consisting essentially of refractory particles, a preformed alkoxy modified phenolic resole resin and a polar solvent for the resin, said resin produced in the presence of a divalent metal ion catalyst and consisting essentially of a phenolic resole resin having at least one alkoxy methylene group for every 20 phenolic hydroxyl groups, said alkoxy methylene group having the general formula $—(CH_2O)_nR$ where R is the alkyl group of a primary or secondary monohydric aliphatic alcohol containing from 1 to 8 carbon atoms and n is a small positive integer, and said alkoxy modified phenolic resole resin being capable of forming an 80% by weight solution in a polar solvent, which solution shows an increase in viscosity of less than about 20% per week when held at 40° C. in a closed container. wherein the alkoxy modified phenolic resole resin comprises from about 1% to 25% by weight of the mix.

2. The refractory mix of claim 1 wherein the alkoxy modified phenolic resole resin is a methoxy modified phenolic resole resin.

3. The refractory mix of claim 2 wherein the phenolic resole resin is prepared from phenol and formaldehyde.

4. The refractory mix of claim 3 wherein the refractory particles comprise magnesite.

4,657,951

FIBROUS MATERIAL-BASED FRICTION MEMBER

Mitsuhiro Takarada; Hiroshi Ishii; Yutaka Arai, and Takashi Hamano, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co, Ltd., Tokyo and Gun-ei Chemical Industry Co., Ltd., Gunma, both of, Japan

Filed Feb. 10, 1986, Ser. No. 828,066

Claims priority, application Japan, Feb. 22, 1985, 60-34109

Int. Cl.⁴ C08J *5/14*

U.S. Cl. 523—153 **6 Claims**

1. A friction member formed by consolidating a fibrous base material with a resinous binder which comprises a phenolic resin modified with an organopolysiloxane comprising, in a molecule, at least one tetrafunctional siloxane unit expressed by the unit formula SiO_2 or at least one trifunctional siloxane unit represented by the general unit formula $R^1SiO_{1.5}$, in which R^1 is a substituted or unsubstituted monovalent hydrocarbon group having 1 to 8 carbon atoms.

4,657,952

THERMOPLASTIC GLASS FIBER-REINFORCED POLYAMIDE MOLDING MATERIAL

Franz Kerschbaumer, Steinhausen, and Klaus Schmidt, Chur, both of Switzerland, assignors to Ems Inventa AG, Switzerland

Filed Feb. 24, 1986, Ser. No. 833,062

Claims priority, application Switzerland, Feb. 22, 1985, 818/85

Int. Cl.⁴ C08J *3/20;* **C08K** *3/40*

U.S. Cl. 523—351 **20 Claims**

1. A method of making a thermoplastic impact-resistant glass fiber-reinforced polyamide molding material, comprising mixing (A) a glass fiber-containing polyamide and (B) an impact-resistance-providing additive-containing polyamide.

4,657,953

COATING COMPOSITION OF POLYOL RESIN, ISOCYANATE HARDENER AND DILUENT

Hidehiko Kojo, Koshigaya, and Koji Akimoto, Tokyo, both of Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Division of Ser. No. 603,395, Apr. 24, 1984, Pat. No. 4,535,107. This application Jun. 18, 1985, Ser. No. 746,207

Int. Cl.⁴ C08K *5/01, 5/12;* **C08L** *57/00, 63/00*

U.S. Cl. 523—435 **9 Claims**

1. A coating composition which comprises

(A) a polyol resin obtained by the reaction of an amino compound having at least one primary or secondary amino group with a prepolymer which prepolymer has been prepared by reacting

an epoxy resin, with

a phosphorous compound having at least one P—OH group;

(B) a compound having more than one isocyanate group or groups which change to isocyanate groups under conditions effective for hardening the coating composition; and

(C) a material selected from the group consisting of coumarone resin, petroleum resin, dioctyl phthalate, dibutyl phthalate and high boiling point neutral oil,

wherein the reaction ratio of said phosphorus compound to said epoxy resin, by equivalents of the hydroxy groups of said phosphorus compound to the epoxy groups of said epoxy resin, is from 0.05 to 0.9; the reaction ratio of said amino compound to said prepolymer, by equivalents of groups of said amino compound that are reactive with the epoxy groups of said prepolymer, is from 1.1 to 0.7; the ratio of (A) to (B), by equivalents of the hydroxy groups of (A) to the isocyanate groups of (B), is from 0.4 to 1.2; and the weight ratio of (C) to (A) is from 0.5 to 2.

4,657,954

POLY (HYDROXY ETHER)

Katsuyoshi Watanabe, Nara, and Yoshiya Fukuyama, Minoo, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

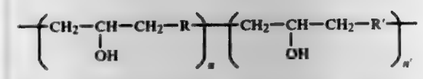
Continuation of Ser. No. 639,513, Aug. 7, 1984, abandoned, which is a continuation of Ser. No. 328,192, Dec. 7, 1981, abandoned. This application Apr. 21, 1986, Ser. No. 857,396

Claims priority, application Japan, Dec. 18, 1980, 55-179934; Sep. 10, 1981, 56-143564

Int. Cl.⁴ C08L *63/02*

U.S. Cl. 523—459 **9 Claims**

1. A zinc dust paint comprising zinc dust and poly(hydroxy ether) having a repeat unit of the formula:



wherein R is an unsubstituted or substituted resorcinol residue, R′ is a residue of a dihydric dinuclear phenol in which both monohydric phenols are linked to each other directly or through one carbon atom, n and n′ each represents a positive number, provided that n and n′ satisfy $35 \leqq n+n' \leqq 400$, the amount of resorcinol residue in the poly(hydroxy ether) being 10–40%, and the amount of zinc dust being 70–97% by weight.

4,657,955

FLAMEPROOFING AGENTS, THEIR PREPARATION AND THEIR USE FOR FLAMEPROOFING POLYCARBONATES

Hans-Jürgen Kress, Krefeld, and Klaus Kircher, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

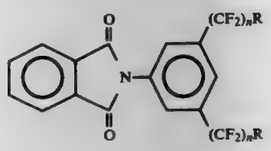
Division of Ser. No. 654,582, Sep. 26, 1984, Pat. No. 4,615,832. This application Jan. 11, 1986, Ser. No. 872,791

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1983, 3334822

Int. Cl.⁴ C08K *5/34*

U.S. Cl. 524—94 **3 Claims**

1. A process for flameproofing thermoplastic, branched, aromatic polycarbonates made from halogen-free, phenolic components, comprising incorporating therein about 0.1 to 1% by weight, based on the polycarbonate, of a phthalimide of the formula



wherein

n is an integer from 1 to 12 and

R is hydrogen or a fluorine atom and 0.02 to 2% by weight based on the polycarbonate of an alkali metal salt of an organic or inorganic acid.

4,657,956

COMPOUNDS USEFUL AS STABILIZING AGENTS FOR RUBBER VULCANIZATES

Albert F. L. G. Devaux, Mont Saint Guibert, and Philippe G. Moniotte, Heron, both of Belgium, assignors to Monsanto Europe, S. A., Brussels, Belgium

Division of Ser. No. 617,070, Jun. 4, 1984, Pat. No. 4,595,721. This application Sep. 13, 1985, Ser. No. 775,555

Int. Cl.⁴ C08K *5/41, 5/36;* **C07C** *149/26, 149/14;* **C07D** *403/12*

U.S. Cl. 524—105 **22 Claims**

1. A vulcanizable rubber composition comprising a diene rubber, sulphur and a vulcanisation accelerator, characterised in that the composition also comprises a stabiliser material having the formula

(a) R—S—B—S—R

where B is an organic bridging group selected from the group consisting of an alkylene or alkenylene radical having 2 to 40 carbon atoms which is optionally substituted by one or more aryl substituents, a cycloalkylene, a (C_{1-6} alkylene) cycloalkylene, a (C_{1-6} alkylene) alkylcycloalkane or one of the structures having the following formulae:

$—(CH_2)_a—O—(CH_2)_a—$

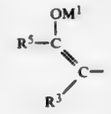
$—(CH_2)_a—O—(CH_2)_{a'}—O—(CH_2)_a—$

$—(CH_2)_b—A—(CH_2)_b—$

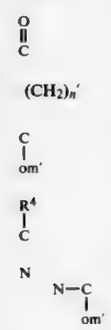
$—(CH_2)_c—COO—(CH_2)_d—$ and

$—(CH_2)_c—COO—Y—OOC—(CH_2)_c—$, where each a′ and each c independently represents an integer of from 1 to 20, a represents an integer of from 2 to 20, each b independently represents an integer of from 1 to 10, A represents phenylene or cyclohexylene, and Y represents a group $—(CH_2)_c—$ or a group $—(CH_2CH_2O)_dCH_2CH_2—$ where d represents an integer of from 1 to 5 and R is

(i) a group having the formula

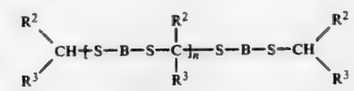


in which M^1 represents H, a monovalent metal or the equivalent of a multivalent metal, and wherein R^3 is CN, $CONHR^4$, COR^5, $COOR^5$, SO_2R^5, COOM or SO_2OM, where R^4 is H, C_{1-6} alkyl, phenyl or benzyl, and R^5 is C_{1-6} alkyl, phenyl or benzyl, or in which R^3 and R^5 are linked to form a cyclic group having the formula



where n′ has the value 2 or 3 and one or more of the hydrogen atoms in the $(CH_2)_{n'}$ grouping can be replaced by methyl or ethyl groups, and B in the formula of the stabilizer represents an alkylene group having from 5 to 6 carbon atoms j or

(ii) CN or CCl_3; or



(b)

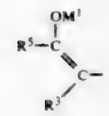
where n has an average value of from 1 to 5.

14. A compound having the formula

R—S—B—S—R

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where B is an alkylene group having from 5 to 16 carbon atoms and R is a group having the formula

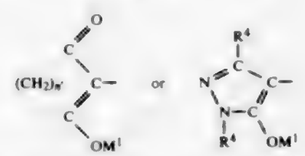


in which M^1 represents H, a monovalent metal or the equivalent of a multivalent metal, R^3 represents $CONHR^4$ or COR^5 where R^4 is H, C_{1-6} alkyl, phenyl or benzyl, and R^5 is C_{1-6} alkyl, phenyl or benzyl.

18. A compound having the formula

R—S—B—S—R

where B is an alkylene group having from 5 to 16 carbon atoms and each R is a group having the formula



where n' has the value 2 or 3 and one or more of the hydrogen atoms in the $(CH_2)_{n'}$ grouping can be replaced by methyl or ethyl groups, M^1 represents H, a monovalent metal or the equivalent of a multivalent metal, and each R^4 independently represents methyl, ethyl or phenyl.

4,657,957

BINDING AGENT AQUEOUS DISPERSIONS HAVING IMPROVED COAGULATION PROPERTIES

Hans-Peter Baumann, Allschwil, and Marcel Grossmann, Reinach, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

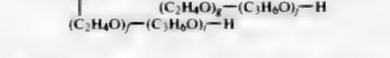
Continuation of Ser. No. 767,922, Aug. 21, 1985, abandoned, which is a continuation of Ser. No. 386,007, Jun. 7, 1982, abandoned, which is a continuation of Ser. No. 96,985, Nov. 23, 1979, abandoned, which is a continuation of Ser. No. 904,740, May 11, 1978, abandoned, which is a continuation of Ser. No. 605,776, Aug. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 454,071, Mar. 25, 1974, abandoned. This application Jan. 15, 1986, Ser. No. 819,182

Claims priority, application Switzerland, Mar. 30, 1973, 4400/73

Int. Cl.[4] **C08L** *75/04*

U.S. Cl. 524—245 **18 Claims**

1. A composition comprising an aqueous dispersion of a binding agent in admixture with a compound or mixture of compounds of formula Ib



Ib

in which

R_2 is an alkyl or alkenyl radical of 10 to 24 carbon atoms derived from reduced tallow fatty acids;

each of the groups $—(C_2H_4O)_f—(C_3H_6O)_i—H$, $—(C_2H_4O)_g—(C_3H_6O)_j—H$ and $—(C_2H_4O)_h—(C_3H_6O)_k—H$, independently, contains either all ethyleneoxy (C_2H_4O) or all propyleneoxy (C_3H_6O) groups, or contains an ordered chain of ethyleneoxy groups followed by propyleneoxy groups or an ordered chain of propyleneoxy groups followed by ethyleneoxy groups; each propyleneoxy group is present either as $—CH(CH_3)—CH_2—O—$ or as $—CH_2—CH(CH_3)—O—$; and each of the symbols f to k is zero or an integer, with the provisos that each of f+i, g+j and h+k is at least 1 and f+g+h is 5 to 40 and i+j+k is 10 to 60,

said compound(s) of formula Ib being in free base, acid addition salt or quaternary ammonium salt form; and said binding agent comprising rubber or a member selected from the group consisting of homo- and copolymers of butadiene, styrene, acrylonitrile, isobutylene, vinyl esters, vinyl halides, vinylidene chloride, acrylic esters, methacrylic esters, methylene-bis-acrylic amide and (methyl)-acrylic amide, and dimethylol urea, dimethylol propylene urea, dimethylol melamine and dimethylol methylcarbamate.

4,657,958

CONTACT ADHESIVE AND ADHESIVE SYSTEM FOR EPDM ELASTOMERS

John W. Fieldhouse, Mogadore, and Mark L. Stayer, Suffield, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 708,616, Mar. 5, 1985, abandoned. This application Feb. 11, 1986, Ser. No. 827,456

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

Int. Cl.[4] **C08K** *5/01, 3/36, 5/17, 5/05*

U.S. Cl. 524—247 **42 Claims**

1. An adhesive composition comprising:

(a) 100 parts by weight of a neutralized sulfonated EPDM terpolymer having from about 10 to about 100 milliequivalents of neutralized sulfonate groups per 100 grams of terpolymer;

(b) from about 500 to about 1500 parts by weight of an organic hydrocarbon solvent;

(c) from about 10 to about 100 parts by weight of an ionic plasticizer selected from the group consisting of aliphatic alcohols, alkylamines, alkanol amines and mixtures thereof;

(d) from about 50 to about 200 parts by weight of a phenolic hydrocarbon resin or mixture of phenolic hydrocarbon resins; and

(e) from about 10 to about 200 parts by weight of a material selected from the group consisting of mineral oils, petroleum oils, polybutenes, polyisobutylenes, ethylene/propylene copolymers and mixtures thereof.

4,657,959

HYDROPHILIC SILICONES

Thomas T. Bryan, Mahtomedi, and Harvey L. Anderson, Dellwood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1985, Ser. No. 798,737

Int. Cl.[4] **C08K** *5/24*

U.S. Cl. 524—266 **18 Claims**

1. A curable silicone composition comprising a mixture of (a) curable silicone prepolymer and (b) surfactant selected from the group consisting of (i) ethoxylated nonionic surface active agents containing one or more siloxane or perfluoroalkyl solubilizing groups and (ii) cationic or amphoteric fluorochemical surface active agents, said surfactant being present in sufficient amount and said ethoxylated nonionic surface active agent, if present, containing sufficient ethyleneoxy groups so that said composition, when cured, has a three minute water contact angle below about 65°.

4,657,960

READHERING ADHESIVE

Ralph J. Shuman, Needham, and Barbara Burns, Auburn, both of Mass., assignors to Dennison Manufacturing Co., Framingham, Mass.

Filed Jul. 18, 1985, Ser. No. 756,870

The portion of the term of this patent subsequent to Feb. 17, 2004, has been disclaimed.

Int. Cl.[4] **C08L** *7/00*

U.S. Cl. 524—270 **17 Claims**

1. A gelled adhesive product in solid form comprising:

a natural rubber latex component; a water soluble or water dispersible tackifying agent; and a gelling agent; said gelled adhesive product having the combination of properties resulting in an adhesive coatable onto a substrate surface area by gliding the adhesive product over the substrate surface, the adhesive having sufficient tack permitting the adhesive coated area on said substrate to immediately adhere to a solid contact surface as said adhesive coated substrate is pressed against the contact surface, the adhesive also having sufficient release property permitting removal of said adhesive coated substrate from said contact surface upon lifting the coated substrate from the contact surface, said adhesive having the additional property permitting said same adhesive coated substrate to readhere to a solid contact surface upon pressing said same coated substrate thereto without applying additional adhesive.

4,657,961

PROCESS FOR FORMING PHOSPHOR SCREEN OF CATHODE RAY TUBE

Masahiro Nishizawa; Hiroshi Yokomizo; Kiyoshi Miura, and Osamu Sasaya, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 13, 1982, Ser. No. 397,902

Claims priority, application Japan, Jul. 20, 1981, 56-112166

Int. Cl.[4] **C08K** *5/12*

U.S. Cl. 524—297 **7 Claims**

1. A film-forming composition for producing a lacquer film between phosphor layers and a metallic film in the production of phosphor screen of cathode ray tube, which consists essentially of a resin component, an organic solvent and a plasticizer in an amount of about 12 to 60% by weight based on the weight of the resin component, whereby a film can be formed on the phosphor layers which is strongly adherent and can fill gaps between phosphor layers, and yet which is uniform and does not wrinkle and have pinholes, wherein the resin component is polyisobutyl methacrylate and an acrylic resin, the solvent is toluene and ethyl acetate and the plasticizer is dibutyl phthalate, said composition being a solution of said resin component, said solvent and said plasticizer.

4,657,962

FINELY DIVIDED COATING AGENT CONTAINING POLYMERS HAVING HYDROXYL GROUPS AND BLOCKED POLYISOCYANATES CONTAINING AT LEAST ONE ACYLURETHANE

Gerhard Brindöpke, Frankfurt am Main, and Gerhard Johannes, Taunusstein, both of Fed. Rep. of Germany, assignors to Hoechst AK, Fed. Rep. of Germany

Filed Jun. 6, 1985, Ser. No. 741,864

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421294

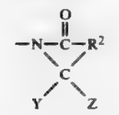
Int. Cl.[4] **C08G** *18/80*

U.S. Cl. 524—362 **16 Claims**

1. A finely divided coating agent based on

(A) oligomers, polymers or a mixture thereof containing OH groups and

(B) blocked polyisocyanates and optionally further conventional additives, the component B) consisting of at least one acylurethane, possessing groups of the formula —CO—NH—CO—XR^1 (I), wherein X represents oxygen or nitrogen, and, when X is oxygen, R^1 represents alkyl, alkoxyalkyl, hydroxyalkyl, aryl, aralkyl or cycloalkyl having 1 to 12 carbon atoms in the alkyl group, and, when X is nitrogen, the radical XR^1 represents the group



(II)

wherein

R^2 is C_{1-11}-alkylene, C_{1-11}-alkenylene, or unsubstituted or alkyl-substituted phenylene having up to 8 carbon atoms in the alkyl radical, and

Y and Z together form an oxygen atom, or are identical or different and each denote hydrogen or C_{1-5}-alkyl, and the coating agent is present in powder form or in the form of a dispersion.

4,657,963

HEAT-RESISTANT COATING COMPOSITION AND HEAT-RESISTANT COAT

Tooru Matsumoto, Asaka; Satoshi Ishikawa; Eiji Nakamura, both of Saitama; Tomio Izuoka, Nabari, and Tomoyuki Okada, Tsu, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo; Mie Yushikako Kabushiki Kaisha, Mie and Sankei Giken Kogyo Kabushiki Kaisha, Tokyo, all of, Japan

Filed Aug. 27, 1985, Ser. No. 769,838

Claims priority, application Japan, Aug. 28, 1984, 59-177544

Int. Cl.[4] **C38K** *3/08, 3/10, 3/32, 3/34*

U.S. Cl. 524—406 **3 Claims**

1. A heat-resistant coating composition comprising:

(a) 50–80% by weight of a pulverized inorganic material consisting essentially of (i) a mixture of powder particles consisting essentially of at least one compound selected from the group consisting of aluminum phosphate, zinc molybdate and calcium carbonate, (ii) plate-shaped powder particles consisting essentially of aluminium silicate or magnesium silicate, and (iii) metallic zinc powder, wherein the amount of the mixture of powder particles (i) is 20–55% by weight of the pulverized inorganic material, and the amount of metallic zinc powder is 40–70% by weight of the pulverized inorganic material; and

(b) 20–50% by weight of a mixture of a modified silicone resin and an aluminium chelate compound selected from the group consisting of ethyl acetate aluminum di-isopropylate and aluminium tris-ethylacetoacetate, wherein the amount of aluminium chelate is 0.5–4% by weight of the mixture (b), and the modified silicone resin consists of 20–40% by weight of at least one resin selected from the group consisting of phenol resin, epoxy resin, acrylic resin and polyester resin and 80–60% by weight of a silicone resin;

said pulverized inorganic material (a) being bound by said mixture (b) of modified silicone resin and aluminum chelate compound.

4,657,964

AQUEOUS-BASED URETHANE COATING COMPOSITIONS

Kwo-Hrong Lai, Lynnfield; Milton Lapkin, Sudbury, and Frank B. Swasey, Salem, all of Mass., assignors to ICI Americas Inc., Wilmington, Del.

Filed Jul. 3, 1985, Ser. No. 752,150

Int. Cl.[4] **C08L** *75/12;* **C08K** *3/22;* **C08G** *18/50, 18/32*

U.S. Cl. 524—409 **12 Claims**

1. An aqueous polyurethane dispersion comprising the reaction product of

(a) a prepolymer of

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a diol selected from the group consisting of alkoxylated halogen containing Bisphenol A diols and halogen containing neopentyl glycols,

a second diol selected from the group consisting of carboxy group, sulphonate group and tertiary amine containing diols,

a polyol having a hydroxyl functionality equal to at least 2 wherein said functionality is attached to either (a) a polymer selected from the group consisting of polyesters, polylactones, polyacetals, polycarbonates, polyolefins, polyethers, polythioethers and mixtures or combined polymers thereof having a molecular weight of from about 300 to about 4200, (b) linear or branched hydrocarbon containing from 2 to 20 carbon atoms having a molecular weight up to 300 or (c) combinations of (a) and (b), and

an organic diisocyanate in an aqueous dispersion, with

(b) an active hydrogen containing chain extender.

12. A dispersion, as claimed in claim 1, further including antimony oxide.

4,657,965

SILICONE ELASTOMER COMPOSITION

Junichiro Watanabe; Yuichi Funahashi, both of Obta; Kazuo Sagiura, Matsuzaka, and Hironori Matsumoto, Yokkaichi, all of Japan, assignors to Toshiba Silicone Co., Ltd. and Japan Synthetic Rubber Co., Ltd., both of Tokyo, Japan

Filed Oct. 21, 1985, Ser. No. 789,833

Claims priority, application Japan, Oct. 22, 1984, 59-221541; Oct. 22, 1984, 59-220357

Int. Cl.⁴ C08L *83/04, 83/00*

U.S. Cl. 524—506 **13 Claims**

5. A silicone elastomer composition, comprising:

(A) 100 parts by weight of a composition consisting of

(a) a polyorganosiloxane of a polymerization degree of at least 20, wherein the organic groups are selected from monovalent substituted and unsubstituted hydrocarbon groups and are attached to silicon atom at a rate, on average, in the range of 1.9 to 2.1 per silicon atom and at least two of said organic groups are monovalent hydrocarbon groups possessing at least five carbon atoms and an aliphatic carbon-carbon double bond bonded to a silicon atom via at least one carbon atom and

(b) an organic elastomer, at a mixing ratio, (a)/(b), in the range of 95/5 to 5/95 (by weight) and

(B) 0.1 to 25 parts by weight of vulcanizer selected from the group consisting of sulfur, sulfur donors, substituted or unsubstituted alkylphenol resins, and quinoids.

4,657,966

CARBOXYLATED LATEX

Prakash Mallya, Pasadena, Calif., assignor to Polysar Limited, Sarnia, Canada

Continuation of Ser. No. 499,063, May 27, 1983, abandoned. This application Jun. 13, 1985, Ser. No. 744,476

Claims priority, application Canada, Apr. 25, 1983, 426470

Int. Cl.⁴ C08K *5/01*

U.S. Cl. 524—747 **3 Claims**

1. A process for the synthesis of a latex having a polymeric solids content from about 58 to 65 percent by weight, a viscosity of less than about 3000 cps at a polymeric solids content of 61 percent by weight and a bimodal particle size distribution so that from about 65 to 80 weight percent of the polymer particles in the latex have an average particle diameter from about 1800 to 2100 A; and from about 35 to 20 weight percent of the particles in the latex have an average particle diameter from about 450 to 650Å,

comprising conventionally polymerizing an emulsion comprising per 50 to 75 parts by weight of water about 100 parts by weight of additives consisting of a minor proportion of non-monomeric additives and a major proportion of a monomeric mixture consisting essentially of:

30 to 40 weight percent of an aliphatic C_{4-6} conjugated diolefin;

30 to 60 weight percent of a vinyl aromatic monomer;

0.5 to 10 weight percent of at least one monomer selected from the group consisting of C_{3-6} ethylenically unsaturated carboxylic acid, C_{3-6} ethylenically unsaturated aldehydes; and amides of C_{3-6} ethylenically unsaturated carboxylic acids which amides may be unsubstituted or substituted at the nitrogen atom by a C_{1-4} alkyl or alkanol radical; and from about 0 to 25 weight percent of a C_{2-8} alkyl or alkanol ester of a C_{3-6} ethylenically unsaturated carboxylic acid and at an overall monomer conversion between 43 and 50 percent introducing into the emulsion as essentially a single portion an additional micelle forming surfactant selected from the group consisting of alkali salts of C_{8-25} alkyl ether sulfates; C_{8-25} alkyl sulfates; C_{8-25} alkyl sulfonates; C_{8-25} alkyl aryl sulfonates; and C_{8-25} alkyl succinates and a mixture thereof, in an amount from about 1.0 to 2.0 parts by weight per hundred parts by weight of total monomers and continuing the polymerization to at least 95 percent conversion.

4,657,967

ROOM TEMPERATURE CURING COMPOSITIONS CONTAINING TETRAFUNCTIONAL ETHOXY-KETOXIMO SILANE CROSSLINKERS

Jerome M. Klosowski, Monitor Township, Bay County; Michael D. Meddaugh; Paul B. Sykes, both of Midland, and Antony P. Wright, Mills Township, Midland County, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 7, 1986, Ser. No. 849,231

Int. Cl.⁴ C08L *83/04*

U.S. Cl. 524—860 **44 Claims**

1. A composition comprising a product which is storage stable in a package when protected from moisture but cures when removed from the package and exposed to moisture and which is obtained by mixing the following ingredients

(A) a hydroxyl endblocked polydiorganosiloxane having an average viscosity at 25° C. of from 0.5 to 100 Pa.s and the organic radicals bonded to the silicon atom are selected from the group consisting of monovalent hydrocarbon radicals and monovalent halogenated hydrocarbon radicals, and

(B) a tetrafunctional ethoxy-ketoximo silane mixture of 0 to 80 weight percent of tetraketoximosilane, 20 to 70 weight percent of monoethoxytriketoximosilane, 1 to 60 weight percent of diethoxydiketoximosilane, and 0 to 20 weight percent triethoxymonoketoximosilane in which the ketoximo groups have a formula —O—N=CR′R′ in which each R′ is an alkyl radical having from 1 to 4 carbon atoms, the amount of ingredient (B) being present in an amount sufficient to provide at least 0.8 moles of tetrafunctional ethoxy-ketoximo silane per mole of hydroxyl group in (A).

4,657,968

THERMOSETTING RESINOUS MOLDING COMPOSITIONS FOR PREPARING POLYURETHANE CONTAINING A PHOSPHOROUS POLYOL AND AN ESTEROL

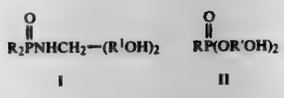
Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed May 14, 1986, Ser. No. 863,263

Int. Cl.⁴ C08G *18/38*

U.S. Cl. 525—28 **5 Claims**

1. The homogeneous, stable solution produced by mixing from 1 to 30% by weight of a polyol conforming to at least one of the formulas



I II

wherein R represents a saturated or unsaturated alkyl group having from 1 to 20 carbon atoms, a saturated or unsaturated alkaryl group having from 7 to 20 carbon atoms, or an aryl group having from 6 to 12 carbon atoms and R′ independently represent an alkylene group having from 1 to 4 carbon atoms or an alkylene ether group having from 2 to 50 carbon atoms with an esterol.

4,657,969

CONTINUOUS VULCANIZATION INTERFACE CONTROL

Ronald R. Martin, and Clifford E. Witcher, Jr., both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation of Ser. No. 509,391, Jun. 30, 1983, abandoned. This application Mar. 4, 1985, Ser. No. 707,188

Int. Cl.⁴ C08J *3/24*

U.S. Cl. 525—51 **11 Claims**

1. A method of controlling the water-steam interface in a continuous vulcanization tube comprising the steps of:

selecting a preferred water-steam interface position within said tube;

detecting elevation of water in said tube near said preferred position by a water sensitive sensing means;

converting detected elevation data into a water level signal;

transmitting said signal to means for controlling flow of water into said tube; and

controlling the position of said water-steam interface according to said level signal.

4,657,970

MODIFIED BLOCK COPOLYMER COMPOSITION

Toshinori Shiraki, Yamato; Fusakazu Hayano, Chigasaki, and Hideo Morita, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 432,923, Sep. 30, 1982. This application Aug. 26, 1985, Ser. No. 769,506

Claims priority, application Japan, Aug. 13, 1981, 56-125882; Aug. 24, 1981, 56-131650

Int. Cl.⁴ C08L *51/00, 51/04, 53/02, 69/00*

U.S. Cl. 525—57 **18 Claims**

1. A modified block copolymer composition comprising:

(a) at least one thermoplastic polymer selected from the group consisting of polar thermoplastic polymers each containing at least one polar functional group, polyoxymethylenes, polycarbonates, modified polycarbonates, polysulfones, modified polysulfones, nitrile polymers, polyphenylene ethers, modified polyphenylene ethers, polyarylene sulfides and modified polyarylene sulfides, said polar thermoplastic polymers being exclusive of polyamides, and

(b) at least one modified block copolymer which comprises a base block copolymer of at least one monovinyl substituted aromatic hydrocarbon polymer block A and at least one olefin compound polymer block B having an ethylenic unsaturation degree not exceeding 20%, said base block copolymer having at least one molecular unit grafted thereto, said at least one molecular unit containing at least one member selected from a carboxylic acid group and groups derived therefrom, said monovinyl substituted aromatic hydrocarbon being contained in said base block copolymer in an amount of 5 to 60% by weight based on said base block copolymer;

said thermoplastic polymer (a) being present in a weight ratio of 2:98 up to 50:50 relative to said at least one modified block copolymer (b);

said polar thermoplastic polymers excluding said modified block copolymer (b).

4,657,971

MODIFIED BLOCK COPOLYMER COMPOSITION

Toshinori Shiraki, Yamato; Fusakazu Hayano, Chigasaki, and Hideo Morita, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 432,923, Sep. 30, 1982. This application Aug. 26, 1985, Ser. No. 769,466

Claims priority, application Japan, Aug. 13, 1981, 56-125882; Aug. 24, 1981, 56-131650

The portion of the term of this patent subsequent to Dec. 9, 2003, has been disclaimed.

Int. Cl.⁴ C08L *51/04, 51/06, 53/02, 77/00*

U.S. Cl. 525—57 **17 Claims**

1. A modified block copolymer composition comprising:

(a) a thermoplastic polymer component selected from the group consisting of members (i) and (ii),

said member (i) being at least one thermoplastic polymer selected from the group consisting of polar thermoplastic polymers each containing at least one polar functional group, polyoxymethylenes, polycarbonates, modified polycarbonates, polysulfones, modified polysulfones, nitrile polymers, polyphenylene ethers, modified polyphenylene ethers, polyarylene sulfides and modified polyarylene sulfides, said polar thermoplastic polymers being exclusive of polyamides,

said member (ii) being a polyamide and at least one thermoplastic polymer selected from the group consisting of polar thermoplastic polymers each containing at least one polar functional group, polyoxymethylenes, polycarbonates, modified polycarbonates, polysulfones, modified polysulfones, nitrile polymers, polyphenylene ethers, modified polyphenylene ethers, polyarylene sulfides and modified polyarylene sulfides, said polar thermoplastic polymers being exclusive of polyamides; and

(b) at least one modified block copolymer which comprises a base block copolymer of at least one monovinyl substituted aromatic hydrocarbon polymer block A and at least one olefin compound polymer block B having an ethylenic unsaturation degree not exceeding 20%, said base block copolymer having at least one molecular unit grafted thereto, said at least one molecular unit containing at least one member selected from a carboxylic acid group and groups derived therefrom, said monovinyl substituted aromatic hydrocarbon being contained in said base block copolymer in an amount of 5 to 60% by weight based on said base block copolymer;

said thermoplastic polymer (a) being present in a weight ratio of 70:30 up to 98:2 relative to said modified block copolymer (b);

said polar thermoplastic polymers excluding said modified block copolymer (b).

4,657,972

POLYCARBONATE COMPOSITIONS

Harold F. Giles, Jr., Cheshire, and Robert P. Hirt, Jr., Lenox, both of Mass., assignors to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 688,196, Jan. 2, 1985, Pat. No. 4,608,311. This application Mar. 28, 1986, Ser. No. 845,349

Int. Cl.⁴ C08L *29/04*

U.S. Cl. 525—57 **10 Claims**

1. A composition comprising a physical admixture of:

(i) at least one polycarbonate;

(ii) at least one polyolefin;

(iii) at least one olefin vinyl alcohol copolymer; and

(iv) at least one material selected from olefin vinyl ester copolymers and modified polyolefin copolymers.

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4,657,973

POLYCARBONATE RESIN COMPOSITION

Hideki Endo; Kazuto Hashimoto; Kenji Tanaka, all of Ichihara; Takeshi Matsumoto, Chiba; Keishiro Igi, Kurashiki; Takayuki Okamura, Okayama; Shunro Taniguchi, Kurashiki; Masao Ishii, Kurashiki; Yoshifumi Murata, Kurashiki, and Shinichi Yokota, Kurashiki, all of Japan, assignors to Idemitsu Petrochemical Co. Ltd., Tokyo and Kuraray Company Limited, Kurashiki, both of, Japan

Filed Jan. 8, 1986, Ser. No. 817,064

Claims priority, application Japan, Jan. 23, 1985, 60-9252; Aug. 7, 1985, 60-172412; Oct. 8, 1985, 60-222720; Oct. 9, 1985, 60-223633

Int. Cl.[4] C08L *69/00*

U.S. Cl. 525—67 **24 Claims**

1. A polycarbonate resin composition comprising:

(A) 92 to 10 wt % of a polycarbonate resin; and

(B) 8 to 90 wt % of a polyesterether elastomer, said polyesterether elastomer consisting essentially of 40 to 75 wt % of a bifunctional carboxylic acid component and 60 to 25 wt % of a glycol component, said glycol component comprising 1 to 65 wt % of polyethylene glycol and 99 to 35 wt % of ethylene glycol.

4,657,974

FLAME-RETARDANT RESIN COMPOSITION

Yuichiro Kushida; Shigenobu Tago, both of Shibukawa, and Tatsuhiro Aoyagi, Ichihara, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1985, Ser. No. 782,569

Claims priority, application Japan, Oct. 19, 1984, 59-218514; Aug. 15, 1985, 60-178587

Int. Cl.[4] C08L *55/02, 51/04, 25/12, 27/06*

U.S. Cl. 525—73 **9 Claims**

1. A flame-retardant resin composition comprising:

(a) a copolymer obtained by copolymerizing from 65 to 80% by weight of α-methylstyrene, from 15 to 30% by weight of acrylonitrile and from 0 to 30% by weight of a monomer copolymerizable therewith and having a number average molecular weight of from 15,000 to 80,000 and a ratio of $\overline{M}_w/\overline{M}_n$ within a range of from 1.5 to 3.5, where $\overline{M}_w$ is the weight average molecular weight of the copolymer and $\overline{M}_n$ is the number average molecular weight of the copolymer;

(b) a graft copolymer obtained by copolymerizing from 20 to 70 parts by weight of a monomer mixture of from 50 to 80% by weight of styrene, from 15 to 35% by weight of acrylonitrile and from 0 to 30% by weight of other vinyl compound copolymerizable therewith in the presence of from 30 to 80 parts by weight of a rubber having a glass transition temperature of not higher than 0° C.; and

(c) a vinyl chloride resin having a polymerization degree of not higher than 700; wherein the total amount of components (a) and (b) is from 10 to 80 parts by weight while the amount of component (c) is from 20 to 90 parts by weight, and the proportion of component (a) is from 30 to 90% by weight relative to the proportion of component (b) being from 10 to 70% by weight.

4,657,975

THERMOPLASTIC RESIN COMPOSITION

Mikio Kodama, Hirakata, and Akitoshi Ito, Nabari, both of Japan, assignors to Sumitomo Naugatuck Co., Ltd., Osaka, Japan

Filed Oct. 16, 1985, Ser. No. 787,948

Claims priority, application Japan, Oct. 16, 1984, 59-217982; Mar. 26, 1985, 60-63086

Int. Cl.[4] C08L *25/08, 23/08, 51/04*

U.S. Cl. 525—74 **4 Claims**

1. A thermoplastic resin composition having high heat resistance and good impact resistance, which comprises (A) at least one unsaturated dicarboxylic acid anhydride polymer obtainable by polymerizing at least one unsaturated dicarboxylic acid anhydride and at least one aromatic vinyl compound with or without at least one other polymerizable monomer in the presence or absence of a rubbery material and (B) at least one olefin polymer chosen from copolymers of at least one of unsaturated epoxy compounds and at least one of mono-olefins with or without at least one of other polymerizable monomers.

4,657,976

MOULDING COMPOSITIONS OF VINYL CHLORIDE POLYMERS, GRAFT POLYMERS AND POLYMERIC PLASTICIZERS HAVING A HIGH RESISTANCE TO AGEING

Karl-Heinz Ott, Leverkusen; Christian Lindner, Cologne; Walter Uerdingen, Leverkusen; Hans-Eberhard Braese, Cologne, and Helmut Hurnik, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 516,572

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1982, 3229079

The portion of the term of this patent subsequent to May 21, 2002, has been disclaimed.

Int. Cl.[4] C08L *27/06, 51/04*

U.S. Cl. 525—83 **3 Claims**

1. A thermoplastic molding composition comprising,

(A) from 25 to 50 parts, by weight, of a vinyl chloride homo- or copolymer containing at least 50% by weight, vinyl chloride;

(B) from 25 to 50 parts, by weight, of a mixture of

(B)(1): a graft polymer produced by the graft polymerization of

(B)(1.1): from 30 to 95 parts, by weight, of a monomer mixture of styrene, methyl methacrylate α-methyl styrene, either individually or in admixture, on the one hand, and acrylonitrile on the other hand, in a ratio of from 90:10 to 60:40; onto

(B)(1.2): from 70 to 5 parts by weight of a butadiene homo- or copolymer containing ≧35%, by weight, of comonomer and having a gel content of ≧50%;

where the graft polymer has an average particle size of from 0.05 to 5μ; and

(B)(2): a copolymer containing α-methyl styrene, styrene, acrylonitrile, methyl methacrylate or a mixture thereof incorporated with ≧30%, by weight, α-methyl styrene;

(C) from 0 to 10 parts, by weight, of a thermoplastic copolymer of styrene/acrylonitrile or methyl methacrylate/acrylonitrile having a Staudinger index, η, ≧3 (dl)/g and where η is higher than the Staudinger index of (B);

(D) from 5 to 40 parts, by weight, of a copolymer selected from

(D)(1): an ethylene/vinyl acetate or an ethylene/acrylic ester copolymer containing ≧50%, by weight, of a polar component and having an average molecular weight of ≧1500;

(D)(2): an ethylene/vinyl acetate/carbon monoxide terpolymer containing ≧20%, by weight, of a polar component and having an average molecular weight of ≧1500;

(D)(3): a copolymer of:

(D)(3.1): from 10 to 99.9 parts, by weight, of an acrylic ester of a C_1–C_{15} alcohol;

(D)(3.2): from 0 to 90 parts, by weight, of at least one difunctional or polyfunctional monomer containing conjugated or unconjugated double bonds; and

(D)(3.3): 0 to 40%, by weight, based on the sum of the weights of (D)(3.1) and (D)(3.2), of copolymerizable monomers,

where (D)(3) has an average molecular weight ≧1500;

(E) from 3 to 30 parts, by weight, of:

(E)(1): a copolymer produced from:

(E)(1.1): 60 to 95 parts, by weight, of a monomer containing two conjugated olefinic double bonds, an acrylic ester of C_1–C_6 alcohol or a mixture thereof;

(E)(1.2): 5 to 40 parts, by weight, of styrene, acrylonitrile, methyl methacrylate or a mixture thereof;

(E)(1.3): 0 to 10 parts, by weight, of a bifunctional or polyfunctional monomer or polymer containing conjugated or unconjugated double bonds; and

(E)(1.4): 0 to 30 parts, by weight, of copolymerized monomers;

copolymer (E)(1) being different from component (D)(3) in at least one parameter and the copolymer (E)(1) having a gel content of ≧70%;

(E)(2): an ethylene/propylene terpolymer rubber having a gel content of ≧70%

or mixtures thereof.

4,657,977

POLY(ETHERIMIDE-CARBONATE) BLOCK COPOLYMERS AND POLYMER BLENDS CONTAINING SAME

Edward N. Peters, Lenox, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Oct. 4, 1985, Ser. No. 784,511

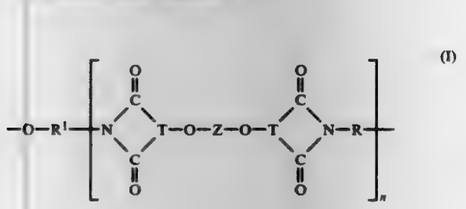
Int. Cl.[4] C08L *53/00*

U.S. Cl. 525—92 **16 Claims**

1. A poly(etherimide carbonate) having a mean weight average molecular weight M_w of between about 15,000 and 40,000 and being of the general formula (I) comprising:

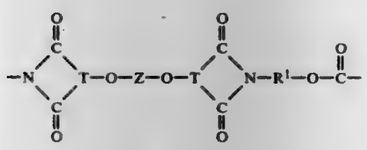
(a) from about 5 to 80% by weight of polyetherimide segments (A) with mean number-average molecular weight M_n of between 1,000 and 6000; and

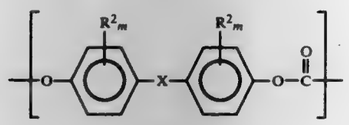
(b) polycarbonate segments B:



(I)

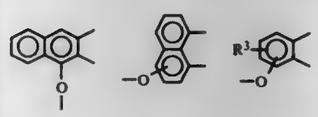
(A)



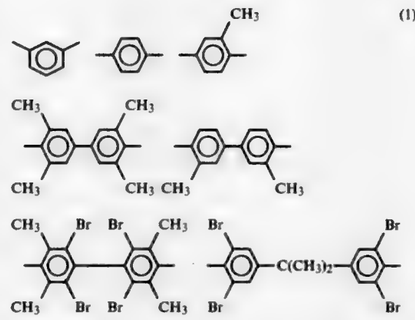


(B)

wherein, the —O—T< group is selected from:

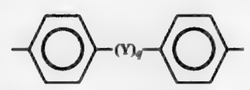


R^3 being hydrogen, lower alkyl or lower alkoxy; and Z is:

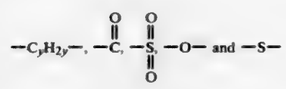


(1)

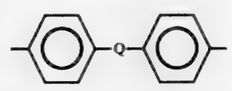
or a (2) divalent organic radical of the general formula:



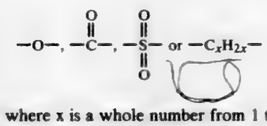
where Y is a divalent radical of the formulae:



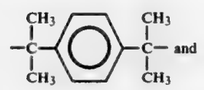
where q is 0 or 1, y is a whole number from 1 to 5; and R is a divalent organic radical selected from (1) an aromatic hydrocarbon radical having from 6–20 carbon atoms and halogenated derivatives thereof, (2) an alkylene radical or a cycloalkylene radical having from 2–20 carbon atoms, a $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (3) a divalent radical of the formula:



where Q is



where x is a whole number from 1 to 5 inclusive; and R^1 is as defined for R above; and X is a bond or C_1–C_8 alkylene, C_2–C_8 alkylidene, C_5–C_{15} cycloalkylene, C_5–C_{15} cycloalkylidene, SO_2, SO, O, CO or



R^2 denotes hydrogen, chlorine, bromine or alkyl of 1 to 3 carbon atoms; n is an integer of from about 3 to about 12 and m is 1 or 2.

VOL 1077 ISS 2 AP 14 1987 UMI

4,657,978
CURABLE COMPOSITION
Hiroshi Wakabayashi, and Joe Kawamura, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Nov. 25, 1985, Ser. No. 801,999
Claims priority, application Japan, Nov. 26, 1984, 59-249027
Int. Cl.⁴ C08F *8/00*
U.S. Cl. 525—100 **6 Claims**

1. A curable composition comprising:
(a) an organic polymer containing at least one silicon-containing hydrolyzable group at an end of the main chain or in a branch chain of the polymer molecule,
(b) an acidic phosphoric acid compound containing a

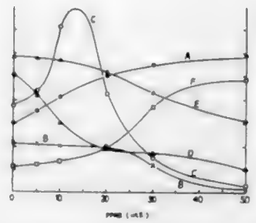


group, and
(c) an organozirconium compound selected from the group consisting of a zirconium alkoxide, a zirconium chelate, and a zirconium salt of an organic acid.

4,657,979
BLOCKED DIENEOPHILE FUNCTIONAL MODIFIED AMINOEPOXY RESINS
Ray A. Dickie, Birmingham, and Saiyed B. A. Qaderi, Livonia, both of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 10, 1984, Ser. No. 679,975
Int. Cl.⁴ C08L *63/10*
U.S. Cl. 525—113 **18 Claims**

1. A substantially gel-free dieneophile functional amino-epoxy resin of number average molecular weight (Mn) about 1000–18,000, comprising the reaction product of (i) diepoxide reactant, (ii) amine functional dieneophile chain extending reactant selected from the group consisting of di-secondary amine functional bis-dieneophile, mono-primary amine functional dieneophile, and a mixture of any of them, (iii) modifying agent comprising hydroxy functional secondary amine, and (iv) second modifying agent selected from the group consisting of secondary amine terminated butadiene acrylonitrile copolymer resin, carboxy terminated butadiene acrylonitrile copolymer resin, and any mixture thereof, said second modifying agent having number average molecular weight about 1400–4400 and amine or carboxy, respectively, equivalent weight of about 700–2200.

4,657,980
THERMOPLASTIC RESIN BLEND COMPRISING 80 TO 95 WT % OF POLYCARBONATE AND 5 TO 20 WT % OF POLY-P-METHYLSTYRENE
Yuji Fujita, Saitama, and Noboru Yamamoto, Tokyo, both of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 18, 1985, Ser. No. 788,908
Claims priority, application Japan, Oct. 30, 1984, 59-226917
Int. Cl.⁴ C08L *69/00*
U.S. Cl. 525—146 **3 Claims**



1. A thermoplastic resin blend consisting essentially of 80 to 95 wt % polycarbonate resin and 5 to 20 wt % of poly-p-methylstyrene.

4,657,981
DICYCLOPENTADIENE POLYMER CONTAINING ELASTOMER
Daniel W. Klosiewicz, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of Ser. No. 672,567, Nov. 16, 1984, abandoned, which is a continuation-in-part of Ser. No. 472,685, Mar. 7, 1983, Pat. No. 4,469,809, which is a division of Ser. No. 342,453, Jan. 25, 1982, Pat. No. 4,400,340, said Ser. No. 672,567, is a continuation-in-part of Ser. No. 552,195, Nov. 15, 1983, Pat. No. 4,485,208, which is a division of Ser. No. 378,449, May 14, 1962, Pat. No. 4,436,858. This application Mar. 7, 1986, Ser. No. 837,107
Int. Cl.⁴ C08L *47/00*
U.S. Cl. 525—211 **6 Claims**

1. A polymeric composition comprising a blend of a substantially crosslinked thermoset polymer comprising polymerized units of dicyclopentadiene and 1 to 10% by weight of a hydrocarbon elastomer.

4,657,982
BLENDS OF POLYETHYLENE AND POLYBUTENES
Alan K. Breck, and Alistair N. Mollison, both of Kingston, Canada, assignors to Du Pont Canada Inc., Mississauga, Canada
Filed Dec. 27, 1983, Ser. No. 565,774
Claims priority, application United Kingdom, Jan. 4, 1983, 8300074
Int. Cl.⁴ C08L *23/20, 23/06, 23/08*
U.S. Cl. 525—240 **2 Claims**

1. A blend comprising (a) 80 to 99% by weight of a polyethylene, in which the polyethylene is 70 to 100 wt. % of a linear ethylene-C_4 to C_8-α-olefin copolymer and 30 to 0 wt. % of a polymer selected from high pressure polyethylenes and ethylene/vinyl acetate copolymers and mixtures thereof, (b) 0.5 to 10.0% by weight of a polybutene having a number average molecular weight of from 500 to 1500 and (c) 0.5 to 10% by weight of a polybutene having a number average molecular weight of from 1700 to 10,000.

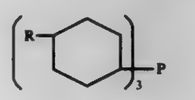
4,657,983
PHOSPHATE ESTERS OF ACRYLATED GLYCIDYL ESTER COPOLYMERS
Ronald J. Skiscim, Crestwood, Ky., assignor to Interez, Inc., Jeffersontown, Ky.
Filed Dec. 5, 1984, Ser. No. 678,528
Int. Cl.⁴ C08F *261/06*
U.S. Cl. 525—255 **18 Claims**

1. A radiation curable composition comprising the reaction product of
(a) an acrylate copolymer containing pendant glycidyl ester groups, and
(b) acrylic acid or methacrylic acid plus
(c) phosphoric acid
wherein the acrylate copolymer (a) is a copolymer of about 5 to about 75 weight percent, based on the total weight of the copolymer, glycidyl acrylate or methacrylate with the remainder being an ethylenically unsaturated monomer copolymerizable therewith, wherein (b) is reacted with the glycidyl ester groups in the amount of about 25 to about 75 percent of the equivalents of the glycidyl ester groups, and wherein (c) is reacted with the remainder of the glycidyl ester groups in the amount of about 0.5 to about 1 mole per glycidyl ester group in the presence of at least about one equivalent of hydroxyl group-containing material per mole of (c).

4,657,984
PROCESS FOR PORMATION OF DIALKYLAMINOMETHYLATED INTERNAL OLEFIN POLYMERS
Edward E. McEntire, Kennett Square, Pa., and John F. Knifton, Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Oct. 16, 1985, Ser. No. 787,861
Int. Cl.⁴ C08F *8/40*
U.S. Cl. 525—340 **23 Claims**

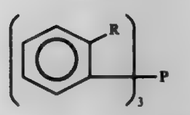
1. A process for selectively preparing dialkylaminomethylated polymers which comprises reacting a polymer with internal olefin groups, a secondary amine and synthesis gas ($CO+H_2$) in the presence of a catalyst system comprising a ruthenium-containing compound, a rhodium-containing compound, a sterically hindered phosphine from the group consisting of ligands represented by the formulae:

A



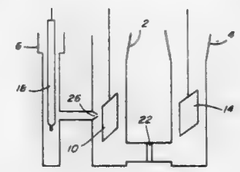
and

B



wherein R equals an alkyl or alkoxy radical having 1 to 20 carbon atoms in a branched or linear chain, and a solvent, heating the resultant mixture to a temperature of at least 100° C. and a pressure of at least 500 psi until there is substantial formation of the desired dialkylaminomethylated internal olefin polymers and separating the resulting product.

4,657,985
MULTICOMPONENT SYSTEMS BASED ON POLYTHIOPHENE
Mark A. Druy, and Sukant K. Tripathy, both of Arlington, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed Jul. 30, 1984, Ser. No. 687,619
Int. Cl.⁴ C08L *71/00, 71/02, 71/04;* **C25D** *1/00*
U.S. Cl. 525—390 **10 Claims**

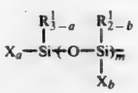


1. A composition comprising a solid polythiophene having incorporated therein polyether, the polyether being present in an amount of at least about 10 weight percent of the polythiophene present.

7. A method for preparing a multicomponent system comprising a polythiophene and a polyether, said method comprising:
passing a current across an electrochemical cell containing a solution comprising a thiophene compound, an electrolyte, and a polyether in a solvent to form a multicomponent system film of predetermined thickness on the anode of the cell, wherein:
said thiophene compound is electrochemically polymerizable;
said solvent is selected such that said thiophene compound is soluble therein and the polythiophene is insoluble therein,
said electrolyte is soluble in said solvent; and
said polyether is soluble in said solvent.

4,657,986
CURABLE RESINOUS COMPOSITION COMPRISING EPOXY RESIN AND SILICON-CONTAINING ELASTOMERIC POLYMER
Katsuhiko Isayama; Toshifumi Hirose; Takahisa Iwahara, and Fumio Kawakubo, all of Hyogo, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan
Filed Dec. 23, 1985, Ser. No. 812,378
Claims priority, application Japan, Dec. 26, 1984, 59-281099
Int. Cl.⁴ C08G *65/32*
U.S. Cl. 525—407 **4 Claims**

1. A curable resinous composition comprising:
(A) an organic elastomeric polymer having at least one silicon-containing functional group in a molecule,
(B) an epoxy resin,
(C) a silicone compound having a silicon-containing group and a functional group reactive with an epoxy group, and
(D) a curing agent for the epoxy resin, wherein the silicon-containing functional group of the organic elastomeric polymer (A) and/or the silicone compound (C) is a group of the formula:



wherein X is a hydroxyl group or a hydrolyzable group, R^1 is a monovalent hydrocarbon group having 1 to 20 carbon atoms or an organosiloxy group, "a" is 0, 1, 2 or 3, "b" is 0, 1 or 2 provided that the total of "a" and "b" is at least 1, and "m" is 0 or an integer of 1 to 18, and a weight

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ratio of (A) to (B) is from 1:100 to 100:1 and a weight ratio of (A)+(B) to (C) is from 100:0.1 to 100:20.

4,657,987

POLYETHERIMIDE-POLYAMIDE BLENDS

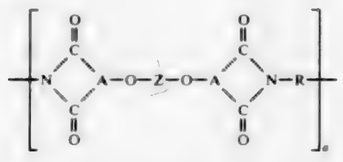
John A. Rock, Becket, and Harold F. Giles, Jr., Cheshire, both of Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 574,464, Jan. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 359,256, Mar. 18, 1982, abandoned. This application Jun. 28, 1985, Ser. No. 749,712

Int. Cl.⁴ C08L *77/00*

U.S. Cl. 525—432 **12 Claims**

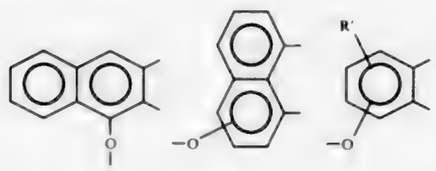
1. A composition comprising (a) a polyetherimide and (b) a polyamide, wherein the polyetherimide comprises from 5% to 39% of the blend by weight and wherein the polyetherimide has the formula



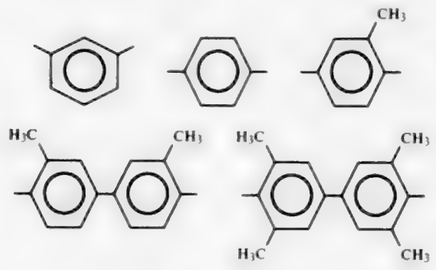
where a represents a whole number in excess of 1, the group



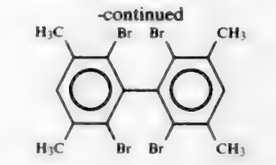
is selected from:

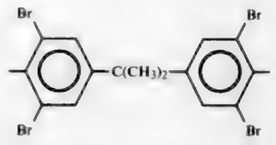


R′ being hydrogen, lower alkyl or lower alkoxy, Z is a member of the class consisting of (1)

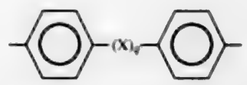


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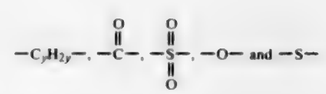




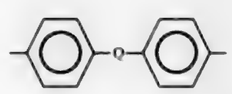
and (2) divalent organic radicals of the general formula:



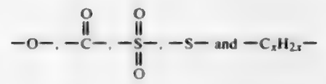
where X is a member selected from the class consisting of divalent radicals of the formulas,



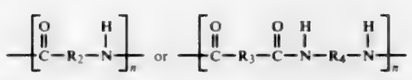
where q is 0 to 1, y is a whole number from 1 to 5, and R is a divalent organic radical selected from the class consisting of (1) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivaties thereof, (2) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, and $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (3) divalent radicals included by the formula



where Q is a member selected from the class consisting of



where x is a whole number from 1 to 5 inclusive; and wherein the polyamide has repeating structural units consisting essentially of the formula:



wherein R_2, R_3 and R_4, which may be the same or different, each represents an alkylene group having from 4 to 11 carbon atoms, and n is an integer of 30 to 500 or more.

4,657,988

REPOLYMERIZATION

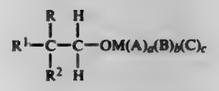
Gerald Sugerman, Allendale, N.J., and Salvatore J. Monte, Staten Island, N.Y., assignors to Kenrich Petrochemicals, Inc., Bayonne, N.J.

Continuation-in-part of Ser. No. 725,437, Apr. 22, 1985, which is a continuation-in-part of Ser. No. 609,727, May 14, 1984, abandoned. This application Feb. 28, 1986, Ser. No. 834,794

Int. Cl.⁴ C08G *63/76*

U.S. Cl. 525—437 **5 Claims**

1. A process for repolymerizing a polymeric material which comprises admixing said polymeric material with from 0.005 to 5 wt. % of a neoalkoxy compound having the formula:



wherein M is titanium or zirconium, R, R^1 and R^2 are each a monovalent alkyl, alkenyl, alkynyl, aralkyl, aryl or alkaryl group having up to 20 carbon atoms or a halogen or ether substituted derivative thereof, and, in addition, R^2 may also be an oxy derivative or an ether substituted oxy derivative of said groups; A, B, and C are each a monovalent aroxy, thioaroxy, diester phosphate, diester pyrophosphate, oxyalkylamino, sulfonyl or carboxyl containing up to 30 carbon atoms; and $a+b+c=3$.

2. The process of claim 1 wherein the polymeric material is a polyalkylene terephthalate.

4,657,989

METHOD FOR PREPARING SILOXANE-CARBONATE BLOCK COPOLYMERS

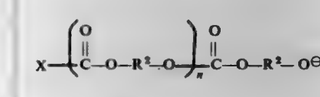
Thomas L. Evans, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 11, 1985, Ser. No. 743,446

Int. Cl.⁴ C08G *77/42, 63/62*

U.S. Cl. 525—464 **13 Claims**

1. A method for preparing a siloxane-carbonate block copolymer which comprises reacting (A) at least one nucleophile-reactive siloxane compound with (B) at least one polycarbonate compound having the formula



(IV)

wherein X is a polycarbonate end group, Z^1 is one equivalent of a cation other than hydrogen, n is at least 1, at least about 60% of the total number of R^2 values are divalent aromatic radicals and the balance of said R^2 values are divalent aliphatic, alicyclic or aromatic radicals.

4,657,990

AROMATIC POLYETHERKETONES

Daniel J. M. Daoust, Brussels; Jacques J. Devaux, Namur; Roger M. Legras, Hannut; Jean P. Mercier, Kessel-Lo, all of Belgium, and Eric Nield, Cleveland, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jan. 10, 1985, Ser. No. 690,246

Claims priority, application United Kingdom, Jan. 19, 1984, 8401411

Int. Cl.⁴ C08F *283/00;* **C08G** *14/00, 16/00*

U.S. Cl. 525—471 **15 Claims**

1. A crystallisable thermoplastic aromatic polyetherketone, the polymeric chain of which contains the repeat unit

—Ar_1—CO—Ar_2—O—

where Ar_1 and Ar_2 are aromatic radicals which may be the same or different and comprise at least one aromatic ring, the polymeric chains having terminal ionic groups of formula —A—X, where A is an anion selected from the group consisting of sulphonate, carboxylate, sulphinate, phosphonate and phosphate and A is linked by a chemical bond to the polymer chain and X is a metal cation.

4,657,991

PRECURSOR COMPOSITION OF SILICON CARBIDE

Minoru Takamizawa; Taishi Kobayashi; Toshinobu Ishihara; Yoshihumi Takeda, and Akira Hayashida, all of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1985, Ser. No. 787,328

Claims priority, application Japan, Oct. 17, 1984, 59-218140

Int. Cl.⁴ C08F *283/00*

U.S. Cl. 525—477 **4 Claims**

1. A precursor composition of silicon carbide which comprises:

(a) from 80 to 99.9% by weight of a polycarbosilane polymer having a three-dimensional molecular structure obtained by heating at a temperature of 300°–650° C. in an atmosphere of an inert gas, a polysilane compound composed of one or a combination of one or more units selected from the group consisting of



in which R^2 is a hydrogen atom or a monovalent hydrocarbon group selected from the class consisting of methyl, ethyl, vinyl and phenyl groups, or, a copolymer of said polysilane compound, and an organometallic compound containing a metal atom selected from the group consisting of boron, aluminum, titanium and zirconium, to effect pyrolytic polycondensation reaction, and

(b) from 0.1 to 20 parts by weight of a polymeric organosilicon compound having a linear molecular structure represented by the general formula



in which R is a monovalent hydrocarbon group, R^1 is a monovalent group selected from the class consisting of hydroxy, amino, monovalent hydrocarbon and trialkylsiloxy groups and m is a positive integer not smaller than 100.

4,657,992

PASTE ANHYDRIDE CURING SYSTEM FOR CAST EPOXY RESIN BODIES AND METHOD FOR MAKING THE SAME

Anthony Brennan, Lakewood, and Edmee Files, Aurora, both of Colo., assignors to Coors Porcelain Company, Golden, Colo.

Filed Feb. 18, 1986, Ser. No. 830,220

Int. Cl.⁴ C08L *63/04*

U.S. Cl. 525—482 **22 Claims**

1. A formulation for making a cured epoxy resin solid body characterized by its ability to undergo controlled post cure expansion thereof, said formulation having the following Components A and B which, when mixed with each other in a ratio of 10 to 40 parts of Component B to 100 parts of Component A, undergo a polymerization reaction to form the body: Component A consisting essentially of from 40 to 70% by weight epoxy novolac polymer; from 30 to 50% by weight vinyl 3 cyclohexene diepoxide; and from 0 to 20% by weight 3,4 epoxy cyclohexylmethyl-3,4-epoxy cyclohexane carboxylate; and characterized by Component B being a paste anhydride

consisting essentially of a mixture of a partially hydrolyzed aryl tetracarboxylic acid dianhydride and an alicyclic dicarboxylic anhydride.

4,657,993

PHOSPHAZENE HOMOPOLYMERS AND COPOLYMERS HAVING HYDROXYLATED OR AMINO DERIVATIVES OF CARBAZOLE OR OF NAPHTHALENE AS SUBSTITUENTS

Silvano Lora, Padova; Francesco Minto, Mestre; Piergiulio DiMarco, Bologna; Gabriele Giro, Fortimpopoli, and Giovanni Pezzin, Padova, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Feb. 11, 1986, Ser. No. 828,263

Claims priority, application Italy, Feb. 11, 1985, 19465 A/85; Apr. 18, 1985, 20404 A/85; 20406 A/85

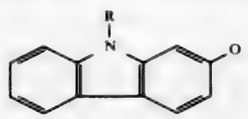
U.S. Cl. 525—538 11 Claims

1. Polyphosphazene homopolymers and copolymers containing repetitive units represented by the following general formula:

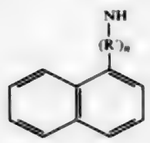


(I)

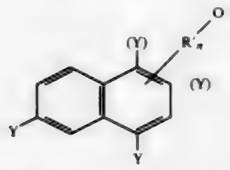
in which the substituents X, which can be equal or different, are represented by the following formulas:



(II)



(III)



(IV)

where R is hydrogen or a C_1–C_5 alkyl group or an aryl or heterocyclic group, with or without substituents, R' is CH_2 or an aryl or heterocyclic group, with or without substituents, n is zero or a whole number variable from 1 to 5 and Y is hydrogen or a halogen or a methyl, nitroso or nitro group; the substituents X^1 are groups equal to X or halogens or alkoxy, aryloxy, amino or mercapto groups, either substituted or unsubstituted, or a mixture of them; the sum (w+y+x) has a value varying from 20 to 50,000.

4,657,994

PROCESS FOR CONTINUOUS PRODUCTION OF ETHYLENE-VINYL ACETATE COPOLYMER

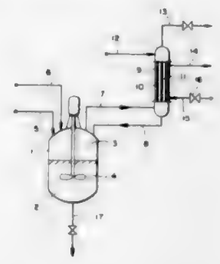
Junsuke Tanaka, Ikeda, and Kenji Matsumoto, Okayama, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 646,367, Aug. 30, 1984, abandoned. This application Jan. 6, 1986, Ser. No. 816,950

Claims priority, application Japan, Sep. 1, 1983, 58-161291

Int. Cl.[4] C08F *2/06, 218/08*

U.S. Cl. 526—68 6 Claims



1. An improved process for continuously producing ethylene-vinyl acetate copolymer containing 20 to 50 mole % of ethylene by solution polymerization which comprises copolymerizing ethylene and vinyl acetate in the presence of a lower aliphatic alcohol containing from 1 to 4 carbon atoms as solvent and polymerization catalyst in a polymerization vessel, wherein the improvement comprises the steps of

(1) passing vinyl acetate or a solvent solution of vinyl acetate through a heat exchanger provided with a cooling means from the upper part thereof to the lower part thereof, and simultaneously passing ethylene vapor discharged from the polymerization vessel through said heat exchanger from the lower part thereof to the upper part thereof, so that they come into counter-current contact with each other in said heat exchanger at a temperature sufficient to condense said ethylene vapor, thereby causing the viyl acetate or the solvent solution of vinyl acetate to absorb and solubilize ethylene,

(2) introducing the resulting vinyl acetate or solvent solution of vinyl acetate which has absorbed and solubilized ethylene therein into the polymerization vessel, and

(3) mixing the polymerization vessel the resulting vinyl acetate or the solvent solution of vinyl acetate which has absorbed and solubilized ethylene therein with the polymerization solution, heating the polymerization solution up to the prescribed polymerization temperature, and vaporizing ethylene in excess of solubility at the polymerization temperature from the vinyl acetate or the solvent solution of vinyl acetate by the aid of the heat in the polymerization vessel, and circulating the vaporized ethylene to the heat exchanger.

4,657,995

OLEFIN POLYMERIZATION CATALYST COMPOSITIONS AND POLYMERIZATION PROCESS

Robert C. Job, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 657,861, Oct. 5, 1984, Pat. No. 4,535,068, which is a continuation-in-part of Ser. No. 534,016, Sep. 20, 1983, abandoned. This application Jun. 4, 1985, Ser. No. 741,095

Int. Cl.[4] C08F *4/64, 10/06*

U.S. Cl. 526—124 30 Claims

1. A process for the catalytic polymerization of an olefin by contact with a catalyst composition comprising an organoaluminum compound, a selectivity control agent and a solid titanium-containing catalyst component in which the atomic ratio of

aluminum to titanium is from 1:1 to 150:1, wherein said solid component is obtained by:

(a) halogenating a magnesium compound of the formula $MgR'R''$ where R' is an alkoxide or aryloxide group and R'' is an alkoxide or aryloxide group or halogen, with a tetravalent titanium halide in the presence of a halohydrocarbon and an electron donor, therein forming a halogenated product;

(b) contacting said halogenated product with an acid halide of the formula



where A is an alkyl, aryl or substituted aryl group and X is a halide, said substituted aryl group having substituents on the benzene ring selected from the group consisting of halogens, C_1–C_6 alkyl groups and C_1–C_6 alkoxy groups, at a temperature of about 40° to about 140° C.;

(c) contacting the resulting acid halide-treated product with a tetravalent titanium halide at a temperature of about 40° to about 140° C.; and

(d) washing the resulting titanium halide-treated product with an inert hydrocarbon liquid.

4,657,996

PROCESS FOR PRODUCING POLYETHYLENE

Takeshi Iwabuchi; Masao Kawahara; Sakae Kamiyama, and Terumi Sato, all of Ichihara, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 404,925, Aug. 3, 1982, abandoned. This application Feb. 27, 1986, Ser. No. 833,670

Claims priority, application Japan, Jul. 13, 1982, 57-121759

Int. Cl.[4] C08F *4/02, 10/02*

U.S. Cl. 526—127 14 Claims

1. A process for producing polyethylene, which comprises: polymerizing ethylene or copolymerizing ethylene with another α-olefin in the presence of a catalyst system obtained by bringing the following components (I) to (III) in contact with each other:

(1) a reaction product (B) obtained by reacting an intermediate reaction product (A) obtained by reaction of a hydropolysiloxane with a Grignard reagent which is synthesized in the presence of an ether compound, with at least one nucleophilic reagent selected from the group consisting of an aldehyde, a ketone and an alcohol and then removing the ether such that the amount of remaining ether is not more than 0.4 mol per gram atom of magnesium,

(2) a transition metal compound which is a titanium compound of the formula: (i) $Ti(OR^7)_nX_{4-n}$, wherein R^7 is a C_1–C_{12} hydrocarbon group, X is halogen and $0 \leqq n \leqq 4$ or the formula: (ii) $Ti(OR^8)_lX_{3-l}$, wherein R^8 is a C_1–C_{12} hydrocarbon group, X is halogen and $0 \leqq l \leqq 3$, or a complex (iii) of a compound of the formula (ii) with a nucleophilic agent, or (iv) a vanadium compound of the formula: $VO(OR^9)_rX_{3-r}$, wherein R^9 is a C_1–C_{12} hydrocarbon group, X is halogen and $0 \leqq r \leqq 3$ or (v) a compound of the formula: VX_4 wherein X is halogen, and

(3) at least one organoaluminum compound.

4,657,997

POLYMERIZATION CATALYST, PRODUCTION AND USE

Steven A. Best, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 680,853, Dec. 12, 1984, Pat. No. 4,579,834. This application Dec. 9, 1985, Ser. No. 806,588

Int. Cl.[4] C08F *4/68*

U.S. Cl. 526—129 12 Claims

1. A process for the polymerization of ethylene and alpha-olefins having from 1 to 20 carbon atoms or mixtures of ethylene, alpha-olefins or diolefins which process comprise polymerizing one or more olefins in the presence of the catalyst system comprising (A) an organo aluminum cocatalyst, and (B) a vanadium-containing catalyst component obtained by treating an inert support material in an inert solvent with (i) a dihydrocarbyl magnesium compound or a complex or mixture of an organic dihydrocarbyl magnesium compound and an aluminum compound, (ii) optionally an oxygen-containing compound which is an alcohol, ketone or aldehyde, (iii) a Group IIIa metal halide, (iv) at least one vanadium compound, and as the last step a second treatment with a Group IIIa metal halide.

4. The process as in claim 1 wherein the inert solid support material is an inorganic oxide or mixtures of inorganic oxides.

5. The process as in claim 4 wherein the inorganic oxide is silica.

4,657,998

POLYETHYLENE WITH BROAD MOLECULAR WEIGHT DISTRIBUTION

Deanis B. Malpass, LaPorte, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 528,185, Aug. 31, 1983, Pat. No. 4,593,010. This application Mar. 17, 1986, Ser. No. 840,189

Int. Cl.[4] C08F *4/62, 4/64, 4/68*

U.S. Cl. 526—144 2 Claims

1. A process for the polymerization of ethylene comprising polymerizing ethylene in the presence of a catalyst comprising

(a) a transition metal compound of a Group IVb to VIb metal,

(b) isoprenylaluminum and

(c) a halogenated hydrocarbon.

4,657,999

POLYMERIZATION EMULSIFIERS

Rainer Hoefer, Duesseldorf; Karl-Heinz Schmid, Mettmann, and Bernd Wegemund, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 22, 1985, Ser. No. 801,016

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1984, 3442457

Int. Cl.[4] C08F *2/00*

U.S. Cl. 526—200 12 Claims

1. In a process for the emulsion polymerization of ethylenically unsaturated monomers, the improvement comprising using from about 0.5 to about 10% by weight, based on the weight of monomer, of at least one alkyl glycoside of a C_8–C_{22} alkanol and a reducing sugar in which one sugar chain having an average of from 1 to 10 sugar residues attached to each other by glycoside bonds is present for each alkyl group.

4,658,000

POLYACRYLAMIDE ADHESIVE FOR FIXING THE SORBENT LAYERS OF OVERPRESSURED, ONE-AND MULTILAYER-CHROMATOGRAPHIC PLATES AND A PROCESS FOR THE PREPARATION THEREOF

Erno Tyihak, Budapest; Emil Mincsovics, Szentendre; Sandor Zoltan; Gabor Kemeny, both of Budapest; Aniko Mathuny, Esztergom; Tibor Szekely, Budapest; Sandor Nemeth, Budapest; Zsuzsanna Antal, Budapest, and Zsuzsanna Fater, Jaszapati, all of Hungary, assignors to Reanal Finomvegyszergyar, Budapest and "Labor" Muszeripari Muvek, Esztergom, both of, Hungary

Filed Aug. 16, 1984, Ser. No. 641,439

Claims priority, application Hungary, Aug. 16, 1983, 2875/83

Int. Cl.[4] C08F *2/10, 222/38;* C09J *3/14*

U.S. Cl. 526—217 10 Claims

1. A process for preparing a polyacrylamide adhesive having a density of 1.004 to 1.008 g/ml of and a relative viscosity of

$2 \leqq \eta \leqq 20$, suitable for the appropriate fixing of fine particle sorbent layers, based on organic or inorganic compounds, and supplied with a bound or unbound nonpolar phase, used in high pressure single layer and multilayer chromatographic procedures, which comprises the following steps:

(a) polymerizing in an aqueous mixture, acrylamide and N,N-methylene-bis-acrylamide, in the presence of a catalyst, at 21° to 30° C., wherein the aqueous mixture contains 1.6 to 2.5% acrylamide and 0.6 to 1.0% N,N-methylene-bis-acrylamide repsectively to obtain a polyacrylamide gel;

(b) homogenizing the polyacrylamide gel to obtain an opaline solution containing acrylamide-N,N-methylene-bis-acrylamide copolymer;

(c) fractionally precipitating the acrylamide-N,N-methylene-bis-acrylamide copolymer from the opaline solution with a water-soluble solvent to obtain a curdy precipitate containing the desired fraction of the copolymer and a supernatant liquid containing undesired monomers and oligomers;

(d) removing the curdy precipitate and pulpifying same by adding water to form again a homogeneous opaline solution; and

(e) repeating steps (c) and (d) several times to obtain a homogenous opaline composition of the polyacrylamide adhesive.

4,658,001

PEROXYCARBONATE GROUP-CONTAINING COPOLYMER AND METHOD FOR MANUFACTURE THEREOF

Kenji Kato, Kariya; Yuji Okada, and Kazuyoshi Aoshima, both of Aichi, all of Japan, assignors to Nippon Oils & Fats Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1985, Ser. No. 784,049

Claims priority, application Japan, Oct. 12, 1984, 59-212719; Jun. 28, 1985, 60-140154

Int. Cl.[4] C08F *18/24, 118/24*

U.S. Cl. 526—218.1 **24 Claims**

1. A peroxycarbonate group containing random copolymer, comprising:

(a) at least one unit of the formula (I):



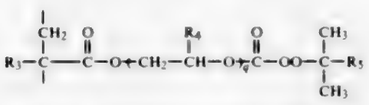
(I)

wherein R_1 represents a member selected from the group consisting of hydrogen and methyl and X represents a member selected from the group consisting of phenyl, substituted phenyl, cyano, acetyloxy, chloro and



wherein R_2 represents a member selected from the group consisting of hydrogen, and C_{1-8} alkyl; and

(b) at least one unit of the formula (II):



(II)

wherein R_3 represents a member selected from the group consisting of hydrogen and C_{1-2} alkyl, R_4 is hydrogen or methyl, and R_5 is a member selected from the group consisting of branched and straight chain C_{1-9} alkyl, phenyl, and C_{1-3} alkyl substituted phenyl, and q is 1 or 2, the ratio of the units of formula (I) to units of formula (II) in the copolymer being equal to the weight ratio of the unsaturated monomer corresponding to unit (I) to the unsaturated monomer corresponding to unsaturated peroxycarbonate (II) ranging from 1:0.0001–10, as they react to form said copolymer, and said random copolymer having a viscosity-average molecular weight in the range of 2,000 to 10,000,000.

4,658,002

PREPARATION OF INSOLUBLE POLYMER POWDERS WHICH ARE ONLY SLIGHTLY SWELLABLE

Chung-Ji Tschang, Bad Durkheim; Karlheinz Messmer, Weisenheim, and Walter Deazinger, Speyer, all of Fed. Rep. of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 18, 1985, Ser. No. 777,329

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1984, 3434138

The portion of the term of this patent subsequent to Mar. 3, 2004, has been disclaimed.

Int. Cl.[4] C08F *2/34*

U.S. Cl. 526—264 **14 Claims**

1. A process for the preparation of an insoluble polymer powder which is only slightly swellable and which contains monoethylenically unsaturated carboxamides, carboxylic acids and carboxylates, comprising:

copolymerizing N-vinylpyrrolidone or a mixture of (a) a compound of the formula: $R—CO—NR^1—CH=CH_2$ in which R is H or C_1–C_3-alkyl and R^1 is H or CH_3, acrylamide, methacrylamide, acrylic acid, methacrylic acid, acrylates, methacrylates and/or a vinyl ester, and (b) from 0.1 to 10% by weight, based on the total amount of monomers, of, as a crosslinking agent, a compound which possesses at least two ethylenically unsaturated double bonds in the absence of both oxygen and a polymerization initiator in a powder bed which contains or consists of an insoluble polymer which is only slightly swellable, in the presence of a heat-transfer medium which is inert to the reactants, at from 90° to 220° C., the powdered state of the bed being maintained, and the reaction mass being circulated and the heat-transfer medium being evaporated from the polymerization zone.

4,658,003

NOVEL PHOSPHINYL-CONTAINING ETHYLENICALLY UNSATURATED COMPOUNDS

Donald L. Schmidt, and Gerald K. McEwen, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 627,265, Jul. 2, 1984, abandoned. This application Apr. 21, 1986, Ser. No. 854,275

Int. Cl.[4] C08F *30/02*

U.S. Cl. 526—278 **5 Claims**

1. A polymeric composition which comprises the reaction product of:

(a) between about 0.5 and 100 percent by weight of a (hydroxy)-phosphinylalkyl acrylate, (hydroxy)-phosphinylalkyl methacrylate or an alkali metal, alkaline earth metal or ammonium salt thereof; and

(b) between about 0 and 99.5 weight percent of a compound containing a polymerizable 1,2-ethylenically unsaturted moiety.

4,658,004

POLYACRYLONITRILE FIBER WITH HIGH STRENGTH AND HIGH MODULUS OF ELASTICITY

Toshiyuki Kobashi, and Seiji Takao, both of Okayama, Japan, assignors to Japan Exlan Company, Ltd. and Toyo Boseki Kabushiki Kaisha, both of Osaka, Japan

Filed Sep. 27, 1985, Ser. No. 781,037

Claims priority, application Japan, Oct. 12, 1984, 59-214872

Int. Cl.[4] C08F *20/44*

U.S. Cl. 526—341 **7 Claims**

1. A polyacrylonitrile fiber of high strength and high modulus of elasticity having a tensile strength above 13 g/d and a modulus of elasticity above 2.4×10^{11} dyne/cm^2, and said fiber being produced under the following conditions:

(i) preparing a spinning solution of a polymer mainly composed of acrylonitrile, said polymer having a $\overline{M}w \geqq 400{,}000$ and $\overline{M}w/\overline{M}n \leqq 7.0$, in which solution, the polymer molecular chains are sufficiently loosened or extended in the fiber axis direction, and wherein the polymer is dissolved under reduced pressure for defoaming so that the solution will not contain air bubbles;

(ii) spinning the polymer solution to form gel filaments,

(iii) coagulating said gel filaments under slow coagulation conditions to produce uniform coagulated gel filaments;

(iv) subjecting the filaments to a multistage heat stretching process in which the later the stretching stage the higher the temperature and

(v) drying the filaments under tension at a temperature below 130° C. to avoid a strength drop associatd with heat relaxation.

4,658,005

STORAGE-STABILE POLYURETHANE RESIN POWDER ENAMELS OR VARNISHES

Rainer Gras, Bochum; Heinz Riemer, Bottrop, and Elmar Wolf, Recklinghausen, all of Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Aug. 9, 1985, Ser. No. 764,011

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1984, 3434881

Int. Cl.[4] C08G *18/80*

U.S. Cl. 528—45 **6 Claims**

1. A storage-stable polyurethane resin powder enamel which cures below 170° C. which comprises:

a polyol in combination with isophorone diisocyanate (IPDI) which is blocked with a secondary amine having a boiling point of at least 150° C. selected from the group consisting of t-butyl-1-methylpentylamine, t-butyl-benzylamine, di-(1-methylpentyl)amine, di-(1-ethylbutyl)amine, dicyclohexylamine, t-butyl-cyclohexylamine, di-(3,5,5-trimethylcyclohexyl) amine, dicyclopentylamine, 2,6-dimethylpiperidine and 3,5-dimethylmorpholine.

4,658,006

METHOD FOR THE PREPARATION OF ALKOXY-CONTAINING ORGANOPOLYSILOXANE

Yoshio Inoue, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1986, Ser. No. 846,242

Claims priority, application Japan, Apr. 15, 1985, 60-79566

Int. Cl.[4] C08G *77/04*

U.S. Cl. 528—29 **6 Claims**

1. A method for the preparation of an alkoxy-terminated organopolysiloxane which comprises the successive steps of:

(a) reacting a silanol-terminated diorganopolysiloxane represented by the general formula

$$HO—SiR^1{}_2—O_nH,$$

in which each R^1 is a monovalent group selected from the class consisting of methyl, vinyl, phenyl and 3,3,3-trifluoropropyl groups and the subscript n is a positive integer, with an organosilane compound represented by the general formula

$$R^3Si(O—N=X)_3,$$

in which R^3 is a monovalent group selected from the class consisting of methyl, ethyl, propyl, vinyl, phenyl and 3,3,3-trifluoropropyl groups and X is a divalent group represented by the general formula $=CR^4{}_2$, R^4 being a halogen-substituted or unsubstituted monovalent hydrocarbon group, or



R^5 being a halogen-substituted or unsubstituted divalent hydrocarbon group, in a molar ratio of the silane compound to the silanol groups in the diorganopolysiloxane of at least 1 under a substantially anhydrous condition to form an intermediate oxime-terminated diorganopolysiloxane represented by the general formula

$$(X=N—O)_2(R^3)Si—O—SiR^1{}_2—O_nSi(R^3)(O—N=X)_2,$$

in which R^1, R^3, X and n each have the same meaning as defined above; and

(b) reacting the intermediate oxime-terminated diorganopolysiloxane with a monohydric alcohol represented by the general formula

$$R^6OH,$$

in which R^6 is a monovalent hydrocarbon group having 1 to 8 carbon atoms, in a molar ratio of the monohydric alcohol to the oxime groups of the formula —O—N=X in the intermediate oxime-terminated diorganopolysiloxane of at least 1 to form an alkoxy-terminated diorganopolysiloxane represented by the general formula

$$(R^6O)_2(R^3)Si—O—SiR^1{}_2—O_nSi(R^3)(OR^6)_2,$$

in which R^1, R^3, R^6 and n each have the same meaning as defined above.

4,658,007

POLYISOCYANURATE-BASED POLYOXAZOLIDONE POLYMERS AND PROCESS FOR THEIR PREPARATION

Maurice J. Marks, and Raymond A. Pleprys, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 7, 1985, Ser. No. 731,253

Int. Cl.[4] C08G *18/22, 18/38, 18/64*

U.S. Cl. 528—55 **14 Claims**

1. In a process for preparing a polyoxazolidone in the reaction of a polyepoxide and a polyisocyanate, the improvement which comprises reacting said polyepoxide and polyisocyanate in the presence of a catalytic amount of an organoantimony iodide.

13. A polyurethane polymer prepared by reacting an isocyanate-terminated poly-oxazolidone polymer containing less than about 15 mole percent isocyanurate groups with a material having a plurality of active hydrogen atoms.

14. A cured epoxy resin prepared by reacting an epoxy-terminated polyoxazolidone polymer containing less than about 15 mole percent isocyanurate groups with a diamine.

4,658,008

HIGH IMPACT CROSS-LINKED POLYURETHANES

Timothy A. Tufts, Columbus, Ohio, assignor to Ashland Oil, Inc., Russell, Ky.

Filed Aug. 21, 1985, Ser. No. 767,990

Int. Cl.[4] C08G *18/32*

U.S. Cl. 528—67 **8 Claims**

1. A polyurethane molding composition having a polyisocyanate component, a polyol component consisting essentially of

(a) 0.5–0.85 part by weight propylene glycol and correspondingly from 0.5–0.15 part dipropylene glycol, and (b) an oligomeric polyol of from about 3,000–10,000 average molecular weight wherein the weight relationship of (a) and (b) is from about 2:1:1:1, respectively, and in which the polyisocyanate component provides an overall isocyanate equivalent index of from about 1.1–1.6.

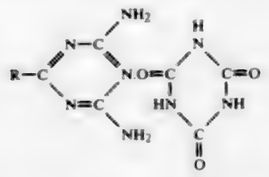
4,658,009

NOVEL 2-SUBSTITUTED-4,6-DIAMINO-S-TRIAZINE/ISOCYANURIC ACID ADDUCT, PROCESS FOR SYNTHESIS OF SAID ADDUCT AND PROCESS FOR CURING POLYEPOXY RESIN WITH SAID ADDUCT

Kazuo Kamagata; Toshiaki Yamada, both of Saitama, and Natsuo Sawa, Kagawa, all of Japan, assignors to Shikoku Chemicals Corporation, Kagawa, Japan

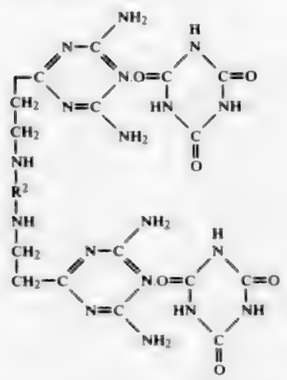
Filed Mar. 13, 1986, Ser. No. 839,189
Claims priority, application Japan, Mar. 14, 1985, 60-51828
Int. Cl.⁴ C08G 59/50; C07D 403/00
U.S. Cl. 528—109 **43 Claims**

1. A 2-substituted-4,6-diamino-s-triazine/isocyanuric acid adduct represented by the following formula:



(1)

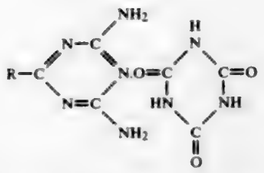
wherein R stands for an alkyl group having 2 to 20 carbon atoms, an unsubstituted or cyano group-substituted aryl group, or a group of the formula $R^1—CH_2CH_2—$ in which R^1 stands for an alkoxy group having up to 20 carbon atoms, an acyloxy group, an amino group, an N-substituted amino group, a benzotriazolyl group or a 2-alkylimidazolyl-(4)-dithiocarbonyl group, or by the following formula:



(2)

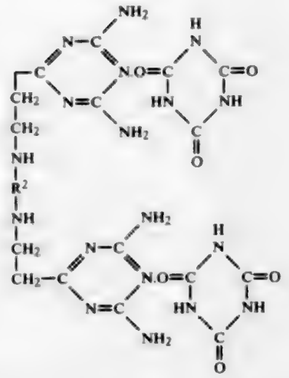
wherein R^2 stands for an alkylene group which may have an intervening imino or phenylene group.

42. A process for curing polyepoxy resins, which comprises mixing 100 parts by weight of an epoxy resin with 5 to 50 parts by weight of a 2-substituted-4,6-diamino-s-triazine/isocyanuric acid adduct represented by the following formula:



(1)

wherein R stands for an alkyl group having 2 to 20 carbon atoms, an unsubstituted or cyano group-substituted aryl group, or a group of the formula $R^1—CH_2CH_2—$ in which R^1 stands for an alkoxy group having up to 20 carbon atoms, an acyloxy group, an amino group, an N-substituted amino group, a benzotriazolyl group or a 2-alkylimidazolyl-(4)-dithiocarbonyl group, or by the following formula:



(2)

wherein R^2 stands for an alkylene group which may have an intervening imino or phenylene group, and 0.025 to 10 parts by weight of a curing agent selected from the group consisting of aliphatic amines, aromatic amines, tertiary amines, polyamide resins and acid anhydrides, and heating the mixture.

4,658,010

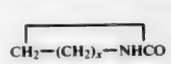
POLYIMIDE ADHESIVE AND METHOD OF MAKING FROM LACTAM, DIANHYDRIDE MIXTURE AND DIAMINE

John V. Long, 1756 Lexington Ave., El Cajon, Calif. 92121, and John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120

Filed Apr. 25, 1985, Ser. No. 727,127
Int. Cl.⁴ C08G 69/14
U.S. Cl. 528—322 **11 Claims**

1. The method of preparing a polyimide composition useful as an adhesive or a matrix material for fiber reinforced composite structure which comprises the steps of:

providing an oxoimine having the general formula:



wherein

x is an integer from 2 to 7;

mixing with said oxoimine a tetracarboxylic acid dianhydride;

the mole ratio of oxoimine to dianhydride being from about 0.1:1 to 3:1;

said dianhydride comprising at least about 50 mole % 1,2,3,4-butane tetracarboxylic acid dianhydride and from about 0.5 to about 50 mole % of a dianhydride selected from the group consisting of 3,3',4,4'-benzophenone tetracarboxylic acid dianhydride, pyromellitic dianhydride and mixtures thereof;

heating the mixture to a temperature of from about 150° to 200° C. for about 30 to 90 minutes to produce at least one bisimide;

adding to said mixture, either before or after said heating step, at least about 30 wt.% of a non-reactive solvent, based on weight of the solids, said solvent being capable of dissolving, without reacting with, said oxoimine, dianhydride and bisimide;

adding to said mixture after said heating and solvent addition a substantially stoichiometric quantity of a diamine; and

stirring the resulting mixture for about 20 to 60 minutes at a temperature of from about 40° to 60° C.;

whereby a polyamide adhesive solution capable of forming a polyimide upon heating results.

4,658,011

POLYMERIZATION OF OXAZOLINE USING ALKALI OR ALKALINE EARTH METAL COMPLEX CATALYST

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 15, 1985, Ser. No. 765,634
Int. Cl.⁴ C08G 73/06
U.S. Cl. 528—409 **9 Claims**

1. The process for the homopolymerization of an oxazoline comprising carrying out the homopolymerization at a temperature in the range of from about 80° C. to about 200° C. at a pressure in the range of from about atmospheric to about 50 atmospheres in the presence of a catalyst which is a cationic complex of an alkali or al alkaline earth metal.

4,658,012

PROCESS FOR PURIFYING CHLORINATED ALIPHATIC POLYMERS

Alfred Altorfer, Freienstein, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 9, 1986, Ser. No. 849,687
Claims priority, application Switzerland, May 6, 1985, 1903/85
Int. Cl.⁴ C08F 6/10
U.S. Cl. 528—497 **7 Claims**

1. A process for purifying a chlorinated aliphatic polymer of chlorination solvent comprising the steps of

delivering a flow of chlorinated aliphatic polymer containing a chlorination solvent into a head of a continuously operating exchange column;

delivering a flow of a second solvent having a higher boiling point than the chlorination solvent into a sump of the exchange column;

performing a solvent exchange within the exchange column between a descending flow of the chlorinated aliphatic polymer and an ascending flow of the second solvent;

extracting a solution of chlorinated aliphatic polymer in the second solvent from the sump of the exchange column; and

removing the chlorination solvent from the head of the exchange column.

4,658,013

ANALGESIC AND/OR OPIATE ANTAGONIST TRIPEPTIDE AMIDES AND PROCESSES FOR PREPARATION AND COMPOSITIONS THEREOF

Barry A. Morgan, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 287,865, Jul. 28, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,678
Int. Cl.⁴ C07K 7/12, 5/08; A61K 37/24
U.S. Cl. 530—302 **1 Claim**

1. HTyrD-DaaPheNHCH$_2$CH$_2$CHMe$_2$ or a pharmaceutically acceptable acid addition salt thereof.

4,658,014

SYNTHETIC PEPTIDES WITH CALCITONIN-LIKE ACTIVITY

Tomas G. Kempe, 16604 Windermere Pl., Minnetonka, Minn. 55345

Filed Dec. 20, 1985, Ser. No. 811,179
Int. Cl.⁴ C07K 7/36
U.S. Cl. 530—307 **3 Claims**

1. A biologically active peptide with calcitonin-like activity having the formula:

1 2 3 4 5 6 7 8 9 10 11
$R_1—R_2—$Asn—Leu—Ser—Thr—$R_3—$Val—Leu—Gly—Lys—

12 13 14 15 16 17 18 19 20 21 22
Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—

23 24 25 26 27 28 29 30 31 32
Pro—Arg—Thr—$R_4—R_5$—Gly—R_6—Gly—R_7—Pro(NH_2)

wherein,

R_1 is 3-mercaptopropionic acid and R_3 is Cys and R_1–R_3 is linked by a —S—S— bond, or

R_1 is hydrogen and R_3 is Asu and R_2–R_3 is linked by a —CH_2—CH_2— bond,

R_2 is an optional moiety from the group consisting of Ser, Ala and Gly,

R_4 is Asn or Asp,

R_5 is Thr or Val,

R_6 is Ser or Ala,

R_7 is Ser, Asn, Asp, Glu, Gln, Pro or Hse.

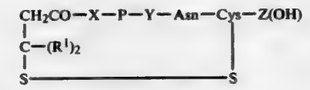
4,658,015

POLYPEPTIDE INTERMEDIATES

James F. Callahan, Philadelphia; William F. Huffman, Malvern; Michael L. Moore, Media, and Nelson C. Yim, Ambler, all of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 673,829, Nov. 21, 1984, Pat. No. 4,604,378. This application Apr. 16, 1986, Ser. No. 852,869
Int. Cl.⁴ C07K 7/06, 7/16
U.S. Cl. 530—329 **3 Claims**

1. A polypeptide compound having the formula:



in which:

P is Phe, Ile, Phe(4'-Alk), Tyr or Tyr(Alk);

X is a D or L isomer of Val, Nva, Leu, Ile, Pba, Phe, Phe(4'-Alk), Trp, Nle, Cha, Abu, Met, Chg, Tyr or Tyr(Alk);

Y is Val, Ile, Abu, Ala, Chg, Gln, Lys, Cha, Thr, Nle, Phe, Leu or Gly;

Z is Gly, Sar, a single bond or a D or L isomer of Pro, Δ^3-Pro, Ala or N-Me-Ala; and

R^1 is methyl; or an acceptable salt thereof.

VOL 1077 ISS 2 AP 14 1987 UMI

4,658,016

PROCESS FOR THE PREPARATION OF PENTAPEPTIDES HAVING AN ACTION ON THE IMMUNE SYSTEM AND INTERMEDIATE PRODUCTS FOR THIS PROCESS

Wolfgang König, Hofheim am Taunus; Rolf Geiger, Frankfurt am Main; Rainer Obermeier, Hattersheim am Main, and Hubert Müllner, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 7, 1985, Ser. No. 742,441

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1984, 3421614

Int. Cl.⁴ C07K *1/02, 7/06*

U.S. Cl. 530—330 **5 Claims**

1. A process for the preparation of a peptide of the formula

Arg—Lys—S—Val—Y

wherein

S denotes glutamic acid or α-aminoadipic acid, in each case in the L- or D-configuration, and

Y denotes tyrosine or tryptophan, in each case in the L- or D-configuration, or their esters, amides, alkylamides, cycloalkylamides or aralkylamides, which comprises subjecting a tetrapeptide of the formula

Z—Arg(Z')—Lys(Z')—S—(Bzl)—Val—OH

in which S is as defined above and Z' represents an amino-protective group of the benzyl type, to a condensation reaction with the corresponding tyrosine ester or amide or tryptophan ester or amide and splitting off the protective groups of the benzyl type by catalytic transfer hydrogenation with formic acid/dimethylformamide or dimethylacetamide mixtures.

4,658,017

METHOD FOR THE LARGE SCALE PURIFICATION OF HUMAN FIBROBLAST INTERFERON

Wlodzimierz E. Dembinski, and Eugene Sulkowski, both of Buffalo, N.Y., assignors to Health Research, Inc. (Roswell Park Division), Buffalo, N.Y.

Filed Feb. 14, 1984, Ser. No. 579,994

Int. Cl.⁴ C07K *3/20, 15, 26;* **A61K** *45/02*

U.S. Cl. 530—351 **4 Claims**

1. A process for the large scale purification of human fibroblast interferon produced by human diploid fibroblasts under superinduction conditions which process produces a purified fibroblast interferon end product having a final recovery not less than 60% of the starting material, and a specific activity not less than 1×10^8 units/mg protein, comprising the following steps carried out in the sequence specified:

(a) contacting an aqueous solution of human fibroblast interferon which has been first mildly acidified by the addition of a suitable buffering agent, with a weakly acidic cation exchange medium having one or more carboxymethyl functional groups as the active ligand component of said medium to absorb the inferferon on said medium;

(b) eluting the interferon absorbed on the medium of step (a) by washing the medium with a suitable acidic or basic eluting solution containing a suitable salt such as potassium or sodium chloride to obtain a solution of purified interferon having an activity not less than 95% of the starting material;

(c) subjecting the solution of purified interferon obtained in step (b) to affinity chromatography on a suitable exchange material wherein lectin, preferably concanavalin A, is the active ligand component of said material, to adsorb the interferon on said exchange material;

(d) developing said exchange material with an eluant comprising methyl-α-D-mannopyranoside and thereafter incubating said exchange material for a sufficient length of time in the presence of said methyl-α-D-mannopyranoside;

(e) eluting the exchange material of step (d) with a suitable amount of ethylene glycol to obtain an eluate containing ethylene glycol and the purified interferon in which the final concentration of the ethylene glycol is not more than 50% (vol/vol), and preferably not more than 40% (vol/vol);

(f) subjecting the eluate obtained in step (e) to chromatography on a hydrophobic sorbent medium having one or more phenyl functional groups as the active ligand component of said sorbent medium to absorb the interferon on said sorbent medium;

(g) eluting the interferon adsorbed in step (f) with a suitable eluant comprising preferably 75% (vol/vol) ethylene glycol in 0.02 M sodium phosphate, 0.15 M sodium chloride, pH 7.4 (PBS); and

(h) subjecting the eluate obtained from step (g), which has been first mildly acidified by the addition of a suitable buffering agent, to chromatography on a weakly acidic cation exchange medium having one or more carboxymethyl functional groups as the active ligand component of said medium to eliminate the ethylene glycol and endotoxins and to concentrate the interferon to the desired strength.

4,658,018

PROCESS FOR PRODUCING HOMOGENEOUS COLONY STIMULATING FACTOR

David L. Urdal; Carl J. March; Diane Y. Mochizuki, and Paul J. Conlon, III, all of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Filed Mar. 13, 1984, Ser. No. 588,940

Int. Cl.⁴ C07K *3/20;* **C12P** *21/00*

U.S. Cl. 530—351 **4 Claims**

1. A process for preparing colony stimulating factor in homogeneous form, comprising:

(a) passing a solution of crude colony stimulating factor through a reverse phase, high-performance column containing an appropriate ligand covalently bonded to a silica gel whereby the colony stimulating factor is retained by said first column, eluting said first column with an acetonitrile gradient, and pooling fractions exhibiting colony stimulating factor activity; and,

(b) passing the pooled active fractions eluted from the first column through a second reverse phase, high-performance liquid chromatography column containing an appropriate ligand covalently bonded to a silica gel whereby the colony stimulating factor is retained by the second column, eluting the second column with a buffered N-propanol gradient and pooling fractions exhibiting colony stimulating factor activity.

4,658,019

COMPLEMENT-FIXING MONOCLONAL ANTIBODY TO HUMAN T CELLS

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 432,452, Oct. 4, 1982, Pat. No. 4,515,893, which is a division of Ser. No. 33,669, Apr. 26, 1979, Pat. No. 4,361,549. This application Aug. 10, 1984, Ser. No. 639,552

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.⁴ C07K *15/00;* **A61K** *39/395*

U.S. Cl. 530—387 **3 Claims**

1. Complement-fixing mouse monoclonal anitbody which reacts with essentially all normal human peripheral T cells.

4,658,020

MONOCLONAL ANTIBODY TO HUMAN HELPER T CELLS

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 432,459, Oct. 4, 1982, Pat. No. 4,515,895, which is a division of Ser. No. 33,639, Apr. 26, 1979, Pat. No. 4,381,295. This application Aug. 10, 1984, Ser. No. 639,554

The portion of the term of this patent subsequent to Apr. 26, 2000, has been disclaimed.

Int. Cl.⁴ C07K *15/00;* **A61K** *39/395*

U.S. Cl. 530—387 **3 Claims**

1. Mouse monoclonal antibody which reacts with essentially all normal human peripheral helper T cells.

4,658,021

METHIONYL HUMAN GROWTH HORMONE

David V. Goeddel, and Herbert L. Heyneker, both of Burlingame, Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Division of Ser. No. 356,564, Mar. 9, 1982, Pat. No. 4,601,980, which is a division of Ser. No. 55,126, Jul. 5, 1979, Pat. No. 4,342,832. This application Sep. 25, 1984, Ser. No. 654,340

Int. Cl.⁴ C07K *15/06;* **C12N** *15/00*

U.S. Cl. 530—399 **1 Claim**

HGH (1-24)



1. Methionyl human growth hormone.

4,658,022

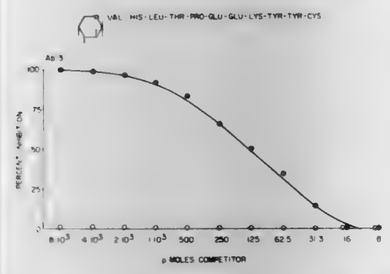
BINDING OF ANTIBODY REAGENTS TO DENATURED PROTEIN ANALYTES

William J. Knowles, Hamden, and Vincent T. Marchesi, Guilford, both of Conn., assignors to Molecular Diagnostics, Inc., West Haven, Conn.

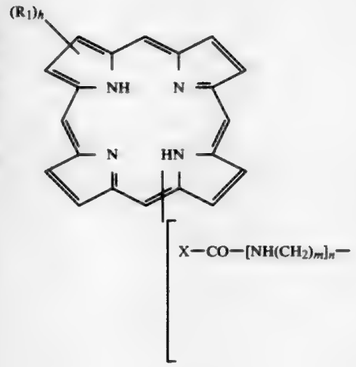
Continuation-in-part of Ser. No. 763,193, Aug. 8, 1985, which is a continuation-in-part of Ser. No. 665,811, Oct. 29, 1984, abandoned. This application Sep. 27, 1985, Ser. No. 779,730

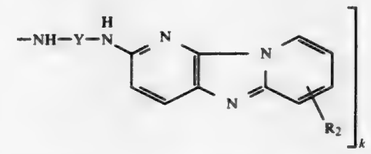
Int. Cl.⁴ A61K *39/00;* **G01N** *33/56*

U.S. Cl. 530—402 **69 Claims**



1. A method for binding a particular native protein with an antibody reagent comprising the steps of treating the protein to denature a significant amount thereof and contacting the denatured protein with an antibody reagent specific for binding a linear peptide epitope in such particular protein.





wherein R^1 represents a lower alkyl group, $—CH=CH_2$, $—CH_2CH_2CO_2H$, an aryl group or an aryl group substituted with an alkyl group having 1 to 4 carbon atoms or a halogen atom; h represents 0 to 8 wherein, when h is not smaller than 2, R_1 each may be the same or different; X represents



or $—CH_2CH_2—$; m represents an integer of 2 to 4; n represents 0 to 4; Y represents $—(CH_2)_l—$ or $—CO—(CH_2)_l—CO—$ wherein l represents an integer of 2 to 5; R_2 represents H or a lower alkyl group; and k represents an integer of 1 to 4 and any counterion pharmaceutically acceptable necessary for electrical neutrality.

4,658,024

PYRAZOLO [1,2-A][1,2]-DIAZEPINES USEFUL AS ANTIHYPERTENSIVES

Michael R. Attwood, Hitchin; Cedric H. Hassall, Harpenden; Robert W. Lambert, Welwyn; Geoffrey Lawton, and Sally Redshaw, both of Hitchin, all of Great Britain, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

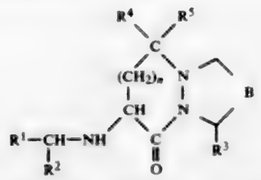
Division of Ser. No. 493,876, May 12, 1983, Pat. No. 4,512,924. This application Feb. 1, 1985, Ser. No. 697,559

Claims priority, application United Kingdom, May 12, 1982, 8213850

Int. Cl.⁴ C07D *403/04, 401/04;* **A61K** *31/33*

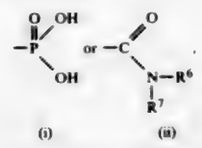
U.S. Cl. 540—500 **17 Claims**

1. Compounds of the formula



I

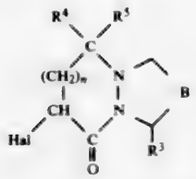
wherein B represents a methylene, R^1 represents a hydrogen atom or an alkyl, aralkyl, amino-alkyl, monoalkylamino-alkyl, dialkylamino-alkyl, acylamino-alkyl, phthalimidoalkyl, alkoxycarbonylamino-alkyl, aryloxycarbonylamino-alkyl, aralkoxycarbonylamino-alkyl, alkylaminocarbonylamino-alkyl, arylaminocarbonylamino-alkyl, arakylaminocarbonylamino-alkyl, alkylsulphonylamino-alkyl or arylsulphonylamino-alkyl group, R^2 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group or a group of the formula



(i) (ii)

R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group, R^6 and R^7 each represent a hydrogen atom or an alkyl or aralkyl group or R^6 and R^7 together with the nitrogen atom to which they are attached represent a 5-membered or 6-membered heteromonocyclic ring which may contain a further nitrogen atom or an oxygen or sulphur atom, and n stands for 2, and pharmaceutically acceptable salts thereof.

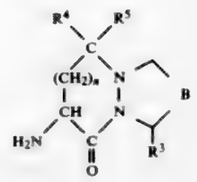
10. A compound of the formula



II

wherein B represents a methylene, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group, Hal represents a halogen atom and n stands for 2, with the proviso that B represents a methylene group when R^4 and R^5 together represent an oxo group, R^3 represents a carboxyl or alkoxycarbonyl group and n stands for 1.

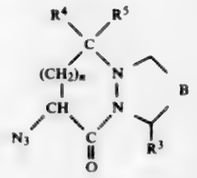
11. A compound of the formula



IV

wherein B represents a methylene, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group and n stands for 2.

12. An azide of the formula



XV

wherein B represents a methylene, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo gorup and n stands for 2.

13. A compound of the formula

XVIIa

wherein B represents a methylene, R^3 represents a carboxyl, alkoxycarbonyl or aralkoxycarbonyl group, R^4 and R^5 each represent a hydrogen atom or R^4 and R^5 together represent an oxo group, R^8 represents a phthaloylamino group and n stands for 2.

4,658,025

HYDRAZINE-THIOCARBOXYLIC ACID O-CARBAMOYLMETHYL ESTERS

Fritz Maurer, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

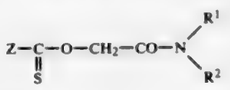
Filed Dec. 21, 1984, Ser. No. 684,568

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1984, 3400170

Int. Cl.⁴ C07C *155/02;* **C07D** *211/06, 223/04, 215/08*

U.S. Cl. 540—607 **2 Claims**

1. An ester of the formula



in which

Z is H_2N—NH— and

R^1 and R^2 each independently is hydrogen, alkyl, alkenyl or alkynyl with up to 8 carbon atoms, cycloalkyl or cycloalkenyl each of which has 3 to 7 carbon atoms and is optionally substituted by alkyl with 1 to 4 carbon atoms, alkoxy or alkoxyalkyl with 1 to 8 carbon atoms, halogenoalkyl with 1 to 8 carbon atoms and 1 to 5 halogen atoms, aralkyl with 6 to 10 carbon atoms in the aryl part and 1 or 2 carbon atoms in the alkyl part, or aryl which has 6 to 10 carbon atoms and is optionally substituted by halogen, alkyl, alkoxy or alkylthio with in each case 1 to 4 carbon atoms, halogenoalkyl, halogenoalkoxy or halogenoalkylthio with in each case 1 or 2 carbon atoms and 1 to 5 halogen atoms, or nitro; or

R^1 and R^2, together with the nitrogen atom to which they are bonded, form a 5-membered to 7-membered heterocyclic radical which can contain up to 2 further heteroatoms nitrogen and/or oxygen atoms, and which is optionally substituted by alkyl with 1 to 6 carbon atoms, also in the form of a fused-on ring system, aryl with 6 to 10 carbon atoms, also in the form of a fused-on ring system, or dioxyalkylene with 2 or 3 carbon atoms.

4,658,026

N,N'-BIS(2,3-EPOXYPROPYL) DERIVATIVES OF CYCLIC DICARBOXYLIC ACID HYDRAZIDES AND A PROCESS FOR THE PRODUCTION THEREOF

Ludwig Rottmaier, Odenthal-Gloebusch, and Rudolf Merten, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

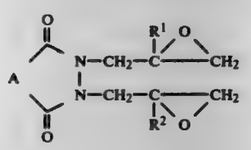
Filed Jul. 31, 1984, Ser. No. 636,280

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1983, 3329192

Int. Cl.⁴ C07D *405/14, 491/18;* **D06M** *13/38;* **C09J** *3/00*

U.S. Cl. 544—238 **3 Claims**

1. N,N'-bis(2,3-epoxypropyl) derivatives of cyclic dicarboxylic acid hydrazides corresponding to the formula (I):

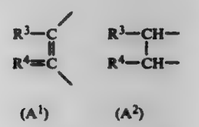


(I)

wherein

R^1 and R^2, which may be the same or different, each represents a hydrogen atom or a methyl group,

A represents the radicals



(A^1) (A^2)

where R^3 and R^4, which are the same or different, represent a hydrogen atom or a straight-chain or branched chain C_1–C_4 alkyl group, a halogen atom, or a C_1–C_4-alkoxy group.

4,658,027

PROCESS FOR THE PREPARATION OF 1-(2-OXYAMINOSULPHONYL-PHENYLSULPHONYL)-3-HETEROARYL-UREAS

Hans-Joachim Diehr; Christa Fest, both of Wuppertal; Rolf Kirsten, Monheim; Joachim Kluth, Langenfeld; Klaus-Helmut Müller, Duesseldorf; Theodor Pfister, Monheim; Uwe Priesnitz, Solingen; Hans-Jochem Riebel, Wuppertal, and Wolfgang Roy, Langenfeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

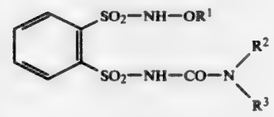
Filed Aug. 23, 1985, Ser. No. 769,184

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431932

Int. Cl.⁴ C07D *239/42, 239/47, 251/42, 257/08*

U.S. Cl. 544—321 **4 Claims**

1. A process for the preparation of a 1-(2-oxyaminosulphonyl-phenylsulphonyl)-urea of the formula

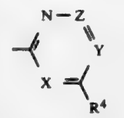


in which

R^1 is C_1–C_{12}-alkyl which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylsulphonyl, C_1–C_4-alkyl-carbonyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkyl-amino-carbonyl or di-(C_1–C_4-alkyl)-amino-carbonyl; or is C_3–C_6-alkenyl, C_3–C_6-alkinyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-C_1–C_2-alkyl; phenyl-C_1–C_2-alkyl which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl; or is phenyl which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy, C_1–C_2-fluoroalkoxy, C_1–C_4-alkylthio, trifluoromethylthio or C_1–C_4-alkoxy-carbonyl,

R^2 is hydrogen or C_1–C_4-alkyl which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylamino-carbonyl or di-(C_1–C_4-alkyl)-amino-carbonyl; or is C_3–C_6-alkenyl, C_3–C_6-alkinyl; or phenyl-C_1–C_2-alkyl which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_3-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl,

R^3 is the radical



R^4 is hydrogen, fluorine, chlorine, bromine, hydroxyl; C_1–C_4-alkyl which is optionally substituted by fluorine and/or chlorine; C_1–C_4-alkoxy which is optionally substituted by fluorine and/or chlorine; C_1–C_4-alkylthio which is optionally substituted by fluorine and/or chlorine; amino, C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino,

X is nitrogen or a methine bridge (CH),

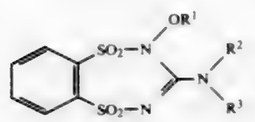
Y is nitrogen or an optionally substituted methine bridge G—R^5,

R^5 is hydrogen, fluorine, chlorine, bromine or C_1–C_4-alkyl,

Z is nitrogen or an optionally substituted methine bridge C—R^6, and

R^6 is hydrogen, fluorine, chlorine, bromine, hydroxyl; C_1–C_4-alkyl which is optionally substituted by fluorine and/or chlorine; C_1–C_4-alkoxy which is optionally substituted by fluorine and/or chlorine; C_1–C_4-alkylthio which

is optionally substituted by fluorine and/or chlorine; amino, C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino, comprising reacting water with a benzodisultam of the formula



at a temperature between 0° C. and 100° C.

4,658,028
QUINOXALINE ADDUCTS USEFUL AS ANTHELMINTICS

Vernon V. Young, Terre Haute, and David R. Bright, West Terre Haute, both of Ind., assignors to Angus Chemical Company, Northbrook, Ill.

Division of Ser. No. 716,506, Mar. 25, 1985, which is a continuation of Ser. No. 329,446, Dec. 10, 1981, abandoned, which is a division of Ser. No. 176,168, Aug. 7, 1980, Pat. No. 4,348,389. This application May 1, 1986, Ser. No. 858,590
Int. Cl.⁴ C07D *403/06*, *417/06*, *413/06*, *403/14*
U.S. Cl. 544—353 **1 Claim**

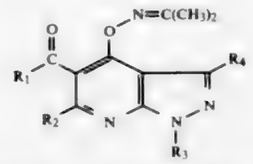
1. N,N'-bis(α-hydroxy-2-quinoxalinylmethyl)urea-1,1',4,4'-tetraoxide.

4,658,029
1-HPYRAZOLO[3,4-B]PYRIDINES

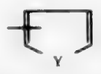
Gregory M. Shutske, Somerset, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 812,590, Dec. 23, 1985, Pat. No. 4,622,326. This application Aug. 15, 1986, Ser. No. 896,919
Int. Cl.⁴ C07D *471/04*
U.S. Cl. 546—119 **14 Claims**

1. A compound having the formula



where R_1 is hydrogen, loweralkyl, arylloweralkyl, aryl or heteroaryl; R_2 is hydrogen or loweralkyl; R_3 is loweralkyl, loweralkoxyloweralkyl, cycloalkyl, arylloweralkyl or heteroarylmethyl; and R_4 is hydrogen or loweralkyl, the term aryl in each occurrence signifying an unsubstituted phenyl group or a phenyl group substituted with 1, 2 or 3 substituents each of which being independently a loweralkyl group, loweralkoxy group, hydroxy group, trifluoromethyl group, chlorine or fluorine, with the proviso that the aryl group shall not have chlorine or fluorine at the ortho position; the term heteroaryl in each occurence signifying a group having the formula



where Y is O, S, NR_6 or CH=N, R_6 being hydrogen, loweralkyl or phenylloweralkyl; and the term cycloalkyl signifying a cycloalkyl group of 3 to 7 carton atoms.

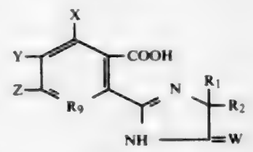
4,658,030
PROCESS FOR THE PREPARATION OF 2-(5,5-DISUBSTITUTED-4-OXO-2-IMIDAZOLIN-2-YL)NICOTINIC ACIDS, QUINOLINE-3-CARBOXYLIC ACIDS, AND BENZOIC ACIDS

Jerry M. Barton, East Windsor; Don W. Long, and Kenneth D. Lotts, both of Trenton, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

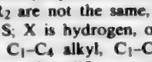
Division of Ser. No. 489,400, May 5, 1983, Pat. No. 4,518,780, which is a continuation-in-part of Ser. No. 381,818, May 25, 1982, abandoned. This application Apr. 11, 1985, Ser. No. 703,014
Int. Cl.⁴ C07D *401/04*
U.S. Cl. 546—167 **8 Claims**

1. A process for the preparation of a 2-(5,5-disubstituted-4-oxo(or thiono)-2-imidazolin-2-yl)-nicotinic acid, 3-quinoline carboxylic acid or benzoic acid of the formula:

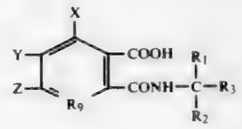
(1A)



wherein R_9 is N or CH; R_1 is C_1–C_4 alkyl; R_2 is C_1–C_{14} alkyl or C_3–C_6 cycloalkyl; and when R_1 and R_2 are taken together along with the carbon to which they are attached, they may represent C_3–C_6 cycloalkyl optionally substituted with methyl, and when R_1 and R_2 are not the same, the optical isomers thereof; W is O or S; X is hydrogen, or C_1–C_4 alkyl, Y is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, trifluoromethyl, trichloromethyl, difluoromethoxy, diloweralkylamino, C_1–C_4 alkylthio, nitro, phenyl or phenoxy optionally substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; Z is hydrogen, C_1–C_4 alkyl, trifluoromethyl, trichloromethyl, phenyl or phenyl substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; and when taken together, Y and Z may form a ring in which YZ are represented by the structure: $-(CH_2)_n-$, where n is an integer from 3 to 5, provided that X is hydrogen; or YZ is



where L, M, Q and R_7 are each of hydrogen, halogen, C_1–C_4 haloalkyl, difluoromethoxy, diloweralkylamino, C_1–C_4 alkylthio, nitro, phenyl, phenoxy or mono-substituted phenyl or phenoxy where the substituent is C_1–C_4 alkoxy or halogen; with the proviso that only one of L, M, Q or R_7, may represent a substituent other than hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; comprising, reacting a compound of the structure:



wherein R_9, X, Y, Z, W, R_1 and R_2 are as described above, and R_3 is



with from 2 to 20 molar equivalents of an aqueous or aqueous

alcoholic sodium or potassium hydroxide wherein the base concentration is from 10 to 40% of the total reaction mixture on a weight basis at a temperature of from 25° to 100° C. and thereafter acidifying the thus-formed reaction mixture to a pH between 2 and 4 with a strong mineral acid to give the formula (I) acid.

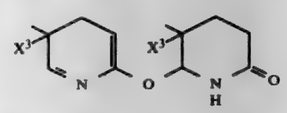
4,658,031
SYNTHESIS OF 2-SUBSTITUTED-5-METHYL-PYRIDINES AND INTERMEDIATES THEREFOR

Ludwig A. Hartmann, Wilmington, Del., and John F. Stephen, West Chester, Pa., assignors to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 649,423, Sep. 11, 1984, Pat. No. 4,584,380, which is a division of Ser. No. 433,273, Oct. 7, 1982, Pat. No. 4,473,696. This application Dec. 11, 1985, Ser. No. 807,850
Int. Cl.⁴ C07D *401/12*
U.S. Cl. 546—193 **2 Claims**

1. A dimeric compound of the following formula (XII):

(XII)



wherein X^3 is a halogen.

4,658,032
PROCESS FOR PRODUCING 2,3,5-COLLIDINE AND/OR 2,3,5,6-TETRAMETHYLPYRIDINE

Mitsuharu Yamaji, Nara, Japan, assignor to Koei Chemical Co., Ltd., Osaka, Japan

Filed Jul. 10, 1985, Ser. No. 753,533
Claims priority, application Japan, Jul. 13, 1984, 59-146620
Int. Cl.⁴ C07D *213/127*
U.S. Cl. 546—349 **2 Claims**

1. A process for producing 2,3,5-collidine and/or 2,3,5,6-tetramethylpyridine, which comprises reacting 3,5-lutidine with an aliphatic alcohol having 1 to 4 carbon atoms in a liquid reaction system at a temperature of 200° C. to 270° C. in the presence of a Raney cobalt catalyst, wherein the aliphatic alcohol is continuously supplied to the reaction system and wherein gas produced during the reaction is removed from the reaction system.

4,658,033
SYNTHESIS OF INTERPHENYLENE PROSTAGLANDIN ANALOGS

Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Sep. 23, 1985, Ser. No. 778,803
Int. Cl.⁴ C07D *307/00*; C07C *67/30*
U.S. Cl. 548—123 **14 Claims**

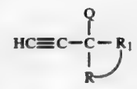
1. A method of synthesis of interphenylene PGH analogs, comprising:

reacting a bicyclic olefin of the formula:



wherein A is methylene, ethylene, oxy, imino, or lower alkyl- or aryl- substituted imino; and D is methylene, ethylene, vinylene, methyleneoxy, alkylidenedioxy, iminoxy, dithio or azo,

with an acetylene of the formula:

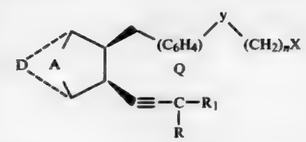


wherein R and R_1 are hydrogen, lower alkyl and lower aryl or $(CH_2)_Z$ with the Z being 2–5, Q being hydroxy, methoxy, acetoxy, or hydrogen or Q and R are oxo, and with a benzylic halide of the formula:

W CH_2 C_6H_4 $Y(CH_2)_nX$

wherein W is a halide selected from the group of chloride, bromide, and iodide, Y is oxa or methylene, n is 1–12, X is a carboxylic acid or C_1–C_8 ester, alcohol, ether or amide group and the aryl group (C_6H_4) is ortho, meta or para substituted,

said reaction being conducted in the presence of a catalytically effective amount of a palladium(O) catalyst to provide an interphenylene PGH analog of the formula



wherein, A, D, R, R_1, Q, Y and n are as previously defined.

4,658,034
PROCESS FOR THE PREPARATION OF 2,6-DICHLOROBENZOXAZOLE

Otto Arndt, Hofheim am Taunus, and Theodor Papenfuhs, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 703,708
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1984, 3406909
Int. Cl.⁴ C07D *263/54*
U.S. Cl. 548—217 **4 Claims**

1. A process for the preparation of 2,6-dichlorobenzoxazole, which comprises reacting 6-chlorobenzoxazolone in the presence of chlorine, phosphorus trichloride and phosphoryl chloride, or in mixtures of phosphorus pentachloride and phosphoryl chloride, at temperatures of 150° to 170° C., under pressure, the weight ratio of chlorine and phosphorus trichloride to phosphoryl chloride or of phosphorus pentachloride to phosphoryl chloride being 0.15:1 to 0.60:1.

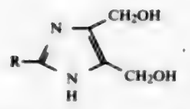
4,658,035
PREPARATION OF 2-ALKYL-4,5-DIHYDROXYMETHYLIMIDAZOLES

Uwe Kempe, Dannstadt-Schauernheim, and Toni Dockner, Meckenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 12, 1985, Ser. No. 754,852
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1984, 3426081
Int. Cl.⁴ C07D *233/64*
U.S. Cl. 548—342 **8 Claims**

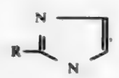
1. A process for the preparation of a 2-alkyl-4,5-dihydroxymethylimidazole of the formula

VOL 1077 ISS 2 AP 14 1987 UMI



(I)

where R is alkyl of 1 to 17 carbon atoms which may furthermore contain radicals of the formula R'O—, R'$_2$N— or R'S—, and R' is alkyl of 1 to 4 carbon atoms, wherein an imidazole of the formula



(II)

where R has the above meanings, is reacted with not less than 2 moles of formaldehyde at from 40° to 180° C. in the presence of a tertiary amine.

4,658,036

INVERT EMULSIFIERS FOR OIL-BASE DRILLING MUDS

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 3, 1985, Ser. No. 783,692

Int. Cl.^{4} C07D *209/48*

U.S. Cl. 548—513 **17 Claims**

9. An invert emulsifier for an oil base drilling mud comprising a mixture of triacid-fatty acid amidoimidoamines, fatty acid diamides, and unreacted tall oil fatty acids.

4,658,037

INTERMEDIATES FOR 1,3-DISUBSTITUTED 2-OXINDOLES AS ANALGESIC AND ANTIINFLAMMATORY AGENTS

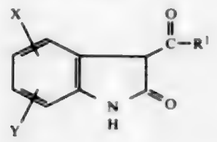
Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 693,696, Jan. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 619,861, Jun. 12, 1984, abandoned, which is a continuation-in-part of Ser. No. 577,903, Feb. 7, 1984, abandoned. This application Dec. 30, 1985, Ser. No. 814,719

Int. Cl.^{4} C07D *209/34*

U.S. Cl. 548—486 **12 Claims**

1. A compound of the formula



and the base salts thereof, wherein X is hydrogen, 5-fluoro, 5-chloro or 5-trifluoromethyl; Y is hydrogen, 6-fluoro, 6-chloro or 6-trifluoromethyl; and R^1 is benzyl, furyl, thienyl or thienylmethyl; provided that when X and Y are both hydrogen, R^1 is not benzyl.

4,658,038

N-ACYLATED 5-HYDROXYTRYPTOPHAN AMIDE DERIVATIVES

Hadassah Tamir, Teaneck, N.J.; Stephen E. Karpiak, New York, N.Y., and Meir Wilchek, Rehovoth, Israel, assignors to Research Foundation for Mental Hygiene, Inc., New York, N.Y. and Yeda Research and Development Co. Ltd., Rehovot, Israel

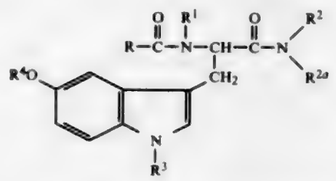
Division of Ser. No. 433,283, Oct. 7, 1982, Pat. No. 4,482,567. This application Nov. 13, 1984, Ser. No. 671,109

The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.

Int. Cl.^{4} C07D *209/20*

U.S. Cl. 548—495 **4 Claims**

1. A compound selected from the group consisting of 5-hydroxytryptophan derivatives of the formula:



wherein R is selected from the group consisting of C_5-C_{16} alkyl;

R^1 is H or methyl;

R^2 and R^{2a} are each H or R, as defined above;

R^3 is H or alkyl containing from 1 to 4 carbons;

R^4 is H or alkyl containing from 1 to 4 carbons;

and their non-toxic, pharmacologically acceptable acid addition salts.

4,658,039

PROCESS FOR THE PREPARATION OF ALKENYL ESTERS OF ACEMETACIN

Samir Samaan, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

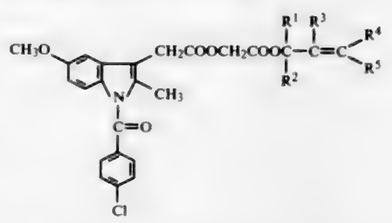
Filed Nov. 21, 1985, Ser. No. 800,493

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1984, 3443993

Int. Cl.^{4} C07D *209/28*

U.S. Cl. 548—501 **2 Claims**

1. An indole derivative of the formula



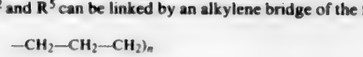
in which

R^1 and R^2 each independently is hydrogen or lower alkyl,

R^3 is hydrogen, lower alkyl or halogen, and

R^4 and R^5 each independently is hydrogen, lower alkyl, lower alkenyl or aryl of 6 to 12 carbon atoms optionally substituted by halogen or lower alkyl, or

R^2 and R^5 can be linked by an alkylene bridge of the formula



in which

n is 0 or 1.

4,658,040

PROCESS FOR MANUFACTURING HETEROCYCLIC COMPOUNDS

David B. Baird; Ronald Baker; Brian R. Fishwick, and Robert D. McClelland, all of Manchester, England, assignors to Imperial Chemical Industries PLC, London, England

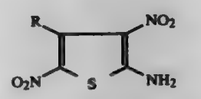
Continuation of Ser. No. 274,384, Jun. 17, 1981, abandoned, which is a continuation of Ser. No. 71,024, Aug. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 70,042, Aug. 27, 1979, abandoned, which is a continuation of Ser. No. 693,149, Jun. 7, 1976, abandoned, which is a continuation of Ser. No. 549,295, Feb. 12, 1975, abandoned, which is a continuation of Ser. No. 363,818, May 25, 1973, abandoned. This application Sep. 29, 1982, Ser. No. 427,807

Claims priority, application United Kingdom, Jun. 9, 1972, 27005/72; Aug. 29, 1972, 39948/72

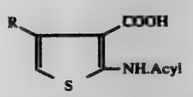
Int. Cl.^{4} C07D *333/36*

U.S. Cl. 549—68 **1 Claim**

1. A process for the manufacture of heterocyclic compound of the formula:



wherein R is hydrogen, lower alkyl or phenyl, comprising decarboxylating and dinitrating a compound (a) of the formula:



wherein R has the meaning stated above, and finally hydrolysing off and acyl group, wherein the decarboxylation and dinitration are simultaneously carried out by contacting said compound (a) with a mixture of nitric and sulphuric acid, said nitric acid being present in amounts of at least 2 moles thereof per mole of said compound (a) at a temperature between −20° and 30° C. and hydrolysing the acyl group of said decarboxylated and dinitrated compound by heating said compound with an aqueous or alcoholic solution of a mineral acid, the acyl group in the compound (a) being the residue —COX of a carboxylic acid X.COOH having a pK value not exceeding 3.8 whereby the yield of the said heterocyclic compound is 33% or more.

4,658,041

PREPARATION OF ALKYL CARBONATES

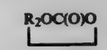
James M. Renga, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 24, 1982, Ser. No. 422,762

Int. Cl.^{4} C07D *317/36*; C07C *68/06*

U.S. Cl. 549—229 **3 Claims**

1. A process for preparing carbonate compounds corresponding to the formula $R_1OC(O)OR_1'$ or



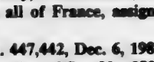
comprising contacting a lower alkyl carbonate or halogenated lower alkyl carbonate corresponding to the formula ROC(O)OR with a primary alkyl halide corresponding to the formula R_1-X or a vicinal alkyl dihalide having one primary halide functionality corresponding to the formula X-R_2-X at about 50° C. to 250° C. in the presence of an effective amount of an initiator selected from the group consisting of an alkali metal alkoxide, a salt of a strong base and a weak acid, a non-nucleophilic organic base, an alkali metal halide or a stable quaternary ammonium or phosphonium salt wherein:

R is independently each occurrence a lower alkyl or halogenated lower alkyl radical;

R_1 is different than R and is an alkyl radical of up to about 20 carbons optionally further substituted with alkenyl, aryl, halo, alkoxy or cyclic aliphatic or aromatic groups;

R_1' is R or R_1;

R_2 is



where R' is R or phenyl; and

X is halo.

4,658,042

PROCESS FOR THE PREPARATION OF MALEIC ANHYDRIDE

Tokisuke Watanabe; Shinji Kitaoka, and Yoshio Suwa, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 8, 1985, Ser. No. 752,914

Claims priority, application Japan, Jul. 16, 1984, 59-147078

Int. Cl.^{4} C07D *307/60*

U.S. Cl. 549—257 **11 Claims**

1. A process for the preparation of molten maleic anhydride by complete evaporation of water and dehydration within a rotary film evaporator of an aqueous solution containing maleic acid which is obtained by absorbing in water the gaseous reaction products formed by catalytic oxidation of benzene, or by absorbing in water the spent gas from the production of phthalic anhydride formed by catalytic oxidation of o-xylene or naphthalene, characterized in that when or prior to conducting the evaporation and the dehydration operations, hydrogen peroxide is added to said aqueous solution containing maleic acid to prevent the formation of resinous or gelatinous substances that would otherwise accumulate within the rotary film evaporator, and the amount of hydrogen peroxide added is from 0.5 g to 10 g calculated as H_2O_2 per 1 liter of said aqueous solution.

4,658,043

ETHERS OF PANTOLACTONE

Jacques Martel, Boudy; Jean Tessier, Vincennes, and André Teche, Nanterre, all of France, assignors to Roussel Uclaf, Paris, France

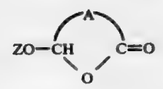
Division of Ser. No. 447,442, Dec. 6, 1982, Pat. No. 4,540,797, which is a continuation of Ser. No. 253,869, Apr. 13, 1981, abandoned, which is a division of Ser. No. 21,833, Mar. 19, 1979, Pat. No. 4,265,817. This application Jun. 17, 1985, Ser. No. 745,653

Claims priority, application France, Mar. 17, 1978, 78 07778

Int. Cl.^{4} C07D *307/93*

U.S. Cl. 549—302 **5 Claims**

1. An ether containing chiral atoms having the formula

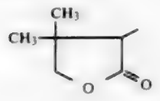


wherein A is selected from the group consisting of bicyclic hydrocarbon chain of 5 to 10 carbon atoms, bicyclic hydrocarbon chain of 5 to 10 carbon atoms containing one unsaturation containing one unsaturation, radicals

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wherein Y and Y' are individually selected from the group consisting of hydrogen, fluorine, bromine, chlorine and alkyl of 2 to 6 carbon atoms and the chain A can contain one or more chiral atoms or the lactone moiety can present a chirality due to the dissymetric spatial configuration of the whole of the molecule and Z is



4,658,044

INTERMEDIATES FOR URACIL DERIVATIVES

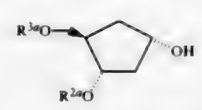
Paul Ravenscroft, Royston, England, assignor to Glaxo Group Limited, London, England

Continuation of Ser. No. 532,860, Sep. 16, 1983, abandoned. This application Oct. 24, 1985, Ser. No. 791,165

Int. Cl.⁴ C07D *309/12; C07C 143/68, 43/30*

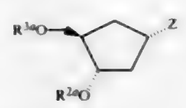
U.S. Cl. 549—415 **5 Claims**

1. A compound of the formula



wherein R^{2a} and R^{3a} are limited to protecting groups selected from the group consisting of methoxymethyl, benzyl, diphenylmethyl, triphenylmethyl, tetrahydropyranyl, acetyl and trialkylsilyl groups.

5. A compounds of formula



(XI)

where R^{2a} and R^{3a} are limited to protecting groups selected from the group consisting of methoxymethyl, benzyl, diphenylmethyl, triphenylmethyl, tetrahydropyranyl, acetyl and trialkylsilyl groups and Z represents a leaving group selected from the group consisting of halogen atoms and hydrocarbylsulphonyloxy groups.

4,658,045

PROCESS FOR PREPARING DISUBSTITUTED FURANS

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 22, 1985, Ser. No. 801,180

Int. Cl.⁴ C07D *307/36*

U.S. Cl. 549—506 **10 Claims**

1. A process for preparing 2,5-disubstituted furans, which comprises contacting a 1,4-diketone with an acidic zeolite catalyst having a Constrant Index less than 12 at a temperature in the range about 100°–500° C.

4,658,046

PROCESS FOR THE PREPARATION OF METHYLTIN CHLORIDES

Carl R. Gloskey, Hilton Head Island, S.C., assignor to Zemex Corporation, New York, N.Y.

Filed Jul. 8, 1985, Ser. No. 752,795

Int. Cl.⁴ C07F *7/22*

U.S. Cl. 556—100 **5 Claims**

1. A process for the preparation of methyltin chlorides by reacting methyl chloride with metallic tin and/or stannous chloride in the presence of a pentavalent organophosphorous dihalide at a temperature of 200° C. ±15° C. and recovering the methyltin chlorides by vacuum distillation, solvent recrystallization, aqueous hydrolysis, or by using the product directly to make mercaptides or organotin esters useful for polyvinyl chloride stabilization.

4,658,047

METHOD OF PREPARING 1,2-DIAMINOCYCLOHEXANE TETRACHLORO PLATINUM (IV) ISOMERS

Babu R. Vishnuvajjala, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Sep. 27, 1985, Ser. No. 780,932

Int. Cl.⁴ C07F *15/00*

U.S. Cl. 556—137 **6 Claims**

1. A method of preparing tetrachlorodiamine cyclohexane platinum (IV) ($PtCl_4^=$) and isomeric complexes by reacting 1,2-diaminocyclohexane in the form of dihydrohalides with an alkali metal or hydrogen chloroplatinate.

4,658,048

PLATINUM COMPLEXES

Tetsushi Totani; Osamu Shiratori, both of Hyogo; Katsutoshi Aono, and Naomi Uchida, both of Nara, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

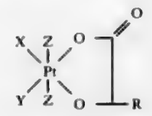
Filed Jun. 6, 1985, Ser. No. 741,890

Claims priority, application Japan, Jun. 20, 1984, 59-126845

Int. Cl.⁴ A01N *55/02;* **A61K** *31/28;* **C07F** *15/00*

U.S. Cl. 556—137 **15 Claims**

1. A compound of the formula:



wherein R is hydrogen, phenyl, or lower alkyl optionally substituted by the group consisting of hydroxy and halogen; X and Y each is amine or lower alkylamine; or X and Y taken together form ethane-1,2-diamine, cyclohexane-1,2-diamine, bicyclo[2.2.1]heptane-2,3-diamine, adamantane-1,2-diamine, cyclohexane-1,1-bis(methylamine), or cyclohexane-2-amine-1-methylamine; and Z is halogen, hydroxy, or an alkali-metal salt of hydroxy.

15. An antibacterial composition comprising an effective amount of a compound of claim 1 and one or more pharmaceutically acceptable carriers.

4,658,049

CARBOXYL GROUP-CONTAINING SILOXANE COMPOUND

Takaharu Nakano, Yokosukashi, and Nobumasa Ohtake, Yokohamashi, both of Japan, assignors to Chisso Corporation, Osaka, Japan

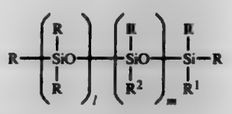
Filed Dec. 12, 1985, Ser. No. 808,052

Claims priority, application Japan, Dec. 22, 1984, 59-271506

Int. Cl.⁴ C07F *7/08*

U.S. Cl. 556—437 **5 Claims**

1. A carboxyl group-containing siloxane compound expressed by the general formula



wherein R represents an alkyl group of 1 to 4 carbon atoms; R^1 represents R or R^2; R^2 represents $CH_2CH_2CH_2(OCH_2CH_2)_nCOOH$; n is an integer of 1 to several ten thousands, l is an integer of from 0 to 134; m is an integer of from 0 to 20; l+m is an integer of from 1 to 134; and R^1 represents R^2 when m=0.

4,658,050

NOVEL PROCESS FOR THE PREPARATION OF HALOPROPYLTRIALKOXYSILANES AND HALOPROPYLALKYLALKOXYSILANES

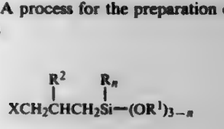
Jennifer M. Quirk, Highland, Md., and Bernard Kanner, West Nyack, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1986, Ser. No. 846,176

Int. Cl.⁴ C07F *7/08, 7/18*

U.S. Cl. 556—479 **15 Claims**

1. A process for the preparation of a compound of the formula



wherein R and R^1 individually are alkyl groups having from 1 to 6 carbon atoms; R^2 is hydrogen, or an alkyl group having from 1 to 6 carbon atoms; X is chlorine, bromine or iodine and n has a value of 0, 1 or 2 , which process comprises reacting a silane having the formula



wherein R, R^1 and n are as defined above with a compound having the formula



wherein R^2 and X are as defined above in the presence of a catalytic amount of an iridium containing dimer complex of the formula



wherein Q is selected from the group consisting of 1,3-butadiene, 1,3-hexadiene, 1,3-cyclohexadiene, 1,3-cyclooctadiene, 1,5-cyclooctadiene and norbornadiene and L is chlorine, bromine or iodine.

4,658,051

HYDROBORATE COMPOUNDS

Karen W. Morse, Providence, and John L. Peters, Logan, both of Utah, assignors to Utah State University Foundation, Logan, Utah

Filed Apr. 9, 1985, Ser. No. 721,298

Int. Cl.⁴ C07C *121/16, 121/66*

U.S. Cl. 558—384 **13 Claims**

1. A chemical compound having the formula:

$$MBH_3CR_1R_2CN$$

wherein R_1 is selected from the group consisting of H, deuterium, CH_3 and C_6H_5;
wherein R_5 is selected from the group consisting of H, deuterium, CH_3, and C_6H_5; or wherein R_1 and R_2 are jointly represented as C_5H_{10} so as to form a cyclohexyl ring with the alpha carbon of the compound; and
wherein M is a cation capable of forming a salt.

4,658,052

SALTS, CONTAINING FLUOROALKYL GROUPS, OF β-ALKYLAMINO-PROPIONIC ACID ESTERS, A PROCESS FOR THEIR SYNTHESIS AND THEIR USE FOR THE PRODUCTION OF AQUEOUS POLYACRYLATE DISPERSIONS CONTAINING FLUOROALKYL GROUPS

Herbert Ramloch, Bad Soden am Taunus; Manfred Seidel; Joachim Lause, both of Frankfurt am Main, and Karl Waldmann, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

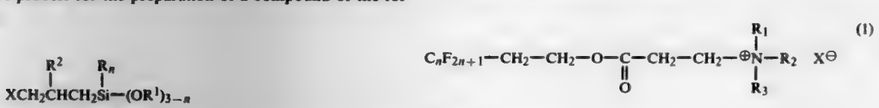
Filed Jan. 31, 1985, Ser. No. 696,730

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1984, 3403880

Int. Cl.⁴ C07C *101/02*

U.S. Cl. 560—155 **2 Claims**

1. A compound of the formula I



(1)

in which
n denotes a number from 4 to 12,
R_1 denotes hydrogen or methyl,
R_2 and R_3 denote C_1–C_6-alkyl and
X denotes halogen, HSO_4 or anions of organic acids having 1 to 4 carbon atoms, or CH_3OSO_3.

4,658,053

PRODUCTION OF ESTERS

Michael J. Green, Hull, England, assignor to BP Chemicals Limited, London, England

Filed Feb. 25, 1985, Ser. No. 704,667

Claims priority, application United Kingdom, Mar. 8, 1984, 8406126

Int. Cl.⁴ C07C *51/12, 67/03, 67/38*

U.S. Cl. 560—234 **12 Claims**

1. A process for the production of a second carboxylic acid ester from a first carboxylic acid ester, an olefinic hydrocarbon, carbon monoxide and hydrogen which comprises reacting said olefinic hydrocarbon, with said carbon monoxide, said hydrogen and said first carboxylic acid ester, at elevated temperature in the range 130°–220° C. and elevated pressure in the range 33 to 100 bars, in the presence of an effective amount of a catalyst comprising
(1) a rhodium source,
(2) a ruthenium source, and
(3) an iodide selected from the group consisting of cobalt iodide and zinc iodide,

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wherein the rhodium source is present in an effective amount between 0.1 and 1% by weight of the reaction mixture,

wherein the ruthenium source is present in an effective amount between 0.1 and 1% by weight of the reaction mixture, and

wherein the zinc iodide or cobalt iodide is present in an effective amount between 1 and 30% by weight of the reaction mixture.

4,658,054

PROCESS FOR THE PREPARATION OF 5,6-DIALKOXYANTHRANILIC ACIDS

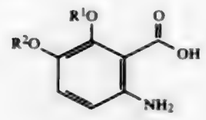
Richard A. Conley, Annandale, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jul. 29, 1985, Ser. No. 759,974

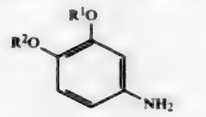
Int. Cl.⁴ C07C *101/54*

U.S. Cl. 562—453 **10 Claims**

1. The process for the preparation of a compound of the formula



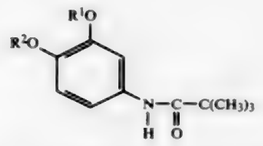
which comprises reacting a compound of the formula



with a pivalic acid compound of the formula



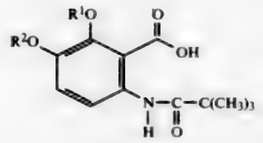
to form an amide of the formula



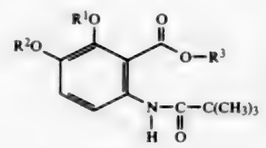
reacting the amide with an organolithium compound of the formula

R_4—Li

followed by reaction of the dilithium salt which forms which carbon dioxide to form an anilide of the formula



reacting the anilide with an esterifying agent to form an ester of the formula

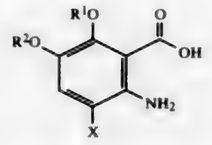


reacting the ester with an acid anhydride of the formula

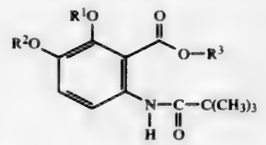
$(RCO)_2O$

and hydrolyzing the product formed with base, wherein R, R_1, R_2, R_3 are the same or different loweralkyl, R_4 is n-butyl, s-butyl, or t-butyl, R_5 is t-butyl and X is $OCOC(CH_3)_3$, chloro, bromo or fluoro.

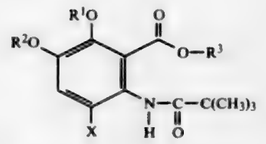
7. The process for the preparation of a compound of the formula



which comprises reacting a compound of the formula



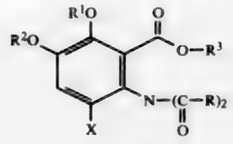
with a halogenating agent to form a compound of the formula



reacting the product formed with an acid anhydride of the formula

$(RCO)_2O$

to form a compound of the formula



and hydrolyzing the product formed with base wherein, R, R_1, R_2 and R_3 are the same or different lower alkyl, and X is halo.

4,658,055

METHOD FOR MANUFACTURE OF 7-(2,5-DIOXOCYCLOPENTYL)HEPTANOIC ACID DERIVATIVE

Takashi Onuki; Hirokazu Naora, both of Kawasaki, and Asao Nakamura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

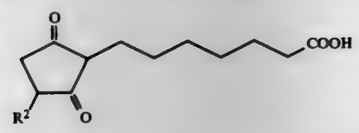
Filed Jan. 28, 1985, Ser. No. 695,187

Claims priority, application Japan, Jan. 27, 1984, 59-12875; Jun. 19, 1984, 59-126259

Int. Cl.⁴ C07C *67/28*

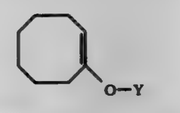
U.S. Cl. 562—503 **4 Claims**

1. A method for the manufacture of 7-(2,5-dioxocyclopentyl) heptanoic acid represented by the formula:

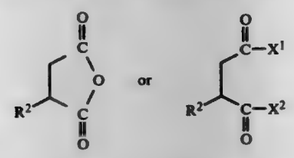


wherein R^2 stands for an acetyloxy group, a halogen atom, or a hydrogen atom, which comprises:

reacting a cyclooctene derivative represented by the formula



wherein Y stands for $—R^1$, $—COR^1$ or $—SiR^1_3$, wherein R^1 is an alkyl group of 1 to 5 carbon atoms or a benzyl group, with a compound represented by the formula



wherein X^1 and X^2 each is a halogen atom, in the presence of a Lewis acid.

4. The method of claim 1, which comprises reacting succinic anhydride with 1-cyclooctenyl acetate, succinyl chloride with 1-cyclooctenyl acetate, succinic anhydride with 1-cyclooctenyloxytrimethylsilane, succinic anhydride with 1-methoxycyclooctene, or succinic anhydride with 1-ethoxycyclooctene.

4,658,056

CATALYTIC OXIDATION OF LIQUID CYCLOPARAFFINS

Peter A. Sipos, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Apr. 22, 1982, Ser. No. 370,928

Claims priority, application United Kingdom, Apr. 29, 1981, 8113259

Int. Cl.⁴ C07C *27/12, 29/50, 45/33, 49/413, 51/31, 61/10, 178/00, 179/053*

U.S. Cl. 562—523 **10 Claims**

1. A process for the catalytic oxidation of a liquid cycloparaffin to partial oxidation products thereof, which comprises introducing a molecular oxygen-containing gas into a cycloparaffin of from 5 to 12 carbon atoms at elevated pressure and a temperature of from 130° to 180° C. and in the presence of an oxidation catalyst comprising a combination of a cobalt compound and a chromium compound, said oxidation catalyst being soluble in the cycloparaffin, said cobalt compound having ligands selected from the group consisting of dialkyl phosphate, dicycloalkylphosphate and alkylcycloalkylphosphate, and mixtures thereof, said alkyl group having from 6 to 18 carbon atoms with the proviso that the alkyl group of the dialkylphosphate is a branched alkyl group and said cycloalkyl group has from 5 to 12 carbon atoms, and said chromium compound having ligands selected from the group consisting of alkanoates having from 6 to 18 carbon atoms, and mixtures thereof, the ratio of cobalt compound to chromium compound being greater than 1:1 on an atomic basis, said catalyst also containing free dialkylphosphate.

4,658,057

EXTRACTION METHOD

Kunio Koga; Yukihiro Sasaki, and Hirotoshi Niwa, all of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

PCT No. PCT/JP83/00223, § 371 Date Jan. 10, 1984, § 102(e) Date Jan. 10, 1984, PCT Pub. No. WO84/00309, PCT Pub. Date Feb. 2, 1984

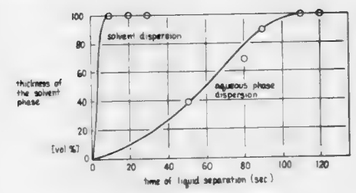
PCT Filed Jul. 12, 1983, Ser. No. 576,284

Claims priority, application Japan, Jul. 13, 1982, 57-121425

The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.

Int. Cl.⁴ C07B *51/42*

U.S. Cl. 562—608 **7 Claims**



1. A method of recovering a solute from an aqueous solution thereof, comprising the steps of: feeding into a mixer of a mixer-settler extraction system

(1) said aqueous solution, and

(2) a liquid organic extracting agent capable of extracting said solute from said aqueous solution,

and mixing said aqueous solution and said extracting agent in said mixer so as to form a dispersion in which the disperse phase is droplets of said extracting agent which droplets are dispersed in a continuous phase of said aqueous solution, whereby the solute is extracted from said aqueous solution and is transferred to said extracting agent, the volumetric ratio of the aqueous solution (1) to the total liquids in said mixer being at a level effective to maintain said dispersion in a stable condition in said mixer; then, in the settler of said extraction system, allowing said dispersion to settle whereby to obtain separately (i) an aqueous phase and (ii) a liquid organic extracting agent phase containing the solute.

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4,658,058

11-O-METHYLSPERGUALIN

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Shinichi Kondo, Yokohama; Hironobu Iinuma; Daishiro Ikeda, both of Tokyo; Teruya Nakamura, Kanatsu, and Akio Fujii, Kamakura, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Continuation-in-part of Ser. No. 426,372, Sep. 29, 1982, Pat. No. 4,518,532. This application Apr. 15, 1985, Ser. No. 723,169

Claims priority, application Japan, Oct. 8, 1981, 56-159503

Int. Cl.⁴ C07C *103/07*

U.S. Cl. 564—159 **3 Claims**

1. N-[4-(3-aminopropyl)aminobutyl]-2-(7-guanidino-3-hydroxyheptanamido)-2-methoxyethanamide or a pharmaceutically acceptable salt thereof.

4,658,059

METHODS FOR REMOVING BIURET FROM UREA BY ION EXCHANGE

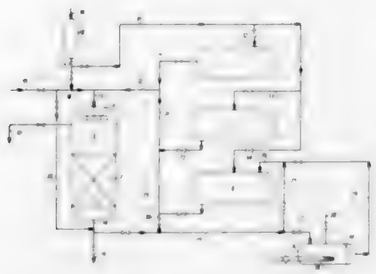
Donald C. Young, Fullerton, and James A. Green, II, Chino, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 30, 1983, Ser. No. 567,271

The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.

Int. Cl.⁴ C07C *126/08*

U.S. Cl. 564—73 **54 Claims**



1. A method for regenerating a biuret-containing anion exchanger which comprises the steps of contacting said anion exchanger with a regenerant consisting essentially of a substantially non-alkaline aqueous medium under conditions sufficient to remove a substantial proportion of said biuret from said anion exchanger and restore a substantial proportion of the activity of said anion exchanger for removing biuret from biuret-containing aqueous urea solutions, and subsequently contacting the thus regenerated anion exchanger with a biuret-containing aqueous urea solution under conditions sufficient to remove at least a portion of said biuret from said urea solution.

31. A multi-cycle process for reducing the biuret content of a biuret-containing, aqueous urea solution in which method each cycle comprises the steps of

(A) contacting a quantity of said biuret-containing urea solution with the anion exchanger under conditions sufficient to remove at least a portion of said biuret from said quantity of said biuret-containing urea solution and retain the biuret thus removed on said anion exchanger,

(B) recovering the thus formed urea solution of reduced biuret content from said anion exchanger,

(C) regenerating said anion exchanger containing said retained biuret by contact with an aqueous regenerant under conditions sufficient to restore a substantial proportion of the activity of said anion exchanger for removing biuret from aqueous urea solutions, and

(D) recovering the thus formed biuret-containing regenerant from the thus regenerated anion exchanger, wherein, in at least one cycle, said aqueous regenerant consists essentially of a substantially non-alkaline aqueous regenerant.

4,658,060

PREPARATION OF (—)-5-(BETA)-1-HYDROXY-2-(BETA)-1-METHYL-3-PHENYLPROPYL)AMINOETHYL) SALICYLAMIDE

Elijah J. Gold; Esther Babad; Lydia Peer, all of West Orange, and Wei K. Chang, Livingston, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Apr. 26, 1982, Ser. No. 371,622

Int. Cl.⁴ C07C *103/29*

U.S. Cl. 564—165 **7 Claims**

1. A method for the preparation of (−)-5-[(R)-1-hydroxy-2-((R)-1-methyl-3-phenylpropyl)aminoethyl]salicylamide, which comprises:

(1) reaction of N-((R)-α-methylbenzyl)-(R)-1-methyl-3-phenylpropylamine with a 4-O-protected-α-bromo-3-carbamoylacetophenone in the presence of a non-basic acid acceptor to produce a 2-(O-protected)-5-[(R)-α-methylbenzyl-N-((R)-1-methyl-3-phenylpropyl)glycyl]benzamide;

(2) reduction of the glycyl carbonyl function in the product from Step (1) to hydroxy;

(3) deprotection of the O and N functions of the product from Step (2);

(4) resolution of the deprotected racemate from Step 3 by reaction with a suitable resolving agent to selectively precipitate the R,R stereoisomer as a salt thereof substantially free from the corresponding S,R stereoisomer.

6. 2-(O-benzyl)-5-[(R)-α-methylbenzyl-N-((R)-1-methyl-3-phenylpropyl)glycyl]benzamide.

7. 2-(O-benzyl)-5-[(R,S)-1-hydroxy-2-[((R)-1-methyl-3-phenylpropyl)-(R)-α-methylbenzylamino]ethyl]benzamide.

4,658,061

9-AMINOALKYLFLUORENES

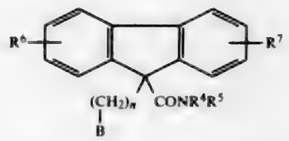
William B. Lacefield, Indianapolis, and Richard L. Simon, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 24, 1984, Ser. No. 685,924

Int. Cl.⁴ C07C *103/22*

U.S. Cl. 564—180 **15 Claims**

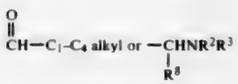
1. A compound of the formula



wherein:

R^4 and R^5 independently are hydrogen or C_1–C_6 alkyl;

B is



in which R^2 and R^3 independently are hydrogen, C_1–C_2 alkyl or

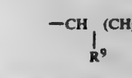


R^8 and R^9 independently are hydrogen or C_1–C_4 alkyl;

m and n independently are 2, 3, 4 or 5;

R^6 and R^7 independently are hydrogen, C_1–C_4 alkyl or halogen;

provided that R^8 is C_1–C_4 alkyl when both of R^2 and R^3 are other than



and the pharmaceutically acceptable salts thereof.

4,658,062

AMINE TERMINATED POLYBUTADIENE COMPOSITIONS AND PREPARATION THEREOF

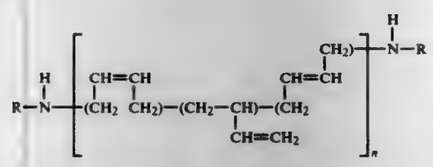
Harry R. Hinney, Springfield, and Jamil Baghdadchi, Wayne, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 24, 1985, Ser. No. 748,068

Int. Cl.⁴ C07C *87/50*

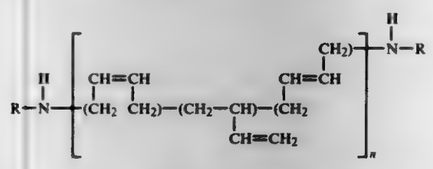
U.S. Cl. 564—305 **15 Claims**

1. A amine terminated polybutadiene compound having the formula

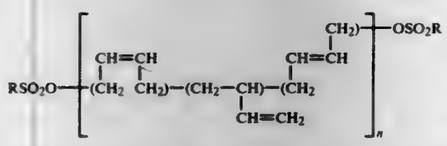


wherein R is hydrogen, a straight or branched chain alkyl group containing from 1 to 10 carbon atoms or a substituted or unsubstituted aryl or aralkyl group containing one or more benzenoid rings which may be fused or joined by single valency bonds and n is an integer of from about 5 to 1500.

6. A process for the preparation of an amine terminated polybutadiene having the formula:



wherein R is hydrogen, a straight or branched chain alkyl group containing from 1 to 10 carbon atoms or a substituted or unsubstituted aryl or aralkyl group containing one or more benzenoid rings which may be fused or joined by single valency bonds, and n is an integer of from about 5 to 1500 which comprises reacting an alkane- or arenesulfonate terminated polybutadiene having the formula:



wherein R is an alkane group containing from 1 to 16 carbon atoms or a substituted or unsubstituted aryl group or aralkyl group containing one or more benzenoid rings which may be fused or joined by single valency bonds and n is an integer of from about 5 to 1500 at a temperature of from about 25° C. to 200° C. with a primary amine or ammonia at an ammonia pressure which will provide a stoichiometric amount in the reaction.

4,658,063

ISOPRENYLAMINE DERIVATIVES

Yoshiyuki Tahara, Saitama; Yasuhiro Komatsu, Niiza; Hiroyasu Koyama, Ageo; Reiko Kubota, Hasuda; Teruhito Yamaguchi, Tokyo, and Toshihiro Takahashi, Ohi, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Japan

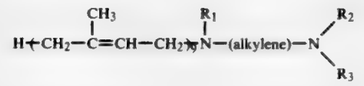
Continuation of Ser. No. 377,580, May 12, 1982, abandoned. This application Apr. 15, 1985, Ser. No. 723,084

Claims priority, application Japan, May 18, 1981, 56-76158

Int. Cl.⁴ C07C *87/28*

U.S. Cl. 564—367 **2 Claims**

1. A compound of the formula



wherein R_1 is a phenethyl group, R_2 is a hydrogen atom, R_3 is a lower alkyl group, and (alkylene) is a lower alkylene chain substituted with a hydroxyl group; or an acid addition salt thereof.

4,658,064

P-FORMYL-N,N-DIPOLYOXYALKYLENESUBSTITUTEDANILINE

Patrick D. Moore, Spartanburg, and Robert L. Mahaffey, Jr., Inman, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 644,375, Aug. 27, 1984, Pat. No. 4,594,454. This application Oct. 8, 1985, Ser. No. 785,627

Int. Cl.⁴ C01C *91/40*

U.S. Cl. 564—443 **1 Claim**

1. A process is provided for the preparation of p-formyl-N,N-dipolyoxyalkylenesubstitutedaniline which comprises:

(a) forming a solution of dimethylformamide in an N,N-dipolyoxyalkylenesubstitutedaniline;

(b) adding to said solution a condensing agent selected from phosphorus oxychloride, thionyl chloride, phosphorus trihalide, phosphorus pentahalide, and acyl acid chlorides in an amount sufficient to form p-formyl-N,N-dipolyoxyalkylenesubstitutedanilinediacetate from the corresponding N,N-dipolyoxyalkylenesubstitutedanilinediacetate; and

(c) hydrolysing said p-formyl-diacetate to form said p-formyl-N,N-dipolyoxyalkylenesubstitutedaniline product.

4,658,065

PROCESS FOR PRODUCING POLYETHER POLYOL AND A PRODUCT

Atsushi Aoshima, Yokohama; Shoichiro Tonomura, Fuji; Hiroyuki Fukui, Fuji, and Hisaya Imai, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Mar. 27, 1985, Ser. No. 716,656

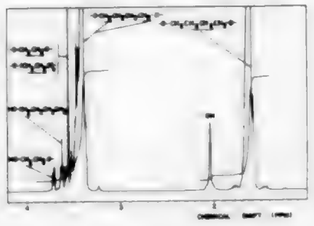
Claims priority, application Japan, Mar. 28, 1984, 59-58485; Nov. 16, 1984, 59-240481; Nov. 21, 1984, 59-244340; Nov. 21, 1984, 59-244345; Mar. 8, 1985, 60-44679

Int. Cl.⁴ C07C *85/20, 41/02, 148/00*

U.S. Cl. 564—487 **18 Claims**

1. A process for producing a polyether polyol with a content of 0.5 to 99.5% by weight of oxytetramethylene groups derived from tetrahydrofuran by copolymerizing tetrahydrofuran with a polyhydric alcohol having two or more hydroxyl

groups per one molecule with the use of a heteropoly-acid and/or its salt as a catalyst, which comprises allowing 0.1 to 15



molecules of water per one heteropoly-anion to exist in the catalyst phase.

4,658,066

1,10-SUBSTITUTED 1,11-DIAMINO-UNDECA-3,7-DIENES AND PROCESSES FOR THEIR PREPARATION

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Josef Pfeifer, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

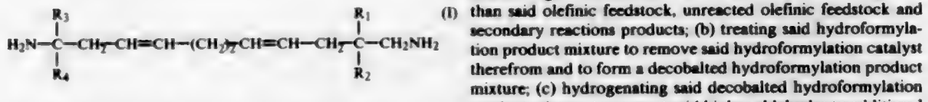
Continuation of Ser. No. 461,044, Jan. 26, 1983. This application Aug. 7, 1985, Ser. No. 763,321

Claims priority, application Switzerland, Jan. 29, 1982, 560/82

Int. Cl.⁴ C07C 55/28, 57/34

U.S. Cl. 564—490 **5 Claims**

1. A compound of the formula I



(I)

in which R_1 is alkyl having 1–12 C atoms, R_2 is hydrogen or alkyl having 1–12 C atoms, R_3 is alkyl having 1–12 C atoms, cycloalkyl having 4–12 ring C atoms, aralkyl having 7 or 8 C atoms, substituted or unsubstituted aryl or, if R_4 is hydrogen, is also —CH=CH—alkyl or —C(alkyl)=CH—alkyl each having 1–4 C atoms in the alkyl groups, and R_4 is hydrogen, alkyl having 1–12 C atoms, cycloalkyl having 4–12 ring C atoms, aralkyl having 7 or 8 C atoms or substituted or unsubstituted aryl, or R_1 and R_2 and/or R_3 and R_4 together are alkylene having 3–11 C atoms.

4,658,067

DIALKYLTHIOALKENES, DIALKYLTHIOALKYLCYCLOALKENES AND MONOALKYLTHIOALKENYLCYCLOALKENES AND ORGANOLEPTIC USES THEREOF

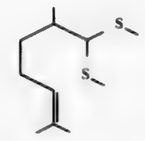
Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Fair Haven; Kevin P. Miller, Middletown; Domenick Laccarelli, Jr., Neptune, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 731,919, May 8, 1985, Pat. No. 4,565,707. This application Nov. 21, 1985, Ser. No. 800,430

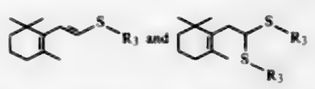
Int. Cl.⁴ C07C 149/26, 149/10

U.S. Cl. 568—38 **6 Claims**

2. The dialkylthio compound having the structure:



3. A mixture of compounds defined according to the structures:



wherein R_3 represents C_1 or C_3 alkyl.

4,658,068

HYDROFORMYLATION OF OLEFINS

Jean A. A. Hanin, Rixensart, Belgium, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 27, 1985, Ser. No. 803,086

Claims priority, application United Kingdom, Nov. 30, 1984, 8430223

Int. Cl.⁴ C07C 45/50

U.S. Cl. 568—451 **14 Claims**

1. A process for producing higher alcohols from an olefinic feedstock comprising olefins containing from 6 to 12 carbon atoms which comprise: (a) hydroformylating said olefinic feedstock with synthesis gas in the presence of a cobalt-containing hydroformylation catalyst to form a hydroformylation product mixture containing higher aldehydes and higher alcohols having a carbon number which is one carbon atom greater than said olefinic feedstock, unreacted olefinic feedstock and secondary reactions products; (b) treating said hydroformylation product mixture to remove said hydroformylation catalyst therefrom and to form a decobalted hydroformylation product mixture; (c) hydrogenating said decobalted hydroformylation product mixture to convert said higher aldehydes to additional amounts of said higher alcohols; (d) distilling the higher alcohol-containing hydrogenation product mixture formed in step (c) to separate (i) a lower boiling light oxo fraction and (ii) said higher alcohols from (iii) a higher boiling heavy oxo fraction; (e) subjecting the heavy oxo fraction to catalytic steam cracking at a temperature of from 260° to 380° C. in the presence of a cracking catalyst selected from the group consisting of active metal oxides and pseudo-metal oxides, to form a cracked heavy oxo fraction mixture comprising a major proportion of higher alcohol and higher aldehyde, and a minor proportion of olefin, saturated hydrocarbon and uncracked heavy oxo fraction residue; and (f) recycling said cracked heavy oxo fraction mixture to the hydroformylation or hydrogenation stage of the process.

4,658,069

CONVERSION OF ALLYL ETHERS TO ACETALS

Ronnie M. Hanes, Milford, and William D. Baugh, Wilmington, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jul. 2, 1985, Ser. No. 751,094

Int. Cl.⁴ C07C 43/303

U.S. Cl. 568—603 **19 Claims**

1. A method for converting the ether group of an allylic ether to an acetal group, said allylic ether having formyl or carboxy groups, comprising contacting said allylic ether under anhydrous conditions with an alkanol in a first stage, removing water formed in said first stage to obtain a product and contacting said product in a second stage with an alkanol and a

catalytically effective amount of a catalyst comprising a metal compound where said metal is selected from Group VIII metals of The Periodic Table of the Elements and mixtures thereof.

4,658,070

PROCESS FOR THE SYNTHESIS OF 2,2,2-TRIFLUOROETHANOL

Bernard Cheminal, Lyons, and Henri Mathais, Saint Didier au Mont D'Or, both of France, assignors to Atochem, France

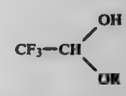
Filed Apr. 21, 1986, Ser. No. 854,103

Claims priority, application France, Apr. 23, 1985, 85 06121

Int. Cl.⁴ C07C 31/38

U.S. Cl. 568—842 **14 Claims**

1. The process for synthesizing 2,2,2-trifluoroethanol by liquid phase catalytic hydrogenation of a compound of formula:



(I)

in which R is a hydrogen atom or a linear or branched alkyl radical containing from 1 to 8 carbon atoms and optionally partially fluorinated, comprising carrying out the hydrogenation in the presence of a nickel catalyst and in the presence of an aliphatic tertiary amine as a cocatalyst.

4,658,071

PREPARATION OF OLEFINICALLY UNSATURATED COMPOUNDS IN PARTICULAR ALKENOLS

Walter Seufert, Speyer; Norbert Goetz, Worms; Rainer Becker, Bad Durkheim, all of Fed. Rep. of Germany, and Volker Schwendemann, Mountain Lakes, N.J., assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 25, 1985, Ser. No. 802,202

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1984, 3444112

Int. Cl.⁴ C07C 29/17, 33/025

U.S. Cl. 568—903 **5 Claims**

1. A process for the preparation of the cis-isomer of an alkenyl compound of the formula



(I)

where R is hydrogen, an ether or ester radical, or a protective group which can virtually be eliminated, m is from 1 to 12 and n is from 1 to 10 which process comprises: hydrogenating the corresponding acetylenically unsaturated compound at a pressure of from atmospheric pressure to 2 bars and at a temperature slightly below room temperature in the presence of a tertiary amine over a palladium catalyst, wherein a calcium carbonate supported catalyst which contains from 0.1 to 2% by weight of palladium and from 0.05 to 15% by weight of zinc or cadmium is used.

4,658,072

LUBRICANT COMPOSITION

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1984, Ser. No. 643,124

The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.

Int. Cl.⁴ C07C 13/00, 2/70

U.S. Cl. 585—24 **12 Claims**

1. An improved alkylaromatic lubricant composition prepared by a process which comprises reacting an aromatic reactant comprising diisopropylbenzene and/or hexylbenzene with an alpha olefin reactant having an average carbon number ranging from about 8 to about 22 at a temperature ranging from about 25° to about 400° C. in the presence of a catalyst comprising pentavalent tantalum, halogen, oxygen and an inorganic oxide substrate wherein at least one valence of tantalum is bound to oxygen which is bound to the substrate, at least one valence at the tantalum is bound to halogen and the remaining tantalum valences are bound to halogen and/or oxygen which may or may not be bound to the substrate and subsequently separating the lubricant composition from the reaction mixture.

4,658,073

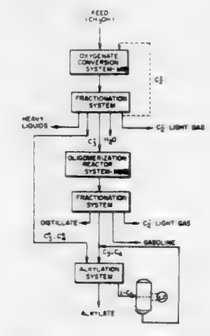
CONTROL SYSTEM FOR MULTISTAGE CHEMICAL UPGRADING

Samuel A. Tabak, Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 779,373, Sep. 23, 1985. This application Jul. 11, 1986, Ser. No. 884,844

Int. Cl.⁴ C07C 2/00

U.S. Cl. 585—314 **1 Claim**



1. A continuous catalytic process for converting olefinic feedstock comprising ethylene and C_3+ olefins to heavier liquid hydrocarbon product comprising the steps of:

prefractionating the olefinic feedstock to obtain a gaseous stream rich in ethylene and a first liquid olefinic stream comprising C_3–C_4 olefin;

passing the C_3–C_4 liquid olefinic stream to a first accumulator vessel;

contacting a major stream portion of the C_3–C_4 olefins from the accumulator vessel with shape selective medium pore zeolite oligomerization catalyst in a distillate mode catalytic reactor zone at elevated temperature and pressure to provide a heavier hydrocarbon effluent stream comprising distillate, gasoline and lighter hydrocarbons;

fractionating the effluent stream to recover distillate, gasoline and a second C_3–C_4 hydrocarbon stream containing isobutane;

further reacting a stoichiometric excess of isobutane from the second C_3–C_4 hydrocarbon stream with a minor stream of C_3–C_4 olefin from the first accumulator vessel in an alkylation reactor zone in the presence of acid alkylation catalyst to produce an effluent stream containing C_7+ alkylate;

fractionating the alkylate reactor effluent stream to recover C_7+ alkylate product, a C_3- light hydrocarbon stream, a stream rich in normal butane and a stream rich in unreacted isobutane;

passing unreacted isobutane to a second accumulator vessel;

recycling isobutane to the alkylation reactor zone at a predetermined rate;

sensing C_3–C_4 liquid level in the first accumulator vessel;

generating a first control signal representative of said first liquid level;

adjusting fluid flow control means in response to the first control signal to increase flow rate for the major C_3–C_4 olefinic liquid stream from the first accumulator to the distillate

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mode oligomerization reactor zone with increased liquid level in the first accumulator vessel;

sensing isobutane liquid level in the second accumulator vessel;

generating a second control signal representative of said isobutane liquid level; and

increasing flow of the minor C_3–C_4 olefin stream from the first accumulator to the alkylation reaction zone in response to the second control signal indicating increased isobutane liquid level in the second accumulator.

4,658,074

CATALYTIC OXIDATIVE DEHYDROGENATION PROCESS

Laimonis Bajars, Princeton, and Louis J. Croce, East Brunswick, both of N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed May 28, 1965, Ser. No. 459,878
Int. Cl.⁴ C07C *5/48, 5/50*
U.S. Cl. 585—380 **32 Claims**

1. A process for the oxidative dehydrogenation of dehydrogenatable organic compounds which comprises contacting an organic compound having at least one



grouping and having from 1 to 12 carbon atoms in vapor phase at a temperature of at least about 250° C. with at least about 0.20 mols of oxygen per mol of organic compound with a catalyst having as its main active constituent a crystalline structure of iron, oxygen and at least one metal element other than iron selected from the group consisting of Cu, Al, Cr, Ti, V, Mo, W, Na, Li, K, Sn, Pb, Sb, Bi, Ga, rare earth elements and mixtures thereof which is capable of forming a crystalline structure with iron and oxygen.

4,658,075

XYLENE ISOMERIZATION WITH A REACTIVATED ZEOLITE

Ralph M. Dessau, Edison, and George T. Kerr, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 608,737, May 10, 1984, abandoned, which is a division of Ser. No. 458,398, Jan. 17, 1983, Pat. No. 4,461,845. This application Nov. 12, 1985, Ser. No. 796,678
Int. Cl.⁴ C07C *5/22*
U.S. Cl. 585—481 **13 Claims**

1. A process for converting a feedstock comprising xylene isomers to isomerization conversion product which comprises contacting said feedstock at conversion conditions sufficient to convert said feedstock to said product with a catalyst composition comprising a crystalline zeolite material having a silicon-/aluminum atomic ratio of at least about 2, said catalyst composition having been deactivated by contact with steam and reactivated by the steps of

contacting said steam-deactivated catalyst composition with an aluminum compound vapor at a temperature of from about 100° C. to about 850° C., and thereafter

contacting said aluminum compound contacted catalyst composition with an aqueous acid solution of from about 0.001 molar to about 10 molar at a temperature of from about 20° C. to about 100° C.

4,658,076

COMPOSITION OF MATTER AND METHOD OF OXIDATIVE CONVERSION OF ORGANIC COMPOUNDS THEREWITH

John H. Kolts, Ochelata, and James B. Kimble, Bartlesville, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 19, 1985, Ser. No. 713,673
Int. Cl.⁴ C07C *2/00*
U.S. Cl. 585—500 **14 Claims**

1. A method for the oxidative conversion of feed organic compounds comprising methane to product organic compounds comprising higher hydrocarbons, comprising:

contacting said feed organic compounds and a free oxygen-containing gas with a solid contact material selected from the group consisting of:

(a) a contact material consisting essentially of: (1) at least one material selected from the group consisting of Group IA metals and compounds containing said metals, and (2) zinc oxide; and

(b) a contact material consisting essentially of: (1) at least one material selected from the group consisting of Group IA metals and compounds containing said metals, (2) zinc oxide and (3) at least one material selected from the group consisting of chloride ions, compounds containing chloride ions, tin and compounds containing tin,

under oxidative conversion conditions sufficient to convert said feed organic compounds to said product organic compounds.

4,658,077

COMPOSITION OF MATTER AND METHOD OF OXIDATIVE CONVERSION OF ORGANIC COMPOUNDS THEREWITH

John H. Kolts, Ochelata, and James B. Kimble, Bartlesville, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 7, 1985, Ser. No. 742,340
Int. Cl.⁴ C07C *2/00*
U.S. Cl. 585—500 **26 Claims**

1. A method for the oxidative conversion of methane to higher hydrocarbons, comprising:

contacting a feed material comprising methane and a free oxygen-containing gas with a solid contact material selected from the group consisting of:

(a) a contact material consisting essentially of: (1) at least one Group IA metal, (2) titanium and (3) oxygen;

(b) a contact material consisting essentially of: (1) at least one Group IIA metal, (2) titanium and (3) oxygen;

(c) a contact material consisting essentially of: (1) at least one Group IA metal, (2) at least one Group IIA metal, (3) titanium and (4) oxygen;

(d) a contact material consisting essentially of: (1) at least one Group IA metal, (2) titanium, (3) oxygen and (4) at least one material selected from the group consisting of halogen ions and compounds containing halogen ions;

(e) a contact material consisting essentially of: (1) at least one Group IIA metal, (2) titanium, (3) oxygen and (4) at least one material selected from the group consisting of halogen ions and compounds containing halogen ions; and

(f) a contact material consisting essentially of: (1) at least one Group IA metal, (2) at least one Group IIA metal, (3) titanium, (4) oxygen and (5) at least one material selected from the group consisting of halogen ions and compounds containing halogen ions,

under oxidative conversion conditions sufficient to convert said methane to said higher hydrocarbons.

4,658,078

VINYLIDENE OLEFIN PROCESS

Lynn H. Slaugh, Cypress, and Galeon W. Schoenthal, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 15, 1986, Ser. No. 896,700
Int. Cl.⁴ C07C *2/26*
U.S. Cl. 585—512 **6 Claims**

1. A process for dimerizing an alpha olefin of the general formula $RCH{=}CH_2$ where R is alkyl, cycloalkyl or cycloalkenyl with a carbon number ranging from 1 to about 30 to a vinylidene olefin which process comprises contacting said alpha olefin at a temperature ranging between about −60° C. to about 280° C. with a catalyst comprising (a) a metallocene having the general formula $(cyclopentadienyl)_2MY_2$ wherein M is zirconium or hafnium and each Y is individually selected from the group consisting of hydrogen, C_1–C_5 alkyl, C_6–C_{20} aryl and halogen and (b) an alumoxane, wherein the atom ratio of aluminum to M in the catalyst ranges from about 1 to about 100.

4,658,079

PRODUCTION OF LUBRICANT RANGE HYDROCARBONS FROM LIGHT OLEFINS

Catherine S. H. Chen, Berkeley Heights, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 709,143, Mar. 7, 1985, Pat. No. 4,568,786, which is a continuation-in-part of Ser. No. 598,139, Apr. 9, 1984, Pat. No. 4,520,221. This application Dec. 16, 1985, Ser. No. 808,973
Int. Cl.⁴ C07C *2/02*
U.S. Cl. 585—517 **6 Claims**

1. A process for producing substantially linear hydrocarbons by oligomerizing a lower olefin at elevated temperature and pressure which comprises

contacting the lower olefin under polymerization conditions with a medium or large pore siliceous zeolite having Bronsted acid activity and a constraint index of about 0.5 to 12; wherein said zeolite has acidic pore activity and wherein the zeolite surface is rendered substantially inactive for acidic reactions, said zeolite surface being neutralized by a bulky organo-phosphorus compound having an effective cross section larger than the zeolite pore.

4,658,080

ACETYLENE REMOVAL PROCESS

Cecil G. McFarland, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation of Ser. No. 088,394, Oct. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 566,303, Apr. 9, 1975, abandoned, which is a division of Ser. No. 443,752, Feb. 19, 1974, abandoned. This application Aug. 15, 1983, Ser. No. 523,291
The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.
Int. Cl.⁴ C07C *5/327*
U.S. Cl. 585—658 **5 Claims**

1. In a vapor phase process for the preparation of hydrocarbon monoolefins and diolefins comprising oxidative dehydrogenation of a stream of C_3 to C_9 hydrocarbon compounds to produce a product stream comprising, exclusive of any water present, 3.5 to 80 mol percent hydrocarbon monoolefins and diolefins and about from 0.0001 to 2.5 mol percent acetylenic compound impurity, about from 0.0005 to 2.5 mol percent carbonyl compounds and 5 to 93 mol percent non-condensable gases, wherein the improvement comprises contacting said product stream in vapor phase at a temperature in the range of 250° to 900° C. and containing less than 5 mol percent free oxygen with a solid catalyst for reducing said acetylene compounds in said product stream, said catalyst consisting essentially of zinc ferrite and nickel oxide, wherein Fe is the major metal component by weight, an alkaline earth metal oxide, carbonate or hydroxide of Mg, Ca, Sr or Ba, and about 0.5 to 30 weight percent of an alkali metal oxide, carbonate or hydroxide, based on the other metallic elements of Li, Na, K or Rb said Ni being present in the range of 0.25 to 20 weight percent of the total weight of the catalyst, and recovering said product stream having the amount of acetylenic compounds therein reduced.

4,658,081

PROPYLENE AND ETHYLENE SELECTIVITY WITH H_2S

John H. Kolts, Ochelata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1985, Ser. No. 758,921
Int. Cl.⁴ C07C *4/02*
U.S. Cl. 585—651 **16 Claims**

1. A method for cracking feed hydrocarbons comprising at least one of propane and butanes to produce less saturated hydrocarbon products and selectively maximize the content of one of ethylene and propylene in said less saturated hydrocarbon products, comprising:

(a) contacting said feed hydrocarbons with a cracking catalyst selected from the group consisting of:

(1) a catalyst composition, consisting essentially of: 0.1 to 30 wt. % of (A) at least one oxide of manganese and the balance of (B) at least one oxide of magnesium;

(2) a catalyst composition, consisting essentially of: 1 to 15 wt.% of (A) at least one oxide of one metal selected from the group consisting of calcium, strontium, barium, tin and antimony, 0.1 to 30 wt.% of (B) at least one oxide of manganese and the balance of (C) at least one oxide of magnesium;

(3) a catalyst composition, consisting essentially of: 1 to 15 wt.% of (A) at least one oxide of a metal selected from the group consisting of silicon, aluminum and titanium, 0.1 to 30 wt.% of (B) at least one oxide of manganese and the balance of (C) at least one oxide of magnesium;

(4) a catalyst composition, consisting essentially of: 1 to 15 wt.% of (A) at least one oxide of a metal selected from the group consisting of calcium, strontium, barium, tin and antimony, 1 to 15 wt.% of (B) at least one oxide of a metal selected from the group consisting of silicon, aluminum and titanium, 0.1 to 30 wt.% of (C) at least one oxide of manganese and the balance of (D) at least one oxide of magnesium;

(5) a catalyst composition, consisting essentially of: 1 to 15 wt.% of (A) at least one oxide of chromium, 0.1 to 30 wt.% of (B) at least one oxide of manganese and the balance of (C) at least one oxide of magnesium; and

(6) a catalyst composition, consisting essentially of: 1 to 15 wt.% of (A) at least one oxide of chromium, 1 to 15 wt.% of (B) at least one oxide of a metal selected from the group consisting of calcium, strontium, barium, tin and antimony, 0.1 to 30 wt.% of (C) at least one oxide of manganese and the balance of (D) at least one oxide of magnesium,

said amounts being expressed in terms of wt.% of the elemental metal based on the total weight of the catalyst;

in the absence of significant amounts of hydrogen sulfide and hydrogen sulfide precursors and under predetermined conditions to produce said less saturated hydrocarbon products containing substantially greater quantities of ethylene than propylene; and

(b) at least intervally, adding a material selected from the group consisting of hydrogen sulfide and hydrogen sulfide precursors to said feed hydrocarbons, in the presence of said cracking catalyst,

under said predetermined conditions to produce said less saturated hydrocarbons containing substantially increased quantities of propylene and decreased quantities of ethylene.

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4,658,082

METHOD FOR PRODUCING INTACT PLANTS CONTAINING FOREIGN DNA

Robert B. Simpson, Danville, and Linda J. Margossian, Albany, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 25, 1984, Ser. No. 634,283
Int. Cl.[4] C12N *15/00, 1/00*
U.S. Cl. 800—1 **27 Claims**

1. An in vivo method for transforming and regenerating whole dicotyledenous plants comprising:

(a) infecting a dicotyledenous plant (P) with Rhizobiaceae bacteria containing

(1) virulence functions,

(2) a first plasmid containing T-DNA terminal sequences flanking oncogenic factors capable of inducing a shoot-bearing shooty tumor on plant (P), and

(3) a second plasmid containing T-DNA terminal sequences flanking heterologous transfer DNA capable of being integrated into nuclear DNA of plant (P) cells wherein said second plasmid does not contain any oncogenic factors;

(b) maintaining said infected dicotyledenous plant (P) until shoot-bearing shooty tumor develops on said dicotyledenous plant (P);

(c) selecting those shoots, or progeny thereof wherein said progeny are selected from the group consisting of seeds or tubers, that contain transformed cells having heterologous transfer DNA but not any tumorous DNA integrated into their genomes;

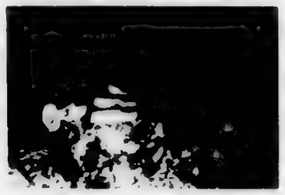
(d) utilizing said selected shoots, or progeny thereof, to produce whole plants that contain cells having heterologous transfer DNA integrated into their genomes.

4,658,083

STRAINS OF PLEUROTUS

Liliane Miller, Tours, France, assignor to Somycel, France

Filed Mar. 22, 1985, Ser. No. 715,128
Claims priority, application France, Mar. 23, 1984, 84 04549
Int. Cl.[4] A01G *1/04*
U.S. Cl. 800—1 **7 Claims**



1. Sporeless pleurotus strains comprising:

lamellae decurrent over a major portion of the height of the pleurotus foot,

lamellae more developed than those of the other pleurotus strains.

4,658,084

HYBRIDIZATION USING CYTOPLASMIC MALE STERILITY AND HERBICIDE TOLERANCE FROM NUCLEAR GENES

Wallace D. Beversdorf, Guelph; Lawrence R. Erickson, Mississauga, and Ian Grant, Guelph, all of Canada, assignors to University of Guelph, Guelph, Canada

Filed Nov. 14, 1985, Ser. No. 797,917
Int. Cl.[4] A01H *1/02, 5/00*
U.S. Cl. 800—1 **70 Claims**

1. An improved process for producing a substantially homogeneous population of plants of a predetermined hybrid variety of a crop which is capable of undergoing both self-pollination and cross-pollination comprising:

(a) growing in a first planting area a substantially random population of (1) cytoplasmic male sterile plants which exhibit tolerance to at least one herbicide attributable solely to homozygous dominant nuclear genes, and (2) male fertile plants which are capable of pollinating said cytoplasmic male sterile plants and which lack said herbicide tolerance because the presence of homozygous recessive nuclear genes for such trait, whereby said cytoplasmic male sterile plants (1) and said male fertile plants (2) are pollinated with pollen derived from said male fertile plants and seed is formed on said cytoplasmic male sterile plants and on said male fertile plants,

(b) harvesting in bulk said seed which is formed on said plants of said first planting area,

(c) growing at least a portion of the seed from step (b) in a second planting area in the absence of segregation between the seed derived from said cytoplasmic male sterile plants which exhibit said herbicide tolerance attributable solely to homozygous dominant nuclear genes and said male fertile plants which lack said herbicide tolerance because of the presence of homozygous recessive nuclear genes for such trait, and

(d) contacting prior to pollination substantially all of the plants present in said second planting area with a herbicide which is effective to destroy said plants resulting from seed formed on said male fertile plants of said first planting area, whereby a substantially homogeneous population of a predetermined hybrid variety is formed which resulted from seed formed on said male sterile plants of said first planting area.

4,658,085

HYBRIDIZATION USING CYTOPLASMIC MALE STERILITY, CYTOPLASMIC HERBICIDE TOLERANCE, AND HERBICIDE TOLERANCE FROM NUCLEAR GENES

Wallace D. Beversdorf, Guelph; Lawrence R. Erickson, Mississauga, and Ian Grant, Guelph, all of Canada, assignors to University of Guelph, Guelph, Canada

Filed Nov. 14, 1985, Ser. No. 797,916
Int. Cl.[4] A01H *1/02, 5/00*
U.S. Cl. 800—1 **79 Claims**

1. An improved process for producing a substantially homogeneous population of plants of a predetermined hybrid variety of crop which is capable of undergoing self-pollination and cross-pollination comprising:

(a) growing in a first planting area a substantially random population of (1) cytoplasmic male sterile plants which exhibit cytoplasmic herbicide tolerance to at least one Type A herbicide and exhibit tolerance to at least one Type B herbicide which is attributable solely to homozygous dominant nuclear genes, and (2) male fertile plants which are homozygous recessive maintainer plants for said cytoplasmic male sterile plants and which lack said cytoplasmic herbicide tolerance to at least one Type A herbicide and exhibit tolerance to said at least one Type B herbicide attributable solely to said homozygous dominant nuclear genes, whereby said cytoplasmic male sterile plants (1) and said maintainer plants are pollinated with pollen derived from said maintainer plants and seed is formed on said cytoplasmic male sterile plants and on said maintainer plants,

(b) harvesting in bulk the seed which is formed on said plants of said first planting area,

(c) growing in a second planting area a substantially random population of plants derived from seed harvested in step (b) together with homozygous dominant fertility restorer plants for said cytoplasmic male sterile plants which exhibit cytoplasmic herbicide tolerance to said at least one Type A herbicide and lack tolerance to said at least one Type B herbicide because of the absence of the required dominant nuclear genes for such trait,

(d) contacting prior to pollination substantially all of the plants present in said second planting area with a Type A herbicide which is effective to destroy the plants resulting from seed formed on said maintainer plants in step (a) whereby cytoplasmic male sterile plants and restorer plants remain,

(e) pollinating said cytoplasmic male sterile plants and said restorer plants of step (d) with pollen derived from said restorer plants and seed is formed on said cytoplasmic male sterile plants and on said restorer plants,

(f) harvesting in bulk the seed which is formed on said plants remaining in said second planting area,

(g) growing in a third planting area a substantially random population of plants derived from seed harvested in step (f), and

(h) contacting substantially all of the plants present in said third planting area with a Type B herbicide which is effective to destroy said plants resulting from the seed formed on said restorer plants of step (e), whereby a substantially homogeneous population of male fertile F_1 hybrid plants of a predetermined variety is formed.

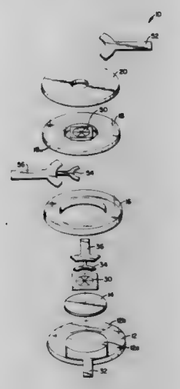
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4,658,086

PHOTOVOLTAIC CELL PACKAGE ASSEMBLY FOR MECHANICALLY STACKED PHOTOVOLTAIC CELLS

Paul S. McLeod, Berkeley; John A. Cape, San Rafael; Lewis M. Frass, El Sobrante, and Larry D. Partain, Richmond, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 3, 1985, Ser. No. 740,362
Int. Cl.[4] H01L *25/02*
U.S. Cl. 136—249 11 Claims



1. An apparatus comprising mechanically stacked solar cells, comprising:

a base support having opposed major surfaces;

a first heat spreader-electrical contact contacting said base support on a major surface thereof which is incident to solar radiation;

means for electrically contacting said first heat spreader-electrical contact;

a first insulating spacer surrounding said heat spreader-electrical contact, said first insulating spacer having a space therein for a photovoltaic cell;

a first photovoltaic cell having opposed major surfaces and electrically contacting said heat spreader-electrical contact on its major surface opposed to solar radiation, said first photovoltaic cell having a band gap energy responsive to solar radiation of predetermined wavelengths;

means for electrically contacting the other major surface of said first photovoltaic cell which is incident to solar radiation;

a second insulating spacer contacting said first insulating spacer and having a space therein for a second photovoltaic cell;

a second photovoltaic cell having, opposed major surfaces, said second photovoltaic cell having a band gap energy responsive to solar radiation of shorter wavelengths than said first photovoltaic cell;

means for electrically contacting the major surface of said second photovoltaic cell which is opposed to solar radiation;

a second heat spreader-electrical contact contacting said second insulator and the major surface of said photovoltaic cell which is incident to solar radiation, said heat spreader-electrical contact having a space therein to provide for the passage of solar radiation to said first and second photovoltaic cells; and

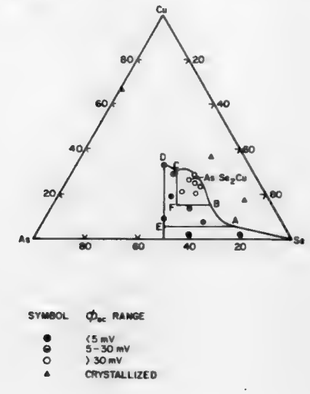
means for electrically contacting said second heat spreader-electrical contact.

4,658,087

PHOTOELECTRODES FOR PHOTOELECTROCHEMICAL CELL DEVICES

Gerald D. Fong, Catlin, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 633,660, Jul. 23, 1984, abandoned. This application Feb. 20, 1986, Ser. No. 831,271
Int. Cl.[4] E03B *11/00*
U.S. Cl. 136—264 6 Claims



1. In a photoelectrochemical cell device consisting essentially of:

(a) an electrolyte containing appropriately chosen redox couples in contact with

(b) a working electrode, voltage-biased with respect to

(c) a convenient reference electrode and in series with

(d) a photoelectrode,

the improvement comprising said photoelectrode being composed of a glass exhibiting a bandgap of about 0.8–2.5 eV, an electrical resistivity less than about 10^6 ohm-cm, and an open-circuit photopotential of about 50–500 millivolts under white light, as exemplified by illumination from a 150 watt Xenon lamp, and consisting essentially of an As-Se-Cu composition within area ABCDEA of FIG. 1.

2. In a solid state electronic component consisting essentially of a metal/glass junction with rectifying properties, the improvement comprising said glass being composed essentially of an As-Se-Cu composition within the area ABCDEA of FIG. 1.

4,658,088

SELF-THREADING POLYMERIC FASTENER

Albert J. Gartland, Jr., and James A. Sandor, both of Trumbull, Conn., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Continuation of Ser. No. 729,105, Apr. 30, 1985, abandoned, which is a division of Ser. No. 490,228, Apr. 29, 1983, abandoned. This application Jul. 25, 1986, Ser. No. 887,986
Int. Cl.[4] H02G *3/14;* F16B *35/00*
U.S. Cl. 174—66 4 Claims

1. A fastener assembly comprising:

a member having a threaded bore therein;

a plate having an aperture therethrough; and

a self-threading polymeric screw comprising

a head having a transverse slot for receiving a rotatable screw driving mechanism,

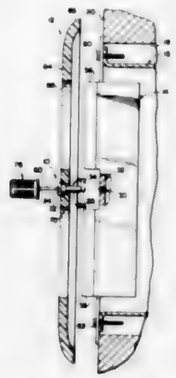
a shank having first and second ends, the first end extending integrally from said head, said shank being substantially cylindrical,

a tip extending integrally from the second end of said shank, said tip tapering inwardly from said shank, and

a helical thread permanently cold formed on said shank by

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deforming the outer surface of said shank without removing any significant amount of polymeric material therefrom by rotating said screw in said threaded bore, said shank being received in the aperture in the plate,



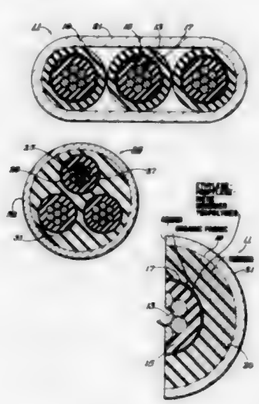
said helical thread formed on said shank being threadedly engaged with the threads in the threaded bore,
said plate and said screw being comprised of the same polyamide resin,
said helical thread having rounded crests.

4,658,089

ELECTRICAL CABLE WITH FABRIC LAYER

Raymond L. Guzy, Tulsa, and Thomson H. Wallace, Claremore, both of Okla., assignors to Hughes Tool Company, Houston, Tex.

Filed May 28, 1985, Ser. No. 738,339
Int. Cl.[4] H01B *7/18, 7/02*
U.S. Cl. 174—113 R **2 Claims**



1. An electrical cable for a submersible well pump, comprising in combination:
a plurality of conductors;
an insulating layer surrounding each conductor, the insulating layer being permeable to gas and resistant to oil and brine;
a separate woven fabric layer for each of the conductors, each fabric layer consisting essentially of organic material and individually surrounding each of the insulating layers in nonadhering contact; and
a separate elastomeric jacket for each of the conductors, each jacket extruded over and bonded to the fabric layer, the fabric layers being of a sufficiently dense weave to prevent contact of the material of the jacket with the insulating layers during extrusion to facilitate stripping, the jacket having means for allowing gas absorbed in the insulating layers and the jacket to escape while the ambient pressure is lowered, the fabric layers providing hoop strength for preventing rupturing of the insulating layers.

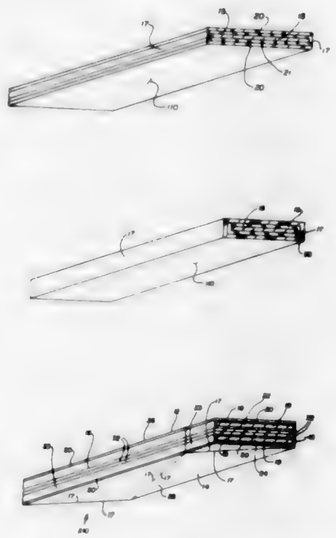
2. A method of manufacturing an electrical cable for use with submersible well pumps, comprising in combination
extruding an insulating layer around a conductor;
placing a strip of woven fabric layer consisting essentially of organic material longitudinally over the insulating layer after the insulating layer has cured sufficiently to prevent bonding with the fabric layer; then
feeding the strip and the insulated conductor into an extruder, causing the fabric layer to fold longitudinally around the insulated conductor, and extruding an elastomeric jacket over the fabric layer, the jacket having means for allowing gas absorbed in the insulating layer and jacket to be released while lowering ambient pressure, the fabric layer providing additional hoop strength to prevent rupturing of the insulating layer.

4,658,090

RIBBON CABLE, A TRANSPOSED RIBBON CABLE, AND A METHOD AND APPARATUS FOR MANUFACTURING TRANSPOSED RIBBON CABLE

Jessie H. Coon, Ft. Wayne, Ind., assignor to Phelps Dodge Industries, Inc., New York, N.Y.

Filed Jul. 24, 1984, Ser. No. 634,042
Int. Cl.[4] H01B *7/30*
U.S. Cl. 174—119 R **15 Claims**



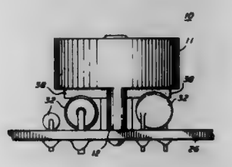
1. A ribbon cable comprising an elongated conductor, said conductor having width and thickness dimensions, said conductor extending essentially the entire length, width and thickness of the ribbon cable, said conductor having superimposed thereon a continuous and uniformly thick coat of flexible insulation material, said conductor being folded into a transposed ribbon cable wherein said conductor axes are angularly disposed to the longitudinal axis of said transposed ribbon cable, said conductor being folded at the boundaries of said transposed ribbon cable, said transposed ribbon cable having two layers of said conductor, said conductor defining a laterally flattened helix.

4,658,091

INDUCTOR HOUSING

Christopher I. McCarthy, Streamwood, and David W. Currier, Algonquin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1985, Ser. No. 720,122
Int. Cl.[4] H01F *15/02;* **H05K** *5/02*
U.S. Cl. 174—52 PE **10 Claims**



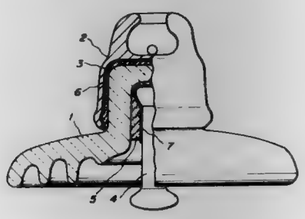
1. An inductor housing for use in connecting an inductor to a conductor board, comprising:
(a) platform means for supporting said inductor;
(b) standoff means having a smaller cross section than said platform means for operably connecting said platform means to said conductor board such that said platform means and said inductor are positioned distally with respect to said conductor board such that electrical components can be mounted on said conductor board between said platform means and said conductor board; and
(c) foam means operably affixed to said platform means for contacting at least one of said electrical components to aid in physically retaining said contacted electrical component in place on said conductor board.

4,658,092

EXPLOSION-PREVENTING SUSPENSION INSULATOR

Itsushi Nakamura, Nagoya; Shigeo Mori, Kuwana, and Hiroshi Nozaki, Nagoya, all of Japan, assignors to NGK Insulators., Ltd., Japan

Filed Mar. 17, 1986, Ser. No. 840,086
Claims priority, application Japan, May 23, 1985, 60-111157
Int. Cl.[4] H01B *17/08*
U.S. Cl. 174—182 **2 Claims**



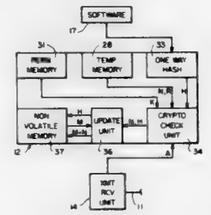
1. An explosion-preventing suspension insulator comprising:
an insulator body having an inner surface and an outer surface;
a metal cap having an inner surface and an outer surface, said inner surface of the metal cap having a first electrical insulating film thereon, said inner surface of the metal cap, with said first electrical insulating film thereon, being bonded to the outer surface of the insulator body by cement; and
a metal pin having an outer surface with a second electrical insulating film thereon, said outer surface of the metal pin, with said second electrical insulating film thereon, being bonded to the inner surface of the insulator body by cement, and said second electrical insulating film being present on said outer surface of the metal pin at least where said metal pin is buried in the cement, wherein said first and second electrical insulating films comprise a synthetic resin based electrical insulating film having a Young's modulus of elasticity of 20,000–80,000 kgf/cm^2 and a thickness of 600 to 1,500 μm.

4,658,093

SOFTWARE DISTRIBUTION SYSTEM

Martin E. Hellman, 730 Alvarado Ct., Stanford, Calif. 94305

Filed Jul. 11, 1983, Ser. No. 512,685
Int. Cl.[4] H04L *9/00*
U.S. Cl. 380—25 **10 Claims**



1. A system for secure distribution of software comprising in combination:
a base unit which uses the software;
a remote authorization unit which authorizes the use of the software in the base unit;
means providing communication between the base unit and the authorization unit;
means in said base unit for inhibiting use of the software unless authorization for use has been received from the authorization unit;
means in said base unit for communicating software requests to the authorization unit, said request including at least identification of the base unit, the number of uses requested and a random or non-repeating number;
means in said authorization unit for processing siad request including identification of the base unit the number of uses requested, and the random number and providing an authorization for the requested number of uses;
means in said base unit for receiving, and verifying the authorization; and
means in said base unit permitting use of the software for the number of uses authorized by the authorization unit.

4,658,094

ENCRYPTION APPARATUS AND METHOD FOR RAISING A LARGE UNSIGNED INTEGER TO A LARGE UNSIGNED INTEGER POWER MODULO A LARGE UNSIGNED INTEGER

James M. Clark, Verona, N.J., assignor to ITT Corporation, New York, N.Y.

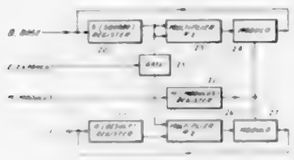
Filed Mar. 28, 1985, Ser. No. 716,877
Int. Cl.[4] H04L *9/00*
U.S. Cl. 380—28 **18 Claims**

1. Encryption apparatus for raising a large unsigned integer (B) indicative of message data to a large unsigned integer power (E), modulo a large unsigned integer M, with each of said integers being as large as N bits, wherein a resulting large

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unsigned integer C is adapted for transmission over an insecure communications channel, comprising:

first logic means responsive to said large unsigned integer B for successively squaring said integer, including means for reducing said squared integer succesively by a given modules, to provide at an output a first value indicative of said squared integer as reduced by said given modules, wherein siad first logic means comprises a first register having an input for receiving said large unsigned integer (B) and an output coupled to a first modulo multipier means for successively squaring said integer and reducing said squared integer by said given modulus, with the output of said modulo-multiplier means coupled to the input of said first register to enable said first value to be stored therein, selectively operated gating means having one input adapted to receive a second value indicative of



a given exponent power E and having another input coupled to said output of said first logic means,

second logic means having input coupled to said gating means and operative as controlled by said gating means to provide an output value indicative of the product of said first value as further modified by modulus means including in said second logic means to provide at said outputs said resulting large unsigned integer (C) adapted to be transmitted over said insecure communications channel, wherein said second logic means comprises a second register having an input adapted to receive a first binary value, with an output of said second register coupled to the input of a second multiplier modulo means, with another input of said second modulo multiplier, and with the output of siad second modulo-multiplier means coupled to the input of said second register to cause it to store said large unsigned integer.

4,658,095

BUILDING INTERCOM SYSTEM

Elias Santiago, P.O. Box 3199, Bayamon, P.R. 00621-3199

Filed Apr. 15, 1985, Ser. No. 723,432

Int. Cl.[4] H04M *9/04, 11/00*

U.S. Cl. 379—103 **19 Claims**

1. An intercom system for a building having a locked entrance door leading to a plurality of occupied units in the building, and an electrically operable release for said entrance door, said system having:

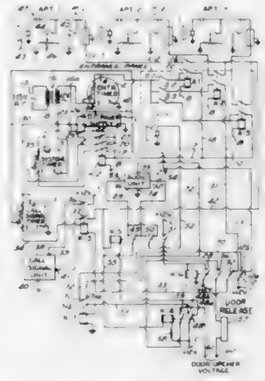
an entrance control panel at said entrance with call switches for initiating call signals from said entrance to the building units individually and a microphone/loudspeaker unit for voice communication with the building units;

and plurality of building unit control panels located individually in said building units and each having a microphone/loudspeaker unit for voice communication with the microphone/loudspeaker unit at the entrance panel, a talk switch selectively operable to enable a person in the building unit to speak to the visitor and a door switch selectively operable to activate said release for the entrance door;

the improvement which comprises:

a plurality of separate lines each extending individually from said entrance control panel to only one corresponding building unit control panel and each terminating at said corresponding building unit control panel for conducting:

(a) a call signal from said entrance control panel to any selected building unit control panel; and



(b) voice communication back and forth between the microphone/loudspeaker unit in each building unit control panel and the microphone/loudspeaker unit in said entrance control panel; and

(c) a signal from each building unit control panel to said entrance control panel for releasing the entrance door.

4,658,096

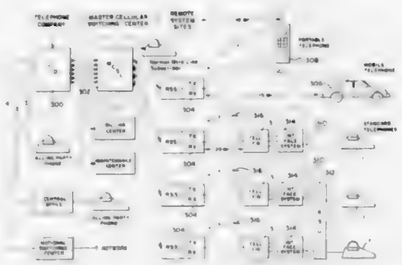
SYSTEM FOR INTERFACING A STANDARD TELEPHONE SET WITH A RADIO TRANSCEIVER

William L. West, Jr., and James E. Shafer, both of Jackson, Miss., assignors to Metrofone, Inc., Skokie, Ill.

Filed Sep. 18, 1984, Ser. No. 651,817

Int. Cl.[4] H01Q *7/04*

U.S. Cl. 379—59 **14 Claims**



1. A telephone interface system for coupling a standard Touch-Tone/rotary dial telephone set with a radio transceiver used in a telephone communication system wherein the transceiver is capable of radio communication with a remote radio transmitter-receiver system that is part of a telephone network, wherein the interface system comprises:

telephone coupling means for providing a two-way communication link with the telephone set;

transceiver coupling means for providing a two-way communication link with the radio transceiver;

telephone number digital conversion means for receiving a group of touch tone or rotary dialed telephone numbers from said telephone coupling means, converting the group of telephone numbers into digital data, and providing said digital data to said transceiver coupling means;

determination means coupled with the telephone number digital conversion means for determining the last number of the group of telephone numbers provided at said transceiver coupling means;

send signal means coupled with said determination means for providing a send signal to the transceiver coupling means;

call detecting means for detecting an incoming call signal provided at said transceiver coupling means;

off-hook detecting means for detecting an off-hook signal provided at said telephone coupling means;

audio channel means for providing a two-way audio signal path between said telephone coupling means and said transceiver coupling means; and

telephone simulation means coupled with said telephone coupling means for providing audio frequency ring tone and dial tone signals thereto.

4,658,097

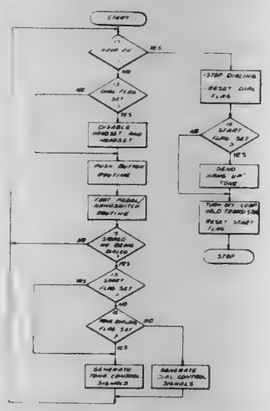
REMOTE TERMINAL FOR USE WITH CENTRAL DICTATION APPARATUS

Nicholas A. D'Agosto, III, Trumbull, Conn., and Alan S. Rubinstein, Arcadia, Calif., assignors to Dictaphone Corporation, Rye, N.Y.

Filed May 18, 1983, Ser. No. 495,756

Int. Cl.[4] H04M *11/10, 1/64;* **G11B** *19/00*

U.S. Cl. 379—75 **19 Claims**



1. A remote terminal for connection to a telephone line to enable a user thereof to carry on a telephone conversation or to control dictation apparatus coupled to said telephone line, said terminal comprising:

connection means for seizing said telephone line and for connecting said terminal thereto;

dial signal generating means for generating dial signals to dial a telephone number;

microphone means for transmitting speech signals to said telephone line;

speaker means for receiving speech signals from said telephone line, and for converting the received speech signals to audio sounds;

function control switch means manually operable to cause function control signals to be transmitted to said telephone line for controlling the operation of said dictation apparatus;

hang-up means operable to release said telephone line;

disconnect means responsive to the operation of said hang-up means for disconnecting said terminal from said telephone line a predetermined period of time after said hang-up means is operated;

hang-up signal generating means responsive to the operation of said hang-up means for transmitting over said telephone line a predetermined hang-up signal prior to the disconnection of said terminal from said telephone line; and

processor means for controlling the dial signals generated by said dial signal generating means, the function control signals transmitted by the operation of said function control switch means, the operation of said disconnect means, and the transmission by said hang-up signal generating means of said hang-up signal.

4,658,098

CIRCUIT ARRANGEMENT FOR TELECOMMUNICATIONS SWITCHING SYSTEMS, PARTICULARLY TELEPHONE SWITCHING SYSTEMS, COMPRISING INFORMATION-PROCESSING CENTRAL SWITCH DEVICES AND SUB-CENTRAL SWITCHING FACILITIES WHICH SUPPLY THE SAME WITH INFORMATION

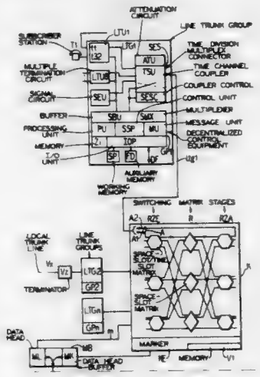
Gerhard Wegmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 22, 1986, Ser. No. 865,754

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1985, 3522721

Int. Cl.[4] H04M *3/36*

U.S. Cl. 379—113 **3 Claims**



1. In a circuit arrangement for regulating the load of a telecommunications switching system, in particular a telephone switching system, of the type comprising information-processing central switch devices and decentralized switching facilities connected thereto and continuously supplying thereto series of information-processing requests in which the first information-processing request of each series is composed of an initial switch identifier, the improvement therein comprising:

counting means storing a threshold count and operable to count initial switch identifiers;

adjusting means connected to said counting means and operable in response to measured loadability results acquired during a predetermined time interval to adjust the threshold count;

for continuously acquiring the measured loadability results, loadability measuring means defines measuring time intervals and identifies initial switch identifiers incoming during each time interval, the measuring time intervals being sufficiently long to compensate brief load fluctuations and maintains a small measuring error, and operates said adjusting means to adjust the threshold count on the basis of the ratio of a maximally allowable traffic load and the actual measured traffic load during a measuring time interval; and means connected to said counting means for

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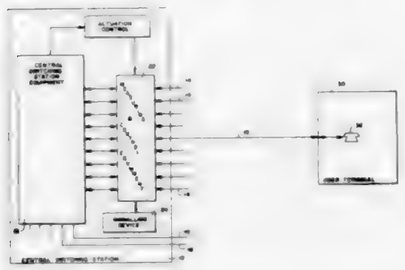
transmitting non-acceptance data to the decentralized switching facilities in response to transgression of the threshold count.

4,658,099

APPARATUS AND METHOD FOR REMOTELY DETERMINING THE PRESENCE OF UNAUTHORIZED SURVEILLANCE DEVICES ON A COMMUNICATIONS LINE

Byron T. Frazer, Boise, Id., assignor to Security Call, Inc., Boise, Id.

Filed Dec. 16, 1985, Ser. No. 809,170
Int. Cl.[4] H04B 3/46
U.S. Cl. 379—7 **19 Claims**



1. Apparatus for remotely determining whether or not an unauthorized surveillance device is installed on a communications line between user terminal equipment and communications exchange station equipment, said apparatus is adapted to be responsive to a test request signal provided from a location remote from said exchange station, comprising:

receiving means located at said exchange station, adapted for receiving said test request signal;

measuring means, located at said exchange station and coupled to said receiving means, for measuring electrical characteristics of said communications line and determining whether or not a surveillance device is installed on said line between said user terminal equipment and said exchange station equipment, in response to said test request signal; and

signalling means, located at said exchange station and coupled to said measuring means for generating a status signal indicating whether or not said device is installed on said line.

4,658,100

TROLLEY WIRE HANGER

Vladimir Suris, Lexington, Ohio, assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jan. 30, 1986, Ser. No. 824,242
Int. Cl.[4] B60M 1/23
U.S. Cl. 191—41 **5 Claims**

1. A hanger for suspending a grooved trolley wire below a messenger wire comprising the combination of

a stiff, resilient wire bent to form a first U-shaped loop at one end for partially encompassing the messenger wire and a second U-shaped loop at the other end, said loops lying in substantially the same plane;

a clip member for engaging the grooves in said trolley wire, said clip member comprising a flat sheet of metal bent to form a U-shaped body having two diverging legs,

the distal end of each of said legs being bent inwardly at an obtuse angle relative to the remainder of the leg so that said ends lie in planes forming an acute angle with each other and said ends are spaced apart to engage said grooves,

each of said legs having means defining a generally T-shaped opening therethrough with the stem of each said T-shaped opening pointing away from said distal end of said leg and being dimensioned to receive said second loop, and with the cross-pieces of each said T-shaped opening being parallel with said distal end and adjacent the obtuse angle bend in said leg; and

a latch member comprising a transverse bar and two perpendicular end bars at opposite ends of said transverse bar, said end bars having inwardly facing substantially parallel surfaces, the lengths of said end bars and the thickness of said latch member being such that said latch member can



be inserted through said cross-pieces of said T-shaped opening with small clearance until said inwardly facing surfaces of said end bars lie outside of said clip member,

said latch member being rotatable through an angle of about 90° from its inserted orientation so that said inwardly facing surfaces of said end bars contact outwardly facing surfaces of said obtuse angle bends and press said outwardly facing surfaces toward each other, thereby pressing said distal ends toward each other in said trolley wire grooves to firmly clamp said trolley wire.

4,658,101

SLIDING-TYPE DIP SWITCH

Takashi Akimoto; Akio Kai; Masao Kobayashi, and Haruo Itoh, all of Kanagawa, Japan, assignors to Teikoku Tsushin Kogyo Co., Ltd., Kanagawa, Japan

Filed Feb. 19, 1986, Ser. No. 830,885
Claims priority, application Japan, Feb. 28, 1985, 60-28970[U]
Int. Cl.[4] H01H 15/02
U.S. Cl. 200—16 R **2 Claims**

1. A sliding-type DIP switch comprising:

a housing having a bottom portion, first and second spaced apart and opposed side wall portions extending from said bottom portion, a pair of spaced apart and opposed end wall portions extending from said bottom portion between said first and second opposed side wall portions, and a cover plate provided opposite said bottom portion on said wall portions, said cover plate having at least one slot means extending therethrough, said slot means extending in a direction between said side wall means;

a pair of opposing contacts each of which extends from said housing at said first and second side wall portions respectively and has a free end,

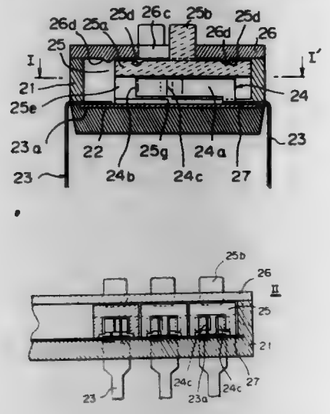
one of said pair of opposing contacts having a first portion extending from said housing at said first side wall portion, an urged portion bent away from and then towards the other opposing contact and a contact portion extending from said urged portion terminating at the free end of said one contact,

said other contact having a first portion extending from said housing at said second side wall portion of said housing,

an urged portion bent away from and then towards said one contact and a contact portion extending from said urged portion thereof terminating at the free end thereof;

a slider slidably mounted to said housing for sliding in said direction in which said slot means extends, said slider having a lower portion located in said housing, said lower portion comprising first and second spaced apart and opposed side walls defining a cavity therebetween through which said opposing pair of contacts extend, each of said first and second side walls having a recess open to said cavity,

said slider being slidable between a first position adjacent said first side wall portion of said housing in which said





urged portions of said opposing pair of contacts are situated in a respective said recess of each of said side walls of said slider and said pair of opposing contacts do not contact each other to a second position adjacent said second side wall portion of said housing in which said urged portions of said opposing contacts are each engaged by a respective one of said side walls of said slider for urging each of said pair of opposing contacts towards one another such that each contact portion of said pair of opposing contacts makes contact with said first portion of the opposing contact; and

a respective terminal connected at one end thereof to each of said first portions of said opposing contacts.

4,658,102

ELECTRIC SWITCH

Burkhart Seim, Radevormwald, and Karl-Georg Eicker, Remscheid, both of Fed. Rep. of Germany, assignors to K. A. Schmersal GmbH & Co., Fed. Rep. of Germany

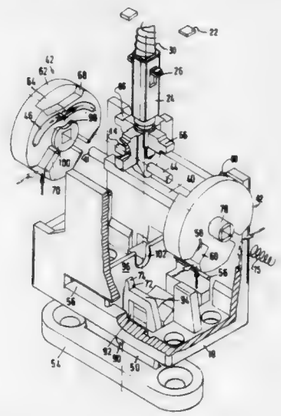
Continuation of Ser. No. 770,522, Aug. 29, 1985, abandoned.
This application Sep. 19, 1986, Ser. No. 909,198
Int. Cl.[4] H01H 3/00, 9/28, 13/18
U.S. Cl. 200—17 R **18 Claims**

1. In an electrical switch including a housing containing at least one pair of stationary contacts, a plunger reciprocally mounted in said housing and carrying bridging contacts for engaging said stationary contacts in said housing when the plunger is moved from a normal position to a contact closing position, said housing containing a pair of cam rollers, each including a predetermined cam profile, a cam follower means integral with said plunger and engaged with said predetermined cam profiles to reciprocate said plunger between said normal and contact closing positions responsive to rotation of said cam rollers, wherein each of said cam rollers includes at least one radially inwardly extended slot adapted to receive the free end of an actuator inserted into said housing, thereby to effect rotation of said cam rollers responsive to continued inward movement of said actuator, the improvement comprising:

a shaft supported in said housing and rotatable relative to the housing, said shaft having a non-circular cross-section over a medial portion of its length, and an integrally formed cylindrical extension at each of its ends, said shaft supporting said cam rollers for lateral, reciprocal sliding motion along said medial portion, between a normal roller position and a displaced position in which said rollers are relatively remote from one another;

a biasing means for urging said cam rollers into said normal cam position; a first stop means integral with said plunger; and a second stop means on each of said cam rollers for engaging said first stop means to substantially prevent rotation of said cam rollers when in said normal cam position;

means forming at least one housing opening through a wall of said housing, and a partitioning member for dividing each of said housing openings in two; and



an actuating member having a base and a free end opposite the base, said actuating member adapted for insertion by its free end into said housing through any one of said housing openings, said actuating member having an actuating slot open to said free end, extended toward said base, and having a width corresponding to the thickness of said partitioning member to provide clearance between said actuator member and said partitioning member as said actuating member is inserted into said housing; said actuating member including a cam roller moving means at said free end for engaging said cam rollers as said actuating member is inserted, and for moving said rollers laterally away from said normal cam position responsive to further insertion of said actuating member, thereby to disengage said first and second stop means and free said cam wheels to rotate, said actuating member further including cam roller rotating means at said free end for engaging said radially inwardly extended slots to rotate said cam rollers.

4,658,103

DISTRIBUTOR FOR MULTI-CYLINDER ENGINE

MacPatrick McAbee, 3136 Cottage Grove, Des Moines, Iowa 50311, and Deloss J. Biddle, Urbandale, Iowa, assignors to MacPatrick McAbee, Des Moines, Iowa

Filed Feb. 7, 1986, Ser. No. 826,989
Int. Cl.[4] H01H 19/04
U.S. Cl. 200—19 DC **2 Claims**

1. An improvement for an ignition system for an engine

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having at least first and second sparkplugs; a distributor comprising a distributor housing containing a rotor, a stationary contact point, a movable contact point, and spring means normally holding said movable contact point in a closed position in contact with said stationary contact point, said movable contact point being yieldably movable to an open position in spaced relation to said stationary contact point, said rotor having two lobes and being rotatably mounted for causing said two lobes to engage said movable contact point and cause said movable contact point to move to said open position twice during each revolution of said rotor; an electrical power circuit connected to said contact points and including an outlet connection for causing electrical current to be introduced to said outlet connection each time said movable contact point is moved to said open position; wherein the improvement comprises:

a single discharge coil having an inlet terminal connected to said outlet connection of said power circuit and having a single discharge post;

a circular dielectric disk having an upwardly presented circular surface and having connection means integral with said disk and being in direct retentive engagement with said rotor for causing rotation of said disk in unison with said rotor;

a pie-shaped conductive sheet having a narrow end and a wide end and being attached to said upwardly presented circular surface of said disk, with said narrow end located



at the center of said disk and with said wide end located adjacent the outer circumference of said disk;

a distributor cap detachably secured in fixed relation to said distributor housing, said cap comprising a coil wire connected to said discharge post of said discharge coil, a first sparkplug wire connected to said first sparkplug, and a second sparkplug wire connected to said second sparkplug,

said distributor cap having a downwardly presented surface, first and second sparkplug contacts and a central contact means being mounted on said downwardly presented surface, said first and second sparkplug contacts being connected to said first and second sparkplug wires and said central contact means being connected to said coil wire;

said central contact means being in electrical contact with said narrow end of said pie-shaped conductive sheet at all times during rotation of said disk in unison with said rotor;

said first and second sparkplug contacts being positioned to be contacted sequentially one at a time by said wide end of said pie-shaped conductive sheet during each revolution of said disk in unison with said rotor;

said wide end of said pie-shaped conductive sheet being sufficiently wide and being positioned relative to said rotor and relative to said first and second sparkplug contacts so as always to be in electrical contact with one of said first and second sparkplug contacts whenever said rotor moves said movable contact point to said open position.

4,658,104

PRINTED WIRING BOARD

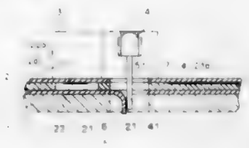
Haruyuki Koizumi, and Koichi Omae, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 19, 1985, Ser. No. 724,862

Claims priority, application Japan, Apr. 19, 1984, 59-57983[U]

Int. Cl.⁴ H01R *9/09;* **H01H** *3/12*

U.S. Cl. 200—159 B **5 Claims**



1. A printed wiring board, comprising:

(a) a supporting frame;

(b) a first non-conductive resilient sheet supported by the supporting frame and having a tongue member formed therein, a first wiring pattern formed on the first non-conductive resilient sheet and the tongue member including a stationary contact;

(c) a second non-conductive resilient sheet having a second wiring pattern formed thereon including a movable contact corresponding to the stationary contact; and

(d) an insulating spacer interposed between the first and second non-conductive resilient sheets and supporting the second sheet at a predetermined distance from the first sheet, formed with an aperture therein located such that the movable contact forms an electrical connection with the stationary contact when a force is applied to the second non-conductive resilient sheet over the aperture;

the supporting frame having an escape space formed therein corresponding to the tongue member whereby the terminal of an electronic device is adapted to be pressed against the first wiring pattern of the tongue member in such a manner that the restoring force of the tongue member completes the electrical connection between the first wiring pattern and the terminal of the electronic device.

4,658,105

ELECTRICAL CONTACT MEANS FOR A LOCK CYLINDER WITH AN ELECTRONIC/MECHANICAL KEY

Erich Seckinger, Wallisellen, Switzerland, assignor to Bauer Kaba Ag, Wetzikon, Switzerland

Filed Jul. 11, 1985, Ser. No. 753,776

Claims priority, application Switzerland, Aug. 10, 1984, 03950/84

Int. Cl.⁴ H01R *31/08*

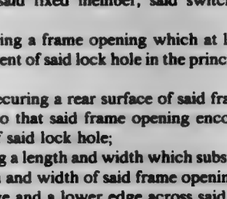
U.S. Cl. 200—43.05 **12 Claims**

1. A lock cylinder for receiving a key having mechanical and electronic coding thereon and having electrical key contacts exposed along an edge thereof, said cylinder having contact means for making electrical contact with the contacts on the key and electronic evaluation means for responding to the coding, the contact means comprising

a plurality of electrical contacts each having contact legs;

a contact support body having a central axis and including means for carrying said plurality of electrical contacts in a substantially uniform, axially spaced array on said support so that said electrical contacts are restrained against axial and rotational movement and so that said legs are radially movable, and

a contact guidance member concentrically rotatable within and axially fixed relative to said contact support body, said guidance member having



a plurality of contact guides for axially guiding said contact legs, and

a guide slot for receiving said key with said exposed key contacts thereon in position to electrically contact said contact legs as said guidance member is rotated by said key.

4,658,106

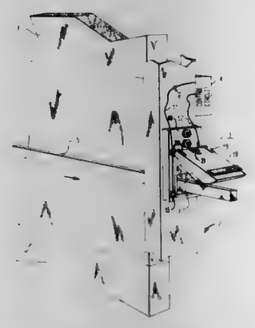
LOCK-OPERATED CUT-OFF SWITCH FOR ELECTRONICALLY OPERATED DOORS

Michael Makoe, 20 Charles St., Lodi, N.J. 07644

Filed Feb. 3, 1986, Ser. No. 825,150

Int. Cl.⁴ H01H *27/00, 3/16*

U.S. Cl. 200—61.64 **6 Claims**



1. A lock operated cut-off switch for disabling the electrical controller for remotely-operated or push button operated garage or warehouse doors which comprise a lock bolt or bar which is propelled by a locking mechanism from a first position out of contact with a member fixed with reference to said garage or warehouse doors to a second position secured in a lock hole in said fixed member, said switch comprising in combination:

a frame having a frame opening which at least exceeds the lateral extent of said lock hole in the principal plane of said frame;

means for securing a rear surface of said frame to said fixed member so that said frame opening encompasses the perimeter of said lock hole;

a gate having a length and width which substantially exceeds the length and width of said frame opening and having an upper edge and a lower edge across said width;

hinge means fastened above said frame opening and constructed to support the upper edge of said gate to at least partially cover said frame opening, so that the lower edge of said gate is rotatable in an outward direction from said frame for uncovering said frame opening;

said frame including at its lower end a pair of frame electrical contacts disposed on opposite sides of said frame opening;

electrical conductors connected to each of said frame contacts, which conductors are respectively constructed and arranged to be connected in circuit relation to opposite terminals of the power circuit for said electrical controller;

a pair of gate contacts respectively connected adjacent to said lower edge near the opposite lower corners of said gate on its inner surface and constructed to respectively mate with said frame electrical contacts when said gate is closed;

conducting means including a portion disposed across the width of said gate for electrically connecting said gate electrical contacts; and

spring-biasing means for biasing said gate in normally closed condition in which said gate electrical contacts are in contact with said frame electrical contacts.

4,658,107

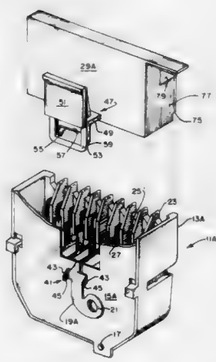
PLUG ASSEMBLY AND INTERCONNECTION SYSTEM

Eugene F. Hildebrandt, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 24, 1985, Ser. No. 813,017

Int. Cl.⁴ H01H *35/10*

U.S. Cl. 200—80 R **8 Claims**



1. A plug assembly for an electric motor starting switch comprising:

a housing having an open end;

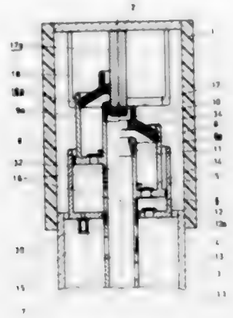
a plurality of terminals disposed adjacent the open end of the housing such that electrical contact is made between conductors of an external plug and the terminals;

an electric motor starting switch disposed in said housing and electrically connected to the terminals such that the electrical connections between the terminals are a function of whether the electric motor starting switch is open or closed, said electric motor starting switch having an actuator arm extending outside the housing, whereby the electric motor starting switch is operable by a centrifugal actuator; and

a grounding buss secured to and accessible from the exterior of the housing, said grounding buss having conductive latching means formed integrally therein and extending exteriorly of the housing, said latching means latchingly mating with a corresponding structure on the external plug, whereby the latching means latches the external plug to the plug assembly.

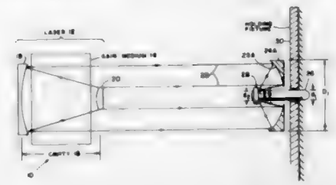
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4,658,108
GAS-BLAST SWITCH
Gerhard Maasbe, Birmenstorf, Switzerland, assignor to BBC Brown, Boveri & Company Ltd., Switzerland
Filed Sep. 18, 1985, Ser. No. 777,314
Claims priority, application Switzerland, Sep. 26, 1984, 4610/84
Int. Cl.[4] H01H *33/88*
U.S. Cl. 200—148 A 9 Claims



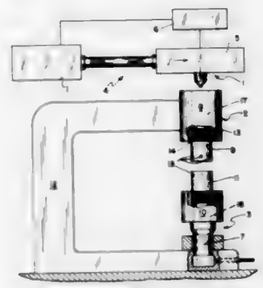
1. A gas-blast switch, comprising:
a housing adapted to be filled with a quenching-gas, the housing being defined about an axial axis;
an expansion volume defined in and enclosed by said housing;
a first rated current contact and a first arc contact, a moving contact member having a second rated current contact and a second arc contact, the rated current contacts and the arc contacts being adapted to be, respectively, electrically connected to or disconnected from one another;
a quenching chamber housing coaxially surrounding said second arc contact;
an opening through said second arc contact, said opening communicating into said quenching chamber housing and being sized to permit said first arc contact to penetrate therethrough;
a heating volume defined in said quenching chamber housing and arranged coaxially about said second arc contact, the heating volume being operative for accommodating said quenching gas which is heated up by a switching arc developing in an interior of said quenching chamber housing during a switching-off operation associated with said gas-blast switch;
a compression volume defined coaxially about said moving contact member and a compression slider mounted at said quenching chamber housing for generating in said compression volume compressed quenching gas during said switching-off operation;
a back-pressure valve mounted at said compression slider at a location facing into said heating volume;
said second arc contact having a discharge duct which extends axially from said opening of said second arc contact and extending to another opening which communicates into said expansion volume which is defined about said moving contact member; and
a pressure controlling device which communicates into said compression chamber and which is adapted to refill said compression chamber with quenching gas in response to preset conditions.

4,658,109
CYLINDRICAL LASER WELDER
Thomas E. Honeycutt, Somerville, and Thomas G. Roberts, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 15, 1986, Ser. No. 864,638
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 LC 5 Claims



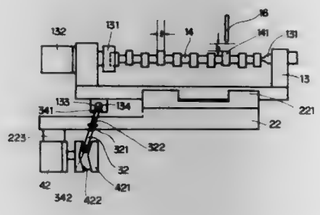
1. A laser welder for simultaneously welding around a complete circumference and comprising: a laser having a feedback mirror and a fully reflecting mirror for providing an unstable optical cavity, said laser providing a hollow, circular output beam along an axial path; a circularly-symmetric concave mirror for receiving the hollow laser beam, redirecting the beam, and focusing the beam into a focal ring in a predetermined focal plane; a holding fixture for holding an object having a cylindrical member to be welded within said focal plane.

4,658,110
METHOD AND APPARATUS FOR WELDING
Jule A. Miller, Derby; Mary Bazan, Northford, and Gerard E. Bessette, Hamden, all of Conn., assignors to Avco Corporation, Stratford, Conn.
Filed May 1, 1984, Ser. No. 605,936
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121 LC 13 Claims



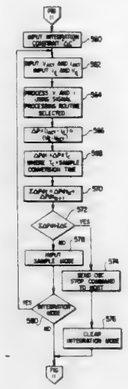
1. Apparatus for spot welding a metal workpiece having first and second sides comprising clamping means for exerting a compressive force on the workpiece during the welding operation in the zone within which the weld is to be performed;
laser meaan for generating a laser beam and applying said beam to the workpiece in the weld zone with sufficient power to fuse the workpiece and create a weld;
means to control the application of the beam to the workpiece to create a series of substantially arcuate segments defining a weld pattern, said means to control the application of the beam to the workpiece comprising an optical deflection system adapted to receive the laser beam and moveably direct the beam to the weld zone, and a computer controller operatively connected to the optical deflection system to move the beam to form a weld pattern comprising arcuate segments, and said computer controller is programmed to adjust the angular velocity of the beam to maintain a constant linear velocity throughout the weld pattern.

4,658,111
METHOD FOR HARDENING A SURFACE OF A CAM PROVIDED ON A CAMSHAFT
Seya Takagi, and Toshiharu Fukuizumi, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Continuation-in-part of Ser. No. 643,011, Aug. 22, 1984, abandoned. This application Sep. 30, 1985, Ser. No. 782,001
Claims priority, application Japan, Aug. 31, 1983, 58-159766
Int. Cl.[4] B23K *9/12*
U.S. Cl. 219—125.1 10 Claims



1. A method for hardening a surface of a cam secured to a camshaft comprising the steps of:
rotating a cylinder cam which has a continuous peripheral guide groove, said continuous peripheral guide groove comprising at least two straight grooves and at least two 'V' shape connecting portions so that said at least two 'V' shape connecting portions connect said at least two straight groove and form said continuous peripheral guide groove on an outer peripheral surface of said cylinder cam;
swinging a rod member by said rotation of said cylinder cam, a first end portion of said rod member being located in said continuous peripheral guide groove of said cylinder cam, an intermediate portion of said rod member being pivoted on a base member;
oscillating a holding means by said swing movement of said rod member, said camshaft being mounted on said holding means, said oscillation being at a constant speed in the axial direction of said camshaft, a second end portion of said rod member being connected to said holding means, said holding means including a vertical guide groove, said second end ortion of said rod member being inserted into said vertical guide groove;
rotating said camshaft in a circumferential direction of said camshaft concurrently with said oscillating, said rotating being performed by a second driving means;
emitting high energy from an emitting means concurrently with said oscillating and second rotating steps to a surface of a cam to be hardened to melt said surface of said cam; and
vertically oscillating said emitting means in the vertical direction concurrently with said rotating of said camshaft, whereby said emitting means is always located over said cam with a constant interval defined between said surface of said cam and said emitting means, and
whereby said camshaft is oscillated at said constant speed in the axial direction of said camshaft and said camshaft concurrently rotates in the circumferential direction of said cam during the emitting step so that a chill layer of constant depth along the axial direction of the camshaft is formed on the surface of the cam.

4,658,112
WELDING CONTROL BY POWER INTEGRATION
Floyd M. Thompson, Spring, Tex., assignor to CRC-Evans Pipeline International, Inc., Houston, Tex.
Filed Jan. 21, 1986, Ser. No. 821,158
Int. Cl.[4] B23K *9/12*
U.S. Cl. 219—125.12 8 Claims



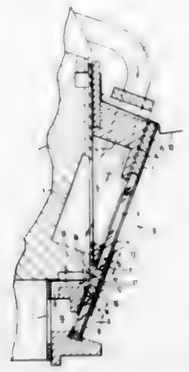
1. A method for automatic welding in which a weld torch follows a groove while making lateral traverses across the groove, comprising the steps of:
measuring weld voltage and current as said torch passes the centerline of said groove,
sequentially sampling weld voltage and current as said torch passes through a position window toward each wall of said groove,
integrating the product of (1) the absolute difference of said sampled weld voltage and said centerline voltage, and (2) the absolute difference of said sampled weld current and said centerline current to produce an integration value, and
reversing the lateral travel of said torch when said integration value reaches a predetermined constant.

4,658,113
DEVICE AND METHOD FOR PROTECTING OPTICAL MEANS FROM CONTAMINATED GASES
Abraham Vingerling, Zwijndrecht, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft" , Netherlands
Filed Nov. 2, 1984, Ser. No. 667,551
Claims priority, application Netherlands, Sep. 19, 1984, 8402872
Int. Cl.[4] B23K *9/32*
U.S. Cl. 219—147 15 Claims

3. An apparatus for protecting an optical member from contaminated gases, which comprises: means for producing a clean gas, a chamber in fluid communication with said means for producing said clean gas, a slit-like channel having a discharge opening connected without material interruption to said optical member, said discharge opening of said slit-like channel being in fluid flow communication with said chamber, said slit-like channel being dimensioned in a direction normal to a direction of flow of clean gas substantially constant over a

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distance from upstream of said discharge opening to said discharge opening and being identical to a dimension of said



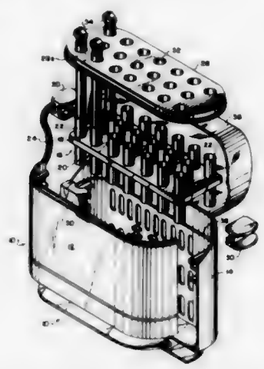
discharge opening to produce a substantially laminar flow of clean gas over and across said optical member.

4,658,114

HEATER AND HOLDER FOR SOFT ROLLER HAIR CURLERS

Andrew M. P. Hong, c/o Celestial Electric Mfg., Co., Ltd., Block A&B, 2/F, Acro Ind. Bldg., 19 Yuk Yat Street, Tokwawan, Kowloon, Hong Kong

Filed May 5, 1986, Ser. No. 859,838
Int. Cl.[4] H05B *1/00*; A45D *2/18, 4/12*
U.S. Cl. 219—222 **7 Claims**



1. In a holder for soft roller hair curlers having a base having an open top closed by an openable cover, a shelf in said base accessible through said open top and provided with a plurality of holes wherein the hair curlers are adapted to be inserted therethrough, the improvement comprising a heat-conductive plate having spaced top and lower panels, a plurality of open-ended heat conductive hollow heating tubes each having a first section with an open upper end in alignment with a different one of the holes in said shelf and extending upwardly from one panel and a second section extending downwardly from the other panel and in alignment with each other, a flexible electric heating element in said space between said panels and arranged to heat said heating tubes, and the roller hair curlers being insertible through the holes of said shelf into said hollow heating tubes and wherein the combined length of said first and second sections of each heating tube is less than the length of the curler to be heated so that the opposite ends of said roller hair curlers are not heated.

4,658,115

LASER FIRED STEAM BOILER

Vernon Heath, 118 Walleye Ct., LaGrange, Ohio 44050

Filed Jan. 23, 1986, Ser. No. 824,553
Int. Cl.[4] F22B *00/00*
U.S. Cl. 219—275 **33 Claims**



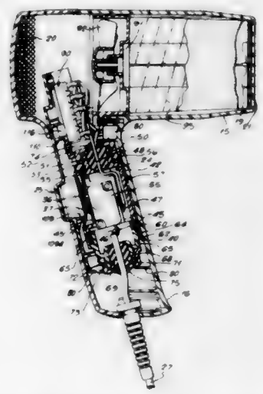
1. A method of producing vapor from a liquid using laser energy comprising the steps of providing a liquid to be vaporized in a container, directing at least one laser beam into the liquid in the container and retaining at least essentially all of the energy of said at least one laser beam in the container for vaporizing said liquid by preventing said at least one laser beam directed into said liquid from leaving said liquid.

4,658,116

HAND-HELD ELECTRICAL APPLIANCES

Fan K. Tsang; Fan W. Tsang, both of Kowloon, and Ying S. Chan, Kennedy Town, all of Hong Kong, assignors to Techs Industrial Design Limited, Tsuen Wan, Hong Kong

Filed Mar. 28, 1984, Ser. No. 594,249
Int. Cl.[4] F24H *3/04*; H05B *1/00*
U.S. Cl. 219—370 **10 Claims**



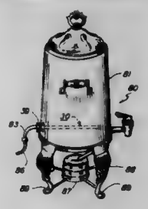
1. A hand held electrical appliance comprising a single housing with an insulated electrical supply cable extending thereinto for carrying electrical power from an external source; an enclosure within the housing having an electrically insulating and waterproof wall comprising a flexible wall portion, into which enclosure said supply cable passes through a first electrically insulating and waterproof seal member; two switches within the enclosure electrically connected on one side to two power lines from the supply cable, and electrically connected on their other side to two output conductors passing out of the enclosure through a second electrically insulating and waterproof seal member for powering the appliance, said housing wall and first and second seal members combining to seal said enclosure against the ingress of water; a manual pressure actuated lever also within the enclosure for closing the switches simultaneously to connect the power lines to the output conductors; spring means continuously biasing the lever to maintain the switches open in the absence of pressure being applied to the lever; and a button actuator mounted in the housing external of the enclosure but adjacent said flexible wall portion, said actuator being adapted for movement against said wall portion in response to manual pressure to actuate said lever against the force of said spring means to close said switches and activate the appliance so long as sufficient manual pressure is maintained, said button actuator being at all times electrically isolated from said lever and said switches by said insulating wall portion of said enclosure.

4,658,117

FOOD WARMER WITH REMOVABLE ELECTRIC HEATER

Samuel S. Sayward, Jr., Danvers, Mass., assignor to Oneida, Ltd., Oneida, N.Y.

Filed Jan. 24, 1986, Ser. No. 821,957
Int. Cl.[4] H05B *3/82*; A47J *27/18*
U.S. Cl. 219—437 **8 Claims**



1. Apparatus for maintaining precooked food at a desired temperature that includes a warmer for holding a quantity of food,

a stationary hollow housing member having a cylindrical passage, said housing member being mounted in the bottom part of the warmer and said housing member passing out of the warmer through at least one wall thereof so that said passage has an entrance located on the outside of said at least one wall,

a removable member having a cylindrical sleeve that is insertable within the cylindrical passage of said stationary housing through said entrance member, said sleeve being able to rotate freely within said passage when inserted therein,

an electrical heating means contained inside the sleeve for providing heat to the warmer,

a moment inducing counterweight means attached to the sleeve for applying a turning moment to the sleeve for automatically rotating the sleeve to a predetermined rest position when the sleeve is released after it is inserted into said passage with the counterweight means in an unbalanced position,

a locking means acting between the stationary housing member and the removable member including a lug secured to one of said members and a rotor secured to the other of said members,

said rotor having a circular guideway for rotatably retaining said lug to lock the removable member within the stationary housing member when the sleeve is automatically rotated into said predetermined rest position by operation of said moment inducing means whereby the removable member is prevented from being removed from the stationary housing member, and

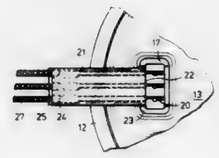
said rotor further containing an axial slot that opens into the guideway which permits the lug to pass laterally into and out of the guideway when the sleeve is rotated to a position that is angularly displaced in regard to said predetermined rest position thereby allowing the removable member to be removed from said stationary housing member.

4,658,118

ELECTRIC HOTPLATE

Robert Kicherer, and Stefan Reif, both of Oberderdingen, Fed. Rep. of Germany, assignors to EGO Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Jul. 10, 1985, Ser. No. 753,430
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 3425896
Int. Cl.[4] H05B *3/68*
U.S. Cl. 219—451 **5 Claims**



1. An electric hotplate, comprising:

a hotplate body and a lower cover plate with an insulator projecting through the lower cover plate, the insulator having electric hotplate leads projecting outwardly in stub-like manner;

a positioning part having spaced passages, the positioning part being fixable with respect to the hotplate body, the positioning part having flexible connecting lines in the spaced passages, the flexible connecting lines being provided with multicore cable ends for connecting with ends of the leads projecting in stub-like manner, the multicore cable ends projecting from the positioning part on a side facing the insulator and the multicore cable ends crossing the ends of the leads, the multicore cable ends and the spaced passages of the positioning part having two areas with different diameters and wherein terminal portions of the multicore cable ends projecting from the positioning parts are squeezed therein.

4,658,119

WARMING APPARATUS FOR USE DURING SLEEP

Shinichi Endo; Hideho Shinoda, both of Yamatokoriyama, and Kunio Kimata, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 31, 1985, Ser. No. 739,908
Claims priority, application Japan, Jun. 6, 1984, 59-115988
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—492 **4 Claims**

1. A warming apparatus for use during sleep comprising:

an electric heater;

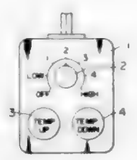
temperature setting means for presetting a temperature of said electric heater; and

a control circuit for controlling an electric current flow through said electric heater to maintain the temperature of said electric heater at the temperature preset by said temperature setting means,

said control circuit including a temperature-down timer circuit and means to actuate said timer circuit while said warming apparatus is in operation, to cause the temperature of said electric heater to become lower than the

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temperature preset by said temperature setting means by an amount in the range from 2° C. to 6° C. for a predetermined time period and thereafter restoring the temperature of said electric heater to the preset temperature.

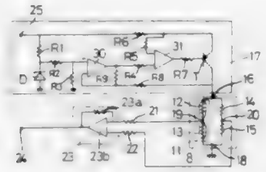


4,658,120

SENSOR DEVICE FOR USE WITH COOKING APPLIANCES

Kuniyoshi Fujikawa, Sakai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 25, 1985, Ser. No. 715,293
Claims priority, application Japan, Mar. 28, 1984, 59-61942
Int. Cl.[4] H05B 6/68
U.S. Cl. 219—505 2 Claims



1. A sensor device for detecting the absolute humidity in a chamber, comprising:

a pair of thermistor elements connected in series and providing a humidity output signal, one of said pair of thermistor elements being responsive to variations in the amount of humidity in the chamber, the other of said pair being unaffected by said variations, the characteristics of said pair of thermistor elements being temperature dependent;

a pair of impedance elements connected in series with each other and in parallel with said pair of thermistor elements, and providing a reference output signal, said pair of impedance elements and said pair of thermistor elements collectively forming a sensing circuit;

comparator means having inputs respectively connected to said humidity output signal and said reference output signal for determining the amount of humidity in the chamber; and

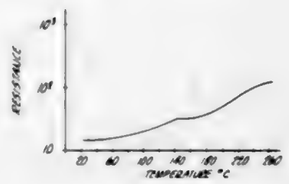
current control means for supplying a relatively large amount of current to the circuit comprised of said thermistor elements and said impedance elements when the temperature of said thermistor elements decreases, and for supplying a relatively small amount of current to said circuit when the temperature of said thermistor elements increases, said current being inversely related to the temperature of said thermistor elements, thereby enabling said comparator means to accurately determine the amount of humidity in the chamber regardless of changes in the temperature of the chamber.

4,658,121

SELF REGULATING HEATING DEVICE EMPLOYING POSITIVE TEMPERATURE COEFFICIENT OF RESISTANCE COMPOSITIONS

David A. Horsma, Palo Alto, and Teddy J. Hammack, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 084,352, Oct. 12, 1979, Pat. No. 4,560,498, which is a continuation of Ser. No. 601,639, Aug. 4, 1975, abandoned, which is a continuation-in-part of Ser. No. 510,035, Sep. 27, 1974, abandoned. This application Aug. 29, 1985, Ser. No. 771,384
Int. Cl.[4] H05B 3/10; H01B 1/06
U.S. Cl. 219—553 18 Claims



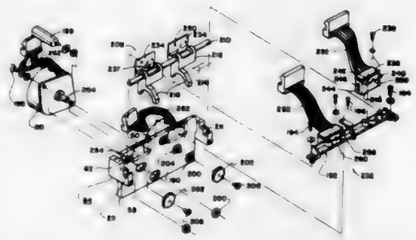
1. A self-regulating heating article comprising at least two electrodes and a crosslinked electrically conductive polymer composition, the electrodes being connectable to a power supply so that current will pass between the electrodes through the conductive polymer composition, said composition having a positive temperature coefficent of resistivity and comprising (1) a first polymeric material which prior to cross-linking exhibits significant green strength corresponding to a tensile stress of at least 10 psi at 20% elongation and which exhibits elastomeric properties at ambient temperatures in the cross-linked state; (2) a second thermoplastic polymer material; and (3) conductive particles which have been dispersed in said polymeric material such that the composition exhibits increased resistance with increased temperatures at temperatures substantially above the melting point of either material.

4,658,122

POSTAGE METER STEPPER MOTOR MODULE

Ward J. Payn, Pacheco, Calif.; Onni W. Niemi, Mosier, Oreg.; John V. McDonald, El Cerrito, Calif.; Elizabeth A. Simon, Berkeley, Calif., and Daniel P. Leonard, Concord, Calif., assignors to f.m.e. Corporation, Hayward, Calif.

Filed Nov. 6, 1985, Ser. No. 795,692
Int. Cl.[4] G06F 1/00
U.S. Cl. 235—101 32 Claims



1. A meter stepper motor module for use in a meter having a base supporting a rotatable main shaft to which a printhead is mounted, the printhead capable of printing a plurality of value characters, the main shaft having a value rod mounted thereto and coupled to the printhead so movement of the value rod parallel to the main shaft axis changes the chosen value character to be printed, the stepper motor module comprising:

a stepper motor frame;

means for mounting the stepper motor frame to the base at a chosen position relative to the main shaft;

a stepper motor mounted to the stepper motor frame;

a coupler member secured to a chosen axial position along the value rod;

a yoke, mounted to the stepper motor frame for movement along a yoke path parallel to the main shaft axis, including a coupler member engaging portion for axially positioning the coupler member according to the position of the yoke while permitting free rotation of the coupler member about the main shaft axis; and

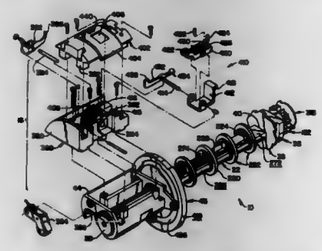
means for coupling the stepper motor and the yoke to move the yoke along the yoke path.

4,658,123

POSTAGE METER SHAFT ASSEMBLY

Ward J. Payn, Pacheco, and Timothy D. Pike, Hayward, both of Calif., assignors to f.m.e. Corporation, Hayward, Calif.

Filed Nov. 6, 1985, Ser. No. 795,693
Int. Cl.[4] G06F 1/00
U.S. Cl. 235—101 29 Claims



1. A main shaft assembly for use in a meter having a base supporting the main shaft assembly, a printhead mounted to an outer end of the main shaft assembly for rotation therewith, and a stepper motor drive mounted to the base and operably coupled to the printhead through the main shaft assembly, the main shaft assembly comprising:

a main shaft having an inner end, an outer end and a main shaft axis, said main shaft having a flat surface;

a plurality of value rods, positioned adjacent the main shaft flat surface, having outer ends, coupled to the printhead, and inner ends;

means for connecting the value rods to the stepper motor drives to move the value rods parallel to the main shaft axis;

bearings for rotatably mounting the main shaft to the base at chosen sites on the base so to properly radially position the main shaft relative to the base;

means for securing at least one of said bearings to a chosen axial position along the main shaft so to properly axially position the shaft relative to the base; and

drive means for rotating the main shaft and printhead therewith during a print cycle.

4,658,124

KEYBOARD HAVING VARIABLE INCLINATION OF THE KEY PLANE

Domenico Bertina, Parella, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Italy

Continuation of Ser. No. 668,685, Nov. 5, 1984, abandoned, which is a division of Ser. No. 435,652, Oct. 21, 1982, Pat. No. 4,563,550. This application May 27, 1986, Ser. No. 867,608
Claims priority, application Italy, Oct. 21, 1981, 68360 A/81
Int. Cl.[4] A47F 5/12; B41J 11/56; F16M 11/24; G06C 7/02
U.S. Cl. 235—145 R 6 Claims



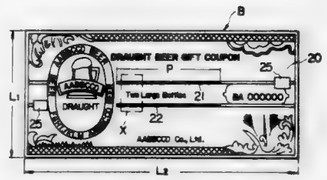
1. A keyboard comprising a frame, a plurality of keys mounted in said frame and defining a key plane; and means for modifying the inclination of said key plane with respect to a support plane for said frame, wherein said inclination modifying means comprise a pair of support feet pivotally mounted on and in said frame, said pair of support feet having peripheral edge means engaging the support plane, positioning means defining a given number of different stable angular positions of said pair of support feet with respect to said frame, said positioning means includes a teeth and notches coupling between said support feet and said frame and plural spring means for holding said teeth and notches coupling in engagement to define the stable angular positions of said support feet, said support feet being rotated from one to another of said stable angular positions by forcing the engagement of said teeth and notches coupling against the action of said plural spring means, said peripheral edge means of each of said support feet comprises a number of sections equal to said given number of different, stable angular positions, said sections having extensive planar portions lying on different distances from said pivot means for causing each of said planar portions to cooperate planarly with said support plane for each one associated position of the stable positions of said support feet.

4,658,125

GIFT COUPON DETECTABLE BY BILL SORTER

Kenjiro Kachi, Komaki; Hideaki Onda, Ageo; Yukichi Hayashi, Sakado; Kenzo Yoshikara, Konosu; Masayuki Watanabe, Wako; Masaki Akagawa, Sakado, and Yoshikazu Mori, Iruma, all of Japan, assignors to Nipponcoinco Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1985, Ser. No. 711,612
Claims priority, application Japan, Mar. 19, 1984, 59-51153
Int. Cl.[4] G06K 7/08
U.S. Cl. 235—449 10 Claims



1. A gift coupon detectable by a bill sorter, comprising a rectangular paper having a width capable of being inserted into a travelling path of the bill sorter and also having predetermined characters and design, said gift coupon further having:

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a first data train comprising data units formed by a magnetic ink and arranged in a row at predetermined intervals; and

a second data train comprising data units corresponding respectively to the data units of the first data train, formed by a magnetic ink and arranged in a row, data units in predetermined positions of the second data train being cut off to provide blank units to record data required for the gift coupon such as the significance of an amount of money, the name of commodity to be exchanged, etc. according to the arrangement of the blank units,

said first and second data trains being disposed in positions capable of being detecting by two magnetic detection heads for bill sorting provided in the bill sorter during travel of the gift coupon along said travelling path.

4,658,126

CHECK IDENTIFICATION SYSTEM

Joseph A. May, 400 E. Redbridge Rd., Kansas City, Mo. 64131

Filed Nov. 10, 1985, Ser. No. 793,840
Int. Cl.⁴ G06K *19/00*
U.S. Cl. 235—487 **6 Claims**



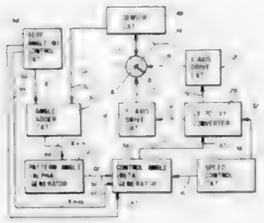
1. A process of marking a check having a front and back side thereof with identification indicia comprising the steps of running the check through a copying machine and transferring the image of one side of an identification card to the back side of the check.

4,658,127

PATTERN TRACER WITH KERF DEPENDENT CONTROL FOR IMPROVED CORNERING

Francis E. Ferrari, LaGrange Park, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Dec. 28, 1984, Ser. No. 687,015
Int. Cl.⁴ G05B *1/00*
U.S. Cl. 250—202 **18 Claims**



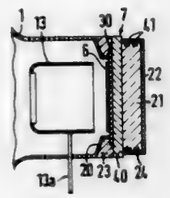
1. An optical tracer assembly for tracing a pattern-line, comprising: an optical sensor for scanning a pattern-line and developing actual pattern-line direction information therefrom, kerf circuit means for preselecting a desired kerf offset and deriving kerf offset information therefrom, means for combining the pattern-line direction information and the kerf offset information to derive tracing direction control information so that the desired kerf offset is effected, a drive circuit for receiving the tracing direction control information and developing drive signals for x and y coordinate servo motors for the optical sensor, and means responsive to changes in the tracing direction control information and the kerf offset information to produce modified tracing direction control information for the drive circuit so that the drive circuit responds faster to changes in pattern-line direction in the presence of at least some preselected kerf offsets.

4,658,128

ELECTRON VACUUM IMAGE INTENSIFIER WITH REFLECTION REDUCING OUTPUT SCREEN

Rainer Beierlein, Spardorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 9, 1985, Ser. No. 764,123
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1984, 3429561
Int. Cl.⁴ H01J *31/50*
U.S. Cl. 250—213 VT **12 Claims**



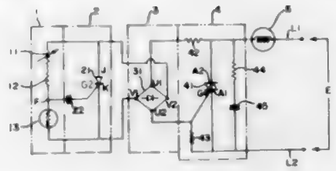
1. An electronic image intensifier having an output window in an evacuated bulb, said output window comprising a light transmissive carrier connected to an opening in said bulb, said carrier having a luminescent screen on a side thereof facing said bulb and having an exterior image exit surface, and having a thickness therebetween such that light reflected from said exterior image exit surface returns only to portions of said luminescent screen outside of an observation surface of said screen.

4,658,129

PHOTOELECTRIC CONTROL DEVICE WHICH DETECTS CHANGES IN LIGHT INTENSITY

Jenn-Kang Fan, No. 8, Kung Tzu Kou, 8-Lin, Jen An Li, Kuang Hsi, Hsin Tzu Hsien, Taiwan

Filed Jul. 25, 1985, Ser. No. 758,724
Int. Cl.⁴ H05B *37/02, 39/04, 41/36*
U.S. Cl. 250—214 R **2 Claims**



1. A photoelectric control device, comprising:

a photoelectric sensing unit capable of delivering an output voltage in response to changes of the intensity of light cast on said photoelectric sensing unit;

a trigger unit having a capacitor and a silicon controlled rectifier having a gate connected to said capacitor to which said output voltage delivered by said photoelectric sensing unit is applied;

a first switching unit capable of supplying a rectified voltage from an A.C. source to said photoelectric sensing unit and said trigger unit and operable by said trigger unit; and

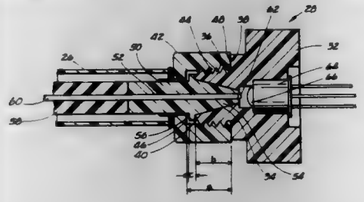
a second switching unit operable by said trigger unit in cooperation with said first switching unit when said output voltage varies and reaches a predetermined level, second to selectively allow or cut off the supply of electric current.

4,658,130

FIBER OPTIC SWIVEL COUPLER AND METHOD OF USE THEREFOR

John R. Durbin, 317 Kimberly, St. Peters, Mo. 63376

Filed Mar. 22, 1985, Ser. No. 714,964
Int. Cl.⁴ H01J *5/16*; G02B *6/42*
U.S. Cl. 250—227 **15 Claims**



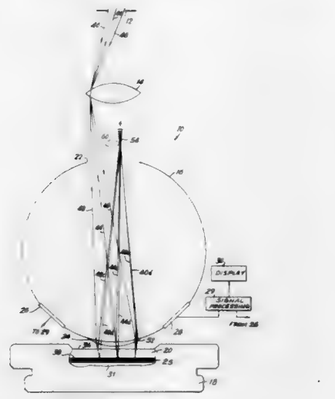
1. A control system in combination with a movable assembly mounted on a transportable base and having a functional device movable throughout a plurality of positions; said control system comprising a portable control unit adapted to be operated at a location removed a distance from said movable assembly; said portable control unit having at least one light generating device for producing a light beam, said control unit having means for controlling and varying the characteristics of the light in said light beam in a predetermined manner; said control system having a flexible, non-electrically conducting light transfer path means for transmitting said light beam from said control unit to a control box on said movable assembly, and a light responsive means at said control box for sensing the variations in said light beam and producing an electrical response to the variations of said light beam, the electrical response varying in accordance with variations in the characteristics of the light from said control unit; said control system including a variable response drive means communicating with said light responsive means and said movable assembly for operating said movable assembly throughout said plurality of positions in response to the variable electrical response produced by said light responsive means; said control system further including a reel device, having a central axis, mounted in proximity to said control box; said reel device being adapted to have said flexible, non-electrically conducting light transfer path wound thereon for storage; said reel device being further adapted to easily dispense and receive said flexible light transfer path by rotating on its central axis; one end of said flexible light transfer path being connected to said control box by a swivel coupler; which coupler consists of a swivel body affixed to the control box, said aforementioned light responsive device being mounted in said swivel body; a terminating ferrule surrounding said flexible light transfer path; and a coupling nut, which coupling nut serves to retain said terminating ferrule in mating relationship with said swivel body, whereby said terminating ferrule and said flexible light transfer path are free to rotate as a unit about the longitudinal axis of said flexible light transfer path and whereby the end of said flexible light transfer path is maintained in a uniform light emitting relationship to said light responsive device.

4,658,131

INTEGRATING SPHERE UTILIZING A POSITIVE POWER LENS

Edward W. Stark, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,234
Int. Cl.⁴ G01J *1/04*; G01N *21/01*
U.S. Cl. 250—228 **13 Claims**



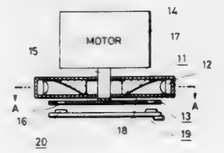
1. In a radiation energy integrating sphere which includes optically aligned radiation energy entry and exit ports for the transmission of radiation energy through the sphere, the improvements comprising, lens means operatively associated with said radiation energy exit port, said lens means being of positive power and operable to prevent specular reflections from the lens means surfaces of radiation energy which has been transmitted into said integrating sphere through said radiation energy entry port from striking the interior wall surfaces of said integrating sphere for collection thereby.

4,658,132

ROTATIONAL ANGLE DETECTING DEVICE WITH FULL CIRCUMFERENCE ILLUMINATION AND DETECTION

Masaharu Nishiura; Hakubun Fujisawa, and Katsumi Yamada, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd. and Fuji Electric Corporate Res. & Dev. Ltd., both of Kanagawa, Japan

Filed Aug. 24, 1984, Ser. No. 643,717
Claims priority, application Japan, Aug. 26, 1983, 58-156027
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **14 Claims**



1. A rotational angle detecting device comprising:

a rotatable plate adapted to be attached to a rotatable shaft of a rotor for rotation therewith, the rotating plate having a plurality of windows arranged at a first angular pitch on the entire circumference around the axis of the rotor;

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a light source for simultaneously uniformly illuminating all of said windows on said rotating plate; and

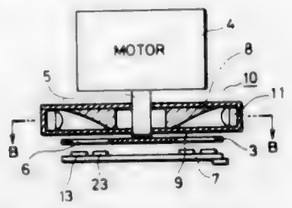
a stationary detection plate opposed in a parallel to said rotating plate and having a plurality of photodetectors for receiving light from said light source passing through said windows and for generating output signals having amplitudes corresponding to the intensity of said received light, said photodetectors being arranged to have a second angular pitch on said circumference, at least two of said photodetectors being connected in parallel to generate a combined output signal having a magnitude corresponding to the sum of the output signals thereof.

4,658,133

ROTATIONAL ANGLE DETECTING DEVICE WITH FULL CIRCUMFERENCE ILLUMINATION AND DETECTION

Masaharu Nishiura, Kanagawa, Japan, assignor to Fuji Electric Corporate Research and Dev. Inc., Yokosuka, Japan

Filed Aug. 24, 1984, Ser. No. 643,719
Claims priority, application Japan, Aug. 26, 1983, 58-156032
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **7 Claims**



1. A rotational angle detecting device comprising:

a rotatable plate adapted to be attached to a shaft of a rotatable rotor and having a surface including a plurality of windows arranged at a first angular pitch on the entire circumference around the axis of the shaft;

a light source for uniformly illuminating all of said windows on said rotatable plate at the same time;

a stationary detector plate having a surface opposed to said surface of said rotatable plate, said surface of said detector plate including a first photodetector comprising a plurality of first detecting segments disposed around the entire circumference at a second angular pitch for receiving light from said light source passing through said windows on said rotating plate and for generating a first electrical signal with an amplitude corresponding to the intensity of said received light, and a second photodetector comprising a plurality of second detecting segments disposed around the entire circumference at said second angular pitch for receiving light from said light source passing through said windows on said rotating plate and for generating a second electrical signal with an amplitude corresponding to the intensity of said received light wherein the spacing of said windows and said first and second detecting segments is such that light is completely interrupted by rotation of said disk;

a first conductor electrically connecting said first detecting segments in parallel to generate a first combined output signal comprising the sum of each of said first electrical signals; and

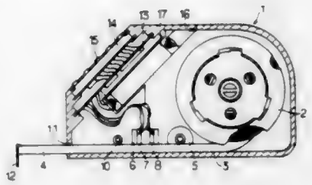
a second conductor electrically connecting said second detecting segments in parallel to generate a second combined output signal comprising the sum of each of said second electrical signals.

4,658,134

DIGITAL TAPE MEASURE

Kazuyoshi Okumura, Joyo, Japan, assignor to Kyoto Measuring Instruments Corp., Kyoto, Japan

Filed Sep. 11, 1985, Ser. No. 774,894
Claims priority, application Japan, Apr. 4, 1985, 60-71998
Int. Cl.⁴ G01D *5/34*; G01B *3/12*
U.S. Cl. 250—231 R **2 Claims**



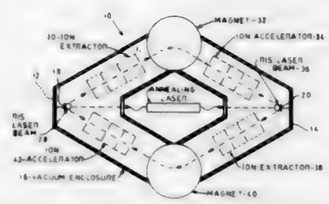
1. A digital tape measure, comprising: a tape stored in a casing being wound on a reel so as to be movable corresponding to a length of an object to be measured when drawn out and on the surface of which a detection mark for measuring length is indicated, and a photoelectric transfer element for receiving a quantity of light projected to said tape and reflected therefrom and for converting the light to an electric signal so that the movement of the tape is measured by optically detecting the detection mark for measuring length indicated on the tape, characterized in that said photoelectric transfer element is accepted in a holding block supported by said casing body with a constant impetus to the tape, and said holding block is disposed so as to form a spacing corresponding to the allowance of the focal distance of the photoelectric transfer element between a surface of said holding block and the surface of the tape on the side facing to said surface of the holding block at the initial stage of drawing out the tape.

4,658,135

METHOD AND APPARATUS FOR SENSITIVE ATOM COUNTING WITH HIGH ISOTOPIC SELECTIVITY

Steve L. Allman, Knox County; Norbert Thonnard, Anderson County, and George S. Hurst, Roane County, all of Tenn., assignors to Atom Sciences, Inc., Oak Ridge, Tenn.

Filed Sep. 16, 1985, Ser. No. 776,598
Int. Cl.⁴ H01J *49/26*
U.S. Cl. 250—283 **27 Claims**



1. A method for counting atoms of a desired specie which may be small in number, such method conducted within an evacuated chamber, which comprises:

rapidly releasing atoms from a first atom bank containing such desired specie;

resonantly ionizing a portion of atoms of such desired specie removed from said first atom bank:

extracting said ions of such desired specie;

implanting said extracted ions into a second atom bank; and

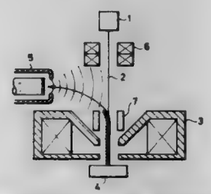
measuring the number of ions implanted in said second atom bank as a measure of the number of atoms of such desired specie.

4,658,136

SECONDARY ELECTRON DETECTING APPARATUS

Tadashi Ohtaka; Yasushi Nakaizumi, both of Katsuta, and Katsuhiro Kuroda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP85/00170, § 371 Date Dec. 6, 1985, § 102(e) Date Dec. 6, 1985, PCT Pub. No. WO85/04757, PCT Pub. Date Oct. 24, 1985
PCT Filed Apr. 5, 1985, Ser. No. 828,309
Claims priority, application Japan, Apr. 6, 1984, 59-67743
Int. Cl.⁴ H01J *37/244*
U.S. Cl. 250—310 **3 Claims**



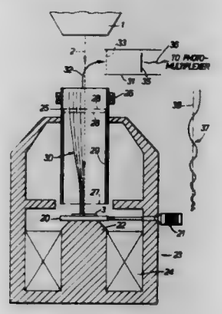
1. A secondary electron detecting apparatus comprising: means for generating an electron beam and for irradiating a sample with said electron beam—for generating secondary electrons from said sample at the side of said sample, which is irradiated by said electron beam, with respect to said sample; means for generating an electric field for deflecting said electron beam and said secondary electrons in a first direction; means for generating a magnetic field for deflecting said electron beam in a second direction opposite to said first direction, thereby reducing the deflection of said electron beam in said first direction substantially to zero, and deflecting said secondary electrons in said first direction and to means for detecting the secondary electrons which are deflected in said first direction.

4,658,137

ELECTRON DETECTOR

Simon C. J. Garth, and William C. Nixon, both of Cambridge, United Kingdom, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 18, 1984, Ser. No. 662,001
Claims priority, application United Kingdom, Oct. 17, 1983, 8327737
Int. Cl.⁴ H01J *37/26*
U.S. Cl. 250—310 **26 Claims**



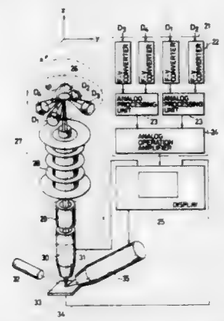
1. Electron detector apparatus for detecting secondary electrons released from a body; magnetic lens means having an axis of symmetry; means for supporting said body at a region of high field strength of said magnetic lens means; means for accelerating secondary electrons released from said body, through the magnetic lens means towards means for retarding said secondary electrons and classifying them according to their energies; said magnetic lens means for producing a magnetic field that progressively weakens along said axis from said accelerating means to said retarding means to cause said secondary electrons to travel through the magnetic lens means in progressively elongated helical paths to approach the retarding means at approach angles to the direction of said axis such that their approach speeds along the axial direction are substantially equal to their actual speeds.

4,658,138

SCANNING ELECTRON MICROSCOPE

Kazuyuki Koike, Nishitama, and Kazunobu Hayakawa, Chofu, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 15, 1985, Ser. No. 702,223
Claims priority, application Japan, Feb. 24, 1984, 59-32316
Int. Cl.⁴ G01N *23/00*
U.S. Cl. 250—310 **7 Claims**



1. A scanning electron microscope comprising means for emitting a fine electron beam to the upper surface of a magnetized sample, means for scanning the surface of said sample with said fine electron beam to enable discharge of secondary electrons from said sample, means for collecting secondary electrons from said sample, means for detecting a spin polarization vector of said collected secondary electrons according to a magnetization in the portion of said sample from which said secondary electrons are discharged, means for converting a component which is in an arbitrary direction in the surface of said sample, and/or a component which is in the normal direction of the surface of said sample, of said detected polarization vector into a video signal which is representative of an image obtained through said scanning electron microscope, and means for indicating said video image on a display so as to enable observation of a two-dimensional distribution of the magnetization vector on the surface of said magnetized sample.

4,658,139

NIGHT VISION REFLEX SIGHT

Thomas M. Brennan, Cambridge, and W. Michael Glasheen, North Reading, both of Mass., assignors to Baird Corporation, Bedford, Mass.

Filed Feb. 4, 1985, Ser. No. 697,758
Int. Cl.⁴ G02B *27/34*
U.S. Cl. 250—330 **4 Claims**

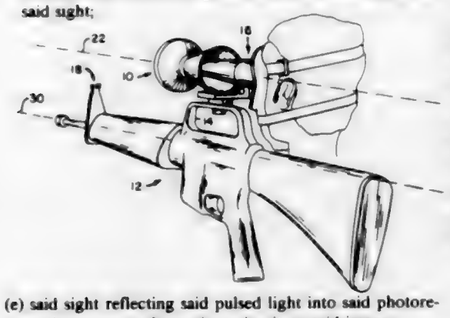
1. A combination passive night vision reflex sight device and a photoreceptive sensor, said combination comprising:

(a) a sight for passing an image of a scene along a line of sight, said sight including an entrance window mounted at an angle with respect to said line of sight, said angle being about 45° and a reflective film disposed on said entrance window;

(b) said photoreceptive sensor being aligned with said line of sight and viewing said image, said photoreceptive sensor

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being a night vision goggle system, with daylight capability;
(c) an exit window mounted between said entrance window and said photoreceptive sensor and normal to said line of sight;
(d) means for generating a pulsed light and for directing it at said sight, a collimator lens and a movable filter mounted between said means for generating said pulsed light and said sight;



(e) said sight reflecting said pulsed light into said photoreceptive sensor and superimposing it on said image;
(f) said night vision reflex sight device characterized by having a wide field of view of about 40°;
(g) said pulsed light being pulsed at a rate between about two to about twelve c.p.s.;
(h) a baffled housing for said sight structured to reduce non-image reflections back toward said scene; and
(i) a demountable flared light shield attachable to said reflex signal device about said exit window.

4,658,140
INFRARED SCANNER FOR FORWARD LOADING INFRARED DEVICE (FLIR)
Walter F. Roll, Blue Ridge, and Anthony R. Thedford, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed May 20, 1985, Ser. No. 736,025
Int. Cl.⁴ G02B *26/10*
U.S. Cl. 250—347 **10 Claims**

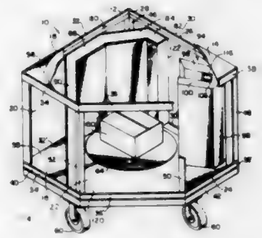


1. An apparatus for scanning infrared energy comprising a reflecting surface having a predetermined path of rotation, reflecting surface actuating means for actuating said reflecting surface to a location anywhere along said path of said reflecting surface, magnetic means for driving said reflecting surface and error determining means responsive to predetermined signals received from said reflecting surface for continuously controlling the position at all points along said path of said reflecting surface by controlling said reflecting surface actuating means to control the position of said reflecting surface along said path.

4,658,141
INORGANIC SCINTILLATOR CRYSTAL HAVING A HIGHLY REFLECTIVE SURFACE
Michael C. Wilt, Solon; Bradley K. Utts, Oakwood Village, and Michael L. Toth, Aurora, all of Ohio, assignors to Harshaw/-Filtrol Partnership, Cleveland, Ohio
Filed Apr. 3, 1984, Ser. No. 596,479
Int. Cl.⁴ G01T *1/20*
U.S. Cl. 250—361 R **10 Claims**

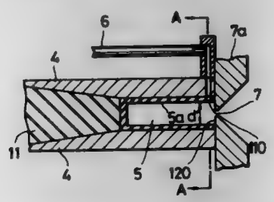
1. An inorganic scintIllation crystal selected from the group consisting of inorganic halides and inorganic oxides, said crystal having one surface optically coupled to a photodetector, and the remaining surfaces coated with a reflective layer, said layer having a thickness in the range of between about 3 and about 10 mils and adapted to internally reflect scintillation events being emitted by the crystal in the light range of 200–700 nanometers, said reflective layer comprising a coating of a first reflective material in contact with the crystal surface and selected from the group consisting of barium sulfate, aluminum oxide and magnesium oxide and a coating of a second reflective material consisting of titanium dioxide bonded to the first reflective coating by use of a compatible binder.

4,658,142
APPARATUS FOR DETECTING RADIATION IN A CONTAINER
Alfred N. Johnson, Voorhees, and Anthony J. Prisco, Beverly, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 10, 1984, Ser. No. 648,778
Int. Cl.⁴ G21F *3/00*; G01T *1/167*
U.S. Cl. 250—393 **14 Claims**



1. An apparatus for detecting the emission of radiation emanating from a sample while minimizing interference by background radiation comprising
an enclosure, said enclosure comprising a floor and a roof, said floor and said roof being comprised of radiation shielding material,
first and second radiation shielding sections, each of said shielding sections extending between said floor and said roof,
one of said radiation shielding sections being generally "U" shaped and comprising first and second side walls connected by another wall,
a platform for supporting a sample,
means for supporting said platform between said first and second radiation shielding sections for rotation about a vertical axis of rotation,
means for detecting radiation, said means for detecting being disposed in an elongated array which is disposed in parallel relation to said axis of rotation, said means for detecting being located between said first and second side walls and in generally facing relation to said second shielding section, and the facing surfaces of said first and second side walls diverge to define a sector from which said means for detecting detects radiation,
said second radiation shielding section extending across said sector so that said first and second radiation shielding sections, said floor and said roof cooperate to shield said radiation detectors from background radiation, said first and second radiation shielding sections being spaced from each other to define at least one opening therebetween, said opening being between said floor and said roof and being located outside of said sector so that the amount of said radiation shielding around said sample is minimized, said opening being of sufficient size to allow said sample to be placed on and removed from said support means.

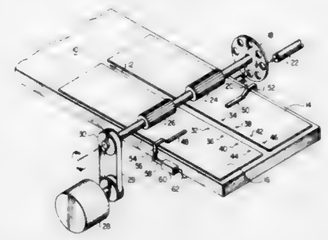
4,658,143
ION SOURCE
Katsumi Tokiguchi, Machida; Hidemi Koike, Tokorozawa; Noriyuki Sakudo, Ome; Osami Okada, Chofu; Ken Ninomiya, Tokyo, and Susumu Ozasa, Kashiwa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 14, 1985, Ser. No. 711,824
Claims priority, application Japan, Mar. 16, 1984, 59-49064; Mar. 16, 1984, 59-49065
Int. Cl.⁴ H01J *27/00*
U.S. Cl. 250—423 R **33 Claims**



1. An ion source including a microwave discharge chamber adapted to have a plasma therein generated in a feed gas introduce therein, a gas inlet for introducing said feed gas into said discharge chamber, and an ion beam exit slit for extracting ions from said plasma generated in the feed gas introduced into said discharge chamber, wherein the ion beam exit slit is located on an end surface of the discharge chamber, and wherein the distance d between the end surface of said discharge chamber on which said ion beam exit slit is disposed and said gas inlet, and the distance d' between the wall surface of the portion of said discharge chamber on which said gas inlet is disposed and a wall surface facing the former, satisfy the relation $d \leqq 2d'$, so as to reduce deposition onto the ion beam exit slit as compared to the deposition thereon when the distances d and d' do not satisfy said relation.

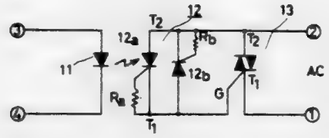
4,658,144
SYSTEM FOR ALIGNMENT AND FEEDING COOPERATING FABRIC PARTS IN SEWING OPERATIONS
Gene F. Croyle, Plano, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.
Filed Jul. 17, 1985, Ser. No. 756,392
Int. Cl.⁴ G01N *21/86*; G01V *9/04*
U.S. Cl. 250—548 **31 Claims**

1. An apparatus to align a plurality of objects comprising:
transport means for moving the objects concomitantly over a predetermined path;
positional detection means located along the path for determining the actual relative positions of the objects and comparing the determined relative position to a predetermined relative position to be maintained;
said positional detection means being operable to provide an alignment correction signal correlated to the differential between said determined actual relative position and said relative position of the objects to be maintained; and
repositioning means receiving the provided signal from said positional detection means and operable in response to receipt thereof for imposing a controlled resistance to the



movement of at least one object along said path by said transport means.

4,658,145
SOLID STATE RELAY
Hidekazu Awaji, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 528,658, Sep. 1, 1983, abandoned. This application Dec. 23, 1985, Ser. No. 814,160
Claims priority, application Japan, Sep. 2, 1982, 57-153617
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—551 **4 Claims**



1. A solid state relay comprising:
a conductive header;
a triac die bonded to said header;
a photothyristor circuit die bonded to said header, said photothyristor circuit including,
a photodiode receiving an input signal and developing light in relation thereto, and
first and second photothyristors cross-coupled in parallel, responsive to light developed by said photodiode,
said photothyristor circuit being connected to said triac to gate said triac in response to said input signal, said header including a first output terminal wherein an ON voltage of said photothyristor circuit is related to an ON voltage of triac such that said triac turns ON by a gate trigger current produced when said photothyristor circuit turns ON, said triac being ON resulting in a turning OFF of said photothyristor circuit thereby preventing a continuous flow of an inrush current to said photothyristor circuit; and
a second output terminal, said first and second output terminals being controlled in response to said input signal.

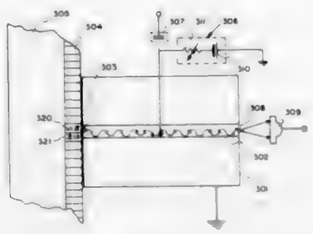
4,658,146
EXTENDED CAVITY LASER READOUT APPARATUS
Ken Clements, Santa Cruz, Calif., assignor to Laser Dynamics Inc., Santa Clara, Calif.
Filed Mar. 7, 1985, Ser. No. 709,267
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 250—566 **22 Claims**

1. An extended cavity laser readout apparatus for reading data from a recorded medium comprising:
a laser means having an active region for producing stimu-

lated emissions of radiation having a preferred polarization and a magnetic medium having said data recorded thereon which co-act to produce a standing wave of said radiation which extends through said active region to the surface of said magnetic medium, said data recorded on said magnetic medium comprising a plurality of magnetic domains, each of which produces a Kerr effect rotation of the polarization of said standing wave which, in cooperation with said preferred polarization of said standing wave, changes the amplitude of said standing wave;

means for moving said magnetic domains in said recorded medium in a transverse direction relative to said standing wave; and

means for detecting said changes in amplitude of said standing wave as said magnetic domains are moved relative to said standing wave.

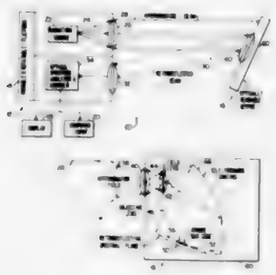


4,658,147

REMOTE OPTICALLY READABLE SYSTEM AND METHOD

Herman G. Eldering, Nutting Lake, Mass., assignor to Baird Corporation, Bedford, Mass.

Filed Apr. 3, 1985, Ser. No. 719,719
Int. Cl.⁴ G06K *7/10*
U.S. Cl. 250—566 **18 Claims**



1. A process for remotely identifying people and/or objects comprising:

(a) generating a beam of radiation representing a continuous spectrum;

(b) directing said beam of radiation at a device having a unique spectral signature and provided with means of generating a retroreflected beam of radiation spectrally encoded with said unique spectral signature; and

(c) analyzing and decoding said retroreflected beam of radiation;

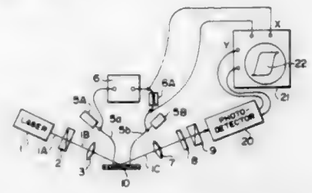
(d) said unique spectral signature comprising said retroreflected beam of radiation with certain wavelengths segments being removed therefrom.

4,658,148

INSPECTION METHOD FOR MAGNETIC HEAD UTILIZING THE KERR EFFECT

Hiroichi Naito, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Dec. 27, 1984, Ser. No. 686,529
Claims priority, application Japan, Dec. 29, 1983, 58-252005
Int. Cl.⁴ G01N *21/21*
U.S. Cl. 250—571 **5 Claims**



1. An inspection method for a magnetic head, which comprises the steps of:

(i) making a light beam impinge upon a light reflecting section of a magnetic head provided with a magnetic material layer having the light reflecting section on the surface,

(ii) photoelectrically detecting a change in characteristics of said light beam reflected by said light reflecting section, which is caused by the Kerr effect in accordance with a change in internal magnetization of said magnetic material layer, and

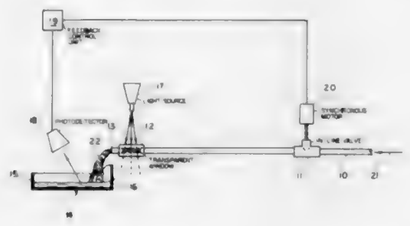
(iii) measuring the magnetic characteristics of said magnetic head on the basis of the detection output.

4,658,149

METHOD AND APPARATUS FOR MEASURING THE DEPTH OF A FLOWING LIQUID

Ronald E. Miranda, and Particia M. Miranda, both of 7003 O'Neill Dr., Amarillo, Tex. 79109

Filed Aug. 19, 1985, Ser. No. 766,529
Int. Cl.⁴ G01F *23/28*
U.S. Cl. 250—577 **5 Claims**



1. A method for measuring the depth of a flowing fluid, and controlling the flow rate of said fluid based upon said depth measurement comprising:

(a) conducting a fluid through a conduit having a flow controlling device, a window portion, and a substantially horizontally directed exit terminus,

(b) directing a beam of light of known intensity onto said window portion,

(c) permitting said fluid to fall by gravity from said exit terminus into a reservoir having a reflective flat bottom,

(d) measuring the intensity of light reflected upwardly from said flat bottom, and converting said measured intensity into an electrical signal, and

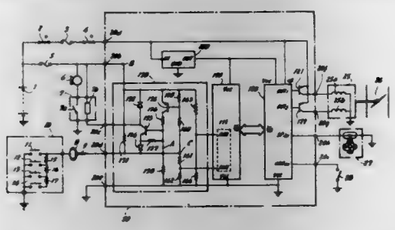
(e) causing said electrical signal to manipulate said flow controlling device.

4,658,150

IMPEDANCE DISCRIMINATOR RESPONSIVE TO OPERATION OF SWITCHES MOUNTED ON A STEERING WHEEL

Yoshikazu Mizuno, Aichi; Yutaka Ninoyu, Anjo; Motoyoshi Suzuki, and Akira Ikuma, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 3, 1984, Ser. No. 576,899
Claims priority, application Japan, Feb. 4, 1983, 58-17856
Int. Cl.⁴ H02J *1/00*
U.S. Cl. 307—10 R **7 Claims**



1. Apparatus responsive to the operation of switches mounted on the steering wheel of an automotive vehicle, one of said switches being operated when a horn is activated, comprising:

an impedance circuit having a plurality of first impedance elements connected in series between terminals of a voltage source;

a second impedance element connected in series with said first impedance element and feeding a current from a battery mounted on said vehicle to said first impedance elements and generating a first potential corresponding to the operated switch at a junction between said first impedance elements and said second impedance element;

potential responsive means connected in parallel with said second impedance element and sensing when said first potential reaches a predetermined value and activating said horn when said predetermined value is reached;

a resistance network coupled to said junction and said battery and developing a first voltage corresponding to said first potential and a second voltage corresponding to the potential of said battery; and

a resistance network comprising a pair of first and second resistors conected in series to said junction to develop said first voltage at a junction between said first and second resistors and a pair of third and forth resistors connected in series between terminals of said battery for developing said second voltage at a junction between said third and fourth resistors, said first and third resistors being equal in resistance value and said second and fourth resistors being equal in resistance value; and

discriminating means connected to said resistance network and generating a control signal in accordance with the relative value of said first voltage to said second voltage.

4,658,151

BATTERY-SUPPORTED INTEGRATED SWITCHING ELEMENT

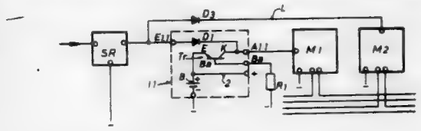
Paul Wyser, and Heinrich Uebelhart, both of Itingen, Switzerland, assignors to Renata AG, Itingen, Switzerland

Filed Jan. 29, 1985, Ser. No. 696,010
Claims priority, application Switzerland, Feb. 20, 1984, 813/84
Int. Cl.⁴ H02J *9/02*
U.S. Cl. 307—66 **7 Claims**

1. A battery-supported integrated switching element, comprising a cup-shaped housing (3;3') provided with a hollow space (3'), containing:

a primary battery (B) of the gas-tight type; a number of spacers (6; 25–28) which keep the battery (B) at a distance from a cover plate (4) in the hollow space (3') of the housing, and a number of stop elements (5.2, 5.3, 7, 10; 5.2, 5.3, 7.1, 28.1) which laterally center the battery in the hollow space (3') of the housing;

a wiring arrangement consisting of semiconductor switching elements and conductor connections (8, 13/13', 15–18/18')



and a number of holding devices (11, 12, 14, 29) which fix the wiring elements in the hollow space of the housing; and

a casting compound (19) which envelops in a gastight manner the battery (B) and the wiring elements in the hollow space of the housing.

4,658,152

ADAPTIVE RATE MULTIPLEXER-DEMULTIPLEXER

Stephen M. Walters, Holmdel, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Dec. 4, 1985, Ser. No. 804,689
Int. Cl.⁴ H04J *3/22, 3/00*
U.S. Cl. 370—84 **26 Claims**



1. A multiplexer-demultiplexer for multiplexing a plurality of digital subchannels into a transmit bit stream on a fixed rate channel and for demultiplexing a receive bit stream from the fixed rate channel into the plurality of digital subchannels, the transmit and receive bit streams being organized in frames having a frame structure consisting of a fixed number of bits, the number of bits per frame being determined as a function of the rates of the digital subchannels and the rate of the fixed rate channel, said multiplexer-demultiplexer comprising,

memory means for storing the bit assignment pattern of the frame structure,

plural transmit and receive bit storage means, one transmit and one receive bit storage means associated with each one of the digital subchannels, each transmit bit storage means for storing bits from its associated digital subchannel to be multiplexed into the transmit bit stream and each receive bit storage for storing bits from the receive multiplexed bit stream to be distributed to its associated digital subchannel,

bit distribution means connected to said memory means, said plural transmit and receive bit storage means, and the fixed rate channel, for selecting in accordance with said stored bit assignment pattern bits from said plural transmit bit storage means to form said transmit bit stream and for distributing in accordance with said stored bit assignment pattern bits in said receive bit stream to said plural receive bit storage means, and

plural clocking means, one clocking means associated with each one of the digital subchannels for generating a clock signal that clocks bits between the one digital subchannel and the transmit and receive bit storage means associated with that one digital subchannel at the rate of the one subchannel, each of said plural clocking means each responsive to the frame structure for automatically generating its clock signal at the rate of the associated digital subchannel,

wherein said multiplexer-demultiplexer is adaptive to the frame structure stored in said memory means as a function of the rates of the plural digital subchannels and the fixed rate channel.

4,658,153

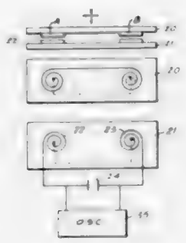
PLANAR COIL APPARATUS FOR PROVIDING A FREQUENCY OUTPUT VS. POSITION

Amnon Brosh, 16 Sunnyside Dr., Montvale, N.J. 07645, and David Fiori, Jr., 140 Dollington Rd., Yardley, Pa. 19047

Continuation of Ser. No. 621,997, Jun. 18, 1984, abandoned. This application May 12, 1986, Ser. No. 864,737

Int. Cl.⁴ H01H *36/00*

U.S. Cl. 307—106 **16 Claims**



1. Apparatus for providing an output signal indicative of a movement between at least a first and second position, comprising:

(a) a first stationary planar member having disposed on a first surface thereof a flat serpentine coil structure with said coil having output terminals,

(b) an oscillator circuit coupled to said output terminal of said coil and operative to provide an output frequency said oscillator including a capacitor which capacitor forms a resonant circuit with said coil to provide said output frequency from said oscillator which frequency varies according to the magnitude of the inductance of said coil,

(c) a second movable planar member having disposed on a surface thereof a closed loop coil structure,

(d) means for moving said second planar member with respect to said first planar member, modulating the equivalent inductance of said coil structure and to thereby vary the resonant frequency of said oscillator in accordance with the position of said second member with respect to said first member, to cause said oscillator to provide said output frequency which varies monotonically and continuously in accordance with the position of said second member with respect to said first member.

4,658,154

PIEZOELECTRIC RELAY SWITCHING CIRCUIT

John D. Harndes, Jr., Schenectady, and William P. Kornrumpf, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1985, Ser. No. 811,782

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 307—132 R **18 Claims**

1. A relay switching circuit for controlling the flow of power current to a load, said circuit comprising in combination:

A. a piezoelectric relay including

(1) a first terminal for conection to a source of power,

(2) a second terminal for connection to a load,

(3) a bimorph actuator member having first and second prepolarized poezoceramic plates,

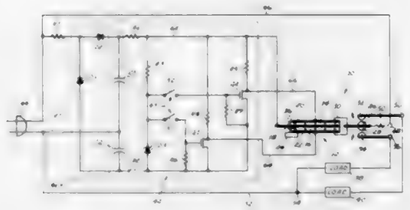
(4) a movable contact,

(5) at least one stationary contact,

(6) said actuator members in its quiescent state supporting said movable contact in spaced relation to said stationary contact; and

B. relay control circuitry including

(1) a voltage conversion circuit for direct ohmic connection to a utility source of AC voltage and connected to



said actuating member, said voltage conversion circuit having a diode-capacitor network for developing a high DC supply voltage,

(2) a high voltage integrated circuit connected with said voltage conversation circuit and including at least one active device connected with said actuator member, and

(3) means activating said active device to selectively apply said supply voltage across one of said first and second plates,

(4) whereby said actuator member deflects to position said movable contact in engagememnt with said stationary contact to thereby complete a circuit between said first and second relay terminals connecting the source with the load.

4,658,155

DRIVE CIRCUIT FOR A PIEZOELECTRIC ACTUATOR

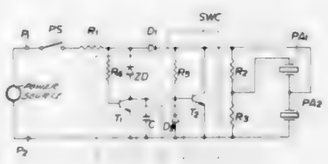
Masatoshi Ohba, Nagaokakyo; Ryuichi Sato, and Tsutomu Taniguchi, both of Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 601,529, Apr. 18, 1984, abandoned. This application Apr. 21, 1986, Ser. No. 856,856

Claims priority, application Japan, Apr. 19, 1983, 58-59165

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 307—154 **4 Claims**



1. A drive circuit used for driving a piezoelectric actuator, comprising:

a pair of power input terminals for receiving any one of AC or DC power;

a piezoelectric actuator connected between the power input terminals;

means for supplying current for driving the piezoelectric actuator in one direction interposed between one of the power input terminals and an end of the piezoelectric actuator;

switching means having a high resistance state when switched on and serving as an active discharge path for the electric charges of the piezoelectric actuator when said drive circuit is switched off, and switching means being connected in parallel to the piezoelectric actuator and;

discharge prohibiting means for maintaining said switching means in the high resistance state when said pair of input terminals receives any one of AC or DC power.

4,658,156

VOLTAGE DETECTION CIRCUIT FOR DETECTING INPUT VOLTAGE LARGER IN ABSOLUTE VALUE THAN POWER SUPPLY VOLTAGE

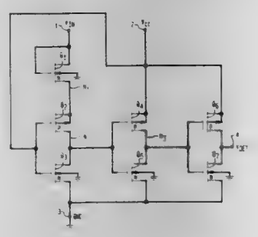
Kiyokazu Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 7, 1984, Ser. No. 679,450

Claims priority, application Japan, Dec. 8, 1983, 58-231855

Int. Cl.⁴ H03K *5/153;* **G11C** *8/00;* **G01R** *31/28*

U.S. Cl. 307—350 **4 Claims**



1. A detection circuit for detecting an application of an input voltage which is higher in absolute value than a power voltage, comprising:

an input terminal supplied with said input voltage;

a power terminal supplied with said power voltage;

a reference terminal supplied with a reference potential;

a first field effect transistor having drain-source current path connected between said input terminal and said first node and a gate short-circuited with a drain, said first field effect transistor operating as a diode to supply said first node with a voltage that is lower in absolute value than said input voltage by a threshold voltage of said first field effect transistor;

a second field effect transistor having a drain-source current path connected between said first node and said second node and a gate connected directly to said power terminal;

a third field effect transistor having a source-drain current path connected between said second node and said reference terminal and a gate connected directly to said power terminal, said second and third field effect transistors being different in conductivity type from each other; and

an inverter operative with said power voltage and said reference potential and having its input terminal connected to said second node, said inverter producing a detection output signal indicating that said input voltage has a level higher in absolute value than a sum voltage of said power voltage, said threshold voltage of said first field effect transistor and a threshold voltage of said second field effect transistor.

4,658,157

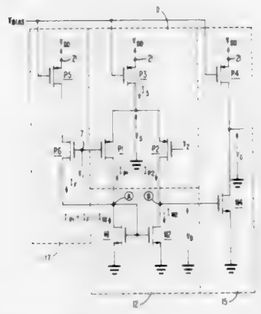
IGFET COMPARATOR CIRCUIT HAVING GREATER CONTROL OF INTENDED OFFSET VOLTAGE

Michael J. McGowan, New Brunswick, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 31, 1985, Ser. No. 739,819

Int. Cl.⁴ H03K *5/24;* **H03F** *3/16, 3/45*

U.S. Cl. 307—355 **5 Claims**



1. The combination comprising:

first and second power terminals for the application therebetween of an operating potential;

first, second, third, fourth and fifth insulated-gate field-effect transistors (IGFETs), each IGFET having source and drain electrodes defining the ends of a conduction path and a control electrode;

means connecting the conduction path of said first IGFET between said first power terminal and a first signal node;

means connecting the conduction path of said second IGFET between said first signal node and a second signal node;

means connecting the conduction paths of said third and fourth IGFETs in series between said first power terminal and said second signal node;

means for applying a fixed bias voltage to the control electrodes of said first and third IGFETs;

first and second signal input terminals for the application therebetween of a variable differential input signal;

means connecting the control electrodes of said second and fourth IGFETs to said first signal input terminal for controlling the current level in said second and fourth IGFETs as a function of the voltage level at said signal input terminals;

a third signal node for the production thereat of an output signal;

means connecting the conduction path of said fifth IGFET between said first and third signal nodes;

means connecting the control electrode of said fifth IGFET to said second signal input terminal; and

a load means connected between said second and third signal nodes and said second power terminal.

4,658,158

VOLTAGE SENSE AMPLIFIER USING NMOS

Ngaiman Chau, Flintridge; John W. Wu, Torrance; Neng-Tze Yang, Rancho Palos Verdes, and Eugene J. Mar, Sunnyvale, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 3, 1980, Ser. No. 165,518

Int. Cl.⁴ H03K *5/24;* **G11C** *7/06, 11/40*

U.S. Cl. 307—530 **5 Claims**

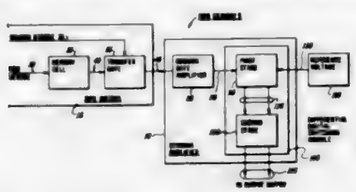
1. A memory system comprising:

a plurality of memory cell transistors, each of which produces an output bit signal at its drain which is either high or low,

a decoding means for selecting one output bit signal,

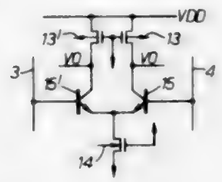
an amplifier comprising:

(1) a first impedance load connected to a supply voltage,
(2) a first transistor coupling said first load to said decoding means output,
(3) a first clamp to prevent the voltage at the point between said first impedance and said first transistor to drop below a predetermined voltage,
a reference voltage generator comprising:
(1) a second impedance load generally similar to said first load, connected to said supply voltage,
(2) a reference transistor coupled to said second load to produce a low output bit reference signal, said reference



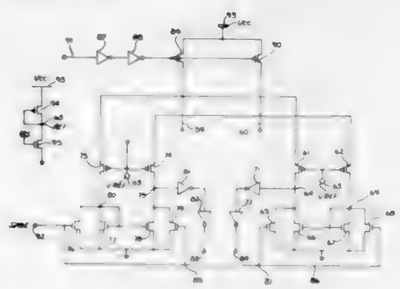
transistor being generally similar to said memory cell transistors,
(3) a second clamp to prevent the voltage at the point between said second impedance and said reference transistor to drop below said predetermined voltage, and
(4) a voltage divider to produce a reference voltage halfway between said supply voltage and the voltage at the point between said reference transistor and said second clamp, and
a differential amplifier where one input is the voltage at said first clamp and the second input is the reference voltage.

4,658,159
SENSE AMPLIFIER CIRCUIT FOR SEMICONDUCTOR MEMORY DEVICE
Junichi Miyamoto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 523,764, Aug. 17, 1983, abandoned. This application Apr. 9, 1986, Ser. No. 850,082
Claims priority, application Japan, Aug. 20, 1982, 57-144235
Int. Cl.⁴ H03K 5/24; G11C 7/06
U.S. Cl. 307—530 **5 Claims**



1. A sense amplifier circuit comprising:
first and second sensing transistors each having a control electrode;
first and second load elements connected to respective ones of said first and second sensing transistors;
a constant voltage supply termined connected to said first and second load elements;
first and second input terminals coupled to respective ones of said control electrodes of said first and second sensing transistors;
first and second output terminals coupled to respective connecting points of said first and second sensing transistors and said load elements; and
a constant current supply connected between said first and second sensing transistors and a second constant voltage supply terminal;
wherein said sensing transistors are bipolar type transistors, said load elements are MOS type transistors of a first channel type with the voltage applied between the gate and the source of said transistors being a constant value,
said constant current supply comprising a MOS type transistor of a complementary channel type, and
the conductance value of said load element is much larger than that of said constant current supply.

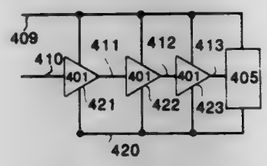
4,658,160
COMMON GATE MOS DIFFERENTIAL SENSE AMPLIFIER
Ian A. Young, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
Filed Oct. 1, 1985, Ser. No. 782,998
Int. Cl.⁴ H03K 5/24; G11C 7/06
U.S. Cl. 307—530 **17 Claims**



1. A FET sense amplifier for sensing first and second data lines, said sense amplifier comprising:
first and second common gate transistors of a first conductivity type and each having an input and an output, said first transistor having its input coupled to said first data line and said second transistor having its input coupled to said second data line
third and fourth common gate transistors of said first conductivity type and each having an input and an output, said third transistor having its input coupled to said first data line and said fourth transistor having its input coupled to said second data line;
said gates of said first, second, third and fourth transistors coupled to a reference voltage independent of said first and second data lines;
first active loads coupled to the output of said first and second common gate transistors;
second active loads coupled to the output of said third and fourth common gate transistors;
first and second output lines coupled to said first and second active loads.

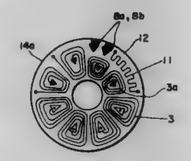
4,658,161
SPLIT PHASE LOOP
John R. Spencer, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 13, 1985, Ser. No. 765,731
Int. Cl.⁴ H03K 5/13, 5/159
U.S. Cl. 307—603 **11 Claims**

1. An apparatus for generating a clock edge referenced to a clock, the apparatus comprising:
first variable delay means having an input line to carry an input signal, an output line to carry an output signal and a control line to carry a control signal for delaying the input signal by a first delay interval to generate the output signal, the output signal being the clock edge, the input line connected to the clock, the first delay interval responsive to the control signal;
second variable delay means having an input line to carry an input signal, an output line to carry an output signal and a control line to carry a control signal for delaying the input signal by a second delay interval to generate the output signal, the input line connected to the output line of the first variable delay means, the second delay interval responsive to the control signal; and



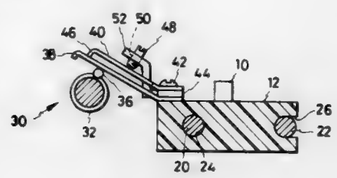
comparator means having a first and second input line to carry a first and second signal and an output line to carry a control signal for comparing the first signal to the second signal and generating the control signal, the first input line connected to the clock, the second input line connected to the output line of the second variable delay means, the output line connected to the control line of the first and second variable delay means for increasing the first and second delay intervals if the second signal occurs before the first signal or decreasing the first and second delay intervals if the first signal occurs before the second signal.

4,658,162
PRINTED COIL UNIT FOR SMALL SIZE ACTUATOR
Ryouhei Koyama, Hyuga, and Yoshinobu Haruta, Tokyo, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jul. 23, 1985, Ser. No. 758,070
Claims priority, application Japan, Jul. 23, 1984, 59-110243[U]; Aug. 28, 1984, 59-129295[U]; Aug. 29, 1984, 59-129845[U]; May 17, 1985, 60-104076
Int. Cl.⁴ H02K 11/00
U.S. Cl. 310—68 R **15 Claims**



1. A printed coil unit for an actuator of a small size comprising at least one printed coil sheet having opposed planar surfaces separated by a defined thickness; a magnet magnetized so as to present at least one magnetic pole in a given plane, said printed coil sheet being disposed in opposition to said magnet and having at least one spiral conductor pattern deposited in said plane,
wherein at least one magnetic sensor element having a thickness smaller than said defined thickness of said printed coil sheet, is formed in a region of said printed coil sheet located in the vicinity of and outside of said spiral conductor patterns, said magnetic sensor element being confined within the exposed surfaces of said printed coil sheet.

4,658,163
ROTARY TO LINEAR CONVERTER EMPLOYING A LEAD SCREW, FOR USE IN A FLEXIBLE MAGNETIC DISK DRIVE OR THE LIKE
Kazuhiko Inoue, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan
Filed Mar. 18, 1986, Ser. No. 840,872
Claims priority, application Japan, Mar. 25, 1985, 60-42965[U]
Int. Cl.⁴ H02K 7/06
U.S. Cl. 310—80 **5 Claims**



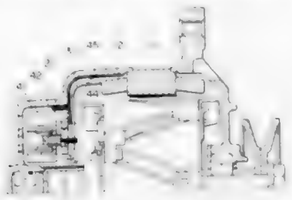
1. A rotary to linear converter for translating the bidirectional rotation of a rotary actuator into the rectilinear reciprocation of a guided member along a predetermined path, as in a data transfer apparatus wherein the bidirectional rotation of a drive motor is translated into the rectilinear reciprocation of a head carriage in a radial direction of a disklike record medium, the rotary to linear converter comprising:
(a) a lead screw to be driven by the rotary actuator and extending parallel to the predetermined path of the guided member, the lead screw having a helical groove cut therein;
(b) an engagement member slidably engaged in the helical groove in the lead screw;
(c) a first cantilever spring to be anchored to the guided member and extending across the lead screw, the first cantilever spring supporting the engagement member and urging the same against the lead screw;
(d) a second cantilever spring also to be anchored to the guided member and acting on the first cantilver spring for urging the engagement member against the lead screw in coaction with the first cantilever spring; and
(e) adjustment means to be mounted to the guided member for adustably varying the force exerted by the second cantilever spring on the first cantilever spring and, in consequence, the total force of the first and second cantilever springs under which the engagement member is urged against the lead screw.

4,658,164
VEHICLE GENERATOR
Hitoshi Gotoh, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 26, 1985, Ser. No. 801,876
Claims priority, application Japan, Nov. 27, 1984, 59-180473[U]
Int. Cl.⁴ H02K 5/00
U.S. Cl. 310—89 **4 Claims**

1. A vehicle generator comprising a rotor rotatably arranged in a housing, a stator surrounding said rotor and having a coil with lead wires extending therefrom, metallic rear bracket for fixing said stator, a rectifier disposed within said rear bracket, and a windscreen of an electrically insulating material mounted

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on said rectifier and having an electrically insulating wall, said insulating wall extending substantially along the inner surface



of said rear bracket so as to insulate said lead wires of said stator coil from said rear bracket.

4,658,165

ROTATING MACHINES WITH MAGNETS ON THE ROTOR

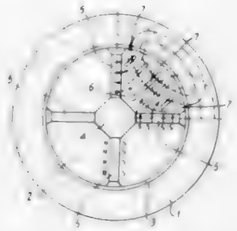
Christian Vanderschaeghe, Goncsse, France, assignor to Precision Mecanique Labinal, France

Filed Jul. 9, 1984, Ser. No. 628,900

Claims priority, application France, Jul. 7, 1983, 83 11325

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—156 **11 Claims**



1. A rotating machine comprising a rotor and a stator, a non-magnetic shaft located centrally of said rotor, a plurality of permanent magnets arranged radially on said rotor and carried by said shaft and joined together respectively by pole pieces in the form of a sector of a circle so as to concentrate the flux of the magnets toward the stator, and pole pieces extending radially between said non-magnetic shaft and the outer periphery of said rotor, between their respective magnets, each of said pole pieces including a plurality of elongated slots arranged to oppose the propagation of magnetic fluxes of armature reaction, said slots extending essentially radially of the associated pole piece, and terminating at least close to the periphery of the pole piece.

4,658,166

SYNCHRONOUS ELECTRIC MOTOR WITH DISC-SHAPED PERMANENT MAGNET ROTOR

Claude Oudet, Besancon, France, assignor to Portescap, Chaux-de-fonds, Switzerland

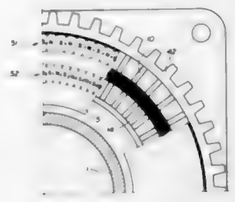
Filed May 8, 1986, Ser. No. 860,813

Claims priority, application Switzerland, May 10, 1985, 1999/85

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—156 **11 Claims**

1. A synchronous electric motor, comprising at least one rotor part, substantially of annular disc form, magnetised so as to present on at least one of its opposite planar surfaces at least one series of magnetic poles of alternating polarities, disposed regularly along at least one annular zone, said rotor part being mounted on a rotatable shaft, the motor additionally comprising at least one assembly of several elementary magnetic circuits of a magnetically permeable material and at least one annular electric energizing coil coupled with said assembly of magnetic circuits, each of said circuits having at least one air-gap, and all of said air-gaps being arranged for co-operating with the said magnetic poles of an annular zone of said rotor part, each of said elementary magnetic circuits comprising at least two rectangular and essentially flat pole parts, which are arranged substantially radially with respect to said shaft of the



rotor, two pole parts of each magnetic circuit being arranged at different radial distances on a same side of said magnetised rotor part, each elementary magnetic circuit thus presenting two radially spaced air-gaps and co-operating with two concentric annular zones of said magnetised rotor part, and said electrical energizing coil being inserted into the space formed between said pole parts of the magnetic circuits with which it is coupled.

4,658,167

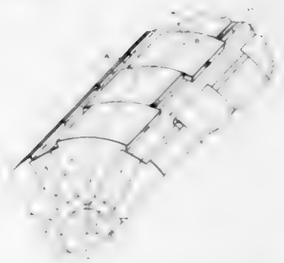
ROTOR WITH PERMANENT MAGNETS FOR AN ELECTRICAL MACHINE

Entcho N. Popov; Rumen K. Apostolov; Georgi A. Georgiev; Hristo B. Katzarov, and Julii S. Penkov, all of Sofia, Bulgaria, assignors to DSO "ELPROM" , Sofia, Bulgaria

Filed May 28, 1985, Ser. No. 738,596

Int. Cl.⁴ H09K *1/28, 21/08*

U.S. Cl. 310—156 **2 Claims**



1. An electrical machine rotor comprising a central shaft,

a plurality of permanent magnets arranged equi-angularly and radially equidistant about said shaft, said magnets being substantially parallelpiped in shape and extending along the length of the shaft,

a plurality of pole pieces, each of which is placed between two adjacent magnets, said pole pieces being of substantially wedge shape, thereby having two linear sides defining an angle and an arc, said arc being the outer peripheral surface of said pole piece, said linear sides being the portions of the pole piece adjacent to said magnets,

each of said pole pieces being cut such that its arc has an angular recess at one linear side where the arc has the same radial dimension as its adjacent magnet, and an angular projection at the other linear side where said arc partially overlaps its adjacent magnet,

each magnet being flanked on one side by an overlapping pole piece arc and on the other side by a pole piece arc having the same radial dimension as said magnets.

4,658,168

DEVICE FOR MONITORING THE CIRCUMFERENTIAL SPEED OF A TOOTHED DISC CAPABLE OF BEING ROTATED

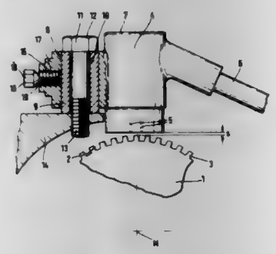
Juan Belart, Walldorf, Fed. Rep. of Germany, and Andre Goossens, Rumst, Belgium, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 17, 1984, Ser. No. 631,626

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327400

Int. Cl.⁴ H02K *19/20*

U.S. Cl. 310—168 **4 Claims**



1. A device for monitoring the circumferential speed of a toothed disc which is capable of being rotated, a sensor arranged at a defined distance from the toothed rim of the toothed disc and with a sensor casing supported at and removably secured to a stationary guide member, wherein a bushing (9) is adapted to be fixed to a carrier element (14) by first screw means and is employed as said guide member, said bushing (9) projecting into a bore (8) of said casing (7) and wherein a threaded bore (15) is disposed in said casing (7), said threaded bore (15) adapted to hold a second screw means (16) in contact with said bushing (9).

4,658,169

SYNCHRONOUS MACHINE WITH COIL HALVES

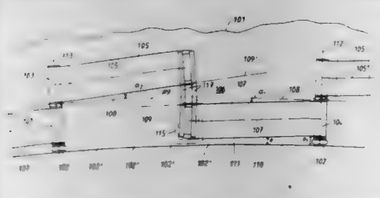
Hans Eckerrot, Oskarshamn; Knut Eriksson, and Bengt Rothman, both of Västerås, all of Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Continuation-in-part of Ser. No. 399,082, Jul. 16, 1982. This application Nov. 13, 1984, Ser. No. 670,458

Claims priority, application Sweden, Sep. 7, 1981, 8105291

Int. Cl.⁴ H02K *3/04*

U.S. Cl. 310—208 **4 Claims**



1. A high voltage synchronous machine with a rotor and an annular stator core surrounding said rotor;

said stator core having a plurality of axially extending and radially inwardly directed winding slots;

a stator winding disposed in said winding slots;

said winding consisting of coils, each coil comprising a bottom coil half and a top coil half;

each of said coil halves having a rectangular cross-section with identical center lines which are congruent and comprising a bundle of transposed strands extending along the entire coil half and being insulated from each other;

said bottom coil half having a straight bottom portion located at the bottom of a first winding slot, and a bottom end half;

said top coil half having a straight top portion located near the slot opening of a second winding slot, and a top end half;

in each coil half the end half is shaped and oriented in relation to its respective straight portion so that at least a part of the top end half lies closer to the machine axis than does said straight top portion, and that the bottom end half lies further from the machine axis than does said straight bottom portion; and

a connecting device for connecting the ends of said top end connection half and said bottom end half remote from said straight portions, whereby said straight top and bottom portions are connected to each other at a stator end.

4,658,170

ROTOR FOR A SUPERCONDUCTING ROTATING ELECTRIC MACHINE

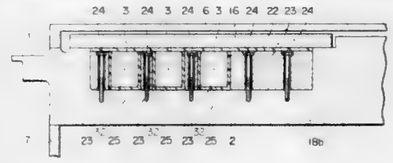
Akinori Ueda, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1985, Ser. No. 751,943

Claims priority, application Japan, Jul. 5, 1984, 59-140801

Int. Cl.⁴ H02K *3/48*

U.S. Cl. 310—214 **5 Claims**



1. A rotor for a superconducting rotating electric machine comprising:

a plurality of superconducting field coils each of which has straight portions, arcuate portions at the ends of the straight portions, and corners connecting said straight portions and said arcuate portions;

a coil-carrying shaft in which are formed a plurality of longitudinally-extending straight coil slots and a plurality of circumferentially-extending coil slots connected to the ends of said straight coil slots, each of said straight coil slots having housed therein a straight portion of one of said field coils and each of said circumferentially-extending coil slots having housed therein the arcuate portions and the corners of a plurality of said field coils;

a plurality of wedges which fit into wedge grooves formed in said coil-carrying shaft adjoining said straight coil slots, said wedges fitting over the straight portions of said field coils so as to restrain the straight portions of said field coils against centrifugal forces;

a retaining ring which is shrink fit on said coil-carrying shaft over said circumferentially-extending slots so as to restrain the arcuate portions and corners of said field coils against centrifugal forces; and

retaining members which are secured by connectors in said circumferentially-extending slots adjacent to the arcuate portions and corners of said field coils, which are rigidly secured to the bottom surfaces of said circumferentially-extending slots, which completely fill the spaces between adjacent field coils and between said field coils and the sides of said circumferentially-extending slots so as to restrain the arcuate portions and the corners of said field coils against movement, and which have a coefficient of

thermal expansion substantially equal to that of the coil-carrying shaft.

4,658,171

ENGINE FOR CONVERSION OF THERMAL RADIATION TO DIRECT CURRENT

James M. Hawley, 4272 Queen Ave. S., Minneapolis, Minn. 55410

Filed Jul. 15, 1985, Ser. No. 754,591
Int. Cl.⁴ H02N *7/00*
U.S. Cl. 310—306 **5 Claims**



1. An engine for converting thermal energy to electrical current comprising:

a. means for emitting thermal energy, said emitting means having a temperature no greater than 3500 degrees Centigrade and no less than 100 degrees Centigrade;

b. at least one dipole antenna having a length no greater than eight microns and no less than one micron, said antenna being located to receive energy from said emitting means, said antenna is turned to said emitting means by having a length of $L=B/2T$, where L=length, $B=2.898\times10^{-3}$ meters degrees Kelvin, and T=temperature of said emitting means in degrees Kelvin; and,

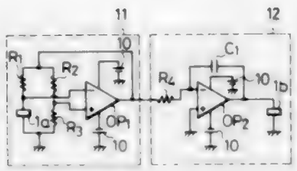
c. an AC/DC rectifier means connected to said antenna, said rectifier means having a pair of output terminals for connecting to a load and providing full wave rectification.

4,658,172

DRIVE CIRCUIT FOR A VIBRATION WAVE MOTOR

Kazuhiro Izukawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1985, Ser. No. 699,319
Claims priority, application Japan, Feb. 10, 1984, 59-24023
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—316 **12 Claims**



1. A drive circuit for a vibration wave motor driven by a travelling vibration wave, comprising:

(a) an electrostrictive device for picking up a vibration of the vibration wave motor and generating an electric signal;

(b) an oscillation circuit having a resonant circuit including said electrostrictive device, an oscillation frequency thereof which is changed in accordance with said electrical signal representative of the vibration picked up by said electrostrictive device; and

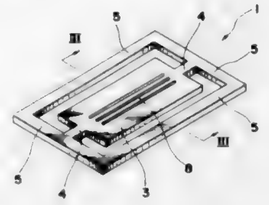
(c) means for applying a signal representative of the output of said oscillation circuit to said vibration wave motor.

4,658,173

PIEZOELECTRIC VIBRATOR AND METHOD OF ADJUSTING VIBRATING FREQUENCY THEREOF

Takeshi Nakamura, Uji, and Ikuo Matsumoto, Nagaokakyo, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Nov. 14, 1985, Ser. No. 798,026
Claims priority, application Japan, Nov. 19, 1984, 59-245625
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—321 **6 Claims**



1. A piezoelectric vibrator device comprising:

a vibrating plate;

piezoelectric means on said vibrating plate for vibrating said plate in the expansion mode vibration in a direction between two opposite side edges of said plate; and

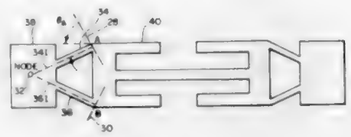
groove means in the surface of said vibrating plate other than the portion on which said vibrating means is positioned, said groove means being substantially midway between said side edges and extending perpendicular to the direction of vibration between the two opposite side edges of the plate and extending into the material of the plate for reducing the speed of propagation of the vibrations.

4,658,174

VIBRATING BEAM FORCE TRANSDUCER WITH ANGLED ISOLATOR SPRINGS

William C. Albert, Parsippany, N.J., assignor to The Singer Company-Kearfott Division, Little Falls, N.J.

Filed Mar. 20, 1986, Ser. No. 841,982
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—323 **11 Claims**



1. An apparatus comprising:

a member adapted to vibrate in a plane along the longitudinal axis;

means connected to the member for maintaining the vibration of the member at a characteristic frequency;

an isolation mass secured to each end of the member, each isolation mass including a base extending transversely from the longitudinal axis in both directions;

an end mount positioned in parallel spaced relation to the base of each isolation mass;

a pair of non-parallel spaced isolator springs coupling each isolation mass to the corresponding end mount, each isolator spring being positioned perpendicularly to a locus of motion located proximately at the base of the isolation mass, the locus of motion intersecting the junction of the base where the isolation spring is coupled to the isolation mass, the locus of motion being representative of the

direction of motion of the force and moment reactions produced at the root of the vibrating member;

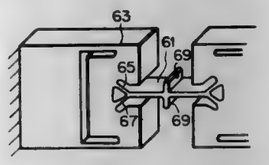
whereby energy losses from the vibrating member are substantially eliminated.

4,658,175

VIBRATING BEAM FORCE TRANSDUCER WITH A-FRAME BEAM ROOT AND FREQUENCY ADJUSTING MEANS

William C. Albert, Parsippany, N.J., assignor to The Singer Company-Kearfott Division, Little Falls, N.J.

Filed Mar. 26, 1986, Ser. No. 844,479
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—323 **20 Claims**



1. In a vibrating beam force transducer comprising a piezoelectric beam structure having first and second ends, and means for inducing a vibration in the piezoelectric beam, the improvement comprising:

an adjustment mass formed at the center of said beam, said adjustment mass made up of said piezoelectric material, whereby parts of said adjustment mass can be broken off to adjust the bias frequency of said vibrating beam; and

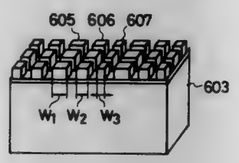
further including first and second legs at each end of said beam for directly mounting said beam to a support structure or mass.

4,658,176

ULTRASONIC TRANSDUCER USING PIEZOELECTRIC COMPOSITE

Chitose Nakaya, Nishitama; Hiroshi Takeuchi, Matsudo, and Kageyoshi Katakura, Meguro, all of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corporation, both of Tokyo, Japan

Filed Jul. 23, 1985, Ser. No. 758,029
Claims priority, application Japan, Jul. 25, 1984, 59-152930; Aug. 24, 1984, 59-174979; Nov. 2, 1984, 59-230223
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—334 **7 Claims**



1. An ultrasonic transducer using a piezoelectric composite comprising:

a piezoelectric composite consisting of a plurality of piezoelecric poles arranged maintaining a gap relative to each other, and a polymer charged into the gaps; and

electrodes formed on the upper and lower surfaces of said piezoelectric composite;

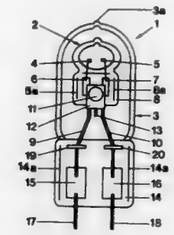
wherein each pitch defined by the sum of the width of one of said piezoelectric poles and the width of said gap is smaller than a wavelength that is determined by a fundamental resonance frequency of the transducer and the speed of sound in a wave propagating medium.

4,658,177

ELECTRIC LAMP WITH ORIENTED CURRENT CONDUCTORS EXTENDING THROUGH A PRESS SEAL

Achim Goeslar, and Jürgen Heider, both of Munich, Fed. Rep. of Germany, assignors to Patent-Treuhand Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 752,155
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 3425894
Int. Cl.⁴ H01J *5/46, 5/50, 61/34, 61/36*
U.S. Cl. 313—25 **9 Claims**



1. Electrical lamp having a bulb (3, 28) of glass or quartz;

external current leads (17,18; 29, 30) leading from outside of the bulb towards the inside thereof;

internal current leads (9, 10; 23, 24) extending inwardly of the bulb;

lamp elements (2-12; 22) supported on said internal current leads (9, 10; 23, 24);

sealing foils (15,16; 25, 26) bonded to and connecting respective external and internal leads; and

a press seal (14, 27) sealing the bulb with respect to the outside and embedding the sealing foils,

comprising,

means formed into said press seal (14, 27) for mechanically aligning the internal current leads leads (9, 10; 23, 24) and the lamp elements supported thereon including

metal elements (19, 20; 31, 32) made of high temperature resistant metal, secured to the internal current leads in position to extend transversely to the major direction of said internal current leads and of current flow therein, and positioned in a plane parallel to a central longitudinal plane of the press seal by formation of said seal.

4,658,178

PLASTICS SKIRT FOR RIGIDLY INTERCONNECTING METALLIC BASE AND GLASS ENVELOPE OF A LAMP

Irving Bradley, Russell Township, Geauga County, and Paul A. Moore, Chardon, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1984, Ser. No. 681,742
Int. Cl.⁴ H01J *5/36, 5/60*
U.S. Cl. 313—113 **8 Claims**

1. A lamp comprising:

(a) an outer envelope having at least one dimple at its lower rim position;

(b) a light source disposed within said outer envelope;

(c) a screw-type metallic base having at least one dimple at its upper portion; and

(d) a plastics skirt having means of complementary engaging and fastening to said dimples of the glass envelope and metallic base, said complementary engaging and fastening

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of the plastics skirt to the glass envelope being accomplished by ramp-like extensions integrally formed into the



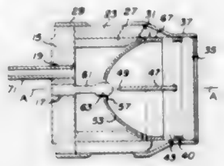
plastics skirt and which fit into and engage an inner portion of the dimple of the glass envelope.

4,658,179

ARC LAMP FOR ONE-STEP BRAZING

Roy D. Roberts, Newark, Calif., assignor to ILC Technology, Inc., Sunnyvale, Calif.

Filed May 17, 1985, Ser. No. 735,817
Int. Cl.⁴ H01J *17/16, 61/30*
U.S. Cl. 313—113 **5 Claims**



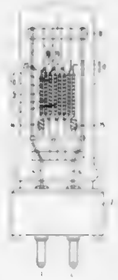
1. A lamp of the short arc type comprising:
(a) a first hollow cylindrical body member;
(b) a circular window of diameter less than the outside diameter of the first cylindrical body member;
(c) an open-ended tubular cowling member having a window section with an inside diameter approximately equal to the outside diameter of the circular window to receive the circular window, and having a body section with an inside diameter approximately equal to the outside diameter of the first body member to receive a first end of the first body member, said cowling member flaring radially outward between said window section and said body section;
(d) a window retaining ring member, having a diameter approximately equal to that of the circular window, which fits concentrically within said window section of the cowling member, a first edge of said window retaining ring abutting the circular window to sealingly secure the circular window in place;
(e) a strut means attached to a second edge of the window retaining ring member, extending radially inward from the window retaining ring member, and positioned between the window and body sections of the cowling member to support a cathode member;
(f) a cathode member which extends axially from the strut means into the first body member;
(g) a retaining ring member having an outside diameter approximately equal to the inside diameter of the first cylindrical body member, the retaining ring member being mounted partially within said first cylindrical body member at a first end thereof and a first edge of the retaining ring member abutting the strut means;
(h) a hollow concave reflecting shell dimensioned to fit completely within the first cylindrical body member and with a mouth facing the strut means, the outer edge of the reflecting shell positioned against a second edge of the retaining ring, and the reflecting shell having an aperture formed therethrough opposite said mouth;
(i) a second hollow cylindrical body member having a length less than the first body member and dimensioned to fit flush concentrically within the first body member, the second body member having a radially tapered edge at a first end abutting the periphery of the outer wall of the concave reflecting shell to secure the reflecting shell concentrically in place between the retaining ring and the second body member;
(j) a disk-shaped base member for sealingly enclosing a second end of the first body member and a second end of the second body member; and
(k) an anode member mounted concentrically to the base member to extend axially through said central aperture in said hollow concave reflecting shell to a location spaced adjacent the end of the cathode member at the focal point of the reflecting shell.

4,658,180

FILAMENT SUPPORT FOR A PROJECTION LAMP

Leo F. M. Ooms, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 29, 1985, Ser. No. 695,986
Claims priority, application Netherlands, Feb. 14, 1984, 8400464
Int. Cl.⁴ H01J *1/88, 19/42;* **H01K** *1/18*
U.S. Cl. 313—273 **2 Claims**



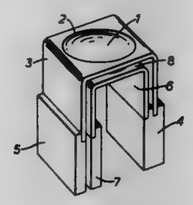
1. An incandescent lamp comprising
a translucent lamp vessel sealed in a vacuum-tight manner,
a frame, comprising two current supply conductors entering through the wall of the lamp vessel, and two glass beams inside the lamp vessel, said beams mechanically interconnecting said conductors,
a filament having several helically wound sections which are stretched at least substantially parallel to each other in the frame, each end of said filament being electrically connected to a respective current supply conductor, and
two sets of supports, each anchored in a respective glass beam of the frame, said supports each consisting of a wire having a main link and terminating in a hook, each hook having a bend having a peak, and a free end; and each hook engaging the filament between a respective pair of adjacent sections of the filament,
characterized in that the supports of at least one set each have an end portion extending in a direction which is transverse to said main length of the respective support, and is located at a given distance from said peak of the bend of the hook of the respective support, said given distance being the same for each support of the set.

4,658,181

TRAVELLING WAVE TUBES

Brian F. Cooper, and Maurice Estersoo, both of Chelmsford, England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Oct. 9, 1984, Ser. No. 658,790
Claims priority, application United Kingdom, Oct. 7, 1983, 8326854
Int. Cl.⁴ H01J *1/14*
U.S. Cl. 313—346 R **17 Claims**



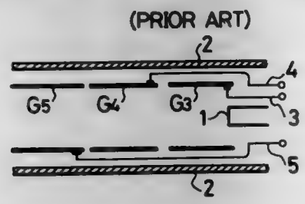
1. In a travelling wave tube, a directly heated cathode comprising
a first electrically conductive layer having outer and inner surfaces and first and second ends, the outer surface of said electrically conductive layer having a concave spherical depression therein;
emissive material carried in said spherical depression; and
a second electrically conductive layer having an outer surface and first and second ends, the first end of said second layer being connected to the second end of said first layer so that a heater current flows through said first and second layers when a voltage is applied across the first end of said first layer and the second end of said second layer, said second layer being spaced from and conforming closely to said first layer at least at the portion of said first layer having said spherical depression carrying said emissive material, whereby the effect of a stray magnetic field generated by the passage of said heater current through said first layer tends to be neutralized by the passage of said heater current through said second layer.

4,658,182

IMAGE PICK-UP TUBE

Shoji Araki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 7, 1984, Ser. No. 607,766
Claims priority, application Japan, May 12, 1983, 58-82995
Int. Cl.⁴ H01J *31/00*
U.S. Cl. 313—384 **4 Claims**



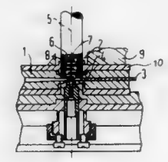
1. Image pick-up tube comprising:
(a) an envelope;
(b) an electron beam source positioned at one end of said envelope;
(c) a target positioned at another end of said envelope opposite to said electron beam source; and
(d) at least one electrostatic lens means positioned between said electron beam source and said target, said lens means comprising a first electrode and a second electrode respectively deposited on the inner surface of said envelope, an electrode lead connected to said second electrode deposited on the inner surface of said envelope and extending across said first electrode but electrically isolated therefrom.

4,658,183

TRAVELING-WAVE TUBE

Günther Huber, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,921
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311910
Int. Cl.⁴ H01J *25/34*
U.S. Cl. 315—3.5 **8 Claims**



1. In a traveling-wave tube, including a delay line having two end surfaces, a spatially periodic permanent magnet system surrounding the delay line for the bunched guidance of an electron beam, the delay line having line cells disposed in tandem, each of the cells having an electron beam passage opening formed therein and adjacent partitions separating the cells with a given mutual spacing, each of the partitions having at least one coupling opening formed therein extended substantially in circumferential direction, a ridgeless rectangular waveguide coupled to at least one of the end surfaces of the delay line and protruding away from the delay line substantially at right angles to the axis of the delay line, the waveguide having a location of smallest reflection, a wide side facing away from the delay line extended substantially perpendicular to the longitudinal axis of the delay line and at least one narrow side being steadily tapered toward the delay line down to substantially the given spacing of the adjacent partitions, and a short-circuit slider disposed below the waveguide, the improvement comprising a hollow-cylindrical matching element fixed and soldered to the wide side of the waveguide facing away from the delay line, said hollow-cylindrical matching element including means for infinitely adjusting the position of said matching element for minimum reflection before soldering, said adjusting means being a fine thread screwed to the location of smallest reflection of the waveguide.

4,658,184

METHOD OF TRIGGERING A HIGH PRESSURE SODIUM VAPOR LAMP AND SODIUM VAPOR LAMP WITH IMPROVED TRIGGERING

János Gáspár, Budapest, Hungary, assignor to Tungsram Reszvenytarsasaq, Budapest, Hungary

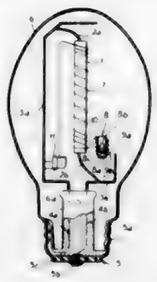
Filed Sep. 23, 1985, Ser. No. 779,352
Claims priority, application Hungary, Sep. 21, 1984, 3570/84
Int. Cl.⁴ H01J *7/44*
U.S. Cl. 315—47 **14 Claims**

1. A method of triggering a high vacuum sodium vapor lamp having a discharge tube connected to a pair of lamp terminals, and a heating body in heat transfer relationship with said tube, and connectable to said terminals in parallel with said tube and in series with an input inductivity, said method comprising the steps of:

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connecting said terminals to a source of line current, thereby electrically energizing said body and heating said tube to reduce a breakdown voltage thereof while applying line voltage across said tube;

upon the lapse of a heating period, disconnecting said heating body at least at one side thereof in response to temperature to open-circuit said side of said body and generate an



autoinductive pole sufficient to effect breakdown in said tube and thereby ignite the latter; and

limiting the voltage generated upon open-circuiting of said side of said body to a level sufficient to effect discharge in said tube at the temperature to which said tube has been heated by said body, but to a level less than the breakdown voltage between said terminals.

4,658,185

ARRANGEMENT FOR THE IGNITION OF IGNITABLE MIXTURES

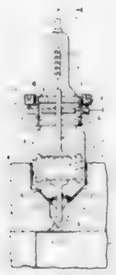
Hans Albrecht, Waiblingen, and Rudolf Maly, Sindelfingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 25, 1984, Ser. No. 664,778

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1983, 3338672

Int. Cl.⁴ H01J *7/44, 13/46, 19/78, 29/96*

U.S. Cl. 315—58 **38 Claims**



1. An arrangement in a spark plug for producing ignition sparks to ignite ignitable mixtures, said arrangement comprising at least one condenser means operable to be charged by a high-voltage source, booster gap means and main gap means having respective electrodes, said main gap means including an ignition electrode and a ground electrode, said condenser means being operable to be substantially discharged during the breakdown phase of initial ignition of said spark plug through said booster gap means and main gap means, the breakdown voltage of the booster gap means being higher than the breakdown voltage of the main gap means, a free connection of said condenser means and one electrode of the booster gap means adapted to be connected with the high-voltage source, the condenser means and the main gap means being connected in series circuit, and the booster gap means being connected in parallel with said series circuit and ground.

4,658,186

CONTROL APPARATUS FOR FLUORESCENT DISPLAY TUBE

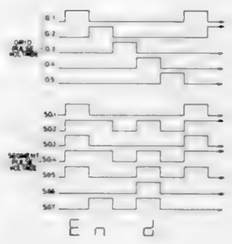
Atsushi Horinouchi, Otsu, Japan, assignor to Sanyo Electric Co., Japan

Filed Dec. 26, 1984, Ser. No. 686,212

Claims priority, application Japan, Dec. 27, 1983, 58-252103

Int. Cl.⁴ G09G *3/10*

U.S. Cl. 315—169.3 **12 Claims**



1. A control apparatus comprising:

a fluorescent display tube comprising a cathode and an anode including a plurality of display segments each having a fluorescent material layer, said plurality of display segments being positioned and configured to cause said display tube to display various characters determined by selection among said display segments,

segment enabling means coupled to said fluorescent display tube for selectively supplying operating voltage to said cathode and said plurality of display segments of said anode to cause said fluorescent material layers of said display segments to emit light and display a predetermined character,

selection data providing means coupled to said segment enabling means for providing data for selection of said display segments to said segment enabling means, said data for selection having the characteristic that certain specified segments out of all the segments that can be selected are selected relatively less frequently and accordingly said specified segments emit light relatively less frequently,

determining timing determining means, and

means for enabling some of said segments in response to an output of said predetermined timing determining means, said some of said segments including at least said specified segments emitting light relatively less frequently.

4,658,187

ELECTRONIC BALLAST CIRCUIT FOR FLUORESCENT LAMPS

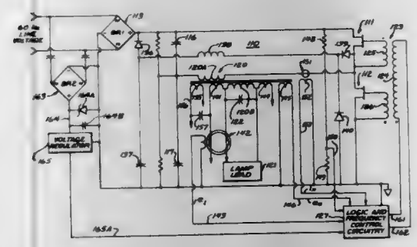
Calvin E. Grubbs, Garland, Tex., assignor to Thomas Industries, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 194,783, Oct. 7, 1980, Pat. No. 4,477,748. This application Oct. 16, 1984, Ser. No. 661,397

Int. Cl.⁴ G05F *1/00;* **H05B** *37/02, 39/04, 41/36*

U.S. Cl. 315—306 **19 Claims**

1. An electronic circuit for energizing a lamp circuit including at least one gaseous discharge lamp from a source of electrical power having a voltage amplitude varying in time, comprising: resonant inverter circuit means receiving power from said source and having a resonant frequency and including first and second controlled switches gated to conduction respectively in alternate cycles of inverter frequency for generating a high frequency electrical signal for supplying power to said lamp circuit; sensing circuit means for generating a control signal representative of lamp current; feedback control circuit means for controlling the gating of said controlled switches in response to said control signal for controlling the operating frequency of said inverter circuit means relative to the reso-



nant frequency thereof to regulate lamp current to a predetermined value; and characterized in that said feedback control circuit has a frequency response characteristic which is defined by a cut-off frequency sufficient to permit said feedback control circuit to respond to said amplitude variations in said source voltage thereby to reduce the amplitude variation in the applied lamp voltage and lamp current.

4,658,188

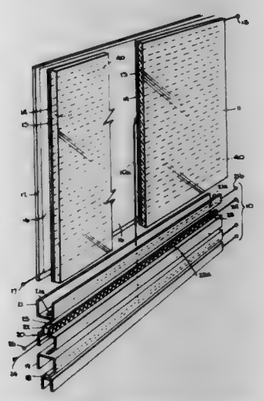
APPARATUS AND METHOD FOR SCANNING A FLAT SCREEN CATHODE RAY TUBE

William Bohmer, Flanders, N.J., assignor to Control Interface Company Limited, Randolph, N.J.

Filed Feb. 11, 1985, Ser. No. 700,320

Int. Cl.⁴ H01J *29/70*

U.S. Cl. 315—366 **42 Claims**



26. A cathode ray tube device comprising:

a system for forming a scanning electron beam including

means for emitting electrons in a plane extending from the length of a predetermined line at substantially a right angle thereto to form a sheet of emitted electrons;

means extending parallel to the sheet of emitted electrons for applying a reference field extending transverse to the direction of emission of the sheet of emitted electrons; and

means disposed adjacent the field applying means for generating a scanning field to be applied by the field applying means, the scanning field having a predetermined magnitude extending over the length of the scanning field applying means which is sufficient to deflect the electrons from the plane of the sheet of electrons adjacent the major portion of the length of the scanning field, the resultant field of the reference field and the scanning field having a predetermined magnitude extending over a minor portion of the length of the scanning field applying means which permits the electrons of the portion of the sheet of electrons adjacent to the minor portion to remain as a beam of electrons adjacent the plane of the sheet of electrons, the scanning field having a predetermined rate of scanning of the predetermined magnitude with respect to the length of the scanning field applying means;

means spaced apart from the means for emitting electrons for forming a visual image in response to the electrons of the portion of the sheet of electrons adjacent the minor portion which remain adjacent the plane of the sheet of electrons; and

means for deflecting the scanning electron beam in a direction substantially at right angles to the plane of the sheet of electrons to form a two-dimensional image on the image forming means.

4,658,189

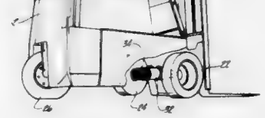
SERIES CONNECTED SERIES MOTORS FOR INDEPENDENT LOADS

George J. Trusock, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 656,152, Sep. 28, 1984, abandoned. This application Sep. 5, 1986, Ser. No. 904,569

Int. Cl.⁴ B61C *15/14;* **H02P** *7/68*

U.S. Cl. 318—52 **3 Claims**



1. An industrial truck having first and second independently rotatable traction wheels for driving contact with the road, both of said wheels exhibit substantially same start-up load torque and running-load torque when both have non-slip adhesive friction with the road,

each traction wheel being subject to exhibiting a start-up load torque ranging from a threshold-load torque, which is a value of torque required to initiate motion of the truck when there is a non-slip adhesive friction with the road, to a no-load torque when there is no adhesive friction with the road,

a DC voltage source,

first and second DC series motors which are substantially identical to each other and are connected electrically in series with each other in a series circuit, each of said first and second DC series motors having an armature winding and a field winding connected in series with each other,

switching means for connecting said series circuit across said voltage source for energizing said motors,

said first and second DC series motors being mechanically coupled independently of each other in driving relation with said first and second wheels, respectively,

each motor being capable of developing a predetermined transient driving torque when the wheel coupled to said each motor exhibits said no-load torque and the other wheel coupled to the other motor exhibits said threshold-

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load torque, said predetermined transient driving torque having a peak value at a time after motor energization,

said peak value of said predetermined transient driving torque being greater than said threshold-load torque,

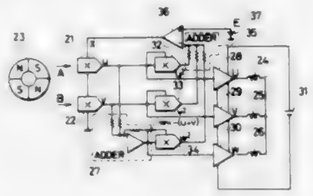
whereby said truck is moved by the traction of the wheel which exhibits the threshold-load torque during a time interval that said peak value of torque is greater than the threshold-load torque.

4,658,190

REDUCED RIPPLE DRIVE CIRCUIT FOR A BRUSHLESS MOTOR

Kiyoshi Miyazaki; Jinichi Ito, and Hayato Naito, all of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Oct. 26, 1984, Ser. No. 665,207
Claims priority, application Japan, Oct. 27, 1983, 58-201810
Int. Cl.⁴ H02P 6/02
U.S. Cl. 318—254 **4 Claims**



4. A drive circuit for a brushless motor, comprising:

a rotor magnet magnetized to have 2n poles (n being an integer which is greater than zero);

two position detectors for detecting a rotational position of said rotor magnet and providing first sinusoidal outputs signals having a 120° phase difference therebetween;

means receiving said first sinusoidal output signals for producing three phase output signals having phase differences therebetween of substantially 120° in electrical angle;

three phase drive coils for rotating said rotor magnet;

three amplifier means, each of said amplifier means having an input receiving a respective one of said three phase output signals and an output driving a respective one of said drive coils;

multiplying means for raising a full bandwidth portion, with respect to an operating frequency of said rotor magnet, of each of said three phase output signals prior to said amplifier means to a positive even power;

means for adding the three phase output signals raised to said power by said multiplying means to form a sum signal; and

means for producing a correction signal in response to said sum signal, said correction signal being applied to said two position detectors for controlling said two position detectors in such a manner that said sum signal remains constant

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4,658,191

MOTOR ROTATION CONTROL APPARATUS

Masaya Okita, Yokohama; Masahiro Sawada, Kawasaki, and Tadashi Ota, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

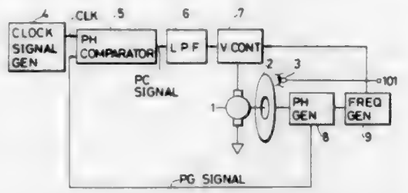
Continuation of Ser. No. 764,975, Aug. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 594,364, Mar. 28, 1984, abandoned. This application Mar. 25, 1986, Ser. No. 844,236
Claims priority, application Japan, Mar. 31, 1983, 58-53806
Int. Cl.⁴ H02P 5/16
U.S. Cl. 318—314 **4 Claims**

1. An apparatus for controlling the phase of rotation of a motor in accordance with a reference clock signal and thereby controlling the rotation speed of the motor to attain a predetermined rotation speed, said apparatus comprising:

(a) driving means for driving said motor into rotation;

(b) rotation speed detecting means connected to said motor for detecting that the rotation speed of said motor is substantially equal to a reference rotation speed which is lower than said predetermined rotation speed and generating a first control signal only in response to the rotation speed of said motor being greater than or equal to said reference rotation speed;

(c) means for generating said reference clock signal and a detection clock signal having a predetermined frequency equal to the frequency of said reference clock signal and having a predetermined phase different than the phase of said reference clock signal;



(d) means for producing a rotation signal which represents the rotation of said motor;

(e) first phase difference detecting means for detecting that a phase difference between said detection clock signal and said rotation signal is less than a predetermined value during the generation of said first control signal and for producing a second control signal in response thereto; and

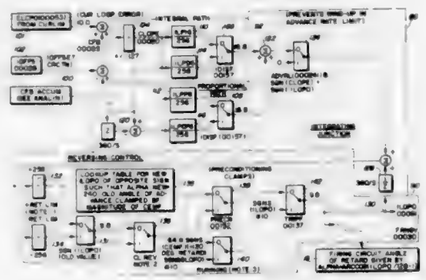
(f) control means including second phase difference detecting means for detecting a phase difference between said reference clock signal and said rotation signal in response to said second control signal and producing a phase difference signal indicative of said detected phase difference and means connected to said motor for controlling said driving means in accordance with said phase difference signal so that said detected phase difference corresponds with a predetermined phase difference.

4,658,192

PROGRAMMABLE DEADBAND CURRENT REGULATOR

Jordan B. Casteel, Charlottesville, Va.; David L. Lippitt, Scotia, N.Y., and Allen M. Ritter, Charlottesville, Va., assignors to General Electric Company, Charlottesville, Va.

Filed Jan. 31, 1986, Ser. No. 825,086
Int. Cl.⁴ H02P 5/16
U.S. Cl. 318—317 **17 Claims**



1. In a four quadrant motor control system having first and second controllable bridge rectifier power regulators for supplying excitation to a DC electric motor for controlling the direction of motor rotation, the system being capable of operating in a continuous and discontinuous current mode of operation and including a digital electronic control circuit for calculating a firing angle from desired and measured system parameters, a reversing controller for developing a current command for generating firing pulses to fire selected switching elements in the power regulators for controlling the magnitude and polarity of the excitation and a current sensor for sensing motor current, a method for transitioning between the first and second regulators in response to a sensed requirement for reversing excitation to the motor, comprising the steps of:

(a) sensing an offset correction in the current sensor when no current is flowing through the motor;

(b) determining when current in the motor is below a predetermined threshold value;

(c) determining when the firing angle of the first bridge rectifier power regulator reaches a programmable threshold value; and

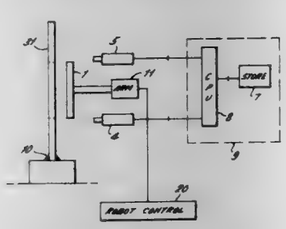
(d) transitioning from the first bridge to the second bridge a programmable time interval after the firing angle of the first bridge rectifier power regulator and motor current reach their respective threshold values.

4,658,193

SENSING ARRANGEMENT

Robert G. M. Low, 6 Minton Close, Blakelands, Milton Keynes, England

Filed May 7, 1985, Ser. No. 731,585
Int. Cl.⁴ G05B 1/06
U.S. Cl. 318—568 **1 Claim**



1. A control system for controlling the insertion of a component into an aperture, comprising:

means for providing markers on said component;

at least two viewing sensors disposed in predetermined fixed positions to view said component and said aperture and responsive to said markers to produce signals representing gaps between edges of said components and corresponding edges of the aperture; and

drive means responsive to said signals and coupled to produce relative movement between the component and the aperture to reduce said gaps to respective predetermined values.

4,658,194

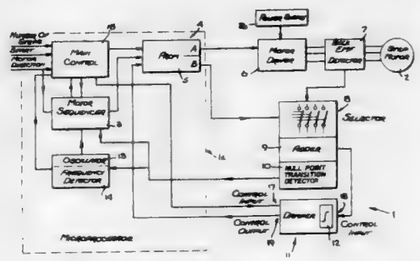
CLOSED LOOP CONTROL CIRCUITRY FOR STEP MOTORS

Ludwig Richter, Rheinhausen; Werner Siefert, Kippenheim, and Hans-Jorg Kleis, Lahr, all of Fed. Rep. of Germany, assignors to Gerhard Berger GmbH & Co. KG, Lahr, Fed. Rep. of Germany

Filed Feb. 1, 1985, Ser. No. 697,567
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1984, 3404127
Int. Cl.⁴ H02P 8/00
U.S. Cl. 318—696 **19 Claims**

1. Closed loop control circuitry for a multiphase step motor having at least two phase windings and a magnetic rotor for inducing voltages in said phase windings, which control circuitry includes motor-driver/phase-shifting means, control circuit means including logic switching means for applying signals to said motor-driver/phase-shifting means for effecting a self-synchronous driving of the motor, and a main control for applying signals to said logic switching means, back EMF waveform detector means for sensing the voltage waveforms in said phase windings, and a feedback control loop including said back EMF waveform detector means and said control circuit means, said feedback control loop further including back EMF selector means for receiving the output of said back EMF waveform detector means and for modifying the detected voltage waveforms into different forms assigned to the individual phases of the motor, null point transition detector means, for receiving the modified waveforms from said back EMF selector means and for generating output pulses corresponding to the detected null point transitions of the modified waveforms, and counter means and signal generating means constituting parts of said control circuit means and being connected for receiving the output pulses from said null point transition detector means, said counter means being connected to said main control and said logic switching means;

wherein the improvement comprises that:



(a) said back EMF selector means includes analog switching means operable for passing selected individual ones or combinations of the back EMF waveforms sensed by said back EMF waveform detector means;

(b) said signal generating means includes oscillator means and frequency detector means for delivering signals to said counter means and said main control, respectively; and

(c) said feedback control loop further includes adder means interconnected between said analog switching means and said null point transition detector means, said adder means being operable for forming from the selected waveforms passed by said analog switching means addition and subtraction waveforms corresponding to full-step as well as half-step positions of said rotor, and said signal generating means and said counter means being responsive to the output pulses generated by said null point transition detector means, based on said addition and substraction waveforms received from said adder means, for delivering to said main control and said logic switching means control signals which, being determined by the null point transitions, represent the full-step and half-step positions of said rotor and which enable the motor torque to be controlled in dependence on the instantaneous position of the rotor at each part of an operating cycle of the motor.

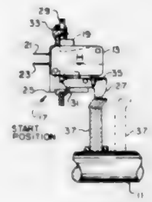
VOL 1077 ISS 2 AP 14 1987 UMI

4,658,195
MOTOR CONTROL CIRCUIT WITH AUTOMATIC RESTART OF CUT-IN
Young-Kee Min, Milwaukee, Wis., assignor to PT Components, Inc., Milwaukee, Wis.
Filed May 21, 1985, Ser. No. 736,454
Int. Cl.⁴ H02P 1/42
U.S. Cl. 318—786 **5 Claims**



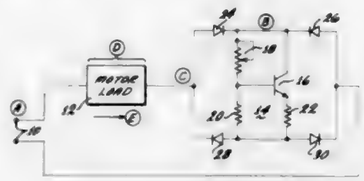
1. In an AC motor having a main winding and an auxiliary winding both connectable to an AC power source, and having a power switch for disconnecting said auxiliary winding from said AC source, an improved control for said power switch providing automatic cut-in restart of said motor, comprising:
starting means for turning on said power switch to connect said auxiliary winding to said AC source at energization of said motor;
disconnect means for turning off said power switch to disconnect said auxiliary winding from said AC source in response to a predetermined condition following said energization; and
automatic restart means comprising:
means for deriving a reference voltage from the main winding voltage;
means for sensing auxiliary winding voltage; and
means for comparing said reference voltage and said sensed auxiliary winding voltage and turning on said power switch to reconnect said auxiliary winding to said AC source to re-energize said auxiliary winding and re-apply starting torque to said motor when said sensed auxiliary winding voltage drops below a given value relative to said reference voltage derived from said main winding voltage,
wherein said given value of said sensed auxiliary winding voltage relative to said reference voltage corresponds to a designated cut-out motor speed and wherein said automatic cut-in restart means turns on said power switch a second time after said first reconnection to again reconnect said auxiliary winding to said AC source if said motor until does not accelerate above said cut-out speed upon said first reconnection, to provide multiple bumping action with multiple reconnections, all without external intervention;
timing means coupled to said disconnect means and providing said predetermined condition as a set interval of time following said energization, and wherein said automatic restart means is coupled to said timing means to reset said timing means and automatically restart said time interval;
wherein said timing means comprises:
an RC charging network having a resistor and a capacitor and providing said time interval by charging said capacitor;
second comparing means for comparing said reference voltage and the voltage of said capacitor to turn off said power switch to disconnect said auxiliary winding from said AC source;
and wherein said automatic cut-in restart means comprises an RC switch coupled to said charging capacitor and activated by said first mentioned comparing means to discharge said capacitor when said sensed auxiliary winding voltage drops to said given value relative to said reference voltage.

4,658,196
ELECTRIC MOTOR STARTING SWITCH ASSEMBLY
Eugene F. Hildebrandt, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Oct. 16, 1985, Ser. No. 788,068
Int. Cl.⁴ H02P 1/42
U.S. Cl. 318—793 **16 Claims**



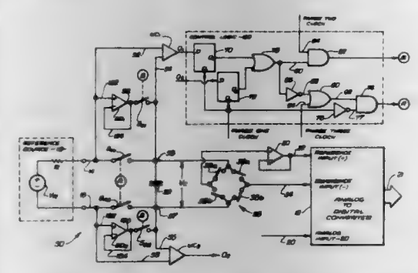
1. A starting switch assembly for an electric motor, said motor having a run winding, a starting winding, and a centrifugal actuator or the like, said starting switch assembly comprising:
a first enclosed switch electrically insertable between an electric motor starting winding and a power source to control the application of power to the starting winding, closure of said switch completing a circuit between the starting winding and the power source, said first switch having its own housing for protecting the interior thereof from environmental particles such as lint or the like;
a base securable to an end shield or the like of an electric motor;
a relatively rigid, open frame extending from the base to support the first enclosed switch in a predetermined position, said frame being electrically isolated from the circuit between the starting winding and the power source; and
means responsive to an electric motor centrifugal actuator or the like for actuating the first enclosed switch.

4,658,197
MOTOR CONTROL CIRCUIT
James R. Ligman, Santa Barbara, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.
Filed Aug. 18, 1980, Ser. No. 178,796
Int. Cl.⁴ H02P 5/40
U.S. Cl. 318—812 **14 Claims**



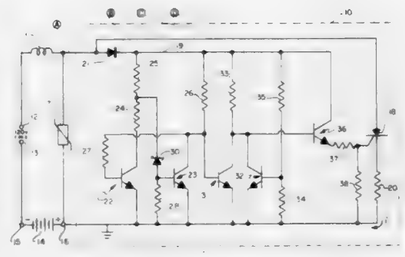
1. A current control circuit for controlling the full wave AC current supplied by an AC power source through an AC motor to predetermined substantially constant values and for additionally providing a control of the speed of the motor, including,
a semiconductor device having an input terminal, an output terminal and a control terminal and with the current passing through the semiconductor device in a current path from the AC power source to the input terminal and from the output terminal to the AC power source forming a substantial portion of the current through the AC motor,
first means coupled to the control terminal of the semiconductor device for providing a control signal at the control terminal,
second means forming an impedance and connected in series within the current path through the semiconductor device from the output terminal to the AC power source for providing an impedance in the output current path of the semiconductor device to have the substantial portion of the current through the AC motor pass through the impedance and with the ratio between the amplitude of the control signal and the value of the impedance forming a substantial constant control of the value of the full wave AC wave AC current passing through the AC motor, and
third means for controlling the ratio between the amplitude of the control signal and the value of the impedance to predetermined values for controlling the current passing through the semiconductor devices and the AC motor to predetermined substantially constant values for controlling the speed of the motor.

4,658,198
CHARGING CIRCUIT FOR A REFERENCE CAPACITOR
Charles R. Thurber, Jr., Sunnyvale, Calif., assignor to Intersil, Inc., Cupertino, Calif.
Filed Aug. 16, 1985, Ser. No. 766,189
Int. Cl.⁴ H03G 3/00
U.S. Cl. 320—1 **6 Claims**



1. In a circuit adapted for use with a capacitor for storing a reference voltage supplied by a reference source, the improvement comprising:
comparison means for comparing the voltage across the capacitor and the voltage of the reference source, and providing an output when the difference in the capacitor voltage and the voltage of the reference source exceeds a predetermined maximum;
charge means responsive to the comparison means, for charging the capacitor when the difference in the capacitor voltage and the voltage of the reference source exceeds the predetermined maximum so as to reduce said difference, and
switch means responsive to the comparison means output, for coupling the reference source to the capacitor to enable the reference source to directly charge the capacitor to a voltage equal to the reference voltage, and for uncoupling the reference source from the capacitor while the capacitor comparison means compares the reference source and capacitor voltages and while the charge means is charging the capacitor.

4,658,199
CURRENT REGULATING CIRCUIT
Philip A. Hoffman, Towson, Md., assignor to Solid State Charger Research and Development, Lutherville, Md.
Filed Nov. 14, 1984, Ser. No. 671,497
Int. Cl.⁴ H02J 7/00
U.S. Cl. 320—21 **22 Claims**



1. A battery charging or forming circuit comprising means across which a battery to be charged or formed is to be placed; means for providing an unfiltered, rectified input; control circuit means responsive solely to the unfiltered, rectified input for developing a control signal during a portion of decreasing swings of the unfiltered, rectified input; and means responsive to the control signal for passing current pulses to said means across which a battery is to be placed during a portion of the decreasing swings, wherein said control circuit means consists of circuit means responsive solely to the unfiltered, rectified input for providing an output controlling signal whenever the rectified input is above a first given level during upswings thereof and during downswings thereof until a second given level different from the first given level is reached and control means receiving the output controlling signal and responsive to absence of the output controlling signal for developing the control signal only at times when the unfiltered input reaches the second given level during downswings, and wherein said means for providing an unfiltered, rectified input includes a circuit reference point and bus means on which the unfiltered, rectified input appears; and wherein said control circuit means includes a first transistor having a base, collector and emitter, its collector-emitter path being coupled between the circuit reference point and said bus means; an OR function circuit including a first resistor, a second transistor and a third transistor having their emitters coupled to the circuit reference point and their collectors connected to said bus means via said first resistor, said base of said first transistor being connected to said collectors of said second transistor and said third transistor; a fourth transistor and fifth transistor each having a base, a collector and an emitter, said emitters of said fourth transistor and said fifth transistor being coupled to said circuit reference point; a second resistor, said collector of said fourth transistor being connected to said base of said third transistor, and via said second resistor, to said bus means; a third resistor and a fourth resistor, said third resistor being connected between said collector of said fourth transistor and said base of fifth transistor and said fourth resistor being connected between said bus means and each of said collector of said fourth transistor and said base of said third transistor; a fifth resistor and a sixth resistor, said fifth resistor and said sixth resistor being connected in series between said bus means and said collector of said fifth transistor; and a seventh resistor and a Zener diode connected in series between a circuit point defined by a connection between said fifth resistor and said sixth resistor and said circuit reference point.

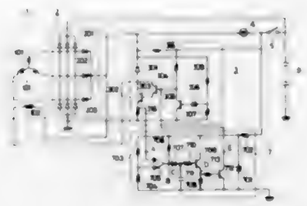
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4,658,200

PROTECTION CIRCUIT FOR VOLTAGE REGULATOR OF VEHICLE MOUNTED GENERATOR

Shinichi Kouge, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,348
Claims priority, application Japan, Mar. 25, 1983, 58-50894; Mar. 25, 1983, 58-50895; Apr. 5, 1983, 58-60595
Int. Cl.⁴ H02J 7/14
U.S. Cl. 322—25 **3 Claims**



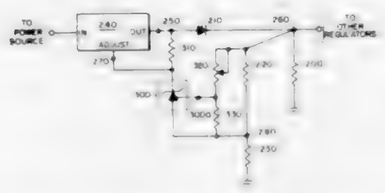
1. In a charging generator system including an A.C. generator having an armature winding and a field winding, a battery to be charged by a rectified output of said A.C. generator and a voltage regulator for regulating said rectified output of said A.C. generator to a first predetermined value, said field winding being energized by said recified output of said generator, a protection circuit for said charging generator system against a short-circuit of said field winding, said protection circuit comprising an output transistor connected in series with said field winding to on-off control a field current thereof, a resistor connected to a base of said output transistor, a drive transistor connected in series between said resistor and said base of said output transistor, a detection transistor for detecting a current flowing through said resistor, a comparator having hysterisis characteristics, a capacitor connected to an input of said comparator and adapted to be charged by a logical product of an output voltage of said detection transistor and a terminal voltage of said output transistor and a resistor constituting a discharging circuit for said capacitor, said drive transistor being turned-off when said capacitor is charging.

4,658,201

OUTPUT CIRCUIT FOR DIODE-OR CONNECTED POSITIVE THREE TERMINAL VOLTAGE REGULATORS

Hubertus S. Notohamiprodjo, Hoffman Estates, Ill., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Dec. 30, 1985, Ser. No. 814,938
Int. Cl.⁴ G05F 1/614
U.S. Cl. 323—224 **7 Claims**



1. An output circuit for use with three terminal regulators connected in a power system including a power source, a load and a plurality of diodes connected to said load and each associated with a different one of said regulators, each regulator having input, output and adjustment terminals, said input terminal being connected to said power source and said output terminal being connected to said load via said associated diode, said output circuit comprising:

a first voltage divider connected across said load and including first and second series connected impedance means operated to provide divider voltages of first and second characteristics, respectively;

control means connected between said voltage divider and said adjustment terminal and operated in response to said divider voltage of a first characteristic to provide a control signal of a first characteristic;

said regulator being operated in response to said control signal of a first characteristic to provide an output voltage of a first characteristic;

said impedance means being further operated to provide a plurality of divider voltage less than said divider voltage of a first characteristic;

said control means being further operated in response to said plurality of divider voltages less than said voltage of a first characteristic to provide a corresponding plurality of control signals of different characteristics;

said regulator being further operated in response to said plurality of control signals of different characteristics to provide a corresponding plurality of output voltages of different characteristics; and

said control means comprising

a second voltage divider connected across said first impedance means and operated to provide a threshold voltage and a plurality of voltage less than said threshold voltage; and

comparison means comprising

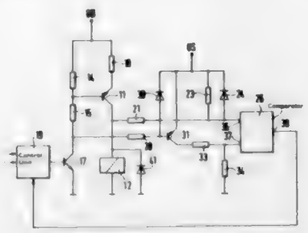
an adjustable precision shunt regulator connected between said second voltage divider and said adjustment terminal and operated in response to said threshold voltage to provide said control signal of a first characteristic and further operated in response to said plurality of voltages less than said threshold voltage to provide said plurality of control signals of different characteristics.

4,658,202

CIRCUIT ARRANGEMENT FOR CONTROLLING THE CURRENT THROUGH AN ELECTRIC LOAD

Werner Nitschke, Ditzingen, and Peter Taufer, Renningen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 19, 1986, Ser. No. 841,156
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1985, 3509961
Int. Cl.⁴ G05F 1/565
U.S. Cl. 323—275 **9 Claims**



1. A circuit arrangement for controlling the current through an electric load such as an electromagnetic load connected to ground, the circuit arrangement comprising:

current control means connected to the load for controlling the current therethrough;

drive means for generating a drive signal for driving said current control means;

first comparator input circuit means for providing a first voltage signal corresponding to the voltage across said load;

second comparator input circuit means for providing a second voltage signal dependent upon said drive means;

comparator means for comparing said first voltage signal with said second voltage signal and for generating an output signal indicative of the comparison; and,

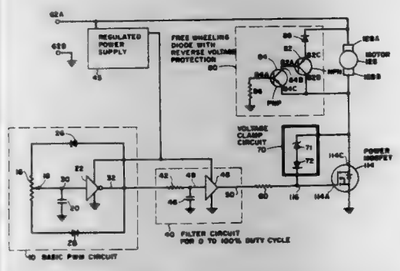
said drive means being adapted for driving said current control means in dependence upon said output signal thereby controlling the current through said load.

4,658,203

VOLTAGE CLAMP CIRCUIT FOR SWITCHED INDUCTIVE LOADS

William P. Freymuth, Tulsa, Okla., assignor to Airborne Electronics, Inc., Plano, Tex.

Continuation of Ser. No. 677,796, Dec. 4, 1984, abandoned. This application Mar. 7, 1986, Ser. No. 838,425
Int. Cl.⁴ G05F 1/56
U.S. Cl. 323—282 **2 Claims**



1. In a control system in which a current is passed through an inductive load by controlling an electronic switch means in series with said inductive load across a power supply by opening and closing said switch with a control voltage on a control voltage lead; the improvement comprising means to clamp the inductive voltage generated by said inductive load as said current flowing through said load is cut off by the opening of said electronic switch means with said control voltage, said clamp means further comprising;

(a) circuit means having a first terminal connected to the junction of said load and switch; and a second terminal connected to said control voltage lead; and

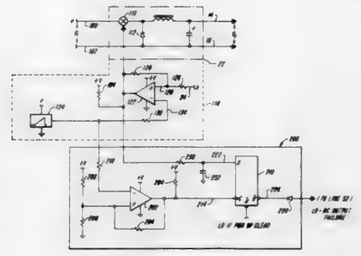
(b) said circuit means having a Zener diode and a simple diode connected in series with either their cathodes together, or their anodes together, and the cathode of said simple diode connected toward said control voltage lead, and the cathode of said Zener diode connected toward said first terminal; whereby when the control voltage is removed from said electronic switch means, said electronic switch means opens, and an inductive voltage peak appears on said first terminal; current flows in reverse through said Zener diode and through said simple diode thereby generating a control voltage to turn on said electronic switch means passing current through said switch until the inductive voltage is dissipated; removing said generated voltage from said control lead and opening said electronic switch means until the next load carrying cycle begins.

4,658,204

ANTICIPATORY POWER FAILURE DETECTION APPARATUS AND METHOD

Peter A. Goodwin, Wayland, Mass., assignor to Prime Computer, Inc., Natick, Mass.

Filed Feb. 7, 1986, Ser. No. 827,366
Int. Cl.⁴ G05F 1/46
U.S. Cl. 323—285 **9 Claims**



1. An apparatus for anticipating a power failure condition in a regulated power supply system having a regulated output signal comprising

means for generating a regulation control signal representative of the difference between said regulated output signal and an optimum operating point of the regulated output signal,

means responsive to said control signal for generating said regulated output signal,

means for determining when said control signal is in a saturation state, and

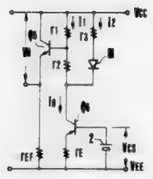
means for signalling an input power failure if said control signal is in said saturated state.

4,658,205

REFERENCE VOLTAGE GENERATING CIRCUIT

Kazuyoshi Yamada, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 7, 1985, Ser. No. 763,462
Claims priority, application Japan, Aug. 10, 1984, 59-167466
Int. Cl.⁴ G05F 3/16
U.S. Cl. 323—313 **4 Claims**



1. A reference voltage generating circuit comprising:

a current source;

a potential terminal;

a first series connection circuit including a first resistor having one terminal connected to said current source, a second resistor having one terminal connected to another terminal of said first resistor, and a first transistor having a collector electrode connected to another terminal of said second resistor, an emitter electrode connected to said potential terminal via a resistor, and a base electrode connected to said potential terminal via a bias voltage source;

a third resistor having one terminal connected to said current source;

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a diode having one terminal connected to another terminal of said third resistor, said diode having another terminal connected to the other terminal of said second resistor;

a second series connection circuit including a second transistor having a collector electrode connected to said current source, an emitter electrode connected to said potential terminal via a resistor, and a base electrode connected to a junction between said first and second resistors, an output voltage V_R of said reference voltage generator being obtained between the collector and emitter electrodes of said second transistor;

said output voltage V_R and a temperature characteristic dV_R/DT of the voltage V_R being represented by the following equations:

$$V_R = -\frac{R_1}{R}\cdot\frac{R_3}{R_E}\cdot V_{CS} + \left(\frac{R_1}{R}\left(\frac{R_3}{R_E}-1\right)-1\right)V_F$$

$$\frac{dV_R}{dT} = -\frac{R_1}{R}\cdot\frac{R_3}{R_E}\cdot\frac{dV_{CS}}{dT} + \left(\frac{R_1}{R}\left(\frac{R_3}{R_E}-1\right)-1\right)\frac{dV_F}{dT}$$

where R_1, R_2, R_3, and R_E are resistances of first, second, third resistors and of the resistor connected to the emitter electrode of said first transistor, $R=R_1+R_2+R_3$, V_{CS} is an output voltage of said bias voltage source, and V_F is a forward voltage of the diode.

4,658,206

FAULT DETECTOR FOR COMMUNICATIONS EQUIPMENT USING EXCLUSIVE OR CIRCUITRY

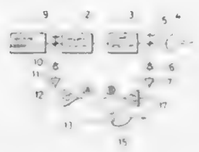
Osamu Yamanaka, Nishinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1984, Ser. No. 687,761

Claims priority, application Japan, Jan. 18, 1984, 59-7541; Mar. 13, 1984, 59-49733

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—51 **6 Claims**



1. A fault detector for detecting abnormalities in communication transmission equipment which transmits burst-like communication signals, comprising:

first pulse wave reformer means for detecting a burst-like signal inputted at an input terminal of the equipment and for producing a first square wave pulse corresponding thereto;

second pulse wave reformer means for detecting a burst-like communication output signal at an output terminal of the equipment and for producing a second square wave pulse corresponding thereto;

exclusive OR means responsive to said first and second square wave pulses for performing an exclusive OR operation on said first and second pulses and outputting an error signal indicative of a fault in the equipment when either of said first and second pulses is present in the absence of the other.

4,658,207

DEVICE FOR MEASURING THE WATER CONTENT OF INK SAMPLES

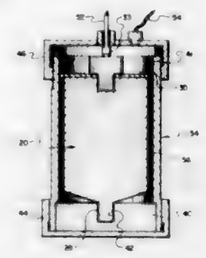
Gino A. Scribano, Willowbrook; Thomas A. Fadner, LaGrange, both of Ill., and Ira B. Goldberg, Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 28, 1985, Ser. No. 717,050

The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.

Int. Cl.⁴ G01R *27/26*

U.S. Cl. 324—61 P **11 Claims**



1. A device for measuring the water content of a non-flowing fluid mixture of ink and water, the dielectric constant of the fluid mixture varying with its water content, comprising:

(a) a capacitor cell comprising:

(1) first and second electrodes, wherein the first electrode is disposed inward of the second electrode and has an outer surface which is spaced from the inner surface of the second electrode,

(2) means for positioning the electrodes with their respective surfaces mutually opposed and separated by a predetermined gap,

(3) means for containing a fluid mixture in the gap between the electrodes, and

(4) an insulative base for the first and second electrodes, the first electrode being movable away from the base to enable the introduction of a fluid mixture into the space defined by the base and second electrode, and movable back to a fixed position against the base so that at least part of the fluid mixture is displaced into the gap between the first and second electrodes,

(b) an oscillator circuit which includes said capacitor cell, the oscillator circuit providing an output signal with a frequency that varies in a known manner with the dielectric constant of the fluid mixture, and

(c) an output means connected to provide an output display which varies with the output signal frequency, and thereby indicates the concentration of water in the fluid mixture.

4,658,208

DOWNHOLE STEAM QUALITY MEASUREMENT

David O. Lee; Paul C. Montoya; James F. Muir, and J. Robert Wayland, Jr., all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 19, 1985, Ser. No. 746,593

Int. Cl.⁴ G01N *15/00*

U.S. Cl. 324—61 R **8 Claims**

1. A method for measuring the quality of steam flowing through a conduit containing a pair of spaced electrodes comprising the steps of:

calibrating the system by:

filling said conduit with steam samples of known qualities;

applying an AC frequency across said electrodes;

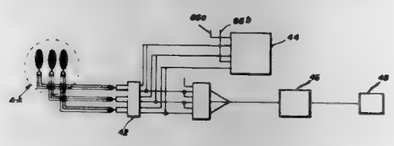
measuring the capacitance between said electrodes as a function

of frequency for each steam sample;

determining a frequency range where measured capacitance is a

linear function of steam quality; and

injecting an unknown sample of steam into said conduit;



applying an alternating voltage at a selected frequency within said

frequency range to said electrodes;

measuring the capacitance between said electrodes at said selected

frequency; and

determining steam quality from said capacitance measurement.

4,658,209

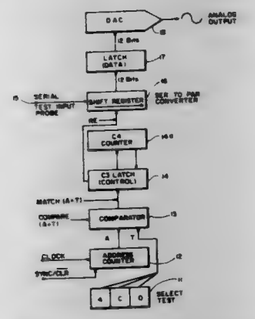
UNIVERSAL TEST BOARD, SERIAL INPUT (FOR SYNTHESIZER TESTING)

Robert E. Page, 1945 Willow La., San Diego, Calif. 92106

Filed Jan. 30, 1984, Ser. No. 575,106

Int. Cl.⁴ G01R *31/00, 31/28;* **G06F** *11/00*

U.S. Cl. 324—73 R **7 Claims**



1. An apparatus for selectively monitoring a serial data stream within a repetitive sequence of time slots at a desired point in a system and for providing a representative analog output signal comprising:

means for providing a selected digital address signal representative of a particular time slot within the repetitive sequence of time slots;

means for iteratively producing a series of digital address signals that are representative of all the repetitive sequence of time slots;

means coupled to the selected digital address signal providing means and the series of digital address signals iteratively producing means for comparing and indicating coincidence signals when the selected digital address signals correspond to the address signals of one in the series of digital address signals;

means connected to the comparing and indicating means for creating a latch signal for the time starting when the coincidence signals occur;

means adapted to be completed to the desired point in the system for passing a series test input signal from the data stream in the system;

means connected to the latch signal creating means and the serial test inputs signal passing means for converting the serial test input signal to parallel signals upon receipt of the latch signal; and

means connected to the serial to parallel converting means for generating the representative analog output signal to enable a comparison with standardized analog signals that should be present at the desired point in the system when all components are functioning properly.

4,658,210

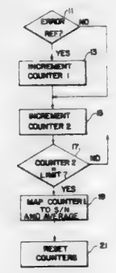
NONINTERRUPTIVE NOISE MEASUREMENT

Oscar C. de Leon, Jr., Hialeah, Fla., and Philip F. Kromer, III, Winchester, Mass., assignors to Racal Data Communications Inc., Miami, Fla.

Filed Jun. 29, 1984, Ser. No. 626,315

Int. Cl.⁴ G01R *23/16*

U.S. Cl. 324—77 R **4 Claims**



1. A method of and nondisruptive noise measurement comprising the steps of:

setting a reference threshold within a range of received signal vector magnitudes;

counting the number of vectors received over a selected interval which exceed a selected range about said reference to produce an event count; and

mapping said event count to a signal-to-noise ratio value.

4,658,211

CIRCUIT FOR REGULATING THE TORQUE OF RATIO METERS

Werner Wallrafen, Kelkheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 28, 1984, Ser. No. 675,584

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343850

Int. Cl.⁴ G01R *7/00;* **H03K** *5/08*

U.S. Cl. 324—140 D **6 Claims**

1. A circuit for regulating the torque of ratio meters, particularly of compass indicators, in which two-quadrant voltage-controlled sources of current are connected to respective coil branches voltage amplifiers and feed the two current sources with a sine signal voltage and cosine signal voltage, respectively, the regulating circuit comprising

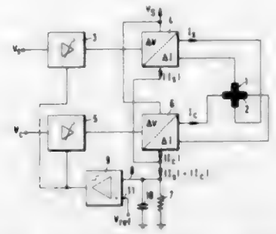
means for forming the sum of supply currents of the two voltage-controlled current sources; and

means for automatically altering amplification factors of said amplifiers as a function of said sum of the supply currents,

said sum forming means comprises a resistor inserted into a line carrying the sum of the supply currents; said circuit further comprising a comparator having an input connected to said resistor; and wherein said altering means comprises a controlled switch which is controllable by the

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output of the comparator to change the amplification factor of each of the two voltage amplifiers, and wherein each voltage-controlled source is formed essentially of two operational amplifiers which are connected in tandem, said current sources serving as impedance transformers for the feeding of one of the two coil branches, and



wherein one of said current sources is switched with a current which is proportional to the sine current voltage, a total of four operational amplifiers being formed as a quadruple operational amplifier on one chip, the resistor being connected in a common supply-current line of the quadruple operational amplifiers.

4,658,212

CONNECTOR TERMINAL EXAMINATION DEVICE

Shinichi Ozawa, and Masayuki Mizutani, both of Yokkaichi, Japan, assignors to Tokai Electric Wire Company Limited, Yokkaichi, Japan

Filed Dec. 26, 1984, Ser. No. 685,917
Claims priority, application Japan, Dec. 27, 1983, 58-250329
Int. Cl.⁴ G01R *1/06, 31/02*
U.S. Cl. 324—158 F **7 Claims**



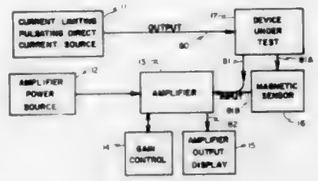
1. A connector terminal examination device comprising:
a frame;
an examination head mounted on said frame;
a connector holder mounted on said frame at one side of said examination head and adapted to receive and hold a connector inserted from an upper side thereof; and
one of said examination head and said connector holder being supported for reciprocation relative to said frame for relative movement of said examination head and said connector holder toward and away from each other;
an operating means disposed on said frame and adapted to drive said one of said examination head and said connector holder towards and away from the other;
wherein said examination head comprises a metallic tube, a probe extending forwardly from said metallic tube, said probe having a front probe portion that extends forwardly from said tube for entry into said connector and a rear probe portion slidably received in said metallic tube and means for independently biasing each of said probe portions toward said connector holder, stop means for establishing a predetermined gap between said probe portions when they are in a freed condition, at least one of said probe portions being electrically insulated from said metallic tube, said front probe portion being adapted to be moved into said metallic tube so as to make electric contact with said rear probe portion when pressed by a corresponding terminal of said connector at a time of examination.

4,658,213

METHOD AND APPARATUS FOR TESTING DIRECT CURRENT MOTORS AND GENERATORS, ELECTROMAGNETIC DEVICES, AND THE LIKE

Stanton M. Finley, 865 N. 2nd East, Price, Utah 84501

Filed Nov. 16, 1984, Ser. No. 671,926
Int. Cl.⁴ G01R *33/00*
U.S. Cl. 324—158 MG **12 Claims**



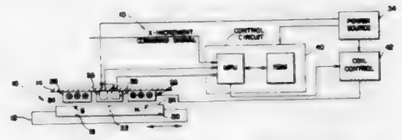
1. Apparatus for testing electromagnetic devices such as D.C. motors, D.C. generators, and other electromagnetic devices comprising:
means for producing a pulsating or otherwise time varying direct current output signal;
means for connecting the output signal to the device under test;
means for receiving a return signal from the device under test;
means for amplifying said return signal, producing an amplified signal; and
means for displaying the magnitude of said amplified signal;
wherein the means for producing said output signal comprises:
a constant voltage transformer;
means for connecting the constant voltage transformer to an electrical power supply;
a stepdown transformer connected in series with the constant voltage transformer;

4,658,214

MAGNETIC POSITION INDICATOR USING MULTIPLE PROBES

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1982, Ser. No. 454,045
Int. Cl.⁴ G01B *7/10;* **G05B** *11/32*
U.S. Cl. 324—207 **8 Claims**



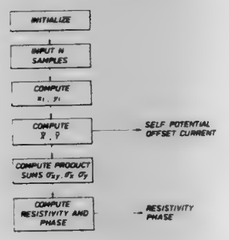
1. Apparatus for monitoring the relative displacement between a pair of members, one of which is moved along a given path, said apparatus comprising:
sensing means operatively connected to a first of said members for sensing magnetic field strength, said sensing means including at least a pair of magnetic sensing probes spaced apart an incremental distance from each other;
magnetic means operatively connected to the second of said members for providing a magnetic field wherein the magnetic field strength thereof varies as a function of distance along a sensing path, said magnetic means and said sensing means being configured and arranged such that during the relative displacement, said sensing means moves along the sensing path of varying magnetic field strength; and,
control means operatively coupled to said probes and being operable for determining the value of the field strength sensed by each of said probes and for storing a value related to the sensed value of a leading one of said probes, as viewed in the direction of the relative displacement, and for comparing the stored value with a present value of the other of said probes so as to define the relative distance traversed during the relative displacement of said members as a function of the incremental distance of said probes and the relationship of the stored and present values.

4,658,215

METHOD FOR INDUCED POLARIZATION LOGGING

Harold J. Vinegar, and Monroe H. Waxman, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 505,623, Jun. 20, 1983, Pat. No. 4,583,048.
This application Feb. 24, 1986, Ser. No. 831,957
Int. Cl.⁴ G01V *3/24, 3/38*
U.S. Cl. 324—366 **1 Claim**



1. A method for generating a log of the formation phase shift, resistivity and spontaneous potential of an earth formation from data obtained from the earth formation with a multi-electrode induced polarization logging tool, comprising:
obtaining data samples from the formation at measurement points equally spaced in time of the magnitude and phase of the induced voltage and the magnitude and phase of the current supplied by a circuit through a reference resistance R_o to a survey current electrode associated with the tool;
computing the x_i and y_i values for each measurement point from the relations

$$x_i = \frac{C_i}{R_o G_c}$$

$$y_i = \frac{V_i}{G_v}$$

where C_i is the value of the current sample, G_v is the voltage gain of the circuit, V_i is the value of the voltage sample, G_c is the current gain of the circuit;
computing the average value of $\bar{x}$ and $\bar{y}$ from the relations

$$\bar{x} = \frac{\sum_i^N x_i}{N} \quad \bar{y} = \frac{\sum_i^N y_i}{N}.$$

computing values of σ_x and σ_y from the relations:

$$\sigma_x = \sqrt{\frac{\sum_i^N (x_i - x)^2}{N}} \quad \sigma_y = \sqrt{\frac{\sum_i^N (y_i - y)^2}{N}}$$

computing the value of σ_{xy} from the relation:

$$\sigma_{xy} = \frac{\sum_i^N (x_i - \bar{x})(y_i - \bar{y})}{N}$$

and then determining that
spontaneous potential $= \bar{y}$
and
resistivity $= K(\sigma_y/\sigma_x)$
where K is the tool geometry factor, and

$$\text{phase} = \cos^{-1}\left(\frac{\sigma_{xy}}{\sqrt{\sigma_x \sigma_y}}\right)$$

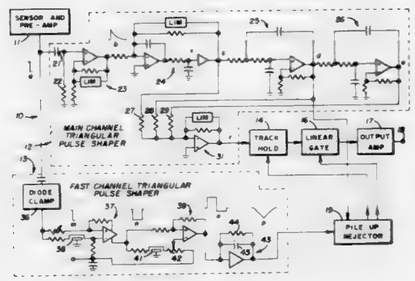
and recording a log of the values of spontaneous potential, resistivity and phase with respect to the depth at which the measurements were made.

4,658,216

HIGH RESOLUTION, HIGH RATE X-RAY SPECTROMETER

Frederick S. Goulding, Lafayette, and Donald A. Landis, Pinole, both of Calif., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jul. 14, 1983, Ser. No. 513,557
Int. Cl.⁴ H03K *5/22, 3/017*
U.S. Cl. 328—109 **14 Claims**



1. A system for processing pulses generated in response to detected signals of differing magnitudes, said system comprising;
a main channel pulse shaping means for generating a substantially symmetrical triangular main channel pulse in response to each detected signal, said main channel pulses having amplitudes proportional to the magnitudes of said detected signals, said main channel pulses each having a substantially constant pulse width,
a fast channel pulse shaping means for generating a substantially symmetrical triangular fast channel pulse in response to each detected signal, said fast channel pulses each having a substantially constant pulse width which is substantially independent of the magnitudes of the detected signals and which is substantially less than the pulse width of the main channel pulses,
output means for receiving said main channel pulses and for generating output pulses corresponding to said main channel pulses, with the amplitudes of the output pulses being proportional to the amplitude of the main channel pulses to which they correspond.
pile-up rejector means for receiving said fast channel pulses and for allowing said output means to generate two successive output pulses corresponding to two successive main channel pulses whenever the time duration between

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the corresponding fast channel pulses, which are generated in response to the same detected signals that cause the two successive main channel pulses to be generated, is greater than a time which is equal to the longest of the rise or fall times of the main channel pulses.

second logic circuit means for selecting two pulse trains from among said plurality of pulse trains and for providing said two pulse trains to said phase detector as said two clock signals of different phase; and

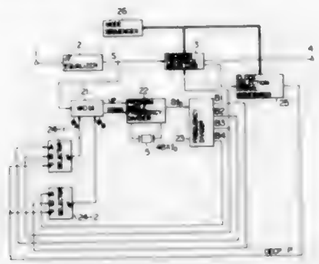
clock selection signal generator means for controlling said second logic circuit means by use of a signal from said decision feedback type equalizer and an external control signal.

4,658,217

TIMING SIGNAL EXTRACTING CIRCUIT

Hiroshi Takatori, Kokubunji; Toshiro Suzaki, Tama, and Keiji Tomooka, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1984, Ser. No. 654,897
Claims priority, application Japan, Sep. 30, 1983, 58-180244
Int. Cl.[4] H03B 1/00; H03K 5/13; H03L 7/00
U.S. Cl. 328—139 **1 Claim**



1. A timing signal extracting circuit for producing a decision timing signal to be applied to a decision feedback type equalizer, comprising:

a phase detector operating in accordance with a wave difference method, including means for extracting two amplitude values from a transmitted signal sampled by two clock signals having phases which are different by a half of the period of the transmitted signal, and means for generating an output signal indicative of the difference between the two amplitude values;

an oscillator having an oscillation frequency M (M: an integer) times as high as the transmission rate of the transmitted signal;

programmable frequency divider means connected to said oscillator and said phase detector for dividing the frequency of the output signal of said oscillator so as to generate a frequency-divided clock signal and for controlling the phase of said frequency-divided clock signal on the basis of said output signal of said phase detector;

first logic circuit means for further dividing the frequency of the output signal of said programmable frequency divider so as to generate a plurality of pulse trains whose frequency is equal to that of said transmitted signal and which have respectively different phases;

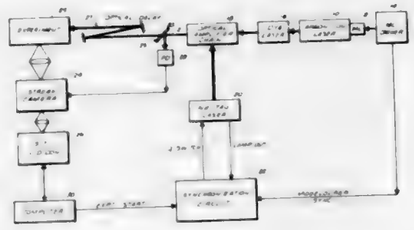
means for applying one of said plurality of pulse trains to said decision feedback type equalizer as the decision timing signal;

4,658,218

CIRCUIT FOR SYNCHRONIZING A MODE-LOCKED OSCILLATOR-AMPLIFIER DYE LASER WITH A STREAK CAMERA DETECTION SYSTEM

Geraldine A. Kenney-Wallace, Toronto, Canada, and Edward L. Quitevis, Lubbock, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 10, 1984, Ser. No. 679,782
Int. Cl.[4] G03B 9/70
U.S. Cl. 330—4.3 **1 Claim**



1. A mode-locked oscillator-amplifier dye laser system synchronized with a streak camera detection system comprising:

a mode-locked continuous wave laser;

a dye laser pumped by said mode-locked continuous wave laser;

an optical amplifier chain to amplify the pulse output of said dye laser;

a Nd:YAG laser to pump said optical amplifier chain;

a synchronization circuit which drives said Nd;YAG laser using a lamp out signal from said Nd:YAG laser and a sync signal from a mode-lock driver which drives said mode-locked continuous wave laser such that the pump pulse from said Nd:YAG to said optical amplifier chain overlaps with the pulse output of said dye laser as the pulse output arrives in each stage of said optical amplifier chain;

a streak camera triggered by a pulse obtained by deflecting a portion of the output of said optical amplifier chain with a beam-splitter to a photodiode;

a silicon intensified target detector to receive the output of said streak camera;

an optical delay line after said beam-splitter to compensate for electronic delays in said streak camera;

a computer to enable said synchronization circuit and said silicon intensified target detector and to receive data from said silicon intensified target detector

said synchronization circuit comprising:

means for counting down said lamp out signal from said Nd:YAG laser to produce a divided output signal;

means for delaying and divided output signal to produce a delay signal;

means for converting said delay signal into a delayed sync signal;

means for combining said delayed sync signal with said sync signal from said mode-lock driver to produce a coincidence signal;

means for forming a Q-switch signal from said coincidence signal to pulse said Nd:YAG laser; and

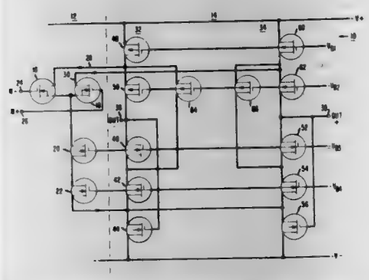
means for inhibiting said converting means until a start signal is received from said computer.

4,658,219

FOLDED CASCODE FIELD-EFFECT TRANSISTOR AMPLIFIER WITH INCREASED GAIN

Veikko R. Saari, Spring Lake Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1985, Ser. No. 814,198
Int. Cl.[4] H03F 3/45
U.S. Cl. 330—253 **3 Claims**



1. A fully double-ended complementary field-effect transistor amplifier circuit of the type including a differential input network and a folded cascode transimpedance stage, the transimpendance stage having first and second signal output branches, each comprising:

a current source transistor having its control electrode connected to a first reference voltage node and a cascode transistor having its control electrode connected to a second reference voltage node, both transistors having a conduction channel of a first conductivity type connected in tandem, respectively, between a first polarity supply voltage node and a signal output node;

a pull-down transistor having its control electrode connected to a third reference voltage node and a bias current transistor having its control electrode connected to a fourth reference voltage node, both having conduction channels of a second conductivity type connected in tandem, respectively, between the signal output node and the drain of a feedback transistor which has its source connected to a second polarity supply voltage node and its gate connected to the output node,

WHEREIN THE IMPROVEMENT COMPRISES:

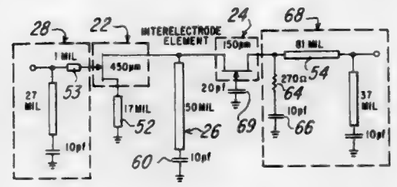
a second cascode transistor in each of said branches, said second transistor also having a conduction channel of the first conductivity type, its source being connected to the source of the first cascode transistor, its drain being connected to the source of the pull-down transistor, and its control electrode being connected to the second reference voltage node.

4,658,220

DUAL-GATE, FIELD-EFFECT TRANSISTOR LOW NOISE AMPLIFIER

David D. Heston, Dallas; Randall E. Lehmann, Garland, and David J. Seymour, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 6, 1985, Ser. No. 773,266
Int. Cl.[4] H03F 3/193
U.S. Cl. 330—277 **13 Claims**



1. A low noise amplifier comprising:

(a) a dual gate field effect transistor (DGFET) circuit means for achieving simultaneous noise match (Z_{opt}) and power match, the dual gate field effect transistor (DGFET) circuit means includes;

a first device having an input gate for receiving an input signal,

a second device connected to the first device and having an output drain for providing a power amplified output signal,

an impedance modification means located between the first device and the second device for modifying the load impedance of the second device that is presented to the first device, and

feedback means for providing a predetermined series reactance to a source of the first device, the feedback means being connected between the source of the first device and ground.

4,658,221
Patent Not Issued For This Number

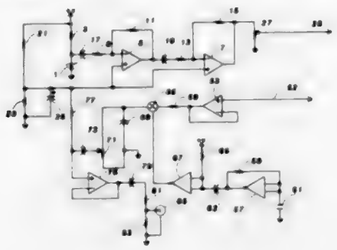
VOL 1077 ISS 2 AP 14 1987 UMI

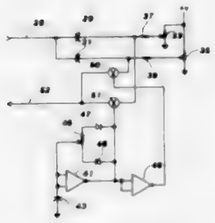
4,658,222

RADIATION DETECTOR SPECTRUM SIMULATOR

Michael A. Wolf, and John M. Crowell, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Apr. 9, 1985, Ser. No. 721,352
Int. Cl.⁴ H03B *29/00;* **H03K** *3/84*
U.S. Cl. 331—78 **20 Claims**





1. A portable battery powerable nuclear spectrum simulator comprising:

noise source means for generating pulses with a Gaussian distribution of amplitudes;

switched dc biased means for modulating the amplitude of pulses generated by said noise source means; and

pulse shaping means fed by said switched dc bias means for generating short rise and long tail pulses therefrom, thereby producing a spectral distribution of pulses that closely simulates the spectrum produced by a radiation source.

4,658,223

HIGH SPEED METHOD OF DETERMINING TEMPERATURE COMPENSATION COMPONENT VALUES

Dennis F. Marvin, Roselle, and Roger Steele, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 31, 1984, Ser. No. 688,085
Int. Cl.⁴ H03B *5/36*
U.S. Cl. 331—176 **21 Claims**

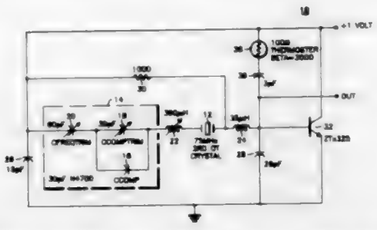
1. A method of optimizing the output frequency versus temperature performance of a circuit over a specified range individually tailored to said circuit while simplifying the adjustment to at least two designated components therein for effecting temperature compensation thereof, the method comprising the steps of:

(a) correlating a previously determined model performance of the circuit with the measured performance thereof while utilizing initial values for said designated components therein for establishing a first previous performance;

(b) fractionally modifying the values of said designated components to predict a new performance of the circuit without measuring said circuit;

(c) comparing said new performance with a previous performance and, if there is an improvement, updating said previous performance before repeating step (b) above; and

(d) utilizing the present values of said designated components to calculate two target output frequencies for adjusting each designated component in a predetermined order while remaining at a single ambient temperature, thereby simplifying the adjustment process to achieve optimization of the output frequency versus temperature performance of said circuit.

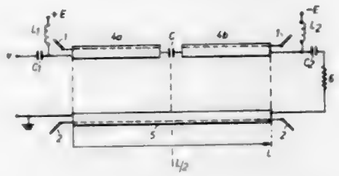


4,658,224

METHOD AND APPARATUS FOR INCREASING THE BANDWIDTH OF A HIGH SPEED MODULATOR

Lars H. Thylén, Huddinge, and Anders G. Djupsjöbacka, Solna, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Sep. 21, 1984, Ser. No. 653,679
Claims priority, application Sweden, Oct. 10, 1983, 8305572
Int. Cl.⁴ G02B *5/14*
U.S. Cl. 332—7.51 **1 Claim**



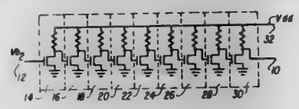
1. Wide-band high-speed modulator of the traveling wave type comprising: a substrate; two parallel planar wave conductor means disposed on said substrate, one of said conductor means being a continuous metallic conductor, the other of said conductor means being two distinct metallic conductors in axially aligned relationship; coupling means for AC coupling but DC isolating said two distinct metallic conductors; means for applying a positive bias voltage to a first of said distinct metallic conductors; means for applying a negative bias voltage to a second of said two distinct metallic conductors; load means for connecting the end of one of said two distinct metallic conductors remote from said coupling means to the end of said continuous metallic conductor adjacent thereto; means for applying a microwave signal across the end of the other of said metallic conductors remote from said coupling means and the end of said continuous metallic conductor adjacent thereto; a first optical conductor disposed adjacent and parallel to one of said conductor means for guiding an optical signal; and a second optical conductor disposed adjacent and parallel to the other of said conductor means for guiding an optical signal.

4,658,225

AMPLITUDE INSENSITIVE DELAY LINES IN A TRANSVERSAL FILTER

John N. Dukes, Los Altos Hills, and Richard A. Baumgartner, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 5, 1984, Ser. No. 628,066
Int. Cl.⁴ H03H *17/06, 15/00;* **H03C** *1/36*
U.S. Cl. 333—166 **10 Claims**



1. A circuit for filtering an input signal comprising:

a plurality of cascaded unclocked delay elements with propagation delay, the plurality of cascaded unclocked delay elements having an input, and each element in the plurality of cascaded unclocked delay elements producing an output signal which depending upon an input signal to the element settles in one of a first state and a second state, and each element havng a control means for varying propagation delay through the element, the control means including a first node coupled to a voltage source, a second node coupled to the element and a third node on which may be placed a signal in order to vary propagation delay through the element;

modulating means coupled to the input of the plurality of cascaded unclocked delay circuit elements for modulating a carrier wave with the input signal to produce a modulated signal, and applying the modulated signal to the input of the plurality of cascaded unclocked delay elements;

a plurality of tap means coupled to the plurality of cascaded unclocked delay elements for tapping the plurality of cascaded unclocked delay elements wherein on each tap means there appears a corresponding delayed signal from a plurality of delayed signals; and,

a combining means coupled to the plurality of tap means for combining the plurality of delayed signals to produce a first filtered signal.

4,658,226

ELECTROMAGNETIC RELAY WITH LINEARLY MOVING BLOCK ASSEMBLY

Kozo Maenishi; Keiji Genma, both of Nagaokakyo; Takezo Sano, Shiga; Toshiki Tanaka, Ohtsu, and Shigenobu Sato, Ohmi-Hachiman, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 3, 1985, Ser. No. 772,026
Claims priority, application Japan, Aug. 31, 1984, 59-183428; Aug. 31, 1984, 59-183429; Aug. 31, 1984, 59-183430; Aug. 31, 1984, 59-183431
Int. Cl.⁴ H01H *67/02, 67/06*
U.S. Cl. 335—127 **13 Claims**

1. An electromagnetic relay comprising:

(a) a base assembly;

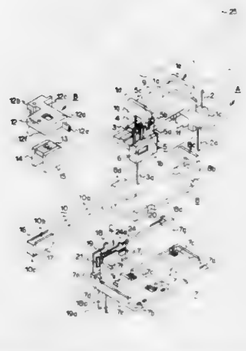
(b) an electromagnetic block assembly, mounted to said base, comprising an iron core having a longitudinal axis and a pole portion and an electromagnetic coil wound around said core;

(c) a movable block assembly which is selectively attracted by said electromagnetic block assembly according to energization of said electromagnetic coil and is movable along a direction perpendicular to the axis of said iron core;

(d) a contact mechanism comprising a movable contact support member actuated by the movement of said movable block assembly, a movable contact mounted to said movable contact support member near one extremity thereof, a fixed terminal member on said base assembly supporting said movable contact suppport member near another extremity thereof, a fixed contact support member mounted to said base assembly opposing said movable contact support member, and a fixed contact mounted on said fixed contact support member opposing said movable contact;

(e) a means for guiding said movable block assembly along said direction perpendicular to the axis of the iron core;

(f) a projecting guide wall extending from the base assembly; and



(g) a projection formed on a surface of said movable block assembly adjacent said base assembly which is adapted to slide along the projecting guide wall;

said movable block assembly being engaged with said movable contact support member so as to be substantially fixed thereto with respect to movement of said movable contact support member along the direction of said axis and said guide wall bridging across a portion between said electromagnetic block assembly and said contact mechanism and said pole portion of said iron core, serving as an arc barrier wall.

4,658,227

HIGH SPEED MAGNETIC CONTACT DRIVER

Edward K. Howell, Simsbury, and Henry G. Willard, Wethersfield, both of Conn., assignors to General Electric Company, New York, N.Y.

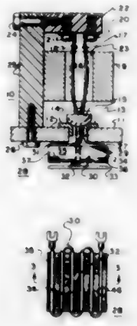
Filed Mar. 14, 1986, Ser. No. 839,671
Int. Cl.⁴ H01H *9/20, 71/24*
U.S. Cl. 335—174 **17 Claims**

1. A circuit interrupter comprising:

a pair of fixed contacts and a bridging contact arranged for electrically disconnecting an electric path between said fixed contacts; and

a magnetic operator arranged for moving said bridging contact and disconnecting said electric path, said magnetic operator comprising a stator consisting of a magnetic material having a plurality of notches with a metal conductor lying in said notches and a magnetic armature plate extending proximate said conductor and said notches, said armature being also arranged proximate said bridging

contact for striking said bridging contact and driving said bridging contact away from said fixed contacts to thereby



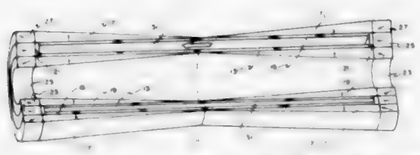
disconnect said electric path when a first current pulse is applied to opposite ends of said metal conductor.

4,658,228

CONFINEMENT OF LONGITUDINAL, AXIALLY SYMMETRIC, MAGNETIC FIELDS TO ANNULAR REGIONS WITH PERMANENT MAGNETS

Herbert A. Leupold, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 1, 1986, Ser. No. 861,464
Int. Cl.[4] H01F *3/12*
U.S. Cl. 335—211 **5 Claims**



1. A magnetic device for the production and substantially flux leakage free control and maintenance of a longitudinally extending annular cross-section magnetic field, comprising, in combination:

an inner and outer cylindrical permanent magnet pair concentrically disposed and extending longitudinally to define an annular space therebetween;

a first array of cladding magnets disposed exteriorly of said permanent magnet pair, extending longitudinally concentrically therewith and tapering in diminishing thickness from their ends towards and to a plane of zero magnetic potential transversely through the device; and

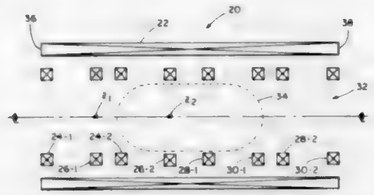
a second array of cladding magnets arranged interiorly of said permanent magnet pair, extending longitudinally concentrically therethrough and tapering in diminishing thickness from their ends towards and to a plane of zero magnetic potential transversely through the device.

4,658,229

MAGNET SYSTEM PROVIDING A REGION OF SUBSTANTIALLY HOMOGENEOUS FIELD STRENGTH

Wilkie Y. Chen, San Diego; Yen-Hwa L. Hsu, Solana Beach, and John R. Purcell, San Diego, all of Calif., assignors to GA Technologies Inc., San Diego, Calif.

Filed May 10, 1985, Ser. No. 733,232
Int. Cl.[4] H01F *7/22*
U.S. Cl. 335—216 **18 Claims**



1. A magnet system for providing a substantially homogeneous magnetic field in a limited region, said magnet system comprising:

means including a main coil for generating a magnetic field in a zone including said region; and

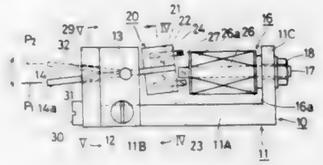
at least one pair of correcting coils, one of said coils being at a first predetermined location in said zone and the other of said coils being at a second predetermined location in said zone, said coils being connected to one another so that a magnetic field generated by said means for generating induces currents in said correcting coils of said pair which oppose one another, said correcting coils being constructed so that when substantially the same field strength is generated at both of said locations, there will be no resultant current generated in a said pair of correcting coils, whereby the generation of differing magnetic field strengths at said locations effects generation of a resultant current in said correcting coils which strengthens the field at the respective location having the lesser field strength and reduces the field at the location having the greater field strength to substantially equalize the field strength at the two locations.

4,658,230

MAGNETICALLY OPERATED ACTUATOR

Seiji Yamamoto, 2-11-6-406, Tsurukawa, Machida-shi, Tokyo-to, Japan

Filed Mar. 31, 1986, Ser. No. 846,134
Claims priority, application Japan, Apr. 13, 1986, 60-79031
Int. Cl.[4] H01F *7/08*
U.S. Cl. 335—230 **7 Claims**



1. A magnetically operated actuator which comprises, in combination:

a generally elongated operating element supported for selective displacement between first and second positions;

an electromagnet assembly for driving the operating element to displace the latter between the first and second positions under the influence of magnetism emanating therefrom, said electromagnet assembly comprising an iron core and a solenoid coil disposed around the iron core;

a permanent magnet assembly rigidly mounted on the operating element and having a pair of opposite poles different in polarity from each other, said permanent magnet assembly having a magnetic field developed between the opposite poles, said electromagnet assembly being fixedly supported in position with one of the opposite ends of the iron core situated in the magnetic field developed between the poles of the permanent magnet assembly; and

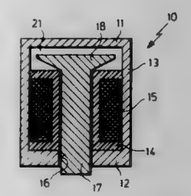
means for restricting the stroke of movement of the operating element between the first and second positions, said first and second positions being defined in the vicinity of the opposite poles of the permanent magnet assembly.

4,658,231

ACTUATING MAGNET WITH ENLARGED PLUNGER POLE PIECE

Reinhard Schwenzer, St. Georgen-Langenschiltach, and Victor Cohanciuc, Villingen, both of Fed. Rep. of Germany, assignors to GAS Gesellschaft fur Antriebs-und Steuerungs-technik mbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed Apr. 4, 1986, Ser. No. 848,120
Int. Cl.[4] H01F *3/00*
U.S. Cl. 335—261 **9 Claims**



1. Actuating magnet comprising a magnet body and an exciting winding arranged in the said magnet body and enclosing a radially movable armature having a predetermined first radial cross-sectional surface, at least one end of the said armature forming a pole piece exhibiting a second radial cross-sectional surface substantially larger than the said first cross-sectional surface, and an air gap being provided between the said pole piece and a wall of the said magnet body which covers in the radial direction at least part of one end face of the said exciting winding, wherein the said wall covers the said end face of the exciting winding and shields it magnetically, the said pole piece is arranged opposite to the inside of the said wall and the air gap extends in the radial direction.

4,658,232

ELECTROMAGNETIC DEVICE

Ichiro Ohnuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1985, Ser. No. 757,690
Claims priority, application Japan, Jul. 31, 1984, 59-116121[U]
Int. Cl.[4] H01F *7/08*
U.S. Cl. 335—270 **8 Claims**

1. An electromagnetic device comprising:

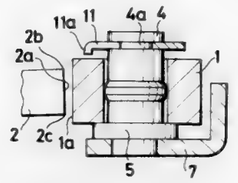
(a) an electromagnet having an attraction surface;

(b) an armature having a reactive surface to be attracted to said attraction surface of said electromagnet;

(c) an armature shaft, having an axis, supporting said armature in such a way as to be able to incline with respect to the axis; and

(d) a regulating member for keeping said armature inclined with respect to the axis of said armature shaft,

said regulating member keeping said armature inclined with respect to said armature shaft in such a way that the gap between said attraction surface of said electromagnet and said reactive surface of said armature is wider at the upper end than at the lower end, upper and lower directions



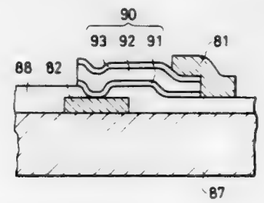
being based upon the direction of a vertical line along which the force of gravity is directed.

4,658,233

STRAIN GAUGE

Yoshiyuki Uchida, and Masaharu Nishiura, both of Kanagawa, Japan, assignors to Fuji Electric Corporate Research & Development Ltd., Yokosuka, Japan

Filed Mar. 18, 1985, Ser. No. 712,609
Claims priority, application Japan, Mar. 16, 1984, 59-51841; Mar. 16, 1984, 59-51842
Int. Cl.[4] G01L *1/22*
U.S. Cl. 338—5 **14 Claims**



1. A strain gauge comprising:

a substrate;

an amorphous semiconductor film formed on said substrate. said amorphous semiconductor film comprising microfine grains and having a resistivity in a range of 1 to 10 ohms/cm;

an electrode pair coupled to said amorphous semiconductor film to sense changes in the resistance of said film responsive to strain applied to said film and to determine the amount and direction of the strain.

4,658,234

RESISTOR NETWORK

Katsumi Takayanagi, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Japan

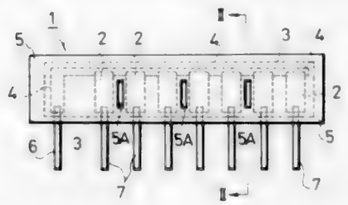
Filed Jun. 6, 1985, Ser. No. 742,214
Claims priority, application Japan, Jun. 6, 1984, 59-84038[U]; Jun. 6, 1984, 59-84037[U]
Int. Cl.[4] H01C *1/02, 1/08, 10/14*
U.S. Cl. 338—260 **3 Claims**

1. In a resistor network having a plurality of resistor elements disposed in parallel spaced apart from each other in a longitudinal row in one plane, an insulation substrate supporting the resistor elements, and a resin sealing member enclosing the resistor elements and substrate.

the improvement wherein said resin sealing member is formed as a rectangular body elongated over said longitu-

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dinal row parallel to said one plane, and has a plurality of holes equally spaced apart and formed through said body



and said substrate normal to said one plane between selected pairs of said resistor elements.

4,658,235

KEYBOARD PRINTED CIRCUIT FILM AND METHOD OF FABRICATION

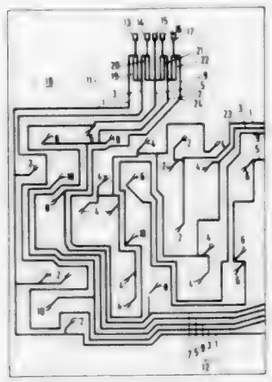
Jürgen Oelsch, Hohenroth, Fed. Rep. of Germany, assignor to Preh Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co., Bad Neustadt/Saale, Fed. Rep. of Germany

Filed Sep. 18, 1985, Ser. No. 777,165

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1984, 3434664

Int. Cl.⁴ H01C *1/012*

U.S. Cl. 338—307 **6 Claims**



1. A keyboard printed circuit film, comprising:

a film having thereon a plurality of switching contact points,

a plurality of terminal contact points on said film,

a plurality of conductor strips on said film, each conductor strip connecting a respective group of said switching contact points to a respective one of said terminal contact points, wherein said conductor strips are parallel to each other in an area adjacent said terminal contact points, each said terminal contact point consisting of a carbon resistor layer on said film, and a resistor strip comprising a layer of the same carbon resistor printed on said film between each respective adjacent pairs of said conductors in said area.

4,658,236

AUTOMATIC SIGNAL CANCELLING APPARATUS FOR A DIRECTION INDICATOR ON MOTORCYCLE OR THE LIKE VEHICLE

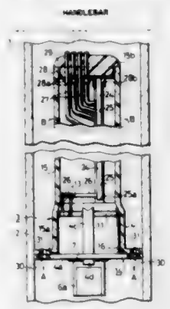
Tsumoru Oka, and Hiroshi Tamagawa, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 27, 1984, Ser. No. 655,362

Claims priority, application Japan, Sep. 28, 1983, 58-148820

Int. Cl.⁴ B60Q *1/40*

U.S. Cl. 340—56 **4 Claims**



1. In an automatic signal cancelling apparatus for a direction indicator on a motorcycle or the like vehicle, of the type having detecting means for detecting an angle of turning between one part fixedly connected to a handlebar and another part connected to the body of the vehicle which serves as a reference relative to a turning movement of the handlebar, said detecting means including means for providing a signal indicative of the angle of relative turning movement and a control circuit mounted on a printed circuit board for providing a cancelling signal to the direction indicator in response to said turning angle signal,

the improvement comprising a single holding sleeve enclosing said detecting means including said signal providing means and said printed circuit board, said holding sleeve being mounted vertically within said one part fixedly connected to the handlebar and having one open end thereof facing downwardly from which a member of said detecting means extends and is connected to said other part connected to the body of the vehicle, said holding sleeve having a laterally extending flange at said one open end for mounting to said one part, a bushing covering said one open end and mating with said flange, and a seal positioned between said flange and said bushing to form a watertight seal for said one open end of said holding sleeve.

4,658,237

INTRUSION ALARM SYSTEM FOR VEHICLES

John D. Williamson, North Canton, Ohio, assignor to Omnitronics Research Corporation, Akron, Ohio

Continuation of Ser. No. 115,881, Jan. 28, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,636

Int. Cl.⁴ B60R *25/00*

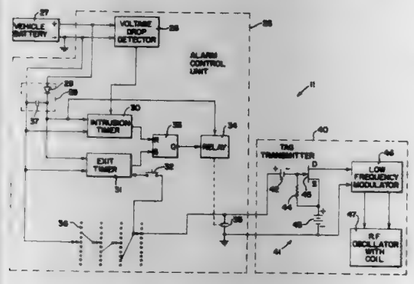
U.S. Cl. 340—63 **4 Claims**

1. An alarm circuit for detecting an unauthorized intrusion into a vehicle, comprising:

deactivation means for supplying a deactivation control signal;

transmitter means including oscillator means for broadcasting a radio frequency alarm signal, said transmitter means includes oscillator power supply means for continuously furnishing electrical power to said oscillator means, said oscillator power supply means adapted to continuously activate said transmitter means upon interruption of receipt of a deactivation control signal by said transmitter means, and power gate switch means for controlling the electrical connection of said oscillator power supply means with said oscillator means, said power gate switch means electrically interrupting the connection between said oscillator power supply means and said oscillator means at all times said deactivation control signal is received by said transmitter means;

said transmitter means further including power gate switch power supply means for operating said power gate switch means so as to establish and maintain electrical connection between said oscillator power supply means and said oscillator means at all times said deactivation control signal is not received by said transmitter means;



said oscillator power supply means, said power gate switch means and said oscillator means being electrically connected in series so as to form a first power loop, and,

said power gate switch power means, said oscillator power supply means and said deactivation means being connected in series so as to form a second power loop, said power gate switch means electrically interrupting electrical power flow in said first power loop whenever electrical power is flowing in said second power loop;

said deactivation means selectively disabling the continuous activation of said transmitter means by furnishing said deactivation control signal to said transmitter means; and,

control means for detecting an anauthorized intrusion into the vehicle and controlling the operational condition of said deactivation means.

4,658,238

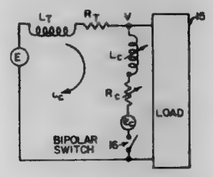
METHOD AND APPARATUS FOR PROVIDING SELECTIVELY VARIABLE MODULATION SIGNAL FOR A CARRIER WAVE

Sioe T. Mak, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 24, 1982, Ser. No. 411,035

Int. Cl.⁴ H04M *11/04*

U.S. Cl. 340—310 R **21 Claims**



1. A method of transmitting digital intelligence over a power line having a preexisting alternating wave thereon, said method comprising:

combining a signal wave with said preexisting wave on the power line to produce a composite wave having a recognizable pattern of variation in the durations of the intervals defined by preselected locations in the composite wave, said pattern of variations in the durations of the intervals representing at least a portion of the digital intelligence to be transmitted; and

adjusting the signal wave prior to its combination with the preexisting alternating wave on the power line to any one of a variety of preselected desired amplitudes.

4,658,239

DIFFERENTIAL PULSE CODE MODULATION CODER

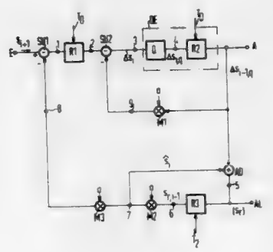
Hans-Joachim Grallert, Groebenzell, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 19, 1985, Ser. No. 766,503

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433840

Int. Cl.⁴ H03M *3/04*

U.S. Cl. 340—347 AD **11 Claims**



1. A DPCM coder having an increased internal calculation speed comprising first and second arithmetic units connected in series with each other, said first arithmetic unit serving as the input stage of said DPCM coder and connected to receive digitized input samples, a quantizing unit connected to the output of said second arithmetic unit for producing quantized DPCM signals, means for supplying digitized input samples to the input of said first arithmetic unit, means including a first multiplier unit for connecting the output of said quantizing unit to an operand input of said second arithmetic unit, an adder unit connected to receive the output of said quantizer, a second multiplier unit connected to the output of said adder unit, the output of said second multiplier unit being connected to a further input of said adder, and means for connecting the output of said second multiplier to an operand input of said first arithmetic unit.

4,658,240

APPARATUS FOR CONVERTING DATA BETWEEN ANALOG AND DIGITAL VALUES

James A. Bixby, San Diego, Calif., assignor to Brooktree Corporation, San Diego, Calif.

Filed May 7, 1984, Ser. No. 607,736

Int. Cl.⁴ H03K *13/02*

U.S. Cl. 340—347 AD **30 Claims**

1. In combination for providing a conversion between binary-coded and analog values,

an integrated circuit chip having a common centroid,

means for providing a plurality of binary signals each having first and second logic levels respectively coding for binary "1" and binary "0" and each having an individually weighted binary significance, the binary signals cumulatively representing the analog value,

a plurality of control switches disposed on the integrated circuit chip, each of the control switches having conduc-

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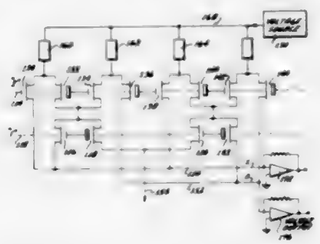
tive and non-conductive states, each of the control switches being operatively coupled to an individual one of the signal means to become operative in a particular one of the conductive and non-conductive states in accordance with the logic levels of the signals from the associated signal means,

a plurality of output members disposed on the integrated circuit chip, each of the output members having a conductive state,

a line,

means disposed on the integrated circuit chip and connecting the plurality of control switches in a particular matrix relationship to the output member and to the line to provide for the connection of progressive ones of the output members to the line in accordance with the pattern of the control switches in the conductive and non-conductive states in representation of progressive increments in the analog value coded by the logic levels of the binary signals and to provide, with such progressive increments in such analog value, for the continued coupling to the line of the output members previously connected to the line, each of the output members in the plurality being connected in the matrix relationship to code for an analog increment different from the analog increments coded by the other output elements in the plurality, and

means for providing for a flow of a particular current through each of the output members connected to the line, the output members being disposed on the integrated circuit chip in groups, each of the output members in each group having a progressive binary significance, the output members in each group being disposed in a symmetrical arrangement relative to the common centroid of the integrated circuit chip, the output members in the middle range of the analog values coded by the logic levels of the binary signals being disposed on the integrated circuit chip closer to the common centroid than the output members in the extreme ranges of such analog values.



4,658,241

SURVEILLANCE SYSTEM INCLUDING TRANSMITTER AND RECEIVER SYNCHRONIZED BY POWER LINE ZERO CROSSINGS

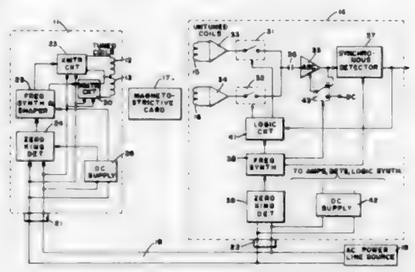
John J. Torre, Monroe, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 17, 1985, Ser. No. 777,062

Int. Cl.⁴ G08B *13/24*

U.S. Cl. 340—551 **18 Claims**

1. An article surveillance system wherein a structure responds to a first pulsed inductive magnetic field to derive a second pulsed inductive magnetic field having a predetermined occurrence time relative to the occurrence time of the first magnetic field comprising AC power line activated transmitter means for periodically deriving the first pulsed inductive magnetic field, AC power line activated receiver means responsive to the second pulsed inductive magnetic field, means for synchronizing the occurrence time of the first magnetic field and the activation of the receiver means so the receiver means is activated while the second magnetic field is incident on coil means of the receiver means, said synchronizing means including first and second separate zero crossing detectors for power lines activating the transmitter means and the receiver means,



the first and second zero crossing detectors being respectively included in the transmitter and receiver means.

4,658,242

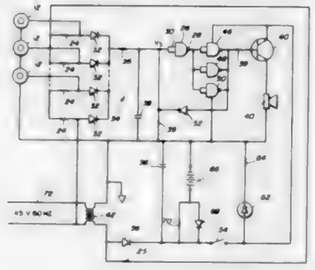
IMPEDANCE SENSING ANTI-THEFT DEVICE

Abraham Zeder, Stajer Corporation, 134 Middle St., Suite 320, Lowell, Mass. 01853

Filed Jun. 7, 1985, Ser. No. 742,558

Int. Cl.⁴ G08B *13/22, 13/14*

U.S. Cl. 340—568 **2 Claims**



1. An impedance sensing apparatus for deterring theft of electrical appliances, said apparatus comprising:

(a) common voltage source means;

(b) an array of multiple voltage divider means connected to said common voltage source means, each of said voltage divider means including input means and output means, said input means of each divider, configured to be interconnected with an electrical applicance and comprising jack means for inserting the input impedance of said appliance into a leg of the divider circuit, a first low voltage a.c. signal being presented at said output means of each divider when an electrical applicance is connected to said input means and a second low voltage a.c. signal being presented at said output means of each divider when the electrical appliance is disconnected from said input means of the divider and comprising an array of means for rectifying and filtering the low voltage a.c. signals to d.c.; each said voltage divider having in one leg a resistive impedence and in the other leg said applicance's input impedance, the resistive impedance being selected to be greater than the expected range of input impedances;

(c) high impedance detector means having input means and output means, said detector input means being operatively connected in common to said array of voltage divider means output means, said detector means having first and second states, said detector means being in said first state when all of the electrical applicances of the array are connected and in said second state when one of the electrical applicances is disconnected, a first control signal being presented at said output means of said detector means when said detector means is in said first state and a second control signal being presented at said output means of said detector means when said detector means is in said second state; and

(d) alarm means operatively connected to said output means of said detector means for generating an alarm when said detector means is in said second state,

and further including latching means connected to said output means of said detector means comprising NAND gates, said latching means operative to maintain said detector means in said second state.

4,658,243

SURVEILLANCE CONTROL APPARATUS FOR SECURITY SYSTEM

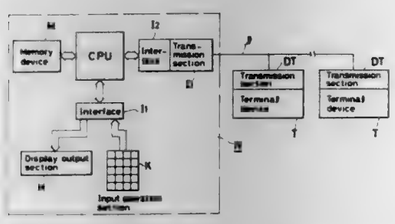
Tetsuo Kimura, Tokyo; Seiichi Tanaka, Chiba, and Takashi Suzuki, Tokyo, all of Japan, assignors to Nittan Company, Limited, Tokyo, Japan

Filed Nov. 5, 1984, Ser. No. 668,496

Claims priority, application Japan, Nov. 8, 1983, 58-171946[U]; Nov. 29, 1983, 58-223142; Dec. 16, 1983, 58-192963[U]; Dec. 26, 1983, 58-198578[U]

Int. Cl.⁴ G08B *26/00*

U.S. Cl. 340—505 **23 Claims**



1. A surveillance control system for a security system in which data signals are exchanged between a central station and a plurality of terminal devices, comprising:

the terminal devices being connected in parallel with each other to a common line extending from said central station;

each terminal device having a self address detector means for detecting whether a received address signal coincides with a self address stored in the detector means unique for each respective terminal device, the detector means then creating an output;

each terminal device having a display driver means for responding to said output from said self address detector means each and every time when address coincidence occurs, and a display unit driven by said display driver means;

said central station having means for generating address signals corresponding to the addresses of the plurality of terminal devices; and

said central station having means for storing an address of a terminal device which is not to be accessed and for selectively not addressing said terminal device when the other terminal devices are being addressed,

whereby through observation of the display unit at the terminal device it can readily be determined whether the terminal device is being accessed by the central station.

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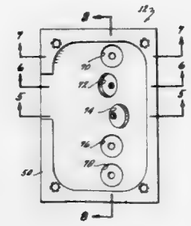
AIR-IN-LINE DETECTOR

Robert Meijer, San Diego, Calif., assignor to IMED Corporation, San Diego, Calif.

Filed Mar. 28, 1985, Ser. No. 716,862

Int. Cl.⁴ G08B *17/10*

U.S. Cl. 340—632 **10 Claims**



1. An air detector for automatically determining the presence of air in a fluid line comprising:

means for supporting a portion of the fluid line in a position to be detected;

a first optical sensor having a first ON-OFF means mounted on said support means and operatively associated with the supported portion of the fluid line to generate an ON signal when air or a relatively transparent fluid is in the fluid line;

a second optical sensor having a second ON-OFF means requiring less light intensity for its ON condition than said first ON-OFF means, said second ON-OFF means mounted on said support means and operatively associated with the supported portion of the fluid line to generate an OFF signal when air or a relatively opaque fluid is in the fluid line; and

means operatively coupled to said first and second means to alarm and indicate air in the fluid line only when simultaneously said first ON-OFF means indicates ON and said second second ON-OFF means indicates OFF.

4,658,245

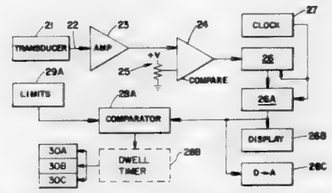
TOOL CONDITION AND FAILURE MONITORING APPARATUS AND METHOD

Denver R. Dye, Hiram; David J. Gee, Twinsburg; Richard L. Patterson, South Euclid, and Stephen M. Zielaskiewicz, Garfield Hts., all of Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Apr. 29, 1983, Ser. No. 490,010

Int. Cl.⁴ G08B *21/05*

U.S. Cl. 340—683 **2 Claims**



1. A method of sensing the wear condition of a cutting tool while machining a workpiece, comprising the steps of:

(A) detecting the acoustic emissions resulting from the machining of the workpiece by the cutting tool;

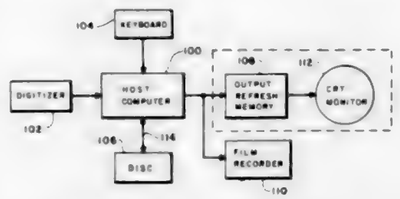
(B) generating an electrical signal which varies in magnitude with the detected acoustic emissions;

(C) comparing the electrical signal with a threshold value;

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(D) producing a pulse each time the electrical signal exceeds said threshold value;
(E) generating successive timing signals of fixed, equal time duration, each of said timing signals defining a fixed time sample window;
(F) counting the number of pulses which are produced in step (D) only during each time sample window generated in step (E).
(G) comparing the number of pulses counted in step (F) during each time sample window with a preset count; and,
(H) generating a signal indicative of the wear condition of said cutting tool when the number of pulses counted in step (F) during a single time sample window exceeds said preset count.

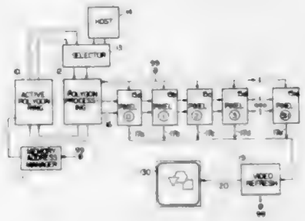
4,658,246
MATRIX DISPLAY SIMULATION
Gilbert G. Kuperman, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Aug. 14, 1984, Ser. No. 640,624
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—723 **14 Claims**



1. Matrix display simulation apparatus comprising the combination of:
means for coding an input image into a first array of digital signals of magnitudes representing image density at each input image pixel;
means for conforming the digital signal magnitudes representing predetermined numbers of adjacent pixels in said input image to a common value, a second array of said common value signals being capable of representing said input image in decreased resolution, larger pixel form;
means for scaling the range of density values in said common value signal second array into a third array of predetermined dynamic signal range;
fourth array random number means of predetermined numeric means and variance for amplitude modulating similar magnitude values in said predetermined dynamic range third array, thereby forming a pseudo noise modulated fifth array of pixel density values;
cathode ray tube display means for reconstructing said fifth array of pixel density values into an output image having controlled resolution, dynamic range and pseudo noise modulation;
grid writing means for obscuring from said display image a matrix element interstice simulating grid of periodically spaced orthogonal bands, said bands having controllable grid line spacing, width and pixel density.

4,658,247
PIPELINED, LINE BUFFERED REAL-TIME COLOR GRAPHICS DISPLAY SYSTEM
Nader Gharachorloo, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Jul. 30, 1984, Ser. No. 635,806
Int. Cl.[4] G09G 1/14
U.S. Cl. 340—747 **14 Claims**

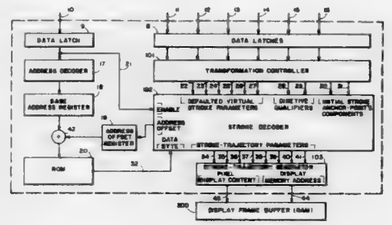
1. A real-time image processing system for creating color video images on a raster-scan display made up of a plurality of scan lines, each scan line made up of a plurality of picture elements ("pixels"), the image comprising a plurality of polygons, the polygons being based upon a plurality of data elements supplied from a host computer, each data element representing a single polygon to be displayed, the data element specifying at least beginning and ending scan lines, beginning and ending pixel locations on at least one line, and color for each polygon, comprising:
(a) circulating ring means for storing and sequentially accessing a plurality of data elements, comprising:
(1) storage means for storing a plurality of data elements in discrete locations;
(2) input means for accepting data elements for the host computer and placing them in locations in the storage means;
(3) memory management means for organizing the storage means, whereby each data element stored in the storage means may be individually accessed as if in a circular queue, whereby the storage means is organized by the memory management means as a first-in-first-out memory in which the first data element in the storage means is sequentially accessed immediately after the last data element;
(4) polygon processing for decomposing the polygon represented by the data elements accessed by the memory management means into scan lines;
(b) video refresh means for creating the video image on the raster-scan display, comprising:
(1) input means for accepting pixel data;
(2) video output means for generating video displays from the pixel data supplied by the input means;



(3) synchronization means for indicating the scan line and pixel being generated, having a clock input for synchronization pulses, and current pixel and line indication output means for indicating the point in the image being currently written to the raster-scan display;
(c) the polygon processing means comprising:
(1) input register means for accepting a data element representing a polygon from the storage means via the memory management means;
(2) selection means for examining the data element in the input register means and determining if at least part of the polygon represented by the element is located on the scan line currently being created, having a data input connected to the input register means, a synchronization input connected to the screen synchronization means of the video refresh means, and an active output indicating that at least part of the data element is located on the current scan line;
(3) painter station means for creating line buffer instructions, having a first input connected to the input register means, a second input connected to the active output of the selection means, a third input connected to the synchronization means of the video refresh means and output means adapted to producing micropainter, null, or microinspector instructions for loading into a line buffer pipeline;
(4) output register means for replacing a data element into the storage means via the memory management means;

(5) processing means for transferring data elements from the input register means to the output register means;
(6) the painter station being adapted to produce micropainter instructions at the output means if the active output of the selection means indicates that the data element in the input register means is active; the micropainter comprising at least the addresses of the leftmost and rightmost pixels on the current line on which the polygon represented by the data element appears, and the color of the polygon;
(7) the painter station being adapted to produce null instructions at the output means if the active output of the selection means is not active, the null instructions being instructions which do not have any active pixels or are identical to the last micropainter instruction produced by the painter station, whereby no change in the scan line is caused by the instruction;
(8) the painter station being adapted to produce microinspector instructions at the output means if the synchronization means of the video refresh means indicates a new line is to be displayed, the microinspector comprising at least a refresh flag;
(d) line buffer pipeline means comprising:
(1) a plurality of pixel processors, one for each pixel on a scan line, comprising:
(a) input register means for accepting an instruction, comprising storage for at least a beginning address and an ending address, a color, and a fresh flag;
(b) output register means for transmitting an instruction, comprising storage for at least a beginning address and an ending address, a color and a refresh flag;
(c) pixel buffer means for storing the color of a pixel, having a color input connected to the color storage of the input register means, a load input, a read input connected to the refresh flag storage of the input register means, and a video output;
(d) processing means for copying the instruction in the input register means into the output register means, comprising a clock input, a data input connected to the input register, and a data output connected to the output register, whereby a signal at the clock input causes the data in the input register to be copied to the output register;
(e) identifier means for indicating which pixel in the scan line is processed by the pixel processor;
(f) comparator means for determining if the instruction in the input register affects the pixel processor by the pixel processor, having inputs connected at least to the beginning and ending addresses in the input register means, and an active output adapted to indicate active if the pixel is addressed by the instruction, the active output being connected at least to the load input of the pixel buffer means;
(g) the pixel buffer means being adapted to storing the color from the color input when the load input is active; whereby the color from the input register is stored if the instruction affects the pixel processed;
(h) the pixel buffer means being adapted to output the color stored to the video output of the pixel buffer means when the read input is active, whereby the stored color output upon receipt of a microinspector instruction;
(2) video reading means for conveying video information to the video refresh means, having a plurality of inputs connected to the video outputs of the pixel buffer means, and an output connected to the input means of the video refresh means;
(3) the input register means of the first pixel processor being connected to the output means of the painter station means;
(4) the input register means of each pixel processor except the first being connected to the output register means of the preceding pixel processor in the pipeline means;
(e) clock means for generating clock signals on the pipeline for synchronization to the video refresh means, having an output connected at least to the clock input of the processing means of the pixel processors, and to the clock input of the synchronization means of the video refresh means whereby the instructions in the pipeline advance along the the pipeline from pixel processor to pixel processor, one step for each clock signal; the clock signals being synchronized such that the time for an instruction to pass through all the pixel processors on the pipeline is exactly equal to the time for one scan line to be generated in the video display.

4,658,248
METHOD FOR GENERATING STROKE-VECTOR CHARACTERS FOR USE IN A DISPLAY SYSTEM
Oliver T. Yu, Vancouver, Canada, assignor to Microtel Limited, Burnaby, Canada
Filed Nov. 1, 1984, Ser. No. 667,232
Int. Cl.[4] G09G 1/10
U.S. Cl. 340—739 **11 Claims**



1. In an electronic graphic display system capable of displaying characters on a display screen, a method of generating characters by interconnecting a series of stroke-vectors, each stroke-vector being characterized by at least a plurality of character-shape dependent stroke attributes and a plurality of character-field-size dependent stroke attributes, said method comprising the steps of:
receiving a first data signal defining a character type, character field dimensions, and a character drawing point;
retrieving from a first memory a plurality of encoded binary valued stroke-drawing directives for the character type defined by said first data signal;
retrieving from a second memory encoded initial values for each character-shape dependent stroke attribute, said initial values being independent of the character type;
decoding said encoded stroke-drawing directives and said encoded initial values and sequentially applying the decoded drawing directives to the decoded initial values thereby generating a series of stroke signals representing a series of interconnected stroke-vectors;
scaling the length of each stroke-vector so that the resulting character image is scaled to the character field dimensions defined by said first data signal; and
converting each scaled stroke-vector into a series of signals to generate start/stop positions, of each interconnected stroke-vector, said series of signals defining a character mask for the character type defined by said first data signal.

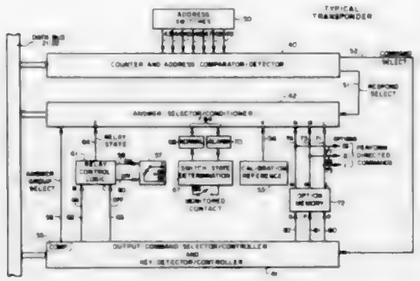
VOL 1077 ISS 2 AP 14 1987

4,658,249

DATA COMMUNICATION SYSTEM WITH KEY DATA BIT DENOTING SIGNIFICANCE OF OTHER DATA BITS

William R. Vogt, Rockaway, N.J., assignor to Baker Industries, Inc., Parsippany, N.J.

Filed Mar. 27, 1985, Ser. No. 716,799
Int. Cl.[4] H04Q 9/00
U.S. Cl. 340—825.63 **19 Claims**



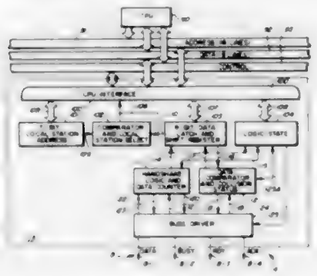
1. A communication system comprising a transmitter for sending composite signals in successive polls, each composite signal having successive segments which represent different data, and a receiver operable to receive the successive polls of composite signals and to recognize the different data in a composite signal, which receiver includes memory means for storing information denoting the status of at least one segment of a composite signal, characterized in that said transmitter includes means for modifying at least one segment of a given composite signal in a predetermined manner within a given poll, and said receiver is operable, upon receipt of said given composite signal with a modified segment in a poll immediately following a poll with no modification of any signal segment, to assign a different significance to data in the remainder of said given composite signal and/or in at least one other received composite signal.

4,658,250

COMPUTER NETWORK OPERATING METHOD AND APPARATUS FOR DETECTING AND EXPLOITING DATA COLLISIONS TO MERGE READ TRANSACTIONS

Douglas G. Nering, 572 W. Pima Ave., Coolidge, Ariz. 85228, and James L. Bucanek, P.O. Box 5741, Scottsdale, Ariz. 85261

Filed Jun. 15, 1984, Ser. No. 621,070
Int. Cl.[4] H04Q 9/00
U.S. Cl. 340—825.5 **17 Claims**



1. A computer network comprising:
(a) a bus, including a bus conductor;
(b) a plurality of processors coupled to said bus, some or all of which processors contend for control of said bus in order to transmit transmission header information, including priority header information followed by transaction header information, via said bus to a destination address, said priority header information in each of said processors including a plurality of bits arranged as priority code;
(c) data asserting means in each of said processors causing said contending processors to each concurrently assert corresponding bits of their respective priority codes on said bus in order of decreasing bit significance, such that if any of said corresponding priority code bits is at a first logic level, said first logic level appears on said bus conductor and otherwise a second logic level appears on said bus conductor;
(d) priority bit reading means in each of said processors for causing each contending processor to read the priority bit logic levels appearing on said bus conductor;
(e) priority bit comparing means in each of said processors for causing each contending processor to compare the logic levels of the bits of its priority code to corresponding logic levels of bits read on said bus conductor in order of decreasing bit significance to detect the occurrence of any data mismatches therebetween;
(f) mismatch data gating means in each of said processors for causing any of said contending processors for which a data mismatch is detected to immediately stop asserting further bits of its transmission header information;
(g) transaction data transmission means in each of said processors for causing a highest priority one of said contending processors which does not detect a data mismatch during transmission of its priority header information to transmit its transaction header information on said bus;
(h) transaction header reading and comparing means for causing each other one of said contending processors to read the bits of data of said transaction header information transmitted by said highest priority contending processor on said data bus and compare those bits with respective corresponding bits of the transaction header information of that contending processor to detect any mismatches therebetween; and
(i) mergeability determination means in each of said processors responsive to said transaction header reading and comparing means for causing each of said other ones of said contending processors to determine, in response to its comparing of its own transaction header information with that transmitted on said bus by said highest priority contending processor, whether a first transaction specified by the transaction header information of that contending processor can be merged with a second transaction specified by the transaction header information of said highest priority contending processor.

4,658,251

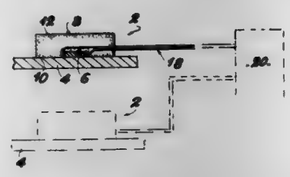
HEAT SEAL MONITORING DEVICES FOR A CONTAINER, WHICH MORE PARTICULARLY CONTAINS CALOGENIC MATERIAL

Paul Bourrelly, Marseilles; Jean Monier, Bourg la Reine; Henri Patin, Marseilles; Charles Sanson, Chatenay Malabry, and Robert Schoepp, Marseilles, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Jul. 18, 1985, Ser. No. 756,773
Claims priority, application France, Jul. 24, 1984, 84 11721
Int. Cl.[4] G08B 21/00
U.S. Cl. 340—820.17 **11 Claims**

1. A device for monitoring a container to check the presence and integrity of the container contents, said device comprising at least one seal for placement on a container surface element, each seal including at least one thermally responsive resistive component and a structure protectively enclosing and thermally insulating said at least one resistive component on said surface element, each seal being able to supply an electric indication from its said at least one resistive component repre-

senting the heat flux exchanged between the surface element and said seal and monitoring means spaced at a distance from



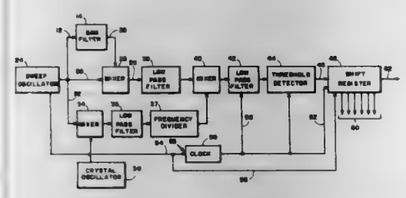
said seal and responsive to said electrical indication supplied therefrom.

4,658,252

ENCODER/DECODER FOR CARD ENTRY SYSTEM

Don H. Rowe, Portola Valley, Calif., assignor to GTE Government Systems Corporation, Stamford, Conn.

Continuation of Ser. No. 640,060, Aug. 13, 1984, abandoned.
This application Jul. 7, 1986, Ser. No. 882,438
Int. Cl.[4] G09C 1/00
U.S. Cl. 340—825.31 **22 Claims**



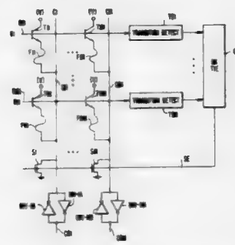
1. In an access control card entry system, apparatus for storing binary identification key codes and for recovering such key codes, said apparatus comprising:
a surface acoustic wave (SAW) delay line device mounted on a control card, said device having an input terminal, an output terminal and a plurality of delay line taps, for imbedding a binary identification key code therein by connecting selected ones of said taps to said output terminals;
frequency generating means having an output terminal connected to said input terminal of said SAW device, for generating a periodic swept frequency signal varying in frequency from f_o to f_f and including at least the operating frequency range of said SAW device;
oscillator means having an output, said oscillator means for providing a frequency reference signal of frequency f_o;
a first, second, and third frequency conversion means, each having first and second inputs and an output for generating an output signal whose frequency is equal to at least the difference in frequency of signals applied to said first and second inputs;
said first input of said first frequency conversion means connected to said SAW output terminal, said second input of said first frequency conversion means connected to said output terminal of said frequency generating means, for producing a periodic output signal having a unique frequency component corresponding to each connected tap of said SAW device;
said first input of said second frequency conversion means connected to said output terminal of said frequency generating means and said second input of said second frequency conversion means connected to said output of said oscillator means, said second frequency conversion means for down converting the frequency of said periodic swept frequency signal;
said first input of said third frequency conversion means connected to said output of said first frequency conversion means, and said second input of said third frequency conversion means connected to said output of said second frequency conversion means, said third frequency conversion means for generating a periodic pulse waveform with each pulse corresponding to said selected ones of said taps and said pulse waveform having a timed relationship between pulses corresponding to the time delay between said selected ones of said taps;
means for detecting the presence or absence of pulses in said periodic pulse waveform at each interval of time corresponding to the interval of time between adjacent time delay taps, and means for generating a binary pulse signal corresponding to said binary code.

4,658,253

INTERNALLY SYNCHRONOUS MATRIX STRUCTURE FOR USE IN EXTERNALLY ASYNCHRONOUS PROGRAMMABLE DEVICES

Timothy J. Johnson, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 9, 1985, Ser. No. 786,701
Int. Cl.[4] H04Q 1/00; G06F 7/38; H03K 19/173
U.S. Cl. 340—825.83 **12 Claims**

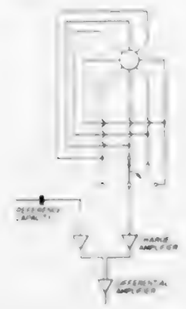


1. For use with a programmable logic device containing a plurality of programmable logic circuits arranged in rows and columns of a matrix, the logic response of each logic circuit in a respective row of the matrix being accessible by an input signal coupled to a row input link to which each logic circuit of said respective row is coupled, the logic response being coupled to a column output link to which the respective logic circuit is coupled, an arrangement for controlling the operation of said logic device comprising:
first means, coupled to the logic devices and column output links of each column of said matrix, for maintaining the logic states of said column output links in the absence of a transistion on a row input link and for causing a signal representative of the logic response of a respective logic circuit coupled thereto to be provided on its associated column output link in response to a transition from a first logic state to a second logic state on the row input link to which said respective logic circuit is coupled; and
second means, coupled to said first means, and responsive to a transition from said second logic state to said first logic state on a row input link, for causing the logic level of each of said column output links, the logic circuits associated with which have their row input links at said first logic state, to synchronously change state.

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4,658,254
GAUGING APPARATUS
Hyman Walton, Berkermet, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Aug. 13, 1984, Ser. No. 640,105
Claims priority, application United Kingdom, Aug. 16, 1983, 8322002
Int. Cl.[4] G01R *17/02;* **G01B** *7/14, 7/28*
U.S. Cl. 340—870.37 **3 Claims**



1. Apparatus for gauging physical dimensions of objects comprising a four arm electrical network, a capacitive transducer and a reference capacitor respectively forming two arms of the network, two charge amplifiers forming the other two arms of the network, means for applying an alternating current carrier input signal to the transducer and the reference capacitor, means for obtaining a signal dependent on the difference between the outputs of the charge amplifiers, means for demodulating the dependent signal to give an output representative of a change in a dimension of an object being gauged, the improvement wherein the transducer comprises a circular array of angularly spaced electrodes forming diametrically arranged pairs of capacitors, means for switching said pairs sequentially in the capacitive transducer arm of the network, means for positioning the transducer coaxially with the object for relative axial displacement therebetween, and means for effecting relative axial displacement therebetween whereby simultaneous application of the switching means and the displacement means results in a profiled scan of the object, said last mentioned means including means for positioning and moving objects through the transducer, said positioning and moving means comprising a pair of plungers adapted to releasably hold an object between the ends thereof.

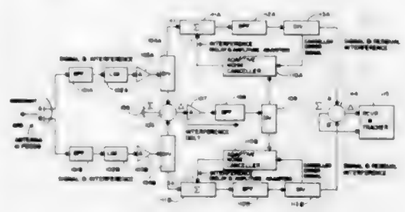
4,658,255
ADAPTIVE RADAR SIGNAL PROCESSING APPARATUS
Hiroshi Nakamura; Eiichi Kiuchi, and Toshihiko Hagisawa, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jul. 23, 1984, Ser. No. 633,030
Claims priority, application Japan, Jul. 21, 1983, 58-133345
Int. Cl.[4] G01S *13/52*
U.S. Cl. 342—91 **3 Claims**

1. An adaptive radar signal processing apparatus for a radar system comprising:
- a memory unit including a plurality of memories having a predetermined memory capacity, an input signal to the apparatus being successively stored in said plurality of memories and signals being read out of said memories;
- a weighting unit connected to said plurality of memories for applying a weight to each of the read-out signals in one-to-one correspondence;
- a region discriminator for discriminating two or more regions among a region having stationary objects such as ground and buildings, a region having moving objects such as droplets of rain and clouds, and a clear region having neither said stationary objects nor said moving objects, according to an input signal to said region discriminator;
- a control signal generator responsive to an output of said region discriminator, for generating a control signal for controlling the weight application of said weighting unit for each region; and



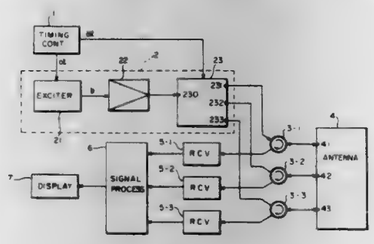
- a weight coefficient generator connected to said control signal generator and said weighting unit and having weight coefficients for said respective regions, said weight coefficients being switched according to said control signal from said control signal generator, thereby permitting suppression of undesired signals to be adapted for the individual regions.

4,658,256
COMBINED MONOPULSE COMPARATOR AND ADAPTIVE NOISE CANCELLER FOR ANTENNAS
Gerald H. Piele, Salt Lake City, Utah, assignor to Sperry Corporation, Blue Bell, Pa.
Filed Sep. 12, 1985, Ser. No. 775,381
Int. Cl.[4] G01S *3/16, 5/02*
U.S. Cl. 342—383 **14 Claims**



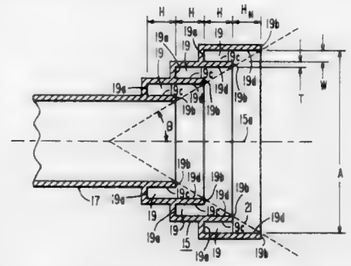
1. A monopulse comparator system comprising,
- antenna means comprising feed means for providing two input signals which are each representative of a signal pattern relative to a receiving axis of said antenna means which is symmetrically offset with respect to the signal pattern associated with the other of said input signals,
- first and second signal channels connected in parallel, each coupled to receive one of said input signals
- first comparator means coupled to both of said first and second signal channels to produce a difference signal which is a function of the difference between said input signals,
- first and second adaptive noise canceller means connected to receive said difference signal,
- first and second signal modifier means connected to said first and second adaptive noise canceller means, respectively, to selectively alter the status of the respective adaptive noise canceller,
- said first and second signal modifier means being coupled to supply modified signals which are modified by the respective adaptive noise canceller means, and
- second comparator means connected to receive signals from both of said first and second signal modifier means and to produce both a sum and a second difference signal which is a function of the sum and the difference between said modified signals.

4,658,257
RADAR SYSTEM
Toshiyuki Izutani; Yuichi Tomita, and Hiroshi Yokoyama, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jul. 17, 1984, Ser. No. 631,732
Claims priority, application Japan, Jul. 21, 1983, 58-133343
Int. Cl.[4] H01Q *3/22;* **G01S** *13/58*
U.S. Cl. 342—372 **2 Claims**



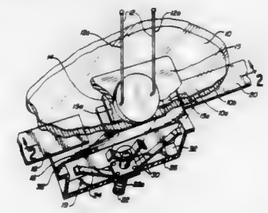
1. A radar system comprising:
- (a) clock means for generating a timing signal of a predetermined period;
- (b) exciter means for generating a high-frequency signal whose frequency is changed in response to said timing signal to have first and second values different from each other;
- (c) a transfer switch including an input terminal for receiving said high-frequency signal and first and second output terminals, said transfer switch separating said high-frequency signal into first and second separated signals according to said timing signal, said first and second separated signals having an individual frequency of said first and second values, respectively, said transfer switch outputting said first and second separated signals at said first and second output terminals, respectively;
- (d) first and second circulators connected to said first and second output terminals for receiving said first and second separated signals respectively;
- (e) an antenna unit including;
  - (1) first and second feed terminals connected to said first and second circulators respectively for receiving said first and second separated signals,
  - (2) an antenna element,
  - (3) first and second feed lines connected to said first and second feed terminals respectively and selectively coupled to said antenna element,
  - (4) said antenna unit forming first and second transmission beams in accordance with said first and second separated signals applied to said first and second feed lines, projecting said first and second transmission beams from said antenna element to receive first and second reflected beams of said first and second transmission beams, and outputting first and second power signals corresponding to said first and second reflected beams at said first and second feed terminals, respectively;
- (f) first and second receivers for receiving said first and second power signals via said first and second circulators, respectively; and
- (g) a signal processor connected to said first and second receivers for processing said first and second power signals.

4,658,258
TAPERD HORN ANTENNA WITH ANNULAR CHOKE CHANNEL
Robert M. Wilson, Hamilton Square, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Nov. 21, 1983, Ser. No. 554,086
Int. Cl.[4] H01Q *13/02*
U.S. Cl. 343—786 **7 Claims**



1. A microwave antenna providing substantially equal E and H plane pattern beam widths when operating over a given range of microwave frequencies comprising in combination:
- a flared horn having metallic tapered wave translation surfaces, and
- a metallic surfaced annular channel in and extending from said tapered wave translation surfaces to a terminating conductive short for modifying the boundary conditions for waves emanating from said horn,
- said annular channel extends concentric and parallel with the axis of symmetry of said horn with the side walls of said annular channel being of unequal length and parallel and said side walls overlapping each other from said terminating short over a distance of one quarter wavelength at one of said microwave frequencies.

4,658,259
ON-GLASS ANTENNA
Herbert R. Blaese, 3314 Olcott, Chicago, Ill. 60634
Filed Mar. 6, 1985, Ser. No. 708,667
Int. Cl.[4] H01Q *1/32*
U.S. Cl. 343—715 **13 Claims**



3. In an antenna for mounting on a motor vehicle's glass plate with a radiator extending from a first side of the glass plate and with an electrical connector and electrical wiring extending from the opposite, second side of the glass plate whereby energy is transferred through the glass plate and the drilling of a hole for connecting the radiator to the electrical connector is unnecessary, the improvement comprising, in combination:
- a current fed radiator extending in a first direction and connected to an electrically conductive outer RF transfer member, said outer transfer member being adapted for affixation to said first side of the glass plate;
- an electrically conductive RF inner transfer member

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adapted for affixation to said second side of the glass plate in alignment with said outer transfer member;

an electrical connector having a main electrical contact and a ground contact and being adapted for affixation adjacent said second side of the glass plate with said main electrical contact in engagement with said inner transfer member without the need for a resonant circuit interposed between the electrical wiring and the inner transfer member;

an electrically conductive field-cancelling member adapted for location on said second side of the glass plate adjacent to but in electrically spaced relation to said inner transfer member and extending in a direction that is significantly different from said first direction;

said field-cancelling member having a first non-volume containing portion thereof on one side of the inner transfer member and a non-volume containing and substantially balanced second portion on the other side of the inner transfer member; said field-cancelling member being operative to cancel the electromagnetic field in the plane of the field-cancelling member;

said ground contact of said electrical connector being adapted for engagement with said field-cancelling member; and

said electrical connector also including means for coupling said electrical wiring to said main contact and to said ground contact.

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TELESCOPING MULTIBAND ANTENNA

Robert E. Myer, Denville, N.J., assignor to AT&T Company and AT&T Bell Laboratories, both of Murray Hill, N.J.

Continuation-in-part of Ser. No. 624,456, Jun. 25, 1984. This application Apr. 10, 1985, Ser. No. 721,873

Int. Cl.[4] H01Q *9/18*

U.S. Cl. 343—792 **15 Claims**



1. A multiband antenna comprising

a dipole having first and second elements for radiating and receiving electromagnetic energy, and

means for tuning said dipole to have similar voltage standing wave ratio versus frequency response characteristic minima at each of first and second different frequencies, said tuning means comprising

a first one of said elements having a length of a quarter wavelength at approximately a mid-frequency point of a first frequency band including one of said minima,

a second one of said elements having a length such that the total length of said first and second elements is a half wavelength at approximately a mid-frequency of a range extending between a highest frequency of said first band and a lowest frequency of a second band which includes frequencies lower than any in said first band, said second band including another of said minima,

a radio frequency choke collinearly arranged with said elements and having a length of a quarter wavelength at approximately a mid-frequency of said second band, and

means for spacing said choke from the nearest one of said elements by a distance such that the sum of said distance and the length of said first element is equal approximately to a quarter wavelength at said second band mid-frequency.

4,658,261

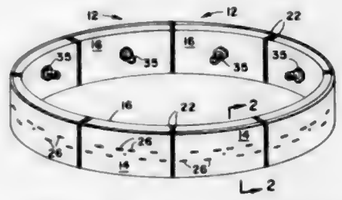
CIRCUMFERENTIAL SLOTTED RIDGED WAVEGUIDE ARRAY ANTENNA

Daniel G. Reid, Klamath Falls, Oreg., and C. Sterling Van Meter, Mt. View, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1985, Ser. No. 695,102

Int. Cl.[4] H01Q *13/10*

U.S. Cl. 343—771 **5 Claims**



1. An antenna for providing a omnidirectional circumferential radiation pattern, which comprises:

(a) a plurality of arcuate waveguide radiators disposed end-to-end to form a cylindrical antenna;

(b) each said arcuate waveguide radiator having a closed arcuate waveguide cavity of rectangular cross-section, an outer side wall of each said cavity having a plurality of longitudinal slots, an inner side wall of each said cavity having a central longitudinal ridge; and

(c) means for feeding connected to each of said arcuate waveguide radiators, said means for feeding being coupled through the inner side wall of each said cavity to a feedpoint at the center of the outer side wall of said cavity.

4,658,262

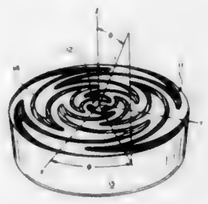
DUAL POLARIZED SINUOUS ANTENNAS

Raymond H. DuHamel, 707 Continental Circle, Apt. 1627, Mountain View, Calif. 94040

Filed Feb. 19, 1985, Ser. No. 703,042

Int. Cl.[4] H01Q *11/10, 1/36*

U.S. Cl. 343—792.5 **42 Claims**



1. A sinuous antenna comprising an array of N sinuous arms lying on a common surface each consisting of a sinuous conductor extending away from a common point with the common point the center of a coordinate system (r, ϕ) with a rotational symmetry such that a rotation of 360/N degrees about an axis containing the common point leaves the structure unchanged, wherein each arm consists of a cascade of cells numbered 1 to P, where 1 is the largest cell and the outside and inside radii of the pth cell, measured from the common point, are given by R_p and R_{p+1} and are related by the design parameter τ_p which is less than 1, wherein $R_{p+1}=\tau_p R_p$, each cell comprising a conductor portion having a sharp bend with a protrusion and wherein the center line of each sinuous conductor of each cell is defined by a line with the angular coordinate ϕ being an oscillating function of the radius and varying smoothly as a function of radius from ϕ_n to $\phi_n+\alpha_p$ to ϕ_n degrees for one cell and from ϕ_n to $\phi_n-\alpha_{p+1}$ to ϕ_n degrees for the next cell where the α_p's are positive numbers and ϕ_n is the angle to the start of the first cell for the n'th arm and the α_p's are such that the cells of adjacent sinuous arms are interleaved and spaced from one another.

4,658,263

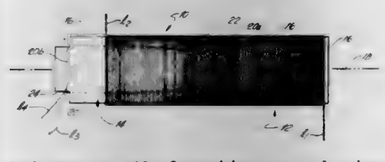
DUAL ANTENNA FOR MAGNETIC MARKERS

Jeffrey C. Urbanski, Sparta, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 11, 1985, Ser. No. 700,257

Int. Cl.[4] H01Q *1/36, 7/08;* **G08B** *13/26*

U.S. Cl. 343—788 **24 Claims**



1. A dual antenna capable of energizing a correctly oriented, closely coupled marker providing an identifiable signal in response to an applied magnetic interrogation field and receiving the response, for utilization in card readers, product verification devices, or the like, comprising:

a substantially flat elongated drive coil defining a longitudinal axis of the antenna, each individual winding of the drive coil extending in a plane substantially perpendicular to said longitudinal axis; and

a receive coil having a plurality of loops of differing lengths in the direction of the longitudinal axis of the antenna, a first portion of each of said loops being overlapped by said drive coil, said first portion extending in a direction substantially perpendicular to the longitudinal axis of said antenna, said plurality of loops being operataive to decrease the longitudinal position sensitivity of the antenna in relation to the marker.

4,658,264

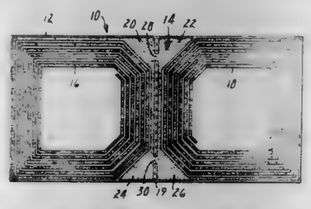
FOLDED RF MARKER FOR ELECTRONIC ARTICLE SURVEILLANCE SYSTEMS

Dennis L. Baker, St. Joseph Township, St. Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 9, 1984, Ser. No. 669,752

Int. Cl.[4] H01Q *1/36;* **H03H** *7/01*

U.S. Cl. 343—895 **24 Claims**



1. A method of fabricating a marker for use in a radio frequency electronic article surveillance system, said method comprising the steps of:

(a) providing a flexible polymeric insulative sheet,

(b) providing on one surface of said sheet an electrically conductive layer configured to form

(i) at least one multi-turn spiral resulting in an inductive element,

(ii) at least two substantially two-dimensionally shaped portions, each electrically connected to said sprial and

(iii) each having a substantially straight side parallel to and spaced a short distance from the straight side of another of said portions, leaving therebetween an elongated region in which said conductive layer is substantially absent to define a fold line therebetween, the two-dimensional shape of each of said two parts serving to thereby stiffen said sheet on opposite sides of said fold line to promote subsequent folding only along said fold line,

(c) folding said sheet back on itself, said two straight-sided portions stiffening the sheet on both sides of the fold line thereby opposing any tendency of the sheet to fold along any line other than said predetermined fold line and precisely localizing the fold such that said two portions become precisely positioned opposite each other with a dielectric sheet sandwiched therebetween to form at least one capacitive element, and

(d) bonding the facing surfaces together to thereby establish a given spacing between the positioned portions and hence a predictable capacitance for the resultant capacitive element, said capacitive element and inductive element in combination forming a circuit resonant at at least one resonant frequency.

4,658,265

FOLDABLE AND UNFOLDABLE ANTENNA REFLECTOR

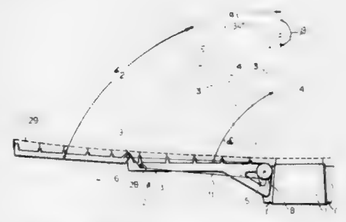
Horst Heinze, Feldkirchen-Westerham, and Henning Herbig, Holzkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed May 31, 1985, Ser. No. 739,826

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1984, 3423526

Int. Cl.[4] H01Q *15/20*

U.S. Cl. 343—915 **7 Claims**



1. A repeatedly unfoldable and foldable antenna reflector, comprising a central mounting body, reflector netting means, a plurality of folding ribs (2) for carrying said reflector netting means, each of said folding ribs including the following: first journal means (5) for tiltably securing said folding rib to said central mounting body (1), each folding rib having an inner rib section (3) and an outer rib section (4), second journal means (6) for tiltably securing said outer rib section to its inner rib section (3), drive means for performing a folding and unfolding operation mounted to said central body (1), said first journal means (5) being operatively secured to said central body (1) for rotation of said inner rib sections (3) through a first tilting

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angle range (α), said second journal means (6) being connected to a radially outer end of said inner rib section (3) for rotation of said outer rib section (4) through a second tilting angle range (β), said drive means comprising at least two first (7) and second (8) cable pulleys arranged for operating each inner rib section (3), said two cable pulleys (7, 8) being also rotatable about said first journal means (5), first coupling means (14, 15) for coupling said first cable pulley (7) to its said inner rib section (3) for rotating through said first tilting angle range (α), second coupling means (17, 15) for coupling said second cable pulley (8) to its said inner rib section for rotation through a first partial tilting angle range (α_1) together with said inner rib section (3), said second coupling means locking said second cable pulley (8) to said central body (1) against rotation with its inner rib section (3) through a second partial tilting angle range (α_2), a third cable pulley (9) journalled to said second journal means (6), third coupling means (20, 21) coupling each outer rib section (4) with the rotation of said third cable pulley (9) rotatable about said second journal means (6), said drive means driving said first cable pulley (7) and including an endless, crossing cable loop (11) for interconnecting said second (8) and third (9) cable pulleys with each other without slip, said second (8) and third (9) cable pulley having a transmission ratio corresponding approximately to the ratio between said second partial tilting angle range (α_2) to said second tilting angle range (β).

4,658,266

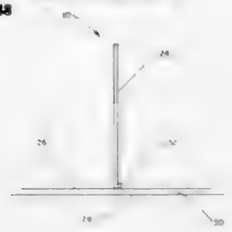
VERTICAL ANTENNA WITH IMPROVED ARTIFICIAL GROUND SYSTEM

Archibald C. Doty, Jr., Jackson Rd., Rte. 3, Box 126, Fletcher, N.C. 28732

Filed Oct. 13, 1983, Ser. No. 541,587

Int. Cl.⁴ H01Q *1/48*

U.S. Cl. 343—848 **2 Claims**



1. An improved vertical antenna and artificial ground system comprising: a folded unipole antenna fed at one end and terminating in a first ground plane means at the other end, said first ground plane means comprising an array of radial wires extending from said terminating end; and a second ground plane means spaced below and closely capacitively coupled to said first ground plane means, said second ground plane means extending at least to the periphery of said first ground plane means.

4,658,267

RIDGED WAVEGUIDE ANTENNA WITH PLURAL FEED INPUTS

Albert A. Roy, Lompoc, and George J. Monser, Goleta, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 31, 1984, Ser. No. 666,796

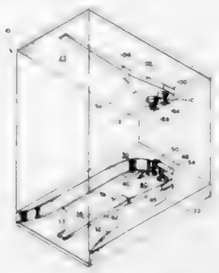
Int. Cl.⁴ H01Q *13/02*

U.S. Cl. 343—786 **7 Claims**

1. A radio frequency antenna element comprising:

(a) a waveguide comprising a ridge member disposed within a rearward portion of the waveguide; and

(b) a plurality of feed means, disposed within the rearward portion of the waveguide, for coupling energy from a corresponding plurality of sources to the ridge member, the waveguide, ridge member and plurality of feed means being arranged to combine the energy from each one of said sources within the waveguide, such combined energy



radiating from a forward portion of the waveguide into free space.

4,658,268

HYDRAULIC SYSTEM FOR RECIRCULATING LIQUID

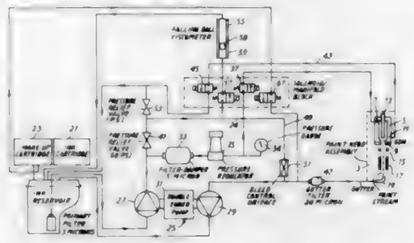
Alan Needham, Huntingdon, United Kingdom, assignor to Domino Printing Sciences Limited, Cambridge, United Kingdom

Filed Oct. 19, 1984, Ser. No. 662,536

Claims priority, application United Kingdom, Oct. 19, 1983, 8328000

Int. Cl.⁴ G01D *15/18*; B05B *5/00*

U.S. Cl. 346—1.1 **6 Claims**



6. A method of conveying liquid under pressure from a reservoir to a work head with a first pump, the work head having a collector for unused liquid through which air enters the system, and a second pump for returning air or a mixture of air and unused liquid to the reservoir, comprising the steps of:

(a) activating the first pump to operationally supply a first flow of liquid to said work head from said reservoir; and

(b) supplying a second flow of liquid from said first pump to the inlet of said second pump being a gear pump so that the gear pump applies sufficient suction to the collector, said first and second flows being supplied simultaneously.

4,658,269

INK JET PRINTER WITH INTEGRAL ELECTROHYDRODYNAMIC ELECTRODES AND NOZZLE PLATE

Ivan Rezanka, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1986, Ser. No. 869,647

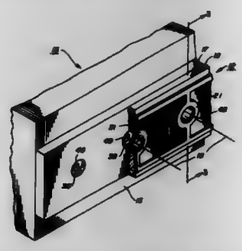
Int. Cl.⁴ G01D *15/16*; H01S *4/00*; C23F *1/00*

U.S. Cl. 346—75 **12 Claims**

1. In a continuous stream-type pagewidth ink jet printer of the type having a manifold with a nozzle plate containing a plurality of nozzles from which ink streams are emitted under pressure, the ink streams being stimulated by electrohydrodynamic electrodes provided integrally with but dielectrically spaced from the nozzle plate in an integral nozzle plate assembly attached to said manifold, said integral nozzle plate assembly comprising:

a sheet of dielectric material having a uniform thickness and a linear row of passageways perpendicularly penetrating the dielectric sheet;

an electroformed nozzle plate with a linear row of nozzles contigous with one side of the dielectric sheet, the nozzles being coaxial with the dielectric sheet passageways, the nozzles having a smaller cross-sectional area than that of the passageways in the dielectric sheet;



a plurality of electrodes formed on the side of the dielectric sheet opposite the side contiguous with the nozzle plate, each electrode surrounding a one of the passageways;

means to address the electrodes with a time varying voltage to stimulate each ink stream electrohydrodynamically, so that the ink stream breaks up into droplets a fixed distance from the nozzles; and

each internal surface of the passageway of the dielectric sheet having a coating that smooths said passageway surfaces and that is non-wettable by the ink.

4,658,270

RECORDING APPARATUS

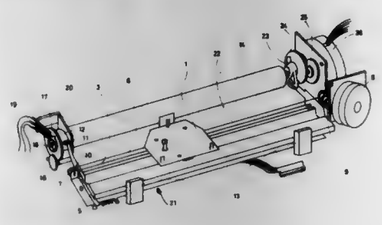
Hiroo Katsura, Nara; Keiji Yao, Yamatokoriyama, and Kazuya Koyama, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 17, 1984, Ser. No. 631,729

Claims priority, application Japan, Jul. 27, 1983, 58-138230; Jul. 27, 1983, 58-138231; Jul. 27, 1983, 58-138232

Int. Cl.⁴ G01D *15/10*; B41J *33/14*

U.S. Cl. 346—76 PH **15 Claims**



1. A thermal printing apparatus comprising:

a carriage;

a thermal head on said carriage for making a record on a recording medium in use by the effect of heat on an ink ribbon member;

an ink ribbon transport mechanism rotatably mounted on said carriage and including a ribbon reel axis;

means for moving said thermal head between a first position in which it is pressed against the recording medium and a second position in which it is spaced from the recording medium, and

means responsive to movement of said thermal head from said first position to said second position for slightly rotating said ribbon reel axis.

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ELECTROOPTICAL RECORDING DEVICE

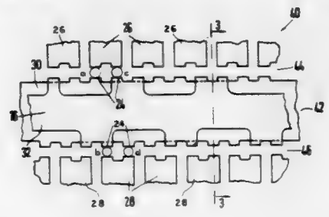
Gerhard Wessel, Stuttgart, and Heinz Ebner, Ditzingen, both of Fed. Rep. of Germany, assignors to Standard Electrik Lorenz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 6, 1985, Ser. No. 796,040

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1984, 3440406

Int. Cl.⁴ G01D *9/42*; G02F *1/07*

U.S. Cl. 346—107 R **1 Claim**



1. An electrooptical recording apparatus for recording image information on a line by line format comprising, in combination:

an electrically controllable optical component having a plurality of spot elements from which light impinges as a plurality of spots onto a plurality of recording spots on a recording medium along the length of a recording line;

an electrooptical switch with the recording apparatus having a layer of optically active material;

an electrode array within the recording apparatus having a plurality of central electrodes comprised of an upper central electrode and a lower central electrode vertically communicating with each cooperating with a plurality of external electrodes for controlling one of said recording spots; and

an insulating film placed within the electrode array and intermediate said upper central electrode and said lower central electrode for isolating said central electrodes, the electrode array providing control of N of said recording spots by employing N/2 driver stages.

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INK-SUPPLYING DEVICE

Shigeo Toganoh; Yohji Matsufuji, and Hiroo Ichikashi, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 419,516, Sep. 17, 1982, abandoned. This application Dec. 12, 1984, Ser. No. 681,067

Claims priority, application Japan, Oct. 2, 1981, 56-157294; Oct. 2, 1981, 56-157297; Oct. 2, 1981, 56-157298; Oct. 2, 1981, 56-157299; Oct. 2, 1981, 56-157300; Oct. 2, 1981, 56-157301; Oct. 2, 1981, 56-157302

Int. Cl.⁴ G01D *15/16*

U.S. Cl. 346—140 R **1 Claim**

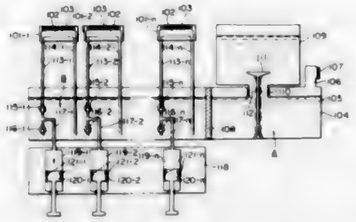
1. An ink-jet recording device, comprising a plurality of ink-jetting heads, each having a plurality of orifices able to apply ink to a recording medium simultaneously, a common reservoir for storing ink for jetting by all of said orifices and a system for supplying ink under pressure from said common reservoir to said heads, said system including a plurality of flow paths from said common reservoir to said heads and a plurality of ink-feeding means for pressurizing said flow paths to supply ink from said common reservoir under pressure to said orifices, wherein:

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each of said flow paths is connected to a respective said head;

each of said heads comprises a respective intermediary reservoir for receiving ink from said common reservoir and for supplying the ink of said orifices; and

each said flow path has a first pipe and a second pipe connected between said common reservoir and said respective intermediate reservoir, the first pipe being open to said common reservoir, the second pipe having two check valves with the same directional flow, and a respective said ink-feeding means being connected to the second pipe at a point between said check valves for individually pressurizing the second pipes.



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WALL MEMBER FOR INK LIQUID RESERVOIR MOUNTED ON A CARRIAGE IN AN INK JET SYSTEM PRINTER

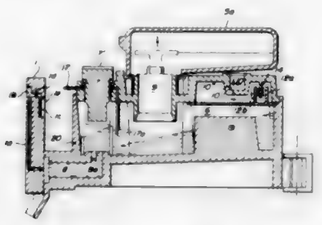
Yoshio Yuki, Nabari, and Takafumi Hara, Tsuzuki, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 13, 1984, Ser. No. 681,251

Claims priority, application Japan, Dec. 16, 1983, 58-194578[U]

Int. Cl.[4] G01D *15/16*

U.S. Cl. 346—140 R 9 Claims



1. An ink liquid supply system for an ink jet printer having a printing head mounted on a carriage, said system comprising:

ink liquid reservoir means, mounted on said carriage within said printing head for maintaining a supply of ink liquid, said ink liquid reservoir means including an upper ceiling wall with an opening and an inlet therein and a base portion opposing said ceiling wall;

a flat plate disposed in said ink liquid reservoir in order to prevent the ink liquid from reaching said opening in said upper ceiling, wherein said flat plate includes upward barrier plates extending toward said ceiling wall and having a free top, and wherein said ceiling wall includes a downward barrier plate extending toward said flat plate and having a free top, said downward barrier plate being inserted between said upward barrier plates of said flat plate so as to form a labyrinth path;

ink liquid cartridge means, removably mounted on said ink liquid reservoir means, for supplying the ink liquid into said ink liquid reservoir means through said inlet;

conduit means for delivering the ink liquid from said ink liquid reservoir means to said printing head, said ink liquid conduit means having an ink liquid inlet disposed in the base portion of said ink liquid reservoir means for communication therewith; and

means for preventing air from entering said ink liquid inlet of said conduit means to interrupt the flow of ink from said ink liquid reservoir means to said printing head even in the event said ink jet printer is inclined.

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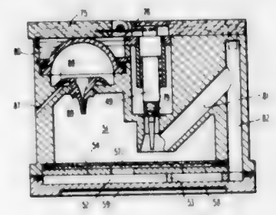
MELT INK JET APPARATUS WITH MEANS AND METHOD FOR REPRIMING

Thomas W. DeYoung, Stormville, N.Y., assignor to Exxon Printing Systems, Inc., Brookfield, Conn.

Filed Oct. 16, 1984, Ser. No. 661,925

Int. Cl.[4] G01D *15/16, 9/00*

U.S. Cl. 346—140 R 16 Claims



1. A method of operating an ink jet apparatus, said apparatus having an ink supply system for supplying hot melt type ink to be ejected in the form of ink droplets, comprising;

containing said ink in said ink supply system;

normally heating all of said ink in said ink supply system when said apparatus is in use to maintain said ink in its melted phase;

cooling said ink when said apparatus is not being used, whereby said ink reverts to its frozen phase, resulting in contraction of said ink and depriming of said apparatus;

re-heating said frozen ink to its melted phase; and

repriming said apparatus to eject ink through said supply system and out of said print head.

4,658,275

IMAGE FORMING APPARATUS

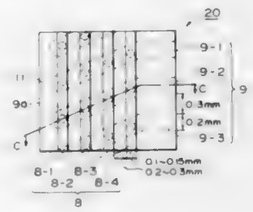
Haruo Fujii, and Yujiro Ando, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1985, Ser. No. 713,559

Claims priority, application Japan, Mar. 23, 1984, 59-55661; Mar. 30, 1984, 59-62961; Apr. 13, 1984, 59-74770; Nov. 16, 1984, 59-242045

Int. Cl.[4] G01D *15/06*

U.S. Cl. 346—154 15 Claims



1. An image forming apparatus for forming an image on an image bearing member, comprising:

developing means provided on one side of the image bearing member and including a developer carrier for carrying developer;

ion generating means provided on the opopsite side of the image bearing member and opposed to said developing means through the image bearing member, said ion generating means including a first electrode, a second electrode, a third electrode so disposed that said second electrode lies between said first electrode and said third electrode, a first dielectric member between said first electrode and said second electrode and a second dielectric member between said second electrode and said third electrode, said second dielectric member and said third electrode having a plurality of corresponding apertures;

means for applying an alternating potential between said first electrode and said second electrode;

means for applying a signal voltage to said second electrode in accordance with image formation;

means for applying a predetermined voltage between said third electrode and said developer carrier;

means for causing relative movement between the image bearing member and both of said developing means and said ion generating means; and

electrode means disposed between said third electrode and the image bearing member to prevent production of a foggy background.

4,658,276

PHTHALIDE DERIVATIVES AND RECORDING SYSTEM UTILIZING THE SAME

Nobuo Kanda, Osaka; Tetsuro Horiike, Kanagawa, and Mitsuru Kondo, Kawabe, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

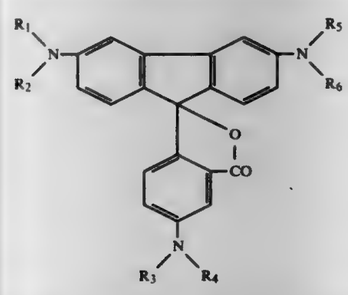
Filed Jun. 11, 1986, Ser. No. 872,865

Claims priority, application Japan, Jun. 22, 1985, 60-136553; Aug. 9, 1985, 60-176318; Aug. 27, 1985, 60-189218; Aug. 29, 1985, 60-190439; Oct. 31, 1985, 60-245734

Int. Cl.[4] B41M *5/16, 5/18, 5/22*

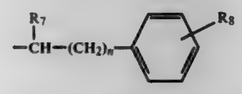
U.S. Cl. 346—220 3 Claims

1. A recording system which utilizes the color forming reaction between a colorless chromogenic material and an electron accepting acid reactant material, comprising a base sheet and a chromogenic material which comprises at least one phthalide derivative having the following formula:



(I)

wherein at least one of R_1, R_2, R_3, R_4, R_5 and R_6 radicals is an alkoxyalkyl having 3 to 8 carbon atoms; an unsaturated alkyl having 3 to 9 carbon atoms, tetrahydrofurfuryl; tetrahydropyran-2-methyl; an aralkyl represented by the following formula



in which n is 0, 1 or 2, R_7 is hydrogen or an alkyl having 1 to 4 carbon atoms and R_8 is hydrogen, halogen, an alkyl having 1 to 4 carbon atoms or an alkoxyl having 1 to 4 carbon atoms, and when n is 0 and R_7 is hydrogen, R_8 is halogen or an alkoxy having 1 to 4 carbon atoms; an alkyl having 2 to 8 carbon atoms and having phenoxy group which may be substituted by at least one selected from the group consisting of halogens, alkyls having 1 to 4 carbon atoms, and alkoxyls having 1 to 4 carbon atoms; or a halogenated alkyl having 1 to 8 carbon atoms; and each of the other ones of said radicals is hydrogen; an alkyl having 1 to 8 carbon atoms which may be substituted by at least one halogen; a cycloalkyl having 5 to 12 carbon atoms; an alkoxyalkyl having 3 to 8 carbon atoms; an unsaturated alkyl having 3 to 9 carbon atoms; tetrahydrofurfuryl; tetrahydropyran-2-methyl; an aralkyl which may be substituted by at least one selected from the group consisting of halogens, alkyls having 1 to 4 carbon atoms and alkoxyls having 1 to 4 carbon atoms; an aryl which may be substituted by at least one selected from the group consisting of halogens, alkyls having 1 to 4 carbon atoms and alkoxys having 1 to 4 carbon atoms; or an alkyl having 2 to 8 carbon atoms and having phenoxy group which may be substituted by at least one selected from the group consisting of halogens, alkyls having 1 to 4 carbon atoms, and alkoxyls having 1 to 4 carbon atoms; or one or two pairs of R_1 and R_2, R_3 and R_4, and R_5 and R_6 may form morpholino, pyrrolidino, piperidino or hexamethyleneimino group together with the adjacent nitrogen atom.

4,658,277

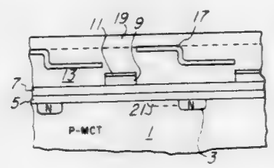
TWO LEVEL CHARGE IMAGING MATRIX DESIGN WITH STEPPED INSULATOR

Richard A. Schiebel, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 17, 1984, Ser. No. 611,456

Int. Cl.[4] H01L *29/78*

U.S. Cl. 357—24 21 Claims



1. A charge imaging matrix, comprising:

(a) a doped semiconductor substrate;

(b) a plurality of diodes in said substrate;

(c) a first electrical insulator layer over a surface of said substrate extending over said diodes;

(d) a first electrically conductive layer on a predetermined portion of said first insulator layer laterally spaced from said diodes;

(e) a stepped second electrical insulator layer having a first region which is thicker than a second region thereof to form said step and disposed over said first electrically conductive layer and said first insulator layer, said stepped layer having said step disposed over an edge of said diodes;

(f) a second electrically conductive layer along said step extending at both ends thereof over said first conductive layer and electrically insulated therefrom; and

(g) a third insulator over said second conductive layer.

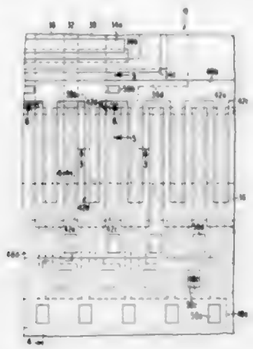
VOL 1077 ISS 2 AP 14 1987 UMI

4,658,278

HIGH DENSITY CHARGE-COUPLED DEVICE IMAGER AND METHOD OF MAKING THE SAME

Hamman Elabd, East Windsor, and Walter F. Kosonocky, Skillman, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 15, 1985, Ser. No. 723,150
Int. Cl.[4] H01L 29/78, 27/14, 31/00; G11C 19/28
U.S. Cl. 357—24 7 Claims



1. In a charge-coupled device imager which includes in a substrate of semiconductor material of one conductivity type, a first register having a plurality of spaced, parallel buried channel regions of a conductivity type opposite to that of the substrate in the substrate and extending along a surface of the substrate and a plurality of conductive gates extending transversely across the channel regions and insulated from the substrate surface and a second register having a buried channel region in the substrate and extending along said substrate surface substantially perpendicular to and across the ends of the first region channel regions and a plurality of conductive gates extending transversely across the second register channel region substantially parallel to the first register channel regions and insulated from said substrate surface, the conductive gates of said second register being arranged in a plurality of sets with a plurality of gates in each set, one gate of each set extending to a common conductive termination which is along the side of the second register channel region over and insulated from the first register and the gates of the other sets extending to conductive termination which is along the side of the second register channel region opposite to the first register, the improvement comprising,

the termination strip is of conductive polycrystalline silicon, at least a portion of said termination strip extends over a portion of a conductive gate of said first register, a layer of silicon oxide extends between the overlapping portions of said termination strip and the said conductive gates of the first register, and a plurality of metal contacts are spaced along the portions of the termination strip which is over the conductive gate of the first register.

4,658,279

VELOCITY SATURATED STRAIN SENSITIVE SEMICONDUCTOR DEVICES

Henry Guckel, Madison, Wis., assignor to Wisconsin Alumini Research Foundation, Madison, Wis.

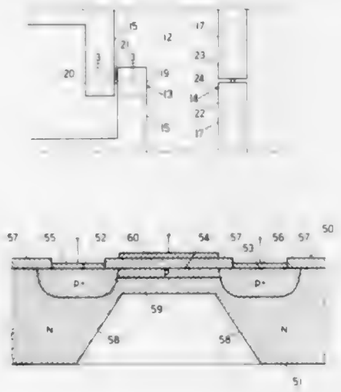
Filed Sep. 8, 1983, Ser. No. 530,401
Int. Cl.[4] H01L 29/84, 29/78
U.S. Cl. 357—26 28 Claims

1. Apparatus for measuring strain comprising:

(a) a substrate of insulating material which can be deformed to strain the substrate and having a top surface;

(b) a layer of crystalline silicon formed on the top surface of the substrate;

(c) a pair of terminal regions formed in the silicon layer and spaced from one another and having an impurity of a chosen conductivity type dispersed therein, and a channel region formed in the silicon layer having an impurity therein of the same conductivity type as the terminal regions and extending between them, the length, width, and depth of, and concentration of impurity in the channel region selected such that charge carriers in the entire channel region will reach velocity saturation at potentials applied to the terminal regions which are lower than the



breakdown of the channel region and with charge flow within the channel region being substantially uniformly distributed through its cross section;

(d) means for applying a potential across the terminal regions sufficient to cause the charge carriers in the channel region to be in velocity saturation such that the voltage-current characteristic of the channel region is non-linear; and

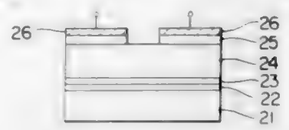
(e) means for measuring changes in the voltage-current characteristics of the channel region as the substrate is deformed and thereby strain is induced in the channel region.

4,658,280

AMORPHOUS SILICON PHOTOSENSOR OF LAYERS HAVING DIFFERING CONDUCTIVITY

Toshiyuki Komatsu, Yokohama; Katsumi Nakagawa, Kawasaki; Masaki Fukaya, Yokohama, and Tatsumi Shoji, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1984, Ser. No. 586,972
Claims priority, application Japan, Mar. 11, 1983, 58-41160
Int. Cl.[4] H01L 27/14
U.S. Cl. 357—30 12 Claims



1. A photoconductive photosensor comprising in sequence a laminate of a first layer, a second layer and a third layer, each layer comprising amorphous silicon and the third layer having at least a pair of electrodes separated from each other at a given interval said electrodes not being directly connected to

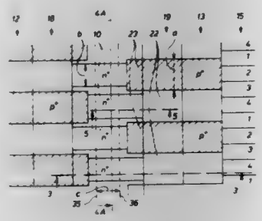
each other, characterized in that said second layer has p-type semiconductor characteristics, said first layer and said third layer have N-type or undoped semiconductor characteristics, and at least said first layer has photoconductivity.

4,658,281

RADIATION-SENSITIVE SEMICONDUCTOR DEVICE

Johannes M. Sevenhans, Brasschaat, and Gilbert J. Declerck, Herent, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Jul. 3, 1984, Ser. No. 627,659
Claims priority, application European Pat. Off., Jul. 6, 1983, 83201004.5
Int. Cl.[4] H01L 27/14, 27/02
U.S. Cl. 357—30 7 Claims



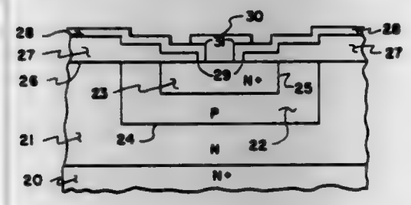
1. A radiation-sensitive semiconductor imaging device comprising: a semiconductor body which at its surface has a plurality of distinct radiation-sensitive adjacent diodes for generating charge carriers when exposed to radiation, means for electrically insulating said diodes from each other comprising depletion regions of the semiconductor body, the distances between the diodes being sufficiently small so that said regions are fully depleted, means for causing the potentials of the diodes to adjust in accordance with the amount of charge that is produced during radiation exposure of said sensors, which includes storage means for each diode for collecting charge carriers generated thereby over a finite period of time into charge carried packets, thereby to cause a relative displacement of the potential levels of unequally irradiated photodiodes so that the blooming potential (V_{mb}) of the device amounts to four times the maximum potential (V_{mo}) of the potential hump (V_m) between two depleted adjacent diodes, charge read-out means, transfer means operable for transporting charge carrier packets into said read-out means, and a controlling clock generator for operating said transfer means to transfer said charge carrier packets into said read-out means.

4,658,282

SEMICONDUCTOR APPARATUS

Walter T. Matzen, Jr., Richardson, Tex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 28, 1984, Ser. No. 625,483
Int. Cl.[4] H01L 29/72, 29/34
U.S. Cl. 357—34 9 Claims



1. A semiconductor device having a first semiconductor junction therein intersecting a surface at which a selected surface current can flow from one side of said first semiconductor junction to another, said device comprising:

a semiconductor material body of a first conductivity type at least in a first portion thereof forming a first body portion, but being other than of said first conductivity type in at least one selected region in said first body portion including a first selected region which is of a second conductivity type, said first semiconductor junction separating said first selected region from that part remaining of said first body portion, and said semiconductor material body having a first major surface with (i) said first body portion intersecting said major surface to form a first major surface portion, and (ii) with said first selected region also intersecting said first major surface to form a first selected region surface portion contained in said first major surface portion, such that said first selected region surface portion is separated from that part remaining of said first major surface portion by said first semiconductor junction where said first semiconductor junction intersects said first major surface to thereby form a first semiconductor junction surface intersection peripheral to said first selected region where said first selected region intersects said first major surface; and

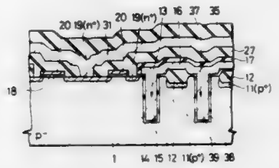
first and second electrical insulating layers disposed at least in part on said semiconductor material body at said first major surface portion in such a manner that said first electrically insulating layer is directly on and covers a selected portion of said first semiconductor junction surface intersection and said second electrical insulating layer is directly on and substantially covers at least some of those portions remaining of said first semiconductor junction surface intersection, said second electrical insulating layer being a passivating layer which leads to reduced surface current flowing across portions of said first semiconductor junction surface intersection thereunder relative to surface currents flowing across portions of said first semiconductor junction surface intersection under said first electrical insulating layer if a voltage potential difference is maintained between said first selected region and those portions of said first body portion immediately across said first semiconductor junction surface intersection from said first selected region.

4,658,283

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING A CARRIER TRAPPING TRENCH ARRANGEMENT

Yoshihisa Koyama, Mitaka, Japan, assignor to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

Filed Jul. 22, 1985, Ser. No. 757,842
Claims priority, application Japan, Jul. 25, 1984, 59-153024; Sep. 26, 1984, 59-199623
Int. Cl.[4] H01L 27/02, 29/78, 29/06; G11C 11/24
U.S. Cl. 357—41 4 Claims



1. A semiconductor integrated circuit device comprising:

a semiconductor substrate of first conductivity type having one main surface;

a memory cell array formed on said semiconductor substrate

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and including a plurality of memory cells arrayed in rows and column;

a peripheral circuit formed on said semiconductor substrate in portions other than said memory cell array; and

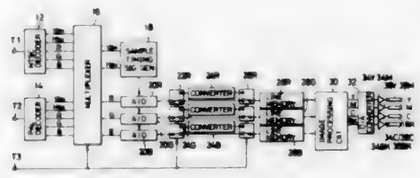
a carrier trapping region formed in said semiconductor substrate between said memory cell array and said peripheral circuit, wherein said carrier trapping region comprises trenches formed in the main surface of said semiconductor substrate, an insulating film which is formed on the surface of said trenches, and an electrode made of a conductive material formed on the surface of said insulating film in said trenches.

4,658,284

IMAGE FORMING APPARATUS

Hideaki Kawamura, Tokyo; Nobuaki Sakurada, Yokohama, and Takashi Sasaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1985, Ser. No. 688,429
Claims priority, application Japan, Jan. 11, 1984, 59-3291
Int. Cl.⁴ H04N *9/79, 11/20*
U.S. Cl. 358—11 **10 Claims**



1. An image forming apparatus comprising:

generating means for generating an analog video signal including a large number of horizontal scanning lines;

sampling signal generating means for generating a sampling signal to sample said video signal point by point with respect to each horizontal scanning line;

analog-digital converting means for converting said analog video signal into a digital value in response to said sampling signal;

memory means for storing said digital value;

pixel number converting means, including a multiplier unit in which each digital value in said memory means is multiplied by a predetermined coefficient and an adder unit in which the multiplied results of consecutive digital values of said multiplier unit are added for converting six digital values in said memory means into five output values; and

image forming means for image formation in response to signals corresponding to said output values of said converting means.

4,658,285

VIDEO SIGNAL NOISE REDUCTION APPARATUS

Henry G. Lewis, Jr., Hamilton Square, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 30, 1985, Ser. No. 782,128
Int. Cl.⁴ H04N *9/64, 5/213*
U.S. Cl. 358—36 **4 Claims**

4. Recursive filter circuitry for enhancing the signal-to-noise ratio of a video signal comprising:

an input terminal for applying said video signal;

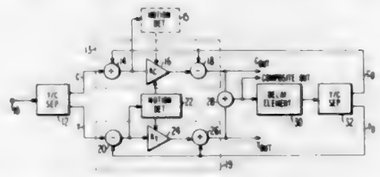
first filter means coupled to said input terminal, and having a plurality of output terminals, for providing at respective ones of said plurality of output terminals, signals occupying substantially exclusive portions of the frequency spectrum of said video signal;

a plurality of scaling/combining circuits having respective first input terminals coupled respectively to ones of said plurality of output terminals, and having respective second input terminals, for combining signals applied to said first and second input terminals in predetermined ratios;

means coupled to said plurality of scaling/combining circuits for summing signals produced thereby to produce a combined recursively filtered video signal;

a delay element coupled to said means for summing, for delaying said combined video signal by at least substantially one field interval;

second filter means, having an input coupled to said delay element and having a plurality of output terminals for providing at respective ones of said plurality of output



terminals, signals occupying substantially exclusive portions of the frequency spectrum of delayed combined video signal, the frequency bands occupied by respective ones of the signals provided by said second filter means substantially corresponding to frequency bands of respective ones of signals provided by said first filter means; and

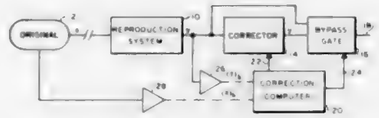
respective means for coupling the output terminals of said second filter means to respective second input terminals of said plurality of scaling/combining means wherein the signals applied to the first and second input terminals of each of said scaling/combining circuits occupy substantially similar frequency bands.

4,658,286

METHOD AND APPARATUS FOR CORRECTING DISTORTIONS IN REPRODUCING SYSTEMS

Jack Schwartz, and Tai T. Wu, both of 147 Ridge St., Arlington, Mass. 02174

Filed Mar. 28, 1983, Ser. No. 479,275
Int. Cl.⁴ H04N *5/14*
U.S. Cl. 358—37 **16 Claims**



1. A method of correcting distortions of an original phenomenon introduced by a system for reproducing said phenomenon, said method comprising the steps of:

A. defining a plurality of subcategories of the information content of said phenomenon;

B. defining a first set of values representing an ideal representation of said phenomenon in each of said subcategories;

C. defining a second set of values corresponding to said first set, and representing said phenomenon as reproduced by said reproducing system in each of said subcategories;

D. comparing said first and second sets of said values to thereby define a distortion function;

E. if said distortion function does not indicate the absence of distortion, calculating a correction to be applied to said phenomenon as reproduced as a whole, said correction being a third set of said values representing an approximation of the effective inverse of said distortion function; and

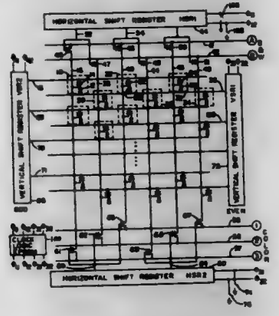
F. applying said correction to said phenomenon as reproduced as a whole whereby said phenomenon as reproduced and corrected as a whole represents the substantial equivalent of said original phenomenon as a whole.

4,658,287

MOS IMAGING DEVICE WITH MONOCHROME-COLOR COMPATIBILITY AND SIGNAL READOUT VERSATILITY

Cheng-wei Chen, Santa Clara, Calif., assignor to Fairchild Camera and Instrument Corp., Mt. View, Calif.

Filed Feb. 29, 1984, Ser. No. 584,855
Int. Cl.⁴ H04N *9/077, 3/15, 5/335, 9/07*
U.S. Cl. 358—48 **19 Claims**



19. An imaging device having monochrome and color outputs comprising:

an array of rows and columns of light sensing elements;

a first addressing circuit for activating the light sensing elements in selected ones of said rows at selected times;

a second addressing circuit for activating the light sensing elements in selected ones of said rows at selected times;

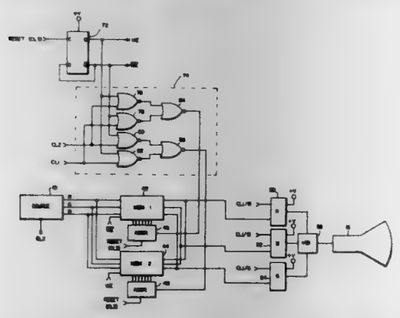
means for sequentially connecting each of said columns to either said monochrome output or said color output at any particular time as selected.

4,658,288

BEAM INDEX SYSTEM WITH SWITCHABLE MEMORIES

Richard W. Midland, Inverness, and Boris Rozansky, Skokie, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 6, 1986, Ser. No. 893,530
Int. Cl.⁴ H04N *9/24*
U.S. Cl. 358—67 **5 Claims**



1. In a beam index system of the type including a source of video data coupled to a memory for storing a line of data from said source and supplying the stored line of data under control of an index signal for display on the CRT, the improvement comprising:

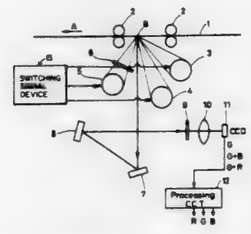
a second memory for storing a line of video data and switch means for alternately operating the memories to store a line of video information from said source and to provide a line of video information for display on said CRT.

4,658,289

COLOR-PICTURE ANALYZING APPARATUS FOR CONTINUOUSLY SWITCHING-ON GREEN LAMP AND FOR ALTERNATIVELY SWITCHING-ON BLUE AND RED-PURPOSE LAMPS

Fumikazu Nagano, and Toshio Urakawa, both of Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 4, 1985, Ser. No. 688,680
Claims priority, application Japan, Jan. 12, 1984, 59-4057
Int. Cl.⁴ H04N *1/46*
U.S. Cl. 358—75 **4 Claims**



1. A color picture analyzing apparatus with an image signal sensor, such as a charge coupled device, that analyzes color components of an original color document, comprising:

green lamp means for propagating green spectral radiations;

blue lamp means for propagating blue spectral radiations, said blue lamp means having a minimal afterglow time;

third lamp means for propagating light having broad band spectral characteristics that include within said broad band red spectral characteristics and having a minimal afterglow time;

switching means for controlling the operation of said green lamp means, said blue lamp means and said third lamp means during a period in which the color document is analyzed such that said green lamp stays ON at all times, while said third lamp mens and said blue lamp means are turned ON and OFF such that their respective ON times do not overlap; and

sharpcut filter means for filtering said light having broad band spectral characteristics so as to illuminate the document with light having red spectral characteristics when said switching means turns ON said third lamp means,

wherein light propagated from said green lamp means, said blue lamps means and said sharp cut filter means illuminates the document which produces a reflection signal containing color components, said reflection signal being input into an image processing circuit that includes the image signal sensor.

4,658,290

TELEVISION AND MARKET RESEARCH DATA COLLECTION SYSTEM AND METHOD

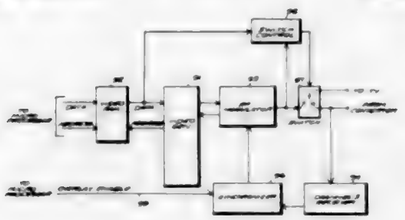
William J. McKenna, Barrington; Kenneth W. Silvers, Frankfort, both of Ill.; Rand B. Nickerson, Scarborough; Russell J. Welsh, Toronto, both of Canada; Harold R. Walker, Edison, N.J.; Joseph A. Caility, Jersey City, N.J., and Bohdan Stryzak, Bridge Water, N.J., assignors to CTBA Associates, Cincinnati, Ohio

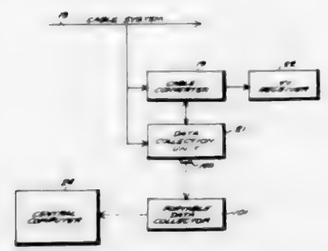
Continuation-in-part of Ser. No. 559,459, Dec. 8, 1983, Pat. No. 4,546,382, which is a continuation-in-part of Ser. No. 502,654, Jun. 9, 1983, Pat. No. 4,566,030. This application Oct. 5, 1984, Ser. No. 658,378

The portion of the term of this patent subsequent to Oct. 8, 2002, has been disclaimed.

Int. Cl.[4] **H04H** *9/00*

U.S. Cl. 358—84 **11 Claims**





1. A system for collecting data with respect to cooperating television viewers or panelists, including a centrally located computer and a plurality of remote units at a corresponding plurality of panelist locations, each of said remote units being for connection to a television broadcast receiver and comprising receiving means for receiving a television broadcast signal; a viewer control means including a channel selector coupled to said means for receiving a television broadcast signal; a data collection unit for coupling said receiving means to the television broadcast receiver, said data collection unit including a microprocessor and memory means for storing programming information for said microprocessor and for storing data; said viewer control means being monitored by said microprocessor which stores data representing the state of said viewer control means in said memory means; an optical reader associated with said data collection unit and for use by a panelist to scan data, said data being stored in said memory means under control of said microprocessor; a portable data collection unit including data storage means for periodic connection to said data collection unit to effect a transfer of data stored in said data collection unit memory means to the data storage means of said portable data collection unit, said portable data collection unit being connectable to said centrally located computer for transferring the contents of the portable data collection unit data storage means thereto.

10. A system for collecting data with respect to cooperating television viewers or panelists, including a centrally located computer and a plurality of remote units at a corresponding plurality of panelist locations, each of said remote units being for connection to a television broadcast receiver and comprising receiving means for receiving a television broadcast signal; a viewer control means including a channel selector coupled to said means for receiving a television broadcast signal; a data collection unit for coupling said receiving means to the television broadcast receiver, said data collection unit including a microprocessor and memory means for storing programming information for said microprocessor and for storing data, said viewer control means being monitored by said microprocessor which stores data representing the state of said viewer control means in said memory means, means under control of said microprocessor in said data collection units for initiating at the remote locations on-screen prompts overlayed on normal programming on the television receiver inquiring as to the identity of persons viewing the television receiver at the time of the prompts, said microprocessor functioning to place said viewer control means in a channel lock condition in association with the on-screen prompts, whereby changes entered in the viewer control means during on-screen prompts are stored in said memory means as representations of the identity of persons viewing the television receiver.

4,658,291

STEREOSCOPIC TELEVISION SIGNAL PROCESSING METHOD, SIGNAL TRANSMITTING UNIT, AND SIGNAL RECEIVING UNIT

Masanobu Morishita, Tokyo, Japan, assignor to NEC Home Electronics Ltd., Osaka, Japan

Filed Jun. 12, 1985, Ser. No. 743,848

Claims priority, application Japan, Jun. 12, 1984, 59-120436

Int. Cl.[4] **H04N** *13/00*

U.S. Cl. 358—92 **11 Claims**



1. A stereoscopic television signal processing method comprising the steps of

generating right and left eye picture signals respectively from a pair of image pickup means disposed at the right and left sides of an object, each said picture signal including four fields constituting a first odd-numbered field, a first even-numbered field, a second odd-numbered field and a second even-numbered field occurring in the foregoing order where each field includes a plurality of horizontal scanning lines;

sampling said right and left eye picture signals at predetermined time intervals so that the samples of the right and left eye picture signals are alternated on the horizontal lines of the four fields of each picture in such a manner that the sampling order is reversed (a) between successive horizontal scanning lines for each field, (b) between the first and second odd-numbered fields and (c) between the first and second even-numbered fields;

transmitting said samples to a receiving location;

separating from said samples, at said receiving location; the said four fields of each picture signal to thus extract said right and left eye picture signals; and

applying the extracted right and left eye picture signals respectively to image receiving means disposed at the right and left sides of an observer.

4,658,292

ENCIPHERING KEY DISTRIBUTION SYSTEM FOR SUBSCRIPTION TV BROADCAST OR CATV SYSTEM

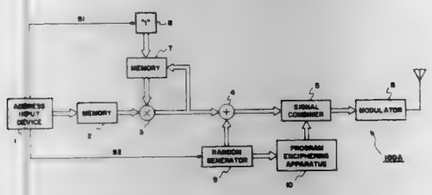
Eiji Okamoto, and Katsuhiro Nakamura, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Apr. 27, 1983, Ser. No. 489,243

Claims priority, application Japan, Apr. 30, 1982, 57-73143

Int. Cl.[4] **H04N** *7/167;* **H04L** *9/00*

U.S. Cl. 380—20 **10 Claims**



1. An enciphering key signal distribution system comprising:

transmitter means having first enciphering key signal generator means for generating a first key enciphering signal which is used for enciphering a TV signal, address generating means for generating addresses of subscribers, second enciphering key signal generator means for generating second enciphering key signals in response to said addresses, said second enciphering key signals being assigned on a one-to-one correspondence with said subscribers, multiplier means for producing a product of the second key signals associated with all of said subscribers, and adder means responsive to a signal supplied from said address generating means which is indicative of the last address of said subscribers for adding said first key signal to said product of said second key signals;

means for transmitting a signal responsive to the output of said adder means; and

receiver means having a divider means for dividing the signal transmitted from said transmitter means by one of said second enciphering key signals which is assigned to identify the particular subscriber who is receiving the signal.

4,658,293

SCANNING CONVERSION METHOD AND SCAN CONVERTER UNIT EMPLOYING THE CONVERSION METHOD

Takeshi Arai, Nara; Masami Ebara, Osaka, and Hiroyuki Ueyama, Daito, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 25, 1985, Ser. No. 748,646

Claims priority, application Japan, Aug. 8, 1984, 59-165821; Aug. 17, 1984, 59-172091; Aug. 20, 1984, 59-172916; Oct. 3, 1984, 59-207706; Oct. 3, 1984, 59-207707

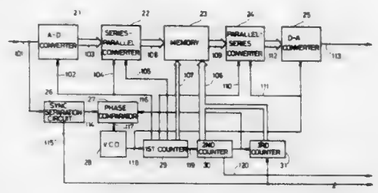
Int. Cl.[4] **H04N** *7/01*

U.S. Cl. 358—140 **18 Claims**

1. A scanning conversion method of converting an interlace scanning system video signal for two fields in an interlace scanning relation, each of said two fields being formed by (2N+1)/2 scanning lines (N being a positive integer), into a progressive scanning system video signal having the same field frequency as said interlace scanning system video signal and having twice as many scaning lines as said interlace scanning system video signal, said method comprising the steps of:

preparing a storage means haivng addresses capable of at least storing effective signal components included in said interlace scanning system video signal;

circulating a designation of said addresses of said storage means for each circulation cycle having a period corresponding to N+1 scanning lines;



progressively writing said interlace scanning system video signal by one scanning line per said designated address; and

reading twice each of said signal components stored in said addresses subjected to said writing at a speed twice that in said writing, thereby to convert said interlace scanning system video signal into said progressive scanning system video signal.

4,658,294

DIRECT MEMORY ACCESS CONTROL DEVICE FOR USE IN TELETEXT SIGNAL RECEIVING APPARATUS

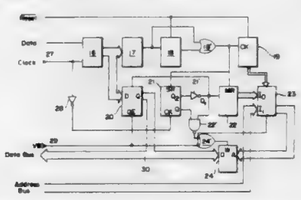
Chong S. Park, 48-36 Shohaldong, Kwangmyung city, Kyungkeedo, Rep. of Korea

Filed Dec. 27, 1985, Ser. No. 813,717

Claims priority, application Rep. of Korea, Dec. 31, 1984, 14476/84

Int. Cl.[4] **H04N** *7/08*

U.S. Cl. 358—142 **1 Claim**



1. In a teletext adaptor comprising a data separating element, a data receiving element including an improved direct memory access control device as a part and a data processing element, the improved direct memory access control device comprising;

a serial/parallel converter having an output connected to an input of a byte synchronization detector and a D-input of a flip flop;

a first OR gate having an input connected to an output of the byte synchronization detector, another input connected to an output of a multivibrator which is supplied with the output of the byte synchronization detector, and an output connected to a clock input of a 4 division counter, an input of a 64 division counter and a terminal of an 8 division counter;

a RAM having an input connected to an output of the flip flop and to a data bus; and

a second OR gate having an input connected to an output of a NAND gate, another input connected to receive a vertical blanking internal signal, and and output connected to a terminal of the RAM which also receives an address input from a multiplexer.

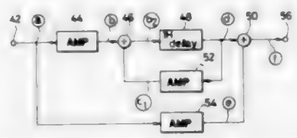
VOL 1077 ISS 2 AP 14 1987 UMI

4,658,295

VERTICAL CONTOUR CORRECTION DEVICE

Toshimitsu Umezawa, Kazo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 26, 1984, Ser. No. 674,654
Claims priority, application Japan, Nov. 26, 1983, 58-221396
Int. Cl.[4] H04N 5/14
U.S. Cl. 358—166 8 Claims



1. A vertical contour correction device for imparting preshoot and overshoot to a video signal from a video source and correcting the vertical contour of the video signal in the vertical direction as well as in the horizontal direction and providing an output corresponding to said corrected video signal, which comprises:

(a) first amplifier means (44,) for receiving the video signal from said video source and amplifying the same to provide an amplified signal;

(b) first signal combining means (46) for combining the amplified video signal with a feedback signal and for producing a combined third signal thereof;

(c) a single delay means (48) for receiving said combined third signal and for delaying same for producing a 1H delay signal where H is a horizontal scan period of said video signal;

(d) a feedback loop circuit having a second amplifier means (52) for receiving said 1H delay signal from the delay means and for producing the feedback signal;

(e) third amplifier means (54) for receiving the video signal and for producing a fourth signal; and

(f) second signal combining means (50) for receiving and combining said 1H delay signal and said fourth signal for producing said output,

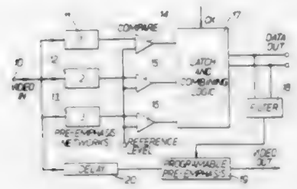
(g) wherein the amplification factors and the polarities of said first, second and third amplifier means have a predetermined relationship with each other.

4,658,296

DYNAMIC NOISE REDUCTION FOR VIDEO

Brian H. Beech, Hampshire, United Kingdom, assignor to Independent Broadcasting Authority, London, United Kingdom

PCT No. PCT/GB84/00069, § 371 Date Oct. 30, 1984, § 102(e) Date Oct. 30, 1984, PCT Pub. No. WO84/03599, PCT Pub. Date Sep. 13, 1984
PCT Filed Mar. 5, 1984, Ser. No. 668,769
Claims priority, application United Kingdom, Mar. 3, 1983, 8305858
Int. Cl.[4] H04N 5/213
U.S. Cl. 358—167 8 Claims



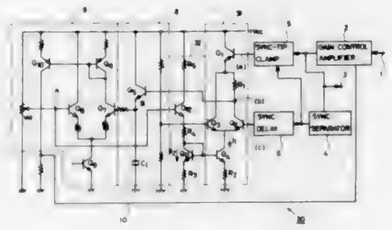
1. Apparatus for monitoring a sampled video signal to be transmitted by an FM channel, the apparatus comprising: means for receiving an input video signal to be monitored, means for calculating an optimum value of a parameter of the video signal to be transmitted and for generating a digital data signal indicative of the quantity of the parameter, first modifying means for modifying the input video signal by a further signal derived from the calculating means, second modifying means for modifying the input video signal, the calculating means operating on the modified input video signal, the second modifying means comprises a plurality of pre-emphasis networks each arranged to apply a different amount of pre-emphasis to the input video signal, and the calculating means determining the optimum value of pre-emphasis for comparing the outputs of the pre-emphasis networks with a datum level.

4,658,297

AUTOMATIC GAIN CONTROL CIRCUIT

Hiroshi Nomura, Moriguchi, and Tetsuo Kubota, Higashiosaka, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 18, 1985, Ser. No. 746,159
Claims priority, application Japan, Jun. 20, 1985, 59-126921
Int. Cl.[4] H04N 5/52
U.S. Cl. 358—174 4 Claims



1. An automatic gain control circuit comprising:

control video signal generating means for mixing a reference pulse in a pedestal of a clamped composite video signal to generate a control video signal,

reference potential providing means for providing a reference potential serving as a reference for gain control of said clamped composite video signal,

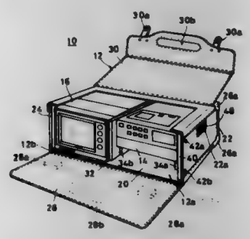
reference pulse control means coupled to said control video signal generating means and said reference potential providing means to change the amplitude of said reference pulse in accordance with said reference potential, and gain control means coupled to said control video signal generating means and said reference potential providing means for controlling the gain of said control video signal so that when a peak of said reference pulse is higher than a peak of said clamped composite video signal, the peak of said reference pulse may be equal to said reference potential and when the peak of said reference pulse is lower than the peak of said clamped composite video signal, the peak of said clamped composite video signal may be equal to said reference potential.

4,658,298

PORTABLE TYPE AUDIO-VISUAL SENSORY APPARATUS

Mituo Takeda; Katunobu Odamoto, and Keiji Uraki, all of Osaka, Japan, assignors to El Planning System Ltd., Osaka, Japan

Filed May 29, 1985, Ser. No. 739,017
Claims priority, application Japan, May 30, 1984, 59-80060; Dec. 29, 1984, 59-200425; Dec. 29, 1984, 59-200426; Dec. 29, 1984, 59-200427; Dec. 29, 1984, 59-200428; Dec. 29, 1984, 59-200429; May 1, 1985, 60-95146
Int. Cl.[4] H04N 5/64
U.S. Cl. 358—254 17 Claims



1. A portable case for audio-visual apparatus, comprising:

a first case portion including a bottom portion and three side walls connected thereto so as to form a substantial portion of a generally rectangular box;

a second case portion including a front cover and a top cover connected thereto, said second portion being connected at one edge thereof to said first case portion to complete, when in a closed position, said generally rectangular box;

a partition piece formed in said case for dividing said case into a first section and a second section;

a TV monitor removably mounted in said first section;

means for developing the signal displayed on said TV monitor mounted in said second section;

a switching power source mounted in said case for receiving power from an external source and supplying power to said TV monitor and said developing means; and

shield means, located in said case, for preventing any noises from said switching power source from interfering with the operation of said TV monitor and developing means.

4,658,299

IMAGE PROCESSING SYSTEM

Kanou Tanaka; Motofumi Konishi, both of Yokohama; Yoshio Ando, Chigasaki; Toshio Iwaya, Shiki; Masahide Kotera, Yokohama; Norio Hashimoto, Tokyo; Yasutoshi Sugita, Urayasu; Yoshitaka Sano, Matsudo, and Satoshi Ono, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1984, Ser. No. 658,300
Claims priority, application Japan, Oct. 12, 1983, 58-191336; Oct. 12, 1983, 58-191337; Oct. 12, 1983, 58-191340; Dec. 22, 1983, 58-243449
Int. Cl.[4] H04N 1/10
U.S. Cl. 358—256 22 Claims

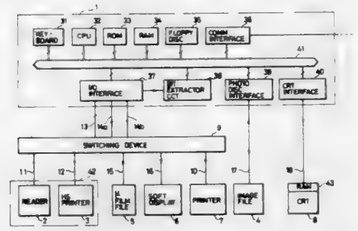
1. An image processing system comprising:

plural generating means for generating image signals;

plural forming means for forming an image based on the image signals;

image processing means for processing the image signals generated from said plural generating means and supplying the processed image signals to said plural forming means; and

switching means connected with said plural generating means and said plural forming means to selectively supply the image signals generated from one of said plural generating means to another of said plural forming means,



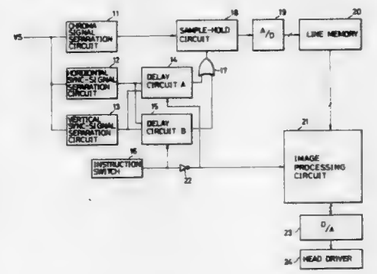
said switching means being adapted to supply different image signals from first and second image processing means respectively to mutually different ones of said plural forming means in a parallel manner, respectively.

4,658,300

SYSTEM AND METHOD FOR PROCESSING IMAGE SIGNALS

Hideaki Kawamura, Tokyo; Nobuaki Sakurada, Yokohama, and Takashi Sasaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,189
Claims priority, application Japan, Mar. 8, 1983, 58-37700; Mar. 8, 1983, 58-37701; Jul. 15, 1983, 58-129245
Int. Cl.[4] H04N 1/40, 11/06, 7/12
U.S. Cl. 358—280 19 Claims



1. Video signal processing method of fetching pixel signals by sampling an input video signal comprising a plurality of horizontal scanning lines, said method comprising the steps of:

setting the ratio represented by the rate of the number of vertical pixels to be obtained in the vertical direction to the number of horizontal scanning lines;

obtaining pixel signals indicative of said vertical pixels in the vertical direction by interpolation on the basis of pixel signals sampled from a plurality of adjacent horizontal scanning lines; and

sampling the input video signal in the horizontal direction at a horizontal sampling frequency determined by said ratio, wherein the sampling of one line in the vertical direction is performed in one vertical interval of the video signal and the horizontal position of one line in the vertical direction to be sampled changes at every vertical retracing interval of the video signal.

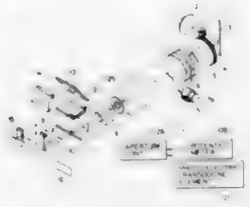
VOL 1077 ISS 2 AP 14 1987 UMI

4,658,301

PHOTOTELEGRAPHIC APPARATUS FOR TRANSMITTING IMAGES OF FILM AND DATA

Kenji Toyoda, Chigasaki; Makoto Kimura, and Masaki Isogai, both of Tokyo, all of Japan, assignors to Kyodo News Service and Nippon Kogaku K.K., both of Tokyo, Japan

Continuation of Ser. No. 614,683, May 29, 1984, abandoned. This application Mar. 17, 1986, Ser. No. 841,017
Claims priority, application Japan, Jun. 3, 1983, 58-98079
Int. Cl.[4] H04N *1/04*
U.S. Cl. 379—100 **25 Claims**



1. An apparatus for electrically transmitting through a telephone circuit the image of a pattern corresponding to the light transmission characteristic of a light-transmitting film substrate, said apparatus including:
(a) means for illuminating said film substrate;
(b) means for holding said film substrate;
(c) an optical system for causing the image of said pattern by the light from said illuminating means transmitted through said film substrate to be formed on a predetermined plane;
(d) means for disposing said illuminating means rearwardly of said film substrate relative to said optical system;
(e) photoelectric transducing means including an image sensor having a light-receiving surface for receiving the light from said illuminating means transmitted through said film substrate, said light-receiving surface being arranged at a position substantially coincident with said predetermined plane in the direction of the optical axis of said optical system, said photoelectric transducing means producing an output signal corresponding to the distribution of intensity of light on said light-receiving surface;
(f) means for changing the magnification of said optical system;
(g) means for detecting the magnification of said optical system and producing a detection signal;
(h) control means for causing said output signal to be independent of the magnification of said optical system in accordance with said detection signal; and
(i) means for transmitting said output signal to said telephone circuit

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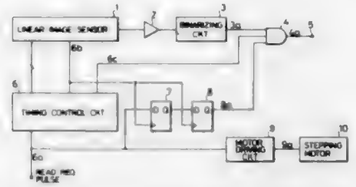
4,658,302

IMAGE READER

Masahiro Sakamoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1984, Ser. No. 664,303
Claims priority, application Japan, Oct. 28, 1983, 58-200754
Int. Cl.[4] H04N *1/024*
U.S. Cl. 358—294 **10 Claims**

1. An original document reading apparatus, comprising:
reading means for reading an original document line by line, said reading means being operated at a predetermined cyclic period, wherein, in a first period, read information is stored therein, and in a second period, the stored information is output such that outputting for one line and storing for the next line are performed in parallel;
transporting means for transporting the original document line by line relative to said reading means;
means for generating a reading request signal at an irregular period;
detecting means for detecting a predetermined level of said output signal from said reading means;
controlling means for allowing the storing operation of said reading means to start in synchronism with said reading request signal; and



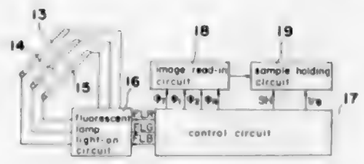
disabling means for disabling said detection by said detecting means with respect to said output signal which is output from said reading means at said predetermined period immediately after generation of said reading request signal.

4,658,303

IMAGE READING APPARATUS

Fumikazu Nagano, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 8, 1985, Ser. No. 720,712
Claims priority, application Japan, Apr. 9, 1984, 59-71605
Int. Cl.[4] H04N *1/46, 3/15*
U.S. Cl. 358—294 **4 Claims**



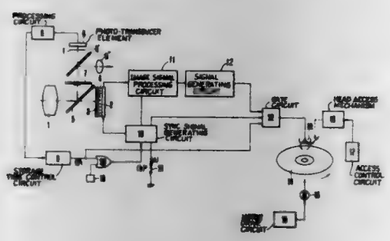
1. An image reading apparatus which detects, by the use of a CCD sensor the lights from a light source reflected by images, comprising:
lighting control means for lighting said light source only during a given period;
analog shift means for receiving a plurality of analog signals in parallel from said CCD sensor for output to an output circuit, and shifting said analog signals in accordance with a clock pulse;
transfer control means for prohibiting said analog signals from being provided to said analog shift means while said light source is turned on, and for providing said analog signals to said analog shift means while said light source is turned off;
clock pulse control means for providing said clock pulse to said analog shift means to control the shifting of the contents of said analog shift means to said output circuit while said light source is turned off.

4,658,304

IMAGE RECORDING SYSTEM

Tokuichi Tsunekawa; Nobuaki Date; Hiroshi Aisawa, all of Yokohama; Kazuya Hosoe, Machida, and Kazunori Urushibara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 031,168, Apr. 18, 1979, Pat. No. 4,366,501. This application Feb. 11, 1982, Ser. No. 347,966
Claims priority, application Japan, Apr. 23, 1978, 53-48010; Apr. 23, 1978, 53-48011
Int. Cl.[4] H04N *5/76*; G03B *7/08*
U.S. Cl. 358—310 **8 Claims**



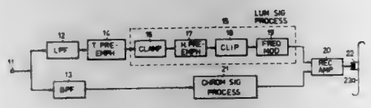
1. An image recording device comprising:
(A) image signal generating means for generating an image signal indicative of an object image, said image signal generating means being of a signal integration type which integrates said image signal over a signal integration time;
(B) control means for controlling the signal level of said image signal, said control means including a signal integration time control circuit for controlling said signal integration time to adjust the signal level of said image signal;
(C) recording means for recording said image signal;
(D) detection means for detecting whether the signal level of said image signal is below a predetermined level; and
(E) inhibit means responsive to said detection means for inhibiting the signal recording operation of said recording means when the detection means detects that the signal level of said image signal is below the predetermined level.

4,658,305

VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS HAVING A PRE-EMPHASIS AND DE-EMPHASIS SYSTEM FOR NOISE REDUCTION

Takuya Tsushima, Ayase, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 26, 1984, Ser. No. 634,810
Claims priority, application Japan, Jul. 29, 1983, 58-138874
Int. Cl.[4] H04N *9/80*; G11B *20/24*
U.S. Cl. 358—327 **7 Claims**



1. A video signal recording and reproducing apparatus having a pre-emphasis and de-emphasis system for noise reduction, said video signal recording and reproducing apparatus comprising:
input terminal means for receiving a color video signal which comprises a luminance signal and a carrier chrominance signal;
separating means supplied with the color video signal from said input terminal means for separating the luminance signal and the carrier chrominance signal from the color video signal;
pre-emphasis circuit means supplied with the separated luminance signal from said separating means, for relatively emphasizing a level of a high-frequency component in a temporal frequency of the separated luminance signal from said separating means compared to a level of a low-frequency component thereof;
modulatiing means for frequency-modulating an output signal of said pre-emphasis circuit means so as to obtain a frequency modulated luminance signal;
recording carrier chrominance signal processing means for frequency-converting the separated carrier chrominance signal from said separating means into a low frequency band so as to obtain a frequency converted carrier chrominance signal;
recording means for multiplexing the frequency modulated luminance signal and the frequency converted carrier chrominance signal, and for recording the multiplexed signal on a recording medium;
reproducing means for reproducing the recorded signal from said recording medium;
demodulating means for separating a reproduced frequency modulated luminance signal from an output reproduced signal of said reproducing means, and for demodulating the reproduced frequency modulated luminance signal so as to obtain a reproduced luminance signal;
filter circuit means for separating a reproduced frequency converted carrier chrominance signal from the output reproduced signal of said reproducing means;
reproduced carrier chrominance signal processing means for performing a predetermined signal processing with respect to the reproduced frequency converted carrier chrominance signal from said filter circuit means so as to obtain a reproduced carrier chrominance signal which is in an original frequency band and has an original phase;
de-emphasis circuit means supplied with the reproduced luminance signal from said demodulating means for relatively attenuating a level of a high-frequency component in a temporal frequency of the reproduced luminance signal from said demodulating means compared to a level of a low-frequency component thereof, said de-emphasis circuit means comprising an input terminal for receiving the reproduced luminance signal, first and second adding circuits each of which is supplied with the reproduced luminance signal from said input terminal, a delay circuit for delaying an output signal of said first adding circuit by a predetermined delay time, said predetermined delay time being a natural number multiple of one field or a time approximately equal thereto and being a natural number multiple of one horizontal scanning period, a first coefficient multiplier for multiplying a first coefficient to an output signal of said delay circuit and for supplying an output signal to said first adding circuit, a second coefficient multiplier for multiplying a second coefficient to the input signal or the output signal of said delay circuit and for supplying an output signal to said second adding circuit, and an output terminal through which a de-emphasized reproduced luminance signal from said second adding circuit is obtained pre-emphasis characteristic of said pre-emphasis circuit means and de-emphasis characteristic of said de-emphasis circuit means being complementary of each other; and
mixing means provided in an output stage of said de-emphasis circuit means, for mixing the de-emphasized reproduced luminance signal and the reproduced carrier chrominance signal so as to produce a reproduced color video signal.

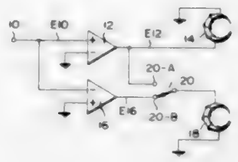
VOL 1077 ISS 2 AP 14 1987 UMI

4,658,306

METHOD OF RECORDING IDENTIFICATION SIGNAL ON SOFTWARE RECORDING MEDIUM

Masaaki Daigaku, and Shoichi Saito, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 627,775, Jul. 5, 1984, abandoned. This application Apr. 3, 1986, Ser. No. 848,329
Claims priority, application Japan, Jul. 8, 1983, 58-123492
Int. Cl.[4] G11B *5/02, 20/20*
U.S. Cl. 360—22 **14 Claims**



1. A method of recording signals on a software recording medium having first and second tracks, said method comprising the steps of:

recording a program signal for controlling a computer on the first and second tracks, thereby forming a first recorded program signal on the first track and a second recorded program signal on the second track;

carrying out said program signal recording step so that the first and the second recorded program signals are substantially identical to one another in amplitude, frequency and phase;

recording on the first track a first identification signal selected to identify the program signal; and

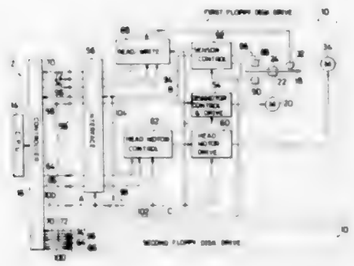
recording on the second track a second identification signal substantially identical to the inverted signal of the first identification signal.

4,658,307

DATA TRANSFER APPARATUS FOR USE WITH A FLEXIBLE MAGNETIC DISK OR THE LIKE

Hiroshi Tsuyuguchi, Tokyo, and Shozo Toma, Kokubunji, both of Japan, assignors to Teac Corporation, Tokyo, Japan

Filed Aug. 17, 1984, Ser. No. 642,050
Claims priority, application Japan, Sep. 14, 1983, 58-170946
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—69 **9 Claims**



1. A data transfer apparatus for use with a disklike record medium such as a flexible magnetic disk, the record medium being loaded in the apparatus for data transfer and being unloaded therefrom upon completion of data transfer, the apparatus comprising:

(a) a first motor for imparting rotation to the loaded record medium in a preassigned data transfer position within the apparatus;

(b) a first drive circuit for controllably driving the first motor;

(c) a transducer arranged for data transfer with the record medium in the data transfer position;

(d) a second motor for moving the transducer radially of the record medium;

(e) a second drive circuit for controllably driving the second motor;

(f) a read/write circuit connected to the transducer for processing data transferred between the transducer and the record medium;

(g) power supply means;

(h) sensor means for sensing the loading and unloading of the record medium and producing a DISK PRESENCE signal indicative of the presence or absence of the record medium in the apparatus, the sensor means being connected directly to the power supply means to be powered thereby;

(i) power control switch means connected between the power supply means an at least one of the first drive circuit and the second drive circuit and the read/write circuit, the power control switch means being further connected to the sensor means for actuation by the DISK PRESENCE signal depending upon whether the record medium is loaded in or loaded from the apparatus, the power control switch means being effective to hol said at least one of the first drive circuit and the second drive circuit and the read/write circuit disconnected from the power supply means when the record medium is unloaded from the apparatus; and

(j) a data select gate, included in the read/write circuit, for selectively allowing the passage of the data therethrough; and

(k) signal supply means for supplying a DRIVE SELECT signal for the data through the data select gate, the DRIVE SELECT signal having a first prescribed state for causing the data select gate to pass the data and a second prescribed state for causing the data select gate to inhibit the passage of the data;

(l) the power control switch means being further connected to the signal supply means for actuation by the DRIVE SELECT signal depending upon whether the DRIVE SELECT signal is in the first or second prescribed state, the power control switch means being effective to hold said at least one of the first drive circuit and the second drive circuit and the read/write circuit disconnected from the power supply means when the record medium is unloaded from the apparatus and when the DRIVE SELECT signal is in the second prescribed state.

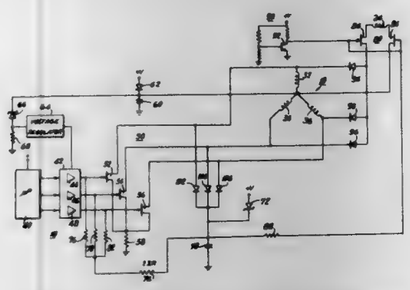
4,658,308

METHOD AND APPARATUS FOR RETRACTING HEAD AND BRAKING MOTOR OF A DISC DRIVE DEVICE

Charles M. Sander, Jr., Boulder, Colo., assignor to MiniScribe Corporation, Longmont, Colo.

Filed Mar. 5, 1986, Ser. No. 836,345
Int. Cl.[4] G11B *5/012, 5/54*
U.S. Cl. 360—74.1 **16 Claims**

1. A method of retracting the head assembly of a disc drive device and of braking the spindle motor therein upon interruption of power to the device, said method comprising the steps of generating an emf as a result of the rotation of said spindle motor following power interruption; using said emf to drive said head assembly in a retraction direction; dynamically braking said spindle motor following said power interruption; and delaying the dynamic braking of said spindle motor to allow



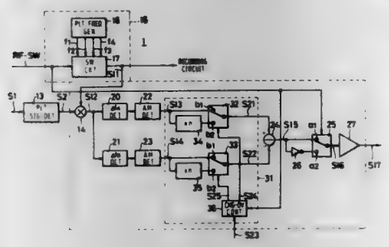
said head assembly time to retract before said spindle motor is braked.

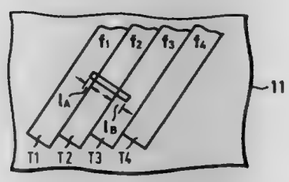
4,658,309

TRACKING CONTROLLING APPARATUS

Yukihiro Yasuda, Kanagawa; Hiroshi Yoshioka, Chiba, and Takao Takahashi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,808
Claims priority, application Japan, Mar. 18, 1982, 57-41638; Mar. 18, 1982, 57-41640
Int. Cl.[4] G11B *5/56*
U.S. Cl. 360—77 **12 Claims**





1. An apparatus for controlling the tracking position of a head which records and reproduces tracks sequentially on a record medium, each said track containing a pilot signal recorded therein having a different frequency from the frequencies of the pilot signals recorded in adjacent tracks, said frequencies changing in cylic sequence from track to track, comprising:

control signal generating means for generating first and second control signals which are respectively indicative of opposite displacements of said head from a track to be traced;

tracking error signal generating means for generating a tracking error signal from said first and second control signals, said tracking position being controlled in response to said tracking error signal; and

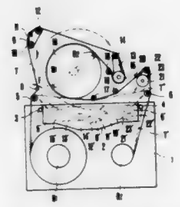
control means for controlling the magnitude of said control signals according to a desired tracking position of said head.

4,658,310

SYSTEM FOR MOVING A PINCH ROLLER IN A RECORDING AND/OR REPRODUCING APPARATUS

Takashi Kimura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1984, Ser. No. 613,602
Claims priority, application Japan, May 26, 1983, 58-92878; May 26, 1983, 58-92879; May 26, 1983, 58-92880
Int. Cl.[4] G11B *15/66*
U.S. Cl. 360—95 **27 Claims**



1. A recording and/or reproducing apparatus arranged to use a belt-shaped, record-bearing medium housed in a container which is provided with an opening, said apparatus comprising:

(a) a pull-out member for pulling out the record-bearing medium from said container;

(b) a capstan for moving the pulled out, record-bearing medium at the exterior of said container;

(c) a pinch roller for pressing the record-bearing medium against said capstan;

(d) a movable member for supporting said pull-out member and said pinch roller so as to position them spacedly from each other with a constant distance, with at least said pinch roller being movably supported thereon;

(e) moving means for moving said movable member so as to move said pull-out member and said pinch roller between their respective first position within the opening of said container and their respective second position near said capstan; and

(f) control means for controlling at least the position of said pinch roller relative to said movable member in accordance with the moved position of the movable member while said pull-out member and said pinch roller are moved from said first position to said second position.

4,658,311

MAGNETIC DATA TRANSFER APPARATUS HAVING A DISK DRIVE MECHANISM PROTECTED AGAINST LEAKAGE FLUX

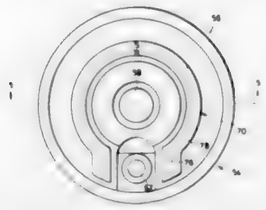
Takahiro Sakaguchi, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Apr. 4, 1985, Ser. No. 719,767
Claims priority, application Japan, Apr. 9, 1984, 59-52484[U]
Int. Cl.[4] G11B *17/02*
U.S. Cl. 360—97 **3 Claims**

1. A data transfer apparatus for use with a magnetic disk of the type having a hub of magnetic material attached centrally thereto, the hub having a first opening defined centrally therein and a second opening defined eccentrically therein, the apparatus including a disk drive mechanism for imparting rotation to the magnetic disk, comprising:

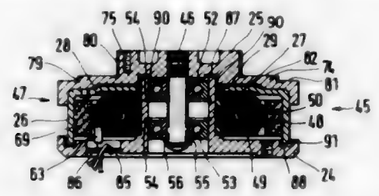
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(a) a spindle
(b) a turntable fixedly and coaxially mounted on the spindle for joint rotation therewith, the spindle partly projecting from the turntable for centering engagement in the first opening in the hub of the magnetic disk as the latter is placed on the turntable;
(c) a drive pin mounted eccentrically on the turntable for



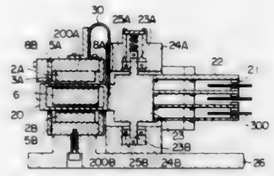
driving engagement in the second opening in the hub of the magnetic disk placed on the turntable; and
(d) permanent magnet means of substantially annular arrangement fixedly and concentrically mounted on the turntable, the permanent magnet means having north and south poles disposed adjacent each other in a radial direction of the turntable and both oriented opposite the hub of the magnetic disk and so reducing leakage flux.

4,658,312
DISK STORAGE DRIVE
Dieter Elsässer, and Bernhard Schuh, both of St. Georgen, Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co. K.G., St. Georgen, Fed. Rep. of Germany
Continuation of Ser. No. 412,093, Aug. 27, 1982, abandoned. This application Aug. 21, 1985, Ser. No. 767,671
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135385
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—97 **29 Claims**



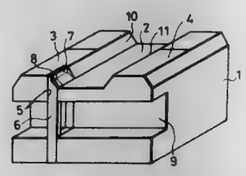
1. A disk storage drive for receiving at least one storage disk having a central opening, said drive including an outer rotor type motor, comprising
a rotor casing having a shaft mounted therein extending axially internally thereof;
a bearing system receiving said shaft and rotatingly mounting said rotor casing;
a stator including magnetically active parts of said motor, said rotor casing being mounted to rotate around the periphery of said stator,
said rotor casing having a storage disk receiving part, said storage disk receiving part having a substantially cylindrical circumferential outer surface portion coaxial to said shaft and formed to coaxially extend through said central opening of said storage disk to receive and drive said disk, said storage disk receiving part being made of a non-ferromagnetic material;
a separate distinct magnetic shield mounted internally of said rotor casing and having a substantially cylindrical wall portion generally peripherally surrounding the magnetically active parts of the motor and being radially enclosed for at least part of the axial extension thereof by said circumferential surface portion of said storage disk receiving part, the diameter of said substantially cylindrical circumferential portion of said disk receiving part being larger than the diameter of said substantially cylindrical wall portion of said magnetic shield and smaller than the diameter of the central opening in said magnetic disk, said magnetic shield being made of a ferromagnetic material.

4,658,313
MAGNETIC SHIELD FOR ROTARY ACTUATOR IN A MAGNETIC DISC DEVICE
Hatsuo Takahashi, Chigasaki, and Junichi Hibino, Minamiashigara, both of Japan, assignors to Hitachi, Ltd. and Hitachi Electronics Engineering Co., Ltd., both of, Japan
Filed Oct. 13, 1983, Ser. No. 541,441
Claims priority, application Japan, Oct. 15, 1982, 57-179869
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—98 **5 Claims**



1. A rotary actuator for a magnetic disc device comprising:
a head carriage rotatable in a horizontal plane and having a shaft for supporting at least one head arm extending radially outwardly from said shaft and having a magnetic head mounted at one end thereof;
a moving coil mounted on said head carriage and extending radially outwardly from said shaft in a direction substantially opposite to the extension direction of said at least one head arm;
a magnetic circuit assembly including a gap of a constant magnetic field serving as a space for the horizontal movement of said coil;
a relative position of said coil and said magnetic circuit assembly being controlled by a current flowing through said coil so that said magnetic head is positioned on a record medium;
said magnetic circuit assembly including at least one piece of a permanent magnet and a yoke member for circulating magnetic fluxes created by said permanent magnet through said gap; and
at least one magnetic shield plate interposed between said permanent magnet and said shaft for covering one side of said permanent magnet and one portion of said yoke member which is fixedly mounted to the magnetic circuit assembly, said one side of said permanent magnet and said one portion of said yoke member facing said head carriage and being adjacent said shaft, and at least one other magnetic shield plate for covering at least one other side of said permanent magnet and at least one other portion of said yoke member, said at least one other side of said permanent magnet and said at least one other portion of said yoke member not facing said head carriage.

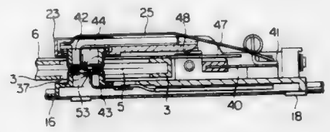
4,658,314
FLOATING TYPE MAGNETIC HEAD
Isao Sasazaki, Ojiya, Japan, assignor to Alps Electric Co., Ltd., Japan
Filed Dec. 20, 1984, Ser. No. 683,879
Claims priority, application Japan, Dec. 20, 1983, 58-240487
Int. Cl.[4] G11B *15/64*
U.S. Cl. 360—103 **3 Claims**



1. In a floating type magnetic head, for recording on and reproducing from a magnetic recording medium, comprising a pair of side portions each having a floating surface at one level facing the recording medium and adapted to float a small distance from the recording medium, a slider groove formed between said side portions defined by a bottom surface recessed below the level of said floating surfaces and a pair of tapered surfaces each bordering a respective one of said side portions and extending from said bottom surface of said slider groove to the floating surface of the respective one of said side portions, a core inserting groove extending through one of said side portions to the floating surface of said one side portion, and a magnetic core member disposed in said core inserting groove having an end portion extending to the level of said floating surface of said one side portion, said magnetic core member being fixedly mounted in said core inserting groove by a glass bonding agent applied around said core end portion in said core inserting groove,
the improvement wherein said slider groove is formed with a portion of the tapered surface bordering said one side portion cut away below the level of said floating surface forming a recess in the tapered surface of said one side portion, said core inserting groove is located in said one side portion such that a part of said core when inserted in the core inserting groove proximate said core end portion has a common boundary with said recess in said tapered surface, and the glass bonding agent for fixedly mounting said magnetic core member in said core inserting groove is filled only in the recess in a space defined between said common boundary and said tapered surface such that no significant amount of the glass bonding agent is exposed at the level of said floating surface facing toward the recording medium.

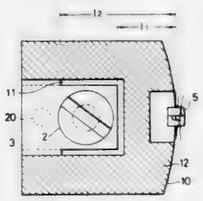
4,658,315
MAGNETIC HEAD MOUNTING DEVICE OF MAGNETIC RECORDING APPARATUS
Gen Seki; Seiichi Hayashi, both of Mito; Haruyuki Kaito, and Akira Tatsumi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 10, 1984, Ser. No. 659,564
Claims priority, application Japan, Oct. 12, 1983, 58-191510
Int. Cl.[4] G11B *5/54, 5/48*
U.S. Cl. 360—104 **5 Claims**

1. A magnetic head mounting device of a magnetic recording apparatus, comprising:
a chassis;
guide shafts provided in said chassis;
a carriage supported slidably on said guide shafts;
a head arm provided on said carriage;
a first magnetic head disposed on said carriage through a first gimbal;
a second magnetic head disposed on said head arm through a second gimbal, said second magnetic head being arranged to confront said first magnetic head through a magnetic disc; and
a head arm spring for pressing said second magnetic head against said first mangetic head through said magnetic disc,
said carriage including projections for mounting said first gimbal and for allowing a support surface of said first gimbal to extend into a first opening contained in a planar surface of a disc bearing hard cover,
said head arm including a support member for mounting said



second gimbal and for allowing a support surface of said second gimbal to extend into a second opening contained in a planar surface of a disc bearing hard cover; and
said first gimbal including a head mount section on which said first magnetic head is mounted, a support section loated outwardly of said head mount section and partially supported by said projections, and a plurality of connections for partially connecting said support section and said head mount section to each other, said plurality of connections being arranged in parallel to a sliding direction of said carriage.

4,658,316
HEAD SUPPORTING STRUCTURE
Fujiaki Narita, Amagasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 2, 1984, Ser. No. 595,672
Claims priority, application Japan, Apr. 4, 1983, 58-50333[U]; Apr. 19, 1983, 58-5911[U]
Int. Cl.[4] G11B *5/56*
U.S. Cl. 360—109 **8 Claims**



1. A structure for movably mounting a head, comprising:
a base;
a generally elongated, planar supporting plate (**10**) including a first end at which said head (**5**) is fixedly attached, a second end at an opposite end of said plate (**10**), and an intermediate mounting portion located between said first and second ends, wherein said mounting portion comprises a tab which projects from said second end toward said first end and which is circumscribed by a generally U-shaped gap (**11**) formed between a portion of said supporting plate and said tab such that said head (**5**) is cantilevered on said first end by a longer distance measured from said head to said second end than a distance from the head to said mounting portion; and
means (**2**) for fixedly attaching said mounting portion to said base.

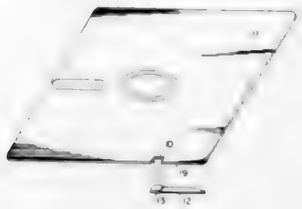
VOL 1077 ISS 2 AP 14 1987 UMI

4,658,317

FLEXIBLE MAGNETIC DISK WRITE PROTECT DEVICE

Claude Lievsay, Jr., 2435 Villanueva Way, Mountain View, Calif. 94040

Filed Aug. 7, 1984, Ser. No. 638,877
Int. Cl.⁴ G11B *23/03, 15/04, 19/04*
U.S. Cl. 360—133 **3 Claims**



1. A method of write protecting a flexible magnetic disk assembly of a kind in which a rectangular shaped jacket has top and bottom walls enclosing a magnetic disk and has a rectangular shaped write enable notch in one edge of the jacket, said method comprising,

positioning a non-magnetic pin having a head and a blade in the jacket by first inserting a tip of the blade into the jacket at the side of the notch which is most distant from the center of the magnetic disk and into the space between the top and bottom walls of the jacket and then progressively moving the tip of the blade toward a adjoining corner of the jacket until the head fits within the notch, and

wherein said head has a thickness, length, and width matched to the respective thickness, length and width of the write enable notch so that said head completely fills the volume of the notch to thereby prevent both mechanical microswitch sensing and light sensing of the notch by an erase and record mechanism of an apparatus with which the disk is used, and

wherein said blade is joined to the head at the base of the blade and has a biased edge at the end of the blade, a long outside edge, said tip formed at the intersection of the long edge and the biased edge, and a length of the long edge which is matched to the distance from said jacket corner to said side of the notch in which the tip is first inserted so as to cause said tip to engage said corner and to retain said pin in place in the jacket when said head fits within the notch.

2. A write protected flexible magnetic disk assembly comprising,

a magnetic disk,

a rectangular shaped jacket having top and bottom walls enclosing the disk,

a rectangular shaped write enable notch in one edge of the jacket,

a non-magnetic pin having a head in the notch and a blade extending from the notch and between the top and bottom walls to a corner of the jacket,

said head having a thickness, length, and width matched to the respective thickness, length and width of the write enable notch so that said head completely fills the volume of the notch to thereby prevent both mechanical microswitch sensing and light sensing of the notch by an erase and record mechanism of an apparatus with which the disk is used,

said blade being joined to the head at the base of the blade and having a biased edge at the end of the blade, a long outside edge, a tip at the intersection of the long edge and the biased edge, and a width and a thickness which enable the tip of the blade to be inserted into the jacket at the side of the rectangular write enable notch which is most distant from the center of the magnetic disk and into the space between the top and bottom walls of the jacket and then progressively moved toward the adjoining corner of the jacket until said head fits within the notch, and

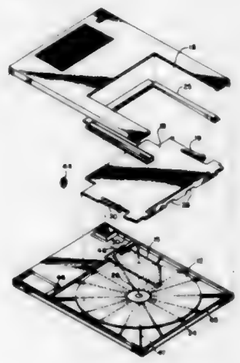
wherein the length of the long outside edge is matched to the distance from said jacket corner to said side of the notch in which the tip is first inserted so as to cause said tip to engage said corner and to retain said pin in place in the jacket when said head fits within the notch.

4,658,318

MAGNETIC DISK CARTRIDGE HAVING IMPROVED LOCKING MECHANISM AND RINGING PAD

Randall C. Bauck, Davis County; Anton J. Radman, Weber County; Roy Thornock, Weber County; Robert D. Freeman, Weber County; Peter Kleczkowski, Weber County; Paul D. Losee, Davis County, and Michael Lyon, Weber County, all of Utah, assignors to Iomega Corporation, Ogden, Utah

Continuation-in-part of Ser. No. 256,320, Apr. 22, 1981, Pat. No. 4,400,748. This application Nov. 9, 1982, Ser. No. 440,336
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.
Int. Cl.⁴ G11B *23/03, 5/016, 5/012*
U.S. Cl. 360—133 **14 Claims**



1. A magnetic disk cartridge for use with a disk drive of the type having a fixed Bernoulli plate against which a flexible magnetic disk is rotated in read/write relationship with a magnetic head, said cartridge comprising:

an enclosure containing said flexible magnetic disk; and

a flexible pad disposed between said plate and said disk when said cartridge is inserted into said disk drive, said pad being fabricated of a soft, flexible moisture-absorbent material which is co-extensive with a portion of the surface of said magnetic disk, said pad preventing said disk from clinging closely to said plate to prevent ringing as said disk is rotated against said plate.

4,658,319

TIME LAPSE VIDEO RECORDER WITH AUTO MONITORING FUNCTION

Robert R. Tripp, Orange, and Charles H. Watts, Huntington Beach, both of Calif., assignors to Odetics, Inc., Anaheim, Calif.

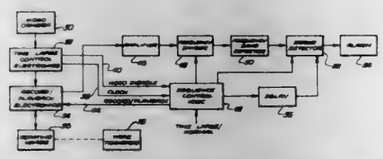
Filed Oct. 18, 1984, Ser. No. 662,495
Int. Cl.⁴ H04N *5/782*
U.S. Cl. 360—11.1 **10 Claims**

1. A time lapse video recorder comprising:

record/playback electronics switchable to enable recording of video signals or playback of previously recorded video signals;

time lapse control circuitry for causing the record/playback electronics to intermittently record video signals at predetermined intervals; and

automatic monitoring circuitry for switching the record/playback electronics to a read mode between successive recording intervals and monitoring the signal recorded in the immediately preceding recording interval to determine whether the signal was properly recorded, wherein the recorder is a helical scan videotape recorder having a pair of diametrically opposed rotating heads, wherein a



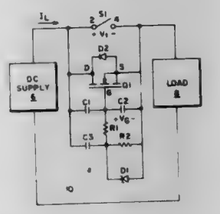
track is recorded diagonally across a videotape during a recording interval corresponding to one-half of a complete head rotation, wherein the monitoring circuitry monitors the recorded track prior to the recording of a subsequent track, and wherein the monitoring circuitry includes means for monitoring the frequency content of the recorded signal to determine if it falls within an acceptable range.

4,658,320

SWITCH CONTACT ARC SUPPRESSOR

Chester C. Hoagel, Brush Prairie, Wash., assignor to ElecSpec Corporation, Vancouver, Wash.

Filed Mar. 8, 1985, Ser. No. 709,930
Int. Cl.⁴ H01H *9/30*
U.S. Cl. 361—13 **15 Claims**



1. An arc suppression circuit used with a switch carrying a load current, said switch having first and second contacts, said circuit comprising:

a MOSFET having a drain, and means for coupling the drain to said first contact of said switch,

said MOSFET having a source, and means for coupling the source to said first contact of said switch,

said MOSFET having a source, and means for coupling the sourcre to said second contact of said switch,

said MOSFET also having a gate, and an inherent gate-to-source capacitance,

capacitor means for charging said gate-to-source capacitance when said first and second switch contacts are opened and are at differing potentials such that the MOSFET turns on, said MOSFET shunting the load current around said switch contacts, and

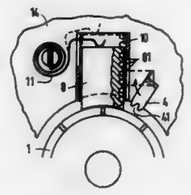
resistance means for discharging said gate-to-source capacitance such that the MOSFET turns off after it turns on thereby terminating load current shunting.

4,658,321

THERMAL OVERLOAD PROTECTION APPARATUS FOR A COMMUTATOR OR SLIPRING MOTOR

Adolf Lindner, Rottendorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 12, 1985, Ser. No. 764,853
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1984, 84109642[U]
Int. Cl.⁴ H02H *5/04*
U.S. Cl. 361—25 **15 Claims**



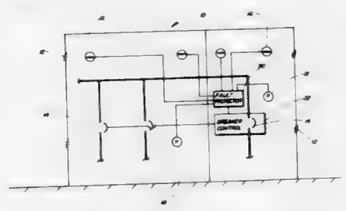
1. In an electrical motor having brushes and a plurality of rotating electrical contacts, a thermal overload protection apparatus, with a thermally actuated switching mechanism, whereby when the temperature of the protection apparatus exceeds a set value, the power supplied from the brushes to the rotating contacts can be interrupted; comprising a lever element, manufactured from a memory element, providing the thermally actuated switching by lifting the brushes from the rotating electrical contacts of the motor whenever the overload temperature set value is exceeded.

4,658,322

ARCING FAULT DETECTOR

Neftali Rivera, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1982, Ser. No. 373,082
Int. Cl.⁴ H02H *5/04*
U.S. Cl. 361—37 **6 Claims**



1. An arcing fault detection system for an electrical equipment enclosure having vents to an ambient atmosphere comprising:

means for monitoring the temperature of the atmosphere within said electrical equipment enclosure;

means for comparing the pressure of said ambient atmosphere to the pressure of the atmosphere within said electrical equipment enclosure;

means for determining from the output of said monitoring means and said comparing means based upon predetermined temperature and pressure differential criteria whether an arcing fault is present; and

means for tripping a circuit breaker when said arcing fault is detected by said determining means,

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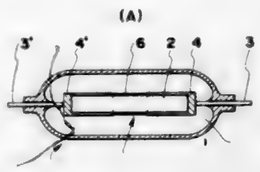
4,658,323
RMS CALCULATION CIRCUIT FOR DIGITAL CIRCUIT INTERRUPTERS
John J. Dougherty, Avon, Conn., assignor to General Electric Company, New York, N.Y.
Filed Jun. 10, 1985, Ser. No. 743,337
Int. Cl.[4] H02H 3/26
U.S. Cl. 361—79 1 Claim



1. A current conditioning circuit for a digital circuit interrupter comprising:
voltage-to-frequency conversion means whereby current through a protected circuit is first converted to a voltage and wherein said voltage is converted to an input frequency, said input frequency comprising a plurality of pulses proportional to said circuit current;
a frequency squaring circuit comprising an AND gate, a fixed timer and a divide-by-N counter interconnected by means of an RS flip flop, an input to said AND gate and said divide-by-N counter being connected in common with said voltage-to-frequency converter, a SET input to said flip flop being connected to an output from said divide-by-N counter, an output from said fixed timer being connected with a RESET input to said flip flop and a Q output from said flip flop being connected in common with both an ENABLE input to said fixed timer and another input to said AND gate providing an output frequency from said AND gate proportional to a multiple of said input frequency;
digital pickup circuitry means for determining from said output frequency when said circuit current exceeds predetermined pick-up values; and
trip circuitry means connected with said output frequency through a second counter, said second counter comprising an averaging counter providing a time delay to said trip circuit proportional to the inverse value of the average of the square of said circuit current, whereby a time increment is generated in inverse porportion to siad output frequency, said trip circuit then initiating a trip operation when said circuit current exceeds said pickup value for predetermined periods of time.

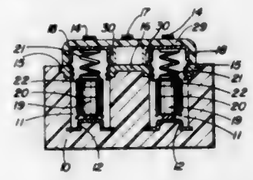
4,658,324
SURGE ABSORBING DEVICE
Toshikazu Inaba, Gyoda, Japan, assignor to Okaya Electric Industries Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 592,806, Mar. 23, 1984, abandoned. This application Jun. 28, 1985, Ser. No. 750,330
Claims priority, application Japan, Mar. 23, 1983, 58-41462; Jun. 17, 1983, 58-92827; Jan. 20, 1984, 59-6754
Int. Cl.[4] H02H 9/04
U.S. Cl. 361—118 16 Claims

1. A surge absorbing device comprising a high resistance element of metal oxide having a surface, a pair of electrodes provided on the surface of said high resistance element and facing each other with a discharge gap formed between said electrodes, a hermetically sealed case in which said high resistance element and said electrodes are contained, and a heat-



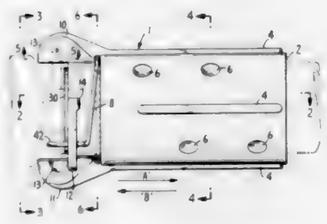
proof and reduction-proof protective film formed on the surface of said high resistance element.

4,658,325
APPARATUS FOR PROVIDING POSITIVE PROTECTION FOR STATION PROTECTORS FOR TELEPHONE SYSTEMS
Frank G. Splitt, Mt. Prospect, Ill., assignor to Northern Telecom Limited, Montreal, Canada
Filed Apr. 22, 1985, Ser. No. 725,471
Int. Cl.[4] H01T 4/06
U.S. Cl. 361—119 24 Claims



1. Apparatus for providing positive protection for station protectors for telephone systems, by at least restricting access to an arrestor in the protector and indicating any such access, comprising a unitary connecting means interconnecting adjacent screw caps of a pair of arrestor positions in a protector, said connecting means preventing turning of either of said screw caps without breaking of said connecting means.

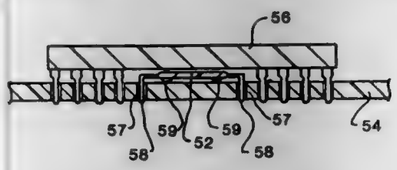
4,658,326
HOSE COUPLING
Paul W. Clark, and John S. Gulliford, both of San Francisco, Calif., assignors to Clemco Industries, San Francisco, Calif.
Filed Jul. 23, 1981, Ser. No. 285,968
Int. Cl.[4] H01G 1/08
U.S. Cl. 361—215 7 Claims



1. A high impact hose coupling apparatus comprising:
a hollow coupling body further comprising a hose retention means disposed at an outside diameter of the coupling body half, a hose restriction means disposed on an inside diameter surface of the hollow coupling body half, a

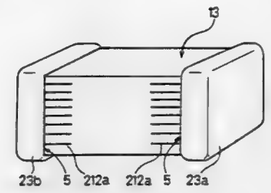
plurality of partially annular flange surfaces extending radially outward at a first end of the coupling body half and each flange surface having a raised portion on at least one lateral surface, a plurality of ears disposed at the first end of the coupling body half which extend in an axial direction of the coupling body half having cut-outs to receive the flange surfaces with at least one raised portion of a flange of a second coupling body half in a locking relationship, an annular groove extending into the first end of the coupling body half;
a spring locking means disposed at a first end of the coupling half body having a retractable portion extending through the flange surface for disposition in a second coupling body half preventing relative rotation between a first and second coupling body half in a locking relationship;
a static electricity dissipating means disposed in the annular groove.

4,658,327
DECOUPLING CAPACITOR FOR SURFACE MOUNTED CHIP CARRIER
Jorge M. Hernandez, Mesa, Ariz., assignor to Rogers Corporation, Rogers, Conn.
Continuation-in-part of Ser. No. 693,189, Jan. 22, 1985, abandoned. This application Aug. 8, 1985, Ser. No. 763,826
The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.
Int. Cl.[4] H01G 1/14; H01C 1/01
U.S. Cl. 361—306 32 Claims



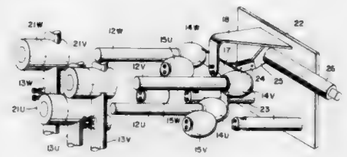
1. A decoupling capacitor for use with a surface mounted integrated circuit chip carrier package, the chip carrier package having a plurality of surface mountable leads extending therefrom, the center of the chip carrier having no leads extending therefrom, at least some of the leads surrounding the center of the chip carrier being power and ground leads, the capacitor including:
a flat dielectric body having a pair of opposed surfaces;
a first conductor on one of said opposed surfaces of said dielectric body defining a ground conductor;
a second conductor on the other of the said opposed surfaces of said dielectric body defining a power conductor;
a plurality of first leads in electrical contact with said first conductor and extending outwardly therefrom;
a plurality of second leads in electrical contact with said second conductor and extending outwardly therefrom;
said first and second leads being formed for surface mounting on a circuit board;
the power or ground configuration of said first and second leads corresponding to the power or ground configuration of said chip carrier leads;
an insulating material surrounding said dielectric body and conductors, said leads extending through said insulating material; and
said insulated assembly being dimensioned to fit within said center of said chip carrier package.

4,658,328
MONOLITHIC CERAMIC CAPACITOR
Yukio Sakabe, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan
Filed Mar. 24, 1986, Ser. No. 843,100
Claims priority, application Japan, Apr. 11, 1985, 60-78179
Int. Cl.[4] H01G 1/14, 4/10
U.S. Cl. 361—309 5 Claims



1. A monolithic ceramic capacitor comprising:
a cofired ceramic body having first and second opposite end surfaces and side surfaces connecting said end surfaces, said ceramic body being provided therein with a plurality of gap layers laminated between ceramic sheets to alternately lead to either said first end surface and at least one said side surface adjacent to said first end surface, or said second end surface and at least one said side surface adjacent to said second end surface;
a pair of porous outer electrodes being applied to said end surfaces to respectively cover said gap layers exposed on said first end surface of said fired ceramic body and said at least one side surface adjacent to said first end surface, and said gap layers exposed on said second end surface and said at least one side surface adjacent to said second end surface; and
a plurality of inner electrodes being formed by injecting molten metal comprising lead or lead alloy into said gap layers in said ceramic body and solidifying the same to be electrically connected with respective ones of said pair of outer electrodes.

4,658,329
GAS-INSULATED SWITCHGEAR APPARATUS
Yukio Kamura, Hitachi; Seizo Nakano, Mito; Toru Tsubaki, Hitachi; Satoshi Miwada, Toukai, and Naoki Amano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 11, 1985, Ser. No. 710,390
Claims priority, application Japan, Mar. 9, 1984, 59-43929
Int. Cl.[4] H02B 13/00
U.S. Cl. 361—332 8 Claims



1. A gas-insulated switchgear apparatus comprising:
a three-phase circuit breaker means;
a housing means housing said three-phase circuit breaker means;
a three-phase disconnecting switch means connected to said three-phase circuit breaker means;
a three-phase cable head means connected to said three-phase disconnecting switch means; and
a cable head housing means housing said three-phase disconnecting switch means and said three-phase cable head

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means, said three-phase disconnecting switch means including three stationary conductor means respectively electrically connected to corresponding phases of said three-phase circuit breaker means, three movable conductor means adapted to respectively contact said three stationary conductor means, three terminals slidably supporting said respective three movable conductor means, three connecting conductor means connecting said respective three terminals to corresponding phases of said three-phase cable head means, three movable insulator means respectively connected to said three movable conductor means and three stationary insulator means respectively supporting said three connecting conductor means, said three movable insulator means are disposed at apices of a first triangular configuration, said three stationary insulator means are disposed at apices of a second triangular configuration, and wherein said first and second triangular configurations formed of said movable and said three stationary insulator means occupy substantially the same plane with said first and second triangular configurations being inverted with respect to each other.

4,658,330

MOUNTING A HYBRID CIRCUIT TO A CIRCUIT BOARD

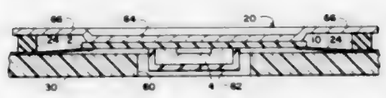
William E. Berg, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 9, 1985, Ser. No. 773,756

The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.

Int. Cl.⁴ H05K *1/12, 7/20*

U.S. Cl. 361—386 **12 Claims**



6. A method of mounting a unitary electronic circuit element that has an interconnect surface at which it is provided with contact pads, to a circuit board that comprises dielectric material, runs of electrically conductive material supported by the dielectric material in mutually electrically insulated relationship, and mutually spaced pads of conductive material connected to said runs and exposed at one main face of the board, said method comprising:

providing a flexible, sheet-form interconnect member that comprises dielectric material and runs of electrically conductive material supported by the dielectric material in mutually electrically insulated relationship, each run extending between a contact pad that is exposed at one main face of the interconnect member and a termination point that is exposed at the opposite main face of the interconnect member, the contact pads of the interconnect member corresponding in their layout to that of the contact pads of the circuit board and the termination points corresponding in their layout to that of the contact pads of the circuit element,

placing the interconnect surface of the circuit element and the opposite main face of the interconnect member in mutually confronting relationship,

attaching the circuit element by way of its interconnect surface to said opposite main face of the interconnect member, whereby electrically conductive contact is established between the contact pads of the circuit element and the corresponding termination points of the interconnect member,

providing a thermally conductive mounting plate that has, at one main face, pressure pad means at least partially surrounding a circuit element receiving area,

attaching the circuit element by way of it face opposite the interconnect surface to the circuit element receiving area of the plate,

placing said one main face of the interconnect member and said one main face of the circuit board in mutually confronting relationship, with the contact pads of the interconnect member touching the corresponding contact pads of the circuit board, and

clamping the plate and the circuit board together, whereby the pressure pad means supply contact force to maintain the contact pads of the interconnect member in electrically conductive pressure contact with the corresponding contact pads of the circuit board.

4,658,331

MOUNTING AN INTEGRATED CIRCUIT CHIP TO AN ETCHED CIRCUIT BOARD

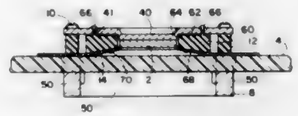
William E. Berg, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 9, 1985, Ser. No. 773,757

The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.

Int. Cl.⁴ H05K *7/20, 1/12*

U.S. Cl. 361—387 **14 Claims**



7. In combination:

an integrated circuit chip that has a plurality of contact pads at its interconnect face,

a circuit board that comprises dielectric material, runs of conductive material supported by the dielectric material in mutually electrically insulated relationship, and mutually spaced pads of conductive material connected to said runs and exposed at one main face of the circuit board,

a flexible, sheet-form interconnect member that comprises dielectric material and runs of conductive material supported by the dielectric material in mutually electrically insulated relationship, each run extending between a contact area that is exposed at one main face of the interconnect member and a termination point that is exposed at the opposite main face of the interconnect member, the termination points being in electrically conductive contact with respective contact pads of the chip, and the contact areas of the interconnect member corresponding in their layout to that of the contact pads of the circuit board,

a thermally conductive plate that has, at one main face, pressure pad means at least partially surrounding a chip receiving area, the chip being attached by way of its back face to the chip receiving area of the thermally conductive plate, and

means securing the plate and the circuit board together with said one main face of the interconnect member in confronting relationship with said one main face of the circuit board and the contact areas of the interconnect member in registration with the corresponding contact pads respectively of the circuit board, said pressure pad means being compressed and supplying contact force to maintain the contact pads of the interconnect member in electrically conductive pressure contact with the contact pads of the circuit board.

4,658,332

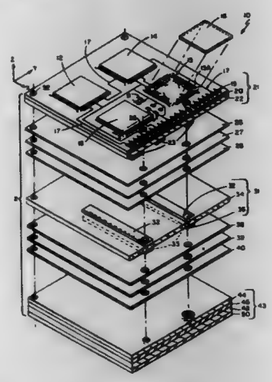
COMPLIANT LAYER PRINTED CIRCUIT BOARD

Thomas E. Baker, Northboro, Mass.; S. Bert Krasnow, Lake Worth, Fla., and Richard A. Silverman, Berlin, Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 482,073, Apr. 4, 1983, abandoned. This application Sep. 19, 1985, Ser. No. 777,869

Int. Cl.⁴ H05K *1/18*

U.S. Cl. 361—398 **32 Claims**



1. A printed circuit board comprising:

a plurality of conductive layer means comprising a top layer having a conductive pattern means for mounting at least one carrier means to said pattern means;

a plurality of insulating layer means alternating between said conductive layer means, said conductive layer means performing electrical interconnection within said printed circuit board;

one of said insulating layer means under said top layer of conductive pattern means comprising compliant material means for reducing forces between said carrier means and said printed circuit board due to different thermal coefficients of expansion of said carrier means and said printed circuit board said forces occurring during thermal variations of said printed circuit board; and

said compliant layer means comprising a material having a Youngs Modulus of less than 20,000 psi over said thermal variations having a temperature range of at least −55° C. to +125° C.

4,658,333

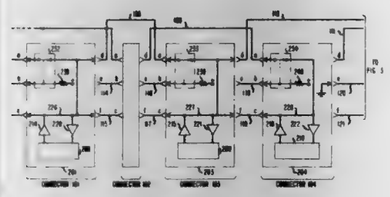
VARIABLE LENGTH BACKPLANE BUS

Gary J. Grimes, Thornton, Colo., assignor to AT&T Information Systems Inc., Holmdel, N.J.

Filed Nov. 8, 1985, Ser. No. 796,724

Int. Cl.⁴ H05K *1/14*

U.S. Cl. 361—413 **3 Claims**



1. A backplane having a backplane bus comprising;

a plurality of connectors on said backplane,

backplane bus conductors segments interconnecting contacts of adjacent ones of said connectors,

a plurality of boards inserted into a corresponding plurality of adjacent ones of said connectors whereby contacts on each board are connected to corresponding contacts of the connector into which each board is inserted,

a bus path on each one of said boards extending between said contacts on said one board whereby the backplane bus conductor segments connected to said contacts of the connector into which each said one board is inserted are interconnected via the bus path of said one board so long as said one board remains inserted in its associated connector,

a switch having at least one pair of contacts on each one of said boards,

means connecting a first switch contact of each one of said boards to said bus path of said each one board,

means connecting a second switch contact of each one of said boards beyond the adjacent connector on one side of said each one board to the bus path on another one of said boards currently inserted in the next one of said connectors beyond said adjacent connector, and

means for normally maintaining said pair of switch contacts of said each one board in a closed state whereby said bus path of said each one board is connected via said closed pair of switch contacts on said each one board to the bus path of said other board to provide a bus path connection between said each one board and said other board when a board is removed from said adjacent connector.

4,658,334

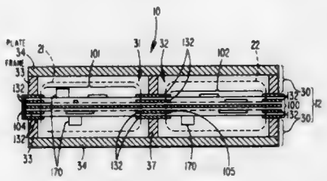
RF SIGNAL SHIELDING ENCLOSURE OF ELECTRONIC SYSTEMS

Joseph F. McSparran; William Blackman, both of Cherry Hill, N.J.; Harry Z. Weaver, Newtown, Pa., and Jere W. O'Neill, Succasunna, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 19, 1986, Ser. No. 841,453

Int. Cl.⁴ H05K *1/14*

U.S. Cl. 361—415 **19 Claims**



1. An electronic system comprising a multilayer circuit board having first and second opposed, laterally extending substantially planar major surfaces and a peripheral edge extending about the periphery of said circuit board, said circuit board including:

a planar conductive ground layer, a plurality of circuit layers which comprise separate conductors in a predetermined pattern in a central circuit zone for controlling the path of RF signals and a plurality of dielectric layers interleaved with said circuit layers and said conductive ground layer to space said circuit layers from each other and said conductive ground layer; said dielectric layers, said conductive ground layer and said circuit layers each being disposed substantially parallel to said major surfaces;

a shielding structure comprising:

each of said circuit layers including conductive shielding border surrounding and circuit zone and spacing said circuit zone from said peripheral edge, the outermost layer of said circuit board at said first and second major surfaces being a circuit-layer; and

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a plurality of parallel, spaced conductive members each extending through said dielectric layers and electrically contacting said ground layer and said conductive shielding borders for holding said conductive shielding borders at the same electrical potential as said conductive ground layer and for forming an RF barrier surrounding said circuit zone.

4,658,335

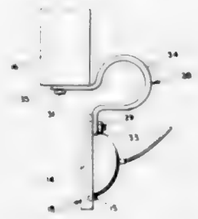
RESILIENT MOUNTING MECHANISM FOR VEHICLE TAIL LIGHTS

Daniel L. Culler, 334 Jean St., SW., Wyoming, Mich. 49508

Continuation-in-part of Ser. No. 310,741, Oct. 13, 1981, abandoned. This application Apr. 7, 1983, Ser. No. 482,841

Int. Cl.⁴ F21V *25/00*

U.S. Cl. 362—80 **21 Claims**



1. A vehicle light mounting means for suspending a vehicle light from a vehicle comprising resilient suspension means for connecting the light to the vehicle, the suspension means being formed of a resilient yieldable material that is formed and constructed such that it maintains the light in a substantially stable position during normal operation of the vehicle, the suspension means being resiliently movable on contact with a solid object such that the light can be substantially deflected in both a longitudinal direction and a sideways direction relative to the direction of the vehicle when the light is subjected to a deflecting force provided by such object, the suspension means urging the light to return to its stable position when the deflecting force is removed, the resilient suspension means comprising a spring member including an upper portion attached to the vehicle and a lower portion from which the light is suspended, the spring member including a loop formed between the upper and lower portions that enhances the deflection capabilities of the spring member, the loop serving to increase the range of resilient motion of the light.

4,658,336

MINIATURE FLASHLIGHT

Anthony Maglica, Ontario, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.

Continuation of Ser. No. 648,032, Sep. 6, 1984. This application Feb. 11, 1986, Ser. No. 828,729

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.⁴ F21L *7/00*

U.S. Cl. 362—197 **19 Claims**

1. A flashlight comprising:

a barrel for retaining in series a plurality of dry cell batteries;

a lamp bulb having a filament;

bulb holding means positioned adjacent one end of the barrel and adapted to locate the bulb filament axially beyond the one end of the barrel;

a substantially parabolic reflector;

a substantially planar lens;

means for retaining the reflector and the lens being engageable with the barrel at the end the bulb holding means is positioned and adapted to be controllably translatable along the barrel such that the relative positional relationship between the reflector and the lamp bulb may be varied, thereby varying a reflection dispersion of a light beam emanating through the lens from said lamp bulb;

means for electrically coupling a center electrode of one of the batteries to a first electrode of the lamp bulb; and

means for electrically coupling a case electrode of one of the batteries to a second electrode of the lamp bulb;



wherein relative motion of the head means for retaining the reflector and the lens in an axial direction away from the barrel closes an electrical contact of one of the coupling means and further relative motion in said same axial direction separates said means for retaining the reflector and the lens from the barrel to expose the lamp bulb and thereby permits the dispersion of substantially spherical illumination.

4,658,337

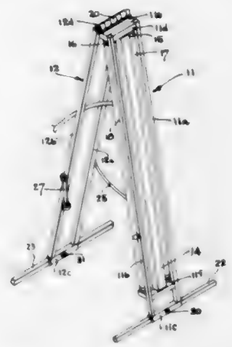
PORTABLE FLUORESCENT LIGHTING DEVICE

Lawrence J. Burke, P.O. Box 306, Manhattan Beach, Calif. 90266

Filed Nov. 29, 1985, Ser. No. 803,014

Int. Cl.⁴ F21S *3/00*

U.S. Cl. 362—225 **6 Claims**



1. A portable lighting device comprising

a pair of similar elongated frame sections, each of said frame sections including a pair of spaced apart longitudinal bar members joined together at the opposite ends thereof by transverse bar members to form a rectangular frame section,

means for pivotably joining said frame sections together at one of the ends thereof,

means for mounting at least one fluorescent lamp in one of said frame sections,

means for removably interconnecting said frame sections at a point therealong spaced from said one of the ends thereof to limit triangular spread between the sections, and

foot means attached to each of the frame sections at the other end thereof.

4,658,338

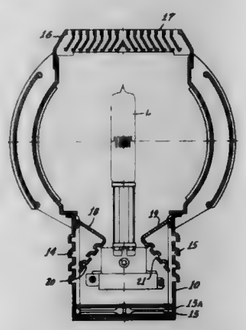
LIGHTING PROJECTORS WITH AN INTENSIFIED AND ACCELERATED AIR FLOW COOLING SYSTEM FOR PHOTOGRAPHIC AND MOTION PICTURE STUDIOS

Marcello Bertozzi, Rome, Italy, assignor to Quartzcolor Ianiro S.p.A., Rome, Italy

Filed Jul. 2, 1985, Ser. No. 753,383

Int. Cl.⁴ F21V *29/00*

U.S. Cl. 362—226 **2 Claims**



1. A lighting projector for photographic and motion picture studios, comprising a bulb, an upper housing portion including said bulb, a lower housing portion concentric with said upper housing portion including means for holding said bulb and electrical power supply accessories for said bulb and having walls provided with a series of air inlet openings, an air outlet grate cover forming a top wall of said upper housing portion, a Venturi tube diffuser device arranged within said lower housing portion and consisting of a truncated toroidal cone convergent in a direction towards said upper housing portion having one end starting from a side wall of said lower housing portion and extending at a predetermined angle upwardly and inwardly toward a central axis of said upper housing portion and ending at a selected distance from said axis along a plane normal to said axis and a truncated toroidal cone divergent in a direction towards said upper housing portion starting from said plane and upwardly extending outward to an upper edge of said lower housing portion side wall so as to form a central throat, whereby an increase of the air flow within said central throat is obtained, said convergent truncated cone having a series of openings in correspondence to said series of air inlet openings, said both series of openings being shaped in form of finned louvers, a further series of finned louvers being provided in the lower edge of said lower housing portion, and said divergent truncated cone being imperferate.

4,658,339

SPLASH-PROOF, DUST-PROOF VENTED LUMINAIRE

Franciscus M. Tammerijn, and Hugo Van Der Woord, both of Winterswijk, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1985, Ser. No. 804,706

Claims priority, application Netherlands, Dec. 10, 1984, 8403745

Int. Cl.⁴ F21V *29/00*

U.S. Cl. 362—294 **12 Claims**

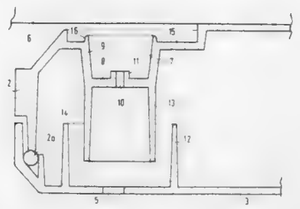
1. A luminaire having a housing which accommodates a holder adapted to receive an electric lamp, said housing comprising:

a base portion having a wall with a venting opening formed therein, and

a cover which is transparent at least in part, said base portion and cover being closed in a water-tight manner,

characterized in that said base portion has an inward depression having a bottom, said venting opening being located in said bottom; said depression having a side wall extending around said bottom, and said opening having an outwardly directed collar, and

at an area located opposite the venting opening, said cover



has a removable wall portion which, upon removal, provides a drainage opening on the inner side of the cover; and means for preventing any water and dust, which may enter through the drainage opening when the wall portion is removed, from spreading through the housing.

4,658,340

HEADLIGHT FOR A MOTOR VEHICLE

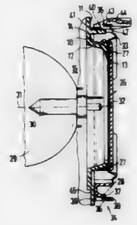
Hans-Rudolf Bodensieck, Gerlingen; Karl-Otto Dobler; Horst Hänel, both of Reutlingen; Kurt Kohler, Renningen; Frieder Liedtke, Dettingen, and Siegfried Seliger, Oberstenfeld, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 10, 1985, Ser. No. 786,312

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1984, 3437323

Int. Cl.⁴ F21V *15/00*

U.S. Cl. 362—267 **4 Claims**



1. A headlight for motor vehicles, comprising a housing having an opening for handling a bulb inserted in a reflector supported in said housing; a hood; sealing means, said hood sealingly closing said opening with an interposition of said sealing means; and locking means for securing said hood to said housing, said housing having a rear wall and a conical ring-shaped portion extended from said rear wall and having an edge, said conical portion having an outer surface tapering to said edge, said hood being made of elastic plastics and including an elastic sealing lip which forms said sealing means, said sealing lip, upon securing of said hood to said housng, lying on said outer surface of said conical portion, said locking means being two-part and including an open hinge and a snap device diametrically opposing to said hinge, said hood including a radially-elastic portion which connects the hood with said locking means, said radially-elastic portion being a multi-part ring-shaped bellows which is tip-stretched on said hood and has a pressure ring which carries said locking means.

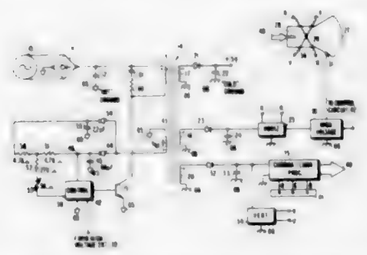
VOL 1077 ISS 2 APR 14 1987 UMI

4,658,341
REGULATED DC POWER SUPPLY
Jimmie D. Feips, Colorado Springs, Colo., assignor to Hewlett Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 732,485, May 9, 1985, abandoned. This application Jun. 11, 1986, Ser. No. 874,824
Int. Cl.[4] H02M 3/335
U.S. Cl. 363—21 **2 Claims**



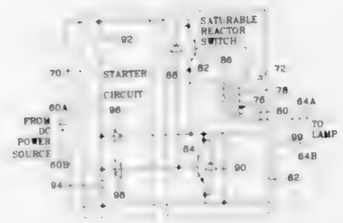
1. A DC power supply comprising:
a transformer having a primary winding and first and second secondary windings,
means for exciting said primary winding with AC current,
means coupled to said first secondary winding for providing a first DC voltage,
means for regulating said first DC voltage,
means coupled to said second secondary winding for providing a second DC voltage,
means for regulating said second DC voltage,
means for deriving the difference between said first and second DC voltages, and
means responsive to said difference for controlling said means for exciting said primary winding so as to keep the difference at a predetermined value.

4,658,342
DUAL FEEDBACK SWITCHING POWER SUPPLY REGULATOR FOR ISOLATED CHASSIS
James H. Wharton, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.
Filed Oct. 31, 1985, Ser. No. 793,421
Int. Cl.[4] H02M 3/335
U.S. Cl. 363—21 **13 Claims**



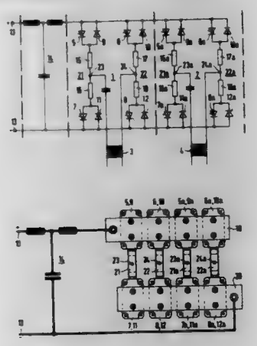
1. A power supply for a video display apparatus comprising:
a source of input voltage;
switching means;
a transformer comprising:
a first winding coupled to said source of input voltage and to said switching means; and
a second winding coupled to a load;
a control circuit coupled to said switching means for controlling the on-off state of said switching means for developing a first AC voltage across said first winding and a second AC voltage across said second winding for supplying power to said load, the switching of said switching means developing a voltage spike component of said first AC voltage that varies in accordance with the amount of power supplied to said load;
first feedback means coupled to said control circuit and responsive to said first AC voltage for regulating said second AC voltage;
second feedback means coupled to said control circuit for varying the condition interval of said switching means in accordance with variations of said voltage spike component for improving said regulation of said second AC voltage.

4,658,343
FLUORESCENT LAMP DRIVER
Francis H. Shepard, Jr., 16 Lee La., Countryside, Summit, N.J. 07901
Filed Apr. 3, 1986, Ser. No. 847,748
Int. Cl.[4] H02M 3/335; H05B 41/36
U.S. Cl. 363—22 **8 Claims**



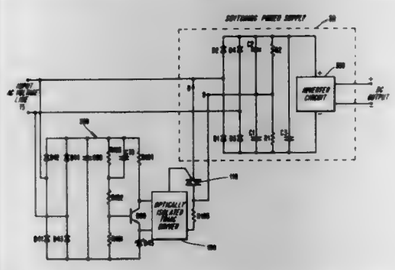
1. A lamp driver for driving a fluorescent lamp comprising:
a saturable reactor switch;
means in said saturable reactor switch for generating a substantially symmetrical drive signal at a frequency;
a series-resonant drive circuit applying said drive signal to said fluorescent lamp;
said series-resonant drive circuit including one of an inductor and a capacitor receiving said drive signal and connectable in series with a first terminal of one of first and second filaments of said fluorescent lamp;
said series-resonant drive circuit including the other of an inductor and a capacitor connectable to second terminals of said first and second filaments of said fluorescent lamp;
a series-resonant frequency of said inductor and capacitor having a relationship to said frequency effective for heating said first and second filaments and applying said drive signal between said first and second filaments during a start of said fluorescent lamp and effective for driving said fluorescent lamp after said start;
said saturable reactor switch including a saturable transformer having a small winding and a large winding separated by a tap;
said small winding being connected to carry substantially all of a load current from said tap to said series-resonant drive circuit; and
means for employing a current induced in said large winding from said load current in said small winding for controlling an On condition of said saturable reactor switch.

4,658,344
BRIDGE INVERTER HAVING SWITCHING ELEMENTS INTERCONNECTED WITH BRASS BUSBARS
Denes Romandi, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 30, 1985, Ser. No. 781,419
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1984, 3442259
Int. Cl.[4] H02M 7/521
U.S. Cl. 363—136 **2 Claims**



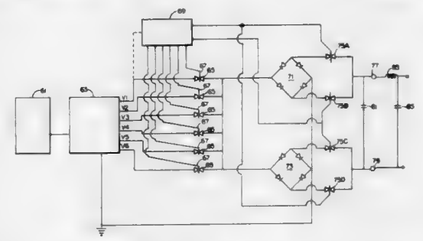
1. A DC-AC converter comprising:
a bridge circuit including first and second diagonals, one of said diagonals adapted for connection to a load and the other diagnoal adapted for connection to a constant voltage source;
said bridge circuit comprising a plurality of electronic switches connected serially in pairs forming respective bridge branches of said one diagonal; and
a plurality of resistance means each serially connecting the electronic switches of a respective pair of electronic switches and each comprising a busbar including a center tap which constitutes a load terminal to provide an even distribution of resistance and a symmetrical current distribution.

4,658,345
AUTOMATIC SWITCHOVER CIRCUIT
Thomas M. Ingman, Somis, Calif., assignor to Condor, Inc., Oxnard, Calif.
Filed Nov. 19, 1985, Ser. No. 799,462
Int. Cl.[4] H02M 7/04
U.S. Cl. 363—143 **16 Claims**



1. A circuit for automatically operating from two input voltage ranges, comprising:
a switching power supply, the switching power supply being connected to an input AC voltage line and capable of operating from first and second input voltage ranges and having first and second nodes for changing the switching power supply from a first rectifier circuit when the first and second nodes are electrically connected to a second rectifier circuit when the first and second nodes are not electrically connected, the switching power supply having an inverter circuit with an output coupled to an output circuit;
means coupled to the input AC voltage line and separate from said switching power supply, for rectifying an AC voltage to a DC voltage, wherein the DC voltage continuously varies proportionally with the AC voltage;
level sensing means coupled to said rectifying means and responsive to the DC voltage for generating an output voltage;
triac means coupled to said level sensing means and responsive to the output voltage for switching the switching power supply to the first rectifier circuit by electrically connecting the first and second nodes when the output voltage is at a predetermined level corresponding to when the AC voltage on the input AC voltage line is in the first input voltage range and for switching the switching power supply to the second rectifier circuit by electrically disconnecting the first and second nodes when the output voltage is at a predetermined level corresponding to when the AC voltage on the input AC voltage line is in the second input voltage range;
delay means connected between said rectifying means and said level sensing means for setting the DC voltage sensed by said level sensing means at a level to set said triac means in an off condition when the switching power supply is initially turned on; and
over-voltage sensing means coupled to the input AC voltage line and responsive to the input AC voltage exceeding an over-voltage threshold, for generating an inhibit signal for inhibiting operation of components in the output circuit and for protecting components in the output circuit from power abnormalities resulting in possible component failure when the switching power supply is operating with the second rectifier circuit from an input AC voltage from the second input voltage range and the AC voltage drops to a level in the first input voltage range causing triac means to switch the switching power supply to the first rectifier circuit and sequentially the AC voltage returns to the second input voltage range with the switching power supply operating with the first rectifier circuit and said triac means still in the on condition.

4,658,346
APPARATUS FOR CO-GENERATION OF ELECTRIC POWER
Frederick E. Templeton, Salt Lake City, Utah, assignor to Kennecott Corporation, Cleveland, Ohio
Filed Dec. 11, 1985, Ser. No. 807,884
Int. Cl.[4] H02M 5/257
U.S. Cl. 363—160 **34 Claims**



1. Apparatus for deriving an alternating current electrical output signal having a preselected waveform and frequency from a variable, higher frequency alternating current electrical input signal, said apparatus comprising:
input terminals for receiving an input signal and output terminals for connection to an electrical load;

dividing means connected to said input terminals for receiving and dividing an alternating current input signal having a first frequency into a plurality of continuous input signal segments, each segment having a different amplitude, said dividing means comprising a mechanically driven alternating current generator including a winding for extracting said input signal from said generator, said winding having first and second ends, and a plurality of individual electrical connections to said winding intermediate said first and second ends for extracting sasid input signal segments from said generator;

switching means receiving said input signal segments from said dividing means for selectively transmitting to said output terminals different ones of said input signal segments; and

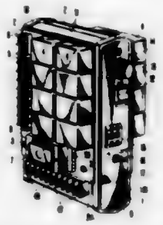
control means connected to said switching means for controlling over time the selective transmission by said switching means of said input signal segments to produce at said output terminals an alternating current output signal having a preselected waveform of a second frequency lower than said first frequency.

4,658,347

READ-ONLY SEQUENCE CONTROLLER

Yoshikazu Kaze, 31-3, Higashimagome 1-chome, Ohta-ku, Tokyo, Japan

Filed Jan. 14, 1985, Ser. No. 691,085
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—140 **7 Claims**



1. A read-only sequence controller for controlling the operation of a machine, comprising:

a case;

a control unit provided within said case;

a circuit board detachably mounted on said case;

an output relay unit provided on said board, including,

an EPROM detachably mounted on said board,

a plurality of relays responsive to data outputs of said EPROM for respectively producing driving signals, and

a plurality of output terminals for coupling said driving signals to said machine; the control unit including,

clock pulse generating means for producing clock pulses,

presettable counter means for counting said clock pulses and producing a read clock pulse after a predetermined number of clock pulses has been counted,

binary counter means for counting said read clock pulses and producing a sequential output for addressing said EPROM in response to each read clock pulse so counted, said EPROM being responsive to said sequential output for activating a predetermined relay,

means, responsive to a predetermined sequential output from said binary counter means, for resetting said presettable counter means and said binary counter means and stopping the operation of the machine by setting said EPROM in a non-select state, and

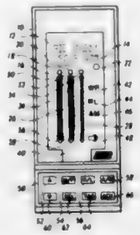
means responsive to a normal condition of said machine, for setting said presettable counter means and said binary counter means and restarting the operation of the machine.

4,658,348

METHOD AND APPARATUS FOR CONFIGURING A CONTROLLER

Allan L. Flanagan, Attleboro, Mass., and David A. Richardson, East Greenwich, R.I., assignors to The Foxboro Company, Foxboro, Mass.

Filed Aug. 12, 1985, Ser. No. 764,271
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—146 **20 Claims**



1. A controller device having apparatus for user activated selection among machine states comprising:

(A) an electronic device having a multiplicity of machine states for user interaction said machine states called user interaction points, serially ordered from a first highest point to a last lowest point in a single main path linking all the interaction points, and at least two of said interaction points forming at least one subset of said interaction points serially ordered and linked from a first highest subset point to a last subpoint as a subpath; and

(B) electronic means

(i) responsive to activation of a first key by a user for stepping said electronic device from a current interaction point to a next interaction point along said main path, and

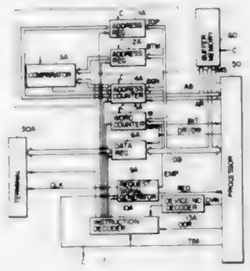
(ii) responsive to activation of a second key by a user for stepping said processor from a subpath interaction point to a subset interaction point along the subpath linking the subset of subpath interaction points.

4,658,349

DIRECT MEMORY ACCESS CONTROL CIRCUIT AND DATA PROCESSING SYSTEM USING SAID CIRCUIT

Kuniaki Tabata, Hinodemachi; Tetsuo Machida, Machida, and Kazuaki Ohya, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 274,178, Jun. 16, 1981, abandoned. This application Aug. 9, 1984, Ser. No. 639,527
Claims priority, application Japan, Jul. 4, 1980, 55-90652
Int. Cl.⁴ G06F *13/28*
U.S. Cl. 364—200 **13 Claims**



1. A direct memory access control circuit for controlling the transfer of data between a first terminal capable of handling data in units of a first block length of plural words and a second terminal capable of handling data in units of a second block length of plural words via a region of a memory having a first boundary address and a second boundary address, said second block length being different from said first block length, bus means including an address bus and a data bus which connects said memory to a processor and wherein access to said region of said memory by said first or second terminal is controlled by said direct memory access control circuit via said address bus without intervention of said processor, said first and second terminals being connected to said memory via said bus means, said direct memory access control circuit comprising: first memory means connected to said data bus for storing only said first boundary address of said region of said memory; second memory means connected to said data bus for storing only said second boundary address of said region of said memory; third memory means connected to said address bus and said data bus for storing a beginning address received from said processor via said data bus and for delivering the stored contents thereof to said address bus in order to access said region of said memory; comparison means for comparing the content of said second memory means with that of said third memory means; wherein said third memory means includes updating means connected to said first memory means and said comparison means for updating the memory content of said third memory means, whenever access to said memory is made, in such a fashion that when the output of said comparison means does not represent coincidence between the content of said second memory means and the content of said third memory means, the content of said third memory means is changed by a predetermined amount, and when the output of said comparison means represents a coincidence, the content of said third memory means is made equal to said first boundary address in said first memory means; fourth memory means for storing the word number applied thereto from said processor as an initial value and including means for effecting a counting down of said word number by a predetermined number whenever access to said memory is made, said access to said memory being stopped when said word number is decremented to zero, wherein said initial value of said word number is equal to the maximum integral number of said units of said first or said second block length which can be accommodated in an area which is less than the size of a remaining usable area of said memory determined in accordance with said first and second boundary addresses and data held in said region; and means for controlling the storing of address information, provided from said processor via said data bus, into said first, second, third and fourth memory means in response to a predetermined instruction from said processor.

4,658,350

EXTENDED ADDRESSING APPARATUS AND METHOD FOR DIRECT STORAGE ACCESS DEVICES

Lewis C. Eggebrecht, Rochester, Minn., and David A. Kummer, Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

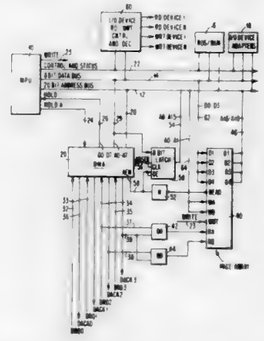
PCT No. PCT/US81/01078, § 371 Date Mar. 31, 1983, § 102(e) Date Mar. 31, 1983, PCT Pub. No. WO83/00576, PCT Pub. Date Feb. 17, 1983
PCT Filed Aug. 12, 1981, Ser. No. 493,134
Int. Cl.⁴ G06F *13/00*
U.S. Cl. 364—200 **4 Claims**

1. Apparatus of the type including an addressable memory, a processor, peripheral device, direct memory access (DMA) control means, a data bus coupled to said processor, said DMA control means, said devices, and said memory, and an address bus for transferring addresses from said processor to said memory, said DMA control means connected to said devices and buses for controlling transfers of data between said memory and said devices, said DMA control means having a plurality of DMA channels for enabling said channels to operate concurrently relative to either the same or different page address spaces of said memory for transferring data concurrently between said spaces and said devices, said address bus having discretely separate first and second portions for conveying partial address information to said memory, said apparatus comprising:

means connecting said DMA control means with said first portion of said address bus;

a plurality of programmable page address registers, one for each of said DMA channels, coupled between said DMA control means and said second portion of said address bus, for storing page addresses representing portions of said memory assigned to respective said channels; and

gating means controlled by said DMA control means when one of said DMA channels requires access to said memory



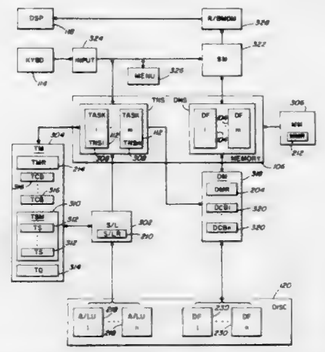
for simultaneously gating a partial address signal from said DMA control means to said first portion of said address bus and a page address signal from the register associated with said channel to said second portion of said address bus; said partial address and page address being gated to said memory via said address bus and representing in combination a complete address assigned to said one channel.

4,658,351

TASK CONTROL MEANS FOR A MULTI-TASKING DATA PROCESSING SYSTEM

Peter Y. Teng, Billerica, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Oct. 9, 1984, Ser. No. 658,951
Int. Cl.⁴ G06F *9/06*
U.S. Cl. 364—200 **12 Claims**



1. In a data processing system including memory means for storing data and active tasks, CPU means responsive to active tasks for operating on the data, mass storage means for storing inactive tasks, and keyboard means for entering user commands for interactively controlling execution of the active tasks, task control means for controlling the interactive, concurrent execution of a plurality of tasks, comprising:

task loader means responsive to a task load request resulting from user commands or the execution of presently active tasks for transferring a corresponding inactive task from

the storage means to the memory means to become an active task to be executed,

memory manager means responsive to operation of the task loader means for assigning a corresponding task node space in the memory means for storing the task to be transferred into the memory means,

task manager means, including

task control block means responsive to the task load request for

creating a task control block corresponding to the task to be transferred from the storage means to the memory means to become an active task, each task control block containing information used by the task manager means in controlling execution of the corresponding active task, and

generating a corresponding task control block identification and writing the task control block identification into the corresponding task node space in the memory means,

each task control block identification linking the task to the corresponding task control block, and

task queue means for ordering the sequence of execution of the active tasks wherein each active task is a member of one of a plurality of priority levels, including

a task queue for each priority level, wherein

the task control block of each active task resides in the task queue corresponding to the priority level of the task, and

the task control blocks reside in each task queue in a sequence determined by the status of execution of the corresponding active tasks, and wherein

the task manager means is responsive to the priority level and status of each active task to write the corresponding task control block into the corresponding sequential location in the task queue corresponding to the priority level of the task.

4,658,352

COMPUTER SYSTEM WITH A BACK-UP POWER SUPPLY

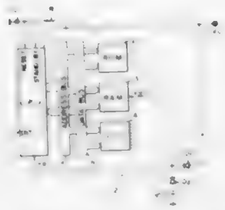
Kunihiko Nagasawa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 1, 1984, Ser. No. 616,137

Claims priority, application Japan, Jun. 2, 1983, 58-084682[U]

Int. Cl.⁴ G06F *11/08, 1/00*

U.S. Cl. 364—200 **4 Claims**



1. A computer system that discriminates between a normal reset operation and a power down mode reset operation, said system comprising:

a central processing unit,

a random access memory,

a data bus connecting said central processing unit and said random access memory,

a main power supply connected to said central processing unit and said random access memory for supplying a main power current to said central processing unit and said random access memory,

a back-up power supply connected to said central processing unit and said random access memory for supplying a back-up power current to said central processing unit and said random access memory when said main power current is not supplied from said main power supply for maintaining data stored in said random access memory,

said central processing unit operative to write a check data in a predetermined area of said random access memory,

said check data being changed upon the normal reset operation requiring a normal throw-in of said main power current from said main power supply; and

said check data remaining unchanged upon the power down mode reset operation caused by a power down requiring recovery by a throw-in of back-up power current supplied from said back-up power supply,

said central processing unit operative to detect the change in said data in said random access memory after a reset start of said central processing unit to discriminate between said normal reset operation and said power down mode reset operation.

4,658,353

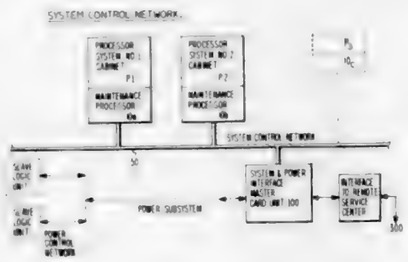
SYSTEM CONTROL NETWORK FOR MULTIPLE PROCESSOR MODULES

Bruce E. Whittaker, San Juan Capistrano; James H. Jeppesen, III, El Toro, and Andrew W. Beale, Laguna Hills, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 20, 1984, Ser. No. 673,256

Int. Cl.⁴ G06F *15/16*

U.S. Cl. 364—200 **12 Claims**



1. In a network of multiple units of processors and digital modules, a control network system for providing direct communication capability between any two digital units in the network designated as a transmitting unit and a receiving unit, said system comprising:

(a) a plurality of processor means wherein each processor means includes:

(a1) Maintenance processor means for interfacing said processor means to a system network bus means, said maintenance processor means including:

(a1a) means to generate a LOCK signal;

(a1b) means to generate an address signal to indicate presence of address data;

(a1c) means to generate a strobe when transmitting and an acknowledge signal when receiving;

(b) network bus means connecting each maintenance processor means to every other maintenance processor means, said network bus means including:

(b1) a first set of bit lines for transferring data bits from said transmitting unit to said receiving unit;

(b2) a second bit line for carrying a LOCK signal to hold the network bus means available for exclusive use of the unit originating the LOCK signal, said LOCK signal originated by said transmitting unit;

(b3) a third bit line for carrying an address signal, to a receiving unit, to indicate the presence of address byte data on the network bus means;

(b4) a fourth bit line for carrying a strobe handshake signal, originated by said transmitting unit, for indicating valid data on the network bus means;

(b5) a fifth bit line, originated by said receiving unit, to carry an acknowledge signal to indicate, to the said transmitting unit, the receipt of a data byte on the network bus means.

4,658,354

PIPELINE PROCESSING APPARATUS HAVING A TEST FUNCTION

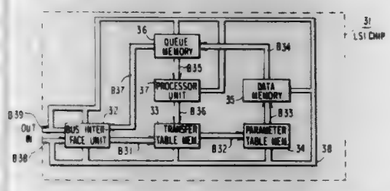
Tomoji Nukiyama, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 31, 1983, Ser. No. 499,705

Claims priority, application Japan, May 28, 1982, 57-90620

Int. Cl.⁴ G06F *9/38, 11/00, 13/40*

U.S. Cl. 364—200 **4 Claims**



1. A pipeline processing apparatus having a test function comprising:

a first latch circuit;

a first unit having at least one memory and/or at least one processor;

a first address decoder coupled to said first latch circuit;

a first pipeline bus coupled between said first latch circuit and said first unit;

a second latch circuit;

a second pipeline bus coupled between said first unit and said second latch circuit;

a second unit having at least one memory and/or at least one processor;

a second address decoder coupled to said second latch circuit;

a third pipeline bus coupled between said second latch circuit and said second unit;

a third latch circuit;

a fourth pipeline bus coupled between said second unit and said third latch circuit;

a third address decoder coupled to said third latch circuit;

fifth and sixth pipeline buses coupled to said first and third latch circuits, respectively;

an input means coupled to said fifth pipeline bus for applying a data to be processed in said first and second units;

an output means coupled to said sixth pipeline bus for outputting a data;

an address bus for transferring an address designating one of the latch circuits and provided separately from said pipeline buses, said first, second and third address decoders being coupled in parallel to said address bus;

a test bus provided separately from said pipeline buses and operatively coupled to said first, second and third latch circuits in parallel;

means for transferring a first address for a write operation, via said address bus, to said first address decoder which generates a write control signal upon receipt of said first address and applies the write control signal to said first latch circuit;

means for transferring a test data to said first latch circuit via said test bus, said first latch circuit transferring, upon receipt of said write control signal and said test data, said test data to said first unit via said first pipeline unit to allow said first unit to execute an operation according to the test data and to send a result of the operation to said second latch circuit via said second pipeline bus;

means for applying a second address for a read operation to said second address decoder which generates a read control signal upon receipt of said second address and applies said read control signal to said second latch circuit; and means for transferring said result of the operation set in said second latch circuit, upon receipt of said read control signal, to said test bus without being transferred to said third, fourth and sixth pipeline buses.

4,658,355

PIPELINE ARITHMETIC APPARATUS

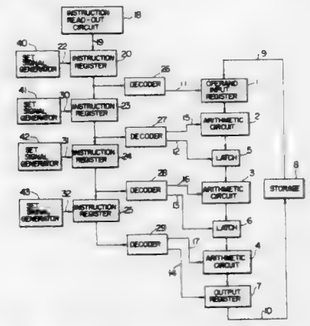
Yasuhiko Hatakeyama, and Hiroshi Murayama, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 14, 1982, Ser. No. 449,659

Claims priority, application Japan, Dec. 18, 1981, 56-203702

Int. Cl.⁴ G06F *15/347*

U.S. Cl. 364—200 **7 Claims**



1. A pipeline arithmetic apparatus in which a vector operation, where operand vectors each comprising a plurality of elements are used as operands, is divided into a plurality of stages and processed in an overlapping manner in each of said stages, comprising:

means for retaining said operand vectors;

a plurality of arithmetic circuits provided, respectively, in association with said stages and connected in series to one another, and means for inputting the individual elements of said operand vectors from said retaining means to the arithmetic circuit of the leading one of said stages and for outputting the result of the arithmetic operation from the arithmetic circuit of the last stage to said retaining means, while the arithmetic circuits of the intermediate stages are respectively connected to receive the output from the arithmetic circuit of the preceding stage;

a first register for holding control information indicating the content of a type of arithmetic operation;

a plurality of second registers connected in cascade with said first register, each second register being provided in correspondence with at least a respective one of a plurality of said arithmetic circuits for holding control information indicating the type of arithmetic operation to be executed by the associated arithmetic circuit, the leading one of said second registers being connected to receive the control information from said first register;

command means for commanding the arithmetic operations by supplying to the associated arithmetic circuits the control information held by said second registers; and

control means for controlling said first and second registers such that the control information in said first register is held for a number of cycles equal to the number of the elements of said operand vector and the control information of said second registers is updated every cycle in accordance with the contents of the second registers of the preceding stages, respectively.

4,658,356

CONTROL SYSTEM FOR UPDATING A CHANGE BIT

Kenichi Shiozaki, Odawara; Makoto Kishi, Ashigarakamigun; Tomoatsu Yaagita, Machida, and Kanji Kubo, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,235

Claims priority, application Japan, Nov. 22, 1982, 57-203630

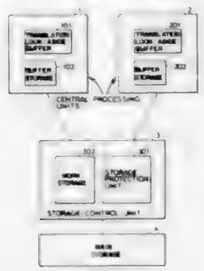
Int. Cl.⁴ G06F *13/14*

U.S. Cl. 364—200 **14 Claims**

1. A control system for updating change bits in a data processing system having a storage for storing data in predeter-

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mined storage information units thereof and means for providing a store request signal for effecting a storing of data into the storage, comprising: first retention means for retaining change bits each of which are provided in correspondence with a respective one of said predetermined storage information units of said storage and each of which indicates by its state whether or not a "store" operation for storing data into the corresponding storage information unit has been performed; second retention means for retaining change bits for at least some of the



predetermined storage information units for which change bits are retained in said first retention means; and control means connected to said first and second retention means and responsive to a store request signal for updating the change bit in said first retention means to indicate a storing operation for storing data into the storage subject to the state of the change bit in said second retention means which corresponds to the storage information unit which is subjected to the storing operation.

4,658,357

TIME AND ACCOUNTING SYSTEM

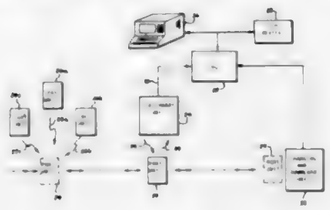
Gary T. Carroll, Boulder County, and Robert D. Hunter, Arapahoe County, both of Colo., assignors to B.I. Incorporated, Boulder, Colo.

Continuation-in-part of Ser. No. 539,049, Oct. 4, 1983, Pat. No. 4,549,264. This application Oct. 2, 1984, Ser. No. 657,002

The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.

Int. Cl.[4] G01J *1/00*

U.S. Cl. 364—406 **6 Claims**



1. A system for recording the interaction between a plurality of objects, at least one of which objects moves relative to the other objects, said system comprising:

transmitting and generating means for generating a uniquely coded signal and for transmitting said uniquely coded signal at prescribed intervals, said transmitting and generating means being attached to a selected one of said plurality of objects; whereby said uniquely coded signal thereafter identifies said selected object; and

receiving means for receiving said uniquely coded signal only when said transmitting and generating means and said receiving means remain within a specified distance of each other, said receiving means including recording and timing means for recording the receipt of the uniquely coded signal, including the time at which the uniquely coded signal was received, said recording and timing means comprising

means for generating a first code signal representative of the location of the receiving means,

means for generating a second code signal representative of the time at which the uniquely coded signal is received from said transmitting and generating means,

means for combining said first code signal and said second code signal with said uniquely coded signal to generate a combined code word (CCW), and

means for storing said combined code word for subsequent retrieval;

whereby the combined code word generated within the receiving means may be examined to determine the time at which a particular transmitting and generating means came within the specified distance of the receiving means and the duration of time during which said specified distance was maintained, thereby providing an indication of the interaction between the selected objects and said receiving means.

4,658,358

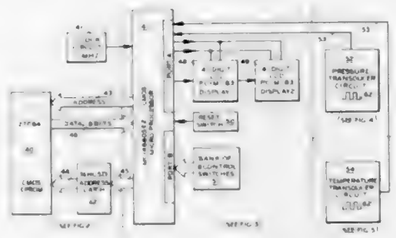
UNDERWATER COMPUTER

Eugene R. Leach; James A. Robbins; Steven B. Helton, and Jeffrey J. Webb, all of Columbus, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Jun. 13, 1984, Ser. No. 620,299

Int. Cl.[4] G06F *15/42*; H04B *11/00*

U.S. Cl. 364—418 **25 Claims**



1. Apparatus for carrying by a diver while under water (and at the surface between dives) and for providing information useful for enabling the diver to ascend therefrom both expeditiously and safely in order to avoid decompression sickness, comprising

transducer means for providing an electrical capacitance responsive to the pressure of the water thereon,

electronic circuit means comprising a resistance means in circuit with the transducer capacitance means for providing a signal responsive to the time constant therein and substantially unaffected by normally encountered variations in supply voltage,

electronic data processing means, responsive to the signal from the resistance-capacitance circuit means, for computing the water pressure, the depth of the transducer capacitance means in the water, the minimum depth to which the diver can from there ascend safely, and the minimum time within which the diver then can ascend safely to the surface of the water, and

means for providing indications perceptible to the diver of the computed values,

the size, shape, and composition of the transducer capacitance means and the characteristics of the circuit, data processing, and indication providing means being such as to draw substantially less than ten milliamperes in total current, and thus to assure long usable life of the source of the current for the apparatus and essentially negligible magnetic influence on the surroundings.

4,658,359

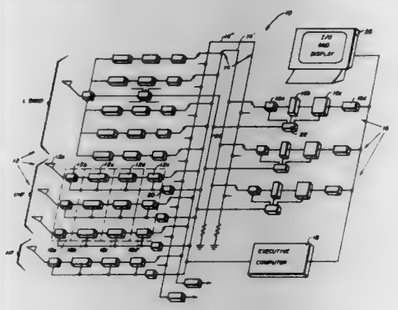
METHOD FOR MANAGING REDUNDANT RESOURCES IN A COMPLEX AVIONICS COMMUNICATION SYSTEM

Gerald J. Palatucci, Warminster, Pa.; Chester M. Nowicki, Lambertville, N.J., and Gordon B. Heal, Warminster, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 31, 1984, Ser. No. 688,126

Int. Cl.[4] G06F *13/00*

U.S. Cl. 364—424 **8 Claims**



7. In a complex avionics system of the type having a plurality of resources, apparatus for configurating the resources in selected signal processing modes for performing different communication, navigation, and identification, functions, comprising:

functional mode data file means for storing a table of obtainable signal processing modes;

display means for outputting a list of the obtainable signal processing modes from said functional mode data file means;

manual entry means for inputting a signal processing mode selection;

data storage and processing means responsive to said manual entry means for determining the signal processing resources required to configure the selected signal processing mode, said data storage and processing means comprising:

resource linking data file means for storing a table of specifications for linking of the resources to construct the obtainable modes;

resource pool data file means for storing information on the identification and availability of the resources;

means for selecting a linking specification from said resource linking data file means appropriate for constructing the selected mode;

means rsponsive to said specification selecting means for assigning avaialble resources from said resource pool data file means to be implemented for the selected mode;

means for determining that one or more resources are not available to implement the selected mode;

means for comparing a previously assigned priority value of the selected mode to priority values of the modes already implemented;

means for reassigning a resource to the selected mode from an existing mode having a lower priority; and

display means for outputting a message indicative of said resource reassignment if made, or if not made due to the unavailability of resources to accomplish the selected mode;

means responsive to said data storage and processing means for implementing the selected mode;

means responsive to said implementing means for generating, storing, and displaying a table of the implemented modes;

resource data table storage means for storing data concerning the status of resources used to implement the selected mode; and

means responsive to said implementing means for updating said resource data table storage means and said resource pool data file means.

4,658,360

METHOD AND APPARATUS FOR CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION FOR VEHICLE

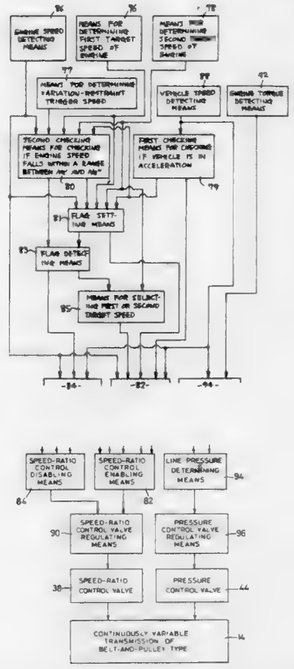
Akinori Osanai, Susono; Takao Niwa, Toyota, and Takeshi Gono, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 29, 1984, Ser. No. 645,285

Claims priority, application Japan, Sep. 1, 1983, 58-160899

Int. Cl.[4] B60K *41/12*

U.S. Cl. 364—424.1 **8 Claims**



1. A method of controlling a speed ratio of a continuously variable transmission for a vehicle for transmitting a rotary motion of an engine of the vehicle to drive wheels of the vehicle with a stepless speed change, by regulating the speed ratio of the transmission such that an actual speed of the engine coincides with a target engine speed, said method comprising the steps of:

determining a first target speed of the engine based on a predetermined currently required output of the engine and according to a predetermined relation between said first target speed of the engine and said required output of the engine, said first target speed of the engine being normally used as said target engine speed to regulate said speed ratio of the transmission;

detecting a running speed of the vehicle;

determining a second target speed of the engine based on a predetermined transmission efficiency of the transmission and on said first target speed of the engine, said second

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target speed of the engine being lower than said first target speed;

determining a variation-restraint trigger speed of the engine based on the detected running speed of the vehicle and according to a predetermined relation between said variation-restraint trigger speed of the engine and said running speed of the vehicle, said variation-restraint trigger speed being within a range at which the engine provides a sufficient output necessary to permit desirable acceleration of the vehicle at the detected running speed of the vehicle;

restraining variation in the speed ratio of the transmission during a first time span between a first moment when said actual speed of the engine has exceeded said variation-restraint trigger speed of the engine, and a second moment when said actual speed of the engine has reached said first target speed of the engine, while said vehicle is in acceleration; and

selecting said second target speed of the engine as said target engine speed when said actual speed of the engine has been raised to said first target speed of the engine with the restrained variation in said speed ratio of the transmission during acceleration of the vehicle, said second target speed of the engine being used to regulate said speed ratio of the transmission during a second time span between said second moment and a third moment when said actual speed of the engine has been lowered to said second target speed of the engine.

4,658,361

METHOD AND APPARATUS FOR DETERMINING SATELLITE ATTITUDE BY USING STAR SENSOR

Michitaka Kosaka, Sagamihara; Satoshi Mohri, Kawasaki; Katsumi Kawano, Tokyo; Toshiro Sasaki; Shoji Miyamoto, both of Kawasaki, and Takashi Nakajima, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 20, 1984, Ser. No. 632,847

Claims priority, application Japan, Jul. 25, 1983, 58-134320

Int. Cl.⁴ G06F *15/50*; **B64G** *1/10*

U.S. Cl. 364—434 **9 Claims**



6. A system for determining the attitude of satellite which communicates with a ground station, said satellite comprising:

a star sensor for observing star positions within a view-field of the star sensor;

first memory means for storing star sub-catalogue data of positions of stars in a certain partial area of the whole sky including the view-field of the star sensor;

first data processing means for calculating attitude parameters of the satellite by comparing the observation data of the star sensor with the star sub-catalogue data stored in the first memory means;

means for choosing either one of first and second operation modes for determining the attitude of the satellite, comprising means for choosing the first operation mode when stability of the attitude of the satellite satisfies a predetermined condition, or otherwise for choosing the second operation mode when the stability does not satisfy said predetermined condition; and

first communication means for transmitting the attitude parameters calculated by said first data processing means when said choosing means chooses the first operation mode, and for transmitting the data of observation of the stars by the star sensor when the choosing means chooses the second operation mode;

said ground station comprising:

second communication means for communicating with the satellite;

second memory means for storing star catalogue data of positions of stars in the whole sky; and

second data processing means responsive to receipt of the attitude parameters from the satellite for producing the star sub-catalogue data for the certain partial area of the whole sky including the view-field by calculating the view-field of the star sensor on the basis of the attitude parameters, said star sub-catalogue data being transmitted to the satellite through said second communication means, and responsive to receipt of the data of the star observation of the star sensor from the satellite for calculating the attitude parameters of the satellite by comparing the star observation data with the star catalogue data stored in the second memory means and for transmitting said calculated attitude parameters to the satellite through said second communication means.

4,658,362

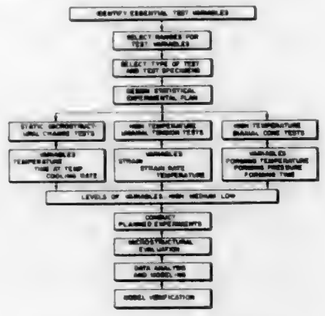
PROCESS MODELING FOR SUPERPLASTIC FORMING OF METAL SHEETS

Dhananjay D. Bhatt, Cerritos, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 24, 1984, Ser. No. 685,534

Int. Cl.⁴ G06F *15/46*; **G05B** *13/02*; **B21D** *31/00, 22/10*

U.S. Cl. 364—472 **27 Claims**



1. The method of modeling and optimizing superplastic forming of metal parts comprising the steps of:

(a) selecting generalized control equations for superplastic forming which relate the forming conditions of stress, strain rate, temperature and time duration to particular properties of the metal to be formed, wherein said forming conditions are expressed in said equations as variables interrelated by particular constants corresponding to the properties of the metal;

(b) conducting a series of predetermined tests of specimens of the metal to be formed in order to develop data for determining said constants;

(c) applying a selected statistical analysis procedure to the developed data to determine the particular constants for the metal to be formed which will optimize the forming process for that metal; and

(d) forming the metal by superplastic forming in accordance with said control equations using said optimizing constants.

4,658,363

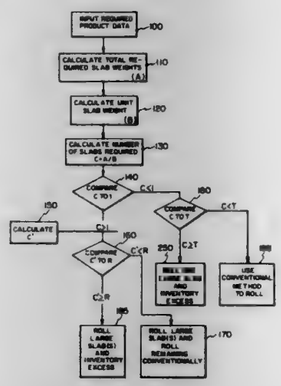
METHOD OF INCREASING THE PRODUCTIVITY OF REVERSING PLATE MILLS

George W. Tippins; Lawrence P. Dunn, both of Pittsburgh, and Wayne G. Pottmeyer, Murrysville, all of Pa., assignors to Tippins Incorporated, Pittsburgh, Pa.

Filed Nov. 21, 1984, Ser. No. 673,881

Int. Cl.⁴ B21B *37/12, 41/06*

U.S. Cl. 364—472 **14 Claims**



1. A method of improving the productivity of a reversing plate rolling mill by scheduling processing of a combination of extra large and pattern slabs during a next horizon period based upon the plate output requirements of the rolling mill comprising:

(a) installing coiler furnaces of the upstream and downstream sides of the mill;

(b) providing a supply of extra large slabs as well as a supply of pattern slabs for the mill;

(c) analyzing the plate requirements for the next horizon period and for each size plate making a decision:

(i) to process extra large size slabs, or

(ii) to process pattern slabs, or

(iii) a combination of both extra large and pattern slabs to supply the plate requirements;

(d) processing the extra large slabs by passing them back and forth through the rolling mill taking up the slabs in the coiler furnaces on at least a portion of the passes;

(e) processing the pattern slabs by passing them back and forth through the mill while the coiler furnaces remain idle;

(f) satisfying the plate requirements from the output of the rolling mill during steps (d), (e) or both and sending the excess plate, if any, to inventory;

(g) repeating steps (a) through (f) while in step (c) considering the plate requirements for the next horizon period.

4,658,364

SIGNAL PROCESSING APPARATUS

Takehiko Hoshino, Oomiya, Japan, assignor to The Nippon Signal Co., Limited, Tokyo, Japan

Filed Dec. 27, 1984, Ser. No. 686,825

Int. Cl.⁴ H03K *5/20*

U.S. Cl. 364—484 **5 Claims**

1. A signal processing apparatus comprising:

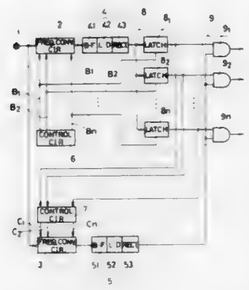
(a) a first frequency converter circuit for multiplying or dividing the frequency of an input signal;

(b) a first control circuit connected with said first frequency converter circuit for producing a first control signal for sequentially and repeatedly changing multipliers or divisors in said first converter circuit;

(c) a first processing circuit connecting with said first control circuit and having a first band-pass filter for permitting passage of a signal of a predetermined frequency alone, and a first rectifier for rectifying and smoothing the output signal of said first frequency converter circuit after passage of said signal through said first bandpass filter;

(d) a selector circuit connected with said first processing circuit and said first control circuit and responsive to both the output signal of said first processing circuit and said first control signal for producing a signal representative of the frequency of the signal being inputted to said first frequency converter circuit;

(e) a second control circuit connected with said selector circuit for producing a second control signal in accordance with the output signal of said selector circuit;



(f) a second frequency converter circuit for multiplying or dividing the frequency of the input signal which is fed thereto in parallel relation to said first frequency converter circuit, said second frequency converter circuit being connected with said second control circuit and having multipliers or divisors which are selectively changeable by said second control signal;

(g) a second processing circuit connected with said second control circuit and having a second band-pass filter for permitting passage of a signal of a predetermined frequency alone, and a second rectifier for rectifying and smoothing the output signal of said second frequency converter circuit after passage of said signal through said second band-pass filer; and

(h) a discriminator circuit connected with said selector circuit and said second processing circuit for evaluating the output signal of said selector circuit by using the output signals of said second processing circuit and said selector circuit.

4,658,365

DEVICE FOR IN-SITU MONITORING OF CORROSION RATE OF CATHODICALLY POLARIZED METALS

Barry C. Syrett, Palo Alto, and Michael C. H. McKubre, Menlo Park, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 2, 1984, Ser. No. 576,119

Int. Cl.⁴ G01N *27/46*

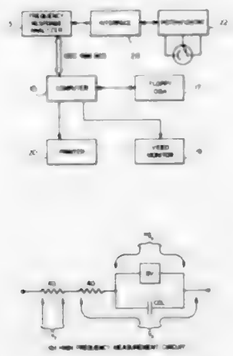
U.S. Cl. 364—496 **3 Claims**

1. A method of monitoring the rate of corrosion of a cathodically protected system, comprising superimposing a sinusoidal voltage on a cathodic protection voltage imposed on a portion of the system,

measuring an anodic dissolution current in response to the superimposed voltage at each of a plurality of harmonics of said anodic dissolution current, including measuring a

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rectification current which comprises the DC response of the anodic dissolution current to the presence of said superimposed sinusoidal voltage; and



calculating the corrosion rate from the anodic dissolution current at the cathodic protection voltage potential.

4,658,366

METHODS AND APPARATUS FOR ACCURATELY COMPLETING PRE-PRINTED FORMS

David R. Posh, 630 Littlefield Bldg., Austin, Tex. 78701

Filed Aug. 9, 1984, Ser. No. 639,077
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—523 **33 Claims**





19. In a computerized system for formatting the print-out of character data on a pre-printed form containing a plurality of parallel print lines having blank fields to be completed by the printing therein of corresponding character data, the respective lengths of the blank fields being defined by corresponding numbers of characters at a particular character per inch density, apparatus for defining the locations of the blank fields along the respective print lines independently of character per inch density so as to permit completion of the fields at a selected character per inch density greater than or equal to said particular density, said apparatus comprising:

a printer having a print carrier with a print head and means for holding a pre-printed form for the printing of lines of characters theron by said print head,

a visible reference mark on said print carrier in fixed relation to said print head,

means for causing relative movement of said print carrier and said form along said print lines in distance increments which are small relative to the average character width at said particular character per inch density, whereby said reference mark may be successively positioned at the desired print location on said form for a selected character position within each blank field to be completed,

means for determining from the successive positioning of said reference mark the number of distance increments, in the direction of said print lines, between each desired print location and a selected reference location on said form, and

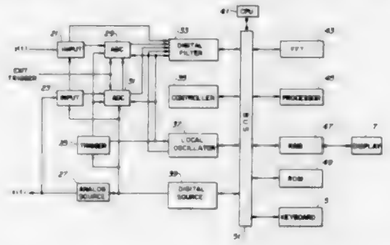
means for storing the resulting numbers of distance increments.

4,658,367

NOISE CORRECTED POLE AND ZERO ANALYZER

Ronald W. Potter, Saratoga, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 23, 1984, Ser. No. 644,405
Int. Cl.[4] G06F *15/20, 11/00;* **H03F** *1/266*
U.S. Cl. 364—553 **18 Claims**



12. An analyzer for determining poles and zeroes of an estimated transfer function of a device, comprising:

stimulation means, coupled to the device, for applying a stimulus signal thereto such that a response signal is excited;

detection means, coupled to the device, for detecting the stimulus and response signals;

computation means, coupled to the detection means, for computing the auto- and cross-spectra of the device at each of a plurality of frequencies of interest;

measurement means, coupled to the computation means, for measuring a noise level incident on the cross-spectrum at each of the frequencies of interest;

determination means, coupled to the measurement means and to the computation means, for determining an error at each of the frequencies of interest between the estimated transfer function and a measured transfer function;

differentiation means, coupled to the determination means, for differentiating the error at each of the frequencies of interest with respect to the estimated transfer function such that the cross-spectrum is squared at each of the frequencies of interest;

subtraction means, coupled to the differentiation means and to the measurement means, for subtracting the measured noise level from the squared cross-spectrum at each of the frequencies of interest;

equation means, coupled to the subtraction means and to the differentiation means, for equating the differentiated error to zero at each of the frequencies of interest and for determining therefrom coefficients of the estimated transfer function;

root solver means, coupled to the the equation means, for determining the roots of the estimated transfer function; and

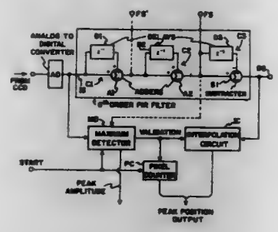
display means, coupled to the root solver means, for displaying the roots of the estimated transfer function.

4,658,368

PEAK POSITION DETECTOR

Francois Blais, Vanier, Canada, assignor to Canadian Patents and Development Limited-Societe Canadienne Des Brevets Et D'Exploitation Limitee, Ottawa, Canada

Filed Apr. 30, 1985, Ser. No. 729,138
Int. Cl.[4] H03H *17/00;* **H03K** *5/153*
U.S. Cl. 364—572 **12 Claims**



7. A circuit for detecting the position of a peak of a digital input signal, comprising

(a) a finite impulse response filter having an input connected to receive the input signal and an output, and

(b) an interpolation circuit connected to said output for detecting a point when such output crosses zero, including means for linearly interpolating the location of such point to a fraction of a clock interval, such point representing the desired peak position,

(c) wherein said filter comprises a series connection in either sequence of two delay circuits,

(d) a first of said delay circuits comprising a delay for generating a signal delayed by one clock interval and an adder for adding such delayed signal to the undelayed signal received by this first circuit, and

(e) the second of said delay circuits comprising a delay for generating a signal delayed by three clock intervals and a subtracter for subtracting such thrice delayed signal from the undelayed signal received by this second circuit.

4,658,369

SOUND SYNTHESIZING APPARATUS

Youji Segiura, Motoru, Japan, assignor to Sanyo Electric Co., Ltd, Japan

PCT No. PCT/JP82/00233, § 371 Date Feb. 17, 1983, § 102(e) Date Feb. 17, 1983, PCT Pub. No. WO82/04493, PCT Pub. Date Dec. 23, 1982
PCT Filed Jun. 18, 1982, Ser. No. 474,578
Claims priority, application Japan, Jun. 18, 1981, 56-94802
Int. Cl.[4] G10L *5/00*
U.S. Cl. 364—513.5 **6 Claims**

1. A sound synthesizing apparatus for achieving compiling synthesization by the use of sound elements extracted from an analog sound waveform, the apparatus comprising:

(a) first clock means for providing a first clock signal having a first frequency;

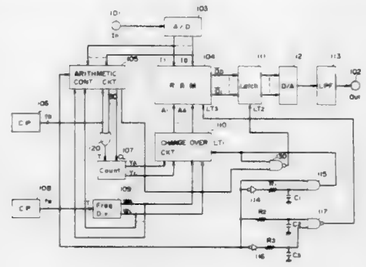
(b) second clock means for providing a second clock signal having a second frequency,

(c) converting means for converting an analog input signal of said analog sound waveform into a digital signal having a plurality of bits,

(d) digital storage means for storing an output of the converting means in response to said first clock signal,

(e) address control means for controlling and designating an address for reading stored contents of said digital storage means, being advanced by said second clock signal;

(f) arithmetic control means for sampling, in response to the first clock signal, a digital value in the vicinity of the trailing end portion of a preceding sound element obtained by converting the analog input signal and another digital value in the vicinity of the leading end portion of a succeeding sound element and thereby providing sampled trains of both of said sound elements, and for making an arithmetic operation of similarity between the sampled trains of both said sound elements while the sampled trains



of both said sound elements, as sampled, are made to relatively correspond with each other, and for initializing a value of said address control means in accordance with a corresponding relation of both sampled trains at the time point where the similarity is maximum, and

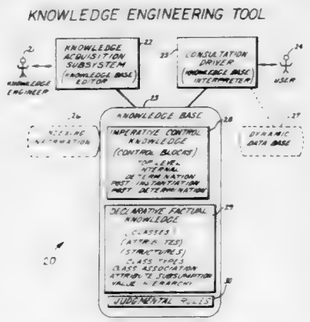
(g) digital/analog converting means for converting the digital signal read from said digital storage means into an analog signal and for reproducing the analog sound signal.

4,658,370

KNOWLEDGE ENGINEERING TOOL

Lee D. Erman; William J. Clancey, both of Palo Alto; Philip E. London, Cupertino; A. Carlisle Scott, Palo Alto; James S. Bennett, Palo Alto, and Jay S. Lark, Palo Alto, all of Calif., assignors to Teknowledge, Inc., Palo Alto, Calif.

Filed Jun. 7, 1984, Ser. No. 618,038
Int. Cl.[4] G06F *15/18*
U.S. Cl. 364—513 **69 Claims**



1. A knowledge engineering tool comprising a computer having a stored program and memory for storing a knowledge base,

said knowledge base including factual knowledge and judgmental knowledge, said judgmental knowledge including judgmental rules having premises for limiting the conditions in which the rules are applicable and conclusions for indicating the actions to perform when the rules are successfully applied,

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said factual knowledge including definitions of attributes that can take on values,

said judgmental rules including rules having premises referring to attributes and rules concluding values for attributes,

means for executing a built-in control procedure including means for interpreting the knowledge base,

means for invoking and chaining said rules, and

means for terminating the knowledge base search for a value,

said knowledge base also including control knowledge supplied by a knowledge engineer to modify the built-in control procedure, and

a language interpreter for executing the control knowledge to modify the built-in control procedure, whereby the control knowledge can be separated from the factual knowledge and judgmental knowledge and stored as a distinct portion of the knowledge base.

4,658,371

FUEL DISPENSING AND VEHICLE MAINTENANCE SYSTEM WITH ON-BOARD COMPUTER

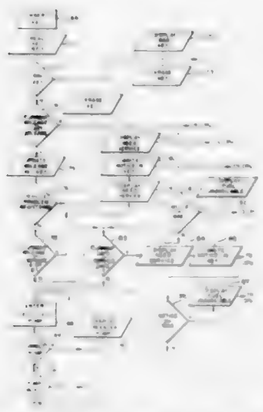
Richard F. Walsh; James A. Franks, both of Forth Worth, and Richard R. Martin, Grand Prairie, all of Tex., assignors to Art Systems, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 331,250, Dec. 16, 1981, Pat. No. 4,490,798. This application Jul. 16, 1984, Ser. No. 631,475

The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.

Int. Cl.⁴ G01D *4/14;* **G06F** *15/20*

U.S. Cl. 364—550 **7 Claims**



1. A method of dispensing fuel and providing maintenance information for a motor vehicle, comprising:

providing with the vehicle a portable memory means for storing, retrieving and updating selected data;

providing with the vehicle an on-board processing means for sensing at least one vehicle condition, and for poviding a warning in the on-board processing means should the condition exceed selected bounds, the on-board processing means having a receptacle means for releasably receiving the memory means and storing the data and any warnings in the memory means;

inserting the memory means into the receptacle means of the on-board processing means and storing in the memory means the data and any warnings received from the on-board processing means;

providing at a fuel dispensing site a remote processing unit having receptacle means for releasably receiving the memory means, providing with the remote processing unit a means for reading and updating the data in the memory means, and providing with the remote processing unit an interface means for controlling a pump to dispense fuel;

removing the memory means from the receptacle means of the on-board processing means and inserting the memory means into the receptacle means of the remote processing unit, then reading with the remote processing unit from the memory means the data and any warnings;

notifying the vehicle operator with the remote processing unit of service needs if a warning has been entered in the memory means;

if a warning has not been entered in the memory means, turning on the pump with the remote processing unit; and

if a warning has been entered in the memory means, refusing with the remote processing unit to turn on the pump.

4,658,372

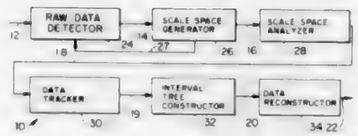
SCALE-SPACE FILTERING

Andrew P. Witkin, Fremont, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 13, 1983, Ser. No. 494,194

Int. Cl.⁴ G01S *13/00;* **G06K** *9/62*

U.S. Cl. 364—550 **12 Claims**



1. A method for classifying events, said events expressed in a detectable signal of at least a first dimension, said method comprising the steps of:

mapping said signal into a substantially continuous scale-space representation in scale-space, said mapping characterizing said signal over scales within a range of observation resolution of said signal;

analyzing said scale-space representation to identify distinguished points in said range of observation resolution in said scale-space, said distinguished points defining scale boundaries of said events;

localizing said distinguished points to identify locations of said events in said at least first dimension; and

constructing a discrete description of said signal from said locations of said events in said at least first dimension and from said scale boundaries.

4,658,373

POSITION DETECTING APPARATUS

Azuma Murakami, Tokyo, and Yoshinori Taguchi, Ageo, both of Japan, assignors to Wacom Co., Ltd., Kaitama, Japan

Filed Aug. 6, 1984, Ser. No. 638,000

Claims priority, application Japan, Aug. 5, 1983, 58-144227

Int. Cl.⁴ H03K *13/02*

U.S. Cl. 364—559 **6 Claims**

1. A position detecting apparatus comprising:

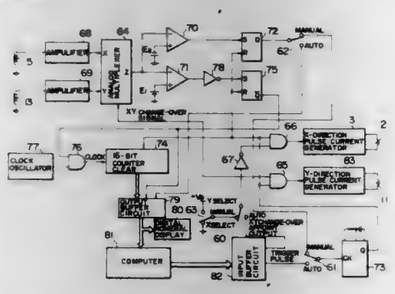
a plurality of substantially parallel X-direction magnetostrictive line bundles, each of said bundles having at least one magnetostrictive transmission medium element;

a plurality of substantially parallel Y-direction magnetostrictive line bundles, each of said bundles having at least one magnetostrictive transmission medium element, said Y-direction magnetostrictive line bundles crossing said X-direction magnetostrictive line bundles substantially at a right angle;

a first coil constituted by an X-direction first coil wound commonly around one end of said X-direction magnetostrictive line bundles and a Y-direction first coil wound

commonly around one end of said Y-direction magnetostrictive line bundles;

a second coil constituted by an X-direction second coil having portions wound around said X-direction magnetostrictive line bundles over a large length thereof, said portions being connected in series or parallel, and a Y-direction second coil having portions wound around said Y-direction magnetostrictive line bundles over a large length thereof, said portions being connected in series or parallel;



a pulse current generator for applying a pulse current to one of said second or first coils to cause a magnetostrictive vibration wave in each of said magnetostrictive transmission medium elements; and

a processing unit for detecting the time length from a moment at which said magnetostrictive vibration wave is generated until a moment at which an induced voltage appears in the other of said first and second coils.

4,658,374

ALPHABETIZING JAPANESE WORDS IN A PORTABLE ELECTRONIC LANGUAGE INTERPRETER

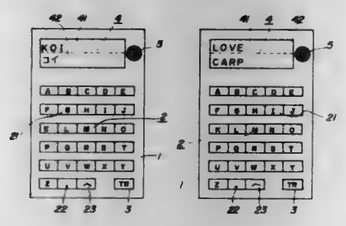
Akira Tanimoto, Kashihara, and Sigeaki Masuzawa, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 125,456, Feb. 28, 1980, abandoned. This application Jul. 8, 1982, Ser. No. 396,269

Claims priority, application Japan, Feb. 28, 1979, 54-26851[U]

Int. Cl.⁴ G06F *15/38, 3/16*

U.S. Cl. 364—900 **6 Claims**



5. An electronic language interpreter device wherein a first word represented in the Japanese language is translated into a translated word in a different language but equivalent in meaning to the first word, comprising:

alphabetized Japanese word input means for entering said first word in Japanese into said device in the form of alphabetical characters;

memory means for storing a plurality of words in said different language;

access means, responsive to said first word entered into said alphabetized Japanese word input means, for retrieving from said memory means said translated word having the same meaning as said first word;

converting means, responsive to the entry of said particular Japanese word by said alphabetized Japanese word input means, for converting said first word in alphabetized Japanese into its corresponding representation in Japanese "Katakana" characters; and

display means responsive to said converting means and said input means for simultaneously displaying said first word both in said alphabetical characters and in said "Katakana" characters.

4,658,375

EXPANDABLE SEQUENCE CONTROL SYSTEM

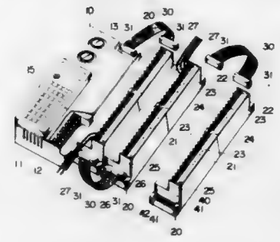
Toshiro Onogi, Tatsuno; Mamoru Hatakawa, Yawata, and Hiroaki Fujimoto, Kadoma, all of Japan, assignors to Matsushita Electric Works Ltd, Japan

Filed Sep. 28, 1984, Ser. No. 655,694

Claims priority, application Japan, Sep. 30, 1983, 58-184211

Int. Cl.⁴ G06F *13/00, 1/00;* **H01R** *11/00;* **H05K** *7/00*

U.S. Cl. 364—900 **7 Claims**



1. An expandable sequence control system, comprising:

a central control unit for controlling a plurality of input/output devices;

at least one input/output interface module, each module being connectable to said central control unit directly or through another module, each module having terminals to which a plurality of input/output devices are connectable, each module having an internal bus and an electrical circuit connected with said terminals which enables the coupling of input/output devices connected to said terminals to said bus which is in turn connectable to said central control unit, each module having two connection ports which are electrically connected to said bus and to said electrical circuit in a manner which permits connection of either port directly to said central control unit or directly to either port of another like module, while fully maintaining the ability of said input/output devices to be coupled to said central control unit through said bus; and

at least one flexible cable for connecting a port of each said module to one of said central control unit and either port of another like module.

4,658,376

MAGNETIC BUBBLE FILE SYSTEM

Kunio Suzuki; Kunihiko Onuma, and Koji Masui, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1984, Ser. No. 664,845

Claims priority, application Japan, Nov. 30, 1983, 58-224241

Int. Cl.⁴ G11C *19/08*

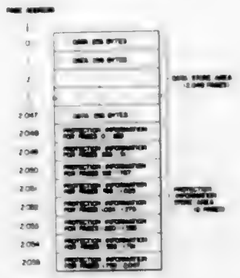
U.S. Cl. 365—1 **3 Claims**

1. A magnetic bubble file system comprising:

a magnetic bubble memory including a plurality of magnetic bubble memory devices for storing a plurality of pages of information to be read and written by page in respective store areas, the store areas of selected ones of said plurality of pages of said magnetic bubble memory devices

being allotted to the storing of write protection information for data stored in the other store areas of said magnetic bubble memory; and

control means responsive to a write request signal for determining whether data can be written into a designated store area, in accordance with the write protection information stored in said selected ones of said store areas, and for generating a write control signal in accordance with that determination.

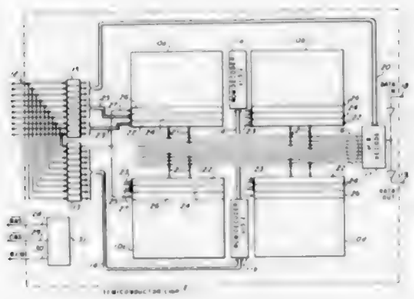


4,658,377

DYNAMIC MEMORY ARRAY WITH SEGMENTED BIT LINES

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 26, 1984, Ser. No. 634,898
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—149 20 Claims



1. A semiconductor memory device comprising:

an array of rows and colums of memory cells, each cell including an access transistor having a gate connected to one of a plurality of parallel word lines extending along said rows of cells, each cell including storage means coupled to a source-to-drain path of said access transistor,

a plurality of bit lines extending along said columns of cells perpendicular to said word lines,

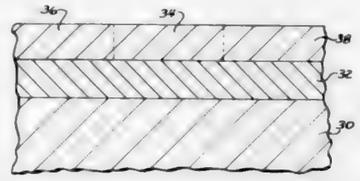
a plurality of bit line segments for each of said bit lines, said segments being separate from said bit lines and extending parallel to said bit lines, the source-to-drain paths of said access transistors being connected to said segments, and a plurality of control means, a separate one of said control means being connected between each of said segments and a corresponding one of said bit lines for selectively connecting said segments to a bit line in response to an address.

4,658,378

POLYSILICON RESISTOR WITH LOW THERMAL ACTIVATION ENERGY

Ronald R. Bourassa, Colorado Springs, Colo., assignor to Inmos Corporation, Colorado Springs, Colo.

Filed Dec. 15, 1982, Ser. No. 449,984
Int. Cl.[4] H01L *29/04, 29/86*
U.S. Cl. 365—154 15 Claims



1. A method of using a polysilicon structure as a resistance device in a semiconductor circuit comprising the steps of:

coupling a polysilicon structure in circuit with portions of an integrated circuit, applying a voltage across said polysilicon structure, and obtaining a current through said polysilicon structure proportional to said voltage,

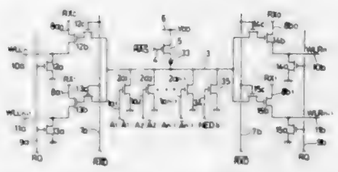
said polysilicon structure comprising a polysilicon region, a selected one of N-type and P-type impurities defining a middle area in said polysilicon region, the other one of said N-type and N-type impurities defining other areas located in said polysilicon region on the sides of said middle area, a PN junction being defined on one side of said middle area and an NP junction being defined at the other side of said middle area, the concentration of impurities in said middle area being greater than 10^{18} per cubic centimeter.

4,658,379

SEMICONDUCTOR MEMORY DEVICE WITH A LASER PROGRAMMABLE REDUNDANCY CIRCUIT

Kazuyasu Fujishima, Itami; Kazuhiro Shimotori, Toyonaka; Hideyuki Ozaki, Nishinomiya; Hideshi Miyatake, and Masahiro Tomisato, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1984, Ser. No. 666,380
Claims priority, application Japan, Dec. 15, 1983, 58-238610
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—200 5 Claims



1. A semiconductor memory device with a laser programmable redundancy circuit, which comprises:

a plurality of decoders for selecting a row or a column of the memory, each decoder including a decoder output line, a precharging transistor connected to a power supply and a selectively disconnecting link element disposed in series with said precharging transistor and connecting said precharging transistor to said decoder output line; and

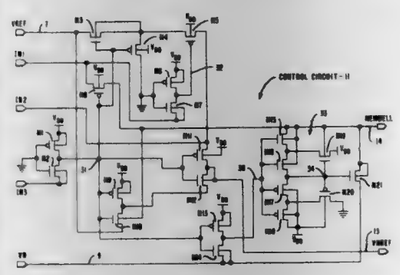
at least one spare decoder which is selected instead of a decoder connected to a faulty memory cell wherein said selectively disconnecting link element selectively disconnects said precharging transistor and said decoder output line when said spare decoder is selected instead of said decoder that is connected to a faulty memory cell thereby preventing a precharge of said decoder output line.

4,658,380

CMOS MEMORY MARGINING CONTROL CIRCUIT FOR A NONVOLATILE MEMORY

Michael D. Eby, Centerville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 28, 1986, Ser. No. 834,995
Int. Cl.[4] G11C *29/00, 11/40*
U.S. Cl. 365—201 9 Claims



1. A control circuit for testing the memory margin and the read reference potential of nonvolatile memory cells resident on a substrate having complimentary MOS devices, comprising:

wells of first impurity type having formed therein field effect devices of second impurity type, the substrate itself being of second impurity type;

means for generating a reference potential on the substrate;

means for selectively connecting the reference potential to gate electrodes of selected memory cells in time correspondence with a connection of selected wells for the selected memory cells to a first substrate node providing a first potential;

means for enabling the measurement of the reference potential at a second substrate node responsive to a control signal connected through a third substrate node; and

means responsive to a memory margining test mode enabling signal on a fourth substrate node for selectively enabling the measurement of memory cell threshold potentials of a first polarity type, corresponding to a first binary state stored in a cell, by connecting a first well bias potential through the third substrate node to selected wells, and by connecting a margin testing potential through the second substrate node to the gate electrodes of selected memory cells, and for selectively enabling the measurement of memory cell threshold potentials of a second polarity type, corresponding to a second binary state stored in a cell, by connecting a second well bias potential through the third substrate node to selected wells, and by connecting a margin testing potential through the second substrate node to the gate electrodes of selected memory cells.

4,658,381

BIT LINE PRECHARGE ON A COLUMN ADDRESS CHANGE

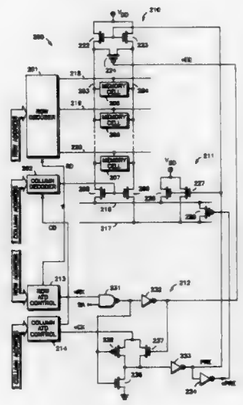
Paul A. Reed, and Stephen T. Flannagan, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1985, Ser. No. 762,362
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—203 10 Claims

1. A memory circuit which has a plurality of bit line pairs which are selected by a column address, a plurality of word lines which are selected by a row address and a memory cell located at each intersection of the bit line pairs and word lines, the bit line pairs developing a voltage differential when a word line is enabled, comprising:

a row detection means for detecting a row address change;

column detection means for detecting a column address change;



precharging means, coupled to the column detection means, for precharging the bit lines without equalizing the bit lines in response to a column address change; and

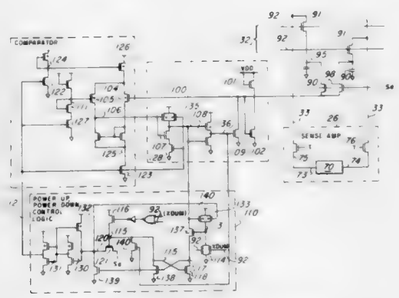
equalizing means, coupled to the row detection means, for equalizing the bit lines in response to a row address change.

4,658,382

DYNAMIC MEMORY WITH IMPROVED DUMMY CELL CIRCUITRY

Bao G. Tran; Hugh P. McAdams, both of Houston, and Jimmie D. Childers, Missouri City, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 11, 1984, Ser. No. 630,507
Int. Cl.[4] G11C *11/40, 13/00*
U.S. Cl. 365—203 18 Claims



1. A semiconductor memory device comprising:

an array of rows and columns of storage cells, each storage cell having a storage capacitor,

at least one row of dummy cells adjacent said array of storage cells, each dummy cell having a dummy capacitor,

addressing means for activating one of said rows of storage cells and activating said row of dummy cells at a first time in an operating cycle,

a first voltage divider connected between a voltage supply

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and ground, said first divider having an intermediate node at an intermediate voltage level, said intermediate node being coupled to all of said dummy capacitors at a time prior to said first time in an operating cycle, to thereby precharge all of said dummy capacitors to an intermediate voltage determined by said intermediate voltage level, and said intermediate node being decoupled from said dummy capacitors for a priod after said first time,

and a control element connecting said intermediate node to ground in said operating cycle beginning at a second time which is after said period, to thereby pull said intermediate node rapidly down to said intermediate voltage level prior to said first time in the next operating cycle.

4,658,383

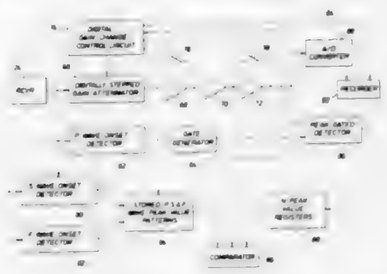
AUTOMATIC GAIN CONTROL OF DIGITIZED FULL TRACE ACOUSTIC SIGNAL IN A BOREHOLE

Mark D. Zimmer, Katy, Tex., assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 410,277, Aug. 23, 1982, abandoned. This application Aug. 22, 1985, Ser. No. 768,253

Int. Cl.⁴ G01V *1/40;* **H03G** *3/20*

U.S. Cl. 367—29 **7 Claims**



1. An automatic gain control system apparatus for processing a received analog acoustic well logging signal and for converting such a signal into digital form comprising:

(a) amplifier means for amplifying the received signal at a gain sufficient to provide some level of output;

(b) means for generating at least one time gate for detection of expected peaks in the received signal;

(c) peak detector means connected to the output of said amplifier means and responsive to said time gate generating means;

(d) programmable automatic gain control signal generating means for forming a control signal to control the gain of said amplifier means to obtain an amplified acoustic analog signal having peak values falling within a predetermined amplitude range;

(e) comparator means connected to the output of said peak detector means to compare received and gated peak amplitude signals with signals from said programmable automatic gain control signal generating means; and

(f) means connected to said comparator means and to said programmable automatic gain control signal generating means and responsive thereto to apply control signals to said amplifier means for altering operation of said automatic gain control system on observing peak amplitude outside the specified range by said comparator means.

2. The apparatus of claim 1 including means for recognizing onset of a S wave in the analog acoustic signal, said means forming a second time gate control signal for said automatic gain control system means.

4,658,384

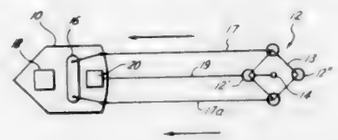
METHOD FOR DETERMINING THE FAR-FIELD SIGNATURE OF AN AIR GUN ARRAY

William H. Dragoset, Jr., and Dennis L. Cumro, both of Houston, Tex., assignors to Western Geophysical Co. of America, Houston, Tex.

Filed Jan. 7, 1985, Ser. No. 689,432

Int. Cl.⁴ G01V *1/38, 1/16*

U.S. Cl. 367—23 **17 Claims**



1. A method for deriving the far-field signature of an air-gun array in real time, comprising:

towing an air-gun array at a preselected depth in a body of water, the air guns of said array being positioned substantially on the circumference of a circle;

positioning a pressure sensor in the water substantially at the center of said circle;

firing said air-gun array to generate a wave field;

sensing the near-field pressure signature of said air-gun array by said pressure sensor; and

multiplying said pressure signature by a negative number substantially equal to the reflection coefficient of the water-air interface, delaying in time the so-multiplied pressure signature by the time required for the pressure wave to travel from said array to the water surface and back to the array, and adding the delayed signature to said near field signature.

4,658,385

OBSTACLE DETECTION SYSTEM

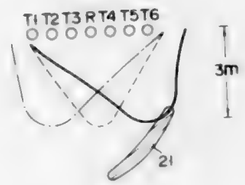
Akio Tsuji, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 10, 1985, Ser. No. 733,504

Claims priority, application Japan, May 25, 1984, 59-106099

Int. Cl.⁴ B62D *1/24;* **B25J** *19/00*

U.S. Cl. 367—105 **2 Claims**



1. In an obstacle detection system including ultrasonic wave radiating means comprising a plurality of ultrasonic transducers, and means for supplying transmitting pulses for driving each transducer, the improvement comprising:

said ultrasonic transducers are arranged in a row symmetrically about a central transducer with a rightmost and a leftmost transducer relative to said system, the transducers being arranged to radiate ultrasonic waves in a forward direction in response to transmitting pulses;

said means for supplying transmitting pulses includes drive control means for cyclically performing first to third radiating operations, wherein during said first operation the number of transmitting pulses supplied to central ultrasonic transducers is set to a maximum and the number of transmitting pulses supplied to each remaining ultrasonic transducer is set to decrease from said maximum number according to the distance of said each transducer from said central transducer;

wherein during said second operation said drive control means sets the number of transmitting pulses supplied to said rightmost ultrasonic transducer to a maximum and the number of transmitting pulses supplied to each remaining transducer is set to decrease from said maximum number according to the distance of said each transducer from said rightmost transducer; and

wherein during said third operation said drive control means sets the number of transmitting pulses supplied to said leftmost ultrasonic transducer to a maximum and the number of transmitting pulses supplied to each remaining transducer is set to decrease from said maximum number according to the distance of said each transducer from said leftmost transducers; and

said drive control means includes means for setting the number of transmitting pulses supplied to each of said ultrasonic transducers during said first to third radiating operations, so that a changing parabolic-like sensing region is produced by ultrasonic waves radiated by said transducers in said forward direction in an obstacle detection region.

4,658,386

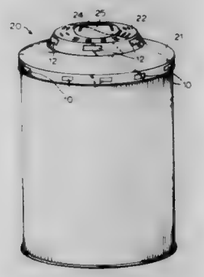
ULTRASONIC SOUND WAVE GENERATING DEVICE FOR REPELLING ANIMALS

Kenneth L. Morris, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,548

Int. Cl.⁴ H04B *1/02;* **G08B** *13/00, 23/00*

U.S. Cl. 367—139 **4 Claims**



1. In a refuse container of the type which includes a receptacle and a lid removably fitted to the receptacle, a device carried in the container and operable for repelling animals present in the vicinity of the container location, the device comprising as components embodied in the lid

(a) a detector for remote-sensing infra-red radiation emitted by an animal present within its infra-red radiation sensing range, said detector including a plurality of detecting elements received in the lid at the circumference thereof and disposed in spaced array about said circumference;

(b) ultrasonic sound generator means for producing an animal-repelling ultrasonic soundwave; and

(c) means for temporarily activating the ultrasonic sound generator when presence of an animal is sensed by any of the detecting elements.

4,658,387

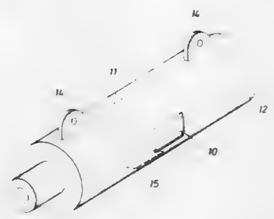
SHALLOW WATER SEISMIC ENERGY SOURCE

George A. Dolengowski, Stafford, and D. Raymond Young, Houston, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Nov. 23, 1984, Ser. No. 674,386

Int. Cl.⁴ H04R *1/44;* **G01V** *1/38*

U.S. Cl. 367—144 **17 Claims**



1. An apparatus for generating a shock wave in water comprising:

(a) an elongated housing having a longitudinal axis and adapted to releasably contain compressed gas;

(b) attachment means fastened to said housing by which said apparatus may be positioned in said water such that the longitudinal axis is substantially horizontal; and

(c) exhaust means positioned in said housing so that when said housing is positioned in the water such that the housing's longitudinal axis is substantially horizontal, said compressed gas escapes through said exhaust means only in directions other than substantially upward.

4,658,388

OPTICAL RECORDING MEDIUM WHICH INCLUDES A CORROSION RESISTANT FILM OF A MIXTURE OF A CARBIDE AND A NITRIDE

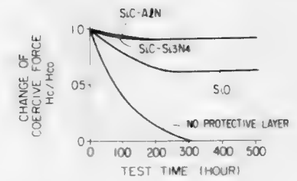
Takahiko Ishiwatari, Nihonbashi; Hiroyoshi Kishi, Tokyo; Hisaki Kawade, Yokohama; Masaaki Matsushima, Yokohama; Mitsuharu Sawamura, Yokohama, and Kazuoki Hongu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1985, Ser. No. 779,414

Claims priority, application Japan, Sep. 28, 1984, 59-203034

Int. Cl.⁴ G11B *7/00, 7/24, 11/00*

U.S. Cl. 369—13 **11 Claims**



1. An optical recording medium comprising:

a substrate;

an optical recording layer formed on said substrate for recording and reproducing information by irradiation with a light beam; and

a corrosion resistant film formed on at least one side of said optical recording layer, said film consisting of a mixture of silicon carbide and one of silicon nitride and aluminum nitride.

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4,658,389

TRACK FOLLOWER SYSTEM FOR CORRECTING TANGENT ERRORS IN AN OPTICAL RECORD SCANNING SYSTEM

Hans Kuchs, St. Georgen, Fed. Rep. of Germany, assignor to Deutsche Thomson Brandt GmbH, Villingen, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,142

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339736

Int. Cl.⁴ G11B 7/00

U.S. Cl. 369—45 **19 Claims**



1. A radially acting track follower device for optical scanning of the surface of a record of a playback apparatus comprising

a light source;

means for bundling the light originating from the light source;

a rotatable phase grating disposed in the path of the light coming from the light source and generating three luminous spots disposed approximately on a straight line;

a planar three part reflection mirror where each of the parts can be controlled as to its position forming a position adjustable reflection mirror system for reflecting the light from the light source such that three luminous spots are generated on the record where the position of the spots is adjustable relative to the tangent of the track sensing location;

detection means for the light reflected from the record at the said luminous spots;

an electronic processing means for the signals generated in the detection means, where the center spot causes the generation of the use signal and where the auxiliary outer spots cause the generation of control signals for the radial track follower system;

electromechanical converters connected to the electronic processing means, which converters are individually settable for adjusting the position of at least the outer parts of the three part reflection mirror for varying the angle formed by the connection line from the center point of the respective auxiliary light spot to the center point of the main light spot and the tangent at the optimum track sensing position of the main light spot.

4,658,390

OPTICAL FOCUS POSITION CONTROL IN AN OPTICAL MEMORY SYSTEM

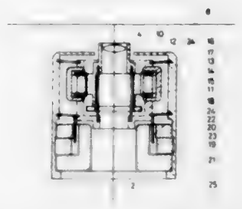
Yoshikazu Fujii; Tetsuya Inui; Toshihisa Deguchi, all of Nara, and Hideyoshi Yamaoka, Matsubara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 16, 1984, Ser. No. 600,374

Claims priority, application Japan, Apr. 18, 1983, 58-68771; Mar. 19, 1984, 58-53842

Int. Cl.⁴ G11B 7/12

U.S. Cl. 369—45 **14 Claims**



2. An optical focus and positioning control device for controlling the optical focus and position of an optical beam such as a laser beam in an optical disc apparatus, the optical focus position control device comprising:

an objective lens;

lens support means for supporting said objective lens;

a stationary holder;

tracking control means for shifting said lens support means in the radial direction of the optical disc, said tracking control means including,

an intermediate holder,

tracking parallel spring means for connecting said lens support means to said intermediate holder in a manner to allow said lens support means to move with respect to said intermediate holder in the radial direction of the optical disc, said tracking parallel spring means including a parallel spring formed of a vibration-proof alloy, and

electromagnetic tracking drive means for shifting said lens support means in said radial direction within said intermediate holder, and

focus control means for shifting said tracking control means in the direction of the optical axis of said optical beam, said focus control means including,

focusing parallel spring means for connecting said intermediate holder to said stationary holder in a manner to allow said intermediate holder to move with respect to said stationary holder in said optical axis direction, and

electromagnetic focus drive means for shifting said intermediate holder in said optical axis direction within said stationary holder.

4,658,391

FOCUS ERROR DETECTION DEVICE FOR AN OPTICAL RECORDING/PLAYING BACK SYSTEM

Shinsaku Nozu; Katsuharu Sato; Hozumi Tanaka, and Kenjiro Hamanaka, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 18, 1984, Ser. No. 662,149

Claims priority, application Japan, Oct. 19, 1983, 58-161698[U]

Int. Cl.⁴ G11B 7/09

U.S. Cl. 369—45 **2 Claims**

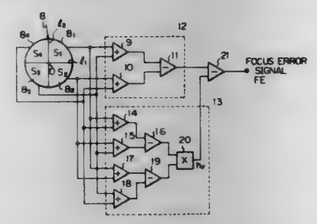
1. A focus error detection device to be used in an optical system for recording/playing back information on and from a record medium, comprising:

a light detector having four independent light receiving elements which are arranged on the side of a first and a second boundary line crossing substantially at right angles with each other;

an optical means for directing a reflection light beam from a surface of the record medium to a light receiving surface of said light detector in such a manner as to provide an astigmatic focus;

a first operation circuit means including a first and a second adder means each for adding output signals of two of said light receiving elements and a first subtractor means connected to said first and second adder means for generating a differential signal between output signals of said first and second adder means;

a second operation circuit means for deriving a compensation signal, including a third and a fourth adder means each for adding output signals of two of said light receiving elements which are located on the same side with respect to said first boundary line of the light detector, a second subtractor means connected to said third and



fourth adder means for generating a differential signal between output signals of said third and fourth adder means, a fifth and a sixth adder means for respectively adding output signals of two of said light receiving elements which are located on the same side with respect to said second boundary line of the light detector, a third subtractor means connected to said fifth and sixth adder means for generating a differential signal between output signals of said fifth and sixth adder means, and a multiplier means connected to said second and third subtraction means for multiplying output signals of said second and third subtraction means and generating said compensation signal; and subtraction means connected to said first and second operation circuit means, for generating a focus error signal by subtracting said compensation signal generated by said second operation circuit means from said differential signal generated by said first operation circuit means.

4,658,392

OPTICALLY READABLE, HIGH STORAGE DENSITY, INFORMATION CARRIER

Horst-Christian Langowski, and Klaus Schmitz, both of Hanover, Fed. Rep. of Germany, assignors to Polygram GmbH, Hamburg, Fed. Rep. of Germany

Filed Apr. 26, 1985, Ser. No. 727,852

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1984, 3425371

Int. Cl.⁴ B32B 3/02; C23C 21/08; G11B 3/70

U.S. Cl. 369—288 **7 Claims**



1. In an optically readable, high storage density information carrier comprising a base, a microstructure in which tracks of varying depth contain recoverable information located on at least one side of said base, a reflective layer on the surface or surfaces of said base which has said microstructure formed on it, and a protective layer covering said reflective layer, the improvement which comprises:

utilizing as said reflective layer at least one of the following classes of metal alloys:

(1) an Al-Mg-Si alloy containing from 0.5 to 1.5% each of magnesium and silicon, and

(2) an Mg-Mn-Si alloy containing from 1.2 to 2% manganese and 0.05 to 0.1% silicon.

4,658,393

OPTICAL MEMORY DISC

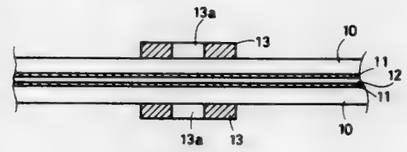
Kenji Ohta, Yao; Akira Takahashi; Tetsuya Inui, both of Nara; Takao Hyuga, Soraku, and Hideyoshi Yamaoka, Matsubara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 15, 1984, Ser. No. 671,865

Claims priority, application Japan, Nov. 17, 1983, 58-178224[U]

Int. Cl.⁴ G11B 3/70, 7/24

U.S. Cl. 369—290 **6 Claims**



1. An optical memory disc comprising:

a substrate without a center hole therein;

a plurality of concentric circular guide grooves formed on said substrate;

a recording thin-film layer formed on said plurality of concentric circular guide grooves; and

a centering plate secured to said substrate, said centering plate having a hole, the center of which is adjusted to the center of said plurality of concentric circular guide grooves, said centering plate being the sole means of centering said disc to facilitate reading thereof.

4,658,394

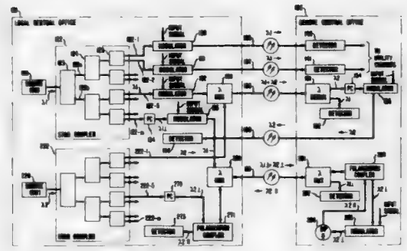
OPTICAL TRANSMISSION

Steven S. Cheng, Bernards Township, Somerset County, N.J.; Jan Lipson, Bethlehem, Pa., and Stewart D. Personick, Middletown, N.J., assignors to Bell Communications Research, Inc., Livingston and AT&T Bell Laboratories, Murray Hill, both of, N.J.

Filed Dec. 12, 1984, Ser. No. 680,398

Int. Cl.⁴ H04B 9/00

U.S. Cl. 370—3 **5 Claims**



1. A short-haul optical transmission network comprising

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a source of coherent single mode continuous wave optical radiation,

dividing means for dividing said single mode continuous wave optical radiation into m ($m \geqq 2$) individual single mode output signals,

external modulating means for modulating information onto at least some of said m individual single mode output signals, and

a plurality of short-haul transmission paths each comprising a single mode optical fiber,

each of said short-haul single mode optical fiber paths being adapted to transmit one of said m individual single mode output signals to a receiver station.

4,658,395

METHOD FOR LOCATING FAULTS IN A CARRIER SUBSCRIBER COMMUNICATION SYSTEM

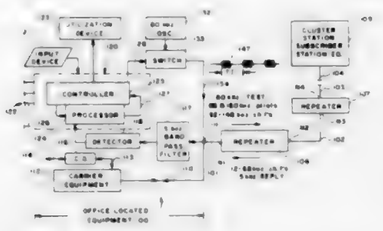
Tom L. Blackburn, San Jose, Calif., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Dec. 10, 1984, Ser. No. 680,206

The portion of the term of this patent subsequent to Dec. 30, 2003, has been disclaimed.

Int. Cl.⁴ H04J *1/16, 3/14*

U.S. Cl. 370—13 **11 Claims**



1. The method of checking for faults in a carrier subscriber communication system in which pluralities of cables and repeaters are alternately connected in series between office carrier equipment and subscriber station terminal carrier equipment, each of which repeaters being connected to one end of a first one of said cables at a first node and to the other end of a second one of said cables at a second node, comprising the steps of:

transmitting a selected number of test pulses having a test frequency from the office on the first cable to said first node of said first repeater, said test frequency being outside the frequency bandwidth passed by said repeaters between office carrier equipment and subscriber station carrier equipment;

first determining the first number of test pulses that are received at said first node of said first repeater;

first incrementing said first number of received test pulses by a first prescribed number to produce a second number of test pulses;

first coupling a first predetermined number of reply pulses having a reply frequency from said first repeater to said first node at said first repeater for transmission over said first cable to said office equipment if the second number of test pulses is equal to a second prescribed number for testing the integrity of said first cable, said reply frequency being within a frequency bandwidth passed by said repeaters between subscriber station carrier equipment and office carrier equipment;

second determining the number of reply pulses that are received at the office equipment on the other end of said first cable for indicating whether there is a fault on said first cable;

second incrementing the second number of test pulses by a third prescribed number to produce a third number of test pulses if the second number of test pulses is not equal to the second prescribed number;

performing one or more predetermined tests in said first repeater if the third number of received test pulses is equal to a fourth prescribed number which may be equal to said second prescribed number;

second coupling a second number of reply pulses to one of said first and second nodes of said first repeater for transmission to the office equipment at the other end of the first cable for indicating the results of the predetermined tests;

third determining the number of reply pulses that are received at the other end of the first cable for indicating whether there is a fault in the first cable or first repeater;

generating in said first repeater an output signal having the same test frequency as the test pulses; ;p1 third coupling a plurality of pulse output signals, which correspond to test pulses and that are generated at the first repeater, to said second node of the first repeater for transmission on said second cable to said first node of the adjacent-next repeater that is connected in said series if the third number of test pulses is not equal to the second or fourth prescribed numbers; the number of said plurality of output pulses being related to the value of the third number of test pulses.

4,658,396

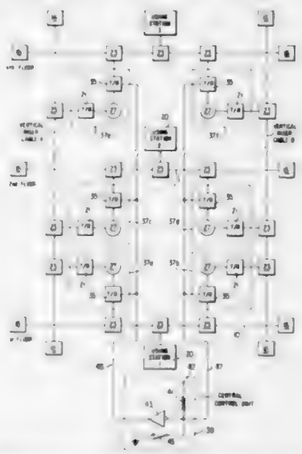
REDUNDANCY ARRANGEMENT FOR A LOCAL AREA NETWORK

Robert A. Barden, 3 Coraway Rd., Setauket, N.Y. 11733

Filed Mar. 11, 1985, Ser. No. 710,514

Int. Cl.⁴ H04J *1/16, 3/02*

U.S. Cl. 370—16 **10 Claims**



1. A redundancy arrangement for a multiple access communication system having a bidirectional communication bus for carrying data signals, the bus being composed of at least first, second and third segments, and a first plurality of bidirectional repeater stations each connecting the third segment to a respective one of the first and second segments for providing bidirectional data transmission between the first and third segments and between the second and third segments comprising:

a fourth bus segment;

a second plurality of bidirectional repeater stations each connecting said fourth segment to a respective one of the first and second segments for providing bidirectional data transmission between the first and fourth segments and between the second and fourth segments;

a plurality of controllable switch means each connected for selectively enabling the bidirectional data transmission of a respective one of said repeater stations; and

central control means connected to each said controllable switch means and producing a first operating mode control signal for causing said plurality of controllable switch means to enable bidirectional data transmission of only said first plurality of repeater stations and producing a second operating mode control signal for causing said plurality of controllable switch means to enable bidirectional data transmission of only said second plurality of repeater stations.

4,658,397

TIME DIVISION MULTIPLEX DATA TRANSFER SYSTEM AND METHOD FOR TELEPHONE SWITCHING OR LIKE APPLICATIONS

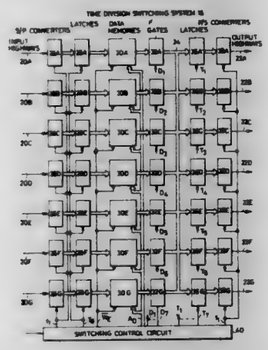
Masataka Kawamura, and Masaharu Kamigaki, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1985, Ser. No. 792,365

Claims priority, application Japan, Oct. 31, 1984, 59-229599

Int. Cl.⁴ H04Q *11/04*

U.S. Cl. 370—58 **6 Claims**



1. In a telecommunications network having n input highways, whre n is an integer of not less than two, each for the time division multiplex transmission of k channels of data, where k is an integer of not less than two, and m output highways, where m is an integer equal to or less than n, each for the time division multiplex transmission of k channels of data, each channel of data on the input and output highways having a preassigned transmission period (T), a time division multiplex data transfer system for the transfer of data from any selected channel of any selected input highway to any desired channel of any desired output highway, comprising:

(a) memory means comprising n data memories corresponding respectively to the input highways and each having k addresses corresponding respectively to the channels of the corresponding one of the input highways, the address of each data memory being adapted to sequentially store the corresponding channels of data from the corresponding one of the input highways, the stored data being read out from each data memory n times during each preassigned channel transision period (T) on the input and output highways, all the data memories being addressed in common for such readout; and

(b) selective data transfer means for transferring to the desired channel of the desired output highway the data that has been read out from that one of the addresses which corresponds to the selected input channel, of that one of the data memories which corresponds to the selected input highways.

4,658,398

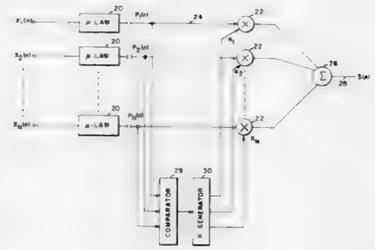
FRAMED DIGITAL VOICE SUMMING FOR TELECONFERENCING

To R. Haing, Sudbury, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 29, 1984, Ser. No. 666,042

Int. Cl.⁴ H04J *3/02;* **H04M** *3/56*

U.S. Cl. 370—62 **7 Claims**



1. Electronic signal processing apparatus for combining digital voice signals in teleconferencing comprising:

comparator means for comparing the activity levels of a plurality of digital signals to be combined and for determining a most active digital signal which has the greatest activity level;

multiplier generator means for generating a multiplier for each of the digital voice signals, the multiplier for the most active digital signal being substantially greater than the other multipliers and the sum of the multipliers being about one;

digital multiplier means for multiplying each digital voice signal with its respective multiplier, the same multiplier being applied through a plurality of digital samples; and

digital summing means for summing the outputs of the multiplier means.

4,658,399

CIRCUIT ARRANGEMENT DESIGNED TO PICK UP THE ERROR RATE IN NUMERICAL TRANSMISSION SYSTEMS

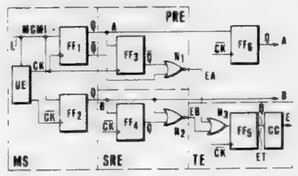
Aldo D'Angio, and Claudio Regola, both of Milan, Italy, assignors to Italtel Societa Italiana Telecomunicazioni spa, Milan, Italy

Filed Dec. 20, 1984, Ser. No. 684,007

Claims priority, application Italy, Dec. 20, 1983, 24267 A/83

Int. Cl.⁴ G06F *11/00;* **H04B** *17/00*

U.S. Cl. 371—5 **5 Claims**



1. A circuit arrangement for measuring an error rate in a numerical transmission system using a 1B/2B line code in which each symbol of an original code is converted into a train of two-bit words including a first bit of one of two binary values and a second bit of one of said two binary values, said circuit arrangement comprising:

separating means having an input receiving said train of two-bit words and first and second outputs, said first

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output generating a first stream of said first bits in serialized form from said train of two-bit words, said second output generating a second stream of said second bits in serialized form corresponding to said train of two-bit words;

first detecting means connected to said first output and responsive to the appearance of consecutive first bits of one of said binary values for generating an output representing an error count;

second means connected with said second output and responsive to consecutive second bits of the other of said binary values for generating an output representing an error count; and

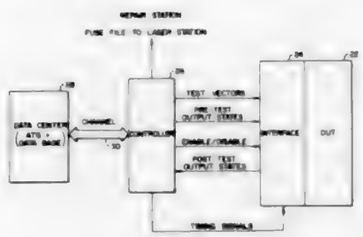
counting means connected to outputs of said first and second means for totaling said counts representing said errors.

4,658,400

WSI TESTER

Harold E. Brown, Santa Clara; Steven I. Mozgai, Cupertino, and Jason C. Chen, Santa Clara, all of Calif., assignors to Trilogy Computer Development Partners, Ltd., Cupertino, Calif.

Filed Jun. 7, 1984, Ser. No. 618,095
Int. Cl.⁴ G06F *11/00*
U.S. Cl. 371—25 **5 Claims**



1. A system for testing a device under test (DUT), having DUT I/O ports, with the DUT of the type including N identical logical circuit copies, each circuit copy including storage elements (SEs) and combinatorial elements (CEs) and with each logic circuit copy structured into circuit element groups (CEGs) including only CEs, with each CEG having a set of inputs coupled to input SEs and a single output, where each of the identical logical circuit copies are structured into identical, corresponding CEGs, said test system comprising:

a first test machine including N identical, corresponding first CEGs from each of the N circuit copies;

a first set of input SEs coupled to the input ports of said first CEGs of said first test machine;

a first voting logic circuit, having N input ports and N output ports, for generating a logic output signal at said N output ports, with the logic state of the output signal equal to the logic state of the majority of input signals received at said first voting logic circuit input ports;

first enabling means for controllably coupling the output port of each said first CEG in said first test machine to a respective one of the input ports of said first voting logic circuit;

a first set of N outputs SEs, with each output SE having an input port coupled to a respective one of the output ports of said voting logic circuit;

means for transferring the logic state stored in an SE in said first set of output SEs to the DUT I/O ports;

means for generating a test vector for setting the input states of said first set of input SEs to test said first test machine for faults and for transferring said test vector to the DUT I/O ports;

means for generating a pre-test output state, corresponding to said test vector, to set the output state of said first set of output SEs prior to fault testing and for transferring said pre-test output state to the DUT I/O ports;

means for generating an expected value post test output state;

means, coupled to the DUT I/O ports, for loading said test vector into the first set of input SEs;

means, coupled to the DUT I/O ports, for setting the output state of the first set of output SEs to said pre-test output state;

means, coupled to said first test machine, for clocking said first test machine through one machine cycle to generate a post-test output state; and

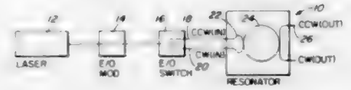
means, coupled to said DUT I/O ports, for comparing said post-test output state with said expected value post test output state to determine whether said first test machine has a fault.

4,658,401

THIN FILM PASSIVE RING RESONATOR LASER GYRO

Joseph P. Segré, Newton Center, and John R. Haavisto, Scituate, both of Mass., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Mar. 15, 1984, Ser. No. 589,711
Int. Cl.⁴ H01S *3/10*
U.S. Cl. 372—26 **8 Claims**



1. Thin film laser gyro comprising:

a solid state laser;

a thin film passive ring resonator;

a thin film delivery loop waveguide means evanescently coupled to said resonator to deliver light from said laser into said resonator;

a thin film electro-optic switch means to alternatingly inject a clockwise and a counterclockwise beam of light from said laser into said delivery loop; and

a thin film electro-optic modulator means to modulate the phase of light from said laser to maintain said clockwise and said counterclockwise beams on resonance independently wherein said electro-optic modulator means comprises a channel waveguide of an electro-optic material with electrodes for modulating the phase of light from said laser.

4,658,402

OPTICAL BISTABLE SEMICONDUCTOR LASER PRODUCING LASING LIGHT IN DIRECTION NORMAL TO SEMICONDUCTOR LAYERS

Kohroh Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 5, 1984, Ser. No. 658,007
Claims priority, application Japan, Oct. 6, 1983, 58-187312
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—50 **3 Claims**

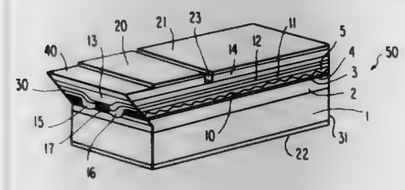
1. A bistable semiconductor laser for use in a bistable optical device comprising:

a stratified structure further comprising a semiconductor substrate, a semiconductor active layer formed over said substrate and emitting light upon excitation, and a semiconductor optical waveguide layer formed adjacent to said semiconductor active layer and having corrugations of a prescribed pitch on its face, said corrugations providing a distributed feedback mechanism as a resonator:

a reflecting face formed obliquely to the upper face of said stratified structure and including a first end of said active layer disposed in the direction of said corrugations;

a first and a third electrode separately provided on the upper face of said stratified structure and smaller than the surface area of said stratified structure, the corrugations of said optical waveguide layer extending below said first and third electrodes; and

a second electrode provided on said substrate, wherein a laser beam emitted is reflected on said reflecting face in a direction normal to the upper face of said stratified structure, said semiconductor laser is excited slightly below the



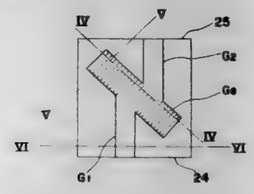
threshold of laser oscillation by the injection of current to said active layer upon impression of voltage between said third and second electrodes, said first electrode is capable of injecting to said active layer a current sufficient to initiate laser oscillation and a current sufficient to stop the laser oscillation under a biased current through said third electrode, and said semiconductor laser exhibits a hysteresis characteristic of laser output vs. injection current through said first electrode.

4,658,403

OPTICAL ELEMENT IN SEMICONDUCTOR LASER DEVICE HAVING A DIFFRACTION GRATING AND IMPROVED RESONANCE CHARACTERISTICS

Haruhisa Takiguchi, Osaka; Shinji Kaneiwa; Sadayoshi Matsui, both of Tenri, and Mototaka Taneya, Sakai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1984, Ser. No. 666,979
Claims priority, application Japan, Nov. 8, 1983, 58-210369
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—96 **6 Claims**



1. An optical element in a semiconductor laser device comprising:

a periodical diffraction grating;

a light emitting waveguide, optically coupled with said periodical diffraction grating for optical resonance, said light emitting waveguide emitting light received from a active layer of said element, said light emitting waveguide being substantially disposed in a first plane;

first and second light exit faces, each said exit face having an exit portion thereof;

a first optical waveguide connected to said light emitting waveguide and providing a first transmission path for light emitted from said light emitting waveguide to said first light exit face, said first optical waveguide being substantially disposed in said first plane and intersecting said first light exit face; and

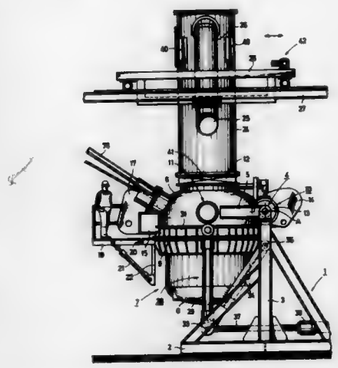
a second optical waveguide connected to said light emitting waveguide and providing a transmission path for light emitted from said light emitting waveguide to said second light exit face, said second optical waveguide being substantially disposed in said first plane and intersecting said second light exit face, wherein said first and second optical waveguides are disposed between said first and second exit faces, are noncolinear and do not intersect one another.

4,658,404

INDUCTION FURNACE WITH A FURNACE BOTTOM AND A LID

Georg Sick, Maintal; Otto Steazel, Gründau; Heinz Kohnert, Rodenbach, and Hans-Johann Kemmer, Rödermark, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Aug. 18, 1986, Ser. No. 897,320
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1985, 3530471
Int. Cl.⁴ F27B *14/02*; H05B *5/00*
U.S. Cl. 373—143 **15 Claims**



1. An induction furnace comprising: a furnace bottom having a crucible, an induction winding and a gas-tight casing; a lid which fits on the furnace bottom and is releasably connected thereto in gas-tight fashion by a flange joint, said lid having at least one gas connection, a charging valve and a pouring arrangement, and being tiltably supported about a pivot axis in the connected state in a furnace stand by a pivot bearing which is secured to said lid; and a tipping mechanism which engages the lid, wherein the furnace bottom is separable from the lid by unfastening the flange connection, the lid remaining in the furnace stand.

4,658,405

RADIO COMMUNICATION SYSTEM

Hiroyuki Yazuka, Kawasaki, and Isao Nakazawa, Isehara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 10, 1984, Ser. No. 569,772
Claims priority, application Japan, Jan. 21, 1983, 58-007448
Int. Cl.⁴ H04B *7/00*
U.S. Cl. 375—38 **25 Claims**

1. A radio communication system for transmitting and receiving digital data over a transmission path using an on-off amplitude shift keying modulation method, said system comprising:

a transmitter unit, operatively coupled to the transmission path, for generating a carrier, transforming the carrier into a vertically (V)-polarized wave carrier and a horizontally (H)-polarized wave carrier in dependence upon the digital data and transmitting at least one of the V-polarized wave carrier and the H-polarized wave carrier as a transmission

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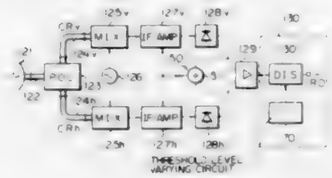
signal, over the transmission path when the digital data is to be transmitted; and

a receiver unit, operatively coupled to the transmission path to receive the transmission signal for separating the transmission signal of the V-polarized wave carrier and the H-polarized wave carrier into V- and H-polarized wave received signals, detecting the amplitude levels of the V- and H-polarized received signals and reproducing the digital data as received data in dependence upon existence or nonexistence of the V- and H-polarized wave received signals, comprising:

a V-polarized wave mixer, operatively coupled to the transmission path, for demodulating the V-polarized wave received signal;

a V-polarized wave intermediate frequency amplifier operatively connected to said V-polarized wave mixer;

a V-polarized wave detector, operatively connected to said V-polarized wave intermediate frequency amplifier, for detecting the V-polarized wave received signal;



an H-polarized wave mixer, operatively coupled to the transmission path, for demodulating the H-polarized wave received signal;

an H-polarized wave intermediate frequency amplifier operatively connected to said H-polarized wave mixer;

an H-polarized wave detector, operatively connected to said H-polarized wave intermediate frequency amplifier, for detecting the H-polarized wave received signal;

a local oscillator, operatively connected to said V- and H-polarized wave mixers, supplying a local oscillation signal commonly to both said V- and H-polarized wave mixers to produce individual intermediate frequency signals;

a differential amplifier, operatively connected to said V- and H-polarized wave detectors, for amplifying a difference between the V- and H-polarized wave received signals; and

a discriminator, operatively connected to said differential amplifier, for reproducing the digital data.

4,658,406

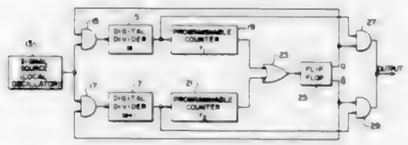
DIGITAL FREQUENCY DIVIDER OR SYNTHESIZER AND APPLICATIONS THEREOF

Andreas Pappas, 8 Avon Dr., Freehold, N.J. 07728

Filed Aug. 12, 1985, Ser. No. 764,368

Int. Cl.[4] H03L *7/00*; H03K *21/08*

U.S. Cl. 377—48 **11 Claims**



1. A digital frequency divider or synthesizer comprising a pair of integral digital frequency dividers having the inputs thereof connected to a local oscillator, the frequency of which is to be divided by a noninteger, M.k, one of said digital dividers being programmed to divide the output of said local oscillator by M and the other of said digital dividers being programmed to divide the output of said local oscillator by M+1, and switching and synchronizing means alternately connecting the outputs of said frequency dividers to an output lead for synchronously switching said pair of digital frequency dividers at the trailing edge of their respective pulse train outputs, the duty cycle of said switching means being selected to yield the desired nonintegral frequency division.

4,658,407

ELECTRONIC CLINICAL THERMOMETER WITH POWER SHUT-OFF AT MAXIMUM TEMPERATURE

Nobuyuki Iwama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 20, 1984, Ser. No. 684,138

Claims priority, application Japan, Dec. 21, 1983, 58-239800

Int. Cl.[4] G01K *7/16*

U.S. Cl. 377—25 **5 Claims**



1. An electronic clinical thermometer comprising:

(a) a thermometric oscillator means for producing output pulses having an oscillation frequency which varies in accordance with a temperature desired to be measured;

(b) a thermometric counter means connected to said thermometric oscillator means for counting said output pulses, the frequency of said output pulses proportional to the temperature to be measured;

(c) a maximum value memory circuit means connected to said thermometric counter means for storing a maximum count value of said counter means corresponding to a maximum temperature;

(d) a comparison circuit means for comparing the maximum count value stored in the maximum value memory circuit means with the count value from the thermometric counter means and for producing a reset signal when said thermometer counter count value is greater than said maximum count value;

(e) a reference oscillator generating a plurality of reference pulses;

(f) a clock counter means connected to said reference oscillator for counting clock pulses from said reference oscillator and connected to receive said reset signal for resetting the count of said clock pulses, said clock counter producing an overflow signal when no reset signal is received after a predetermined time from said comparison circuit; and

(g) said thermometric oscillator responsive to said overflow signal from said clock counter means for inhibiting production of said output pulses from said thermometric oscillator means,

whereby energy is conserved by terminating production of said thermometric oscillator output pulses when said maximum temperature is stored in said maximum value memory circuit means.

4,658,408

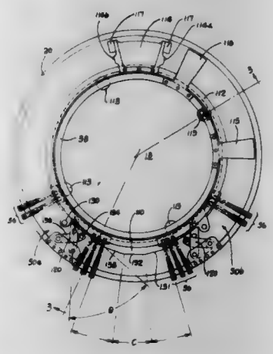
COMPUTED TOMOGRAPHY BRAKE METHOD AND APPARATUS

William H. Amor, Chagrin Falls, and Robert E. Levar, Willoughby, both of Ohio, assignors to Picker International Inc., Highland Heights, Ohio

Filed Mar. 4, 1985, Ser. No. 707,732

Int. Cl.[4] G01N *23/00*

U.S. Cl. 378—4 **10 Claims**



1. A computed tomography scanner comprising

a first structure including an X-ray source rotatably supported by a second structure such that relative rotation between the first and second structures causes X-ray scanning of a subject,

detector means mounted to one of said first and second structures to detect X-rays passing through said subject; and

a braking apparatus for stopping movement between said two structures, said braking apparatus including:

brake means mounted to one of said first and second structures and having a brake pad which upon actuation of the brake means applies a braking force;

means defining a brake pad contact surface coupled to a different one of said first and second structures than the brake means; and

means for engaging said brake pad against the contact surface, said means for engaging including a cam surface, a brake actuator which initiates braking co-action between the contact surface and said brake pad in response to contact by said cam surface; and means for maintaining the force of engagement between the brake pad and contact surface.

4,658,409

COMPRESSION DEVICE FOR AN X-RAY DIAGNOSTIC APPARATUS

Herbert Sumn, Wilhelmsdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

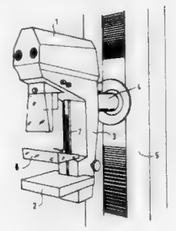
Filed Oct. 29, 1984, Ser. No. 666,246

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3340019

Int. Cl.[4] A61B *6/04*; H05G *1/00*

U.S. Cl. 378—37 **2 Claims**

1. A compression system for an X-ray diagnostic apparatus, comprising, a compression carriage movable along a predetermined path and having a compression localizer coupled therewith for movement into engagement with a radiography subject, a motor for driving said compression carriage along the predetermined path to effect engagement of the compression localizer with the radiography subject, switch means controlling said motor and responsive to engagement of the compression localizer with the radiography subject to deactivate said motor, disengagement means providing a selectively a disengageable coupling between said motor and said compression localizer to disconnect said compression carriage from said motor, and manually actuatable control means connected to said disengagement means and manually actuatable to release said disengageable coupling to allow free movement of said compression carriage relative to said radiography subject and independently of whether said motor is running or is stopped.



4,658,410

STEREO X-RAY SUBTRACTION APPARATUS

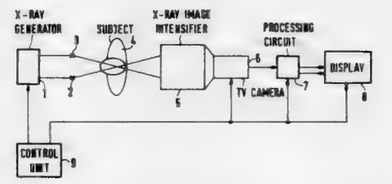
Jörg Haendle, Erlangen, and Wolfgang Maass, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 12, 1984, Ser. No. 660,373

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1983, 3341215

Int. Cl.[4] A61B *6/02*; H05G *1/64*; H04N *5/32*

U.S. Cl. 378—41 **8 Claims**



1. In a stereo X-ray apparatus having a means for generating two X-ray beams directed at an examination subject, an X-ray image intensifier, a video means for generating a video signal from said X-ray image intensifier consisting of alternating signals from said two X-ray beams, and a stereo display means, the improvement of a processing circuit having two stereo channels interconnected between said video means and said stereo display means comprising for each stereo channel:

a means for weighting and summing successive video signals received from said video means;

a first storage means for storing the weighted and summed video signals;

a first subtraction means having a first input connected to the output of said first storage means and a second input connected to the output of the first storage means in the other stereo channel for forming a difference between the signals at said first and second inputs;

a second storage means connected to the output of the first subtraction means; and

a second subtraction means having a first input connected to the output of said second storage means and a second input connected to the output of said first subtraction means for forming a difference between the signals at said

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first and second inputs, and having an output connected to said stereo display means.

4,658,411

GONIOMETRIC DEVICE PARTICULARLY FOR X-RAY OR NEUTRON DIFFRACTOMETRY ON MONOCRYSTALS OR ANY OTHER SAMPLE

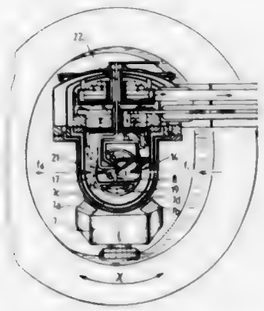
Roger Argoud, Saint-Egreve, and Jean-Noël Muller, Seyssinet Pariset, both of France, assignors to Centre National de la Recherche Scientifique (CNRS)., Paris, France

Filed Jun. 19, 1985, Ser. No. 746,548

Claims priority, application France, Jun. 22, 1984, 84 09846

Int. Cl.⁴ G01N *23/20*

U.S. Cl. 378—81 **14 Claims**



10. An apparatus comprising a goniometric device for x-ray or neutron diffractometry of a sample comprising:

(a) a sample-holder for maintaining said sample along an incident x-ray or neutron beam axis;

(b) means for rotating said sample-holder about a first axis lying along the length of said sample-holder, about a second axis perpendicular to said first axis, and about a third axis perpendicular to said second axis and said first axis;

(c) a slave-goniometer for carrying said sample-holder, said slave-goniometer comprising a transverse bar connected to said sample-holder perpendicular to said first axis; and

(d) means for creating a magnetic field having a variable spacial orientation such that for any spacial orientation of said magnetic field, said transverse bar, said sample-holder and said sample assume the same spacial orientation.

4,658,412

X-RAY DIAGNOSTIC APPARATUS

Klaus Finkler, and Hans-Dieter Wolf, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

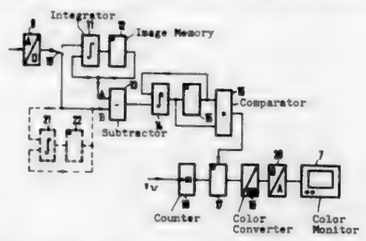
Filed Apr. 5, 1985, Ser. No. 720,320

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421461

Int. Cl.⁴ H05G *1/60*

U.S. Cl. 378—99 **2 Claims**

1. In X-ray diagnostic apparatus comprising a video camera for producing a video signal representing the X-ray image of a subject; an image memory for storing said video signal; a subtraction stage coupled to the output of said image memory and said video camera for producing a difference signal representing the difference between the stored video signal and another video signal chronologically following the stored signal; evaluation circuit means connected with said subtraction stage for evaluating time variations in said difference signal and including time memory means for storing information about the chronological progression of a contrast medium used in said subject; and a video monitor coupled with said evaluation circuit means for imaging information stored in said time memory means, the improvement wherein said evaluation circuit means further includes circuit means connected with said time memory means for repeatedly scanning said information stored in said time memory means and switching means connected between said time memory means and said video monitor for



passing only those image points from said time memory to said monitor for which the value of said image points fails to exceed an output value from said circuit means, each of said output values being increased step by step above each preceding output value.

4,658,413

FLUOROSCOPIC AND RADIOGRAPHIC X-RAY IMAGING SYSTEM

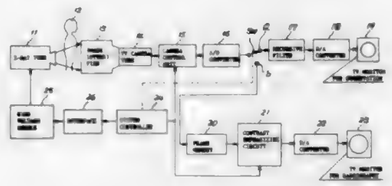
Hiroyuki Nishioka, and Takeshi Nakanishi, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jun. 16, 1986, Ser. No. 874,472

Claims priority, application Japan, Jun. 14, 1985, 60-130610

Int. Cl.⁴ H05G *1/64*

U.S. Cl. 378—99 **4 Claims**



1. An X-ray imaging system comprising:

an X-ray tube for producing a beam of X-rays to irradiate an object to be examined;

an image intensifier for producing an X-ray image of said irradiated object;

a TV camera for converting said X-ray image to a corresponding video signal;

a TV monitor for receiving said video signal to reproduce said X-ray image as a visible image to be observed with the eye;

a frame memory for storing said video signal;

switch means for applying said video signal selectively to said TV monitor and said frame memory; and

a system controller means for operating in a first mode in which said switch means transmits said video signal to said TV monitor and alternatively in a second mode in which said switch means transmits said video signal to said frame memory, said controller operating in said first mode to impress a pulse-like voltage to said X-ray tube in synchronism with vertical scanning in said TV camera within the period of vertical blanking and alternatively in said second mode to interrupt the scanning of said TV camera for a first predetermined period of time and at the same time continuously impress a predetermined tube voltage to said X-ray tube for a second predetermined period of time

within said first predetermined period of time, and upon lapse thereof said TV camera is scanned for one frame to obtain a video signal so as to be stored in said frame memory.

4,658,414

ROTARY ANODE X-RAY TUBE

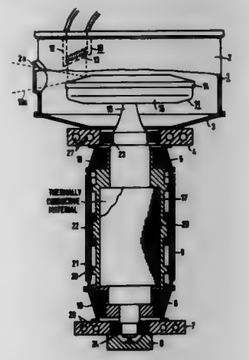
Ernst Geldner, Weiher, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 15, 1983, Ser. No. 514,004

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1982, 3233064

Int. Cl.⁴ H01J *35/08, 35/10*

U.S. Cl. 378—132 **4 Claims**



1. A rotary anode X-ray tube comprising:

a housing consisting of a first chamber having an opening therein, a first metal plate adjacent said first chamber and having a central opening therein in registry with said opening in said first chamber, a second chamber having one end closed by said first metal plate, and a second metal plate disposed at and closing an opposite end of said second chamber, said second metal plate having a central opening therein in registry with said central opening in said first metal plate;

a cathode disposed in said first chamber;

an anode disposed in said first chamber facing said cathode;

a rotor disposed in said second chamber and extending through said respective central openings in said first and second metal plates, said rotor having an anode shaft connected thereto with said anode being mounted at an end thereof;

means for magnetically mounting said rotor in said second chamber at opposite ends thereof; and

a pair of spaced emergency stop bearings respectively received in said first and second metal plates, said stop bearings normally not in contact with said rotor and being disposed for supporting said rotor at two points in the event of failure of said magnetic mounting means, one of said points being disposed substantially adjacent said anode shaft.

4,658,415

X-RAY FILM HOLDER

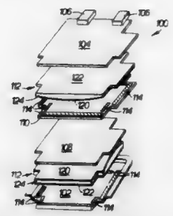
Yoshimasa Ogo, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 20, 1985, Ser. No. 713,854

Claims priority, application Japan, May 16, 1984, 59-97827

Int. Cl.⁴ G03B *41/16*

U.S. Cl. 378—187 **7 Claims**



1. An X-ray film holder for holding an X-ray film comprising

at least one structural pair including a support plate and an intensifying screen each defining mutually opposed inner surfaces;

cushion means disposed between said at least one structural pair for cushioning an X-ray film in said film holder and defining a pair of outer surfaces each in adjacent opposing contact with a respective said inner surface of said at least one structural pair; and

adhesive means associated with at lesat one said inner surface of said at least one structural pair for adhesively bonding said cushion means to said at least one opposed inner surface; wherein

said cushion means comprising a cushion core and protective layer means bonded to said cushion core by harden type adhesive material, said protective layer means being provided for potecting said cushion means from damage by said adhesive means by permitting an adhesive bond to be established between said cushion means and said at least one opposed inner surface by virtue of said adhesive means while yet permitting bonding release of said cushion means from said adhesive means to facilitate removal of said cushion member from said at least one opposed surface.

4,658,416

AUTOMATIC CALL TRANSFER SYSTEM CAPABLE OF CARRYING OUT CALL TRANSFER WITHOUT MANUAL OPERATION

Minoru Tanaka, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 11, 1985, Ser. No. 700,107

Claims priority, application Japan, Feb. 14, 1984, 59-25506

Int. Cl.⁴ H04Q *7/04*

U.S. Cl. 379—57 **7 Claims**

1. In an automatic call transfer system for use in automatically carrying out transfer of a call by the use of an exchange which is coupled through subscriber lines to telephone sets, respectively, said telephone sets being specified by line numbers corresponding to said subscriber lines, respectively, and being distributed in an area so as to be utilized by persons movable in said area, the improvement wherein:

a person identification number is assigned to each of specific ones of said persons so as to identify said each specific person;

said system comprising:

a plurality of receiving means coupled to said exchange and having receivable zones into which said area is divided so that at least one of said telephone sets is included in each of said receivable zones, each of said receiving means

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being for receiving an identification number signal representative of said person identification number; and

signal generating means conveyed by said each specific person for generating said identification number signal such that it is received by a selected one of said receiving means when said each specific person is staying in the receivable zone for said selected one of said receiving means;

said exchange comprising:



memory means coupled to said receivers for memorizing specific at least one of the line numbers of the receivable zone for said selected one of said receiving means in correspondence to said identification number signal; and

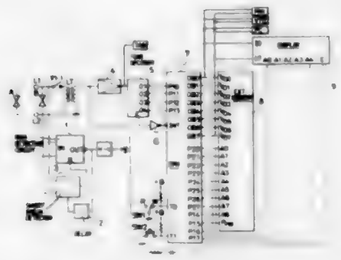
call transferring means coupled to said memory means and responsive to the call carrying said person identification number for transferring the call to the telephone set specified by said specific at least one of said line numbers with reference to the memorized identification number signal.

4,658,417

INFORMATION TRANSMISSION/RECEPTION SYSTEM USING PUSHPHONE AND INFORMATION RECEPTION APPARATUS

Kazuo Hashimoto, and Mitsuo Kobayawa, both of Tokyo, Japan, assignors to Hashimoto Corporation, Tokyo, Japan

Filed Oct. 4, 1984, Ser. No. 657,661
Claims priority, application Japan, Oct. 8, 1983, 58-188732
Int. Cl.[4] H04M *11/00*
U.S. Cl. 379—97 14 Claims



1. An information communication system including a reception apparatus comprising:

a ringing circuit for detecting a ringing signal of a telephone set; looping means for forming a loop in response to an output from said ringing circuit; a tone decoder for converting to a code a tone sent upon depression of each key of a remote pushphone; numeric key code discriminating means for discriminating a code of one of a plurality of numeric keys representing numerals from 1 to 0 of the pushphone in response to an output from said tone decoder; memory means for storing a discriminated numeric key code and data representing a number of times of receptions thereof; second discriminating means for discriminating among letters and numbers on the basis of the numeric key code and the data representing the number of times of receptions thereof which are stored in said memory means upon reception of a specific symbol key code following the numeric key code; said second discriminating means including means for discriminating among a plurality of letters represented by a single numeric key code and for detecting the numeric key code as representing a letter in a kth ordinal position associated with a particular key which generated said key code by determining that the number of receptions of the key code is k+1; code memory means for storing a letter code for each letter discriminated by said second discriminating means; and display means for displaying a character string stored in said code memory means;

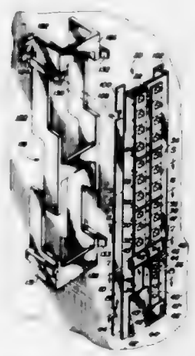
said system further including adapter means for mounting on a keypad of the pushphone and including indicating means for indicating a number of depressions of each key required to transmit each letter.

4,658,418

MULTIPLE TELEPHONE JACK SLIDE ASSEMBLY

E. Walter Rodgers, Glendale, Ariz., assignor to Armor Metals, Inc., Phoenix, Ariz.

Filed Mar. 14, 1986, Ser. No. 839,740
Int. Cl.[4] H05K *5/00*
U.S. Cl. 379—328 16 Claims



1. A multiple telephone jack slide assembly for supporting a plurality of telephone jacks upon a telephone interchange wiring panel, said assembly including:

(a) a sliding jack support member having at least one longitudinal channel formed therein and open at one end thereof, said channel being defined by first and second opposing edge portions of said support member, said first and second opposing edge portions being generally directed toward one another and separated by a predetermined distance corresponding to the width of said channel;

(b) fastening means for fastening said support member to said wiring panel;

(c) a plurality of telephone jacks each having an upper surface opening into a cavity for releasably receiving a mating telephone cord plug, each of said telephone jacks further including a pair of opposing side walls extending downwardly from said upper surface and substantially perpendicular thereto, said opposing side walls being separated by a distance approximating the width of said channel, said opposing side walls including engaging means for slidingly engaging said first and second opposing edge portions of said channel for permitting each of said plurality of telephone jacks to be slid into said channel from the open end thereof in order to support said plurality of telephone jacks within said channel; and

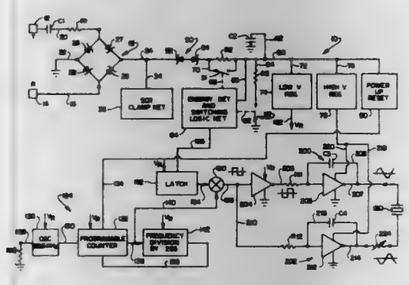
(d) retaining means releasably fastened to said support member and abutting at least one of said plurality of telephone jacks for inhibiting further sliding movement of said plurality of telephone jacks after the same are slid into said channel.

4,658,419

TELEPHONE RINGER CIRCUIT

Dennis J. Denen, Columbus, Ohio, assignor to Floyd Bell Associates, Inc., Columbus, Ohio

Filed Jul. 22, 1981, Ser. No. 285,628
Int. Cl.[4] H04M *1/00*
U.S. Cl. 379—375 20 Claims



1. A telephone ringer circuit comprising:

conductive means connectible to receive telephonic signals including ring and talk signals;

rectifier means having an input coupled with said conductive means for rectifying said telephonic signals and providing a corresponding d.c. signal at an output thereof;

talk disconnect means coupled with said output of said rectifier means for blocking said d.c. signals having a voltage level corresponding with said talk signals and conducting said d.c. signals above said level at an output;

energy responsive network means including resistor means coupled with said talk disconnect means output and connectible in charging relationship with capacitor means, first switching means normally enabling a discharge path for said capacitor means and actuable for effecting the blockage of said path, second switching means normally enabling the charging of said capacitor means through said resistor means and actuable to effect a low impedance current conveying bypass of said resistor means and detect network means responsive to charge values on said capacitor means representing a said d.c. signal corresponding with a ring signal for assuming an operational condition actuating said first and second switching means;

oscillator network means energizable for generating squarewave outputs of at least two frequency values alternating at a select warble rate;

drive circuit means connectible with an audio drive component and responsive to said squarewave outputs when enabled, said drive circuit means comprising two amplification stages and an inverter stage coupled with one said amplification stage for effecting the push-pull energization of said component; and

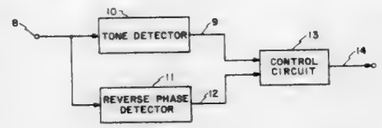
control circuit means responsive to said detect network means when in said operational condition for effecting the energization of said oscillator network means and enablement of said driver circuit means.

4,658,420

TONE RESPONSIBLE DISABLER CIRCUIT FOR AN ECHO CANCELLER

Yuzo Fukushi, and Yukio Hagiwara, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Nov. 30, 1984, Ser. No. 676,531
Claims priority, application Japan, Dec. 6, 1983, 58-229056
Int. Cl.[4] H04B *3/20*
U.S. Cl. 379—407 7 Claims



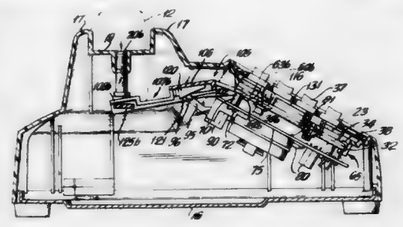
1. A tone responsive disabler circuit for disabling an echo canceller by detecting a tone signal of a prescribed frequency which includes a phase reversal signal portion and is sent out prior to data transmission, said tone responsive disabler circuit comprising first means for detecting said tone signal to produce a first detection signal representing the presence of said tone signal, said first means continuing to produce said first detection signal during at least the reception of data signals transmitted following said tone signal; second means for detecting said phase reversal signal portion in said tone signal to produce a second detection signal representing the occurrence of the phase reversal signal portion; and third means responsive to said first and second detection signal for producing a third detection signal which continues from the start of said second detection signal until the end of said first detection signal.

4,658,421

TELEPHONE SET STAND

Harold L. Bohannon, Shreveport, La., assignor to AT&T Company and AT&T Technologies, Inc., both of Berkeley Heights, N.J.

Filed Mar. 25, 1985, Ser. No. 715,810
Int. Cl.[4] H04R *1/02, 1/06, 1/26*
U.S. Cl. 379—422 21 Claims



1. A stand for a telephone set comprising; a molded, plastic, generally thin-walled open-bottomed hollow housing integral with an upper wall having formed therein (a) a large indented portion providing a shallow depression on the wall's outer side, (b) a large aperture centered within said indented portion and extending through said wall and (c) screw holes disposed within said indented portion adjacent to and on opposite sides of said aperture; a keypad comprising (e) an insulative keypad casing of greater thickness than said wall and disposed in said housing to be framed by said aperture, and (e) an array of keys projecting within said aperture outward from said casing, said casing having formed therein a plurality of holes extending thereinto from its outer side and registering with said screw holes in said wall, a plurality of fastening screws having heads on the outer side of said wall and having shanks extending from said heads through said screw holes and into said casing holes

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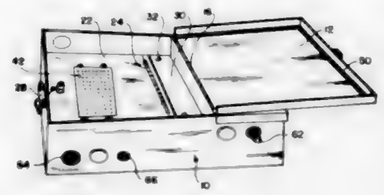
so as to fixedly fasten said keypad to said wall, a faceplate having formed therein an array of openings matching said keys, said faceplate being disposed in said depression so as to conceal from view said heads of said screws and so that said keys pass through said openings in said faceplate, faceplate retaining means to maintain said faceplate in said depression, and a base plate providing a closure for the bottom of said housing.

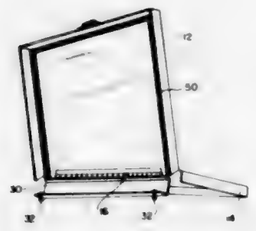
4,658,422

BUILDING ENTRANCE TELEPHONE TERMINAL BOX

Gary D. Sparks, 4232 Mulligan Dr., Carson City, Nev. 89701

Filed Aug. 19, 1985, Ser. No. 767,353
Int. Cl.⁴ H04M *9/00*
U.S. Cl. 379—442 **9 Claims**





1. A telephone terminal box comprising: at least one chassis mounted in said box; first and second covers; an elongated bracket; a common hinge attached to the first and second covers and to the bracket; and fastener means removably mounting the bracket on the chassis with the bracket extending across the chassis from one side of the box to the other to divide the box into first and second compartments, said first cover providing access to said first compartment and said second cover providing access to said second compartment, said fastening means being located in said first compartment to permit the covers and bracket to be removed when access is gained to said first compartment.

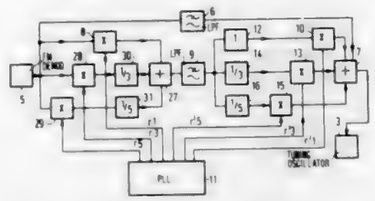
4,658,423

FM-STEREO RECEIVER

Wolfgang Nolde, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1984, Ser. No. 684,443
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346059
Int. Cl.⁴ H04H *5/00*
U.S. Cl. 381—13 **5 Claims**

1. An FM-stereo receiver comprising:
- a frequency controlled oscillator having a control input for receiving a frequency control voltage;
- means for mixing a received radio frequency input signal with a signal from said oscillator, whereby an intermediate frequency signal is produced;
- an FM demodulator for demodulating said intermediate frequency signal;
- means for deriving a control voltage for said oscillator from a demodulated signal produced by said FM demodulator comprising a first low pass filter, and bandpass filter connected in parallel with said low pass filter to receive said demodulated signal, said bandpass filter including a stereo signal demodulator for producing a stereo difference signal when a stereo signal is included in said radio frequency input signal, a second low pass filter for supplying said stereo difference signal to a first mixer stage, said first



mixer stage receiving a second, non-sinusoidal signal having a frequency of a subcarrier frequency of said stereo difference signal; and
- means responsive to said first low pass filter and an output of said first mixer for removing mixing products produced by third and fifth harmonics of said non-sinusoidal signal fundamental frequency from said first mixer stage output signals, thereby generate said control voltage.

4,658,424

SPEECH SYNTHESIS INTEGRATED CIRCUIT DEVICE HAVING VARIABLE FRAME RATE CAPABILITY

Alva E. Henderson, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 5, 1981, Ser. No. 240,685
Int. Cl.⁴ G10L *5/00*
U.S. Cl. 381—51 **1 Claim**



1. A speech synthesis system comprising:
- speech synthesizer means for receiving frames of digital speech data comprising binary representations of speech parameter data including pitch data, energy data and reflection coefficient data and converting said frames of digital speech data into analog signals representative of human speech;
- audio means coupled to said speech synthesizer means for converting said analog signals representative of human speech into audible synthesized human speech;
- means for varying the time interval during which respective frames of digital speech data are converted by said speech synthesizer means into analog signals representative of human speech, said frame rate-varying means comprising external control signal means for furnishing one of a plurality of possible control signals indicative of a corresponding plurality of different speech data frame rates; and
- circuit means operably coupled to said external control signal means and said speech synthesizer means for receiving said one of said plurality of control signals representative of a particular speech data frame rate from said external control signal means and adjusting the operation of said speech synthesizer means in accordance therewith for

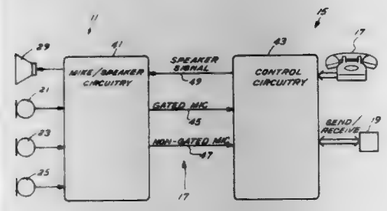
establishing the current speech data frame rate of said speech synthesizer means in accordance with said one control signal, said circuit means comprising
- data input means for receiving control signals from said external control signal means,
- decode and counter preset circuit means connected to said data input means for decoding the control signals received therefrom,
- a counter coupled to the output of said decode and counter preset circuit means, said counter being responsive to the decoded value of said control signals to be preset and having a plurality of bits for incrementing after the presetting thereof to provide count signal outputs,
- programmable logic array means for receiving said count signal outputs from said counter and providing a logic array signal output, and
- timing decode means connected to the output of said programmable logic array means for decoding the logic array signal output therefrom to generate a timing signal indicative of a selected one of said plurality of possible speech data frame rates utilized by said speech synthesizer means in converting said speech data frame associated with said timing signal into a corresponding analog signal representative of human speech, whereby said audio means produces audible synthesized human speech having an aural quality influenced by the respective frame rates of the speech data frames from which the audibly synthesized human speech is derived.

4,658,425

MICROPHONE ACTUATION CONTROL SYSTEM SUITABLE FOR TELECONFERENCE SYSTEMS

Stephen D. Julstrom, Chicago, Ill., assignor to Shure Brothers, Inc., Evanston, Ill.

Continuation of Ser. No. 725,302, Apr. 19, 1985, abandoned. This application Jun. 30, 1986, Ser. No. 881,523
Int. Cl.⁴ H04R *3/00*
U.S. Cl. 381—81 **21 Claims**



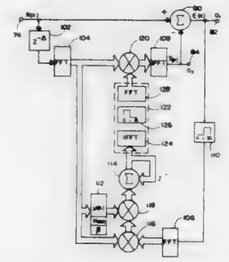
1. A microphone system comprising:
- a plurality of microphones, each said microphone responsive to speech for generating an electrical microphone signal carrying speech information;
- gating means receiving each said microphone signal and gating a said microphone signal to gate ON its associated microphone in response to a gating signal, said gating means including:
- monitoring means for continuously monitoring the maximum of the microphone signal amplitudes of said microphone signals at one scaled level for microphone signals associated with gated ON microphones and at a different scaled level for microphone signals associated with gated OFF microphones, said monitoring means generating an electrical MAX signal representative of said maximum, said monitoring means comparing the scaled amplitude level of each said microphone signal with said MAX signal for responsively generating a trigger signal associated with a said microphone to gate ON the associated microphone;
- gating signal generation means responsive to a said trigger signal for generating a gating signal of at least a predetermined minimal non-zero time duration for gating ON the microphone associated with said trigger signal; and
- gate means responsive to a said gating signal for gating ON an associated microphone.

4,658,426

ADAPTIVE NOISE SUPPRESSOR

Douglas M. Chabries, Salem; Richard W. Christiansen, Highland; Douglas Lynn, Provo, all of Utah, and Gary Kenworthy, Fremont, Calif., assignors to Harold Antin and Mark Antin, both of New York, N.Y.

Filed Oct. 10, 1985, Ser. No. 785,999
Int. Cl.⁴ H04R *27/00;* **H04B** *15/00*
U.S. Cl. 381—94 **63 Claims**



1. A noise suppression device for providing a noise filtered speech signal comprising:
- means for delaying an input signal X by a fixed delay Δ;
- means for transforming the delayed signal into the frequency domain;
- weighted means, having weights and having inputs connected to the transforming means, for adaptably filtering the delayed, transformed signal using a mean square algorithm in the frequency domain;
- means for transforming the output of the weighted means into a time domain signal comprising the noise filtered speech signal Y;
- means, having as inputs the signals X and Y for subtracting the signal Y from X, the output of the subtracting means being a noise error signal ϵ;
- means for transforming the noise error signal ϵ into the frequency domain to produce a transformed error signals;
- means for multiplying the transformed noise error signals by a vector gain μ;
- projection operator means receiving the output of the multiplying means for removing the effects of circular convolution, the output of the projection operator means being fed back to the weighted means to cause the weights of the weighted means to be readjusted in a manner to minimize the difference between the signal X and the signal Y, thereby minimizing the error signal and producing a noise suppressed signal in the filtered signal Y.

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4,658,427

SOUND PRODUCTION DEVICE

Sylvain Aubin, Paris, France, assignor to Etat Francais representé per le Ministre des PTT (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, France

PCT No. PCT/FR83/00247, § 371 Date Aug. 2, 1984, § 102(e) Date Aug. 2, 1984, PCT Pub. No. WO84/02416, PCT Pub. Date Jun. 21, 1984

PCT Filed Dec. 8, 1983, Ser. No. 641,960

Claims priority, application France, Dec. 10, 1982, 82 20695

Int. Cl.⁴ H04N *7/18*

U.S. Cl. 381—124 **11 Claims**



1. A method of sound production, said method comprising the steps of

observing an image which includes a moving object;

producing image signals representing at least two different parameters, each parameter having a variation corresponding to one of the position, the volume and the displacement of the object, the variation of the volume of the object, the rate of variation of the displacement and of the volume of the object;

producing sound control signals from said image signals; and

achieving sound synthesis by utilizing said sound control signals for controlling the variations of at least two different parameters of the sounds produced.

4,658,428

IMAGE RECOGNITION TEMPLATE GENERATION

Renee Bedros, West St. Paul, and Robert J. Schnell, Brooklyn Center, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 17, 1985, Ser. No. 755,874

Int. Cl.⁴ G06F *9/62, 9/78, 9/44*

U.S. Cl. 382—30 **8 Claims**

1. A system for generating additional template images containing an object of interest, having an angle associated with the major axis of the best-fit ellipse around said object, in a plurality of defined orientations from a single digitized template image frame containing said object of interest comprising:

means for generating a first digitized pixel template of a frame containing an object of interest in the form of object and background pixels, wherein said frame is divided into four quadrants by perpendicular reference axes;

storage means for storing said first digitized template;

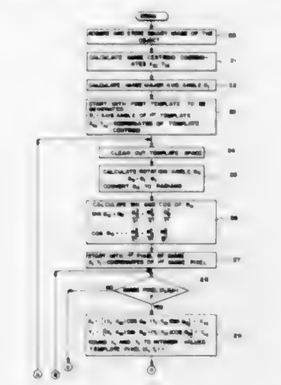
means for locating the centroid object pixel which is the pixel located closest to the geometric centroid of the object of interest in said first digitized template;

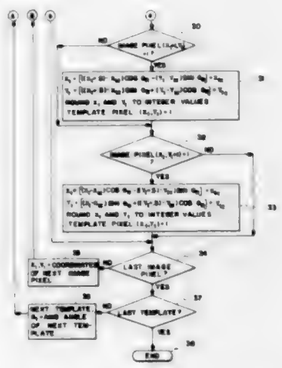
means for determining the angle of the major object axis, wherein said major object axis is defined as the major axis of the best-fit ellipse around said object of interest in said first digitized template;

means for translating said centroid pixel to a desired position in a quadrant of the frame with respect to said perpendicular reference axes dividing said frame into quadrants;

means for rotating said angle of said major object axis to a desired second angle in a quadrant of said template frame;

means for generating a second digitized pixel template of said frame containing said object of interest disposed in a second position with respect to said perpendicular reference axes of said frame;





means for enhancing the clarity of said object of interest in said second digitized pixel template.

4,658,429

SYSTEM AND METHOD FOR PREPARING A RECOGNITION DICTIONARY

Miyahiko Orita; Yoshiki Kobayashi, and Yutaka Kubo, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 31, 1984, Ser. No. 687,757

Claims priority, application Japan, Dec. 29, 1983, 58-248151; Dec. 29, 1983, 58-248152

Int. Cl.⁴ G06K *9/64*

U.S. Cl. 382—36 **9 Claims**

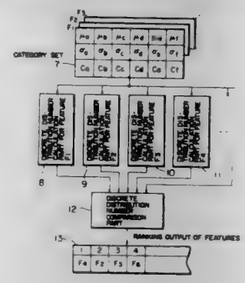
1. A recognition system for preparing a recognition dictionary comprising:

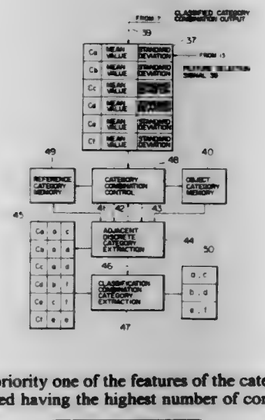
means for producing distribution data of a plurality of categories for each of a plurality of features from samples of patterns to be recognized;

means responsive to said means for producing distribution data for providing the mean value and the standard deviation of each of the categories of each of said plurality of features;

means responsive to said means for providing the mean value and the standard deviation for summing for each of the features a number of combinations of pairs of the categories having a discreteness greater than a predetermined value; and

means coupled to said means for summing for comparing the number of combinations of each feature for selecting as a





highest priority one of the features of the categories to be recognized having the highest number of combinations.

4,658,430

SYSTEM FOR ROTATING BINARY IMAGES

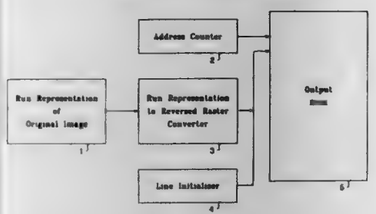
Karen L. Anderson, Peekskill, and Joan L. Mitchell, Ossining, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 27, 1984, Ser. No. 686,788

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—46 **20 Claims**

System for 180° Rotation



1. A method for rotation of an image in run end or run length form by 180° from the orientation of the original image to create an image in raster form, comprising the steps of: beginning at a first end of an original image representation and a second end of an output image area; storing a plurality of run representations of a line of said original image in a buffer; initializing a line of output data; converting each run representation in said buffer to a picture element representation in which the bits read in the opposite direction from the line described by the run representations; storing said picture element representation of said line; repeating the steps of storing, initializing, converting, and storing for remaining lines of said original image, progressing from said second end of the output image to said first end and from said first end of the original image to said second end, until said original image has been converted to a bit map representation rotated 180° in the output image area.

4,658,431

STAR SENSOR USING CCD

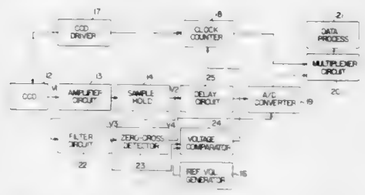
Toyohachi Yokota, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 25, 1984, Ser. No. 634,076

Claims priority, application Japan, Jul. 26, 1983, 58-136123

Int. Cl.⁴ G06K *9/38*

U.S. Cl. 382—53 **16 Claims**



1. A star sensor comprising:

CCD means for detecting the light rays of a star and for producing an output representative of the intensity distribution of said light rays at various points of said CCD means;

means for counting clock pulses with which said CCD means is driven;

means for filtering said output of said CCD means to produce an envelope signal representative of an envelope component thereof, said envelope signal having a zero crossing point;

means for detecting the zero-crossing point of said envelope signal to produce a detecting means output; and

computing means responsive to the output of said detecting means and to the output of said counting means for proving a signal representative of the position of said star.

4,658,432

CONTAINER FOR BULK MATERIAL

Rolaf Lehmann, and Sven Burmeister, both of Elmshorn, Fed. Rep. of Germany, assignors to Lolift Verwaltungs GmbH, Elmshorn, Fed. Rep. of Germany

Filed Feb. 25, 1986, Ser. No. 833,648

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1985, 8505491[U]

Int. Cl.⁴ B65D *33/02, 33/14, 88/16, 90/02*

U.S. Cl. 383—20 **6 Claims**

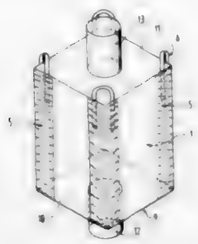
1. A large-sized transportation container for the transport of materials in bulk, comprising:

a side wall structure that is formed with four equally sized, substantially rectangular wall portions, each wall portion being a separate cut-up of a high tenacity synthetic fiber woven fabric and having two opposite, cut edges extending in the direction of the warp threads of the fabric whereas the two remaining cut edges extend in the direction of its weft threads;

four corner seams being each stitched with a zigzag-stitch and interconnecting in pairs said wall portions at mutually overlapping, vertically extending edge portions that each comprise one corresponding cut edge of said one pair of opposite, cut edges of a respective cut-up so that with these four corner seams a side wall structure having two

pairs of oppositely parallel wall portions or panels is being formed;

four substantially U-shaped lifting loops having each a bight and two spaced legs and being each secured to said side



wall structure by means of an upper portion of a coordinated corner seam; and

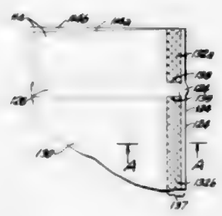
a substantially square bottom being stitched to said side wall structure opposite of said lifting loops.

4,658,433

RIB AND GROOVE CLOSURE BAG WITH BEAD SEALED SIDES

Alan F. Savicki, South Windsor, Conn., assignor to First Brands Corporation, Danbury, Conn.

Filed Sep. 11, 1985, Ser. No. 774,724
Int. Cl.⁴ B65D *33/24*
U.S. Cl. 383—63 **20 Claims**



1. A bag comprising:

(a) two film sections of thermoplastic material in overlying relationship, each section having a top edge, a bottom edge joined with the bottom edge of the other section, and two lateral edges spaced between the top edge and bottom edge;

(b) a closure element adjacent to and extending across the entire top edge of each section, with the closure elements of overlying sections constructed and arranged in opposing and occludable relationship;

(c) a peripheral bead seal coextensive with each lateral edge completely fusing together the overlying sections and the closure elements at each lateral edge;

(d) an upper flat seal fusing together adjacent surfaces of the sections in a portion extending inwardly from each bead seal between the top edges of the sections and the uppermost edge of the closure elements; and

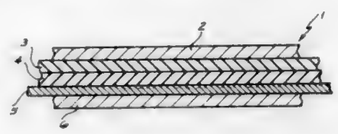
(e) a lower flat seal fusing together adjacent surfaces of the sections in a portion extending inwardly from each bead seal between the joined bottom edges of the sections and the lowermost edge of the closure elements, such that a flat seal does not extend through the closure elements.

4,658,434

LAMINATES AND LAMINATED ARTICLES

Eric S. A. Murray, Beecroft, Australia, assignor to Grain Security Foundation Ltd., Randwick, Australia

Filed May 29, 1986, Ser. No. 867,961
Int. Cl.⁴ B65D *33/16*; B32B *1/02, 15/08, 27/08*
U.S. Cl. 383—66 **5 Claims**



1. A laminate comprising a first layer of plastics material any two regions of which are readily heat sealable to each other;

a second layer of a high density plastics material;

a third layer also of a high density plastics material, said second and third layers being cross-laminated to each other;

a fourth layer of foil or like material adapted to minimise gas transmission therethrough; and

a fifth layer of plastics material.

2. A laminate as defined in claim 1 wherein said first layer is of low density polyethylene, said second and third layers are of high density polyethylene, said fourth layer is of aluminium foil and said fifth layer is of low density polyethylene.

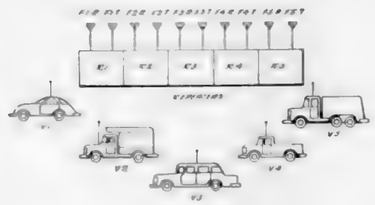
3. A container formed from the laminate of claim 1 or claim 2, said container having shoulders sloping to the mouth thereof, leaving heat seamed and being sealable either by a purpose made cap or by heat sealing across the top opening thereof.

4,658,435

RADIO TRUNKING SYSTEM WITH TRANSCEIVERS AND REPEATERS USING SPECIAL CHANNEL ACQUISITION PROTOCOL

Jeffrey S. Childress, Lynchburg; Mark M. Sihlanick; Michael W. Smith, both of Forest, and Peyton L. Morgan, III, Lynchburg, all of Va., assignors to General Electric Company, Lynchburg, Va.

Continuation-in-part of Ser. No. 645,710, Sep. 17, 1984, abandoned. This application Apr. 10, 1985, Ser. No. 721,815
Int. Cl.⁴ H04B *1/40, 7/15*
U.S. Cl. 455—17 **39 Claims**



6. A radio repeater for repeating operations in a trunked radio communication system, said repeater comprising:

receiver means for detecting the presence of a channel busy signal and of a sequence of P channel acquisition protocol signals s1–sP which may occur on the incoming side of a communications channel during corresponding time periods t1–tP; and

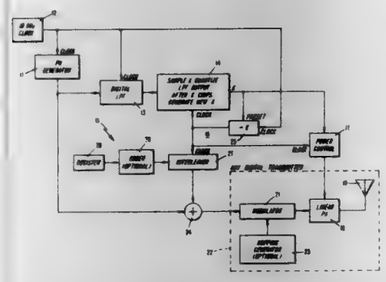
transmitter means for regenerating and transmitting a corresponding sequence of P channel acquisition protocol signals s1–sP on the outgoing side of said communications channel during time periods T1–TP where T1 is greater than the combined duration of t1–tP.

4,658,436

DISGUISED TRANSMISSION SYSTEM AND METHOD

Terrance J. Hill, Fairfield, Ohio, assignor to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Oct. 28, 1982, Ser. No. 437,309
Int. Cl.⁴ H04K *1/00, 1/06*
U.S. Cl. 380—31 **54 Claims**



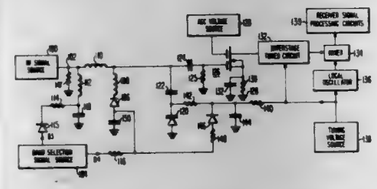
41. Apparatus for emitting a modulated information wave that simulates fading, said apparatus being responsive to a stream of binary data bits, the apparatus comprising a predictable noise-like binary chip sequence generating means, a digital angle modulated wave transmitter, means responsive to the generating means for controlling the power level of the wave transmitted from the transmitter, means responsive to the stream of binary bits and the generating means for controlling angle modulation of the transmitted wave, said angle modulation control means including means for controlling the length of each data bit of the transmitted wave in response to a predetermined function of an output of the means for generating, the means for generating controlling the length controlling means and the power level controlling means so the power level and the length of each data bit in the transmitted wave vary in opposite directions to simulate fading of the transmitted wave.

4,658,437

TUNING VOLTAGE TRACKING ARRANGEMENT

Nathaniel H. Ersoz, and James Hettiger, both of Marion County, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Mar. 1, 1985, Ser. No. 705,900
Int. Cl.⁴ H04B *1/16*
U.S. Cl. 455—180 **6 Claims**



1. In a superheterodyne radio frequency (RF) receiver having a plurality of selectable tuning bands and including a tuning voltage source for providing a tuning voltage variable over a predetermined voltage range for selecting channels in said tuning bands, voltage controlled RF means for selecting an RF signal from a plurality of received RF signals corresponding to respective ones of said channels in response to an RF tuning voltage, local oscillator (LO) means for generating a LO signal having a plurality of frequencies corresponding to respective ones of said channels in response to an LO tuning voltage, mixer means for mixing said selected RF signal and said LO signal to produce an IF signal, tuning circuit means associated with said RF means for tuning said RF means in said tuning bands in response to said RF tuning voltage, and a selection signal source for providing a selection signal voltage to said tuning circuit means for selectively causing said RF means to be tuned in one of said tuning bands, a tuning voltage tracking arrangement comprising:

coupling means for coupling said tuning voltage to an RF tuning voltage input as said RF tuning voltage and to an LO tuning voltage input as said LO tuning voltage;

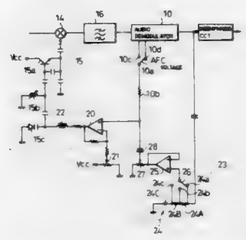
selectively enabled voltage modifying means coupled to said tuning voltage source and being responsive to said selection signal voltage for selectively modifying said RF tuning voltage relative to said LO tuning voltage and for providing said modified RF tuning voltage in said one band only when said tuning voltage provided by said tuning voltage source is within a predetermined portion, less than the whole, of said predetermined range so that said RF signal selected by said RF means and the frequency of said local oscillator produced by said local oscillator means track one another to correspond to the same channel for each one of said channels selected throughout said bands.

4,658,438

RECEIVER FOR SATELLITE BROADCASTING SERVICE

Hiroshi Kamata, and Wataru Okubo, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 13, 1985, Ser. No. 775,599
Claims priority, application Japan, Sep. 17, 1984, 59-194283
Int. Cl.⁴ H04B *1/16*
U.S. Cl. 455—264 **3 Claims**



1. A receiver for receiving a television signal radiated from a broadcasting satellite and containing a plurality of frequency-modulated audio subcarriers having different maximum frequency deviations, said receiver comprising:

(a) a frequency mixer receptive of a selected audio subcarrier;

(b) a voltage-controlled oscillator for applying an oscillation signal to said frequency mixer to convert said selected audio subcarrier into an intermediate-frequency audio subcarrier;

(c) a bandpass filter for passing said intermediate-frequency audio subcarrier;

(d) an audio demodulator for demodulating said intermediate-frequency audio subcarrier having passed through said bandpass filter; and

(e) a feedback circuit composed of feedback voltage generating means for converting a demodulated signal fed back from said audio demodulator into a feedback voltage at a voltage ratio corresponding to the maximum frequency deviation of said selected audio subcarrier, and an operational amplifier for applying a control signal to said voltage-controlled oscillator in response to said feedback voltage to control an oscillation signal of said voltage-controlled oscillator so that the maximum frequency devia-

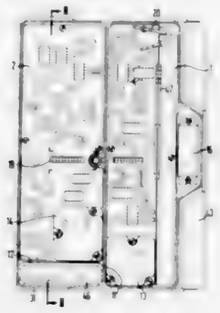
VOL 1077 ISS 2 AP 14 1987 UMI

tion of the intermediate-frequency audio subcarrier issued from said frequency mixer will match the bandwidth of said bandpass filter.

4,658,439
HOUSING FOR A RADIO APPARATUS

Geir Danielsen, Oslo, Norway, and Heiner Thomfohrde, Hohenschaeftlarn, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 16, 1985, Ser. No. 734,612
Claims priority, application Fed. Rep. of Germany, May 24, 1984, 3419416
Int. Cl.[4] H04B *1/08, 1/38, 1/10*
U.S. Cl. 455—301 **14 Claims**



14. A housing for a radio apparatus having a rectangular cross-section with an opening at the front side and an opening at the back side which are respectively closable with a cover, comprising:

a plate dividing the housing into a plurality of tub-shaped chambers;

radio assemblies as well as antenna and control devices being separately disposed in various ones of said chambers;

plug connector elements for the electrical connection of said antenna and control devices in said chambers inserted through said plate;

a single central screw engagable with both covers to secure the covers to one another and to the housing;

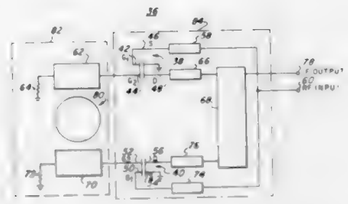
outside guide rails provided on the housing at two side faces lying opposite one another for acceptance into a support mount; and

a carrying handle pivotally attached near the top side of the housing, said carrying handle including means for latching the radio apparatus to said support mount.

4,658,440
SINGLE BALANCED SELF-OSCILLATING DUAL GATE FET MIXER

Anthony M. Pavio, and Kevin J. Anderson, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 27, 1984, Ser. No. 635,093
Int. Cl.[4] H04B *1/26*
U.S. Cl. 455—324 **7 Claims**



1. A self-oscillating mixer comprising:

an RF input input terminal for receiving RF signals;

a first circuit means for receiving and mixing the RF signals with a first signal and includes a first device having a first and second gate with the first gate being for receiving the RF signals for mixing with the first signal to obtain a first mixed signal and a first resonator circuit means operatively connected to the second gate for generating the first signal;

a second circuit means for receiving and mixing the RF signal with a second signal and includes a second device having a third and fourth gate with the third gate being for mixing RF signals with the second signal to obtain a second mixed signal and a second resonator circuit means operatively to the second gate for generating the second signal;

the first and second resonator circuit means includes means for maintaining a phase differential between the first and second signals; and

power combiner means for combining at a predetermined angle the first mixed signal with the second mixed signal to obtain a combined signal.

289,220
COMBINED COOKIE BOUQUET AND INEDIBLE HOLDER THEREFOR

Linda M. Dowdy, San Jose, Calif., and Sherri J. McInnis, 18771 Loree Ave., Cupertino, Calif. 95014, assignors to Sherri J. McInnis, San Jose, Calif.

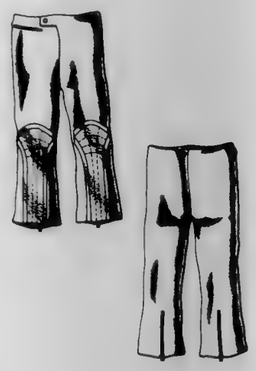
Filed Mar. 1, 1984, Ser. No. 585,235
Term of patent 14 years
U.S. Cl. D1—102



289,221
SKI PANTS

Seiichi Maejima, Nara, Japan, assignor to Descente Limited, Osaka, Japan

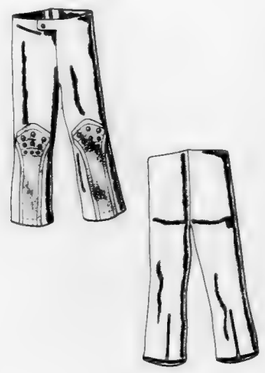
Filed Sep. 17, 1984, Ser. No. 651,154
Term of patent 14 years
U.S. Cl. D2—28



289,222
SKI PANTS

Seiichi Maejima, Nara, Japan, assignor to Descente Limited, Osaka, Japan

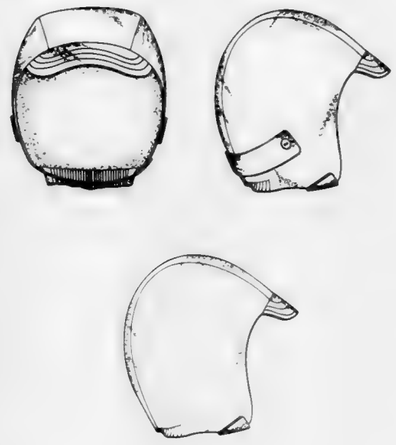
Filed Jul. 24, 1984, Ser. No. 634,314
Claims priority, application Japan, Jan. 25, 1984, 59-1935
Term of patent 14 years
U.S. Cl. D2—28



289,223
CAP

Dennis E. Sumpter, 4468 N. Pasedena, and Marion L. Berry, 6539 E. 55th Pl., both of Indianapolis, Ind. 46226

Filed Mar. 11, 1985, Ser. No. 710,487
Term of patent 14 years
U.S. Cl. D2—244



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289,224
ADJUSTABLE SLIPPER
Bobbi J. Free, One Pleasant St., Meredith, N.H. 03253
Filed Aug. 15, 1984, Ser. No. 641,034
Term of patent 14 years
U.S. Cl. D2—282



289,225
PANTYHOSE
Emil E. Amersin, Parkring 20, A-1010 Vienna, Austria
Filed Mar. 12, 1984, Ser. No. 588,791
Term of patent 14 years
U.S. Cl. D2—336



289,226
COMBINED BELT AND TENNIS BALL POUCH
Emily S. Zisholtz, 159 Woodpecker Rd., Jenkintown, Pa. 19046
Filed Jul. 5, 1984, Ser. No. 627,951
Term of patent 14 years
U.S. Cl. D2—630



289,227
ILLUMINABLE BELT
Kenneth P. Glynn, 118 Franklin Ct., Flemington, N.J. 08822
Filed Dec. 26, 1984, Ser. No. 686,466
Term of patent 14 years
U.S. Cl. D2—627



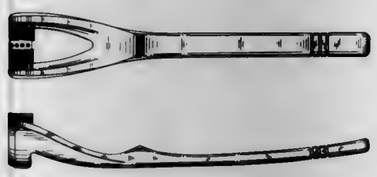
289,228
FOLDABLE WRAPPER FOR CLOTHING
Carole Chinman, 922 Blackshire Rd., Wilmington, Del. 19805
Filed Sep. 28, 1984, Ser. No. 655,588
Term of patent 14 years
U.S. Cl. D3—30.1



289,229
TOOTHBRUSH
Cheryl L. Greene, 8401 W. Sample Rd. #42, Coral Springs, Fla. 33065
Filed Jun. 17, 1985, Ser. No. 745,186
Term of patent 14 years
U.S. Cl. D4—108



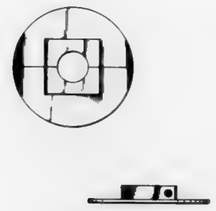
289,230
TOOTHBRUSH
John D. DeMartino, 1 Fairfield Ave., Holyoke, Mass. 01041
Filed Aug. 30, 1985, Ser. No. 771,352
Term of patent 14 years
U.S. Cl. D4—110



289,231
TOOTHBRUSH
Mae Fleisher, 1500 Locust St., Apartment 1705, Philadelphia, Pa. 19102
Filed Aug. 12, 1985, Ser. No. 764,629
Term of patent 14 years
U.S. Cl. D4—110



289,232
REMOVABLE STOP FOR A PAINT ROLLER HANDLE
Henri Leray, Nyköping, Sweden, assignor to Henri Leray AB, Nyköping, Sweden
Filed Aug. 28, 1984, Ser. No. 645,750
Term of patent 14 years
U.S. Cl. D4—122



289,233
STAND FOR AN ORNAMENT OR PLATE
Christian B. Cadman, 309 East 24th Avenue, Vancouver, British Columbia, Canada V5V 1Z8
Filed Jun. 25, 1984, Ser. No. 624,246
Claims priority, application Canada, Feb. 28, 1984, 28-02-84-12
Term of patent 14 years
U.S. Cl. D6—314





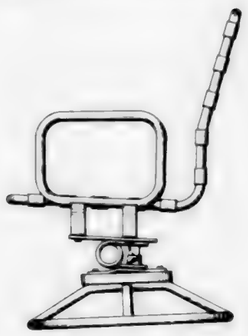


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289,234
CHILD'S ROCKING CHAIR
Thomas R. Hoult, P.O. Box 3382, New Bern, N.C. 28560
Filed Jul. 10, 1984, Ser. No. 629,419
Term of patent 14 years
U.S. Cl. D6—348



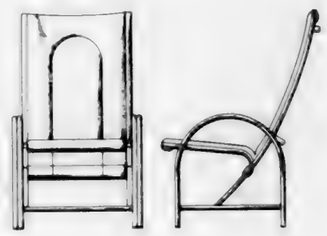
289,235
CHAIR
Gregg Heyl, Westminster, Calif., assignor to Virco Mfg. Corporation, Los Angeles, Calif.
Filed Oct. 19, 1984, Ser. No. 662,712
Term of patent 14 years
U.S. Cl. D6—365



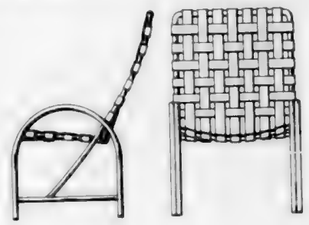
289,236
ARMCHAIR
Egon Brüning, Weil am Rhein, Fed. Rep. of Germany, assignor to Fehlbaum & Co., Dornach, Switzerland
Filed Sep. 29, 1983, Ser. No. 537,292
Term of patent 14 years
U.S. Cl. D6—366



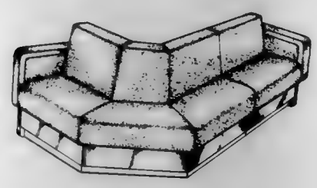
289,237
CHAIR
James R. Arthur, Jr., P.O. Box 58081, Birmingham, Ala. 35259
Filed Nov. 29, 1984, Ser. No. 676,235
Term of patent 14 years
U.S. Cl. D6—379



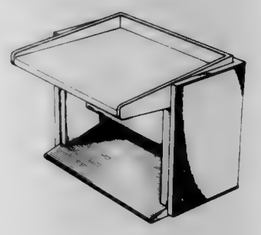
289,238
CHAIR
James R. Arthur, Jr., P.O. Box 58081, Birmingham, Ala. 35259
Filed Nov. 29, 1984, Ser. No. 676,236
Term of patent 14 years
U.S. Cl. D6—379



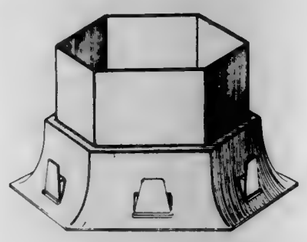
289,239
SOFA OR SIMILAR ARTICLE
William B. Raftery, Arlington, Tex., assignor to Steelcase Inc., Grand Rapids, Mich.
Division of Ser. No. 494,177, May 13, 1983. This application Oct. 21, 1985, Ser. No. 789,728
Term of patent 14 years
U.S. Cl. D6—381



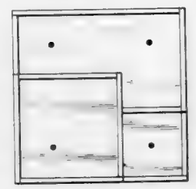
289,240
ADJUSTABLE WORK TABLE OR SIMILAR ARTICLE
Gordon E. Sylvester, Jamaica, N.Y.; Alvin R. Tilley, Redbank, N.J., and Robert R. Wyckoff, Aurora, Ill., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 21, 1984, Ser. No. 652,644
Term of patent 14 years
U.S. Cl. D6—429



289,241
STACKABLE DISPLAY STAND
David Solomon, 52 Gregory Street, South Coogee, Sydney, N.S.W., Australia 2034
Filed Aug. 17, 1983, Ser. No. 523,927
Term of patent 14 years
U.S. Cl. D6—457



289,242
DISPLAY TABLE OR SIMILAR ARTICLE
Joan H. Stauff, 202 Hillside Ct., Janesville, Wis. 53545
Filed Jul. 25, 1984, Ser. No. 634,221
Term of patent 14 years
U.S. Cl. D6—467



289,243
GARMENT RACK LEG
William D. Arnold, St. Louis, Mo., assignor to Lee-Rowan Company, St. Louis, Mo.
Filed Jul. 30, 1984, Ser. No. 635,588
Term of patent 14 years
U.S. Cl. D6—495

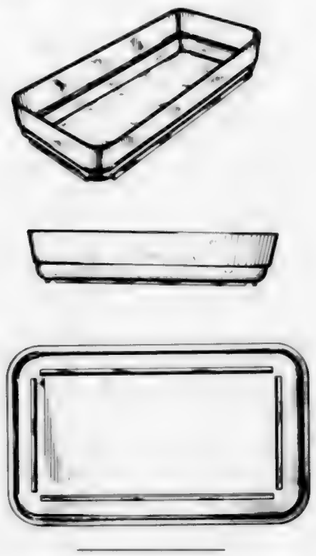


289,244
SPRING FOR BED
Noboru Sasaki, Akishima, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan
Filed May 14, 1984, Ser. No. 609,890
Term of patent 14 years
U.S. Cl. D6—504



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289,245
DISH
Joost R. Ritman, Bloemgracht 15-19, 1016 KB Amsterdam, Netherlands
Filed Jun. 4, 1984, Ser. No. 616,739
The portion of the term of this patent subsequent to Feb. 24, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—1



289,246
PLATE
Joost R. Ritman, Bloemgracht 15-19, 1016 KB Amsterdam, Netherlands
Filed Jun. 4, 1984, Ser. No. 616,584
The portion of the term of this patent subsequent to Feb. 24, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—1



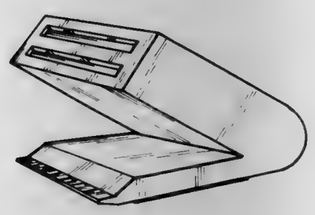
289,247
MESS TRAY OR SIMILAR ARTICLE
Henry C. H. Wang, Taipei, Taiwan, assignor to Two Powers Enterprise Co. Ltd., Taipei, Taiwan
Filed Sep. 19, 1984, Ser. No. 652,055
Term of patent 14 years
U.S. Cl. D7—21



289,248
BAKERY MOLD
Jean Joaquin, 420 Yosemite Ct., Park Pl., Petaluma, Calif. 94952
Filed Sep. 10, 1984, Ser. No. 648,670
Term of patent 14 years
U.S. Cl. D7—43



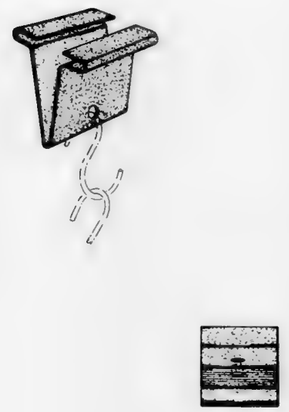
289,249
TOASTER
Rusne Jeter, 1779 Alvira St., Los Angeles, Calif. 90035
Filed Mar. 20, 1984, Ser. No. 591,578
Term of patent 14 years
U.S. Cl. D7—330



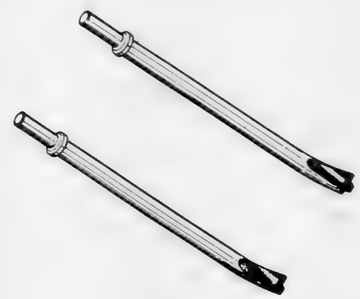
289,250
GARDEN PRUNER
Alan K. Pittaway, High Wycombe, England, assignor to Wilkinson Sword Limited, High Wycombe, England
Filed Nov. 30, 1984, Ser. No. 676,893
Claims priority, application United Kingdom, Jun. 16, 1984, 1020345
Term of patent 14 years
U.S. Cl. D8—5



289,251
HANGER CLIP
Jacob M. Joseph, 2129 Post Rd., Northbrook, Ill. 60062
Filed Jul. 19, 1984, Ser. No. 632,421
Term of patent 14 years
U.S. Cl. D8—37

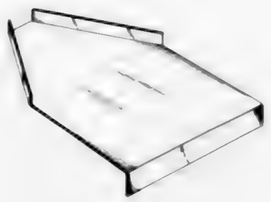


289,252
TOOL FOR A POWER HAMMER
Richard G. Albright; William C. Bitter, and Bernard T. Marro, all of Wilmington, Del., assignors to Delsteel Incorporated, Wilmington, Del.
Filed Feb. 21, 1984, Ser. No. 581,656
Term of patent 14 years
U.S. Cl. D8—70

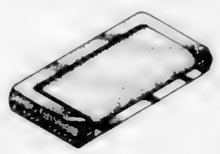


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289,253
HOLDER FOR WOODCARVING
Bernard F. Saper, 2514 Radcliffe Ave., Roslyn, Pa. 19001
Filed Dec. 6, 1984, Ser. No. 678,788
Term of patent 14 years
U.S. Cl. D8—71



289,254
CUTTING TOOL
Gary L. Brown, 830 Second St. East, Whitefish, Mont. 59937
Filed Jan. 18, 1985, Ser. No. 692,765
Term of patent 14 years
U.S. Cl. D8—98

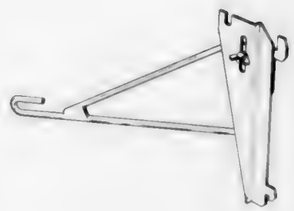


289,255
UTILITY HOOK
Lee R. Chasen, Port Chester, N.Y., assignor to Coats & Clark, Inc., Stamford, Conn.
Filed Mar. 20, 1985, Ser. No. 714,174
The portion of the term of this patent subsequent to Apr. 7, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—367





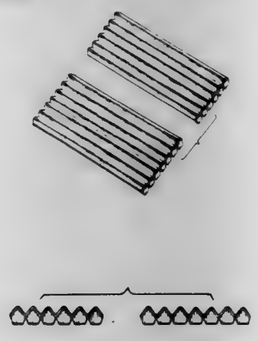
289,256
HOLDER BRACKET OR SIMILAR ARTICLE
Lynn E. Everett, New Philadelphia, Ohio, assignor to Tusco Manufacturing Co., Gnadenhutten, Ohio
Filed Jun. 24, 1985, Ser. No. 747,576
Term of patent 14 years
U.S. Cl. D8—373



289,257
CURTAIN ROD AND BRACKET SUPPORT SET OR SIMILAR UNIT
Martha E. Smith, 29 Oak Forest Dr., Sharpsburg, N.C. 27878
Filed Oct. 24, 1984, Ser. No. 664,331
Term of patent 14 years
U.S. Cl. D8—376



289,258
SHEET METAL NAIL
Börje E. I. Sundberg, Huddinge, Sweden, assignor to Nordisk Kartro Aktiebolag, Farsta, Sweden
Filed Jul. 19, 1984, Ser. No. 632,336
Claims priority, application Sweden, Feb. 29, 1984, 84-0693
Term of patent 14 years
U.S. Cl. D8—389



289,259
PLASTIC SLEEVE-ENCASED JAR
Gordon A. Strand, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 13, 1984, Ser. No. 681,349
Term of patent 14 years
U.S. Cl. D9—349



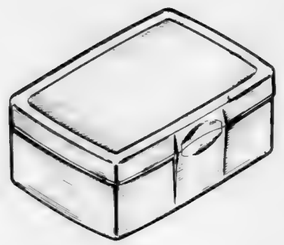
289,260
PLASTIC SLEEVE-ENCASED BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 6, 1984, Ser. No. 679,142
Term of patent 14 years
U.S. Cl. D9—349



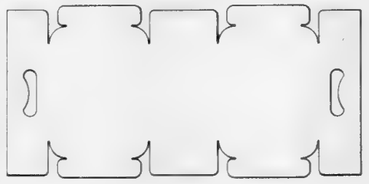
289,261
CONTAINER
David W. Shadwell, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England
Filed May 15, 1984, Ser. No. 610,489
Claims priority, application United Kingdom, Nov. 21, 1983, 1016389
Term of patent 14 years
U.S. Cl. D9—373



289,262
PACKAGING CONTAINER
Elmer Goetz, Philadelphia, Pa., and Kenard E. Urion, Woodbury, N.J., assignors to Scott Paper Company, Philadelphia, Pa.
Filed Jun. 8, 1984, Ser. No. 618,646
Term of patent 14 years
U.S. Cl. D9—420

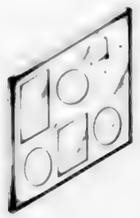


289,263
CARRIER BLANK FOR CANS OR THE LIKE
Kevin R. Rusnock, Boulder, and C. Richard Hamilton, Arvada, both of Colo., assignors to Adolph Coors Company, Golden, Colo.
Filed May 14, 1984, Ser. No. 609,599
Term of patent 14 years
U.S. Cl. D9—433

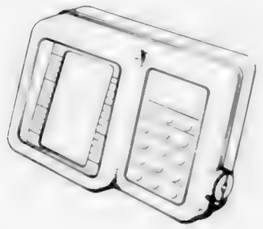


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289,264
COMBINED CLOCK AND PICTURE FRAME
Michael W. Hill, 1116 W. Main St., Marshalltown, Iowa 50158
Filed Oct. 1, 1984, Ser. No. 656,366
Term of patent 14 years
U.S. Cl. D10—2



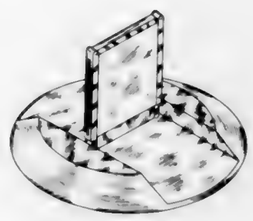
289,265
MARINE DEPTH SOUNDER
Jonathan M. Wood, Lilburn, Ga., and Robert R. Gibson, Eufaula, Ala., assignors to Techsonic Industries, Inc., Eufaula, Ala.
Filed Oct. 3, 1984, Ser. No. 657,153
Term of patent 14 years
U.S. Cl. D10—46



289,266
FOUR WAY CORNER LEVEL
Robert H. Vander Werf, P.O. Box 4333, Redding, Calif. 96099
Filed May 29, 1984, Ser. No. 614,969
Term of patent 14 years
U.S. Cl. D10—69



289,267
ROAD MARKER
J. Harlan Garner, Rte. 2, Box 215, Gurley, Ala. 35748
Filed Apr. 6, 1984, Ser. No. 597,724
Term of patent 14 years
U.S. Cl. D10—113



289,268
PLAQUE
Ronald J. Andrews, 15804 SR 9, Snohomish, Wash. 98290
Filed Aug. 7, 1984, Ser. No. 638,430
Term of patent 14 years
U.S. Cl. D11—134



289,269
SOUVENIR GOLD PAN
Urban Fleckenstein, 2500-Z Valley Rd., Reno, Nev. 89512
Filed Apr. 24, 1984, Ser. No. 603,383
Term of patent 14 years
U.S. Cl. D11—157



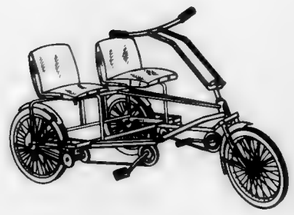


289,270
INSECT FIGURINE
Leal Smith, 4931 E. 40th, Indianapolis, Ind. 46226
Filed Dec. 20, 1984, Ser. No. 684,362
Term of patent 14 years
U.S. Cl. D11—158

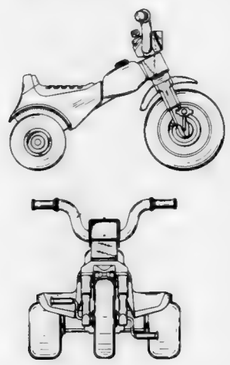




289,271
TWO SEAT TRICYCLE
Bradley Hendrickson, Colfax, N. Dak. 58018, and Clair W. Hudsonl, 1421 N. 7th St., Wahpeton, N. Dak. 58078
Filed Aug. 27, 1984, Ser. No. 644,573
Term of patent 14 years
U.S. Cl. D12—112



289,272
TRICYCLE
Ray C. Phinney, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 23, 1985, Ser. No. 693,775
Term of patent 14 years
U.S. Cl. D12—112

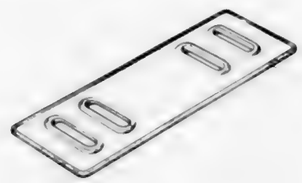


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289,273
TRICYCLE HAVING A PASSENGER CARRIER
Lucellen A. Berger, New Orleans, La., assignor to Sibling Cycle, Inc., New Orleans, La.
Filed Nov. 28, 1984, Ser. No. 675,708
Term of patent 14 years
U.S. Cl. D12—112



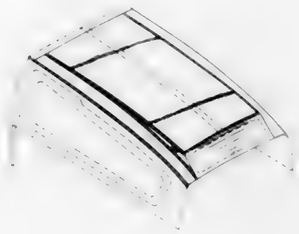
289,274
DEVICE FOR HANDLING PATIENTS
John D. Troup, 10 Sandringham Road, Waterloo, Merseyside, L22-1RW, England
Filed Nov. 28, 1984, Ser. No. 675,657
Term of patent 14 years
U.S. Cl. D12—133



289,275
TIRE
Silvana Hiarichaca, Rome, Italy, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jun. 6, 1984, Ser. No. 617,880
Claims priority, application Italy, Dec. 21, 1983, 54063/83[U]
Term of patent 14 years
U.S. Cl. D12—147



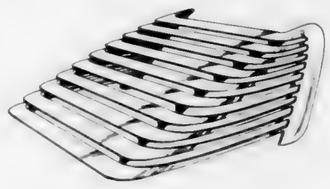
289,276
EXTERIOR ROOF PANEL OF A CAP FOR THE BED OF A PICKUP TRUCK
John Collins, 58288 Ventura Dr., Elkhart, Ind. 46517
Continuation of Ser. No. 467,779, Feb. 18, 1983, Pat. No. Des. 281,488. This application Jul. 23, 1985, Ser. No. 757,870
Term of patent 14 years
U.S. Cl. D12—156



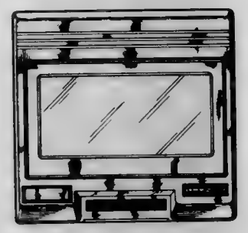
289,277
STABILIZER FOR A VEHICLE SUSPENSION SYSTEM
Bertil K. G. Hörberg, and Magnus A. Roland, both of Trollhättan, Sweden, assignors to Saab-Scania Aktiebolag, Trollhättan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,958
Claims priority, application Sweden, Nov. 1, 1983, 83-2827
Term of patent 14 years
U.S. Cl. D12—160



289,278
LOUVER UNIT FOR AUTOMOBILE REAR WINDOW
William F. Kuykendall, Woodland Hills, Calif., assignor to Sundowner Industries, Inc., Van Nuys, Calif.
Filed Jul. 26, 1985, Ser. No. 759,642
Term of patent 14 years
U.S. Cl. D12—191



289,279
VIDEO TAPE REWINDER
Johnson J. Liu, South El Monte, Calif., assignor to Solidex, Inc., S. El Monte, Calif.
Filed Mar. 24, 1986, Ser. No. 845,766
Term of patent 14 years
U.S. Cl. D14—1

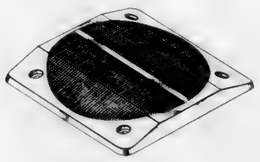




289,281
CAR SPEAKER
You Takagi, Kanagawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 4, 1984, Ser. No. 646,540
Claims priority, application Japan, Mar. 5, 1984, 59-8291
Term of patent 14 years
U.S. Cl. D14—30



289,282
SPEAKER GRILLE
Tetsuo Ohtsuji, and Tetsuya Kamata, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 10, 1984, Ser. No. 649,023
Claims priority, application Japan, Mar. 23, 1984, 59-11268
Term of patent 14 years
U.S. Cl. D14—39

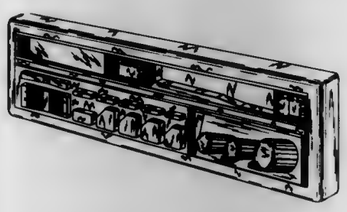


289,283
TELEPHONE FOR AUTOMOBILES
Takashi Kajita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 10, 1985, Ser. No. 742,868
Claims priority, application Japan, Dec. 11, 1984, 59-50585
Term of patent 14 years
U.S. Cl. D14—53



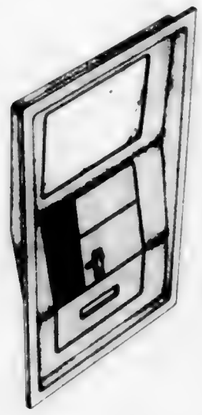


289,280
FRONT CONTROL PANEL FOR A COMBINED VEHICULAR CASSETTE PLAYER AND RADIO RECEIVER
John Stoddard, London, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 25, 1984, Ser. No. 664,680
Term of patent 14 years
U.S. Cl. D14—10

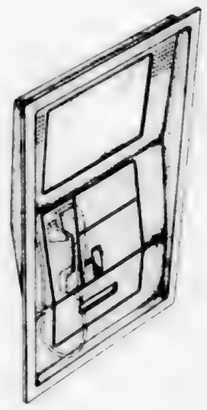


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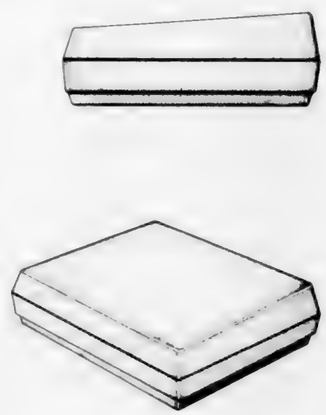
289,284
PANEL FOR A PUBLIC VIDEO TERMINAL ENCLOSURE
Joseph J. Giordano, Jr., Roselle Park; Richard M. Joffe, Palisades Park; Oskar Loosme, Lincroft, all of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Company and AT&T Information Systems Inc., Murray Hill, N.J.
Filed Jan. 30, 1986, Ser. No. 824,095
The portion of the term of this patent subsequent to Apr. 14, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—54



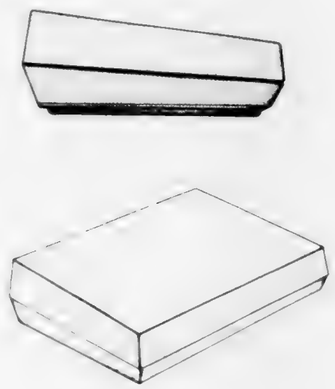
289,285
PANEL FOR A PUBLIC VIDEO TERMINAL ENCLOSURE
Joseph J. Giordano, Jr, Roselle Park; Richard M. Joffe, Palisades Park; Oskar Loosme, Lincroft, all of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Company and AT&T Information Systems Inc., Murray Hill, N.J.
Filed Jan. 30, 1986, Ser. No. 824,215
The portion of the term of this patent subsequent to Apr. 14, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—54



289,286
TELEPHONE APPARATUS HOUSING
Thomas B. Aldrich, Spring Valley, and John Pardo, Yonkers, both of N.Y., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.
Filed Jul. 29, 1983, Ser. No. 518,400
The portion of the term of this patent subsequent to Apr. 14, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—60

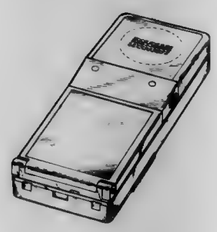


289,287
TELEPHONE APPARATUS HOUSING
Thomas B. Aldrich, Spring Valley, and John Pardo, Yonkers, both of N.Y., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.
Filed Jul. 29, 1983, Ser. No. 518,437
The portion of the term of this patent subsequent to Apr. 14, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—60



289,288
HOUSING FOR A CORDLESS TELEPHONE OR SIMILAR ARTICLE
Wolfgang Muenscher, Munich, and Siegfried Schoen, Starnberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Nov. 23, 1984, Ser. No. 674,189
Term of patent 14 years
U.S. Cl. D14—63

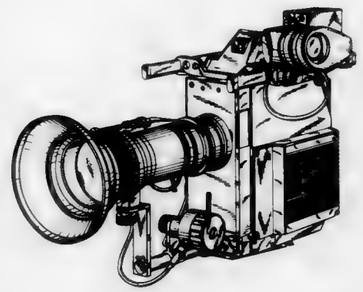




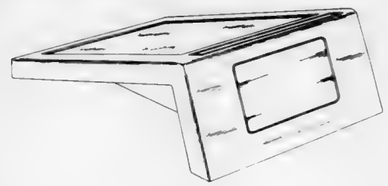
289,289
TELEPHONE HEADSET HEARING AID
Jacek J. Wojcik, Nepean; Andrzej Przybysz, Ottawa, and Peter R. Miltos, Kanata, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Jul. 31, 1984, Ser. No. 636,376
Term of patent 14 years
U.S. Cl. D14—67



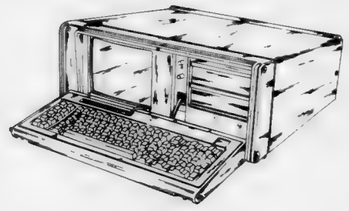
289,290
VIDEO CAMERA
Haruyuki Enomoto, Yamato, and Naokazu Shimazaki, Oiso, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 23, 1984, Ser. No. 643,684
Claims priority, application Japan, Feb. 29, 1984, 59-7489
Term of patent 14 years
U.S. Cl. D14—78



289,291
INTERACTIVE GRAPHICS DATA TERMINAL
Henry Kapper, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Apr. 6, 1984, Ser. No. 597,320
Term of patent 14 years
U.S. Cl. D14—100

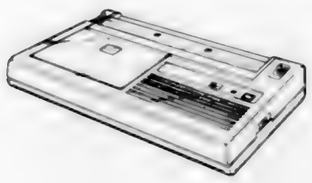


289,292
TRANSPORTABLE COMPUTER
Daniel F. Ansell, Coral Springs; Thomas A. Anzelone, Fort Lauderdale; Myron F. Davis, Boca Raton; John Greenfield, Boca Raton; Robert L. Syler, Boca Raton, and Harold D. Yeaw, North Palm Beach, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Jan. 17, 1984, Ser. No. 570,467
Term of patent 14 years
U.S. Cl. D14—106

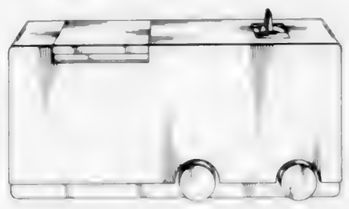


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289,293
THERMAL PRINTER FOR ELECTRONIC COMPUTER
Koki Sagawara, and Sanpei Seki, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Oct. 22, 1984, Ser. No. 663,221
Claims priority, application Japan, May 27, 1984, 59-017052
Term of patent 14 years
U.S. Cl. D14—111



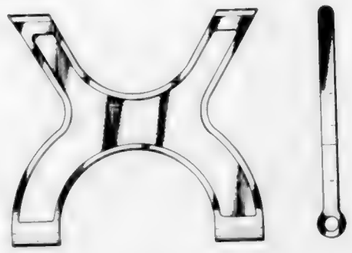
289,294
INTERFACE HOUSING FOR DATA PROCESSING SYSTEM
Jeffrey L. Kline, and Stanley E. Koprowski, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 29, 1984, Ser. No. 614,936
Term of patent 14 years
U.S. Cl. D14—114



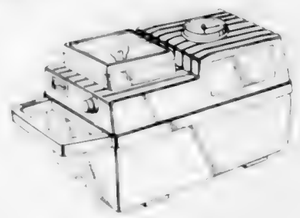
289,295
MUFFLER FOR BOATS
John A. Connor, Costa Mesa, Calif., assignor to Kaama Marine Engineering, Inc., Costa Mesa, Calif.
Filed Sep. 18, 1984, Ser. No. 651,833
Term of patent 14 years
U.S. Cl. D15—4



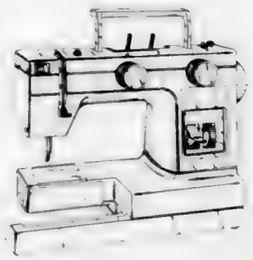
289,296
OUTBOARD MOTOR BRACKET
George L. Mahoney, P.O. Box 377, West Grove, Pa. 19390
Filed Jun. 20, 1984, Ser. No. 622,501
Term of patent 14 years
U.S. Cl. D15—4



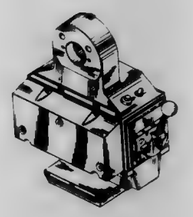
289,297
AIR COMPRESSOR
Jackson Liu, No. 10, Lane 378, Kung-Ho Rd., Kuai-Tsun Li, Chiai City, Taiwan
Filed Jul. 26, 1984, Ser. No. 634,871
Term of patent 14 years
U.S. Cl. D15—7



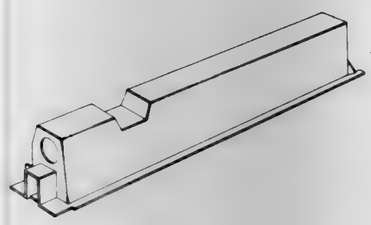
289,298
SEWING MACHINE
Yoshiaki Eguchi, Kodaira, and Masatomo Amemiya, Hachioji, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed May 25, 1984, Ser. No. 614,733
Claims priority, application Japan, May 2, 1984, 59-17879
Term of patent 14 years
U.S. Cl. D15—69



289,299
POWER FEED FOR A MACHINE TOOL OR SIMILAR ARTICLE
H. C. Wang, 11-5, Ta Nan Lane, San Feng Road, Feng Yuan, Taiwan
Filed Jul. 10, 1984, Ser. No. 630,579
Term of patent 14 years
U.S. Cl. D15—149



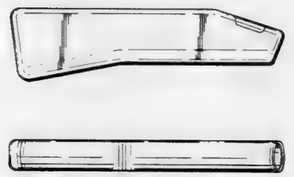
289,300
TONER CARTRIDGE
Takeshi Saito, Chiba, Japan, assignor to Ricoh Company Ltd., Japan
Filed Sep. 7, 1984, Ser. No. 648,714
Claims priority, application Japan, Mar. 7, 1984, 59-008643
Term of patent 14 years
U.S. Cl. D16—32



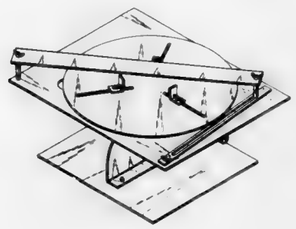
289,301
SUNGLASSES
James H. Jannard, Laguna Niguel, Calif., assignor to Oakley, Inc., Irvine, Calif.
Filed Jun. 15, 1984, Ser. No. 621,364
Term of patent 14 years
U.S. Cl. D16—112



289,302
CARTRIDGE APPLICATOR HOLDER
David Powell, London, England, assignor to Imperial Chemical Industries PLC, London, England
Filed Jul. 25, 1984, Ser. No. 634,230
Claims priority, application United Kingdom, Jan. 25, 1984, 1017509
Term of patent 14 years
U.S. Cl. D19—35



289,303
ADJUSTABLE CHINA PLATE PAINTING EASEL FOR RIGHT OR LEFT HANDED ARTISTS
Archie H. Stark, 7850 Slater Ave., #54, Huntington Beach, Calif. 92647
Filed Sep. 10, 1984, Ser. No. 649,856
Term of patent 14 years
U.S. Cl. D19—35



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289,304
BALL POINT PEN
Giorgetto Giugiaro, Trofarello, Italy, assignor to Parker Pen (Benelux) BV, Netherlands
Filed Dec. 8, 1983, Ser. No. 559,628
The portion of the term of this patent subsequent to Nov. 18, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—48



289,305
ILLUMINATED HOUSE NUMBER DISPLAY OR SIMILAR ARTICLE
Sheldon M. Rutter, Miami, Fla., assignor to FL Industries, Inc., Livingston, N.J.
Filed Sep. 4, 1984, Ser. No. 646,939
Term of patent 14 years
U.S. Cl. D20—17



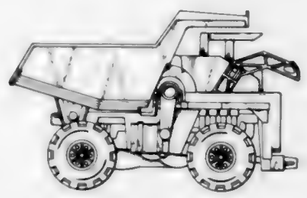
289,306
TRACKBALL
Philip J. Burastein, Skokie, and Syng N. Kim, Hoffman Estates, both of Ill., assignors to Wico Distribution Company, L.P., Niles, Ill.
Filed Nov. 16, 1984, Ser. No. 672,345
Term of patent 14 years
U.S. Cl. D21—48



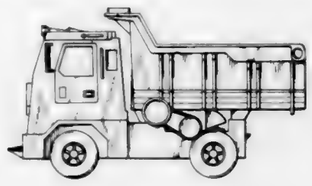
289,307
TOY VEHICLE
Kuo S. Su, Sanchung, Taiwan, assignor to Chuan Shin Mold Plastics & Toys Co., Ltd., Taiwan
Filed Aug. 17, 1984, Ser. No. 641,839
Term of patent 14 years
U.S. Cl. D21—128



289,308
TOY TRUCK
Karl D. Lerch, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 23, 1985, Ser. No. 693,783
Term of patent 14 years
U.S. Cl. D21—134



289,309
TOY DUMP TRUCK
Kenneth R. Wilkes, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 23, 1985, Ser. No. 693,761
Term of patent 14 years
U.S. Cl. D21—134



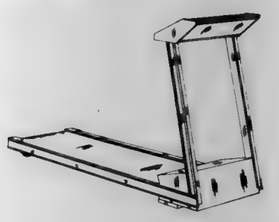
289,310
DOLL
Carolyn E. Wray, 135 Vine Dr., Brandon, Miss. 39042
Filed Nov. 13, 1984, Ser. No. 670,815
Term of patent 14 years
U.S. Cl. D21—171



289,311
DANCING DOLL
Mei S. Kuo, 2 Fl. No. 31, Lane 43, Shwang Cheng Street, Taipei, Taiwan
Filed Aug. 1, 1984, Ser. No. 636,713
Term of patent 14 years
U.S. Cl. D21—180



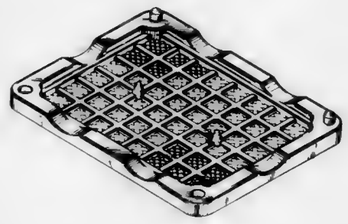
289,312
EXERCISE TREADMILL
James A. Trulaske, and Frank R. Trulaske, both of Chesterfield, Mo., assignors to True & True, St. Louis, Mo.
Filed Sep. 6, 1984, Ser. No. 647,690
Term of patent 14 years
U.S. Cl. D21—192



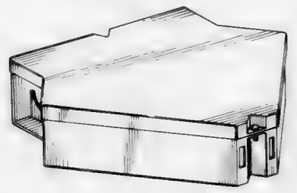
289,313
HAND-HELD ELECTRIC PROD
More Shy, No. 25, Lane 152, Kun Yang St., Nan Kang District, Taipei, Taiwan
Filed Oct. 29, 1985, Ser. No. 792,355
Term of patent 14 years
U.S. Cl. D22—117



289,314
ADHESIVE RODENT TRAP TRAY
Moses Frisch, 9 - 53rd St., Brooklyn, N.Y. 11232
Filed Aug. 10, 1984, Ser. No. 639,506
Term of patent 14 years
U.S. Cl. D22—119

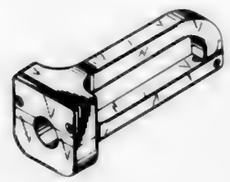


289,315
TAMPER PROOF RODENT BAIT STATION
Stanley Z. Baker, Pepper Pike; Bart M. Baker, Richmond Heights, and Benjamin H. Baker, Chesterland, all of Ohio, assignors to J. T. Eaton & Company, Inc., Twinsburg, Ohio
Filed Jul. 30, 1984, Ser. No. 636,004
Term of patent 14 years
U.S. Cl. D22—119



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289,316
SHOTGUN SHELL DISMANTLER
Jacques M. Kirsch, 243 Knollwood Ave., Mamaroneck, N.Y. 10543
Filed Aug. 15, 1984, Ser. No. 640,877
Term of patent 14 years
U.S. Cl. D22—199



289,317
WATER FILTER
Armand G. Mezey, 6349 N. 78th St. #101, Scottsdale, Ariz. 85253, and Cecil W. Hale, P.O. Box 956, Wickenburg, Ariz. 85358
Filed May 14, 1984, Ser. No. 609,761
Term of patent 14 years
U.S. Cl. D23—4



289,318
LAVATORY FAUCET SET
Holly K. Yost, Van Nuys, Calif., assignor to Price Pfister, Inc., Paxoima, Calif.
Continuation-in-part of Ser. No. 587,620, Mar. 8, 1984. This application Jul. 2, 1984, Ser. No. 627,048
Term of patent 14 years
U.S. Cl. D23—25



289,319
INFANT'S BATHTUB
Stanley M. Kujawski, East Aurora, and Barron C. Merten, Orchard Park, both of N.Y., assignors to The Quaker Oats Company, Chicago, Ill.
Filed Jul. 17, 1985, Ser. No. 756,024
Term of patent 14 years
U.S. Cl. D23—52



289,320
WATER CLOSET
Jacques P. Hardion, Loir-et-Cher, France, assignor to Produits Ceramiques de Touraine, Selles-sur-Cher, France
Filed Jan. 17, 1984, Ser. No. 571,530
Claims priority, application France, Sep. 30, 1983, 833 556
Term of patent 14 years
U.S. Cl. D23—65

289,321
COMBUSTION WICK FOR OIL STOVES
Isaburo Yamaguchi, Nigata, Japan, assignor to Kitate Sangyo Co., Inc., Nigata, Japan
Filed Oct. 12, 1984, Ser. No. 660,533
Term of patent 14 years
U.S. Cl. D23—127



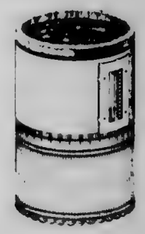
289,322
COMBUSTION WICK FOR OIL STOVES
Isaburo Yamaguchi, Nigata, Japan, assignor to Kitate Sangyo Co., Inc., Nigata, Japan
Filed Oct. 12, 1984, Ser. No. 660,535
Term of patent 14 years
U.S. Cl. D23—127



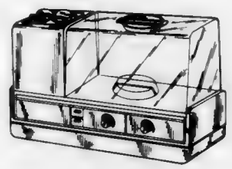
289,323
COMBUSTION WICK FOR OIL STOVES
Isaburo Yamaguchi, Nigata, Japan, assignor to Kitate Sangyo Co., Inc., Nigata, Japan
Filed Oct. 12, 1984, Ser. No. 660,532
Term of patent 14 years
U.S. Cl. D23—127



289,324
COMBUSTION WICK FOR OIL STOVES
Isaburo Yamaguchi, Nigata, Japan, assignor to Kitate Sangyo Co., Inc., Nigata, Japan
Filed Oct. 12, 1984, Ser. No. 660,534
Term of patent 14 years
U.S. Cl. D23—127



289,325
HUMIDIFIER
Hideo Nishikawa, Higashi Osaka, Japan, assignor to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Sep. 28, 1984, Ser. No. 655,667
Claims priority, application Japan, Jul. 11, 1984, 59-28711
Term of patent 14 years
U.S. Cl. D23—146



289,326
HUMIDIFIER
Hideo Nishikawa, Higashi Osaka, Japan, assignor to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Sep. 27, 1984, Ser. No. 655,171
Claims priority, application Japan, Jul. 11, 1984, 59-28712
Term of patent 14 years
U.S. Cl. D23—146

289,327
IV INFUSION CONTROLLER
Bruce R. Campbell, and Stephen O. Ross, both of San Diego, Calif., assignors to IVAC Corporation, San Diego, Calif.
Filed Dec. 12, 1984, Ser. No. 680,926
Term of patent 14 years
U.S. Cl. D24—8

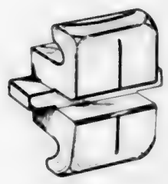


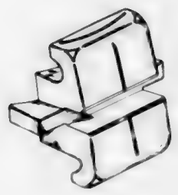
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289,328
ORTHODONTIC APPLIANCE ACCESSORY
Mackey M. Armstrong, Seattle; Steven A. Houser, Edmonds, and Jeffrey A. Armstrong, Mercer Island, all of Wash., assignors to Unitek Corporation, Monrovia, Calif.
Continuation of Ser. No. 834,288, Feb. 27, 1986, which is a continuation-in-part of Ser. No. 609,409, May 11, 1984. This application May 2, 1986, Ser. No. 859,874
Term of patent 14 years
U.S. Cl. D24—10



289,329
ORTHODONTIC MICROBRACKET WITH SLOT EXTENSION
Derek Evans, San Diego, Calif., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed May 7, 1984, Ser. No. 607,883
Term of patent 14 years
U.S. Cl. D24—16









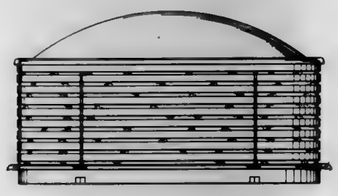
289,330
HANDLE FOR SURGICAL INSTRUMENT
John C. Strahan, Arlington, and Philip R. Lichtman, Newton, both of Mass., assignors to Acufex Microsurgical Inc., Norwood, Mass.
Filed Feb. 9, 1984, Ser. No. 578,767
Term of patent 14 years
U.S. Cl. D24—30



289,331
ENDOTRACHEAL TUBE BITE BLOCK
Stephen Briggs, Orangevale, Calif., assignor to B & B Medical Technologies, Inc., Orangevale, Calif.
Filed Dec. 23, 1983, Ser. No. 564,718
Term of patent 14 years
U.S. Cl. D24—51



289,332
APARTMENT BUILDING
James A. Rhodes, 42 E. Gay St., Ste. 1300, Columbus, Ohio 43215
Filed May 24, 1984, Ser. No. 613,688
Term of patent 14 years
U.S. Cl. D25—5



289,333
PARTITION RAIL
John F. Lewis, 65 Cote St. Charles Rd., P.O. Box 363, Hudson Heights, Quebec, Canada (J0P 1J0)
Filed Nov. 18, 1983, Ser. No. 553,287
Term of patent 14 years
U.S. Cl. D25—73



289,334
PORTABLE LAMP FOR JOGGERS OR THE LIKE
Günter Dannhauer, Grünwald, Fed. Rep. of Germany, assignor to O S R A M Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany
Filed Dec. 18, 1984, Ser. No. 682,799
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1984, MR13933
Term of patent 14 years
U.S. Cl. D26—37



289,335
ENCASED HAIR PICK WITH HANDLE
William C. Scofield, and Barbara A. Scofield, both of 11080 Kendall Way, Westminster, Colo. 80020
Filed Mar. 18, 1985, Ser. No. 712,633
Term of patent 14 years
U.S. Cl. D28—23





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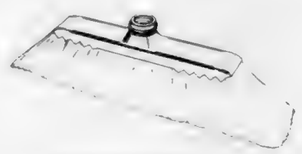
289,336
PICK UP NOZZLE FOR A CARPET CLEANER
Edwin Fitzwater, Rahway, N.J., assignor to The Regina Co., Inc., Rahway, N.J.
Filed Mar. 2, 1984, Ser. No. 585,728
Term of patent 14 years
U.S. Cl. D32—32



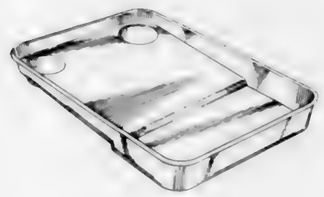
289,337
PICK UP NOZZLE FOR A CARPET CLEANER
Edwin Fitzwater, Rahway, N.J., assignor to The Regina Co., Inc., Rahway, N.J.
Filed Mar. 2, 1984, Ser. No. 585,720
Term of patent 14 years
U.S. Cl. D32—32



289,338
BROOM
Francesco Sartori, Via San Felice,44, 40122 Bologna, Italy
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289,339
PAINT TRAY
Kenneth W. Woolcock, Kellyville, Australia, assignor to Rota Cota Pty. Ltd., Gladesville, Australia
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Arene, Gilbert; Artaud, Robert; and Renaux, Charley, to Commissariat a l'Energie Atomique. Heat exchanger incorporating an auxiliary cooling device. 4,657,071, Cl. 165-134.100.

Argoud, Roger; and Muller, Jean-Noel, to Centre National de la Recherche Scientifique (CNRS). Goniometric device particularly for X-ray or neutron diffractometry on monocrystals or any other sample. 4,658,411, Cl. 378-81.000.

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Asai, Takamitsu; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,657,814, Cl. 428-329.000.

Asayama, Yoshiaki; and Kominami, Seiya, to Mitsubishi Denki Kabushiki Kaisha and NGK Spark Plug Co., Ltd. Method of sensing air-to-fuel ratio sensor of an engine. 4,657,640, Cl. 204-1.00T.

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Belart, Juan, to Alfred Teves GmbH. Hydraulic motor vehicle servo brake. 4,657,315, Cl. 303-113.000.

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Cybermation, Inc.: *See*—
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Daigaku, Masaaki; and Saito, Shoichi, to Olympus Optical Co., Ltd. Method of recording identification signal on software recording medium. 4,658,306, Cl. 360-22.000.

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Flotow, Richard A., 4,657,124, Cl. 192-13.00R.

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Deschamps, Daniel, to Fichet-Bauche. Lock with a double locking mechanism for a safe, bank compartment or the like. 4,656,852, Cl. 70-277.000.

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Godwin, W. Lee. Apparatus for aiding the anchoring of a boat. 4,657,517, Cl. 441-1.000.
Goeddel, David V.; and Heyneker, Herbert L., to Genentech, Inc. Methionyl human growth hormone. 4,658,021, Cl. 530-399.000.
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Goel, Anil B., to Ashland Oil, Inc. Polymerization of oxazoline using alkali or alkaline earth metal complex catalyst. 4,658,011, Cl. 528-409.000.
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Halioua, Maurice, to New York Institute of Technology. Apparatus and method for obtaining three dimensional surface contours. 4,657,394, Cl. 356-376.000.
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Independent Broadcasting Authority. *See*—
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Industrie Pirelli S.p.A.. *See*—
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Anhegger, Sigmund; and Lehmann, Klaus-Peter, 4,656,807, Cl. 52-718.100.

Ingendoh, Axel; Meyer, Horst; and Garthoff, Bernward, to Bayer Aktiengesellschaft. Novel hypotensive imidazothiadiazolealkanecarboxamides. 4,657,905, Cl. 514-231.000.

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Saito, Shunichi; Inoue, Hiromichi; Terashima, Kanetsugu; Inukai, Takashi; and Furukawa, Kenji, 4,657,695, Cl. 252-299.610.

Inoue, Kazuhiko, to Teac Corporation. Rotary to linear converter employing a lead screw, for use in a flexible magnetic disk drive or the like. 4,658,163, Cl. 310-80.000.

Inoue, Yoshio, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a'koxy-containing organopolysiloxane. 4,658,006, Cl. 528-29.000.

Inouye, Tohru. Method and apparatus for locating and embedding a specimen. 4,657,720, Cl. 264-275.000.

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Endres, Mark C., 4,656,973, Cl. 123-41.150.

Intel Corporation: *See*—
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Eggebrecht, Lewis C., and Kummer, David A., 4,658,350, Cl. 364-200.000.
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Howard, James K., 4,657,824, Cl. 428-611.000.
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Klacik, Kenneth J.; Vermesh, Robert J.; Fronczkowski, Paul R.; DeTora, Sigismondo A.; and Mihalich, Donald, to Nabisco Brands. Apparatus for continuously depositing sorbitol sweetened hard candy. 4,657,501, Cl. 425-379.00R.

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Klein, Hans C., to Alfred Teves GmbH. Brake system for automotive vehicles with controllable brake force distribution. 4,657,310, Cl. 303-6.00C.

Kleis, Hans-Jorg: *See*—
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Kobayashi, Kohroh, to NEC Corporation. Optical bistable semiconductor laser producing lasing light in direction normal to semiconductor layers. 4,658,402, Cl. 372-50.000.

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Kobayashi, Yukio: *See*—
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Kobayashi, Yutaka, to Kobayashi, Yutaka; and Marukoshi Co., Ltd. Plastic toy and method of manufacturing same. 4,657,519, Cl. 446-376.000.

Kobe Steel, Ltd.: *See*—
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Kocak, Nuri. Introducer sheath assembly. 4,657,772, Cl. 427-2.000.

Koch, Jean. Ski pole hand shield. 4,657,282, Cl. 280-821.000.

Koch, Joseph J.; Koch, Richard N.; and Vandekerkhof, Peter H., to K & K Stamping. Radially resilient electrical socket. 4,657,335, Cl. 339-256.00R.

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Koflach Sportgerate Gesellschaft: *See*—
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Koga, Kunio; Sasaki, Yukihiro; and Niwa, Hirotoshi, to Daicel Chemical Industries, Ltd. Extraction method. 4,658,057, Cl. 562-608.000.

Kogure, Tsuneo; Tsuchiyama, Yuji; Amano, Tadashi; Takahashi, Hideaki; Sekita, Katsuji; and Akami, Ichio, to Amada Company, Limited. Press machine. 4,656,862, Cl. 72-443.000.

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Koito Seisakusho Co., Ltd.: *See*—
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Kojo, Hidehiko; and Akimoto, Koji, to Asahi Denka Kogyo K.K. Coating composition of polyol resin, isocyanate hardener and diluent. 4,657,953, Cl. 523-435.000.

Kokubo, Tadayoshi; Ikeda, Tadashi; Adachi, Keiichi; Okazaki, Masaki; and Yoshida, Tetsuo, to Fuji Photo Film Co., Ltd. Silver halide photographic printing paper. 4,657,846, Cl. 430-434.000.

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Kolibas, James A., to Nordson Corporation. Modular color changers with improved valves and manifolds. 4,657,047, Cl. 137-881.000.

Kolts, John H., to Phillips Petroleum Company. Catalyst for conversion of C_3 and C_4 hydrocarbons. 4,657,886, Cl. 502-303.000.

Kolts, John H.; and Kimble, James B., to Phillips Petroleum Company. Composition of matter and method of oxidative conversion of organic compounds therewith. 4,658,076, Cl. 585-500.000.

Kolts, John H.; and Kimble, James B., to Phillips Petroleum Company. Composition of matter and method of oxidative conversion of organic compounds therewith. 4,658,077, Cl. 585-500.000.

Kolts, John H., to Phillips Petroleum Company. Propylene and ethylene selectivity with H_2S. 4,658,081, Cl. 585-651.000.

Komatsu, Toshio; Katada, Akira; and Takahashi, Hideyuki, to Mitsubishi Gas Chemical Company, Inc. Package containing quality-retaining agent. 4,657,133, Cl. 206-204.000.

Komatsu, Toshio; and Takahashi, Hideyuki, to Mitsubishi Gas Chemical Company, Inc. Method for manufacturing gas permeable packaging material. 4,657,610, Cl. 156-87.000.

Komatsu, Toshiyuki; Nakagawa, Katsumi; Fukaya, Masaki; and Shoji, Tatsumi, to Canon Kabushiki Kaisha. Amorphous silicon photosensor of layers having differing conductivity. 4,658,280, Cl. 357-30.000.

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Kuhasalo, Antti; and Vikio, Pentti, to Enso-Gutzeit Oy. Twin hydrocyclone. 4,657,678, Cl. 210-512.200.

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Kull, Hermann; Sautter, Wilfried; and Wessel, Wolf, to Robert Bosch GmbH. Device for modifying operation of regulator for setting fuel quantity in an internal combustion engine operating with self-ignition. 4,656,986, Cl. 123-357.000.

Kumar, Sudhir. Serum-free, synthetic, completely chemically defined tissue culture media. 4,657,866, Cl. 435-240.000.

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Yamaji, Mitsuharu, to Koei Chemical Co., Ltd. Process for producing 2,3,5-collidine and/or 2,3,5,6-tetramethylpyridine. 4,658,032, Cl. 546-349.000.

Yamakawa, Goichi: *See*—
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; and Yasuda, Shinichiro, 4,657,837, Cl. 430-109.000.

Yamamoto, Diane M.: *See*—
Stout, David M.; Yamamoto, Diane M.; and Barcelon-Yang, Cynthia, 4,657,919, Cl. 514-335.000.

Yamamoto, Hiroyuki: *See*—
Fukube, Tsugio; Yamashita, Akinori; Hashimoto, Noboru; and Yamamoto, Hiroyuki, 4,656,988, Cl. 123-489.000.

Yamamoto, Isamu; Noguchi, Yoshiaki; Iwasaki, Kouzou; and Arai, Kenichi, to Mitsui Toatsu Chemicals, Incorporated. Production of aminoalkylsulfonic acids. 4,657,704, Cl. 260-513.00B.

Yamamoto, Noboru: *See*—
Fujita, Yuji; and Yamamoto, Noboru, 4,657,980, Cl. 525-146.000.

Yamamoto, Seiji. Magnetically operated actuator. 4,658,230, Cl. 335-230.000.

Yamanaka, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Fault detector for communications equipment using exclusive or circuitry. 4,658,206, Cl. 324-51.000.

Yamaoka, Hideyoshi: *See*—
Fujii, Yosikazu; Inui, Tetsuya; Deguchi, Toshihisa; and Yamaoka, Hideyoshi, 4,658,390, Cl. 369-45.000.
Ohta, Kenji; Takahashi, Akira; Inui, Tetsuya; Hyuga, Takao; and Yamaoka, Hideyoshi, 4,658,393, Cl. 369-290.000.

Yamashita, Akinori: *See*—
Fukube, Tsugio; Yamashita, Akinori; Hashimoto, Noboru; and Yamamoto, Hiroyuki, 4,656,988, Cl. 123-489.000.

Yamashita, Kimihiro: *See*—
Nicholson, Patrick S.; and Yamashita, Kimihiro, 4,657,879, Cl. 501-152.000.

Yamashita, Nobuyuki; Tahara, Kazuo; Watanabe, Masatoshi; and Takahashi, Noriyoshi, to Hitachi, Ltd. Sliding current collector. 4,657,818, Cl. 428-446.000.

Yamato Sanko Mfg. Co., Ltd.: *See*—
Yamato, Yukio, 4,656,759, Cl. 34-134.000.

Yamato, Yukio, to Yamato Sanko Mfg. Co., Ltd. Aeration-type rotary dryer. 4,656,759, Cl. 34-134.000.

Yamauchi, Satomi, to Mitsubishi Denki Kabushiki Kaisha. Temperature compensated solenoid in a sewing machine. 4,656,958, Cl. 112-317.000.

Yamazaki Machinery Works, Ltd.: *See*—
Saeki, Hideki; and Kanematsu, Isao, 4,656,728, Cl. 29-568.000.

Yamazaki, Shigeru: *See*—
Ikeda, Kunihiko; Suzuki, Shigeru; Yokota, Takashi; Shimura, Akira; Kodama, Yutaka; Yamazaki, Shigeru; Niro, Masaichi; and Tomita, Satoru, 4,657,372, Cl. 355-3.00R.

Yanagihashi, Kikuji: *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; and Yanagihashi, Kikuji, 4,657,493, Cl. 418-173.000.

Yanagita, Tomoatsu: *See*—
Shiozaki, Kenichi; Kishi, Makoto; Yanagita, Tomoatsu; and Kubo, Kanji, 4,658,356, Cl. 364-200.000.

Yang, Ching-Yun M.: *See*—
Mays, Alfred T.; and Yang, Ching-Yun M., 4,657,804, Cl. 428-212.000.

Yang, Neng-Tze: *See*—
Chau, Ngaiman; Wu, John W.; Yang, Neng-Tze; and Mar, Eugene J., 4,658,158, Cl. 307-530.000.

Yaniger, Christopher J.: *See*—
Farinacci, Anthony L.; Witkin, Steven G.; and Yaniger, Christopher J., 4,656,919, Cl. 89-14.600.

Yann Tay Enterprises Co., Ltd.: *See*—
Jen, You Y., 4,656,879, Cl. 74-102.000.

Yano, Osamu; and Kitano, Takafumi, to Mitsui Toatsu Chemicals, Inc. Method for the treatment of digestive ulcers. 4,657,896, Cl. 514-44.000.

Yao, Keiji: *See*—
Katsura, Hiroo; Yao, Keiji; and Koyama, Kazuya, 4,658,270, Cl. 346-76.0PH.

Yarnell, Ian R., to I.P.D. Systems Limited. Device and method for removing irregularities in or enlarging an underground duct. 4,657,436, Cl. 405-154.000.

Yashiki, Yuichi, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member having an intermediate layer of conductive powder and resin or oligimer. 4,657,835, Cl. 430-60.000.

Yasuda, Shinichiro: *See*—
Morita, Hideaki; Kasuya, Takahira; Yamakawa, Goichi; Tomono, Makoto; and Yasuda, Shinichiro, 4,657,837, Cl. 430-109.000.

Yasuda, Wataru: *See*—
Kanno, Fuchio; Kobayashi, Kazuo; Sakamoto, Koji; Kaneko, Toshio; and Yasuda, Wataru, 4,656,964, Cl. 118-648.000.

Yasuda, Yukihiro; Yoshioka, Hiroshi; and Takahashi, Takao, to Sony Corporation. Tracking controlling apparatus. 4,658,309, Cl. 360-77.000.

Yasuda, Yukio; and Masuda, Nobuhito, to Fuji Photo Film Co., Ltd. Integral element for biological reaction and process for the preparation thereof. 4,657,739, Cl. 422-56.000.

Yasunao, Miura: *See*—
Yukihisa, Takeuchi; Yasunao, Miura; and Tsukasa, Hirayama, 4,656,832, Cl. 60-303.000.

Yazawa, Akira; Itagaki, Kimio; Sezaki, Kazuo; Matsuda, Kenji; Kanazawa, Kazuo; Hayashi, Mitsuo; and Katada, Katsuo, to Ishikawajima-Harima Jukogyo Kabushi Kaisha. Method for separating cobalt, nickel and the like from alloys. 4,657,585, Cl. 75-63.000.

Yazuka, Hiroyuki; and Nakazawa, Isao, to Fujitsu Limited. Radio communication system. 4,658,405, Cl. 375-38.000.

Yeda Research and Development Co. Ltd.: *See*—
Tamir, Hadassah; Karpiak, Stephen E.; and Wilchek, Meir, 4,658,038, Cl. 548-495.000.

Yellin, Tobias O.; Gilman, David J.; Edwards, Philip N.; Large, Michael S.; Jones, Derrick F.; and Oldham, Keith, to ICI Americas, Inc.; and Imperial Chemical Industries PLC. Carbonyl derivatives. 4,657,908, Cl. 514-245.000.

Yetter Manufacturing Company: *See*—
Williamson, Gerald E.; and Noland, Carroll D., 4,656,957, Cl. 111-7.000.

Yim, Nelson C.: *See*—
Callahan, James F.; Huffman, William F.; Moore, Michael L.; and Yim, Nelson C., 4,658,015, Cl. 530-329.000.

Yokohama Rubber Co., Ltd., The: *See*—
Kabe, Kazuyuki; Morikawa, Tuneo; and Tsukada, Shuichi, 4,657,058, Cl. 152-556.000.

Yokomizo, Hiroshi: *See*—
Nishizawa, Masahiro; Yokomizo, Hiroshi; Miura, Kiyoshi; and Sasaya, Osamu, 4,657,961, Cl. 524-297.000.

Yokota, Shinichi: *See*—
Endo, Hideki; Hashimoto, Kazuto; Tanaka, Kenji; Matsumoto, Takeshi; Igi, Keishiro; Okamura, Takayuki; Taniguchi, Shunro; Ishii, Masao; Murata, Yoshifumi; and Yokota, Shinichi, 4,657,973, Cl. 525-67.000.

Yokota, Takashi, to Ricoh Company, Ltd. Receptacle for memory cassette. 4,657,136, Cl. 206-328.000.

Yokota, Takashi: *See*—
Ikeda, Kunihiko; Suzuki, Shigeru; Yokota, Takashi; Shimura, Akira; Kodama, Yutaka; Yamazaki, Shigeru; Niro, Masaichi; and Tomita, Satoru, 4,657,372, Cl. 355-3.00R.

Yokota, Toyohachi, to NEC Corporation. Star sensor using CCD. 4,658,431, Cl. 382-53.000.

Yokoyama, Hiroshi: *See*—
Izutani, Toshiyuki; Tomita, Yuichi; and Yokoyama, Hiroshi, 4,658,257, Cl. 342-372.000.

Yoneda, Yasuhiro: *See*—
Fukuyama, Shun-ichi; Yoneda, Yasuhiro; Miyagawa, Masashi; and Nishii, Kota, 4,657,843, Cl. 430-323.000.

Yonehara, Takashi; and Hayashi, Kanji. Method and apparatus for forming an extremely thin film on the surface of an object. 4,656,963, Cl. 118-326.000.

Yong O, Sung. Vehicle protective cover device. 4,657,298, Cl. 296-136.000.

Yoshida, Haruo: *See*—
Heeger, Alan J.; Yoshida, Haruo; Naito, Kazumi; and Kobayashi, Yukio, 4,657,694, Cl. 252-299.010.

Yoshida Kogyo K. K.: *See*—
Matsuda, Yasuhiko, 4,657,500, Cl. 425-334.000.

Yoshida, Moritaka, to Toyota Jidosha Kabushiki Kaisha. Tiltable steering column with adjustable locking pawl. 4,656,887, Cl. 74-493.000.

Yoshida, Shiro: *See*—
Akiyama, Setsuo; Fukuura, Yukio; Yoshikawa, Masato; Matsuda, Takeyuki; Monobe, Hisanobu; Ohkubo, Shigeki; and Yoshida, Shiro, 4,657,285, Cl. 285-256.000.

Yoshida, Tetsuo: *See*—
Kokubo, Tadayoshi; Ikeda, Tadashi; Adachi, Keiichi; Okazaki, Masaki; and Yoshida, Tetsuo, 4,657,846, Cl. 430-434.000.

Yoshihara, Kenzo: *See*—
Kachi, Kenjiro; Onda, Hideaki; Hayashi, Yukichi; Yoshihara, Kenzo; Watanabe, Masayuki; Akagawa, Masaki; and Mori, Yoshikazu, 4,658,125, Cl. 235-449.000.

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Yoshikawa, Masato: *See*—
Akiyama, Setsuo; Fukuura, Yukio; Yoshikawa, Masato; Matsuda, Takeyuki; Monobe, Hisanobu; Ohkubo, Shigeki; and Yoshida, Shiro, 4,657,285, Cl. 285-256.000.

Yoshikawa, Yoshimasa, to Nippon, Gakki Seizo, Kabushiki Kaisha. Electronic musical instrument with keyboard and cover. 4,656,913, Cl. 84-177.000.

Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition containing para-aminobenzoic acid-N-L-rhamnoside as an active ingredient. 4,657,895, Cl. 514-42.000.

Yoshinaka, Ryozi: *See*—
Azuma, Hidekazu; Yoshinaka, Ryozi; Tsuruhashi, Takayuki; Hokao, Katsuiku; Watanabe, Kazuki; Ogo, Kazutaka; Suzuki, Takatoshi; and Hayashi, Masahiro, 4,656,868, Cl. 73-587.000.

Yoshino Kogyosho Co., Ltd.: *See*—
Endo, Syuzo; and Tsuchida, Haruo, 4,657,161, Cl. 222-256.000.

Yoshioka, Hiroshi: *See*—
Yasuda, Yukihuro; Yoshioka, Hiroshi; and Takahashi, Takao, 4,658,309, Cl. 360-77.000.

Yoshioka, Junichi: *See*—
Kimura, Sosaku; Hatsuse, Toshikazu; Shimizu, Masami; Miyashita, Masakazu; Yoshioka, Junichi; Kanai, Akira; and Koizumi, Koichi, 4,656,951, Cl. 108-20.000.

Yoshioka, Yukio: *See*—
Shinoda, Akibumi; Yoshioka, Yukio; and Kato, Akio, 4,657,471, Cl. 414-663.000.

Youmans, Audrey L.: *See*—
Youmans, Gordon D.; and Youmans, Audrey L., 4,657,468, Cl. 414-563.000.

Youmans, Gordon D.; and Youmans, Audrey L. Vehicle towing apparatus. 4,657,468, Cl. 414-563.000.

Young, D. Raymond: *See*—
Dolengowski, George A.; and Young, D. Raymond, 4,658,387, Cl. 367-144.000.

Young, Donald C.; and Green, James A., II, to Union Oil Company of California. Methods for removing biuret from urea by ion exchange. 4,658,059, Cl. 564-73.000.

Young, Ian A., to Intel Corporation. Common gate MOS differential sense amplifier. 4,658,160, Cl. 307-530.000.

Young, John R.: *See*—
Axford, Robin; and Young, John R., 4,656,901, Cl. 83-55.000.

Young, Vernon V.; and Bright, David R., to Angus Chemical Company. Quinoxaline adducts useful as anthelmintics. 4,658,028, Cl. 544-353.000.

Yu, Oliver T., to Microtel Limited. Method for generating stroke-vector characters for use in a display system. 4,658,248, Cl. 340-739.000.

Yuasa Battery Co. Ltd.: *See*—
Kagawa, Hiroshi, 4,657,830, Cl. 429-104.000.

Yuki, Yoshio; and Hara, Takafumi, to Sharp Kabushiki Kaisha. Wall member for ink liquid reservoir mounted on a carriage in an ink jet system printer. 4,658,273, Cl. 346-140.00R.

Yukihisa, Takeuchi; Yasunao, Miura; and Tsukasa, Hirayama, to Nippondenso Co., Ltd. Detector and particular density and filter with detector for particulate density. 4,656,832, Cl. 60-303.000.

Yuzawa, Haruo; Nishiyama, Masafumi; Nakamura, Katsuyuki; and Ishigami, Kazuhiro, to Nissan Motor Company, Limited. Crank angle detecting system for engines. 4,656,993, Cl. 123-643.000.

Zacharias, Ellis M. Method of measuring the amount of water flowing in a crude oil pipeline. 4,656,869, Cl. 73-597.000.

Zacky, Ralf G.; and Alexander, Gordon L., to Aspects, Inc. Extruded nosing for a furniture pedestal or the like. 4,657,319, Cl. 312-333.000.

Zagar, Gregory J.; Rosa, Thomas A., and Lowry, Billy C., to United States of America, Air Force. Fiber optic cable storage device. 4,657,140, Cl. 206-397.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Takeuchi, Tomio, Kondo, Shinichi; Iinuma, Hironobu, Ikeda, Daishiro; Nakamura, Teruya; and Fujii, Akio, 4,658,058, Cl. 564-159.000.

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Przybyla, Janusz; Gozdziewicz, Zygmunt; Szal, Andrzej; Zub, Ryszard; and Maczynski, Andrzej, 4,656,719, Cl. 29-516.000.

Zan, Ja D. Solar water conditioning apparatus for fishpond. 4,657,675, Cl. 210-170.000.

Zaporozhsky Konstruktorsky Tekhnologichesky Institut Selskokhozyaistvennogo Mashinostroenia: *See*—
Erasov, Fedor N., 4,657,494, Cl. 418-61.00B.

Zava, Francis: *See*—
Coppa, Louis; Mengual, Christian; Ripart, Alain; and Zava, Francis, 4,657,728, Cl. 376-248.000.

Zeder, Abraham. Impedance sensing anti-theft device. 4,658,242, Cl. 340-568.000.

Zeller, Gregor; and Bonn, Helmut, to Petri AG. Current conduction connector for the electrical connection of gas bag collision protection installation. 4,657,326, Cl. 339-3.00S.

Zemex Corporation: *See*—
Gloskey, Carl R., 4,658,046, Cl. 556-100.000.

Zen, Sheng T. Closed passage type equi-pressure combustion rotary engine. 4,657,009, Cl. 123-204.000.

Zenith Electronics Corporation: *See*—
Midland, Richard W.; and Rozansky, Boris, 4,658,288, Cl. 358-67.000.

Zenk, Meinhart H.: *See*—
Amann, Manfred; Nagakura, Naotaka; and Zenk, Meinhart H., 4,657,861, Cl. 435-121.000.

Zezza, Louis J.: *See*—
Evans, Cliff; Obligado, Alvaro; and Zezza, Louis J., 4,656,714, Cl. 29-157.00C.

Zhuravlev, Vitaly P.: *See*—
Volkhin, Nikolai N.; Ardabatsky, Vladimir P.; Dulya, Boris A.; Zhuravlev, Vitaly P.; and Stepanov, Alexandr V., 4,656,736, Cl. 29-730.000.

Zibelin, Henry S. Heart valve. 4,657,545, Cl. 623-2.000

Zibrida, John F., to AMAX Inc. Wastewater treatment. 4,657,680, Cl. 210-713.000.

Ziegler, Wolfgang, to Robert Bosch GmbH. Arrangement to remove reflection from liquid crystal displays (LCD's). 4,657,348, Cl. 350-347.00R.

Ziek, Robert R., Jr.: *See*—
Wise, Rodney M.; and Ziek, Robert R., Jr., 4,657,693, Cl. 252-174.210.

Zielaskiewicz, Stephen M.: *See*—
Dye, Denver R.; Gee, David J.; Patterson, Richard L.; and Zielaskiewicz, Stephen M., 4,658,245, Cl. 340-683.000.

Zierler, Reinhard, to Voest-Alpine Aktiengesellschaft. Gun with recoil and counter recoil means. 4,656,921, Cl. 89-43.010.

Ziggity Systems, Inc.: *See*—
Hostetler, Eldon, 4,656,970, Cl. 119-75.000.

Zimmer, Ernst, to KUKA Schweissanlagen + Roboter GmbH. Manipulator head assembly. 4,657,472, Cl. 414-735.000.

Zimmer, Mark D., to Halliburton Company. Automatic gain control of digitized full trace acoustic signal in a borehole. 4,658,383, Cl. 367-29.000.

Zimmerer, Roger E., to Procter & Gamble Company, The. Disposable absorbent articles. 4,657,537, Cl. 604-360.000.

Zimmerman, Theodore S.; and Fulcher, Carol A., to Scripps Clinic & Research Foundation. New factor VIII coagulant polypeptides. 4,657,894, Cl. 514-21.000.

Zimmermann, Gert, to F. Zimmermann & Co. Device for separating single coins. 4,657,035, Cl. 133-5.00R.

Zimmermann, Stephen G.: *See*—
Martin, Peter; Wyatt, Avis N., Jr.; Alonso, Hector; Rowe, Norman R.; Southard, Robert S.; and Zimmermann, Stephen G., 4,657,144, Cl. 209-546.000.

Zimring, Bruce: *See*—
Peltz, Hanns-Heinz, 4,657,068, Cl. 165-47.000.

Zinser Textilmaschinen GmbH: *See*—
Lattner, Manfred, 4,656,695, Cl. 19-236.000.
Meissner, Werner; and Schollhammer, Richard, 4,656,822, Cl. 57-81.000.

Zoltan, Sandor: *See*—
Tyihak, Erno; Mincsovics, Emil; Zoltan, Sandor; Kemeny, Gabor; Mathuny, Aniko; Szekely, Tibor; Nemeth, Sandor; Antal, Zsuzsanna; and Fater, Zsuzsanna, 4,658,000, Cl. 526-217.000.

Zub, Ryszard: *See*—
Przybyla, Janusz; Gozdziewicz, Zygmunt; Szal, Andrzej; Zub, Ryszard; and Maczynski, Andrzej, 4,656,719, Cl. 29-516.000.

Zwickel, Friedrich: *See*—
Berry, Robert W.; Kaufman, Stanley; and Zwickel, Friedrich, 4,657,346, Cl. 350-320.000.

501 Freeport Research and Engineering Company: *See*—
Mollere, Phillip D.; Astley, Vivian C.; and Taravella, Jody J., 4,657,559, Cl. 23-297.000.

501 Techno Diagnosis B.V.: *See*—
Uttermarkt, Rombartus W., 4,656,875, Cl. 73-862.350.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF APRIL, 1987

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Beilstein, Kenneth E., Jr.; and Kotecha, Harish N., to International Business Machines Corporation. Quaternary FET read only memory. Re. 32,401, Cl. 365-182.000.

Benedetto, Enrico: *See*—
De Witt, Paolo; and Benedetto, Enrico, Re. 32,398, Cl. 204-72.000.

Casco Products Corporation: *See*—
Fitz, Edward J., Re. 32,396, Cl. 123-549.000.

De Witt, Paolo; and Benedetto, Enrico, to Oronzio de Nora S.A.; and Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Electrolytic process and electrolytic cell for the preparation of organic compounds. Re. 32,398, Cl. 204-72.000.

Ehrlich, Johann, to Patoflex Corporation. Sole construction for shoes. Re. 32,394, Cl. 36-33.000.

Farmos Yhtyma Oy: *See*—
Karjalainen, Arto J.; and Kurkela, Kauko O. A., Re. 32,400, Cl. 514-397.000.

Fitz, Edward J., to Casco Products Corporation. PTC heater construction. Re. 32,396, Cl. 123-549.000.

Geffroy, Christophe: *See*—
Geffroy, Robert; and Geffroy, Christophe, Re. 32,395, Cl. 92-212.000.

Geffroy, Robert; and Geffroy, Christophe. Piston and piston rings set. Re. 32,395, Cl. 92-212.000.

Golfbands Products: *See*—
Self, James M.; and Schaubel, Charles, Re. 32,397, Cl. 273-186.00A

Hitachi Cable, Ltd.: *See*—
Nagai, Masahiro; and Miyake, Yasuhiko, Re. 32,399, Cl. 427-11.000.

International Business Machines Corporation: *See*—
Beilstein, Kenneth E., Jr.; and Kotecha, Harish N., Re. 32,401, Cl. 365-182.000.

Karjalainen, Arto J.; and Kurkela, Kauko O. A., to Farmos Yhtyma Oy. Substituted imidazole derivatives and their use as anti-thrombosis agents. Re. 32,400, Cl. 514-397.000.

Kotecha, Harish N.: *See*—
Beilstein, Kenneth E., Jr.; and Kotecha, Harish N., Re. 32,401, Cl. 365-182.000.

Kurkela, Kauko O. A.: *See*—
Karjalainen, Arto J.; and Kurkela, Kauko O. A., Re. 32,400, Cl. 514-397.000.

Miyake, Yasuhiko: *See*—
Nagai, Masahiro; and Miyake, Yasuhiko, Re. 32,399, Cl. 427-11.000.

Nagai, Masahiro; and Miyake, Yasuhiko, to Hitachi Cable, Ltd. Method for the manufacture of a composite metal wire. Re. 32,399, Cl. 427-11.000.

Oronzio de Nora S.A.: *See*—
De Witt, Paolo; and Benedetto, Enrico, Re. 32,398, Cl. 204-72.000.

Patoflex Corporation: *See*—
Ehrlich, Johann, Re. 32,394, Cl. 36-33.000.

Schaubel, Charles: *See*—
Self, James M.; and Schaubel, Charles, Re. 32,397, Cl. 273-186.00A.

Self, James M.; and Schaubel, Charles, to Golfbands Products. Golf club swing training aid. Re. 32,397, Cl. 273-186.00A.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See*—
De Witt, Paolo; and Benedetto, Enrico, Re. 32,398, Cl. 204-72.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Allergan Caribbean: *See*—

Karageozian, Hampar L.; and Rudko, Paul, B1 3,910,296, Cl. 134-42.000.

Karageozian, Hampar L.; and Rudko, Paul, to Allergan Caribbean. Method of removing proteinaceous deposits from contact lenses. B1 3,910,296, 4-14-87, Cl. 134-42.000.

Rudko, Paul: *See*—
Karageozian, Hampar L.; and Rudko, Paul, B1 3,910,296, Cl. 134-42.000.

Wyman, Ransome J. Deflation-proof pneumatic tire and elastomeric fillings therefore. B1 4,416,844, 4-14-87, Cl. 264-67.000.

LIST OF DESIGN PATENTEES

Acufex Microsurgical Inc.: *See*—
Strahan, John C.; and Lichtman, Philip R., 289,330, Cl. D24-30.000.

Adolph Coors Company: *See*—
Rusnock, Kevin R.; and Hamilton, C. Richard, 289,263, Cl. D9-433.000.

Albright, Richard G.; Bitter, William C.; and Marro, Bernard T., to Delsteel Incorporated. Tool for a power hammer. 289,252, 4-14-87, Cl. D8-70.000.

Aldrich, Thomas B.; and Pardo, John, to American Telephone and Telegraph Company; and AT&T Information Systems Inc. Telephone apparatus housing. 289,286, 4-14-87, Cl. D14-60.000.

Aldrich, Thomas B.; and Pardo, John, to American Telephone and Telegraph Company; and AT&T Information Systems Inc. Telephone apparatus housing. 289,287, 4-14-87, Cl. D14-60.000.

Amemiya, Masatomo: *See*—
Eguchi, Yoshiaki; and Amemiya, Masatomo, 289,298, Cl. D15-69.000.

American Telephone and Telegraph Company: *See*—
Aldrich, Thomas B.; and Pardo, John, 289,286, Cl. D14-60.000.
Aldrich, Thomas B.; and Pardo, John, 289,287, Cl. D14-60.000.

American Telephone and Telegraph Company, AT&T Bell Laboratories: *See*—
Sylvester, Gordon E.; Tilley, Alvin R.; and Wyckoff, Robert R., 289,240, Cl. D6-429.000.

Amersin, Emil E. Pantyhose. 289,225, 4-14-87, Cl. D2-336.000.

Andrews, Ronald J. Plaque. 289,268, 4-14-87, Cl. D11-134.000.

Ansell, Daniel F.; Anzelone, Thomas A.; Davis, Myron F.; Greenfield, John; Syler, Robert L.; and Yeaw, Harold D., to International Business Machines Corp. Transportable computer. 289,292, 4-14-87, Cl. D14-106.000.

Anzelone, Thomas A.: *See*—
Ansell, Daniel F.; Anzelone, Thomas A.; Davis, Myron F.; Greenfield, John; Syler, Robert L.; and Yeaw, Harold D., 289,292, Cl. D14-106.000.

Armstrong, Jeffrey A.: *See*—
Armstrong, Maclay M.; Houser, Steven A.; and Armstrong, Jeffrey A., 289,328, Cl. D24-10.000.

Armstrong, Maclay M.; Houser, Steven A.; and Armstrong, Jeffrey A., to Unitek Corporation. Orthodontic appliance accessory. 289,328, 4-14-87, Cl. D24-10.000.

Arnold, William D., to Lee-Rowan Company. Garment rack leg. 289,243, 4-14-87, Cl. D6-495.000.

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Wang, H. C. Power feed for a machine tool or similar article. 289,299, 4-14-87, Cl. D15-149.000.
Wang, Henry C. H., to Two Powers Enterprise Co. Ltd. Mess tray or similar article. 289,247, 4-14-87, Cl. D7-21.000.
Weckman, Richard L., to Owens-Illinois, Inc. Plastic sleeve-encased bottle. 289,260, 4-14-87, Cl. D9-349.000.
Wico Distribution Company, L.P.: *See*—
Burnstein, Philip J.; and Kim, Syng N., 289,306, Cl. D21-48.000.
Wilkes, Kenneth R., to Quaker Oats Company, The. Toy dump truck. 289,309, 4-14-87, Cl. D21-134.000.
Wilkinson Sword Limited: *See*—
Pittaway, Alan K., 289,250, Cl. D8-5.000.
Wojcik, Jacek J.; Przybysz, Andrzej; and Milton, Peter R., to Northern Telecom Limited. Telephone headset hearing aid. 289,289, 4-14-87, Cl. D14-67.000.
Wood, Jonathan M.; and Gibson, Robert R., to Techsonic Industries, Inc. Marine depth sounder. 289,265, 4-14-87, Cl. D10-46.000.
Woolcock, Kenneth W., to Rota Cota Pty. Ltd. Paint tray. 289,339, 4-14-87, Cl. D32-53.100.
Wray, Carolyn E. Doll. 289,310, 4-14-87, Cl. D21-171.000.
Wyckoff, Robert R.: *See*—
Sylvester, Gordon E.; Tilley, Alvin R.; and Wyckoff, Robert R., 289,240, Cl. D6-429.000.
Yamaguchi, Isaburo, to Kitate Sangyo Co., Inc. Combustion wick for oil stoves. 289,321, 4-14-87, Cl. D23-127.000.
Yamaguchi, Isaburo, to Kitate Sangyo Co., Inc. Combustion wick for oil stoves. 289,322, 4-14-87, Cl. D23-127.000.
Yamaguchi, Isaburo, to Kitate Sangyo Co., Inc. Combustion wick for oil stoves. 289,323, 4-14-87, Cl. D23-127.000.
Yamaguchi, Isaburo, to Kitate Sangyo Co., Inc. Combustion wick for oil stoves. 289,324, 4-14-87, Cl. D23-127.000.
Yeaw, Harold D.: *See*—
Ansell, Daniel F.; Anzelone, Thomas A.; Davis, Myron F.; Greenfield, John; Syler, Robert L.; and Yeaw, Harold D., 289,292, Cl. D14-106.000.
Yost, Holly K., to Price Pfister, Inc. Lavatory faucet set. 289,318, 4-14-87, Cl. D23-25.000.
Zisholtz, Emily S. Combined belt and tennis ball pouch. 289,226, 4-14-87, Cl. D2-630.000.

LIST OF PLANT PATENTEES

Ball Pan Am Plant Company: *See*—
Shoesmith, Leonard H., deceased, 5,943, Cl. 74.000.
Shoesmith, Leonard H., deceased, 5,945, Cl. 76.000.
Shoesmith, Leonard H., deceased, 5,946, Cl. 78.000.
Shoesmith, May V., 5,944, Cl. 74.000.
Fischer Geraniums, Inc.: *See*—
Schumann, Ingeborg, 5,938, Cl. 68.000.
Schumann, Ingeborg, 5,939, Cl. 68.000.
Schumann, Ingeborg, 5,940, Cl. 68.000.
Schumann, Ingeborg, 5,941, Cl. 68.000.
Schumann, Ingeborg, 5,942, Cl. 68.000.
Gems-Zuckerman, Danielle: *See*—
Morren-De Coster, Jos, 5,937, Cl. 34.000.
Morren-De Coster, Jos, to Gems-Zuckerman, Danielle. Apple tree—Jonagored. 5,937, 4-14-87, Cl. 34.000.
Schumann, Ingeborg, to Fischer Geraniums, Inc. Geranium plant named Casino. 5,938, 4-14-87, Cl. 68.000.
Schumann, Ingeborg, to Fischer Geraniums, Inc. Geranium plant named Bolero. 5,939, 4-14-87, Cl. 68.000.
Schumann, Ingeborg, to Fischer Geraniums, Inc. Geranium plant named Volcano. 5,940, 4-14-87, Cl. 68.000.
Schumann, Ingeborg, to Fischer Geraniums, Inc. Geranium plant named Satellite. 5,941, 4-14-87, Cl. 68.000.
Schumann, Ingeborg, to Fischer Geraniums, Inc. Geranium plant named Champagne. 5,942, 4-14-87, Cl. 68.000.
Shoesmith, Leonard H., deceased (by Shoesmith, May V., executrix), to Ball Pan Am Plant Company. Chrysanthemum plant named Fascination. 5,943, 4-14-87, Cl. 74.000.
Shoesmith, Leonard H., deceased (by Shoesmith, May Victoria, executrix), to Ball Pan Am Plant Company. Chrysanthemum plant named Citadel. 5,945, 4-14-87, Cl. 76.000.
Shoesmith, Leonard H., deceased (by Shoesmith, May Victoria, executrix), to Ball Pan Am Plant Company. Chrysanthemum plant named Keystone. 5,946, 4-14-87, Cl. 78.000.
Shoesmith, May V., to Ball Pan Am Plant Company. Chrysanthemum plant named Seminole. 5,944, 4-14-87, Cl. 74.000.
Shoesmith, May V., executrix: *See*—
Shoesmith, Leonard H., deceased, 5,943, Cl. 74.000.
Shoesmith, May Victoria, executrix: *See*—
Shoesmith, Leonard H., deceased, 5,945, Cl. 76.000.
Shoesmith, Leonard H., deceased, 5,946, Cl. 78.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 14, 1987

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

5 4,656,667
15 4,656,668
67 4,656,669
92 4,656,670
150 4,656,672
174 4,656,671
247 4,656,673
410 4,656,674

CLASS 4

144.4 4,656,675
228 4,656,676
395 4,656,677
578 4,656,678

CLASS 5

81 R 4,656,679
108 4,656,680
451 4,656,681
494 4,656,682

CLASS 8

107 4,657,554
128 R 4,657,555
405 4,657,556
471 4,657,557
603 4,657,558

CLASS 15

1.7 4,656,683
27 4,656,684
104.16 4,656,685
147 A 4,656,686
324 4,656,687
327 F 4,656,688

CLASS 16

2 4,656,689
48.5 4,656,690
251 4,656,691

CLASS 17

44.1 4,656,692
44.2 4,656,693

CLASS 19

105 4,656,694
236 4,656,695

CLASS 23

297 4,657,559

CLASS 24

3 R 4,656,696
30.5 P 4,656,697
136 A 4,656,698
237 4,656,699
574 4,656,700

CLASS 26

10 C 4,656,701
75 4,656,702

CLASS 28

100 4,656,703
170 4,656,704
179 4,656,705

CLASS 29

2 4,656,706
25.35 4,656,707
40 4,656,708
113 R 4,656,709
156.4 WL 4,656,710
156.5 R 4,656,711
157 C 4,656,714
157 R 4,656,712
4,656,713
4,656,715
259 4,656,716
270 4,656,717
430 4,656,718
455 R 4,656,719
516 4,656,720
520 4,656,721
523 4,656,722
527.2 4,656,723
558 4,656,724
566 4,656,725
566.4 4,656,726
568 4,656,727
4,656,728
571 4,656,729
576 J 4,656,730
591 4,656,731
602 R 4,656,732
623.1 4,656,733
723 4,656,735
730 4,656,734
806 4,656,736
4,656,737

CLASS 30

41 4,656,738
276 4,656,739
322 4,656,740
363 4,656,741
372 4,656,742

CLASS 33

1 H 4,656,743
41.5 4,656,744
265 4,656,746
4,656,747
270 4,656,748
334 4,656,749
352 4,656,750
358 4,656,751
399 4,656,752
408 4,656,753
507 4,656,754
526 4,656,755
626 4,656,745

CLASS 34

25 4,656,756
27 4,656,757
54 4,656,758
134 4,656,759

CLASS 36

28 4,656,760
33 Re.32,394
77 R 4,656,761

CLASS 37

238 4,656,762

CLASS 38

77.83 4,656,763

CLASS 40

122 4,656,764
316 4,656,767
412 4,656,768
491 4,656,765
605 4,656,766

CLASS 43

1 4,656,769
2 4,656,770
3 4,656,771
4 4,656,772
18.1 4,656,773
21.2 4,656,774
35 4,656,775
43.12 4,656,776
44.9 4,656,777

CLASS 44

51 4,657,560
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71 4,657,562

CLASS 49

63 4,656,778
318 4,656,779
348 4,656,780
404 4,656,781
4,656,782
4,656,783
491 4,656,784
495 4,656,785

CLASS 51

50 R 4,656,786
4,656,787
58 4,656,788
105 R 4,656,789
141 4,656,790
308 4,657,563
410 4,656,791

CLASS 52

22 4,656,794
93 4,656,792
98 4,656,793
126.6 4,656,795
169.12 4,656,797
169.7 4,656,796
221 4,656,798
236.3 4,656,799
248 4,656,800
280 4,656,801
300 4,656,802
304 4,656,803
309.16 4,656,804
417 4,656,805
704 4,656,806
718.1 4,656,807
749 4,656,808
795 4,656,809

CLASS 53

374 4,656,810
399 4,656,812
410 4,656,813
450 4,656,814
475 4,656,815
511 4,656,816
520 4,656,817
551 4,656,818
559 4,656,811

CLASS 55

16 4,657,564
55 4,657,565
73 4,657,566
109 4,657,567
186 4,657,568
189 4,657,569
385 E 4,657,570

CLASS 56

291 4,656,819
341 4,656,820
370 4,656,821

CLASS 57

73 4,656,823
81 4,656,822
263 4,656,824
289 4,656,825
401 4,656,826

CLASS 60

39.281 4,656,827
203.1 4,656,828
276 4,656,830
277 4,656,829
297 4,656,831
303 4,656,832
345 4,656,833
602 4,656,834

CLASS 62

17 4,657,571
175 4,656,835
185 4,656,836
236 4,656,837
294 4,656,838
476 4,656,839
530 4,656,840

CLASS 65

1 4,657,572
3.12 4,657,575
265 4,657,573
4,657,574

CLASS 66

121 4,656,841
139 4,656,842

CLASS 68

13 R 4,656,843
17 A 4,656,844
23.2 4,656,847
205 R 4,656,845
207 4,656,846

CLASS 70

58 4,656,848
134 4,656,849
276 4,656,850
277 4,656,851
4,656,852
456 R 4,656,853

CLASS 71

64.07 4,657,576
86 4,657,577
90 4,657,578
92 4,657,579
98 4,657,580
118 4,657,581
121 4,657,582

CLASS 72

8 4,656,854
4,656,855
11 4,656,856
131 4,656,857
181 4,656,858
243 4,656,859
299 4,656,860
323 4,656,861
443 4,656,862

CLASS 73

23 4,656,863
24 4,656,864
38 4,656,865
49.3 4,656,866
170 R 4,656,867
587 4,656,868
597 4,656,869
629 4,656,870
724 4,656,871
850 4,656,872
861.33 4,656,873
861.55 4,656,874
862.35 4,656,875
865 4,656,876

CLASS 74

68 4,656,877
89.15 4,656,878
102 4,656,879
105 4,656,880
110 4,656,881
337.5 4,656,882
411.5 4,656,883
424.5 4,656,884
467 4,656,885
475 4,656,886
493 4,656,887
4,656,888
718 4,656,889
801 4,656,890
804 4,656,891
868 4,656,892

CLASS 75

0.5 AA 4,657,583
5 4,657,584
63 4,657,585
76 4,657,586
96 4,657,587

CLASS 81

9.51 4,656,893
57.43 4,656,894
177.8 4,656,895

CLASS 82

1 C 4,656,896
2 B 4,656,897
4 R 4,656,898
34 R 4,656,899

CLASS 83

24 4,656,900
55 4,656,901
136 4,656,902
199 4,656,903
289 4,656,904
337 4,656,905
451 4,656,906
571 4,656,907
863 4,656,908
874 4,656,909
875 4,656,910

CLASS 84

1.03 4,656,911
1.16 4,657,114
1.22 4,656,912
177 4,656,913
232 4,656,914
313 4,656,915
4,656,916
327 4,656,917

CLASS 89

8 4,656,918
14.6 4,656,919
16 4,656,920
33.17 4,656,922
43.01 4,656,921

CLASS 91

369 R 4,656,923

CLASS 92

85 B 4,656,924
125 4,656,925
212 Re.32,395

CLASS 98

2 4,656,926

CLASS 99

295 4,656,932
323.1 4,656,933
348 4,656,934
388 4,656,927
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419 4,656,928
426 4,656,935
593 4,656,936

CLASS 100

3 4,656,930
4 4,656,931
100 4,656,937
189 4,656,938

CLASS 101

35 4,656,939
350 4,656,940
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CLASS 102

208 4,656,943
312 4,656,944
405 4,656,945
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CLASS 104

172.3 4,656,949

CLASS 105

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CLASS 106

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308 N 4,657,594

CLASS 108

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CLASS 109

6 4,656,954

CLASS 110

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346 4,656,955

CLASS 111

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CLASS 112

317 4,656,958

CLASS 114

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144 R 4,656,960
230 4,656,961
264 4,656,962

CLASS 118

326 4,656,963
648 4,656,964
649 4,656,965
661 4,656,966

CLASS 119

29 4,656,967
51 R 4,656,968
51.11 4,656,969
75 4,656,970

CLASS 122

4 D 4,656,971
4,656,972

CLASS 123

41.15 4,656,973
41.21 4,656,974
41.68 4,656,975
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90.55 4,656,978
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179 L 4,656,980
192 B 4,656,981
193 CH 4,656,982
196 R 4,656,983
202 4,656,984
204 4,657,009
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357 4,656,986
463 4,656,987
489 4,656,988
490 4,656,989
494 4,656,990
549 Re.32,396
559 4,656,992
572 4,656,991
643 4,656,993

CLASS 124

23 R 4,656,994

CLASS 126

438 4,656,996

CLASS 128

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8 4,656,999
57 4,656,998
88 4,657,000
92 V 4,657,002
92 YS 4,657,001
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134 4,657,004
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156 4,657,006
200.18 4,657,007
203.27 4,657,008
205.25 4,657,010
303 R 4,656,995
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303.1 4,657,012
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303.13 4,657,015
4,657,016
303.14 4,657,017
303.15 4,657,018
334 C 4,657,019
356 4,657,020
630 4,657,021
635 4,657,022
640 4,657,023
658 4,657,024
671 4,657,025
721 4,657,026
762 4,657,027
765 4,657,028

CLASS 130

27 JT 4,657,029

CLASS 131

70 4,657,030
109.1 4,657,031
336 4,657,032

CLASS 132

91 4,657,033
92 R 4,657,034

CLASS 133

5 R 4,657,035

CLASS 134

3 4,657,596
8 4,657,597
9 4,657,598
42 B1 3,910,296
95 4,657,036

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90 4,657,037

CLASS 136

249 4,658,086
264 4,658,087

CLASS 137

62 4,657,038
78.3 4,657,039
110 4,657,040
116.3 4,657,041
505.13 4,657,042
543.19 4,657,043
606 4,657,044
625.4 4,657,045
627.5 4,657,046
881 4,657,047
884 4,657,048

CLASS 138

133 4,657,049
149 4,657,050

CLASS 139

1 E 4,657,051
92 4,657,052
449 4,657,053

CLASS 141

1 4,657,054
83 4,657,055

CLASS 144

208 E 4,657,056

CLASS 148

6.15 R 4,657,600
6.2 4,657,599
12.7 C 4,657,601
33.3 4,657,602
175 4,657,603
304 4,657,604
4,657,605
327 4,657,606

CLASS 149

19.4 4,657,607

CLASS 152

415 4,657,057
556 4,657,058

CLASS 156

64 4,657,608
70 4,657,609
87 4,657,610
157 4,657,611
227 4,657,612
238 4,657,613
244.11 4,657,614
245 4,657,615
345 4,657,616
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4,657,619
4,657,620
4,657,621
361 4,657,622
429 4,657,623
470 4,657,624
471 4,657,625
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607 4,657,627
643 4,657,628
4,657,629
4,657,630
655 4,657,631
659.1 4,657,632

CLASS 160

120 4,657,059
168 R 4,657,060
176 R 4,657,061
243 4,657,062

CLASS 162

65 4,657,633
199 4,657,634
208 4,657,635
261 4,657,636
272 4,657,637

CLASS 164

45 4,657,063
169 4,657,064
461 4,657,065
476 4,657,066

CLASS 165

1 4,657,067
47 4,657,068
78 4,657,069
124 4,657,070
134.1 4,657,071
153 4,657,072
159 4,657,073
179 4,657,074

CLASS 166

72 4,657,075
90 4,657,076
115 4,657,077
123 4,657,078
231 4,657,079
308 4,657,080
4,657,081
336 4,657,082
374 4,657,083
387 4,657,084

CLASS 169

43 4,657,085
54 4,657,086

CLASS 172

3 4,657,087

CLASS 173

13 4,657,088

CLASS 174

52 PE 4,658,091
66 4,658,088
113 R 4,658,089
119 R 4,658,090
182 4,658,092

CLASS 175

4.6 4,657,089
92 4,657,090
229 4,657,091
232 4,657,092
353 4,657,093

CLASS 177

50 4,657,094
132 4,657,095
163 4,657,096
211 4,657,097

CLASS 180

8.1 4,657,098
9.28 4,657,099
19.1 4,657,100
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140 4,657,102
142 4,657,103
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151 4,657,108

CLASS 182

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5 4,657,110
36 4,657,111
63 4,657,112
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CLASS 184

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CLASS 187

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4 R 4,657,118
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CLASS 192

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3.58 4,657,123
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41 S 4,657,125
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17 R 4,658,102
19 DC 4,658,103
43.05 4,658,105
61.64 4,658,106
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CLASS 202

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CLASS 204

1 T 4,657,640
4,657,641
59 M 4,657,642
64 R 4,657,643
72 Re.32,398
91 4,657,644
129.1 4,657,645
157.5 4,657,646
182.4 4,657,647
192.26 4,657,648
224 M 4,657,649
242 4,657,650
265 4,657,651
269 4,657,652
290 R 4,657,653
298 4,657,654
299 R 4,657,655
4,657,656
400 4,657,657
406 4,657,658
410 4,657,659
427 4,657,660

CLASS 206

3 4,657,132
204 4,657,133
219 4,657,134
315.3 4,657,135
328 4,657,136
329 4,657,137
366 4,657,138
397 4,657,140
519 4,657,141
606 4,657,142
626 4,657,143

CLASS 208

58 4,657,661
111 4,657,662
210 4,657,663
211 4,657,664
216 R 4,657,665

CLASS 209

8 4,657,666
135 4,657,667
158 4,657,668
167 4,657,669
546 4,657,144
698 4,657,145

CLASS 210

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86 4,657,671
94 4,657,672
108 4,657,673
110 4,657,674
170 4,657,675
198.2 4,657,676
219 4,657,677
512.2 4,657,678
701 4,657,679
713 4,657,680
769 4,657,681
770 4,657,682

CLASS 211

41 4,657,146
58 4,657,147
128 4,657,148
194 4,657,149

CLASS 212

218 4,657,150

CLASS 215

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252 4,657,153
273 4,657,154

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4,658,110
125.1 4,658,111
125.12 4,658,112
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222 4,658,114
275 4,658,115
370 4,658,116
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492 4,658,119
505 4,658,120
553 4,658,121

CLASS 220

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83 4,657,159
94 4,657,160
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402.25 4,657,162

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106 4,657,170
119 4,657,171
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17 R 4,657,174
4,657,175
41 R 4,657,176
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CLASS 235

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145 R 4,658,124
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487 4,658,126

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130 4,657,181

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33 4,657,182
64 4,657,183
296 4,657,184
438 4,657,185
462 4,657,186
556 4,657,187
557 4,657,188
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CLASS 242

35.5 A 4,657,194
43 R 4,657,195
55 4,657,196
56 R 4,657,197
57 4,657,198
75.4 4,657,199
84.1 R 4,657,200
84.5 R 4,657,201
117 4,657,202
125.1 4,657,203
128 4,657,204
157.1 4,657,205

CLASS 244

2 4,657,207
3.22 4,657,208
54 4,657,209
158 R 4,657,210
161 4,657,211

CLASS 248

56 4,657,212
117.7 4,657,213
176 4,657,214
187 4,657,216
221.3 4,657,215
280.1 4,657,217
411 4,657,218
562 4,657,219
647 4,657,220

CLASS 249

175 4,657,221

CLASS 250

202 4,658,127
213 VT 4,658,128
214 R 4,658,129
227 4,658,130
228 4,658,131
231 R 4,658,134
231 SE 4,658,132
4,658,133
283 4,658,135
310 4,658,136
4,658,137
4,658,138
330 4,658,139
347 4,658,140
361 R 4,658,141
393 4,658,142
423 R 4,658,143
548 4,658,144
551 4,658,145
566 4,658,146
4,658,147
571 4,658,148
577 4,658,149

CLASS 251

56 4,657,222
61.2 4,657,223
63.5 4,657,224

CLASS 252

12 4,657,683
32.5 4,657,684
4,657,685
47.5 4,657,686
54 4,657,687
61 4,657,688
75 4,657,689
90 4,657,690
91 4,657,691
99 4,657,692
174.21 4,657,693
299.01 4,657,694
299.61 4,657,695
301.17 4,657,696
301.35 4,657,697
373 4,657,698
4,657,702
513 4,657,699
522 A 4,657,701
522 R 4,657,700

CLASS 254

93 HP 4,657,225

CLASS 260

104 4,657,703
4,657,706
383 4,657,707
502.5 F 4,657,705
513 B 4,657,704
544 D 4,657,708

CLASS 261

3 4,657,709
46 4,657,710
79.2 4,657,711
90 4,657,712
142 4,657,713

CLASS 264

1.3 4,657,714
10.2 4,657,717
45.5 4,657,715
45.7 4,657,716
67 B1 4,416,844
146 4,657,718
153 4,657,719
275 4,657,720

CLASS 266

220 4,657,226

CLASS 267

8 R 4,657,227
64.15 4,657,228
64.27 4,657,229
71 4,657,230
107 4,657,231
140.1 4,657,232
155 4,657,233

CLASS 269

97 4,657,234
322 4,657,235

CLASS 271

99 4,657,236
178 4,657,237
186 4,657,238
227 4,657,239
250 4,657,240
305 4,657,241

CLASS 272

62 4,657,242
67 4,657,243
73 4,657,244
117 4,657,245
4,657,246

CLASS 273

1 E 4,657,247
1 R 4,657,248
1.5 R 4,657,249
26 A 4,657,250
26 C 4,657,251
55 B 4,657,252
58 A 4,657,253
88 4,657,254
113 4,657,255
143 R 4,657,256
148 R 4,657,257
186 A Re.32,397
187 R 4,657,258
244 4,657,259
326 4,657,260
392 4,657,261
417 4,657,262

CLASS 277

31 4,657,263
118 4,657,264

CLASS 280

7.1 4,657,270
7.13 4,657,265
18 4,657,266
47.11 4,657,267
47.27 4,657,268
47.38 4,657,269
95 R 4,657,271
266 4,657,272
271 4,657,273
433 4,657,274
477 4,657,275
512 4,657,276
612 4,657,278
616 4,657,277
636 4,657,279
707 4,657,280
775 4,657,281
821 4,657,282

CLASS 285

18 4,657,283
39 4,657,284
256 4,657,285
323 4,657,286
373 4,657,287
420 4,657,288

CLASS 290

1 R 4,657,289
2 4,657,290

CLASS 292

6 4,657,291
80 4,657,292
173 4,657,206
258 4,657,293

CLASS 293

115 4,657,294

CLASS 294

162 4,657,295

CLASS 296

1 C 4,657,296
63 4,657,297
136 4,657,298
159 4,657,299
173 4,657,300
188 4,657,301

CLASS 297

232 4,657,302
362 4,657,303
391 4,657,304
417 4,657,305

CLASS 299

21 4,657,306
36 4,657,307
81 4,657,308

CLASS 301

37 SS 4,657,309

CLASS 303

6 C 4,657,310
71 4,657,311
92 4,657,312
96 4,657,313
100 4,657,314
113 4,657,315

CLASS 307

10 R 4,658,150
66 4,658,151
106 4,658,153
132 R 4,658,154
154 4,658,155
350 4,658,156
355 4,658,157
530 4,658,158
4,658,159
4,658,160
603 4,658,161

CLASS 310

68 R 4,658,162
80 4,658,163
89 4,658,164
156 4,658,165
4,658,166
4,658,167
168 4,658,168
208 4,658,169
214 4,658,170
306 4,658,171
316 4,658,172
321 4,658,173
323 4,658,174
4,658,175
334 4,658,176

CLASS 312

7.2 4,657,316
198 4,657,317
297 4,657,318
333 4,657,319

CLASS 313

25 4,658,177
113 4,658,178
4,658,179
273 4,658,180
346 R 4,658,181
384 4,658,182

CLASS 315

3.5 4,658,183
47 4,658,184
58 4,658,185
169.3 4,658,186
306 4,658,187
366 4,658,188

CLASS 318

52 4,658,189
254 4,658,190
314 4,658,191
317 4,658,192
588 4,658,193
696 4,658,194
786 4,658,195
793 4,658,196
812 4,658,197

CLASS 320

1 4,658,198
21 4,658,199

CLASS 322

25 4,658,200

CLASS 323

224 4,658,201
275 4,658,202
282 4,658,203
285 4,658,204
313 4,658,205

CLASS 324

51 4,658,206
61 P 4,658,207
61 R 4,658,208
73 R 4,658,209
77 R 4,658,210
140 D 4,658,211
158 F 4,658,212
158 MG 4,658,213
207 4,658,214
366 4,658,215

CLASS 328

109 4,658,216
139 4,658,217

CLASS 330

4.3 4,658,218
253 4,658,219
277 4,658,220

CLASS 331

78 4,658,222
176 4,658,223

CLASS 332

7.51 4,658,224

CLASS 333

166 4,658,225

CLASS 338

127 4,658,226
174 4,658,227
211 4,658,228
216 4,658,229
230 4,658,230
261 4,658,231
270 4,658,232

CLASS 338

5 4,658,233
260 4,658,234
307 4,658,235

CLASS 339

3 S 4,657,326
4 4,657,320
14 R 4,657,321
17 CF 4,657,324
4,657,325
17 M 4,657,322
17 R 4,657,323
49 B 4,657,327
75 MP 4,657,328
97 P 4,657,329
99 R 4,657,330
125 R 4,657,331
147 R 4,657,332
164 4,657,333
166 R 4,657,334
256 R 4,657,335
258 R 4,657,336
278 C 4,657,337

CLASS 340

56 4,658,236
63 4,658,237
310 R 4,658,238
347 AD 4,658,239
4,658,240
505 4,658,243
551 4,658,241
568 4,658,242
632 4,658,244
683 4,658,245
723 4,658,246
739 4,658,248
747 4,658,247
820.17 4,658,251
825.31 4,658,252
825.5 4,658,250
825.63 4,658,249
825.83 4,658,253
870.37 4,658,254

CLASS 342

91 4,658,255
372 4,658,257
383 4,658,256

CLASS 343

715 4,658,259
771 4,658,261
786 4,658,258
4,658,267
788 4,658,263
792 4,658,260
792.5 4,658,262
848 4,658,266
895 4,658,264
915 4,658,265

CLASS 346

1.1 4,658,268
75 4,658,269
76 PH 4,658,270
107 R 4,658,271
140 R 4,658,272
4,658,273
4,658,274
154 4,658,275
220 4,658,276

CLASS 350

96.20 4,657,339
4,657,340
96.210 4,657,338
96.22 4,657,341
96.23 4,657,342
4,657,343
162.24 4,657,344
311 4,657,345
320 4,657,346
332 4,657,347
347 R 4,657,348
362 4,657,349
400 4,657,350
427 4,657,351
432 4,657,352
4,657,353
4,657,354
452 4,657,355
516 4,657,356
4,657,357
610 4,657,358
4,657,359
620 4,657,360
633 4,657,361
637 4,657,362

CLASS 351

156 4,657,364
162 4,657,363

CLASS 354

173.1 4,657,365
246 4,657,366
415 4,657,367
452 4,657,368

CLASS 355

3 BE 4,657,369
4,657,370
3 R 4,657,371
4,657,372
4,657,373
4,657,374
14 R 4,657,375
4,657,376
4,657,377
38 4,657,378
53 4,657,379
55 4,657,380
76 4,657,381

CLASS 356

4 4,657,382
39 4,657,383
43 4,657,384
4,657,385
45 4,657,386
72 4,657,387
73.1 4,657,388
312 4,657,389
346 4,657,390
350 4,657,391
4,657,392
376 4,657,393
4,657,394
385 4,657,395
394 4,657,396
414 4,657,397
418 4,657,398
421 4,657,399

CLASS 357

24 4,658,277
4,658,278
26 4,658,279
30 4,658,280
4,658,281
34 4,658,282
41 4,658,283

CLASS 358

11 4,658,284
36 4,658,285
37 4,658,286
48 4,658,287
67 4,658,288
75 4,658,289
84 4,658,290
92 4,658,291
140 4,658,293
142 4,658,294
166 4,658,295
167 4,658,296
174 4,658,297
254 4,658,298
256 4,658,299
280 4,658,300
294 4,658,302
4,658,303
310 4,658,304
327 4,658,305

CLASS 360

11.1 4,658,319
22 4,658,306
69 4,658,307
74.1 4,658,308
77 4,658,309
95 4,658,310
97 4,658,311
4,658,312
98 4,658,313
103 4,658,314
104 4,658,315
109 4,658,316
133 4,658,317
4,658,318

CLASS 361

13 4,658,320
25 4,658,321
37 4,658,322
79 4,658,323
118 4,658,324
119 4,658,325
215 4,658,326
306 4,658,327
309 4,658,328
332 4,658,329
386 4,658,330
387 4,658,331
398 4,658,332
413 4,658,333
415 4,658,334

CLASS 362

80 4,658,335
197 4,658,336
225 4,658,337
226 4,658,338
267 4,658,340
294 4,658,339

CLASS 363

21 4,658,341
4,658,342
22 4,658,343
136 4,658,344
143 4,658,345
160 4,658,346

CLASS 364

140 4,658,347
146 4,658,348
200 4,658,349
4,658,350
4,658,351
4,658,352
4,658,353
4,658,354
4,658,355
4,658,356
406 4,658,357
418 4,658,358
424 4,658,359
424.1 4,658,360
434 4,658,361
472 4,658,362
4,658,363
4,658,364
496 4,658,365
513 4,658,370
513.5 4,658,369
523 4,658,366
550 4,658,371
4,658,372
553 4,658,367
559 4,658,373
572 4,658,368
900 4,658,374
4,658,375

CLASS 365

1 4,658,376
149 4,658,377
154 4,658,378
182 Re.32,401
200 4,658,379
201 4,658,380
203 4,658,381
4,658,382

CLASS 366

144 4,657,400
263 4,657,401
349 4,657,402

CLASS 367

23 4,658,384
29 4,658,383
105 4,658,385
139 4,658,386
144 4,658,387

CLASS 368

6 4,657,403
74 4,657,404
110 4,657,405
120 4,657,406
184 4,657,407
317 4,657,408

CLASS 369

13 4,658,388
45 4,658,389
4,658,390
4,658,391
288 4,658,392
290 4,658,393

CLASS 370

3 4,658,394
13 4,658,395
16 4,658,396
58 4,658,397
62 4,658,398
84 4,658,152

CLASS 371

5 4,658,399
25 4,658,400

CLASS 372

26 4,658,401
50 4,658,402
96 4,658,403

CLASS 373

143 4,658,404

CLASS 374

25 4,657,409

CLASS 375

38 4,658,405

CLASS 376

104 4,657,721
105 4,657,722
119 4,657,724
146 4,657,723
178 4,657,733
209 4,657,725
4,657,726
217 4,657,727
248 4,657,728
251 4,657,729
285 4,657,730
313 4,657,731
314 4,657,732

CLASS 377

25 4,658,407
48 4,658,406

CLASS 378

4 4,658,408
37 4,658,409
41 4,658,410
81 4,658,411
90 4,658,412
4,658,413
132 4,658,414
187 4,658,415

CLASS 379

7 4,658,099
57 4,658,416
59 4,658,096
75 4,658,097
97 4,658,417
100 4,658,301
103 4,658,095
113 4,658,098
328 4,658,418
375 4,658,419
407 4,658,420
422 4,658,421
442 4,658,422

CLASS 380

20 4,658,292
25 4,658,093
28 4,658,094
31 4,658,436

CLASS 381

13 4,658,423
51 4,658,424
68.4 4,657,106
81 4,658,425
94 4,658,426
124 4,658,427

CLASS 382

30 4,658,428
36 4,658,429
46 4,658,430
53 4,658,431

CLASS 383

20 4,658,432
63 4,658,433
86 4,658,434

CLASS 384

79 4,657,410
98 4,657,411
447 4,657,412
524 4,657,413
548 4,657,414

CLASS 400

59 4,657,415
119 4,657,416
185 4,657,417
229 4,657,418
490 4,657,419
625 4,657,420

CLASS 401

57 4,657,421

CLASS 402

61 4,657,422

CLASS 403

21 4,657,423
46 4,657,424
104 4,657,425
297 4,657,426
321 4,657,427
359 4,657,428
362 4,657,429

CLASS 404

74 4,657,430
108 4,657,431

CLASS 405

24 4,657,432
26 4,657,433
81 4,657,434
136 4,657,435
154 4,657,436
198 4,657,437
4,657,438
200 4,657,439
213 4,657,440
254 4,657,441
282 4,657,442
302 4,657,443

CLASS 406

23 4,657,444

CLASS 408

1 R 4,657,445
87 4,657,446

CLASS 409

12 4,657,447
81 4,657,448
143 4,657,449
4,657,450
186 4,657,451
190 4,657,452
216 4,657,453
234 4,657,454
235 4,657,455

CLASS 411

38 4,657,456
93 4,657,457
182 4,657,458
188 4,657,459
258 4,657,460
340 4,657,461
552 4,657,462

CLASS 414

31 4,657,464
4,657,465
416 4,657,466
419 4,657,467
495 4,657,463
563 4,657,468
607 4,657,469
627 4,657,470
663 4,657,471
735 4,657,472
739 4,657,473
744 A 4,657,474
786 4,657,475

CLASS 415

48 4,657,476
126 4,657,477
4,657,478
138 4,657,479
147 4,657,480
151 4,657,481
176 4,657,482
182 4,657,483

CLASS 416

127 4,657,484
247 R 4,657,485

CLASS 417

12 4,657,486
68 4,657,487
267 4,657,488
467 4,657,489
478 4,657,490

CLASS 418

61 B 4,657,494
82 4,657,495
136 4,657,491
150 4,657,492
173 4,657,493

CLASS 419

9 4,657,734

CLASS 420

20 4,657,588
429 4,657,735

CLASS 422

13 4,657,740
46 4,657,743
52 4,657,744
56 4,657,736
4,657,739
94 4,657,737
186.04 4,657,738
202 4,657,741
240 4,657,742

CLASS 423

53 4,657,745
242 4,657,746
249 4,657,747
328 4,657,748
329 4,657,749
4,657,750
407 4,657,751
419 R 4,657,752
447.6 4,657,753
625 4,657,754

CLASS 424

1.1 4,657,755
9 4,657,756
49 4,657,758

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83	4,657,759	552	4,657,822	66	4,657,513	315	4,657,917	407	4,657,986	437	4,658,049
85	4,657,760	610	4,657,823		CLASS 441	318	4,657,918	432	4,657,987	479	4,658,050
88	4,657,761	611	4,657,824	1	4,657,517	335	4,657,919	437	4,657,988		CLASS 558
93	4,657,762	627	4,657,825	64	4,657,515	365	4,657,920	464	4,657,989	384	4,658,051
131	4,657,763		CLASS 429	125	4,657,516	383	4,657,921	471	4,657,990		CLASS 560
162	4,657,764	12	4,657,826		CLASS 446	390	4,657,922	477	4,657,991	155	4,658,052
488	4,657,757		4,657,827	354	4,657,518	397	Re 32,400	482	4,657,992	234	4,658,053
	CLASS 425		4,657,828	376	4,657,519	399	4,657,923	538	4,657,993		CLASS 562
112	4,657,498	19	4,657,829	488	4,657,520	404	4,657,924		CLASS 526	453	4,658,054
130	4,657,496	104	4,657,830		CLASS 455	438	4,657,925	68	4,657,994	503	4,658,055
133.1	4,657,497		CLASS 430	17	4,658,435	467	4,657,926	124	4,657,995	523	4,658,056
208	4,657,499	14	4,657,831	180	4,658,437	492	4,657,927	127	4,657,996	608	4,658,057
334	4,657,500	18	4,657,832	264	4,658,438	499	4,657,928	129	4,657,997		CLASS 564
379 R	4,657,501	52	4,657,833	301	4,658,439	524	4,657,929	144	4,657,998	73	4,658,059
526	4,657,502	58	4,657,834	324	4,658,440	557	4,657,930	200	4,657,999	159	4,658,058
	CLASS 426	60	4,657,835		CLASS 464	616	4,657,931	217	4,658,000	165	4,658,060
250	4,657,765	83	4,657,836	174	4,657,521	665	4,657,932	218.1	4,658,001	180	4,658,061
309	4,657,766	109	4,657,837		CLASS 474	722	4,657,933	264	4,658,002	305	4,658,062
471	4,657,767	110	4,657,838	12	4,657,522		4,657,934	278	4,658,003	367	4,658,063
524	4,657,768	201	4,657,840	101	4,657,523	724	4,657,935	341	4,658,004	443	4,658,064
549	4,657,769	258	4,657,839	110	4,657,524	758	4,657,936		CLASS 528	487	4,658,065
	4,657,770	270	4,657,841	242	4,657,525		CLASS 521	29	4,658,006	490	4,658,066
641	4,657,771	280	4,657,842	261	4,657,526	56	4,657,937	45	4,658,005		CLASS 568
	CLASS 427	323	4,657,843		CLASS 493	96	4,657,938	55	4,658,007	38	4,658,067
2	4,657,772	325	4,657,844	176	4,657,527	163	4,657,939	67	4,658,008	451	4,658,068
4	4,657,773	326	4,657,845	204	4,657,528	164	4,657,940	109	4,658,009	603	4,658,069
11	Re 32,399	434	4,657,846		CLASS 501		CLASS 522	322	4,658,010	842	4,658,070
38	4,657,774	523	4,657,847	39	4,657,875	14	4,657,941	409	4,658,011	903	4,658,071
	4,657,775	617	4,657,848	87	4,657,876	16	4,657,942	497	4,658,012		CLASS 585
	4,657,776		CLASS 431	89	4,657,877		CLASS 523	302	4,658,013	24	4,658,072
39	4,657,777	158	4,657,503	115	4,657,878	130	4,657,944	307	4,658,014	314	4,658,073
53.1	4,657,778	166	4,657,504	152	4,657,879		4,657,948	329	4,658,015	380	4,658,074
54.1	4,657,779	284	4,657,505		CLASS 502	137	4,657,949	330	4,658,016	481	4,658,075
	4,657,780	329	4,657,506	35	4,657,874	145	4,657,950	351	4,658,017	500	4,658,076
117	4,657,781		CLASS 432	64	4,657,880	153	4,657,951		4,658,018		4,658,077
130	4,657,782	18	4,657,507	80	4,657,881	200	4,657,945	387	4,658,019	512	4,658,078
211	4,657,783		CLASS 433	115	4,657,882	216	4,657,943		4,658,020	517	4,658,079
213	4,657,784	24	4,657,508	127	4,657,883	351	4,657,952	399	4,658,021	651	4,658,081
255.6	4,657,785	37	4,657,509	161	4,657,884	402	4,657,946	402	4,658,022	658	4,658,080
304	4,657,786	173	4,657,510	241	4,657,885	435	4,657,953		CLASS 540		CLASS 604
319	4,657,787		CLASS 434	303	4,657,886	455	4,657,947	145	4,658,023	6	4,657,529
354	4,657,788	20	4,657,511	331	4,657,888	459	4,657,954	500	4,658,024	9	4,657,530
372.2	4,657,789	44	4,657,512	335	4,657,889		CLASS 524	607	4,658,025	23	4,657,531
374.1	4,657,790		CLASS 435	340	4,657,890	94	4,657,955		CLASS 544	24	4,657,532
	CLASS 428	7	4,657,849		CLASS 514	105	4,657,956	238	4,658,026	60	4,657,533
15	4,657,791		4,657,850	11	4,657,891	245	4,657,957	321	4,658,027	90	4,657,534
35	4,657,792		4,657,851	16	4,657,892	247	4,657,958	353	4,658,028	247	4,657,536
36	4,657,793		4,657,852	18	4,657,893	266	4,657,959		CLASS 546	263	4,657,535
	4,657,794		4,657,853	21	4,657,894	270	4,657,960	119	4,658,029	360	4,657,537
	4,657,795	14	4,657,854	42	4,657,895	297	4,657,961	167	4,658,030	381	4,657,538
38	4,657,796	19	4,657,855	44	4,657,896	362	4,657,962	193	4,658,031	385 A	4,657,539
64	4,657,797	28	4,657,856	47	4,657,897	406	4,657,963	349	4,658,032	808	4,657,540
71	4,657,798	68	4,657,857		4,657,898	409	4,657,964		CLASS 548		4,657,541
77	4,657,799		4,657,858	120	4,657,899	506	4,657,965	123	4,658,033	410	4,657,542
102	4,657,800	86	4,657,859	166	4,657,900	747	4,657,966	217	4,658,034	891	4,657,543
137	4,657,801	115	4,657,860	171	4,657,901	860	4,657,967	342	4,658,035		CLASS 623
152	4,657,802	121	4,657,861	185	4,657,902		CLASS 525	486	4,658,037	1	4,657,544
200	4,657,803	135	4,657,862		4,657,903	28	4,657,968	495	4,658,038	2	4,657,545
212	4,657,804	142	4,657,863	229	4,657,904	51	4,657,969	501	4,658,039	6	4,657,546
215	4,657,805	192	4,657,864	231	4,657,905	57	4,657,970	513	4,658,036		4,657,547
226	4,657,806	202	4,657,865	234	4,657,906		4,657,971		CLASS 549	10	4,657,548
263	4,657,807	240	4,657,866	245	4,657,907		4,657,972	68	4,658,040	16	4,657,549
	4,657,808	284	4,657,867		4,657,908	67	4,657,973	229	4,658,041	17	4,657,550
304.4	4,657,809	287	4,657,868	249	4,657,909	73	4,657,974	257	4,658,042	23	4,657,551
313.9	4,657,810		4,657,869	263	4,657,910	74	4,657,975	302	4,658,043		4,657,552
318.6	4,657,811	311	4,657,870	272	4,657,911	83	4,657,976	415	4,658,044	66	4,657,553
328	4,657,812		CLASS 436	275	4,657,912	92	4,657,977	506	4,658,045		CLASS 800
	4,657,813	55	4,657,871	278	4,657,913	100	4,657,978		CLASS 556	1	4,658,082
329	4,657,814	154	4,657,872	288	4,657,914	113	4,657,979	100	4,658,046		4,658,083
403	4,657,815	532	4,657,873	300	4,657,915	146	4,657,980	137	4,658,047		4,658,084
	4,657,816		CLASS 440	312	4,657,916	211	4,657,981		4,658,048		4,658,085
425.9	4,657,817	31	4,657,514			240	4,657,982				
446	4,657,818					255	4,657,983				
458	4,657,819					340	4,657,984				
476.6	4,657,820					390	4,657,985				
510	4,657,821										

D1—	102	289,220		429	289,240			289,260		10	289,280	D16—	32	289,300		65	289,320
D2—	18	289,221		457	289,241		373	289,261		30	289,281		112	289,301		127	289,321
		289,222		467	289,242		420	289,267		39	289,282	D19—	35	289,302			289,322
	244	289,223		495	289,243		433	289,263		53	289,283			289,303			289,323
	282	289,224		504	289,244	D10—	2	289,264		54	289,284		48	289,304			289,324
	336	289,225	D7—	1	289,245		46	289,265			289,285	D20—	17	289,305		146	289,325
	627	289,227			289,246		89	289,266		60	289,286	D21—	48	289,306			289,326
	630	289,226		21	289,247		113	289,267			289,287		128	289,307	D24—	8	289,327
D3—	30.1	289,228		43	289,248	D11—	134	289,268		63	289,288		134	289,308		10	289,328
D4—	108	289,229		330	289,249		157	289,269		67	289,289			289,309		16	289,329
	110	289,230	D8—	5	289,250		158	289,270		78	289,290		171	289,310		30	289,330
		289,231		37	289,251	D12—	112	289,271		100	289,291		180	289,311		51	289,331
	122	289,232		70	289,252			289,272		106	289,292		192	289,312	D25—	5	289,332
D6—	314	289,233		71	289,253			289,273		111	289,293	D22—	117	289,313		73	289,333
	348	289,234		91	289,254		133	289,274		114	289,294		119	289,314	D26—	37	289,334
	365	289,235		367	289,255		147	289,275	D15—	4	289,295			289,315	D28—	23	289,335
	366	289,236		373	289,256		156	289,276			289,296		199	289,316	D32—	32	289,336
	379	289,237		376	289,257		160	289,277		7	289,297	D23—	4	289,317			289,337
		289,238		389	289,258		191	289,278		69	289,298		25	289,318		50	289,338
	381	289,239	D9—	349	289,259	D14—	1	289,279		149	289,299		52	289,319		53.1	289,339

CLASSIFICATION OF PLANTS

P.—	34	5,937		5,939		5,941	74	5,943			
	68	5,938		5,940		5,942		5,944	76	5,945	78	5,946

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PATENTS

	4,656,745		4,657,094		4,657,966		4,658,341		4,657,244		4,657,458
	4,656,936		4,657,107		4,658,010		4,658,357		4,657,353		4,657,485
	4,657,044		4,657,112		4,658,021		4,658,378		4,657,359		4,657,513
	4,657,056		4,657,135		4,658,059	09 :	Re 32,396		4,657,361		4,657,566
	4,657,208		4,657,141		4,658,082		4,656,714		4,657,386		4,657,594
	4,657,870		4,657,172		4,658,086		4,656,725		4,657,517		4,657,626
	4,658,109		4,657,199		4,658,093		4,656,874		4,657,521		4,657,664
04	4,656,673		4,657,207		4,658,121		4,656,941		4,657,544		4,657,665
	4,656,792		4,657,255		4,658,122		4,656,967		4,657,545		4,657,679
	4,656,943		4,657,272		4,658,123		4,657,054		4,657,629		4,657,713
	4,657,032		4,657,274		4,658,146		4,657,332		4,657,638		4,657,720
	4,657,233		4,657,290		4,658,158		4,657,345		4,657,680		4,657,765
	4,657,251		4,657,317		4,658,179		4,657,410		4,657,935		4,657,779
	4,657,323		4,657,319		4,658,197		4,657,412		4,658,210		4,657,785
	4,657,709		4,657,333		4,658,198		4,657,414		4,658,253		4,657,866
	4,658,250		4,657,334		4,658,209		4,657,583	13 :	4,656,705		4,657,882
	4,658,327		4,657,390		4,658,216		4,657,586		4,656,823		4,657,883
	4,658,418		4,657,401		4,658,225		4,657,622		4,657,790		4,657,919
05	4,657,160		4,657,418		4,658,229		4,657,645		4,657,802		4,657,931
	4,657,299		4,657,445		4,658,240		4,657,649		4,657,969		4,657,933
	4,657,928		4,657,461		4,658,244		4,657,688	16 :	4,656,893		4,657,934
06	4,656,670		4,657,468		4,658,252		4,657,697		4,656,909		4,657,946
	4,656,675		4,657,469		4,658,262		4,657,800		4,658,099		4,657,950
	4,656,676		4,657,476		4,658,267		4,657,938	17 :	4,656,668		4,658,091
	4,656,684		4,657,516		4,658,287		4,658,022		4,656,753		4,658,127
	4,656,699		4,657,518		4,658,317		4,658,037		4,656,765		4,658,201
	4,656,700		4,657,527		4,658,319		4,658,088		4,656,811		4,658,207
	4,656,715		4,657,529		4,658,326		4,658,097		4,656,831		4,658,223
	4,656,771		4,657,589		4,658,336		4,658,110		4,656,871		4,658,259
	4,656,781		4,657,602		4,658,337		4,658,227		4,656,890		4,658,288
	4,656,817		4,657,616		4,658,345		4,658,323		4,656,899		4,658,290
	4,656,834		4,657,639		4,658,353		4,658,433		4,656,924		4,658,325
	4,656,836		4,657,654		4,658,362	10 :	4,657,143		4,656,925		4,658,425
	4,656,840		4,657,661		4,658,365		4,657,578		4,656,957	18 :	4,656,749
	4,656,849		4,657,672		4,658,367		4,657,703		4,656,960		4,656,848
	4,656,851		4,657,674		4,658,370		4,657,706		4,656,969		4,656,856
	4,656,864		4,657,686		4,658,372		4,657,853		4,657,021		4,656,970
	4,656,865		4,657,689		4,658,395		4,657,869		4,657,064		4,657,012
	4,656,895		4,657,692		4,658,400		4,657,981		4,657,139		4,657,036
	4,656,904		4,657,694		3,910,296		4,658,031		4,657,150		4,657,062
	4,656,912		4,657,723		4,416,844	11 :	4,656,928		4,657,151		4,657,124
	4,656,916		4,657,747	08 :	4,656,744		4,657,253		4,657,152		4,657,185
	4,656,917		4,657,756		4,656,747	12 :	4,656,680		4,657,166		4,657,190
	4,656,976		4,657,767		4,656,769		4,656,772		4,657,173		4,657,218
	4,656,987		4,657,771		4,656,774		4,656,775		4,657,186		4,657,318
	4,657,003		4,657,809		4,657,096		4,656,802		4,657,202		4,657,398
	4,657,010		4,657,816		4,657,214		4,656,808		4,657,230		4,657,435
	4,657,011		4,657,824		4,657,745		4,656,959		4,657,243		4,657,484
	4,657,014		4,657,852		4,657,766		4,656,995		4,657,249		4,657,508
	4,657,039		4,657,854		4,657,992		4,656,997		4,657,289		4,657,608
	4,657,040		4,657,867		4,658,161		4,657,001		4,657,295		4,657,855
	4,657,057		4,657,894		4,658,308		4,657,033		4,657,423		4,657,936
	4,657,090		4,657,908		4,658,333		4,657,038		4,657,449		4,658,028

	4,658,061		4,657,424		4,657,804		4,658,154	41 :	4,656,738		4,657,093
	4,658,090		4,657,433		4,657,841		4,658,241		4,656,898		4,657,116
	4,658,342		4,657,460		4,657,862		4,658,247		4,656,973		4,657,155
	4,658,437		4,657,478		4,657,863		4,658,269		4,657,322		4,657,192
19 :	4,656,929		4,657,611		4,657,885		4,658,274		4,657,337		4,657,242
	4,657,004		4,657,721		4,657,988		4,658,386		4,657,486		4,657,263
	4,657,069		4,657,735		4,658,019		4,658,396		4,658,160		4,657,363
	4,657,165		4,657,744		4,658,020		4,658,430		4,658,261		4,657,439
	4,657,196		4,657,803		4,658,029	37 :	4,656,704		4,658,330		4,657,490
	4,657,307		4,657,890		4,658,030		4,656,729		4,658,331		4,657,499
	4,657,498		4,657,897		4,658,038		4,656,768	42 :	4,656,671		4,657,510
	4,658,033		4,657,898		4,658,045		4,656,770		4,656,677		4,657,534
	4,658,103		4,657,909		4,658,054		4,656,953		4,656,721		4,657,568
20 :	4,656,894		4,657,913		4,658,060		4,657,197		4,656,724		4,657,595
	4,656,984		4,657,927		4,658,067		4,657,431		4,656,795		4,657,598
	4,657,193		4,657,967		4,658,073		4,657,444		4,656,798		4,657,617
	4,657,275		4,657,979		4,658,074		4,657,722		4,656,820		4,657,618
21 :	4,656,667		4,658,003		4,658,075		4,657,918		4,656,828		4,657,620
	4,656,971		4,658,041		4,658,079		4,658,266		4,656,854		4,657,621
	4,657,213		4,658,189		4,658,094	39 :	4,656,710		4,656,859		4,657,628
	4,657,878		4,658,335		4,658,106		4,656,712		4,656,905		4,657,647
	4,657,983	27 :	4,656,819		4,658,142		4,656,713		4,656,938		4,657,651
22 :	Re.32,397		4,656,835		4,658,152		4,656,777		4,656,950		4,657,724
	4,657,092		4,656,956		4,658,153		4,656,791		4,657,020		4,657,844
	4,657,430		4,657,002		4,658,157		4,656,816		4,657,026		4,657,930
	4,657,559		4,657,023		4,658,174		4,656,872		4,657,042		4,657,944
	4,657,948		4,657,034		4,658,175		4,656,886		4,657,066		4,657,949
	4,658,421		4,657,110		4,658,188		4,656,910		4,657,109		4,657,995
24 :	4,656,681		4,657,126		4,658,219		4,656,961		4,657,211		4,657,997
	4,656,739		4,657,179		4,658,228		4,657,028		4,657,222		4,657,998
	4,656,919		4,657,268		4,658,249		4,657,047		4,657,257		4,658,007
	4,657,000		4,657,321		4,658,258		4,657,067		4,657,325		4,658,072
	4,657,159		4,657,371		4,658,260		4,657,097		4,657,331		4,658,078
	4,657,178		4,657,392		4,658,263		4,657,117		4,657,346		4,658,080
	4,657,269		4,657,446		4,658,278		4,657,149		4,657,349		4,658,112
	4,657,298		4,657,530		4,658,285		4,657,153		4,657,378		4,658,140
	4,657,467		4,657,536		4,658,334		4,657,167		4,657,459		4,658,144
	4,657,470		4,657,570		4,658,343		4,657,177		4,657,466		4,658,149
	4,657,822		4,657,597		4,658,394		4,657,184		4,657,520		4,658,187
	4,657,833		4,657,784		4,658,406		4,657,188		4,657,532		4,658,215
	4,657,851		4,657,810	35 :	4,657,515		4,657,201		4,657,562		4,658,220
	4,657,864		4,657,840		4,657,677		4,657,270		4,657,564		4,658,277
	4,657,899		4,657,900		4,658,208		4,657,311		4,657,582		4,658,282
	4,657,903		4,657,959		4,658,222		4,657,473		4,657,584		4,658,366
	4,658,047		4,658,014	36 :	4,656,691		4,657,483		4,657,596		4,658,371
	4,658,050		4,658,171		4,656,708		4,657,506		4,657,624		4,658,377
	4,658,199		4,658,350		4,656,754		4,657,533		4,657,662		4,658,381
25 :	4,656,717		4,658,428		4,656,766		4,657,537		4,657,671		4,658,382
	4,656,751	28 :	4,656,693		4,656,773		4,657,539		4,657,702		4,658,383
	4,656,783		4,657,437		4,656,785		4,657,572		4,657,726		4,658,384
	4,657,134		4,658,096		4,656,800		4,657,580		4,657,730		4,658,387
	4,657,169	29 :	4,656,760		4,656,805		4,657,590		4,657,738		4,658,424
	4,657,260		4,657,168		4,656,900		4,657,601		4,657,740		4,658,440
	4,657,403		4,657,183		4,656,934		4,657,650		4,657,742		4,658,463
	4,657,409		4,657,254		4,656,940		4,657,693		4,657,753	49 :	4,657,642
	4,657,422		4,657,302		4,656,952		4,657,708		4,657,757		4,658,051
	4,657,543		4,657,705		4,656,966		4,657,718		4,657,827		4,658,213
	4,657,563		4,657,769		4,656,994		4,657,788		4,657,839		4,658,256
	4,657,635		4,658,107		4,657,013		4,657,815		4,657,850		4,658,318
	4,657,829		4,658,126		4,657,016		4,657,887		4,657,874		4,658,346
	4,657,932		4,658,130		4,657,037		4,657,939		4,657,922		4,658,426
	4,657,960		4,658,196		4,657,061		4,657,958		4,657,984		Re.32,401
	4,657,964		4,658,238		4,657,140		4,657,968		4,658,015	50 :	4,656,918
	4,657,972	31 :	4,656,939		4,657,203		4,658,008		4,658,062	51 :	4,656,945
	4,657,977		4,657,191		4,657,225		4,658,011		4,658,359		4,657,005
	4,657,985		4,657,261		4,657,264		4,658,069		4,658,363		4,657,104
	4,657,987	32 :	4,656,716		4,657,287		4,658,100	43 :	4,658,095		4,657,144
	4,658,117		4,656,907		4,657,336		4,658,115	44 :	4,656,682		4,657,252
	4,658,139		4,656,932		4,657,358		4,658,141		4,656,853		4,657,455
	4,658,147		4,657,546		4,657,365		4,658,178		4,656,873		4,657,712
	4,658,204		4,657,670		4,657,370		4,658,237	45 :	4,657,633		4,657,727
	4,658,214		4,658,422		4,657,393		4,658,245		4,658,036		4,658,192
	4,658,242	33 :	4,657,146		4,657,394		4,658,246		4,658,046		4,658,322
	4,658,286		4,657,503		4,657,448		4,658,358		4,658,064		4,658,435
	4,658,332	34 :	4,656,669		4,657,462		4,658,380	47 :	4,656,686		4,656,741
	4,658,348		4,656,730		4,657,501		4,658,408		4,657,063	53 :	4,656,755
	4,658,351		4,656,778		4,657,512		4,658,419		4,657,215		4,656,797
	4,658,398		4,656,906		4,657,698		4,658,436		4,657,234		4,657,171
	4,658,401		4,657,007		4,657,699	40 :	4,656,722		4,657,407		4,657,250
26 :	4,656,718		4,657,024		4,657,715		4,656,869		4,657,646		4,657,266
	4,656,803		4,657,025		4,657,758		4,656,935		4,657,877		4,657,364
	4,656,829		4,657,105		4,657,770		4,657,073		4,657,917		4,657,428
	4,656,844		4,657,130		4,657,792		4,657,080		4,658,135		4,657,438
	4,656,847		4,657,200		4,657,797		4,657,081	48 :	4,656,685		4,657,514
	4,656,975		4,657,210		4,657,806		4,657,082		4,656,689		4,657,652
	4,657,065		4,657,221		4,657,807		4,657,083		4,656,731		4,657,729
	4,657,098		4,657,265		4,657,811		4,657,100		4,656,732		4,658,018
	4,657,114		4,657,283		4,657,820		4,657,157		4,656,767		4,658,320
	4,657,125		4,657,330		4,657,823		4,657,245		4,656,786		4,656,746
	4,657,132		4,657,369		4,657,831		4,657,273		4,656,810	54 :	4,657,904
	4,657,138		4,657,538		4,657,872		4,657,489		4,656,927		4,656,706
	4,657,204		4,657,548		4,657,876		4,657,663		4,656,937	55 :	4,656,776
	4,657,212		4,657,612		4,657,880		4,657,681		4,656,944		4,656,979
	4,657,231		4,657,619		4,657,902		4,657,752		4,657,050		4,657,060
	4,657,246		4,657,673		4,657,915		4,657,886		4,657,070		4,657,137
	4,657,259		4,657,684		4,657,989		4,658,076		4,657,077		4,658,195
	4,657,271		4,657,748		4,658,013		4,658,077		4,657,078		4,657,655
	4,657,292		4,657,749		4,658,017		4,658,081		4,657,084		4,658,264
	4,657,304		4,657,760		4,658,087		4,658,089		4,657,089		4,658,279
	4,657,335		4,657,772		4,658,131		4,658,203		4,657,091		

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01	289,237		289,303	17	289,251	30	289,254		289,287		289,260
	289,238		289,318		289,306	32	289,269		289,308		289,315
	289,267		289,327	18	289,223	33	289,224		289,309		289,332
04	289,317		289,329		289,270	34	289,227		259,314	42	289,226
06	289,220		289,331		289,276		289,284		289,316		289,231
	289,235	08	289,335	19	289,264		289,285		289,319		289,253
	289,248	09	289,263	22	289,273		289,336	37	289,234		289,262
	289,249	10	289,228	25	289,230		289,337		289,257		289,296
	289,266		289,252		289,330	36	289,240		289,291	48	289,239
	289,278	12	289,229				289,255	38	289,271		289,294
	289,279		289,292	28	289,310		289,272	39	289,256	53	289,328
	289,295		289,305	29	289,243		289,286		289,259	55	289,242
	289,301	13	289,265		289,312						

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UNITED STATES PATENT AND TRADEMARK OFFICE
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Apr. 1, 1987 and was announced in the *Official Gazette* at 1077 O.G. 3 on Apr. 7, 1987.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

Schedule of current PCT fees effective Apr. 1, 1987

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
If paid before Apr. 1, 1987:	1015.00
If paid on or after Apr. 1, 1987:	1180.00
International fees	
Basic fee (first 30 pages):	430.00
Basic Supplemental fee (for each page over 30):	8.00
Designation fee for the first 10 national or regional offices:	105.00
Designation fee for 11th and subsequent designations:	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Mar. 23, 1987

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 17, 1984, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents	4,442,551 through 4,443,890
Reissue Patents based on the above identified patents.	

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 1, 1987, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,370,757	06/359,946	2/1/83
4,370,762	06/243,525	2/1/83
4,370,763	06/265,555	2/1/83
4,370,767	06/254,169	2/1/83
4,370,780	06/220,893	2/1/83
4,370,813	06/226,643	2/1/83
4,370,817	06/234,308	2/1/83
4,370,819	06/247,213	2/1/83
4,370,847	06/310,342	2/1/83
4,370,868	06/222,455	2/1/83
4,370,901	06/222,327	2/1/83
4,370,909	06/241,244	2/1/83
4,370,940	06/242,906	2/1/83
4,370,947	06/253,896	2/1/83
4,370,969	06/248,323	2/1/83
4,370,979	06/257,429	2/1/83
4,370,992	06/303,697	2/1/83
4,370,993	06/227,032	2/1/83
4,370,994	06/235,955	2/1/83
4,370,996	06/243,371	2/1/83
4,370,997	06/221,901	2/1/83
4,371,003	06/226,071	2/1/83
4,371,009	06/243,761	2/1/83
4,371,033	06/243,556	2/1/83
4,371,056	06/233,204	2/1/83
4,371,057	06/217,186	2/1/83
4,371,067	06/319,500	2/1/83
4,371,071	06/257,009	2/1/83
4,371,077	06/256,986	2/1/83
4,371,079	06/277,237	2/1/83
4,371,091	06/226,956	2/1/83
4,371,093	06/254,227	2/1/83
4,371,109	06/266,497	2/1/83
4,371,117	06/248,751	2/1/83
4,371,140	06/222,211	2/1/83
4,371,148	06/216,205	2/1/83
4,371,161	06/260,791	2/1/83
4,371,165	06/275,142	2/1/83
4,371,166	06/242,459	2/1/83
4,371,168	06/271,633	2/1/83
4,371,170	06/247,107	2/1/83
4,371,182	06/232,688	2/1/83
4,371,184	06/232,974	2/1/83
4,371,200	06/225,620	2/1/83
4,371,203	06/282,851	2/1/83
4,371,208	06/253,199	2/1/83
4,371,217	06/274,412	2/1/83
4,371,257	06/281,392	2/1/83
4,371,278	06/236,589	2/1/83
4,371,295	06/245,454	2/1/83
4,371,314	06/251,608	2/1/83
4,371,328	06/254,063	2/1/83
4,371,342	06/258,651	2/1/83
4,371,349	06/244,099	2/1/83
4,371,376	06/274,540	2/1/83
4,371,379	06/352,444	2/1/83
4,371,382	06/281,097	2/1/83
4,371,399	06/347,313	2/1/83
4,371,402	06/290,198	2/1/83
4,371,420	06/241,997	2/1/83
4,371,427	06/273,559	2/1/83
4,371,435	06/313,804	2/1/83
4,371,442	06/254,736	2/1/83
4,371,443	06/232,785	2/1/83
4,371,468	06/244,511	2/1/83
4,371,486	06/273,188	2/1/83
4,371,497	06/271,896	2/1/83
4,371,502	06/249,196	2/1/83
4,371,528	06/360,708	2/1/83
4,371,530	06/279,825	2/1/83
4,371,533	06/306,776	2/1/83
4,371,534	06/335,342	2/1/83
4,371,545	06/244,823	2/1/83
4,371,546	06/310,165	2/1/83
4,371,559	06/265,942	2/1/83
4,371,592	06/243,796	2/1/83
4,371,593	06/268,277	2/1/83
4,371,608	06/275,816	2/1/83
4,371,633	06/258,903	2/1/83
4,371,676	06/251,920	2/1/83
4,371,681	06/316,412	2/1/83
4,371,700	06/232,461	2/1/83
4,371,705	06/278,104	2/1/83
4,371,729	06/337,456	2/1/83
4,371,736	06/248,345	2/1/83
4,371,759	06/223,116	2/1/83
4,371,761	06/244,279	2/1/83
4,371,791	06/280,487	2/1/83
4,371,793	06/257,104	2/1/83
4,371,800	06/274,509	2/1/83
4,371,811	06/230,904	2/1/83
4,371,814	06/300,498	2/1/83
4,371,820	06/293,347	2/1/83
4,371,834	06/264,396	2/1/83
4,371,896	06/296,823	2/1/83
4,371,968	06/279,394	2/1/83
4,371,978	06/256,170	2/1/83

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

Des. 277,354, Re. S.N. 011,900, Filed Jan. 28, 1987, Cl. D07/009, BEVERAGE MUG, Susan H. Levine, Owner of Record: *Pottery by Levine, Inc., Richmond, Calif.,* Attorney or Agent: H. Michael Brucker, Ex. Gp.: 292

4,201,557, Re. S.N. 022,217, Filed Mar. 5, 1987, Cl. 55/327, PRECLEANER, Ross K. Petersen, Owner of Record: *Inventor,* Attorney or Agent: Lowell L. Heinke, Ex. Gp.: 135

4,501,459, Re. S.N. 018,685, Filed Feb. 25, 1987, Cl. 339/48, ELECTRICAL CONNECTOR, Curtis S. Chandler, et al., Owner of Record: *AMP, Inc., Harrisburg, Pa.,* Attorney or Agent: Jay L. Seitchik, et al., Ex. Gp.: 322

4,505,623, Re. S.N. 021,661, Filed Mar. 4, 1987, Cl. 406/114, APPARATUS FOR TRANSFERRING POWDER FROM BULK DRUMS, Douglas C. Mulder, Owner of Record: *Nordson Corp., Amherst, Ohio,* Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 315

4,538,403, Re. S.N. 020,751, Filed Mar. 2, 1987, Cl. 56/13.2, NARROW ROW COTTON HARVESTER AND PICKER UNIT, Robert M. Fachini, Owner of Record: *International Harvester Co., Chicago, Ill.,* Attorney or Agent: Talivaldis Cepuritis, et al., Ex. Gp.: 333

4,539,060, Re. S.N. 020,801, Filed Mar. 2, 1987, Cl. 156/275.1, APPARATUS AND METHOD OF SEALING CAPSULES, Fritz Wittwer, et al., Owner of Record: *Warner-Lambert Co., Morris Plains, N.J.,* Attorney or Agent: Stephen Raines, et al., Ex. Gp.: 131

4,548,729, Re. S.N. 020,281, Filed Feb. 27, 1987, Cl. 252/174.21, AQUEOUS FOAM-INHIBITING COMPOSITIONS CONTAINING ALKYL POLYETHYLENE GLYCOL ALKYL ETHERS, Karl Schmid, et al., Owner of Record: *Henkel KGaA, Dusseldorf, Germany,* Attorney or Agent: Ernest G. Szoke, et al., Ex. Gp.: 157

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4,607,091, Re. S.N. 021,151, Filed Mar. 3, 1987, Cl. 528/96, POLYMERIC RESINS DERIVED FROM 1-OXA-3-AZA TETRALINE GROUP CONTAINING COMPOUNDS AND CYCLOALIPHATIC EPOXIDES, Herbert Schreiber, Owner of Record: *Gurit-Essex, AG, Freienbach, Switzerland,* Attorney or Agent: Thomas L. Tarolli, et al., Ex. Gp.: 153

4,620,339, Re. S.N. 017,612, Filed Feb. 24, 1987, Cl. 14/71.5, COMBINED PASSENGER LOADING BRIDGE AND UTILITIES CONDUIT BETWEEN AIRPORT TERMINAL AND PARKED AIRCRAFT, Thomas E. Shepheard, Owner of Record: *Air-A-Plane Corp., Norfolk, Va.,* Attorney or Agent: James H. Littlepage, et al., Ex. Gp.: 356

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a))

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,499,591, Reexam. No. 90/001,192, Requested: Mar. 12, 1987, Cl. 227/76, INSTRUMENT FOR PLACING LATERAL GASTRO-INTESTINAL ANASTOMOSES, David T. Green, Owner of Record: *U.S. Surgical Corp., Norwalk, Conn.,* Attorney or Agent: Fleit, Jacobson, et al., Ex. Gp.: 320, Requester: Ethicon, Inc., Somerville, N.J.

3,966,419, Reexam. No. 90/001,198, Requested: Mar. 23, 1987, Cl. 422/179, CATALYTIC CONVERTER HAVING MONOLITH WITH MICA SUPPORT MEANS THEREFOR, Rodger E. Bloomfield, Owner of Record: *General Motors Corp., Detroit, Mich.,* Attorney or Agent: F. M. Ritchie, Ex. Gp.: 130, Requester: E. L. Brooks, Southfield, Mich.

4,016,118, Reexam. No. 90/001,197, Requested: Mar. 23, 1987, Cl. 524/108, POLYOLEFIN PLASTIC COMPOSITIONS, Kenzo Hamada, et al., Owner of Record: *Milliken Research Corp., Spartanburg, S.C.,* Attorney or Agent: Unknown, Ex. Gp.: 150, Requester: Owner

4,053,313, Reexam. No. 90/001,190, Requested: Mar 19, 1987, Cl. 430/270, PROCESS FOR IMAGE REPRODUCTION USING MULTILAYER PHOTOSENSITIVE SOLVENT PROCESSABLE ELEMENTS, Roxy N. Fan, Owner of Record: *E. I. du Pont de Nemours & Co., Wilmington, Del.,* Attorney or Agent: Annette L. Richter, Ex. Gp.: 150, Requester: Owner

4,092,529, Reexam. No. 90/001,195, Requested: Mar. 20, 1987, Cl. 250/201, DETECTING HEAD FOR USE IN AN APPARATUS FOR HEADING OPTICALLY AN INFORMATION RECORDED ON A RECORD CARRIER AS A TRACK OR TRACKS, Takayuki Aihara, Owner of Record: *Olympus Optical Co., Ltd., Tokyo, Japan,* Attorney or Agent: Parkhurst & Oliff, Ex. Gp.: 250, Requester: Owner

4,203,062, Reexam. No. 90/001,193, Requested: Mar 16, 1987, Cl. 318/571, MACHINE TOOL CONTROL SYSTEM, Roland Bathen, Owner of Record: *Mahle GmbH, Stuttgart, Germany,* Attorney or Agent: Kenyon & Kenyon, Ex. Gp.: 210, Requester: Owner

4,502,161, Reexam. No. 90/001,196, Requested: Mar. 17, 1987, Cl. 3/1.91, PROSTHETIC MENICUS FOR THE REPAIR OF JOINTS, William H. Wall, Owner of Record: *Inventor, Atlanta, Ga.,* Attorney or Agent: Unknown, Ex. Gp.: 330, Requester: Vitek, Inc., Houston, Tex.

4,520,551, Reexam. No. 90/001,194, Requested: Mar. 16, 1987, Cl. 29/568, MACHINE TOOL, Werner Imhof, Owner of Record: *Posalux S. A., Bienne, Switzerland,* Attorney or Agent: John T. Winburn, Ex. Gp.: 320, Requester: Owner

4,537,709, Reexam. No. 90/001,199, Requested: Mar. 25, 1987, Cl. 252/558, LIQUID DETERGENT COMPOSITION COMPRISING SELECTED ALKYLBENZENE SULPHONATES AND ALKYL ETHER SULPHATES, David J. Edge, et al., Owner of Record: *Lever Brothers Co., Edgewater, N.J.,* Attorney or Agent: Milton L. Honig, Ex. Gp.: 150, Requester: Owner

4,610,256, Reexam. No. 90/001,191, Requested: Mar. 20, 1987, Cl. 128/675, PRESSURE TRANSDUCER, William D. Wallace, Owner of Record: *Midecor, Inc., Salt Lake City, Utah,* Attorney or Agent: Workman, Nydegger, et al., Ex. Gp.: 330, Requester: Lyon & Lyon, Los Angeles, Calif.

Notice for Registered Patent Attorneys and Agents

The United States Patent and Trademark Office (PTO) has been informed of a PETITION FOR WRIT OF QUO WARRANTO filed in, and an AGREED ORDER entered by, the Circuit Court of Arlington County, Commonwealth of Va. in *Commonwealth of Va. v. Harold L. Blasius, d/b/a Washington Patent Office Searches, Chancery No. 38050.*

The full texts of the PETITION FOR WRIT OF QUO WARRANTO and AGREED ORDER are published to facilitate compliance with 37 CFR 10.23(c)(17) by registered patent attorneys and agents who now or in the future represent before the PTO in a patent case either (1) an inventor referred to the registered patent attorney or agent by Harold L. Blasius and/or Washington Patent Office Searches, or (2) a joint venture comprising an inventor, and Harold L. Blasius and/or Washington Patent Office Searches. Registered patent attorneys and agents must fully advise the inventor of the existence of the PETITION FOR WRIT OF QUO WARRANTO and the AGREED ORDER prior to undertaking or continuing representation of the inventor or joint venture.

Mar. 25, 1987. CAMERON WEIFFENBACH,
Director, Office of Enrollment & Discipline.

VIRGINIA:

In the Circuit Court of Arlington County

COMMONWEALTH OF VIRGINIA
Petitioner,
v. Chancery No. 38050
HAROLD LAWRENCE BLASIUS,
d/b/a Washington Patent Office Searches,
Defendant.

Petition for Writ of Quo Warranto

TO THE HONORABLE JUDGES OF THE CIRCUIT COURT FOR THE COUNTY OF ARLINGTON:

The Commonwealth of Va., through the Attorney General of Va., hereby petitions this Court for a writ of quo warranto under Va. Code §§8.01–636 and –637 to be issued enjoining Harold Lawrence Blasius from practicing law in Va., and in support thereof avers the following:

1. Harold Lawrence Blasius does business as Washington Patent Office Searches, having been granted a Certificate of Trade Name on June 29, 1979 by the County of Arlington, Va.
2. Washington Patent Office Searches is located at 927 S. Walter Reed Dr., Suites 27 and 28, Arlington, Va. 22204.
3. Washington Patent Office Searches is engaged in the business of doing patent searches and preparing patent applications for clients.
4. The performance of patent searches and the preparation of patent applications constitutes the unauthorized practice of law, prohibited by the Rules of the Supreme Court of Va. and §54–44 of the Code of Va.

WHEREFORE, the Commonwealth of Va. petitions this Court to issue a writ of quo warranto to be prosecuted against Harold Lawrence Blasius pursuant to Va. Code §8.01–636(2a), to inquire into and determine whether Harold Lawrence Blasius is engaged in the unauthorized practice of law. In the event that Harold Lawrence Blasius fails to establish that he is not engaged in the unauthorized practice of law, the Commonwealth asks that Harold Lawrence Blasius be permanently enjoined from engaging in such acts in Va., that the Commonwealth be awarded its costs and fees in prosecuting this action, and that the Court grant such other and further relief as may be appropriate or necessary in this matter.

COMMONWEALTH OF VIRGINIA

By: /s/ Caroline L. Lockerby
Counsel

Mary Sue Terry
Attorney General of Va.

James T. Moore, III
Senior Assistant Attorney General

Caroline Lowdon Lockerby
Assistant Attorney General

Supreme Court Bldg.
101 N. Eighth St.
Richmond, Va. 23219
(804) 786–1129

Caroline Lowdon Lockerby, Assistant Attorney General, being duly sworn according to law, declares upon information and belief that the statements contained in the foregoing petition are true.

/s/ Caroline L. Lockerby

Subscribed and sworn to before me, a Notary Public, in and for the Commonwealth of Va., City of Richmond, on this 2nd day of Dec., 1986.

/s/ Debra M. Kilpatrick
Notary Public

My Commission Expires: 4–11–87

A copy
Teste: David A. Bell, Clerk
By /s/ Kertta S. Powell
Deputy Clerk

VIRGINIA:

In the Circuit Court of Arlington County

COMMONWEALTH OF VIRGINIA
Petitioner,
v. Chancery No. 38050
HAROLD LAWRENCE BLASIUS,
d/b/a Washington Patent Office Searches,
Defendant.

Agreed Order

This matter came to be determined upon the Petition for Writ of Quo Warranto (the "Petition") filed by the petitioner Commonwealth of Va. against the defendant, Harold L. Blasius, d/b/a Washington Patent Office Searches, alleging that the defendant has engaged in the unauthorized practice of law. By stipulation of the parties, the Court finds as follows:

a. That the defendant was served with the Writ of Quo Warranto.

b. That the defendant is not licensed to practice law in Va., and is not authorized to practice law in Va.

c. That the defendant, while not admitting the allegations set forth in the Petition, agrees to the terms of this Order as set forth below.

WHEREFORE, pursuant to Va. Code Section 8.01–636 *et seq.* and the inherent power of this Court to inquire into and prohibit the unauthorized practice of law, it is hereby ORDERED:

1. That Blasius shall cease and refrain from the preparation of patent applications for or on behalf of persons other than himself;

2. That Blasius (or his company) is permitted to continue (i) advertising his services for patent searches, (ii) responding to inquiries or requests for patent searches, (iii) conducting, or causing to be conducted, patent searches, and (iv) providing the results of such patent searches to the inquiring party. Notwithstanding the foregoing, Blasius (a) shall not comment upon the applicability or effect of existing patents to or upon the inquiring party's invention, and (b) shall recommend, in his response to the inquiring party, that the inquiring party contact a licensed patent attorney or licensed patent agent should (x) there be any questions concerning the patents, (y) further information be desired, or (z) the inquiring party desire to proceed further in applying for a patent;

3. That this Order shall be permanent and of indefinite duration, until otherwise dissolved by the Court after hearing thereon. Each party shall bear its respective costs and fees.

The Clerk shall mail a certified copy of this Order to the defendant and to all counsel of record.

WE ASK FOR THIS:

/s/ Caroline L. Lockerby
Caroline L. Lockerby
Counsel for Petitioner

/s/ William L. Stauffer, Jr.
William L. Stauffer, Jr.
Counsel for Defendant

SO ORDERED:

/s/ Benjamin Kendrick
Judge, Circuit Court for
Arlington County

Entered this 3rd day of Mar., 1987.

A Copy
Teste: David A. Bell, Clerk
By /s/ Jeannette I. Brown
Deputy Clerk

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Inclusion of Copyright or Mask Work Notices in Patents

Under current intellectual property laws, it is possible to obtain copyright protection or mask work protection as well as patent protection for certain designs and technologies. On occasion, an author/inventor considers it desirable to include a notice of copyright or mask work in a design or utility patent which discloses material on which copyright or mask work protection has previously been established.

The inclusion of a copyright or mask work notice in a patent that discloses material on which copyright or mask work protection has previously been established, would serve to publicize and thereby protect the various intellectual property rights of the author/inventor. Further, this publication would tend to protect the public by militating against an unintentional encroachment into these rights. The presence of an unrestricted copyright or mask work notice in a patent could have an inhibiting effect on public dissemination of the patent disclosure to the extent it discourages the facsimile reproduction of the patent. This possible effect would be contrary to the mission of the Patent and Trademark Office to disseminate knowledge and information publicly by way of patent issuance, publication, and distribution. To avoid this effect, it is considered necessary to include an appropriate authorization of the author/inventor with any copyright or mask work notice appearing in a patent.

In light of these considerations, the Patent and Trademark Office will permit the inclusion of a copyright or mask work notice in a design or utility patent application, and thereby any patent issuing therefrom, which discloses material on which copyright or mask work protection has previously been established, under the following conditions:

(1) The copyright or mask work notice must be placed adjacent to the copyright or mask work material. Therefore, the notice may appear at any appropriate portion of the patent application disclosure, including the drawing. However, if appearing on the drawing, the notice must be limited in print size from ¼ inch to ½ inch and must be placed within the "sight" of the drawing immediately below the figure representing the copyright or mask work material. If placed on a drawing in conformance with these provisions, the notice will not be objected to as extraneous matter under 37 CFR 1.84.

(2) The content of the notice must be limited to only those elements required by law. For example, "©1983 John Doe" (17 U.S.C. 401) and "*M* John Doe" (17 U.S.C. 909) would be properly limited, and under current statutes, legally sufficient notices of copyright and mask work respectively.

(3) Inclusion of a copyright or mask work notice will be permitted only if the following authorization is included at the beginning (preferably as the first paragraph) of the specification to be printed for the patent:

> A portion of the disclosure of this patent document contains material which is subject to [copyright or mask work] protection. The [copyright or mask work] owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all [copyright or mask work] rights whatsoever.

(4) Inclusion of a copyright or mask work notice after a Notice of Allowance has been mailed will be permitted only if the criteria of 37 CFR 1.312 have been satisfied.

The inclusion of a copyright or mask work notice in a design or utility patent application, and thereby any patent issuing therefrom, under the conditions set forth above will serve to protect the rights of the author/inventor, as well as the public, and will serve to promote the mission and goals of the Patent and Trademark Office. Therefore, the inclusion of a copyright or mask work notice which complies with these conditions will be permitted. However, any departure from these conditions may result in a refusal to permit the desired inclusion. If the authorization required under condition (3) above does not include the specific language "(t)he [copyright or mask work] owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, . . .", the notice will be objected to as improper by the examiner of the application. If the examiner maintains the objection upon reconsideration, a petition may be filed in accordance with 37 CFR 1.181.

RENE D. TEGTMEYER,
Mar. 20, 1987. *Assistant Commissioner for Patents.*

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,272,774, Charles E. Boettcher, SELF-ALIGNED FLOATING GATE MEMORY CELL AND METHOD OF MANUFACTURE, Interference No. 101,585, decided Feb. 4, 1987, claims 1–10.

Patent No. 4,400,316, Shigeo Katsuragi, Kaoru Morita, Sadami Kobari, Toshiharu Noda, Nobuaki Nakagawa and Susumu Watanabe, C-TERMINAL FRAGMENT OF HUMAN CHORIONIC GONADOTROPIN, Interference No. 101,635, decided Feb. 12, 1987, claim 1.

Patent No. 4,430,478, Burghard Schmitt, Klaus Benker, Edmund Priebe and Gerhard Lindenschmidt, THERMOPLASTIC MOLDING MATERIALS, Interference No. 101,511, decided Feb. 26, 1987, claims 1–9.

Patent No. 4,431,518, Philip J. Angevine, Guenter H. Kuehl and Sadi Mizrahi, HIGH NITROGEN-CONTAINING OIL PROCESSING, Interference No. 101,503, decided Jan. 13, 1987, claims 1–9.

Patent No. 4,485,196, George P. Speranza, Robert A. Grigsby, Jr., and Michael E. Brennan, LIQUID PHASE POLYOLS WHICH ARE ALKYLENE OXIDE ADDUCTS OF TEREPHTHALIC ESTERS FROM RECYCLED POLYETHYLENE TEREPHTHALATE, Interference No. 101,591, decided Feb. 26, 1987, claims 1–19.

Patent No. 4,492,598, Lothar Willms, Thomas Huttelmaier, Hilmar Mildenberger, Klaus Bauer, Helmut Burstell and Hermann Bieringer, SULFONYLUREAS HAVING HETEROCYCLIC SUBSTITUENTS AND THEIR USE IN AGRICULTURE, Interference No. 101,433, decided Jan. 5, 1987, claims 1–18.

Patent No. 4,515,930, Ikuo Omura and Junichi Yamauchi, HIGHLY WATER-RESISTANT ADHESIVE, Interference No. 101,530, decided Feb. 27, 1987, claims 14–18.

Patent No. 4,515,930, Ikuo Omura and Junichi Yamauchi, HIGHLY WATER-RESISTANT ADHESIVE, Interference No. 101,531, decided Feb. 27, 1987, claims 1–3 and 8–13.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 4,149,301, Robert C. Cook, MONOLITHIC SEMICONDUCTOR INTEGRATED CIRCUIT-FERROELECTRIC MEMORY DRIVE, Interference No. 100,842, decided Aug. 26, 1986, claims 13—22.

Patent No. 4,203,738, Kenneth Carol Kerman, COMBINATION AIR FILTER AND VACUUM CLEANING SYSTEM, Interference No. 101,132, decided Nov. 17, 1986, claims 1 & 2.

Patent No. 4,371,463, Candace B. Pert and Jaw-Kang Chang, ENZYME-RESISTANT OPIATE PENTAPEPTIDES, Interference No. 101,286, decided Feb. 26, 1987, claims 1 & 3.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

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Animals - Patentability

A decision by the Board of Patent Appeals and Interferences in Ex parte Allen, ___ USPQ ___ (Bd. App. & Int. April 3, 1987), held that claimed polyploid oysters are nonnaturally occurring manufactures or compositions of matter within the meaning of 35 U.S.C. 101. The Board relied upon the opinion of the Supreme Court in Diamond v. Chakrabarty, 447 U.S. 303, 206 USPQ 193 (1980) as it had done in Ex parte Hibberd, 227 USPQ 443 (Bd. App. & Int., 1985), as controlling authority that Congress intended statutory subject matter to "include anything under the sun that is made by man." The Patent and Trademark Office now considers nonnaturally occurring non-human multicellular living organisms, including animals, to be patentable subject matter within the scope of 35 U.S.C. 101.

The Board's decision does not affect the principle and practice that products found in nature will not be considered to be patentable subject matter under 35 U.S.C. 101 and/or 102. An article of manufacture or composition of matter occurring in nature will not be considered patentable unless given a new form, quality, properties or combination not present in the original article existing in nature in accordance with existing law. See e.g. Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 76 USPQ 280 (1948); American Fruit Growers v. Brogdex, 283 U.S. 1, 8 USPQ 131 (1931); Ex parte Grayson, 51 USPQ 413 (Bd. App. 1941).

A claim directed to or including within its scope a human being will not be considered to be patentable subject matter under 35 U.S.C. 101. The grant of a limited, but exclusive property right in a human being is prohibited by the Constitution. Accordingly, it is suggested that any claim directed to a non-plant muticellular organism which would include a human being within its scope include the limitation "non-human" to avoid this ground of rejection. The use of a negative limitation to define the metes and bounds of the claimed subject matter is a permissible form of expression. In re Wakefield, 422 F.2d 897, 164 USPQ 636 (CCPA 1970).

Accordingly, the Patent and Trademark Office is now examining claims directed to multicellular living organisms, including animals. To the extent that the claimed subject matter is directed to a non-human "nonnaturally occurring manufacture or composition of matter - a product of human ingenuity" (Diamond v. Chakrabarty), such claims will not be rejected under 35 U.S.C. 101 as being directed to nonstatutory subject matter.

4-7-87
Date

Donald J. Quigg
Assistant Secretary and Commissioner
of Patents and Trademarks

PATENT NOTICES

Certificates of Correction for the Week of Apr. 21, 1987

D. 285,534	4,607,018	4,624,456	4,633,516
D. 287,642	4,607,461	4,624,548	4,633,907
4,433,319	4,607,603	4,624,774	4,634,240
4,485,693	4,608,161	4,624,901	4,634,311
4,501,460	4,610,335	4,624,940	4,635,327
4,509,341	4,610,384	4,625,434	4,635,438
4,544,708	4,612,744	4,625,459	4,635,464
4,547,904	4,613,070	4,625,595	4,636,593
4,556,460	4,614,195	4,625,622	4,636,937
4,563,461	4,615,384	4,625,662	4,637,038
4,567,127	4,615,450	4,625,870	4,637,061
4,568,388	4,615,608	4,626,220	4,637,062
4,571,520	4,615,612	4,626,507	4,637,194
4,574,466	4,615,750	4,626,598	4,637,360
4,581,581	4,615,795	4,626,828	4,637,649
4,582,734	4,615,864	4,627,003	4,637,942
4,583,247	4,616,325	4,627,364	4,638,627
4,587,446	4,616,477	4,627,544	4,638,790
4,588,465	4,616,626	4,627,705	4,638,859
4,589,667	4,618,497	4,627,974	4,638,952
4,590,830	4,618,600	4,628,028	4,639,173
4,591,002	4,619,037	4,628,218	4,639,196
4,592,318	4,619,409	4,628,402	4,639,381
4,594,335	4,619,467	4,628,529	4,639,410
4,595,644	4,619,625	4,628,598	4,639,647
4,597,746	4,619,804	4,628,778	4,640,020
4,599,112	4,620,611	4,628,812	4,640,176
4,599,398	4,620,743	4,629,278	4,640,177
4,600,617	4,621,399	4,629,540	4,640,275
4,601,968	4,621,718	4,629,717	4,640,495
4,602,020	4,621,823	4,630,223	4,640,546
4,602,022	4,621,911	4,630,423	4,640,566
4,603,209	4,621,946	4,630,768	4,640,919
4,603,621	4,622,148	4,631,001	4,641,003
4,604,320	4,622,276	4,631,091	4,641,045
4,604,708	4,622,464	4,631,222	4,641,290
4,605,450	4,623,346	4,631,264	4,641,692
4,605,509	4,623,800	4,631,268	4,642,691
4,606,791	4,623,971	4,632,342	
4,607,003	4,623,979	4,633,333	

Disclaimer and Dedication

4,444,953.—*David J. St. Clair*, Houston, Tex. ASYMMETRIC BLOCK COPOLYMERS AND CORRESPONDING ADHESIVE FORMULATIONS. Patent dated Apr. 24, 1984. Disclaimer filed Sept. 22, 1986, by the assignee, *Shell Oil Co.*

Hereby disclaims and dedicates to the public the entire term of said patent.

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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext. 21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
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	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
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Colorado	Denver Public Library	(303) 571-2122
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Dist. of Columbia	Washington: Howard University Libraries	(202) 636-5060
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	Miami-Dade Public Library	(305) 375-2665
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
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New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 14, 1987

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-22-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-26-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	7-25-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	2-25-85
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-19-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	11-4-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	1-25-85
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	3-28-85
DESIGN, GROUP 290—K. L. CAGE, Director	8-09-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-29-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	7-22-85
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	8-16-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during March 1987, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,497,872 to 3,504,376, inclusive

Plant Patents . . . . . None

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REISSUES

APRIL 21, 1987

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

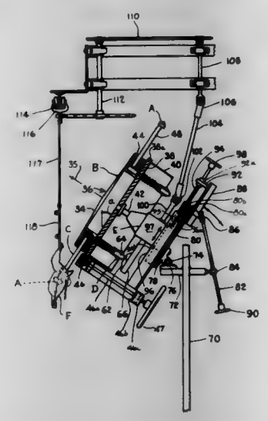
Re. 32,402
ROTARY VISCERA HARVESTER

Johnny R. Graham, Gainesville, and Kenneth Z. Graham, Dawsonville, both of Ga., assignors to Cantrell Machine Co., Inc., Gainesville, Ga.

Original No. 4,467,498, dated Aug. 28, 1984, Ser. No. 553,508, Nov. 21, 1983. Application for reissue Apr. 24, 1985, Ser. No. 725,241

Int. Cl.⁴ A22C *21/06*

U.S. Cl. 17—45 **27 Claims**



1. Apparatus for harvesting the viscera from a fowl being processed along a food processing line of the type having an overhead fowl conveyor from which said fowl is suspended in an inverted position with an upward facing vent, said apparatus comprising:

(a) frame means arranged at a fixed location adjacent said conveyor line;

(b) gripping means having a closed position for tightly clamping a desired section of said viscera generally without slippage and an open position in which said viscera section is released;

(c) carrier means carried by said frame means for carrying said gripping means;

(d) insertion means operatively connected to said gripping means for moving said gripping means to a viscera clamping position inside an interior cavity of said fowl;

(e) said carrier means moving said gripping means a predetermined lateral distance generally in the direction of fowl conveyance along with said fowl while said gripping means is inserted in said fowl;

(f) actuator means for moving said gripping means from said open position to said closed position while inserted in said fowl cavity for clamping said viscera of said fowl;

(g) retraction means operatively connected to said gripping means for retracting said closed gripping means so that said viscera is completely separated and removed from said carcass of said fowl;

(h) said actuator means moving said gripping means to said open position after retraction of said gripping means from said fowl to release said viscera;

(i) said carrier means including a rotating hub means carried by said frame means at said fixed location adjacent said fowl conveyor;

(j) [radical] *radial* connector means carrying said gripping means extending radially outwardly from said rotating hub; and

(k) mounting means for rotatably mounting said hub means adjacent said fowl conveyor so that said radial connector means are rotated in a plane inclined to the horizontal to bring adjacent radially carried gripping means into penetrating alignment with fowl carcasses passing successively by said rotating hub means.

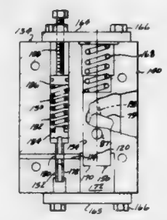
Re. 32,403
FLUID DEVICE HAVING INTERCHANGEABLE DISPLACEMENT CONTROL MEANS

Wilfred S. Bobier, Bloomfield Hills, Mich., assignor to Dana Corporation, Toledo, Ohio

Original No.. Continuation of Ser. No. 211,224, Nov. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 60,333, Aug. 3, 1970, Pat. No. 3,739,691. Application for reissue Aug. 26, 1982, Ser. No. 412,025

Int. Cl.⁴ F01B *13/04*; F04B *1/26*

U.S. Cl. 92—12.2 **1 Claim**



8. [A a fluid device of the type] *In an axial piston pump* having *a main housing including a valve face, a cylinder barrel mounted in said main housing for rotation about a main axis normal to said valve face and carrying an annular array of pump pistons axially reciprocable within said barrel, drive shaft means extending coaxially through said barrel for driving said barrel in rotation about said main axis, said drive shaft means being rotatably supported in said main housing by axially spaced bearing means located adjacent opposite ends of said main housing,* an inclinable thrust plate with a *pump* piston engaging face at one end thereof, [said thrust plate adapted to be pivoted about a predetermined axis,] *coaxially aligned support pin means projecting outwardly from opposite sides of said thrust plate rotatably seated in said main housing for mounting said thrust plate for pivotal movement in said main housing about a second axis normal to and intersecting said main axis, said thrust plate having a central passage therethrough through which said drive shaft means freely passes at all pivotal positions of said thrust plate,* said thrust plate having an arm member [disposed] *fixedly mounted thereon and extending longitudinally* along an axis *radial to said second axis and along* which *said arm member* extends *away from said barrel and* toward the other end of said thrust plate;

the improvement wherein said arm member is mounted at the axial outer end of one of said support pin means and said pump further comprises a displacement control mechanism having a control housing adapted to be fixedly and detachably mounted on the exterior of said main housing adjacent said arm member, said main and said control housings each having an opening therethrough which openings are in registry with each other and said arm member when said control housing is fixedly mounted on said main housing, a control mechanism mounted in said control housing for reciprocable movement relative to said control housing along a linear path

aligned with the aforementioned opening in said control housing and perpendicular to both said main and said second axes and located externally of said main housing, a coupling pin having one end attachable to said control mechanism and movable when so attached along said linear path with said control mechanism with the other end of said pin projecting from said control mechanism through said openings into the interior of said main housing; a U-shaped member, the legs of which encompass a portion of said arm member, said U-shaped member being reciprocable along a portion of said arm member; [as] *said other end of said pin being carried by and coupled to said U-shaped member to move* said arm member [moves] through an arcuate path to pivot said thrust plate about said [predetermined] *second* axis[; and a coupling pin movable along a linear path having one end carried by said U-shaped member,] *upon movement of said pin along said linear path imparted thereto by reciprocating movement of said control mechanism,* said coupling pin being disposed along an axis which is perpendicular to the path of reciprocal movement of said U-shaped member [the other end of said coupling pin being attachable to a displacement control mechanism adapted to impart a linear motion to said coupling pin such that] *along said arm, whereby* said U-shaped member is simultaneously moved along said reciprocal and linear paths [for] *while* pivoting said thrust plate about said predetermined axis.

Re. 32,404

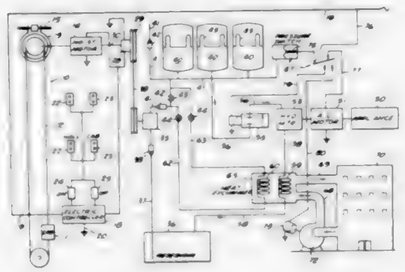
ELEVATOR WITH POWER RECOVERY

Loren B. Ferris, 5344 Tyler Ave., Arcadia, Calif. 91006

Original No. 4,489,812, dated Dec. 25, 1984, Ser. No. 516,031, Jul. 22, 1983. Application for reissue Mar. 20, 1985, Ser. No. 714,166

Int. Cl. F03B *13/00*

U.S. Cl. 187—100 **24 Claims**



1. That improvement in elevator apparatus of the type having power driven means for operating a load lifting device between different floor levels which improvement comprises:

power recovery means for recovering energy from said elevator apparatus during travel of said load lifting device including:

hydraulic pump means having a driving connection to said power driven means for said load lifting device operable to drive said pump means during travel of said load lifting device in at least one direction of travel thereof;

hydraulic fluid accumulator means connected by a conduit to the outlet of said pump means and including means to prevent reverse fluid flow through said pump means when said pump means is not driven;

electric motor driven means normally connected to an electric power source;

hydraulic motor means having a driving connection to said electric motor operable in an idling condition while said electric motor is electrically driven; and

means responsive to a predetermined pressure in said accumulator means to deactivate said electric motor and to supply pressurized fluid to said hydraulic motor means from fluid in communication with said accumulator means.

Re. 32,405

FARMING IMPLEMENT PARTICULARLY FOR ROW CULTIVATION

Paolo Barato, Padua, Italy, assignor to Maschio S.p.A., Padua, Italy

Original No. 4,158,390, dated Jun. 19, 1979, Ser. No. 753,552, Dec. 22, 1976. Application for reissue Jun. 20, 1980, Ser. No. 161,402

Claims priority, application Italy, Mar. 29, 1976, 41561 A/76

Int. Cl.[4] **A01B** *69/06*

U.S. Cl. 172—5 **1 Claim**



1. A farming implement, particularly for row cultivation, comprising a fork frame (2) adapted to be connected to a tractor; a support (1) for carrying operating tools (15); oleodynamic cylinder means (5) having one end (7) pivotally mounted to a rear portion of said fork frame (2); two spaced apart parallel pivoted arms (3,3') for connecting and supporting said support (1) together with said tools (15) to said fork frame (2); first means having a first component for pivotally mounting a first end of one of said pivoted arms (3,3') and a second component for pivotally mounting a corresponding first end of the other of said pivoted arms (3,3') to portions of said fork frame (2) spaced forwardly of the portion mounting said oleodynamic cylinder means (5); second means (4') having a first component associated with the other end of one of said pivoted arms (3,3') and a second component associated with the respective other end of the other of said pivoted arms (3,3'), said components being associated with portions of said support (1) closest to said fork frame (2) and being spaced rearwardly from the portion of said fork frame mounting said oleodynamic cylinder means (5) for pivotally mounting said other end of said pivoted arms (3,3') to said support (1); another end (8) of said oleodynamic cylinder means (5) being pivotally connected to one of said two pivoted arms (3,3') between components of said first and said second means (4,4') mounting said one arm of said fork frame and said support, said oleodynamic cylinder means (5) with its end (7,8) being disposed in a plane extending substantially transverse to the direction of movement of the tractor, said plane being interposed between the components of said first means (4) and the components of said second means (4'); and feeler means operatively associated with said oleodynamic cylinder means for sensing obstacles and for actuating said oleodynamic cylinder means to exert a force on said one of said two pivoted arms (3,3') in a direction substantially transverse to the direction of movement of the tractor.

Re. 32,406

IMPACT RESISTANT SOFT COATED LAMINATES AND PROCESS FOR MAKING THE SAME

Richard Edgar Molari, Jr., Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Original No. 4,169,181, dated Sep. 25, 1979, Ser. No. 855,803, Nov. 29, 1977. Continuation-in-part of Ser. No. 761,876, Jan. 24, 1977, Pat. No. 4,123,588, and a continuation of Ser. No. 586,630, Jun. 13, 1975, Pat. No. 4,027,072, which is a continuation-in-part of Ser. No. 369,663, Jun. 13, 1975, abandoned. Application for reissue Jan. 28, 1981, Ser. No. 229,270

Int. Cl.[4] **B32B** *9/00, 17/10, 27/36*

U.S. Cl. 428—412 **39 Claims**

1. An impact and shock-resistant laminate comprising a plurality of laminae including a back polycarbonate layer and a soft, overlying, exposed layer, opposite the direction of impact, of a self-healing, chemically resistant polyurethane having an excess of free hydroxyl groups over isocyanate groups *and including a mar-resistant coating on the exposed, impact receiving surface of the polycarbonate layer.*

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PLANT PATENTS

GRANTED APRIL 21, 1987

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,947

APPLE TREE—ELBEE

Leo Büsser, Untervaz, Switzerland, assignor to Haberli Obst- und Beerenzentrum AG, Switzerland

Filed Mar. 15, 1985, Ser. No. 712,562

Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—34 1 Claim

1. A new and distinct variety of apple tree named Elbee and parts thereof as described and illustrated, and particularly characterized by its red fruit.

5,948

JUNIPER PLANT NAMED 'MOTHER LODE'

Jean Iseli, Boring, Oreg., assignor to Iseli Nursery, Inc., Boring, Oreg.

Filed Mar. 8, 1985, Ser. No. 709,765

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—50 1 Claim

1. A new and distinct variety of *Juniperus horizontalis* plant, substantially as described and illustrated, obtained as a sport from *Juniperus horizontalis wiltonii* characterized by its lemon yellow new growth which turns bronze yellow during the winter.

5,949

ASIATIC LILY NAMED ROSEFIRE

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 11, 1985, Ser. No. 710,428

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Asiatic hybrid lily, substantially as herein shown and described, characterized in particular by the excellence of its flower form and substance and its dramatic tri-colored pattern of orange red throat, a golden central flush, and a fiery red body beyond the central flush area.

5,950

ASIATIC LILY NAMED BRAVO

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 11, 1985, Ser. No. 710,588

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Asiatic hybrid lily plant, substantially as herein shown and described, particularly distinguished by its vibrant red to red-orange coloring and its lack of spots providing a unique color pattern; the plant has vigorous growth and propagation characteristics; excellent flower form and substance; and has versatility both as a garden plant and as a plant produced from precooled bulbs forced for cut-flower production.

5,951

ASIATIC LILY NAMED ADELINA

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 11, 1985, Ser. No. 710,614

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of hybrid Asiatic lily, substantially as herein shown and described, characterized by the excellence of its flower form and, in particular, by its yellow and gold color pattern and light maculation, its vigorous growth and propagation character, its excellent flower form and substance, its versatility both as a garden plant and as a plant produced from precooled bulbs forced for cut-flower production, and its relatively late cut-flower season.

5,952

ASIATIC LILY NAMED IMPACT

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 11, 1985, Ser. No. 710,319

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of Asiatic hybrid lily, substantially as herein shown and described, characterized by the excellence of its flower form and substance and in particular by its unusual and dramatic color pattern of golden orange flowers, each tepal of which is marked with a very large and intensely colored deep magenta-purple brushmark; and by its vigorous growth and propagation characteristics with versatility as both a garden plant and a plant grown from precooled bulbs for cut-flower production.

5,953

BEGONIA PLANT NAMED ROMANCE TOO

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelseas, Inc., Ohio

Filed Nov. 23, 1983, Ser. No. 554,707

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of begonia plant known by the name Romance Too, as described and illustrated, and particularly characterized by its light chartreuse-yellow flower color, which fades to a lighter yellow on maturity, with the outermost petals tinging to pink on maturity; ease of propagation, vigorous growth habit; early flowering, and excellent keeping quality.

5,954

MINIATURE CARNATION—ROSE

Angelo J. Siri, San Francisco, Calif., assignor to Siri Brothers Nursery, Inc., Palo Alto, Calif.

Filed Aug. 17, 1984, Ser. No. 641,923

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—71 1 Claim

1. A new and distinct variety of miniature carnation plant, substantially as herein shown and described.

5,955

CHRYSANTHEMUM PLANT NAMED FUNNY REDEMINE

Martinus van der Jagt, Ter Aar, Netherlands, assignor to Chrysathemum Breeders Association N.V., Curacao, Netherlands Antilles

Filed Feb. 4, 1985, Ser. No. 697,868

Claims priority, application Netherlands, Feb. 9, 1984, CHR 862

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—77 1 Claim

1. A new and distinct cultivar of Chrysanthemum named 'Funny Redemine', as described and illustrated in the foregoing specification and accompanying drawings.

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ERRATA

For CLASS	See PATENT NO.
228-263	4,658,537
112-262	4,658,752
623-016	4,658,808
123-472	4,658,824
623-023	4,659,067
420-008	4,659,378
429-046	4,659,559
424-088	4,659,603
427-129	4,659,605
525-054	4,669,774

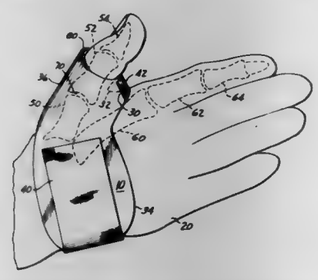
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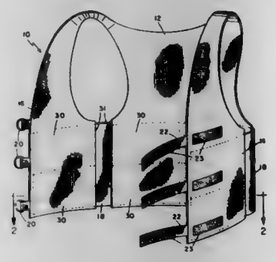
GENERAL AND MECHANICAL

4,658,441
ONE PIECE THUMB SUPPORT AND PROTECTOR
Steven A. Smith, P.O. Box 416, Grover City, Calif. 93433
Filed Dec. 13, 1985, Ser. No. 808,632
Int. Cl.[4] A41D *13/08*
U.S. Cl. 2—16 **2 Claims**



1. A thumb support for the human hand, comprising:
a support piece defining a plane and comprising:
a cradle portion installable at least partially around the thenar eminence and the metacarpophalangeal joint of the thumb;
a tab portion wrappable over the thumb/index web space and when so wrapped acting to at least partially enclose the cradle portion, the tab portion being of sufficient rigidity to substantially prevent the thumb from moving in a plane defined by the thumb and an index finger of the human hand;
a means for anchoring the cradle portion of the support piece to the hand;
a means for securing the tab portion in its position as wrapped over the thumb/index web space; and,
the cradle portion when so installed and the tab portion so wrapped comprise a frusto-conically shaped cone portion, which cone portion acts to enclose at least the metacarpophalangeal joint or the thumb and acts to isolate the index finger and the thumb.

4,658,442
WEIGHT VEST
Dick Tomlinson, 8935 Sinnard Ave., Live Oak, Calif. 95953, and Michael Von Quilich, P.O. Box 67, San Ysidro, Calif. 92073
Filed Nov. 4, 1985, Ser. No. 794,478
Int. Cl.[4] A41D *1/00*
U.S. Cl. 2—94 **11 Claims**



1. A snugly fitting variable weight vest for wearing while exercising comprising:
a back panel;
left and right front panels connected to said back panel at their proximate top edges; said panels being of flexible material and being above the waist of a user; each panel having an inside and an outside;
elastic side joining means for elastically joining said front panels to said back panel along their respective side edges;
front fastening means connected to said left and right front panels for adjustably fastening said vest snugly about a user;
pockets on said panels; said pocket having an opening;
closing means for closing said pockets; and
weights; each weight shaped to snugly fit in a said pocket; said weights being easily bendable by a wearer to conform to the shape of a wearer's body.

4,658,443
INVISIBLE SEAM ASSEMBLY AND MODULAR OUTFIT
Ellie Beman, 462 Northcroft Rd., Springfield, Pa. 19064
Filed Apr. 3, 1986, Ser. No. 847,477
Int. Cl.[4] A41D *1/22*
U.S. Cl. 2—105 **9 Claims**



1. An invisible seam assembly for garments and the like, comprising:
non-extensible, but flexible elongated band means having a plurality of hooks formed integrally therewith and projecting perpendicularly therefrom, affixable to an inner surface of a garment portion along a seam path; and,
elongated elastic cord means affixed to an elongated carrier strip at a plurality of spaced points, defining a plurality of loops enabling the hooks to snugly engage the cord means, the carrier strip being affixable to another garment portion, the elasticity of the cord means imparting yieldability to the engaged seam and the integrally formed band means imparting stability to the engaged seam, whereby the garment portions may be detachably but reliably connected to one another.

4,658,444
SURGICAL GLOVES
Betty J. Figlia, 520 E. 72nd St., Apt. 10-0, New York, N.Y. 10021, and George Spector, 233 Broadway, Rm 3815, New York, N.Y. 10007
Filed Aug. 25, 1986. Ser. No. 900,001
Int. Cl.[4] A41D *19/00*
U.S. Cl. 2—161 R **5 Claims**

1. An improved surgical glove being formed out of plastic material and of the type having a hand portion with a palm area, a series of finger portions, a thumb portion and a wrist portion having an opening in which a hand of a person is inserted into said glove, wherein the improvement comprises:
(a) a smooth latex skin coated onto said palm area of said

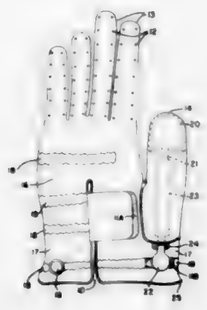
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hand portion, front of said finger portions and front of said wrist portion so that surgical tape will not stick thereto; and



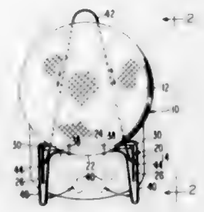
(b) a textured contoured flap being formed out of plastic material, pivotly secured to the tips of said finger portions so that when said flap is flipped over to cover completely said latex skin, said hand of said person wearing said glove can increase its grip to hold various items.

4,658,445
GOLF GLOVE
Robert L. Tribble, 6614 McCahill Dr., Laurel, Md. 20707
Filed Jun. 24, 1986, Ser. No. 877,787
Int. Cl.[4] A41D *19/00*
U.S. Cl. 2—161 A **9 Claims**



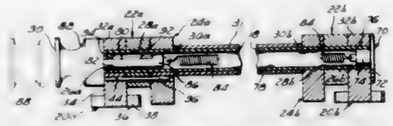
1. A golf glove comprising:
a. a hand insertion opening, a back portion, a palm portion, a wrist portion and a thumb stall,
b. an extension strap having two ends and means, adjacent the distal end of the thumb stall, for maintaining the first end of said strap in engagement with the thumb of a wearer,
c. a first fastening element located along a portion of the extension strap,
d. a second fastening element, attached to said back portion, for engagement with the first fastening element, whereby the first joint nearest the end of the thumb of a wearer is maintained in an upwardly and backwardly bent position when the strap is tensioned and the fasteners are mated so as to apply pressure to the grip of a golf club.

4,658,446
HEAD COVERING WITH MOVABLE ANIMATIONS
Philip J. McGill, 637 Tully Rd., Modesto, Calif. 95350
Filed Jan. 13, 1986, Ser. No. 817,958
Int. Cl.[4] A42B *1/06*
U.S. Cl. 2—209.1 **10 Claims**



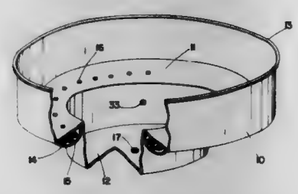
1. A head covering comprising:
a body having a front portion;
a pair of elongated members extending forwardly of the front portion each member having a rear end;
means pivotally mounting the rear ends of the members on the front portion of the body for movement toward and away from each other;
means coupled with each member for moving the same in a first direction relative to the front portion of the body; and
means coupled with each member for biasing the same in a direction opposite to said first direction.

4,658,447
TOILETTE SEAT LOCK
Mark A. Smith, 1330 E. Banyan Ave., Anaheim, Calif. 92805
Filed Jun. 24, 1985, Ser. No. 748,055
Int. Cl.[4] A47K *13/12*
U.S. Cl. 4—236 **1 Claim**



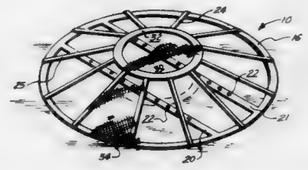
1. A locking device for retaining a toilete seat and a toilette seat cover in closed postions on a toilette for preventing small children from raising either the seat cover alone or both the seat and seat cover together, comprising:
a mounting bracket connected to the toiette, the mounting bracket having a first locking passage therethrough;
a substantially straight rod rotatably mounted within the mounting bracket, the rod having an axial passage therein, the axial passage being spaced apart from the first locking passage and parallel thereto;
an end cap mounted to an end of the rod;
a plunger mounted to the end cap such that the plunger, the end cap and the locking shaft form a unitary structure, the plunger being positioned to be slidable within the axial passage;
a seat cover bracket rotatably mounted upon the rod, the seat cover bracket including a second locking passage therein;
a seat bracket rotatably mounted upon the rod such that the seat cover bracket is between the mounting bracket and the seat bracket, the seat bracket including a third locking passage therein, the first, second and third locking passages being aligned when the seat and seat cover are in closed positions upon the toilette;
a locking shaft extending from the end cap into the first locking passage and slidable between a first postion in which the locking shaft extends through both the first and second locking passages and through at least a portion of the third locking passage to retain the seat bracket and the seat cover bracket against rotation about the rod to prevent movement of both the seat and the seat cover from their closed positions and a second position in which either the seat cover alone or the seat and cover together may be rotated away from their closed positions;
a spring mounted within the axial passage, the spring having a first end fixed relative to the rod and having a second end connected to the plunger for biasing the plunger toward the interior of the axial passage, a portion of the plunger being slidable out of the axial passage in response to a predetermined force to overcome the bias force of the spring, the locking shaft being withdrawn from the second and third locking passages as the plunger moves out of the axial passage; and
a first projection extending radially inward from the rod into the axial passage to form a stop;
a second projection extending radially outward from the plunger for selectively engaging the first projection to limit the range of linear motion of the plunger out of the axial passage;
a planar surface formed on a portion of the plunger, the planar surface facing the first projection, the first projection extending into the axial passage to engage the edges of the planar surface to retain the plunger against rotation relative to the shaft, thereby retaining the locking shaft against rotation out of alignment with the second and third locking passages when the seat and seat cover are in the closed positions.

4,658,448
PROCESS AND APPARATUS FOR HEATING BATHS AND THE LIKE
Jerry W. Rogers, P.O. Box 16764, Mobile, Ala. 36616; Frankin R. Rogers, 4 Christine Cir., Mobile, Ala. 36609, and R. Wayne Jacobs, 1947 Staples Rd., Mobile, Ala. 36605
Filed Nov. 18, 1985, Ser. No. 798,880
Int. Cl.[4] F24H *1/20*
U.S. Cl. 4—493 **3 Claims**



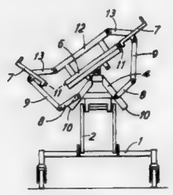
1. A heated water holding receptable comprising, a spa shell having a heat chamber attached thereto, said heat chamber having heat transferring conduits therein, multiple appertures being provided between said heat chamber and said shell for the passage of water therethrough, a water heating element being connected to said conduit, said spa shell having a seat therein, said seat having said heat chamber adjacent thereto, said seat having appertures interconnecting said seat and said heat chamber, said heat transfer conduit being connected by closed conduits with said water heating element, said connecting conduit having therein a water pump, said water pump being thermostatically controlled according to the temperature of the water temperature contained in said spa shell, said spa shell having its water circulated through said heat chamber, said circulation being provided by a spa-water circulator pump, said spa-water circulator pump having connecting conduit means between said heat chamber and said spa shell, said spa-water circulator pump being thermostatically controlled by the same sensor as that which controls said water pump whereby said spa-water circulator pump and said water pump operate in unison.

4,658,449
PROCTECTIVE ADAPTER FOR POOL DRAIN
Daniel R. Martin, 809 E. Gloria Switch Rd., Lafayette, La. 70507
Filed Sep. 19, 1985, Ser. No. 777,748
Int. Cl.[4] E04H *3/18*
U.S. Cl. 4—496 **6 Claims**



1. An apparatus adaptable onto the drain of a pool for disturbing the water prior to the water entering the pool drain, comprising:
a. a primary frame member positioned flush against the pool floor, and having a pair of mounting arms secured to the pool drain;
b. a second upper frame member raised above the primary frame member, said second upper frame member and primary frame member being of sufficient width to at least cover the broadest opening of the pool drain;
c. a plurality of radiating arms rigidly interconnecting the primary frame member and the upper frame member said radiating arms defining a raised surface above the pool drain; and
d. means interconnecting the radiating arms and the upper frame member for defining a continuous screen substantially above the pool drain so that water entering the pool drain must first enter the screen in its flow.

4,658,450
MULTI-POSITION BED
Martin S. Thompson, Bickley, England, assignor to Egerton Hospital Equipment Limited, Kent, England
Filed Nov. 13, 1985, Ser. No. 797,804
Claims priority, application United Kingdom, Nov. 20, 1984, 8429324
Int. Cl.[4] A61G *7/06*
U.S. Cl. 5—61 **13 Claims**



1. A multi-position bed comprising a base 1 frame carrying a mattress platform, the mattress platform being pivoted at its ends, on pivot brackets, for lateral tilting about an axis located below the platform, the pivot brackets being connected to the base frame by lifting arms, the mattress platform comprising a centre section and two side sections, the side sections being connected at their ends by links to end pivot frames on the centre section of other links to a pivot bracket whereby lateral tilting of the centre section and being connected at intermedi-

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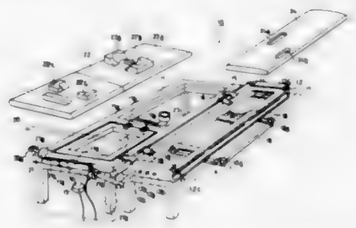
ate points through pairs in either direction causes a side section to tilt in a conrolled manner in the other direction to produce a turning effect on a patient, each of said pairs of other links comprising two links connected in series.

4,658,451

CARRIER FOR SUPPORTING USER'S BODY

Harushige Taniguchi, 4-432, Ikebukuro, Toshima-ku, Tokyo, Japan

Filed Feb. 8, 1985, Ser. No. 699,828
Claims priority, application Japan, Oct. 1, 1984, 59-203983; Oct. 12, 1984, 59-212498
Int. Cl.[4] A61G 7/10
U.S. Cl. 5—61 **20 Claims**



1. A carrier for supporting a user's body and for changing a horizontal rest posture of the user to a topsy-turvy posture, comprising:

a first support means for normally carrying thereon the user's body substantially in the horizontal rest posture, said first support means being movable to a vertical upright position so that the posture of the user is changed to the topsy-turvy posture,

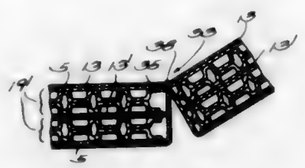
at least one second support means pivotally mounted to one side of said first support means, said second support means being pivotable to overlie and sandwich the user's body when changing the posture of the user and being rotatable together with said first support means to transfer the user's body from said first support means to said second support means, and drive means operatively associated with at least one of said first and second support means for rotating said first and second support means together to transfer the user's body from said first support means to said second support means.

4,658,452

SPORTSMAN'S PAD

Peter B. Brockhaus, Rte. 1, Owen, Wis. 54460

Filed Oct. 17, 1984, Ser. No. 661,906
Int. Cl.[4] A47G 9/06
U.S. Cl. 5—420 **3 Claims**



1. A sportsman's pad comprising:

a. a pair of coterminus covers of a flexible material joined together along the margins thereof; and

b. a pair of insulators stacked one above the other between the covers, each insulator including at least one sheet of thin flexible material embossed on one side with a multiplicity of indentations, each indentation having an open side and a closed side that forms a crown, and a skin of thin flexible material bonded to the embossed sheet on the open side of the indentations to encapsulate the air therein to create a layer of encapsulated air bubbles, said thin sheet of embossed material is clear polyethylene, and the thin skin is a heat reflective material and wherein each insulator comprises two like layers of encapsulated air bubbles, and wherein the crowns of the layers are bonded together to form a double layer of bubbles,

c. the pair of covers and the insulators are of substantially square shape;

d. the lower double layer of encapsulated bubbles is severed along lines diagonal to the margins of the covers to create a substantially square central panel and four triangular corner pieces;

e. the upper double layer of encapsulated bubbles is scored through one skin thereof remote from the cover along diagonal lines corresponding to the severed lines of the lower double layer of bubbles, the unscored skin of the upper double layer of bubbles thereby creating hinges for permitting swinging of the upper layer thereabout; and

f. the covers and the unscored skin of the upper double layer of bubbles are stitched together along the diagonal lines,

so that folding the sportman's pad along the diagonal lines is facilitated and tie means connected to an outside corner of said pad for securing said pad in a roll, said tie means having a sufficient length to encircle said rolled pad when three of said corner panels are folded and said fourth corner panel is rolled over the rolled folded corner panels to maintain said pad in said roll.

4,658,453

WAVE-RETARDING WATERBED MATTRESS

Dennis Boyd, 14457 Rogue River, Chesterfield, Mo. 63017

Filed Apr. 14, 1986, Ser. No. 851,106
Int. Cl.[4] A47C 27/08
U.S. Cl. 5—450 **5 Claims**



1. A wave-retarding waterbed mattress comprising an envelope of supple sheet material for containing a liquid therein, and a free-floating wave motion retarding baffle within the hollow interior of the envelope, said baffle comprising at least four buoyant, substantially rectangular sheets, on the top of which is joined a unitary layer that forms at least two downwardly depending loops that are substantially perpendicular to each other, said loops depending downwardly in gaps formed between adjacent sides of said sheets, the baffle having a horizontal surface that substantially corresponds to the horizontal surface of the mattress.

4,658,454

TOP AND BOTTOM BEDSHEET COMBINATION NONCONFINING TO THE FEET OF A TALL PERSON

Wilson Potter, P.O. Box 1672, Lake Havasu City, Ariz. 86403

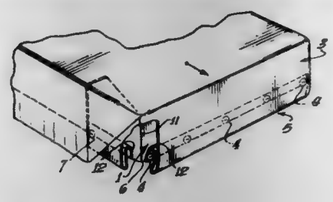
Filed Sep. 13, 1984, Ser. No. 649,930
Int. Cl.[4] A47G 9/02
U.S. Cl. 5—497 **4 Claims**

1. In the combination of a top bedsheet and a bottom bedsheet, wherein said bottom bedsheet is adapted to fit and to reach around the bottom perimeter edge of the sides, the head end and the foot end of a mattress, the improvement consisting of providing on said bottom bedsheet;

(a) a row of a plurality of buttons distributed in alignment with said bottom perimeter edge along said foot end and one additional button on each side, spaced about 12 inches from said foot end and aligned with said bottom perimeter edge;

(b) said buttons also being spaced about one and one-half inches from the free edge of said foot end and of each side, respectively, of said bottom bedsheet,

(c) a reinforcing strip sewn in said foot end of said bottom bedsheet in alignment with and in opposition to said plurality of buttons, and one reinforcing tab sewn on each side in opposition to each said additional button, and



(d) providing in said top bedsheet foot end a hem and in said hem a row of buttonholes suitably disposed to receive corresponding buttons in said row of buttons in said bottom bedsheet, including said additional button on each side, whereby

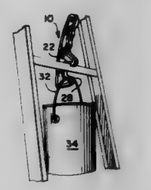
said top bedsheet is secured to said bottom bedsheet which is fitted to said mattress.

4,658,455

MULTIPURPOSE TOOL

Robert M. Skillern, Lake Cormorant, Miss., assignor to Lid-Claw Inc., Memphis, Tenn.

Filed Apr. 17, 1986, Ser. No. 853,222
Int. Cl.[4] B25F 1/00
U.S. Cl. 7—105 **8 Claims**



1. A multipurpose tool, comprising

(a) a body portion,

(b) reinforcing beads extending laterally from the body portion for reinforcing the tool,

(c) a claw comprised of a bottom wall and inclined side walls, with at least one of said side walls being of a length to extend over the rung of a ladder,

(d) flanges at the outer ends of said side walls extending inwardly and upwardly toward the bottom wall of said claw, the flange adjoining said one side wall being adapted to impinge upon or extend around the ladder rung when the tool is so oriented, and the opposed flange adapted to receive and cradle the handle of a paint can so as to suspend said can from said ladder rung,

(e) said claw and flanges being reinforced with said beads, and

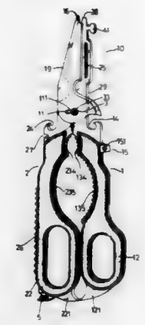
(f) a scraper blade embedded in said tool at the forward end thereof.

4,658,456

MULTI-PURPOSE SCISSORS

Su-Jem Tsai, No. 90, Su Yeh Road, Cheng District, Kaohsiung, Taiwan

Filed Oct. 16, 1985, Ser. No. 788,128
Int. Cl.[4] B25F 1/00; B25B 7/22
U.S. Cl. 7—135 **1 Claim**



1. A multi-purpose scissors comprising:

a first body being provided at the middle portion with a pair of aligned positioning holes communicated by a slot, the lower end of the first body being formed with a handle of which the bottom side has a first portion, the inner side of the first body being provided with a wire cutting means, a wire stripping means, a recess, a smaller saw-toothed portion and a larger saw-toothed portion, the outer side of the first body being formed with a can opener and a screw driver having a hole disposed thereon for bending a wire, the upper end of the first body being formed with a Phillips-head screwdriver, the upper outer portion of the first body being provided with blade and a second portion having a knife edge;

a second body being furnished at the middle portion with a fixing hole corresponding to either one of the positioning holes of the first body, the second body being pivotally connected to the first body by means of a detachable rivet or other suitable means such that the rivet thereof can be fixed to either one of the two positioning holes to make the relative movement of the first and second bodies more flexible, the lower end of the second body being provided with a handle of which the bottom side is formed with a first portion which is cooperated with the first portion of the first body to form a hair pincer, the inner side of the second body being provided with a wire cutting means corresponding to the wire cutting means of the first body to form a wire cutter, a wire stripping means corresponding to the wire stripping means of the first body to form a wire stripper, a flange corresponding to the recess of the first body to secure a connector to an electric wire, a smaller saw-toothed portion corresponding to the smaller saw-toothed portion of the first body to form a plier for smaller objects and a larger saw-toothed portion corresponding to the larger saw-toothed portion of the first body to form a plier for larger objects, the outer side of the second body being formed with a bottle opener, a scale scraper and a wire bending means for bending the wire, the second body being furnished at the upper end with a standard screwdriver, the upper inner portion of the second body being provided with a protuberance and a peeling means, the upper outer portion of the second body being furnished with blade corresponding to the blade of the first body to be served as a scissors and a second portion having a knife edge corresponding to the second portion of the first body to form a nut cracker, the

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bottom end of the second body being provided with a claw which is used to pull a nail out of an object;
a head member capable of being engaged with the protuberance of the second body to be served as a hammer.

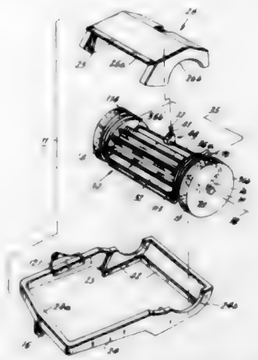
4,658,457
COMBINATION FASTENER REMOVER AND DIMPLER
Stephen Rokita, Sussex, N.J., assignor to R.J. Tool Design, Inc., Hoboken, N.J.
Filed Apr. 14, 1986, Ser. No. 852,722
Int. Cl.⁴ B25F *1/00*
U.S. Cl. 7—170 **20 Claims**



1. A combination fastener remover and dimpler tool for removing an improperly installed fastener and forming in place thereof a smooth cavity, said combination tool comprising:
an elongated tool body having a medial portion forming a tool handle;
a pair of spaced jaws attached at one end of said elongated tool body, said jaws being substantially flat and lying within a plane substantially normal to the longitudinal axis of the tool handle;
a throat portion extending between said jaws for receiving the head of an improperly installed fastener; and,
dimpler means for rotatingly inserting in the cavity left by a removed fastener and for smoothing the wall thereof, said dimpler means attached to said elongated tool body at the end opposite said spaced jaws;
whereby, upon improperly installing a fastener, the combination fastener and dimpler tool removes the fastener with a force exerted parallel to the shaft of the fastener, minimizing damage to the surface penetrated by the fastener, and smooths the cavity wall thereof.

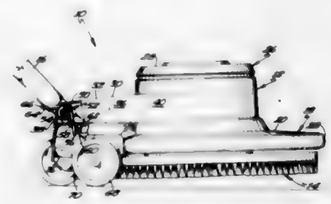
4,658,458
ROTARY BRUSH SWEEPER WITH MECHANISM FOR BRUSH HEIGHT ADJUSTMENT
Robert C. Berfield, Jersey Shore; R. Leat Creviing, Jr., Williamsport; Ronald F. Meland, Muncy, and Richard M. Fegan, Cogan Station, all of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.
Filed Apr. 16, 1986, Ser. No. 852,408
Int. Cl.⁴ A47L *11/22*; E01H *1/04*
U.S. Cl. 15—49 C **18 Claims**

1. A rotary brush sweeper, comprising:
a rotary brush;
means to rotate the rotary brush;
a pivotable brush support assembly including a pair of spaced support members having respective annular convex mounting surfaces; a central axis passing through the spaced support members; the assembly supporting the rotatable brush about a brush axis which is radially offset from the central axis such that rotation of the assembly about the central axis raises or lowers the rotary brush with respect to the central axis;
means to rotate the pivotable brush support assembly; and a housing including a pair of annular concave mounting surfaces for respectively receiving the pair of annular



convex mounting surfaces of the pivotable brush support assembly.

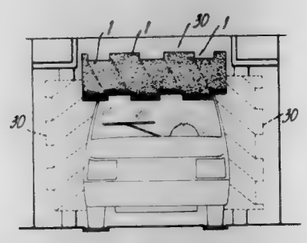
4,658,459
FLOOR POLISHING MACHINE
David W. Wood, Maple Plain, Minn., assignor to Advance Machine Company, Spring Park, Minn.
Filed Jan. 27, 1986, Ser. No. 823,006
Int. Cl.⁴ A47L *11/162*
U.S. Cl. 15—49 R **20 Claims**



1. Machine for polishing floor surfaces comprising, in combination: a body portion adapted to be moved along the floor, with the body portion including a platform having a front and a rear; a polishing member mounted for rotation about a polishing axis within the body portion for polishing the floor surface when the body portion is moved along the floor; a handle for guiding and controlling the movement of the body portion along the floor, with the handle being pivotally mounted to the platform about a pivot axis for movement between operating positions and a transport position; a first set of wheels rotatably mounted adjacent the rear of the platform and between the handle pivot axis and the polishing axis for supporting the platform above the floor surface; torsion spring means between the handle and the platform for urging the platform to pivot about the first set of wheels when the handle is in an operating position such that the rear of the platform moves downwardly and the front of the platform moves upwardly; and a second set of wheels located at the rear of the platform and on the opposite side of the first set of wheels than the polishing axis, with the level of the second set of wheels being higher than the first set of wheels for limiting the amount of upward movement of the front of the platform by the torsion springs when the polishing member is not being rotated in the body portion allowing a partial vacuum to be formed under the polishing member when the polishing member is initially rotated in the body

portion to place a downward suction on the polishing member and counteracting with the torsion springs to place an even polishing force on the floor surface by the polishing member regardless of the pivotal position of the handle with respect to the platform and regardless of the unevenness of the floor surface.

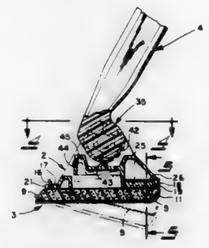
4,658,460
BRUSH FOR A WASHING ROLLER
Favagrossa Edoardo, Roncadello, Italy
Filed Aug. 1, 1985, Ser. No. 761,141
Claims priority, application Italy, Mar. 7, 1985, 21027/85[U]
Int. Cl.⁴ A46B *3/16, 9/02*
U.S. Cl. 15—182 **1 Claim**



1. A brush for a washing roller, for use in an automatic motor vehicle washing installation or the like, comprising a flexible laminar backing element having a plurality of sockets for removably receiving groups of fibres forming the bristles of said brush, a strip zone of said backing element being provided with groups of fibres having a greater length than the groups of fibres fitted to the remaining areas of said backing element, the flexibility of said backing element being such that it can be curved into a cylindrical form, said backing element being substantially rectangular and said strip zone for receiving said fibres having a greater length and extending diagonally with respect to said backing element, said fibres being removably fixed to said backing element at a mid part of their longitudinal extent by a sewing thread disposed on the rear face of said backing element, said strip-like zone of fibres of greater length extending helically over the cylindrical surface of said roller, said washing roller having a crenellated-longitudinal edge longitudinal cross-section and the pitch of the helix defined of said fibers of greater length being such as to provide, as said washing roller is rotated, a component of force effective to progressively displace the dirt particles along an axial direction with respect to said washing roller.

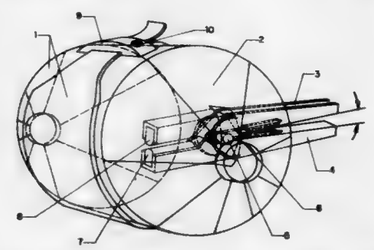
4,658,461
FLAT PAD APPLICATOR
Elverton O. Roe, and Charles G. Moore, both of Wooster, Ohio, assignors to The Wooster Brush Company, Wooster, Ohio
Filed Oct. 2, 1985, Ser. No. 783,140
Int. Cl.⁴ B05C *1/06*
U.S. Cl. 15—210 R **18 Claims**

1. A pad applicator for use in applying coatings to surfaces comprising a base member having top and bottom sides, a handle member attached to the top side of said base member, a pad assembly having a backing plate made of magnetic material, said backing plate having an inturned lip on the front edge thereof for hooking engagement over the front edge of said base member, and magnet means located adjacent the back edge of said base member for magnetically attaching said



backing plate to the bottom side of said base member adjacent the back edge of said backing plate.

4,658,462
OIL RESERVOIR DIPSTICK WIPER
Marcel Elassar, 64 Marinus St., Rochelle Park, N.J. 07662
Filed Mar. 12, 1986, Ser. No. 838,911
Int. Cl.⁴ F01M *11/12*
U.S. Cl. 15—210 B **1 Claim**

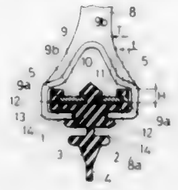


1. A device for cleaning reservoir oil dispsticks on vehicles and machinery which require oil levels to be verified and maintained regularly by means of an oil dipstick, the device comprising:
a hollow cylindrical member having an end cap at each end thereof, one of said end caps being detachably mounted on said cylindrical member, an opening in each end cap providing means for inserting a dipstick through said cylindrical member,
a pair of resilient blades mounted in said cylindrical member, first means for supporting and moving said resilient blades from a first position in which the dipstick can be passed therebetween without contacting said blades to a second position in which said blades will contact and wipe the dipstick as it is passed therebetween, said first means comprising first end portions supporting said blades and second end portions providing means for moving said blades,
second means pivotally mounting said first means on the interior surface of the cylindrical member for movement between said first and second positions, said second means supporting said first means between the first and second end portions,
third means for biasing said blades toward said first position,
fourth means for mounting said cylindrical member on a supporting surface, said fourth means comprising a flexible strap fixed at one end thereof to said cylindrical member, a strap lock means fixedly mounted on said cylindrical member, a second end of said strap adapted to be adjustably secured to said strap lock means, and the openings in said end caps and the position of said blades being posi-

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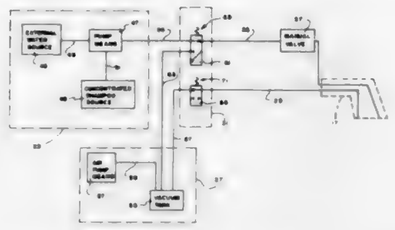
tioned such that the dipstick can be inserted from either end of the device for cleaning.

4,658,463
WIPER BLADE
Hiroshi Sugita, Ichinomiya; Takemasa Yasukawa, Inazawa, and Masanori Aritake, Nishikasugai, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan
Filed Oct. 11, 1985, Ser. No. 786,866
Claims priority, application Japan, Oct. 11, 1984, 59-153495[U]
Int. Cl.⁴ B60S *1/38*
U.S. Cl. 15—250.36 **9 Claims**



1. A wiper blade, comprising:
a base section having a symmetrical transverse cross-sectional shape and comprising, from the top downward, a head, a neck having a width smaller than that of said head, a pair of first wings together having a width larger than that of said neck and extending in opposite lateral directions beyond said head to respective side edges, a body having a width smaller than the distance between said side edges of said first wings and extending to opposite side edges, and a pair of second wings extending in opposite lateral directions beyond said side edges of said body;
a neck portion extending downwards from medially of said pair of second wings of said base section;
a medially disposed turning portion connected to said base section through said neck portion and extending downwards therefrom, said turning portion having approximately triangular transverse cross-sectional shape, apex end downwards;
a medially disposed lip portion extending downwards from the apex end of said turning section in the form of a laterally thin strip;
a backing plate member comprising a pair of laterally-spaced plate-like elastic portions having laterally outer side edges and laterally inner side edges, and a connecting portion which arches over and connects said pair of elastic portions with one another so as to provide a gap of predetermined lateral dimension between said laterally inner side edges of said elastic portions;
said backing plate member being longitudinally slidngly detachably assembled to said base section so that said neck of said base section is disposed laterally between said laterally inner side edges of said elastic portions and said connecting portion arches over and around said head and said elastic portions are intervened vertically between respective downwardly facing shoulders provided on said head of said base section, and respective upwardly facing shoulders provided on said first wings, inwardly of said opposite side edges of said first wings;
said first wings of said base section having respective upwardly directed flanges provided thereon, said flanges being integral with said base section and extending upwardly laterally outwardly of said laterally outer side edges of said elastic portions throughout the height of said laterally outer edges of said elastic portions so as to substantially protect said laterally outer side edges of said elastic portions from lateral engagement by a wiper blade holder structure;
said base section, said neck portion, said turning portion and said lip portion being made of natural or synthetic rubber.

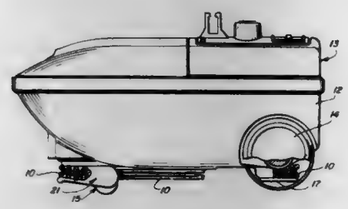
4,658,464
VACUUM/SHAMPOO APPARATUS
Leonard E. Sharp, 1304 Rosemond, Jonesboro, Ark. 72401
Filed Mar. 26, 1986, Ser. No. 844,302
Int. Cl.⁴ A47L *7/00*
U.S. Cl. 15—321 **15 Claims**



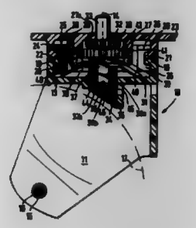
1. A vacuum/shampoo apparatus for cleaning an area of upholstery, carpet and the like, said apparatus comprising in combination;
(a) a nozzle member for being moved over said area during the cleaning operation;
(b) shampoo spray means coupled to said nozzle member for causing a shampoo solution to be sprayed through said nozzle onto said area, said shampoo spray means including a shampoo solution source and including a shampoo solution supply conduit coupled to said nozzle member;
(c) vacuum means coupled to said nozzle member for normally creating a vacuum at said nozzle member to draw said shampoo solution and any dirt from said area as said nozzle member is moved over said area, said vacuum means including a vacuum source and including a vacuum conduit coupled to said nozzle member; and
(d) valve means coupled to said shampoo solution source, to said shampoo solution supply conduit and to said vacuum source for coupling said shampoo solution supply conduit to said shampoo solution source during the normal operation of said apparatus and for coupling said shampoo solution supply conduit to said vacuum source after the normal operation of said apparatus to draw said shampoo solution from said shampoo solution supply conduit.

4,658,465
QUICK RELEASE POWER CORD WRAP FOR CANISTER VACUUM CLEANER
James W. Keane, White Bear Lake, Minn., and William J. Martin, Watervliet, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jun. 7, 1985, Ser. No. 742,712
Int. Cl.⁴ A47L *9/00*
U.S. Cl. 15—323 **21 Claims**

1. In an electrically operable appliance having a housing, first wheel means on the housing, and a flexible electrical power cord extending outwardly from the housing for use in providing electrical power to the appliance, the improvement comprising:
second wheel means on the housing for cooperation with said first wheel means for providing a wheeled support of said appliance in use;
means on the housing defining a first cord wrap support; and
second means on said second wheel means defining a second cord wrap support, said first and second cord wrap supports cooperatively defining oppositely outwardly facing surfaces about which said power cord may be wrapped for removably retaining said power cord in a stored condition when said appliance is not in use.



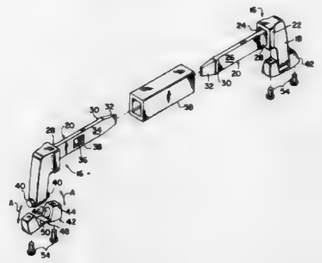
4,658,466
BLOCKING DEVICE FOR THE WHEELS AND WHEEL FRAMES OF CASTERS
Fritz Vollberg, Wermelskirchen, and Lothar Steinhaus, Remscheid, both of Fed. Rep. of Germany, assignors to Albert Schulte Söhne GmbH & Co., Wermelskirchen, Fed. Rep. of Germany
Filed Apr. 15, 1985, Ser. No. 723,249
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414282
Int. Cl.⁴ B60B *33/00*
U.S. Cl. 16—35 R **19 Claims**



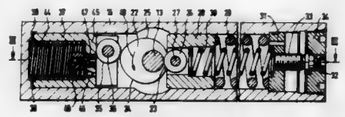
1. A caster, comprising a frame including at least one arm; a wheel mounted on said arm for rotation about a first axis; a carrier for said frame, said carrier and said frame defining a chamber and including portions surrounding said chamber and together forming part at least of a thrust bearing defining for said frame a swivel axis which is normal to said first axis; and a device for selectively permitting and preventing rotation of said wheel and swiveling of said frame, including a first component disposed in said chamber and having a portion which is rigid with said carrier, a second component disposed in said chamber and movably mounted on and sharing the movements of said frame about said swivel axis, and actuating means for moving said second component between a first position in which said first component holds said second component and said frame against swiveling and a second position in which said second component and said frame are free to swivel relative to each other.

4,658,467
LUGGAGE HANDLE
Edward Stolarz, Yorktown Heights, N.Y., assignor to Homa Locks, Inc., Danbury, Conn.
Filed Jan. 3, 1986, Ser. No. 815,939
Int. Cl.⁴ A45C *13/00*
U.S. Cl. 16—126 **3 Claims**

1. A luggage handle comprising a pair of spaced apart identical handle halves consisting of two vertical legs each having a cavity formed in an upper end thereof in facing relation to the other cavity, a horizontal arm extending at a right angle from each said vertical leg in spanning relation between said handle halves with a free end of the horizontal arm of one said handle half projected into the cavity of the other handle half and said horizontal arms having abutting surfaces along their lengths in overlapping relation, each said horizontal arm surface having formed thereon a wedge and a recess at selected locations therealong such that said wedge of one arm seats in the recess of the other arm and said wedges are in an interengaged relation with each other, said free ends of said horizontal arms and said cavities having cooperating cam surfaces effective to cam said horizontal arms towards each other so as to maintain said interengaged condition of said wedges, and a hollow sleeve disposed in covering relation about said arms in said positions thereof spanning between said handle halves, whereby said sleeve and the ends of said horizontal arms projected in said cavities confine relative movement of said arms to a vertical plane in which said wedges are interengaged to thereby obviate any inadvertent disassembly of said handle halves.



4,658,468
DOOR CHECK
Horst Tillmann, Ennepetal, and Giselher Sieg, Ratingen, both of Fed. Rep. of Germany, assignors to Dorma-Baubeschlag GmbH & Co. KG, Ennepetal, Fed. Rep. of Germany
Filed Dec. 5, 1984, Ser. No. 678,243
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1983, 3345004
Int. Cl.⁴ E05F *3/22*
U.S. Cl. 16—53 **14 Claims**



1. A door check, comprising a housing, a first component connectable to an upper part of the frame of a door and a second component connectable to an upper part of the pivotable panel of such door, one of said components comprising elongated guide means and the other of said components comprising an arm having a first end portion reciprocable along said guide means in response to movements of the panel between open and closed positions and a second end portion, said other component further comprising a shaft non-rotatably connected with said second portion of said arm and arranged to turn about its axis in said housing in response to movement of the panel with reference to the frame, cam means provided on said shaft in said housing and having first and second sections, means for transmitting to the first section of said cam means torque so as to urge said shaft to rotate in a panel-closing direction, said torque transmitting means comprising a first support movable in and reciprocably guided for movement by

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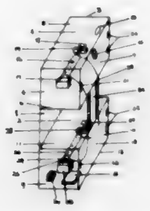
said housing at one side of said shaft and a first follower provided on said support and tracking said cam means, and damper means arranged to yieldably oppose rotation of said shaft in said direction, said damper means comprising a second support movable in and reciprocably guided for movement by said housing at the opposite side of said shaft and a second follower provided on said second support and tracking said second section of said cam means.

4,658,469

SANITARY DOOR HANDLE HAVING A MATERIAL ADVANCING MECHANISM

Junior F. Hawkins, 3120 W. 16th, Wichita, Kans. 67203

Filed May 27, 1986, Ser. No. 866,756
Int. Cl.⁴ B25G 1/00
U.S. Cl. 16—110 R **7 Claims**



1. A sanitary door handle device which permits a door to be opened without touching an area which was previously touched by others who had opened the same door comprising:
- a cabinet comprising a supply compartment and an exposed material compartment;
- a handle which extends between said compartments with means for advancing clean material immediately beneath said handle in such a manner that when grasping said Handle to open the door, the fingers will touch only said clean material and not said handle;
- a rotatable supply spool for clean material and means for securing said supply spool inside said supply spool compartment;
- a rotatable take-up spool for exposed material and means for securing said take-up spool inside said exposed material compartment;
- an electric motor and driving arrangement which will turn said take-up spool and wind said exposed material on said take-up spool and simultaneously advance clean material from said supply spool to said take-up spool, which is located immediately beneath said handle, when said motor is energized;
- an electric control circuit comprising means for energizing said motor when your hand is placed in front of the front panel light sensitive sensor and de-energizing said motor when said hand is removed from in front of said front panel light sensitive sensor;
- a control top panel light sensitive sensor secured in such a manner that said electric control circuit will de-energize said motor when normal room lighting is absent.

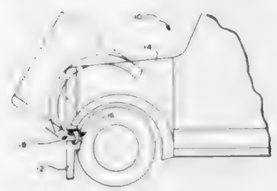
4,658,470

ADJUSTABLE HOOD HINGE ASSEMBLY

Joshua T. Oen, Castro Valley, Calif., assignor to Paccar, Inc., Bellevue, Wash.

Filed Oct. 17, 1985, Ser. No. 788,647
Int. Cl.⁴ E05D 7/06
U.S. Cl. 16—241 **1 Claim**

1. In a vehicle having a main body including a front end section and a hood pivotally connected at its front end with the front end section of said main body for movement between a completely closed position and a fully opened position, the improvement comprising:
- (a) first means connected with said front end section and said hood of said vehicle body and movable between various adjustable positions for adjusting the position of said hood with respect to the front end of said main body when the hood is in its closed position, said first means being located entirely under said hood when the latter is in its closed position, whereby to hide said first means from view from outside the vehicle, said first means including a first member fixedly connected to said hood for movement with the latter between its opened and closed positions and a second member pivotally connected at one point to said first member and at a second point to said front end section of said main body; and
- (b) second means connected with said first means for moving said first means between its various adjustable positions in order to adjust the position of said hood, said second means being accessible from outside the vehicle when the hood is in its closed position, whereby the hood can be adjusted without its having to be opened, said second



means including means for pivotally moving said first and second members relative to one another about a first axis through said first point and for pivotally moving both of said members about a second axis through said second point in order to cause the overall first means to move between its various adjustable positions, said means for pivotally moving said members including manually engagable means rotatably mounted on said first member and located outside the vehicle when said hood is in its closed position for pivotally moving said members between said various positions and an adjustment bolt connected to said manually engageable means, mounted for rotation about its own axis and threadedly connected to said second member such that rotation of the bolt about its axis in one direction or the other moves said first means between said various positions and wherein said manually engagable means includes a knob connected to said bolt, the rotation of said bolt by said knob causing said first member to pivot about said first axis and both of said members to pivot about said second axis in order to cause the overall first means to move between its various positions.

4,658,471

HINGE WITH NO TUBULAR PORTION AND METHOD OF PRODUCING THE SAME

Yoshiaki Nakanishi, Nara, Japan, assignor to Kitamura Iron Works, Ltd., Osaka, Japan

Filed Dec. 3, 1985, Ser. No. 804,300
Claims priority, application Japan, Dec. 28, 1984, 59-280066
Int. Cl.⁴ E05D 7/00
U.S. Cl. 16—224 **7 Claims**

1. A hinge with no tubular portion comprising:
- a left-hand side flap plate having on its right-hand end at least one shaft plate having at least one communication hole and at least one semicircular locking recess,
- a right-hand side flap plate having on its left-hand end at least one shaft plate having at least one communication hole and at least one semicircular locking recess,

said semicircular locating recesses coming in contact with each other to form a circular portion when the shaft plates of said right and left flap plates are fitted together,
- a ball having a washer fitted thereon, adapted to fit in said circular portion, and
- core shafts communicating with the opposite surfaces of the shaft plates through said communication holes and separated from each other by said washer.

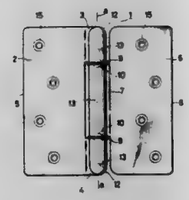
5. A method of producing a hinge with no tubular portion, comprising the steps of:

fabricating a left-hand side flap plate having on its right-hand end at least one shaft plate having at least one communication hole and at least one semicircular locating recess and a right-hand side flap plate having on its left-hand end at least one shaft plate having at least one communication hole and at least one semicircular locating recess,

fitting the shaft plates of said left-hand and right-hand side flap plates together to thereby cause said semicircular locking recesses to form a circular portion,

fitting in said circular portion a ball having a washer fitted thereon, and

forming core shafts communicating with the opposite surfaces of the shaft plates through said communication holes.



4,658,472

MOUNTABLE STRAP TYPE HINGE WITHOUT RIGID ARTICULATION AXIS

Jean Grenier, Pantin, France, assignor to Louis Vuitton, SA, Paris, France

Continuation of Ser. No. 776,991, Sep. 16, 1985, abandoned, which is a continuation of Ser. No. 531,910, Sep. 12, 1983, abandoned. This application Aug. 5, 1986, Ser. No. 892,470
Claims priority, application France, Sep. 14, 1982, 82 15485
Int. Cl.⁴ E05D 1/00
U.S. Cl. 16—225 **1 Claim**



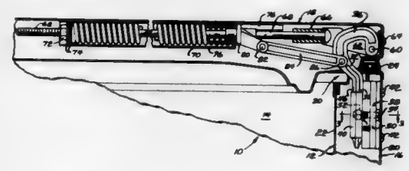
1. An improved hinge without rigid articulation axis of the type comprising:
- (a) first and a second double part jaws, said first jaw having a first inner end, a first outer end, a first portion including an inner and an outer segment and a second portion including an inner and an outer segment, said first jaw including a first groove formed in at least one of said first and second portions, said first portion having at least one first curved member projecting perpendicular from said first portion at the inner segment thereof, said first curved member extending substantially along and spaced from said inner segment of said second portion and including a free end, said first jaw to be secured to a first element extending outwardly from said first outer end in a latitudinal plane therewith, said second jaw having a second inner end, a second outer end, a third portion including an inner and an outer segment and a fourth portion including an inner and an outer segment, said second jaw including a second groove in at least one of said third and fourth portions, said third portion having at least one second curved member projecting perpendicular from said third portion at said inner segment thereof, said second curve member extending substantially along and spaced from said inner segment of said fourth portion and including a second free end, said second jaw to be secured to a second element extending outwardly from said first outer end in a latitudinal plane therewith, said second curved member being in alternating arrangement with said first curved member, said first and second jaws being hingedly connected to each other at said inner ends thereof;
- (b) connection means for connecting said jaws, including a supple strap having first and second cylindric selvedges and a central band including a longitudinal rotational center line along said central band, said first selvedge cooperatively engaging said first groove and said second selvedge cooperatively engaging said second groove, engagement of said selvedges making said supple strap integral with said first and second elements, said central band having a minimum width to permit free rotation of said first and second elements relative to each other, said first and second jaws being hingedly connected by said strap so that in a first position said first and second curved members are in substantially lateral alignment with each other and in a second position said first and second curved members are in substantially longitudinal alignment with said first and second free ends directed to the central area of the strap and resting thereon, thereby forming a single folding which coincides with said longitudinal rotational center line of said central band; and
- (c) means for producing a folding area along said central line of said central band, said means acting upon said central band, said means for providing said folding area including said first and second curved members.

4,658,473

CONCEALED FREEZER HINGE

Anthony C. Schema, Faribault, Minn., assignor to Truth Incorporated, Owatonna, Minn.

Filed Dec. 23, 1985, Ser. No. 812,747
Int. Cl.⁴ E05F 1/08
U.S. Cl. 16—290 **12 Claims**



1. A concealed hinge between the lid and the chest wall of a freezer, comprising:
- a hook-shaped support bracket having a leg and a bight, said leg being adapted for mounting within the chest wall and said bight defining substantially diametrically opposed first and second pivots and being substantially within the lid when the lid is closed;
- a rigid member pivotably mounted at one end to the first

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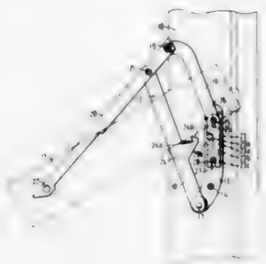
pivot and at the other end defining a fixed point within the lid at a selected radial distance from the first pivot;
means for mounting the lid to the rigid member; and
a compression spring member extending between the fixed point and the second pivot.

4,658,474

SWING WINDOW ARRANGEMENTS

Bjorn Andersen, Vatne, Norway, assignor to Kva. Spil Ltd., Spjelkavik, Norway

Filed Jan. 21, 1986, Ser. No. 820,980
Claims priority, application Norway, Jan. 22, 1985, 850252
Int. Cl.⁴ E05D *11/10*
U.S. Cl. 16—352 **11 Claims**



1. Swing window arrangement comprising:
(a) a window frame;
(b) a window casement connected to opposite sides of said window frame via a pair of pivot mountings each of which comprises a plate fastened to said window frame, said plate supporting upper and lower pivot arms about respective upper and lower pivot pins; and
(c) a child safety device incorporated in at least one of said pivot mountings and comprising a drop bolt first component arranged for axial movement on said pivot mounting plate and a second component having a stop-forming hook portion associated with said lower pivot arm enabing said hook portion to be swung with said pivot arm into and out of locking engagement with said first component at a location substantially closer to said upper pivot pin than to said lower pivot pin, one end of said first component being displaceably mounted on a first slide pin forming an extension of said upper pivot pin while its other end is displaceably mounted on a second slide pin fastened to said plate between said first and second pivot pins.

4,658,475

SIDE DOOR HINGE MECHANISM IN MOTOR VEHICLE

Eiichi Kinaga, Toyota, and Daiichi Shiraishi, Seto, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Oct. 10, 1984, Ser. No. 659,308
Claims priority, application Japan, Oct. 11, 1983, 58-157117[U]
Int. Cl.⁴ E05D *3/10*
U.S. Cl. 16—367 **7 Claims**

1. A hinge mechanism for a vehicle door comprising:
a vehicle frame including first means extending along said vehicle frame for mounting the door to said vehicle frame, the door also having second means extending along the door proximate said first mounting means for mounting the door to said vehicle frame, the door having an upper portion and a lower portion; and
support means extending between said first and second mounting mens for supporting the door, said support means including:
frame bracket means affixed to said first mounting means, said frame bracket means having an upper frame bracket means and a lower frame bracket means;
door bracket means secured to said second mounting means, said door bracket means having an upper door bracket means and a lower door bracket means;
support arms extending between said frame bracket means and said door bracket means wherein said support arms extending between said upper frame bracket means and said upper door bracket means are longer than said support arms extending between said lower frame bracket means and said lower door bracket means; and



pivot means at opposite ends of said support arms for pivotally attaching said support arms to said frame bracket means and to said door bracket means, wherein said pivot means includes rotary shafts individually mounted at opposite ends of each of said support arms, each of said rotary shafts aligned along independently inclined axes, and wherein said axes define a point of convergence beneath the hinge mechanism, enabling said upper portion of the vehicle door to be positioned away from said vehicle frame when the door is opened.

4,658,476

DEVICE FOR CONVEYING CHICKENS TO A SLAUGHTERING PLANT

Hendrikus G. van den Brink, Edeseweg 111, 6732 De Harskamp, Netherlands

Filed Nov. 28, 1984, Ser. No. 675,803
Claims priority, application Netherlands, Nov. 28, 1983, 8304072
Int. Cl.⁴ A22C *21/00*; **A01K** *37/00*
U.S. Cl. 17—11 **6 Claims**



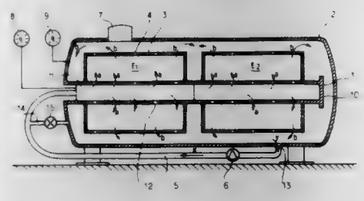
1. A device for conveying poultry to a slaughtering plant, comprising:
(a) first conveyor means for conveying poultry in spaced apart arrangement in an outfeed direction,
(b) leg spreading means for spreading the legs of each poultry on the first conveyor means,
(c) second conveyor means adjacent the first conveyor means,
(d) a plurality of longitudinally spaced pairs of leg clamps on the second conveyor means for clamping the spread legs of poultry,
(e) means mounting each pair of leg clamps on the second conveyor means for rotating the leg clamp pair to hang each poultry head down and facing the same direction,
(f) third conveyor means adjacent the second conveyor means,
(g) a plurality of longitudinally spaced leg and neck clamp assemblies on the third conveyor means each arranged to register with one pair of the leg clamps on the second conveyor means during simultaneous movement of said second and third conveyor means and operable to transfer a poultry hanging in the pair of leg clamps of the second conveyor means to a leg and neck clamp assembly of the third conveyor means,
(h) means mounting each leg and neck clamp assembly on the third conveyor means for rotating the leg and neck clamp assembly to move a clamped poultry to substantially horizontal position with the poultry legs projecting therefrom,
(i) fourth conveyor means adjacent the third conveyor means, and
(j) a plurality of longitudinally spaced slaughter hooks on the fourth conveyor means each arranged to register with one of the leg and neck clamp assemblies on the third conveyor means during simultaneous movement of the third and fourth conveyor means and operable to engage the poultry legs projecting from the leg and neck clamp assembly and transfer the poultry to the fourth conveyor means for delivery to the slaughtering plant.

4,658,477

METHOD OF MAKING A HYDROPHILIC COTTON "FLEECE", AND A FLEECE OBTAINED IN ACCORDANCE WITH THE EMPLOYMENT OF THIS METHOD, AND PIECES OF COTTON OF ANY FORM WHICH ARE OBTAINED BY CUTTING THIS FLEECE UP

Jean-Francois Caumont, Brionne, France, assignor to Tempo Sanys, Paris, France

Filed Jul. 26, 1984, Ser. No. 634,720
Claims priority, application France, Sep. 21, 1983, 83 15026
Int. Cl.⁴ D01B *9/00*
U.S. Cl. 19—66 CC **5 Claims**



1. A method of making a hydrophilic cotton fleece from fibers of raw cotton, in which the raw cotton is subjected successively to standard operations and preliminary beating and opening, more particularly on carding machines, so as to obtain cotton in flocks which are opened and physically cleaned, these flocks are taken to perforated cylinders on which they deposit themselves fairly uniformly to form a fleece which is fluffy and has practically no cohesion, this fleece is taken to a wetting bath consisting of warm water to which a wetting agent is added so as to obtain a fleece which is more compact and has a certain firmness by physical cohesion, and then, when the material leaves the wetting bath, this fleece is dried between calender rollers, and is wound on a perforated cylinder so as to obtain a coil which is then introduced into an autoclave to undergo boiling and bleaching operations, and then the coil is removed from the autoclave and squeezed and dried in a way known per se, characterised in that during the operations of boiling and bleaching in the autoclave, treatment liquids are caused to pass through each of the cylinder perforations perpendicular to its axis, thereby to circulate radially through the turns of the coil in such a way that a differential pressure is established between the liquid entering the coil and the liquid leaving it, by reason of the losses of load due to the difficulty which the liquid experiences in passing through the coil, and this differential pressure brings about displacement and tangling of the cotton fibers because of the effect of hydraulic tufting on the whole of the volume of cotton distributed over the coil, thus considerably increasing the cohesion of the fleece obtained after unwinding.

4,658,478

BUNDLING OF OBJECTS

Joseph R. Paradis, Holden, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 167,890, Jul. 14, 1980, Pat. No. 4,473,524. This application Sep. 14, 1984, Ser. No. 650,588
Int. Cl.⁴ B65D *63/00*
U.S. Cl. 24—16 PB **11 Claims**



1. A harnessing device comprising
a locking head,
a strap attached to said head and containing teeth on at least one side, and
a deflectable locking pawl in said head for wedging said strap therein,
said pawl containing at least a setting tooth which engages said strap during its insertion into said head and a wedging tooth which is out of contact with said strap during insertion into said head, wherein said locking head included an entry channel having at least one engagement tooth therein for said strap directly opposite the setting tooth; a ramp that extends from the entry thereof to said engagement tooth; said engagement tooth having a trialing edge which is substantially at a right angle with respect to the channel of said locking head; and a flat which is parallel to the axis of insertion of said strap into said head for engagement with the web of said strap.

4,658,479

ORGANIZER CLIP DEVICE AND KEY HOLDER

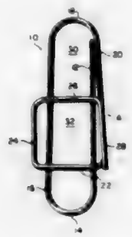
Calvin E. Sanders, P.O. Box 1246, Keaau, Hi. 96749

Continuation-in-part of Ser. No. 746,505, Jun. 19, 1985. This application Mar. 13, 1986, Ser. No. 839,192
Int. Cl.⁴ B42F *1/02*
U.S. Cl. 24—67.9 **14 Claims**

1. A clip device formed from a single, continuous length of multiply bent resilient material to define a plurality of loops, comprising:
(a) a first leg extending a first distance in a first direction from one end of the resilient material;
(b) a first arcuate portion extending from said first leg;

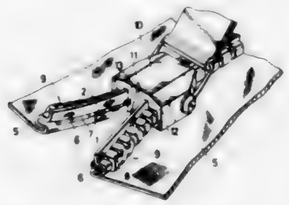
VOL 1077 ISS 3 APR 21 1987 UMI

(c) a second leg extending from said first arcuate portion a second distance in a second direction substantially opposite said first direction;
(d) a second generally arcuate portion extending from said second leg, whereby a generally oval portion is formed by said first and second legs and first and second arcuate portions;
(e) a third leg extending from said second arcuate portion a third distance in a third direction;
(f) a first rectangular loop portion extending at a generally right angle from said third leg substantially crossing and exerting a pressure on said first and second legs;



(g) a fourth leg extending from said first rectangular loop portion a fourth distance in a fourth direction at a generally right angle to said first rectangular loop portion; and
(h) a second rectangular loop portion extending from said fourth leg substantially crossing and exerting a pressure on at least one of said first and second legs;
(i) wherein an essentially rectangular portion is formed by said third and fourth legs and first and second rectangular loop portions, the essentially rectangular portion being a continuation of said oval portion and being positioned on and exerting a pressure on said oval portion.

4,658,480
FLUID-TIGHT SLIDE FASTENER
Koitsu Morioka, and Masahiro Kasayama, both of Kurobe, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed Jul. 25, 1986, Ser. No. 890,176
Claims priority, application Japan, Jul. 27, 1985, 60-116106[U]
Int. Cl.⁴ A41D *13/00*
U.S. Cl. 24—389 **5 Claims**



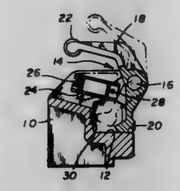
1. A fluid-tight slide fastener comprising:
(a) a pair of fastener stringers each including
(1) a fluid-tight tape,
(2) a series of discrete coupling elements mounted on said tape along an inner longitudinal edge portion thereof, each of said coupling element having a base portion, a leg portion and a head portion,
(3) said inner longitudinal edge portion of said tape being folded so as to extend around said base portion of each said coupling element,
(4) a series of generally U-shaped first clamping strips each surrounding said folded edge portion of said tape over said base portion of a respective one of said coupling elements, and
(5) a pair of top stops each mounted on the respective tape at a position adjacent to a top end of said series of coupling elements;
(b) a slider mounted on said pair of fastener stringers for movement along such two series of coupling elements to open and close the slide fastener, said slider having a generally Y-shaped guide channel for the passage of said two series of coupling elements; and
(c) each said top stop including
(1) an elongate plate of a generally I-shaped cross section substantially corresponding to the shape of the individual coupling element, said elongate plate having such a length as to be completely received in said guide channel of said slider when the slide fastener is fully closed, said folded edge portion extending around a base part of said elongate plate which part corresponds to said base portion of the individual coupling element, and
(2) an elongate second clamping strip of a generally U-shaped cross section substantially corresponding to the shape of the individual first clamping strip, said second clamping strip surrounding said folded edge portion of said tape over said base part of said elongate plate.

4,658,481
SAFETY RELEASE PIN FOR FIRE EXTINGUISHERS
Gerard Seyler, Elgin, and Donald R. Sloan, North Aurora, both of Ill., assignors to Pittway Corporation, Aurora, Ill.
Filed Jan. 17, 1986, Ser. No. 819,719
Int. Cl.⁴ B65D *33/34*; F16B *19/00*
U.S. Cl. 24—704 **13 Claims**



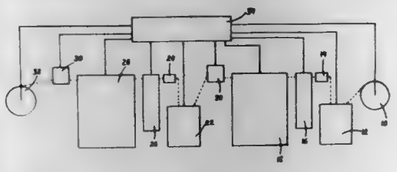
1. A safety release pin comprising a head portion, a cylindrical shank, a nose portion, and a locking portion, said shank extending from said head portion with the free end of said shank terminating in said nose portion, said shank having a portion of reduced diameter rearwardly of said nose portion including a pair of flat surfaces extending axially of said shank, at least one of said surfaces having a groove extending normal to the axis of said shank, said locking portion including an elongated locking member formed integrally with said shank rearwardly of said nose portion, said locking member defining a detent surface which extends generally normal to the axis of said shank whereby a force in a direction axially of said shank applied to said detent surface and translated to said nose portion through said locking member tends to rotate said nose portion about an axis extending parallel to said detent surface and normal to the axis of said groove, said locking member overlying said slot and having a fixed end and a free end, said fixed end being formed integrally with said shank near said end wall defining a pivot axis for said locking member, said locking member defining a cam surface which slopes downwardly from its free end towards its fixed end for receiving a force for pivoting said locking member about its pivot axis at least partially into said slot.

4,658,482
TENTER FRAME CLIP
Alfred Lechner, Punta Gorda, Fla., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 26, 1985, Ser. No. 769,412
Int. Cl.⁴ D06C *3/04*
U.S. Cl. 26—93 **7 Claims**



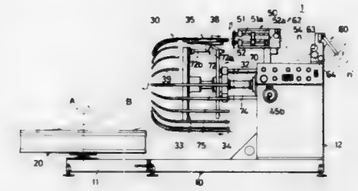
1. In a tenter frame clip comprising a body portion having an upwardly facing clamping surface and a clamping arm hingedly mounted above said clamping surface and having a lower web-engaging end, said clamping arm pivotable between an open position and a closed web-engaging position, said lower web-engaging end of said clamping arm, adapted to move into contact with said body portion when pivoted to said open position, the improvement of noise-reducing cushioning means of elastomeric material to cushion the contact between said lower web-engaging end of said clamping arm and said body portion.

4,658,483
YARN SHRINKING METHOD
George L. Baghdadi, 28 Geraldine Ct., Don Mills, Ontario M3A 1M9, Canada
Filed Apr. 26, 1985, Ser. No. 727,679
Int. Cl.⁴ D02J *1/22*
U.S. Cl. 28—219 **3 Claims**



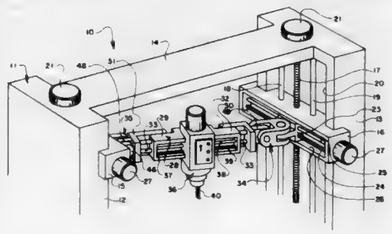
1. A method for twice shrinking thread and temporarily setting it in its twice shrunk condition and comprising the steps of passing thread continuously through a tank means containing a liquid, thereafter passing said thread through tension releasing means, and thereafter passing said thread through drying chamber means, whereby said thread is dried, and is simultaneously permitted to shrink a first time along its length into a first-shrunk condition, without being subjected to tension, passing said thread through second liquid tank means containing a liquid solution of a water soluble temporary shrink-enhancing and setting compound, said compound being removable by a subsequent washing step, passing said thread through tension releasing means, and thereafter passing said thread through drying chamber means whereby said thread is permitted to shrink a second time to a twice-shrunk condition, and whereby said shrink-setting compound is dried in said thread thereby temporarily setting and retaining said thread in its said twice-shrunk condition until said shrink-setting compound is removed in a subsequent washing, thereby releasing said thread to its said first-shrunk condition.

4,658,484
KNIT TAPE MANUFACTURING DEVICE
Seizo Morishita, Suita, and Tamotsu Sumoto, Toyonaka, both of Japan, assignors to Yugen Kaisha Manthree Shokai, Osaka, Japan
Filed Oct. 8, 1985, Ser. No. 785,891
Claims priority, application Japan, Sep. 10, 1985, 60-200891
Int. Cl.⁴ B21D *43/00*; B26D *3/00*
U.S. Cl. 29—2.15 **6 Claims**



1. A knit tape manufacturing device comprising:
a framework;
a driver supported on said framework;
a feeding and guiding mechanism composed of a plurality of feeding means which, arranged peripherally, are rotatively driven on said framework about a longitudinal axis by said driver through a power transmission mechanism and feeds under guidance along a longitudinal direction a circular knitted fabric stretched externally therearound;
an operating mechanism which operates said feeding means by said driver, said operating mechanism of said feeding means comprising a double shaft construction which changes the feeding speed by generating a relative difference between the rotary speeds of a hollow outer shaft and an inner shaft thereof, a geared power transmission means and relative difference adjustment means, said outer shaft being connected to said feeding and guiding mechanism and said inner shaft being connected to said operating mechanism; and
a cutting means for cutting spirally the rotating circular knitted fabric into a tape of width corresponding to the specific feed length, said cutting means is located adjacent to the forward end of said feeding and guiding mechanism.

4,658,485
MACHINE TOOL WITH ARTICULATED CROSSBEAM
Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan
Continuation-in-part of Ser. No. 643,092, Aug. 21, 1984, abandoned, which is a continuation of Ser. No. 400,225, Jul. 20, 1982, abandoned. This application Aug. 23, 1985, Ser. No. 768,724
Int. Cl.⁴ B23C *1/12*; B23D *1/14*; B23B *39/14*
U.S. Cl. 29—26 A **17 Claims**



1. In a machine tool, the combination of a frame having a pair of vertical columns substantially parallel to each other, a

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carrier block mounted for sliding movement along a first vertical axis on each of the columns, means for vertically adjusting each carrier block on its respective column, a slide block mounted for sliding movement in each of the carrier blocks about a second horizontal axis perpendicular to the first axis, a longitudinal crossbeam means disposed between the pair of vertical columns and having respective end portions, a first universal joint between one of the end portions of the crossbeam means and one of the slide blocks, a second universal joint between the other end portion of the crossbeam means and the other slide block, whereby the crossbeam means may articulate between the respective carrier blocks and between the pair of vertical columns, a tool saddle carried by the crossbeam means for sliding movement longitudinally thereof, means for adjusting the longitudinal position of the tool saddle relative to the crossbeam means, a tool element carried by the saddle for engagement with a workpiece, and means for driving the tool element.

4,658,486

FLUID-MEDIUM-HEATED CALENDER ROLL

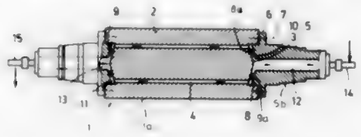
Joachim Schüsemann, Netphen, Fed. Rep. of Germany, assignor to Walzen Irle GmbH, Netphen, Fed. Rep. of Germany

Filed Apr. 8, 1985, Ser. No. 720,700

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 8410839[U]; Dec. 14, 1984, 8436564[U]

Int. Cl.⁴ B21B *31/08*; B60B *7/04*

U.S. Cl. 29—123 **13 Claims**



1. A paper calendering roll, comprising:

a substantially cylindrical one-piece roll body formed unitarily and directly with a rolling peripheral surface and formed unitarily and directly with a multiplicity of angularly equispaced axially extending heating bores in the material of said body proximal to said rolling peripheral surface whereby said bores are formed exclusively in and are exclusively defined by said material of said body, said body having a pair of cylindrical annular formations composed of said material projecting axially at opposite ends thereof and integral and unitary with the remainder of said body, each of said cylindrical annular formations surrounding an inner portion of said body defining a respective recess opening axially outwardly at the respective end of said body, said recesses having bottom surfaces, each of said bores opening into a respective one of said recesses at each end of said body; and

respective flange journal stubs formed with end faces defining respective gaps with the bottoms of said recesses, said gaps communicating with said axial heating bores, at least one of said stubs being provided with an axially extending communication bore communicating with at least one of said gaps for passing a heating medium through said axial heating bores, said heating medium being distributed to said axial heating bores by said one of said gaps and being recovered from said axial heating bores by the other of said gaps, said stubs having annular flanges bolted to end faces of said formations and with cylindrical bosses extending into said formations and provided with the end faces of the stubs which define said gaps with the bottoms of said recesses.

4,658,487

METHOD FOR THE MANUFACTURE OF A PISTON

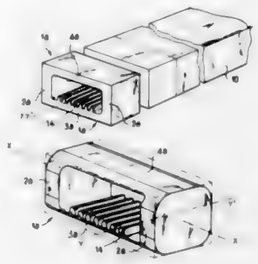
Jean Gachot, 26 bis avenue de Paris, 95230 Soisy Sous Montmorency, France

Filed Jun. 10, 1980, Ser. No. 158,155

Claims priority, application France, Jul. 3, 1979, 79 17188

Int. Cl.⁴ B23P *15/10*

U.S. Cl. 29—156.5 R **8 Claims**



1. Method for the manufacture of a rack piston, said piston comprising at least one head, at least one transmission member extending traversely to the head, and a rack fast to the transmission member and arranged longitudinally with respect to the axis of the head, said method comprising extruding a profiled bar whose profile envelops essentially that of the piston and has a wing provided with teeth whose profile is that of the teeth of the finished rack, said profiled bar having a uniform cross-sectional configuration throughout its length and said teeth extending lengthwise of the extruded bar, cutting off slices from this profiled bar, the width of each slice being at least equal to the maximum diameter of the piston, and removing by machining the material of the profiled slice which extends beyond the desired profile for the piston, said machining being effected by turning the material of the profiled slice about an axis which is both perpendicular to the length of the extruded bar from which said slice was cut and parallel to the longitudinal direction of the rack.

4,658,488

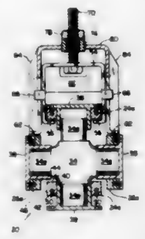
DRIVE-LINE PULLER

Park L. Johnstead, 2404 SE. Gladstone, Portland, Oreg. 97202

Filed Feb. 28, 1985, Ser. No. 706,656

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—259 **8 Claims**



1. In combination with a universal joint including first and second yoke members, each having a pair of opposed first and second collars which seat respective press fit bearings, and a cross shaft cooperating with said bearings to mount said yoke members, an apparatus for removing said press fit bearings comprising:

pulling means adapted for unsecured abutting contact with said first collar of said first yoke member;

pushing means adapted for unsecured abutting contact with both said collars of said second yoke member;

coupling means for coupling said pushing and pulling means in nested relationship with said pushing means being laterally outboard of said pulling means, while permitting relative movement therebetween;

force applying means urging said pulling means and said pushing means in opposite directions to cause said pulling means to exert a pulling force on said first collar of said first yoke member and said pushing means to exert an opposite pushing force on both said collars of said second yoke member, thereby to force the press fit bearing seated by said second collar of said first yoke member out of its bearing seat to facilitate its removal.

4,658,489

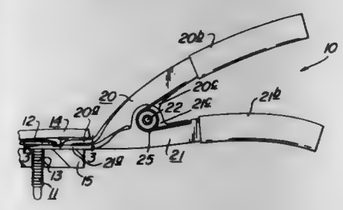
CLIP REMOVING TOOL

Harry R. Johnston, Coatesville, Pa., assignor to Mega Enterprises, Inc., Coatesville, Pa.

Filed Apr. 14, 1986, Ser. No. 851,496

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—268 **7 Claims**



1. For use in removing a clip having a head and a depending shank anchored below a surface, a prying tool comprising: a lower member having a planar jaw portion adapted to be positioned above said surface and having an integral handle portion extending distally therefrom, an upper member having a planar jaw portion adapted to engage below the head of said clip and having an integral handle portion extending distally therefrom in spaced relation with said lower member handle, means pivotally connecting said upper and lower members for causing said jaw portions to move apart when said handle portions are squeezed together, said jaw portion of said upper member having a front opening recess adapted to receive the shank of the clip, said jaw portion of said lower member having a front opening recess for receiving in coplanar relation the jaw portion of said upper member, said jaw portions of said members having chamfered upper surfaces at their proximal ends to facilitate their insertion underneath the head of the clip, said jaw portions of said members being thin and elongate and extending in coplanar relation for a first portion of their lengths and in closely spaced overlapping relation for a second portion of their lengths to provide a thin jaw profile enabling the jaws to be inserted to a predetermined depth inwardly of the edge of a panel, whereby the clip can be pried loose by inserting the jaw portions of the members between its head and underlying surface and squeezing the handles together.

4,658,490

SIDING INSTALLATION TOOL

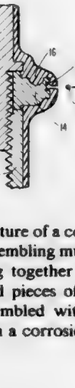
Daniel J. Czelusniak, 80 Loudville Rd., East Hampton, Mass. 01022; Robert J. Cooke, 456 Russellville Rd., Westfield, Mass. 01085, and Donald K. Grolean, 18 Jonathan Judd Cir., Southampton, Mass. 01073

Filed Aug. 20, 1985, Ser. No. 767,787

Int. Cl.⁴ B25B *27/14*

U.S. Cl. 29—271 **2 Claims**

1. A siding installation tool comprising a rigid and elongated angle iron having a pair of wing members forming a right angle, a pluraility of holding blocks affixed to both wing members of said angle iron, a plurality of retainer assemblies having locking positions and contact portions, said locking portions releasably engagable with said holding blocks, said assemblies



and said holding blocks adapted to hold a siding corner post in said angle iron by leg and groove means on said contact portions dimensioned for engaging slots and edges conventionally found in such a siding corner post.

4,658,491

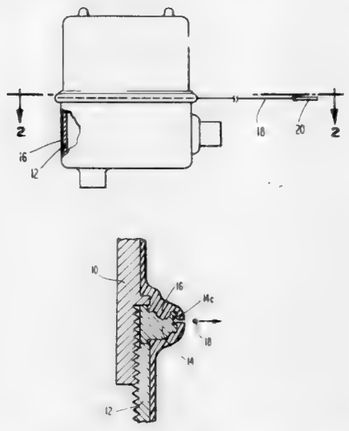
METHOD OF MAKING A CORROSION PROOF MULTI-PIECE HOUSING

Gary Pletcher, 18 W. Sixth St., Lansdale, Pa. 19446; Robert C. Henderson, 580 Jacksonville Rd., Ivyland, Pa. 18974; Robert Tiley, 68 Winding La., Feasterville, Pa. 19047, and Michael J. Cesaro, 104 Gerstley Rd., Hatboro, Pa. 19040

Filed Jul. 1, 1985, Ser. No. 750,296

Int. Cl.⁴ B23P *17/00*; F16L *11/12*

U.S. Cl. 29—423 **3 Claims**



1. A method of manufacture of a corrosion-resistant housing comprising the steps of assembling multiple corrosion-susceptible pieces of said housing together with spacer means, said spacer means spacing said pieces of said housing a distance further apart then if assembled without said spacer means, coating this assembly with a corrosion-resistant material, cut-

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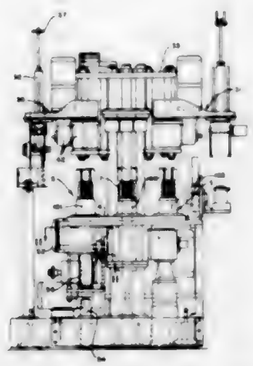
ting said corrosion-resistant coating apart in a cutting operation such that the width of the cut is less than said distance, and removing said spacer therefrom, whereby upon assembly of said coated housing pieces together without said spacer, portions of said coating in the vicinity of said spacer are brought into compression with one another whereby an effective seal is formed therebetween.

4,658,492

COIL ASSEMBLY MACHINE

Vernon E. Kieffer, and Andrew J. Kliethermes, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 21, 1984, Ser. No. 684,805
Int. Cl.⁴ B23Q *41/02*; H02K *15/00*
U.S. Cl. 29—564.6 **11 Claims**



1. A system for constructing a plurality of stator assemblies for dynamoelectric machines, comprising:

means for constructing a plurality of core assemblies for said stator assembly plurality at a first station, said core assemblies each having a plurality of closed bottom, winding receiving slots formed in them;

means for transporting said core assemblies to a second station;

means for at least partially inserting insulation for the closed bottoms of the slots of said core assemblies at said second station;

means for transporting said core assemblies to a third station;

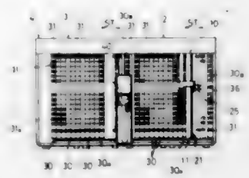
an assembly apparatus at said third station, said assembly apparatus including first means for automatically removing a core assembly from said last mentioned transporting means and placing said core assembly in a first position; means for moving a winding of a dynamoelectric machine through a plurality of positions, said last mentioned means including a turn table mounted for rotation, said turn table including a plurality of stations each located at a predetermined location on said turn table, said turn table being rotatable through 360°, each of said stations including an upper tooling assembly of an axial insertion device, said automatic removing and placing means placing said core on said windings at one of said position pluralities; means for constructing a plurality of wedges operatively associated with at least one of said position plurality, said wedge constructing means including material for said wedges having a width dimension and a length dimension, said construction means advancing said material during construction of said wedge a length dimension substantially shorter than the width dimension; means for inserting said windings and said wedges at another of said position plurality; second means for automatically removing said core assembly and windings at a third of said position plurality; and means for adjusting the movement of said first automatic removing and placing means and said second automatic removing means operatively connected to said respective means.

4,658,493

TOOL STORING APPARATUS

Hideki Saeki, and Isao Kanematsu, both of Inuyama, Japan, assignors to Yamazaki Machinery Works, Ltd., Niwa, Japan

Filed Aug. 6, 1985, Ser. No. 762,836
Claims priority, application Japan, Aug. 10, 1984, 59-168647; Aug. 10, 1984, 59-168648; Aug. 14, 1984, 59-169844; Aug. 14, 1984, 59-169845
Int. Cl.⁴ B23Q *3/157*
U.S. Cl. 29—568 **4 Claims**



1. A tool storing apparatus comprising:

a frame, defining a plane having perpendicular longitudinal and latitudinal axes;

a plurality of tool racks located within said frame, each tool rack being longer along the longitudinal axis than along the latitudinal axis, said tool racks being mounted so as to be moveable along the latitudinal axis so as to define a predetermined space between two adjacent tool racks;

guide means, located within said frame, for guiding the motion of said tool racks; and

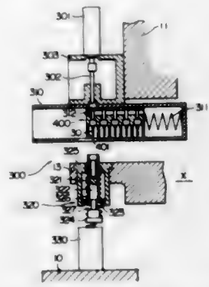
a plurality of tool pockets, arranged longitudinally in each tool rack for storing tools therein, each tool having a tool holder associated therewith.

4,658,494

APPARATUS FOR DRILLING PRINTED CIRCUIT BOARDS

Tamio Ohtani, Hadano; Yasuhiko Kanaya, Machida; Hiroshi Aoyama, Ebina, and Nobuyasu Nozaka, Sagamihara, all of Japan, assignors to Hitachi Seiko Ltd., Tokyo, Japan

Filed May 28, 1986, Ser. No. 867,553
Claims priority, application Japan, May 28, 1985, 60-113096; Oct. 18, 1985, 60-231225; Dec. 25, 1985, 60-198382[U]
Int. Cl.⁴ B23Q *3/157*
U.S. Cl. 29—568 **10 Claims**



1. An apparatus for automatically forming openings of predetermined sizes and locations in printed circuit boards, having: a movable work table for supporting printed circuit boards to be worked; at least one drilling unit provided with means for opening and closing a collet thereof, said drilling unit being movable relative to said work table; means for driving said work table and said drilling unit to move relative to each other; tool holding means mounted on said work table to hold a plurality of drills each having a collar fitted around a shank of said drill at a predetermined position; and a control unit for controlling operations of said drilling unit and said driving means in a predetermined manner that the drilling unit is brought into alignment with a desired drill held by said drill holding means, the collet of said drilling unit grips the shank of said desired drill with the former abutting against the collar of the latter, and said drilling unit is then moved to a predetermined position above the printed circuit boards to perform drilling, wherein the improvement comprises:

another tool holding means of a magazine type removably mounted above said work table for holding a plurality of the drills arranged parallel to each other; and

tool transferring means operative under the control of said control unit to push a desired drill out of said magazine type tool holding means, hold the pushed-out desired drill and convey the same to a position where said pushed-out desired drill is in alignment with said drilling unit.

4,658,495

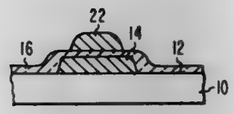
METHOD OF FORMING A SEMICONDUCTOR STRUCTURE

Doris W. Flatley, Hillsboro Township, Somerset County, and Alfred C. Ipri, Hopewell Township, Mercer County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 28, 1986, Ser. No. 856,278
Int. Cl.⁴ H01L *21/473*
U.S. Cl. 29—571 **16 Claims**







1. A method of forming a silicon dioxide layer on silicon islands on an insulating substrate comprising:

(a) providing an insulating substrate having at least one silicon island disposed on a major surface thereof;

(b) oxidizing the surface of the silicon island to form a layer of silicon dioxide thereover;

(c) depositing a layer of silicon on the oxidized island and the substrate adjacent thereto;

(d) depositing a layer of planarizing material over the substrate;

(e) etching the planarizing layer for a time sufficient to expose the surface of the silicon layer overlying the island;

(f) etching the silicon layer for a time sufficient to expose the layer of silicon dioxide on top of the island;

(g) removing any remaining planarizing layer; and

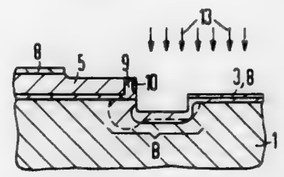
(h) oxidizing the remaining silicon layer.

4,658,496

METHOD FOR MANUFACTURING VLSI MOS-TRANSISTOR CIRCUITS

Willy Beinvogl; Gerhard Enders, and Ernst-Guenter Mohr, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 2, 1985, Ser. No. 783,161
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1984, 3443580
Int. Cl.⁴ H01L *21/265, 21/308*
U.S. Cl. 29—571 **11 Claims**



1. In a method for the manufacture of VLSI MOS-transistor circuits on a semiconductor substrate wherein source/drain regions of n-channel or p-channel transistors are provided by ion implantation using the gate as an implantation mask, the side walls of said gate having spacer layers which act as implantation barriers, while simultaneously generating buried contacts between a gate interconnect and the diffused regions in the semiconductor substrate, the improvement which comprises:

etching contact holes in said substrate prior to deposition of said spacer layers,

depositing and back-etching a spacer layer on the side wall of said gate interconnect and at the side wall of said gate, and

thereafter diffusing dopant into said contact holes and said spacer layers while generating source/drain regions in said substrate.

4,658,497

METHOD OF MAKING AN IMAGING ARRAY HAVING A HIGHER SENSITIVITY

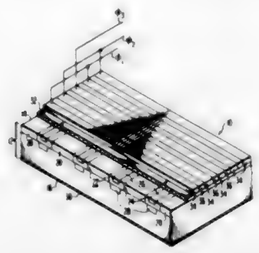
Eugene D. Savoye, Lancaster, Pa.; Walter F. Kosonocky, Skillman, N.J., and Lloyd F. Wallace, Coatesville, Pa., assignors to RCA Corporation, Princeton, N.J.

Division of Ser. No. 455,332, Jan. 3, 1983, abandoned. This application Jun. 3, 1985, Ser. No. 740,719
Int. Cl.⁴ H01L *21/26*
U.S. Cl. 29—572 **6 Claims**

1. In a method of fabricating an imaging array in a semiconductor body of first conductivity type which has a major surface, which method includes the steps of forming spaced apart blooming drains extending a distance into the major surface and comprising regions of a second conductivity type, forming channel stops around the blooming drains which comprise regions containing an excess concentration of first type conductivity modifiers, forming charge transfer channels extending a distance into the body from the major surface which comprise regions of a second conductivity type whereby there is at least one channel stop with a blooming drain therein adjacent to each channel;

the improvement which comprises forming directly under each blooming drain a buried barrier region containing a

greater concentration of first type conductivity modifiers than the semiconductor body and the channel stop and



extending a further distance into the body from the channel stop containing the blooming drain.

4,658,498

PROCESS FOR PRODUCING RECHARGEABLE ELECTROCHEMICAL DEVICE

Junichi Yamaura, Osaka; Yoshinori Toyoguchi, Yao; Tooru Matsui, Moriguchi, and Takashi Iijima, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

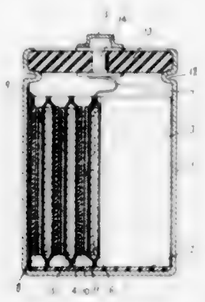
PCT No. PCT/JP84/00171, § 371 Date Dec. 4, 1984, § 102(e) Date Dec. 4, 1984, PCT Pub. No. WO84/04001, PCT Pub. Date Oct. 11, 1984

PCT Filed Apr. 5, 1984, Ser. No. 681,848

Claims priority, application Japan, Apr. 7, 1983, 58-61624

Int. Cl.⁴ H01M *6/00, 6/14*

U.S. Cl. 29—623.1 **24 Claims**



1. A process for producing a rechargeable electrochemical device comprising a reversible cathode, a non-aqueous electrolyte containing lithium ions and an anode made of an lithium-free alloy which absorbs therein lithium ions from the electrolyte on charging to form an alloy with lithium and desorbs lithium as ions into the electrolyte on discharging, said alloy being one which would not be finely powdered even if lithium is absorbed therein to an extent that the potential of said alloy becomes equal to that of lithium metal, wherein said process comprises connecting said alloy to lithium metal so that they are electrically conductive to each other, incorporating said alloy connected to lithium metal into the electrochemical device, and then contacting said alloy connected to lithium metal with the liquid electrolyte in said device to form an alloy absorbing lithium in said alloy.

4,658,499

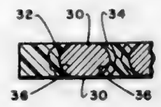
BIPOLAR BATTERY PLATE

John J. Rowlette, Monrovia, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 346,414, Feb. 18, 1982, Pat. No. 4,542,082. This application Jul. 15, 1985, Ser. No. 755,320

Int. Cl.⁴ H07M *6/00*

U.S. Cl. 29—623.1 **12 Claims**



1. A method of forming a bipolar plate for a battery comprising the steps of:

disposing metal pellets in each aperture of a perforated thermoplastic sheet to form an assembly;

heating and pressing the assembly to seal the pellets into the apertures with first and second surfaces exposed in the opposite faces of the sheet.

4,658,500

APPARATUS FOR FABRICATING A PLAIN (SLIDING) BEARING

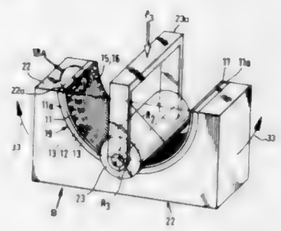
Ulrich Engel, Bad Schwalbach; Fritz Niegel, Östrich-Winkel, and Jürgen Gröschen, Wiesbaden-Schierstein, all of Fed. Rep. of Germany, assignors to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 29, 1985, Ser. No. 728,076

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1984, 3415929

Int. Cl.⁴ B21D *53/10;* **B23P** *19/04*

U.S. Cl. 29—724 **7 Claims**



1. Apparatus for producing a sliding bearing, comprising:

first coating means for covering a bearing base element with a first layer having a surface;

forming means for providing said surface with indentations and intermediate elevations;

second coating means for applying a second layer of predetermined thickness onto said first layer wherein said second layer is of softer material than the material of said first layer; and

treating means for forming portions of said second layer covering the elevations through plastic shaping to flow into the indentations so as to obtain a levelled and smooth surface and to provide said second layer of requested thickness above the elevations.

4,658,501

AUTOMOBILE ASSEMBLING APPARATUS

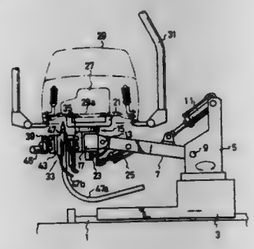
Hiroshi Fujii; Shunji Sakamoto, both of Higashi-Hiroshima, and Kunji Kimura, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 9, 1985, Ser. No. 753,141

Claims priority, application Japan, Jul. 10, 1984, 59-142879

Int. Cl.⁴ B23P *21/00, 19/00;* **B66C** *23/00*

U.S. Cl. 29—787 **8 Claims**



1. A vehicle assembling apparatus including part transfer arm means supported at one end for swingable movements about a vertical axis and a horizontal axis, part carrying means provided at the other end of the transfer arm means for carrying a part to be assembled, fastener driving means for driving fasteners, support means for supporting the fastener driving means on said part carrying means for swinging movements about a vertical axis and for adjustment of the distance between the part carrying means and the fastener driving means, said support means including a swingable arm mounted on the part carrying means for swingable movements about a vertical axis with respect to the part carrying means, the fastener driving means being slidably supported on the swingable arm for movement along the swingable arm, and position adjusting means for adjusting the position of the fastener driving means on the swingable arm.

4,658,502

SHEET METAL JOINING APPARATUS

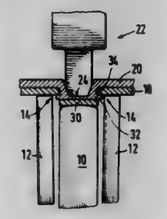
Gerd-Jürgen Eckold, Silberhutte 11, 3424 St. Andreasberg, and Hans Maass, Germelmannstr. 12, 3422 Bad Lauterberg, both of Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 713,677

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 8408792[U]; Mar. 22, 1984, 8408793[U]

Int. Cl.⁴ B23P *19/00*

U.S. Cl. 29—798 **14 Claims**



1. An apparatus for joining two adjacent sheet metal pieces comprising a female die having a central anvil member provided with a working face and support members adjacent said anvil member, each support member projecting beyond a working surface of said anvil member and having cutting edges at the ends of said projections, said support members being adapted to flex away from said anvil member, and a male die having a working surface opposite said anvil working face, said male die working surface having width dimensions less than the distance at which said support member cutting edges are spaced apart, said male die being adapted to be moved and pressed toward said anvil working face whereby when two adjacent sheet metal pieces are positioned between said male and female dies and said male die is moved and pressed toward said anvil working face, the first sheet metal piece, adjacent said male die, is deformed but not cut and the second sheet metal piece, adjacent said anvil working face, is deformed and cut by said cutting edges, the deformation of said first sheet causing a swagging of the material thereof beyond the cut portions of said second sheet so as to join the two sheet metal pieces.

4,658,503

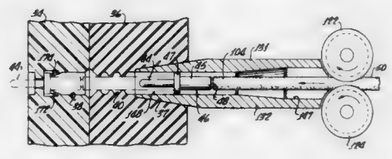
METHOD AND APPARATUS FOR TERMINAL INSERTION

Homer L. Eaton, Leucadia, Calif., assignor to MTS Vektronics Corporation, Carlsbad, Calif.

Filed Sep. 4, 1984, Ser. No. 646,949

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—854 **22 Claims**



1. A method of inserting into a connector aperture a wire having a first terminal fixed to a first end of the wire, said method comprising the steps of:

mounting a connector having a connector aperture upon a connector support,

grasping said first terminal with a pair of rollers,

enclosing the terminal in a protective quill, moving the rollers together with the quill relative to the support and toward the connector aperture, thereby positioning the quill adjacent the connector aperture, and

rotating the rollers, thereby driving the terminal from the quill into the connector aperture, whereby the quill is moved toward the connector aperture with the terminal enclosed in and protected by the quill, and the terminal is then driven from the protective quill into the connector aperture.

4,658,504

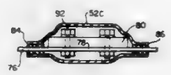
METHOD FOR INSULATING CONDUCTOR JOINTS PARTICULARLY BUS BARS AND INSULATED BUS BAR APPARATUS

Semahat D. Sinharoy, Monroeville Boro, and Norman Davies, Penn Township Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1985, Ser. No. 768,773

Int. Cl.⁴ H01R *43/00*

U.S. Cl. 29—873 **7 Claims**



1. A method for removably electrically insulating an electrical conductor, comprising the steps of:

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surrounding a portion of the conductor with a flat sheet of heat shrinkable electrically insulating material;
abutting any two portions of the inner surface of the electrically insulating material to each other which will cause said portion of said conductor to be enclosed by said flat sheet;
altering the thermal bonding capability of the two abutting portions to prevent cohesion thereof under the influence of the application of heat;
applying heat to the heat shrinkable insulating material to shrink the non-abutted portion of said flat sheet to form a mass of electrical insulation on said conductor which is generally the shape of said conductor;
removably securing the non-cohered portions together for subsequent removal of the entire mass of electrical insulation from said conductor; and
altering the thermal bonding capability of the two abutting portions comprising using a heat sink in the area of the two abutting portions to direct heat away from said two abutting portions.

4,658,505
RAZOR HANDLE FOR SUPPORTING A DETACHABLE SHAVING UNIT
Anthony J. Williams, Horsehurch, England, assignor to Wilkinson Sword Limited, High Wycombe, England
Filed Mar. 12, 1986, Ser. No. 839,012
Claims priority, application United Kingdom, Mar. 15, 1985, 8506831
Int. Cl.⁴ B26B *21/00*
U.S. Cl. 30—47 **6 Claims**



1. A razor handle comprising a pair of co-linear oppositely-directed pivots for detachably supporting thereon a shaving unit of the pivotal type (said unit having one or more blades contained within a housing, and the housing having spaced pivot supports thereon for receiving a pair of pivots of a handle to support the shaving unit in the handle for pivotal movement about an axis containing said pivots), said handle further comprising a pair of spaced apart supporting arms carrying said pivots at the forward ends of the arms, spring means secured to the handle and connected to the rearward end of the arms and acting on each arm independently to urge it in a rearward direction and to oppose movement of the arms away from each other, cam means engageable with the respective arms and effective in a first sense to move the arms apart against the force of said spring means in response to forward movement of the arms relative to the cam means into a unit-released position and in a second sense to permit the arms to move towards each other into a unit-locked position under the return force of said spring means in response to rearward movement of the arms, at least one abutment on the handle offset from said axis and against which the unit in the locked position is spring-biassed by said spring means, the spring means permitting the unit to move pivotally about the said axis through the pivots and also about an axis transverse to a plane containing said arms.

4,658,506
DEVICE IN CLEARING SAWS
Göran A. Nilsson, Sandarne, Sweden, assignor to Electrolux Motor AB, Sweden
Filed Jun. 13, 1985, Ser. No. 744,276
Claims priority, application Sweden, Jun. 25, 1984, 8403373
Int. Cl.⁴ B27B *9/00*
U.S. Cl. 30—371 **8 Claims**



1. A device for use with a clearing saw of the type having a rotatable circular saw means mounted on a portable frame and the periphery of which saw means is at least partially exposed or capable of being exposed to permit sawing and cutting through a first tree trunk,
said device comprising at least one arm mounted on the frame at a joint for pivotal movement about a pivot axis of the joint,
an abutment member connected to the arm and extending generally transverse to a radius from the axis of rotation of the saw means, said abutment member located outwardly beyond the periphery of the saw means,
the said transverse extent of said abutment member being an at least partly arcuate plate which is concave and widens outwards away from the arm and thus comprising a means for positively holding the saw means spaced from a second tree trunk which is closely adjacent the said first tree trunk, as the saw means cuts through the first tree trunk on one side or the other of said arm and abutment member.

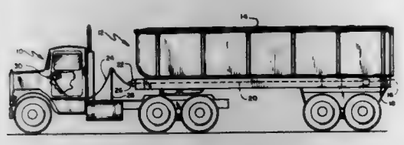
4,658,507
SAFETY DEVICE FOR POWER DRIVEN CHAIN SAWS
Albert A. Hazen, 4332 Greensboro, Troy, Mich. 48098
Filed Jan. 10, 1985, Ser. No. 690,202
Int. Cl.⁴ B23D *57/02*
U.S. Cl. 30—382 **10 Claims**



1. An improved chain saw of the power driven type adapted to be held by an operator using two hands, said improved chain

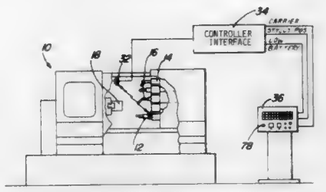
saw having a housing means and a cutting chain means extending from said housing means, said housing means further including a first handle means disposed remote from said cutting chain means and a second handle means disposed between said first handle means and said cutting chain means wherein said improvement comprises:
first wrist support means fixedly interconnected with said housing means at a first predetermined location thereon between said first handle means and said second handle means, said first wrist support means extending from said first predetermined location in a direction generally away from said cutting chain means such that, when said improved chain saw is held by an operator, and the operator grips said first handle means by a first hand interconnected with a first arm by a first wrist, said first wrist support means cooperates with the first arm of the operator to inhibit inadvertent rotation of the first wrist; and
a second wrist support means fixedly interconnected with said housing means at a second predetermined location thereon between said second handle means and said cutting chain means, said second wrist support means extending from said second predetermined location in a direction generally away from said cutting chain means and beyond said second handle means such that when said improved chain saw is held by an operator and the operator grips said second handle means by a second hand interconnected with a second arm by a second wrist, said second wrist support means cooperates with the second arm of the operator to inhibit inadvertent rotation of the second wrist.

4,658,508
ELECTRONIC LEVEL MEASURING SYSTEMS FOR TRUCK TRAILERS
Neil G. Oberg, Longmont, Colo., assignor to Cardel, Inc., Loveland, Colo.
Filed Jan. 30, 1986, Ser. No. 824,114
Int. Cl.⁴ G01C *9/06;* **B60Q** *1/52*
U.S. Cl. 33—333 **5 Claims**



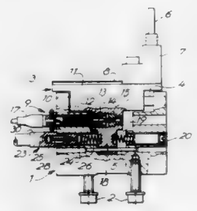
1. An electronic level measuring device for use with a truck having a tractor and a trailer frame, said device comprising:
a remote lever sensor for attachment to the rear of the trailer frame, said sensor providing an output signal which is proportional to the angle at which the trailer frame is tilted laterally from the horizontal and which is of one polarity when the trailer frame is tilted to the left and is of opposite polarity when the trailer frame is tilted to the right;
a source of electrical power connected to said sensor;
a meter for mounting in the cab of the tractor which provides a continuous reading of the amount of the angle of tilt and the direction of tilt of the trailer frame is response to said output signal and provides a warning signal when the angle of tilt exceeds a predetermined amount;
a first conduit having a first end connected to said level sensor;
a junction box mountable at the front of the trailer frame, a second end of said first conduit being connected to said junction box;
a meter box in which said meter is mounted;
a second conduit having a first end connected to said meter box; and
a quick disconnect connected to the second end of said second conduit for connecting said first and second conduits together at said junction box.

4,658,509
PROBE HAVING LOW BATTERY DETECTION/TRANSMISSION FEATURE
Richard O. Juengel, Romeo, Mich., assignor to GTE Valeron Corporation, Troy, Mich.
Filed Sep. 12, 1985, Ser. No. 775,425
Int. Cl.⁴ G01B *7/02*
U.S. Cl. 33—558 **11 Claims**



1. In an inspection system having a battery operated probe with a moveable stylus adapted to move from its rest position upon contact with an object, the probe including optical transmission means having at least one optical device for emitting an optical transmission containing information about the stylus position, and remote receiver means for receiving the optical transmission from the probe, wherein the improvement comprises:
first means in the probe for detecting a low battery condition;
second means in the probe for driving the optical device at a frequency that is capable of being detected by the remote receiver means, said second means driving said optical device in a first predetermined manner when the stylus is in a rest position, said second means driving the optical device in a second predetermined manner when the stylus moves from its rest position upon contact with an object, and said second means driving said optical device in a third predetermined manner in response to detection of a low battery condition by the first means whereby the same optical device is used to transmit both stylus position information and low battery information to the remote receiver.

4,658,510
SENSOR FOR DEVICES FOR MEASURING COMPARATIVE LINEAR MAGNITUDES
Adriano Zanier, Prilly, Switzerland, assignor to Tesa S.A., Renens, Switzerland
Filed Aug. 1, 1985, Ser. No. 761,413
Claims priority, application Switzerland, Sep. 20, 1984, 4505/84
Int. Cl.⁴ G01B *5/00*
U.S. Cl. 33—172 E **1 Claim**



1. A sensor for devices for measuring comparative linear

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magnitudes of parts to be checked held on a suitable support, comprising:

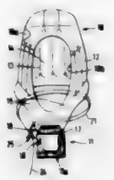
(a) a reference body;
(b) means for fastening said body to said suitable support;
(c) a bearing face in said reference body;
(d) a linear guide affixed to said reference body;
(e) a movable body displaceable along said linear guide
(f) a stop affixed to said movable body;
(g) two opposed rest faces on said stop;
(h) a measurement finger fastened to said movable body;
(i) displacement pick-up detection means affixed to said reference body and displacement pick-up detection means affixed to said movable body for providing signals representative of the direction and amplitude of the relative displacements of said reference body and movable body with respect to a preadjusted zero;
(j) a first compression spring interposed between said bearing face and one of the two opposed rest faces of said stop;
(k) limited stroke pusher means mounted in said reference body for limited extension and limited retraction motions therein; and
(l) a second compression spring interposed between said limited stroke pusher means and the other of the two opposed rest faces of said stop, whereby said stop is subjected to permanent and opposed resilient bias by said first and second compression springs, and a resilient pressure of the measurement finger against the part to be checked as well as its disengagement thereof occur respectively at the ends of the extension and retraction motions of said limited stroke pusher means and under the control of the elastic constancy and active length of said first and second compression springs.

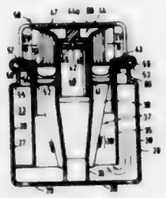
4,658,511

ELECTRIC HAIR DRYER WITH AIR DISPERSING HOOD

Gotthard C. Mahlich, and Rudolf Maass, both of Solingen, Fed. Rep. of Germany, assignors to Robert Krups Stiftung & Co. KG, Solingen, Fed. Rep. of Germany

Filed Aug. 20, 1985, Ser. No. 767,413
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1984, 3434289
Int. Cl.⁴ A45D *20/18*
U.S. Cl. 34—97 **41 Claims**





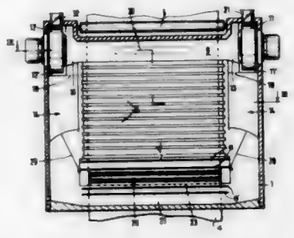
41. A hair dryer comprising a hood defining at least one plenum chamber and having a deformable foraminous panel which is adjacent to said chamber and is arranged to at least partially surround the hair on the head of a person wearing the hood so that streamlets of air which flow from the chamber by way of said panel condition the hair; and an apparatus for supplying air into said chamber including a hollow housing having a plurality of walls including at least two apertured walls provided with ports for admission of atmospheric air into said housing, means for conveying the thus admitted air into said chamber, motor means for said conveying means, means for influencing the temperature of air in the interior of the housing, and discrete means provided within said housing for guiding the air from said ports directly to said influencing means.

4,658,512

DRYING TOWER

Gerold Fleissner, Chur, Switzerland, assignor to Vepa Aktiengesellschaft, Riehen/Basel, Switzerland

Filed Sep. 21, 1984, Ser. No. 652,891
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334381
Int. Cl.⁴ F26B *13/02*
U.S. Cl. 34—155 **20 Claims**



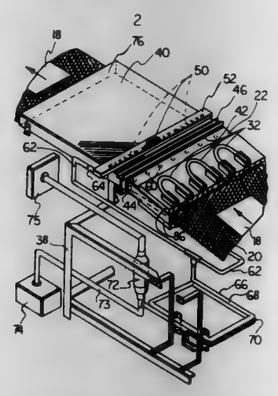
1. A drying tower for the heat treatment of a vertically extending length of traveling material having a certain width, which comprises a housing having an inlet and an outlet through which the length of material is transported along a vertical path within a heat treatment zone; an air conducting box arranged on each side of the path for the length of material, each of said boxes having exhaust openings discharging in a direction toward the length of material traveling along said path; radial-flow fans for recirculating drying air and being associated with said air conducting boxes; infrared heating means arranged in said air conducting boxes on both sides of the path for the length of material and being vertically spaced from each other along a substantial portion of said path; each of the air conducting boxes extending on one side of the path for the length of material over a treatment height and over a treatment width of the heat treatment zone; a dry air inlet passage located at the bottom of each of said air conducting boxes; above each air conducting box, an air exhaust chamber located for receiving air discharged onto one side of the length of traveling material; and each of the radial-flow fans having an axis of rotation arranged in parallel to the width of the traveling material and being located in a fan chamber operatively associated with an end portion of each of said air exhaust chambers, and said fan chamber being arranged outside of the treatment width of said heat treatment zone in an air recycle zone provided at each lateral end portion of the drying tower and extending along the treatment height of the heat treatment zone within said tower for returning air to both sides of the path of the traveling length of material; the air recycling zone including two ducts associated with one of said radial-flow fans for supplying air on both sides of the path of the length of material.

4,658,513

CONTINUOUS VAPOR PHASE PROCESSING MACHINE

Wayne P. Strattman, Boston, Mass., assignor to Dynapert-HTC Corporation, Concord, Mass.

Filed Sep. 3, 1985, Ser. No. 771,697
Int. Cl.⁴ F26B *15/18*
U.S. Cl. 34—78 **3 Claims**



1. A continuous vapor phase processing machine comprising
a vessel for containing an electronic liquid,
heater means for heating the contained electronic liquid for generating a zone of saturated vapor,
an aperture in said vessel,
throat means communicating with said aperture and extending outwardly from said vessel, said throat means having an outer end communicating with the atmosphere,
cooling means extending along said throat means outwardly from said vessel aperture,
said throat means including opening means intermediate the outer end of said throat means and said cooling means and extending substantially transversely across said throat means at a location substantially spaced from said outer end of said throat means,
conveyor means for conveying product through said throat means,
manifold means communicating with said opening means and including means for drawing air through said opening means whereby air from the atmosphere will be pulled through the end of said throat means and into said manifold means to thereby establish a dynamic fluid barrier of air flowing in a direction from the outer end of the throat towards said tank to entrain electronic liquid exiting the machine through the throat and for carrying such electronic liquid through said opening means.

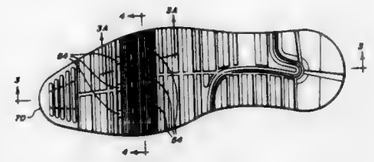
4,658,514

SHOE DESIGN

Yoon K. Shin, Pusan, Rep. of Korea, assignor to Mercury International Trading Corp., N. Attleboro, Mass.

Continuation of Ser. No. 464,204, Feb. 7, 1983, Pat. No. 4,498,251. This application Oct. 22, 1984, Ser. No. 663,381
Int. Cl.⁴ A43B *13/14, 13/18, 13/00*
U.S. Cl. 36—30 R **9 Claims**

1. An article of footwear comprising:
an outsole extending from the toe region to the heel region and and having a section extending over the region underlying the ball of the foot and across the full width of the sole structure, said section being appreciably thicker than the remainder of the outsole,
a plurality of parallel slots traversing the section across the full width of the outsole and extending upwardly from the bottom surface to just short of the top surface thereof to form hinges in the outsole to make the section underlying the ball region very flexible so that it can bend easily, and



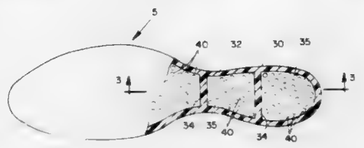
separate midsole pieces overlying the outsole at the toe and heel regions.

4,658,515

HEAT INSULATING INSERT FOR FOOTWEAR

Donald S. Oatman, 6122 Patrick Henry, San Antonio, Tex. 78233

Filed Feb. 5, 1985, Ser. No. 698,452
Int. Cl.⁴ A43B *13/38*
U.S. Cl. 36—44 **3 Claims**



1. A heat insulating insole for shoes comprising a laminated pad horizontally and vertically contoured to lie within a shoe beneath the foot of the wearer of the shoe; said laminated pad comprising a bottom sheet, a spacer sheet and a top sheet; said bottom and top sheets formed from a flexible organic plastic film and said spacer sheet being formed from a resilient, readily compressible, foamed sheet of organic plastic material having heat insulating properties; said spacer sheet being bonded to both said bottom and top sheets; said spacer sheet comprising a continuous perimeter disposed between and bonded to the perimeters of said top and bottom sheets, said spacer sheet further having a plurality of transverse bands integrally joining opposite sides of said continuous perimeter to define a plurality of horizontally spaced chambers; said chambers being vertically bounded by said top and bottom sheets and horizontally bounded by said transverse bands and said perimeter portion of said spacer sheet; said chambers being partially filled with loose particles formed from a resilient organic plastic material having heat insulating properties.

4,658,516

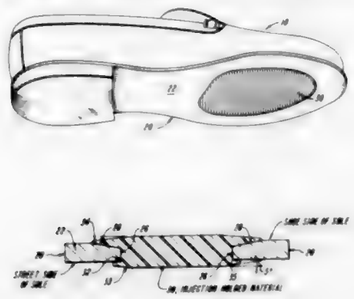
TAP SOLE CONSTRUCTION

Guy Beck, Bradford, Mass., assignor to The Timberland Company, Hampton, N.H.

Filed Mar. 19, 1986, Ser. No. 841,243
Int. Cl.⁴ A43C *15/02*
U.S. Cl. 36—59 B **8 Claims**

1. A shoe sole comprising a blank having an insert of thermally-moldable material secured in and filling a cut-out area int he forward portion of the blank, said insert extending over a major part of the forward portion of the sole area and having lateral dimensions much greater than the thickness thereof, the edge of said cut-out area being bevelled on the shoe-side of the blank toward the outer edge of the blank at a small angle relative to the shoe-side surface of the blank, and the insert having a lip around its perimeter on the street-side of the blank

and a tapered edge around its perimeter on the shoe-side of the blank, said tapered edge lying upon the bevelled portion of the



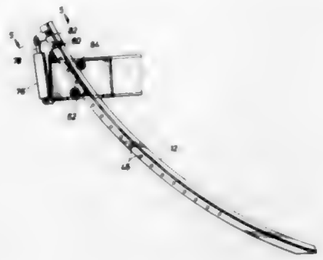
edge of the cut-out area, said edge of said cut-out area cooperating with said tapered edge and said lip to secure said insert to said blank.

4,658,517
SKI BOOT
Terumasa Miyoshi, and Shinichi Iwama, both of Saitama, Japan, assignors to Daiwa Seiko Inc., Tokyo, Japan
Filed Jan. 22, 1986, Ser. No. 821,483
Int. Cl.[4] A43B *5/04*
U.S. Cl. 36—117 **5 Claims**



1. A ski boot comprising a shell body having a sole and a lower shell, a pair of upper shell members, means connecting said upper shell members to said lower shell on opposed sides thereof, means for engaging said upper shell members to the proximate upper end portion of said lower shell for disposition adjacent the proximate lateral portions of the skier's lower leg, said upper shell members being spaced apart in their forward and rearward portions to define vertically extending front and rear openings, said engaging means adapting said upper and lower shell members for laterally outward spreading movement away from each other and for returning movement toward each other, a front cuff and a rear cuff for effecting closure of said front and rear openings respectively, said front and rear cuffs being adapted for pivotal movement longitudinally of the boot, a resilient pivot members integrally formed centrally at the lower end of said rear cuff, a supporting opening formed in the rearward upper portion of said lower shell receiving said pivot member, and locking means for inhibiting disengagement of said pivot members within said supporting opening whereby said rear cuff may swing rearwardly and forwardly, said pivot member comprising a flexible extension projecting forwardly through said supporting opening for engaging a portion of said lower shell internally of said supporting opening, and further comprising an inner boot comprising a lower portion fixed within said lower shell and upper separable portions engaged respectively with said front and rear cuffs.

4,658,518
TREE MOVING APPARATUS
Albert H. Korenek, P.O. Box 45915, Houston, Tex. 77045
Filed Jan. 20, 1984, Ser. No. 572,395
Int. Cl.[4] A01B *13/00*
U.S. Cl. 37—2 R **5 Claims**

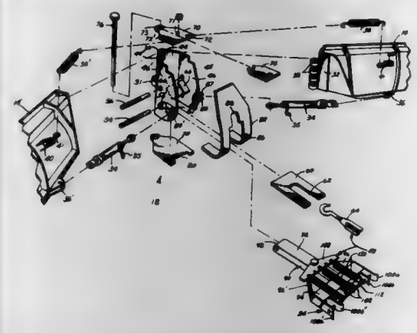


1. Apparatus for excavating a tree and a root ball from the ground comprising a plurality of ground piercing blades, an annular base comprising vertically spaced plates for supporting the blades in a circle around the tree, said blades being curved along their longitudinal axes and tapered to move into lateral engagement under the tree to sever the tree and a root ball from the ground, and to support the tree and root ball as the annular base and the blades are raised to lift the tree and root ball from the ground, means for moving the blades into the ground, and means for guiding the blades into the ground along paths having the same radius of curvature as the blades, said guide means including a pair of vertically spaced guide members mounted on the annular base to engage one side of the blades and a guide member mounted on the base to engage the blades on the other side and hold the blades in engagement with the guide members on the other side to force the blades to follow said curved path, said guide means further including keels that extend along the sides of the blades away from the tree and guide members carried by the base and located on opposite sides of the keels to limit lateral movement of the blades relative to the base, and in which the means for moving each blade into the ground includes a plurality of holes spaced along the keels, a hydraulic cylinder having one end attached to the base, a piston rod, and pin means for attaching the piston rod to the keel to allow the cylinder to move the blade relative to the base in a step by step manner by moving the pin from keel hole to keel hole.

4,658,519
SNOWPLOW AND IMPLEMENT ATTACHMENT MEANS FOR A VEHICLE
Philip J. Quenzi, Atlantic, Mich., assignor to W. Wally Niemela, Chassell, Mich.
Filed Aug. 5, 1985, Ser. No. 762,580
Int. Cl.[4] E01H *5/04*
U.S. Cl. 37—23 **42 Claims**

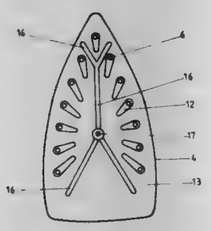
1. A hinged snowplow for vehicles comprising a support frame for attachment to a vehicle, said support frame having a free end; a cowling pivotally secured to said free end; a pair of plow blades pivotally secured to and extending from said cowling; first stop means connected to said cowling and engageable with said support frame to limit the pivotal movement of said cowling about said frame to a first position; second stop means connected with said cowling and engageable with said support frame to limit the pivotal movement of said cowling about said frame to a second position; said cowling including two apex plate means for supporting plow blades thereon, said apex plate means forming an elongated vertical apex when said cowling is in said first position and having

portions extending away from said apex and receiving said free end of said frame therebetween; pivot means extending between said apex plate means and said frame free end for pivotally securing said cowling to said free end of said frame such that said cowling is pivotable in a generally vertical plane about said free end of said frame; said cowling further includ-



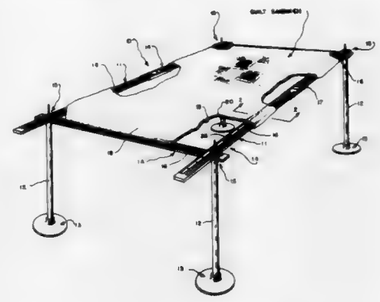
ing hinge means secured to and extending along said apex, said blades being mounted on said cowling by said hinge means; trip bias means between said frame and cowling to bias said cowling to said first position where said blades are positioned for plowing, said cowling being rotatable against said trip bias means toward said second position when said blades hit an obstacle.

4,658,520
STEAM IRON SOLEPLATE
Gerd Heaneberger, Frankfurt am Main; Robert Walter, Eppertshausen; Rolf Thomas, Hanau; Ernst Bechstein, and Norbert Voss, both of Offenbach am Main, all of Fed. Rep. of Germany, assignors to Rowenta-Werke GmbH, Fed. Rep. of Germany
Filed Jun. 4, 1986, Ser. No. 870,678
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1985, 8516445[U]; Feb. 5, 1986, 3603409
Int. Cl.[4] D06F *75/16, 75/38*
U.S. Cl. 38—93 **6 Claims**



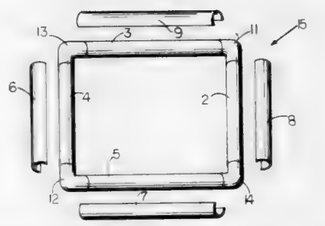
1. An electrically heated steam iron comprising a soleplate having an underside, an electrical heating element and a vaporization chamber provided therein, a soleplate liner made of a different material from the soleplate and secured to the underside thereof to provide an ironing surface, the soleplate having steam escape holes and the soleplate liner having openings each positioned to receive steam from a respective escape hole, each such opening communicating with a steam distribution groove on the ironing surface of the soleplate liner, the soleplate having recesses on its underside each congruent to a respective steam distribution groove, and the longitudinal axes of all the grooves and recesses being directed towards the center of gravity respectively of the ironing surface of the soleplate liner and of the underside of the soleplate.

4,658,521
QUILTING FRAME APPARATUS
Vonda J. Thorpe, 1220 W. 4575 North, Brigham City, Utah 84302
Filed Mar. 6, 1986, Ser. No. 837,042
Int. Cl.[4] D06C *3/08, 3/10*
U.S. Cl. 38—102.6 **7 Claims**



1. A quilting frame apparatus comprising:
a plurality of elongate frame side members, each having a pair of parallel slots therethrough substantially its full length, one of said slots having spaced apart spikes therewithin extending from the side of said slot nearest the side of the side member towards the opposite side of said slot;
a corresponding plurality of elongate leg members, each carrying an axially aligned, threaded bolt extending therefrom at its upper end; so that
said side members may be selectively joined together to the leg members by use of the leg bolts extending through the other of the pair of slots, to form a multi-sided quilting frame elevated from a floor.

4,658,522
FRAME FOR TENSIONING AND SUPPORTING TEXTILES FOR NEEDLEWORK
Monta L. Kramer, Rte. 1 Box 156-A, Parsons, Tenn. 38363
Filed Feb. 28, 1986, Ser. No. 834,392
Int. Cl.[4] D06C *3/08;* D05C *1/02*
U.S. Cl. 38—102.91 **3 Claims**



1. A releaseably assembled frame for tensioning and supporting textile(s) for needlework comprising:
(a) a pair of end frame rod members, of smooth surface and generally tubular in shape, upon whose ends are permanently attached corner connector means, said corner connectors each having an opening at their unattached ends;
(b) a pair of side frame rod members, of smooth surface and generally tubular shaped, wherein the interfacing of their surfaces provide a pressure joint, when inserted one into the other, forming a closed rectangular shape over which textile(s) is laid, for needleworking, and wherein said pressure joints are released for disassembly, when not in

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use, thereby reducing space requirement of frame's storage and transport;

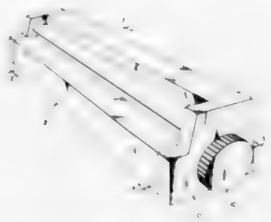
(c) a plurality of cresent shaped clamp members providing means for securing said textile(s) to said frame, wherein said clamp members are snap fitted over said rod members, onto which said textile(s) has been laid, to rotate thereon and tightly grip that portion of textile(s) which passes between the interfacing surface of the clamp member and rod member, wherein the amount of tension in the plane of the textile(s), in said frame, can be changed by rotation of said clamp member about said relatively stationery rod member.

4,658,523
COLLECTIBLE
Robert Adell, Novi, Mich., assignor to U.S. Product Development Company, Sunnyvale, Tex.
Filed May 14, 1982, Ser. No. 378,310
Int. Cl.[4] G09F *11/00*
U.S. Cl. 40—1 **19 Claims**



1. A collectible comprising a base, a writing instrument removably mounted on the base in an upright position, said writing instrument comprising an elongate body having one end engaging the base and a writing tip at the opposite end, a cap separably engaging the body to cover the writing tip, and a replica of a piece of sports equipment mounted on the cap wherein said replica of a piece of sports equipment comprises a replica of a sport player's protective headgear with the inside of the headgear fitting onto the cap.

4,658,524
STORAGE AND SELECTABLE DISPLAY DEVICE FOR SHEET MEDIA
Garth A. Jackson, and A. Stevens Ballard, both of King County, Wash., assignors to Top Flite Industries, Inc., Seattle, Wash.
Filed Jan. 18, 1985, Ser. No. 692,779
Int. Cl.[4] G09F *11/02*
U.S. Cl. 40—499 **10 Claims**



1. A storage and selectable display device for a plurality of printed sheets, each sheet having an attachment edge and an oppositely disposed free edge and indicia on the printed side of the sheet and adjacent to the free edge, comprising:

(a) an enclosure having walls defining a slot through which the sheets may be extended and retracted;

(b) a spool rotatably secured within the enclosure and about which the sheets may be rolled;

(c) means for attaching the attachment edge of each sheet to the spool so that the free edges of the sheets are circumferentially disposed at spaced positions about the spool when the sheets are fully rolled about the spool to expose the indicia on the free edges of the sheets;

(d) means for rotating the spool to wind the sheets about the spool;

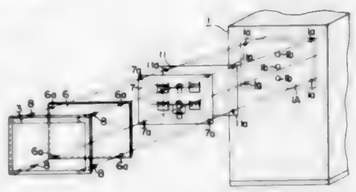
(e) means for sequentially viewing the free edges of the sheets as the spool is rotated in the winding direction;

(f) means for frictionally driving the outermost surface of the assembly formed by the spool and the exposed portions of the sheets to unwind the sheets;

(g) means for alternately driving the spool rotating means and the outermost frictional driving means so that on winding, the spool is driven while the frictional drive means is undriven and so that on unwinding the frictional drive means is driven while the spool is undriven to prevent bunching of the sheets; and

(h) means for sequentially guiding the free edges of the sheets out of the slot when the sheets are unwound from the spool so that the last sheet viewed is ejected on the top of the other sheets with the indicia and printed side up.

4,658,525
SUPERVISORY CONTROL PANEL BOARD
Toshiyuki Nagahama; Hisashi Suzuki, both of Hitachi, and Akira Yamamoto, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 2, 1983, Ser. No. 557,456
Claims priority, application Japan, Dec. 3, 1982, 57-211301
Int. Cl.[4] G09F *13/04*
U.S. Cl. 40—564 **4 Claims**



1. A supervisory control panel board including:

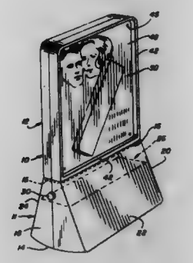
(a) a supervisory control panel having a supervisory display surface zone in which illumination apertures are formed;

(b) a plurality of film members superposed one over another and on which graphic diagrams are respectively inscribed so that a graphic diagram is formed of a synthesis of the plurality of graphic diagram respectively inscribed on the plurality of film members, said graphic diagrams being obtained by enlargement or reduction of views which are taken on photographic films from original illustrations;

(c) a dressing frame mounted on said supervisory display surface zone, for supporting said film members so that the same are in close contact with said supervisory display surface zone, said dressing frame being removable from said supervisory display surface zone; and,

(d) a transparent plate supported by said dressing frame and arranged to make said film members press-contact with said supervisory display surface zone.

4,658,526
SELF-RIGHTING DISPLAY DEVICE
Kenneth A. Glaesener, Gold, Ill., assignor to Dynagraphic Merchandising Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 510,633, Jul. 5, 1983, Pat. No. 4,553,346. This application Jul. 6, 1984, Ser. No. 628,458
The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.
Int. Cl.[4] G09F *7/00*
U.S. Cl. 40—602 **1 Claim**



1. In a self-righting display device, the combination of a self-righting hollow base, shaped to provide an elongated rocking body with a laterally elongated, convex, lowermost rocking wall, a laterally elongated, flat, rectangular upper wall spaced opposite the convex rocking wall, said upper wall having one pair of opposed end edges and a pair of opposed side edges, the end edges being transverse to the side edges; and four upright side walls, each side wall extending from one edge of the laterally elongated upper wall to an edge of the convex rocking wall, to provide a first pair of parallel, spaced, upright end walls of partially frustro-conical shape, as seen in elevation, and a second pair of side walls that are each outwardly inclined from an elongated edge of the upper wall to an elongated edge of the convex rocking wall, and the lateral ends of each side wall being integral with an edge of an end wall to provide a hollow six-sided base for the self-righting display device, said six sides of said laterally elongated six-sided base bounding a hollow chamber that is adapted to receive and hold therein a flowable ballast material to provide a substanial weight within the base;

the base being formed of plastic to provide a lightweight body;

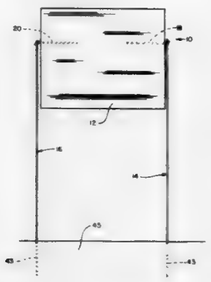
said elongated, flat, upper wall of the base having a selectively openable and closeable aperture provided therein, through which a flowable ballast may be introduced into the hollow chamber of the base;

a rigid display panel means that is provided separable from said base, but is adapted to be easily assembled on the base, in the field, to be supported on the base, said display panel means providing a bottom edge of a size and shape to abut the upper wall of the base;

the upper wall of the base having an upstanding laterally elongated tongue thereon; and

the lower edge of said rigid display panel means having a single non-circular socket, generally congruent with said tongue, for receiving thereinto, in telescoping cooperation said upstanding laterally elongated tongue of the base, to provide a structurally sound interconnection between said base and said rigid display panel means.

4,658,527
SIGN HOLDERS
Matthias A. Pingel, 9837 Tesson Ferry Rd., St. Louis, Mo. 63123
Filed Oct. 28, 1985, Ser. No. 792,287
Int. Cl.[4] G09F *15/00*
U.S. Cl. 40—606 **15 Claims**

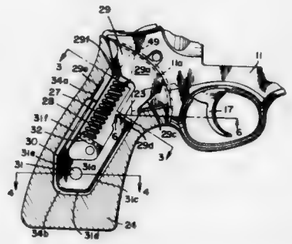


1. A sign holder comprising a panel adapted to receive indicia thereon for display purposes;

a pair of support elements supporting said panel, said support elements being adapted to be positioned on opposite sides of said panel permitting a variable distance between said support elements and permitting variable distances from each of said support elements to said panel; and

connector means connecting said panel to each of said support elements permitting variable positions of said panel between said support elements.

4,658,528
REVOLVER HANDLE STRUCTURE
William B. Ruger, Croydon, N.H., assignor to Sturm, Ruger & Company, Inc., Southport, Conn.
Filed Mar. 27, 1985, Ser. No. 716,730
Int. Cl.[4] F41C *23/00*
U.S. Cl. 42—71.02 **4 Claims**



1. In a handgun having a handle including a grip frame projection for receiving grip panels, the improvement comprising

(a) a grip frame projection having a size and shape to accommodate large and small grip panels, which frame projection is substantially smaller than the large grip panels; said grip frame projection having a plurality of projection engagement areas and a plurality of projection non-engagement surfaces;

(b) a grip panel positioned on each side of the grip frame projection, each grip panel having a border engagement surface, each said panel having a plurality of panel engagement areas positioned to engage and to be held in fixed relationship with the projection engagement areas and a plurality of panel non-engagement surfaces posi-

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tioned to be spaced-apart from the projection non-engagement areas; and

(c) fastener means for drawing the panels against the grip frame projection to hold them in fixed relationship and for drawing the panel border engagement surfaces together;

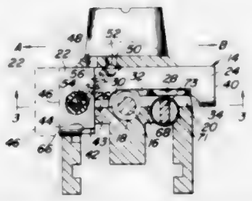
such that the panel border engagement surfaces are urged together and the panel engagement areas and the projection engagement areas engage in fixed relationship while leaving the non-engagement surfaces spaced-apart whereby the panel and grip projection means remain in fixed relationship during operation of the handgun.

4,658,529

FIRING PIN SAFETY MECHANISM

William Bertolini, P.O. Box 113, R.D. 4, Montague, N.J. 07827

Filed Aug. 15, 1984, Ser. No. 641,123
Int. Cl.[4] F41C *11/02*
U.S. Cl. 42—70.08 17 Claims



1. Firing pin safety mechanism for a weapon provided with a slide having a firing pin channel, comprising:

a firing pin mounted for sliding movement between a "ready" position wherein at least one end of the firing pin extends outside said firing pin channel and a "sheathed" position wherein both ends of said firing pin are disposed within the firing pin channel,

said firing pin being yieldingly loaded to said "ready" position,

a safety channel in the weapon slide extending transversely of the firing pin channel and intersecting the firing pin channel,

a safety mounted in said safety channel for sliding movement between "on" and "off" positions,

said safety and firing pin being provided with cam means for cammingly moving said firing pin to and locking said firing pin in the "sheathed" position when said safety is moved to the "on" position and for cammingly releasing said firing pin for movement to said "ready" position when said safety is moved to the "off" position.

4,658,530

DECOY WITH PLUG-IN LEG ASSEMBLY

Arthur W. Ladehoff, 518 N. 9th St., Clinton, Iowa 52732

Filed Mar. 3, 1986, Ser. No. 835,192
Int. Cl.[4] A01M *31/06*
U.S. Cl. 43—3 4 Claims

1. A decoy comprising a body and a removable two-legged supporting assembly, said body being moderately flexible and compressible, the flexibility of said body requiring connection to said supporting assembly thereto to be spread in each of three dimensions within the central flexible bottom portion of said body a substantial distance compared with the dimension of said decoy for distributing forces as required for maintaining said decoy standing upright on said two-legged supporting assembly, said two-legged supporting assembly being quite rigid,

said two-legged supporting assembly comprising a removable plug to provide said connection to said body, a pair of legs extending rigidly downward from opposite spaced portions on the bottom of said plug, and a substantial base attached to the lower ends of both of said legs, the dimensions of said plug in lateral cross section and in height being sufficient to extend said substantial distance in each of said three dimensions within said flexible bottom portion of said body, and

said central flexible bottom portion of said body being recessed to form a socket having said substantial distance in each of said three dimensions for fitting tightly about said plug, said socket being open as viewed from the bottom



and having a continuous top wall and continuous surrounding side wall for strength and distribution of forces, the outer lateral wall of said plug and the corresponding inside surface of said socket being practically vertical for a substantial distance within said bottom portion, and said plug being inserted by applying force thereto in a direction toward the center of said body.

4,658,531

DETECTOR FOR DETECTING A BIT OF A FISH

Shinichi Morimoto, Nishinomiya, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Feb. 18, 1986, Ser. No. 830,123
Claims priority, application Japan, Mar. 4, 1985, 60-30436[U]
Int. Cl.[4] A01K *97/12*
U.S. Cl. 43—1.7 5 Claims



1. A detector for detecting a bite of a fish, said detector being mounted on a fishing line carrying a fish hook, said detector comprising:

a stopper fixed to said fishing line at a position spaced a predetermined distance from said fish hook,

an oscillator movably mounted on said fishing line between said stopper and said fish hook, said oscillator including a sensor actuated by said stopper when said stopper is moved in close proximity to said sensor and an oscillation unit emitting an output signal responsive to actuation of said sensor, and

a receiver receiving said output signal from said oscillation unit,

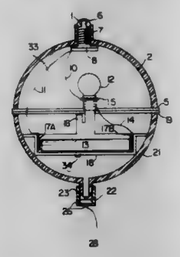
whereby when a fish pulls said fish hook, said stopper together with said fishing line is moved relative to said oscillator and said oscillation unit emits said output signal responsive to actuation of said sensor by said stopper moving in close proximity to said sensor, thereby detecting the bite of the fish.

4,658,532

DELUXE NIGHTIME FISHING CORK

Johnny M. McFarland, and Ruth E. McFarland, both of 1201 Taylor, Lawton, Okla. 73507

Filed Mar. 11, 1985, Ser. No. 710,464
Int. Cl.[4] A01K *93/00*
U.S. Cl. 43—17.5 2 Claims



1. A hollow plastic float for fishing comprising, upper and lower members forming two halves having a generally spherical form with an inner compartment, said upper member having a central opening and a switch secured therein, said lower member being attachable to a fishing line; first and second hinge sections joining said halves for pivotal motion, said hinge sections being located on the outside of respective said halves to form a single hinge; latch means opposite said hinge for securing said halves in a closed position, one of said halves having a hook-like structure and the other of said halves having a loop-like structure for locking together when joined;

gasket means sealing said halves when latched together, said gasket means having a separate seal member with each of said halves, each seal member having a portion mating with an end face of the respective one of said halves, and a portion mating with the other seal member;

a plastic battery box having surfaces mating with the lower member of said halves, said battery box having parallel first and second straps formed centrally thereof, said first strap having an end loop holding a light bulb for illuminating the float, said second strap holding a battery from being dislodged upon casting the float, and circuit means having wiring metallurgically connected between said battery, light bulb, and switch for reliably conducting current through the circuit means.

4,658,533

FISHING POLE HOLDER

Jesse M. Mendoza, 1865 Cornet Pl., Anaheim, Calif. 92807

Filed May 19, 1986, Ser. No. 864,522
Int. Cl.[4] A01K *97/10*
U.S. Cl. 43—21.2 8 Claims

1. In combination:

a rail on a dock or boat;

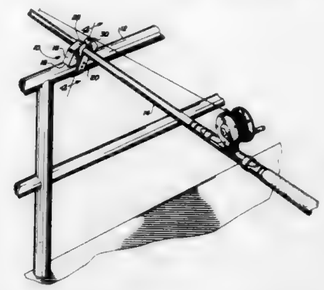
a fishing pole; and

a holder releasably secured to the rail and releasably holding the fishing pole at a fixed location along the rail to extend and rest in a direction transverse to the rail, the holder comprising

a base member having a bottom bearing on a top of the rail,

a strap extending outwardly from a side of the base member and wrapping around the rail and a top of the base member to releasably secure the holder to the rail, and

a pair of arms extending upwardly from the top of the base member on opposite sides of the strap and combining with the top of the base between the arms to define a channel transverse to the direction of the rail for (i) receiving the strap as it wraps around the rail and the base member and (ii) releasably receiving the fishing



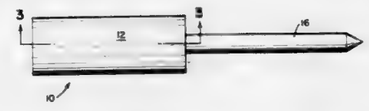
pole in the direction of the channel to hold the pole in place along the rail.

4,658,534

FISHING POLE HOLDER DEVICE

Howard McLean, 520 E. Babcock, Bozeman, Mont. 59715

Filed Jul. 21, 1986, Ser. No. 887,791
Int. Cl.[4] A01K *97/10*
U.S. Cl. 43—21.2 1 Claim



1. An improved holder for fishing rods comprising:

(a) A hollow elongated support member having an open end and having a closed second end with a threaded bore therethrough;

(b) A spike having a pointed end and a head end opposite the pointed end, and further having a threaded collar secured to the spike at a position adjacent the head but spaced therefrom; and

(c) The threaded collar being sized and shaped to be threadably received by the threaded bore when the spike is oriented in a direction with the pointed end through the threaded bore and through the support member or in a direction opposite thereto.

4,658,535

FISHING LURE

Vern R. Anderson, Lake Nebagemon, Wis., assignor to Cecilia M. Anderson, Lake Nebagemon, Wis.

Filed Jun. 23, 1986, Ser. No. 877,155
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.5 6 Claims



1. A fishing lure comprising

an elongate lure body having front and tail areas, equidistant reflective smooth top and bottom surfaces, and side surfaces,

said top surface being larger than said bottom surface and

said side surfaces being angled inwardly from the larger top surface to the smaller bottom surface at the same acute angles on each side surface,

said front and tail areas having acute angled sides less than the acute angles of the side surfaces of said top and bottom surfaces,

said elongate lure body having a concave longitudinal shape, and

said front and tail areas having openings for attachment of a hook and fishing lure.

4,658,536

BAIT STATION

Rex O. Baker, 1776 Bobbitt Ave., Corona, Calif. 91720

Filed Aug. 15, 1985, Ser. No. 766,056
Int. Cl.[4] A01M *25/00*
U.S. Cl. 43—131 **7 Claims**



1. A station for killing rodents and other similar pests including:

a base housing having:

a first chamber defined by:

a front entrance;

a back wall; and

first and second sidewalls; and

a cover housing having:

a first outer wall defining first and second openings therein, said cover housing and base housing being shaped to fit together to form an enclosure whose access and egress to said first chamber is provided by said defined first and second openings;

a second outer wall defining third and fourth openings therein, said third and fourth openings being aligned with said first and second openings respectively;

a third outer solid wall which extends from and runs generally at right angles to said first and second outer walls; and

a fourth outer solid wall which extends from and runs generally at right angles to said first and second outer walls and runs generally parallel to said third outer wall; and said base housing further including:

a second chamber defined by:

a front entrance;

a back wall; and

first and second sidewalls, said back walls of said first and second chambers nesting with said first and second outer walls between said openings defined therein to form an H shaped passageway with said first and second side walls of said first and second chambers, said front entrances of said first and second chambers each including:

a baffle extending upwardly from said base housing, said first and second chambers each including:

a deflector positioned over and spaced from said baffle to define a limited opening to said chamber, each deflector including:

a central gable formed therein; and

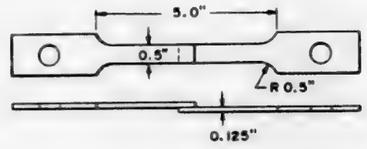
a pair of support members engaged with a deflector, and wherein said deflectors engage each other above and between said chambers.

4,658,537

NICKEL HIGH-CHROMIUM BASE BRAZING FILLER METAL FOR HIGH TEMPERATURE APPLICATIONS

Debasis Bose, Randolph, and Alfred Freilich, Livingston, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 441,465, Nov. 15, 1982, Pat. No. 4,543,135.
This application Mar. 11, 1985, Ser. No. 710,343
Int. Cl.[4] B23K *35/30*
U.S. Cl. 228—263.15 **4 Claims**



1. A process for joining together two or more metal parts which comprises:

(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting point less than that of any of the parts;

(b) heating the assembly to at least the melting temperature of the filler metal; and

(c) cooling the assembly; wherein the improvement comprises employing, as the filler metal, a homogeneous nickel based foil having a composition consisting essentially of 17 to 18.5 atom percent chromium, 5 to 6 atom percent boron and 12.5 to 13.5 atom percent silicon, the balance being nickel and incidental impurities and the total of nickel and chromium ranging from about 74 to 84 atom percent.

4,658,538

MACHINE FOR FORMING WIRE ARCHES, AND INSTALLING THE ENDS OF THE ARCHES IN THE GROUND

Howard A. Kolk, and Robert D. Kolk, both of Holland, Mich., assignors to Mechanical Transplanter, Holland, Mich.

Filed Oct. 16, 1985, Ser. No. 788,018
Int. Cl.[4] A01G *13/02*
U.S. Cl. 47—1 R **10 Claims**

10. A machine for forming and installing wire arches, comprising:

a frame;

ground-engaging wheel means rotatably mounted on said frame;

transverse shaft means rotatably mounted on same frame parallel to the axis of said wheel means;

a pair of radius arms secured to said shaft adjacent the opposite ends thereof, respectively, in substantially coplanar relationship;

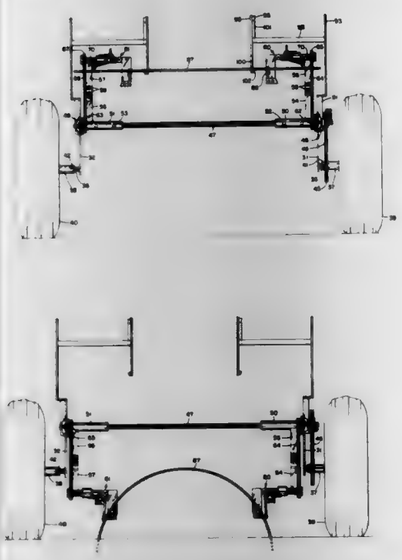
a planetary shaft rotatably mounted on each of said radius arms on an axis substantially parallel to said transverse shaft means;

orbital positioning means interconnecting said planetary shafts and said frame, and adapted to maintain a predetermined rotary angular position of said planetary shafts with respect to said frame;

wire-bending means mounted on each of said planetary shafts;

cam means normally fixed with respect to each of said radius arms, and adapted to actuate said wire-bending means to establish an arch configuration in a wire piece on rotation

of said planetary shafts with respect to said radius arms; and



drive means for rotating said transverse shaft in predetermined relationship to said ground-engaging wheel means.

4,658,539

PROCESS FOR BRINGING PREGERMINATED SEED IN A SOWABLE AND FOR SOME TIME STORABLE FORM, AS WELL AS PILLED PREGERMINATED SEEDS

Simon J. Sluis, Helloo, Netherlands, assignor to Royal Sluis Koniklijke Zaaizaadbedrijven Gebroeders Sluis B.V., Enkhuizen, Netherlands

Continuation of Ser. No. 361,891, Mar. 25, 1982. This application Jun. 25, 1985, Ser. No. 748,746
Claims priority, application Netherlands, Mar. 4, 1981, 8101680
Int. Cl.[4] A01N *21/02*
U.S. Cl. 47—57.6 **4 Claims**

1. A process for providing pregerminated seed in a sowable and storage form, which comprises; pilling the pregerminated seed with a pilling mixture containing at least one compound which slows down the seed germinating process under conditions whereby formation of a moist pill occurs; and maintaining the pills moist at a temperature of 0°–10° C. and/or under reduced atmospheric pressure.

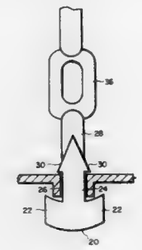
4,658,540

HANGING PLANT POT, ESPECIALLY FOR FLOWERS

Erling Hougard, Jyllinge, Denmark, assignor to OS Plastic A/S, Farum, Denmark

PCT No. PCT/DK83/00120, § 371 Date Jul. 26, 1985, § 102(e) Date Jul. 26, 1985, PCT Pub. No. WO85/02525, PCT Pub. Date Jun. 20, 1985
PCT Filed Dec. 9, 1983, Ser. No. 767,585
Int. Cl.[4] A01G *9/02*
U.S. Cl. 47—67 **3 Claims**

1. A hanging plant pot and suspension means therefore, especially for flowers, said pot consisting of a vessel (10) having at the top thereof an encircling edge flange (16) which is provided with anchoring openings (18) for a releasable hooking of the vessel (10) on said suspension means (12) characterized in that the openings (18) have an oblong shape with the maximum dimension oriented substantially radially relative to the vessel axis, that at the end to be entered in the openings (18) the suspension means (12) comprise a shaft member (20), the free end of which is provided with a pair of shoulders (22) projecting laterally in opposite directions from said shaft and, measured transversely to the shaft, having a total extension which is larger than the smallest internal cross-section of the opening (18) but at the utmost as large as the largest internal cross-section of the opening (18), that at a portion (24) remote from the free end of the shaft and in continuation of the shoulders (22) said shaft comprises abutment surfaces (26) extending



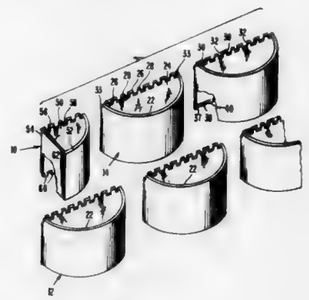
transversely to the shoulders (22), said abutment surfaces defining a transverse measurement of the portion substantially corresponding to the smallest internal cross-section of the opening (18) and engaging with said opening (18) to thereby prevent rotation of said shaft within opening (18), that more remote from the free end of the shaft said shaft comprises a portion (28) having a cross-sectional area which does not exceed the smallest internal cross-section of the opening (18), and that along the long sides of the opening (18) at the bottom of the flange (16), guide surfaces (32) are provided which are adapted to co-operate with the shoulders (22) and extend upwards obliquely towards the central axis of the vessel (10).

4,658,541

INTERLOCKING PLANTERS, FOR USE IN ERECTING DECORATIVE WALLS OR THE LIKE

Ernest Haile, 30 Cadwalader Ter., Trenton, N.J. 08618

Filed Feb. 5, 1986, Ser. No. 826,441
Int. Cl.[4] C10J *3/22*
U.S. Cl. 47—83 **17 Claims**



1. A planter wall formed of interlocking planters each of which comprises:

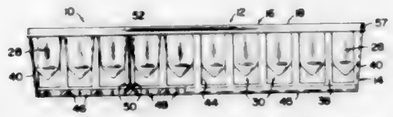
(a) an open-top container for plants including a back wall, a bottom wall and a forwardly projecting front wall, said containers being adapted for assembly end-to-end in a plurality of courses; and

(b) means on the back wall for interlocking each planter with those in the courses next above and below the same, said

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means of each planter comprising alternating teeth and notches adapted to interlock with mating teeth and notches of the planters above and below the same, said teeth being of trapezoidal shape.

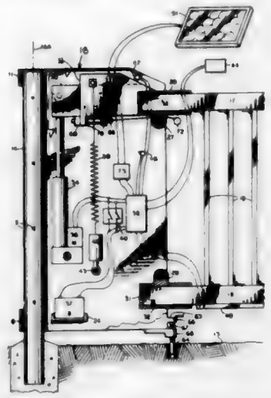
4,658,542
PORTABLE GROWING SYSTEM
Douglas A. Holmberg, 1321 N. Valrico, Valrico, Fla. 33954
Filed Feb. 24, 1986, Ser. No. 831,820
Int. Cl.⁴ A01G *9/02*
U.S. Cl. 47—86 **14 Claims**



1. A portable growing system for propagating seedlings or rooting cuttings comprising an upper propagation tray configured to receive a plurality of seedlings or rooting cuttings and a lower support bench configured to support said upper propagation tray above the ground or other supporting surface, said upper propagation tray comprising a tray member having an outer peripheral support ledge formed about the periphery thereof and plurality of propagation cells each having a centrally disposed aperture formed in the lower portion thereof to receive individual seedlings or rooting cuttings formed inwardly of the outer peripheral support ledge, said lower support bench comprising a pair of said walls held in fixed spaced relationship relative to each other by a pair of end walls and a lattice floor, the upper surfaces of said pair of the side walls and said pair of end walls cooperatively forming an upper peripheral support surface to support said outer peripheral support ledge and a peripheral retaining skirt extending downwardly from the outer edge of said outer peripheral support ledge to engage a portion of the outer surface of said pair of side walls and said pair of end walls to prevent deflection thereof under the weight of said upper propagation tray, said pair of said walls and pair of end walls including a plurality of side openings formed therein whereby said upper propagation tray is supported within said lower support bench such that the seedlings or rooting cuttings disposed within said plurality of propagation cells are provided drainage and air pruning through said enlarged centrally disposed apertures and through said side openings and said lattice floor or said lower support bench.

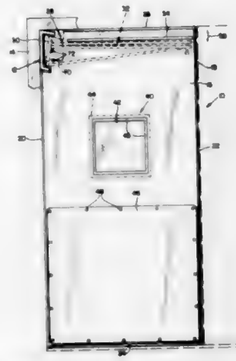
4,658,543
SWINGING LIFT GATE
Frederick J. Carr, 2101 Refugio Rd., Goleta, Calif. 93117
Filed Jul. 3, 1985, Ser. No. 751,520
Int. Cl.⁴ E05F *15/00*
U.S. Cl. 49—139 **1 Claim**

1. A lift gate mechanism comprising:
(a) means defining a bearing for rotation about a horizontal axis;
(b) a gate spar mounted for rotation about said horizontal axis;
(c) a cantilever arm connected to said gate spar;
(d) a counterbalance connected to said cantilever arm;
(e) an actuator arm mounted for rotation about said horizontal axis;
(f) an actuator normally connected to said actuator arm for rotating the actuator arm about said horizontal axis;
(g) and a releasable latch normally connecting the actuator arm to the cantilever arm,



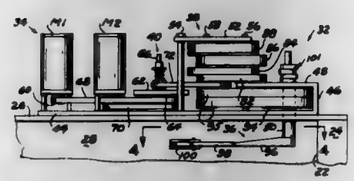
whereby releasing said latch permits manual movement of the gate spar about said horizontal axis.

4,658,544
DOOR ASSEMBLY
Lon H. McCarty, 217 SE. Palmblad St., Gresham, Oreg. 97030
Filed Sep. 30, 1985, Ser. No. 781,941
Int. Cl.⁴ E05D *7/06*
U.S. Cl. 49—236 **10 Claims**



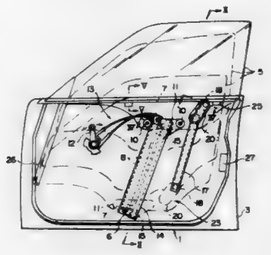
1. A door construction comprising:
first and second rectangular panels of a heat weldable material, the first and second panels being heat welded together at the peripheral margins; and
the first and second bonded panels defining a transversely extending hinge receiving pocket therebetween and at an upper region of the bonded first and second panels, the hinge receiving pocket having a hinge receiving access opening along one upper side margin of the first and second bonded panels.

4,658,545
AUTOMATIC DOOR OPENER AND CLOSER
Steven G. Ingham, and Gary G. Ingham, both of 3728 NW. 25, Oklahoma City, Okla. 73107
Filed Jun. 17, 1985, Ser. No. 745,118
Int. Cl.⁴ E05F *15/04*
U.S. Cl. 49—340 **4 Claims**



1. An electric door operator operably connected with a door mounted for horizontal swinging movement of the door in a door opening below a transom bar, comprising:
motor means above said transom bar including a reversible drive motor having the axis of its pulley equipped drive shaft vertically disposed;
linkage means including a door moving shaft extending vertically through the transom bar and connected with the door;
drive train means including a series of horizontal angularly rotating motor speed reducing torque increasing pulleys and cog belts connecting said drive motor with said door moving shaft;
circuit means including a normally open pedestrian closed circuit activating switch and a series of current switching relays selectively applying current to said drive motor in a door opening or closing direction in accordance with the open or closed position of the circuit activating switch;
a source of electrical energy connected with said circuit means;
transformer means providing a direct current potential,
one said relay having contacts interposed in wires connecting the positive potential with the respective terminal of said drive motor for door opening or closing movement in accordance with the energized or de-energized coil of said one relay;
door opened and closed limit switches interposed in the positive potential wires;
door opened and closed limit switch operating cams mounted on said door moving shaft;
electrical resistance means connected with the negative terminal of said direct current potential,
a pair of relays of said series of relays each having at least one pair of contacts interposed in the drive motor negative potential circuit and connected with said resistance means for applying a predetermined resistance value to the drive motor circuit;
a door movement slowing switch in the coil circuit of each relay of said pair of relays for energizing the respective relay during the opening and closing movement, respectively, of said door; and,
other slowing switch operating cams mounted on said door moving shaft.

4,658,546
WINDOWPANE LIFTING MECHANISM FOR VEHICLE DOOR
Yukihiro Moriyama, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Oct. 3, 1985, Ser. No. 783,597
Claims priority, application Japan, Oct. 11, 1984, 59-213599; Oct. 11, 1984, 59-153799[U]
Int. Cl.⁴ E05F *11/48*
U.S. Cl. 49—352 **20 Claims**



1. A windowpane lifting mechanism for a window of a vehicle door comprising a windowpane driving means including a cable member which is provided to vertically extend in a door shell and connected to a lower end portion of a windowpane by way of a connecting member so that the windowpane is moved up and down to close and open the window in response to up-and-down running of the cable member, and a windowpane guiding means including a first guide rail member which is provided on one side of cable member to linearly extend substantially in the vertical direction, a second guide rail member provided to extend substantially in the vertical direction in nonparallel relation to the first guide rail member spaced therefrom by a predetermined distance in fhe direction of width of the windowpane, a first slider connected to a lower portion of the windowpane and engaged with the first guide rail member to be slidable along the first guide rail member, and a second slider connected to a lower portion of the windowpane at a distance from the first slider and engaged with the second guide rail member to be slidable along the second guide rail member, wherein said first guide rail member is disposed near said cable member and extends linearly in the vertical direction in parallel to said cable member, and wherein said first slider is supported so as not to be displaced in the direction of thickness of the door, and wherein second slider is supported so as to be able to be displaced in the direction of thickness of the door, wherein said second slider is displaced under heavy load, but is hardly displaced uunder light load.

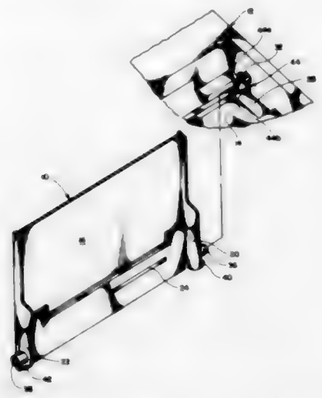
4,658,547
CAM BIASED PIVOTING DOOR
Andrew J. Oboza, Niles, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Aug. 26, 1985, Ser. No. 769,812
Int. Cl.⁴ E05F *1/10*
U.S. Cl. 49—386 **14 Claims**

1. An arrangement for pivotally mounting a door in a support panel comprising:
resilient means positioned on the door and adapted for flexible deflection toward and away from an adjacent portion of the support panel;
pivot means positioned on a lateral portion of said resilient means and in facing relation to the adjacent portion of the support panel;
receiving means positioned on the adjacent portion of the support panel for engaging said pivot means in pivotally coupling the door to the support panel;
ramp means including first and second tapered members

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respectively positioned on facing portions of the support panel adjacent to said receiving means; and

curvilinear cam means positioned on said resilient means adjacent to said pivot means so as to engage said ramp means when said receiving means engages said pivot means, wherein a concave portion of said curvilinear cam means is positioned in facing relation to said pivot means



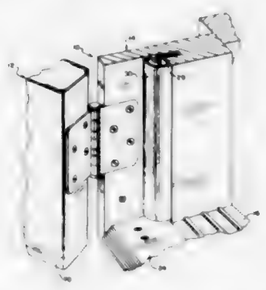
on said resilient means, said cam means including a first portion engaging said ramp means when the door is intermediately positioned between an open and a closed position for biasing the door to the closed position and a second portion engaging said ramp means when the door is in a substantially open position for biasing the door in a snap-acting manner to a full open position.

4,658,548

WEATHERSTRIP MEMBER WITH FLOATING INTERIOR BULB

John T. Gerritsen, Hanover Park, Ill., assignor to Jarrow Products Inc., Chicago, Ill.

Filed Jul. 12, 1984, Ser. No. 630,087
Int. Cl.[4] E06B *7/16*
U.S. Cl. 49—498 **11 Claims**



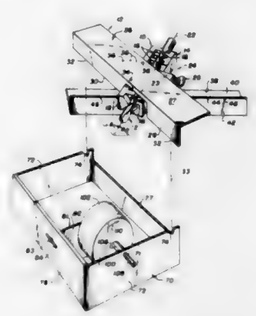
1. A unitary extruded compressible weatherstrip seal member for a doorframe or the like comprising a longitudinally extending generally planar rigid base member, a continuous distortable flexible wall defining a primary loop member integrally connected to opposite edges of said base and dimensioned to define a continuous internal air space between the interior of said wall and said base and movable along an arcuate path relative to said base during compression, a continuous internal hollow bulb positioned within said primary loop, said bulb defining a secondary loop and including a common outer wall portion with said primary loop, hinge means interconnecting said primary and secondary loop at each end of said common wall portion said secondary loop extending into said air space such that said secondary loop is connected to said primary loop and said base only at said hinge means, and extending throughout the length thereof, said primary loop, said secondary loop, said common outer wall portions thereof, and said hinge means all integrally formed and defining with said base a seal movable between a relaxed condition and a compressed condition, said secondary loop positioned in spaced relation to said base and said flexible wall when said seal is in a relaxed configuration and movable along a path toward said base and generally parallel therewith when said seal wall is distorted by compression to preclude collapse of said flexible wall into direct contact with said base member and resultant reduction in seal efficiency.

4,658,549

DRILL BIT SHARPENING DEVICE

David N. Lockwood, 6191 Ewart Street, Burnaby, British Columbia, Canada V5J 2X4

Continuation-in-part of Ser. No. 752,027, Jul. 5, 1985. This application Jan. 21, 1986, Ser. No. 826,061
Int. Cl.[4] B24B *3/00*
U.S. Cl. 51—94 R **24 Claims**



1. A drill bit sharpening device, for use with a support carrying a rotatable grindstone and having pivot arm retaining means, the device comprising a drill bit jig having:

(a) clamp means for releasably retaining a drill bit therein in a position wherein the drill bit axis extends forward from the clamp means along a corresponding clamp axis;

(b) a first and second jig pivot arm connected to said clamp means symmetrically located about the axis of a drill bit held in the clamp such that if the clamp means is rotated 180° about its axis said arms will assume identical and diametrically opposed positions;

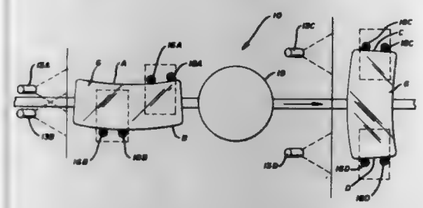
(c) said pivot arms being located such that the first pivot arm can rest in a pivot arm retaining means with the axis of the drill bit held in the clamp extending forward to intersect a grinding face of said grindstone carried in said support at a predetermined angle A_1 thereto, and in an inverted clamp position the second arm can rest in a pivot arm retaining means, with the axis of the drill bit held in the clamp extending forwardly to intersect the same grinding face at an identical point of intersection on the drill bit axis and at an equal angle A_2.

4,658,550

APPARATUS FOR SEAMING GLASS

Daniel O. Myers, Silver Lake, and Mark E. Baskin, Hudson, both of Ohio, assignors to ACC Automation, Inc., Akron, Ohio

Filed Jun. 11, 1985, Ser. No. 743,430
Int. Cl.[4] B24B *49/12*
U.S. Cl. 51—165.72 **21 Claims**



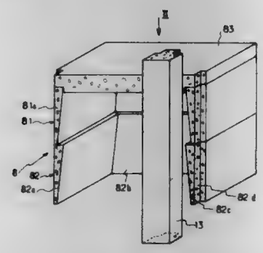
1. Apparatus for performing a seaming or like operation on the peripheral edges of an irregularly shaped workpiece comprising conveyor means to hold the workpiece while moving the same longitudinally from an upstream unseamed position to a downstream seamed position, means detecting the contour of the periphery of the workpiece while moving on said conveyor means and providing output signals proportional thereto, circuit means receiving said output signals of said means detecting the contour and providing output signals proportional thereto, and seaming means located downstream of said means detecting the contour and receiving said output signals of said circuit means to seam the peripheral edges of the workpiece while moving on said conveyor means.

4,658,551

CAISSON OF A STACK OF CAISSONS CONSTITUTING THE LATERAL WALLS OF AN UNDERGROUND ROOM SUCH AS PARTICULARLY A CELLAR

Paul M. M. Roux, 30 rue de Damiette, 91190 Gif sur Yvette, France

Filed Apr. 19, 1985, Ser. No. 725,308
Claims priority, application France, Apr. 24, 1984, 84 06418
The portion of the term of this patent subsequent to Aug. 26, 2003, has been disclaimed.
Int. Cl.[4] E04H *1/00*
U.S. Cl. 52—79.1 **6 Claims**



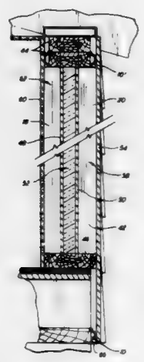
1. An underground room such as a cellar including a floor, a ceiling, lateral walls formed by stacked box-shaped building elements or caissons prefabricated from concrete and serving as storage bins, and vertical posts extending from said floor to the level of the ceiling, such caissons bearing against said vertical posts for withstanding earth pressure, each caisson having a substantially rectangle parallelepipedic shape and being open, either entirely or partially, on at least its bottom side and an internal vertical lateral side thereof, wherein each caisson is constituted by modular elements including at least one portion with vertical walls in right-angled U arrangement with an inclined internal peripheral surface, and a portion constituting the top wall of the caisson adapted to be nested into said portion in U arrangement.

4,658,552

VENTED EXTERIOR BUILDING WALL AND ROOF STRUCTURES

Cass E. Mulford, R.D. 3, Canastota, N.Y. 13032

Continuation-in-part of Ser. No. 371,905, Apr. 26, 1982, Pat. No. 4,488,390. This application Dec. 17, 1984, Ser. No. 682,163
Int. Cl.[4] F24F *7/00;* **E04B** *1/70*
U.S. Cl. 52—90 **9 Claims**



1. A building construction having walls and a roof, at least one of which includes structure allowing interior portions thereof to be vented to receive outside air, said structure comprising:

(a) an outer sheathing layer;

(b) an inner panel member supported in spaced, parallel relation to said sheathing layer to define a space therebetween;

(c) at least one member underlying said sheathing layer along an edge portion thereof exposed to outside air with a gap of predetermined width between said one member and said sheathing member edge portion; said gap communicating with said space,

(d) a vent channel member affixed to one of said one member and said sheathing member and having a portion extending entirely across said gap and extending the full length thereof, said portion having a plurality of closely spaced, small perforations, thereby permitting essentially free flow of outside air through said gap to said space while blocking entry of insects, and the like, into said space.

4,658,553

MULTI-WINDOWPANE STRUCTURE FOR USE IN A TEMPERATURE CONTROLLED ENVIRONMENT

Katsumi Shinagawa, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jul. 25, 1985, Ser. No. 758,970
Claims priority, application Japan, Jul. 25, 1984, 59-111600[U]; Sep. 18, 1984, 59-141477[U]
Int. Cl.[4] E06B *3/24, 7/12*
U.S. Cl. 52—172 **8 Claims**

1. In a multi-windowpane structure for use in a temperature controlled environment, said structure including a pair of glass panes maintained in spaced parallel position by a spacer disposed therebetween along the edges of said glass panes and a

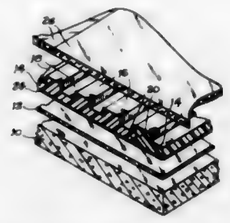
VOL 1077 ISS 3 AP 21 1987 UMI

seal element disposed on the outside of said spacer to seal off the space between said panes, an improvement comprising said



spacer being formed of transparent resinous material, wherein there is substantial visibility through said spacer.

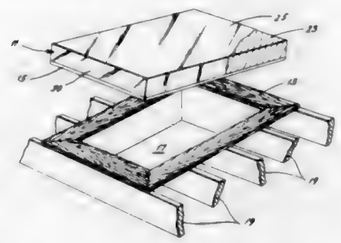
4,658,554
PROTECTED MEMBRANE ROOF SYSTEM FOR HIGH TRAFFIC ROOF AREAS
Elizabeth Riley, Newark, and Wayne E. Petersen, Granville, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.
Filed Dec. 24, 1984, Ser. No. 686,069
Int. Cl.⁴ E04C *2/02, 2/32;* **E04B** *7/00*
U.S. Cl. 52—309.8 **4 Claims**



1. A roofing system comprising a roof deck, a waterproof membrane above said roof deck, a plurality of extruded panels of foam plastic insulation above said waterproof membrane, each of said foam plastic insulation panels having peripheral edge surfaces and having a planar lower surface and having a plurality of flat topped integrally extruded parallel raised elongated ribs on the upper surface thereof and spaced apart by grooves, said ribs being stiffer, stronger, and more resistant to deformation than the remainder of each panel, the tops of said ribs forming a discontinuous planar surface substantially parallel to said lower surface, a waterproof plastic film having peripheral edges coincident with the peripheral edge surfaces of a respective panel and being coextensive with and bonded to only the lower surface thereof and resting on said waterproof membrane in an unsecured face-to-face contacting relation, each of said panels being otherwise free of plastic film and exposed to ambient air for evaporation of moisture, said plurality of panels having said peripheral edge portions and said film peripheral edges in substantially abutting relation, and a plurality of concrete panels overlying said foam plastic insulation panels and resting on said rib top discontinuous planar surface.

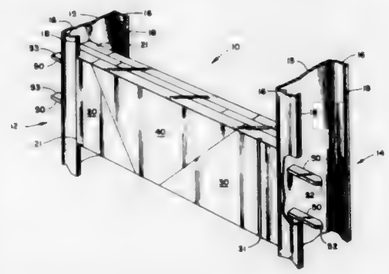
4,658,555
ATTIC HATCHWAY INSULATING COVER
Thomas J. Steiner, 88 Pumpkin Hill Rd., Levittown, Pa. 19056
Filed Jul. 12, 1985, Ser. No. 754,459
Int. Cl.⁴ E02D *29/14*
U.S. Cl. 52—202 **7 Claims**

1. An insulating cover for an attic stairwell opening structure, said attic stairwell opening structure including a folding stairway and stairwell opening framework tied to attic joists, said insulating cover being separate from said attic stairwell opening structure, comprising:
cover framework, separate from said building stairwell opening structure, for surrounding said stairwell opening framework and for being in abutment therewith from above, said cover framework having a rough upper face;
a cap being seatable on said framework and removable therefrom, said cap having a raised deck portion and perimeter sidewalls extending therefrom, and including high "R" value insulating materials; and



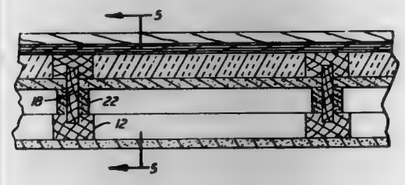
a seal being of a material selected from open cellular foam and fiberglass batt, extending along the bottom of said sidewalls of said cap, said seal being compressable to conform to the upper face of said framework wherein said seal face interlocks with said deck rough face whereby said seal permits the seepage of air during a closing of said folding stairway.

4,658,556
BLOCKING SYSTEM FOR STUD BUILDINGS
Floyd J. Jenkins, Rte. #17, Manchester, Me. 04351
Filed Aug. 20, 1984, Ser. No. 642,143
Int. Cl.⁴ E04B *2/00*
U.S. Cl. 52—317 **32 Claims**



1. A blocking system for metal stud buildings providing wall backing spans for support of wall-mounted fixtures between the metal wall studs comprising:
a plurality of expandable and retractable backing spans for placement and fitting between the studs, said backing spans being expandable and retractable for spanning variable spacing between the studs;
each backing span comprising a first backing element having a stud face for abutting against a web of a stud, and a second backing element for bearing against the first backing element, said first and second backing elements formed with continuously slideable complementary bearing surfaces, wherein the complementary bearing surfaces comprise inclined plane bearing surfaces, said second backing element being slideable relative to the first backing element along the complementary bearing surfaces with a component of motion in a lateral direction toward and away from a stud for expansion and retraction of the backing span to different spacing positions for spanning variable spacing between studs;
said first and second backing elements being constructed of penetrable material and arranged to cooperate and provide a vertical penetrable mounting face behind a wall surface for mounting and supporting fixtures on the wall at locations between studs;
and first securing means for securing the first backing element against the web of a stud.

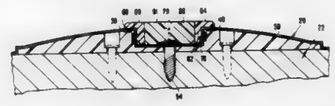
4,658,557
BUILDING WALL CONSTRUCTION
Cass E. Mulford, Rd. 3, Canastota, N.Y. 13032
Continuation-in-part of Ser. No. 371,905, Apr. 26, 1982, Pat. No. 4,488,390. This application Dec. 17, 1984, Ser. No. 682,169
Int. Cl.⁴ E04B *2/00*
U.S. Cl. 52—407 **7 Claims**



1. A building wall construction comprising, in combination:
(a) an elongated top plate;
(b) an elongated bottom plate extending in spaced, horizontal, parallel relation to said top plate;
(c) a plurality of elongated studs arranged in spaced, vertical, parallel relation and affixed at their upper and lower ends to said top and bottom plates, respectively;
(d) each of said studs, top plates and bottom plates comprises a pair of spaced wooden members of equal length having a substantially rectangular groove centrally disposed in one face thereof extending for the entire length of said wooden members, and at least one web member of fire-rated gypsum board having opposite, marginal edge portions secured in said grooves, thereby joining said wooden members in spaced relation, the dimensions and materials of said wooden members and said web member being such that said studs are suited for supporting loads applied at the ends;
(e) sheathing layers affixed to both sides of said stud members and extending vertically between said bottom and top plates, and horizontally between said studs to enclose the space therebetween; and
(f) at least one panel member of fire-rated gypsum board extending horizontally between each successive pair of studs parallel to and spaced from each of said sheathing layers, thus providing at least two, separated spaces between said sheathing layers.

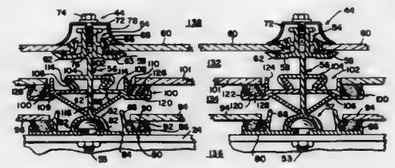
4,658,558
APPARATUS FOR ATTACHING ROOFING MEMBRANE TO A STRUCTURE
Patrick R. Verble, Fortville, Ind., assignor to North American Roofing Company, Inc., Carmel, Ind.
Filed May 22, 1986, Ser. No. 865,765
Int. Cl.⁴ E04D *5/14*
U.S. Cl. 52—410 **20 Claims**

19. A roof membrane anchoring system for securing a roof membrane to a structure, comprising:
an anchoring plate attachable to the structure, said anchoring plate comprising:
a a substantially planar bottom surface; and,
a smoothly contoured top surface, said top surface having an opening therein for the receipt of a roofing membrane;
a cap designed and arranged to be received into the opening in said anchoring plate without penetrating a membrane which has been received in the opening;



a plug insertable into said cap, said plug being designed and arranged to lock said cap within said opening in said anchoring plate; and,
attachment means for attaching said anchoring plate to the structure.

4,658,559
TRIPLE-GLAZE GREENHOUSE STRUCTURE
Henry R. Doherty, Richmond, Ind., assignor to Winandy Greenhouse Company, Inc., Richmond, Ind.
Filed Sep. 28, 1984, Ser. No. 655,888
Int. Cl.⁴ E04C *1/34*
U.S. Cl. 52—463 **20 Claims**



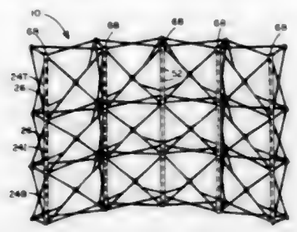
17. An elongated support bar for supporting light transmissive panel members of a greenhouse comprising, in cross section, a generally vertical stand portion having a base and a crown, a laterally extending outer shelf adjacent the crown for supporting an outer panel member, a laterally extending inner shelf adjacent the base for supporting an inner panel member, and a laterally extending middle shelf between the outer and inner shelves for supporting a middle panel member, the inner and middle shelves including an upstanding elongated leg and a raised lip along the extremity of the shelf, the upstanding leg and the raised lip defining therebetween a channel for receiving sealing means for sealingly contacting a panel situated thereon, the upstanding leg being spaced outwardly from the generally vertical stand portion by a distance greater than the distance between the upstanding leg and the lip to thereby permit the inner and middle panel members to be placed on the inner and middle shelves from the inside of the greenhouse while an outer panel member remains fixed in position on the outer shelf.

4,658,560
SUPPORT AND ATTACHMENT BRACE
Bryan J. Beaulieu, 1205 - 132nd St. West, Burnsville, Minn. 55337
Filed Oct. 28, 1985, Ser. No. 792,318
Int. Cl.⁴ E04H *12/18;* **G04F** *15/00*
U.S. Cl. 52—646 **16 Claims**

1. A support and attachment brace for vertically supporting a collapsible display panel structure having hub assemblies for pivotally holding support rod ends which form a skeletal frame for the structure, and for supporting a sheet of material adapted for either covering the panel structure or displaying a graphic representation and for attaching display accessories thereto, comprising

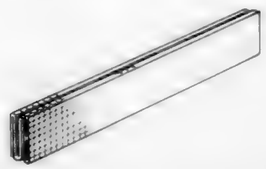
VOL 1077 ISS 3 AP 21 1987 UMI

(a) an elongated rigid bar having top and bottom ends and having a substantially flat elongated surface with a plurality of openings therethrough;
(b) first means for releasably interlocking the ends of the bar to a pair of vertically aligned hub assemblies to add rigidity and supportive strength to the panel structure;



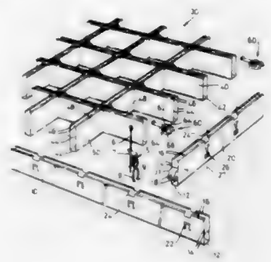
(c) second means for releasably attaching a sheet of material to the substantially flat surface of the bar; and
(d) third means for releasably attaching display accessories to the plurality of openings through the surface of the bar.

4,658,561
REINFORCING MEMBER
Derek V. Russell, Timperley, Nr Altrincham, England, assignor to Alphacrete Linings Limited, London, England
Division of Ser. No. 447,979, Dec. 8, 1982, Pat. No. 4,519,177. This application May 24, 1985, Ser. No. 737,487
Claims priority, application United Kingdom, Dec. 14, 1981, 8137653
Int. Cl.[4] E04C *2/42*
U.S. Cl. 52—662 **10 Claims**



1. In or for a reinforced concrete structure, a connected layered reinforcing member comprising:
at least two outer layers, each of said outer layers comprising steel members linked to define a plurality of first interstices;
at least one inner layer superimposed between said outer layers, at least one of said inner layers comprising steel members linked to define a plurality of second interstices first and second, said second interstices being smaller than said first and second interstices;
said layered reinforcing member being in the form of a rectangular plank and being flexible in at least the longitudinal direction of said plank;
said first and said second interstices being of such size as to allow the plank to be embedded in mortar with such mortar filling the said interstices.

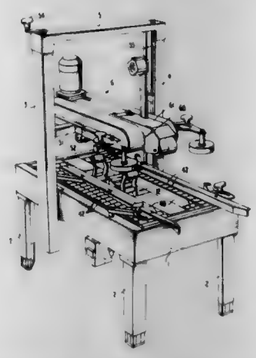
4,658,562
GRID PANELS SUSPENDED BY SLIDABLE BRACKETS
Johannes A. Brugman, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles
Filed Dec. 6, 1985, Ser. No. 805,639
Claims priority, application United Kingdom, Apr. 11, 1985, 8509345
Int. Cl.[4] E04B *5/52*
U.S. Cl. 52—665 **8 Claims**



1. A grid ceiling comprising:
(a) a first set of parallel elongated carriers and a second set of parallel elongated carriers transverse thereto and interengaged therewith to form a supporting grid defining rectangular openings;
(b) grid panels mounted within said openings, said grid panels having a lower web, a pair of spaced side flanges extending upward from said web, upper edges of the side flanges including inturned edges, said web, side flanges and inturned edges defining a hollow interior of said grid panel;
(c) at least one securing clip having a body portion and a tongue, the body portion having a first part disposed within said hollow interior and a second part overlying and slidable on said inturned rims to cooperate with said first part and slidably hold said clip to said grid panel, said securing clip being slidable between an advanced position in which said tongue extends from an end of said grid panel to engage one of said first and second carriers and a retracted position in which said tongue does not engage a carrier.

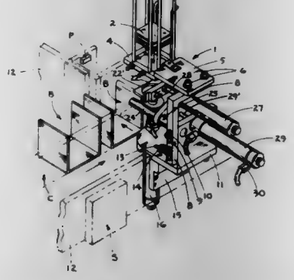
4,658,563
PACKAGING MACHINE WITH A FRAME OF STIFFENED STRUCTURE
Adelio Lissoni, Vedano Olona, Italy, assignor to S.I.A.T. Societa Internazionale Applicazioni Tecniche S.p.A., Turate, Italy
Filed Oct. 3, 1985, Ser. No. 783,445
Claims priority, application Italy, Oct. 5, 1984, 23039 A/84
Int. Cl.[4] B65B *57/00*
U.S. Cl. 53—137 **18 Claims**

1. A packaging machine, of the type comprising a bed mounted on support legs, two uprights rigidly connected to the bed and projecting upwards therefrom, and a working head carried by said uprights, characterized in that the bed consists of a rectangular box-formed sheet metal frame and two central, longitudinal, side-by-side cross-members, the constituent elements of at least part of the machine working units being mounted directly on said cross-members, and a space for housing removable roller tables being provided between these cross-members and the longitudinal sidepieces of the bed, said longitudinal cross-members consisting of sheet metal plates



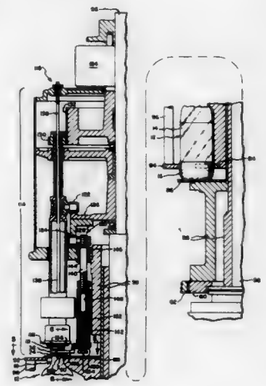
fixed at their ends to the minor sides or endpieces of the rectangular frame.

4,658,564
COUPON INSERTER FOR CARTONS
Cecil R. Bell, Jr., Pinnacle; Richard Thomas, Winston-Salem; Jasper R. London, Winston-Salem, and Walter R. Sizemore, Winston-Salem, all of N.C., assignors to Sara Lee Corporation, Winston-Salem, N.C.
Filed Jan. 2, 1986, Ser. No. 815,560
Int. Cl.[4] B65B *61/20, 39/12*
U.S. Cl. 53—250 **13 Claims**



1. In an article cartoner form conveying in a generally linear path a stream of open-ended cartons and having a mechanism for inserting an article, such as a coupon or the like, into an open end of each of said cartons comprising
(A) a hopper for supporting a supply of articles;
(B) an elongated, vertically extending reciprocating article extractor mechanism for extracting said articles one at a time from said hopper and positioning same adjacent said conveyor and carton thereon; said mechanism comprising an elongated, vertically extending rod-like member having upper and lower ends, the upper end including article grasping means, reciprocating means on said lower end adapted to extend said member to move said grasping means in engagement with said article and for retracting same to a position adjacent said carton, said grasping means also including means to release said articles at said position;
(C) an article insertion mechanism adjacent said position for receiving articles removed from the hopper and inserting the articles in cartons, said article insertion mechanism including an article support means, means for reciprocating said article support means in a horizontal direction, and means displaceable in a horizontal direction for controlling movement of an article on said article support means relative to said article support means.

4,658,565
CAPPING MACHINE
Theodore E. Westbrook, Tonawanda; James V. Kent, Alden, and David Kuzemsky, West Seneca, all of N.Y., assignors to Figgie International Inc., Willoughby, Ohio
Filed Mar. 13, 1986, Ser. No. 839,073
Int. Cl.[4] B67B *3/20;* **B65B** *7/28*
U.S. Cl. 53—308 **9 Claims**



1. A capping machine for applying screw-on caps having a tamper evident band to containers having a neck provided with a radially outwardly extending flange adjacent the open top of the container, said machine including:
container transport means including conveying means having spaced apart inlet and discharge portions, and first, second and third rotatable transfer means, rotatable about spaced apart first, second and third generally vertically extending axes and capable of successively transferring individual containers in closely spaced apart array from the inlet portion to the discharge portion of the conveying means;
cap feeding means capable of picking up individual caps and advancing the individual caps to a desired location; and
capping means including a rotatable portion which is rotatable about said second axis simultaneously with said second transfer means, said rotatable portion having a plurality of circumferentially spaced apart operating stations, each station being associated with one of the containers as it is conveying by the second transfer means, and each station including chuck means mounted for generally vertical shifting movement, said chuck means during rotation of the rotatable portion being capable of engaging a cap at the desired location, then positioning the cap onto the open end of the container and screwing the cap onto said container, and then releasing said cap when fully screwed on, and each station further including gripping means mounted for generally vertical shifting movement, said gripping means during rotation of the rotatable portion being capable of firmly engaging the flange on the container to prevent the container from rotating while the cap is being screwed onto the container.

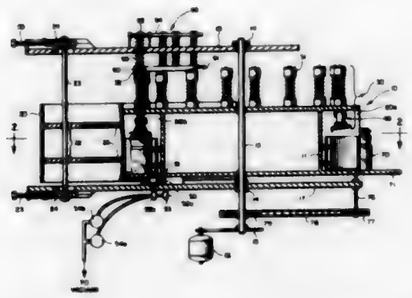
VOL 1077 ISS 3 AP 21 1987 UMI

4,658,566

APPARATUS AND METHOD FOR SEALING CONTAINERS IN CONTROLLED ENVIRONMENTS

John E. Sanfilippo, Plum Tree Rd., Box 367, Barrington Hills, Ill. 60010

Continuation-in-part of Ser. No. 705,661, Feb. 26, 1985, abandoned. This application Jan. 13, 1986, Ser. No. 818,386
Int. Cl.⁴ B65B *31/02*
U.S. Cl. 53—432 **21 Claims**



1. An apparatus for sequentially exposing objects to a controlled environment, comprising:

a rotary drum having a chamber therein for receiving said object, said chamber opening into the periphery of said rotary drum;

a substantially continuous flexible belt enclosure;

means for supporting said substantially continuous flexible belt enclosure proximate said opening in the periphery of said rotary drum, such that said substantially continuous flexible belt enclosure contacts a portion of the periphery of said rotary drum and periodically covers said opening in the periphery of said rotary drum; and

means communicating with said chamber for supplying said controlled environment thereto while said substantially continuous flexible belt enclosure covers said chamber opening in the periphery of said rotary drum.

4,658,567

MULTI-DENSITY POLYURETHANE FOAM PACKING UNIT AND METHOD OF MAKING SAME

Carl T. Arada, 2718 Teagarden St., San Leandro, Calif. 94577

Division of Ser. No. 238,009, Feb. 25, 1981, abandoned. This application Feb. 19, 1982, Ser. No. 350,208
Int. Cl.⁴ B65B *23/00*
U.S. Cl. 53—472 **2 Claims**

1. A method of packaging and protecting articles for shipping and the like, comprising the steps of:

providing a mold having one surface three-dimensionally configured generally the same as one three-dimensionally configured surface of the article and further having generally planar adjacent side walls;

covering the three-dimensionally configured surface and side walls of the mold with a flexible liner sheet;

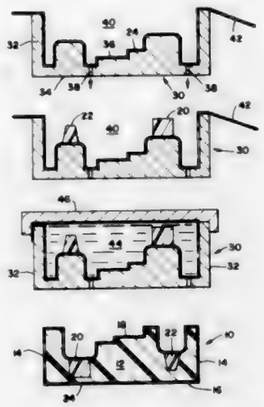
placing a plurality of preformed, resilient foam resin block members within said mold on said liner sheet at preselected locations to provide augmented resilient support to portions of said article;

foaming synthetic resin chemicals within said mold to encapsulate and suspend said block members in the foaming chemicals and generally fill said mold;

placing a cover sheet over the top of said mold and restraining the foaming chemicals with a flat mold top wall opposing the three-dimensionally configured surface of the mold, said block members being spaced from said flat mold top wall by said foaming chemicals disposed therebetween;

curing the foam to a density substantially less than the density of said block members to form a homogeneous one-piece mass of synthetic resin foam material having two opposing side walls, a three-dimensionally configured wall and a planar wall opposing said three-dimensionally configured wall spaced from said block members corresponding to those of the mold that are covered and enveloped by the liner and higher density resilient foam resin block members disposed to augment support of portions of said article to form a packing unit comprising the cover and liner sheets, mass of foam and block members; and

packaging the article by placing the article on the packing unit with said portions of said article impinging on said higher density foam block members, said article being in mating engagement with and in substantially full contact with the three-dimensionally configured surface of the cured foam with liner sheet.

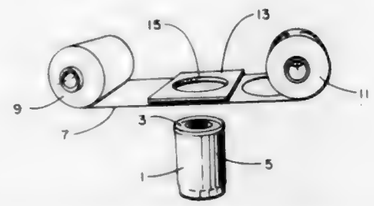


4,658,568

PROCESS FOR COVERING ARTICLES WITH FILM

Philip L. Reid, Rte. 2, Box 422, Duncan, S.C. 29334, and Thomas S. Lofton, Jr., 734 Cherokee Rd., Charlotte, N.C. 28207

Filed Dec. 3, 1984, Ser. No. 677,188
Int. Cl.⁴ B65B *7/00*; **B67B** *5/03*
U.S. Cl. 53—410 **4 Claims**



1. A process for stretch covering articles with film, comprising the steps of:

contacting an article to be covered with a covering film, said article having a primary surface contacted by said film and a secondary surface merging with said primary surface and being generally perpendicular thereto;

moving a portion of said film and said article relative to one another toward one another in the direction of said secondary surface;

circumferentially restraining said film in a circumference about said secondary surface whereby said film portion is positioned across said primary surface and subsequently stretched in the direction of said secondary surface due to said steps of moving and restraining;

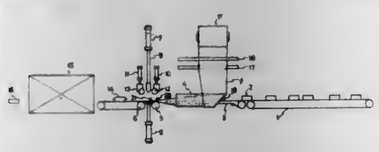
severing said film portion from said film by continuing said steps of moving and restraining until said film portion is severed from adjacent film, said severed film then clinging to said secondary surface due to the stretching thereof.

4,658,569

PACKAGING APPARATUS

Toshiyuki Hanagata, Toyama, Japan, assignor to Hanagata Press Industry Co., Ltd., Toyama, Japan

Filed Mar. 14, 1986, Ser. No. 840,295
Claims priority, application Japan, Dec. 5, 1985, 60-273975
Int. Cl.⁴ B65B *9/06, 41/10*
U.S. Cl. 53—550 **6 Claims**



1. A packaging apparatus for packaging articles in a weldable and heat-contractive plastic film, comprising:

a sealing device for welding and heat-cutting the plastic film widthwise;

a forming device disposed before the sealing device and having a pair of deflecting members disposed opposite to each other with a longitudinal space therebetween;

a guide bar disposed above the forming device with the longitudinal axis thereof in parallel to the longitudinal center axis of the forming device and with the contact line, where the plastic film leaves the guide bar, in alignment with the longitudinal center axis of the forming device;

a cantilever transfer belt conveyor for transferring articles from a feed belt conveyor to the sealing device, supported at the rear end so as to extend through the space between the deflecting members of the forming device;

a driving roller disposed between the front end of the transfer belt conveyor and the sealing device, to drive the plastic film from below; and

a pressure roller disposed above the driving roller to press the plastic film against the driving roller,

wherein the lower portions of the deflecting members are bent inward to form seaming flanges, the rear ends of the deflecting members are cut diagonally from the upper portions to the inner edges of the seaming flanges to form slopes declining toward the front, respectively, so that the plastic film folded in half is turned inside out along the respective outer surfaces of the deflecting members, and the sealing device is actuated upon the passage of an article through the sealing device.

4,658,570

WOOD BUNDLING DEVICE

Harold D. Thomas, Rte. 9, Cumming, Ga. 30130

Filed Mar. 9, 1984, Ser. No. 588,091
Int. Cl.⁴ B65B *11/02*
U.S. Cl. 53—556 **7 Claims**

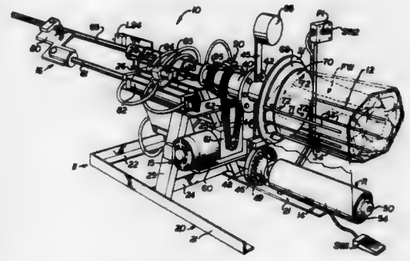
1. A bundling device for bundling elongate articles such as firewood with a plastic film comprising:

wood support means for supporting the articles to be bundled, said wood support means including an end support member; and a plurality of elongate wood support members mounted on said end support member at spaced apart positions and projecting perpendicularly outwardly therefrom in the same direction generally parallel to each other so as to define an open top article receiving space thereabove whereby the articles to be bundled can be stacked on said wood support members in said article receiving space;

film support means for supporting a roll of the plastic film to be wrapped around the articles to be bundled;

drive means for selectively moving said film support means around the articles to be bundled so that the film from the roll will be wrapped around the articles carried by said wood support means; and

unloading means for selectively unloading the elongate articles from the support means after being wrapped with the film, said unloading means including a base plate reciprocally mounted over said wood support members for reciprocal movement toward and away from said end support member, reciprocating means for reciprocating said base plate longitudinally of said wood support members, a spacer plate adapted to be positioned over said wood support members and a plurality of mounting bolts mounting said spacer plate on said base plate, said base plate defining a plurality of holes therethrough through which said bolts slidably extend and said bolts having enlarged heads thereon located between said base plate and said end support member so that said bolt heads are captivated between said base plate and said end support member when said reciprocating means retracts said base plate toward said end support member to hold said spacer plate spaced from said base plate and so that said base plate can move a prescribed distance toward said spacer plate as said base plate moves away from said end support member, said base plate projecting between said wood support members to engage the film as said base plate moves away from said end support member before said spacer plate starts moving with said base plate to move the articles with the film.



4,658,571

APPARATUS AND METHOD OF MAKING CLEANING PADS

George Gropper, 4084 Greentree Dr., Oceanside, N.Y. 11572

Division of Ser. No. 745,143, Jun. 17, 1985. This application Oct. 28, 1985, Ser. No. 792,255
Int. Cl.⁴ B65B *39/14, 43/48*
U.S. Cl. 53—576 **8 Claims**

1. An apparatus for fabricating cleaning pad stock from a tubular meshed network and a flexible filler comprising:

a hollow mandrel having an open inlet end and an open discharge end for supporting the main body of the network, a tail portion of the network being unsupported,

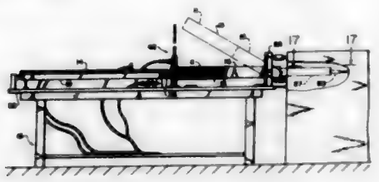
a ram for supporting, transporting and temporarily stiffening said filler, said ram being operable to be received within and withdrawn from said mandrel in telescopic and cyclic

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fashion, said ram being coextensive in length with said filler,

wand means for bending said tail portion transversely of said mandrel across said open inlet end to close said inlet end,

means for creating relative motion between the ram and the mandrel, and



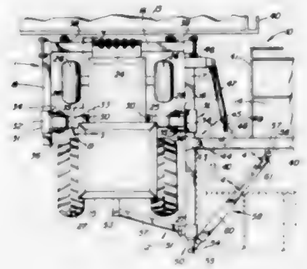
means carried by the ram for engaging the tail portion of the network while extending across said inlet end so that when said relative motion occurs the network is stuffed into the mandrel while being withdrawn from said mandrel inside out and the filler and ram are enveloped within the network substantially throughout their respective lengths.

4,658,572

TRACTOR MOUNTED SWATHER

Gregory J. Honey, and Glenn R. Honey, both of Bracken, Canada, assignors to Honey Bee Manufacturing Ltd., Bracken, Canada

Filed Jun. 14, 1985, Ser. No. 745,248
Int. Cl.⁴ A01B *73/00*
U.S. Cl. 56—228 **17 Claims**



1. A swather for mounting on a tractor unit comprising;

a main frame structure including a front transverse member, a pair of rearwardly extending side members and an intermediate transverse member, said front transverse member having connecting means for detaching securing the front transverse member to the front of the tractor unit, said side members being secured at forward ends thereof to said front transverse member and being spaced to be disposed on opposite sides of said tractor unit, said intermediate transverse member having connecting means between opposite ends thereof for detachably securing said intermediate transverse member beneath said tractor unit, said intermediate transverse member being secured at outer ends therof to said side members,

a front swather head carried solely by said front transverse member,

at least one side swather head having an inner end carried by one of said side members at a point rearward of said front transverse member,

mounting means connecting said side swather head to said one side member for swinging said side swather head between an operative position wherein said side swather head projects outwardly from said one side member and the inner end thereof is located behind and substantially in line with an outer end of said front swather head and a travel position wherein said side swather head is substantially parallel to the direction of travel of said tractor unit,

a rear frame structure for attachment to said tractor unit and providing a strut connecting means rearwardly of said side swather head mounting means, and

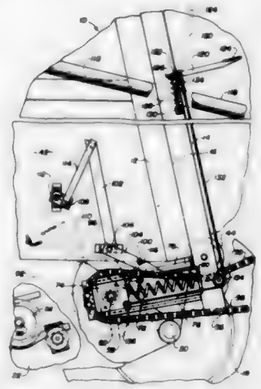
a rigid strut member in an operative position being connected at a rear end to said strut connecting means and extending forwardly to a connection means on said side swather head located outwardly of the side swather head mounting means when said side swather head is in the operative position.

4,658,573

SIGNAL DEVICE FOR BALE FORMING MACHINE

Robert M. VanGinhoven, Lancaster, Pa., assignor to New Holland Inc., New Holland, Pa.

Filed Apr. 8, 1985, Ser. No. 720,846
Int. Cl.⁴ A01D *39/00*; **B30B** *5/06*
U.S. Cl. 56—341 **5 Claims**



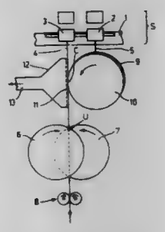
1. A crop baler machine to form round bales comprising in combination, a mobile frame, inner and outer set of guide members at opposite sides of said frame, an endless flexible apron extending around said set of guide members at opposite sides of said frame in a manner to form a substantially C-shaped configuration having inner and outer portions defining a bale-forming compartment, the ends of the C-shaped configuration being spaced apart to define an inlet for said bale-forming compartment adjacent the lower forward portion of said configuration to receive crop material from pickup means supported on said frame, drive means supported by said frame and engaging said apron at one end of said C-shaped configuration adjacent the top of the inlet, takeup guide means supported by said frame at the other end of said C-shaped configuration, said takeup means being supported for limited movement in a direction to increase the size of said inlet and operable to maintain said inner and outer portions of said apron taut, the inner portion of said apron being expanded a limited amount when a round bale of predetermined size and with a soft core has been formed and said takeup guide means have been moved, power means connectible to said drive means to move said apron in a direction to form a round bale, and signal means actuated by movement of said takeup guide means to indicate that a round bale of predetermined size has been formed in said bale forming compartment.

4,658,574

APPARATUS FOR THE PRODUCTION OF WRAPPED YARN

Louis Vignon, Geneva, Switzerland, assignor to Heberlein Hispano S.A., Vernier/Geneva, Switzerland

Filed Jan. 10, 1986, Ser. No. 817,576
Claims priority, application Switzerland, Jan. 17, 1985, 213/85
The portion of the term of this patent subsequent to Apr. 22, 2003, has been disclaimed.
Int. Cl.⁴ D02G *3/36*; **D01H** *5/28*
U.S. Cl. 57—5 **7 Claims**



1. In an apparatus for the production of wrapped yarn, comprising a delivery device (1, 3) for feeding a core (4), twist-imparting means (6, 7) for receiving and twisting said core, a movable fiber feeding and holding surface (9) between said delivery device and said twist-imparting means for feeding fibers to the core (4), which feeding and holding surface comes in contact with the core (4) at a point (C) between the delivery device (1, 3) and the twist-imparting means (6, 7), means (1, 2) for feeding parallel fibers to the movable fiber feeding and holding surface (9) at a location lying, in the direction of movement of the surface, upstream of the contact point (C) with the core (4), and a take-off device (8) for drawing the wrapped yarn out of the twist-imparting means (6, 7); the improvement comprising, at the point (C) where the fiber feeding and holding surface (9) contacts the core (4), a fiber catching device (11, 12, 13; 14, 15) for retaining fiber ends that have become detached from the fiber feeding and holding surface (9), said fiber catching device being disposed on the side of the core opposite said surface (9), the fiber catching device having an air-permeable surface (11; 14), and means (12, 13; 15) for maintaining a vacuum behind this latter surface thereby to retain fibers against this latter surface until they have been completely wound up on the core.

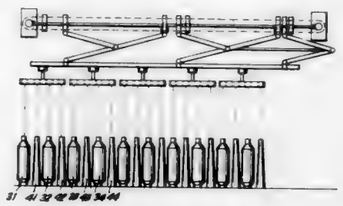
4,658,575

METHOD OF AND APPARATUS FOR REPLACING FULL BOBBINS ON A CONTINUOUS SPINNING MACHINE

Pierre Lousberg, Stembert, Belgium, assignor to Societe Anonyme des Ateliers Houget Duesberg Bosson, Verviers, Belgium

Filed Sep. 18, 1984, Ser. No. 651,717
Claims priority, application Belgium, Sep. 19, 1983, 0/211,546
Int. Cl.⁴ D01H *9/04*
U.S. Cl. 57—274 **5 Claims**

1. An apparatus for replacing full bobbins on spindles of a continuous spinning machine by empty tubes situated on fixed pegs near the spindles, said full bobbins and empty tubes being arranged in a plurality of consecutive spinning positions in said spinning machine, with a predetermined pitch, said apparatus comprising: gripping means for simultaneously removing the full bobbins and the empty tubes of two consecutive spinning positions from the spindles and pegs respectively, and for simultaneously replacing the full bobbins and empty tubes on the pegs and spindles, respectively, of said two consecutive spinning positions, said gripping means being a gripping mechanism of the quadruple mechanism type comprising four separate grippers: a first gripper for engaging the full bobbin of one spinning position; a second gripper for engaging the empty tubes of said one spinning position; a third gripper for engaging the full bobbin of the other spinning position, and a fourth gripper for engaging the empty tube of the other spinning position, means for moving said grippers vertically in the



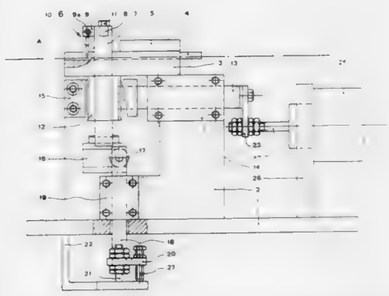
direction of longitudinal axes of the spindles and pegs, respectively, and means for rotating said grippers about a vertical axis by 180° in one direction about the center of a parallelogram defined by the points of intersection between a horizontal plane and said axes.

4,658,576

DEVICE FOR THE PARALLEL AUTOMATIC FEEDING OF ORNAMENTAL CHAINS, IN PARTICULAR FOR THE PRODUCTION OF PAIRED CHAINS

Bucefari Massimo, and Roberto Rubechini, both of Arezzo, Italy, assignors to I.C.M. S.p.A. Italiana Costruzioni Metal Meccaniche and T.E.M. s.r.l. Technologie Eletroniche e Meccaniche, both of Arezzo, Italy

Filed Mar. 29, 1985, Ser. No. 717,975
Claims priority, application Italy, Mar. 29, 1984, 9365 A/84
Int. Cl.⁴ B21K *15/02*
U.S. Cl. 59—34 **7 Claims**



1. A device for the parallel feeding of at least two ornamental chains to a work station of an apparatus so that work may be performed simultaneously on the combination of said chains, said feeding device comprising:

a chain supply station;

a chain alignment station disposed downstream of said chain supply station in the direction of feeding of said chains; and

a chain transport station disposed downstream of said chain alignment station in the direction of feeding of said chains;

said chain supply station including

means for supplying said chains to said chain alignment station in said feeding direction,

said chain alignment station including

a single means for aligning said chains, received from said supplying means, in side-by-side disposition, and

a first guideway for supporting said aligned chains as

they move in said feeding direction toward said transport station, and

said transport station including

means for engaging side-by-side links of said aligned chains, said engaging means including a link-engaging portion and a support portion extending in a direction normal to said feeding direction,

said engaging means support portion having, at an end removed from said link-engaging portion, a sleeve member having a horizontally extending guideway,

first means for moving said engaging means in reciprocating forwardly and rearwardly directed motions in directions parallel with said feeding direction, and

second means, disposed at a forward region of said first guideway, for moving said engaging means in reciprocating lifting and lowering motions in said direction normal to said feeding direction,

said second moving means lifting said engaging means at the end of the forwardly directed motion of said engaging means so that the engaging means link-engaging portion will become disengaged from the links after the advancement of a predetermined length of said chains, and

said second moving means lowering said engaging means at the end of the rearwardly directed motion of said engaging means so that the engaging means link-engaging portion can be moved into engagement with a new set of links disposed side-by-side,

said first means for moving said engaging means in said reciprocating motions comprising

first actuating means for causing said two reciprocating motions,

first linkage means connected with said first actuating means and drivable by said first actuating means in said two reciprocating motions, said first linkage means including a sleeve member having a vertically extending guideway in which said engaging means support portion is slidably supported and through which said engaging means support portion extends,

said second means for moving said engaging means in said reciprocating lifting and lowering motions comprising

second actuating means for causing said lifting and lowering motions,

second linkage means connected at one end thereof with said second actuating means and being drivable by said second actuating means in said lifting and lowering motions, said second linkage means including a roller at an end thereof opposite said one end, said roller being constrained for horizontal movement in said horizontally extending guideway of said engaging means support portion,

whereby movements of said first means for moving said engaging means, interconnected with said second means for moving said engaging means by said roller of said second linkage means and said horizontally extending guideway of said engaging means support portion, do not interfere with movements of said second means for moving said engaging means, and vice versa, so that said link-engaging portion of said engaging means.

4,658,577

SELF-SUPPORTING CABLE CARRIER

Ernst Klein, Duesseldorf, Fed. Rep. of Germany, assignor to A&A Manufacturing Co., Inc., New Berlin, Wis.

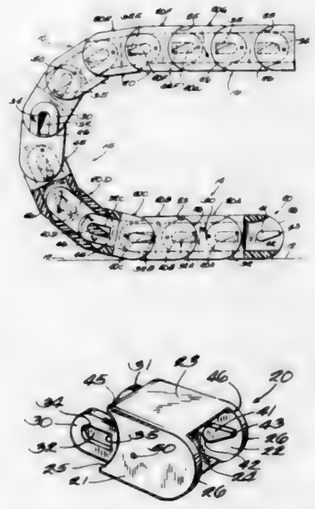
Continuation of Ser. No. 651,994, Sep. 17, 1984, abandoned. This application Nov. 8, 1985, Ser. No. 796,276

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333543

Int. Cl.⁴ F16G *13/16*

U.S. Cl. 59—78.1 **6 Claims**

1. A cable carrier for supporing conductors between a fixed member and a movable member of a machine comprising; a plurality of segments, each of said segments having two sides connected together by a top and a bottom to form a central passage; a coupling member extending from each side of said segment in parallel relationship and adapted to extend into the central passage of the adjacent segment of the cable carrier; a boss formed on the interior of each side of said segments to extend therefrom into the passage of each segment; said coupling members having an opening in position to receive said bosses when the coupling members are inserted into the passage of the adjacent segment to couple the two segments together said openings permitting limited pivotal movement of said bosses within the openings for corresponding limited pivotal movement of said segments relative to each other so that the plurality of segments coupled to each other successively form a flexible tube for supporting and enclosing the conductors, and the bosses and the coupling members are completely enclosed within the passage so that the flexible tube presents a smooth outer surface.



4,658,578

IGNITING ROCKET PROPELLANTS UNDER VACUUM CONDITIONS

Graham C. Shaw, Garland, Utah, assignor to Morton Thiokol Inc., Chicago, Ill.

Continuation of Ser. No. 569,543, Jan. 10, 1984, abandoned, which is a continuation of Ser. No. 463,355, Feb. 2, 1983, abandoned. This application Mar. 21, 1984, Ser. No. 714,351

Int. Cl.⁴ C06B *45/10*; **F02K** *9/08*

U.S. Cl. 60—205 **8 Claims**

1. In a method of igniting rocket motors under vacuum conditions, the improvement comprising employing as the igniter a composition which when cured is non-volatile and capable of igniting under vacuum conditions and burning steadily at reduced pressures, said igniter composition comprising:

(a) about 11% to about 13% hydroxyl terminated polybutadiene binder prepolymer;

(b) about 0.7% to about 2.0% polyfunctional isocyanate curing agent for said binder prepolymer;

(c) about 2.0% to about 20% metallic powder fuel;

(d) about 20% to about 40% large particle size ammonium perchlorate;

(e) about 30% to about 50% small particle size ammonium perchlorate;

(f) about 0.05% to about 5.0% non-volatile burning rate catalyst;

(g) about 0.05% to about 0.50% bonding agent capable of wetting the solids in the composition by said binder prepolymer and of chemically coupling with said ammonium perchlorate; and

(h) about 0.01% to about 0.20% ammonia scavenger wherein all percentages are by weight based on the total weight of the compositions.

4,658,579

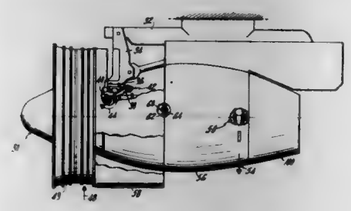
LOAD SHARING FOR ENGINE NACELLE

Charles R. Bower, Middletown, and Frank L. Fowler, Guilford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 514,201, Jul. 14, 1983, abandoned. This application Mar. 29, 1985, Ser. No. 718,184

Int. Cl.⁴ F02K *3/02*

U.S. Cl. 60—226.1 **4 Claims**



1. For a gas turbine engine having rotating blades that impart thrust loads and having a centerline, a gas turbine engine case in combination with a nacelle having a fan cowling and a core cowling surrounding said turbine engine case, means for attaching said fan cowling to said core cowling to form a unitary unit, said gas turbine engine having a mounting for being attached to an aircraft and a thrust linkage spaced from the engine centerline so that a load imparted thereto produces a moment that produces distortion on said fan cowling, means for counter-acting said moment including a pair of load sharing adaptors mounted on opposing sides of said gas turbine engine case remote from and downstram of said thrust linkage relative to the working fluid medium in said turbine engine, releasable means attached to said core cowling for connecting said load sharing adaptors and for transmitting the moment imparted by said thrust load through said fan cowling, said core cowling and said pair of load sharing adaptors to said complementary engine case, and said fan cowling and said core cowling forming a force transmitting unit.

4,658,580

EXHAUST GAS LINE FOR A SUPERCHARGED, MULTI-CYLINDER PISTON INTERNAL COMBUSTION ENGINE

Friedrich Schley; Dieter Wünsche, both of Friedrichshafen, and Gerhard Haussmann, Tettnang, all of Fed. Rep. of Germany, assignors to MTU-Motoren- Und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

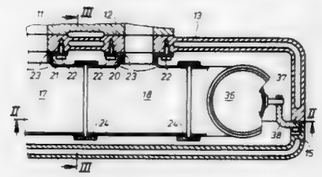
Filed Oct. 1, 1985, Ser. No. 782,387

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1984, 3445916

Int. Cl.⁴ F01N *7/00*

U.S. Cl. 60—322 **18 Claims**

1. An exhaust gas line for a supercharged, multi-cylinder piston internal combustion engine, comprising at least one inner pipe line conducting the exhaust gases, a housing means surrounding the pipe line with a spacing, said housing means being provided with an opening on the side opposite the piston internal combustion engine which extends approximately over its length and is adapted to be closed gas-tight by a cover, exhaust gas flanges at the piston internal combustion engine, the housing means being threadably connected with the exhaust gas flanges from the housing interior, the inner pipe line including individual pipe sections assembled by plug-in connecting means, each pipe section of the inner pipe line including individual pipe section of the inner pipe line including an exhaust gas inlet connection which cooperates with a centering stub arranged in the housing interior at each exhaust gas flange,



the plug-in connecting means of two axially adjacent pipe sections each including a retaining ring means receiving the pipe section ends, the retaining ring means including at its outer diameter mutually oppositely disposed, approximately radially projecting lug means, one of said lug means being fixedly coupled to the edge of the opening and the other lug means which abuts at the opposite edge of the opening, being displaceably coupled to the edge of the opening.

4,658,581

EXHAUST TUBE FOR VEHICLE

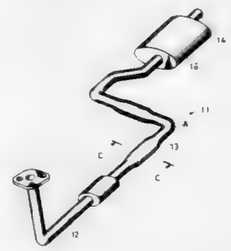
Hirokazu Hirabayashi, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 8, 1986, Ser. No. 861,009

Claims priority, application Japan, May 16, 1985, 60-73262[U]

Int. Cl.⁴ F01N *7/00*

U.S. Cl. 60—322 **3 Claims**



1. An exhaust tube for a vehicle having a center tube, a front tube and a tail tube, said center tube comprising a bent portion that is bent at approximately right angles from said front tube tube towards said tail tube to extend in the lateral direction of said vehicle, and said bent portion having front and rear portions constructed respectively so that, for a length of more than 10 cm, the cross section thereof is of an oblong-shape with its major axis lying along the vertical direction of the vehicle.

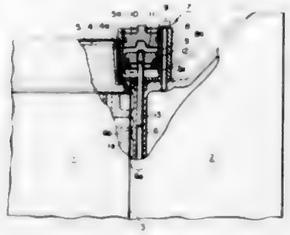
VOL 1077 ISS 3 AP 21 1987 UMI

4,658,582

VOLUME CONTROL DEVICE FOR VARIABLE VOLUME PUMP FOR AUTOMATIC TRANSMISSION

Shinsuke Eguchi, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 28, 1984, Ser. No. 655,555
Claims priority, application Japan, Oct. 4, 1983, 58-184428
Int. Cl.⁴ F16D *33/00*
U.S. Cl. 60—357 **4 Claims**



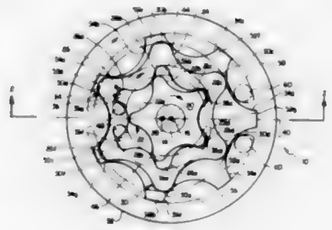
1. In automatic transmission:
a transmission case;
a gasket;
a converter housing having a peripheral surface and being fixedly secured to said transmission case, said gasket being interposed between said housing and said case and lying in a plane;
a volume control device including a cylinder formed with a cylinder bore and a piston slidably fit in said cylinder bore, said cylinder being formed as a separate piece from said converter housing and secured to said converter housing on said peripheral surface, said cylinder having a portion radially extending toward said transmission case beyond said plan where said gasket lies;
wherein said transmission case includes a valve body with a cover, said valve body and said cover being recessed to allow extension of said portion of said cylinder toward said transmission case.

4,658,583

DOUBLE STAGED, INTERNAL ROTARY PUMP WITH FLOW CONTROL

David C. Shropshire, Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Jun. 11, 1984, Ser. No. 619,291
Int. Cl.⁴ F16D *31/02*
U.S. Cl. 60—428 **18 Claims**



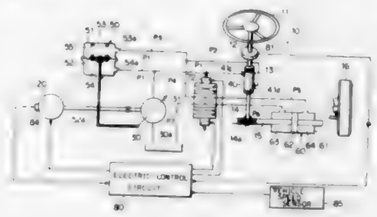
1. Apparatus comprising:
a rotatable drive shaft;
an inner rotary member fixed to said rotatable drive shaft, said inner rotary member having n number of circumferentially spaced, radially projecting teeth;
an intermediate rotary member encircling said inner rotary member and having at least n+1 circumferentially spaced, internal teeth some of which are in meshing cooperation with said teeth of said inner rotary member;
said radially projecting teeth of said inner rotary member and said internal teeth of said intermediate member defining a first set of successive expanding pumping chambers and a first set of successive contracting pumping chambers;
said intermediate member having m number of circumferentially spaced radially projecting external teeth;
an outer member encircling said intermediate member and mounted for rotation about an axis conincident with the axis of said drive shaft;
said outer rotary member having at least m+1 circumferentially spaced internal teeth some of which are in meshing cooperation with said radially projecting external teeth of said intermediate rotary member;
said radially projecting external teeth of said intermediate rotary member and said internal teeth of said outer rotary member defining a second set of successive expanding pumping chambers and a second set of successive contracting pumping chambers;
each radially projecting tooth of said inner rotary member having a portion in bearing surface contact with said intermediate member and each internal tooth of said outer member having a portion in bearing surface contact with said intermediate member so as to support said intermediate member for rotation about an axis eccentrically disposed relative to the axis of said drive shaft.

4,658,584

POWER STEERING SYSTEM FOR VEHICLES

Masahiko Suzuki, Hoi; Kazuma Matsui, Toyohashi; Koichi Moriguchi, Nagoya, and Masatoshi Kuroyanagi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 6, 1985, Ser. No. 708,884
Claims priority, application Japan, Mar. 7, 1984, 59-44768; Mar. 24, 1984, 59-56888; Apr. 4, 1984, 59-68274
Int. Cl.⁴ F15B *7/08*
U.S. Cl. 60—450 **12 Claims**



1. A power steering system for vehicles comprising:
means for receiving a force indicative of a desired degree of turning;
a variable discharge pump having a discharge quantity per operating stroke which may be varied;
variable throttle means, connected to said pump, for varying resistance to flow in accordance with said force received by said receiving means;
means for assisting turning in response to said flow from said variable throttle means;
means for controlling a discharge quantity of said pump to maintain constant a pressure differential across said variable throttle means;
pressure control means for decreasing pressure sensed by said controlling means downstream of said variable throttle means when said pressure downstream of said variable throttle means exceeds a predetermined level to cause said controlling means to decrease a discharge quantity of said pump; and

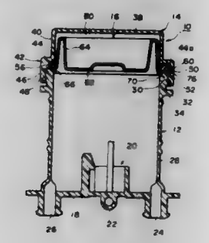
means for delaying said pressure decreasing by said pressure control means for a predetermined short period of time when the rate of change of pressure downstream of said variable throttle means exceeds a predetermined value.

4,658,585

MASTER CYLINDER RESERVOIR

Katsuaki Kamemoto, and Hideyuki Morimoto, both of Yokosuka, Japan, assignors to Nippon Air Brake Co., Ltd., Japan

Continuation of Ser. No. 681,377, Dec. 13, 1984, abandoned. This application Sep. 8, 1986, Ser. No. 906,560
Claims priority, application Japan, Dec. 28, 1983, 58-202105
Int. Cl.⁴ F15B *7/10*
U.S. Cl. 60—592 **4 Claims**



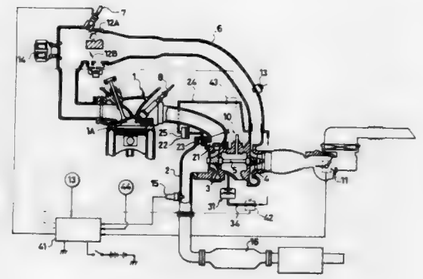
1. A master cylinder reservoir comprising:
(a) a cylindrical body having an open upper end, said body having fluid feed means at a lower end portion thereof;
(b) a cap fitted on and removably secured to said body by a relative rotation therebetween, said cap engaging said open end of said body a a lower end portion thereof, said cap having a mounting portion formed adjacent to the lower end portion thdreof said mounting portion defining together with an upper surface of said open end of said body a circumferential space, said mounting portion having a first surface disposed in opposed spaced relation to the upper surface of said open end of said body, and said mounting portion of said cap having a second surface disposed in opposed relation to an outer surface of said upper end of said body, the outer surface of said upper end being spaced from said second surface adjacent to the upper surface of said body to form a circumferential recess; and
(c) a diaphragm received in said cap and having a peripheral portion received in said circumferential space and held between said first surface of said mounting portion and the upper surface of said open end of said body, said peripheral portion having a circumferential bead formed on a lower surface thereof, said bead being held in engagment with the upper surface of said open end of said body providing a seal therebetween and keeping said lower surface of said peripheral portion of the diaphragm apart from said upper surface of said open end of said body to eliminate friction on the peripheral portion during rotation of the cap, and said peripheral portion having an engaging section depending from its outer edge, and said engaging section being received in said circumferential recess for engagement with the outer surface of said upper edd of said body wherein said mounting portion has a plurality of projections formed on said second surface thereof and spaced circumferentially from each other around said second surface, said peripheral portion of said diaphragm having a plurality of notches formed therethrough and spaced from each other circumferentially therearound, said projections being snugly fitted respectively in said notches, the lower surface of each of said projections being held in engagement with the upper surface of said open end of said body.

4,658,586

DEVICE FOR CONTROLLING SUPERCHARGING PRESSURE OF EXHAUST GAS TURBOCHARGER

Yoshio Iwasa, Nagareyama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 22, 1985, Ser. No. 703,951
Claims priority, application Japan, Feb. 24, 1984, 59-32677
Int. Cl.⁴ F02B *37/12*
U.S. Cl. 60—602 **9 Claims**



1. An internal combustion engine comprising:
an exhaust gas turbine is driven in a rotating manner by energy of exhaust gas from the internal combustion engine;
a compressor means, which is driven in a rotating manner by said exhaust gas turbine for supercharging intake air in the internal combustion engine;
a supercharging pressure controlling means for controlling the supercharged pressure in response to an operating condition of the internal combustion engine;
an exhaust gas turbocharger comprising:
a bypass passageway means comprising a valve for permitting exhaust gas to bypass said exhaust gas turbine;
a bypass valve control means for increasing opening of said valve in said bypass passageway means when a supercharging pressure of said compressor means exceeds a first set value; and
a velocity control means for decreasing the velocity of exhaust gas entering said exhaust gas turbine when the supercharging pressure of said compressor means exceeds a second set value, wherein the first set value of the supercharging pressure is higher than the second set value.

4,658,587

TURBOCHARGED INTERNAL COMBUSTION ENGINE WITH A SYSTEM FOR REGULATING THE SUPERCHARGED AIR PRESSURE

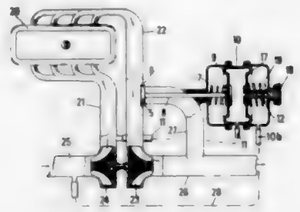
André Ecomard, Marly le Roi, France, assignor to Institut Francais du Petrole, Reuil-Malmaison, France

Division of Ser. No. 533,900, Sep. 20, 1983, Pat. No. 4,552,169. This application Aug. 21, 1985, Ser. No. 767,988
Claims priority, application France, Jan. 21, 1980, 80 01370
Int. Cl.⁴ F02B *37/12*
U.S. Cl. 60—602 **5 Claims**

1. In a system for regulating fluid pressure in the air intake of an internal combustion engine, wherein the engine has an air intake line and an exhaust line, and wherein the system includes a turbocharger having a compressor in the air intake line of the engine and a driving turbine in the exhaust line of the engine with the driving turbine rotating the compressor, there being an upstream port in the air intake positioned upstream of the compressor and a downstream port positioned downstream of the compressor and upstream of the engine, the system comprising a by-pass fluid conduit for bypassing said driving turbine, the bypass fluid conduit being connected in parallel with

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said exhaust line of said internal combustion engine; obturating means adapted for obturating said bypass conduit, and control means for automatically moving said obturating means to an open position when the pressure in the air intake line is higher than a predetermined value: the improvement being wherein said control means comprises a pressure controller connected to said upstream and downstream ports, said pressure controller having within a housing a first movable wall and a second movable wall, each having first and second sides, which define a fluid pressure receiving chamber between the first sides thereof, the fluid pressure receiving chamber having a first calibrated aperture therein connected to the downstream port, an opening in the housing on the second side of the second movable wall and being connected to the upstream port, calibrated first spring means for biasing said first movable wall, said obturating means comprising a valve with a valve stem connected to said first movable wall with the first spring means disposed for urging said first movable wall toward said second movable wall and for moving said valve into closed position; a



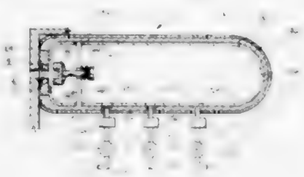
second calibrated spring for urging the second wall toward the first movable wall, and a second calibrated aperture carried by and extending through said second wall to form a passageway beyond the second side of said second movable wall for allowing pressurized fluid to pass therethrough from the fluid pressure receiving chamber to communicate with said opening on the second side of the second movable wall, and passageway closing means juxtaposed with said passageway for closing off passage of fluid through said passageway when the pressure in said pressure receiving chamber increases to a level sufficient to displace said second movable wall a distance sufficient to close said passageway, whereby as the fluid pressure in said air intake line increases, an initial displacement of said second movable wall closes said passageway which causes a sudden rise in pressure in the fluid pressure receiving chamber so as to cause a full opening of the valve to thereby lower the pressure against the bias of said first spring means in the air intake of the internal combustion engine by diverting a partial flow through said by-pass conduit and away from the driving turbine.

4,658,588

HIGH PRESSURE POWER SOURCE FOR A MISSILE AND THE LIKE

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 6, 1984, Ser. No. 617,986
Int. Cl.⁴ F01B *29/08*
U.S. Cl. 60—637 **5 Claims**



1. A high pressure power source for receipt on board a missile, the power source passive until the missile has been fired by a launch means, the power source comprising:

a combustion chamber inside a pressure bottle;

a high pressure inlet valve in the bottle, the valve communicating through a gas intake orifice in the bottle with the launch means, the bottle receiving high pressure gas from the launch means, the valve held in an opened position prior to receiving the gas, the gas when received in the bottle and when reaching a certain pressure, closing the valve and sealing the gas therein, the valve having a fusible metal valve seat, the seat, when closed, engaging a fusible metal gasket seat surrounding the orifice; and

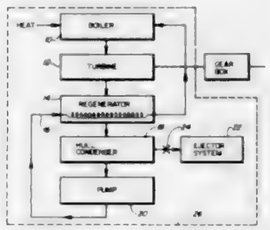
a gas outlet in the pressure bottle for supplying high pressure gas for a power requirement on the missile.

4,658,589

NON-CONDENSIBLE EJECTION SYSTEM FOR CLOSED CYCLE RANKINE APPARATUS

Thomas A. Sutrina, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 21, 1986, Ser. No. 842,163
Int. Cl.⁴ F01K *15/04*
U.S. Cl. 60—646 **11 Claims**



1. Apparatus for ejecting non-condensible gases from a closed Rankine cycle motion producing system including a boiler, an engine, a condenser and means for circulating a condensible working fluid in a closed path through said boiler, engine and condenser, said apparatus comprising:

a valve having an inlet connected to said closed path, an outlet and a valve element controlling the flow of fluid between said inlet and said outlet;

a fluid ejector including a power fluid inlet, an ejection fluid inlet and an outlet and being operative upon flowing a pressurized power fluid from said power fluid inlet to said outlet, to create a reduced pressure at said ejection fluid inlet, said ejection fluid inlet being connected to said valve outlet;

a reaction chamber connected to said power fluid inlet and adapted to contain an exothermic chemical reaction which provides a pressured power fluid as a product;

at least one reactant chamber for containing a reactant for said exothermic chemical reaction and connected to said reaction chamber;

means for controlling the flow of said reactant from said reactant chamber to said reaction chamber.

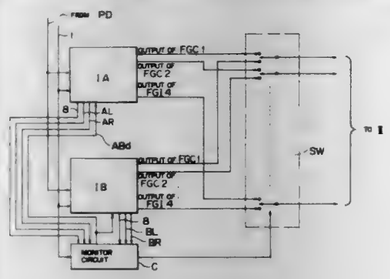
4,658,590

STEAM TURBINE GOVERNOR SYSTEM AND METHOD OF CONTROLLING THE SAME

Toshihiko Higashi, and Yasuhiro Tennichi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,164
Int. Cl.⁴ F01K *13/02*
U.S. Cl. 60—660 **23 Claims**

1. A governor system for a steam turbine having a valve means for controlling an amount of steam supplied to the turbine, said governor system comprising two electronic sections each producing a target opening signal for said valve means based on a turbine operation signal relating to an operation of the turbine and commonly applied to both of said two electronic sections, means for selecting one of the target opening signals produced by said electronic sections to be used for controlling the opening of said valve means, means for computing a first value representative of a parameter relating to the operation of the turbine as a predetermined function of said turbine operation signal, means provided for each of said elec-



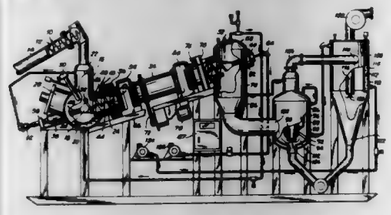
tronic sections for coputing a second valve representative of the same parameter as that represented by said first value which would be obtained if said valve means is controlled by the target opening signal produced by the electronic section associated with the valve means, and means for producing a selection signal on the basis of said first value and said second value produced by said second value computing means provided to said two electronic sections, respectively, said selection signal being applied to said selecting means for determining which of said target opening signals should be selected by said switching means.

4,658,591

APPARATUS AND PROCESS FOR THE FLUIDIZATION AND COMBUSTION OF FUELS

Antonio J. Alvarez, Piedmont, S.C., assignor to Technical Equipment Systems, Inc., New City, N.Y.

Filed Aug. 27, 1985, Ser. No. 770,301
Int. Cl.⁴ F23G *5/04;* **F23B** *7/00*
U.S. Cl. 60—670 **13 Claims**



1. Apparatus for combustion of fuel comprising:

a preignition assembly having means to receive the fuel;

a jacketed combustion chamber attached to said preignition assembly;

a hollow shaftless auger extending from said preignition assembly to and through the combustion chamber for feeding said fuel thereto, said combustion chamber and auger being adapted for rotation about an axis which is inclined with respect to a horizontal;

inlet means for the introduction of combustion air into said combustion chamber and exhaust means for gaseous products of combustion to leave said chamber;

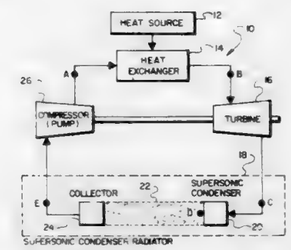
variable speed drive means engaged for rotation of said combustion chamber about said inclined axis; and means for fluidizing said fuel in said combustion chamber.

4,658,592

SINGLE-LOOP, RANKINE-CYCLE POWER UNIT WITH SUPERSONIC CONDENSER-RADIATOR

William R. Wagner, Los Angeles, and Stanley V. Gunn, Chatsworth, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 30, 1985, Ser. No. 770,903
Int. Cl.⁴ F01K *9/00*
U.S. Cl. 60—689 **8 Claims**



1. A supersonic condenser-radiator for converting a subsonic flow of gaseous working fluid into a liquid comprising:

a supersonic DeLaval nozzle connected to receive said subsonic flow of gaseous working fluid and convert it to a supersonic gaseous flow;

barrel means connected to said nozzle for receiving said supersonic gaseous flow and converting it into a multitude of liquid droplets;

spray nozzle means attached to said barrel for forming a beam from said liquid droplets; and,

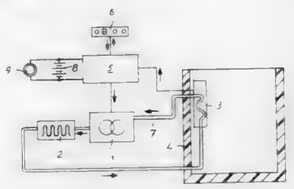
collector means for receiving said droplet beam and cohering said droplets into a liquid.

4,658,593

ENERGY SAVING REFRIGERATION APPARATUS HAVING A CONTROL MEANS

Bengt Stenvinkel, Kalmar, Sweden, assignor to Thermo Produkter B.S. Ab, Kalmar, Sweden

PCT No. PCT/SE85/00043, § 371 Date Sep. 27, 1985, § 102(e) Date Sep. 27, 1985, PCT Pub. No. WO85/03603, PCT Pub. Date Aug. 15, 1985
PCT Filed Jan. 30, 1985, Ser. No. 795,354
Claims priority, application Sweden, Feb. 1, 1984, 8400514
Int. Cl.⁴ F25B *49/00;* **F25D** *17/02*
U.S. Cl. 62—126 **11 Claims**



1. Refrigeration apparatus comprising in combination:

generator means for generating electrical energy, having a running state wherein electrical energy is generated and a nonrunning state wherein electrical energy is not generated;

rechargeable battery means connected to said generator

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means for storing electrical energy generated by said generator means;

cooling means for cooling a refrigerated space, including coil means disposed in said refrigerated space through which cooled refrigeration fluid is circulated and a compressor and condenser located outside said refrigerated space for cooling said refrigeration fluid prior to circulating it through said coil means, said cooling means powered by said battery means; and

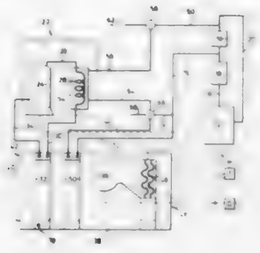
control means for sensing whether said generator means is in its running state or its non-running state and for operating said cooling means to maintain said refrigerated space within a first predetermined temperature range when said generator is in said running state and within a second predetermined temperature range when said generator is in said non-running state.

4,658,594

AIR CONDITIONING SYSTEM FOR A NATATORIUM OR THE LIKE

Wayne Langford, 27 Cygnus Dr., Richmond Hill, Ontario, Canada L4C 7B2

Filed Feb. 15, 1985, Ser. No. 702,358
Int. Cl.[4] F25D *17/04*
U.S. Cl. 62—176.5 **12 Claims**



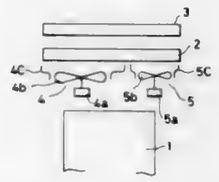
1. In a system for automatically regulating both temperature and humidity within an enclosure for a swimming pool installation or the like wherein the pool installation includes conduit circuit means and pump means for recirculating pool water, an air conditioning system for said enclosure including duct means and fan means disposed within said duct means for directing and recirculating the air within the enclosure, and refrigerant circuit means for chilling the recirculated air including compressor means having a discharge side and a suction side, condenser means disposed downstream of said compressor means, and evaporator means disposed downstream from said condenser means within said duct means and in thermal exchange relation with the air to be directed therethrough for chilling same, heat exchange means disposed between said conduit circuit means and said condenser means whereby heat derived from said condenser means is transferable from refrigerant therein to pool water recirculating within said conduit circuit means, said conduit circuit means downstream of said heat exchange means including heat transfer coil means disposed within said duct means downstream from said evaporator means and in thermal exchange relation with air to be directed therethrough, the capacity of said heat exchange means and said heat transfer coil means of substantially the same order such that the heat transferable to the pool water through said heat exchange means substantially equals the heat transferable to the air through said heat transfer coil means, and valve means for selectively directing said recirculating pool water to said heat transfer coil means or for bypassing same.

4,658,595

COOLING SYSTEM FOR RADIATOR AND CONDENSER OF VEHICLES WITH AN AIR CONDITIONER AND METHOD OF OPERATING THE SAME

Yukio Shimada; Yutaka Obata; Takahisa Takeoka, all of Ebina, and Toyotoshi Katoh, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 26, 1985, Ser. No. 801,807
Claims priority, application Japan, Nov. 29, 1984, 59-250499
Int. Cl.[4] F01P *7/02*
U.S. Cl. 62—179 **15 Claims**



1. A cooling system for radiator and condenser of vehicles with an air conditioner having a first blower (**4**) and a second blower (**5**) for cooling the radiator and the condenser so as to cool the engine cooling water and so as to condense the coolant, and a cooling cycle operation switch (**10**), which comprises;

(a) engine cooling water temperature switch (**SW1**) connected between a power supply and the first blower and turned on and off in accordance with high and low temperature conditions of the engine cooling water;

(b) relay switching means (**8**) for controlling said first and second blowers in accordance with the on-off conditions of said cooling cycle operation switch; and

(c) a control circuit (**9**) having an on-off switch (**9***a*, **30***b*, **40***b* or **50***b*) and a solenoid (**9***b*, **30***a*, **40***a*, or **50***a*), and connected between said relay switching means and either said first blower or said second blower, the solenoid of said control circuit being connected to switches (**SW3**, **SW4** and **SW5**) for electrical equipment such as headlights, wipers;

whereby, when any one of said switches for the electrical equipment of the vehicle is turned off, said first and second blowers are operated at normal speed through said relay switching means and said control circuit, upon the operation of the cooling cycle operation switch, while when any one of said switches for said electrical equipment is turned on, said first blower is on-off controlled through said engine cooling water temperature switch (**SW1**) and said second blower remains operated through said relay switching means (**8**).

4,658,596

REFRIGERATING APPARATUS WITH SINGLE COMPRESSOR AND MULTIPLE EVAPORATORS

Eiji Kuwahara, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Oct. 22, 1985, Ser. No. 790,172
Claims priority, application Japan, Dec. 1, 1984, 59-254341
Int. Cl.[4] F25B *49/00*
U.S. Cl. 62—197 **5 Claims**

1. A refrigerating apparatus with multiple evaporators comprising:

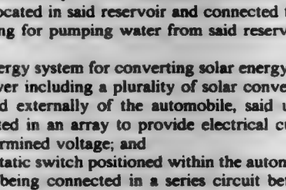
means for compressing refrigerant;

means for condensing the refrigerant fed from the output side said compressing means;

a plurality of evaporating means, connected in parallel with one another, for evaporating the refrigerant from said condensing means;

a plurality of valve means, one of said valve means being connected in series with each said evaporating means, respectively, for controlling the flow of refrigerant through a corresponding one of said evaporating means;

means for bypassing the refrigerant from an output side of said condensing means to an input side of said compressing means;



means for detecting the temperature of said bypassing means to indicate the pressure changes of the refrigerant at the input side of said compressing means occuring when each of said evaporating means is controlled by said corresponding valve means; and

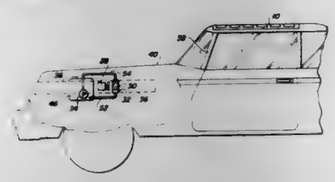
means for adjusting the capacity of said compressing means in response to the temperature of said bypass means detected by said detecting means.

4,658,597

SOLAR POWERED AUTOMOBILE COOLING SYSTEM

Shu Shum, 3720 Farwell Dr., Amarillo, Tex. 79109

Filed Jul. 3, 1985, Ser. No. 751,540
Int. Cl.[4] F25B *27/00;* **B60H** *1/32;* **H01L** *35/12*
U.S. Cl. 62—235.1 **7 Claims**



1. A cooling system for the passenger compartment of an automobile, the automobile including a ventilation duct extending between a front portion of the automobile and passenger compartment for admitting external air to the compartment, said system comprising:

an evaporative cooler including a water reservoir, an evaporative mesh pad, a pump for circulating water from said reservoir to said pad and a fan for blowing air over said pad and into the passenger compartment, said pad being positioned in the ventilation duct in a path of the external air, said fan being positioned in the ventilation duct between the front portion and said pad for blowing air through said pad when the automobile is motionless, said water reservoir comprising a refillable enclosed tank positioned externally of the ventilation duct and said pump being located in said reservoir and connected to said pad by tubing for pumping water from said reservoir to said pad;

a solar energy system for converting solar energy to electrical power including a plurality of solar conversion units mounted externally of the automobile, said units being connected in an array to provide electrical current at a predetermined voltage; and

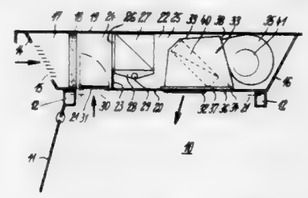
a thermostatic switch positioned within the automobile, said switch being connected in a series circuit between said solar system and said evaporative cooler whereby a temperature within the automobile above a predetermined value will cause activation of said switch to permit current from said solar sysem to said evaporative cooler to activate said fan and said pump to effect cooling of the passenger compartment.

4,658,598

APPARATUS FOR VENTILATING AND AIR-CONDITIONING DRIVER COMPARTMENTS

Joachim Schulz, Amorbach, Fed. Rep. of Germany, assignor to Aurora Konrad G. Schulz GmbH & Co., Mudau/Odenwald, Fed. Rep. of Germany

Filed Apr. 11, 1986, Ser. No. 851,124
Claims priority, application Fed. Rep. of Germany, May 2, 1985, 3515853
Int. Cl.[4] B60H *1/32*
U.S. Cl. 62—239 **13 Claims**



1. An apparatus for ventiating and air-conditioning driver compartments; the apparatus includes an air inlet area, downstream of which are provided an evaporator of an air-conditioning unit, and fan means; the apparatus can be secured to the roof construction of said driver compartment, and is provided with air outlet openings that lead to the latter; said apparatus further comprises:

a base plate that is secured to said roof construction and closes off the space formed by the latter and said base plate, with said space accommodating said air inlet area, said evaporator, and said fan means; said base plate is provided with said air outlet openings; and

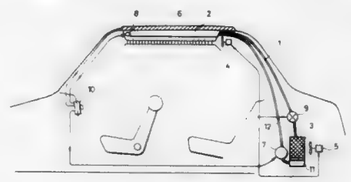
a partition that is disposed in said space and extends at a right angle to said base plate; said partition extends transverse to the direction of flow of air from said air inlet area to said evaporator, and is associated with the latter; said partition is furthermore provided with an aperture, the dimensions of which are adapted to the air passage cross-section of said evaporator.

4,658,599

COOLER FOR AUTOMOTIVE USE

Yasuya Kajiwara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 738,207, May 28, 1985, abandoned. This application Dec. 17, 1985, Ser. No. 808,688
Claims priority, application Japan, May 28, 1984, 59-109856; May 31, 1984, 59-113458
Int. Cl.[4] B60H *1/32*
U.S. Cl. 62—239 **8 Claims**



1. A compressorless cooler for cooling a parked automotive vehicle comprising: a liquid coolant filled evaporator provided on a ceiling of a passenger compartment of said vehicle, a radiator provided in a location in said vehicle which is not exposed to direct rays of the sun and which is ventilated, a heat pipe connecting said evaporator and said radiator, a valve provided in series with said heat pipe for regulating the flow of coolant vapor through said heat pipe, solar cells, a return pipe through which coolant liquefied in said heat sink is returned to said evaporator, a noncompressing pump for circulating said

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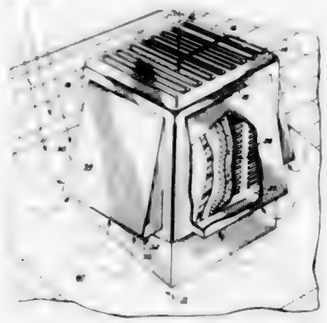
liquid coolant, said pump being provided in said return pipe and being operated by power generated by said solar cells, and fans provided in the vicinity of said evaporator and said radiator and which are also operated on power generated by said solar cells.

4,658,600

ENTHALPIC EVAPORATIVE AIR CONDITIONING DEVICE WITH HEATING

Franklyn F. Kelley, 7802 N. 36th Dr., Phoenix, Ariz. 85021

Filed May 7, 1984, Ser. No. 607,751
Int. Cl.[4] F01N *3/02*; F24F *3/14*
U.S. Cl. 62—311 **16 Claims**



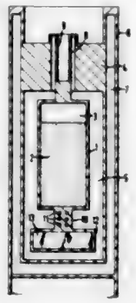
1. An improved enthalpic cooling apparatus for use with an evaporative cooling device which includes a housing having an intake open to ambient air to be treated and a discharge for treated air, air delivery means having a motor for inducing an airflow path from the said intake to discharge, and evaporative treatment means including water treatment means in said airflow path for effecting evaporative cooling, said improved apparatus comprising a thermally absorbant material for solar heating and expanding the air introduced at said intake above the temperature of the said ambient air thereby decreasing the wet bulb temperature of air adjacent said thermally absorbent material and inlet duct means communicating the heated and expanded air from proximate said thermally absorbent material to said intake.

4,658,601

CRYOGENIC CELL

Steven P. Burchell, Folly Hill; Nicholas W. Kerley, Standlake, and David W. Mellor, Blackwater, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Feb. 27, 1985, Ser. No. 706,113
Int. Cl.[4] F25B *19/00*
U.S. Cl. 62—514 R **8 Claims**



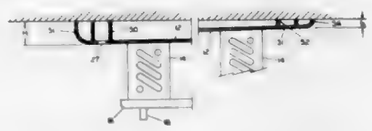
1. A neutron logging tool comprising a probe containing in sequence from the bottom end a source of neutrons, a shield against radioactivity, a semiconductor detector for gamma radiation and a cryogenic cell comprising an external annular chamber, adapted to be maintained under vacuum and partially enclosing a heat shield fabricated from a metal of high thermal conductivity and high specific heat capacity, surrounding and spaced apart from an enclosed inner chamber adapted for the storage of a solid/liquid refrigerant, the space between the heat shield and the chamber forming an annular chamber adapted to be maintained under vacuum, the heat shield having a relatively thin base and sidewall and a relatively thick exposed upper collar having a well therein leading to the top of the chamber, the collar, well and top of the chamber being adapted to receive a "cold finger" to lower the temperature of the shield and chamber, the chamber being connected at its lower end to a further chamber suitable for the reception of a gamma radiation detector.

4,658,602

REFRIGERATION EVAPORATORS WITH PITCHED TOP PANEL

Wayne F. Giberson, Yardville; Glenn T. Estep, Trenton, both of N.J., and Daniel E. Kramer, Yardley, Pa., assignors to Kramer Trenton Co., Trenton, N.J., by said Giberson and Estep

Filed Dec. 23, 1985, Ser. No. 812,891
Int. Cl.[4] F25B *39/02*
U.S. Cl. 62—515 **5 Claims**



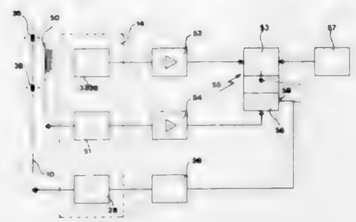
1. A refrigeration evaporator including a fin pack, means postioned above the fin pack for variably spacing the fin pack from a substantially horizontal mounting surface, said means comprising a top plate of varying thickness.

4,658,603

DEVICE FOR SETTING THE ADJUSTABLE TRAVERSE OF THE YARN FEEDERS OF A FLAT KNITTING MACHINE

Thomas Stoll, Memminger Strasse 7; Ernst Goller, Hindenburgstrasse 37, both of D-7410 Reutlingen 1; Guenther Kazmaier, Fichtenstrasse 12, D-7411 St. Johann-Ohnastetten, and Franz Schmid, Eichenweg 20, D-7454 Bodelshausen, all of Fed. Rep. of Germany

Filed Aug. 11, 1986, Ser. No. 895,449
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1985, 3529610; Mar. 3, 1986, 3606821
Int. Cl.[4] D04B *15/52*
U.S. Cl. 66—126 R **10 Claims**



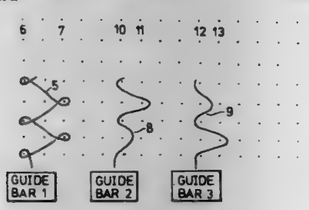
1. A device for use in a flat knitting machine having a needle bed, a cam carriage, a plurality of yarn feeders, and yarn feeder rails guiding said feeders during reciprocation of the cam carriage, said device comprising electromagnetic coupling devices located on the cam carriage of the flat knitting machine and acting upon the yarn feeders to effect their movement, a programmable control device comprising a position transmitter responsive to the position of the cam carriage in relation to the needle bed, at least one desired value/actual value comparator stage, at least two yarn feeder limit stops being provided for each yarn feeder rail, which stops are adjustable along the rail, at least one sensor/coupling member being associated with the control device, said stops co-operating with said sensor/coupling member, the latter being located on said cam carriage, and said control device having a computing stage responsive to the position of the yarn feeder limit stops as a reference value.

4,658,604

WARP KNITTED FABRIC AND METHOD OF KNITTING SAME

David Wilson, West Bridgford, England, assignor to Courtaulds Plc, London, England

Continuation of Ser. No. 740,041, May 31, 1985. This application Aug. 8, 1986, Ser. No. 894,096
Int. Cl.[4] D04B *21/00*
U.S. Cl. 66—192 **12 Claims**



1. A warp knitted outerwear fabric comprising a coherent fabric structure knitted from a ground yarn and including at least one elastic yarn laid into said fabric structure so as to extend generally in the longitudinal direction thereof, wherein said fabric includes

(a) at least two sets of covered elastomeric yarns each supplied on a separate fully threaded guide bar so that at least two covered elastomeric yarns are laid into each wale of the fabric, and

(b) each covered elastomeric yarn is laid into a single wale of the fabric but makes excursions at spaced intervals in the fabric into an adjacent wale,

(c) said excursions of one covered elastomeric yarn taking place in courses different from the excursions of another covered elastomeric yarn, and

(d) the knitted structure of said fabric being such that said covered elastomeric yarns are located in a surface of said fabric and contribute to the surface texture thereof.

4,658,605

WASHING MACHINE

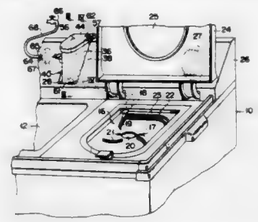
Masanobu Yanagihara, Gifu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 7, 1985, Ser. No. 709,374
Claims priority, application Japan, Mar. 16, 1984, 59-51973; Mar. 16, 1984, 59-51974; Mar. 16, 1984, 59-51975
Int. Cl.[4] D06F *39/08*, *39/10*
U.S. Cl. 68—23.5 **16 Claims**

1. A washing machine comprising:

a main body including a washing tub and a dry tub; and

filter means for filtrating water from a water supply and feeding the filtrated water to the main body, said filter means including a body case detachably mounted on the main body, and a filtering member removably set in the body case and dividing the interior of the body case into an inflow chamber supplied with the water from the water supply and communicating with the outside air, and an outflow chamber supplied with the water filtrated by the



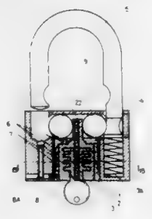
filtering member and communicating with the interior of the main body.

4,658,606

LOCK CENTERS AND KEYS FOR PADLOCKS

Chin-Shan Tseng, 10-3, Cheng Shin, Pin Tung, Taiwan

Filed Aug. 16, 1983, Ser. No. 523,570
Int. Cl.[4] E05B *67/22*
U.S. Cl. 70—38 A **9 Claims**



1. Lock components for use in a padlock, said components comprising:

a cylindrical, hollow barrel having a side wall, the inner surface of which defines a lock center bore, and a radially inwardly extending flange having a lock hole bore extending therethrough and communicating with said lock center bore, said barrel side wall having a plurality of radial pin holes therein each in communication with said lock center bore and said barrel flange having a axial pin hole therein in communication with said lock center bore; and

a lock center rotatably mounted in said barrel lock center bore,

said lock center having a plurality of axially arranged arc-shaped teeth located on one side as seen in an axial cross-section, said teeth defining a plurality of slots therebetween,

said lock center having a plurality of radial lock center pin holes, each lock center pin hole corresponding to one of said barrel pin holes so as to be radially alignable and in communication therewith, and

said lock center also having an axial lock center pin hole corresponding to said barrel flange pin hole and located in said tooth closest to said barrel flange.

4,658,607

OUTBOARD MOTOR LOCK

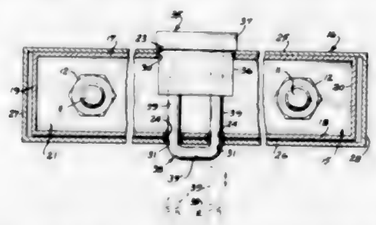
Ira F. Muse, Jr, and Jerrold L. Flowers, both of Wilson, N.C.

Filed Nov. 20, 1985, Ser. No. 799,882
Int. Cl.[4] F16B *41/00*
U.S. Cl. 70—164 **4 Claims**

1. A locking apparatus for use in securing an outboard motor to the transom of a motorboat wherein the motor mount includes at least two spaced bolts which extend through the

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transom of the boat and which are normally secured to the transom by lock nuts threadingly engaged about the bolts wherein the locking apparatus comprises said at least two spaced bolts, a first elongated housing section having a generally U-shaped cross section and which includes a rear wall for engaging the transom of the boat and spaced upper and lower walls which extend outwardly therefrom, said rear wall of said first housing section being generally planar so that said rear wall is in continuous abutting contact with the boat transom along its length to thereby reinforce the transom, said first housing section having a pair of spaced holes through said rear wall thereof so as to be in substantial alignment with the bolts extending through the transom of the boat and further having a first enlarged opening through the upper wall thereof in spaced offset relationship with respect to said spaced holes through the rear wall thereof, said pair of spaced holes in said rear wall having a diameter substantially equal to the diameter of the bolts which extend through the transom, a first pair of spaced openings through the lower wall of said first housing section, said first pair of spaced openings in said lower wall being in opposing alignment with said first enlarged opening through said upper wall thereof, a second elongated housing section having a generally U-shaped cross section and having



an outer wall disposed in opposing relationship with the rear wall of said first housing section and having upper and lower walls extending outwardly therefrom toward said rear wall of said first housing section, a second enlarged opening through said upper wall of said second housing section and a second pair of spaced openings through the lower wall thereof which are in opposing alignment with said second enlarged opening, said first and second enlarged openings and said first and second pairs of spaced openings being in general alignment with one another when said second housing section is brought into nested relationship with said first housing section, at least one of said first and second housing sections including a pair of opposing end walls which extend between said upper and lower walls and between said rear wall of said first housing section and said outer wall of said second housing section, padlock means having a body portion insertable through said aligned first and second enlarged openings so as to be substantially disposed between said first and second housing sections, padlock bolt means selectively extended through said first and second aligned pairs of spaced openings in said lower walls of said first and second housing sections and engageable with said padlock means whereby the mounting bolts extending through the transom and the lock nuts are enclosed within said first and second sections.

4,658,608

SECURITY VALVE MECHANISM FOR A HYDRAULIC SYSTEM

Douglas M. Fox, 7311 Bellenive, Ste. 324, Houston, Tex. 77036

Division of Ser. No. 538,058, Sep. 30, 1983, Pat. No. 4,623,630, which is a continuation-in-part of Ser. No. 405,055, Aug. 4, 1982, Pat. No. 4,427,068, which is a continuation-in-part of Ser. No. 347,210, Feb. 9, 1982, abandoned. This application Nov. 9, 1984, Ser. No. 670,283

Int. Cl.⁴ F16K *35/00*

U.S. Cl. 70—179 **12 Claims**

1. A security valve mechanism for use between a source of hydraulic pressure and a pressure actuated mechanism comprising:

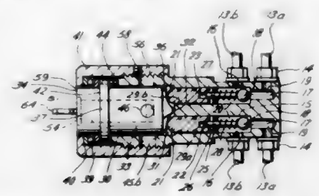
a housing

apertures in said housing;

a duct in said housing in fluid communication with said apertures;

a movable check valve in said housing;

transportation means for moving said movable check valve to either of two positions, the first said position being



intrusive to said duct, the second said position being one withdrawn from said duct;

wherein said movable check valve in said first position allows the selective opening or closing of said duct to allow flow of fluid in one direction but in said second position flow of fluid along said duct is permissible in either direction.

4,658,609

UNIVERSAL JOINT LOCK

Thorwald J. Mickelson, Excelsior, Minn., assignor to Transport Security Inc., Minneapolis, Minn.

Filed Aug. 4, 1982, Ser. No. 404,275

Int. Cl.⁴ B60R *25/02*; **E05B** *65/12*

U.S. Cl. 70—183 **1 Claim**



1. In combination with a system having first means and second means operatively connected by a universal joint embodying cooperating yoke sections;

a. movement inhibiting means insertable between said yoke sections, said movement inhibiting means when installed between said yoke sections inhibiting relative movement between said yoke sections, and lock means for holding said inhibiting means in movement inhibiting position between said yoke sections;

b. said movement inhibiting means comprises a rigid elongated member insertable between said yoke sections, located adjacent one end of said member, second means forming a part of said member adapted to engage at least one of said yoke sections and prevent longitudinal movement of said member when so engaged, and third means adjacent the other end of said member, and connected therewith adapted to engage said lock means to hold said member in said movement inhibiting position;

c. fourth means adjacent to the other end of said member and forming a part thereof adapted to engage said lock means to hold said member in said movement inhibiting position;

d. said fourth means includes a slot formed in said member communicating with one edge portion of said member and adapted to receive the shackle of a padlock spanning the width of said member; and.

e. said member has a second enlarged head portion at the end opposite said first enlarged head portion, said second enlarged head portion being wider than the main body portion of said rigid member located intermediate said first and second enlarged head portions, and said second enlarged head portion being adjacent said slot and adapted to prevent removal of a padlock when the shackle thereof is installed in said slot in locking engagement with said member.

4,658,610

CYLINDER LOCK

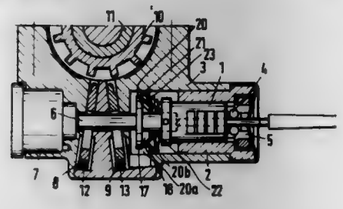
Günter Weber, Wuppertal, Fed. Rep. of Germany, assignor to Neiman S.A., Courbevoie, France

Filed Apr. 12, 1985, Ser. No. 722,475

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414277

Int. Cl.⁴ E05B *65/12*; **B60R** *25/02*

U.S. Cl. 70—252 **5 Claims**



1. A cylinder lock comprising:

(a) a housing,

(b) at least one locking element movable between a non-locking position and a locking position,

(c) a cylinder core provided with an axial key entry channel and being rotatable within said housing and axially movable between an outer position and an inner position in relation to housing,

(d) a transmission element within said housing movable between a non-locking and a locking position capable of permitting movement of said locking element respectively to its non-locking position and to its locking position according to the disposition of said transmission element,

(e) a cam follower connected to said transmission element and extending axially of the cylinder core,

(f) a cam element rotatable by said cylinder core having a cam surface engaged by said cam follower, said cam surface including a first portion along which the cam is effective to move the transmission element from the locking position the non-locking position and a second portion along which the cam is effective to maintain said transmission element in the non-locking position,

(g) a circular dished plate having a sloping exterior rim coaxially disposed on the cylinder core axis between said cam element and said cylinder core,

(h) first spring means between said dished plate and said cylinder core,

(i) a ring engageable with the exterior marginal region of the dished plate, and

(j) second spring means between said ring and said cylinder core,

whereby on axial movement of the cylinder core to its inner position and hence also the axial shifting of the cam element, the plate and the ring, the axial distal end of the cam follower enters the space within the dished plate, rotation of the cam element causing the cam follower to move away from the cylinder core axis and to effect tilting of the dished plate and said ring by engagement of said axial distal end of the cam follower against the interior surface of the rim until the cam follower has moved radially beyond the rim whereupon said dished plate returns under the action of said first spring means towards the cam element leaving said ring tilted with the second spring means under tension and said cam element engaging the exterior of the rim, said cam follower being permitted to return towards the axis of the cylinder core only on axial movement of the dished plate which effects disengagement of the cam follower from the rim brought about by axial movement of the cylinder core to its outer position under the influence of the second spring means upon withdrawal of the key from the cylinder core.

4,658,611

LOCKING MEMBER INCORPORATING A CAM LEVER LOCK AND A SLIDING BOLT

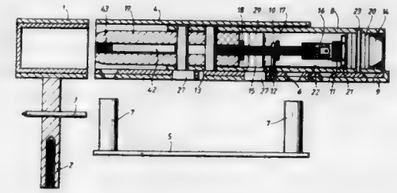
Bryan Deacon, Chippenham, Great Britain, assignor to F. C. Brown (Steel Equipment) Limited, Bisley, United Kingdom

Filed Jul. 9, 1985, Ser. No. 753,331

Claims priority, application United Kingdom, Jul. 12, 1984, 8417729

Int. Cl.⁴ E05B *65/06*

U.S. Cl. 70—360 **17 Claims**



1. A locking member comprising a mounting enclosure, a housing member and a cam lever lock having a cam plate and installed within the housing member, the housing member being slidably movable within the mounting enclosure between a locking position wherein an end part of the housing member projects beyond one end of the mounting enclosure to be received in a keeper and so that the remainder of the housing member is within the mounting enclosure, and a release position wherein said end part of the housing member is withdrawn into the mounting enclosure, slots being defined in both the housing member and the mounting enclosure, which slots will be mutually aligned in the locking position for receipt of the cam plate of the lock to secure the housing member and mounting enclosure together, and wherein a rotatable portion forms part of the cam lever lock, and an extension shaft projects from the rotatable part into the housing member, the cam plate being attached on the extension shaft for rotation therewith into and out of said aligned slots.

4,658,612

FLEXIBLE STRIP KEY

Armin Eisermann, Velbert, Fed. Rep. of Germany, assignor to Schulte-Schlagbaum Aktiengesellschaft, Velbert, Fed. Rep. of Germany

Filed Jun. 10, 1985, Ser. No. 743,181

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1984, 8417687[U]

Int. Cl.⁴ E05B *19/02, 19/26*

U.S. Cl. 70—402 **10 Claims**



1. A waterproof key, particularly for locks of bath-house locker doors, which can be worn on the arm of a bathing guest wearer, comprising

a strip of material having free ends and an opening code for

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a lock, said material being sufficiently flexible by a person's hand alone to permit said strip to be bent into an annular form, said material being non-rigid such that itself it is unable to maintain the annular form,

said strip being formed with connecting means at its ends for connecting said strip to itself adjacent its ends when the strip is bent into the annular form so as to form an arm band of suitable diameter for encircling the arm of the respective wearer,

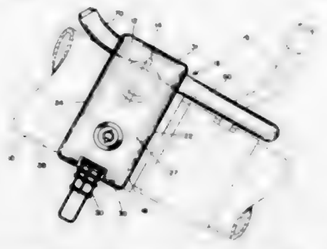
said connecting means for maintaining the annular form of the strip without permitting the arm band to unintentionally tighten and loosen, respectively.

4,658,613

AUTOMOBILE ANTI-THEFT DEVICE

Joseph E. Solow, Plainview, N.Y., assignor to Wolo Manufacturing Corporation, Deer Park, N.Y.

Filed Nov. 27, 1985, Ser. No. 802,870
Int. Cl.⁴ E05B *17/14*
U.S. Cl. 70—427 **4 Claims**



1. An automobile anti-theft device for a steering column with an ignition lock and a column-mounted gear shift lever moveable between "park" and selected gears, comprising:

a cover having a hollow interior space and being open on one side, the open side defined by laterally separated sidewalls having arcuate edge surfaces spacing opposite ends of said cover, thereby being adapted to fit over a portion of a steering column containing an ignition lock;

a tension bearing element;

means for attaching one end of said element to one end of said cover to permit the remaining portion to wrap around a steering column;

means for releasably attaching said element to the other end of said cover; and

a gear shift lock bar having one end attached to one sidewall of said cover and projecting laterally from said cover a distance sufficient, when said device is mounted on a steering column, to interfere with the movement of the gear shift lever from "park", wherein said gear shift lock bar has a portion sized to fit around a column mounted gear shift lever, wherein said portion is a U-shaped portion, and wherein said gear shift lock bar further includes a free end that extends, in the lateral direction, back toward the cover and under the tension bearing element.

4,658,614

SHAPE CONTROL APPARATUS FOR FLAT MATERIAL

Yoshinori Wakamiya, Nishinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1985, Ser. No. 727,563
Claims priority, application Japan, May 9, 1984, 59-94906
Int. Cl.⁴ B21B *37/10*
U.S. Cl. 72—8 **2 Claims**

1. A shape control apparatus for producing rolled products from flat material and having rolls for shaping said material, said shape control apparatus comprising:

means for measuring temperatures of said material at a plurality of points in a widthwise direction in a leading portion of flat material entering said rolls and producing temperature-representing signals,

a thermal crown calculating means having an input receiving product number signals representing count of rolled products from flat material rolled in said rolls and time interval signals representing rolling time intervals following rolling of a number of products and operable for making a first determination from said product number and interval-representing signals of and producing an output representing a thermal crown magnitude in a widthwise direction of said rolls after a change in the vertical spacing of said rolls following rolling of a number of rolled products,

a roll wear calculating means having an input receiving rolling weight signals representing rolling weight of said rolls and operable for making a second determination from said rolling weight-representing signals of and producing an output representing roll wear magnitude in a widthwise direction of said rolls from rolling history information of said rolls after a change in the vertical spacing of the rolls following rolling of a number of rolled products,



an optimum rolling temperature distribution determining means connected to receive the outputs representing thermal crown magnitude, roll wear magnitude, and a reference bending force corresponding to a maximum bending force correction for an optimum rolling temperature distribution in a widthwise direction of flat materials entering said rolls, and operable for determining from the outputs and the reference bending force and producing an output representing an optimum rolling temperature distribution to be applied to the flat material,

a heating/cooling device for heating and cooling a plurality of separate divisions of flat material divided widthwise and entering said rolls, and

a controller for said device including means for comparing the output representing the optimum rolling temperature distribution with an output representing a temperature distribution signal from said temperature measuring means and determining any differences, and means for controlling said device to heat or cool said material to reduce such differences.

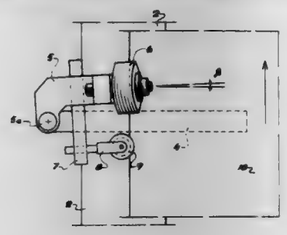
4,658,615

ROLLER FLANGING MACHINE FOR METAL STRIPS AND THE LIKE

Randolph N. Mitchell, Rome, Italy, assignor to Slim-Societa Lavorazioni Industriali Metalli S.p.A., Cisterna Di Latina, Italy

Filed Dec. 14, 1984, Ser. No. 681,872
Int. Cl.⁴ B21B *15/00, 37/00*
U.S. Cl. 72—16 **4 Claims**

1. A roller edging apparatus for a metal strip comprising a movable support member which supports an edging head, said edging head supporting a pair of working idler rollers, said idler rollers having outer surfaces forming an edging angle therebetween and said edging angle being adapted to have an edge of said metal strip pass between said rollers in contact with a portion of said roller outer surfaces to provide an edging on said metal strip edge, said idler rollers being mounted on the edging head with their axes of rotation lying in a first plane substantially perpendicular with a second plane containing a line that indicates the direction of movement of said metal strip said first plane and a line transverse to said direction of movement defining an acute angle in the direction of movement of



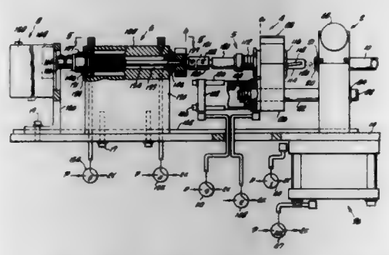
said metal strip, moving means attached to the support member to reciprocally move the edging head, and metal strip width response means attached to the moving means and being adapted to sense a variance in the width of said metal strip width and to activate the moving means to move the edging head.

4,658,616

AUTOMATIC ROLLER SWAGE MACHINE

Robert P. Bastone, Thousand Oaks, Calif., assignor to Sierracin Corporation, Sylmar, Calif.

Filed Oct. 15, 1984, Ser. No. 661,098
Int. Cl.⁴ B21D *39/10*
U.S. Cl. 72—19 **13 Claims**



1. A roller swaging machine for installing a metallic sleeve on a metallic tube by expanding the tube into engagement with the sleeve, the machine comprising:

(a) an expander assembly having a tapered mandrel for engaging a plurality of tapered rollers for expanding the tube as the mandrel is rotated and advanced on its axis, the mandrel requiring a final maximum torque as the tube reaches complete expansion; and

(b) a drive for rotating the mandrel in a swaging cycle, the drive being capable of rotating the mandrel at a high speed and at low speeds; and

(c) control means for the drive for

(i) rotating the mandrel at the high speed during initial expansion of the tube and

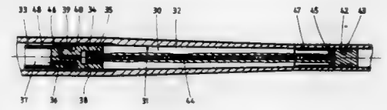
(ii) during final expansion of the tube when rotation of the mandrel requires more than 90 percent of the final maximum torque, rotating the mandrel at speeds no more than 50 percent of the high speed.

4,658,617

METHOD PERMITTING THE INCREASE OF OPERATIONS OF COLD PILGER MILLS AND AN APPARATUS FOR THE EMBODIMENT OF THIS METHOD

Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Vallourec, France

Filed Jan. 2, 1985, Ser. No. 688,298
Claims priority, application France, Jan. 5, 1984, 84 00697
Int. Cl.⁴ B21B *45/02*
U.S. Cl. 72—44 **5 Claims**



1. An improved method for cold rolling a pipe blank on a pilger mill, the pilger mill comprising grooved rolls mounted on a rolls carriage to work the blank along the rolling axis between an upstream dead center and a downstream dead center, the pipe blank having a mandrel with decreasing diameter from upstream to downstream located therein, the method comprising the steps of:

working the blank on the grooved rolls between the upstream dead center and downstream dead center;

periodically advancing the blank downstream a set distance;

periodically recoiling the mandrel upstream a distance greater than the distance the blank is periodically advanced downstream and returning the mandrel to its initial position to momentarily increase or create and reduce in size an annular passage; and

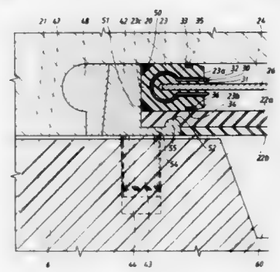
injecting a fluid in the annular passage.

4,658,618

FORMING PRESS OF THE PRESSURE CELL TYPE

Keijo Hellgren, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Jan. 28, 1986, Ser. No. 823,326
Claims priority, application Sweden, Feb. 6, 1985, 8500544
Int. Cl.⁴ B29C *17/04*
U.S. Cl. 72—63 **9 Claims**



1. A forming press of the pressure cell type comprising a press stand with two opposing pressure-absorbing elements between which a working space is formed; a press plate, means defining a recess in said press plate, and elastic diaphragm sealingly mounted in the recess to define an expansible pressure cell; a tool carrier member insertable into said working space which, in the inserted position of the tool carrier member, forms a closed press space together with the press plate and the dipahragm; and a pressure medium source for pressurization of the pressure cell for pressing the diaphragm against a workpiece on a forming block in the tool carrier member for forming the workpiece to the desired shape,

characterized in that

the pressure cell is formed from a substantially plane diaphragm, a substantially plane surface in the press plate, and a sealing ring disposed around the periphery of the diaphragm so as to bridge a gap between the diaphragm and the press plate, the sealing ring having sealing surfaces making contact with the diaphragm and the press plate, the sealing ring being supported by force-absorbing members in the press which are arranged around the periphery of the diaphragm, and the sealing ring having spring elements for pressing the sealing surfaces of the sealing ring against the press plate and the diaphragm, respectively.

4,658,619

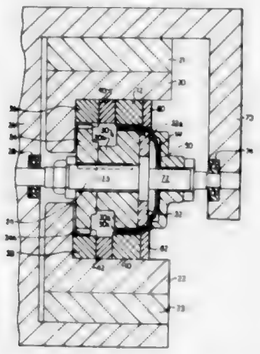
MACHINE FOR SPLINING CLUTCH HUBS

Gary R. Hill, Holland, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Continuation of Ser. No. 531,092, Sep. 12, 1983, Pat. No. 4,596,127. This application Mar. 20, 1986, Ser. No. 842,094

Int. Cl.⁴ B21D *17/04*; B21H *5/00*

U.S. Cl. 72—88 **3 Claims**



1. The combination of a mandrel disposed in a cylindrical sleeve of a power transmission member and rack tool means for supporting the cylindrical sleeve on a power transmission member as the sleeve rotates about its longitudinal axis with the mandrel therein during splining of another sleeve thereof by a toothed rack tool means, said rack tool means comprising a pair of sliding spaced apart facing support racks each having a body with a leading and trailing end and with a working surface therebetween, each said working surface including a first working section extending from the leading end toward the trailing end and having a plurality of substantially coplanar support sections for supportingly contacting the rotating sleeve with the support section interrupted and spaced apart in a direction from the leading end toward the trailing end by non-supporting sections in an alternating sequence from the leading end toward the trailing end and including a second working section extending from the first working section toward the trailing end and having another support section substantially coplanar with said plurality of support sections, the working surfaces of the support racks being disposed relative to one another and to the mandrel such that the support sections tangentially supportingly contact the cylindrical sleeve on diametrically opposite sides thereof without substantially radially deforming the sleeve as the support racks slide therepast.

4,658,620

TANDEM MILL

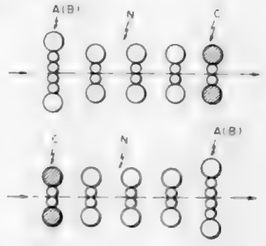
Takeshi Masui, Hyogo, Japan; Eizo Yasui, Chicago, Ill., and Yukio Matsuda, Ibaraki, Japan, assignors to Sumitomo Metal Industries, Ltc., Osaka, Japan

Continuation of Ser. No. 642,691, Aug. 20, 1984, abandoned, which is a continuation of Ser. No. 283,542, Jul. 14, 1981, abandoned. This application Mar. 13, 1986, Ser. No. 840,468

Claims priority, application Japan, Aug. 8, 1980, 55-109545; Nov. 26, 1980, 55-166098

Int. Cl.⁴ B21B *1/04*

U.S. Cl. 72—234 **1 Claim**



1. A tandem mill comprising a plurality of stands, characterized in that the final stand is a sleeve expanding mill, at least one of the stands exclusive of the last stand is a sleeve sliding mill or an intermediate back-up roll shifting mill, and the other stands are common four-high mills.

4,658,621

ROLLING APPARATUS

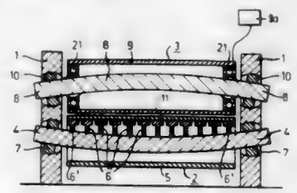
Christoph Link, Weingarten, and Herbert Brandiser, Mochenwangen, both of Fed. Rep. of Germany, assignors to Sulzer-Escher Wyss AG, Zürich, Switzerland

Filed Dec. 3, 1984, Ser. No. 677,571

Claims priority, application Switzerland, Dec. 22, 1983, 6844/83

Int. Cl.⁴ B21B *13/14, 31/16*

U.S. Cl. 72—243 **18 Claims**



1. A rolling apparatus comprising:
a roll stand possessing two sides;
a controlled deflection roll;
said controlled deflection roll containing a non-rotatable support non-rotatably supported at said two sides of said roll stand and a roll shell which is rotatable about said non-rotatable support;
said rotatable roll shell possessing a predetermined length and being support substantially along its length at said non-rotatable support;
supporting means rotatably supporting said rotatable roll shell of said controlled deflection roll at said non-rotatable support thereof;
at least one counter roll;
said at least one counter roll containing a journal-less tubular shell;
said roll shell and said journal-less tubular shell defining therebetween a roll nip of predeterminate extent;

means mounting said at least one counter roll at said two sides of said roll stand;
said mounting means including supporting means pivotably supporting said journal-less tubular shell of said at least one counter roll;
said supporting means of said at least one counter roll constituting only two bearing supports pivotably supporting said journal-less tubular shell of said at least one counter roll within the predeterminate extent of said roll nip; and
said two bearing supports pivotably supporting said journal-less tubular shell of said at least one counter roll and said supporting means supporting said rotatable roll shell of said controlled deflection roll at said non-rotatable support thereof being arranged at opposite sides of the roll nip in a mutually opposing relationship between said two sides of said roll stand.

4,658,622

ROLLING MILL

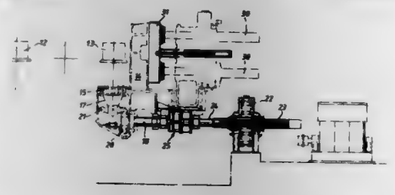
Ralph G. Haynes, Sheffield, England, assignor to Davy McKee (Sheffield) Limited, Sheffield, England

Filed Nov. 12, 1985, Ser. No. 796,862

Claims priority, application United Kingdom, Nov. 16, 1984, 8428981

Int. Cl.⁴ B21B *35/14, 31/22, 31/32*

U.S. Cl. 72—249 **9 Claims**



1. An edger mill comprising two opposite vertical rolls providing a roll gap therebetween each of which is mounted on a carrier for rotation about its axis; means associated with each roll carrier for effecting large adjustments in said roll gap when said mill is not under load; means associated with each roll carrier for effecting small adjustments in said roll gap when said mill is under load; a drive means for each roll extending essentially perpendicular to the axis of said roll, said means comprising first and second coaxial drive sections the first of which is provided with a splined end coupled to a drive pinion for driving it, said splined end accommodating large adjustments in said roll gap effected when said mill is not under load; a splined coupling connecting the other end of said first drive section to one end of said second drive section, said splined coupling accommodating small adjustments in said roll gap effected when said mill is under load; and interconnecting drive means connecting the other end of said second drive section to said roll.

4,658,623

METHOD AND APPARATUS FOR COATING A CORE MATERIAL WITH METAL

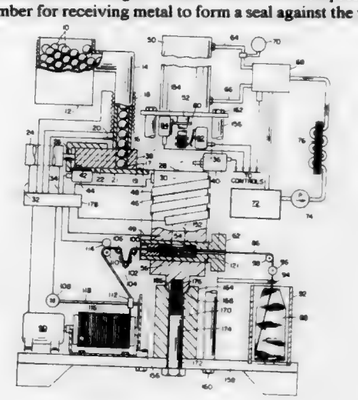
Richard J. Bisnyer, P.O. Box 18394, Austin, Tex. 78760, and Charles L. Mathews, P.O. Box 6290, Austin, Tex. 78762

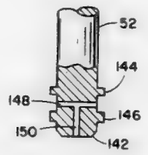
Continuation-in-part of Ser. No. 643,676, Aug. 22, 1984, abandoned. This application Aug. 12, 1985, Ser. No. 763,851

Int. Cl.⁴ B21C *23/24, 23/28, 26/00*

U.S. Cl. 72—268 **6 Claims**

1. Apparatus for coating elongated core material with metal, comprising:
a compression chamber, for receiving metal for extrusion and having an extrusion outlet;
an extrusion die assembly disposed for communication with the extrusion outlet of the compression chamber, and for receiving therethrough an elongated core material to be coated; and
a piston disposed within the compression chamber, for compression driving metal through the extrusion outlet to the die assembly;
said piston having spaced annular lands defining a circumferential seal area facing the inner wall of the compression chamber for receiving metal to form a seal against the wall





and substantially prevent leakage of metal past the piston during compression;
said piston including an internal passage between the circumferential seal area defined by the lands and the end of the piston that engages the metal in the chamber to admit metal to the seal area.

4,658,624

BENDING MACHINES

Charles I. Ridgway, and John R. Coultish, both of Wakefield, United Kingdom, assignors to Joseph Rhodes Limited, Wakefield, England

PCT No. PCT/GB84/00266, § 371 Date Apr. 1, 1985, § 102(e) Date Apr. 1, 1985, PCT Pub. No. WO85/00766, PCT Pub. Date Feb. 28, 1985

PCT Filed Aug. 2, 1984, Ser. No. 719,279

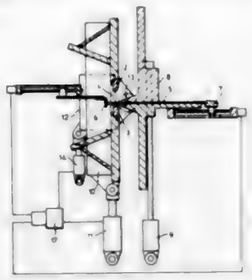
Claims priority, application United Kingdom, Aug. 2, 1983, 8320754

Int. Cl.⁴ B21D *5/04*

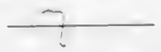
U.S. Cl. 72—316 **9 Claims**

1. A bending machine for forming sharp bends in sheet material, comprising:
clamping means for clamping part of said sheet material;
forming means mounted adjacent said clamping means;
said forming means comprising a pair of forming tools which are coplanar and facing each other and fixed relative to one another, each of said forming tools being an elongate member having a forming edge for contacting the opposite faces, respectively, of the unclamped portion of said sheet material to effect a bend in a corresponding one of two directions and both said forming tools being located on a unitary mounting frame, the space between said forming tools defining a slot through which the sheet material may be fed;
means for moving said forming means such that the angle between the plane of the clamped section of said sheet

material and the direction of motion of said forming means remains substantially constant throughout any one bending action; and



means for adjusting the forming means relative to the clamping means to select said angle according to the nature of the sheet and the desired bend and to allow for spring back of the material after bending.



4,658,625

BENDING MACHINE AND A DIE CHANGING SYSTEM FOR SUCH BENDING MACHINE

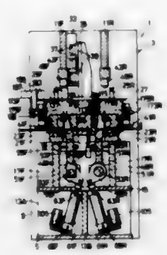
Shigeo Koyama, Hatano, and Katsuyoshi Sakamoto, Isehara, both of Japan, assignors to Amada Company, Limited, Japan

Filed Mar. 29, 1985, Ser. No. 717,675

Claims priority, application Japan, Mar. 30, 1984, 59-60887; Mar. 30, 1984, 59-60886; Apr. 5, 1984, 59-49140[U]; Apr. 5, 1984, 59-49141[U]

Int. Cl.⁴ B21D *5/04*

U.S. Cl. 72—322 **6 Claims**



1. A bending machine comprising:

a bottom die on which a sheet metal workpiece is supported horizontally in a frame body and a ram mounted above said bottom die and movable freely in a direction on the frame body;

an upper die which secures on the workpiece by pressing it against the bottom die and which is installed on the bottom section of said ram;

a bending beam mounted in said frame body and which is freely movable in the vertical direction to bend the edges of the workpiece upward which is secured by pressure between the top and bottom dies; and

a wedge-shaped guide member mounted on the ram, said bending beam being cooperable with said wedge-shaped guide member so as to steer the bending beam in the direction of the top die; and

means connected with said wedge-shaped guide member and said upper ram for vertical adjustment of the wedge-shaped guide member with respect to said upper die.

4,658,626

CONVEYOR IN PLASTIC WORKING MACHINE

Hiroyasu Yamada, Kawagoe; Motoatsu Shiraishi, Sakado; Ken Tazoe, Hidaka; Mitsuki Nakamura, Niiza; Ryoichi Kageyama, Sayama; Akira Namiki, Tokorozawa, and Masaru Sasagawa, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 692,800, Jan. 18, 1985, Pat. No. 4,625,540. This application Feb. 10, 1986, Ser. No. 827,562

Claims priority, application Japan, Jan. 20, 1984, 59-8097; Nov. 6, 1984, 59-233968; Nov. 6, 1984, 59-233969; Nov. 12, 1984, 59-238101; Nov. 12, 1984, 59-238102

Int. Cl.⁴ B21J *13/08*

U.S. Cl. 72—405 **5 Claims**



1. In a working machine having pairs of lower dies and upper dies disposed on a plurality of working stations, respectively, for cooperatively working a workpiece at the respective stations, the stations being set at intervals in a direction of conveyance of the workpiece,

a conveyor which comprises:

a pair of transfer bars spaced from one another a predetermined distance and disposed on opposite lateral sides of the working stations and extending parallel to each other in the conveying direction, said pair of transfer bars being unitarily movable in a vertical direction and in said conveying direction by respective driving means;

a plurality of arms disposed laterally bridging between the transfer bars so that each arm extends the full predetermined distance, said arms, except for at least one arm, being fixed to said transfer bars in a manner non-movable in the conveying direction relative to said transfer bars, said at least one arm being adjustably movable relative to the bars in the conveying direction by a drive mechanism; and

a handling mechanism provided for each arm for holding the workpiece.

4,658,627

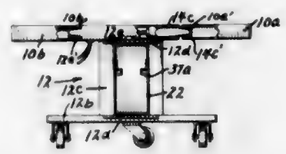
INDEPENDENT PULL TOWER FOR VEHICLE FRAME AND BODY STRAIGHTENING APPARATUS

Clarence R. Brewer, Sr., P.O. Box 247, Central City, Ky. 42330

Filed Aug. 26, 1985, Ser. No. 769,400

Int. Cl.⁴ B21D *1/12*

U.S. Cl. 72—447 **11 Claims**



1. An independentaly locatable pull tower for use in association with a conventional vehicle frame and body straightening apparatus of the type which includes a damaged vehicle receiving platform and a plurality of movable pull towers arranged on one end portion of same damaged vehicle receiving platform, said independently locatable pull tower comprising

a framework removably connectable to and movable independently of said damaged vehicle receiving platform,

an additional pull tower mounted on said movable framework, and

means for selectively securing said movable framework to said damaged vehicle receiving platform, said means including a powered wedge selectively bearing against portions of said damaged vehicle receiving platform.

4,658,628

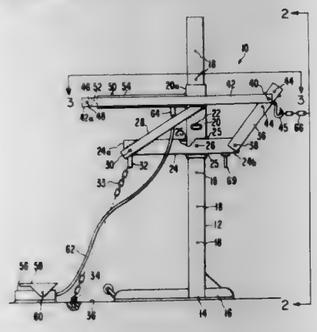
VEHICLE FRAME STRAIGHTENING APPARATUS

William G. Grace, 6263 Stabeli Dr., Kelseyville, Calif. 95451

Filed Mar. 29, 1985, Ser. No. 718,043

Int. Cl.⁴ B21D *1/12*

U.S. Cl. 72—450 **4 Claims**



1. A straightening apparatus for rigid frames and sheet metal products comprising:

a post having means for mounting the post on a support surface in an upright position;

a member adjustably mounted on and movable along the post;

means for releasably coupling the member on the post;

a rigid element rigid to the member, the element extending outwardly from the member in opposed directions;

a fluid-actuated power device extending laterally from the member;

a pair of pulling bars extending generally longitudinally of the power device and projecting laterally from the member in opposite directions;

means coupling the outer end of the power device to adjacent ends of the bars;

a pair of inclined braces pivotally coupled at the first ends thereof to one end of the element, there being means adjustably and pivotally coupling the opposite ends of said bars to the braces near second ends thereof, whereby the leverage provided by said power device and said element can be varied;

an attaching device adjustably coupled to the braces near second ends thereof; and

means coupled with the opposite end of the element for attaching the post to a fixed support.

4,658,629

HYDRAULIC, PNEUMATIC, PNEUMATIC-HYDRAULIC OR COMBINED PNEUMATIC-EXPLOSION PRESS

Milorad S. Milisavljevic, Lucerne, Switzerland, assignor to PTP Patentierte Technologische Prozesse AG, Lucerne, Switzerland

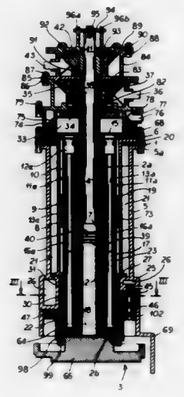
PCT No. PCT/CH83/00141, § 371 Date Aug. 19, 1985, § 102(e) Date Aug. 19, 1985, PCT Pub. No. WO84/02492, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 14, 1983, Ser. No. 770,864

Claims priority, application Switzerland, Dec. 20, 1982, 7400/82

Int. Cl.⁴ B21J *9/18*

U.S. Cl. 72—453.02 **24 Claims**



1. A press for the shaping of a material, comprising:

a supporting platform;

an outer fixed cylinder having a flange at an upper end thereof secured to said platform, said outer fixed cylinder depending from said platform and forming an outer wall of the press;

an inner fixed guiding cylinder coaxially received in said outer fixed cylinder with all around clearance and formed with an upper end having a flange secured to said platform;

a cover overlying said upper end of said inner fixed guiding cylinder and secured thereto, said cover having a central opening;

a movable cylinder slidably received in and guided by said inner fixed guiding cylinder and having a lower end lying below a lower end of said inner fixed guiding cylinder, said movable cylinder extending upwardly through said cover;

a pressing tool engageable with said material mounted on said lower end of said movable cylinder;

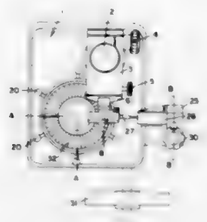
drive means mounted on said platform above said cover and said flanges for displacing said movable cylinder downwardly an exerting upon said movable cylinder and upon said tool through said movable cylinder a pressing force;

a central piston slidably received in said movable cylinder and entrainable therewith upon displacement for said movable cylinder by said drive means; and

retraction means mounted on said platform above said cover and said flanges and adapted to be coupled to said central piston for retracting same and thereby entraining said movable cylinder upwardly.

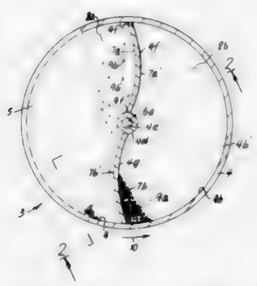
VOL 1077 ISS 3 AP 21 1987 UMI

4,658,630
METHOD AND APPARATUS FOR CALIBRATION OF LENGTH INDICATORS
Fritz Ekland, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed Oct. 15, 1985, Ser. No. 787,557
Claims priority, application Sweden, Oct. 19, 1984, 8405220
Int. Cl.[4] G01C *25/00*
U.S. Cl. 73—1 J **8 Claims**



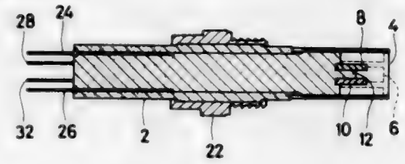
1. A method of calibrating a length indicator, comprising:
securing the length indicator in a stand above a reference plane;
adhering together a plurality of feeler gauges to form a connected sequence of feeler gauges having successively greater longitudinal dimensions, the feeler gauges including all dimensional values needed for calibrating the length indicator;
moving the adhered feeler gauges between the reference plane and a measuring point of the length indicator;
moving the sequence of feeler gauges in stages in contacting relationship with the measuring point of the length indicator;
whereby differences between the longitudinal dimensional values of the feeler gauges and the readings of the length indicator indicate erroneous readings for the length indicator.

4,658,631
FRIABILITY DRUM TESTER FOR PHARMACEUTICAL TABLETS
James E. Swon, 12 Twin Park Dr., Brookside, N.J. 07926, and Glen W. Hill, 28 Marion St., Port Reading, N.J. 07064
Filed Apr. 1, 1986, Ser. No. 846,937
Int. Cl.[4] G01N *3/56*
U.S. Cl. 73—7 **10 Claims**



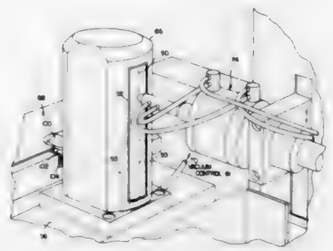
1. A pharmaceutical friability drum-tablet tester comprising in combination: drum means having circumscribing walls thereof forming a substantially total enclosure of enclosed space therein having a partitioning wall therein separating the space into at-least two separate sub-spaces totally isolated from each other, said partitioning wall extending in a direction parallel to an axis of rotation, and the drum means including port means for pharmaceutical tablet separate insertion into and withdrawal from said subspaces, said drum means being adapted to be revolvably supported and including said axis of rotation; and rotation means for causing said drum means to revolve around said axis of rotation.

4,658,632
SENSOR
Kazuko Sasaki, Hiroshima, Japan, assignor to Figaro Engineering Inc. and Mazda Motor Corporation, both of, Japan
Filed Dec. 10, 1985, Ser. No. 807,257
Claims priority, application Japan, Dec. 20, 1984, 59-270252
Int. Cl.[4] G01N *27/12*
U.S. Cl. 73—23 **8 Claims**



1. A λ sensor comprising a metallic oxide semiconductor whose resistance value is varied by a gas, characterized in that the metallic oxide semiconductor is a compound $ASnO_{3-\delta}$ wherein A is at least one member selected from the group consisting of Ra, Ba, Sr and Ca, and δ is a non-stoichiometric parameter, the compound $ASnO_{3-\delta}$ having added thereto the dioxide of at least one element selected from the group consisting of silicon, germanium, zirconium and hafnium in an amount of 5 to 300 mmols per mol of the compound $ASnO_{3-\delta}$.

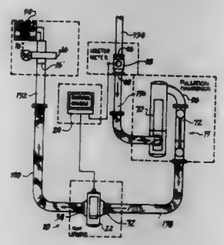
4,658,633
APPARATUS AND METHOD FOR MEASURING PROPERTIES OF CYLINDRICAL OBJECTS
Edgar P. Freer, Simi Valley, Calif., assignor to View Engineering, Inc., Simi Valley, Calif.
Filed Nov. 15, 1985, Ser. No. 798,736
Int. Cl.[4] G01B *13/06*
U.S. Cl. 73—37.5 **22 Claims**



21. A mechanism for measuring the thickness of the wall of a thin walled cylindrical object at a plurality of points comprising:
mandrel means registrable within the object, the mandrel including a curved reference surface on one side and a roller on the other, the reference surface including depression thereon;
means coupled to the mandrel means for providing reduced differential pressure at the concavities to draw a part of the wall of a cylindrical object registered thereon closely onto the reference surface;

first roller means coupled to the mandrel means and disposed adjacent and within the wall of the cylindrical object opposite the reference surface when the object is on the mandrel;
pivoted rotary indexer means disposed adjacent the mandrel means, the rotary indexer means including friction roller means rotatable through a given angle, and engaging the object wall against the first roller means when the indexer means is pivoted toward the mandrel means;
means for pivoting the indexer means toward and away from the mandrel means; and
non-contact means disposed adjacent the reference surface for scanning the wall of an object along the reference surface to measure the spacing of the outer surface thereof from the reference surface.

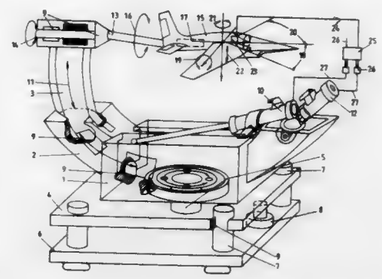
4,658,634
METER PROVER
Ray B. Killough, Matthews; Alan S. Higgins, Charlotte, and Thomas M. Broome, Waxhaw, all of N.C., assignors to Piedmont Natural Gas Company, Charlotte, N.C.
Filed Feb. 11, 1986, Ser. No. 828,965
Int. Cl.[4] G01F *25/00*
U.S. Cl. 73—3 **33 Claims**



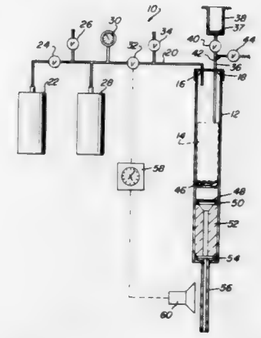
1. Apparatus for proving the gas flow measuring accuracy of a test meter of the rotary positive displacement type, comprising a master reference meter of the turbine wheel type, means for creating a moving gas stream at a selected flow rate, and means for directing a selected quantity of said gas stream successively first through said master reference meter and then though said test meter to permit comparison of the gas flow measurements by each thereof for determining the percentage accuracy of said test meter in comparison with said master reference meter; whereby the inherent rotar pulsations of said test meter do not significantly affect the gas flow measuring accuracy of said master reference meter to provide substantially accurate proving of the accuracy of said test meter.

4,658,635
SIMULATOR FOR AERODYNAMIC INVESTIGATIONS OF MODELS IN A WIND TUNNEL
Hartmut Pszolla; Werner Baumert, and Wolfgang Lorenz-Meyer, all of Göttingen, Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt, Bonn, Fed. Rep. of Germany
Filed Mar. 11, 1986, Ser. No. 838,612
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1985, 3508937
Int. Cl.[4] G01M *9/00*
U.S. Cl. 73—147 **3 Claims**

1. A simulator for aerodynamic investigations of models in a wind-tunnel, said simulator having a multipartite support comprising a part for the accomodation of the model and a mounting holding the parts of the support together, said parts of the support being arranged telescopically in the form of an approximate semicircle; and hydrostatic bearings being used as mountings.



4,658,636
HIGH-TEMPERATURE, HIGH-SHEAR CAPILLARY VISCOMETER
Robert E. Manning, Boalsburg, and Wallis A. Lloyd, State College, both of Pa., assignors to Cannon Instrument Company, State College, Pa.
Filed Mar. 18, 1986, Ser. No. 842,088
Int. Cl.[4] G01N *11/06*
U.S. Cl. 73—55 **12 Claims**



1. A viscometer for a liquid and which utilizes a pressurized gas and constant temperature bath comprises:
a closed ended tube having a chamber;
a first inlet in said tube for introducing said pressurized gas into said tube;
a second inlet in said tube for introducing said liquid into said chamber and for removing excess liquid from said chamber;
a capillary tube in communication with said chamber;
an outlet for said liquid in communication with said capillary tube;
a timer;
means for starting said timer being in communication with said first inlet and operatively connected to said timer; and
means for stopping said timer by sensing the movement of said pressurized gas after said liquid has exited said capillary tube, said stopping means being operatively connected to said timer and including an acoustic pick-up located adjacent said capillary tube and said outlet.

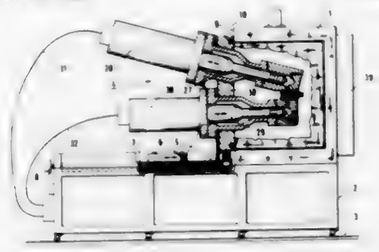
VOL 1077 ISS 3 APR 21 1987 UMI

4,658,637

CELL FOR ANALYZING A FLUID WHICH IS CONDENSABLE, AT LEAST IN PART

Bernard Ollivaud, Ligne, and Jean-Marie Lebas, Basse Goulaine, both of France, assignors to Alsthom, Paris, France

Filed Oct. 23, 1985, Ser. No. 790,592
Claims priority, application France, Oct. 23, 1984, 84 16196
Int. Cl.⁴ G01N *25/00*
U.S. Cl. 73—61.3 **5 Claims**



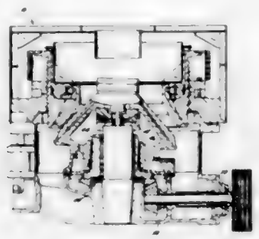
1. In a cell for analyzing a fluid which is condensable, at least in part, said cell forming a volume in which the fluid is inserted, said volume being delimited firstly by an outer envelope and secondly by an upper piston slidably mounted in a sealed manner in said outer envelope and means for slidably shifting said upper piston for adjusting the pressure of the fluid being analyzed, lower means within said outer envelope for adjusting the level of the gas/liquid separation surface, said outer envelope including portholes for displaying and measuring the level of said surface, means provided between the piston and said lower means for inserting the fluid to be analyzed into said volume and for emptying said volume of said fluid, the improvement wherein said means for slidably shifting said upper piston comprises a rod of a first control actuator linked to said upper piston, and said lower means for adjusting the level of said gas/liquid separation surface includes a lower piston slidably mounted within said outer envelope connected to a rod of a second control actuator.

4,658,638

MACHINE COMPONENT DIAGNOSTIC SYSTEM

Thomas G. Plahmer, Waukesha, Wis., assignor to Rexnord Inc., Brookfield, Wis.

Continuation-in-part of Ser. No. 721,097, Apr. 8, 1985, Pat. No. 4,620,185. This application Jul. 7, 1986, Ser. No. 882,324
Int. Cl.⁴ G01N *3/56*
U.S. Cl. 73—7 **14 Claims**



1. In a system for monitoring a machine having an internal circulating fluid and various replaceable, wearable components, such that the fluid is common to said wearable components, the process of monitoring the condition of circulating fluid to pinpoint malfunctioning components comprising:

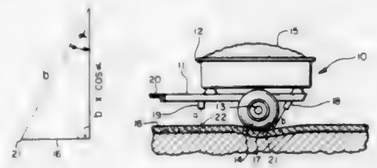
(a) distributing a distinct trace element indicator material in close proximity to each wearable component;
(b) establishing acceptable cumulative levels of indicators from all wearable components in said fluid;
(c) sampling said fluid; and
(d) analyzing said sample of said fluid by means capable of distinguishing between various indicators to detect the presence and changes in the amount of the particular indicator or indicators which signify a specific malfunctioning component.

4,658,639

METHOD AND APPARATUS FOR MEASURING LOAD BEARING CAPACITY OF TRAFFIC-CARRYING SURFACES

Peter W. Arnberg, Odeng 75, 11322 Stockholm, Sweden

Filed Sep. 16, 1985, Ser. No. 776,502
Claims priority, application Sweden, Sep. 17, 1984, 8404663
Int. Cl.⁴ G01N *3/40*
U.S. Cl. 73—84 **24 Claims**



1. A method for measuring the load bearing capacity of a traffic-carrying surface, comprising the steps of:
(a) continuously transporting a load along said surface;
(b) measuring the elevation of the surface in front of the load with respect to a first reference elevation to produce a first measured value;
(c) measuring the elevation of the surface behind the load with respect to a second reference elevation to produce a second measured value; and
(d) determining the difference between the first and second measured values.

4,658,640

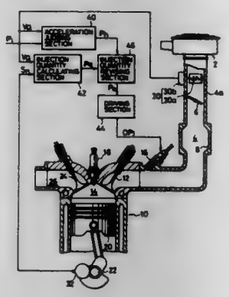
ACCELERATION DETECTING SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Yoshinobu Kido, Higashihiroshima, and Toshihiro Yamada, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 31, 1986, Ser. No. 824,762
Claims priority, application Japan, Feb. 3, 1985, 60/19086
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—118.2 **10 Claims**

1. An acceleration detecting system for an internal combustion engine comprising;
air flow determining means for determining intake air mass flow in an inlet channel provided to the engine and producing an output signal corresponding to the determined intake air mass flow,
first variation detecting means for detecting variations in the output signal of said air flow determining means at intervals of a first predetermined period,
first comparing means for comparing the variation detected by said first variation detecting means with a first predetermined value to find a first condition wherein the variation detected by said first variation detecting means is equal to or larger than the first predetermined value,
second variation detecting means for detecting variations in the output signal of said air flow determining means at intervals of a second predetermined period shorter than said first predetermined period or continuously,

second comparing means for comparing the variation detected by said second variation detecting means with a second predetermined value to find a second condition wherein the variation detected by said second variation detecting means is equal to or larger than the second predetermined value, and



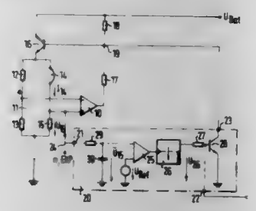
output means for sending out an acceleration signal when said first condition is found by said first comparing means and in addition said second condiion is found by said second comparing means successively during a period which almost corresponds in duration to said first predetermined period and in which said first condition is found by said first comparing means.

4,658,641

METHOD AND APPARATUS FOR MEASURING THE FLOW RATE OF A FLOWING MEDIUM

Ulrich Drews, Vaihingen-Pulverdingen, and Josef Kleinhans, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 3, 1985, Ser. No. 771,991
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1984, 3433368
Int. Cl.⁴ G01M *19/00*; G01F *1/68*
U.S. Cl. 73—118.2 **17 Claims**



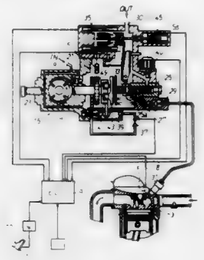
1. Method of determining the flow-rate of a flowing medium such as the mass of air conducted to an internal combustion engine, the method comprising the steps of:
placing a temperature-dependent resistor in the flowing medium;
applying a quantity such as an electric current from an apparatus to the resistor, the quantity being dependent upon said flow-rate; and,
reducing said quantity to approximately zero in response to a flow-rate value lying below a predetermined threshold value.

4,658,642

METHOD AND APPARATUS FOR DETECTING THE IGNITION TIMING FOR A DIESEL ENGINE

Shinji Ikeda, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 4, 1984, Ser. No. 606,969
Claims priority, application Japan, May 7, 1983, 58-79593
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—119 A **10 Claims**



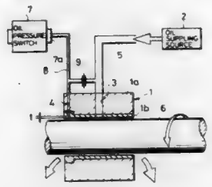
1. An apparatus for detecting the ignition timing of a Diesel engine which comprises;
(a) flame detecting means for detecting a burning flame or combustion light of fuel;
(b) photoelectric converting means for converting said combustion light detected by said flame detecting means into an electrical signal;
(c) wave shaping means for shaping the waveform of said signal produced from said photoelectric converting means; and
(d) signal storing means for storing signals and which is set by the output signal from said wave shaping means on one hand, and reset by a crank angle signal synchronous with the rotation of a crank shaft on the other hand.

4,658,643

APPARATUS FOR DETECTING ABNORMALITY AND LIMIT OF USE OF PLAIN BEARINGS

Yoshihiko Nakayama, and Teruyoshi Miyatake, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1986, Ser. No. 831,298
Claims priority, application Japan, Feb. 20, 1985, 60-30320
Int. Cl.⁴ G01M *15/00*
U.S. Cl. 73—119 R **13 Claims**



1. An apparatus for detecting the abnormality and limit of use of plain bearings, comprising a plain bearing which has a bearing base metal, and a metal member attached to the inner surface of said bearing base metal and supporting a rotary shaft; an oiling passage means formed through said plain bearing base metal and said metal member and adapted to be used for supplying a lubricating oil to a clearance between said metal member and said rotary shaft; an oil suppling source means connected to said oiling passage means; an oiling pressure bore means formed through said plain bearing base metal and a part of said metal member and closed at its one end with

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said metal member; a pressure detecting means connected to said oiling pressure bore means; a pipe means for communicating either one of said oiling passage means and said oil suppling source means with said oiling pressure bore means; and a throttle means provided at an intermediate portion of said pipe means.

4,658,644

MANOMETER DEVICE FOR CONTINUOUS MONITORING OF THE AIR PRESSURE IN VEHICLE TIRES

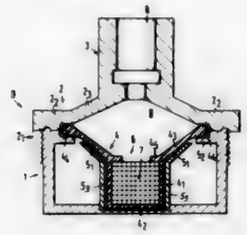
Dieter Coesfeld, Habichtswalderstr. 15, 3502 Vellmar, Kassel; Bernhard Hugemann, Frankfurt am Main; Ludwig Scondo, Frankfurt am Main; Wilhelm Schuster, Frankfurt am Main; Hans D. Schwabe, Staufenberg; Jürgen Stahl, Frankfurt am Main, and Klaus Stüsser, Hofheim-Langenhain, all of Fed. Rep. of Germany, assignors to Dieter Coesfeld, Kassel, Fed. Rep. of Germany

Filed Sep. 25, 1985, Ser. No. 779,931

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1984, 3436493

Int. Cl.⁴ G01L *7/08, 9/10*

U.S. Cl. 73—146.8 **7 Claims**



1. A manometer device for continuous monitoring of air pressure in vehicle tires, wherein a membrane and a magnet movable therewith are inserted in a manometric capsule consisting of a base and a cover attachable fluid-tightly thereon, wherein:

said capsule responds to variations in air pressure in said vehicle tires and transmits a signal to a terminal;

said membrane (4) comprises a membrane part (4_3) which extends inwardly in a conical configuration from a circular circumferential edge (4_4) to a central aperture (6);

said membrane (4) further comprises a membrane part (4_1) which extends in a cylindrical configuration from said membrane part (4_3) near, but not at, the periphery of said central aperture (6) to a closed bottom (4_2) such that said membrane part (4_1) constitutes a cylindrical projection;

said membrane (4) is inserted so as to bridge the interior space of the manometric capsule (D) and rest with its circumferential edge (4_4) upon a shoulder (5_2) directed radially inwards at the free edge of the base (1) of the manometric capsule (D), and held firmly and fluid-tightly thereon by the cover (2) placed on the base;

a permanent magnet (7) is inserted in the cylindrical projection (4_1) of the membrane (4);

said cover (2) comprises a pipe connector (3) connectable to a valve of a vehicle tire; and

a magneto resistive sensor (9) co-operating with a terminal (12) is associated with the manometric capsule.

4,658,645

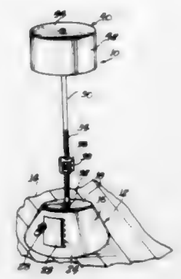
WIND VELOCITY MEASURING APPARATUS

Wayne E. Petersen, Jr., Granville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 10, 1986, Ser. No. 827,709

Int. Cl.⁴ G01W *1/02*

U.S. Cl. 73—189 **9 Claims**



1. Apparatus for indicating when a predetermined wind speed has been reached or exceeded comprising a base adapted to rest on a supporting surface, means upstanding from said base, wind impeding means on said upstanding means and effective to tip said apparatus over when said predetermined wind speed is reached or exceeded, and means sealed within said base to indicate when said apparatus has been tipped over.

4,658,646

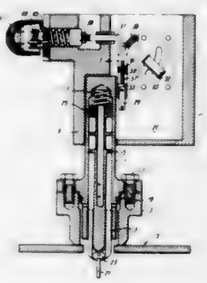
MAGNETIC ACTUATOR FOR MECHANICAL INDICATOR OF CHANGE OF STATE IN A PRESSURIZEABLE SYSTEM

Ross A. Bell, and Ernesto M. Abila, both of Sugar Land, Tex., assignors to Maloney Pipeline Products Company, Houston, Tex.

Filed Oct. 3, 1985, Ser. No. 783,401

Int. Cl.⁴ H01H *9/00*

U.S. Cl. 73—432.1 **7 Claims**



7. An apparatus for indicating detection of a change of state of fluid in a pipeline for fluid passage comprising:

(a) a detector housing capable of being pressurized and in communication with said fluid, comprising;

i. movable mechanical means for detecting said change of state, movable as a result of said change of state;

ii. translatable primary permanent magnet means translatable from a rest position to a detection position;

iii. linkage means for coupling movement of said mechanical detecting means to translation of said primary permanent magent; and

(b) an actuator housing adjacent said detector housing comprising;

i. a booster permanent magnet;

ii. a hammer permanent magnet translatable from a rest position by said primary magnet and to an actuation position by said booster magnet; and

iii. a translatable hammer, translatable from a rest position to an acutation position by said hammer magnet;

(c) visually perceptible signal means for signallingg detection of a change of state, movable from a rest position to a signalling position; and

(d) trigger means for moving said visually perceptible signal means, said trigger means triggered by said hammer.

4,658,647

ACCELEROMETER

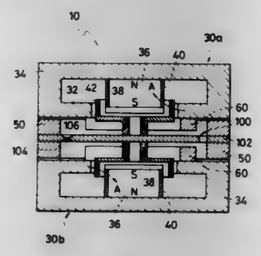
Yasuo Shintani; Kazuhiro Sakuma; Hisashi Yabe, and Hirohito Ito, all of Akishima, Japan, assignors to Japan Aviation Electronic Industry, Ltd., Tokyo, Japan

Filed Jun. 17, 1985, Ser. No. 745,642

Claims priority, application Japan, Jul. 5, 1984, 59-137990

Int. Cl.⁴ G01P *15/13*

U.S. Cl. 73—517 B **2 Claims**



1. An accelerometer comprising: a magnetic assembly having a first stator and a second stator; a pair of diametrically opposed arcuate support portions formed on a surface of each of said first and second stators; a pair of ring members each arranged in contact with said support portions of one of said stators; acceleration detecting means comprising a flapper made of cobalt-nickel alloy and a support ring member of non-magnetic metal, said support ring member being mounted between said ring members, said flapper being connected by two spaced hinge portions to said support ring member, and a bobbin having a coil wound thereon mounted on each opposed surface of the flapper, said bobbins being mounted on a support of the same material as or a material having the same coefficient of expansion as that of said flapper, each said coil being connected to a conductor of an external circuit at a portion on a transverse center line extending through the center of each of said two hinge portions; and a permanent magnet and a U-shaped pickoff means attached to each of said stators, said magnets being arranged so that poles of the same polarity are directed towards one another.

4,658,648

METHOD OF AND APPARATUS FOR THE ULTRASONIC MEASUREMENT OF THE THICKNESS OF TEST ARTICLES

Werner F. Roddeck, Velbert, and Heinz-Peter Schäfer, Wuppertal, both of Fed. Rep. of Germany, assignors to Karl Deutsch Prüf- und Messgerätebau GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Aug. 8, 1985, Ser. No. 763,810

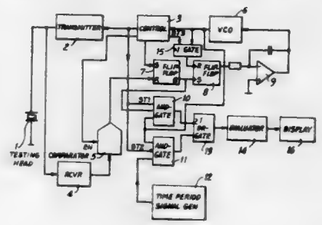
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1984, 3429409

Int. Cl.⁴ G01N *29/00*

U.S. Cl. 73—597 **8 Claims**

1. A method of measuring the thickness of test articles by pulse reflection ultrasonics, the length of a time period as determined by a signal triggering the ultrasonic transmission and by an ultrasonic signal reflected at the end of the measurement path length being used to determine the distance travelled by the ultrasonic signal, characterized in that the triggering signal for the ultrasonic transmitter is generated in phase with a measuring oscillation (B) which is generated by a voltage-controlled measuring oscillator and which is of a high and known frequency, which oscillation is combined, in a first measuring step, with a time period signal (A) corresponding to the measurement path length, with detection and counting of the integral number of measuring oscillation pulses or waves fitting into the time period (A) whereafter;

in a second measuring step, the phase difference between the negative edge of the time period and the immediately following pulse or wave edge of the measuring oscillation



is detected and used as a control parameter to detune the measuring oscillator in order to reduce the phase difference to zero, and a resulting detuned measuring oscillation is combined with a known second time period signal of a predetermined duration with detection of that integral number of pulses or waves of the detuned measuring oscillation (B') which fits into the latter time period signal; whereafter the frequency of the detuned measuring oscillation is calculated and from its deviation from the original frequency of the measuring oscillator, a correction value is derived for the measurement path length resulting from the number of pulses or waves calculated in the first measuring step, the correction value being factored in the measurement path length.

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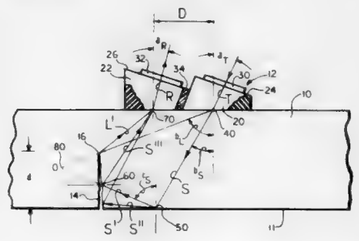
ULTRASONIC METHOD AND DEVICE FOR DETECTING AND MEASURING DEFECTS IN METAL MEDIA

Mark V. Brook, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 6, 1985, Ser. No. 741,699

Int. Cl.⁴ G01N *29/02*

U.S. Cl. 73—624 **16 Claims**



1. A method for the measurement of abnormalities in a solid test object having opposed surfaces comprising the steps of:

intermittently transmitting a beam of ultrasonic energy from a first location so as to cause the axis of said beam to intercept a first surface of a test object at an angle in the

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range of 23° to 28° relative to a line normal to said first surface to thereby propogate a shear mode wave and a first longitudinal mode wave in said object, said waves having substantially equal amplitudes;

reflecting said shear mode wave at a second surface of said body which is disposed generally opposite to said first surface to convert a portion of the energy comprising said shear mode wave to a second longitudinal mode wave;

serially receiving echos of said propogated first and said second longitudinal mode waves as reflected from an abnormality within the test object, said echos being received at a second location on the test object first surface which is spaced from said first location, said echos being refracted at said first surface;

acoustically isolating said trasmitted beam prior to interception of the first surface of the test object thereby from said echos subsequent to refraction thereof;

measuring the time delay transmission of a pulse of ultrasonic energy which comprises the intermittently transmitted beam and receipt of the echo commensurate with the reflection of the propogated first longitudinal wave from the abnormality; and

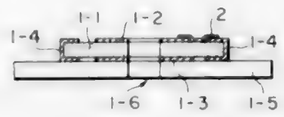
comparing the measured time delay with previously recorded data of time delay vrs. abonormality size to determine the distance from the test object first surface to the beginning of the abnormality.

4,658,650

VIBRATION AND ACOUSTIC WAVE DETECTING DEVICE EMPLOYING A PIEZOELECTRIC ELEMENT

Museo Yoritaga, Aajo; Sumihara Yokoiwa, Kariya, and Hiroaki Yamaguchi, Aajo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 22, 1985, Ser. No. 768,151
Claims priority, application Japan, Aug. 28, 1984, 59-178661
Int. Cl.⁴ G01H *1/00*; H04R *17/00*
U.S. Cl. 73—654 **11 Claims**



6. A piezoelectric apparatus, comprising:

a piezoelectric element having a first surface, a second surface, and a third surface extending between said first and second surfaces;

a first electrode formed on said first surface, and having a first output terminal electrically coupled thereto;

a second electrode formed on said second surface and having a second output terminal electrically coupled thereto;

a side electrode, disposed on said first, second and third surfaces, and electrically insulated from said first and second electrodes;

a resistive structure deposited on said first surface and electrically coupled between said first electrode and said side electrode; and

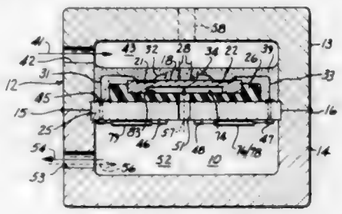
conductive means adapted for being coupled to said second surface to support said piezoelectric apparatus and to electrically couple said side electrode to said second electrode, so that no current will flow through said resistive structure during a polarization operation of said piezoelectric element if said conductive means is not coupled between said second electrode and said side electrode.

4,658,651

WHEATSTONE BRIDGE-TYPE TRANSDUCERS WITH REDUCED THERMAL SHIFT

Da Hong Le, La Verne, Calif., assignor to Transamerica DeLaval Inc., Lawrenceville, N.J.

Filed May 13, 1985, Ser. No. 732,946
Int. Cl.⁴ G01L *9/06*
U.S. Cl. 73—708 **22 Claims**



1. In a method of making a Wheatstone bridge-type transducer having a housing, the improvement of reducing thermal shift, comprising in combination the steps of:

providing a diaphragm of semiconductor material accepting formation of strain gages therein having a uniform temperature coefficient of resistance therethrough;

providing in said diaphragm strain gages, while maintaining said uniform temperature coefficient of resistance;

providing for said diaphragm a support subject to mechanical strains;

providing a cushion of compliant material capable of isolating said diaphragm from said mechanical strains to which said support is subject;

interposing said cushion of compliant material between said diaphragm and said support, when supporting said diaphragm in said housing with the aid of said support, while leaving said strain gages exposed to strains imposed by a physical parameter to be measured with said transducer;

providing electric lead wires for said strain gages with sufficient limpness to prevent transmission of mechanical strains therealong;

determining an amount of unbalance required of said strain gages for balancing a zero offset of said strain gages;

providing one of said strain gages with a series balance equal to one-half of said determined amount; and

completing balancing of said zero offset and also avoiding a thermal zero shift of the Wheatstone bridge by providing an adjacent one of said strain gages with a shunt balance equivalent to one-half of said determined amount.

4,658,652

ELECTROMAGNETIC FLOWMETER WITH CAPACITANCE TYPE ELECTRODES

Thomas L. Picone, Holland; Robert J. Augustine, Willow Grove, both of Pa., and Eggert Appel, Dransfeld, Fed. Rep. of Germany, assignors to Fischer & Porter Co., Warminster, Pa.

Filed Feb. 14, 1986, Ser. No. 829,302
Int. Cl.⁴ G01F *1/58*
U.S. Cl. 73—861.12 **8 Claims**

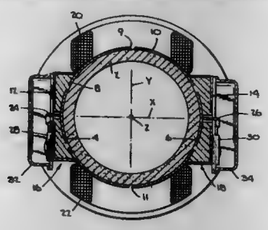
1. A magnetic flowmeter comprising:

A. a spool of ceramic material having a dielectric constant of at least 25 through which is flowable the fluid to be metered;

B. a pair of metering electrodes adjacent to or on the outer surface of the spool at diametrically-opposed positions on an electrode axis that is normal to the flow axis of the spool;

C. a pair of electromagnetic coils disposed on the exterior of the spool at diametrically-opposed positions on a coil axis that is normal both to the electrode axis and the flow axis to produce an electromagnetic field in the spool which is

intercepted by the fluid to induce an emf therein to produce a flow signal at the metering electrodes which is a function of flow rate, each electrode forming one plate of a capacitor whose dielectric is the ceramic material and whose other plate is the fluid, whereby the flow signal is measured through two electrode capacitors of relatively



high capacitance value to provide a relatively low source impedance; and

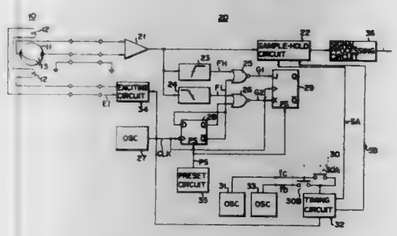
D. amplifying means coupled to said electrodes, said source impedance being the input impedance of said amplifying means to provide a signal output which is relatively noise free.

4,658,653

ELECTROMAGNETIC FLOWMETER

Toyofumi Tomita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 18, 1985, Ser. No. 810,260
Claims priority, application Japan, Dec. 28, 1984, 59-274608
Int. Cl.⁴ G01F *1/60*
U.S. Cl. 73—861.12 **11 Claims**



1. An electromagnetic flowmeter comprising:

a measuring pipe through which a conductive fluid to be measured can flow;

at least one excitation coil for applying, upon reception of an excitation current, a magnetic flux corresponding to the excitation current to the fluid in the measuring pipe;

electrodes for detecting the electromotive force induced in the fluid due to a mutual effect by the fluid and the magnetic flux applied to the fluid by said excitation coil;

noise detection means for detecting, upon reception of the electromotive force detected by said electrodes, the noise included in the electromotive force;

excitation current supply means for alternately and selectively supplying, upon reception of an output signal from said noise detection means, one of at least two excitation currents which have different frequencies to said excitation coil every predetermined period when said noise detection means detects no noise, and for supplying one excitation current whose frequency is farthest from the frequency of the noise when said noise detection means detects the noise; and

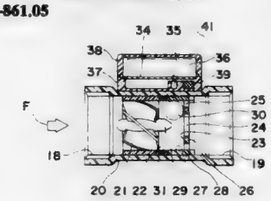
flow rate detection means for calculating, upon reception of the electromotive force detected by said electrode, the flow rate of the fluid based upon the electromotive force.

4,658,654

FLOW RATE DETECTING DEVICE

Yukinori Ozaki, Shiki, and Shuji Yamanouchi, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 31, 1985, Ser. No. 761,021
Claims priority, application Japan, Jul. 31, 1984, 59-161747; Nov. 20, 1984, 59-244958; Dec. 11, 1984, 59-261128
Int. Cl.⁴ G01F *1/66*
U.S. Cl. 73—861.05 **7 Claims**



1. A flow rate detecting device, comprising:

a conduit having a flow passage defined therein for directing a fluid flow to be detected, in a straightforward direction along said passage;

fluid flow rotating means immovably disposed in said passage, for converting the fluid flow in said passage from a straightforward flow into a rotary flow in said passage;

a spherical member receiver disposed in said passage spaced from said fluid flow rotating means in a downstream direction with respect thereto, said receiver having a receiving face in said passage perpendicular to said straightforward direction; said conduit including an intermediate flow path member having an inner face of circular cross section, extending in said straightforward direction between said fluid flow rotating means and said spherical member receiver;

a spherical member freely movably disposed in a space bounded by said fluid flow rotating means, said spherical member receiver and said inner face; and

a revolution detecting means for detecting a number of revolutions of said spherical member about the center axis of said inner face;

said fluid flow rotating means including a fixed blade having a protruding portion at a downstream end thereof, said protruding portion extending toward said spherical member receiver in alignment with said center axis of said inner face and terminating at a free end thereof upstream of the center of said spherical member, said free end being located a distance from said receiving face less than the diameter of said spherical member, said spherical member receiver having openings therein radially inward and outward of said receiving face respectively defining central and circumferential outflow paths directing the fluid flow therethrough.

4,658,655

FLUID SAMPLING DEVICE FOR MEDICAL USE

Michio Kanno, Miyoshi, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 596,512, Apr. 4, 1984, abandoned. This application Feb. 14, 1986, Ser. No. 830,233
Claims priority, application Japan, Jul. 26, 1983, 58-136154
Int. Cl.⁴ G01N *1/14*
U.S. Cl. 73—863.85 **2 Claims**

1. In combination with an extracorporeal blood circuit having an upstream venous line, a downstream arterial line, and an oxygenator inserted therebetween so that unoxygenated blood

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flows through the venous line into the oxygenator and oxygenated blood flows from the oxygenator through the arterial line,

a blood sampling device comprising:

a first sampling line in fluid communication with said arterial line;

a second sampling line in fluid communication with said venous line;

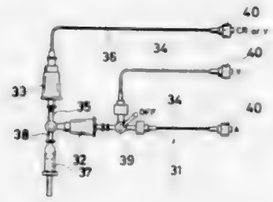
a discharge line in fluid communication with said venous line;

switching means having an inlet side coupled to said first and second sampling lines and an outlet side coupled to said discharge line for selectively communicating at one time only one of said first and second sampling lines to said discharge line;

a fluid line coupled between said sampling and discharge lines and including two check valves arranged in series in said fluid line between said switching means and said discharge line for passing fluid through said fluid line only in a given direction from said sampling lines to said discharge line, one of said two check valves being an upstream check valve having an opening pressure of at least 300 mmHg, with pressure across said check valves, including said opening pressure, being the difference between the pressures at the upstream and the downstream regions of the respective check valves;

each said check valve comprising an outer tube having an outlet port for blood at one end and closed at the other end, an inner tube extended into the outer tube through its closed other end and having a closed one end located within the outer tube and an inlet for blood at the other end, at least one pore perforated in the side wall of the inner tube, and a flexible sleeve normally fitted over the inner tube to cover the pore and being displaceable when a pressure is applied across the sleeve to allow blood passage from the interior of the inner tube to that of the outer tube through the pore; and

adaptor means located in said fluid line between said two check valves and including attachment means for permitting a fluid-tight attachment of a sampler having a pumping function to said adaptor means.



4,658,656

MULTIPLE AXIS TEST MACHINE REPRODUCING ROAD EXCITED VEHICLE VIBRATION

Steven R. Haeg, Shorewood, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Aug. 28, 1985, Ser. No. 770,317

Int. Cl.⁴ G01H *1/00*

U.S. Cl. 73—669 **18 Claims**

1. A road simulator test stand comprising:

a support frame, said support frame mounting a specimen mounted for substantial vertical movement through a spring mounting;

a specimen adapter coupled to load said specimen, said specimen adapter having means for receiving vertical loading in direction simulating vertical loading of the specimen;

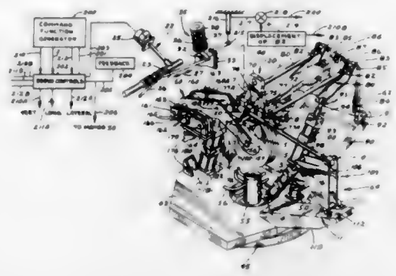
means for applying a vertical load to said specimen adapter across a substantial distance;

means for applying a lateral load to said specimen adapter in direction substantially perpendicular to the vertical load;

means for applying a longitudinal load at substantially right angles to the lateral load;

said means for applying said lateral load and said longitudinal load having loading axles generally in a plane at a desired level on the specimen; and

a turntable mounted for movement about a vertical axis with respect to said support frame and said turntable mounting said means for applying vertical load, longitudinal load, and lateral load respectively.



4,658,657

MASS FLOW METER

Karl Küppers, St.-Peter-Strasse, D-8060 Dachau, Fed. Rep. of Germany

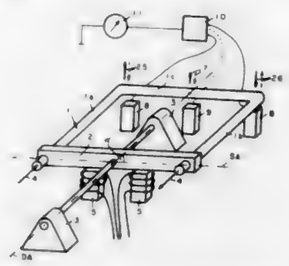
PCT No. PCT/EP84/00252, § 371 Date Apr. 16, 1985, § 102(e) Date Apr. 16, 1985, PCT Pub. No. WO85/00882, PCT Pub. Date Feb. 28, 1985

PCT Filed Aug. 16, 1984, Ser. No. 734,279

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, 3329544

Int. Cl.⁴ G01F *1/84*

U.S. Cl. 73—861.38 **14 Claims**



1. Mass flow meter with at least one tubular loop, through which a test medium is flowing and which is clamped at one side into a rigid loop mounting, forms at least a half turn and can be elastically deflected relative to the loop mounting transversely to the plane of the loop mounting about an axis of oscillation, that is defined by the clamping, moreover with an exciter system, which imposes a primary oscillation about a specified axis of rotation on the tubular loop in operation, the oscillatory motion, in conjunction with the mass flow through the loop, giving rise to Coriolis forces in this loop, which act on the loop in proportion to the flow, and with a device for measuring the action that is proportional to the flow, the tubular loop consisting of two lateral arms extending at opposite distances from the loop mounting as well as one cross arm connecting these lateral arms at a distance from the mounting,

the axis of rotation (DA) intersecting or crossing the axis of oscillation (SA) at an angle significantly different from 0° and moreover having a directional component parallel to the plane of the loop and the axis of rotation intersecting the cross arm of the tubular loop or crossing it at a minimum distance, wherein there is a device for suppressing deflections (7) of the cross arm (1c) of the tubular loop (1, 1') at the point of intersection with the axis of rotation (DA) by generating a counterforce to compensate for the respective deflection force, the measuring device measuring the magnitude of the counterforce or a physical quantity that gives rise to this counterforce.

4,658,658

COIL SYSTEM FOR INDUCTIVE MEASUREMENT OF THE VELOCITY OF MOVEMENT OF A MAGNETIZED BODY

Johan K. Fremerey, Bonn, and Bernd Lindenau, Jülich, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Sep. 26, 1984, Ser. No. 654,822

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1983, 3334750

Int. Cl.⁴ G01C *19/28*; G01L *7/00*; G01P *15/00*

U.S. Cl. 74—5.6 E **17 Claims**



1. A coil system for inductively sensing a movement of a body, said system comprising:

structure means for supporting said body, said body having magnetization means associated therewith for directing magnetic flux from at least one pole pair,

said body having at least one predetermined location of operation and a predetermined axis of mechanical rotation, said body, in operation, rotating about said rotational axis;

said at least one pole pair defining at least one magnetic axis, said at least one magnetic axis in operation having at least one angular component being angularly displaced from said axis of rotation;

at least four inductively wound coils also being disposed in said structure means and being displaced from said body, said at least four coils also disposed for being inductively linked in operation to said flux of said magnetization means of said body;

said at least four coils each defining a magnetic axis, each said magnetic axis being disposed substantially parallel to said axis of mechanical rotation of said body;

each said magnetic axis of said at least four coils substantially defining one plane and lying therein; and

means for electrically connecting said at least four coils to produce at least one signal indicative of a mechanical displacement of said body from said at least one predetermined position while said body is in operation.

4,658,659

GYROSCOPE

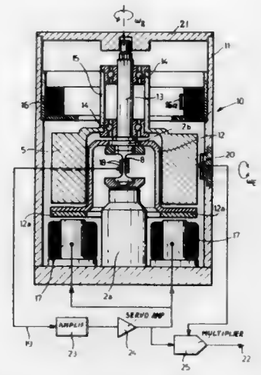
Ernst Gruber, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 17, 1984, Ser. No. 682,653

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346380

Int. Cl.⁴ G01C *19/22*

U.S. Cl. 74—5.46 **21 Claims**



1. A gyroscope, comprising housing means, a rotor having a non-rotating axis, articulation joint means dividing said non-rotating axis into at least two axis sections for permitting a deflection of one axis section relative to the other axis section, first means for rotatably mounting said rotor in said housing means on said one axis section of said non-rotating axis, second means for rigidly mounting said other axis section in said housing means, rotor drive means operatively connectable to said rotor means for temporarily causing said rotor to rotate, first sensor means arranged for providing a first electrical signal representing said deflection of said one axis section, second sensor means arranged for providing a second electrical signal representing a rotor r.p.m., and electrical circuit means including signal multiplying means connected to said first and second sensor means for providing an output signal which is made substantially independent of said rotor r.p.m. by multiplying said first electrical signal representing said deflection with a value which is a reciprocal value of said rotor r.p.m. provided by said second electrical signal.

4,658,660

BOOSTER MOUNTING ARRANGEMENT

Donald L. Parker, Middletown, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 6, 1986, Ser. No. 826,887

Int. Cl.⁴ F16H *21/44*

U.S. Cl. 74—102 **4 Claims**

1. A booster assembly mounting arrangement for installing and securing a booster assembly from one side of a dash, said mounting arrangement comprising:

a dash having an opening therethrough for receiving a part of a booster assembly including a booster input push rod, a bracket secured to one side of said dash in spaced relation to said opening, booster-supporting face means formed by a part of the one side of said dash around said opening, first bolt hole means on the opposite side of said opening from said bracket, said bracket including a portion extending outwardly from the one side of said dash, said bracket portion having laterally extending slot means formed therethrough and positioned in substantially planar alignment with said face means and located on a slot

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axis substantially parallel to a diameter of said opening, and threaded nut means secured to the other side of said dash in alignment with said first bolt hole means;

and a booster assembly having an input push rod extending through said opening and connected to a pedal arm for booster actuation, a mounting bracket secured to and forming a part of said booster assembly, said mounting bracket having first tang means mating with said slot means to form a pivoting mount and further having sec-



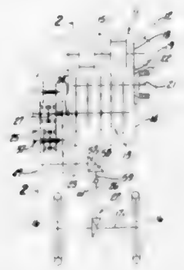
ond tang means having second bolt hole means therethrough in alignment with said first bolt hole means, and bolt means extending through said first and said second bolt hole means and threadedly secured into said nut means and holding said mounting bracket against said dash face means, said first tang means when said bolt means are fully tightened being subjected to a cantilever force providing a spring load on said first tang means assuring tight face-supported contact of said mounting bracket and said face means.

4,658,661

TRANSMISSION FOR MOTOR THREE-WHEELERS

Shinji Terashita, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jan. 30, 1984, Ser. No. 575,050
Claims priority, application Japan, Jan. 31, 1983, 58-13923
Int. Cl.[4] F16H *3/08, 5/06, 57/06*
U.S. Cl. 74—331 **3 Claims**



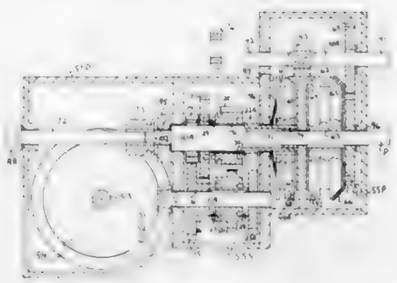
1. A power unit for a wheeled vehicle or the like having an internal combustion engine with an output shaft rotatable about a first axis, a change speed transmission having a primary shaft and a secondary shaft each extending parallel to said first axis, means for driving said primary shaft from said engine output shaft, intermeshing change speed gears on said primary and secondary shafts for driving said secondary shaft at one of selected speed ratios from said primary shaft, said secondary shaft driving output means at one of its ends, a driven shaft extending perpendicularly to said first axis and positioned transversely between the ends of said secondary shaft and means for driving said driven shaft from said secondary shaft output means, said means for driving the driven shaft from the secondary shaft output means comprises an auxiliary transmission having two different forward gear ratios and a reverse gear ratio, said auxiliary transmission comprising an input shaft, a lay shaft, a reverse shaft, an output shaft, said shafts extending parallel to each other and to the first axis, said input shaft being driven by the change speed transmission secondary shaft and said output shaft driving the driven shaft, a first cluster of first and second gears rotatably journaled on said input shaft, a third gear rotatably journaled upon said input shaft at a space location from said first cluster, first shfiting means interposed between said first cluster and said third gear for selectively coupling either of said first cluster and said third gear for simultaneous rotation with said input shaft, a fourth gear affixed for rotation with said lay shaft and in mesh with said second gear, a fifth gear rotatably journaled upon said lay shaft in mesh with said third gear, said fifth gear having a hub portion, a sixth gear rotatably journaled on said hub portion and juxtaposed to said fourth gear, a seventh gear rotatably journaled upon said hub portion and juxtaposed to said fifth gear, said sixth gear and said seventh gear being spaced apart, second shifting means interposed between said sixth gear and said seventh gear for selectively coupling either of said sixth gear and said seventh gear for simultaneous rotation with said fifth gear, a second gear clustr rotatably journaled upon said reverse shaft and comprising an eighth gear in mesh with said seventh gear and a ninth gear in mesh with said first gear, and means for driving said driven shaft from said fourth gear.

4,658,662

TRANSMISSION AND PTO SYSTEM FOR TRACTORS AND UTILITY CYCLES

Kenneth P. Rundle, 8304 Brookside Rd., Independence, Ohio 44131

Continuation-in-part of Ser. No. 600,846, Apr. 16, 1984, abandoned. This application May 29, 1986, Ser. No. 867,939
Int. Cl.[4] F16H *3/08*
U.S. Cl. 74—331 **10 Claims**



1. A tractor power transmission comprised of; a speed transmission housing, a first transmission shaft (**40A**)journalled in said housing, a hollow second transmission shaft (**10A**)journalled in said housing generally below and parallel to said first transmission shaft, a PTO drive shaft (**71**) journalled in said housing and passing axially within said second transmission shaft and protruding forward and rearward from said second transmission shaft, a third transmission shaft (**11A**)journalled in said housing parallel to said second transmission shaft, a final drive differential journalled in said housing perpendicular to said third transmission shaft, a coaxial rearward extension shaft (**72**) to said PTO drive shaft journalled in said housing to provide a rear PTO drive, gear means to drivingly connect said second and said third transmission shafts, gear means to drivingly connect said third transmission shaft and said final drive differential, a first set of intermeshing gears on said first and said second transmission shafts to drivingly connect said first and said second transmission shafts, a second set of intermeshing gears on said first transmission shaft and said PTO

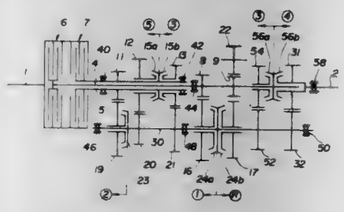
drive shaft PTO clutch means shiftable to drivingly connect said first transmission shaft and said PTO drive shaft through said second set of intermeshing gears at a first speed ratio when said PTO clutch means are in a first actuated state, said PTO clutch means shiftable to drivingly connect said first transmission shaft and said PTO drive shaft through said first set of intermeshing gears at a second speed ratio when said PTO clutch means are in a second actuated state and while said first set of intermeshing gears continues to provide a line of drive from said first transmission shaft to said second transmission shaft.

4,658,663

SYNCHROMESH TRANSMISSION SUITED FOR USE AS AUTOMOTIVE AUTOMATIC TRANSMISSION

Kazuyoshi Hiraiwa, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 8, 1985, Ser. No. 709,642
Claims priority, application Japan, Mar. 30, 1984, 59-60988
Int. Cl.[4] F16H *3/08*
U.S. Cl. 74—359 **10 Claims**



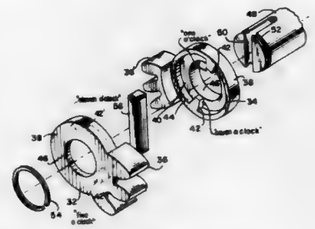
1. A transmission comprising:
an input shaft operatively connected with a source of rotational energy;
a first intermediate shaft arranged to be coaxial with said input shaft;
a first clutch for selectively providing a drive connection between said input shaft and said first intermediate shaft;
a second intermediate shaft arranged to be coaxial with said input shaft;
a second clutch for selectively providing a drive connection between said input shaft and said second intermediate shaft;
a countershaft arranged to be parallel with said input shaft;
a first group of intermeshing input and output gears arranged between said first intermediate shaft and said countershaft to provide a first predetermined speed change ratio;
a second group of intermeshing input and output gears arranged between said second intermediate shaft and said countershaft to provide a second predetermined speed change ratio;
output means for connection with said countershaft to transmit power from the countershaft to an external drive means;
a primary means which comprises a first input gear rotatably disposed about said first intermediate shaft, a first synchronizer-clutch arranged between said first input gear and said first intermediate intermediate shaft to selectively connect and disconnect said first input gear and said first intermediate shaft and a first output gear secured to said countershaft and constantly meshed with said first input gear to rotate therewith;
a secondary means which comprises a second input gear rotatably disposed about said second intermediate shaft, a second synchronizer-clutch arranged between said second input gear and said intermediate shaft to selectively connect and disconnect said second input gear and said second intermediate shaft and a second output gear secured to said countershaft and constantly meshed with said second input gear to rotate therewith,
wherein said primary and secondary means are constructed to individually provide between said input shaft and said countershaft a common speed change ratio.

4,658,664

RACK AND PINION ASSEMBLY

Gary R. Jacobs, and Paul J. Haeck, both of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Filed Sep. 5, 1985, Ser. No. 772,885
Int. Cl.[4] F16H *1/20*
U.S. Cl. 74—422 **15 Claims**



1. A rack and pinion assembly, comprising:
a guide; and
a rack slidably engaged with said guide; wherein said guide comprises means for constraining said rack to linear motion thereof relative to said guide;
pinion means, drivingly engaged with said rack, for causing linear translation of said rack coincident with rotation of said pinion means;
a shaft, (a) disposed for torqued, driving rotation thereof about an axis in clockwise and counter-clockwise directions, and (b) comprising means for causing a driven rotation of said pinion means coincident with, and as a consequence of, rotation of sai shaft; and
means coupling said shaft and said pinion means together for transmitting torqued rotation of said shaft to said pinion means; wherein
said pinion means and said coupling means comprise means cooperative for causing said rack to translate in only one direction in response to rotation of said shaft in (a) a clockwise direction, and/or (b) a counter-clockwise direction.

4,658,665

GEAR INSTALLATION

Horst Strinzel, and Alfred Seidl, both of Southofen, Fed. Rep. of Germany, assignors to BHS-Bayerische Berg-, Hütten- und Salzwerke Aktiengesellschaft, Munich, Fed. Rep. of Germany

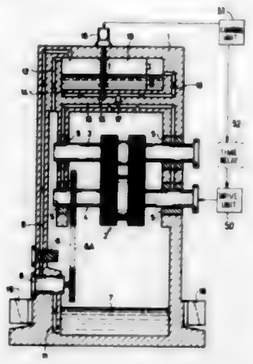
Filed Mar. 10, 1983, Ser. No. 473,930
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1982, 3209514
Int. Cl.[4] F16H *57/04*
U.S. Cl. 74—467 **17 Claims**

1. A gear installation comprising:
a gear housing;
a gear located within said housing;
drive means located outside said housing for operatively driving said gear;
control means for selectively switching said drive means on and off;
a first oil reservoir located in a lower region of said housing beneath said gear;
a second oil reservoir located in an upper region of said housing above said gear;
a duct connecting said first and second oil reservoirs;
a filter disposed in said duct;
an oil pump disposed in said duct and operative to convey oil

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from said first oil reservoir through said filter to said second oil reservoir;

first and second main pipes which communicate with said second reservoir at respective high and low levels and subsequently communicate with each other to supply oil to said gear; and



sealing means responsive to said control means for permitting and obstructing fluid flow through said second main pipe when said drive means is respectively switched on and switched off by said control means.

4,658,666

STRUCTURE OF ROCKING ROD FOR NEW TYPE HORIZONTAL CONTACT VIDEO GAME

Lai-Jin Liu, 2F. #328 Mu Cha Rd. Sec. 1, Mu Cha Ward, Taipei, Taiwan

Filed Nov. 30, 1983, Ser. No. 556,697
Int. Cl.[4] G05G *1/00*
U.S. Cl. 74—471 XY **2 Claims**

1. A rocking rod assembly for new types of horizontal contact video games comprising:

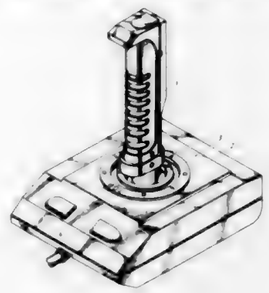
a rocking rod(;) of which the central section has four guide rails;

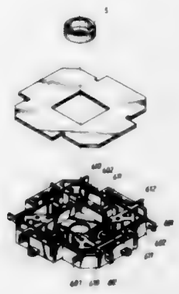
ring means for receiving said rocking rod, wherein said rocking rod having a base shaft extending through said ring means; and said ring means includes a centrally positioned passageway, said passageway having four guide grooves, each said guide groove configured to receive a corresponding guide rail, and whereby positioning said rocking rod in place without having un-intentional self-rotation;

a setting ring means fitting around a portion said base shaft of said rocking rod for mounting said rocking rod in operative relationship to said ring means;

a circuit means for controlling the switching of an electric signal transmitted to said video game, said circuit means including switching elements; and

said circuit means including rod receiving means for receiving said base shaft of said rocking rod, whereby during use movement of said rocking rod moves said base shaft





thereby providing the means for selectively independently actuating each of said switching elements; and

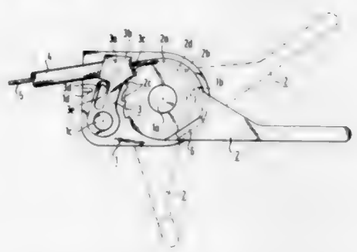
a key means.

4,658,667

GEAR-CHANGE DEVICE FOR A MULTI-RATIO GEAR-CHANGE HUB FOR BICYCLES OR THE LIKE

Kurt Schuller, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 21, 1986, Ser. No. 820,627
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1985, 3501951
Int. Cl.[4] F16C *1/10*; F16H *29/00*; G05G *9/00*
U.S. Cl. 74—475 **10 Claims**



1. A gear-change device for a multi-ratio drive hub of a bicycle which is changeable through a gear-change cable consisting of a cable sheath and a draw cable movable in the cable sheath and which exerts a return spring force upon the draw cable, comprising

(a) a basic body

(b) a gear-change lever mounted pivotably about a first pivot axis on the basic body and at a distance from the first pivot axis having a securing element for the draw cable,

(c) a detent lever mounted pivotably about a second pivot axis on the basic body, with said second pivot axis being spaced from the cable sheath and the first pivot axis and being parallel with the first pivot axis,

(d) a ratchet device with mutually complementary detent elements on the gear-change lever and the detent lever for detaining the gear-change lever in several pivotal positions,

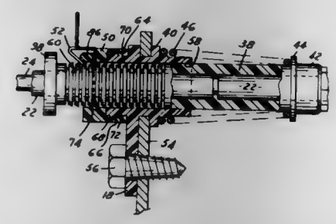
(e) a support element provided on the detent lever for supporting the cable sheath movably in relation to the basic body.

4,658,668

TRANSMISSION KICKDOWN CABLE ADJUSTER

Raymond Stocker, West Bloomfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 10, 1984, Ser. No. 649,110
Int. Cl.[4] F16C *1/10*
U.S. Cl. 74—501.5 R **4 Claims**



4. A cable length adjustment device for transmitting motion between first and second moveable control mechanisms spaced apart from one another comprising:

a motion transmitting member connected at each end to moveable portions of the first and second control mechanisms;

a housing for attachment to a support, located between the attachments of the motion transmitting member to the first and second control mechanisms;

a conduit extending at least partially between the attachments of the motion transmitting member to the first and second control mechanisms, adapted to receive the motion transmitting member therein;

a sleeve adapted to receive the conduit therein and fixed to the conduit, having engageable means located along at least a portion of the length of the sleeve;

spring means for resiliently biasing the sleeve longitudinally away from the housing;

an adjustment lock means releasably connected to the housing for permitting a forceable disconnection of the housing and adjustment lock means;

locking means mounted on said adjustment lock means for movement into interlocking engagement with the engageable means, whereby movement of the sleeve relative to the adjustment lock means is prevented, and for movement out of engagement with said engageable means, whereby movement of the sleeve relative to the housing is permitted;

wherein the engageable means includes multiple teeth formed on the outer surface of the sleeve, and the locking means includes a clip carried on the adjustment lock means radially moveable to fit between adjacent teeth, resiliently biased by the spring means against the surface of a tooth to prevent movement of the sleeve relative to the housing; and

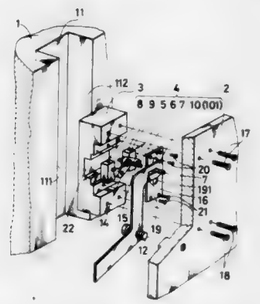
wherein the housing includes a central opening adapted to receive the sleeve therein, a mounting flange for attachment to a support and mounting surfaces located adjacent the adjustment lock means and wherein the adjustment lock means includes a body portion having a central opening aligned with the central opening of the housing and is adapted to receive the sleeve therein, tabs extending longitudinally from the body portion for releasable connection to the mounting surfaces of the housing and a slot intersecting the central opening adapted to receive the clip therein.

4,658,669

VERTICAL MOVEMENT AND FIXTURE DEVICE

Kazuo Nishikawa, Uji, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Jun. 27, 1986, Ser. No. 879,381
Claims priority, application Japan, Jul. 1, 1985, 60-100992[U]
Int. Cl.[4] G05G *5/06*
U.S. Cl. 74—531 **4 Claims**



1. A vertical movement and fixture device including a vertical support having a vertical groove inside, a block base which is slidably fit in said groove and is fixed to a slider and a means for fixing and releasing said block base at any desired position in said groove, said means for fixing and releasing said base block comprising a horizontal shaft, a pair of links each one end of which is swingably connected to one end of said horizontal shaft respectively, a pair of brake shoes which are respectively secured to the other ends of said links via a pair of pivot shafts, and an operation member which supports and vertically moves the other end of said horizontal shaft so that when said operation member is lowered, said links swing around said horizontal shaft until the angle between said two links is almost 180 degrees whereby said brake shoes are firmly pressed against the side walls of said groove.

4,658,670

FINAL REDUCTION GEAR APPARATUS

Yasuyoshi Yasui, and Hiroshi Hori, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 13, 1985, Ser. No. 775,607
Claims priority, application Japan, Nov. 28, 1984, 59-179392[U]
Int. Cl.[4] F16H *1/38, 57/02*
U.S. Cl. 74—710 **10 Claims**

1. A final reduction gear apparatus comprising:

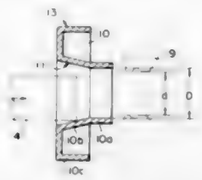
a differential carrier which houses a gear assembly;

an oil seal attached to a side gear shaft opening in said differential carrier, said oil seal having a main lip which may contact a periphery of a side gear shaft; and

a guide member located outside of said oil seal at said side gear shaft opening, said guide member being formed as a

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member separate from said oil seal, said guide member having a slightly larger inner diameter than that of said main lip of said oil seal, and having guide surface concentric to said main lip, wherein ½ of the difference between the inner diameter of the guide member and the inner diameter of said main lip of said oil seal is within the limit of the elastic deformability of said main lip.



4,658,671

FLUID FRICTION CLUTCH

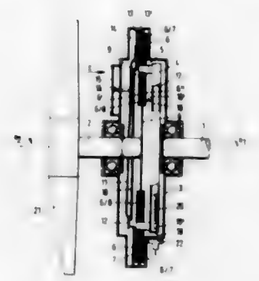
Hans Martin, Stuttgart, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,747

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322779

Int. Cl.⁴ F16H *3/74, 57/10*

U.S. Cl. 74—751 **20 Claims**



1. A fluid friction clutch, comprising:

a primary driving member; and

a driven secondary member, said primary driving member and said driven secondary member comprising elements of an at least three-member planetary transmission arrangement, wherein each of the planetary elements of said at least three member planetary transmission are physically nonengaged and include respective fluid friction clutch surfaces which are always separated from one another by a gap therebetween for receiving therein a viscous fluid medium for transmitting driving force between said driving and driven members, whereby driving force is selectively transmitted only when the viscous fluid medium is present in the gap.

4,658,672

SIMPLIFIED POWER SHIFT TRANSMISSION

Richard A. Michael, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 18, 1986, Ser. No. 853,787

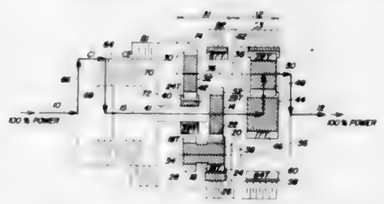
Int. Cl.⁴ F16H *57/10*

U.S. Cl. 74—759 **7 Claims**

1. A multi-speed transmission for transferring power between a first shaft and a second shaft, said transmission comprising:

a compound planetary assembly including a sun gear, a ring gear concentric with said sun gear, a reaction gear concentric with said ring gear, a planetary gear carrier rotatably supporting first and second sets of planet gears, said first planet gear set intermeshing with said ring gear and said sun gear and said second planet gear set intermeshing with said first planet gear set and said reaction gear, means for selectively coupling said first shaft with said sun gear and said reaction gear, and means for selectively preventing rotation of said ring gear, said reaction gear and said planetary carrier;

a simple planetary assembly comprising a sun gear component concentric with said sun gear of said compound planetary assembly, a ring gear component concentric with both of said sun gears, and a planetary gear carrier component rotatably supporting a set of planet gears, said planet gear set meshing with said sun gear and said ring gear of said simple planetary;



a first interconnection connected on one side thereof to the sun gear of said compound planetary assembly and connected on the other side to one component of said simple planetary;

a second interconnection connected on one side thereof to the planetary carrier of said compound planetary assembly and connected on the other side to a second component of said simple planetary; and

a third interconnection coupling said second shaft to a third component of said simple planetary assembly.

4,658,673

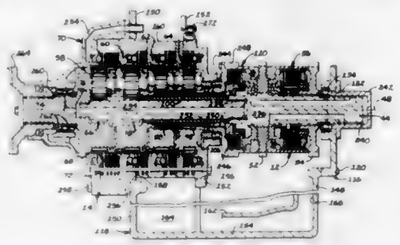
PLANETARY TRANSMISSION

Karl A. Nerstad, Peoria, and Willis E. Windish, Pekin, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 660,353, Oct. 12, 1984, Pat. No. 4,614,133. This application Jun. 2, 1986, Ser. No. 869,487

Int. Cl.⁴ F16H *3/44, 57/10, 37/00*

U.S. Cl. 74—769 **3 Claims**



1. A planetary transmission comprising:

an input shaft;

a first planetary gear set having a first sun gear driven by the input shaft, a first planet carrier serving as the output, a first ring gear, and first brake means for selectively holding the first ring gear stationary;

a second planetary gear set having a second sun gear driven by the input shaft, a second planet carrier connected for joint rotation to the first ring gear, a second ring gear, and second brake means for selectively holding the second ring gear stationary;

a third planetary gear set having a third sun gear connected for joint rotation to the second planet carrier, a third planet carrier connected for joint rotation to the second ring gear, a third ring gear, and third brake means for selectively holding the third ring gear stationary; and

clutch means for connecting the third sun gear to the input shaft and providing a direct drive mode of operation.

4,658,674

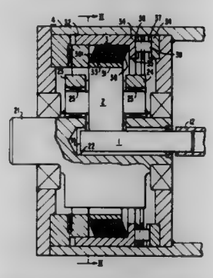
TRACTION ROLLER TRANSMISSION WITH FIXED TRANSMISSION RATIO

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed May 14, 1982, Ser. No. 378,059

Int. Cl.⁴ F16H *13/06*

U.S. Cl. 74—798 **6 Claims**



1. A traction roller transmission comprising a traction ring structure having inner traction surfaces, a sun roller centrally disposed within the traction ring structure and having a circumferential traction surface spaced from the traction surface of said traction ring structure, planetary traction rollers supported in the space between the sun roller and the traction ring structure, at least one of said traction surfaces being formed on a sleeve supported by a stack of spring washers, said spring washers being inclined radially and having slots extending radially from the interface with said sleeve, said transmission further including means for axially compressing said spring washers when a torque is transmitted through said transmission so as to cause radial expansion of said spring washers for forcing said sleeve over its whole circumference toward and into engagement with said traction rollers.

4,658,675

EPICYCLIC TRANSMISSION UTILIZING SETS OF RACES HAVING DIFFERENTIAL CLEARANCES

Richard E. Murray, Boulder, Colo., assignor to Advanced Energy Concepts '81 Ltd., Boulder, Colo.

Filed Feb. 10, 1984, Ser. No. 578,930

Int. Cl.⁴ F16H *1/32*

U.S. Cl. 74—805 **6 Claims**

1. An epicyclic speed reducing transmission, comprising:

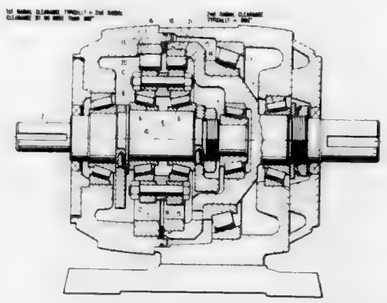
an input (2);

first and second sets of conjugate races (12–15), said first set of races including a stator race (13);

means (4) connected to said input for orbiting one of said races (12, 14) of each of said first and second sets of conjugate races;

a first set of rolling elements (20), transmitting torque betwen races (12, 13) of said first set of conjugate races as said one race of said first set of conjugate races is orbited;

a second set of rolling elements (21) transmitting torque between races (14, 15) of said second set of conjugate races as said one race of said second set of conjugate races is orbited, said orbiting means loading said first and second sets of rolling elements; and



said first set of rolling elements and said first set of conjugate races being sized so as to form a radial radial clearance therebetween, said second set of rolling elements and said second set of conjugate races being sized so as to form a second radial clearance therebetween, said first radial clearance exceeding said second radial clearance to compensate for deflection of at least one of said races of said second set when loaded by said orbiting means.

4,658,676

TRANSMISSION CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

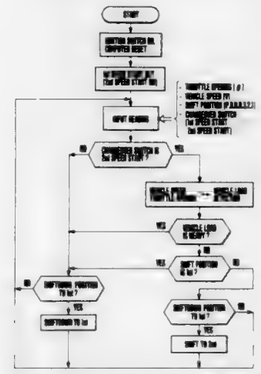
Choji Furusawa, Okazaki, and Toshiaki Ishiguro, Nagoya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 21, 1984, Ser. No. 623,034

Claims priority, application Japan, Jun. 22, 1983, 58-112358

Int. Cl.⁴ B60K *41/06;* **G06F** *15/20*

U.S. Cl. 74—866 **2 Claims**



1. A start controlling system for engine-driven vehicles having an automatic transmission for setting a gear ratio in accordance with a target speed stage calculated on the bases of engine throttle position, vehicle speed and vehicle load, comprising:

means for judging, during running of the vehicle, whether or not vehicle starting at a high gear ratio is allowable, for

allowing starting at the high gear when a low vehicle load is detected, and for preventing starting at the high gear ratio when a high vehicle load is detected,

means for setting the gear ratio at a time of stopping of the vehicle, setting a high gear ratio before stopping the vehicle when the vehicle starting at a high gear ratio is allowable and maintaining said high gear ratio during stopping of the vehicle, and

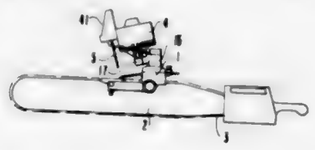
means for starting the vehicle with said maintained high gear ratio.

4,658,677

DEVICE FOR GRINDING CHAIN SAW TEETH

Giorgio Lusetti, and Lorenzo Secchi, both of Reggio Emilia, Italy, assignors to Precision Tooling s.r.l., Reggio Emilia, Italy

Filed Jul. 9, 1985, Ser. No. 753,038
Claims priority, application Italy, Jul. 12, 1984, 3524 A/84
Int. Cl.⁴ B23D *63/16*
U.S. Cl. 76—25 A **7 Claims**



1. A device for grinding the teeth of a chain saw, comprising:

a casing for housing an electric motor which includes a pivotable splined shaft;

a disk grinding wheel, said shaft of said motor being splined to said grinding wheel at an axis of rotation thereof;

a support structure supporting said casing, said support structure including a first pin, said support structure being adapted to straddle a bar of said chain saw, said support structure comprising first stopping means for stopping movement of said teeth of said chain saw;

a first bushing rotatably mounted on said first pin to define a rotation direction of said first bushing;

a second pin fixed to said first bushing;

a second bushing rotatably mounted on said second pin to define a rotation direction of said second bushing, said second bushing being integral with said casing;

an elastic means comprising a torsion spring disposed inside said second bushing, said casing comprising a manually-movable handle biased by said elastic means; and

second and third stopping means for defining stop positions of said casing.

4,658,678

CORK SCREW FURNISHED WITH A BELL-SHAPED HOUSING

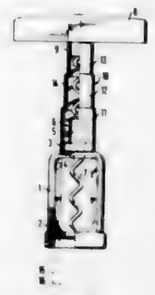
Günther Prucht, Solingen, Fed. Rep. of Germany, assignor to August Reutershan GmbH. & Co. KG., Solingen, Fed. Rep. of Germany

Filed Oct. 7, 1985, Ser. No. 785,121
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1984, 3443307
Int. Cl.⁴ B67B *7/04*
U.S. Cl. 81—3.29 **11 Claims**

1. A cork screw furnished with a bell-shaped housing and a cork-screw blade such that the cork is able to be lifted out of a bottle neck without reversing the turning direction of the cork-screw blade, wherein

(a) one end of the cork-screw blade projects in a known manner out of one end of the bell-shaped housing and is here firmly connected to a tommy handle, and

(b) a telescopic tube encompasses the cork-screw blade and is arranged between the bell-shaped housing and the tommy handle, said telescopic tube comprising a number of individual tubes and being firmly connected with one of



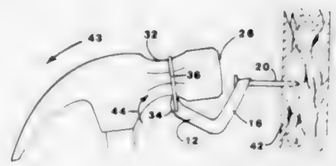
its ends to the bell-shaped housing and with its other end to the tommy handle.

4,658,679

NAIL-HOLDING ACCESSORY FOR HAMMERS

Jerold I. Nitzberg, and Magdalena Nitzberg, both of 3029 Fleetwood Ave., Baltimore, Md. 21214

Continuation-in-part of Ser. No. 731,009, May 6, 1985, abandoned. This application Nov. 7, 1985, Ser. No. 795,929
Int. Cl.⁴ B25D *1/04*
U.S. Cl. 81—23 **11 Claims**



1. An accessory for a hammer head to retain a nail adjacently opposite to a striking surface of the hammer head thereby permitting said nail to be initially driven into a work piece and to release said nail once said nail has been initially driven into and thus captured by said work piece, said accessory comprising:

an accessory body having proximal and distal ends and including (a) gripping means formed at said distal end for resiliently and releasably gripping a nail, and (b) a bearing surface defined at said proximal end for bearing against said hammer head and for establishing means permitting pivotal articulation between said accessory body and said hammer head to thereby allow said accessory body to be pivoted between an operative position wherein said gripping means is positioned forwardly of said hammer head striking surface and an inoperative position wherein said gripping means is displaced rearwardly of said hammer head striking surface; and

coupling means adapted for coupling said accessory body to said hammer head, said coupling means of providing a biasing force upon said accessory body in a first pivot direction which assists in retaining said accessory body in said operative position, and for exerting a biasing force upon said accessory body in a second pivot direction, opposite to said first pivot direction, which assists in retaining said accessory body in said inoperative position,

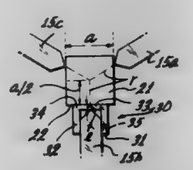
said coupling means exerting said bias force in second pivot direction in response to said bearing surface bearing against said hammer head during pivotal movement of said accessory body from said operative position and into said inoperative position.

4,658,680

OPERATING A LATHE

Fred Nascher, 10819 Rochester Ave., Los Angeles, Calif. 90024, assignor to Fred Nascher, Los Angeles, Calif.

Continuation-in-part of Ser. No. 181,738, Aug. 26, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 420,201
Int. Cl.⁴ B23B *1/00, 31/00*
U.S. Cl. 82—1 C **7 Claims**



1. A method of operating a lathe, having a regular three-jaw chuck, the jaws being of the usual pointed center tip configuration, comprising the steps of:

placing a U-shaped adapter onto just one of the jaws, so that a flat bottom surface of the adapter faces the center of the chuck; and

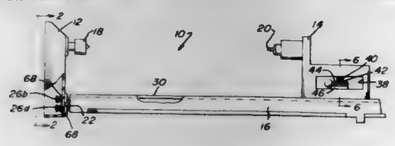
clamping a rectangular or square-shaped workpiece between said flat bottom surface and the uncovered other two jaws directly, whereby the flat bottom surface is in surface-to-surface engagement with one flat surface of the workpiece, so that the lathe axis will run in and through a plane of symmetry which plane extends between other, parallel surfaces of non-adjoining sides of the workpiece, which latter surfaces are engaged by the uncovered jaws.

4,658,681

PORTABLE LATHE

Henry Pollak, Royersford, and Gordon Wells, Spring City, both of Pa., assignors to American Machine and Tool Co., Royersford, Pa.

Filed Oct. 11, 1985, Ser. No. 786,439
Int. Cl.⁴ B23B *17/00, 19/00, 23/00, 3/02*
U.S. Cl. 82—6 R **13 Claims**



1. A portable lathe comprising:

a bed having horizontal plane surface and a longitudinal guide way disposed therethrough;

a headstock removably attached to one end of the bed;

means for aligning the headstock to the bed;

a removable tailstock slidably disposed in the guide way and alignable with the headstock;

means for aligning said tailstock with the headstock comprising a guide bar associated with the base of said tailstock which freely slides in said guide way, said guide bar having a hole, at each end and a center hole located between said end hole; and a screw associated with each end hole, the diameter of the screw being less than the diameter of said end holes, said screw being for engagement with a base of said tailstock; and

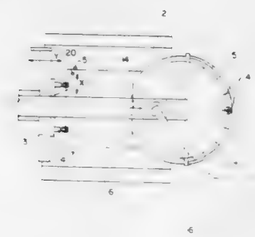
means for selectively locking the tailstock into position on the bed.

4,658,682

METHOD AND DEVICE TO MOVE ONE OR MORE CLAMP ELEMENTS IN AN AUTOMATIC SHEET METAL MACHINING CENTER

Jorma Taijonlahti, Yli-Härmä , and Mikko Lindström, Kauhava, both of Finland, assignors to Lillbackan Konepaja, Kauhava, Finland

Filed Jun. 7, 1985, Ser. No. 742,674
Claims priority, application Finland, Jun. 7, 1984, 842297
Int. Cl.⁴ B23Q *1/26*
U.S. Cl. 83—13 **11 Claims**



1. In an automatic sheet metal machining center having a frame, a work table attached immobile thereto, a first carriage movable with respect to the frame, a second carriage attached to the first carriage and movable in a direction perpendicular to the path of the first carriage, a plurality of clamps located at the second carriage, a stop pin in the frame, the stop pin being immobile in the directions of the paths of the carriages and movable to first and second positions with respect to the plane of the work table in a direction perpendicular to the plane of the work table, only one of the positions being effective for impeding movements on the plane of the work table, and a control center having a program, a method of moving at least one of the plurality of clamps from a first position to a second position for holding a to-be-machined workpiece and of determining a relative X-position for the workpiece, the method comprising the steps of:

moving the clamps in the direction of the path of the second carriage along a guide in the second carriage, the clamps being lockable to the guide;

automatically recognizing the first position of the at least one clamp with regard to the second carriage;

moving the stop pin to the one position with respect to the plane of the work table for impeding movements thereagainst on the plane of the work table;

blocking the movement of the at least one clamp by bringing the same in contact with the stop pin;

moving the second carriage for re-positioning the at least one clamp to the second position with regard to the second carriage; and

moving the workpiece along the direction of the path of the second carriage until the same is abutted against the stop pin for establishing a zero X-position for the workpiece;

whereby the X-position of the workpiece is determined in relation to the stop pin.

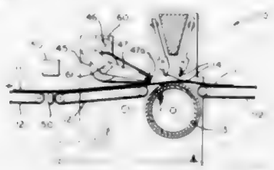
VOL 1077 ISS 3 APR 21 1987 UMI

4,658,683
HIGH PRESSURE LIQUID CUTTING METHOD
Robert Phillips, Epsom, England, assignor to Jetin Industrial Limited, Epsom, England
Filed Jul. 24, 1985, Ser. No. 758,363
Claims priority, application United Kingdom, Jul. 24, 1984, 8418860
Int. Cl.[4] B26F 3/00; B24C 1/00
U.S. Cl. 83—53 2 Claims



1. In a method of dressing a weld of a workpiece, the weld comprising a weld bead and a surface of the workpiece adjacent the weld bead, there being a junction between the weld bead and said adjacent surface, the method comprising cutting away material along said junction between the weld bead and the adjacent surface of the workpiece to relieve stress in the weld, the improvement comprising using a high pressure liquid jetting apparatus having a high pressure liquid cutting head to direct a jet of liquid issued from the high pressure liquid cutting head at the junction between the weld bead and the adjacent surface of workpiece so as to remove material from the junction between the weld bead and the adjacent surface of the workpiece by the action of the jet on the bead and workpiece material.

4,658,684
OSCILLATING GUILLOTINE CLIPPER FOR WOOD VENEER
Byron Brookhyser, P.O. Box 756, Milton, Wash. 98354
Filed Aug. 14, 1985, Ser. No. 765,859
Int. Cl.[4] B27L 5/08
U.S. Cl. 83—289 5 Claims



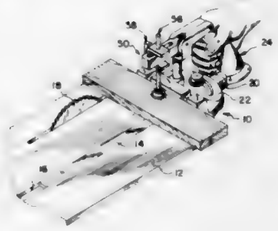
1. An apparatus for intermittently cutting traveling sheet material transversely to its direction of travel, comprising:
- a cylindrical anvil, rotating at synchronous speed with said traveling sheet, for momentarily supporting and conveying said sheet;
- a pair of knives, each extending across said sheet and adjacent to said anvil, for cutting said sheet into transverse segments as said sheet is supported by said anvil;
- an actuating assembly means for supporting each knife adjacent and opposed to said anvil and simultaneously, individually advancing each knife horizontally, in synchronization with said traveling sheet, and vertically into momentary contact with said anvil, whereby said sheet is cut transversely without disrupting segment alignment with respect to the sheet or interrupting conveying of said cut segments; and
- sensing means for sensing characteristics of said sheet and in response initiating said actuating means individually for each knife, whereby segments of desired narrowness are cut in said traveling sheet.

4,658,685
DEVICE FOR LONGITUDINALLY CUTTING WEB MATERIAL, ESPECIALLY PAPER AND CARDBOARD WEBS
Jakob Bodewein, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Jagenberg Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed May 2, 1985, Ser. No. 729,582
Claims priority, application Fed. Rep. of Germany, May 26, 1984, 3419843
Int. Cl.[4] B26D 1/24
U.S. Cl. 83—302 5 Claims



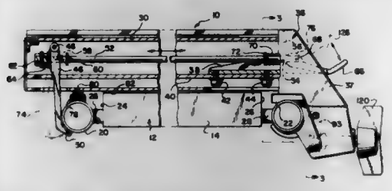
1. In a device for longitudinally cutting web material, having at least one pair of rotating circular knives, each pair having a freely rotating point knife for entering the material during cutting, a pot knife having a radial portion and an axial portion with a circular cutting edge at the end of a radial cutting face thereof which is ground to sharpen the cutting edge and means for rotatably driving the pot knife including a rotatably driven hub element and means mounting the pot knife on the hub element to dispose the cutting edge in alignment with the point knife and for rotation with the hub element, the improvement wherein the means mounting the pot knife includes supporting means forming a contact surface extending generally radially outwardly from the hub element and stationary with respect to the hub element and facing the cutting face of the pot knife and compressing means abutting the radial portion of the pot knife such that the pot knife is disposed between the supporting means and the compressing means for axially forcing the cutting face of the pot knife against the contact surface, the hub element has a hub body and a flange having a larger diameter than that of the hub body, the supporting means has a centering recess on a side facing the hub element and means mounting the supporting means to the hub element comprising the centering recess and attachment screws connected to the flange.

4,658,686
MITER GAGE
Garry W. Woods, Dayton, Ohio, assignor to Shopsmith, Inc., Dayton, Ohio
Filed Jul. 31, 1985, Ser. No. 761,134
Int. Cl.[4] B27B 5/29
U.S. Cl. 83—425 5 Claims



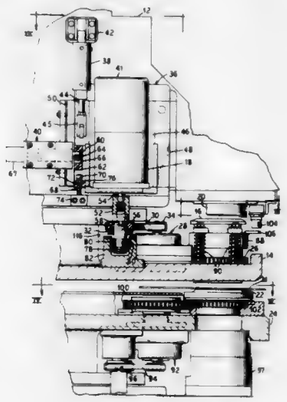
1. In a miter gage of the type having an elongate bar shaped to slidably engage a guideway of a tool work table, protractor means mounted on said bar, and grip means mounted on said protractor means, the improvement comprising:
- a lock guide having a pair of opposing side walls, each having flat inner and outer surfaces and flat upper and lower surfaces, said inner surfaces defining an opening therebetween extending between said upper and lower surfaces;
- a lock clamp having substantially a U-shape and including a flat top member shaped to overlie and abut said upper surface, a flat bottom member shaped to overlie and abut said lower surface, and a flat side member shaped to overlie and abut said outer surface of a selected one of said side walls, such that said lock clamp forms a channel receiving said lock guide for relative sliding movement, but is constrained from relative pivotal movement, and said top and bottom members including bores positioned in registry with said opening;
- a rod oriented substantially perpendicularly to said bar and extending through said bores and opening; and
- lock means for urging said lock guide sidewardly within said channel away from said side members against said rod, whereby said rod is constrained from being displaced relative to said lock guide and lock clamp.

4,658,687
SAW FENCE
Charles J. Haas, Centerville; Dale Timman, Sidney, and John H. Stolzenberg, New Carlisle, all of Ohio, assignors to Shopsmith, Inc., Dayton, Ohio
Filed Oct. 8, 1985, Ser. No. 785,429
Int. Cl.[4] B27B 27/02
U.S. Cl. 83—438 10 Claims



1. For use with a saw table having first and second tubular side rails extending outwardly along a pair of opposing sides thereof, a removable saw fence comprising:
- an elongate fence member;
- lock-back means attached to an end of said fence member for engaging the first side rail of a saw table;
- a base member attached to an opposite end of said fence member and including a housing having a contact surface forming a concave, transverse channel opening downwardly and inwardly toward an associated saw table, and shaped to engage the second side rail, said contact surface extending from an upper point inwardly of a vertical axis extending through a center of curvature of said surface to a lower point below a horizontal axis extending through said center of curvature;
- a hook member pivotally attached to said housing and having a tongue portion extending downwardly and inwardly from said base member, said tongue portion being arcuately shaped to engage said second side rail, when pivoted into contact therewith, from an outer point thereof coincident with said lower point, to an inner point thereof above said lower point, such that pivotal movement of said hook member against said second side rail draws said channel downwardly and inwardly against said second side rail; and
- means for pivoting said hook member inwardly from said housing to a locked position against said second side rail, and outwardly away from said rail to a release position whereby sufficient clearance between said upper point and said inner point is created to allow said base member to be lifted upwardly and outwardly away from said second side rail.

4,658,688
ROTARY PUNCH AND DIE HOLDERS FOR TURRET PUNCHES
Harshad M. Shah, Williamsville; Ronald C. Hill, Corfu, and Arthur J. Lux, Eggerstville, all of N.Y., assignors to Strippit/-Di-Acro - Houdaille, Inc., Akron, N.Y.
Filed Sep. 13, 1985, Ser. No. 776,158
Int. Cl.[4] B26D 5/08
U.S. Cl. 83—552 14 Claims



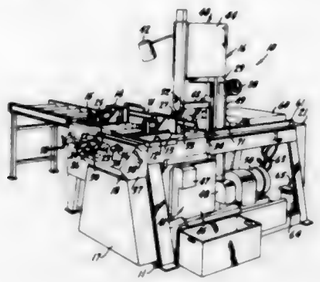
1. An indexable punch press apparatus having upper and lower turrets for selective rotation on a punch press housing and including a plurality of corresponding punch tools, comprising:
- an indexable punch mounted for rotation in the upper turret,
- a first motor slidably mounted on said punch press housing and being selectively slidable between a first and second position,
- first linkage means for transmitting rotation of said first motor to said indexable punch when said first motor is in said second position, said first linkage means being disconnected to prevent the transmission of rotation by said first motor to said indexable punch when said first motor is in said second position,
- an indexable die mounted for rotation in said lower turret,
- a second motor slidably mounted on said punch press housing and being selectively slidable between a first and second position,
- second linkage means for transmitting rotation of said second motor to said indexable die when said second motor is in said second position, said second linkage means being disconnected to prevent the transmission of rotation by said second motor to said indexable die when said second motor is in said first position, and
- the upper and lower turrets being rotatable when said respective first and second motors are in said respective first positions.

4,658,689

VERTICAL BAND SAW WITH CANTILEVER FRAME

John L. Yakich, Broadview, Ill., assignor to Armstrong-Blum Manufacturing Co., Chicago, Ill.

Filed Mar. 19, 1984, Ser. No. 591,033
Int. Cl.⁴ B23D *53/04*; B27B *13/04*
U.S. Cl. 83—801 **1 Claim**



1. A cantilevered band saw, said cantilevered band saw comprising

a base,

a band saw carriage,

means for supporting the band saw carriage from the base,

said means comprising firstly, four horizontally disposed V-groove wheels which are rotatable on vertical axis means carried by the band saw carriage, and, secondly, V-rails on the base which co-act with the V-groove wheels to enable the ban saw carriage to move back and forth,

a band saw frame,

said band saw frame having means for supporting a band saw thereon,

a motor for a band saw which is carried on the band saw frame,

said motor being mounted on the lower end portion of the band saw frame,

said band saw frame, together with the band saw supporting means and the motor, being pivotally mounted to the band saw carriage at a location ahead of the band saw carriage in the direction of work,

said band saw frame being thereby pivotable thru a wide range of movement without interference with the band saw carriage.

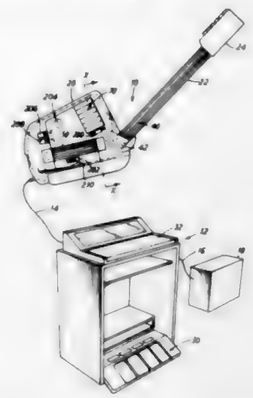
4,658,690

ELECTRONIC MUSICAL INSTRUMENT

William A. Aitken, Oxfordshire; Anthony J. Sedivy, and Michael S. Dixon, both of London, all of England, assignors to Syntheze Limited, London, England

PCT No. PCT/GB84/00158, § 371 Date Jan. 8, 1985, § 102(e) Date Jan. 8, 1985, PCT Pub. No. WO84/04619, PCT Pub. Date Nov. 22, 1984
PCT Filed May 9, 1984, Ser. No. 691,486
Claims priority, application United Kingdom, May 10, 1983, 83 12842; Nov. 4, 1983, 83 29585; Feb. 17, 1984, 84 04247; Mar. 1, 1984, 84 05436
Int. Cl.⁴ G10D *1/08, 3/00*; G10H *3/12, 3/14*
U.S. Cl. 84—1.14 **23 Claims**

1. An electronic musical instrument configured to represent a guitar-like instrument and comprising a neck and a body, in which the neck carries a plurality of pitch strings, and pitch sensing means for electrically sensing the location of depression of the strings by a player, and the body carries key-operated switches corresponding to the strings respectively for initiating notes of a pitch defined by the output of the pitch sensing means.

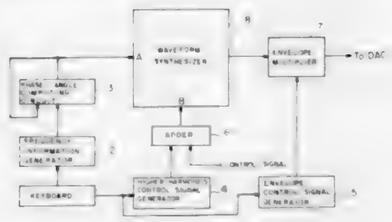


4,658,691

ELECTRONIC MUSICAL INSTRUMENT

Masanori Ishibashi, deceased, late of Oume, Japan (by Masayuki Ishibashi, legal representative), assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 561,180, Dec. 14, 1983, abandoned. This application Oct. 17, 1985, Ser. No. 788,669
Claims priority, application Japan, Dec. 17, 1982, 57-221266; Dec. 22, 1982, 57-225582
Int. Cl.⁴ G10H *1/02*
U.S. Cl. 84—1.19 **46 Claims**



1. An electronic musical instrument, comprising:

storage means for storing waveform information;

address signal production means for producing a single address signal which changes at a uniform rate corresponding to a frequency of the waveform to be produced over one cycle of a waveform, to read out the waveform information stored in said storage means;

modulating signal production means for producing a modulating signal;

modification means coupled to said address signal production means and to said modulating signal production means for modifying the single address signal produced from said address signal production means, into a modified address signal according to the modulating signal supplied from said modulating signal production means without using a feedback loop from said storage means, the changing rate of said modified address signal varying in one cycle of the waveform; and

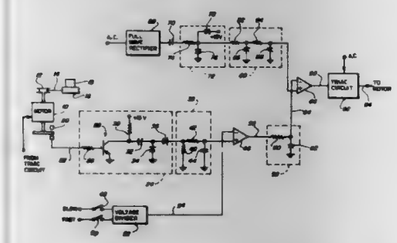
accessing means coupled to said modification means for accessing said storage means by the use of the modified address signal delivered from said modification means to generate a waveform signal which has a distorted waveform according to the modulating signal produced by the modulating signal production means, and has the frequency determined by the single address signal generated by the address signal production means.

4,658,692

CONTROL CIRCUIT FOR SHADED-POLE MOTOR

Brian M. Bagus, Bartlett, Ill., assignor to The Marmon Group, Inc., Chicago, Ill.

Filed Mar. 25, 1985, Ser. No. 715,532
Int. Cl.⁴ G10H *1/047*
U.S. Cl. 84—1.24 **2 Claims**



1. A musical system for producing special effects having a rotatable horn type loudspeaker, a shaded-pole motor connected to the loudspeaker for rotating same, means to detect the motor speed and to produce an output signal indicative of the motor speed and a feedback control means for receiving the output signal indicative of the motor speed and for producing a control signal to adjust the motor speed, the feedback control comprising:

shaper circuit means for receiving said output signal indicative of the motor speed and for producing a pulse signal with a width proportional to the motor speed;

speed selection means for providing at least one selection signal representative of the desired motor speed;

a first pulse width modulator means for receiving said speed proportional pulse signal and said selection signal and producing a pulse output signal having a width proportional to the speed of said motor;

integrator circuit means for receiving the output pulse signal from said first pulse width modulator means and producing an integrated DC signal output;

circuit means for receiving and rectifying an AC power signal and providing a rectified signal;

second pulse width modulator means for receiving said rectified signal and said integrated DC signal and providing a pulse output signal;

control circuit means for receiving said AC power signal and said pulse output from said second pulse width modulator means and providing a control signal output to adjust the speed of said motor.

4,658,693

REAR OPERATED CONTROL DEVICE FOR GUITAR

James R. Hennessey, West Hartford, Conn., assignor to The Music People, Inc., Hartford, Conn.

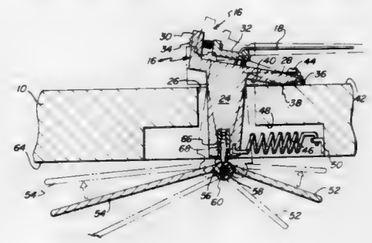
Filed Apr. 25, 1986, Ser. No. 856,838
Int. Cl.⁴ G10D *3/00*
U.S. Cl. 84—313 **12 Claims**

1. Apparatus for enabling dynamic variation of string pitch in an electric guitar, or like hand-held stringed musical instrument, comprising:

a bridge block adapted for mounting to extend transversely of the body of a musical instrument and for pivotal movement about a first axis, said block having an outer portion with means thereon for attachment of at least one string of the instrument, to extend therefrom along a second axis generally transverse to said first axis;

an operating arm adapted to conform generally to contours of the human body trunk; and

mounting means operatively attaching said operating arm to an inner portion of said block for substantially free relative rotational movement thereon about an axis of said mounting means that is generally perpendicular to both of said first and second axes, and so constraining said arm and block against relative movement as to permit pivoting of said block about said first axis by movement of said arm;



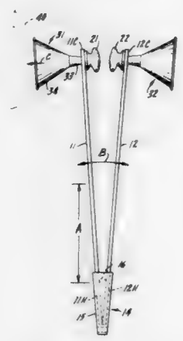
whereby, with said bridge block so mounted upon the body of an instrument, with said operating arm disposed along the rear face thereof, and with the instrument in playing position and said arm engaging a trunk part, the player may produce string pitch variation by moving his body and that of the instrument relative to one another, thereby shifting said arm relative to the instrument body and causing said bridge block to pivot about said first axis to change the tension in a string attached thereto, said mounting means permitting said arm to remain substantially in place on the body part despite rotational movement of said instrument about said mounting means axis.

4,658,694

PERCUSSION NOISEMAKER

Lawrence Marks, deceased, late of Chicago, Ill., and by Esther Marks, administrator, 6619 N. California Ave., Chicago, Ill. 60645

Filed Aug. 26, 1985, Ser. No. 769,454
Int. Cl.⁴ G10D *13/06*
U.S. Cl. 84—402 **9 Claims**



1. A dual-effect percussion noisemaker comprising:

a pair of elongated, bendable clapper arms each having a handle end and a clapper end;

mounting means for mounting the handle ends of the clapper

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arms together in an elongated, narrow V configuration in which the clapper ends of the arms are displaced from each other;

a pair of clapper members mounted on the clapper alignment opposite to each other; and ends of the arms on the inner side of the V in spaced

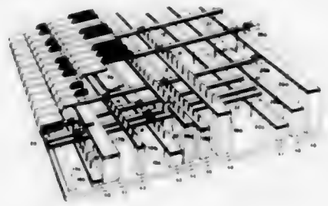
a pair of hollow conical sounding members mounted on the clapper ends of the arms on the outer sides of the V in alignment with the clapper members to amplify and modify sounds produced by banging the clapper members together.

4,658,695

MULTI-DECKED KEYBOARD FOR MUSICAL INSTRUMENTS

Douglas A. Cutler, L7 C3 Brock & Thorah Township, Durham County, R2 Beavertos L0K 1A0 Ontario, Canada

Filed Sep. 17, 1985, Ser. No. 776,888
Int. Cl.[4] G10C *3/12*
U.S. Cl. 84—424 **3 Claims**



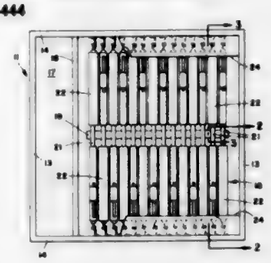
1. Multiple rows of long, straight, consecutively spaced multiple key levers, each of said rows lying horizontally and being positioned one above the other in a parallel manner at a distance from each other that allows for each lever to perform unhindered and independent motions of usual piano-like actuation, a step-like, terraced arrangement of long thin rails acting as motion limiting guides and stops for said arrangement of key levers with said rails being thin enough to be unobtrusively positioned with respect to the motion of actuation of said levers in the horizontal spaces between the levels of said key levers, vertically disposed thin support struts occupying the vertically aligned spaces between vertically corresponding key levers on different rows of levers and acting as bases for said terraced arrangement of long, thin motion limiting guide and stop rails, in combination with a multi-decked musical keyboard that itself combines a substantially normal piano-like primary row of keys, a second row of substantially normal piano-like keys except that the front to back distances of all key surfaces, and in particular the front to back distance of the black key surfaces of said second row of keys, are significantly shortened relative to the front to back distance of said primary row of key surfaces, said second row of keys being positioned in a downward step-like manner immediately in front of said primary row of keys such that when a white key of said primary row of keys is in a completely depressed or actuated position, its upper surface rests on a plane which is extremely close to or immediately level with the plane of the upper surface of the unactuated black keys of said second row of keys, a third row of significantly shortened white keys only positioned in a downward step-like manner directly in front of said second row of keys such that when a white key of said second row of keys is in a completely actuated position its upper surface rests on a plane which is slightly above or level with the plane of the upper surface of an undepressed white key of said third row of keys, and a transducer individually connected to the rearward portion of each lever.

4,658,696

PEDAL KEYBOARD OPERATED MUSICAL INSTRUMENT

Patrick J. Clancy, 1195 Mee La., St. Helena, Calif. 94574

Filed Nov. 16, 1984, Ser. No. 671,912
Int. Cl.[4] G10C *3/14*
U.S. Cl. 84—444 **9 Claims**



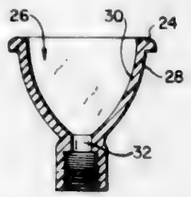
1. A pedal keyboard musical instrument adapted for heel and toe playing, including; a base adapted to be supported on the ground, first and second pluralities of keys extending longitudinally above said base and arrayed in a pair of laterally extending, longitudinally opposed rows, said first and second pluralities being disposed in paired, alternating relationship with each of said first plurality disposed laterally adjacent to a pair of said second plurality, and each of said first plurality being disposed longitudinally opposite a key of said second plurality, support means extending laterally on said base and medially between said rows to support the proximal ends of both said pluralities of keys, said first plurality of keys including upper surface portions generally disposed in a first common plane, said second plurality of keys including upper surface portions generally disposed in a second common plane, said first common plane being spaced above said second common plane with respect to said base, and said second plurality of keys including extension means extending upwardly from said second common plane above said first common plane to a third common plane, each extension means being disposed longitudinally opposite a key of said first plurality in said first common plane.

4,658,697

TRAINING MOUTHPIECE FOR BRASS INSTRUMENTS

Ellis Wean, 1896 Lionel Groulx, Montreal, Quebec, Canada H3J 2P2

Filed Jul. 31, 1986, Ser. No. 890,921
Int. Cl.[4] G09B *15/06*
U.S. Cl. 84—465 **7 Claims**



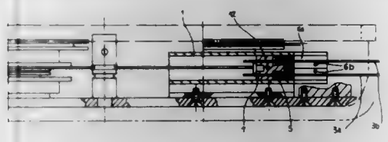
1. In a training mouthpiece for a brass instrument, a mouthpiece having a cup with walls having a transverse annular cross-section, the walls extending between a rim at the top of the cup and a throat for passage of air into the instrument at the base of the cup, the improvement wherein the walls of the cup are made of transparent material and are constructed so that there is minimum visual distortion of the lips of a user when viewed through the walls of the cup.

4,658,698

SAFETY DEVICE FOR PREVENTING AN AIRBORNE CHARGE FROM BEING ARMED

Jean Billot, Bievres, France, assignor to Raufast S.A., Villeneuve la Garenne, France

Filed Mar. 28, 1985, Ser. No. 716,842
Claims priority, application France, Apr. 4, 1984, 84 05298
Int. Cl.[4] F41F *5/02*
U.S. Cl. 89—1.55 **5 Claims**



1. A safety device for preventing an airborne charge from being armed prior to being dropped, and also, if so desired, for enabling the charge to be dead dropped, i.e. to be dropped without being armed, said charge being armed by a draw wire connected to the aircraft applying traction to an arming cable connected to the charge, wherein the safety device comprises a clamping assembly through which the arming cable passes, said cable being free to move through the clamping assembly while the clamping assembly is open and being clamped thereto when the clamping assembly is closed, said clamping assembly comprising first and second parts which are movable relative to each other in the traction direction (T) of the draw wire, and means responsive to said relative displacement to clamp to the arming cable, said first part being a "fixed" part which is fixed to the charge by threshold releasable fixing means sensitive to traction in said traction direction (T), and said second part being slidably mounted to move relative to the charge in said traction direction (T), being free to move relative to said first part over a sufficient distance to close said clamping means, and subsequently being prevented from moving further relative to said first part, whereby traction in said traction direction (T) on said second part firstly causes said second part to move relative to said first part, thereby closing said clamping means on said arming cable, and secondly applies force to said first part, which force, if greater than the threshold of said threshold releasable fixing means, releases said fixing means, releasing said first part from said charge and causing traction to be applied to said arming cable.

4,658,699

WAVE GUN

Thomas J. Dahm, Los Altos, Calif., assignor to Astron Research and Engineering, Mountain View, Calif.

Continuation-in-part of Ser. No. 530,921, Sep. 12, 1983, abandoned. This application Sep. 13, 1985, Ser. No. 775,697
Int. Cl.[4] F41F *1/00;* **F42B** *5/02*
U.S. Cl. 89—8 **22 Claims**

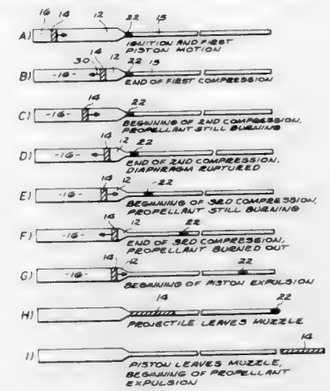
17. A method for launching a mass comprising the steps of:

(a) sealingly dividing a housing into first stage and second stage chambers having reciprocally varying volumes with a barrier member mounted for reciprocating movement;

(b) placing a gas of low molecular weight in the second stage chamber;

(c) expanding the first stage volume a plurality of times culminating in a period of sustained high mean pressure therein so as to compress the second stage volume a plurality of times;

(d) restrainably positioning a launchable mass for acceleration by the compressed gas down a launch tube;



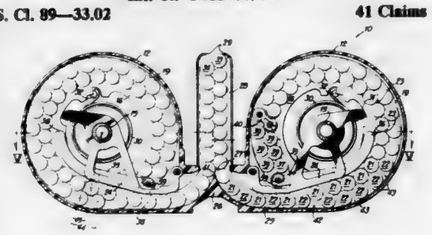
(e) launching the mass during the period of high sustained mean pressure in the first-stage chamber.

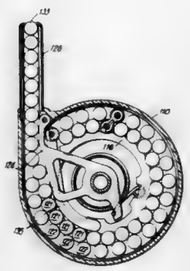
4,658,700

DRUM MAGAZINE

Leroy J. Sullivan, Huntington Beach, Calif., assignor to The Beta Company, Atlanta, Ga.

Filed Jul. 24, 1985, Ser. No. 759,058
Int. Cl.[4] F41D *10/26*
U.S. Cl. 89—33.02 **41 Claims**





1. A drum magazine for successively feeding a plurality of cartridges to a firearm, comprising:

(a) a drum shaped housing means having a cartridge exit opening extending from the side of said housing means;

(b) rotational cartridge carrying means within said housing means which defines a cartridge space, between said car-

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tridge carrying means and the inner wall of said housing means, for two offset concentric rings of cartridges, wherein each of the cartridges of the outer concentric ring are nested in the recess formed by two adjacent cartridges in the inner concentric ring of cartridges and are urged to revolve around said drum by the rearward of said adjacent cartridges in the inner ring of cartridges, said rotational cartridge carrying means comprising means for individually defining the positions of each cartridge of the inner ring of cartridges and for individually urging each of said cartridges of the inner ring of cartridges to revolve around said drum as said cartridge carrying means rotates; and

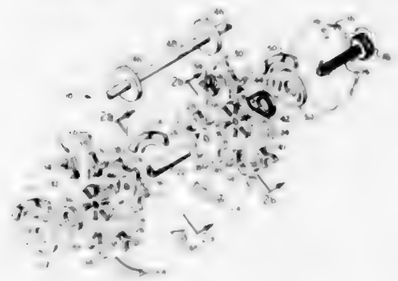
(c) cam means within said housing means defining, with said housing means, a passage from the cartridge space to the exit opening of said housing means, for urging two offset concentric rings of cartridges alternately together into a single row as said cartridges are moved out of said magazine.

4,658,701

SIDE STRIPPING MECHANISM FOR LINKED AMMUNITION

Bill Moore, Sepulveda, Calif., assignor to Hughes Helicopters, Inc., Culver City, Calif.

Filed Apr. 13, 1983, Ser. No. 484,445
Int. Cl.⁴ F41D *10/02*
U.S. Cl. 89—33.2 **10 Claims**



1. An improvement in an automatic weapon system for stripping a plurality of generally cylindrical rounds from a link belt, comprising:

at least one rotating sprocket partially enveloped by an engaging said link belt;

at least one follower guide rotating with said sprocket and having a plurality of radially defined slots;

a follower slideably disposed in each of said slots; and

means to drive said follower in said follower guide synchronously with said rotating sprocket so that said follower applies a radial force on said round which acts on a line drawn from the center of said rotating sprocket through the radial center of said round.

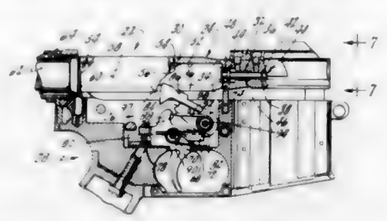
4,658,702

SAFETY DEVICE PREVENTING CONVERSION TO FULL AUTOMATIC FIRING

Henry J. Tatro, Westfield, Mass., assignor to Colt Industries Inc., New York, N.Y.

Filed Sep. 25, 1985, Ser. No. 780,026
Int. Cl.⁴ F41C *5/00*, *11/00*; **F41D** *11/16*
U.S. Cl. 89—139 **5 Claims**

1. In a firing mechanism of the type having a receiver; a bolt assembly mounted for longitudinal movement in the receiver between recoil and battery positions; a hammer pivotally mounted in the receiver such that movement of the bolt assembly from the battery position to the recoil position urges the hammer into a cocked position; a firing pin slidably mounted in the bolt assembly adapted to be displaced into engagement with a cartridge upon being struck by the face of the hammer; and means to prevent movement of the bolt assembly from the



recoil position to the battery position when the hammer is not retained in the cocked position, the improvement comprising:

means to prevent replacing the firing pin with a longer firing pin.

4,658,703

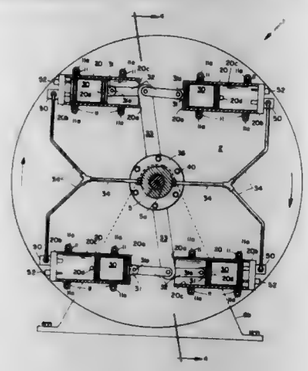
METHOD AND APPARATUS FOR EXTRACTING HEAT AND MECHANICAL ENERGY FROM A PRESSURED GAS

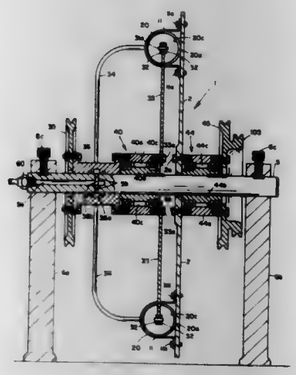
David R. Greene, Bakersfield, Calif., assignor to Centrifugal Piston Expander, Inc., San Antonio, Tex.

Filed Mar. 29, 1985, Ser. No. 717,776
Int. Cl.⁴ F01B *1/00*, *7/00*
U.S. Cl. 91—170 R **2 Claims**

1. A pressured gas expander comprising: a stationary shaft; a pair of unidirectional clutches mounted on said stationary shaft in axially spaced relationship; each said unidirectional clutch having a first ring member mounted on and secured to said stationary shaft and a second ring member mountd adjacent to said first ring member and rotatable only in one direction relative to said first ring member; a cylinder support secured to said second ring member of one said unidirectional clutch for rotation about said stationary shaft; a pair of cylinders; each said cylinder having a closed end and an open end, means for mounting said pair of cylinders on said cylinder support in radially spaced relation to the axis of said stationary shaft and with said open ends in opposed relation; a piston linearly movable in each said cylinder, a connecting rod pivotally secured to each piston and projecting through the open end of the respective cylinder; means for pivotally connecting the projecting ends of said connecting rods to the second ring member of the other said unidirectional clutch; an inlet valve in each said closed cylinder end operable by the respective piston for supplying pressured gas to each closed end of said cylinders

only when the respective piston approaches said closed end; and load driving means mounted on each said second ring





member, whereby two separate loads may be independently rotated at different speeds by the expander.

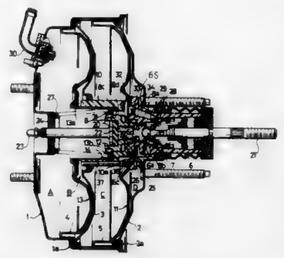
4,658,704

BRAKE BOOSTER OF TANDEM TYPE

Kohei Mori, Saitama, and Haruo Suzuki, Higashimatsuyama, both of Japan, assignors to Jidoshakiki Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1985, Ser. No. 693,564
Claims priority, application Japan, Jan. 31, 1984, 59-12195[U]; Feb. 6, 1984, 59-15735[U]; Feb. 6, 1984, 59-15736[U]
Int. Cl.⁴ F15B *9/10*
U.S. Cl. 91—369 R **5 Claims**

1. A brake booster of tandem type comprising a valve body having a tubular shank portion, a hub fitted in the shank portion of the valve body in a manner to prevent the withdrawal of the hub forwardly from the valve body, a centerbody fitted around the hub and slidably extending through a centerplate and serving to hold a rear power piston between it and the valve body, and a front power piston held between the centerbody and a nut which is threadably engaged with one end of the hub; wherein the other end of the hub is formed with an engaging portion which projects radially outward while the shank portion of the valve body is formed with an axial groove which permits the engaging portion to pass therethrough and is also formed with an engaging recess which is circumferentially displaced from the axial groove for receiving the engaging portion, the engagement between the engaging portion and the engaging recess being effective to prevent the withdrawal of the hub forwardly from the valve body and simultaneously to prevent relative rotation between the hub and the valve body, the front power piston having a shank portion formed as a sleeve which extends toward the rear power piston and



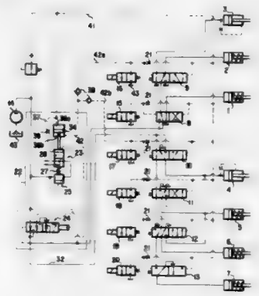
which is fitted inside the centerbody, the end of the sleeve adjacent to the rear power piston being formed as a flange which extends radially inward, the one end of the hub extending through the flange, the nut being threadably engaged with the one end of the hub within the sleeve.

4,658,705

CONTROL SYSTEM FOR HYDRAULIC FLUID PRESSURE

Fujio Maeda, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,015
Claims priority, application Japan, Jun. 30, 1983, 58-116919
Int. Cl.⁴ F15B *13/07*
U.S. Cl. 91—518 **5 Claims**



1. A hydraulic fluid pressure control system, comprising a hydraulic fluid pressure control valve assembly interposed in hydraulic fluid circuits connected between a plurality of hydraulic actuators for clutch-brakes and a pressurized hydraulic fluid supply source and including a pressure modulating valve adapted to modulate or gradually increase the pressure of hydraulic fluid supplied into said hydraulic actuators for clutch-brakes, and a plurality of directional control valves interposed in hydraulic fluid circuits connected between said hydraulic fluid pressure control valve assembly and said hydraulic actuators to supply pressurized hydraulic fluid selectively into desired hydraulic actuators, characterized in that said hydraulic fluid pressure control valve assembly comprises:

(a) a modulating relief valve provided therein; and

(b) means for raising a preset relief pressure of said modulating relief valve.

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4,658,706

CAST LIGHT METAL COMPONENT FOR INTERNAL COMBUSTION ENGINES

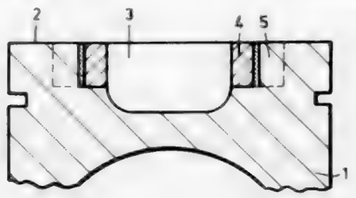
Wilfried Sander; Siegfried Mielke, both of Neckarsulm, and Dieter Eschenweck, Moosbach, all of Fed. Rep. of Germany, assignors to Kolbenschmidt Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Continuation of Ser. No. 618,102, Jun. 7, 1984, abandoned. This application Feb. 25, 1986, Ser. No. 833,649

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321212

Int. Cl.⁴ F16J *1/04*

U.S. Cl. 92—213 **22 Claims**



1. In a light metal piston containing a ceramic insert in the head of the piston consisting of a ceramic material having a low thermal conductivity, a low coefficient of expansion and a low modulus of elasticity, the improvement wherein said piston consists of a cast aluminum alloy consisting of AlSi12-CuNiMg, and between said ceramic insert and said light metal piston there is a zone adjoining the insert comprising fibers in the form of a woven fabric, braid, knitted fabric or felt, embedded in the cast aluminum alloy in the zone with the fibers having a diameter of 0.3 to 10 μm and the minimum width and height of the zone containing said fibers is each at least 5 mm and wherein the interstices between the fibers are impregnated with aluminum to increase the bond strength of the fibers to the aluminum alloy by putting fibers in a mold and pressurizing the aluminum alloy.

4,658,707

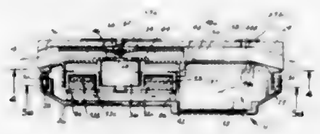
AUTOMATIC AIR PURIFIER FOR VEHICLES

Vernon F. Hawkins, Rt. 1, Box 212 (Jefferson County), Cedar Hill, Mo. 63016, and Willard H. Louks, 4442 Cottage Grove (Jefferson County), House Springs, Mo. 63051

Filed Sep. 27, 1985, Ser. No. 781,144

Int. Cl.⁴ B60H *3/06*

U.S. Cl. 98—2.11 **7 Claims**



1. An automatic vehicular air purifier for automatically filtering out smoke and other airborne impurities within a vehicle passenger compartment, comprising:

a housing including a base having a rear surface for being secured to a preselected location within the passenger compartment, said base defining a fan-receiving space for rotation of a fan, weirs surrounding the fan-receiving space for directing air outwardly therefrom, and outlet-defining means extending completely around the periphery of the base for discharge of the directed air;

a plate for securement to the base in overlying relationship, said base including means for securement of the base to said location prior to securement of said plate to the base;

an electric fan motor carried by the plate and having a fan blade being directed toward and received within the fan-receiving space with the motor being located outwardly from the blade, for rotation of the blade in a plane parallel to the base;

the plate defining a filter receptacle concentric with respect to the fan blade and motor;

a filter for being received by the filter receptacle, the filter being of multilayer construction and including a first layer for dust, dirt and particle filtration, an activated charcoal layer for odor filtration, and a further layer for submicron remnant filtration;

a circuit board carried by the plate proximate the filter receptacle and circuit means on the circuit board including a smoke detector for causing operation of the motor by electric power provided by an electrical system of the vehicle in response to smoke in the air; and

a cover configured for extending over and for covering the plate in overlying relationship to both the base and the plate, including means for securing the cover to the plate, the cover having an air intake for intake of air within the passenger compartment, the air intake being first exposed to the smoke detector and only thereafter to the filter for being drawn therethrough by the fan for filtration; the circuit means including time delay means for causing operation of the motor for a predetermined time interval beyond detection by the smoke detector of smoke in the air intaken; whereby the base may be first secured to said preselected location, and subsequently said plate secured to the base, and thereafter the cover secured over the plate.

4,658,708

MACHINE FOR CONTINUOUSLY AND UNIFORMLY COATING CONFECTIONERY PRODUCTS

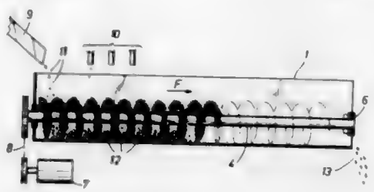
Blaise Rastoin, Aix-en-Provence, France, assignor to Transitube Projet, Aix-en-Provence, France

Filed Dec. 31, 1985, Ser. No. 814,750

Claims priority, application France, Jan. 9, 1985, 85 00412; Jan. 6, 1985, 85 08702

Int. Cl.⁴ A47J *37/12*; A23L *1/18*

U.S. Cl. 99—323.9 **11 Claims**



1. A machine for continuously and uniformly coating confectionery products comprising solid gelatinous or pasty cores, with liquid and/or powdery products, of the type comprising a substantially horizontal fixed trough provided with lateral walls, an endless screw which is driven in rotation in this trough, and means for introducing said cores and for pouring said liquid and/or powdery products into said trough, wherein said machine comprises at least one helicoidal brush composed of bristles implanted radially and helically on at least one drive shaft which is driven in rotation in said trough at a speed of less than 100 rpm and said trough is upwardly open, has a height greater than the diameter of said brush and has a cylindrical bottom which envelops said brush in an area located beneath said drive shaft.

8. The machine of claim 1, adapted for manufacturing popcorn or the like, comprising a heated section in which said bristles are strands of stainless steel and in which the walls of the trough are heated to a temperature of between 120° C. and 150° C.

4,658,709

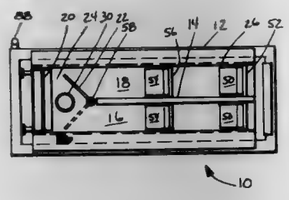
MULTITRACK APPARATUS FOR FRYING FOOD

Edward M. Anderson, 2620 E. Medicine Lake Blvd., Minneapolis, Minn. 55441

Filed May 29, 1984, Ser. No. 614,947

Int. Cl.⁴ A47J *37/12*

U.S. Cl. 99—406 **7 Claims**



1. A deep fat food fryer having a mechanism for dispensing, directing, flipping and removing food product in multiple cooking tracks of the fryer, comprising

(a) a deep fat cooking vat having two adjacent side by side parallel cooking tracks;

(b) a food dispensing device above an upstream end of the fryer;

(c) a diverter barrier upstream of the two tracks and downstream of the dispensing device for directing dropped food product from where the food was dropped by the dispensing device into one or the other of the tracks;

(d) a flipper downstream of the barrier for flipping food product in both of the cooking tracks;

(e) means downstream of the flipper for finally removing cooked food products from both cooking tracks;

(f) an actuator linkage immersed in the cooking oil and connecting all of the barrier, the flipper and the final removing means to a common remote single source of motive power with a single rod extending up and out of the vat to said power source; and

(g) a channel in the vat, said channel having an imperforate bottom separating the cooking tracks from the linkage so that no food pieces can get in the linkage.

4,658,710

PORTABLE BARBECUE

Hector P. Quet, 6203 Deany St., North Hollywood, Calif. 91606, and Rowland A. Selame, 15224 Cantara St., Panorama City, Calif. 91402

Filed Jan. 27, 1986, Ser. No. 822,398

Int. Cl.⁴ A47J *37/07*

U.S. Cl. 99—445 **5 Claims**

1. In a portable barbecue useful in removing fumes and catching oils and greases, the combination which comprises:

a housing having a fire bed;

a grid movably mounted on said housing for movement towards and away from said fire bed;

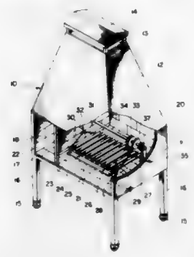
said grid including a plurality of V-shaped channels arranged in a parallel series across said fire bed in close spaced apart relationship;

a collection pan removably carried on said grid along one side of said plurality of channels for collecting oils, greases or the like gathered on said channels from supported foods;

said grid includes a plastic-like coating covering said channels and said pan;

said housing includes a hood of truncated pyramid configuration terminating in a chimney for exhausting fumes and gases;

said housing is divided into a first and a second compartment by a central partition; and



said housing and said partition; each having aligned openings for the passage of fuel from one compartment to the other.

4,658,711

CONTINUOUS CHURN

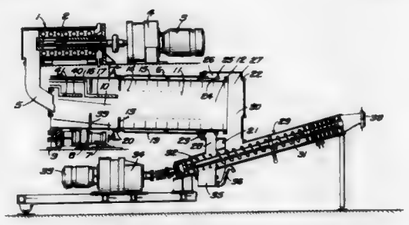
Werner Vennewald, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Jun. 28, 1985, Ser. No. 750,575

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1984, 3426280

Int. Cl.⁴ A23C *17/00*

U.S. Cl. 99—455 **10 Claims**



1. In a continuous churn for making sweet-cream or sour-cream butter and having an initial churning cylinder containing a beater for creating butter grain and buttermilk, and a rotatable second churning cylinder that is downstream of the initial churning cylinder and includes an afterchurning section, a straining section for separating butter grain from buttermilk and a washing section, the improvement comprising a first back-up disk positioned between the afterchurning section and the straining section of the second churning cylinder.

4,658,712

COFFEE DEPULPING MACHINE

Stanley L. Spencer, Route 3, Box 129-A, Gray, Ga. 31032

Filed Jan. 27, 1981, Ser. No. 228,998

The portion of the term of this patent subsequent to Aug. 21, 2000, has been disclaimed.

Int. Cl.⁴ A23N *5/00, 15/10*

U.S. Cl. 99—576 **16 Claims**

1. A depulping machine, comprising:

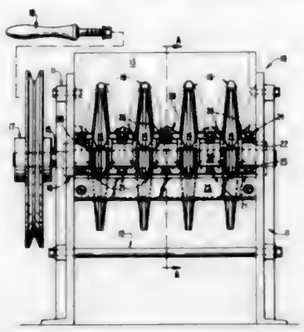
a frame;

a shaft supported on said frame;

at least one circular disk mounted on said shaft, said shaft passing perpendicularly through a center portion of said disk, said disk tapering in a radially outward direction of said shaft and having spirally radiating ribs projecting laterally from opposite faces of said disk;

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a hopper supported on said frame above said disk; and
depulping plates attached to said frame adjacent to but spaced from said disk, said plates having edges which



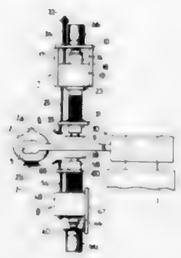
cooperate with said disk faces and ribs to force pulp between said disk and said plates and to push beans, pits and the like on said plates along said edges and out a discharge opening.

4,658,713

APPARATUS FOR CUTTING OFF A HEAD AND A ROOT OF BULBS

Tatuo Nagaoka, Yokohama, Japan, assignor to Nagaokaseiki Seisakusho Co. Ltd., Kanagawa, Japan

Filed May 6, 1985, Ser. No. 731,145
Claims priority, application Japan, May 14, 1984, 59-94714
Int. Cl.⁴ A23N *15/04*
U.S. Cl. 99—636 **6 Claims**



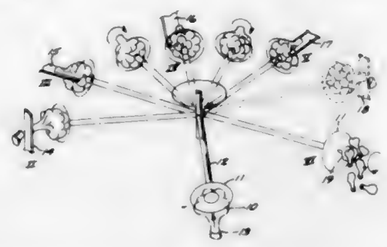
1. An apparatus for cutting off a head and a root of bulbs, comprising:
leading means having a first and a second leading member disposed in opposite relation with one another and for abutment against said bulb to be cut, said leading members being supported for movement toward and away from one another in a direction axially of said cutting apparatus;
cutter means having a first and a second cutter disposed in opposite relation with one another and at locations downstream of said leading members in a direction transversely of said apparatus, each of said cutters being positioned closer to said bulb than a corresponding one of sad leading members by a predetermined distance in the axial direction of said cutting apparatus, each of said cutters being supported for rotation and for axial movement in unison with said corresponding leading member;
urging means urging said first and second members toward one another;
driving means for rotatably driving said first and second cutters;
at least one mounting member provided with a bearing member and supported for movement axially of said apparatus, a corresponding one of said leading members being secured to said at least one mounting member, at least one of said cutters corresponding to said at least one mounting member being rotatably supported by said bearing member;
at least one guide rod each having an end secured to said at least one mounting member;
a hollow shaft having an inner periphery formed with spline-fitting portion and being drivingly coupled to said driving means;
a spline shaft having a portion extending in the interior of said hollow shaft and adapted to be engaged with said spline-fitting portion in a manner preventing relative rotation but permitting relative axial movement, said spline shaft being rotatably supported by said bearing member provided in said at least one mounting member; and
a stationary member rotatably supporting said hollow shaft and axially movably supporting said at least one guide rod.

4,658,714

APPARATUS FOR CUTTING BROCCOLI AND OTHER LONG STEMMED VEGETABLES

Jack R. McIlvain, Watsonville, and Sherman Thompson, Salinas, both of Calif., assignors to J. R. Simplot Company, Boise, Id.

Filed Oct. 29, 1985, Ser. No. 792,578
Int. Cl.⁴ A23N *15/02*
U.S. Cl. 99—637 **15 Claims**



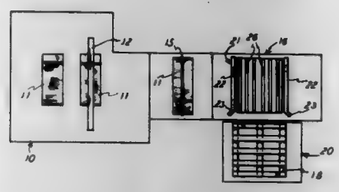
1. An apparatus for cutting a vegetable such as broccoli into a plurality of sections, such vegetable having a long stem and a flowery head, said apparatus comprising:
a. means to hold the head of the vegetable with a stem thereof extending outwardly;
b. means to cut longitudinally through the stem and partiallfy into the flowery head thereof; and
c. means to release the head of the sectioned vegetable;
d. said holding means including a plurality of holding elements which press against the underside of the head to thereby urge the head against a support or retaining member, an elongated shaft having the support or retaining member fixed to one end thereof, collar means slidably mounted on the shaft, a plurality of outwardly extending arcuate or angular fingers rotatably mounted to the collar and rotatably mounted to posts extending outwardly from the rear face of the support or retaining member, and means to move the collar along said shaft to rotate the fingers and thereby move the free ends thereof as a group toward and away from the support or retaining member.

4,658,715

SYSTEM FOR AUTOMATING THE PALLETIZING OF BUNDLES

Walter J. Stobb, Pittstown, N.J., assignor to Stobb Inc., Clinton, N.J.

Filed Apr. 14, 1986, Ser. No. 851,589
Int. Cl.⁴ B65B *13/02*
U.S. Cl. 100—2 **18 Claims**



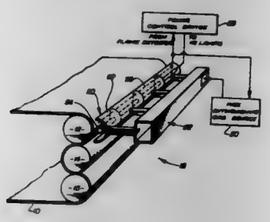
14. A method of stacking bundles onto a pallet, comprising the steps of collecting sheets into elongated and discrete bundles, tying said bundles to secure each of said bundles in a discrete form of a compact bundle, positioning a first pallet in an elevated position at a bundle loading station, individually lifting said discrete bundles and separately placing them onto said first pallet until a plurality of said bundles is on said first pallet, lowering said first pallet with its said bundles thereon to an elevation clear of and lower than said elevated position and to a location offset from the path of lowering and simultaneously positioning a second pallet at said elevated position and individually lifting more of said discrete bundles and separately placing them onto said second pallet.

4,658,716

INFRARED HEATING CALENDER ROLL CONTROLLER

Mathew G. Boissevain, Cupertino, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Filed Apr. 12, 1985, Ser. No. 722,834
Int. Cl.⁴ B30B *15/34, 3/04*
U.S. Cl. 100—38 **10 Claims**



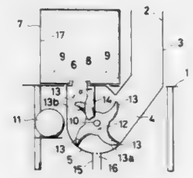
1. A calender roll control system of a type which uses infrared heat radiation to control the diameter of a calender roll and thereby control the thickness of a sheet of calenderable material, the system comprising:
a first calender roll having a diameter which responds to changes in temperature;
at least one cooperating second calender roll adjacent and substantially parallel to the first calender roll;
a sheet of calenderable material pressed between the first and second calender rolls, wherein a portion of said sheet is wrapped partially around the first roll so that the wrapped portion of the sheet contacts the surface of the first roll;
a plurality of infrared radiation heat lamps, said heat lamps being disposed at intervals along the axial direction of the first roll and also being directed at the poriton of the sheet which is wrapped around the first roll, so that the infrared radiation from the heat lamps directly heats the wrapped portion of the sheet of calenderable material which portion is in contact with said first roll and the wrapped portion of the sheet heats, by contact, the temperature responsive first calender roll; and
power control means for selectively controlling the amount of power supplied to each of the heat lamps.

4,658,717

REFUSE COMPACTION UNIT

Hiroki Juhuku, Tokyo, Japan, assignor to Hakushin Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 621,390, Jun. 18, 1984, abandoned.
This application Oct. 28, 1985, Ser. No. 792,189
Claims priority, application Japan, Jun. 17, 1983, 58-107795
Int. Cl.⁴ B30B *9/02*
U.S. Cl. 100—126 **5 Claims**



1. A refuse compaction unit comprising a refuse inlet, a compactor located below the refuse inlet, and communicating therewith and an outlet communicating with the compactor on the opposite side thereof from the refuse inlet and a sealed storage compartment swingably supported on hinges adjacent said outlet in communication with said outlet at the end thereof opposite said compactor, the compactor being constituted of at least one comb-like rotor consisting of a plurality of outwardly projecting blades and at least one comb-like stator acting as a partition between the refuse inlet and refuse outlet and having a plurality of teeth with which the blades of the comb-like rotor interdigitate.

4,658,718

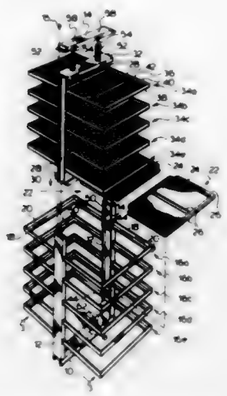
HOLDER FOR PROCESSING PRODUCTS

Guy E. Buller-Colthurst, Erin, and Knud Jespersen, Terracotta, both of Canada, assignors to Knud Simonsen Industries Limited, Rexdale, Canada

Filed Aug. 29, 1985, Ser. No. 770,582
Int. Cl.⁴ B30B *7/02*
U.S. Cl. 100—194 **7 Claims**

1. A product press, for supporting product during processing, and comprising;
support frame having two frame side members, and lower and upper cross-members;
a plurality of fixed tray members fixed to said support frame side members at spaced intervals, said fixed tray members having two ends, and said frame side members being attached thereto midway between said ends;
a moveable frame having two side portions, and lower and upper cross portions, located between said support frame side members, and moveable relative thereto;
a plurality of movable trays fastened to said moveable frame side members at spaced intervals and being movable towards and away from said fixed tray members for holding product therebetween;
biasing means urging said movable trays towards said fixed

tray members for applying pressure to product sotred therebetween, and,



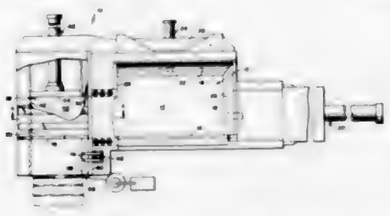
means for releasably holding said trays and tray members apart.

4,658,719

OVERSIZE BALE RELEASE MECHANISM FOR WASTE MATERIAL BALER

Jerry L. Jackson, and Johnny B. Outen, both of Cordele, Ga., assignors to Harris Press and Shear, Inc., Cordele, Ga.

Filed Nov. 15, 1985, Ser. No. 798,387
Int. Cl.⁴ B30B *15/32*
U.S. Cl. 100—218 **4 Claims**



1. In a waste baling machine provided with a compression chamber of generally parallelopiped configuration having three fixed walls, a charging passage leading to and having an exit end at said chamber with a charging ram head reciprocable therein and defining in one position, a fourth chamber wall, a discharge passage defined by two pairs of opposed walls leading from said chamber at right angles to said charging passage, and an ejection ram head advanceable through said chamber and said discharge passage and defining in a retracted position a fifth chamber wall, the improvement comprising:

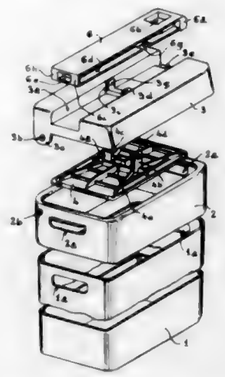
the discharge passage wall adjacent the exit end of said charging passage is divided into two sections, one inner and one outer, parallel to the plane of said discharge passage wall, said outer section being fixed and said inner section normally defining a part of said charging passage and being mounted for movement to enlarge said discharge passage throughout its length to permit ejection therethrough of an oversize charge of waste material in said chamber having a portion of said charge protruding back into said charging passage.

4,658,720

REFUSE BIN INCORPORATING COMPACTING MEANS

Henry Massonnet, 01760 Nurieux-Volognat, France

Filed May 19, 1986, Ser. No. 864,487
Claims priority, application France, May 21, 1985, 85 07818
Int. Cl.⁴ B30B *15/06*
U.S. Cl. 100—226 **9 Claims**



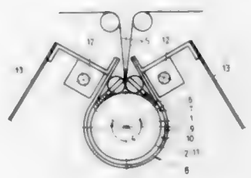
1. A compaction refuse receptacle comprising a bin having an open top portion, a lid selectively mounted to said top portion of said bin and having an elongated recess formed therein, an opening into said bin disposed within said recess, a compactor assembly carried by said lid, said compactor assembly including a compaction plate disposed within said bin and an elongated control member which is cooperatively seated within said recess, mounting means connected to said compaction plate so as to be extendable through said opening so as to be disposed within said recess, said control member having first and second ends and being slideably and pivotally connected to said mounting means within said recess, said control member being selectively movable from a first position within said recess which position is generally parallel with said lid to a second position wherein said control means is generally perpendicular to said lid and aligned for movement through said opening with said first end thereof engaging said compaction plate to thereby permit said control member to selectively urge said compaction plate downwardly relative to said lid within said bin.

4,658,721

METHOD AND APPARATUS FOR HOT FOIL EMBOSSING A WORKPIECE

Walter Mathis, Feldheim 1, CH-6312 Steinhausen, Fed. Rep. of Germany

Filed May 31, 1985, Ser. No. 740,172
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1984, 3421029
Int. Cl.⁴ B41F *17/20*
U.S. Cl. 101—9 **10 Claims**



1. Apparatus for dry printing on a workpiece comprising: a

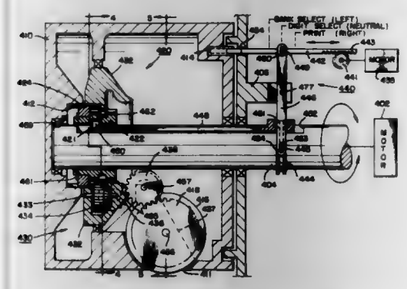
hot embossing die with embossing foil to be moved relatively against a workpiece; said die being brought into progressive contact with the workpiece over the entire die surface so that said die acquires a shape conforming to the shape of the workpiece; means for holding said hot embossing die with said foil in contact with said workpiece over a predetermined time interval to transfer heat from said die and foil thereby, said die being moved thereafter away from said workpiece while leaving said foil adhered to said workpiece, said foil being detached from said workpiece after a predetermined cooling time while leaving a printed image on the workpiece; a holding station for the workpiece; a cyclically operating feed means for feeding hot embossing foil to said holding station; said embossing die being movable relative to said holding station; means for heating said embossing die; said embossing die comprising elastically deformable material and having a thin wall for engaging the workpiece surface in an elastically deforming manner; a supporting mask between said embossing die and said hot embossing foil for fixing in place said die and said foil; said mask comprising pliable material subjectable to tension and compression; said die comprising further a die element of elastically flexible and temperature-resistant material in form of silicone carrying a die surface, and a base element of elastically flexible sheet metal; said die with base element of sheet metal being connected in a closed inductively heated circuit; and means for driving said supporting mask, said driving means being separate from drive means for said embossing die.

4,658,722

POSTAL METER BASE DRIVE SYSTEM

Arno Muller, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 4, 1984, Ser. No. 657,649
Int. Cl.⁴ B41J *1/60, 1/22*
U.S. Cl. 101—110 **12 Claims**



1. A postage meter for printing selected value amounts on a print receiving surface, comprising:

a rotatable print drum,

a plurality of value print wheels mounted within the print drum and each having a plurality of value print elements, said print wheels being selectively adjustable to align selected value print elements in an operative position in which they are exposed at the surface of the drum,

means for rotating said print drum to move said selected value print elements through a printing position to form an imprint on a said print receiving surface,

rotatable value selection means for selectively adjusting said value print wheels one at a time to align selected said value print elements,

means rotatable about the rotational axis of the print drum for rotating said value selection means, print wheel selection means comprising an annular member rotatable about the rotational axis of the print drum and carrying said rotatable value selection means for selectively associating said value selection means with respective value print wheels along an annular path,

a main drive gear,

motor means for rotating said main drive gear, and

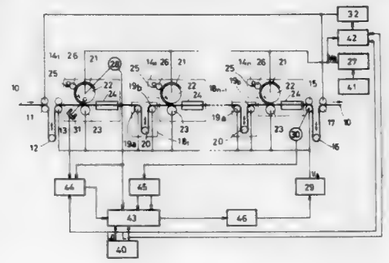
means for displacing said main drive gear between a first position in which it is drivingly engaged with said value selection means via said value selection means rotation means to rotate same and a second position in which it is drivingly engaged with said annular member of said print wheel selection means to rotate same.

4,658,723

COLOR PRINTING MACHINE

Masateru Tokuno, Hyogo; Tetsuya Sawada, Kyogo, and Yasuharu Mori, Hyogo, all of Japan, assignors to Reago Co., Ltd., Fukushima, Japan

Continuation of Ser. No. 639,109, Aug. 9, 1984, abandoned. This application Feb. 18, 1986, Ser. No. 829,859
Claims priority, application Japan, Aug. 18, 1983, 58-151404
Int. Cl.⁴ B41F *5/06, 5/16*
U.S. Cl. 101—181 **1 Claim**



1. A color printing machine for color printing a running web of paper comprising a plurality of printing units each having a plate cylinder and an impression cylinder, and a web length adjusting means provided between each pair of the adjacent printing units for adjusting the length of the web existing between each pair of the adjacent printing units so as to be equal to the printing length multiplied by an integer, further comprising:

a pair of feed rolls for feeding the web into the printing machine;

a pair of pull rolls for pulling the web out of the printing machine;

said plate cylinder adapted to carry a printing plate thereon and having a circumference which is greater than the length of the printing plate;

said impression cylinder adapted to press the web against the printing plate mounted on said plate cylinder;

a motor for driving said plate cylinders of the printing units;

a reversible motor for driving said feed rolls and said pull rolls to selectively advance and back the web;

a setting means for setting the circumference of said plate cylinder and the printing length and for generating a first signal proportional to the circumference of said plate cylinder and a second signal proportional to the printing length;

a signal generating means for generating a third signal proportional to the number of rotations of said motor for driving said plate cylinders;

a further signal generating means for generating a fourth signal proportional to the web speed; and

a speed control means for receiving said first and second and third and fourth signals and for electrically controlling the speed of said reversible motor in response thereto so that the web will run at the same speed as the circumferential speed of the printing plates during the period from the start of one printing length to its end and so that the web

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speed integrated from the start of one printing to its end will be equal to one printing length and so that the web speed integrated from the end of one printing length to the start of the next printing length will be equal to zero, and so that the circumferential speed of the plate cylinder integrated from the start of one printing length to the start of the next printing length will be equal to the circumference of said plate cylinder.

4,658,724

DEVICE FOR TRANSFERRING INK TO AN INKING UNIT OF A PRINTING MACHINE

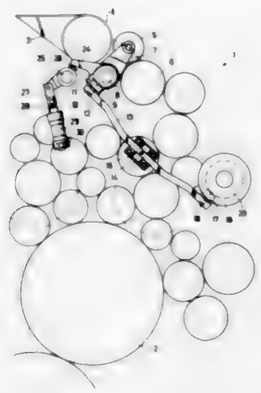
Hermann Beisel, Walldorf, and Karl-Heinz Seefried, Zuzenhausen, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Sep. 23, 1985, Ser. No. 779,143

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1984, 3434646

Int. Cl.⁴ B41F *31/00*

U.S. Cl. 101—351 **3 Claims**



1. Ink duct in a printing machine having an ink duct roller, an axially reciprocating distributor roller, a vibrating lifter roller secured at both ends thereof via respective levers to a floating spindle, and a control cam for transmitting an oscillating movement to the floating spindle and the lifter roller in transverse direction thereof between the ink duct roller and the distributor roller, comprisng additional control cam means for transmitting an axial reciprocating movement to the floating spindle and the vibrating lifter roller in synchronism with the axial reciprocating motion of the distributor roller, the lifter roller being alternately in contact with the ink duct roller and the distributor roller for transferring ink from the ink duct roller to the distributor roller, said additional control cam means being constructed so as to transmit said axial reciprocating movement of the vibrating lifter in opposite direction to the axial reciprocating movement of the distributor roller when the vibrating lifter is in contact with the distributor roller.

4,658,725

FUSE FOR A SMALL BOMB

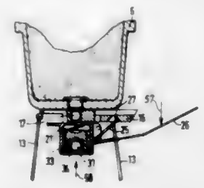
Werner Rudenauer, Roth; Wilhelm Furst, Buchberg, and Erwin Hass, Happurg, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Nov. 13, 1985, Ser. No. 797,702

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1984, 8437159[U]

Int. Cl.⁴ F42B *13/50, 25/16*; F42C *15/32*

U.S. Cl. 102—229 **1 Claim**



1. In a fuse for a small bomb arranged in an artillery grenade including a plurality of said small bombs positioned in an axially stacked relationship, said fuse including a percussion fuse consisting of a striker and a detonator; the improvement comprising: a slider containing the detonator; a radially outwardly pivotable securing lever interposed between said bombs and contacting an inner wall of an adjoining bomb, said slider contacting securing lever, said securing lever maintaining said detonator in a secured position; a securing disc being articulated to said securing lever; said striker being fixed in position between the slider and said securing disc; resilient biasing means for effecting an outward pivoting movement of said securing lever upon separation of said bombs responsive to the firing acceleration of the artillery grenade, so as to displace said slider and deform said securing disc whereby said detonator is set into an armed condition.

4,658,726

FUZE FOR SETTING OFF JACKETED EXPLOSIVE CHARGES

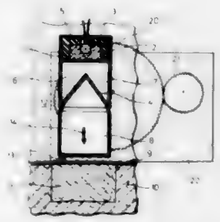
Manfred Held, Aresing, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 27, 1985, Ser. No. 706,017

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407397

Int. Cl.⁴ F42C *3/00, 15/10*

U.S. Cl. 102—416 **5 Claims**



1. A fuze for setting off jacketed explosive charges, comprising a breaking wall aimed at the explosive charge to be detonated, an initiating charge in alignment with said breaking wall, and a housing which encloses said initiating charge and said breaking wall and which can be brought into the vicinity of the jacket of the explosive charge, said fuze having a safety position which includes an empty space in said housing between said initiating charge and said breaking wall which is capable of being filled with a liquid to place the fuze in an off

safety position, said empty spaced in said housing includes a perforated boundary wall to the exterior of said housing permitting the inflow and outflow of liquid thereto, said jacketed explosive charge comprises an underwater explosive charge, said perforated boundary communicating with the ambience, said housing having a chamber between said breaking wall and the end of said housing adjacent the explosive charge, said chamber being gas filled and permitting a free formation of said breaking wall into a piercing fragment adapted to penetrate the main explosive charge, said breaking wall being spaced apart from said initiating charge and being a cone shaped liner for forming said piercing fragment, said initiating charge being of type to form said cone shaped liner into said piercing fragment.

4,658,727

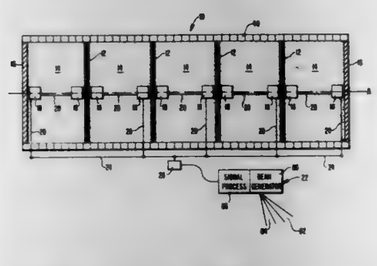
SELECTABLE INITIATION-POINT FRAGMENT WARHEAD

Earl E. Wilhelm, and Alan B. Zimmerschied, both of Renton, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1984, Ser. No. 655,703

Int. Cl.⁴ F42B *13/18*

U.S. Cl. 102—494 **17 Claims**



1. A fragment warhead, comprising:
an explosive formed into a shape having a longitudinal axis;
barrier means dividing said explosive into a plurality of axially adjacent segments for delaying propagation of detonation waves between segments;
at least two detonators embedded in spaced relation in each said segment;
a fragmentation layer encasing said explosive; and
fuze means for sensing a target and for activating at least one said detonator in each said segment in a selected sequence to generate a fragment pattern having a width and angular direction selected in response to the sensed relative position of said target.

4,658,728

PROJECTILES

Leonard J. Amos, Crowborough, and John T. Heron, Tonbridge, both of England, assignors to The Secretary of State for Defence in Her Britanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

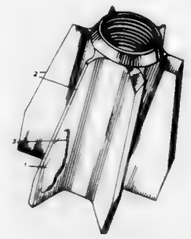
Continuation of Ser. No. 5,392, Dec. 28, 1978, abandoned. This application Oct. 25, 1985, Ser. No. 790,809

Claims priority, application United Kingdom, Dec. 29, 1977, 54200/77

Int. Cl.⁴ F42B *15/00*; B32B *15/08, 27/38*

U.S. Cl. 102—501 **5 Claims**

1. A projectile tail fin unit subject, in use, to temperatures greater than its own melting point having a heat-absorbent external coating comprised entirely by a substantially homogeneous, thermally ablative layer of a heat-cured resinous material that has been formed directly upon said unit by a heat-curing process subsequent to application of the resinous material in an uncured state, which layer is of a uniform thickness selected to be sufficient only for absorbing the total amount of heat received during both firing and flight of said fin unit,



thereby to ensure minimal degradation of the aerodynamic profile of said fin unit.

4,658,729

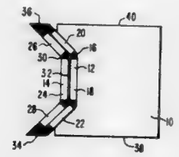
MODULAR FIBER ARMATURE FOR ELECTROMAGNETIC LAUNCHERS

David W. Scherbarth, Wilkinsburg; Samuel J. Scuro, Penn Township, Westmoreland County, both of Pa., and Gerald L. Ferrentino, Madison, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 20, 1984, Ser. No. 652,405

Int. Cl.⁴ F41F *1/02*

U.S. Cl. 102—520 **5 Claims**



1. An armature assembly for conducting very large DC current between two parallel, electrically conductive rails while being driven along a gap between the rails under the influence of electromanetic forces generated by the flow of said very large DC current, said armature assembly comprising:
an insulating armature support member capable of being sized to form a clearance fit between said rails;
a plurality of conductive fibers, each having a length greater than the width of said support member;
said conductive fibers being divided into a plurality of fiber bundles where each bundle includes a first rectangular sheath having an axis and encompassing a first portion of a first group of said conductive fibers and second and third rectangular sheaths, respectively encompassing second and third portions of said first group of said conductive fibers wherein said second and third sheathes are positioned on opposite sides of said first sheath and are positioned at a preselected angle with respect to the axis of said first sheath; and
means for attaching said fiber bundles to said support member.

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4,658,730

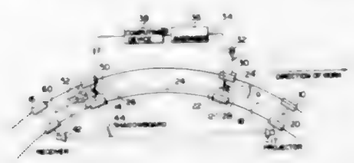
RAILROAD CORRECTION APPARATUS

Helmuth von Beckmann, Columbia, and Edwin H. Reeves, Blythewood, both of S.C., assignors to Caaron Corp., West Columbia, S.C.

Continuation of Ser. No. 566,387, Dec. 28, 1983, abandoned. This application Jul. 3, 1986, Ser. No. 882,011

Int. Cl.[4] E01B 33/02

U.S. Cl. 104—8 10 Claims



1. Track mounted apparatus for aligning railroad track, particularly curved track, comprising a first measuring system having a leading point on the track, an intermediate point on the track and a trailing point on the track and a first straight line physical reference member extending along a first chord between the leading point and the intermediate point and a second straight line physical reference member extending along a second chord between the intermediate point and the trailing point, a measuring means located between said leading and trailing points for measuring the angle between said reference members, means to move said first measuring system over a section of track and to measure a series of said angles to store them and average them thereby providing an averaged angle value; a track correcting means attached to and trailing said first measuring system, a track location sensing system for sensing track position values proximate the location of the track correcting means, the track location sensing system comprising a transmitter and receiver establishing a high frequency electromagnetic beam extending between two longitudinally spaced points on the track on either side of the track correcting means, the first longitudinally spaced point being forward of the point at which the angles are measured and the second longitudinally spaced point being substantially at the end of a third chord extending rearwardly from said trailing point, and a shadow board provided on a rail mounted car located proximate the location of the track correcting means, means for converting the averaged angle value to an equivalent desired radial distance from the track to the beam at the location of the shadow board, means for moving the shadow board radially towards the beam to sense the radial distance from the track to the electromagnetic beam at the location of the shadow board, and means for controlling the operation of the track position correcting means in a sense such that the radial distance of the track sensed by the shadow board substantially equals the desired radial distance thereby correcting the track alignment.

4,658,731

APPARATUS FOR TRANSPORTING GOODS TO AND FROM SHELVES HAVING DUAL FUNCTION GUIDE ROLLERS

Horst G. Schumann, 5190 Stolberg-Zweifall, Werkerbend 28, Fed. Rep. of Germany

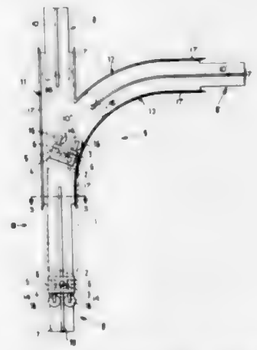
Continuation of Ser. No. 670,866, Nov. 13, 1984, abandoned. This application Jul. 3, 1986, Ser. No. 882,013

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1983, 3342933

Int. Cl.[4] E01B 25/12; B61L 11/02

U.S. Cl. 104—130 5 Claims

1. An apparatus for transporting goods to and from shelves, comprising a vehicle including a carriage frame, goods handling means mounted on said carriage frame, a front guide carriage including a swivel type front carriage axle and front support wheels (6) secured to said swivel type front carriage axle, a vertical swivel post (3) securing said swivel type front carriage axle (5) to said carriage frame in a swivelling manner, a rear guide carriage including a swivel type rear carriage axle and a further vertical swivel post securing said swivel type rear carriage axle to said carriage frame, rear support wheels (6) secured to said swivel type rear carriage axle, front and rear guide rollers (16) operatively secured to said front and rear guide carriages for guiding the respective swivel axle, a pair of front guide rollers and a pair of rear guide rollers, vertical rotational shafts for operatively securing said pairs of front and rear guide rollers to said front and rear support wheels having a horizontal axis, rail means including straight rail sections and rail junctions, said straight rail sections having an inverted T-cross-section with a continuous flange (7) and an upright central web (10) connected to a floor alongside said shelves, said rail junctions having a straight portion and a curved portion for interconnecting said straight rail sections, said upright central web (10) being interrupted in said rail junctions, said front and rear support wheels travelling on said continuous flange of said rail means, said rail junctions (9) comprising lateral upright guide walls (17), said vertical rotational shafts being secured to the respective front and rear guide carriage for supporting said pairs of guide rollers (16), arranged such that both rollers of a pair contact said central upright web (10) for guidance when travelling along said straight rail sections (7) and only one guide roller (16) of a pair contact said lateral upright guide walls (17) for guidance when travelling through said rail junctions (9) where said central upright web (10) is interrupted, whereby said guide rollers (16) are dually effective in accordance with the swivelling of the respective guide carriage in said straight rail sections and in said rail junctions, thereby avoiding guide elements which must be attached to and detached from a guide rail.



4,658,732

PNEUMATIC PROPULSION SYSTEM FOR FREIGHT AND/OR PASSENGER VEHICLES

Oskar H. W. Coester, Rua David Francisco Mauricio 85, Porto Alegre, Rio Grande do Sul, Brazil

Filed Apr. 3, 1984, Ser. No. 596,434

Claims priority, application Brazil, Apr. 4, 1983, PI 8301706

Int. Cl.[4] B61B 13/12

U.S. Cl. 104—156 19 Claims

1. Improvements in a transportation system for pneumatic propulsion of passenger and/or freight vehicles, said transportation system being characterized by including:

beams connected in tandem and constructed of prefabricated modules, pillars providing end supports for said beams, a trackway supported on said beams;

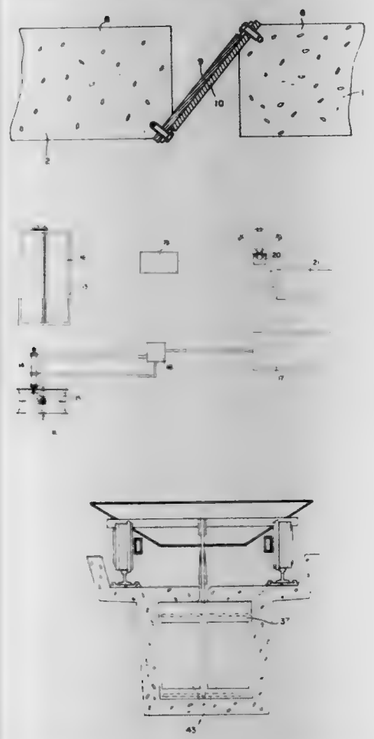
said beams defining a longitudinal propulsion air duct having a longitudinal slit at the top thereof, an openable sealing system for closing said slit;

a vehicle supported on said trackway, a propulsion plate within said duct, a mast extending through said sealing system, a traction arm and said mast connecting said vehicle to said propulsion plate, lateral doors on said vehicle for normal entry and exit, frontal windows on said vehicle that are widely operable for emergency exit;

an on-board battery means for said vehicle, an electrification means for energizing said transportation system, said electrification means supplying electrical energy through said trackway to said battery means;

a braking system for said vehicle, pressure sensing means for controlling actuation of said braking system in response to differential pressures within said duct;

a stationary airflow generator for supplying said duct with pneumatic propulsion air under pressure, a set of valves for regulating said propulsion air, control module means for controlling said set of valves;



sensing means for positioning said vehicle along said trackway and for controlling speed of said vehicle;

a retainer wheel means connected to said vehicle and moving within said duct to prevent derailing of said vehicle;

a plurality of wheel assemblies connected to said vehicle, each of said assemblies including four non-driven rotatable wheels, each of said wheels including a rim, a hub inside of said rim and a vibration absorbing layer between said rim and said hub;

movable decompression panel means for said propulsion plate to protect said transportation system from being damaged as a result of excessive pressure differentials on opposite sides of said propulsion plate;

said decompression panel means (43) being adjustable as to the differential pressure to move from a shut position wherein through aperture means of said propulsion plate is blocked, to an open position wherein said aperture means is clear; and

spring means (44) biasing said propulsion plate (37) toward said shut position; said propulsion plate (39) moving to said open position automatically in the event differential air pressure exceeds a limit value set for structural protection of the system.

13. Improvements in a transportation system for pneumatic propulsion of passenger and/or freight vehicles, said transportation system being characterized by including:

beams connected in tandem and constructed of prefabricated modules, pillars providing end supports for said beams, a trackway supported on said beams;

said beams defining a longitudinal propulsion air duct having a longitudinal slit at the top thereof, an openable sealing system for closing said slit;

a vehicle supported on said trackway, a propulsion plate within said duct, a mast extending through said sealing system, a traction arm and said mast connecting said vehicle to said propulsion plate, lateral doors on said vehicle for normal entry and exit, frontal windows on said vehicle that are widely operable for emergency exit;

an on-board battery means for said vehicle, an electrification means for energizing said transportation system, said electrification means supplying electrical energy through said trackway to said battery means;

a braking system for said vehicle, pressure sensing means for controlling actuation of said braking system in response to differential pressures within said duct;

a stationary airflow generator for supplying said duct with pneumatic propulsion air under pressure, a set of valves for regulating said propulsion air, control module means for controlling said set of valves;

sensing means for positioning said vehicle along said trackway and for controlling speed of said vehicle;

a retainer wheel means connected to said vehicle and moving within said duct to prevent derailing of said vehicle;

a plurality of wheel assemblies connected to said vehicle, each of said assemblies including four non-driven rotatable wheels, each of said wheels including a rim, a hub inside of said rim and a vibration absorbing layer between said rim and said hub;

movable decompression panel means for said propulsion plate to protect said transportation system from being damaged as a result of excessive pressure differentials on opposite sides of said propulsion plate;

said sealing system for the longitudinal slit (60) on the beam including first and second flexible material flaps (9) and (10) mounted symmetrically at opposite sides of said slit to a first and a second of said modules (1) and (2), respectively, in such a way that, as a differential pressure either negative or positive is established between the duct and atmosphere, the flaps will press one against the other, effectively sealing off the duct;

each of said flaps including a longitudinally extending free edge with said first flap being upwardly inclined towards its said free edge, said second flap being downwardly inclined toward its said free edge and said free edges normally engaging one another to close said slit.

18. Improvements in a transportation system for pneumatic propulsion of passenger and/or freight vehicles, said transportation system being characterized by including:

beams connected in tandem and constructed of prefabricated modules, pillars providing end supports for said beams, a trackway supported on said beams;

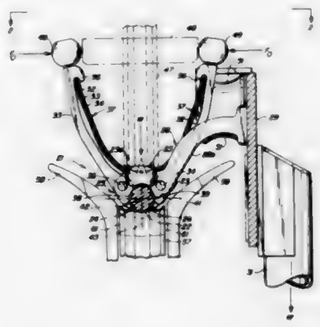
said beams defining a longitudinal propulsion air duct having a longitudinal slit at the top thereof, an openable sealing system for closing said slit;

a vehicle supported on said trackway, a propulsion plate within said duct, a mast extending through said sealing system, a traction arm and said mast connecting said vehicle to said propulsion plate, lateral doors on said vehicle for normal entry and exit, frontal windows on said vehicle that are widely operable for emergency exit;

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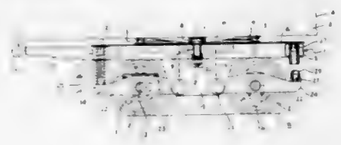
an on-board battery means for said vehicle, an electrification means for energizing said transportation system, said electrification means supplying electrical energy through said trackway to said battery means;
a braking system for said vehicle, pressure sensing means for controlling actuation of said braking system in response to differential pressures within said duct;
a stationary airflow generator for supplying said duct with pneumatic propulsion air under pressure, a set of valves for regulating said propulsion air, control module means for controlling said set of valves;
sensing means for positioning said vehicle along said trackway and for controlling speed of said vehicle;
a retainer wheel means connected to said vehicle and moving within said duct to prevent derailing of said vehicle;
a plurality of wheel assemblies connected to said vehicle, each of said assemblies including four non-driven rotatable wheels, each of said wheels including a rim, a hub inside of said rim and a vibration absorbing layer between said rim and said hub;
movable decompression panel means for said propulsion plate to protect said transportation system from being damaged as a result of excessive pressure differentials on opposite sides of said propulsion plate;
a set of connection ducts interposed between the stationary airflow generator to the propulsion air duct, and a valve command and control system including said control module means;
said set of valves comprising four air control valves (13) the control of which for the "open" and "closed" position is effected by said valve command and control systems; each of said valves including a throttle plate (16);
said improvements in a pneumatic propulsion system for passengers comprising a lever (15) and a pneumatic cylinder (14) connected to said lever (15) for actuating said throttle plate (16) of said valve; an electropneumatic valve (18) for controlling said cylinder; an air compressor (17) feeding said electropneumatic valve (18);
an electric selector switch (20) for switching said another valve (18); an electronic module of logic circuits (19) operating in conjunction with selector switch (20);
said module being under control of the control microprocessor having an output module (21) for controlling said electronic module to affect automatic system operation.

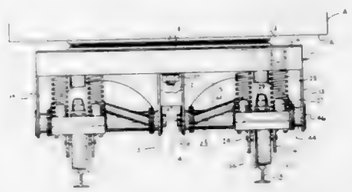
4,658,733
AERIAL TRAMWAY GRIP ASSEMBLY
Jan K. Kunczynski, 2400 Arrowhead Dr., Carson City, Nev. 89701
Filed Aug. 19, 1985, Ser. No. 766,710
Int. Cl.[4] B61B *12/12*
U.S. Cl. 104—208 **7 Claims**



1. In a detachable haul rope grip assembly for an aerial tramway, said assembly including a gripping head having a pair of gripping jaws each mounted for movement between an open position permitting mounting of said head over a haul rope and a closed position retaining said head in gripping engagement with said haul rope, jaw actuating means coupled to each of said jaws and formed for selective movement of said jaws between said open position and said closed position, and load support means coupled to said head and formed for support of a load to be conveyed from said grip assembly, the improvement in said grip assembly comprising:
said head including a pair of stationary relatively spaced apart converging haul rope gripping surfaces oriented for gravity biasing of said surfaces into wedging engagement with said haul rope under loading of said load support means, said gripping surfaces having one of said gripping surfaces oriented in opposed relation to one of said jaws in said closed position and a remainder of said gripping surfaces oriented in opposed relation to a remainder of said jaws in said closed position with each opposed jaw and gripping surface being formed and positioned to grip said haul rope therebetween and to secure said assembly to said haul rope independently of the other opposed jaw and gripping surface; and
said jaws being positioned proximate said surfaces and formed to apply a supplemental force to said haul rope in said closed position in a direction tending to further wedge said haul rope between said surfaces.

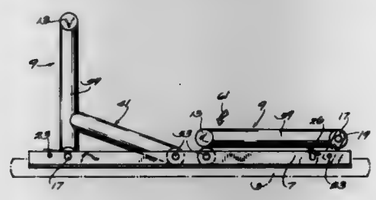
4,658,734
INDEPENDENT SUSPENSION RAILWAY BOGIE
Joseph Mroz, 2572 Montgomery Street, Montreal, Canada H2K 2S4
Filed Mar. 11, 1985, Ser. No. 710,368
Int. Cl.[4] B61F *3/16, 5/04, 5/30*
U.S. Cl. 105—169 **12 Claims**





1. A bogie for use with a railway wagon, comprising a rigid horizontally-disposed frame, of generally rectangular shape, a pivot upstanding from the center portion of said frame for pivotal connection to the underside of a wagon, a large diameter bearing assembly carried by said frame on the top thereof and substantially co-axial with said pivot and adapted to engage the underside of said wagon to restrain rotation of said frame in a plane generally parallel to said wagon underside, rail-engaging wheels disposed below said frame for supporting said wagon through said frame, and separate suspension means for each of said wheels interconnecting each wheel to said frame, so that each wheel is movable along a generally vertical plane independently of the other wheel; each wheel having a generally horizontal axle with ends protruding from each side thereof; and said frame comprising for each wheel a pair of spaced opposite support means downwardly projecting from said frame, each suspension means comprising a pair of lever arms, one lever arm extending on each side of a wheel, said lever arms pivotally carrying at their intermediate portion the respective axle ends and pivoted to said support means at one end, a cross-member rigidly interconnecting the opposite ends of said lever arms and disposed beyond said wheel with respect to said one end of said lever arms, and elastic suspension members generally vertically extending between said frame and said cross-member and having a resultant force generally in the vertical plane of said wheel and wherein the distance between said cross-member and the pivotal axis of said lever arms to said support means is about twice that of the wheel axle to said last-named pivotal axis.

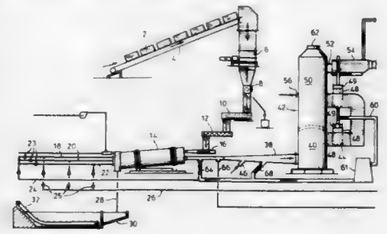
4,658,735
FOLDING TABLE
Lawrence C. Holton, Green Bay, Wis., assignor to Krueger, Inc., Green Bay, Wis.
Filed Jun. 16, 1986, Ser. No. 874,642
Int. Cl.[4] A47B *3/00*
U.S. Cl. 108—131 **4 Claims**



1. A heavy duty table having legs that are operable between folded and unfolded conditions comprising:
a. a table top;
b. a pair of laterally spaced beams attached to the underside of the table top;
c. a pair of pedestal type legs, each leg having an upper horizontal member, a lower horizontal member, and a vertical pedestal connecting the upper and lower horizontal members;
d. a pair of links operatively associated with each pedestal leg, each link having a first end pivotally mounted near the ends of a beam and a second end pivotally attached to the end of a leg upper horizontal member;
e. a pair of T-shaped braces, each brace having a leg portion pivotally connected to a pedestal leg vertical pedestal and a cross piece extending between the table beams; and
f. pin means for pivotally connecting each brace cross piece to the beams,
so that the T-shaped braces add strength and rigidity to the pedestal legs and the pedestal legs can be independently folded and unfolded.

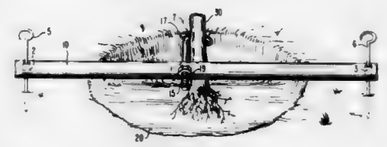
4,658,736
INCINERATION OF COMBUSTIBLE WASTE MATERIALS
Herman K. Walter, 60 Norseman Street, Toronto, Ontario, Canada M8Z 2P8
Filed Mar. 27, 1986, Ser. No. 844,954
Int. Cl.[4] F23G *5/00*
U.S. Cl. 110—346 **8 Claims**

1. A method of incinerating combustible waste materials comprises subjecting the materials to a temperature from about 500° C. to about 925° C. sufficient to gasify most of the combustible content thereof, in the presence of a mixture of hot air and steam containing insufficient oxygen to support free combustion, blending the resulting gases with further hot gases and passing the resulting mixture into a vortex rising through a combustion chamber, the further gases containing oxygen sufficient to provide an excess of oxygen over that required to complete combustion and sufficient diluent gases to restrict combustion temperatures in the vortex to temperatures in the range from about 1250° C. to about 1550° C., passing the gases through a first heat exchanger to transfer part of their thermal energy to a separare flow of compressed air, forming the gases into a further vortex with the admixture of ambient air to



reduce their temperature to a temperature in the range from about 550° C. to about 925° C., passing the gases through a second heat exchanger to preheat the clean compressed air supplied to the first heat exchanger, and passing the gases to a boiler, to produce steam.

4,658,737
PLANTING IMPLEMENT
Elsa Weissberg, 135 W. 83rd St.-Penthouse B, New York, N.Y. 10028
Filed Aug. 1, 1985, Ser. No. 761,523
Int. Cl.[4] A01C *11/00*
U.S. Cl. 111—2 **9 Claims**



1. A planter for supporting a plant at an appropriate height over a planting hole situated in the ground, comprising;
a supporting member, having two ends and being longer than a maximum distance across the top of the planting hole, for lying on the ground and straddling the top of the planting hole, said supporting member having oppositely situated first and second holes spaced apart a distance longer than the distance across the planting hole, wherein the first and second holes are substantially parallel to each other and oriented in a direction substantially perpendicular to the longitudinal axis of the supporting member;
means for securing the plant to the supporting member at a position intermediate said ends; and
means for anchoring the supporting member to the ground on at least one side of the planting hole to prevent rotation of the planter; the anchoring means including at least one generally E-shaped element, said E-shaped element having a top bridging portion, two depending pointed elongated earth penetrating legs, one pointed leg at each end of said bridging portion, and a central leg, said central leg being parallel to and shorter than said pointed elongated legs and so shaped as to cooperatively matingly interfit into said first or second hole in said supporting member, and wherein both of said elongated legs sandwich said supporting member and extend into the ground whenever said central leg is inserted into said first or second hole.

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4,658,738

APPARATUS AND PROCESS FOR TREATING SOIL USED FOR CULTIVATION

Eugen Zlack, Hueffelsheimer Strasse 2, 6550 Bad Kreuznach, Fed. Rep. of Germany

Filed Oct. 28, 1985, Ser. No. 792,102

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1984, 3439380; Aug. 17, 1985, 3529551

Int. Cl.[4] A01C *21/00*

U.S. Cl. 111—7.2 **22 Claims**



1. A method for breaking up and introducing substrate into soil used for the cultivation of plants, comprising the steps of:

opening a rapid-closing valve;

introducing a blast of compressed air into the soil with a probe and breaking up the soil when the rapid-closing valve is opened;

introducing additional compressed air into a third chamber of a second cylinder and the probe simultaneously with the opening of the rapid-closing valve;

sensing a pressure drop in the third chamber following the blast;

opening an injection valve in response to the pressure drop, and

injecting a substrate into interstices in the soil caused by the blast, when the injection valve is opened.

4,658,739

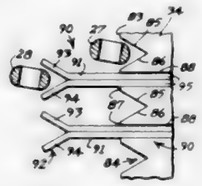
NEEDLE PLATE MEMBER FOR A STAGGERED NEEDLE TUFTING MACHINE

Charles W. Watkins, Ooltewah, Tenn., assignor to Tuftco Corporation, Chattanooga, Tenn.

Filed Feb. 3, 1986, Ser. No. 825,564

Int. Cl.[4] D05C *15/08, 15/14*

U.S. Cl. 112—80.3 **9 Claims**



1. In a staggered needle tufting machine having a front transverse row of uniformly spaced reciprocable front needles and rear transverse row of uniformly spaced reciprocable rear needles uniformly offset from said front needles, the front and rear needles being adapted to carry yarn through a base fabric movable longitudinally through the machine, and a looper hook for each needle having a bill for seizing and forming a loop in each yarn carried through the base fabric by the corresponding needle, fabric support means for supporting the base fabric between the staggered needles and the looper hooks, comprising:

(a) an elongated needle plate having a longitudinal dimension and a transverse dimension and a free transverse edge portion,

(b) means supporting said needle plate so that said free edge portion extends transversely of the machine and closely adjacent the reciprocable paths of the transverse row of said front needles,

(c) a plurality of notches, there being one notch for receiving each said front needle as said needles penetrate the base fabric,

(d) each said notch comprising a pair of opposed walls on opposite sides of the path of a corresponding reciprocable front needle, said side walls diverging rearward to form an opening through said transverse edge portion to permit the free rearward passage of the tufted pile loops formed by said front needles,

(e) a plurality of finger members, each finger member projecting rearward from said edge portion between adjacent pairs of said notches,

(f) each finger member comprising a shank portion projecting rearward from said free edge portion and terminating in a forked portion comprising a pair of rearward diverging tines spaced on each side of the path of a corresponding reciprocable rear needle,

(g) said needle plate and said finger members supporting the adjacent portions of said base fabric stitched by said front and rear needles,

(h) fabric shift means behind said finger members and engaging said base fabric,

(i) means laterally shifting said shift means reciprocably to move said base fabric transversely relative to said needle plate,

(j) said tines terminating in rear ends, each said rear end being transversely spaced from the adjacent rear end of an adjacent finger member to permit the rearward passage of the tufted pile loops formed by the front needle between said adjacent rear ends of adjacent finger members, and

(k) said rear ends terminating adjacent a transverse line intersecting the vertical paths of said rear needles to disengage the loops formed by said needles when said loops move behind said rear ends and to permit free lateral shifting movement of the portion of the base fabric adjacent said rear needles.

4,658,740

SEWN PART TRANSFER DEVICE FOR A SEWING MACHINE

Heinz Goldbeck, and Klaus Möller, both of Bielefeld, Fed. Rep. of Germany, assignors to Durkoppwerke GmbH, Fed. Rep. of Germany

Filed May 24, 1985, Ser. No. 738,047

Claims priority, application Fed. Rep. of Germany, May 26, 1984, 8416290[U]

Int. Cl.[4] D05B *3/18, 31/00*

U.S. Cl. 112—114 **15 Claims**

1. A sewing machine, comprising:

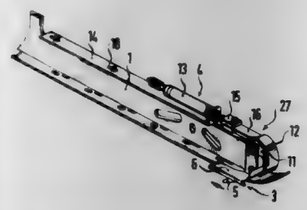
a sewing machine table;

a plate above the table for holding a piece of sewing material that is to be transferred to a workpiece on the table;

a transfer device for transferring a strip of material on the plate to the workpiece; the transfer device comprising a grip-fold stamp; means for moving the clamping element to clamp to the piece of material on the plate;

the clamping element including a clamping strap which is movable from a location away from the underside of the grip-fold stamp toward the underside of the grip-fold stamp; a guide at the underside of the grip-fold stamp toward which the clamping strap is movable and for cooperating with the clamping strap for gripping material; and

the plate including an insertion pocket defined on its upper side facing toward the grip-fold stamp, and the insertion pocket being beneath the clamping element for the clamping element to move into the pocket beneath the said piece of material on the plate for clamping to the said piece of material there so that said clamping element can move into the insertion pocket beneath said material piece to clamp said material piece.



4,658,741

METHOD AND APPARATUS FOR DETERMINING THE AMOUNT OF ADVANCE OF A PLURALITY OF MATERIAL PLIES

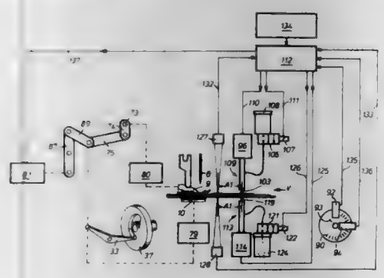
Fritz Jehle, Enkenbach-Alsenborn; Erich Willenbacher, Kaiserslautern; Oskar Braun, and Dietmar Becker, both of Kaiserslautern, all of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Jul. 11, 1986, Ser. No. 884,402

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1985, 3525028

Int. Cl.[4] D05B *97/00, 35/00, 27/22*

U.S. Cl. 112—262.1 **19 Claims**



1. A method for determining the amount of advance of at least one work ply fed by a sewing machine which is driven by a main drive shaft using a sensor device which scans the ply at two points succeeding each other in a feed direction and a signal processing system connected to the sensor device, comprising connecting a pulse generator to the main shaft so as to generate a pulse in proportion to the speed of operation of said main shaft, delivering the pulse signals to the sensor device for evaluating the pulses generated between recognition of the sign of the two scanning points, and wherein for scanning there is used a sign situated at any desired point of the work ply, and comparing the pulse sum formed between the successive recognition of the sign with a desired pulse number corresponding to the stitch length and the distance between the scanning points.

12. In a sewing machine having a thread needle reciprocating and swinging on one first side of a support surface under which multiple plies of materials are fed and which is adapted to cooperate with a bobbin on the opposite second side to form stitches in the materials, the improvement comprising, a first feed mechanism engageable with the materials on said first side to advance them in a feed direction, a second feed mechanism engageable with the materials on said second side to advance them in the feed direction, feed drive means connected to said thread needle and to said first feed mechanism and said second feed mechanism and including a stitch setting means for setting the swing of the needle and its reciprocation, and drive regulating means for regulating the drive of said first feed mechanism and said second feed mechanism sensor device including a scanner arranged at spaced locations along the feed of the materials, at least two spaced apart scanning locations, pulse generating means associated with said feed drive driven by said feed drive to generate a pulse signal in response to and in to the speed of said drive means and connected to said sensor device and being actuated by said sensor device at said scanning locations to evaluate the pulses generated between said scanning locations, said sensor device providing a comparison between desired pulse number corresponding to the stitch length and the distance between said scanning locations.

4,658,742

ELECTRONIC CONTROLLING EQUIPMENT FOR DRIVING SYSTEMS WITH ELECTROMAGNETIC COUPLINGS FOR INDUSTRIAL SEWING AND/OR OVERCASTING MACHINES

Florin T. Tanasescu; Laurentiu Vatafu Gaitan, and Dumitru Stefanescu, all of Bucharest, Romania, assignors to Institutul de Cercetare Stintifica si Inginerie Tehnologica Pentru Industria Electrotehnica-ICPE, Bucharest, Romania

PCT No. PCT/RO84/00001, § 371 Date Sep. 24, 1984, § 102(e) Date Sep. 24, 1984, PCT Pub. No. WO84/02933, PCT Pub. Date Feb. 8, 1984

PCT Filed Jan. 24, 1984, Ser. No. 662,403

Claims priority, application Romania, Jan. 24, 1983, 109813

Int. Cl.[4] D05B *69/22*

U.S. Cl. 112—275 **10 Claims**

1. A device for continuous speed control and control of presser foot lifting, thread loosening and thread cutting for an industrial sewing machine with electromagnetic coupling and a first shaft comprising:

an operator input means for controlling said machine;

an asynchronous motor for driving said machine;

a clutch coupled to said asynchronous motor;

a transmission system;

a braking mechanism coupled to said clutch and coupled to said machine by said transmission system;

an inductive speed and position transducer coupled to said machine for detecting speed of said machine and position of said first shaft;

a comparator coupled to said speed and position transducer and said input means, for comparing said speed with a desired speed as established by said input means;

a logic block coupled to said input means, said machine and said speed and position transducer for controlling said presser foot lifting, said thread loosening and said thread cutting;

a speed regulator coupled to said comparator and said logic block for regulating said speed;

a first power amplifier coupled to said speed regulator and said clutch;

a second power amplifier coupled to said speed regulator and said braking mechanism; and

a voltage source coupled to said first power amplifier and said input means, said operator input means including a foot pedal,

an elongated support having a longitudinally extending passage,

a ferromagnetic rod displaceable in said passage parallel to a longitudinal axis of said support,

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a primary and a secondary coil surrounding said passage and offset along said axis, said primary coil being coupled to said voltage source, and

a link coupling said ferromagnetic rod and said pedal,

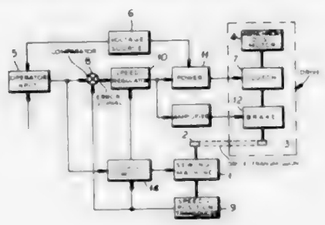
said speed and position transducer comprising:

a nonmagnetic second shaft coupled to said first shaft,

a permanent magnet mounted on said second shaft and rotatable therewith, a stator being juxtaposed with said permanent magnet and having a coil with an output proportional to the speed of said first shaft, and

an axially magnetized magnet carried by said second shaft and formed with ferromagnetic pieces flanking said axially magnetized magnet, a Hall-effect transducer extending between said pieces and having an output signaling the position of said first shaft,

a housing having a longitudinally extending passage,





a nonmagnetic second shaft rotatable in said passage, coupled to said first shaft and surrounded by a magnetic rotor armature, and

a ring-shaped permanent magnet surrounding said second shaft, axially magnetized, having on a first side a first ferromagnetic piece and on a second side a second ferromagnetic piece, said first and second ferromagnetic pieces concentrating the flux of said ring-shaped magnet;

a rotoric inductive armature consisting of magnetic yokes being winded with a multiplicity of coils, whereby the electrical output of said coils is proportional to said speed of said first shaft; and

a magnetic sensor mounted in said housing parallel to said ring-shaped permanent magnetic for detecting the position of said first shaft.

4,658,743

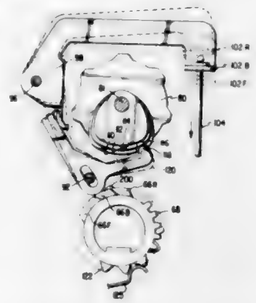
CONTROL MECHANISM FOR SEWING MACHINE STITCH FORMING MECHANISM

Robert B. Brasch, Wayne, and Pao-Ter Huang, Edison, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Mar. 17, 1986, Ser. No. 840,236

Int. Cl.⁴ D05B *3/06*

U.S. Cl. 112—448 **3 Claims**



1. In a sewing machine having stitch forming instrumentalities, actuating mechanism for said stitch forming instrumentalities, a control linkage for influencing selectively different conditions of operation of actuating mechanism for at least one of said stitch forming instrumentalities, spring means applying force biasing said control linkage in one direction, means for effecting transition of said control linkage from one position to new positions either in or opposite the direction of said spring biasing force from said one position, said means for effecting transition of said control linkage to a final position opposite the direction of said spring biasing force from said one position including means for initially effecting transition of said control linkage to a temporary position beyond said final position opposite the direction of said spring biasing force from said one position, and means for permitting return of said control linkage to said final position from said temporary position in the direction in which said spring bias applies a force to said control linkage.

4,658,744

CAM-USING ELECTRONIC CONTROL SEWING MACHINE

Mitsuyoshi Takauchi, and Toshio Takeda, both of Yamagata, Japan, assignors to Happy Mishin Seizou Kabushiki Kaisha, Yamagata, Japan

Filed Jan. 15, 1986, Ser. No. 819,228

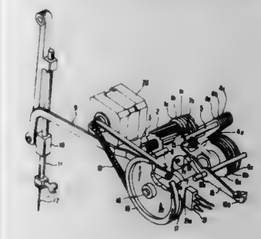
Claims priority, application Japan, Feb. 28, 1985, 60-40749; Apr. 10, 1985, 60-76037

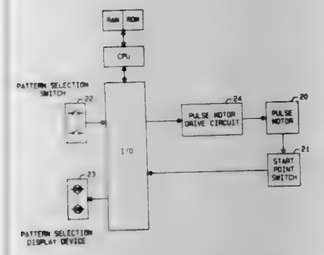
Int. Cl.⁴ D05B *3/02, 3/06*

U.S. Cl. 112—466 **4 Claims**

1. A cam-using electric control sewing machine comprising a plurality of pattern cams rotated by a rotation of a main shaft, one or more cam-followers for contacting with said plurality of pattern cams, a needlebar guiderod and a needle bar connected with the moving of said cam-follower, a position setting device for setting positions of said cam-followers, a start point detecting device for detecting a start point of the cam position data of said pattern cams, a pulse motor for causing movement of said cam-followers for selectively operating said cam-followers, a drive circuit for driving said pulse motor, a plurality of pattern select switches for generating one of proper key codes when one of a plurality of sewing patterns is selected, a display device for displaying the selection of one of said sewing patterns, a memory for storing data corresponding to said starting point of the pattern cams, a random access memory for memorizing data of the position of the cam selected at present,

and an operational unit for calculating the number of output pulses applied to said pulse motor by the cam position data selected at present in said random access memory and the





proper key codes generated by said pattern selection switch, whereby said output pulses are applied to said pulse motor and the desired sewing patterns are selected.

4,658,745

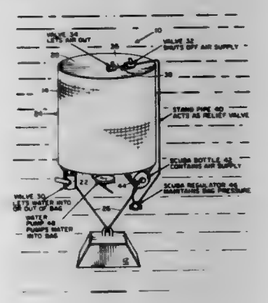
COLLAPSIBLE SALVAGE DRUM AND METHOD

Roger W. Buecher, Kaneohe, Hi., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1981, Ser. No. 276,099

Int. Cl.⁴ B63C *7/10*

U.S. Cl. 114—54 **6 Claims**



3. A method of handling a submerged object with a bellows type container which has top and bottom plates encompassing a flexible skirt therebetween, the top plate having a relief valve and the bottom plate having a valve for opening and closing the passage of water comprising the steps of:

descending the container in water to the object;

attaching the container to the object;

introducing air into the container until the top plate is buoyed up, and opening the valve in the bottom plate so that as the top plate is buoyed up water is drawn into the container to expand the skirt;

introducing additional air into the container with the valve in the bottom plate open until the container is sufficiently deballasted that the object can be moved; and

closing the valve in the bottom plate.

4,658,746

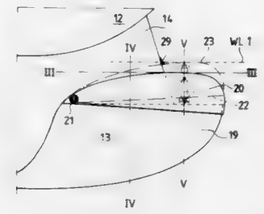
SEAGOING VESSEL HAVING A BULB

Sigurdur Ingvason, Gärdesvägen 31, 430 80 Hovås, Sweden

Filed Aug. 9, 1985, Ser. No. 763,993

Int. Cl.⁴ B63B *1/06*

U.S. Cl. 114—56 **4 Claims**



1. A seagoing vessel having a hull defined by a side plating which converges forwardly to define a bow provided with a projecting bulb, said bulb being designed so that an upper periphery thereof just reaches the water surface when the vessel is stationary and in fully loaded condition, said bulb comprising:

a lower main body integral with the bow of the vessel, said main body comprising a closed shell structure having a substantially flat top face, and a centrally extending box structure projecting upwardly beyond said top face, there being a pair of upwardly facing shelves extending from opposite sides of said box structure,

an upper cowl member covering said main body and being movable relative thereto, said cowl member having downwardly facing shoulder portion overlying said shelves for resting upon said shelves when said cowl is in a lowered position, said cowl having a recess through which said box structure projects, said recess including opposed edges situated on opposite sides of said box structure,

transverse hinge means at a rear end of said cowl member for enabling said cowl member to swing upwardly and downwardly relative to said main body, and

power means operably connected to said cowl member for swinging said cowl member upwardly and downwardly about said hinge means with said edges of said recess moving relative to said opposite sides of said box structure, whereby said box structure provides transverse support for said cowl member.

4,658,747

SHIP WITH SEVERAL DECKS HAVING LONGITUDINAL AND LATERAL SUPPORT ELEMENTS ARRANGED IN A GRID

Hans-Joachim Franz, Kölln-Reisiek; Karl-Otto Sadler, Hamburg, and Willi Schmidt, Ellerbek, all of Fed. Rep. of Germany, assignors to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

Filed Feb. 16, 1984, Ser. No. 580,611

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, 3305322

Int. Cl.⁴ B63B *3/48*

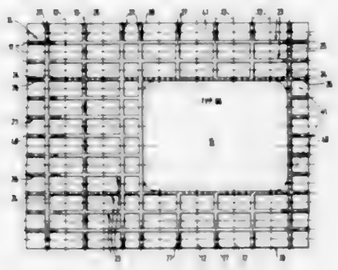
U.S. Cl. 114—85 **19 Claims**

1. A maritime structure of the type having a plurality of vertically spaced decks each having a length and a width, at least one deck among said decks being adapted to receive

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foundation seatings for equipment and apparatus disposed to form a system in said maritime structure, said system comprising:

substantially horizontal load bearing elements which are disposed longitudinally and transversely, said load bearing elements supporting at least said one deck and at least in part being substantially aligned with selected ones of longitudinal and transverse grid lines which are formed of a plurality of uniformly spaced longitudinal grid lines along the length of each deck at a known first grid spacing, and a plurality of uniformly spaced lateral grid lines parallel to said each deck width and spaced at a known second grid spacing, said first grid spacing and second grid spacing having a predetermined relationship, wherein



at least said one deck is provided with rectangular assembly openings constituting said foundation seatings;

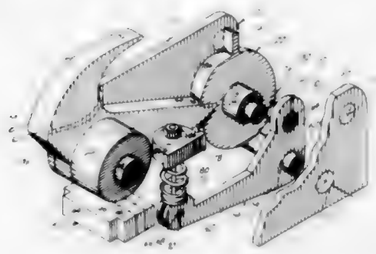
some of said longitudinal load bearing elements being disposed in a given vertical plane on superjacent decks in paired beams, at least some of said paired beams including therebetween vertical load bearing wall-members, at least some of said vertical load bearing wall-members having access openings of predetermined dimensions which are derived from said first and second grid spacings, whereby said apparatus and equipment can be prefabricated with predetermined dimensions which are standardized in terms of said first and second grid spacings, and whereby at least some of said apparatus and equipment can be transported through at least some of said access openings.

4,658,748

RELEASEABLE HOOK

Irving Epstein, Mercer Island, Wash., assignor to Washington Chain & Supply, Inc., Seattle, Wash.

Filed Mar. 3, 1980, Ser. No. 126,372
Int. Cl.⁴ F16G *11/00*
U.S. Cl. 114—217 **9 Claims**



1. A releaseable hook comprising:

a. a hook of a generally, U-configuration having a hook portion and a main body portion terminating in an end Portion;

b. said hook being capable of moving;

c. a locking means juxtapositioned to said end portion and adapted to be in a bearing relationship to said end portion to restrict movement of said hook;

d. a means to apply a first pressure to said locking means to prevent movement of said hook until a second pressure applied to said hook results in a pressure on said locking means opposed to and at least equal to said first pressure to move said locking means to allow said hook to move;

e. said locking means comprising a first catch means and a tensioning means;

f. said first catch means having a first means and a second means;

g. said first means operatively connecting with said main body portion to position said hook;

h. said second means operatively connecting with said tensioning means;

i. said cath means being moveable;

j. said tensioning means applies pressure to said second means to apply said first pressure to said first means and to said first catch means to restrict movement of said

k. a first shaft;

l. said hook being mounted on said first shaft;

m. said hook being capable of rotating;

n. a second shaft;

o. said tensioning means comprising a pawl;

p. said pawl having a first arm and a second arm;

q. said pawl being mounted on said second shaft;

r. a spring bearing against said first arm and placing pressure against said first arm;

s. a contact means on said second arm;

t. said pawl being capable of rotating;

u. a third shaft;

v. said catch means being mounted on said third shaft;

w. said catch means capable of rotating;

x. said first means comprising a first recess for receiving part of said main body portion;

y. said second means comprising a second recess for receiving said contact means mounted on said second arm; and,

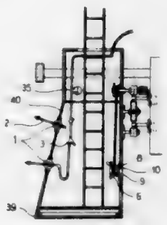
z. when the tension on the hook exceeds the pressure against said first arm said catch means rotates to move said first recess away from said main body portion to allow said hook to rotate.

4,658,749

AUTONOMOUS STATION FOR CLEANING THE HULLS OF PLEASURE CRAFT

Charles L. Penalba, 157 avenue Ste Marguerite, 06200 Nice, France

Continuation of Ser. No. 672,875, Nov. 19, 1984, abandoned. This application May 12, 1986, Ser. No. 863,826
Claims priority, application France, Dec. 1, 1983, 83 19436
Int. Cl.⁴ B63B *59/10*
U.S. Cl. 114—222 **12 Claims**



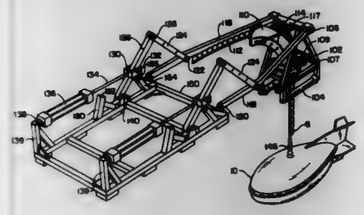
1. Autonomous station for cleaning submerged parts of floating bodies comprising a support independent of the floating body to be cleaned, and a semi-submerged cabin mounted for horizontal sliding movement on said support at a fixed height relative to said support, said cabin comprising a rigid frame having sides and a base sealed from the surrounding water and an open roof, said frame being so designed as to accommodate at least one operator, said cabin further comprising cleaning means for said submerged parts of floating bodies and operator-controlled means disposed within said cabin for effecting said horizontal sliding movement, said cleaning means comprising at least one tube for water under pressure mounted on sealed rotary bearings disposed on one of said sides of the cabin.

4,658,750

APPARATUS AND METHOD FOR DETECTING GAS BUBBLES IN WATER, AND APPARATUS FOR HANDLING AN OCEANOGRAPHIC DEVICE

Norman D. Malcosky, Columbus, Ohio, assignor to Columbia Gas System Service Corp., Columbus, Ohio

Division of Ser. No. 475,591, Mar. 14, 1983, Pat. No. 4,571,984. This application Dec. 9, 1985, Ser. No. 806,386
Int. Cl.⁴ B63G *8/42*
U.S. Cl. 114—244 **10 Claims**



1. In combination, a towable oceanographic device and a towing vessel therefor,

said oceanographic device having a fairing and a cable attachment member projecting upwardly from said fairing; said device having a center of gravity and said attachment member being attached to said device and projecting upward therefrom along a vertical line extending through the center of gravity,

said towing vessel having mounted thereon a winch and a handling apparatus, said handling apparatus comprising a parallel pair of arms pivotally mounted on said vessel for simultaneous pivotal movement relative thereto about a substantially horizontal axis and a clamping assembly mounted upon said arms at a point spaced from the point at which the arms are mounted on the vessel, said clamping assembly being pivotable relative to said arms about a substantially horizontal axis and being provided with clamping means movable between a locked position, wherein said clamping means clamps said cable attachment member, thereby preventing relative movement between said oceanographic device and said clamping assembly, and an unlocked position, wherein said clamping means does not clamp said cable attachment member, thereby permitting relative movement between said clamping assembly and said oceanographic device;

said vessel also being provided with a cable connected between said winch and said cable attachment member; said winch being mounted to play out cable between and parallel to said arms;

the clamping assembly further including two triangular frames, said frames being attached together in parallel relationship and mounted between and parallel to the two said arms, each frame including a pad mounted parallel with the frame to engage the surface of the fairing when the device is in storage position;

a plurality of rollers mounted between the frames to form an opening to receive and maintain the cable within the opening at all times; and

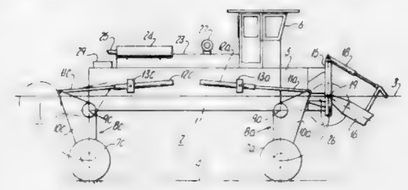
means for guiding the cable from the opening through an arc of about 90° toward said winch, said arc lying in a plane parallel to said arms.

4,658,751

AMPHIBIAN VEHICLE FOR SHALLOW WATER

Bastiaan C. M. Koot, Puttershoek, Netherlands, assignor to Hydrowega Consulting BV, Netherlands

Continuation of Ser. No. 547,840, Nov. 2, 1983, abandoned. This application Aug. 2, 1985, Ser. No. 762,799
Int. Cl.⁴ B63B *35/28*
U.S. Cl. 114—270 **8 Claims**



1. An amphibian work vehicle for use in shallow water for performing operations such as dredging and removal of growths in channels, ditches, and water courses, said vehicle comprising:

a single floatable hull (1) having a bow, a stern, and outer side walls having smooth, uninterrupted exterior surfaces, said side walls connecting said bow and said stern;

a movable work implement (16, 17) pivotally mounted on a vertical axis (15) on the bow of said hull for movement from side to side with respect to said hull;

a plurality of height adjusting mechanisms (8, 32) for transport mechanisms (7, 30, 31) mounted on said exterior surfaces of said hull side walls outwardly of said hull at opposite ends of lines extending completely through the hull and parallel to the beam of the hull, said height adjusting mechanisms being movable between a retracted position and a projected position, said height adjustment mechanisms and said transport mechanisms being disposed outwardly of said hull in both the retracted and projected positions of said height adjusting mechanisms; and

said transport mechanisms being engageable with the ground and with the bottom of the shallow water, the adjustment in the height of said height adjustment mechanisms permitting the pressure of said transport mechanisms on the shallow water bottom to be controlled so that said transport mechanisms form a means for resisting the forces generated during the performance of work by the vehicle to maintain the vehicle at desired locations on the shallow water bottom and a means for driving the vehicle through the water in connection with the performance of such work.

4,658,752

METHOD AND APPARATUS FOR DRAWING A NEEDLE THREAD THROUGH A WORKPIECE

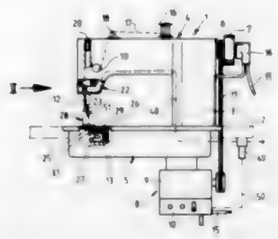
Werner Keilmann, Lorsch; Hans Scholl, Oerlinghausen-Lipperreihe, and Günter Raupach, Bielefeld, all of Fed. Rep. of Germany, assignors to Kochs Adler, AG, Fed. Rep. of Germany

Filed Apr. 10, 1986, Ser. No. 850,250
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1985, 3513506; Feb. 12, 1986, 3604299
Int. Cl.⁴ D05B *47/04, 49/00*
U.S. Cl. 112—262.1 **12 Claims**

1. Method for drawing a free end of a needle thread from an upper workpiece surface to a lower workpiece surface at the

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first stitch of a seam to be produced by a sewing machine having a reciprocable needle, which carries the needle thread drawn-off from a spool by means of a thread take-up lever, and having at least one work presser lowerable onto and liftable from said workpiece, and having a rotatingly drivable hook,



the back of which seizes and withdraws a needle thread loop for stitch formation, wherein said needed thread is held tightly between said needle and said thread take-up lever, while said needle thread loop is widened by said hook beak, so that the thread end is drawn by said hook beak through said workpiece.

4,658,753

ROLL BLADE ASSEMBLY FOR A PAPER COATING MACHINE

Dan Eklund, Grankulla, Finland, assignor to Oy Wärtsilä AB, Wärtsilä, Finland

Filed Jun. 26, 1985, Ser. No. 749,099
Claims priority, application Finland, Jun. 29, 1984, 842625
Int. Cl.⁴ B05C *11/04*
U.S. Cl. 118—119 **10 Claims**



1. Roll blade assembly for a paper coating machine, comprising

a frame (5),

a support (3), attached to said frame (5),

a blade member (8), attached to said support (3) and having an inner and an outer longitudinal end,

mounting means (1, 6, 7) for attaching said inner end of the blade member (8) to said support (3),

a bar unit (9) provided with a rotating metering bar (10), attached to said outer end of said blade member (8),

a pneumatically inflatable tubular loading bag (2) arranged to push said bar unit (9) outwards from said support (3) at increasing inflation pressure,

said blade member (8) is flexible,

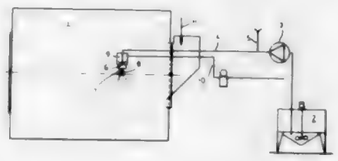
said support (3), said bar unit (9), and said blade member (8) define a recess (4) having a profile substantially corresponding to that of said loading bag (2) and extending in the lateral direction of said blade member (8) at least by 50 percent of the unobstructed width of said blade member (8) and, said loading bag (2) being located in said recess (4) and contacting said blade member (8).

4,658,754

EQUIPMENT FOR THE UNIFORM DOSAGE, DISPERSION AND APPLICATION OF PROTECTIVE COATINGS WITH LIQUID FORMULA, PARTICULARLY SEED-DRESSING MEANS

Erich Messner, Vienna, and Franz Harold, Hintersdorf, both of Austria, assignors to Maschinenfabrik Heid Aktiengesellschaft, Vienna, Austria

PCT No. PCT/AT84/00033, § 371 Date Jun. 4, 1985, § 102(e) Date Jun. 4, 1985, PCT Pub. No. WO85/01636, PCT Pub. Date Apr. 25, 1985
PCT Filed Oct. 5, 1984, Ser. No. 744,006
Claims priority, application Austria, Oct. 7, 1983, 3566/83
Int. Cl.⁴ B05B *13/02*
U.S. Cl. 118—303 **3 Claims**



1. An apparatus for the coating of seeds with a seed dressing in a liquid form, said apparatus comprising:

a mixing drum provided with a seed inlet for mixing seed with said dressing;

a liquid pipe opening into said drum;

a dosing pump connected to a source of liquid seed dressing connected with said pump for metering quantities of liquid seed dressing to said drum through said pipe;

a compressed air pipe opening into said drum for delivering compressed air thereto;

a nozzle in said drum connected to said pipes for dispersion of the liquid seed dressing with compressed air to form a spray which is deposited upon said seeds in said drum, said nozzle comprising:

means defining a compressed air passage communicating with said compressed air pipe and opening radially into said drum,

means defining a liquid seed dressing passage coaxial with said compressed air passage, communicating with said liquid pipe and opening at an outlet into said drum adjacent said compressed air passage, whereby compressed air from said compressed air passage aspirates said liquid seed dressing through said liquid pipe from said pump and disperses said liquid seed dressing in said drum, and

a baffle generally transverse to the axis of said passages and opposite said outlet; and

a secondary air inlet pipe formed on said liquid pipe between said drum and said pump for enabling induction of secondary air upon aspiration of liquid from said liquid pipe.

4,658,755

METHOD FOR FILTRATION OF COATINGS

Edward G. Bernard, Pomona, and Francis K. Kochesky, Newburgh, both of N.Y., assignors to American Felt & Filter Company, Newburgh, N.Y.

Filed Dec. 31, 1984, Ser. No. 687,827
Int. Cl.⁴ B01D *25/04*
U.S. Cl. 118—610 **7 Claims**

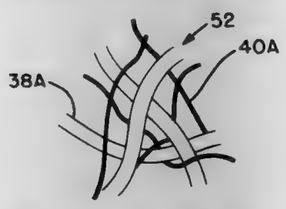
1. A system for automotive coating application, comprising:

(a) a source of pressurized coating;

(b) coating application apparatus;

(c) conduit means for providing fluid flow communication between said coating source and said coating application apparatus; and

(d) filtering means diposed in a preselected length of said conduit means for effecting jointly along said length oil absorption and oil particle removal from said coating in the course of coating flow through such conduit means length, wherein said filtering means comprises a mixture



of first fibrous matter having a high degreee of absorption for said oil and second fibrous matter having substantially no absorption for said oil.

4,658,756

IMAGING HOLDING MEMBER

Hiroshi Ito, and Tomohiro Kimura, both of Toride, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 335,457, Dec. 29, 1981, abandoned, which is a continuation of Ser. No. 175,020, Aug. 4, 1980, abandoned. This application Aug. 3, 1984, Ser. No. 636,807
Claims priority, application Japan, Aug. 7, 1979, 54-100589
Int. Cl.⁴ G03G *15/06*
U.S. Cl. 118—652 **4 Claims**

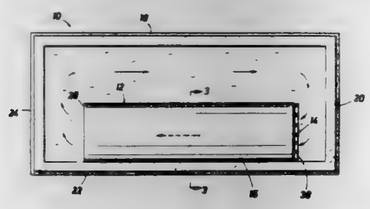
1. An electrophotographic apparatus comprising a drum-shaped image holding member to hold an electrostatic image or a toner image thereon having on its surface a seamless insulating layer comprising a low molecular weight oligomer having dispersed therein a powdered lubricant to enhance surface lubrication properties of said cured oligomer and from about 0.1 to 50 parts per 100 parts oligomer solids of a polyvinyl butyral dispersant for said powdered lubricant, and a cleaning blade adapted to frictionally slide across the surface of said insulating layer to remove residual toner adhering to the surface; wherein the polyvinyl butyral is butryalated from 58 to 81.6 mole percent.

4,658,757

METHOD AND APPARATUS FOR IMPROVED AQUACULTURE/MARICULTURE

Harry L. Cook, Port Lavaca, Tex., assignor to Ocean Ventures-1, Port Lavaca, Tex.

Filed Nov. 14, 1985, Ser. No. 797,872
Int. Cl.⁴ A01K *63/06*
U.S. Cl. 119—3 **18 Claims**



1. A method of controlling the temperature of water in a closed pond used for aquaculture/mariculture, said method comprising the steps of:

defining a closed circuit raceway in a closed pond;

mounting in said raceway at least one pump adapted to circulate water about the raceway; and

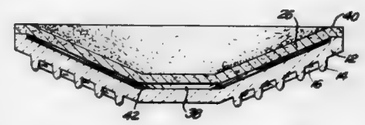
placing a cover over at least a portion of said raceway creating a greenhouse effect to warm the water passing thereunder by solar heating.

4,658,758

POULTRY BROODER

Paul E. Maurice, 14 Fontaine St., Ludlow, Mass. 01056

Division of Ser. No. 666,115, Oct. 29, 1984, Pat. No. 4,614,166. This application Mar. 27, 1986, Ser. No. 844,851
Int. Cl.⁴ A01K *31/20*
U.S. Cl. 119—32 **7 Claims**



1. In a poultry brooder having a heat radiating element facing a source of heat, the improvement comprising:

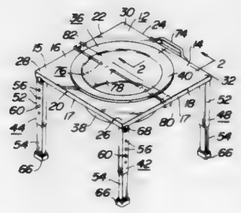
insulating means positioned behind said heat radiating element to substantially reduce the temperature of the surface of said heat radiating element opposite the surface thereof which faces said source of heat, said insulating means being composed of an alumina-silica compound, said insulating means contacting said heat radiating element only adjacent the periphery thereof so that an air gap is provided between substantially all of said insulating means and the rear surface of said ceramic element.

4,658,759

ADJUSTABLE DOG FEEDING TRAY MEANS

Elizabeth A. Brown, 8005 Anderson St., Philadelphia, Pa. 19118

Filed Jul. 11, 1985, Ser. No. 754,011
Int. Cl.⁴ A01K *5/00*
U.S. Cl. 119—61 **12 Claims**



1. An adjustable dog feeding tray means comprising a bowl supporting member including a rectangular plate providing four corners and having a horizontal plane surface with an opening therein, a feeding bowl received and removably retained by the member within the opening of the plate, and a plurality of legs for supporting the member each having a top end and a bottom end, the top end of a respective one of the legs being hingedly secured to the plate at each of its corners, and each leg being rotatable to a first closed position proximate to the plate to provide a collapsed form with the bowl retained by the member within the opening of the plate when the tray means is stored or transported and to an open position away from the plate when the tray means is in use, and each of the legs is extendible and retractable for adjusting its length and the height of the plate.

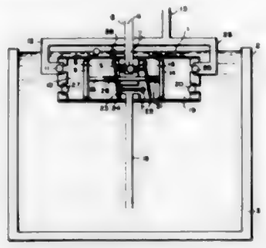
VOL 1077 ISS 3 AP 21 1987 UMI

4,658,760

PRESSURE TRANSFER FLUID HEATER

William H. Zebuhr, Nashua, N.H., assignor to American Thermal Corporation, Nashua, N.H.

Filed Jun. 17, 1985, Ser. No. 745,444
Int. Cl.[4] F22B *5/00*
U.S. Cl. 122—13 R 12 Claims



1. For providing a non-pressurized reservoir in a pressurized-fluid line, the combination comprising:

A. a vessel for containing fluid; and

B. a fluid-driven pump including a control inlet, a control outlet, a pump inlet, and a pump outlet, the pump being operable by flow of liquid into the control inlet, through the pump, and out the control outlet to draw liquid in the pump inlet, through the pump and out the pump outlet, the control outlet and the pump inlet being disposed in communication with the interior of the vessel so that fluid that has flowed from the control inlet through the pump and out the control outlet is discharged into the vessel and that fluid thus contained in the vessel is drawn by the pump from the vessel into the pump inlet, through the pump, and out through the pump outlet, whereby pressure is effectively transmitted from the fluid at the control inlet to the fluid at the pump outlet without imposing the pressure on the fluid in the vessel.

4,658,761

TREATMENT OF BOILER TUBES

Alain J. Duggan, 97 Kallesbach Drive, Linksfield Ridge, Johannesburg, South Africa 2196

Filed Nov. 15, 1984, Ser. No. 671,958
Claims priority, application South Africa, Nov. 19, 1983, 83-8003
Int. Cl.[4] F22B *15/00, 25/00, 37/10*
U.S. Cl. 122—235 C 14 Claims



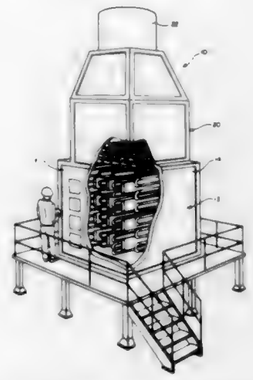
1. A metal boiler tube having an outer layer of metal and metal oxide formed by metal spraying which is resistant to corrosion under the conditions to which the boiler tube is subjected in use; said layer being impregnated by at least chromium oxide by the application to the layer of a solution containing salts of chromium followed by conversion of such salts to chromium oxide.

4,658,762

ADVANCED HEATER

Robert M. Kendall, Sunnyvale, Calif., assignor to Gas Research Institute, Chicago, Ill.

Filed Feb. 10, 1986, Ser. No. 828,024
Int. Cl.[4] F22B *21/00*
U.S. Cl. 122—250 R 10 Claims



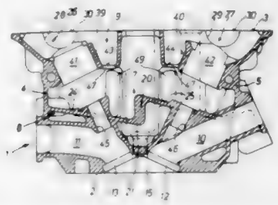
1. A heater for generating a high heat input capacity in a compact configuration comprising the combination of an outer wall structure defining a chamber which includes two coils forming a radiation section, at least two burner tiers within the chamber, each tier comprising a plurality of elongate cylindrical fiber matrix burners mounted in spaced-apart relationship, the radiant section of tube coils including tubes spaced from opposite sides of the burners in each tier, each burner being comprised of a hollow shell formed of a fiber matrix material having interstitial space between the fibers, and means for directing streams of pre-mixed fuel and air into the burners with the mixture flowing outwardly through the matrix and flamelessly combusting on the outer surface of the burners with heat transfering primarily by radiation to the tube coils.

4,658,763

LIQUID-COOLED FOUR-VALVE CYLINDER HEAD FOR A MULTI-CYLINDER INTERNALCOMBUSTION ENGINE

Ernst Gobien, Weinstadt; Gerhard Haussmann, Leinfelden, and Edgar Bruetsch, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 14, 1986, Ser. No. 851,815
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1985, 3513126
Int. Cl.[4] F01P *3/02*
U.S. Cl. 123—41.82 R 16 Claims



1. A liquid-coolable cylinder head for a multi-cylinder internal-combustion engine having a cooling water space formed by lateral exterior walls, a cylinder head bottom and a cylinder head ceiling, said cylinder head having a control space above said cooling water space formed by the cylinder head ceiling, the exterior walls and a cover-separating plane, said cylinder head including tube-shaped chamber means for a spark plug or injection nozzle extending axially through the cooling water space, said cylinder head having transverse supporting walls extending inside the cooling water space from the cylinder head bottom to the cylinder head ceiling, comprising:

longitudinal rib means connected to the cylinder head ceiling, said rib means extending substantially over the length of the cylinder head, said longitudinal rib means being connected to the tube-shaped chamber means and the supporting walls, and

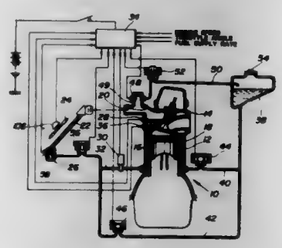
longitudinally extending rib web means at the cylinder head bottom connected to the supporting walls, said longitudinal rib means and said longitudinally extending rib web means combining to reinforce said cylinder head.

4,658,764

BOILING LIQUID ENGINE COOLING SYSTEM

Noboru Miura, Fujisawa, and Yoshimasa Hayashi, Kamakura, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 30, 1985, Ser. No. 770,989
Claims priority, application Japan, Sep. 6, 1984, 59-186672
Int. Cl.[4] F01P *3/22, 5/02*
U.S. Cl. 123—41.12 11 Claims



1. A boiling liquid cooling system for an engine, comprising:

means defining in the engine a coolant jacket into which coolant is introduced in liquid state and from which coolant is discharged in gaseous state;

a radiator into which gaseous coolant from said coolant jacket is introduced to be liquified;

an electric pump for pumping the coolant thus liquified by said radiator into said coolant jacket;

an electric fan positioned adjacent said radiator for, upon energization, producing a radiator cooling air flow to promote a condensation function of said radiator; and

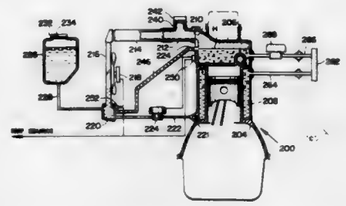
control means for energizing said electric fan when the temperature of the coolant in said coolant jacket is higher than a predetermined temperature, for controlling the rotation speed of said electric fan by gradually increasing the rotation speed from a low level at the beginning of the fan rotation to a normal level as time proceeds and for deenergizing said electric fan when the temperature of the coolant in said coolant jacket is lower than the predetermined temperature.

4,658,765

COOLING SYSTEM FOR AUTOMOTIVE ENGINE OR THE LIKE

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 15, 1986, Ser. No. 852,158
Claims priority, application Japan, Jul. 5, 1985, 60-147813
Int. Cl.[4] F01P *3/22*
U.S. Cl. 123—41.21 7 Claims



1. In an internal combustion engine having a structure subject to high heat flux:

a cooling system comprising:

a coolant jacket disposed about said structure and into which coolant is introduced in liquid form and discharged in gaseous form;

a radiator in fluid communication with said coolant jacket and in which coolant vapor is condensed to form a condensate, said radiator including a small collection vessel disposed at the bottom of said radiator in which said condensate is collected;

a first temperature sensor disposed in said coolant jacket;

a pump which pumps the condensate from said radiator to said coolant jacket through a coolant return conduit, said pump being responsive to said first temperature sensor in a manner that said pump is energized when the temperature of the coolant in said coolant jacket is above a first predetermined level;

a second temperature sensor disposed in said radiator;

a device associated with said radiator for varying the rate of heat exchange between the radiator and a cooling medium surrounding said radiator, said device being responsive to said second temperature sensor in a manner to assume a condition in which the rate of heat exchange is increased upon the temperature in said radiator exceeding second a predetermined level;

an overflow port formed in said coolant jacket at a predetermined height above said structure, said overflow port fluidly communicating with the collection vessel of said radiator so that excess coolant pumped into said coolant jacket overflows through said overflow port to the lower tank; and

a reservoir in which coolant is stored, said reservoir fluidly communicating with the collection vessel of said radiator.

5. A method of cooling an internal combustion engine which has a structure subject to high heat flux, comprising:

introducing liquid coolant into a coolant jacket disposed about said structure;

permitting said coolant to boil and produce coolant vapor;

condensing the vapor produced in said coolant jacket in a radiator;

sensing the temperature of the coolant in said coolant jacket;

pumping coolant from said radiator to said coolant jacket in response to the temperature of the coolant in said coolant jacket being sensed as being above a first predetermined level;

permitting coolant in the coolant jacket above a predetermined height above said structure to overflow via an overflow port to said radiator;

sensing the temperature of the liquid coolant in said radiator;

varying the rate of heat exchange between said radiator and a cooling medium surrounding the same in a manner to

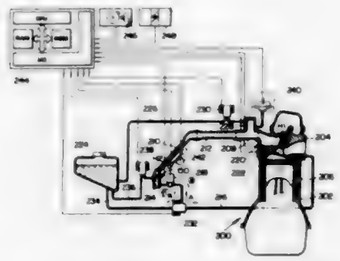
VOL 1077 ISS 3 AP 21 1987 UMI

increase the amount of heat removed from said radiator in response to the temperature of the liquid coolant in said radiator being above a second predetermined level.

4,658,766
COOLING SYSTEM FOR AUTOMOTIVE ENGINE OR THE LIKE

Yoshinori Hirano, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 23, 1985, Ser. No. 779,396
Claims priority, application Japan, Sep. 29, 1984, 59-202935
Int. Cl.[4] F01P *3/22*
U.S. Cl. 123—41.27 **5 Claims**



1. In an internal combustion engine having a structure subject to high heat flux;

(a) a cooling circuit for removing heat from said engine comprising:

a coolant jacket formed about said structure, said coolant jacket being arranged to receive coolant in liquid form and discharge same in gaseous form;

a radiator in which the gaseous coolant produced in said coolant jacket is condensed to its liquid form;

a vapor transfer conduit leading from said coolant jacket to said radiator for transfering gaseous coolant from said coolant jacket to said radiator;

a device associated with said radiator for varying the rate of heat exchange between said radiator and a cooling medium surrounding the radiator;

a liquid coolant return conduit leading from said radiator to said coolant jacket for returning coolant condensed to its liquid state in said radiator to said coolant jacket;

(b) a reservoir the interior of which is maintained constantly at atmospheric pressure;

(c) valve and conduit means for selectively interconnecting said reservoir and said cooling circuit, said valve and conduit means including;

a supply conduit which leads from said reservoir to the bottom of said radiator;

a first valve disposed in said supply conduit, said first valve having a first position wherein communication between said reservoir and said radiator is permitted and a second position wherein the fluid communication between said reservoir and said radiator is prevented;

a second three-way valve disposed in said return conduit and a level control conduit leading from said three-way valve to said reservoir, said three-way valve having a first state wherein fluid communication between said radiator and said coolant jacket is interrupted and communication between said radiator and said reservoir established, and a second state wherein communication between said reservoir and said radiator is interrupted and communication between said radiator and said coolant jacket established;

an overflow conduit which fluidly communicates with said cooling circuit at a first end thereof and with said reservoir at a second end thereof;

a third valve disposed in said overflow conduit, said third valve having a first position wherein fluid communication between said cooling circuit via said overflow conduit is prevented and a second position wherein fluid communication between said cooling circuit and said radiator via said overflow conduit is permitted;

a reversible pump disposed in said coolant return conduit at a location between said radiator and said three-way valve, said pump being selectively energizable to pump coolant in (a) a first flow direction from said radiator toward said three-way valve and (b) in a second flow direction from said three-way valve toward said radiator;

a first sensor for sensing a parameter which varies with the temperature of the liquid coolant in said coolant jacket;

a second sensor for sensing a parameter which varies with the load on the engine; and

a control circuit responsive to said first and second sensors for controlling the operation of said device, said valve and conduit means and said pump, said control circuit including means for:

determining the operational mode of the engine;

deriving a target temperature at which the liquid coolant in said coolant jacket should be maintained;

operatmg said device in a manner to vary the rate of condensation in said radiator and bring the temperature of the coolant in said coolant jacket to said target temperature;

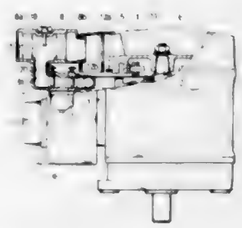
operating said first valve in a manner which vents excess pressure from said cooling circuit in the event that said first sensor indicates that the temperature in said coolant jacket is in excess of a maximum permissible limit; and

operating said third valve in a manner to permit communication between said cooling circuit and said reservoir via said overflow conduit in the event that the temperature and pressure in said cooling circuit do not decrease below said maximum permissible limit within a predetermined time period after said first valve is opened for said venting purpose.

4,658,767
VERTICAL SHAFT V-TYPE ENGINE

Tetsuzo Fujikawa, Kobe; Makizo Hirata, and Shinichi Tamba, both of Kakogawa, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 26, 1985, Ser. No. 780,652
Claims priority, application Japan, Sep. 28, 1984, 59-205235
Int. Cl.[4] F01B *31/00*
U.S. Cl. 123—52 MV **2 Claims**

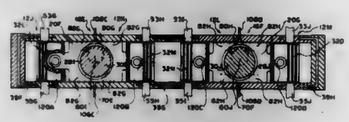


1. A vertical crankshaft V-type engine comprising: a vertical crankshaft having an upper end, a pair of cylinders arranged horizontally forming a V with respect to each other, and each having a cylinder head; a carburetor operatively connected to said cylinders and mounted in the V defined by said cylinders; an air cleaner operatively connected to said carburetor and mounted upwardly of said carburetor; a flywheel secured to the upper end of the crankshaft; an air fan mounted on top of said flywheel; a fan housing covering said cylinders and said air fan, and having a side wall along the crankshaft; and means for providing air from said fan to said air cleaner and to said cylinder heads for cooling the latter; said means including an air-intake port leading to said air cleaner and extending substantially normal from said side wall and also including an air duct mounted inside said side wall located substantially perpendicular to said port and connected to said air fan in communication therewith for conducting air to said cylinder heads.

4,658,768
ENGINE

Douglas T. Carson, 7220 Francis Cir., Lincoln, Nebr. 68505

Continuation-in-part of Ser. No. 749,419, Jun. 27, 1985, abandoned, which is a division of Ser. No. 622,195, Jun. 19, 1984, Pat. No. 4,543,919, which is a continuation-in-part of Ser. No. 334,963, Dec. 28, 1981, Pat. No. 4,485,769. This application Jul. 31, 1986, Ser. No. 892,743
Int. Cl.[4] F02M *75/32*
U.S. Cl. 123—56 BC **8 Claims**



1. Apparatus comprising:

a piston assembly;

said piston assembly including at least one piston and at least one piston rod;

said at least one piston rod being adapted to be reciprocated within a housing in a direction of reciprocation;

at least one cylinder having walls in which at least one piston reciprocates therein forming at least one combustion chamber;

a crank having an axis of crank rotation;

a crankpin having a center;

the center of the crankpin having a radius of crank rotation about the axis of crank rotation;

said at least one piston rod having a piston rod stroke length of travel and a center of midstroke position halfway between ends of the stroke length of travel;

means for fastening at least one piston to said at least one piston rod, wherein alternatingly said rod is driven by said piston and then said piston is driven by said rod;

connector means adapted to be attached to the crankpin;

said connector means being rotatably mounted to said at least one piston rod;

said connector means having a center of connector rotation;

a resulting distance from the center of rotation of said connector means to the crankpin center being equal to said radius of crank rotation;

said piston rod stroke length of travel being equal to substantially four times the radius of crank rotation, whereby the connector means rotates with an angular velocity same as but in a direction opposite that of the crank;

interface means between said crank and said at least one piston rod for controlling motion, through only a predetermined distance portion of midstroke between the crank and the piston rod wherein the piston rod achieves its maximum velocity which is substantially twice an orbital velocity of the center of the crankpin about the axis of crank rotation;

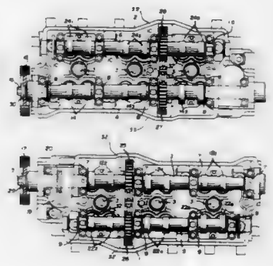
said interface means being positioned to engage at least a length of surfaces substantially at the piston midstroke through said predetermined distance portion of midstroke to produce a velocity of the piston rod substantially twice that of a component of the orbital velocity of the crankpin center in the direction of reciprocation of the piston rod through said predetermined portion of midstroke so as to force and maintain continuity of piston rod movement during said reciprocation; and

said predetermined distance portion of midstroke being that distance necessary to insure continuity of piston rod movement of up to about 50 degrees of crank rotation about before and after said center of midstroke.

4,658,769
V-TYPE INTERNAL COMBUSTION ENGINE WITH CENTRALLY LOCATED DRIVE GEARS COUPLING DOUBLE OVERHEAD CAMSHAFTS

Kimihide Horio; Yasunobu Kikuchi, and Hiroya Fujita, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 26, 1986, Ser. No. 844,107
Claims priority, application Japan, Apr. 17, 1985, 60-057363[U]
Int. Cl.[4] F01L *1/02*
U.S. Cl. 123—90.31 **6 Claims**



1. A V-type internal combustion engine, comprising:

a crank shaft;

a first bank of cylinders, odd in cardinality;

a second bank of cylinders, of the same odd cardinality as said first bank of cylinders, longitudinally offset to the rear from said first bank of cylinders and arranged in a V configuration with respect thereto;

a first cylinder head provided along said first bank of cylinders;

a second cylinder head provided along said second bank of cylinders;

a first intake cam shaft and a first exhaust cam shaft, rotatably mounted along said first cylinder head for valve actuation;

means for rotationally driving from said crank shaft one of said first intake cam shaft and said first exhaust cam shaft;

a second intake cam shaft and a second exhaust cam shaft, rotatably mounted along said second cylinder head for valve actuation;

means for rotationally driving from said crank shaft one of said second intake cam shaft and said second exhaust cam shaft;

a first intake cam shaft gear wheel, provided on said first intake cam shaft at a longitudinal position between the middle cylinder of said first bank of cylinders and the next cylinder to the rear from said middle cylinder;

a first exhaust cam shaft gear wheel, provided on said first exhaust cam shaft at a longitudinal position between the middle cylinder of said first bank of cylinders and the next cylinder to the rear from said middle cylinder, and meshed with said first intake cam shaft gear wheel;

a second intake cam shaft gear wheel, provided on said second intake cam shaft at a longitudinal position between the middle cylinder of said second bank of cylinders and the next cylinder to the front from said middle cylinder;

a second exhaust cam shaft gear wheel, provided on said second exhaust cam shaft at a longitudinal position between the middle cylinder of said second bank of cylinders and the next cylinder to the front from said middle cylin-

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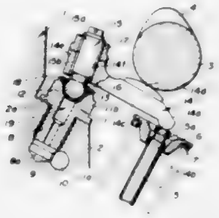
der, and meshed with said second intake cam shaft gear wheel.

4,658,770

SUPPORTING STRUCTURE FOR ROCKER ARMS FOR ENGINE VALVES

Takahiro Okuyama, Tokyo; Susumu Toki, Saitama, and Keiji Tanabe, Aichi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Tokai TRW and Co., Ltd., Aichi, both of, Japan

Filed Sep. 27, 1985, Ser. No. 781,120
Claims priority, application Japan, Sep. 27, 1984, 59-202473
Int. Cl.⁴ F01L *1/18*
U.S. Cl. 123—90.41 **11 Claims**



1. A supporting structure for rocker arms for engine valves, including:
- an engine having a cylinder head;
- a valve provided on said cylinder head and adapted for either of intake and exhaust purposes;
- a valve-operating mechanism for operating said valve;
- said valve-operating mechanism including a rocker arm abutting on the top of said valve, to thereby operate said valve; and
- a pivotal structure for pivotably supporting one end of said rocker arm,
- wherein said pivotal structure comprises:
  - a ball-like portion;
  - a spherical concave portion shaped in a form substantially correspondent to said ball-like portion and engaged with said ball-like portion; and
  - an elastic member disposed within an aperture end of said spherical concave portion and adapted to hold said ball-like portion is said spherical concave portion.

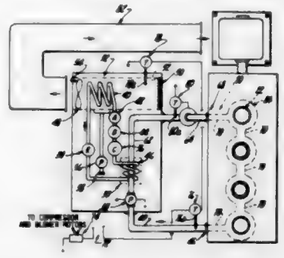
4,658,771

DIESEL HEAT PUMP

Robert H. Ravia, Bradenton, Fla., assignor to Geo-Thermal Systems, Inc., Bradenton, Fla.

Filed Sep. 20, 1985, Ser. No. 778,132
Int. Cl.⁴ F02N *17/04*
U.S. Cl. 123—142.5 R **14 Claims**

1. An internal combustion assembly comprising:
- A. a liquid cooled internal combustion engine having combustion chambers and internal coolant conduit means extending therethrough between a coolant inlet and a coolant outlet in heat exchange relation to said combustion chambers;
- B. external coolant conduit means extending outside of said engine between said coolant outlet and said coolant inlet and coacting with said internal coolant conduit means to form a closed coolant loop; and
- C. heater means operative to deliver a refrigerant in gaseous form to said external coolant conduit means and condense the refrigerant as it flows in heat exchange relation to said external conduit means to thereby give up the phase



change heat to the coolant flowing through the external conduit means.

4,658,772

SYSTEM FOR CONTROLLING THE TEMPERATURE OF A HOT SPOT OR A GLOW PLUG IN AN INTERNAL COMBUSTION ENGINE

Werner Auth, Stuttgart; Martin Leafers, Hemmingen; Johannes Locher, Stuttgart; Hans-J. Peter, Markgröningen; Hannes Pflug, Gerlingen; Michel Friedbert, Ostfildern, and Josef Steiner, Esslingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 31, 1985, Ser. No. 739,968
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420484; Jan. 30, 1985, 3502966
Int. Cl.⁴ F02P *19/02*
U.S. Cl. 123—145 A **16 Claims**



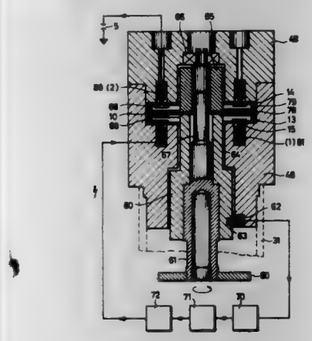
1. A starting resistance system for a diesel engine having a plurality of cylinders, said system comprising a glow plug in each cylinder, electrical heaters in each of said glow plugs, means for supplying electrical current to said heaters and means for controlling said current supplying means so that a predetermined maximum current flows through said glow plugs during an engine start beginning when the engine is at ambient temperature and said current is subject to be reduced in value in a manner dependent on engine operating parameters after the engine is started, siad controlling means including:
- means for producing a first engine operating parameter electrical signal representative of the amount of fuel supplied to said cylinders for a firing cycle of the engine;
- means for producing a second engine operating parameter electrical signal representative of engine intake air temperature;
- means for producing a third engine operating parameter electrical signal representative of engine operating temperature;
- means for producing a signal (UG) representative of an energization parameter of said glow plugs;
- means for correlating said first, second and third engine operating parameter electrical signals together with said signal (UG) representative of an energization parameter of said glow plugs to produce a control signal (CS), and
- means for applying said control signal to control said current supplying means in a manner maintaining said energization parameter of said glow plugs within a predetermine range of values thereof.

4,658,773

APPARATUS FOR TRANSFERRING A HIGH VOLTAGE TO THE IGNITION ELEMENTS OF AN INTERNAL COMUBUSTION ENGINE

Reinhard Treudler, Am Kuhles Grund 22, 6237 Liederbach-/Taunus, Fed. Rep. of Germany

PCT No. PCT/DE84/00226, § 371 Date Aug. 19, 1985, § 102(e) Date Aug. 19, 1985, PCT Pub. No. WO85/01991, PCT Pub. Date May 9, 1985
PCT Filed Oct. 29, 1984, Ser. No. 751,195
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1983, 3339085
Int. Cl.⁴ F02P *1/00*
U.S. Cl. 123—146.5 A **5 Claims**



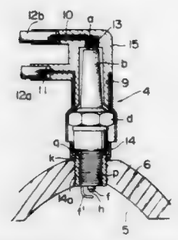
1. A high voltage switch for transferring electrical energy to spark plugs of an internal combustion engine, comprising:
- (a) a plurality of stationary, elongate first electrodes (1) equally spaced apart along a circular path,
- (b) an equal plurality of stationary, elongate second electrodes (2) equally spaced apart along a circular path and individually axially aligned with the first electrodes, the second electrodes being individually connected to an equal plurality of spark plugs,
- (c) a source of continuous high voltage electrical energy (72) directly and continuously connected to each of the first electrodes,
- (d) a first insulator disc (13) disposed closely proximate tips of the first electrodes and having a plurality of equally radially and circumferentially spaced through apertures (15) individually overlying said electrode tips, aligned therewith, and having an outer surface spaced therefrom,
- (e) a second insulator disc (10) disposed parallel to, closely proximate, and between both the first disc and tips of the second electrodes, and having a through aperture (4) radially spaced from a center of the second disc a distance equal to the radial spacings of the first disc apertures, and
- (f) means for rotatably driving the second disc in synchronism with the engine speed such that the aperture thereof successively axially aligns with the aligned first and second electrodes and first disc apertures to enable energy transfers between the electrodes and thus from the source to the spark plugs.

4,658,774

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Osamu Kashima, Kariya, and Masamichi Shibata, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 501,765, Jun. 6, 1983, Pat. No. 4,557,229. This application Oct. 30, 1985, Ser. No. 792,923
Claims priority, application Japan, Jun. 7, 1982, 57-98367; Jun. 7, 1982, 57-98366; Jun. 28, 1982, 57-110952
Int. Cl.⁴ F02P *1/00*
U.S. Cl. 123—169 E **12 Claims**



1. An ignition apparatus for an internal combustion engine comprising:
- at least a first electrode assembly and a second electrode assembly each thereof including an electrode and mounted on a cylinder head of an internal combustion engine; and
- at least one ignition coil having a primary winding and a secondary winding;
- each of the electrodes of said first and second electrode assemblies being electrically connected to one end of the secondary winding of said ignition coil;
- each of the electrodes of said first and second electrode assemblies being supported on the cylinder head of said engine electrically insulated therefrom;
- whereby a spark gap for producing spark discharge is formed between the electrodes of said first and second electrode assemblies, and a high tension circuit connecting the secondary winding of said ignition coil respectively to the electrodes of said first and second electrode assemblies is totally electrically insulated from any body of said engine; and
- said apparatus further comprising a spark plug which incorporates said first and second electrode assemblies and includes an electrical insulator for holding the electrode of said first electrode assembly and a mounting metallic shell fixed onto an outer surface of said electrical insulator, wherein the electrode of said second electrode assembly constitutes a side electrode which is attached to said mounting metallic shell to oppose the electrode of said first electrode assembly, thereby forming a spark gap therebetween, and wherein said mounting metallic shell of said spark plug is fitted onto said cylinder head of said engine being electrically insulated therefrom.

4,658,775

ROPE STARTER FOR ENGINES

Leon D. Greenwood, Okemos, and Thomas A. Thorsen, Eaton Rapids, both of Mich., assignors to Eaton Stamping Company, Eaton Rapids, Mich.

Filed Dec. 23, 1985, Ser. No. 812,362
Int. Cl.⁴ F02N *3/02*
U.S. Cl. 123—185 B **9 Claims**

1. A rope starter for engines wherein the starter includes a pulley rotatable in a cranking direction and a rope recoiling direction having a helically splined connection with a driving member wherein relative rotation between the pulley and driving member causes the member to move axially toward

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and from engagement with a driven member and rotation of the driving member with the pulley upon engagement of the driving member with the driven member rotates the driven member when the pulley is rotating in the cranking direction, a friction brake selectively resisting rotation of the driving member and axial movement of the driving member, and friction brake restraining means selectively restraining the friction brake against rotation with the driving member, the improvement comprising, brake operation delay means interposed between the friction brake and the friction brake restraining means delaying operation of the friction brake when the pulley is initially rotated in the cranking direction until the pulley has rotated approximately one half of a revolution.



4,658,776

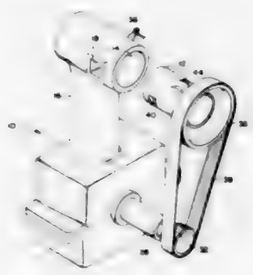
ROTARY VALVE INTERNAL COMBUSTION ENGINE

Clyde R. Coman, 6823 S. 121st West Ave., Sapulpa, Okla. 74066

Filed Feb. 3, 1986, Ser. No. 825,641

Int. Cl.[4] F01L *7/02*

U.S. Cl. 123—190 BD **3 Claims**



1. A rotary valve internal combustion engine which comprises: a cylinder block having a cylindrical recess therein, a cylindrical bore transverse to said cylindrical recess, an exhaust passageway leading from said cylindrical bore, and an intake passageway leading to said cylindrical bore; a cylindrical piston sealably reciprocable in said cylindrical recess wherein the space defined by said piston and the walls of said cylindrical recess forms a combustion chamber; an arcuate passageway in said block between said cylindrical bore and said combustion chamber; a crankshaft connected to said piston; ignition means in communication with said combustion chamber; carburetion means in connection with said intake passageway to provide a fuel-air mixture; a cylindrical valve rotatably received in said cylindrical bore, said cylindrical valve having a hollow cylindrical body, open ends, at least two axially aligned intake ports near one end of said cylindrical body, at least two axially aligned exhaust ports near the opposite end of said cylindrical body, at least four axially aligned arcuate center openings between said exhaust ports and said intake ports, and at least for internal tubes, each tube connecting one of said center openings with one of said intake or exhaust ports; a sprocket wheel extending from one end of said cylindrical valve; and a tooth belt extending between said sprocket wheel and said crankshaft, whereby rotation of said valve by reciprocation of said piston first brings an intake port on said valve in communication with said intake passageway and said accompanying center opening in communication with said arcuate passageway to allow said fuel-air moisture to enter said combustion chamber and then brings an exhaust port on said valve in communication with said exhaust passageway and said accompanying center opening in communication with said arcuate passageway to allow burnt gases to be expelled from said combustion chamber.

4,658,777

BALANCER STRUCTURE FOR THREE-CYLINDER ENGINES

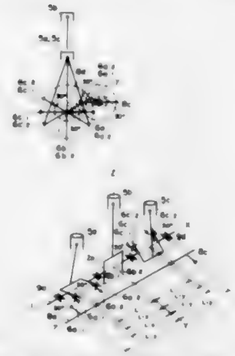
Tsunehiko Suzuki, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 412,658, Aug. 30, 1982, abandoned. This application Nov. 6, 1985, Ser. No. 795,708

Claims priority, application Japan, Aug. 31, 1981, 56-136893

Int. Cl.[4] F02B *75/06*

U.S. Cl. 123—192 B **16 Claims**



1. A balancer structure for a three-cylinder in-line engine having three cylinders, the latter comprising a first and third cylinder and a second cylinder disposed between said first and third cylinders, a crankshaft having crank arms disposed at angles of 120° with respect to each other and operatively connected to a piston assembly within each of said cylinders, respectively, consisting of:

a single crankshaft adjacent and parallel to and rotated at the same speed as the crankshaft but in the opposite direction,

means comprising first counterweights securely mounted on said crankshaft only at positions thereof corresponding to the first and third cylinders for balancing of a part of inertia forces of rotating masses and a part of inertia forces of reciprocating masses;

means comprising at least one second counterweight securely mounted on said crankshaft substantially opposite to the crank arm corresponding to the second cylinder for balancing of the remainder of the inertia forces of rotating masses;

at least two balancers respectively securely mounted on said countershaft at both ends respectively thereof for the balancing of the remainder of the inertia forces of reciprocating masses, and of the couple of inertia of the crankshaft about axes perpendicular to the crankshaft.

4,658,778

PIGGYBACK TYPE BLOWER UNIT

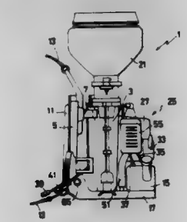
Akira Gamoh, Kodaira; Takashi Miura, Higashiyamato; Toshiharu Sawada, Fuchu, and Katsumi Kiyooka, Warabi, all of Japan, assignors to Komatsu Zenoah Co., Higashiyamato, Japan

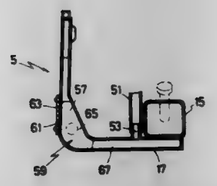
Filed Oct. 10, 1985, Ser. No. 786,238

Claims priority, application Japan, Oct. 16, 1984, 59-155035[U]; Oct. 18, 1984, 59-156352[U]

Int. Cl.[4] B05B *3/10*

U.S. Cl. 123—195 C **5 Claims**





1. A piggyback type blower unit comprising:

a frame having a vertical frame portion adapted to be removably supported on a user's back and a horizontal frame portion integrally joined to and extending rearwardly from said vertical frame portion, said frame being hollow and having mutually spaced air inlet and outlet openings communicating with and interconnected by the interior thereof;

a fan case incorporating a fan, said fan case being attached to said frame at a location disposed rearwardly of said vertical frame portion;

a powder tank arranged above and in communication with said fan case;

a fuel tank arranged rearwardly of said fan case on said horizontal frame portion;

an internal combustion engine arranged behind said fan case and above said fuel tank, said engine having an air suction port; and

means for connecting said suction port to said air outlet opening, thereby establishing a flow path for engine combustion air through the interior of said frame via said inlet and outlet openings and externally of said frame from said outlet opening to said suction port via said connecting means.

4,658,779

INTERNAL COMBUSTION ENGINE OF THREE ROTATION PISTON

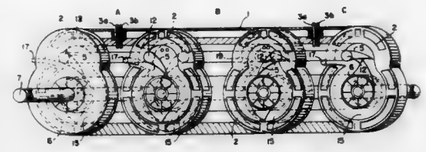
Juan del Granado, Casilla N[0] 4884, La Paz, Bolivia

Filed Sep. 25, 1985, Ser. No. 779,473

Claims priority, application Bolivia, Sep. 27, 1984, 166

Int. Cl.[4] F02B *53/04*

U.S. Cl. 123—237 **3 Claims**



1. A rotary internal combustion engine comprising a housing divided by partition means into three side by side chambers, each of said chambers having a FIG. 8 configuration in transverse section to thereby define a first and second zone, a shaft mounted for rotation concentrically through each first zone in said housing; three rotary pistons secured to said shaft; each of said pistons having a semi-circular extension having a flat surface adapted to engage the walls of each of the piston receiving first zone; a wedge shaped valve mounted between the first and second zones in each of the chambers, and adapted to be engaged by the rotary pistons and to be actuated by the piston extensions; air passages through each of the rotary pistons and through the valve for cooling the engine; means for directing fuel into two of the rotary chambers; means for igniting the fuel and exhaust passage means for exhausting burned fuel from said two of the rotary chambers, said two of the rotary chambers comprising end chamber and the remaining chamber comprising a compressor.

4,658,780

FOUR CYCLE INTERNAL COMBUSTION ENGINE

Yukiharu Hosoi, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 374,276, May 3, 1982, abandoned. This application Feb. 22, 1985, Ser. No. 704,155

Claims priority, application Japan, May 8, 1981, 56-69099; May 8, 1981, 56-69100; May 11, 1981, 56-70331; May 11, 1981, 56-70332; Sep. 8, 1981, 56-141430

Int. Cl.[4] F02B *15/00*

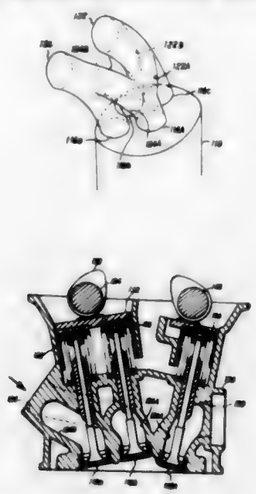
U.S. Cl. 123—315 **15 Claims**

1. An internal combustion engine having a cylinder bore having an axis, a cylinder head forming a closure for one end of said cylinder bore, a first poppet-type intake valve reciprocally supported by said cylinder head and having its head portion intersected by said cylinder bore axis when said first intake valve is closed, a second poppet-type intake valve reciprocally supported by said cylinder head and having its head portion lying on one side of a plane containing said cylinder bore axis when said second intake valve is closed, intake passage means formed in said cylinder head and controlled by said first and second intake valves for supplying a charge to said cylinder bore, a spark plug carried by said cylinder head and having its gap disposed contiguous to said plane, said intake valves having their stems inclined at an angle to said plane diverging therefrom for providing an open area to clear said spark plug, each of the poppet-type valves further having the ends of their respective valve stems lying within an axial extension of the cylinder bore.

10. An internal combustion engine having a cylinder bore having an axis, a cylinder head forming a closure for one end of said cylinder bore, a first poppet-type intake valve reciprocally supported by said cylinder head and having its head portion intersected by said cylinder bore axis when said first intake valve is closed, a second poppet-type intake valve recip-

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rocally supported by said cylinder head and having its head portion lying on one side of a plane containing said cylinder bore axis when said second intake valve is closed, intake passage means formed in said cylinder head and controlled by said first and second intake valves for supplying a charge to said cylinder bore comprising a first intake passage having a first inlet end disposed in an outer surface of said cylinder head and extending to said first and second intake valves and a second



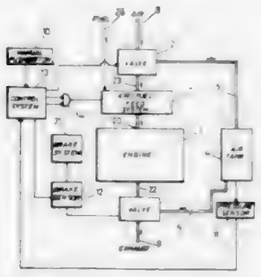
intake passage having a second inlet end formed in an outer face of said cylinder head spaced and separate from said first inlet end and extending to one of the first and second intake valves, but not the other thereof, a spark plug carried by said cylinder head and having its gap disposed contiguous to said plane, said intake valves having their stems inclined at an angle to said plane diverging therefrom for providing an open area to clear said spark plug.

4,658,781

KINETIC ENERGY UTILIZATION SYSTEM FOR USE WITH VEHICLES WITH INTERNAL COMBUSTION ENGINE

Jose M. R. Guinea, Pobla de Segur No. 18, 28033, Madrid, Spain

Filed Oct. 11, 1985, Ser. No. 786,699
Claims priority, application Spain, Oct. 22, 1984, 536.974
Int. Cl.[4] F02D 9/00, 9/06; F02N 9/04
U.S. Cl. 123—325 **8 Claims**



1. An apparatus for the conservation of kinetic energy during braking of an automobile having an internal combustion engine having a plurality of cylinders with a feed system for feeding fuel mixture to the cylinders of the engine for compression therein, the combination comprising:

a. a first electrically operated valve adapted for connection in the air supply to all of the cylinders of the associated engine;

b. a second electrically operated valve adapted for connection in the exhaust system for all of the cylinders of the engine;

c. a pressure tank for storing compressed air;

d. conduits between said pressure tank and said first and second valves;

e. a sensor for sensing the actuation of the associated friction braking system;

f. a sensor for determining the pressure of air stored in the pressure tank;

g. means for acting upon the fuel feed system to terminate flow of fuel therethrough; and

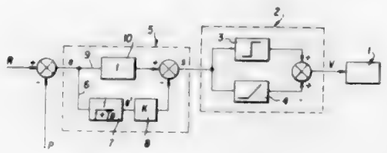
h. control means including (i) electrical switch means actuable by the operator, and (ii) connections from said control means to each of said first and second valves for effecting electrical operation thereof, to said brake actuation sensor, tank pressure sensor and to the fuel terminating means in the feed system for control of the flow of fuel mixture to the engine, said control means being operable to terminate the flow of fuel and to admit air to each of the cylinders for compression therein, the compressed air thus produced in each of the cylinders being diverted by said second valve to said pressure tank, the resistance to compression of said air in the cylinders slowing the engine and thereby the vehicle.

4,658,782

PROCESS AND DEVICE FOR CONTROLLING THE AIR FLOW OF AN IDLING HEAT ENGINE

Rémi Lefevre, Colombes, and Gérard Saint Leger, Villejuif, both of France, assignors to Regie Nationale Des Usines Renault, Boulogne-Billancourt, France

Filed Jul. 22, 1985, Ser. No. 757,298
Claims priority, application France, Jul. 23, 1984, 84 11667
Int. Cl.[4] F02M 3/07
U.S. Cl. 723—339 **1 Claim**



1. An apparatus for controlling the air flow at the intake of a heat engine fed by fuel injection, said apparatus comprising:

(a) first means for varying the air flow at the intake of a heat engine;

(b) second means for calculating:

$$e = P - R$$

wherein the magnitude P is the instantaneous period of the heat engine and the magnitude R is the period of the preset rated rotational speed of the heat engine at idle;

(c) third means for subjecting the value e to a transformation, said third means comprising a controller comprising:

(i) a first branch comprising a first-order system and a proportional element in series with said first-order system, said first-order system filtering the value e to obtain a value $e' = P' - R$ wherein:

$$P = P - T(dP/dt)$$

and said proportional element multiplying the value e' by a constant K;

(ii) a second branch comprising a proportional element that multiplies the value e by the coefficient 1; and

(iii) fourth means for subtracting the output of said first branch from the output of said second branch to obtain an output signal s;

(c) a servo system the input of which is the output signal s of said controller, said servo system comprising a proportional correction element, an integral correction element in parallel with said proportional correction element, and fifth means for adding the output of said proportional correction element to the output of said integral correction element to obtain a control signal V; and

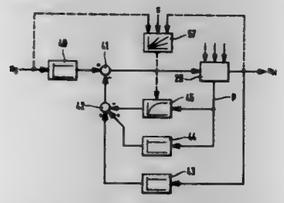
(d) sixth means for inputting said control signal V to said first means.

4,658,783

SYSTEM FOR REGULATING ROTARY SPEED OF AN INTERNAL COMBUSTION ENGINE

Helmut Janetzke; Helmut Kauff, both of Schwieberdingen, and Herbert Stocker, Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 497,732, May 24, 1983, abandoned.
This application Feb. 4, 1986, Ser. No. 825,790
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1982, 3222363
Int. Cl.[4] F02D 41/16
U.S. Cl. 123—339 **2 Claims**



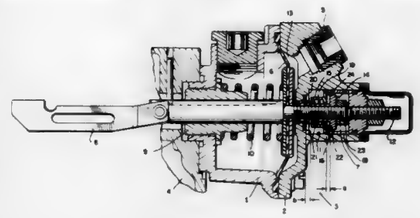
1. A system for regulating rotary speed, particularly idling speed speed of an internal combustion engine, comprising means for generating a signal corresponding to a desired speed value; a sensor for generating an actual speed signal; an additional sensor for generating an additional signal corresponding to another operational variable of the engine; rotary speed adjusting means including a throttle valve arranged in an intake pipe of the engine and throttle valve control means; a condition regulator including two regulating branches each provided with a feedback, one regulating branch producing in response to a difference between the desired and actual rotary speed signals a first regulating signal, the other regulating branch producing, exclusively in response to said additional signal, a second regulating signal; and means for combining said first and second regulating signals to produce a compound regulating signal applied to said throttle valve control means, said one regulating branch including proportional stages for processing said desired and actual speed signals and means connected to said proportional stages for producing the difference of the latter signals, said other regulating branch including a proportional stage for-processing said additional signal and a time-delayed stage acting as a positive feedback path of said additional signal, and a proportional stage in said one regulating branch and the proportional stage in the other regulating branch acting together as a negative feedback path of said actual speed signal.

4,658,784

MECHANICAL INJECTION PUMP GOVERNOR

Ulrich Augustin, Kerpen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 17, 1985, Ser. No. 744,994
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1984, 3422445
Int. Cl.[4] F02M 39/00
U.S. Cl. 123—383 **13 Claims**



1. Injection pump governor device for controlling a movable fuel injection pump control rod means, comprising:

diaphragm means connected to and movable with said control rod means,

pressure medium communicating means for communicating engine supercharging pressure to said diaphragm means to force the diaphragm means and control rod means in a direction corresponding to increasing fuel pumping with increasing supercharging pressure,

follower means mounted on and abuttingly engaging said control rod means on a first side of said diaphragm means proximate said pressure medium communicating means,

full load stop means slidably mounted on and abuttingly engageable with said follower means onsaid first side of said diaphragm means for defining an end point of a first range of movement,

first adapting means disposed on a second side of the diaphragm means remote from said pressure medium communicating means and engaging said diaphragm means for resiliently resisting movement of the control rod means over said first range of movement corresponding to a first predetermined range of engine speeds, and

second adapting means disposed on said first side of the diaphragm means and operatively engaging said full load stop means with said follower means to move said full load stop means through a second range of movement only after completion of said first range of movement and corresponding to a second predetermined range of engine speeds that is higher than said first range of engine speeds.

4,658,785

METHOD OF CONTROLLING AIR-FUEL RATIO AND IGNITION TIMING IN INTERNAL COMBUSTION ENGINE AND APPARATUS THEREFOR

Tadahisa Naganawa, and Yoshihiko Matsuda, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 590,053, Mar. 15, 1984, Pat. No. 4,559,915.
This application Aug. 20, 1985, Ser. No. 767,634
Claims priority, application Japan, Apr. 8, 1983, 58-62816
Int. Cl.[4] F02P 5/00
U.S. Cl. 123—406 **6 Claims**

1. A method of controlling an air-fuel ratio and an ignition timing in an internal combustion engine of a vehicle comprising the steps of:

(a) controlling an on-off timing of a fuel injection valve in accordance with fuel injection time duration corresponding to the engine rotational speed and the engine load;

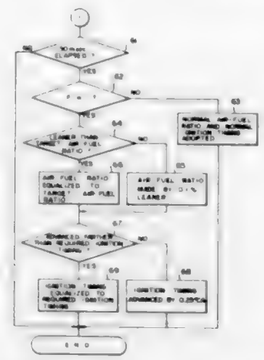
(b) controlling an on-off timing of an igniter in accordance

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with a spark advance angle corresponding to the engine rotational speed and the engine load;

(c) determining whether or not the engine load of the vehicle is within a predetermined range and the variation in the engine load is also within a predetermined range;

(d) correcting the air-fuel ratio to a target air-fuel ratio



which is leaner than the stoichiometric air-fuel ratio, when it is determined at the step (c) that the engine load and the variation thereof are within a predetermined range respectively;

(e) correcting the ignition timing to a ignition timing corresponding to said target air-fuel ratio when the air-fuel ratio is corrected to said target air-fuel ratio at step (d).

4,658,786

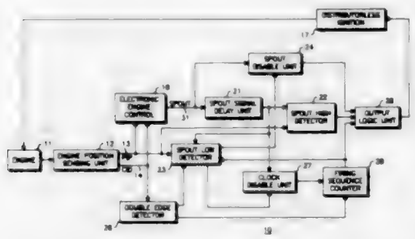
LOSS OF INPUT SIGNAL DETECTION AND RESPONSE SYSTEM FOR USE WITH DISTRIBUTORLESS IGNITION SYSTEMS

Leonard Foss, Lombard; David Cousins, Carol Stream, and Edward Li, Roselle, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1986, Ser. No. 843,969

Int. Cl.[4] F02P 7/077, 11/00

U.S. Cl. 123—414 **15 Claims**



1. In a distributorless ignition system suitable for use with:

an engine;

engine position sensing means for providing a PIP signal relating to crankshaft location information for said engine, and a CID signal relating to identification of a particular cylinder in said engine; and

electronic engine control means for receiving said PIP and CID signals and for providing a SPOUT signal containing spark advance/retard and dwell information to said distributorless ignition system;

an improvement comprising:

(a) SPOUT low detection means for detecting when said SPOUT signal faults low and for causing said PIP signal and said CID signal to be operably substituted therfore; and

(b) SPOUT signal delay means for receiving said SPOUT signal and for providing a delayed SPOUT signal that comprises the SPOUT signal as delayed a predetermined period of time; wherein said SPOUT low detection means receives and monitors said delayed SPOUT signal to detect when said delayed SPOUT signal, and hence said SPOUT signal, has faulted low.

4,658,787

METHOD AND APPARATUS FOR ENGINE CONTROL

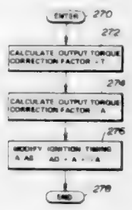
Satoshi Takizawa, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jan. 30, 1985, Ser. No. 696,434

Claims priority, application Japan, Feb. 1, 1984, 59-15053; Feb. 1, 1984, 59-15055; Feb. 1, 1984, 59-15056

Int. Cl.[4] F02P 5/04

U.S. Cl. 123—418 **17 Claims**



1. A method of controlling an internal combustion engine having an induction passage leading to at least one cylinder for generating a torque on its output shaft, comprising the steps of:

generating a first signal indicative of the speed of said engine output shaft;

generating a second signal indicative of a selected engine operating parameter;

calculating a first value for the rate of air flow introduced into said engine cylinder based upon said first and second signals;

calculating a second value for the amount of fuel to be delivered into said engine cylinder based upon said first value, said second value being substantially in direct proportion to said first value;

calculating a basic value for the timing of ignition in said engine cylinder based upon at least one of said first and second signals;

calculating an output-torque correction-factor based upon at least one of said first and second signals, said output-torque correction-factor being substantially in direct proportion to a difference between an actual torque actually produced on said engine output shaft and an ideal torque required on said engine output shaft at the engine speed;

modifying said calculated ignition timing basic value based upon said calculated output-torque correction-factor to provide a value for the timing of ignition in said engine cylinder, thereby bringing the actual torque close to the ideal torque.

4,658,785

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

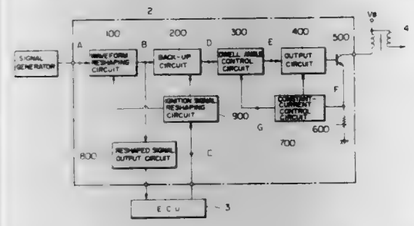
Noboru Yamamoto, Kariya; Katsuhisa Mase, Aichi; Motoshi Kawai, Anjo; Yoshiyuki Miyase, Okazaki, and Takeshi Matsui, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 18, 1985, Ser. No. 810,291

Claims priority, application Japan, Jan. 21, 1985, 60-9614; Jan. 21, 1985, 60-9615

Int. Cl.[4] F02P 5/155

U.S. Cl. 123—418 **4 Claims**



1. An ignition system for an internal combustion engine comprising:

a signal generator for generating, in synchronism with rotation of an engine, an ac signal including a slope portion sharply varying in one direction and another slope portion varying slowly in the other direction;

a waveform reshaping circuit for reshaping the waveform of the ac signal from said signal generator to generate a pulse signal; and

an ignition coil responsive to the pulse signal from said waveform reshaping circuit to switch on and off the flow of a primary current therethrough,

said waveform reshaping circuit including a pump-up circuit responsive to leading-edge and trailing-edge transitions of the pulse signal from said waveform reshaping circuit to alternately feed back biases each increasing to a maximum immediately after one of said transitions and thereafter decreasing gradually and tending to aid said one transition, and bias disabling means for disabling, during a starting period of said engine, one of the biases from said pump-up circuit associated with the transition of the pulse signal from said waveform reshaping circuit corresponding to the slowly varying slope portion of the ac signal from said signal generator.

4,658,789

IGNITION TIMING CONTROL SYSTEM AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Tatsuo Morita, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 17, 1985, Ser. No. 809,733

Claims priority, application Japan, Jan. 31, 1985, 60-18058; Jan. 31, 1985, 60-18059

Int. Cl.[4] F02P 5/145

U.S. Cl. 123—422 **13 Claims**

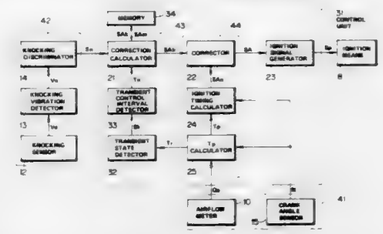
1. A system for controlling the ignition timing of an internal combustion engine, comprising:

(a) first means for detecting engine operating conditions including engine load;

(b) second means for determining a basic ignition advance angle on the basis of the detected engine operating conditions;

(c) third means for producing a transient indication on the basis of the detected engine operating conditions when the rate of change of engine load first increases by a predetermined amount and then decreases by a predetermined amount;

(d) fourth means for correcting the basic timing advance angle by a retardation angle so that no knocking will occur during the predetermined transient state when said third means produces said transient indication indicating that the engine is starting to operate in the predetermined transient state; and



(e) fifth means for igniting air-fuel mixture supplied to the engine at a timing corresponding to the corrected ignition timing angle.

4,658,790

AIR/FUEL RATIO DETECTING DEVICE AND CONTROL SYSTEM USING SAME

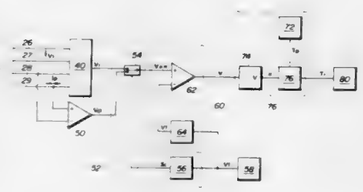
Tsuyoshi Kitahara, Ina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 30, 1985, Ser. No. 729,058

Claims priority, application Japan, May 1, 1984, 59-88115; May 14, 1984, 59-94685

Int. Cl.[4] F02D 41/14

U.S. Cl. 123—440 **8 Claims**



1. A device for detecting an air/fuel ratio of a fuel mixture by probing exhaust gas resulting from combustion of the fuel mixture, comprising:

means for defining a sample gas receiving chamber adapted for receiving the exhaust gas;

means for restricting diffusion of gas from said sample gas receiving chamber and thereinto;

means for defining a reference gas receiving chamber adapted for receiving a reference gas;

means for producing an oxygen ratio indicative signal indicative of the ratio of oxygen concentration within said sample gas receiving chamber to that within said reference gas receiving chamber;

means responsive to said oxygen ratio indicative signal for calculating a deviation of said oxygen ratio indicative signal from a reference and generating a deviation indicative signal;

means, including an oxygen ion-conductive solid electrolyte having thereon a pump cathode and a pump anode, for regulating the supply and discharge of oxygen to and from said sample gas receiving chamber in response to a pump electric current passing through said oxygen ion-conduc-

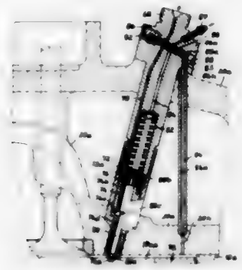
VOL 1077 ISS 3 AP 21 1987 UMI

tive solid electrolyte between said pump cathode and anode;
means for controlling the intensity and direction of said pump electric current in response to said deviation indicative signal in such a manner as to reduce said deviation toward zero;
means for detecting the intensity of said pump electric current and generating a pump electric current indicative signal;
means for detecting a pump electric voltage applied between said pump cathode and pump anode and generating a pump electric voltage indicative signal; and
means receiving said pump electric current indicative signal and said pump electric voltage indicative signal for generating an air/fuel ratio indicative signal indicative of the air/fuel ratio.

4,658,791
MULTI-CYLINDER FUEL INJECTED INTERNAL COMBUSTION ENGINE

Erich Abesinger, Passau, and Hans A. Kochanowski, Ruhstorf, both of Fed. Rep. of Germany, assignors to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed Apr. 9, 1985, Ser. No. 721,528
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414797; Oct. 11, 1984, 3437284; Jan. 21, 1985, 3501784
Int. Cl.[4] F02M *41/02*
U.S. Cl. 123—446 **19 Claims**

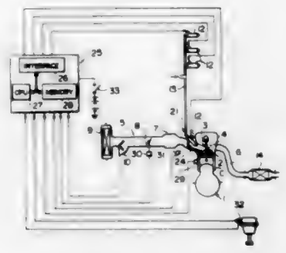


3. A multi-cylinder, fuel injection internal combustion engine, comprising: a respective fuel injection valve associated with each cylinder and a single injection pump which simultaneously supplies fuel under pressure to all of said injection valves at each point in time at which any of said injection valves is to inject fuel into the associated cylinder; wherein each said injection valve includes an injection nozzle, a fuel pressure passage which leads to said injection nozzle, control means for permitting and obstructing fuel flow from said passage through said nozzle when the pressure in said passage is respectively above and below a predetermined value, and blocking means separate from said control means for respectively permitting and obstructing fuel flow from said pump into said passage in response to the presence or absence of a control condition which occurs at a point in time at which fuel injection is to occur, whereby fuel is conveyed simultaneously to all injection valves by said pump but is injected into the engine through only a respective one of said injection valves in which said blocking means therein has opened said passage therein in response to the associated control condition; wherein said blocking means of each said injection valve includes means defining a cylindrical piston hole within said injection valve, said passage and a line from said pump communicating with said hole at first and second locations which are axially aligned and angularly spaced, a cylindrical piston having a circumferential groove therein and slidably supported in said piston hole for movement between two positions in which said groove is axially aligned with and axially offset from said first location and respectively permits and obstructs fuel flow from said connecting line into said passage through said groove, and resilient means for yieldably urging said piston toward one of said positions; said piston normally being in the position in which it obstructs fuel flow into said fuel pressure passage and being moved to the position in which it permits fuel flow into said passage only in response to the occurrence of said control condition.

4,658,792
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Akinori Yamashita; Kenji Hatsuka; Noboru Hashimoto, and Masanori Mizuni, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Apr. 22, 1985, Ser. No. 725,671
Claims priority, application Japan, Apr. 27, 1984, 59-85725
Int. Cl.[4] F02M *51/00*
U.S. Cl. 123—478 **13 Claims**



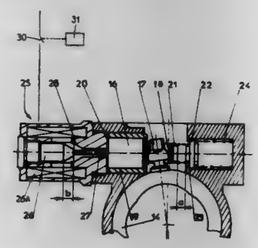
1. In a method of fuel injection for an internal combustion engine having a combustion chamber comprising a main chamber defined by a recess formed in the lower face of a cylinder head opposed to the top surface of a piston and a squish zone which is a narrow space formed between the top surface of the piston in the top dead center positon and a part of the lower face of the cylinder head around the recess, and an intake passage communicating with the combustion chamber by way of an intake port adapted to be opened and closed by an intake valve,
the improvement which comprises injecting fuel into the intake passage near the intake port,
controlling said fuel injection, at least when the engine load is low, to inject fuel by an amount required for one power stroke and to terminate fuel injection by the middle of the intake valve opening time at the latest so that a rich mixture of air and fuel is accumulated in the lower portion of the combustion chamber and a lean mixture thereof in the upper portion of the same,
and igniting said rich mixture in the path of squish flow.

2. In a fuel injection system for an internal combustion engine having a combustion engine chamber comprising a main chamber defined by a recess formed in the lower face of a cylinder head opposed to the top surface of a piston and a squish zone which is a narrow space formed between the top surface of the piston in the top dead center position and a part of the lower face of the cylinder head around the recess, and an intake passage communicating with the combustion chamber by way of an intake port adapted to be opened and closed by an intake valve,
the improvement which comprises a fuel injection valve positioned in the intake passage near the intake port and adapted to inject fuel into the intake passage, a control means which controls said fuel injection valve, at least when the engine load is low, to inject fuel by an amount required for one power stroke and to terminate fuel injection by the middle of the intake valve opening time at the latest so that a rich mixture of air and fuel is accumulated in the lower portion of the combustion chamber and a lean mixture thereof in the upper portion of the same, and a spark plug disposed in the path of squish flow with said rich mixture so that the spark plug is provided with said rich mixture when ignited.

4,658,793
FUEL INJECTION PUMPS FOR INTERNAL COMBUSTION ENGINES

Jean-Claude Bonin, Blois, France, assignor to Lucas Industries public limited company, Birmingham, England

Filed Sep. 6, 1985, Ser. No. 773,125
Claims priority, application France, Sep. 6, 1984, 84 13710
Int. Cl.[4] F02M *59/20*
U.S. Cl. 123—502 **5 Claims**

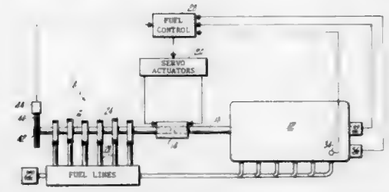


1. A fuel injection pump for supplying fuel to an internal combustion engine in particular a compression ignition engine, comprising a high pressure pump which is actuated in timed relationship in use, with the associated engine, a distributor rotor which rotates in a fixed body and which distributes fuel delivered by the high pressure pump to outlets in turn, the outlets in use being connected to the injection nozzles of the engine respectively, a component in the high pressure pump which is adjustable to vary the timing of delivery of fuel, a fluid pressure operable piston, means coupling said piston to said component, means for supplying to one end of said piston a fluid control pressure which varies in accordance with an engine operating parameter, a first compression spring acting between the other end of said piston and a collar, a stop for the collar and a second compression spring acting to urge said collar into contact with said stop, whereby as the control pressure increases, the piston will move firstly against the action of said first spring through a predetermined distance until the piston engages said collar and after a further increase in the control pressure will move against the action of said second spring, characterised by an electromagnetic device including a core which when electric current is supplied to the device imparts a thrust on said one end of the piston in opposition to the force exerted by said springs, the working stroke of said core being greater than said predetermined distance, the characteristics of said device being such that in the absence of said fluid control pressure the core is unable to move the piston against the action of said first spring but when the fluid control pressure rises to a value at which movement of the piston against the action of the first spring can occur, the combined action of the fluid control pressure and the thrust exerted by the core moves the piston through a distance represented by the working stroke of the core.

4,658,794
FUEL INJECTION CONTROL

Eric Day, Longmeadow, Mass., assignor to United Technologies Diesel Systems, Inc., Springfield, Mass.

Filed Nov. 7, 1985, Ser. No. 796,057
Int. Cl.[4] F02M *59/20*
U.S. Cl. 123—501 **2 Claims**



1. A method of controlling combustion angle in an engine responsive to a fuel injector pump comprising:
generating a table of desired combustion angles for a reference cylinder under various sensed engine operating conditions;
measuring the various engine operating conditions and plugging their values into the table;
providing a SOC signal indicative of the start of combustion in the reference cylinder;
providing a cam timing signal indicative of a particular fuel injector pump position;
generating an adaptive trim table containing values indicative of an angle between the SOC signal and the cam timing signal;
calculating an actual combustion angle as a function of the SOC signal in the presence of the SOC signal;
calculating the actual combustion angle in the absence of the SOC signal as a function of the cam timing signal and the values contained in the adaptive trim table;
providing means for adjusting the fuel injector pump timing with respect to the engine rotation in response to a control signal; and
providing the control signal as a function of the difference between the desired combustion angle and the actual combustion angle.

4,658,795
GASOLINE VAPOR CAPTURE AND COMBUSTION SYSTEM

Kenji Kawashima, Kakegawa; Katsuaki Asano, Iwata, and Osamu Takii, Hamamatsu, all of Japan, assignors to Yamaha Hatsukoki Kabushiki Kaisa, Iwata, Japan

Continuation of Ser. No. 428,132, Sep. 29, 1982, abandoned. This application Jun. 17, 1985, Ser. No. 745,689
Claims priority, application Japan, Jul. 23, 1981, 56-114428
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—519 **8 Claims**



1. An improved fuel vapor capture and combustion system comprising:
a fuel tank including a fuel outlet;

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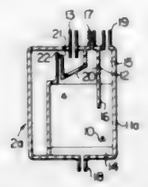
a vapor suction port in the upper part of said tank for receipt of fuel vapors generated in said tank;
a cannister for purging fuel from fuel vapor collected in said suction port and including a vapor inlet, purge outlet, and an air vent for discharging air therefrom;
a vapor conduit connecting said suction port with said vapor inlet;
a carburetor including a fuel inlet, a fuel mixture outlet, and throttle valve means having start and stop positions;
a purge inlet, in said carburetor leading to the throat thereof and arranged and disposed to be closed by said throttle valve means in response to closure of said throttle valve and further operative upon the opening of said throttle valve means to open;
a fuel line connected between said fuel outlet and said fuel inlet; and
a purge conduit connecting said vapor outlet of said cannister with said purge inlet of said purge valve means whereby fuel vapors collected in the upper portion of said fuel tank may, when said throttle valve is opened to open said purge valve, flow through said suction port to said vapor conduit, through said cannister and into said purge inlet of said carburetor and, further said vapors, when said throttle valve is closed causing closure of said purge inlet to block flow from said cannister through said purge conduit and into said purge inlet to the throat of said carburetor.

4,658,796

SYSTEM FOR PREVENTING LOSS OF FUEL DUE TO EVAPORATION

Shigeru Yoshida, Toyota, and Kenji Koeda, Nagoya, both of Japan, assignors to Aisan Industry Co., Ltd., Ohbu and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 585,862, Mar. 2, 1984, abandoned. This application Sep. 23, 1985, Ser. No. 778,734
Claims priority, application Japan, Mar. 9, 1983, 58-39839
Int. Cl.⁴ F02M *39/00*; B01D *53/04*
U.S. Cl. 123—519 **2 Claims**



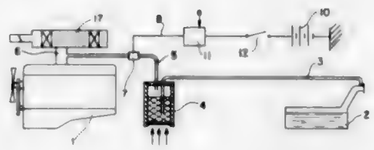
1. A system for preventing loss of liquid fuel due to evaporation comprising: a casing accommodating a fuel gas absorbent and provided with a tank port in its upper portion communicating with a liquid fuel tank; a passage defined in said casing and providing a communication between said tank port and said absorbent; a separator chamber disposed in said passage, said passage being so constructed as to permit only the gaseous phase of the fuel to flow towards said absorbent; and a heat transmitting wall separating said absorbent from any liquid fuel in said chamber, said wall being adapted to enhance the vaporization of any such fuel by the heat of absorption developed in said absorbent.

4,658,797

VENTILATION DEVICE FOR THE FUEL TANK OF A MOTOR VEHICLE

Martin Brand, Ingolstadt, Fed. Rep. of Germany, assignor to Audi AG, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 683,863
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346103
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—520 **1 Claim**



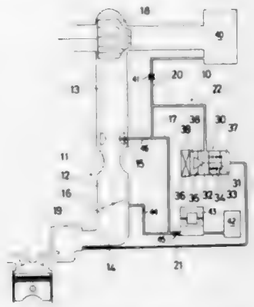
1. A ventilation device for the fuel tank of a motor vehicle having a fuel-air mixture intake system, a ventilation line which connects the tank with the atmosphere by means of a fuel vapor filter (4) and a filter exhaust line (5) through which the fuel vapors are sucked from the filter into the intake system of the vehicle, characterized in that an electromagnetic valve (7) is provided which regulates the flow through the exhaust line (5) in accordance with the speed of rotation of the engine and means are provided for generating a pulsed direct current with a changeable pulse width for operating said valve, said pulse width being dependent on the speed of rotation of said engine; said valve being constructed and arranged to permit increased flow through said exhaust line with increased rotational engine speed to clean said fuel vapor filter.

4,658,798

TURBOCHARGER CONTROL SYSTEM

Kenji Yogo, Nagoya, and Ieshi Nomura, Aichi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation-in-part of Ser. No. 530,547, Sep. 9, 1983, abandoned. This application Feb. 3, 1986, Ser. No. 825,540
Claims priority, application Japan, Sep. 23, 1982, 57-165909; Sep. 23, 1982, 57-165910
Int. Cl.⁴ F02M *7/12*
U.S. Cl. 123—559 **2 Claims**



1. A turbocharger control system utilizing a carburetor system including a carburetor having an air-fuel induction passage, a fuel supply passage for supplying fuel to said air-fuel induction passage, and a turbocharger compressor impeller disposed upstream of a throttle valve and compressing an air-fuel mixture flow delivered to an engine intake manifold, said turbocharger control system comprising:

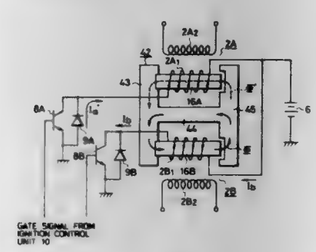
a surge tank provided in said intake manifold;
an air control valve including means for controlling an air bleeding amount supplied to said air induction passage in response to changes in pressure of said surge tank wherein said air control valve further comprises a valve housing having an end wall and including a first, second and third chamber formed therein and a diaphragm having a valve member for controlling communication between said second chamber and said third chamber in response to a pressure existing in said first chamber, a spring biasing said diaphragm in a direction such that said valve member is maintained in a closed position against said pressure in said first chamber, and a valve seat plate in contact with said valve member, and wherein said first chamber is connected with said surge tank and said second chamber is connected with said fuel supply passage, said third chamber is connected with atmosphere, said first chamber is defined by a valve housing of said air control valve, said end wall and said diaphragm and wherein said valve member has a tapered form.

4,658,799

IGNITION COIL ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

Yoshimi Kusaka; Takashi Yoshinari, both of Katsuta, and Hiroshi Watanabe, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1986, Ser. No. 840,199
Claims priority, application Japan, Mar. 25, 1985, 60-58443
Int. Cl.⁴ F02P *1/00*
U.S. Cl. 123—622 **5 Claims**



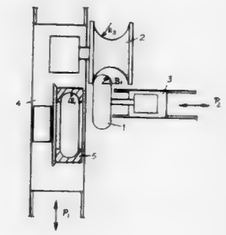
1. An ignition coil assembly for an internal combustion engine having a plurality of coil units each of which includes a primary coil supplied with a primary current from a battery and a secondary coil magnetically coupled with the primary coil, both ends of which are connected to respective spark plugs, center cores around which the respective coil units are provided, a side core magnetically linked with the center cores to form closed magnetic paths for the magnetic fluxes produced by the respective primary coils, and switching means for controlling the primary currents supplied for the respective primary coils in response to ignition signals furnished by an ignition control unit,
characterized in
that each of said center cores is a laminated core formed of grain oriented silicon steel plates and so placed within a coil unit that an axis of easy magnetization of the center core coincides with the direction of the magnetic flux produced by the primary coil of the coil unit,
that said side core is a laminated core made of non-grain oriented silicon steel plates as one body and linked magnetically with each of said center cores with an air gap in a part of the magnetic path formed by each of said center cores and said side core, and
that each of said primary coils, when it is supplied with a primary current, produces the magnetic flux which is in the same direction in the center core as those produced by any other primary coils.

4,658,800

GRINDING WHEEL PROFILE DRESSING DEVICE

Sture Larsson, Lidköping, Sweden, assignor to Lidkopings Mekaniska Verkstads AB, Lidkoping, Sweden

Filed Aug. 26, 1985, Ser. No. 769,142
Claims priority, application Sweden, Aug. 31, 1984, 8404350
Int. Cl.⁴ B24B *53/00*
U.S. Cl. 125—11 CD **1 Claim**



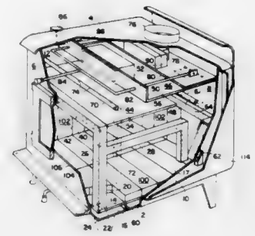
1. A device for dressing of a grinding wheel (1) with a circular peripheral axial section profile by means of a dressing roller (2), which also has a circular peripheral axial section profile, one profile being concave and the other being convex, characterized by that the radii (R_2 and R_1) of the dressing roller and the grinding wheel are of different size, and by means (3, 4) for bringing about an arc-shaped translatory relative motion of the grinding wheel and the dressing roller in a plane comprising the axes of rotation of the dressing roller and the grinding wheel, the length of the radius of the arc being the difference between the larger and the smaller of the radii (R_2 and R_1) of the dressing roller and the grinding wheel, and for adjusting the radius of the arc, the axial width of the dressing roller (2) being greater than the axial width of the grinding wheel.

4,658,801

STOVE WITH MULTIPLE CHAMBERS

Alvin Black, 13130 NW. Lovejoy, Portland, Oreg. 97229

Filed Apr. 8, 1986, Ser. No. 849,496
Int. Cl.⁴ F24C *1/14*
U.S. Cl. 126—77 **23 Claims**



1. A stove for burning a solid fuel such as wood, comprising wall means defining a main air inlet, a combustion gas outlet, and four chambers through which gas passes sequentially from the main air inlet to the combustion gas outlet, said chambers comprising a pre-heat plenum chamber into which the main air inlet opens, a main combustion chamber for containing solid fuel to be burned and into which gas passes from the pre-heat plenum chamber, a second combustion chamber which is downstream of the main combustion chamber with respect to the flow of gas from the main air inlet to the combustion gas outlet, and a third combustion chamber from which the com-

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bustion gas outlet opens, and the stove also comprising a plate having a restricted opening for providing communication between the second and third combustion chambers, and a catalytic converter comprising a body of solid material formed with passageways, said body of solid material being fitted in said restricted opening so that gas passes from the second combustion chamber to the third combustion chamber by way of the passageways in said body.

4,658,802

HEATED SEAMING APPARATUS

William K. Schultz, La Crosse, Kans., assignor to Flame Engineering, Inc., La Crosse, Kans.

Filed May 2, 1985, Ser. No. 729,720
Int. Cl.⁴ F23C 5/00
U.S. Cl. 126—271.2 A **1 Claim**



1. A heated seam sealing apparatus wherein the apparatus consists of:

a handle unit comprising an elongated main handle member having an angled upper end which is provide with a handle grip element; and, a relatively short intermediate handle element that projects outwardly from said main handle member;

a trowel unit comprising a generally flat trowel member pivotally secured to the lower end of the main handle member, and provided with releasable securing means for retaining the trowel member in a variety of angular dispositions with respect to the main handle member;

a torch unit comprising a torch member and an adjustable torch holder wherein the torch member may be angularly disposed with respect to the said trowel member and wherein said adjustable torch holder comprises a pair of relatively rotatable adjustable collar elements, which are adapted to releasably engage the torch member and the main handle member in a variety of angular dispositions with respect to another, and also to vary the height of the torch unit on the main handle member with respect to the trowel unit; and,

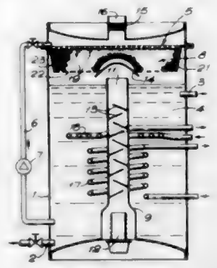
a torch control unit attached to the main handle member and interposed between the torch unit and a source of fuel wherein the torch control unit comprises a lever actuated valve assembly which controls the supply of fuel from the fuel source to the torch member via a flexible fuel supply line; whereby, the height, angle, intensity, and duration of the burner flame with respect to the trowel member may be selectively varied by a user of the apparatus.

4,658,803

GAS-FIRED WATER HEATERS

Geoffrey Ball, Epsom; Robin Galliver, London, and Martin White, Kingston-upon-Thames, all of England, assignors to British Gas Corporation, London, England

Filed Oct. 24, 1985, Ser. No. 791,161
Claims priority, application United Kingdom, Nov. 7, 1984, 8428166
Int. Cl.⁴ F24H 1/10
U.S. Cl. 126—355 **7 Claims**



1. In a compact, gas-fired water heater which comprises a casing that defines a reservoir for collecting water; a water inlet pipe connected to said casing to supply cold water to said reservoir; a water outlet pipe connected to said casing to remove heated water from said reservoir; a heat exchanger means located within said casing which extends upwardly through said reservoir to an outlet opening above a normal water level in said reservoir; a gas burner for supplying heated combustion gases to the interior of said heat exchanger means; a deflection canopy located within said casing and above the outlet opening of said heat exchanger means; a distribution means located in said casing above both said normal water level in said reservoir and said deflection canopy for providing a plurality of downwardly falling streams of water; water supply means for supplying water to said distribution means; a heat transfer means located in said casing below said distribution means and above both said normal water level in said reservoir and said deflection canopy; and an exhaust gas outlet means located above said water distribution means;

the improvement wherein said heat transfer means comprises a generally pan-shaped metal container having a perforated base and containing a plurality of solid materials in the form of a packed bed, said solid materials including inert materials and an anion exchange resin; and wherein said water heater includes a calorifier for heating a stream of water passing therethrough, said calorifier comprising a first tube portion which extends through said casing and into said reservoir, a second tube portion which is connected to said first tube portion and is coiled around said heat exchanger means, and a third tube portion which is connected to said second tube portion and extends through said casing and out of said reservoir.

4,658,804

MOVABLE HEARTH BOILER WITH INTERNAL COMBUSTION AND ADJUSTABLE DRAUGHT

Daniel Doublet, Route du Sap Beuvillers, 14100 Lisieux; Arja Pyysonen, and Daniel Pontoizeau, both of Valsemé, 14340 Cambremer, all of France

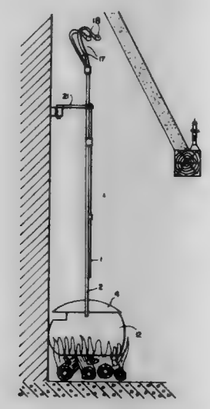
Continuation of PCT/FR83/00258, filed on Dec. 23, 1983, published as WO84/02764 on Jul. 19, 1984. This application Sep. 4, 1984, Ser. No. 648,183
Claims priority, application France, Jan. 3, 1983, 83 00005
Int. Cl.⁴ A47J 27/00
U.S. Cl. 126—391 **12 Claims**

1. An open hearth boiler for use in a hearth having a burning combustion source producing flames and combustion gases, comprising:

a body intended to be positioned vertically above the combustion source through which a heat transfer fluid flows, said body having

(a) vertical internal combustion chambers separated horizontally from one another and having walls which are adapted to be vertically traversed by the flames and combustion gases, said wall providing heat exchange surfaces for the exchange of heat energy between the burning combustion source and the fluid in said body, and

(b) a partition means for vertically partitioning selected



adjacent combustion chambers to form an internal circulation circuit for the heat transfer fluid having an inlet and an outlet;

an inflow pipe and an outflow pipe connected, respectively, to said inlet and said outlet; and

a suspension means for vertically maintaining said body in continuous contact with a top portion of the combustion source as the combustion source is depleted, said suspension means including a compensating means for reducing the vertical pressure exerted on the top of the combustion source by the weight of said body.

4,658,805

THERMO-HYDRAULIC POWER SUPPLY

Roland W. Robbins, Jr., 751 S. Richmond Rd., Ridgecrest, Calif. 93555

Filed Dec. 3, 1984, Ser. No. 649,424
Int. Cl.⁴ F24J 3/02
U.S. Cl. 126—425 **3 Claims**

1. A radiant energy utilization device for the exploitation of solar energy, for example, comprising:

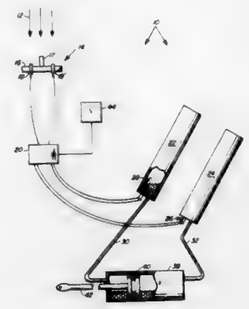
a platform having an exposed surface facing the general direction of the source of radiant energy;

at least one pair of energy detectors mounted in spaced relation to each other on said surface and designed to output an electrical signal of an amplitude proportional to the amount of radiation received;

a shadow bar orthogonally mounted on said surface between each pair of said detectors such that both detectors of a pair receive equal radiation only when the said radiation is impinging directly orthogonally on said surface;

detector/amplifier means receiving signals from each said energy detector and capable of discriminating between amplitudes to amplify and output only signals from the one energy detector of each pair which is receiving the greatest radiant energy;

at least one pair of energy transducers each including heat producing means receiving said output from said detector amplifier means and transforming said output from said one energy detector to a force usable to effect mechanical movement;



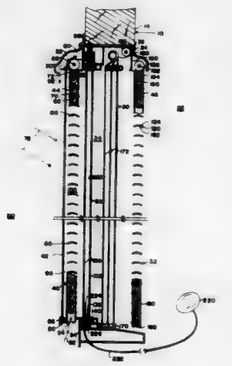
said energy transducers each comprising a fluid containing reservoir wherein a vapor pressure is created when the fluid in said reservoir is subjected to heat from said included heat producing means.

4,658,806

SOLAR RADIATION ASSEMBLY

S. David Boozer, 1417 Nokomis Pass, Anniston, Ala. 36201, assignor to S. David Boozer, Anniston, Ala.

Filed Dec. 28, 1981, Ser. No. 334,990
The portion of the term of this patent subsequent to May 21, 2003, has been disclaimed.
Int. Cl.⁴ F24J 3/02; A47H 1/00
U.S. Cl. 126—450 **4 Claims**



1. A Solar transmission system comprising at least one radiation permeable assembly, in turn comprising:

a light aperture adapted to be mounted in the envelope of a building, and having at least one layer of first glazing forming part of the building envelope;

a generally rectangular frame supported on the building and around an outer side of a said aperture;

a layer of second glazing comprising an outer facing of said frame;

ventilation means at the top and bottom of said frame, including means for enabling air flow through said frame, and including means for inhibiting rain from entering said frame;

support means connectible between said frame and said building, enabling said frame to be moved away from said

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building, whereby said glazing of said light aperture may be made accessible;

a variable light transmission assembly comprising:

a vane assembly comprising a plurality of adjacent reflective vanes supported by and within said frame, and

operating means for synchronously rotating said vanes about a horizontal axis of each and in parallel planes, whereby exterior solar radiation may be reflected in a selected direction either to the interior or exterior of said building, and

control means for controlling said operating means from inside said building;

a second vane assembly comprising a plurality of adjacent second vanes supported by said building on an inner side of said first glazing, and at least one side of said vanes being of a dark color;

second operating means for synchronously rotating said second plurality of adjacent vanes about a horizontal axis of each and in a parallel plane, whereby exterior solar radiation may be selectively absorbed or passed to the interior of said building; and

second control means for controlling said second operating means from inside said building;

a light transmissive insulating assembly positioned between said first glazing of said light aperture and said second variable light transmission assembly comprising:

a plurality of layers of material;

means for interconnecting and normally biasing said layers in a spaced relation over said aperture; and

retraction means for retracting layers from their position over said aperture and rolling said layers onto a roll in adjacent and contacting layers.

4,658,807

METHOD FOR SUPPORTING AND POSITIONING THE HUMAN ANATOMY

Stephen C. Swain, Rowayton, Conn., assignor to International Positioning Systems, Ltd., New York, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,649

Int. Cl.⁴ A61F *13/00, 5/02*

U.S. Cl. 128—78 **17 Claims**



1. A method for fitting to an individual an apparatus for supporting and positioning the individual's anatomy, said method comprising the steps of:

(1) selecting a support module adapted to support a specific portion of an individual's anatomy in three dimensions, said support module having at least two support portions that are separated by a relatively deformable, shape retainable portion;

(2) fitting the support module to conform to the specific portion of the individual's anatomy by bending the relatively deformable, shape retainable portion of the support module;

(3) positioning the fitted support module in space by clamping the support module to a chassis with the spacial positioning of the support module being related to the specific portion of the individual's anatomy when the support module is used to position said anatomy portion; and, thereafter

(4) loosening the clamped support module on the chassis to reposition the support module in space through rotational and/or translational movement in at least one plane with respect to said chassis in order to produce desired changes in positioning of the specific portion of the individual's anatomy, and reclamping the support module to the chassis to maintain the support module in its new spacial position.

4,658,808

ARRANGEMENT FOR PREPARING AN ANATOMICALLY MEASURED ENDOPROSTHESIS

Helmut D. Link, Hamburg, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed May 1, 1985, Ser. No. 729,379

Claims priority, application Fed. Rep. of Germany, May 11, 1984, 3417609

Int. Cl.⁴ A61F *2/30*

U.S. Cl. 623—16 **11 Claims**



1. A kit for making a customfit prosthetic implant including a stem to be anchored in a bone canal of a patient, the kit comprising:

first and second template sets, each set including a plurality of templates, the sets of templates corresponding to longitudinally adjacent sections of the implant, each template in each set having a defined periphery which corresponds to a possible longitudinal cross-sectional shape of the bone canal;

first and second sets of trial prosthesis sections, each section being configured to correspond to the shape of a template in the first and second template sets; and

means carried by the trial prosthesis sections so that any section of the first set can be joined to any section of the second set end-to-end to define a core of a particular shape from which the prosthetic implant can be cast;

whereby the customfit prosthesis can be made by providing a radiograph of the bone into which the implant is to be implanted, determining which templates from the first and second template sets correspond in shape to the shape of the bone canal on the radiograph, and thereafter generating the core from which the implant is to be made by connecting end-to-end the trial prosthesis sections which correspond to the selected templates.

4,658,809

IMPLANTABLE SPINAL DISTRACTION SPLINT

Heinrich Ulrich, Ulm/Donau, and Klaus Zielke, Bad Wildungen, both of Fed. Rep. of Germany, assignors to Firma Heinrich C. Ulrich, Ulm/Donau, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,131

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1983, 3306657

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—92 YM **11 Claims**



1. A spinal distraction apparatus comprising:

a distraction rod extending along an axis and having a center part,

a pair of end parts secured to the center part, extending axially oppositely from the center part, and rotatable about the axis relative to the center part, the center part being exposed between the end parts, and

respective screwthread connections of opposite hand between the end parts and the center part, whereby rotation of the center part about the axis in one direction relative to the end parts axially relatively displaces the end parts away from each other and from the center part and rotation of the center part in the opposite direction relative to the end parts axially relatively displaces the end parts toward each other, the end parts being axially nondisplaceable relative to the center part except on rotation of same about the axis;

respective members secured axially nondisplaceable on the end parts and adapted to be connected to respective vertebrae;

formations between the members and the respective end parts preventing rotation of the end parts about the axis relative to the members; and connection means for connecting said members with selected vertebrae.

4,658,810

METHOD OF CONTRACEPTION AND A DEVICE THEREFOR

Hans A. Bauer, Südliche Stadtmauer-strasse 58, Erlangen 8520, Fed. Rep. of Germany

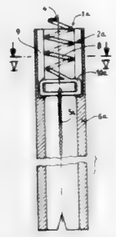
Continuation of Ser. No. 514,640, Jul. 18, 1983, abandoned. This application Apr. 23, 1985, Ser. No. 726,911

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228704

Int. Cl.⁴ A61F *5/46*

U.S. Cl. 128—130 **11 Claims**

1. A method of contraception comprising employing an intrauterine device having an elongated metal chain-like means for producing ions in a utering cavity and anchoring said device in the cavity by an anchoring element disposed about said elongated means, said elongated means being substantially coaxial with the anchoring element, said anchoring element being a helix provided with point means for anchoring said



device at the base of uterine musculature by rotating the helix in a screw-like fashion.

4,658,811

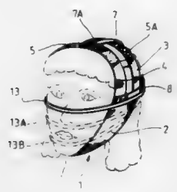
FACIAL CONTOURING MASK

Claudette Beaird, P.O. Box 86, Thompsons, Tex. 77481

Continuation-in-part of Ser. No. 601,680, Apr. 18, 1984, abandoned. This application Jan. 25, 1985, Ser. No. 694,702

Int. Cl.⁴ A61F *13/12*

U.S. Cl. 128—163 **4 Claims**



1. A facial contouring mask comprising

a pad consisting essentially of an outer stretchable material and an inner lining of cotton-like cloth adapted to fit under the chin and to extend upwardly along each side of the face, the pad being contoured to fit the neck of the wearer;

a first pair of elastic anterior supporting bands, adjustable in length, connected at first ends to opposite ends of the anterior portion of the pad to extend upwardly over the malar bone in the region of the origin of the zygomatic major muscles and the zygomatic minor muscles on opposite sides of the face for connection at their second ends;

a second pair of elastic posterior supporting bands, adjustable in length, connected at first ends to opposite ends of the posterior portion of the pad to extend upwardly adjacent to the ears on opposite sides of the head and substantially parallel to the anterior supporting bands for connection at their second ends;

adjustable fastening means at second ends of the first pair of anterior supporting bands and at second ends of the second pair of posterior supporting bands;

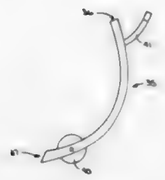
a separate elastic connecting band connecting laterally between each pair of adjacent anterior and posterior supporting bands at a point adjacent the adjustable fastening means;

a first elastic harness band attachable at one end to the first end of one of the second pair of elastic supporting bands and at its other end to the first end of the other one of the second pair of elastic supporting bands; and

a second elastic harness band attachable at one end to the second pair of elastic supporting bands and at a second end to an intermediate point along the length of the first harness band.

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4,658,812
LASER BARRIER
John R. Hatzenbuhler, 1917 E. Kenmore Pl., Shorewood, Wis. 53211, and Thomas A. Lindl, 3325 W. Juneau Ave., Milwaukee, Wis. 53208
Continuation of Ser. No. 779,274, Sep. 23, 1985, abandoned, which is a division of Ser. No. 605,206, Apr. 30, 1984, Pat. No. 4,558,093. This application Apr. 7, 1986, Ser. No. 849,159
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—207.14 5 Claims



1. An endotracheal tube, comprising
an elongated tube having first and second oppositely spaced openings to permit the passage of anesthetic gases therethrough and formed of a flexible and light weight material composed of a dispersion of densely packed water droplets capsulated in a matrix of silicone rubber to terminate laser radiation that may strike said elongated tube.

4,658,813
SUCTION HEAD HOLDER FOR A TRACHEOSTOMY TUBE
Hedwig E. Jones, 3519 Gemini Ct., Concord, Calif. 94519
Filed Mar. 24, 1986, Ser. No. 842,910
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—207.14 3 Claims



1. A suction head holder for a tracheostomy tube, comprising:
(a) a wide, open, snap-on ring of a resilient material, that will firmly engage the protruding end of an inserted tracheostomy tube;
(b) a connecting member bonded to the ring and extending upwards from it and providing rigid mechanical support for a holder;
(c) a holder for a glass suction head in the shape of a hollow tube with an open proximal end and an open distal end, which is integrally bonded to the connecting member in such a way that, when in use, the proximal end of the holder will come to rest on top of the outer rim of the tracheostomy tube and will be flush with it's inner wall.

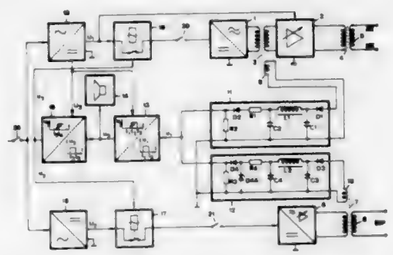
4,658,814
ENDOTRACHEAL TUBE HOLDER
Kirk D. Anderson, 214 W. Pine St., Eagle River, Wis. 54524
Filed May 1, 1985, Ser. No. 729,262
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—207.17 11 Claims

1. An improved holding means for positioning and retaining an endotracheal tube in the mouth and throat of a patient comprising:
a cord having a loop in a generally central portion thereof through which the endotracheal tube extends, said loop being formed by placing said central portion of said cord around the endotracheal tube;
means for securing said loop about the endotracheal tube for retaining the endotracheal tube in said loop,
said central portion of said cord being positioned adjacent the lips of the patient when the endotracheal tube is in the



mouth and throat of the patient, the remaining portions of said cord extending over the ears and under the chin of the patient; and
means for retaining the remaining portions of the cord under the chin of the patient to hold the endotracheal tube in the mouth of he patient,
said securing means comprising a flexible cylinder having a pair of spaced slits in which the portions of the cord adjacent said loop enter the cylinder, the remaining portions of said cord exiting the cylinder at opposite ends.

4,658,815
HIGH-FREQUENCY ELECTROSURGICAL UNIT WITH TIMED SAFETY SHUT DOWN INTERLOCK
Günter Farin, and Peter Pütz, both of Tuebingen, Fed. Rep. of Germany, assignors to Erbe Elektromedizin GmbH, Tuebingen, Fed. Rep. of Germany
Continuation of Ser. No. 514,473, Jul. 18, 1983, abandoned. This application Jan. 15, 1986, Ser. No. 819,468
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 3228136
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.14 15 Claims



1. High-frequency electrosurgical unit for cutting and coagulating biological tissues, including at least one high-frequency generator capable of being individually put into and taken out of operation by control of an enabling circuit thereof including a main power on-off switch, said at least one high-frequency generator having a high-frequency transformer, said unit also comprising:
a rectifier circuit individual to said high-frequency transformer of said at least one high-frequency generator for

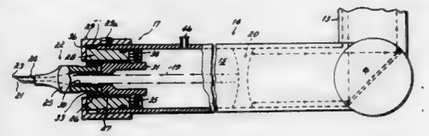
providing a first electrical output signal (u_1) when and so long as said at least one high-frequency generator is in an activated state;
a first delay circuit (13), to which said first output signal (u_1) is provided as an input, for producing a second output signal (u_2) when said first output signal (u_1) has persisted without interruption for more than a first time interval (t_{13}), said first delay circuit having means for adjusting the duration of said first time interval;
means (14) connected to said first delay circuit (13) for producing an audible signal for so long as said second output signal (u_2) of said first delay circuit (13) persists;
a second delay circuit (15) having said second output signal (u_2) of said first delay circuit (13) as an input, for producing a third output signal (u_3) when said second output signal (u_2) has persisted without interruption for more than a second time interval (t_{15}), said second delay circuit (15) having means for adjusting the duration of said second time interval;
cut-off relay means (16,17) having a switching path interposed in said enabling circuit and connected to allow completion of said enabling circuit when said at least one one high-frequency generator is put into operation and to interrupt said enabling circuit immediately at the end of said second time interval (t_{15}) in response to said third output signal (u_3) of said second delay circuit (15), and
means for restoring enablement of said at least one high-frequency generator and restarting said second delay circuit (15) after interruption of said enabling circuit by said cut-off relay means in response to turning off said main power switch and quickly thereafter turning said main power switch back on.

4,658,816
LIGHTED CANALICULUS INTUBATION SETS
W. Lane Ector, Jr., Clearwater, Fla., assignor to Concept Incorporated, Clearwater, Fla.
Filed Nov. 14, 1984, Ser. No. 671,413
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 19 Claims



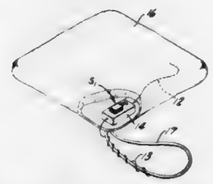
1. In intubation device for use with a light source for the reconstruction of the lacrimal ducts of a patient, comprising:
first and second base means each being suitable for attachment to the light source;
a first and a second probe each having a proximal end and a distal end with the proximal ends connected to said first and second base means, respectively, to permit the entry of light from the light source to the proximal ends of said first and second probes;
each of said probes having a light conducting means to permit the transmission of light along the interior length of said probes between said proximal end and said distal end;
a flexible translucent tubing means including a first and second sheath portion and an intermediate portion;
each of said sheath portions having a proximal end and a closed distal end with said intermediate portion interconnecting said first and second sheath portions;
said first and second sheath portions removably encompassing said first and second probes with said distal ends of said sheath portions being adjacent said distal ends of said probes respectively;
each of said first and second probes and said first and second sheath portions being insertable into the lacrimal ducts of the patient with said distal ends of said first and second sheath portions being illuminated by the light source to aid in the location of each of said distal ends within the nasal cavity of the patient;
said first and second probes being removable from said first and second sheath portions enabling said distal end of said first and second sheath portions to be pulled into the nasal cavity of the patient to position said intermediate portion into the lacrimal duct.

4,658,817
METHOD AND APPARATUS FOR TRANSMYOCARDIAL REVASCULARIZATION USING A LASER
Roger I. Hardy, Cincinnati, Ohio, assignor to Children's Hospital Medical Center, Cincinnati, Ohio
Filed Apr. 1, 1985, Ser. No. 718,069
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 18 Claims



1. A surgical instrument comprising
a surgical needle having an elongated hollow shaft and an end for cutting through tissue, said shaft adapted for the passage of a lasser beam therethrough, and
means for axially adjusting said needle with respect to a body providing said laser beam to align said needle with said laser beam.
15. A method of transmyocardial revascularization comprising
inserting a hollow needle into the epicardium of a heart,
focusing a laser through said needle, and
cutting a perforation through the endocardium into the ventricular chamber of said heart, thereby providing a channel from said ventricular chamber into said endocardium.

4,658,818
APPARATUS FOR TAGGING AND DETECTING SURGICAL IMPLEMENTS
George E. Miller, Jr., 4609 Ashton Dr., Sacramento, Calif. 95825, and Jon D. Rice, 418 Pera Dr., Rancho Murieta, Calif. 95683
Filed Apr. 12, 1985, Ser. No. 722,967
Int. Cl.[4] A61F *13/00*
U.S. Cl. 128—303.1 8 Claims



1. An apparatus for detecting a surgical implement retained within a surgically exposed human body cavity, the apparatus comprising, in combination:
(a) tagging means adapted to be attached to a surgical implement insertable within a human body cavity, and including:
(1) oscillator means for producing a series of electrical output pulses, said pulses having a frequency selected safely to exceed the normal physiological signals of a

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body into which an associated surgical instrument is to be inserted when actuated prior to insertion of an associated surgical instrument within a surgically created body cavity; and

(2) conductor means attached to the oscillator means for electrically conductively coupling the electrical output pulses of the oscillator means to internal body fluids and tissue of a human body into which a surgical instrument associated with the oscillator means is inserted; and

(b) detecting means located externally of a human body into which is inserted a surgical implement provided with a tagging means, and including:

(3) reception means for receiving a signal from a tagging means, said reception means including means for rejecting the normal physiological signals of the human body;

(4) detector means attached to the reception means for sensing a signal received from a tagging means; and

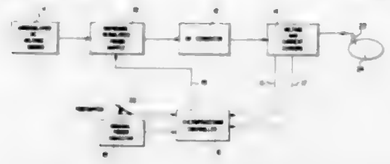
(5) alert means attached to the detector means for providing a sensory response whenever a signal from a tagging means is sensed.

4,658,819

ELECTROSURGICAL GENERATOR

Frank W. Harris, Boulder, Colo., Frederick M. Huletta, Hayward, Calif. assignors to Valleylab, Inc., Boulder, Colo.

Filed Sep. 13, 1983, Ser. No. 531,758
Int. Cl.⁴ A61B *17/36*
U.S. Cl. 128—303.13 **21 Claims**



1. An electrosurgical generator comprising a source of electrosurgical energy;

means adapted for connecting said source to a patient;

means for measuring the impedance of the patient; and

control means responsive to said patient impedance measuring means for decreasing the output power from said source with increasing patient impedance, the rate of power decrease being substantially greater than that which would result if the output voltage from the source were maintained constant over the range of increasing patient impedance and substantially less than that which would result if the source of electrosurgical energy were disabled.

4,658,820

ELECTROSURGICAL GENERATOR WITH IMPROVED CIRCUITRY FOR GENERATING RF DRIVE PULSE TRAINS

Michael S. Klicek, Boulder, Colo., assignor to Valleylab, Inc., Boulder, Colo.

Filed Feb. 22, 1985, Ser. No. 704,188
Int. Cl.⁴ A61B *17/39*
U.S. Cl. 128—303.14 **28 Claims**

1. An electrosurgical generator comprising

a patient circuit including an active electrode and a return electrode;

means for generating a pulse train including

at least one MxN storage device having M memory locations where $M>1$ and where each location contains N storage positions where $N \leq 1$, said storage device storing at least one, K-bit binary signal, where $1<K \leq M$, the bits of which are respectively stored in the Jth storage positions of K of the M memory locations where $J \leq N$;

means for sequentially outputting said K-bit binary signal from said storage device; and



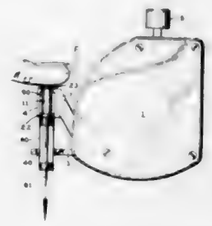
electrosurgical signal generating means sequentially responsive to the sequentially outputted bits of the K-bit binary signal for generating an electrosurgical signal and applying this signal to the patient circuit.

4,658,821

EJECTOR FOR AN AUTOMATIC LANCET ARM

Daniel J. Chiodo, and Joseph Maggio, both of Hialeah, Fla., assignors to Packaging Corporation International a/k/a/ Medicore, Hialeah, Fla.

Continuation of Ser. No. 817,079, Jan. 8, 1986, abandoned. This application Sep. 15, 1986, Ser. No. 908,928
Int. Cl.⁴ A61B *17/34*
U.S. Cl. 128—314 **1 Claim**



1. In combination with a lancet device comprising:

a housing;

an arm mounted in the housing for movement between a retracted position and an operating position, said arm having an end outside said housing;

a holder on said end of the arm, said holder having a recess therein which is open at one end for the slidable insertion and removal of a lancet needle assembly, said holder having an end wall with an opening therein at the opposite end of said recess;

spring means urging said arm from said retracted position to said operating position;

and manually releasable latch means for holding said arm in said retracted position against the urging of said spring means;

a plunger having a peripheral flange slidably received in said recess in the holder, said plunger extending from said flange slidably through said opening in said end wall to the outside of said holder for manual actuation;

and a lancet needle assembly slidably received in said recess in the holder, said lancet needle assembly at one end presenting a needle located beyond said open end of said recess in the holder and at its opposite end positioning said flange on the plunger against said end wall of the holder;

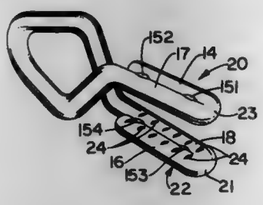
said plunger being slidable toward said one end of the recess to push the lancet needle assembly out of said recess in the holder.

4,658,822

ANEURYSM CLIP

George Kees, Jr., 104 North St., Wilder, Ky. 41071

Filed Dec. 31, 1985, Ser. No. 815,247
Int. Cl.⁴ A61B *17/12*
U.S. Cl. 128—325 **3 Claims**



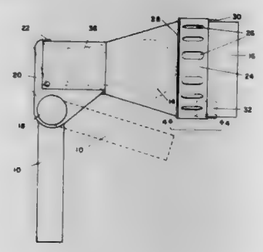
1. An aneurysm clip which comprises an elongated main section of spring metal and a pair of short length jaw addition sections attached to end portions of the main section on opposite sides of the main section, the main section being formed to a central spring portion, diverging first connecting portions extending from the central spring portion, converging second connecting portions extending from the first connecting portions, and jaw end portions extending from the second converging second connecting portions, one second connecting portion and associated jaw end portion being coplanar with and adjacent a respective first side of a plane parallel to jaw movement, the other connecting portion and associated jaw end portion being coplanar with and adjacent a respective second side of said plane parallel to jaw movement, each associated short length jaw addition being on the opposite side of said plane from the jaw end portion to which it is attached, the jaw end portions being arranged so that each of the jaw end portions is opposed to one of the short length jaw addition sections, the central spring section urging the jaw end portions toward engaged position with the jaw addition sections.

4,658,823

INCANDESCENT LAMP STRUCTURE FOR APPLYING THERAPEUTIC HEAT

Alexander F. Beddoe, and Martha A. Beddoe, both of 32851 Mill Creek Dr., Fort Bragg, Calif. 95437

Filed Apr. 15, 1986, Ser. No. 852,433
Int. Cl.⁴ A61F *7/00*
U.S. Cl. 128—396 **2 Claims**



1. A controlled incandescent heat lamp for therapy of the live human ear structure to help treatment of pain and congestion due to injury, inflammation, or infection comprising:

a mounting base with an adjustable handle having an attached ceramic light bulb socket covered by a lamp housing open at one end,

said opening in said lamp housing constituting means for directing light and heat at a human ear using approximately a 15 to 25 watt incandescent appliance light inserted in said ceramic light bulb socket,

a sealed upper limit thermostat attached just inside said opening of said lamp housing means of preventing excessive heat and potental burning and injury while in use,

means for additional temperature adjustment through a vent ring on the outside of said lamp housing,

said vent ring constituting means for adjustable rotation to align and disalign vents of said ring and said lamp housing so a desired amount of heat is released during use,

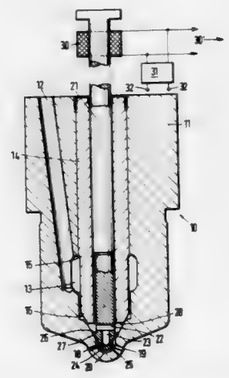
whereby a simple, accurate, safe, and economical way of adding a new dimension for using light and heat in assisting the treatment of earaches and infections plus other applications where heat without undue pressure can be used to manage specific, but localized, inflammatory conditions.

4,658,824

FUEL-INJECTION DEVICE FOR AN INTERNAL-COMBUSTION ENGINE

Wolfgang Scheibe, Remseck, Fed. Rep. of Germany, assignor to L'Orange GmbH, Fed. Rep. of Germany

Filed Aug. 7, 1985, Ser. No. 763,822
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1984, 3429471
Int. Cl.⁴ F02M *39/00*
U.S. Cl. 123—472 **7 Claims**



1. A fuel-injection device for an internal-combustion engine comprising at least one injection nozzle, whose nozzle body has at least one spray hole, wherein the fuel delivery to said spray hole is controllable by way of a valve needle displaceable in the nozzle body and wherein the effective injection cross section is variable by a control device whose position depends on operating parameters of the internal-combustion engine, wherein the fuel is directly conducted to the spray hole (**18, 19**), in the operating position of the control device (**21**), wherein the fuel is conducted to the spray hole (**18, 19**) only by way of a nozzle opening (**24, 25**) substantially coaxially aligned relative to the spray hole (**18, 19**), in the rest position of the control device (**21**), wherein the cross section of said nozzle opening is smaller than the cross section of said spray hole (**18, 19**), and wherein the control device (**21**) is changed over between the rest position and the operating position by an actuating element (**30**) independently of the position of the valve needle (**14**).

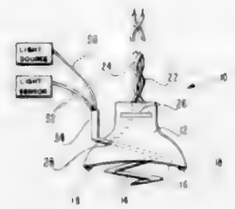
VOL 1077 ISS 3 AP 21

4,658,825

SPIRAL PROBE FOR SIMULTANEOUS ELECTRICAL AND CHEMICAL MONITORING OF A FETUS

Howard M. Hochberg, Woodinville, Wash.; Edwin L. Schmalzbach, Roosevelt, and Janis G. Ziedonis, West Windsor, both of N.J., assignors to International Biomedics, Inc., Bothell, Wash.

Continuation of Ser. No. 616,440, May 31, 1984, abandoned, which is a continuation-in-part of Ser. No. 425,036, Sep. 24, 1982, abandoned. This application Feb. 24, 1986, Ser. No. 832,529
Int. Cl.[4] A61B *5/00, 5/04*
U.S. Cl. 128—634 3 Claims



1. A unitary probe for simultaneous electrical and chemical monitoring of a fetus, comprising:

a low profile, low height probe body, said probe body being relatively wide compared to its height;

a single, electrically conductive, spiral-shaped hollow needle element, having more than one complete turn, which is integral with said probe body and extends downwardly from said probe body a particular distance such that when the probe is operatively positioned on the scalp of the fetus, the tip of said needle element thereof extends a controlled depth into the tissue of the fetal scalp beneath the skin for monitoring of the pH of the fetus, wherein the dimensions and configuration of the needle element are such, in combination with the low height of the probe body, that the probe remains relatively stable on the fetal scalp during labor of the mother and delivery of the fetus such that accurate chemical as well as electrical monitoring of the fetus is accomplished;

fiberoptic probe means adapted to extend through said needle element, including means for detecting a selected chemical condition, such as pH, in the scalp tissue of the fetus;

a reference electrode in said probe body; and

means for electrically connecting said needle element and said reference electrode to a selected electrical monitoring apparatus, such that a desired electrical monitoring procedure, such as an EKG, can be accomplished.

4,658,826

SKIN PREPARATORY COMPOSITION FOR USE WITH ELECTROCARDIOGRAPH AND ELECTROENCEPHALOGRAPH MONITORING ELECTRODES

David O. Weaver, Denver, Colo., assignor to D. O. Weaver and Company, Aurora, Colo.

Continuation-in-part of Ser. No. 11,312, Feb. 12, 1979, abandoned. This application Jul. 22, 1980, Ser. No. 171,101
Int. Cl.[4] A61B *5/04;* H01B *1/06*
U.S. Cl. 128—640 11 Claims

1. A skin preparatory composition for use with electrocardiograph and electroencephalograph monitoring electrodes, the composition functioning to suitably adhere the electrodes to the skin, to abrade the skin to reduce the impedance thereof to a satisfactory level for use in conjunction with an electrocardiograph or electroencephalograph, and to effectively remove perspiration, dirt, natural body oils, and moisturizing oils and lotions from the skin, the composition consisting essentially of:

karaya gum in an amount between about 1 wt % and about 15 wt % so as to adhere the electrodes to the skin and to remove said perspiration, dirt, natural body oils, and moisturizing oils and lotions from the skin;

sodium citrate in an amount between about 1.5 wt % and about 30 wt % so as to impart sufficient electrolytic properties to said composition thereby rendering said composition useful with said electrodes;

an abrasive in an amount between about 5 wt % and about 40 wt % effective to reduce the impedance of said skin to said satisfactory level when said composition is applied thereto; and

an aqueous vehicle in an amount between about 35 wt % and about 85 wt %.

11. A process for securing a monitoring electrode to a patient's skin, said process comprising:

(a) contacting said skin with a composition consisting essentially of:

sodium citrate in an amount of aoout 6.5 wt %;

karaya gum in an amount of about 2.7 wt %;

glycerin in an amount of about 4.0 wt %;

fine pumice in an amount of about 21.6 wt %;

methylhydroxybenzoate in an amount of about 0.18 wt %;

propylhydroxybenzoate in an amount of about 0.02 wt %; and

water in an amount of about 65 wt %; and thereafter,

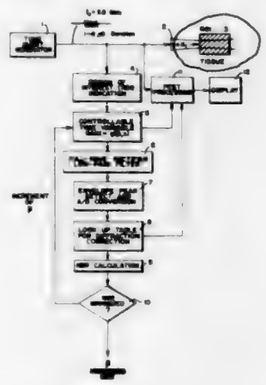
(b) applying said monitoring electrode to said skin, said composition firmly adhering said electrode to said skin while reducing the electrical resistance of said skin to a satisfactory level and effectively removing any perspiration, dirt, natural body oils, and moisturizing oils and lotions from said skin.

4,658,827

ULTRASOUND SCANNER FOR TISSUE CHARACTERIZATION

Ping He, and James F. Greenleaf, both of Rochester, Minn., assignors to Mayo Medical Resources, Rochester, Minn.

Filed May 31, 1985, Ser. No. 740,178
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 14 Claims



1. A method of tissue characterization by ultrasonic measurement, comprising:

(a) transmitting ultrasonic energy into a tissue sample;

(b) receiving return echo signals corresponding to a sample region to be measured;

(c) applying a depth or time variable gain function to the received signals;

(d) detecting peaks of the received signals;

(e) determining the statistical distribution of amplitudes of the detected peaks;

(f) repeating at least some of steps (a)–(e) with a modified value of the gain function to determine the minimum spread of the distribution of peak amplitudes; and

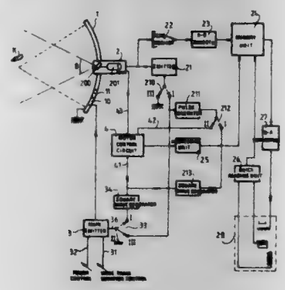
(g) providing the value of the gain function associated with said minimum spread as a measure of attenuation in the sample, and providing a measurement of said minimum spread of the peak distribution as a measure of the homogeneity of the sample.

4,658,828

APPARATUS FOR EXAMINING AND LOCALIZING TUMORS USING ULTRA SOUNDS, COMPRISING A DEVICE FOR LOCALIZED HYPERTHERMIA TREATMENT

Jacques Dory, 91, rue des Molveaux, 77450 Coupvray-Esbly, France

Filed Apr. 30, 1985, Ser. No. 728,905
Claims priority, application France, May 3, 1984, 84 06877
Int. Cl.[4] A61B *8/00;* A61N *5/00*
U.S. Cl. 128—660 4 Claims



1. Apparatus for ultrasonically heating a subject volume comprising:

(i) a first transducer having a curved transmitting surface for generating a single first ultrasound beam focused in a restricted focal zone and drive means for excitig ultrasonic vibrations within the first transducer;

(ii) means for displacing the first transducer with respect to predetermined axes of coordinates successively to irradiate subject volume with said ultrasound beam focal zone;

(iii) a second transducer for generating a second ultrasound beam, said second transducer having an active surface which is substantially smaller than that of the transmitting surface of the first transducer, said second transducer having a point which is fixed with the first transducer during the displacement of the first transducer, and

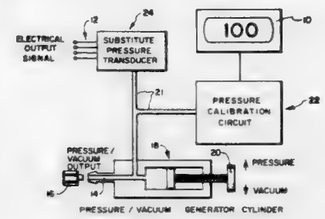
(iv) an echography device comprising said second transducer, electric pulse generator means coupled to said second transducer, means for effecting a scanning of an examination volume with the second ultrasound beam, receiver means coulped to said second transducer for receiving the echoes formed through reflexion of the second ultrasound beam on reflecting surfaces within the examination volume and image forming means coupled to the receiver means for displaying images of the examination volume, said focal zone being located in a predetermined relative position within the examination volume, and said image forming means further displaying a mark which materializes said predetermined position of the focal zone.

4,658,829

METHOD AND APPARATUS FOR PRESSURE TRANSDUCER CALIBRATION AND SIMULATION

William D. Wallace, Salt Lake City, Utah, assignor to Utah Medical Products, Inc., Salt Lake City, Utah

Filed Oct. 10, 1985, Ser. No. 785,966
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—672 30 Claims



1. In a pressure monitoring system having an on-line pressure transducer and a monitor for displaying an operator readable output electronically derived from said on-line pressure transducer, a device for selectively calibrating said on-line pressure transducer from known test pressures and for selectively bypassing said on-line pressure transducer to isolate defective electrical components of said pressure monitoring system, said device comprising:

(a) operator-variable means for generating a known test pressure;

(b) pressure calibration means coupled to said known test pressure for displaying on said device a calibrated output indicating the level of said known test pressure;

(c) bypass means for transforming said known test pressure into an electrical output signal of the type derived from said on-line pressure transducer in said monitoring system, said output signal corresponding to the level of said known test pressure;

(d) first output means selectively couplable to said monitoring system for applying said known test pressure to said on-line pressure transducer to produce on said monitor a first operator readable output so that said first operator readable output on said monitor can be checked against said calibrated output on said device when calibrating said monitoring system; and

(e) second output means selectively couplable to said monitoring system for electrically bypassing said on-line pressure transducer with said bypass means, said output signal of said bypass means producing on said monitor a second operator readable output so that said second operator readable output on said monitor can be checked against said calibrated output on said device to isolate defective electrical components of said pressure monitoring system.

4,658,830

METHOD AND APPARATUS FOR INITIATING REPERFUSION TREATMENT BY AN UNATTENDED INDIVIDUAL UNDERGOING HEART ATTACK SYMPTOMS

Stanley J. Sarnoff, Bethesda, Md., assignor to Survival Technology, Inc., Bethesda, Md.

Filed Aug. 8, 1984, Ser. No. 638,695
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—696 18 Claims

1. In a method of initiating life saving treatment of a coronary prone individual undergoing heart attack symptoms at a time during the early minutes or hours after the onset of the heart attack symptoms with the use of a self-injecting unit containing a medicament, said method comprising the steps of determining during the aforesaid time after the onset of heart attack symptoms that the symptoms being experienced by the

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individual are such as to warrant the injection of said medicament from said self-injecting unit into the individual and then injecting the medicament from said self-injecting unit into the muscle tissue of the individual undergoing the heart attack symptoms,

the improvement which renders said method capable of limiting damage to the myocardium of the individual undergoing the heart attack symptoms as a result of coronary thrombosis by establishing reperfusion,



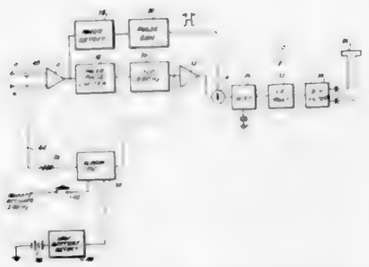
said improvement comprising performing the aforesaid steps with a self-injecting unit having a medicament therein which includes a clot selective coronary thrombolytic agent capable of being absorbed into the blood stream from an injection site in the muscle tissue of the individual undergoing the heart attack symptoms in sufficient quantity to establish reperfusion when accomplished within a time sufficiently early after onset of the heart attack symptoms.

4,658,831

TELEMETRY SYSTEM AND METHOD FOR TRANSMISSION OF ECG SIGNALS WITH HEART PACER SIGNALS AND LOOSE LEAD DETECTION

Clyde J. Reinhard, La Habra Heights, and Keith A. Fowler, Santa Ana, both of Calif., assignors to Pacific Communications, Inc., Santa Ana, Calif.

Filed Jun. 18, 1984, Ser. No. 621,722
Int. Cl.⁴ A61B *5/04*
U.S. Cl. 128—697 **7 Claims**



1. A circuit for transmission of a physiological signal characterized by an ECG signal within a second higher frequency band, said circuit comprising:

lead means for receiving said physiological signal including said ECG and pacer signals;

separation composition means coupled to said lead means, said separation/composition means for generating a frequency modulated output signal indicative of said ECG signal of said physiological signal, said separation/composition means characterized by a limited slew rate wherein said pacer signal of said physiological signal is substantially deleted from said modulated output signal,

pacer detection means coupled to said lead means for detecting said pacer signal included within said physiological signal, wherein said pacer detection means generates and output signal indicative of the presence or absence of said pacer signal within said physiological signal,

pulse generator coupled to said pacer detection means and responsive to said output signal from said pacer detection means, said pulse generator is for generating a predetermined pulse flag signal, said pulse flag signal and said modulated output signal of said separation/composition means being summed within said separation/composition means to provide a composite signal characterized by said flag signal and a frequency modulated output signal carried on a first predetermined subcarrier frequency indicative of said ECG signal of said physiological signal,

FM transmission means coupled to said separation/composition means for receiving said composite signal, said FM transmission means for frequency modulating said composite signal and transmitting said frequency modulated composite signal, whereby said FM transmission means transmits an FM modulated output signal indicative of said pacer signal of said physiological signal and an FM/FM modulated signal indicative of said ECG signal of said physiological signal

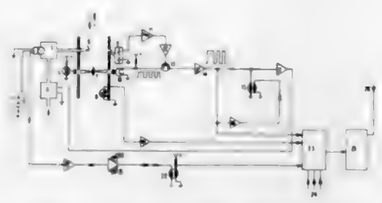
whereby said ECG and pacer signals within said physiological signal are separated and thereafter may be further processed and transmitted.

4,658,832

PORTABLE DEVICE FOR THE SURVEY OF THE BREATHING VENTILATION AND OF THE OXYGEN CONSUMPTION, CONNECTED BY MEANS OF RADIO SIGNALS TO A FIXED RECEPTION AND ELABORATION STATION

Siro Brugnoli, Rome, Italy, assignor to COSMED S.r.l., Rome, Italy

Filed May 13, 1985, Ser. No. 733,543
Claims priority, application European Pat. Off., Apr. 1, 1985, 85830081.7
Int. Cl.⁴ A61B *5/08*
U.S. Cl. 128—719 **9 Claims**



1. A portable device for surveying breathing ventilation and oxygen consumption, said device communicating by radio signals to a fixed reception and elaboration station, said device comprising a volume meter, an oxygen concentration meter, control and radio transmission means including a modulator connected to a radio transmitter, said radio transmission means being of small dimension and light weight so as to be carried by the person to be examined, said device comprising a gaseous volume survey system connected to a mask and including a turbine rotatable at a speed proportional to the speed of a volume of air striking the turbine, a photodiode system and a photosurveyor for generating pulses indicating the speed of rotation of the turbine, a pressure transducer for surveying air flow annulment, said transducer detecting the presence or absence of air flow through the turbine and providing an output signal on the cessation of air flow to prevent said photodiode system and photosurveyor from transmitting said pulses to

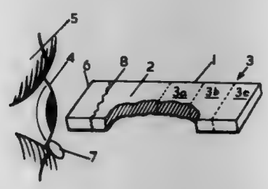
a Schmitt trigger connected to said modulator and said radio transmitter, said Schmitt trigger being responsive to said pulses from said photodiode system and said photosurveyor to simultaneously provide an output signal to said modulator and said radio transmitter and to a power amplifier connected to said Schmitt trigger, said device further comprising an integrator for controlling the amplification factor of said power amplifier, a sampling pump, a micro-mixing chamber communicating with said pump, the gas flow through said pump being proportional to the expiratory flow and the capacity thereof being controlled by said power amplifier, and a polarographic electrode for measuring oxygen percentage, said electrode being connected to said modulator and said transmitter and providing an output signal thereto.

4,658,833

MONITORING OF DRUG LEVELS

James F. B. Stuart, 1 Seafield Avenue, Bearsden, Glasgow G61 3LB, Scotland

Filed Mar. 5, 1984, Ser. No. 585,972
Claims priority, application United Kingdom, Mar. 8, 1983, 8306353
Int. Cl.⁴ A61B *5/14*
U.S. Cl. 128—771 **6 Claims**



1. A method of determining the concentration of a selected drug in the body of a subject comprising the steps of holding a liquid collecting means comprising an absorbent substantially inert member in a position in close proximity to an eye of the patient so as to contact surface tear fluid in the eye for collecting tear fluid therefrom; allowing the tear fluid collected to come into contact with reagent means for reacting with said selected drug so as to produce, after a predetermined time interval, a physically detectable change dependent, at least semi-quantitatively, upon the concentration of said drug; and determining the physical change in said reagent after a predetermined interval of time.

4,658,834

MEDICAL APPARATUS FOR MONITORING BODY LIQUID DISCHARGE

Larry K. Blankenship, Ramona, and Bradley J. Denny, San Marcos, both of Calif., assignors to C.R. Bard, Inc., Murray Hill, N.J.

Filed Mar. 16, 1983, Ser. No. 476,216
Int. Cl.⁴ A61B *5/00*
U.S. Cl. 128—771 **18 Claims**

1. Medical apparatus useful for measuring the discharge of a liquid, such as urine, from a patients body, comprising:

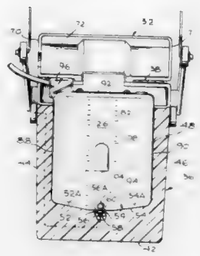
housing means including a cavity having a floor surface;

a substantially rigid wall container removably receivable in said cavity with a bottom wall portion of said container supported on said floor surface;

conduit means for supplying said discharged liquid to the interior of said container to form a pool on an interior surface of said bottom wall portion;

transducer means mounted in said floor surface for engaging an exterior surface of said container bottom wall portion whereby said transducer means is bacteriologically isolated from the liquid in said container;

means for periodically energizing said transducer means to transmit energy through said bottom wall portion and said pool; and



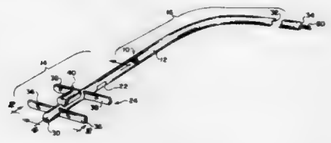
means for determining the time duration required for said transmitted energy to travel from said transducer means to the upper surface of said pool.

4,658,835

NEURAL STIMULATING LEAD WITH FIXATION CANOPY FORMATION

Peter J. Pohndorf, Miami Shores, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Jul. 25, 1985, Ser. No. 758,743
Int. Cl.⁴ A61N *1/04*
U.S. Cl. 128—785 **12 Claims**



1. A neural stimulating lead comprising a hollow lead body having a distal electrode assembly including a side electrode on one side of said lead body and an active fixation stabilizing structure comprising laterally extending vertebra engaging means, dorsal stabilizing means including a movable membrane on the side of said lead body oposite said one side, and means for moving said membrane from a retracted position to an extended position where said membrane engages a dorsal wall of a vertebra for fixing said lead within an epidural space of the vertebra of a spine, said moving means comprising an expandable material and actuating means for causing said expandable material to swell and expand against said membrane, said expandable material comprising a hydrogel and said actuating means including a wetting agent for wetting said hydrogel to cause said hydrogel to swell and expand against said membrane to forms a fixation canopy.

4,658,836

BODY PASSAGE INSERTABLE APPLICATOR APPARATUS FOR ELECTROMAGNETIC

Paul F. Turner, North Salt Lake, Utah, assignor to BSD Medical Corporation, Salt Lake City, Utah

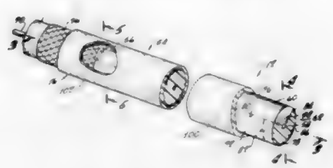
Filed Jun. 28, 1985, Ser. No. 750,483
Int. Cl.⁴ A61N *5/04*
U.S. Cl. 128—804 **11 Claims**

1. A body insertable, electromagnetic radiation applicator apparatus for irradiating living tissue and the like comprising:

(a) an electromagnetic energy transmission line for connection to a source of electromagnetic energy having a preselected frequency and transmitting electromagnetic energy; and

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(b) an applicator means operatively connected to the transmission line for receiving the electromagnetic energy, said applicator means including a segmented outer conductor, said segments thereof being spaced and having first and second ends, said segments decreasing in width from the first ends along the length of the applicator to the second ends for producing a substantially uniform field along



substantially the entire length of the applicator when a transverse external electric heating field is radiated thereby, said applicator means responsive to the electromagnetic energy for producing substantially uniform heating electric fields whereby the tissue surrounding the applicator means is uniformly heated to a malignant cell damaging temperature thereby eliminating temperature regions where growth of malignant cells is stimulated.

4,658,837

APPARATUS FOR FILLING CIGARETTE TUBES

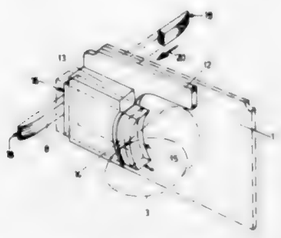
Heinrich W. Ruppert, Trossingen, and Klaus Gätschmann, Bad Dürrheim, both of Fed. Rep. of Germany, assignors to EFKA-Werke Fritz Klein GmbH, Trossingen, Fed. Rep. of Germany

Filed May 9, 1984, Ser. No. 608,543

Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318239

Int. Cl.⁴ A24C *5/42*

U.S. Cl. 131—70 **7 Claims**



1. In a manual apparatus for tamping tobacco into cigarette tubes of the type including a casing having a tobacco compressing chamber disposed in a longitudinal direction thereof, a press bar associated with said tobacco compressing chamber for effecting compression of said tobacco in said chamber and located in a cover covering said chamber and being swingable about an axis, and an ejector slide, connected with a spoon carrying the tobacco, for ejecting the compressed tobacco from said chamber into a cigarette tube supportable on a short socket aligned with said chamber, the improvement comprising:

a spring-loaded clamping element for selectively clamping said cigarette tube on the short socket, said clamping element being independent of said cover, and having a first end and a second opposite end, said second end being disposed laterally beside, and normally spaced from, said short socket,

said ejecting slide being supported by said casing for sliding motion relative thereto in said longitudinal direction and including camming means coacting with said clamping element first end, for selectively moving said clamping element second end into clamping engagement with said tube as said ejecting slide is manually slid relative to said casing to eject said compressed tobacco from said chamber.

4,658,838

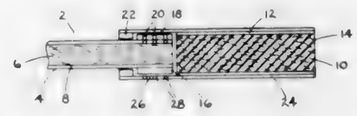
FILTER CIGARETTE HAVING ROTATABLE ADJUSTMENT

Gerard E. Leonard, Kernersville, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Dec. 16, 1985, Ser. No. 808,989

Int. Cl.⁴ A24D *3/04*

U.S. Cl. 131—336 **4 Claims**



1. A filter cigarette comprising in combination a rod of smokable material, an axially aligned filter plug adjacent one end of the rod, and

substantially air impermeable tipping material circumscribing and being fixedly attached to the filter plug and circumscribing a portion of the rod in the region adjacent the filter plug;

said cigarette further comprising first and second bands in an end-to-end relationship, said bands circumscribing the rod in the region adjacent the filter plug and being disposed in and substantially filling the transverse region between the outer surface of the rod and the inner surface of the tipping material;

the first band being constructed from a substantially air impermeable material and is fixedly attached to the rod in the region adjacent the filter plug;

said first band comprising a substantially air impermeable region extending circumferentially about a portion of the circumferential distance around the rod, and said first band and underlying portion of the rod comprising an air permeable region extending circumferentially about a portion of the circumferential distance around the rod;

the second band being positioned adjacent the first band towards the fire end of the cigarette and the outer surface thereof is fixedly attached to the inner surface of the tipping material which overlies said band;

the tipping material comprising an air permeable region in the region therein which overlies the air permeable region of the first band;

wherein axial rotation of the filter end of the cigarette relative to the rod varies the degree of radial alignment between the air permeable region of the tipping material and the air permeable region of the first band.

4,658,839

HAIR CONDITIONING AND ENHANCING APPLICATOR WRAP, COMPOSITION AND METHOD

Joseph A. Dallal, Bridgeport, and Arnold Rubinstein, Norwalk, both of Conn., assignors to Zotos International Inc., Stamford, Conn.

Filed Oct. 4, 1985, Ser. No. 784,343

Int. Cl.⁴ A45D *7/00*

U.S. Cl. 132—7 **16 Claims**

1. A hair conditioning and enhancing applicator system comprising

A. a flexible carrier formed from fibrous material, and

B. a hair treatment composition retained in the fibrous material for transferral to the hair fibers when desired, comprising

a. at least one cationic hair conditioning agent,

b. a water soluble or emulsifiable silicone-based compound, and

c. a concentration of between about 20 and 30 grams for each square meter of fibrous material.

4,658,840

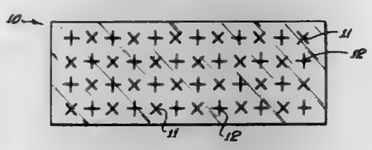
STRIP FOR FACILITATING THE SELECTIVE COLORING OF HAIR

Doris C. McCosker, 872 Victoria, Costa Mesa, Calif. 92662

Filed Feb. 27, 1981, Ser. No. 238,752

Int. Cl.⁴ A45D *7/00*

U.S. Cl. 132—7 **6 Claims**



1. A strip for facilitating the selective coloring of hair, said strip comprising:

a thin sheet of flexible, elastic, plastic material having a thickness between 0.018 and 0.024 inches, said sheet having a plurality of sets of slits formed therein, said slits intersecting to form closeble elastic openings and said sheet having a plurality of such openings.

4,658,841

ASSEMBLED WIG OR WIG KIT

Duk S. Won, West Haverstraw, N.Y.

Filed Jul. 24, 1985, Ser. No. 758,438

Int. Cl.⁴ A41G *3/00*

U.S. Cl. 132—53 **8 Claims**



1. An assembled wig, comprising:

a front wig portion formed of a front cap having a plurality of front hook-type fasteners and side links and hair secured to the front cap, said plurality of front hook-type fasteners being disposed at the ends of longitudinal support bands of the front cap of the front wig portion; and

a back wig portion formed of a back cap having a plurality of back links secured to said front hook-type fasteners, and side hook-type fasteners secured to said side links of said front cap and hair secured to said back cap cap.

4,658,842

RINSING APPARATUS FOR FLAT OBJECTS

Lars K. W. Jensen, Risdalsvej 2A, DK-8260 Viby J., Denmark

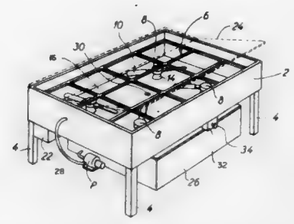
Filed May 7, 1985, Ser. No. 731,494

Claims priority, application Denmark, May 8, 1984, 2262/84

Int. Cl.⁴ B08B *3/04*

U.S. Cl. 134—188 **4 Claims**

1. An apparatus for generally cleaning large and substantially flat objects such as serigraphic printing frames, comprising a substantively flat vat covered by a lid and adapted to receive a cleaning liquid up to a predetermined level, a number of motor driven paddles located in the vat and having horizontal paddle blades located approximately at said predetermined level and mounted on vertical shafts so as to be rotatable to splash liquid upwardly, and supporting means which comprises an open carrier grate structure mounted horizontally at a level between the paddles and the lid, wherein the paddle



blades are each provided with a front edge, a rear edge, an outer tip edge between the front and rear edges, an upstanding rib along at least the major extent of the rear edge and an upstanding rib provided along the outer tip edge wherein the upstanding rib along the rear edge terminates short of said tip edge, and an outer rear corner opening is provided between the upstanding ribs of the blade.

4,658,843

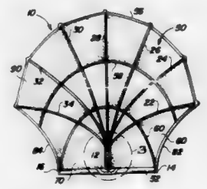
FLEXED FAN UMBRELLA APPARATUS

Robert J. Raymond, 379 W. Park Ave., Apt. A, El Cajon, Calif. 92020

Filed Oct. 16, 1985, Ser. No. 788,060

Int. Cl.⁴ A45B *21/00, 11/00;* **A63H** *27/08*

U.S. Cl. 135—19.5 **14 Claims**



1. Flexed fan umbrella apparatus comprising, in combination:

base means, including a base support element having a first end and a second end,

a support element means, including a plurality of support elements secured to the base support element of the base means between its first end and its second end, and which support elements are substantially perpendicular to the base support element and then diverge and curve away from each other; and

covering means secured to and extending from the base support element and extending outwardly therefrom and secured to the plurality of support elements to contact said support elements along their length where said covering means stresses said support elements into arcuate shapes to provide a generally concave-convex umbrella extending outwardly from the base support element.

4,658,844

FOLDING UMBRELLA FRAME

Huang S. Ping, Taipei, Taiwan, assignor to Haustle Products Inc., Taiwan

Filed Aug. 22, 1985, Ser. No. 768,350
Int. Cl.⁴ A45B *19/00*
U.S. Cl. 135—25 A **1 Claim**



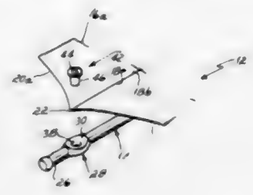
1. An improved umbrella frame comprising:
a telescope stick;
a crown fixed at upper end of said telescopic stick;
a runner slidably mounted on said telescopic stick;
a plurality of stretcher members pivotally connected at one end with said crown;
a plurality of struts hinged to said runner at one end each strut being connected at the other end with respective stretcher member at a hinge point between two ends of said stretcher member;
a plurality of links each hinged at one end to respective strut at a hinge point between two ends of said strut, and at the other end to a first fitting pivotally connected with the other end of said stretcher member;
a plurality of control ribs each connected at one end with a first fitting and at the other end with a second fitting; auxiliary links connected at one end with the stretcher members at a point intermediate two ends of said stretcher members and at the other end with said second fitting;
a plurality of sleeves each enclosing respective auxiliary link and control rib; and a plurality of outer dome ribs each fixedly connected with said second fitting;
characterized in that said first fitting has an enlarged portion capable of fitting into said stretcher member thereby stiffening said frame.

4,658,845

UMBRELLA CLOTH MOUNTING ASSEMBLY AND METHOD

Toshio Okuda, Hirakata, Japan, assignor to 'totes', incorporated

Filed Dec. 24, 1985, Ser. No. 812,972
Claims priority, application Japan, Dec. 29, 1984, 59-197742[U]
Int. Cl.⁴ A45B *25/18*; **B21D** *39/00*; **B23P** *11/00*
U.S. Cl. 135—36 RT **7 Claims**



1. A mounting assembly for attaching an umbrella cloth to the ribs of an umbrella comprising:
a flattened section integrally formed in the rib, said flattened section having opposed upper and lower surfaces with a bore formed therebetween;
a rivet having a head connected to a stem formed with a deformable end portion;
a peripheral portion of the umbrella cloth being insertable through said bore in said flattened section, said rivet then being insertable into said bore so that the umbrella cloth is clamped between said head of said rivet and said upper surface of said flattened section, said deformable end portion of said stem thereafter being flattened against said lower surface of said flattened section with the umbrella cloth interposed therebetween to attach the umbrella cloth to the rib.

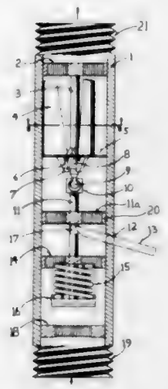
6. A method of attaching an umbrella cloth to the rib of an umbrella comprising the steps of:
inserting a peripheral portion of the umbrella cloth through a bore formed in the rib;
inserting a rivet having a head connected to a stem into the bore, a portion of the umbrella cloth being clamped between the head of the rivet and one side of the rib;
flattening a deformable portion of the stem of the rivet against the opposite side of the rib with the umbrella cloth interposed therebetween to secure the umbrella cloth to the rib.

4,658,846

DISASTER MITIGATION GAS SHUT-OFF DEVICE

Roger L. Johnson, 575 Wisteria St., Chula Vista, Calif. 92011

Filed Sep. 4, 1986, Ser. No. 903,508
Int. Cl.⁴ F16K *17/36*
U.S. Cl. 137—39 **6 Claims**



1. A disaster mitigation gas shut-off valve for attachement to a gas line having a shut-off mechanism which is actuated by a vibratory shock, by an excess flow of gas, or by excess tilting of the valve comprising:
a. a hollow tube housing having a threaded gas inlet orifice incorporating a valve seat and a threaded gas outlet orifice;
b. a shaft and stopper which are spring biased to seat against said valve seat to effect closure when said shaft is released;
c. a conical-shaped articulated head attached atop said shaft by means of a ball and socket arrangement which serves as the retention point means for holding said shaft in the open position;
d. three circular discs spaced at intervals within said valve housing means for allignment and suspension of the moving parts of said valve and having gas vent holes to allow means for the said gas to travel through said circular discs;
e. a set of three wedge-shaped inertia weights with flow vanes, which are attached to a vertical suspension rod by means of three hinges at the lower end of said suspension rod and hinge points on said inertia weights; said weights being mass biased to tilt outward from said suspension rod,

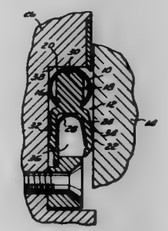
thereby causing each said weight's inward facing hook which is located below said hinge point, to engage the lip of said conical-shaped articulated head, holding said head and likewise said shaft and stopper upward against said spring pressure allowing gas to pass upward through said valve from said inlet orifice to said outlet orifice; and
f. a reset lever which penetrates said valve housing through a gas tight hinge and inserts into said shaft means for allowing reset of said valve subsequent to activation without the need to disassemble any portion of said valve.

4,658,847

BIMETALLIC C-RING SEAL

James A. McCrone, Columbia, S.C., assignor to The Fluorocarbon Company, Los Alamitos, Calif.

Filed Jul. 9, 1985, Ser. No. 753,272
Int. Cl.⁴ E06B *1/00*; **F16J** *15/12*; **F16K** *17/40, 43/00*
U.S. Cl. 137—72 **6 Claims**



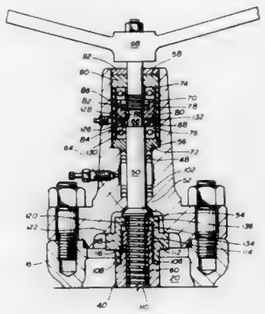
1. A seal assembly comprised of:
a first seal comprised of a bimetallic tube with a slot running longitudinally along the length of said tube so as to form a substantially C-shaped cross section, said bimetallic tube being comprised of two metallic strips having differing rates of thermal expansivity and respectively forming the inner and outer surfaces of the tube, so that changes in temperature cause the differing amounts of expansion in said strips to be compensated by changes in the width of the slot, causing the tube to expand or contract;
a second seal positioned adjacent the first seal in a manner to provide the primary seal with respect to adjacent surfaces housing the seal assembly during normal temperature conditions, said second seal being of soft material destructible at extreme temperatures that causes said first seal to expand or contract, a biasing member forcing a portion of said soft material into sealing engagement with the adjacent surfaces, said first seal being positioned and constructed so that the first seal does not sealingly engage the adjacent surfaces at normal operating temperatures, and in the event of an extreme variation in temperature rendering said second seal inoperative, said first seal would respond to the said temperature variation and sealingly engage said adjacent surfaces;
wherein said first and second seals are perimetric when viewed from above, and said second seal includes a jacket portion which is axial of said bimetallic ring throughout its length, and a head portion which is attached to said jacket and extends through said slot in said C-shaped first seal to provide a seat for said first seal, said jacket having a pair of lips forming an annular channel; and
said biasing member is lodged within the channel to provide a resilient expanding force on the lips, causing the external surfaces of the lips to sealingly engage the adjacent surfaces.

4,658,848

HEAT RESPONSIVE BACKSEAT FOR GATE VALVES

Danny S. Meyer, Richmond, and William S. Shelton, Houston, both of Tex., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Dec. 27, 1983, Ser. No. 565,431
Int. Cl.⁴ F16K *41/16, 3/00*
U.S. Cl. 137—72 **20 Claims**



1. A gate value comprising:
a valve body having an open ended valve chamber and inlet and outlet fluid passages communicating with the valve chamber, a valve seat positioned about each said inlet and outlet fluid passages adjacent the valve chamber;
a bonnet assembly forming a closure for the valve chamber and having a central bore therein communicating with the valve chamber, the central bore having a seat portion facing in a direction toward the valve chamber and an enlarged diameter bore portion axially spaced from the seat portion in a direction away from the valve body;
an axially rotatable non-rising valve stem carried within the central bore of the bonnet assembly and having a threaded end section extending into the valve chamber, a backseat portion facing toward the bonnet assembly and positioned in a normally spaced relationship to the seat portion of the bonnet assembly, and a valve stem shoulder positioned within the enlarged diameter bore portion facing in an upwardly direction away from the valve chamber;
packing means positionable within the central bore of the bonnet assembly between the seat portion and enlarged diameter bore portion surrounding the valve stem for sealing between the valve stem and bonnet assembly;
a gate member disposed in the valve chamber and movable between open and closed positions relative to the fluid passages to control fluid flow through the valve, the gate member having an externally threaded extension with a longitudinal bore therein for receiving the threaded end section of the valve stem;
a stem connection means positioned in the valve chamber for providing a connection between the threaded end section of the valve stem and the gate member extension, the stem connection means translating rotational movement of the valve stem into longitudinal movement of the gate member;
roller bearing means including an upper roller bearing and a lower roller bearing separated by a spacer positioned in an axially fixed relationship within the enlarged bore portion of the central bonnet assembly bore for supporting and providing for axial rotation of the valve stem within the gate valve, the roller bearing means further including a key positioned between the valve stem and spacer for rotationally fixing the valve stem to the spacer such that upon rotation of the valve stem, the spacer rotates between the upper and lower bearings; and
a fusible stem spacing element of a preselected temperature degradable material positioned between the upper roller

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bearing and lower roller bearing, the spacing element acting as a spacer separating the upwardly facing valve stem shoulder and a portion of the axially fixed roller bearing means for normally maintaining the valve stem in a fixed axial position relative to the bonnet assembly and normally maintaining the upwardly facing valve stem backseat portion in a spaced relationship to the downwardly facing bonnet seat portion, the fusible stem spacing element being adapted to relax its spacing function upon reaching the preselected temperature condition so that the valve stem is allowed freedom to move axially upward to a limited extent relative to the upper and lower roller bearings and the bonnet assembly allowing the valve stem backseat portion to sealingly contact the bonnet seat portion to provide a secondary metal-to-metal seal between the valve stem and bonnet assembly in a fire situation, the upper roller bearing and lower roller bearing remaining in a fixed axial position relative to the bonnet assembly before, during and after shifting of the valve stem so that rotation of the valve stem after the fire situation has been extinguished will not be affected such that the gate member may continue to be easily opened or closed with respect to the inlet and outlet fluid passages.

4,658,849

PNEUMATIC SENSORS FOR THE CONTROL OF PNEUMATIC CYCLES

André Legris, Rennes, and Yves Levenez, Vaux Le Penil, both of France, assignors to Societe anonyme dite Legris, Rennes Cedex, France

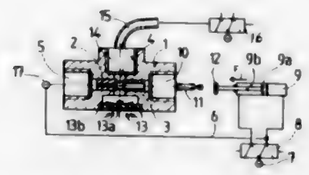
PCT No. PCT/FR84/00284, § 371 Date Jun. 13, 1985, § 102(e) Date Jun. 13, 1985, PCT Pub. No. WO85/02659, PCT Pub. Date Jun. 20, 1985

PCT Filed Dec. 4, 1984, Ser. No. 746,654

Claims priority, application France, Dec. 9, 1983, 83 19798

Int. Cl.⁴ G05D *16/00*

U.S. Cl. 137—82 **12 Claims**



1. An improved pneumatic sensor for the control of pneumatic cycles including in combination a fluid jet vacuum pump having an inlet and an outlet and a pair of jets therebetween with a space between the jets, a source of compressed air, means connecting said source of compressed air to said inlet, a leakage nozzle, means connecting said nozzle to said outlet, obturation of said nozzle provoking a rise in pressure in said vacuum pump, said rise in pressure being used as a signal for controlling a pneumatic component, means forming an outlet orifice leading out of said space for emitting said control signal, a duct connected to said outlet orifice, and and valve means connected to said space and responsive to the increase in pressure in said outlet during obturation of said nozzle so that the supply pressure is established at the outlet orifice and the duct carries a pneumatic pressure signal and responsive to decrease in pressure in the outlet to admit air into the space during flow out of the leakage nozzle to prevent reduction of pressure by the vacuum pump.

4,658,850

FLOW CONTROL VALVE WITH SWITCHING VALVE

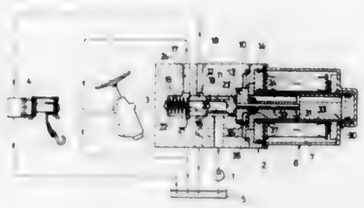
Kazuyoshi Uchino, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1985, Ser. No. 800,482

Claims priority, application Japan, Dec. 10, 1984, 59-186915

Int. Cl.⁴ G05D *7/01*

U.S. Cl. 137—101 **5 Claims**



1. Hydraulic apparatus including a pair of hydraulic loads and a combined control and switching valve, comprising:

a supply passage for receiving hydraulic fluid from a pressure source;

a first hydraulic load defining a power steering apparatus connected to the supply passage for supplying by the supply passage of pressurized fluid to the power steering apparatus, the power steering apparatus being of the kind which upon operation thereof increases the hydraulic pressure in said supply passage;

a branch passage;

a second hydraulic load selected from a group comprising a hydraulic winch and hydraulic lifter and a hydraulic dumper, and connected to the branch passage for supplying by the branch passage of pressurized fluid to the second hydraulic load;

an orifice formed in said supply passage;

spool valve means shiftable for feeding part of the hydraulic fluid supplied to the supply passage to the branch passage in response to a pressure differential across the orifice;

drive means for causing a displacement of the spool valve means to open the branch passage while closing the supply passage, said drive means including a solenoid and an actuating member which is displaced by energizing the solenoid from an inoperative position in which said branch passage is closed to an operative position in which said branch passage is open, the drive means also including means rendering said actuating member also responsive to the hydraulic pressure in said supply passage for causing the hydraulic pressure in the supply passage to hold the actuating member at its inoperative position when hydraulic pressure in the supply passage is increased due to the power steering apparatus being operated, the force supplied by the energized solenoid to urge the actuating member from its inoperative position to its operative position being lower than the force applied by the hydraulic pressure in the supply passage on the actuating member when the power steering apparatus is operated;

whereby during operation of the power steering apparatus, the actuating member is not displaced from its inoperative position to its operative position even by energization of the solenoid, and pressure fluid is not switched to the branch passage.

4,658,851

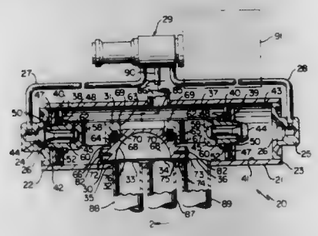
REVERSING VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME

Rudolf K. Koch, and Octávio F. Affonso, both of Rua Tronca, 1370-Caxias do Sul - C.P. 308, Brazil

Division of Ser. No. 621,608, Jun. 18, 1984, Pat. No. 4,564,045. This application Oct. 4, 1985, Ser. No. 784,601

Int. Cl.⁴ F16K *11/02, 31/122*

U.S. Cl. 137—15 **5 Claims**



1. In a method of making a reversing valve construction having a housing means provided with a chamber carrying a movable valve member therein that controls port means of a valve seat means of said housing means through the relative position of a cavity of said valve member relative to said port means, said port means comprising first, second and third ports disposed in spaced apart and straight line relation and said cavity bridging said first and second ports while exposing said chamber to said third port when said valve member is in one position thereof and bridging said second and third ports while exposing said chamber to said first port when said valve member is in another position thereof, said valve member carrying a flexible annular sealing member that is disposed between an annular surface of said valve member and said valve seat means and surrounds said cavity to seal said cavity to said valve seat means while permitting sliding movement therebetween, said housing means carrying biasing means that is operatively associated with said valve member and said housing means to urge and flex said sealing member into sealing engagement with said valve seat means so as to tend to sealingly conform said flexible sealing member to the contour of said valve seat means, the improvement comprising the steps of forming said valve member to have a rigid annular projection that extends from said annular surface thereof and that engages an annular portion of said annular sealing member outboard of and around said cavity, forming said annular sealing member from a plastic material that has cold flowing characteristics, securing said annular sealing member to said valve member only in areas thereof that are remote from said engaged portion thereof so that said engaged portion is adapted to move relative to said rigid annular projection, and cold flowing said engaged portion of said annular sealing member into said sealing engagement with said valve seat means by the action of said biasing means and said rigid annular projection.

4,658,852

BACKFLOW PREVENTER APPARATUS FOR FLUID FLOW LINES

Zvi Weingarten, Bernad, Kibbutz Evron, 25235, Israel

Filed Oct. 21, 1985, Ser. No. 789,449

Int. Cl.⁴ F16K *24/02*

U.S. Cl. 137—218 **21 Claims**

1. A backflow preventer apparatus for preventing backflow of fluid from a downstram conduit into an upstream conduit, comprising:

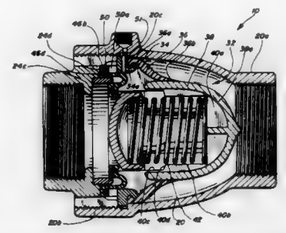
A. an upstream check valve;

B. a downstram check valve; and

C. a relief valve assembly for draining a zone between said respective check valves to prevent backflow through said upstream check valve, said assembly including:

1. valve seat means having at least one drain orifice communicating with ambient atmosphere; and

2. a flexible diaphragm having a U-shaped portion and a sealing portion, said sealing portion including one arm of said U-shaped portion and serving to close said orifice during normal fluid flow from said upstream check valve to said downstream check valve, said sealing portion being capable of peeling across and away from said orifice to enable fluid backflow therethrough from said downstream check valve to the atmosphere.



4,658,853

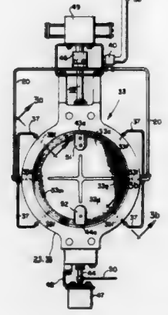
ANTI-LEAK VALVING SYSTEM

Rodney L. Pennington, Morris Township, Morris County, N.J., assignor to Regenerative Environmental Equipment Co., Inc., Morris Plains, N.J.

Filed Jan. 9, 1985, Ser. No. 690,059

Int. Cl.⁴ F16K *1/226;* **F23G** *7/06;* **F01N** *3/10, 3/26*

U.S. Cl. 137—240 **20 Claims**



19. In an incineration system for purifying gaseous effluents or the like which comprises at least one duct means in communication with a source of said effluents and with at least one heat-exchange section which is also in communication with a high temperature combustion chamber, said effluents normally passing through said duct means, said section and said chamber to exhaust, the combination comprising:

(a) at least one valve subassembly in said duct means, said subassembly including:

(i) valve seat means,

(ii) valve means having at least one side face having a predetermined peripheral portion thereof adapted to be moved into and out of substantial contact with a corresponding portion of said valve seat means,

(iii) at least one of said predetermined portion of said valve means and said face of said side corresponding portion of said valve seat means having at least one recess, said at least one recess being substantially unobstructed

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when substantial contact is made between said valve means and said valve seat means, at least one region being defined between said valve seat means and said side face of said valve means when said predetermined portion of said valve means is in substantial contact with said corresponding portion of said valve seat means, said at least one recess extending adjacent a substantial portion of said region, and

(iv) means for enabling a gas to flow into said at least one recess perpendicularly onto said at least one side face of said valve means in the region between said peripheral portion and said corresponding seat portion when said substantial contact is made, and

(b) means for supplying to said enabling means when said substantial contact is made a substantially purified gas under pressure which prevents the flow of said effluent through said region.

4,658,854

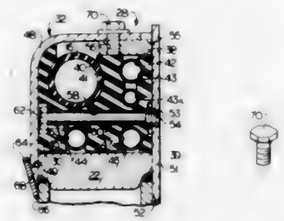
CONDUIT GUARDING AND CLAMPING DEVICE

Delaney C. Hopkins, Dwight, and James W. Thais, White Heath, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 740,462, Jun. 3, 1985, abandoned. This application Aug. 29, 1986, Ser. No. 902,107

Int. Cl.⁴ F16L *13/04*

U.S. Cl. 137—377 **4 Claims**



1. A guarding and clamping device for securing a plurality of tubular conduits to a frame, comprising:

a plurality of elastomeric holding blocks each having a plurality of passages fromed therein for resiliently holding the conduits, said plurality of elastomeric holding blocks being spaced from each other along the frame;

cover guard means for shielding protecting the elastomeric holding blocks and the tubular conduits throughout the entire distance defined by the spaced elastomeric holding blocks; and

fastening means for releasably securing the cover guard means to the frame so that the cover guard means compresses the elastomeric holding blocks into secure gripping relationship to the tubular conduits.

4,658,855

MASS FLOW CONTROLLER

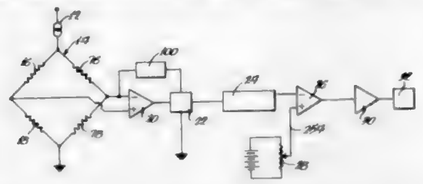
James H. Doyle, 2003 Ivy Hill La., Orange, Calif. 92667

Filed Oct. 3, 1980, Ser. No. 193,876

Int. Cl.⁴ G05D *7/06*

U.S. Cl. 137—468 **12 Claims**

1. A mass flow controller comprising thermal resistance sensing means producing a sensor signal indicative of a rate of flow of a gas, an amplifier receiving and amplifying said sensor signal to provide an amplified signal, a linear signal conditioner having at least one operational amplifier precision limiter having a pair of diodes connected in feedback loops whereby said precision limiter produces no output signal over a first range of amplitudes of said amplified signal and said precision limiter produces an inverted output signal over a second range of said amplitudes of said amplified signal, a comparator means comparing an amplitude of said linearized signal to a set point signal and producing a command signal in response thereto, and a servoamplifier receiving said command signal and controlling a gas flow valve which meters said gas flow in response thereto.



4,658,856

MICROLEAKS INTERCEPTING APPARATUS FOR AVOIDING AND/OR SIGNALLING OIL LEAKAGES IN HYDRAULIC PLANTS AND FOR EQUIVALENT USES

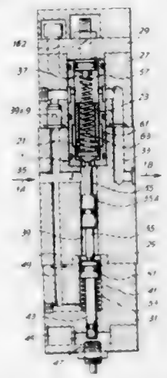
Mario Gonzi, Via Montarfoni, 65, Ponticino, Laterina, Arezzo, Italy 52020

Filed Jun. 4, 1985, Ser. No. 741,228

Claims priority, application Italy, Jun. 8, 1984, 9428 A/84

Int. Cl.⁴ F16K *17/24*

U.S. Cl. 137—543.23 **5 Claims**



1. A leak detecting check valve comprising in combination a valve body containing a fluid passage therethrough from an inlet port to an outlet port, a moveable valve member disposed within said fluid passage, a valve seat within said fluid passage engageable by said valve member for closing said fluid passage, said fluid passage and said valve member being constructed to permit travel of said valve member from a first position in engagement with said valve seat to a second position at which said fluid passage is open to a maximum, said fluid passage being further constructed in combination with said valve member to provide restricted opening of said passage over a substantial travel of said valve member from said first position toward said second position, said fluid passage having a circular cylindrical region adjacent said valve seat, and said valve member having a circular cylindrical portion that travels within said cylindrical passage region concentric therewith with a narrow radial clearance therebetween providing said restricted opening of said passage, said cylindrical portion of said valve member having an end for engaging said valve seat and being disposed to travel away from said valve seat towards said second position, sensor means for detecting when said valve member approaches said second position, and spring biasing means coupled to said valve member for urging the latter toward said valve seat, whereby leaks in any fluid circuit coupled to said outlet port which leaks exceed the flow capacity through said restricted opening will cause said valve member to move toward said second position and activate said sensor means.

4,658,857

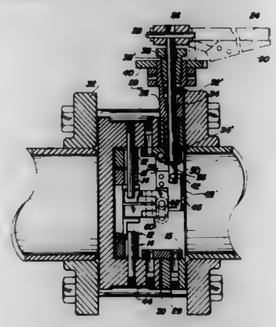
CONTROL VALVE WITH SPLIT DISC

Walter D. Ayres, Jr., Chicago, Ill., assignor to Surgeaco, Incorporated, Alsip, Ill.

Filed Sep. 20, 1985, Ser. No. 778,543

Int. Cl.⁴ F16K *1/20, 1/48*

U.S. Cl. 137—601 **14 Claims**



1. A control valve for controlling the bidirectional flow of a fluid through a conduit comprising:

a main housing having a first end-flange for mounting to an end of a conduit, and a second end-flange spaced from said first end-flange for mounting to another end of a conduit in order to position the valve in a conduit system to control the flow of fluid therethrough;

a pair of pivotal closure plates for controlling the flow of fluid through the valve, said pair of plates being mounted adjacent said first end-flange thereof for movement toward and away from said first end-flange;

means for mounting said pair of closure plates for pivotal rotation about adjacent end-edges thereof, such that one of said pair of plates rotates in the counterclockwise direction, and the other of said pair of plates rotates in the clockwise direction;

a first lever means operatively connected to each of said first and second closure plates, said first lever means being spaced from said first end-flange in said main housing, and comprising a first end thereof connected to each of said pair of closure plates for continuous connection therewith for all positions of said closure plates; and a second end; said first lever means being movable relative to said first end-flange for pivoting said pair of closure plates to a desired flow position;

second lever means operatively connected to said second end of said first lever means for moving said first lever means relative to said first end-flange, to thus pivot said pair of closure plates, said second lever means being mounted in said main housing;

control means operatively associated with said second lever means for controlling the movement thereof, and, therefore, the movement of said first lever means and said pair of closure plates; said control means comprising shaft means having a first end operatively connected with said second lever means in said main housing, and a second end remote from said first end projecting outwardly of said main housing, and means operatively connected to said second end of said shaft means for rotating said shaft means to position said pair of closure plates to a desired flow position, said means for rotating said shaft means comprising a handle means affixed to said second end of said drive shaft for conjoint rotation therewith, and handle-locking means for locking said handle means in a desired position determinate of the flow rate desired through the valve; said handle-locking means cooperating with a circumferential portion of said main housing for locking said handle means in place.

4,658,858

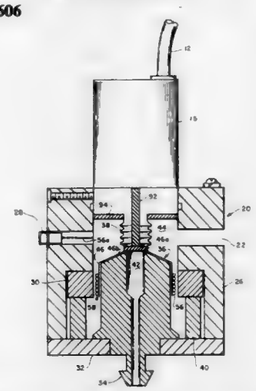
ELECTROMECHANICAL OXYGEN REGULATOR VALVE ASSEMBLY

Robert B. Beale, Arden Hills, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 28, 1985, Ser. No. 791,955

Int. Cl.⁴ F17D *3/01*

U.S. Cl. 137—606 **6 Claims**



1. A valve assembly for providing a breathable gas mixture, comprising:

a housing;

a first nozzle mounted in said housing, said first nozzle having an opening therein in communication with a first gas;

a second nozzle mounted in said housing, said second nozzle having an opening therein in communication with a second gas;

a bobbin surrounding each of said first and second nozzle adjacent said openings therein, each bobbin having a voice coil wound therearound, said bobbin having a portion adapted to close said openings to the passage of said gas therethrough; and

means including said first and second nozzles for forming an air gap for the passage of magnetic flux through each voice coil to cause movement of said bobbins with respect to said nozzles in response to a current applied to said voice coil; and

mixing means in said housing for receiving said first and second gases supplied through said first and second nozzles in response to movement of said bobbins.

4,658,859

VALVE SPOOL WITH CROSS DRILL PORTS

Bengt S. Backe, Dundee, and LaMoyne W. Durham, Bartlet, both of Ill., assignors to South Bend Lathe, Inc., South Bend, Ind.

Filed Dec. 7, 1984, Ser. No. 679,212

Int. Cl.⁴ F16K *39/06, 11/085*

U.S. Cl. 137—625.23 **9 Claims**

1. A pressure balanced multi-way valve comprising:

a housing having a valve chamber therein with inlet, outlet and a plurality of control passageways each connected to said valve chamber;

a non-tapered, generally cylindrical valve means rotatably disposed in said valve chamber between open and closed positions for controlling pressure flow between each of said passageways;

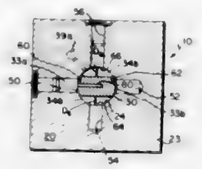
said valve means including valve passages therethrough such that upon selective rotation of said valve means to an open position said inlet passageway and one of said con-

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trol passageways are connected for pressure flow therebetween and said outlet passageway and another of said control passageways are connected for pressure flow therebetween;

said valve means also including sealing land means disposed thereon such that upon selective rotation of said valve means to a closed position pressure flow between said inlet, outlet or control passageway is prevented;

balancing means operably associated with said valve means for preventing pressure in said passageways from acting on said valve means so as to restrict its actuation to said open and closed positions; and



said balancing means including secantial cut-out portions and surface recess portions on said valve means and pressure flow channels extending through said valve means from said sealing land means and said valve passages to said secantial cut-out and surface recess portions surface recess portions and said secantial cut-out portions, to permit pressure exerted on said valve means at said sealing land means and said valve passages to be opposed by pressure exerted on said valve means at said secantial cut-out and surface recess portions.

4,658,860

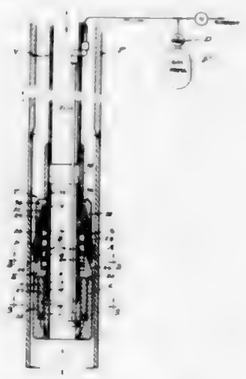
PRESSURE SET AND RETRIEVABLE VENTED ANCHOR-SEAL FOR PIPELINE SERVICE

James R. Reaux, P.O. Box 2700, LaFayette, La. 70502

Filed Mar. 11, 1985, Ser. No. 710,443

Int. Cl.[4] F16L *55/12*

U.S. Cl. 138—89 **20 Claims**



1. A servicing tool for work areas of opened pipelines that carry dangerous fluids and require additions and deletions, maintenance and repair, and including;

a tubular body for insertion into an open end of a pipeline to be serviced and comprised of a pair of axially adjacent sections with unobstructed inner diameter bores continuing one into the other and in open communication into the pipeline,

a radially expansible cup-shaped elastomer seal attached to one section of the tubular body and having a peripheral lip diameter normally clearing the inside diameter of the pipeline,

A conically tapered mandrel slideably carried on said one body section to retractably enter within the peripheral lip of the cup-shaped elastomer seal to expand the same,

a cylinder and piston means carried by the tubular body where the sections thereof are joined and operable to shift the mandrel to enter within and thereby expand the lip of the elastomer seal radially into pressured engagement with the inside diameter of the pipeline,

a pressure actuated anchor means carried by the tubular body and having jaws normally clearing the inside diameter of the pipeline and radially shiftable into pressured engagement therewith,

control means remote from the body and comprised of a fluid pressure line both to the cylinder and piston means and to the anchor means for simultaneous actuation thereof,

and a vent in the form of a tubular continuation of the tubular body and having an unobstructed inner diameter bore in open communication with the inner diameter bores of the body and extending therefrom, said vent opening from the seal and opened end of the pipeline to carry off dangerous fluids.

4,658,861

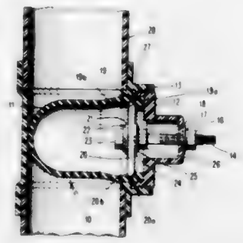
TEST PLUG ASSEMBLY

Walter H. Roberson, Sr., P.O. Box 806, Longwood, Fla. 32570

Filed Jan. 23, 1986, Ser. No. 822,197

Int. Cl.[4] F16L *55/12*

U.S. Cl. 138—90 **17 Claims**



1. A test plug assembly for the pressure testing of a pipeline in liquid drain and vent systems having a tee or Y-test section with a test opening, said assembly comprising:

(a) an inflatable, separable body portion including an open mouth end having a clamping edge structure with an inner, peripheral surface extending along the entire periphery of the open mouth,

(b) a cylindrical plug section having an outer structural configuration to engage said test opening and an inner clamping surface to compressibly engage an outer, peripheral edge surface of the open mouth clamping edge structure of the body portion for forming an airtight seal therebetween,

(c) coupling means for securing said cylindrical plug section in place in said test section throughout the operation of the assembly,

(d) clamping structure contacting said inner, peripheral surface of the clamping edge structure of the body portion to urge said outer, peripheral edge surface against the inner clamping surface of the plug section to form said airtight seal, and

(e) stem means for supporting said clamp structure including valve means for inflating the body portion.

4,658,862

DRIVING ARRANGEMENT FOR A CIRCULAR LOOM

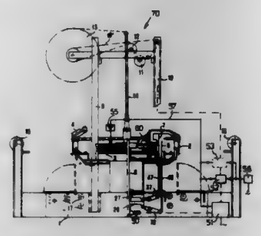
Franz X. Huemer, Sonnenuhrgasse 4, 1060 Vienna, Austria

Filed May 22, 1985, Ser. No. 736,784

Claims priority, application Switzerland, Jan. 8, 1984, 2797/84

Int. Cl.[4] D03D *37/00, 51/00*

U.S. Cl. 139—13 R **2 Claims**



1. In a circular loom comprising:

a main drive shaft;

an electric motor operatively connected to said main drive shaft for rotating same;

means connected to said main drive shaft for establishing a circularly traveling shed;

a circular reed cooperating with said shed to generate a tubular fabric;

a circulating shuttles operatively connected to said main drive shaft for depositing weft thread in said shed in the generation of said fabric;

weft thread supervising means monitoring said weft thread and upon the development of a fault therein generating a stop impulse for deenergizing said motor;

a fabric drawing-off mechanism receiving the generated fabric and collecting same in a flattened form; and

a transmission operatively connecting said fabric drawing-off mechanism with said motor,

the improvement which comprises the combination therewith of:

an electromagnetic coupling between said transmission and said motor and connected with said weft thread supervising means for synchronously with the generation of said stop impulse mechanically deenergizing said transmission from said motor; and

an electromagnetic brake operatively connected to said transmission and actuated by an impulse synchronous with said stop impulse for immediately upon the generation thereof bringing said fabric drawing-off mechanism to standstill while, with said motor deenergized, said traveling shed continues to form and said shuttles to circulate under inertia of said shaft and parts connected therewith.

4,658,863

SCREEN FOR PAPERMAKING PRESS

Jean-Louis Errecart, Boulieu-Les-Annonay, France, assignor to Binet Feutres S. A., Annonay, France

Filed Mar. 12, 1986, Ser. No. 838,913

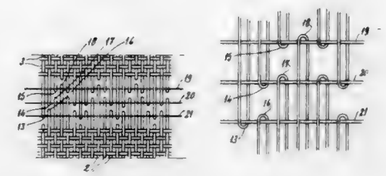
Claims priority, application France, Mar. 12, 1985, 85 04062

Int. Cl.[4] D03D *3/04*

U.S. Cl. 139—383 A **5 Claims**

1. In a papermaking screen having a pair of ends secured together at a joint and formed of a plurality of longitudinal warp filaments having warp ends secured together at the joint and weft filaments transversely woven with the warp filaments, the improvement wherein

one end of each warp filament is formed with a short loop extending longitudinally a short distance past the weft filaments and the opposite end is formed with a long loop extending longitudinally a long distance past the weft filaments longitudinally in line with but longitudinally spaced from the respective short loop, a first portion of the warp filaments having its long loops projecting from one end of the belt and a second portion having its long loops projecting from the opposite end of the belt between the short loops of the first portion;



a first joint rod passes transversely through all of the long loops but only through the short loops of the first portion; and

a second joint rod passes transversely through all of the long loops but only through the short loops of the second portion.

4,658,864

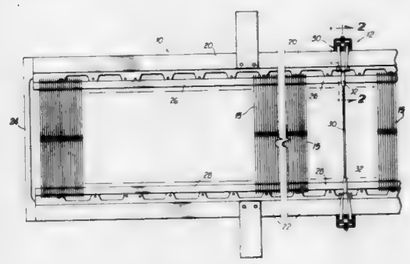
DETACHABLE CENTER BRACE APPARATUS FOR LOOM HARNESS

Robert M. Goodman, Jr., Marietta, Ga., assignor to Ellison, Pioneer Division, Atlanta, Ga.

Filed Apr. 24, 1985, Ser. No. 726,499

Int. Cl.[4] D03C *9/06*

U.S. Cl. 139—91 **12 Claims**



1. Center brace apparatus for a loom harness or the like comprising

a frame including first and second elongated members having a plurality of surfaces extending in parallel spaced relationship;

at least one brace member extending between said first and second elongated members, said brace membr having a T-shaped portion at each end thereof with the the top of the T-shaped portions abutting first parallel surfaces on said first and second elongated members;

support bracket means positioned on second parallel surfaces of said first and second elongated members, said support bracket means having side walls;

slidable block means disposed within said support bracket means for sliding movement along said side walls; clamping means

pivotally mounted on said slidable block means for engaging said T-shaped portions; and

control means for controlling the position of said slidable block means relative to said elongated members whereby said clamping means may be releasably secured from engaging said T-shaped portions of said brace member.

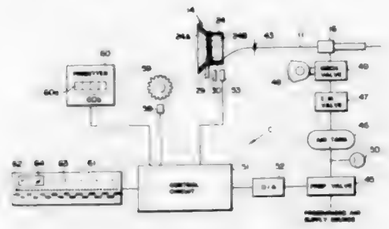
VOL 1077 ISS 3 AP 21 1987 UMI

4,658,865

LOOM EQUIPPED WITH WEFT PICKING CONTROL SYSTEM

Miyuki Gotoh, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 23, 1985, Ser. No. 757,948
Claims priority, application Japan, Jul. 24, 1984, 59-151981
Int. Cl.[4] D03D *47/30, 47/36*
U.S. Cl. 139—435 21 Claims



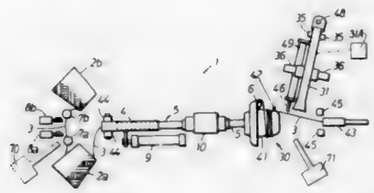
1. A fluid jet loom comprising:
a weft inserting nozzle by which a weft yarn is picked under influence of a fluid supplied thereto;
means for measuring a force applied to said weft yarn to accomplish a weft picking;
means for computing differences each between said force and a standard value and for accumulating said differences to obtain an accumulated value;
means for comparing said accumulated value with an allowable limit and for judging that said accumulated value exceeds said allowable limit; and
means for controllably changing a condition under which said weft yarn is picked, upon judgement of said accumulated value exceeding said allowable limit.

4,658,866

METHOD OF AND APPARATUS FOR REMOVING AND REPLACING A BROKEN WEFT YARN

Yujiro Takegawa, Ishikawa, Japan, assignor to Tsudakoma Corp., Kanazawa, Japan

Filed Aug. 5, 1985, Ser. No. 762,667
Claims priority, application Japan, Aug. 6, 1984, 59-165338; Sep. 6, 1984, 59-187512; Nov. 14, 1984, 59-240152
Int. Cl.[4] D03D *47/36*
U.S. Cl. 139—450 11 Claims



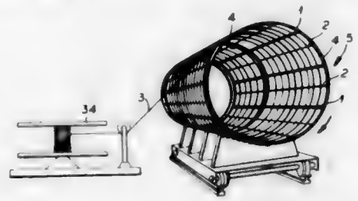
1. A method of removing and replacing a broken weft yarn in a weft inserter wherein weft yarn ends from at least two yarn supplies are joined to each other, the connected weft yarn ends are held by clamps between the yarn supplies, and the leading end of the weft yarn from one of the yarn supplies is delivered through a guide tube toward a weft yarn storage device, said method comprising the steps of moving an open end of the guide tube toward the position of the weft yarn held by the clamps when the weft yarn from said one yarn supply is broken, cutting off the weft yarn in the vicinity of the clamps, thereafter releasing the weft yarn from said clamps, and drawing the weft yarn from the other yarn supply into said guide tube by causing a suction air stream to flow in the guide tube.

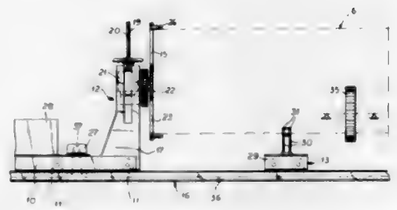
4,658,867

PROCESS AND EQUIPMENT FOR THE PRODUCTION OF REINFORCEMENT BASKETS FOR LARGE-BORE PILES

Wilhelm Hasak, Pfettrach, Fed. Rep. of Germany, assignor to Landshuter Rammeisenbiegerei GmbH, Altdorf, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,138
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1984, 3422099
Int. Cl.[4] B21F *15/08*
U.S. Cl. 140—112 8 Claims





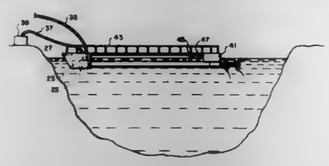
1. A method of making a reinforcement basket for a large-bore pile which comprises the steps of:
supporting each of a pair of reinforcement hoops adapted to form part of the basket so that said hoops lie in vertical planes and are spaced apart from one another along a pair of rails by gripping each of said hoops in a respective rotatable clamping device which engages an outer periphery of the hoop on a respective clamping carriage adapted to travel along said rails, said hoops each being provided with a plurality of spaced apart eyes;
placing a multiplicity of reinforcing rods on a support located between said hoops;
while rotating said devices about a common substantially horizontal axis, individually inserting said reinforcing bars carried on said support through said eyes to form a cage with substantially parallel reinforcing bars held in place by said hoops and adapted to be rested on said support which is displaceable on said rails; and
rotating said devices and thereby rotating said cage while said cage is supported by said support and coiling a wire helically around said cage during the rotation thereof and welding said wire to said bars, thereby forming the reinforcement basket with said hoops incorporated thereon.

4,658,868

ASPHALT PUMPING SYSTEM AND METHOD

Tim D. Word, 2314 Camelback, San Antonio, Tex. 78209

Filed Jun. 22, 1981, Ser. No. 275,878
Int. Cl.[4] B65B *3/04;* F28D *1/06*
U.S. Cl. 141—11 11 Claims



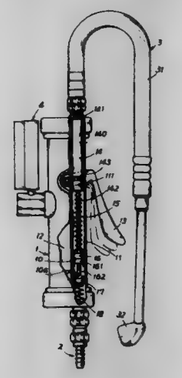
10. A method of storing and recovering a highly viscous fluid comprising:
excavating a large pit in the earth;
pumping a highly viscous fluid into said pit for storage;
disposing an elongated buoyant insulated housing on the surface of said fluid;
heating said fluid at a first end of said housing and within the interior of said housing; and
applying suction to a second end of said housing whereby said heated highly viscous fluid is transferred through said housing.

4,658,869

COMBINATION TIRE INFLATOR, GAUGE AND DEFLATOR

Hwang Soon-Fu, 40, Hsing Yu St., Taipei, Taiwan

Filed May 7, 1986, Ser. No. 860,611
Int. Cl.[4] B60C *29/12;* B65B *3/26*
U.S. Cl. 141—98 3 Claims



1. A triple-pass air inflator comprising:
a double-cylinder body including a first cylinder having its one end connected with a compressed air adapter and having the other end thereof movably connected with an air filling applicator, a second cylinder partitioned from said first cylinder by a partition wall, a levering handle pivotedly mounted on said body and operatively moving a hollow actuating rod reciprocatively in said first cylinder, said actuating rod having its outer end connected with said air filling applicator; said compressed-air adapter connected with said first cylinder adapted to supply a compressed air therein from a compressed-air source; said air filling applicator including a flexible hose connected on the other end of said first cylinder and a filling valve adapted to connect with a valve on a tire for filling compressed air thereinto; and a pressure gauge mounted on said second cylinder and operatively fluidically communicated with said first cylinder through a hole formed on said partition wall;
the improvement which comprises:
said first cylinder having its upper end reciprocatively jacketed therein with a hollow actuating rod slightly smaller in diameter than said first cylinder, having its lower end formed with a lower valve seat, an intermediate valve seat and an upper valve seat, and having its intermediate portion formed with a longitudinal side slot for releasing air therethrough;
said levering handle having a depressing pin movably formed on said handle and positioned between a fulcrum pin for pivotedly mounting said handle on said body and said handle, said depressing pin slidingly moving along said longitudinal side slot and movably engaging with an annular groove formed on said actuating rod adapted to push said rod downwards upon the depression of said handle;
said actuating rod protruding downwards to connect an upper hollow plug by a hollow stem biased upwards by an upper spring jacketed on said hollow stem, said upper hollow plug having an upper-side disk operatively sealing said upper valve seat as tensioned by said upper spring and a lower-side tapered portion operatively sealing said intermediate valve seat upon an utmost depression of said handle to move said actuating rod downwards and having an air-leading tube formed with a recess opening on its lower end operatively pushing a lower plug to open an aperture between said lower plug and said lower valve seat, said lower plug as tensioned by a lower spring upwards to normally seal lower valve seat, said upper hollow plug having a length slightly smaller than a distance between said intermediate valve seat and said upper valve seat, wherein a length of said air-leading tube plus a length of said upper plug being less than a distance between said lower valve seat and said upper valve seat, said air-leading tube having a length slightly larger than the distance between said lower seat and said intermediate seat adapted to open said lower plug when said upper plug is downwardly sealing said intermediate seat, an aperture formed between said upper plug and said first cylinder adapted for releasing air through said air-leading tube, said upper plug, said hollow stem, said actuating rod to be discharged through said longitudinal side slot, whereby upon the depression of said handle to push said actuating rod downwards to open said lower plug and to seal said intermediate valve seat to direct compressed air through said recess opening of said air-leading tube, said hollow upper plug, said stem, said actuating rod, said air filling applicator towards a tire for air-filling; and upon the releasing of the handle, the upper plug will be biased to seal said upper valve seat to prevent air leakage therethrough and to direct air into said second cylinder for its pressure measurement; and upon slight depression of said handle, said upper plug is driven to locate between said intermediate valve seat and said upper valve sent to allow the excess air from tire releasing through said aperture between said upper plug and said first cylinder and discharging through said side slot.

4,658,870

DRIPLESS MULTI-VESSEL FLUID DISPENSER

Richard O. Powell, 9210 Chisolm, Austin, Tex. 78745, and Bert L. Powell, Jr., 7919 El Dorado, Austin, Tex. 78737

Continuation of Ser. No. 588,642, Mar. 12, 1984, abandoned.
This application Dec. 6, 1985, Ser. No. 805,414
Int. Cl.[4] B65B *3/06*
U.S. Cl. 141—236 2 Claims

1. An apparatus for uniformly and simultaneously delivering

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an equal volume of fluid to a plurality of receptacles comprising:

a means for directing said fluid to a removeable detachable, generally flat, distributor, said distributor further comprising:

a top plate having a single opening therethrough, said opening in fluid communication with said means for directing said fluid;

a center gasket of generally uniform thickness having a plurality of major and minor slots of the same thickness cut therethrough, said major slots being wider than said minor slots, said major slots branching from each other at only one junction, said junction dispositioned and aligned below said single opening in said top place, each of said major slots having a plurality of said minor slots



branching therefrom, each of said minor slots branching at an origin from only one of said major slots, said minor slots further having a terminal end;

a bottom plate with a plurality of small verticle passageways therethrough, each of said passageways having an inlet end and an outlet end, said inlet end dispositioned and aligned below said terminal end of each of said minor slots in said center gasket;

said top plate sealingly affixed to said bottom plate with said center gasket disposed between and securely affixed to said top plate and said bottom plate; and

said single opening in said top plate, said slots in said gasket, and said verticle passageways in said bottom plate defining a fluid flow path for said fluid to flow from said directing means out said outlet end of said verticle passageways to said receptacles.

4,658,871

VALVE FOR FILLING A GAS CONTAINER

Yves Gendey, 74800 Esery-Reignier, France, and Conrad Zellweger, 5, chemin des voirons, 1224 Chêne-Bougeries, Switzerland

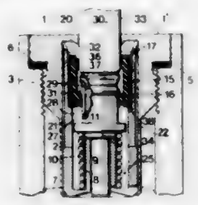
PCT No. PCT/CH84/00117, § 371 Date Apr. 11, 1985, § 102(e) Date Apr. 11, 1985, PCT Pub. No. WO85/00871, PCT Pub. Date Feb. 28, 1985

PCT Filed Jul. 26, 1984, Ser. No. 723,956

Claims priority, application Switzerland, Aug. 15, 1983, 4435/83

Int. Cl.⁴ B65B *3/18*

U.S. Cl. 141—293 **2 Claims**



1. Valve for filling a liquefied gas container by means of a recharging tank equipped with a cylindrical neck, this valve including at least a stationary part having an outer face, a mobile part mounted to slide in an axial chamber of the stationary part and a fluid-right seal, the axial chamber having an opening communicating with an outside face of the stationary part, the valve having two passages, one being a passage for filling of liquefied gas and the other a vent passage to join the inside of the container in communication with the outside, this valve being adapted to be acutated by introduction of the neck into the aixal chamber to move the mobile part and the seal against the action of a spring from a closed position, where the seal is in contact with the stationary part and the mobile part so as to block the two passages, to a filling position where the seal is in contact with the stationary part and the neck to open the two passages, characterized in that said fluid-tight seal comprises two annular portions axially separated by a cylindrical part, a first of these two annular portions being in contact with the mobile part and engageable therewith to move the seal axially from a first position to a second position when the mobile part is moved from the closed position to the filling position, the second of said two annular portions of the seal adapted to block the vent passage when the seal is in said first position, and said seal second annular portion adapted to be squeezed between the cylindrical neck and the stationary part in a position unblocking the vent passage, when the seal is displaced axially to said second position, said vent passage adapted to communicate through an opening leading to said axial chamber, said stationary part comprising, near this vent communicating opening, a ramp intended to guide said second annular portion of the seal from a position, where it is separated from the cylindrical neck, to a position where it is held between the stationary part and the cylindrical neck, when the seal is moved axially from said first position to said second position, said mobile part including an end portion whose diameter substantially equals that of said opening communicating with tne outside face of the stationary part, and said end portion being shaped so that in the closed position of the valve said end portion is located approximately in the plane of the outer face of the stationary part.

4,658,872

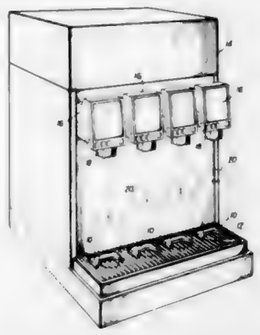
CUP LOCATOR FOR BEVERAGE DISPENSER

Annie T. Ellis, Smyrna, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Jul. 17, 1985, Ser. No. 756,001

Int. Cl.⁴ B65B *3/04*

U.S. Cl. 141—311 R **7 Claims**



1. A cup locator for a beverage dispenser comprising:

(a) an elongated bar and a pair of spaced-apart side arms connected to said bar and extending away from the same side of said bar on opposite ends thereof;

(b) said bar including a straight rear wall and each of said side arms including a straight side wall facing toward said bar for properly laocating a cup placed in abutting relationship against said rear wall of said cup locator; and

(c) said side walls each being at an identical, obtuse angle to said rear wall and extending in opposite directions from said rear wall.

4,658,873

FUELING SYSTEM, IN PARTICULAR FOR AIRCRAFT FUELING

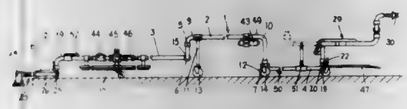
Wolfgang von Meyerinck, Espenstrasse 5, D-6306 Langgoens, and Dietz von Meyerinck, Arnsburger Strasse 14, D-6302 Lich 2, both of Fed. Rep. of Germany

Continuation of Ser. No. 684,564, Dec. 21, 1984, abandoned. This application Jun. 2, 1986, Ser. No. 873,071

Claims priority, application European Pat. Off., Jul. 4, 1984, 84107766.2

Int. Cl.⁴ B65B *3/04;* **B67D** *5/70*

U.S. Cl. 141—387 **22 Claims**



1. In a fueling system which includes a hydrant coupling which can be connected to a supply line, a filler-neck coupling which can be connected to a tank, and a plurality of pipe sections which are serially coupled to each other by respective swivel joints, the improvement comprising wherein:

(a) said pipe sections of said fueling system include a center pipe section and two outer pipe sections, said center pipe section being connected to each of said outer pipe sections by a respective pair of said swivel joints, and said center pipe section being movably supported in the region of each end thereof by a respective wheeled carriage;

(b) said center pipe section is elongate, has a bend in the region of each said end thereof, and has at each said end thereof a swivel joint which is a respective one of said swivel joints of a respective said pair and which has an axis of rotation which extends substantially vertically, the other swivel joint of each said pair having an axis of rotation which extends horizontally;

(c) said outer pipe sections are each movably supported by a respective further wheeled carriage;

(d) each said outer pipe section has at an end thereof remote from said center pipe section an end swivel joint having an axis of rotation substantially perpendicular to the center region of such outer pipe section;

(e) said hydrant coupling is connected to one of a first pipe part which is pivotally coupled at its other end by a first swivel coupling to one end of a second pipe part which in turn is pivotally coupled by a second swivel coupling to one end of a third pipe part which is coupled at its other end to one of said end swivel joints, said first and second swivel couplings having axes of rotation which are perpendicular to the axis of rotation of said one of said end swivel joints; and

(f) said fueling system includes a headpiece which includes said filler-neck coupling and which is connected to the other of said end swivel joints.

4,658,874

FUELING ARM

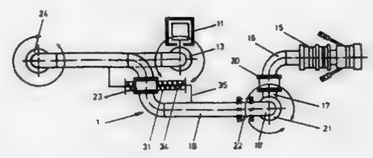
Wolfgang von Meyerinck, Espenstrasse 5, D-6346-Langgoens, and Dietz von Meyerinck, Arnsburger Strasse 14, D-6302-Lich, both of Fed. Rep. of Germany

Continuation of Ser. No. 684,449, Dec. 21, 1984, abandoned. This application Jun. 2, 1986, Ser. No. 873,073

Claims priority, application European Pat. Off., Jul. 4, 1984, 84107765.4

Int. Cl.⁴ B65B *3/04;* **B67D** *5/68*

U.S. Cl. 141—387 **16 Claims**



1. A fueling arm which can be connected to a supply line, comprising a filler-neck coupling and eight pipe sections which are serially connected to each other by respective swivel joints which each have only one degree of freedom, wherein at one end of a first of said pipe sections there is arranged a first of said swivel joints which can pivotally couple said first pipe section to the supply line, wherein an axis of rotation of said first swivel joint and axes of rotation of second and third said swivel joints which successively follow said first swivel joint are disposed in planes which are parallel to one another, wherein said third swivel joint is movable and is guided by guide means for reciprocal movement parallel to a direction of movement, a second of said pipe sections being pivotally coupled to said first pipe section by said second swivel joint and to a third of said pipe sections by said third swivel joint, wherein said fueling arm includes a headpiece which includes said filler-neck coupling and each of said pipe sections other than said first, second and third pipe sections, wherein an end of said headpiece remote from said filler-neck coupling is connected by a fourth of said swivel joints to said third pipe section, wherein said headpiece is movable to a position in which three of said swivel joints thereof have axes of rotation which are parallel to one another and are perpendicular to the axes of the other two swivel joints thereof, wherein said axes of rotation of said first, second and third swivel joints are horizontal, and wherein said guide means includes a guide rail and includes one of said third swivel joint and said third pipe section being movably supported by said guide rail.

4,658,875

KNIFE HOLDER

Bosko Grabovac, 19220 San Jose Ave., City of Industry, Calif. 91748

Filed Mar. 24, 1986, Ser. No. 842,903

Int. Cl.⁴ B26D *1/12;* **B27G** *13/04*

U.S. Cl. 144—230 **7 Claims**

1. In combination, an elongate, planing knife driving shaft with opposite ends, a cylindrical outer surface and a plurality of circumferentially spaced, longitudinally extending, radially outwardly opening channels with circumferentially spaced, circumferentially rearwardly and forwardly disposed front and rear channel surfaces and a radially outwardly disposed bottom, an elongate clamp bar with circumferentially spaced forwardly and rearwardly disposed front and rear surfaces positioned in each channel with its front and rear surfaces in spaced opposing relationship with said forwardly and rearwardly disposed channel surfaces, a plurality of longitudinally spaced jack screw means in each channel between the bar therein and the front channel surface and operating to effect forward and rearward movement of the bar in the channel, an

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elongate planing blade holder in each channel with a rearwardly disposed rear surface opposing and movable into and out of engagement with the forwardly disposed rear channel surface, a longitudinally extending inner bottom surface spaced radially outward from the bottom of the channel, a forwardly disposed front surface opposing and movable into and out of engagement with the rear surface of the bar, and a longitudinally extending outer edge adjacent the outer surface of the shaft, the front surface of each holder has a forwardly and outwardly opening knife-receiving recess with a forwardly disposed support surface in spaced opposing relationship with the rear surface of a related bar and a plurality of longitudinally spaced orienting and retaining pins carried by each holder and projecting forwardly from said support surface thereof, an elongate knife with forwardly and rearwardly disposed front and rear surfaces, longitudinally extending inner and outer cutting edges and a plurality of longitudinally spaced



forwardly and rearwardly opening pin-receiving openings, removably engaged in the recess of each holder with its rear face stopped against its related support surface, its front face opposing and releasably engaged by the rear surface of its related bar, its outer cutting edge projecting outward from the outer edge of its related holder and with said pins on its related holder slidably releasably engaged in said openings, said jack means are manually operable to move the bars forwardly and rearwardly in their channels and into and out of engagement with their related holders to selectively releasably hold the assembled holders and knives in sliding friction and tight clamped engagement between their related bars and rear channel surfaces, said holders further include and carry spring means extending longitudinally of and inward from their bottom edges and engaging the bottoms of the channels and normally yieldingly urging the holders radially outward in the channels relative to the rear channel surfaces and the bars.

4,658,876

AUTOMOTIVE VEHICLE TIRE AND MOUNTING SYSTEM THEREFOR

Pierre J. Augier, Grosse Pointe Park, Mich., assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio

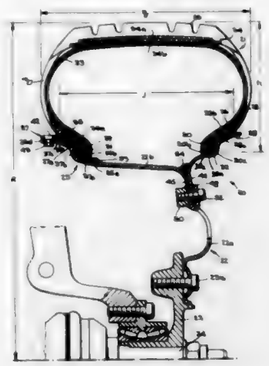
Division of Ser. No. 484,130, Apr. 12, 1983, abandoned. This application Jul. 23, 1985, Ser. No. 758,188

Int. Cl.[4] B60B *3/04, 21/10, 25/10*

U.S. Cl. 152—394 **35 Claims**

31. A drum for use as part of a mounting system for mounting a pneumatic tire on a vehicle axle:

characterized in that the drum has a body adapted to be secured to the hub of a vehicle axle, a peripheral skirt secured to said body and extending therefrom so as to be oriented in the inboard direction of the vehicle when the drum is properly mounted on the hub of the vehicle axle, said skirt being provided at its inboard lateral boundary with a circumferential flange section and being devoid of any flange section at its outboard lateral boundary, said flange section of said skirt having a circumferential laterally outwardmost portion provided with first adjunct means constituting a part of an attachment system for releasably securing the inboard one of a pair of tire-supporting ring members to said skirt along said flange section, said drum body adjacent the outboard lateral boundary of said skirt having a circumferential radially outwardmost portion provided with second adjunct means constituting a part of an attachment system for releasably securing the outboard one of a pair of tire-supporting ring members to said radially outwardmost portion of said



drum body and said first adjunct means includes a plurality of openings in said laterally outwardmost portion of said flange section each corresponding to a respective one of a plurality of openings in the inboard one of said ring members and each adapted to receive a respective one of a plurality of fastening members.

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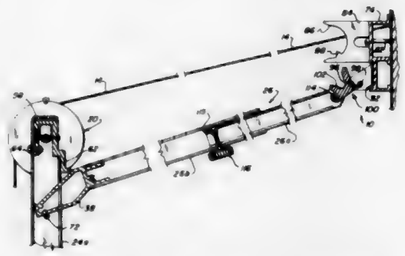
LOCK MECHANISM FOR RETRACTABLE AWNING

Antony W. Quinn, Westminster, Colo., assignor to The Scott & Fetzer Company, Westlake, Ohio

Filed Mar. 11, 1985, Ser. No. 710,604

Int. Cl.[4] E04F *10/06*

U.S. Cl. 160—46 **5 Claims**



1. In a retractable awning assembly for attachment to a substantially vertical support surface, said assembly being movable between retracted and extended positions and having a flexible cover material secured along one edge to said support surface, a roll bar secured to an opposite edge of said cover material such that the cover material can be wrapped around said roll bar, a pair of support arms connected to said roll bar adjacent each end thereof, upper and lower pairs of bracket means mounted on said support surface, said upper pair of brackets serving to releasably secure said support arms when the awning is in a retracted position, a pair of longitudally extensible brace members secured at one end to the upper bracket means and adapted to be operably and releasably connected at the opposite end to an associated support arm to retain the awning in the extended position, said opposite ends of the brace members also being adapted to be releasably connected to an associated lower bracket member when the awning is in a retracted position, the improvement comprising a lock element on said upper bracket means associated with each of said brace members and adapted to automatically capture and operatively secure an associated support arm when the roll bar is moved directly from its extended position into engagement with the lock element and into its retracted position, said lock element being pivotally mounted on said upper bracket means for movement between a locking position and a released position and also being pivotally secured to said one end of the associated brace member such that when the opposite end of said brace member is connected to an associated end of said roll bar, the pivotal connection location of the brace member to the lock element can be positioned lower than the pivotal connection location of the lock element on the upper bracket to establish an over-center system for retaining the lock element in its released position when the awning is in an extended position.

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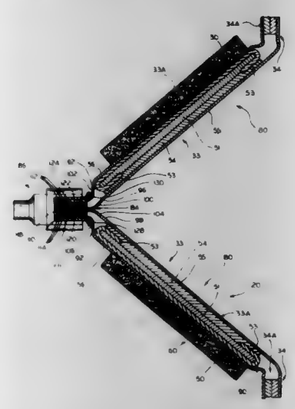
ACOUSTIC TYPE FOLDING DOOR WITH SEPARATE COVER SECTIONS

Charles E. Williams, Delavan, Wis., assignor to Hough Manufacturing Corporation, Janesville, Wis.

Filed Dec. 16, 1985, Ser. No. 809,246

Int. Cl.[4] E06B *9/262*

U.S. Cl. 160—84 V **14 Claims**



11. In an accordion type folding door having a pair of end posts that define opposite vertical end edges of the door, extensible and collapsible lazytongs connecting said posts, foldable cover means disposed along opposite sides of said lazytongs and connected at opposite ends to the respective posts, and flexible sealing skirts attached to and projecting from the upper and lower edges of the cover means,

the improvement wherein each said cover means comprises:

a plurality of vertical cover sections separately connected to said lazytongs in side by side relation,

each of said cover sections comprising:

a pair of relatively wide slats of substantially equal widths disposed on either side of a relatively narrow slat,

said slats of each cover section being pivoted together by inner and outer flexible sheets respectively adhered to opposite faces of the respective slats, and with said narrow slat thereof interposed between said relatively wide slats whereby said relatively wide slats of each said cover section define a first vertical side edge that is disposed adjacent said narrow slat thereof and a second vertical side edge that is opposed to said first side edge thereof,

said inner and outer sheets of the respective cover sections terminating in vertical edge portions extending beyond said second vertical side edges of both said relatively wide slats of each said cover section and forming first and second end portions at like side edges of each said cover section,

means for clamping together the second and first sheet end portions of adjacent of said cover sections along the height of said cover means,

means for anchoring each of said clamping means to the lazytongs to connect same to the lazytongs and including means for journalling the lazytongs on the respective clamping means,

and means for anchoring the said cover section first and second sheet end portions at said opposite ends of said cover means to the respective posts,

with the inner and outer sheets of the respective cover sections being removably joined to each other adjacent said second edges of the relatively wide slats thereof.

4,658,879

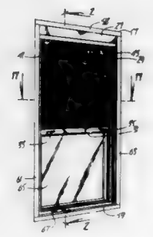
FIELD INSTALLABLE ROLLING SCREEN ASSEMBLY

Marlo Van Klompenburg, Pella, Iowa, assignor to Rolscreen Company, Pella, Iowa

Filed Aug. 31, 1984, Ser. No. 646,647

Int. Cl.[4] E06B *9/17*

U.S. Cl. 160—271 **3 Claims**



1. A rolling window screen assembly installed in a window frame, said frame including a sill, a head, and side jambs, said assembly comprising:

a screen mounted on said window frame adjacent said head thereof and being unrollable along the jambs of said window frame, said screen having opposite side edges, an upper edge, and a lower edge;

clip means secured to each of said side jambs;

a pair of elongated guide means having a wall surface mounted on said clip means and extending along one of said side jambs for guiding said opposite edges of said screen while said screen is unrolled along said jambs;

said clip means including a first leg secured to one of said jambs, a second leg depending substantially perpendicular from said first leg and extending through a corresponding slot in the wall surface in said guide means, and locking means for releasably locking said guide means onto said L-shaped clip;

said locking means being on said clip and including a resilient tab attached to said second leg thereof and normally extending out of the plane of said second leg and adapted to be temporarily resiliently depressed into the plane of said second leg such that said second leg and said tab are movable through said slot in said guide means and upon said tab returning to said normal position out of the plane of said second leg said tab is adapted to engage said wall surface thereby locking said guide means to said clip.

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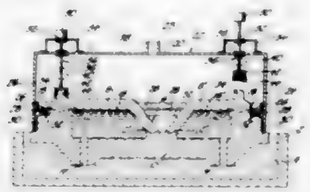
COUNTERGRAVITY CASTING APPARATUS

Karl D. Voss, Standish, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 806,619, Dec. 9, 1985, abandoned. This application Jun. 9, 1986, Ser. No. 872,010

Int. Cl.⁴ B22D *18/06*

U.S. Cl. 164—255 **6 Claims**



1. Apparatus for the vacuum, countergravity casting of molten metal comprising:

a mold comprising a porous, gas-permeable upper shell at least in part defining a molding cavity, and a bottom-gated lower portion secured to said upper shell for admitting said metal into said cavity from an underlying pot of said metal;

a plurality of integral, threadable mounting lugs atop said mold;

a vacuum box sealingly engaging said mold and defining therewith a vacuum chamber confronting said upper shell for evacuating said cavity through said shell, said box having a ceiling overlying said mold;

means reciprocally slidable through said ceiling for engaging each of said lugs so as to anchor said mold in said chamber, said means comprising a plurality of shafts extending through said ceiling, self-tapping threads on the lower end of each said shaft for engaging a said lug registered therewith and rotator means operatively associated with each said shaft for screwing said threads into engagement/disengagement with said lug to respectively mount/demount said mold to/from said box.

4,658,881

CASTING APPARATUS FOR PROVIDING CONTROLLED AMBIENT DURING PRODUCTION CASTING

Nobuyoshi Sasaki, Yokohama, Japan, assignor to M. C. L. Co., Ltd., Japan

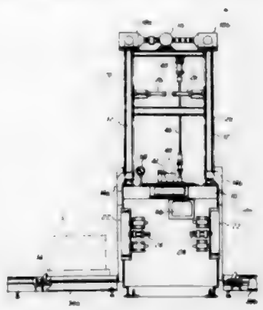
Continuation of Ser. No. 623,367, Jun. 22, 1984, abandoned. This application Feb. 28, 1986, Ser. No. 835,450

Claims priority, application Japan, Jun. 29, 1983, 58-118788; Jun. 29, 1983, 58-115788

Int. Cl.⁴ B22D *18/06*

U.S. Cl. 164—256 **5 Claims**

1. A casting apparatus comprising a casting chamber for containing a mold in a sealingly closed condition, said chamber having an entrance door on one side of said chamber to enable said mold to be put into said casting chamber and an exit door on another side of said chamber to enable said mold to be removed from said casting chamber, a guide track for holding said mold, said guide track extending along the bottom of said casting chamber and being connected to external conveyer means mounted externally of said chamber at each of said doors, an actuator means for opening and shutting off said entrance door, another actuator means for opening and shutting off said exit door, a vacuum pump for evacuating said casting chamber, a gas supply source for supplying at least one of either an inert gas or a reducing gas to said casting chamber, and a ladle for containing a molten metal, said ladle being disposed on said casting chamber, a port at the bottom of said ladle communicating with said casting chamber, said mold being positioned in said casting chamber and below said port, said inert gas or reducing gas flowing into said casting chamber after said casting chamber is evacuated, and said molten metal



in said ladle thereafter pouring through said port and into said mold below said port and in said casting chamber.

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MACHINE FOR DIRECT ROLLING OF STEEL CASTING AND PRODUCING STEEL PRODUCT THEREFROM

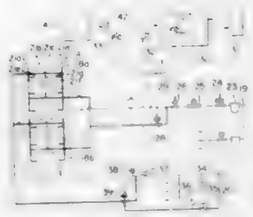
Hanji Oba; Koji Hyodo; Michiyasu Honda, and Kazuhide Kameyama, all of Sakai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 567,149, Jan. 3, 1984, abandoned, which is a continuation of Ser. No. 341,343, Jan. 21, 1982, abandoned. This application Jul. 22, 1985, Ser. No. 757,910

Claims priority, application Japan, Jan. 22, 1981, 56-8397

Int. Cl.⁴ B22D *11/124, 11/12*

U.S. Cl. 164—417 **6 Claims**



1. An apparatus for continuously casting a casting in a casting machine and feeding it directly to a rolling means, said apparatus comprising:

a continuous casting machine having a curved part and a horizontal part;

a continuous casting mold at the upstream end of said curved part;

a gas cutting means at the outlet of said horizontal part for cutting the casting cast in the continuous casting machine;

a transport table at the output side of said cutting means for transporting a cut length of casting;

a heat retention means over said transport table and over said gas cutting means;

said curved part of said continuous casting machine having a water spray cooling means at the outlet of said continuous casting mold and slow cooling means along said curved part and directed against the casting for cooling said casting to form a desired shape of the unsolidified core, said slow cooling means having a plurality of sets of air-water nozzles with each set having a plurality of nozzles with the nozzles of each set spaced at intervals along the length of said curved part and each set having the respective nozzles in rows with corresponding nozzles in the other sets, the nozzles in the rows being spaced in the width direction of the steel casting from the nozzles of the other sets in the corresponding rows, the successive nozzles in each set along the length of said curve part being staggered from each other in the direction of said row, the nozzles within each set being connected to each other;

individual supplying means for supplying air and water, as air alone or as a mixture of air and water, connected to respective sets of said nozzles along the portions corresponding to the outside parts of the width of the casting for supplying amounts of air and water to the respective sets for selectively cooling the outside portions of the width of the casting and further individual supplying means for supplying amount of air and water connected to respective sets of nozzles along the portion corresponding to the central part of the width of the casting, both said supplying means including means for controlling the amounts of air and water for cooling the different portions of the width of the casting at different desired rates;

a plurality of horizontal transport rolls spaced at intervals along said horizontal part of said casting machine and having heat retention means in the gaps between said rolls for substantially closing said gaps, and a further plurality of air-water nozzles directed at said rolls from outside the casting machine for indirectly cooling the casting by means of said horizontal transport rolls; and

further means for supplying air and water to said further plurality of air-water nozzles;

whereby the cooling of the casting can be controlled to retain sufficient heat therein to permit subsequent hot rolling directly from said cutting means and transport table.

4,658,883

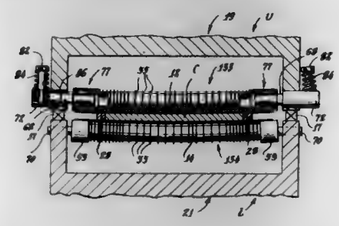
SYSTEMS FOR SHAPING THE CASTING REGION IN A TWIN-BELT CONTINUOUS CASTING MACHINE FOR IMPROVING HEAT TRANSFER AND PRODUCT UNIFORMITY AND ENHANCED MACHINE PERFORMANCE

Robert W. Hazelett, Winooski, Vt., and Samuel R. Hazelett, Provo, Utah, assignors to Hazelett Strip-Casting Corporation, Colchester, Vt.

Division of Ser. No. 608,482, May 8, 1984, which is a continuation of Ser. No. 330,726, Dec. 14, 1981, abandoned. This application Apr. 26, 1985, Ser. No. 727,420

Int. Cl.⁴ B22D *11/06*

U.S. Cl. 164—432 **5 Claims**



1. In a twin-belt continuous metal-casting machine having casting belts revolving around two belt-supporting carriages for defining a casting region between the two belts, and wherein each of the carriages has a frame with main rolls located at opposite ends of the carriage for revolving the casting belt around the carriage, and wherein the casting belts are guided and supported by back-up means in the respective carriages adjacent to the casting region, the system comprising:

elastic and relatively flexible back-up means in at least a portion of a first carriage,

said flexibility being realised in response to "head" pressure acting through the belt from within the casting region and resulting in a transversely slightly concave belt shape in said first carriage facing the casting region,

a plurality of rigidized, relatively unflexing backup means within the second carriage forming a transversely slightly convex belt shape facing the casting region,

said convex belt shape being predetermined for compensating and offsetting said concave belt shape for the purpose of achieving a generally uniform thickness of cast product across its transverse section, while at the same time allowing mechanical resilience between the opposing mold backup systems for providing and maintaining belt contact with the solidifying metal for minimizing regions in which loss of belt contact might occur and thereby for enabling casting speed to be maximized while casting uniform high quality product.

4,658,884

MOLD FOR CONTINUOUS CASTING OF ROUNDS OR BILLETS

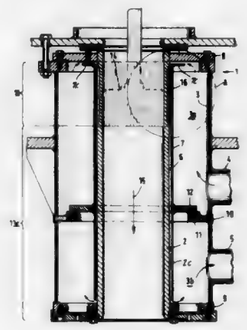
Horst Euler, Duisburg; Hans-Joachim Meyer, Krefeld, and Fritz-Peter Pleschiutschnigg, Duisburg, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 8, 1985, Ser. No. 709,499

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1984, 3411359

Int. Cl.⁴ B22D *11/124*

U.S. Cl. 164—443 **7 Claims**



1. In a mold for continuous casting of rounds or billets including a tubular mold enveloped by a coolant container or jacket, there being a tubular coolant guide sheet provided around the tubular mold, coolant flowing through an anular gap between the mold and the guide sheet, the improvement comprising:

longitudinal coolant ducts provided as grooves in the upper portion of the mold only, the upper portion of the mold covering less than the remaining portion of the mold taken in axial direction of casting, the ducts being on the outside of the mold for relatively increasing the surface area of the mold tube exposed to coolant over and beyond the surface area of the outside of the tubular mold of the remaining portion thereof, and over and beyond the cylindrical surface area defined by ridges between the grooves.

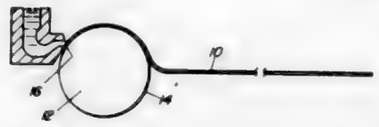
VOL 1077 ISS 3 AP 21 1987 UMI

4,658,885

METHOD OF REPETITIOUSLY MARKING CONTINUOUSLY CAST METALLIC STRIP MATERIAL

Robert E. Maringer, Worthington, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed May 9, 1980, Ser. No. 148,448
Int. Cl.[4] B22D *11/00*
U.S. Cl. 164—463 3 Claims



1. A method of producing a mark onto a continuously cast strip of metal comprising the step of:

providing a continuous surface upon which metal strip is cast from a molten metal holding tundish having a nozzle disposed less than about 0.120 inch from said surface, said surface cooled to a temperature below the solidus temperature of the molten metal, said surface movable past the nozzle at a rate of from about 200 to about 10,000 feet per minute,

providing an impression in the continuous casting surface corresponding to the mark to be produced onto the continuously cast metal strip, said impression deviating at least 0.0001 inch from the casting surface and being an embossment of a material dissimilar to the casting surface,

continuously feeding molten metal through the nozzle onto the moving continuous casting surface and over the impression as said impression passes said nozzle, to produce continuously cast strip thereon,

completely and intermittently interrupting the continuity of the cast strip at such impression into a number of repetitious strips each having a length corresponding to the surface distance on the casting surface from impression to impression, and

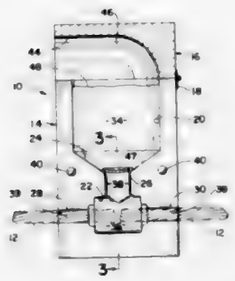
continuously removing the cast strip from the continuous casting surface.

4,658,886

HIGH TEMPERATURE MOLDS AND COMPOSITION FOR SAME

Walter H. Carlson, Aurora, and Kevin L. Burmeister, Kent, both of Ohio, assignors to Graphite Sales, Inc., Chagrin Falls, Ohio

Filed Sep. 11, 1985, Ser. No. 774,998
Int. Cl.[4] B22C *1/22, 9/00*
U.S. Cl. 164—526 32 Claims



30. A mold composition comprising:

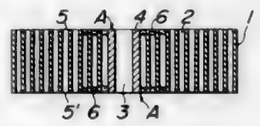
an admixture of an aggregate and a resinous binder system, said aggregate comprising, by weight, about 26% to 29% carbon with the remainder being volatiles and ash, said ash containing by weight about 47.5% to 50% silica and 8 to 8.4% aluminum, said resinous binder system comprising a phenolic resin and a furan resin present in substantially equal amounts by weight, said aggregate and said resinous binder system being present in the ranges of 88 to 92½% by weight and 7½ to 12% by weight respectively, said admixture being thermally curable to a moisture content of below about 1% by weight.

4,658,887

ROTARY REGENERATOR TYPE CERAMIC HEAT EXCHANGER

Tadaaki Matsuhisa, Kasugai, and Kiminari Kato, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 443,695, Nov. 22, 1982, abandoned.
This application Aug. 30, 1985, Ser. No. 771,153
Claims priority, application Japan, Dec. 23, 1981, 56-208278
Int. Cl.[4] F28D *19/04*
U.S. Cl. 165—8 19 Claims



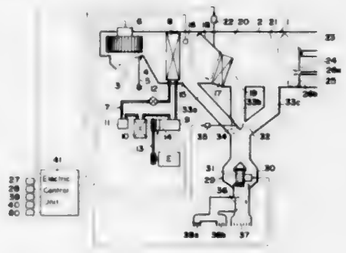
1. A rotary regenerator type ceramic heat exchanger, comprising a hub having a hollow central portion, a ceramic honeycomb structural body having a plurality of longitudinally extending channels, said honeycomb structural body being integrally secured to an outer circumference of the hub along its entire longitudinal length thereof, thereby forming a joint portion between the hub and the ceramic honeycomb structural body, at least one channel blocking layer formed radially outward from said joint portion, said at least one channel blocking layer extending into said plurality of longitudinally extending channels not more than one tenth the length of the longitudinal hub, said at least one channel blocking layer being located at at least one longitudinal end surface of said ceramic body, thereby forming at least one stress relief layer, said at least one channel blocking layer having a difference in thermal expansion of not greater than 0.1% at 800° C. relative to the hub.

4,658,888

AIR CONDITIONER SYSTEM FOR AUTOMOBILES

Yoshihiko Sakurai, and Mamoru Masuji, both of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1985, Ser. No. 810,690
Claims priority, application Japan, Dec. 28, 1984, 59-279941
Int. Cl.[4] B60H *3/00*
U.S. Cl. 165—22 3 Claims



1. An air conditioner system for a vehicle driven by an engine and including a passenger compartment composed of a front-seat space and a rear-seat space, comprising:

(a) a refrigerant compressor driving connected with the engine;

(b) a duct unit comprising:

(1) a front-seat air conditioner unit including a main duct, a blower disposed in said main duct for forcing air therethrough to the front-seat part, an evaporator held in fluid communication with said compressor for cooling air passing therethrough and a heater core disposed in said main duct at a rear side of said evaporator for heating air passing therethrough;

(2) a rear-seat blower unit including a rear-seat duct and a rear-seat blower disposed in said rear-seat duct for forcing air therethrough to the rear-seat part, said rear-seat duct including an air mix chamber defined a front side of said rear-seat blower;

(3) at least two connecting passages interconnecting said main duct and said mix chamber, one of said connecting passages having an inlet opening to said main duct between said evaporator and said heater core, and another of said connecting passages having an inlet opening to said main duct at a rear side of said heater core; and

(4) a means for adjusting the proportion of air introduced from said main duct through said connecting passage into said air mix chamber;

(c) first means for detecting a cooling load of the front-seat space;

(d) second means for detecting a cooling load of the rear-seat space;

(e) third means operative connected with said first and second detecting means for discriminating magnitude of the cooling loads thus detected; and

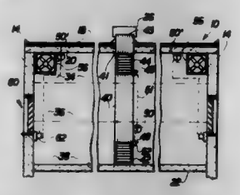
(f) fourth means operative connected with said discriminating means and said compressor for controlling the latter according to a predetermined pattern based on the result of discrimination of said discriminating means.

4,658,889

COMBINED AIR CONDITIONING AND VENTILATION ASSEMBLY

Dewey H. Dolison, 4645 SW. 64 Ave., Miami, Fla. 33155, and William H. Rahn, 1200 N. Shore Dr., No. 205, St. Petersburg, both of Fla. 33701

Filed Mar. 24, 1986, Ser. No. 843,496
Int. Cl.[4] F25B *29/00*
U.S. Cl. 165—48.1 12 Claims



1. A system for the cooling and heating of the interior of a building structure, said system comprising:

(a) an air conditioning assembly mounted on the building structure, said air conditioning assembly structured to selectively heat and cool air passing into the building interior,

(b) a delivery duct assembly connected to said air conditioning assembly substantially at one end thereof and extending into the building interior at an opposite end of said delivery duct assembly,

(c) said delivery duct assembly including at least one elongated delivery duct disposed and structured to direct conditioned air issuing from said air conditioning assembly into said building interior,

(d) air return means for delivering air to an intake portion of said air conditioning assembly and comprising at least one return duct disposed at least in part within the building interior,

(e) said one return duct comprising a first air intake located along the length of said return duct in a lowermost zone of the building interior and a second air intake located along the length of said return duct in an uppermost zone of the building structure,

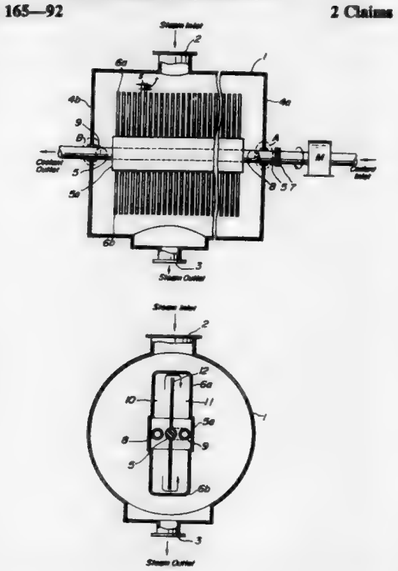
(f) said first and said second air intakes each comprising an air damper structured for selective movement between an open and a closed position, said air dampers interconnected to one another for concurrent reverse positioning; and motor means for electrically positioning said interconnected air dampers between said open and closed positions, thermostatic control means connected in activating relation to said motor means and said air conditioning assembly for concurrent positioning of said air dampers by activation of said motor means and operation of said air conditioning assembly.

4,658,890

ROTARY BLADE TYPE FLUID CONDENSER

Haruo Uehara, and Tsutomu Nakaoka, both of Saga, Japan, assignors to Saga University, Saga, Japan

Filed Apr. 12, 1985, Ser. No. 722,367
Claims priority, application Japan, Apr. 17, 1984, 59-75790
Int. Cl.[4] F28B *1/00;* F28F *5/00*
U.S. Cl. 165—92 2 Claims



1. A condenser for converting a first fluid from a vapor state into a liquid state by heat exchange with a second fluid, comprising

(a) an airtight cylindrical vessel including radial end plates and having an inlet and an outlet for the first fluid;

(b) a rotary axle extending through said cylindrical vessel coaxially therewith and being supported in said end plates;

(c) an elongated hub casing coaxially surrounding said axle and affixed thereto for rotation therewith as a unit; an inlet pipe and an outlet pipe for the second fluid, extending adjacent and parallel to said axle apart from each other on opposite sides of a plane containing an axis of said axle, being provided with a plurality of apertures distributed respectively on their peripheral walls along their length and being enclosed by said hub casing;

(d) a plurality of pairs of hollow blades mounted on said elongated hub casing in an axial series for rotation with said axle as a unit; the hollow blades forming one pair extending in opposite directions radially away from said

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axle; each said hollow blade defining an inner space; each said hollow blade including a partition plate extending radially from said axle in said plane through said hub casing and dividing the inner space of each hollow blade into juxtapositioned first and second chambers communicating with one another in a radially outermost zone of the hollow blade and dividing the inner space of said hub casing into juxtapositioned first and second channels; each said first chamber being evenly in communication with a plurality of respective apertures of said inlet pipe by means of said first channel and each said second chamber being evenly in communication with a plurality of respective apertures of said outlet pipe by means of said second channel for providing for a flow path for said second fluid, leading into each said first chamber evenly from said inlet pipe and further leading into said outlet pipe evenly from each said second chamber; and

(e) motor means for rotating said axle.

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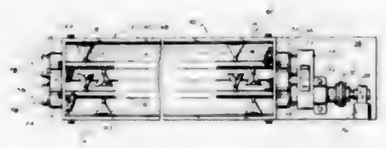
METHOD AND APPARATUS FOR THERMALLY PROCESSING VISCOUS, SHEAR SENSITIVE MATERIALS

William O. Wurtz, Paramus, N.J., assignor to Willow Technology, Inc., Paramus, N.J.

Continuation-in-part of Ser. No. 568,902, Jan. 5, 1984. This application Dec. 5, 1984, Ser. No. 678,761

Int. Cl.⁴ F28F *5/04*

U.S. Cl. 165—92 **7 Claims**



1. In a system handling dewatered waste water sludge from industrial plants, a thermal processor comprising:

(a) an elongated container for containing said materials being processed;

(b) two parallel, horizontally spaced apart shafts disposed longitudinally in said container;

(c) means for rotating said shafts oppositely to one another in said container;

(d) a plurality of working tools mounted on said shafts, each tool comprising two substantially triangularly shaped sides converging toward each other at their connection to the shaft and converging toward each other to define a forward edge in the direction of rotation of said tool thereby defining a double wedge shape, the bottom face of said tool being recessed from the bottom edges of said sides, said tools being mounted to said shafts so that the tools extend substantially up to the bottom of said container and so that the paths of travel of the tools of one shaft come in proximity to the other shaft so as to create an overlapping zone of interaction between the respective tools of said shafts for the rapid impelling and dividing of the material being processed; and

(e) radiant heating means comprising an infrared heater for supplying radiant heat energy to the material being processed in said container the particulate surface of which is continually exposed thereto by the action imparted by the plurality of working tools so that the particles of said material efficiently absorb the radiant heat energy supplied by said radiant heating means to evaporate the liquid therein.

4,658,892

HEAT-TRANSFER TUBES WITH GROOVED INNER SURFACE

Yoshihiro Shinohara; Kiyoshi Oizumi; Yasuhiko Itoh, and Makoto Hori, all of Tsuchiura, Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 684,622

Claims priority, application Japan, Dec. 28, 1983, 58-252191

Int. Cl.⁴ F28F *1/40*

U.S. Cl. 165—133 **3 Claims**

1. In a heat-transfer tube with a grooved inner surface adapted to phase-transition of fluid flowing inside the tube and having a number of spiral grooves having a helix angle (β) and ridges between said grooves having an apex angle formed on the inner surface of the tube, the ratio (Hf/Di) of the depth (Hf) of said grooves to the diameter (Di) of said inner surface of the tube being 0.02 to 0.03, and the helix angle (β) of said grooves to an axis of the tube being 7° to 30°, the improvements comprising:

each of said grooves being substantially trapezoidal in shape;



the ratio (S/Hf) of the cross-sectional area (S) of respective grooved section to said groove depth (Hf) ranging from 0.15 to 0.40;

each of said ridges being substantially triangular in cross-section; and

the apex angle (α) in cross-section of a ridge located between said respective grooves ranging from 30° to 60°.

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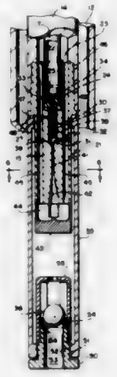
JET PUMP WITH REVERSE FLOW REMOVAL OF INJECTION NOZZLE

John B. Black, 2115 Norman, Pasadena, Tex.

Filed May 16, 1986, Ser. No. 863,880

Int. Cl.⁴ E21B *43/00*

U.S. Cl. 166—68 **20 Claims**



1. A down the hole product flow jet pump in a system operational with circulation fluids pumped from above the earth surface comprising: an in the well down the hole jet pump; first down flow fluid passage means connected to said jet pump and extending up the hole to the well head at the surface; first up flow fluid passage means connected to said jet pump and extending up the hole to the well head at the surface; a jet pump body with second down flow fluid passage means connected to and forming an extension of said first down flow fluid passage means connected to and forming an extension of said first down flow fluid passage means; removeable injection nozzle means that seats in said jet pump body; seat means in said jet pump body for holding said removeable injection nozzle means; a jet pump venturi chamber in said jet pump body positioned for vacuum drawing of product from the well when circulation fluid flows down through said removeable injection nozzle means; additional fluid passage means from said venturi chamber to the well including one way fluid flow means; fluid flow reversing means mounted on the bottom of said jet pump body; lower opening means in said jet pump body extending from said venturi chamber to said fluid flow reversing means; second up flow fluid passage means extending through said jet pump body from said fluid flow reversing means to the top of said body and connected to said first up flow passage means; circulation fluid pumping means at the surface; surface fluid passage means including fluid flow reversing valve means interconnecting said circulation fluid pumping means, said first down flow fluid passage means and said first up flow fluid passage means for pumping production fluids from the well and for pumping fluid in reverse through the system for float removal of said injection nozzle means from said seat means in said body, for movement up from said jet pump body and on up said first down flow fluid passage means to the well head; and injection nozzle removal means connected to said first down flow fluid passage means at the well head.

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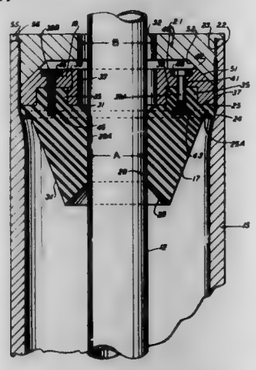
WELL HEAD PIPE STRIPPER

Paul M. Craig, 30131 Matisse Dr., Rancho Palos Verdes, Calif. 90274

Filed Jun. 20, 1985, Ser. No. 746,649

Int. Cl.⁴ E21B *33/08*

U.S. Cl. 166—84 **4 Claims**



1. A well pipe stripper for pipe strings supported from a drill or production ring and surrounded by a compression shell upon a rig platform, the combination comprising a frustroconical stripper unit, coaxial annular walls defining a stepped central bore in the stripper unit adapted to contact the outer surface of the well pipe, a plurality of securing pads integral with said stripper unit and extending from the upper surface of said stripper unit, fastening means associated with each of said securing pads, a metallic mounting plate fitted to said stripper unit, fasteners accesible on said mounting plate for engagement with said fastening means to secure removably said stripper unit to said mounting plate, and clamping means for retaining said stripper unit and mounting plate in said compression shell about said well pipe.

4,658,895

GRAVEL PACK SAFETY SUB

David P. Brisco, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 19, 1986, Ser. No. 841,491

Int. Cl.⁴ F21B *23/00*

U.S. Cl. 166—237 **12 Claims**

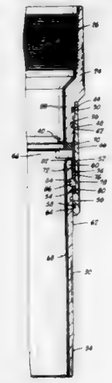
1. A safety sub comprising:

adapter means attachable to a tool string portion and having lug means thereon;

mandrel means attachable to another tool string portion, said mandrel means defining an outwardly opening recess thereon and having lug means thereon facing said lug means on said adapter means;

reversible connecting means for selectively connecting said mandrel means to said adapter means in a first position in which said lug means on said mandrel means are separated from said lug means on said adapter means for allowing relative rotation between said adapter means and said mandrel means and a second position in which said lug means are mutually engaged for preventing relative rotation between said adapter means and said mandrel means, said reversible connecting means comprising:

a retainer attached to said adapter means and defining a central opening therethrough for slidably receiving a portion of said mandrel means, said retainer and said mandrel means defining an annular cavity therebetween



in communication with said recess on said mandrel means;

a sleeve positionable in said cavity and having a first end and a second end, said sleeve defining a transverse hole therethrough longitudinally nearer said first end of said sleeve than said second end of said sleeve, said hole in said sleeve being alignable with said recess on said mandrel means; and

a pin extending through said hole in said sleeve into said recess on said mandrel means;

said sleeve having a first position, corresponding to said safety sub first position, in which said second end of said sleeve is adjacent said adapter means and a second position, corresponding to said safety sub second position, in which said first end of said sleeve is adjacent said adapter means.

4,658,896

APPARATUS FOR A TUBULAR STRING AND METHOD OF ATTACHING THE SAME THERETO

Jack J. Milam, 2217 Lane Way Cir., Oklahoma City, Okla. 73159

Filed Aug. 16, 1985, Ser. No. 766,644

Int. Cl.⁴ E21B *17/10*

U.S. Cl. 166—241 **11 Claims**

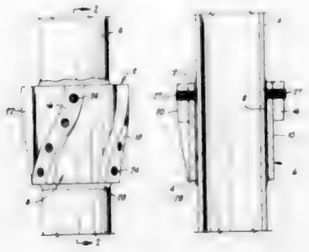
1. A centralizer apparatus for a tubular sting, comprising:

a collar having an inner surface spaced from the tubular string when said centralizer apparatus is disposed thereon;

a plurality of protuberances disposed on an outer surface of said collar and extending at oblique angles between edges of said collar; and

first connector means for connecting said collar to the tubular string, said first connector means including a plurality

of sets of set screws retained radially through at least said collar, each of said sets having a respective plurality of



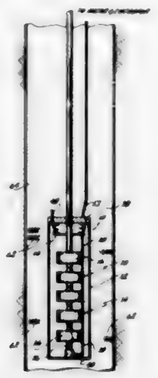
said set screws respectively aligned substantially linearly at an oblique angle to the edges of said collar.

4,658,897

DOWNHOLE TRANSDUCER SYSTEMS

Harry W. Kompanek; James R. Ligman, both of Santa Barbara, and Eric D. Plambeck, Carpinteria, all of Calif., assignors to Piezo Sona-Tool Corporation, Carpinteria, Calif.

Filed Jul. 27, 1984, Ser. No. 635,191
Int. Cl.[4] E21B *33/14*
U.S. Cl. 166—249 13 Claims



1. A method of producing concrete around a casing wall without oil, mud and gas pockets in the concrete, including the steps of:

providing a transducer assembly including at least one transducer having characteristics of resonating at a particular frequency,

providing a casing resonant at the particular frequency,

disposing the transducer assembly in the casing,

disposing wet concrete around the casing, and

moving the transducer along the casing, while resonating the transducer at the particular frequency to obtain a resonance of the casing at the particular frequency, to eliminate oil, mud and gas pockets around the casing while the concrete is drying.

4,658,898

OIL RESERVOIR PERMEABILITY CONTROL USING POLYMERIC GELS

James M. Paul, DeSoto, and Edwin T. Strom, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 24, 1985, Ser. No. 737,617
The portion of the term of this patent subsequent to Sep. 23, 2003, has been disclaimed.
Int. Cl.[4] E21B *33/138, 43/22*
U.S. Cl. 166—270 14 Claims

1. In a method for the enhanced recovery of oil by the injection of a flooding fluid into a subterranean oil-bearing formation through an injection well extending from the surface of the earth into the formation, to displace oil from the formation towards a production well at a distance from the injection well, the improvement which comprises selectively reducing the permeability of the more highly permeable regions of the formation by injecting into the formation through the injection well an aqueous solution of the heteropolysaccharide S-130, said aqueous solution containing cations of basic organic compounds, the cations containing at least two positively charged centers.

4,658,899

USE OF UNCALCINED/PARTIALLY CALCINED INGREDIENTS IN THE MANUFACTURE OF SINTERED PELLETS USEFUL FOR GAS AND OIL WELL PROPPANTS

Jeremiah J. Fitzgibbon, Lafayette, La., assignor to Standard Oil Proppants Company, L.P., Irving, Tex.

Division of Ser. No. 538,058, Sep. 30, 1983, Pat. No. 4,623,630, which is a continuation-in-part of Ser. No. 405,055, Aug. 4, 1982, Pat. No. 4,427,068, which is a continuation-in-part of Ser. No. 347,210, Feb. 9, 1982, abandoned. This application Apr. 22, 1985, Ser. No. 707,776
Int. Cl.[4] E21B *43/267*
U.S. Cl. 166—280 11 Claims

1. A method of fracturing a subterranean formiation located at a depth in excess of 6,000 but less than 14,000 feet, which comprises injecting a hydraulic fluid into said formation at a rate and pressure sufficient to open a fracture therein, injecting into said fracture a fluid containing composite, sintered, spherical pellets having a permeability to distilled water at about 75° F. (24° C. which decreases not more than about three-fourths when the applied pressure on said pellets is increased from 2,000 to 10,000 psi (140–700 kg/cm^2), said pellets being prepared from materials consisting essentially of clay materials, bauxitic materials and alumina wherein said materials include at least one uncalcined or partially calcined ingredient selected from the group consisting of clay materials, bauxitic materials, and dust collector fines produced during the calcination of clay materials or bauxitic materials, and said pellets having an alumia-to-silica dry-weight-basis ratio from about 9:1 to about 1:1, said pellets having an apparent specific gravity of less than 3.30 and at least about 6.51 weight percent of other than alumina and silica.

4,658,900

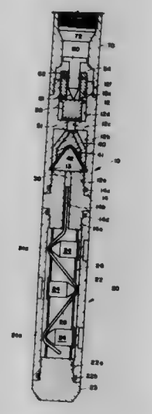
HIGH ENERGY FIRING HEAD FOR WELL PERFORATING GUNS

Gregg W. Stout, Montgomery, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Jun. 6, 1985, Ser. No. 742,096
Int. Cl.[4] F21B *43/116*
U.S. Cl. 166—297 9 Claims

1. A method of firing a well perforating gun in a well environment of about 400° F., said gun containing a plurality of vertically spaced, shaped charges formed of thermal resistant explosive material, comprising the steps of: running a primer cord of thermal resistant explosive material adjacent the detonating ends of the thermal resistant shaped charges; disposing a downwardly directed shaped charge formed of thermal resistant explosive material immediately above the top end of the primer cord; mounting an impact detonatable flyer plate primer immediately above the downwardly directed shaped charge; and detonating said primer to fire said downwardly directed shaped charge by said flyer plate, thereby detonating said primer cord and all of said thermal resistant shaped charges.

5. A perforating gun for high-temperature wells comprising carrier means for supporting a plurality of radially directed shaped charges in vertically spaced relation; a primer cord



passing upwardly adjacent the detonating end of all said shaped charges; a downwardly directed shaped charge positioned immediately above the top end of said primer cord, all of said shaped charges and said primer cord being formed of thermally resistant explosive material; and an impact detonatable, flying plate primer positioned immediately above and adjacent to said downwardly directed shaped charge, whereby the detonation of said primer detonates said downwardly directed shaped charge and said primer cord at a high level of detonating energy to assure the detonation of said radially directed shaped charges.

4,658,901

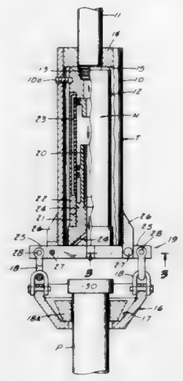
METHOD OF AND APPARATUS FOR REMOVING STUCK WELL PIPE

Ivan D. Alexander, P.O. Box 71, Anza, Calif. 92306

Filed Sep. 3, 1985, Ser. No. 771,737
Int. Cl.[4] E21B *31/113*
U.S. Cl. 166—301 9 Claims

1. The method of removing stuck well pipe from a well bore comprises: supporting a pulling tool on the top of an air hammer, connecting the tool to the pipe, operating the air hammer to apply at least one downwardly acting hammer blow to the tool, and converting the downwardly acting hammer force to an upward force applied to the stuck pipe while applying an upward pull to the hammer.

4. Apparatus for removing stuck pipe from a well bore comprises: an elongated body structure having a shoulder to engage the upper end of an air hammer, force reversing means at the lower of said body structure, connecting means for connecting said force reversing means to a stuck pipe, and said force reversing means having portions engageable by said air hammer to impose an upward force on said connecting means



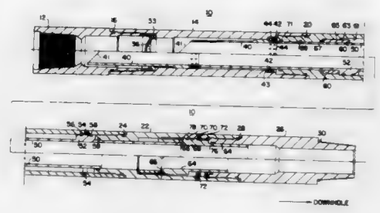
in response to a downward force applied to said force reversing means by said air hammer.

4,658,902

SURGING FLUIDS DOWNHOLE IN AN EARTH BOREHOLE

David S. Wesson, Katy; A. Glen Edwards, Hockley; Flint R. George, Katy; Kevin R. George, Barten Addition, all of Tex., and Emmert F. Brieger, Nogal, N. Mex., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 8, 1985, Ser. No. 752,884
Int. Cl.[4] E21B *21/00*
U.S. Cl. 166—317 4 Claims



1. An annulus pressure resonsive surge tool for use in a conduit string in a well bore having fluid therein filling the annulus between said conduit string and said well bore, said annulus pressure responsive surge tool comprising:

a housing having a bore therethrough, a first aperture therein to allow communication of said fluid from the exterior of the housing to the bore therethrough, and a second aperture therein to allow communication of said fluid from the exterior of the housing to the bore therethrough;

a frangible closure member retained within the bore of the housing sealingly closing the same from fluid therethrough;

a first annular piston slidable within a portion of the bore of the housing having, in turn, a bore therethrough, a portion of the exterior of the first annular piston sealingly engaging a portion of the bore of the housing to form a chamber containing a compressible fluid under pressure therein at a pressure less than the pressure of said fluid in said annulus, and a portion of the first annular piston in fluid communi-

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cation through the first aperture in the housing with said fluid in said annulus;

a second annular piston slidable within a portion of the bore of the housing having, in turn, a bore therethrough, a portion of the second annular piston abutting a portion of the first piston, a portion of the second annular piston sealingly engaging a portion of the bore of the housing, and a portion of the second annular piston in fluid communication through the second aperture in the housing with said fluid in said annulus; and

first releasable locking means retained within a portion of the bore in the housing having a portion thereof releasably retaining the first piston in a first position in the bore in the housing

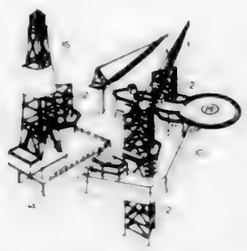
whereby upon increasing the pressure of said fluid in said annulus above a predetermined level, the pressure of said fluid in said annulus causes the first piston and second piston to move relative to the housing thereby releasing the first piston from the releasable locking means allowing the continued movement of the first piston within the housing to be accelerated by the pressure differential between the pressure of said fluid in said annulus and the compressible fluid in the chamber between the housing and the first piston resulting in the first piston impacting the frangible closure member severing a portion thereof, being forced therethrough and deforming the severed portion of the frangible member out of sealing engagement with the bore of the housing thereby forming a flow path through said annulus pressure responsive surge tool.

4,658,903

METHOD FOR HANDLING WELLHEAD ASSEMBLY

Hiromitsu Tateishi, Tokyo, Japan, assignor to Mitsui Ocean Development & Engineering Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1985, Ser. No. 799,805
Int. Cl.⁴ E21B *7/128*
U.S. Cl. 166—335 **1 Claim**



1. A method of handling an underwater assembly by an offshore jack-up drilling rig having a plurality of legs and a cantilever working deck slidably mounted on a platform thereof comprising steps of:

(a) lowering down said legs to the ocean floor at a position adjacent to a template provided on shore, lifting up said jack-up drilling rig above the surface of a body of water, extending said cantilever working deck from said rig to over said template provided on the shore;

(b) mounting said template on the underside of said cantilever working deck and returning said working deck together with said template back to the original position within said jack-up drilling rig;

(c) lifting up said legs from the surface of a body of water and towing said rig to a preselected drilling position;

(d) lowering down said legs from said rig to on the ocean floor and lifting up said platform above the surface of a body of water;

(e) extending said cantilever working deck together with said template from said platform to over the surface of a body of water; and

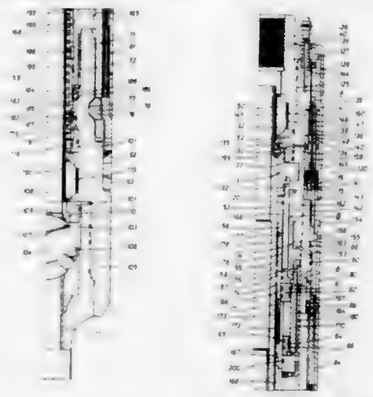
(f) lowering down said template to on the ocean floor.

4,658,904

SUBSEA MASTER VALVE FOR USE IN WELL TESTING

Bernard Doremus, Echouboulains, France, and Dale E. Meek, Missouri City, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed May 31, 1985, Ser. No. 740,085
Int. Cl.⁴ F21B *34/04, 34/10*
U.S. Cl. 166—336 **9 Claims**



1. Apparatus adapted to be landed in a subsea wellhead and used to control the flow of fluids therefrom, comprising a relatively short length valve body having a flow passage; first, normally closed valve means for opening and closing said flow passage; a control valve unit having a flow passage and being adapted to be connected to a pipe string extending upwardly to the surface; remotely operable means for releasably connecting said control unit to said valve body; and second, normally open valve means in said control unit for retaining fluids in said pipe string when said connecting means is released; further including means responsive to the application of a hydraulic control pressure to an interior region of said control unit for releasing said connecting means; and vent passage and valve means that are opened in response to the application of said hydraulic control pressure for bleeding any excessive pressure between said first and second valve means to the exterior of said control unit prior to release of said connecting means.

9. A method for use in the production testing of a well using a control unit releasably connected to a valve unit landed in a subsea wellhead, said valve unit having a normally closed shut-in valve, and said control unit having a normally open retainer valve, comprising the steps of: opening said shut-in valve to allow the well to produce; closing said shut-in valve and said retainer valve; venting pressure in the interior of said control unit between said shut-in valve and said retainer valve to the annulus; and then releasing said control unit from said valve unit to enable said control unit to be removed from said wellhead.

4,658,905

MUD VALVE

Edward V. Burge, 2620 Durgan, Houston, Tex. 77043

Filed Jun. 21, 1985, Ser. No. 747,296
Int. Cl.⁴ E21B *34/08*
U.S. Cl. 166—373 **22 Claims**

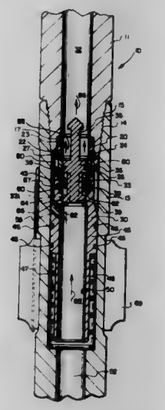
1. An improved mud saver valve of the type comprising a tubular body connectable between a kelly and a drill string and a piston axially movable within said tubular body forming a

valve seat therein and incorporating a plug removably mounted therein to normally close said bore with said piston being biased into engagement with said valve seat for the closure thereof, the improvement comprising:

said tubular body being formed of upper and lower tubular sections;

an upper valve seat formed in a lower region of said upper tubular body section and constructed with a generally cylindrical, curved valve seating recess therearound;

said piston being constructed with a lower valve seat member in an upper end thereof adapted for matingly engaging



said upper valve seat member and formed with a generally cylindrical, curved edge portion adapted for matingly engaging said curved recess of said upper valve seat;

said piston being formed with a generally cylindrical, elongate intermediate body portion comprising a flange region adapted for receipt in, axial alignment with, and slidable engagement through said lower tubular member for facilitating the axial alignment and lateral stability of said upper and lower valve seats; and

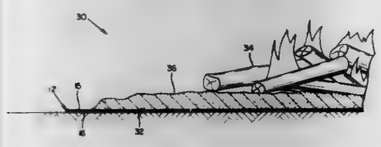
means for coupling said upper and lower tubular sections one to the other for the engagement of said upper and lower valve seats disposed thereon.

4,658,906

CAMPFIRE SHIELD APPARATUS

Bernard A. Hanten, 8500 Galice Rd., Merlin, Oreg. 97532, and Gerald L. Briggs, 2750 Cloverlawn Dr., Grants Pass, Oreg. 97527

Filed Nov. 12, 1985, Ser. No. 796,804
Int. Cl.⁴ A62C *7/00*
U.S. Cl. 169—45 **2 Claims**



1. A method of limiting environmental effects of a campfire on a ground surface, comprising:

providing a foldable, fireproof insulating blanket;

transporting the folded blanket to a campfire site;

unfolding the blanket;

placing the insulating blanket on the ground surface;

placing a layer of soil on the insulating blanket to shield the blanket from direct contact with the campfire;

building combustible products into the campfire over the layer of soil on the blanket;

igniting the campfire;

removing remains of the campfire after the campfire has burned the combustible products; and

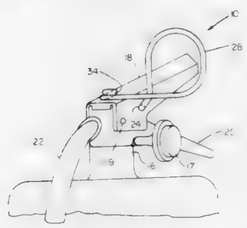
disposing of the remains on the blanket at an environmentally satisfactory disposal site.

4,658,907

FIRE EXTINGUISHER SAFETY PIN TAG HOLDER

Wayne A. Popp, 938 Crestland Dr., Ballwin, Mo. 63011

Filed Dec. 30, 1985, Ser. No. 815,065
Int. Cl.⁴ A62C *23/08*
U.S. Cl. 169—75 **12 Claims**



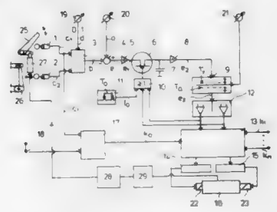
1. A fire extinguisher safety pin for use with fire extinguishers having a trigger provided with registering holes receiving the pin for blocking the operation of said trigger, said safety pin having a pin section receivable in said registering holes of the trigger, a finger loop means connected to said pin section and extending above said pin section in a vertical plane and laterally extending stabilizing means biased against a top surface of the trigger to prevent the rotation of said finger loop means, said stabilizing means being connected to said finger loop means and extending over and biased against a top of the trigger.

4,658,908

ELECTRONIC CONTROL SYSTEM FOR A WORK IMPLEMENT

Hannu Hannukainen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Nov. 3, 1983, Ser. No. 548,511
Claims priority, application Finland, Nov. 4, 1982, 823777
Int. Cl.⁴ A01B *63/112*
U.S. Cl. 172—10 **9 Claims**



1. A tractor control system for a work implement, said control system having an electronic circuit utilizing an analog/digital technique and including an analog/digital control unit and means for measuring a factor dominating the performance of an actuator and providing a first signal representing the actual value of said control system, a second signal representing a set point value, and a third signal in analog form

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representing the difference between the values of said first and second signals, said difference constituting the control deviation for governing said analog/digital control unit, said unit for controlling said actuator, said control system comprising

converting means for converting said third signal to digital form by sampling means for sampling at a sampling frequency f_a to establish a dead range in a time dimension, said sampling means providing pulses, signals supplied to said converting means being first in analog form and being converted to digital signals in establishing a first dead range in a time dimension whereby said control system transfers and processes digital information; and

comparator means for processing said digital signal, said comparator means including an output, limit value comparators having limit values defining said dead range set therein, whereby when the amplitude of the pulses established by said sampling falls outside said dead range at least one time, said sampling means provides a transition to continuous following of the control deviation, thereby performing a requisite control so that when the value of a fourth signal derived from said control deviation falls into said dead range said sampling is repeated, a digital logic circuit connected to the output of said comparator means, means for supplying switch data to said digital logic circuit thereby enabling said digital logic circuit to determine whether a control measure suggested by said control system may be carried out, said comparator means comprising a sensitivity setting comparator and a setting unit connected to said sensitivity setting comparator for setting the limits of said dead range.

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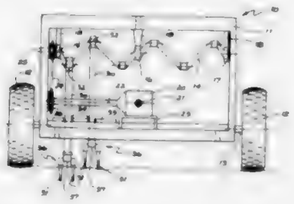
VEHICLE MOUNTED AERATING MACHINE

Brian P. McDermott, Mermaid Waters, and David J. Livingstone, Sylvania Waters, both of Australia, assignors to Greencare Pty., Limited, Sylvania Waters, Australia

Filed Mar. 25, 1985, Ser. No. 715,463

Int. Cl.⁴ A01B *45/02, 35/28*

U.S. Cl. 172—22 **9 Claims**



1. An aerating machine for turf, said aerating machine including:

a supporting frame, including a three-point hitch connection adapted for connection to a tractor;

a crankshaft including a plurality of cranks rotatably mounted relative to the frame and extending transversely of the direction of travel of the frame;

a plurality of rigid tyne arms mounted relative to the crankshaft for reciprocation by the crankshaft;

at least one tyne substantially rigidly mounted relative to each tyne arm;

a transmission means mounted on the frame for rotating the crankshaft when the transmission means is driven, the transmission means including connection means for connection to a power take off of a tractor;

a guide means substantially enclosing the lower portion of the frame adjacent the tynes and for restraining the lateral movement of the tyne arms, said guide means comprising a horizontal guide plate means defining a plurality of slots within which the lower ends of respective tyne arms reciprocate vertically and longitudinally of the frame such that, with forward motion of the operating machine, the tynes may remain stationary, horizontally, relative to the turf when the tynes are in the turf and the aerating machine is moving forward;

each said guide means including a stop means disposed substantially vertically aligned with the forwardmost position of rotation on the crank tyne connections; and

a tyne arm spring return means for returning a lower end of the tyne arm to a forward position, when the respective tyne is removed from the ground, at a rate substantially equal to the rate of forward motion of an upper end of the respective tyne arm, due to the rotation of the crankshaft, said crankshaft being rotatable in the same direction as the forward direction of movement to cause the tyne arms to reciprocate in a substantially vertical direction relative to the turf when the aerating machine is travelling in the forward direction, whereby the tynes are projected into and withdrawn from the turf, the tynes being maintained stationary, horizontally, relative to the turf, and substantially perpendicular to the turf, when the tynes are in the turf and the aerating machine is moving.

4,658,910

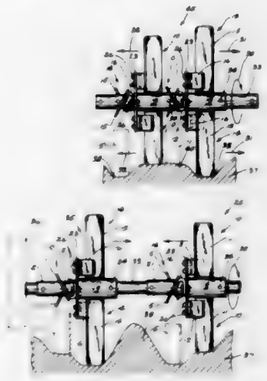
GARDEN TILLER PLOW TINE ASSEMBLY

Thurman W. Garriss, Box 51, Watha, N.C. 28471

Filed Jan. 15, 1986, Ser. No. 818,889

Int. Cl.⁴ A01B *33/02*

U.S. Cl. 172—123 **8 Claims**



1. A garden tiller tine assembly comprising:

an axle adapted to be rotated about a substantially horizontal axis;

a vertical disposed plate rigidly attached to said axle;

a first blade means for engaging the soil, said first blade means being substantially planar in configuration and having a centrally disposed longitudinal axis;

attaching means rigidly connecting the first blade means to said plate for at all times holding the first blade means to one side of said plate in a plane obliquely disposed with respect to said horizontal axis of said axle and positioning a proximal edge of said first blade means closest to said plate and a distal edge of the first blade means farther away from said plate than said proximal edge, and positioning said longitudinal axis of said first blade means to extend through said horizontal axis of rotation of said axle;

means for rotating said axle and first blade means in a first rotational direction for causing the proximal edge of said first blade means to always be leading said distal edge in said first rotational direction whereby soil contacted by

the first blade means will be thrown in a first lateral direction away from said plate;

a second blade means for engaging the soil, said second blade means being substantially planar in configuration and having a centrally disposed longitudinal axis; and

second attaching means rigidly connecting the second blade means to said plate for at all times holding the second blade means to the other side of said plate in a second plane obliquely disposed with respect to said horizontal axis of said axle and positioning a proximal edge of said second blade means closest to said plate and a distal edge of said second blade means farther away from said plate than said proximal edge of said second blade means, and positioning said longitudinal axis of said second blade means to extend through said horizontal axis of rotation of said axle, whereby when said axle and second blade means are rotated in said first rotational direction, the proximal edge of said second blade means will always be trailing said distal edge thereof in said first rotational direction whereby soil contacted by the second blade means will be thrown towards said first blade means.

4,658,911

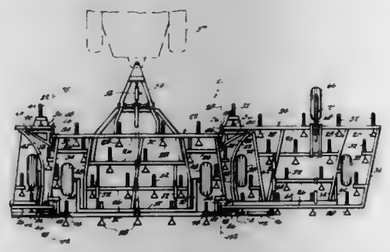
FLEXIBLE FRAMES FOR WIDE SWATH AGRICULTURAL IMPLEMENTS

Kenneth W. Drever, Pispot, and Robert G. Purton, Yorkton, both of Canada, assignors to Morris Rod-Weeder Co., Ltd., Yorkton, Canada

Filed Dec. 17, 1985, Ser. No. 810,053

Int. Cl.⁴ A01B *73/04*

U.S. Cl. 172—776 **5 Claims**



1. A wide swath agricultural implement defining an intended forward path of travel and adapted to have substantially all frame sections thereof follow ground contours and maintain a substantially constant height above ground, comprising:

at least first and second frame sections arranged side-by-side transversely of said path, said first section having at least two ground engaging support wheels spaced transversely of said path and said second section having at least two ground engaging support wheels spaced along said path of travel; and

link means coupling said sections together for transferring forward thrust of said first section to said second section, for limited vertical translational displacement of said second section relative to said first section, for limited angular displacement of said second section relative to said first section substantially above at least one first axis generally normal to said path and for angular displacement of said second section relative to said first section about a second axis generally parallel to said path, said angular displacement about said second axis being sufficient to enable said second section to be raised to a folded transport position substantially or fully supported on said first section, said link means comprising:

first link means;

first hinge means connecting said first link means to a forward side portion of said first section for pivotal movement about said second axis;

means connecting said first link means to a forward side portion of said second section opposed to said forward side portion of said first section for limited universal and swivelling movement;

second link means;

second hinge means connecting said second link means to a rear side portion of said second section for pivotal movement about a third axis parallel to and alignable with said second axis; and

means connecting said second link means to a rear side portion of said first section which transversely overlaps said second section for limited universal and swivelling movement, said connecting means for said second link means being located transversely outboard of said second hinge means, whereby during operation of said implement said second link means is in tension.

4,658,912

PERCUSSION DRILL

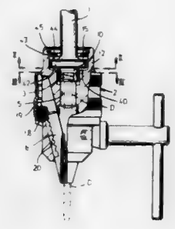
Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sontheim, Fed. Rep. of Germany

Filed Apr. 23, 1985, Ser. No. 726,587

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1984, 3415654

Int. Cl.⁴ B25D *17/08*

U.S. Cl. 173—104 **4 Claims**



1. In a rotary percussion drill, the combination which comprises:

a percussion drill spindle capable of axial reciprocation and rotation;

a drill chuck body mounted on said percussion drill spindle and engaged thereby for rotation and axial impact movement by said precussion drill spindle but movable axially relative to said spindle, said chuck body being formed with an axial passage through which percussion action can be transferred from said precussion drill spindle to a drill;

a plurality of chuck jaws on said drill chuck body movable to secure said drill on said body;

a radially outwardly extending annular shoulder formed on said percussion drill spindle and having a circumferentially continuous abutment surface in a plane perpendicular to an axis of said spindle and said body turned toward said drill;

a radially inwardly extending circumferentially continuous annular shoulder formed on said chuck body and having an abutment surface in a plane perpendicular to said axis juxtaposed with said abutment surface of said spindle, said surfaces providing large annular contact areas during contact against one another;

means limiting axial movement of said drill chuck body in a direction away from the drill, said means comprising:

a circumferentially continuous rearwardly facing surface in a plane perpendicular to said axis on the shoulder of said spindle,

a disc connected to said chuck body, said disc having a circumferentially continuous contact surface in a plane perpendicular to said axis juxtaposed with said rearwardly facing surface, and

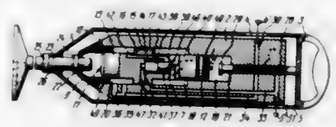
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means for retaining said disc on said body.

4,658,913
HYDROPNEUMATIC PERCUSSIVE TOOL

Ivan A. Yantsen, bulvar Mira, 40, kv. 2, Karaganda; Kenes K. Bekishev, ulitsa Furmanova, 148, kv. 50, Alma-Ata; Orest G. Savchak, ulitsa Satpaeva, 58, kv. 1; Alexandr B. Klok, ulitsa Gogolya, 64, kv. 25, both of Karaganda; Tolgat M. Zhanabaev, ulitsa Vesnovskaya, 19, kv. 51, Alma-Ata; Mechislav-Valentinas K. Pakshtas, ulitsa Studencheskaya, 12, kv. 56, Mozyr; Boris N. Glotov, prospekt Lenina, 81, korpus 1, kv. 73, Karaganda; Garold K. Fiak, ulitsa Shvernika, 1, kv. 11, Tselinograd; Alexei F. Timkin, Zeleny proezd, 45, korpus 6, kv. 16, Kalinin; Nikolai I. Zorin, Changarsky bulvar, 11, kv. 26, and Leonid M. Bobylev, ulitsa Petrozavodskaya, 15, korpus 2, kv. 22, both of Moscow, all of U.S.S.R.

Division of Ser. No. 384,492, Jun. 3, 1982, Pat. No. 4,505,340. This application Dec. 19, 1984, Ser. No. 683,799
Int. Cl.[4] B25D *9/00*
U.S. Cl. 173—134 **2 Claims**



1. A hydropneumatic percussive tool comprising:
(a) a casing;
(b) a hollow housing having radial passages therein and mounted in the interior of said casing for axial reciprocations therein;
(c) an implement secured in said casing, a shank of said implement being inserted into the interior of said housing;
(d) a piston hammer of stepped configuration having an annular groove therein, said piston hammer being disposed in the interior of said housing and having portions of larger and smaller diameters to separate said housing into three chambers, one of said chambers being in communication with a pressure passageway through one of said radial passages, another one communicating through another said radial passage with a discharge passageway, whereas yet another one is intended to be filled with a compressed gas to serve as a pneumatic accumulator;
(e) the distance between said radial passages of said housing connected to said pressure and discharge passageways being a multiple of the maximum distance between said implement and said piston hammer;
(f) a tubular element arranged inside said housing coaxially with said implement for axial reciprocation, one end of said tubular element penetrating said pneumatic accumulator, the other end thereof cooperating with said casing to transmit thereto a force from said pneumatic accumulator;
(g) said implement and said tubular element mounting said housing in said casing for axial reciprocation;
(h) a hydraulic distributor having a cylindrical chamber which accommodates a control valve means separating this chamber into two portions, one such portion being adapted to continuously communicate by way of one of said radial passages with said chamber connected to said discharge passageway, the other portion communicating through another of said radial passages connected to a hollow formed by said annular groove on said piston hammer, the side surface of said hydraulic distributor having a port periodically blocked by said valve means and communicating through yet another of said radial passages with said chamber connected to said pressure passageway; and
(i) said hydraulic distributor is disposed inside said piston hammer, the distance between said radial passages connected to said pressure and discharge passageways being equal to the maximum distance between said implement and said piston hammer.

4,658,914
CONTROLLING SULFIDE SCAVENGER CONTENT OF DRILLING FLUID

Stephen D. Matza, Stafford; William E. Ellington, and Henry C. Fleming, III, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

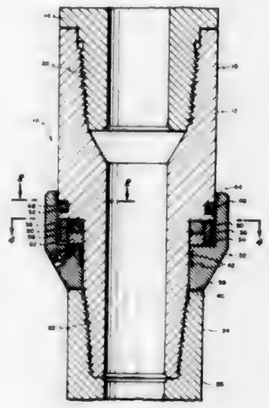
Continuation-in-part of Ser. No. 609,611, May 14, 1984, abandoned. This application Oct. 4, 1985, Ser. No. 784,422
Int. Cl.[4] G01N *31/02, 33/24*
U.S. Cl. 175—40 **11 Claims**

1. In a process for drilling a well with a water based drilling fluid containing zinc based scavengers for controlling encountered sulfide ions, in which process analyses are made for monitoring and controlling the amount of scavenger in the drilling fluid, an improved process for controlling the adequacy of the scavenging capability, comprising:
mixing one part by volume of a sample of circulating drilling fluid with about 4 to 10 parts by volume of a selective solvent for zinc ions, with said solvent containing a kind and amount of buffering material providing a pH of about 4 to 6, and being capable of dissolving substantially all of the zinc present in the drilling fluid except for zinc ions combined into precipitated molecules of zinc sulfides;
separating the resulting solution from undissolved solids;
determining the amount of zinc in the solids-free solution in order to determine the proportion of the unspent zinc based sulfide scavenger in the circulating drilling fluid; and
adjusting the proportion of the scavenger in the drilling fluid to the extent required to provide enough for scavenging a selected amount of encountered sulfide ions without providing enough to impair the rheology of the drilling fluid.

4,658,915
EASY BREAK-OUT TOOL JOINT AND METHOD

Gregg A. Goris, Oxnard, and Igor Krasnov, Port Hueneme, both of Calif., assignors to Vetco Gray Inc., Houston, Tex.

Filed Dec. 6, 1985, Ser. No. 805,664
Int. Cl.[4] F21B *17/043, 19/16*
U.S. Cl. 175—57 **20 Claims**



1. An easy break-out tool joint for reducing the torque required to break-out tubular members connected together by torque applying means to form a joint comprising,
a first tubular member having a first shoulder means and external threads, thus forming a pin,

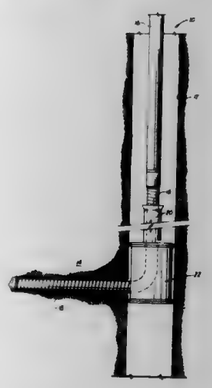
a second tubular member having an end shoulder means and internal threads, thus forming a box,
said pin being adapted to be threaded into said box until said shoulder means engage to form said joint,
said first shoulder means becoming part of the torque applying means to rotate said second tubular member when said first tubular member is rotated in one direction, and
means for moving said first shoulder means away from said end shoulder means when said first tubular member is rotated in a second direction, thereby lessening the torque required to break-out said joint between the tubular members.

17. A method of back reaming a well bore located below a drilling platform comprises the steps of:
lowering a drive means including an easy break-out tool to the platform level and connecting said drive means via said easy break-out tool to the top of a drill string located at about the platform level,
raising said drive means and said drill pipe string while rotating said string in one direction,
stopping the raising of the string and stopping rotation after the lower of a plurality of drill pipe lengths has reached a point slightly above the platform,
gripping a drill pipe length located below said lower drill pipe length,
rotating said drive means in the opposite direction from said one direction so that easy break-out tool functions to thereby disconnect the topmost of the plurality of drill pipe lengths from said drive means,
holding said disconnected topmost drill pipe length, and
disconnecting said lowermost drill pipe length from the aforesaid drill pipe length being gripped.

4,658,916
METHOD AND APPARATUS FOR HYDROCARBON RECOVERY

Les Bond, P.O. Box 624, Neosho, Mo. 64850

Filed Sep. 13, 1985, Ser. No. 775,996
Int. Cl.[4] E21B *7/08, 17/20, 17/22*
U.S. Cl. 175—81 **21 Claims**



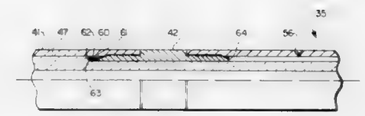
1. A bendable drill shaft for boring earth material comprising:
drive coupling means formed about a longitudinal axis and adapted for affixure to a rotational drive source;
an inner coil shaft formed of flat metal stock having a lesser thickness dimension than width secured to said drive coupling means in equi-spaced relationship to said longitudinal axis;
an outer coil shaft formed of flat stock having a lesser thickness dimension than width and being oppositely coiled from said inner coil shaft, secured to said drive coupling means concentric to said inner coil shaft; and
drill bit means secured to said inner coil shaft to maintain adjacent coil edges flush, while being secured to said outer coil shaft to maintain the adjacent coil edges flush and to maintain the adjacent inner and outer coil surface flush.

4,658,917
ENCLOSED JAR TOOL

Curtis P. Ring, Millarville, Canada, assignor to Bralorne Resources Limited, Alberta, Canada

Continuation of Ser. No. 531,733, Sep. 13, 1983, abandoned. This application Sep. 9, 1985, Ser. No. 775,106
Int. Cl.[4] E21B *4/14*
U.S. Cl. 175—297 **8 Claims**





1. A jar tool comprising: a mandrel adapted for connection to a piece of drill string at one end of said tool; a housing axially movable relative to said mandrel and adapted for connection to said drill string at the opposite end of said tool; first and second pairs of abutment faces between said mandrel and said housing defining jar and bump positions of said tool, respectively, said first and second pairs of abutment faces located in an abutment chamber; a piston slidably located between walls of said mandrel and said housing and having valve means operable to regulate the passage of hydraulic fluid from a first chamber on one side of said piston between said mandrel and said housing to a second chamber on the other side of said piston between said mandrel and said housing, said valve means including passages for permitting said hydraulic fluid to flow through said piston and between said piston and said walls of said mandrel and housing; and sealing means between said housing and mandrel operable to seal said first pair of abutment faces from outside contamination in said abutment chamber and seal said abutment chamber from said first and second chambers, said first and second pairs of abutment faces being enclosed within said jar tool.

4,658,918
THREADED NOZZLE FOR A DRILL BIT

Lawrence W. Matson, League City, Tex., assignor to Strata Bit Corporation, Houston, Tex.

Filed Jul. 25, 1985, Ser. No. 758,888
Int. Cl.[4] E21B *10/18*
U.S. Cl. 175—423 **7 Claims**

1. A threaded nozzle adapted to be engaged by a manually actuable tool for being screwed-in and screwed-out of a drill bit, said nozzle comprising:
a body having a fluid-conducting jet opening and helical threads adapting said nozzle to be threadedly connected with corresponding helical threads on a drill bit by being rotated about a longitudinal axis of rotation, and
a front face on said body including at least one first contact surface and at least one second contact surface, said contact surfaces being engageable by tool surfaces of a manually actuable tool and being arranged such that a

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force applied to said first contact surface causes said nozzle to be screwed-in, and a force applied to said second contact surface causes said nozzle to be screwed-out, said first and second contact surfaces being disposed at different angular relationships relative to said axis of rotation such that:

said second contact surface extends longitudinally forwardly in such manner as to be disposed substantially parallel to said axis of rotation,



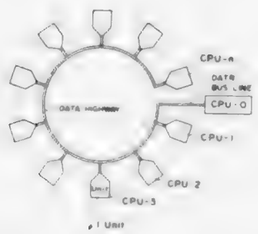
said first contact surface extends longitudinally forwardly in such manner as to be inclined toward the direction of rotation in which said nozzle is screwed-in so that in response to the application of a force to said first contact surface for screwing-in said nozzle, a longitudinally forward reaction force is applied against the tool for pushing the tool off said first contact surface when said nozzle has been screwed-in to a predetermined extent.

4,658,919

CONTROL SYSTEM FOR COMBINATORIAL WEIGHING OR COUNTING APPARATUS

Hideo Nobutsuga, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Nov. 7, 1984, Ser. No. 668,894
Claims priority, application Japan, Nov. 8, 1983, 58-209623
Int. Cl.[4] G01G *19/00, 19/22*
U.S. Cl. 177—1 **5 Claims**



1. A combinatorial weighing or counting apparatus for weighing articles charged in a plurality of weighing machines, for effecting a combinatorial arithmetic operation on obtained weights or numbers of the articles converted from the weights, for selecting an optimum combination of added weights or numbers which is closest to a target value within preset limits, and for discharging the articles from those weighing machines which form the selected optimum combination, said combinatorial weighing or counting apparatus comprising:

a plurality of weighing machines each having a drive unit and an A/D converter for converting analog values of weights of articles into digital values;

a main central processing unit, coupled to said weighing machines, for effecting the combinatorial arithmetic operation on the delivered weights, and for delivering operation commands including a command requesting said weighing machines to deliver the obtained weights and an article discharge command delivered to the weighing machines which have been selected as forming the optimum combination as a result of the combinatorial arithmetic operation;

a plurality of individual drive unit central processing units, associated respectively with the drive units of said weighing machines and connected to said main central processing unit;

means for delivering weight data, which are entered to said drive unit central processing units from the A/D converter of each of said weighing machines, to said main central processing unit; and

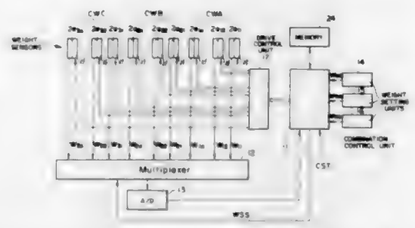
means for controlling the drive units in response to the article discharge command which is delivered by the main central processing unit for discharging the weighed articles, the operation commands from said main central processing unit to said individual drive unit central processing units being generated in synchronism with zero crossing points of the AC power supply for each of the drive units by interrupt processes of said individual drive unit central processing units at all times.

4,658,920

COMBINATORIAL WEIGHING AND COMBINATORIAL COUNTING METHOD AND APPARATUS

Seishi Matsumoto, Tokyo; Takeo Nakashimizu, Itabashi, and Yuji Abe, Tokyo, all of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Continuation of Ser. No. 402,364, Jul. 27, 1982, Pat. No. 4,549,617. This application Jun. 19, 1985, Ser. No. 746,627
Claims priority, application Japan, Jul. 28, 1981, 56-118722
The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.
Int. Cl.[4] G01G *19/00, 19/22, 19/52*
U.S. Cl. 177—25 **11 Claims**



1. A combinatorial measuring method for obtaining a collection of articles from N categories, where N is an integer greater than one, said method comprising the steps of:

(a) supplying N groups of article quantity values, each of said N groups of article quantity values being provided for a corresponding one of the N categories of articles, each of the article quantity values within a group corresponding to the actual quantity of a batch of articles within the corresponding one of the N categories;

(b) performing the following step for each of M categories of articles, where M is an integer and M equals N−1:

(b1) selecting, for a Jth category of articles, where J is an integer between 1 and M, and from combinations of the Jth group of article quantity values provided for the Jth category of articles, a Jth combination having a total value which is within first preset allowable limits;

(c) selecting, for the Nth category of articles, and from combinations of the Nth group of article quantity values provided for the Nth category of articles, an Nth combination having a total value which, when added to the total values of the M combinations selected in said step (b), yields a total collection value which is within second preset allowable limits; and

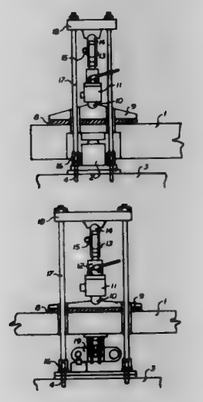
(d) selecting the batches of articles within each of the N categories corresponding to the article quantity values which make up the M combinations and the Nth combination obtained for the N categories of articles, to form a collection of articles.

4,658,921

DEVICE AND PROCEDURE FOR TESTING HEAVY CAPACITY SCALES

Michael J. Karpa, P.O. Box 408, Station B, Hamilton, Ontario, Canada L8L 7W2

Filed Nov. 12, 1985, Ser. No. 797,403
Int. Cl.[4] G01G *19/52;* **G01L** *25/00*
U.S. Cl. 177—50 **12 Claims**



1. A device for accurately loading heavy capacity scales for purposes of determining their accuracy, said scales comprising a load receptacle with a plurality of well defined support points, load sensing mountings and a supporting foundation; said device to be deployed at various locations over a scale under test and said device consisting of:

(a) a loading column having an upper and a lower end and incorporating a calibrated load cell,

(b) said loading column incorporating a force generating means to develop the column load,

(c) a means for ensuring that said loading column is vertically positioned during loading,

(d) having the lower end of said loading column thrusting against the scale load receptacle through a hinged or pivoting joint,

(e) having the upper end of said loading column thrusting against a reaction block through a hinged or pivoting joint,

(f) with the said reaction block fastened to a load sensing mounting or supporting foundation by tension members and

(g) a means for precisely reading out the load in the loading column load cell by known means.

4,658,922

BALANCE OF PRECISION

Lloyd P. Kinsick, P.O. Box 26604, Tempe, Ariz. 85282

Filed Feb. 7, 1986, Ser. No. 827,350
Int. Cl.[4] G01G *21/28, 1/18*
U.S. Cl. 177—127 **2 Claims**

1. A balance of precision including

(a) an elongate base having

(i) a first end and a second end,

(ii) a floor, and

(iii) a wall upwardly extending from said first end and having a generally horizontally oriented upper edge;

(b) a fulcrum connected to said base and having an elongate edge positioned a distance above said floor of said base;

(c) an elongate beam assembly positioned on said fulcrum for turning about said fulcrum edge, said beam assembly including

(i) a member positioned over and including an elongate groove contacting said fulcrum edge to permit said member to turn about said edge,

(ii) a pair of spaced apart support arms attached to and outwardly extending from said member and each having

an elongate upper edge,

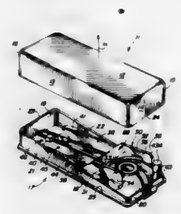
an outer end, and

a notch formed in said outer end thereof,

(iii) a symmetrical pan having

an upper lip, and

a pair of ears extending outwardly from said pan, each ear normally riding in one of said notches such that said ear can turn in said notch and support said pan above said floor when said lever assembly is in equipoise,





(iv) at least one scale arm attached to and outwardly extending from said member and having an outer end generally positioned between said fulcrum and said wall and adjacent and level with said upper edge of said wall when said beam assembly is in equipoise,

said scale arm including a measurement scale and weight slidably mounted thereon for balancing said beam assembly when an object is placed in said pan,

said scale arm generally being positioned below said fulcrum edge when said beam assembly is in equipoise,

said elongate upper edges of said support arm being positioned above said fulcrum edge when said beam assembly is in equipoise,

said pan having a height less than the shortest distance of said upper edges of said support arms above said floor beneath said upper edges when said beam assembly in is equipoise and being shaped, contoured and dimensioned to be removed from said support arms, and stored on the portion of said floor of said base generally beneath and between said support arms; and,

(d) a cover for said base, said cover having a top wall and side walls and being shaped and dimensioned to fit over and enclose said end wall of said base, said fulcrum, said support arms and scale arms.

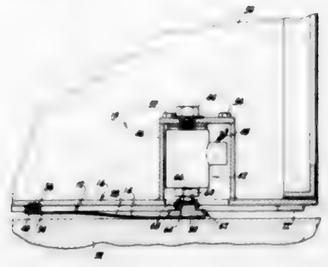
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4,658,923

APPARATUS FOR STABILIZING A LOAD CELL

Paul Labarbe, Pittsburg, Calif., assignor to Campbell Design Group, Pacheco, Calif.

Filed Oct. 15, 1984, Ser. No. 660,847
Int. Cl.[4] G01G *21/02*
U.S. Cl. 177—255 **6 Claims**



1. An apparatus for stabilizing a load cell and a connected floor plate above a platform, said floor plate including an attached superstructure, comprising:

a. an arm lying adjacent to and obtaining support from the platform, said arm having a portion fixed to the floor plate, said arm including an edge portion fixed to the floor plate along a transverse dimension of the floor plate, said arm possessing sufficient strength characteristics to prevent downward movement of the floor plate resulting from a tipping force on the superstructure, said arm permitting direct forces on the floor plate to activate the load cell;

b. a pedestal obtaining support from the platform, said pedestal supporting the load cell and connected floor plate above the platform;

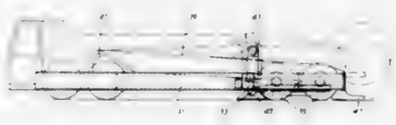
c. means for limiting lateral movement between said pedestal and the supported load cell connected to the floor plate.

4,658,924

AIRCRAFT GROUND-HANDLING VEHICLE

Clelland R. M. Dobbie, Loughborough, England, assignor to Air Traction Industries Limited, England

Filed May 27, 1986, Ser. No. 867,522
Claims priority, application United Kingdom, May 28, 1985, 8513414
Int. Cl.[4] B64F *1/04*
U.S. Cl. 180—14.1 **13 Claims**



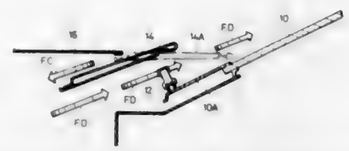
1. An aircraft ground-handling vehicle, comprising a chassis; front and rear wheels mounted on said chassis; a platform means mounted on said chassis for supporting an aircraft nose-wheel, the platform means being positioned relative to the wheels of the vehicle such that no part of the weight of the aircraft is transferred to the vehicle outside the wheelbase thereof; lifting means on said chassis adapted to lift the nose-wheel off the ground, without thereby loading the vehicle, wherein said platform means is movable beneath said nose-wheel without engaging the ground, thereby to engage and receive the nose-wheel onto the platform means.

4,658,925

APPARATUS FOR OPENING AND CLOSING LOUVER

Yasunori Hirosawa, and Souichirou Okudaira, both of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Oct. 12, 1984, Ser. No. 660,050
Claims priority, application Japan, Oct. 14, 1983, 58-192262
Int. Cl.[4] B60K *11/08*
U.S. Cl. 180—68.1 **15 Claims**



1. An apparatus for opening and closing a louver provided at a bottom portion of a windshield of a vehicle to conceal a windshield wiper and to cool a vehicle engine room housing an engine, said apparatus comprising:

(a) driving means for opening and closing said louver to draw a flow of air through said vehicle engine room;

(b) detecting means for detecting a state wherein said engine requires cooling;

(c) vehicle speed sensing means for gauging the speed of said vehicle;

(d) conduit means extending between said bottom portion of said windshield beneath said louver and said vehicle engine room for conveying air when said louver is opened to ventilate said vehicle engine room;

(e) control means for actuating said driving means to open said louver when said detecting means detects a state wherein said engine requires cooling or when said vehicle speed sensing means gauges that the vehicle speed is less than a predetermined value, thereby providing ventilation to said engine room and cooling said engine;

(f) a hood covering said vehicle engine room; and

(g) support means for supporting said louver, said support means having a cowl plate aligned along said conduit means, said support means also having a rail mounted on said cowl plate to guide said louver forward and rearward relative to said vehicle in response to said driving means.

4,658,926

SEAL FOR AIR CUSHION VEHICLE

John B. Paradis, IV, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

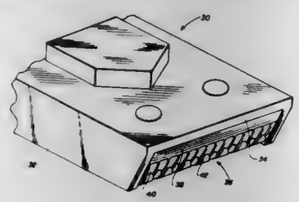
Filed Feb. 11, 1985, Ser. No. 700,151
Int. Cl.[4] B60V *1/04*
U.S. Cl. 180—126 **11 Claims**

1. In an air cushion vehicle which has side hulls and a wet deck therebetween, an improved seal comprising:

flexible sheet like means connected to the wet deck and extending between the side hulls so as to present a forward surface of the vehicle below the wet deck;

a plurality of elongated flexible panels connected to the air cushion vehicle and extending downwardly across and below the forward surface of the flexible sheet like means; and

said elongated panels laterally overlapping one another and slidably engaging one another where they overlap so as to provide a continuous sealed barrier across the vehicle,





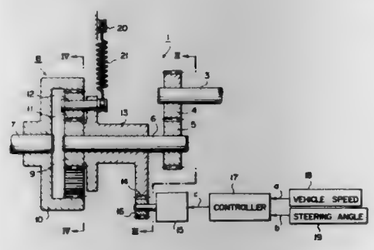
whereby upon operation of the vehicle the panels cooperatively flex and slide with respect to one another to discretely respond to wave actions.

4,658,927

STEERING SYSTEM FOR VEHICLE

Hirotaka Kanazawa, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 18, 1985, Ser. No. 798,864
Claims priority, application Japan, Nov. 19, 1984, 59-244212; Nov. 19, 1984, 59-244215; Nov. 19, 1984, 59-244216; Nov. 19, 1984, 59-244217
Int. Cl.[4] B62D *5/06*
U.S. Cl. 180—142 **12 Claims**



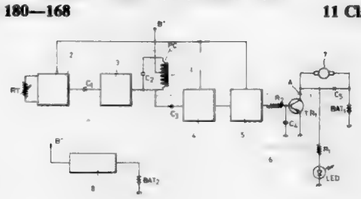
1. A steering system for a vehicle comprising a transmission ratio changing means which is inserted between the steering wheel and the steering gear device of the vehicle to change the transmission ratio to change the steering ratio and is in the form of a differential gear mechanism having an input gear element connected to the steering wheel, an output gear element connected to the steering gear device and a reaction force gear element; a vehicle speed detecting means; a steering angle detecting means; a controller which receives a vehicle speed signal from the vehicle speed detecting means and a steering angle signal from the steering angle detecting means and outputs a control signal; and an actuator which receives the control signal from the controller and controls rotation of the reaction force gear element to increase the transmission ratio to reduce the steering ratio as the vehicle speed increases.

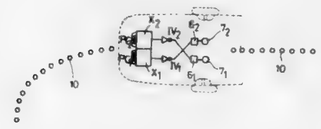
4,658,928

METAL SENSING APPARATUS FOR USE IN OPERABLE TOYS

Soo C. Seo, Seoul, Rep. of Korea, assignor to Samsung Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 22, 1985, Ser. No. 768,361
Claims priority, application Rep. of Korea, Aug. 22, 1984, 84-5055
Int. Cl.[4] B62D *1/24*; A63H *18/00*
U.S. Cl. 180—168 **11 Claims**





1. A metal sensing system for use in operable toys comprising:

means for sensing the proximity of a metallic or magnetic object material, said means including a tuned circuit including a pick-up coil, said tuned circuit having a resonance frequency, said resonance frequency shifting when a sensed object material is disposed adjacent said pick-up coil;

oscillator means, operatively connected to said tuned circuit, for developing an oscillation signal at said resonance frequency;

alternating voltage level detector means, operatively connected to said tuned circuit, for monitoring the output thereof and developing an output signal if the output of said tuned circuit is higher than a predetermined value;

said tuned circuit attenuating said oscillation signal to form an output signal of relatively low voltage when said pick-up coil is disposed adjacent a magnetic or metallic sensed object material;

said alternating voltage level detector means developing a low voltage output when said oscillation is attenuated and otherwise developing a high voltage output;

a motor;

motor drive means, responsive to said alternating voltage level detector means for driving said motor in a forward direction only when a said high voltage output is developed by said alternating voltage level detector means.

7. An operable toy comprising:

first and second drive wheels;

first and second metal sensing circuits each including:

means for sensing the proximity of a metallic or magnetic object material, said means including a tuned circuit including a pick-up coil, said tuned circuit having a resonance frequency, said resonance frequency shifting when a sensed object material is disposed adjacent said pick-up coil,

oscillator means, operatively connected to said tuned circuit, for developing an oscillation signal at said resonance frequency,

alternating voltage level detector means, operatively connected to said tuned circuit, for monitoring the output

thereof and developing an output signal if the output of said tuned circuit is higher than a predetermined value,
said tuned circuit attenuating said oscillation signal to form an output signal of relatively low voltage when said pick-up coil is disposed adjacent a magnetic or metallic sensed object material,
said alternating voltage level detector means developing a low voltage output when said oscillation is attenuated and otherwise developing a high voltage output,
a motor connected to one of said drive wheels,
motor drive means, responsive to said alternating voltage level detector means for driving said motor in a forward direction only when a said high voltage output is developed by said alternating voltage level detector means; and
a metallic or magnetic object material track disposed on a play surface;
said first and second sensing circuits driving said first and second drive wheels to drive said toy and follow said track.

4,658,929

METHOD AND APPARATUS FOR AUTOMATIC TRANSMISSION CRUISE CONTROL

Yuuji Katou, and Kiyoshi Yoshida, both of Zama, Japan, assignors to Nissan Motor Co., Ltd., Yokoha...a, Japan

Filed Oct. 15, 1984, Ser. No. 660,961
Claims priority, application Japan, Oct. 15, 1983, 58-193011
Int. Cl.[4] B60K *31/00*
U.S. Cl. 180—175 **10 Claims**



1. A method of automatically controlling the speed of an automotive vehicle having an engine and a transmission and a transmission control circuit, at a preselected target value, comprising the steps of:
(a) using a vehicle speed control device to vary the opening degree of a throttle valve associated with said engine in a manner to maintain said preselected target speed;
(b) limiting the degree to which said vehicle speed control device opens said throttle valve to a predetermined maximum opening value which is less than that which will cause the transmission control circuit of said transmission to induce a downshift if the vehicle speed falls below said target level;
(c) using said vehicle speed control device to induce a downshift from a predetermined gear ratio to the next lower one, if the load on said engine increases to a level whereat the vehicle speed cannot be maintained at said target speed without opening said throttle valve beyond said maximum opening value; and
(d) maintaining said downshift until a predetermined phenomenon occurs.

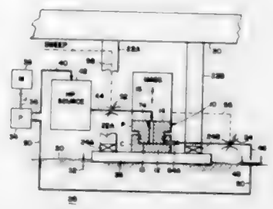
4,658,930

VIBRATOR FOR SEISMIC GEOPHYSICAL PROSPECTING

James M. Bird, Tulsa, Okla., assignor to Industrial Vehicles International, Inc., Tulsa, Okla.

Filed Sep. 28, 1982, Ser. No. 425,436
Int. Cl.[4] G01V *1/133, 1/02*
U.S. Cl. 181—113 **22 Claims**

1. An improved vibrator system for seismic geophysical prospecting, comprising:
(a) a vibrator comprising a first part, or dynamic vibrator part (VD) attached to a base plate in contact with the earth and a second part or vibrator stationary part (VS) attached to a reaction mass providing a sealed space between said VD and said VS;
(b) a cyclically driven first valve for controlling the inflow of pressurized fluid to said sealed space as a selected function of time;
(c) a second valve for controlling the outflow of fluid from said sealed space as a selected function of the displacement D between said VD and said VS;



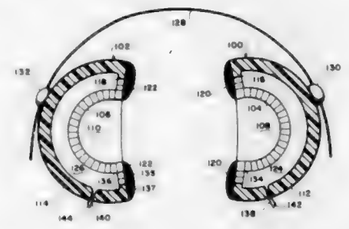
(d) a source of high pressure fluid, and a sump for low pressure fluid, and a pump means connected between said sump and said source; and
(e) means to connect said first valve between said source and said sealed space, and means to connect the said second valves between said sealed space and said sump.

4,658,931

EVACUATED PLENUM HEARING PROTECTION

David G. Curry, P.O. Box 683, Bayou La Batre, Ala. 36509

Filed Jun. 11, 1985, Ser. No. 743,345
Int. Cl.[4] H04R *25/00;* **A61B** *7/02*
U.S. Cl. 181—129 **5 Claims**



1. Sound attenuating ear protection apparatus comprising:
a pair of air evacuated, sealed chamber members disposably covering the ears of a user to lie between the user eardrums and an ear external source of undesirable sound energy;
said air evacuated sealed chamber members each including first and second smooth surface portions with each surface portion having a spherical segment terminated by an annular flange lip shape and being disposable over one external ear of said user with one spherical segment, adjacent said ear being of different, higher mechanical resonance frequency with respect to the other spherical segment distal of said ear;
said surface segment distal of said ear also including air evacuation stem members and a pinchoff seal therefor;
said annular flange lips of said first and second surface portions being joined together in a junction disposed intermediate of said first and second spherical surface portions and perpendicular of said flange lips;
resilient suspension means engaged with the head of said user and with said sealed chamber members for supporting said sealed chamber members in selected position over said user external ears; and

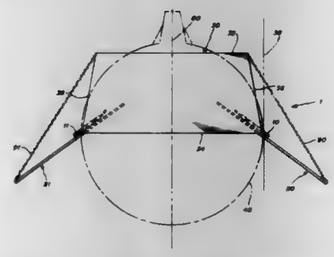
resilient sealing means disposable intermediate said evacuated sealed chamber member flange portion and the cranial surface skin tissue of said user for establishing a sound-tight seal between said evacuated chamber member and the skin tissue of said user.

4,658,932

SIMULATED BINAURAL RECORDING SYSTEM

Michael S. J. C. Billingsley, 5 Kent St., Montpelier, Vt. 05602

Filed Feb. 18, 1986, Ser. No. 830,468
Int. Cl.[4] G10K *11/00*
U.S. Cl. 181--175 **21 Claims**



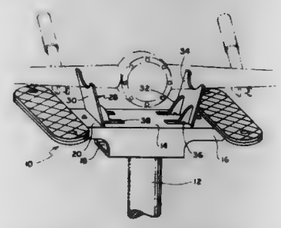
1. A microphone system, comprising:
a pair of microphones, each of said microphones comprising a capsule;
means forming a pair of planar barriers positioned at an angle to each other;
means securing each of said microphone capsules adjacent separate ones of said barriers at spaced apart distances; and
an acoustic baffle positioned between said microphones, means connecting said baffle to each of said barriers, said baffle having a plurality of sidewalls, and wherein at least one of said sidewalls extends angularly toward one of said barriers and forms a corner therewith.

4,658,933

UNIVERSAL HOIST ADAPTOR

Thomas L. Cheek, Anaheim, and Joe G. Schoolcraft, Westminster, both of Calif., assignors to Knowles Chemical Corporation, Canyon Lake, Calif.

Filed Dec. 10, 1984, Ser. No. 680,019
Int. Cl.[4] B60S *13/00*
U.S. Cl. 187—8.67 **7 Claims**



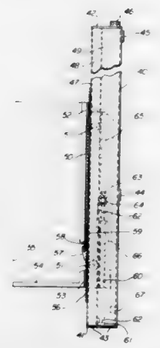
1. A universal adaptor for attachment atop at least one hydraulic ram of a vertical hoist for lifting a motor vehicle across the underside of the vehicle comprising:
an elongated support platform having a traction pad at each end for supporting the underside of the vehicle at the shock absorber support mounts and attachable to the top of the hydraulic ram;
latching means for adjusting longitudinally the positions of the traction pads to accommodate a variety of vehicle undersides;
axle lift cradles which are separate and distinct members than the traction pads, the axle lift cradle are disposed on the support platform adjacent and between each of the traction pads and towards each end of the support platform for supporting the underside of the vehicle along at least one vehicular axle; and,
means for disengaging the axle lift cradles so that alternatively the traction pads may be engaged to support the underside of the vehicle at the shock absorber support mounts.

4,658,934

ELEVATING APPARATUS

Noel G. Cooper, 6 Kenna Street, West Chermside, Brisbane, Queensland, 4032, and Roy A. Dillon, 3 Thelbo Court, Boondall, Brisbane, Queensland, 4034, both of Australia

PCT No. PCT/AU82/00194, § 371 Date Jul. 18, 1983, § 102(e) Date Jul. 18, 1983, PCT Pub. No. WO83/01938, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 22, 1982, Ser. No. 517,523
Claims priority, application Australia, Nov. 24, 1981, PF1677; New Zealand, Nov. 19, 1982, 202505
Int. Cl.[4] B66B *1/00, 5/02, 13/16*
U.S. Cl. 187—17 **9 Claims**



1. An hydraulic elevator system comprising:
a substantially hollow column with an elongate aperture extending lengthwise thereof;
a base member for fixably supporting said column above and extending away from a ground or floor level support surface;
means for securely attaching said supported column to a building support or wall;
a carriage assembly slidably mounted on resiliently-rotatable roller bearings within said column;
a multipassenger elevator car cantilevered from said slidably-movable carriage assembly;
an hydraulic ram assembly for elevating said carriage assembly, said hydraulic ram assembly being located within said substantially hollow column;
an hydraulic fluid reservoir and an electrically-powered hydraulic pump for selectively operating, in response to passenger control, said hydraulic ram to elevate said elevator car, said hydraulic pump being operable on a main voltage power supply, and
a passenger-operable low-voltage control circuit for controlling ascent and descent of said elevator car from within said car and from external call stations, said low-voltage control circuit having a backup low-voltage power supply and safety means responsive to an emergency failure of said main voltage supply, for activating said low-voltage

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control circuit by said backup power supply to selectively control descent of said elevator car in response to passenger operation from within said car and from external call stations.

4,658,935

DIGITAL SELECTOR SYSTEM FOR ELEVATORS

Gordon A. Holland, Memphis, Tenn., assignor to Dover Corporation, New York, N.Y.

Filed Aug. 5, 1985, Ser. No. 762,571
Int. Cl.⁴ B66B *1/30*
U.S. Cl. 187—122 **17 Claims**



1. In an elevator having a car, motor means for displacing said car between a plurality of floors, speed control means for controlling said motor means, and means for generating call signals for said floors, a digital selector system comprising:

means for storing, as absolute values, distances between adjacent floors;

means for storing a deceleration look-up table of ideal stopping velocities, at a plurality of stopping target distances, based upon selected values of jerk, deceleration, and landing speed;

means for generating, at a plurality of fixed reference positions, position signals representative of instantaneous car position;

means for selecting an initial target floor as the next adjacent floor in the desired direction of car travel, and for determining target distance from the distance storing means;

pulse generating means responsive to car movement for producing pulse signals representing incremental distances of car travel;

means for decrementing the target distance responsive to the generation of each pulse signal for generating instantaneous target distance;

means for periodically determining instantaneous car velocity;

means for periodically calculating the car slowdown distance, based on instantaneous car velocity, for decelerating the car, at said selected rate of jerk, to said selected value of deceleration, for calculating a slowdown table of ideal car velocities versus distances for such car slowdown, and for calculating slowdown car velocity when selected deceleration is reached;

means for subtracting car slowdown distance from instantaneous target distance to determine stopping target distance;

means for comparing ideal stopping velocity, taken from said deceleration look-up table based on stopping target distance, with said slowdown car velocity value for determining critical car distances for making stopping decisions;

means responsive to a determination that the car has not reached a critical car distance, for recalculating car slowdown distances, slowdown tables, and car slowdown velocities, based upon updated instantaneous car velocities, and for comparing slowdown velocities with ideal stopping velocities, determined from updated instantaneous target distances, until a critical car distance is reached;

means responsive to absence of a call signal at a target floor, at critical car distance, for advancing target floor to the next adjacent floor and for adding to the instantaneous target distance the distance to the new target floor; and

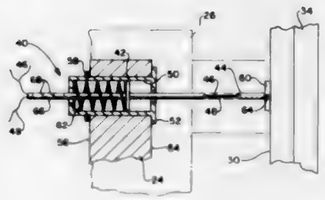
means responsive to the receipt of a call signal at a target floor, at a critical car distance, for issuing a stop signal to said speed control means and for periodically outputting ideal velocities from said slowdown table and said deceleration table, for issuing correction signals of car velocity, as a function of instantaneous target distances, to said speed control means.

4,658,936

BRAKE TEMPERATURE AND WEAR INDICATOR

Douglas D. Moseley, Uniontown, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jul. 25, 1985, Ser. No. 758,945
Int. Cl.⁴ F16D *66/02*
U.S. Cl. 188—1.11 **13 Claims**



13. In an aircraft multi-disk brake assembly having an inboard end and an outboard end, including a brake housing at the inboard end and a brake stack at the outboard end comprising a pressure plate, and stationary members to provide braking to rotatable members when subjected to a pressure force by an actuating means on said pressure plate and the position of said pressure plate varying with the degree of wear of said brake stack; and indicator for sensing and indicating both the temperature and the degree of wear of said brake stack comprising:

a housing, disposed within said brake housing, defining a bore having an axis positioned substantially perpendicular to said pressure plate;

a biasing means, disposed within said housing bore;

an axially movable probe member disposed within said housing bore, operatively engaging said biasing means for reciprocal movement therein and having inboard and outboard ends extending outside of said housing bore;

said outboard end positioned in contact with said pressure plate by said biasing means;

a thermocouple, disposed within said outboard end and secured in thermal conductive engagement therein;

said inboard end being marked with a plurality of indicia for indicating the degree of brake wear; and

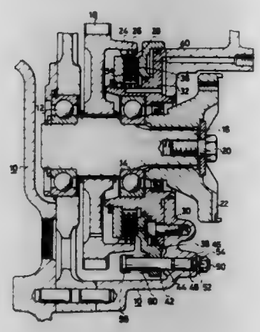
wherein upon activation of said brake stack said probe member moves axially, maintaining contact with said pressure plate at the outboard end for monitoring the temperature of said brake stack and for determining the degree of wear of said brake stack by the distance traveled by said inboard end.

4,658,937

BRAKE UNIT OF POWER TRAIN OUTPUT

Hirokazu Enomoto, Aichi, Japan, assignor to Fuji Tekko Co., Ltd., Kosai, Japan

Filed Jun. 4, 1985, Ser. No. 741,237
Claims priority, application Japan, Sep. 17, 1984, 59-194265
Int. Cl.⁴ F16D *55/224, 55/40*
U.S. Cl. 188—71.4 **1 Claim**



1. A brake unit for a power take-off unit having a fixed portion and a rotating shaft, said brake unit comprising:

a brake drum having a rotating spline hub thereon and a plurality of rotating brake plates mounted on said spline hub for sliding movement therealong;

a fixed spline hub on said fixed portion and a plurality of brake plates mounted on said fixed spline hub for sliding movement therealong and interleaved with said rotating brake plates;

a brake piston having means for receiving a supply of hydraulic pressure from a pressure source outside of said brake unit and mounted on said unit for movement thereon for pressing said brake plates along said spline hubs against each other, and said brake piston having projecting portions on the outer periphery thereof having through holes therein parallel to the movement of said piston;

said fixed portion having a plurality of mounting holes therein aligned with said holes in said projecting portions;

a plurality of rod members each having a free end and positioned in said mounting holes and extending in cantilever fashion through said through holes in said projecting portions, and each having a flange on the free end thereof;

a return spring around each rod member between the flange thereon and the projecting portion;

each said rod member having a threaded portion on an end extending through said fixed portion and exposed on the outside of the corresponding mounting hole on the opposite side of said mounting hole from the location of said flange; and

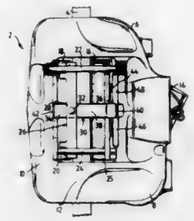
a nut threaded on said threaded portion of each rod member for adjustably securing the corresponding rod member in said fixed portion, whereby said rod members can be adjusted in said fixed portion for adjusting the space between said projecting portions and said flanges for adjusting the force of said return springs on said brake piston.

4,658,938

SPREADING SPRING FOR A FLOATING-CALIPER OR FIST-TYPE CALIPER SPOT-TYPE DISC BRAKE FOR AUTOMOTIVE VEHICLES

Rudolph Thiel, Frankfurt am Main; Ulrich Klimt, Reinheim, and Hans Bungert, Geisenheim, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 24, 1985, Ser. No. 738,033
Claims priority, application Fed. Rep. of Germany, May 25, 1984, 3419523
Int. Cl.⁴ F16D *65/40*
U.S. Cl. 188—73.38 **9 Claims**



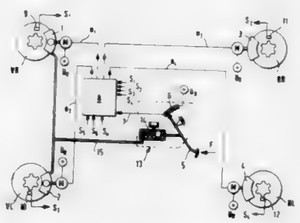
1. A spreading spring for a floating-caliper or a fist-type caliper spot-type disc brake for automotive vehicles, comprising a spreading spring portion which extends substantially in axial direction and forms two legs, the end portions of said legs abutting on backing portions of brake pads, and a resilient bracket connected thereto which extends substantially in circumferential direction and forms two legs, the ends of said resilient bracket being supported on retaining pins, wherein the legs (**34,36**) of the spreading spring portion (**30**) are of different length, wherein the ends of the resilient bracket (**28**) contain indentations (**58,60**) which provide contact points for abutment of the resilient bracket legs (**54,56**) on the respective retaining pins, and wherein the indentations (**58,60**) are disposed on the side of the resilient bracket (**28**) which is close to the longer leg (**36**) of the spreading spring portion (**30**).

4,658,939

PROCESS AND APPARATUS FOR THE CONTROL OF A BRAKE UNIT FOR AUTOMOTIVE VEHICLES

Dieter Kircher, Frankfurt am Main; Hubertus von Gruenberg, Kronberg; Klaus D. Blum, Kelkheim, and Peter Becker, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt, Fed. Rep. of Germany

Filed Mar. 14, 1985, Ser. No. 711,858
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1984, 3410006
Int. Cl.⁴ B60T *8/02, 13/66, 13/74*
U.S. Cl. 188—156 **6 Claims**



1. A method for controlling the distribution of braking power to the wheels of an automotive vehicle upon the actua-

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tion of a vehicle brake pedal, said method comprising the steps of:

deriving an electrical input signal corresponding to the applied brake pedal force;

sensing at least one vehicle wheel to determine its rotational behavior;

deriving an electrical input signal indicative of the sensed wheel rotational behavior;

processing said input signals to provide an electrical output signal indicative of a predetermined wheel braking effect;

transmitting said electrical output signal to the vehicle wheels;

electromagnetically applying braking power at each wheel in response to said electrical output signal;

generating backup braking power directly in response to said applied brake power force;

transmitting mechanically said backup braking power to at least one vehicle wheel; and,

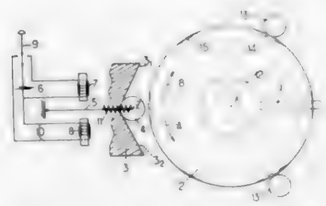
selectively applying the transmitted backup braking power to at least one vehicle wheel.

4,658,940

ANGULAR NON RETURN DEVICES

Jean-Pierre Ulmann, Paris, France, assignor to Eyablissements Georges Klein, France

Filed Oct. 21, 1985, Ser. No. 789,596
Int. Cl.⁴ E06B *11/08*; F16D *49/00*
U.S. Cl. 188—265 **4 Claims**



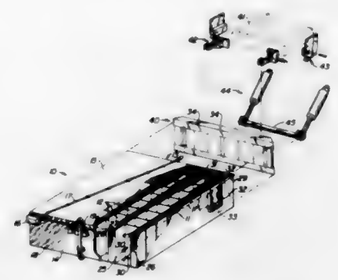
1. An angular non return device associated with a turnstile (1) comprising a drum of revolution (2) about a first axis integral with and coaxial with said turnstile; a V-shaped member (3) defined by first and second faces intersecting at a vertex whose bisecting plane contains said first axis, said V-shaped member being open in the direction of said drum and disposed at a small distance therefrom; a roller (4) with a second axis parallel to said first axis, interposed between said V-shaped member and said drum and mounted on a mobile support (5) permitting said roller to be moved between a first end position in which said roller is locked by jamming between said drum and said first face (3_1) of said V-shaped member and a second end position in which said roller is locked by jamming between said drum and said second face (3_2) of said V-shaped member; means (11) constantly urging said roller (4) toward said vertex of said V-shaped member and electromagnetic means (6 to 10) for urging said mobile support at will toward a selected one of said first and second end positions; and a recess in the surface of said drum (2) disposed radially opposite said roller for at least one preselected stop position of said turnstile to prevent any locking contact between said recess and said roller (4).

4,658,941

VEHICLE MOUNTING SYSTEM FOR IMPACT ABSORPTION APPARATUS

William H. Gottwald, San Diego; Michel N. Bandak, Alamo, and Thomas N. Bitzer, Danville, all of Calif., assignors to Hexcel Corporation, San Francisco, Calif.

Filed Jan. 14, 1985, Ser. No. 691,253
Int. Cl.⁴ F16F *7/12*
U.S. Cl. 188—377 **12 Claims**



1. In an impact absorption apparatus adapted for mounting to the rear of a vehicle, said apparatus comprising a plurality of deformable sections aligned in the longitudinal direction of said vehicle, each said deformable section comprising a first array of elongate cells defined by intercellular walls spanning the length of said section and intersecting along lines parallel to said longitudianal direction, said deformable sections separated by bulkheads and terminating in a front wall and a rear wall, and said apparatus secured to a rotatable vehicle-mounting frame by at least one bolt extending through the forwardmost deformable section parallel to said elonagte cells and secured to said frame,

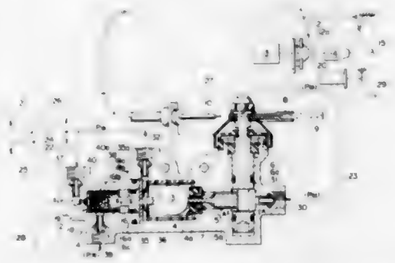
the improvement in which the portion of each said bolt located inside said forwardmost deformable section is surrounded by and bonded to a second array of cells defined by intercellular walls intersecting along lines perpendicular to said longitudinal direction.

4,658,942

LIQUID PRESSURE OPERATED BRAKING SYSTEM

Hitoshi Kubota, Minami-ashigara, and Keiji Nakagawa, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Nippon Air Brake Co., Ltd., Kobe, both of, Japan

Filed Apr. 13, 1984, Ser. No. 599,803
Claims priority, application Japan, Apr. 25, 1983, 58-71401
Int. Cl.⁴ B60K *41/24*
U.S. Cl. 192—13 A **4 Claims**



1. A liquid pressure operated braking system for a vehicle having a clutch actuated by a clutch pedal via a clutch operating mechanism, comprising:

at least two sub-systems, each sub-system being for the transmission of liquid pressure from a respective one of two sources of liquid pressure to a respective one of two groups of brake operating wheel cylinders;

a valve assembly including a first valve fluidly disposed in one of the sub-systems and operatively coupled to the clutch operating mechanism for confining the liquid pressure applied to the associated one group of brake operating wheel cylinders to the one sub-system upon clutch disengagement when the vehicle is at a standstill on an up-hill road;

the valve assembly also including a second valve fluidly disposed in the other sub-system, the second valve including a housing having a first port connected to the associated source of liquid pressure to the other sub-system, a second port connected to the associated one group of brake operating wheel cylinders to the other sub-system and a valve bore constantly communicating with said first port, the second valve also including a stepped piston, movably disposed in said housing, having a large pressure acting area exposed to liquid pressure acting in the associated one group of brake operating wheel cylinders to the one sub-system and a small pressure acting area exposed to liquid pressure acting in the associated one group of brake operating wheel cylinders to the other sub-system, said stepped piston being movable to a predetermined valve close position wherein said stepped piston closes said valve bore to prevent at least fluid flow communication from said second port to said first port.

circuit with a signal (Sv) representing an instantaneous vehicle speed (Vd);

engine output detecting means (33) for feeding said control circuit (31) with a signal (Sth) representing an instantaneous engine output (Thd);

a shift map (Mt) for said automatic transmission (10);

said shift map (Mt) having as variables thereof the speed (V) of said vehicle and the output (Th) of said engine (1); and

said control circuit (31) for controlling the shifting of said gear ratios depending on said shift map (Mt),

wherein

said control system further comprises

a control map (Mc) for controlling said auxiliary equipment (51);

said control may (Mc) being overlapped on said shift map (Mt); and

said control map (Mc) having as variables thereof the speed (V) of said vehicle and the output (Th) of said engine (1); and

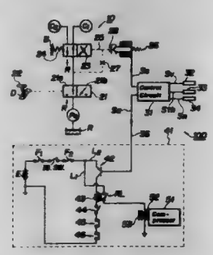
said transmitting-and-interrupting means (52, 53) of said auxiliary equipment (51) is controlled depending on said control map (Mc).

4,658,943

CONTROL SYSTEM FOR ENGINE-DRIVEN AUXILIARY EQUIPMENT FOR VEHICLES

Masao Nishikawa, Tokyo; Junichi Miyake, Saitama, and Yoshimi Sakurai, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1985, Ser. No. 802,125
Claims priority, application Japan, Nov. 28, 1984, 59-251331
Int. Cl.⁴ B60K *41/28*
U.S. Cl. 192—0.073 **8 Claims**



1. A control system (100) for controlling engine-driven auxiliary equipment (51)

for a vehicle comprising;

an engine (1);

an automatic transmission (10) receiving power from said engine (1) to drive a driven wheel;

said automatic transmission (10) having a plurality of gear ratios ("first", "second");

said auxiliary equipment (51) being driven with power from said engine (1); and

said auxiliary equipment (51) having transmitting-and-interrupting means (52, 53) for transmitting and interrupting the power from said engine (1) to said auxiliary equipment (51),

a central control circuit (31);

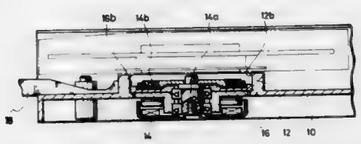
vehicle speed detecting means (32) for feeding said control

4,658,944

DISC CLUTCH MECHANISM FOR A MAGNETIC DISC APPARATUS OF CARTRIDGE TYPE

Toshiharu Kogure, and Noriaki Masubuchi, both of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Filed Apr. 22, 1985, Ser. No. 726,080
Claims priority, application Japan, Apr. 23, 1984, 59-81527
Int. Cl.⁴ F16D *27/01*
U.S. Cl. 192—84 PM **14 Claims**



1. A magnetic disc clutch mechanism for loading a magnetic disc cartridge comprising: a housing for receiving a magnetic disc cartridge and having a bottom surface, means defining an opening provided opposite to the bottom surface, and a door movable to close and open the opening; a spindle assembly provided on the bottom surface and vertically movable upward and downward with respect to the magnetic disc cartridge; a movable lever disposed on the bottom surface, the lever having one end thereof connected to the door and the other end thereof movable in forward and backward directions with respect to the spindle assembly in response to closing and opening movements of the door respectively; and mechanical means integral with the spindle assembly and cooperatively engaged with the other end of the lever for converting the forward and backward movements of the other end of the lever into the upward and downward movements of the spindle assembly respectively, whereby the spindle assembly ascends to the magnetic disc cartridge in accordance with the door closing movement and descends from the magnetic disc cartridge in accordance with the door opening movement.

4,658,945

FRICTION CLUTCH RELEASE MECHANISM

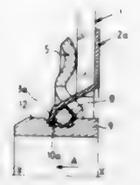
Patrick Muller, Sevran, France, assignor to Automotive Products plc, Leamington Spa, England

Filed May 6, 1985, Ser. No. 730,749

Claims priority, application France, May 7, 1984, 8407061; Dec. 18, 1984, 8419370

Int. Cl.⁴ F16D *23/14*

U.S. Cl. 192—89 B **13 Claims**



1. A friction clutch release mechanism for use with a clutch release bearing of a pull-type friction clutch comprising an actuating element formed by a ring in which there is a transverse circular groove, a diaphragm, and locking means for interlocking the diaphragm with the clutch release bearing, said locking means comprising a flexible ring coaxial with the diaphragm and engaging a bearing, and a washer provided with flexible lugs and so positioned that the diaphragm lies between the washer and the clutch whereby the flexible lugs engage around the flexible ring to render it rigid with the diaphragm, the flexible ring being adapted to snap into the groove in the actuating element to effect said interlocking.

4,658,946

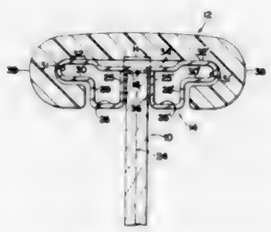
ESCALATOR BALUSTRADE DECKING PROFILE

Willy Adrian, Oberukirchen, and Martin Mehlert, Liekwegen, both of Fed. Rep. of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 6, 1985, Ser. No. 805,684

Int. Cl.⁴ B66B *23/24*

U.S. Cl. 198—337 **6 Claims**



1. An escalator balustrade decking profile (**14**) for guiding the handrail (**12**) along the top of a balustrade (**10**), characterized in that:

the decking profile is made from one long strip (**20**) of rigid material defining a plane of the strip, having the following portions described sequentially from an innermost portion (**34**) at the center of the strip, outwardly to edgemost portions (**25**, **25'**) at the edges (**23**, **23'**) of the strip;

the innermost center portion (**34**) of the strip is of width G and is depressed below the plane (**40**) of the strip;

the next outermost portions (**32**, **32'**) of the strip are of width F and are in-plane with the plane of the strip;

the next outermost portions (**31**, **31'**) of the strip are of width πE and are bent downwardly through 180 degrees around a radius E;

the next outermost portions (**30**, **30'**) of the strip are of width D and extend substantially parallel to the plane of the strip towards the balustrade (**10**);

the next outermost portions (**28**, **28'**) of the strip are of width C and are bent downwardly at right angles to the plane of the strip;

the next outermost portions (**26**, **26'**) of the strip are of width B and extend substantially parallel to the plane of the strip towards the balustrade (**10**); and

the edgemost portions (**25**, **25'**) of the strip are of width A and are bent upwardly at right angles to the plane of the strip.

4,658,947

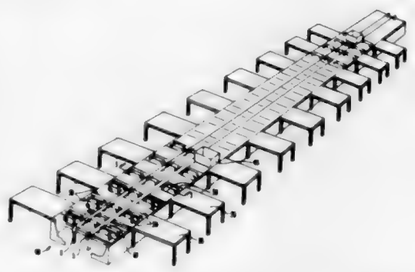
TRANSFER MECHANISM

William C. Welder, Morgan Hill, Calif., assignor to Raymond Production Systems, Hollister, Calif.

Filed Nov. 8, 1984, Ser. No. 670,397

Int. Cl.⁴ B65G *47/74*

U.S. Cl. 198—346.2 **13 Claims**



1. For a transport system wherein a conveying means is provided for carrying thereon an article from at least one location therealong to a second location therealong, an improved device for removing an article from said conveying means at said second location to an adjacent work station comprising:

A. a first platform located below said conveying means;

B. means for raising said first platform a vertical height sufficient to raise an article residing on said first platform above and out of contact with the conveying means;

C. a second platform located on approximately the same horizontal plane as the first platform and between said first platform and the work station;

D. means for raising said second platform a vertical height approximately equal to the vertical height of said first platform when said first platform is in a raised position;

E. belt means forming a closed loop and located above and below said first and second platforms such that when said platforms are in their raised positions, said belt means is in contact with the upper surface of each platform and in further contact with the article to be conveyed; and

F. a fluid driven cylinder located below said first and second platforms functionally connected to said belt means such that when said first and second platforms are raised said belt means moves said article toward or away from said adjacent work station in a direction substantially opposite to the direction of travel of the fluid driven cylinder.

4,658,948

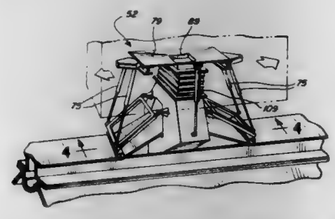
MATERIAL TRANSFER ASSEMBLY

Charles P. Miller, McHenry, Ill., assignor to Miller Formless Co., McHenry, Ill.

Continuation-in-part of Ser. No. 581,284, Feb. 17, 1984, Pat. No. 4,605,116, which is a continuation-in-part of Ser. No. 672,151, Nov. 16, 1984, abandoned, which is a continuation of Ser. No. 414,383, Sep. 2, 1982, abandoned. This application Feb. 26, 1985, Ser. No. 705,545

Int. Cl.⁴ B65G *47/46*

U.S. Cl. 198—364 **11 Claims**



1. A material transfer assembly comprising: an elongated, fixed conveyor housing; a carriage means disposed above said conveyor housing for receiving bulk material, said carriage means being movable along and above said conveyor housing and including an outlet for discharging bulk material contained within said carriage means; a discharge guide disposed below said carriage means and movable with said carriage means along said conveyor housing, said discharge guide having a bottom portion for engaging said conveyor housing and providing closed communication between said discharge guide and said conveyor housing; connection means for suspending said discharge guide from said carriage means and for moving said discharge guide along with said carriage means, said connection means permitting relative horizontal and vertical movement between said discharge guide and said carriage means; and flexible and extensible conduit means for providing closed communication between said outlet of said carriage means and said discharge guide and thereby transferring the bulk material which discharges from the outlet of said carriage means to said conveyor housing while said carriage means remains stationary over said conveyor housing and while said carriage means is moving along said conveyor housing; said connecting means and said flexible conduit means providing a flexible connection between the carriage means and the discharge guide to allow relative adjustment movement between the carriage means and the discharge guide whereby such relative movement between the discharge guide and the carriage means can occur while maintaining closed communication between the conveyor housing and the carriage means.

4,658,949

CONVEYOR BELT SCRAPER BLADE

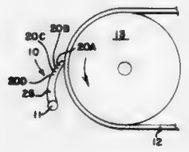
Allen V. Reicks, Geneseo, Ill., assignor to Martin Engineering Company, Neponset, Ill.

Filed Sep. 2, 1986, Ser. No. 902,565

Int. Cl.⁴ B65G *45/00*

U.S. Cl. 198—497 **8 Claims**

1. A scraper blade for cleaning conveyor belts including a base member adapted to be attached to a transverse support, said base member having front and rear faces, a scraping edge formed on said base member adapted to contact the conveyor surface to be cleaned, one or more fracture slits defined in said rear face of said base member, adjacent said scraping edge, extending the width of said scraper blade, whereby said slits form predetermined fracture lines to facilitate fracture of a tip



of said scraping edge as wear takes place so as to maintain a stiff scraping edge for effective cleaning.

4,658,950

LIFT APPARATUS FOR LIFTING CIGARETTE FILTER PLUGS

Kenkichi Itoh, Kobe; Takao Matsui, and Toshio Murakami, both of Osaka, all of Japan, assignors to Osaka Filter Co., Ltd., Sakai and Needs Kiko Co., Ltd., Moriguchi, both of, Japan

Continuation of Ser. No. 539,958, Oct. 7, 1983, abandoned. This application Nov. 29, 1985, Ser. No. 803,776

Int. Cl.⁴ B65G *37/00*

U.S. Cl. 198—577 **4 Claims**

1. A lift apparatus for lifting cigarette filter plugs and which receives filter plugs from a plug making machine while they are still uncured and delivered by a lower horizontal conveyor and conveys the plugs upwardly while they are piled in multiple layers to an upper horizontal conveyor, said lift apparatus comprising:

a pair of vertical spaced opposed flat belt conveyors disposed in fixed positions between the upper and lower horizontal conveyors, said vertical conveyors diverging from each other at a substantially uniform rate as they extend upwardly from the bottom to the top of the conveyors and defining a lifting passage therebetween the transverse size of which increases gradually from the bottom to the top of said lifting passage;

a pressurizing conveyor disposed at the lower end of said vertical conveyors and defining one side of a bend in a conveying passage extending from the lower horizontal conveyor into said lifting passage, said pressurizing conveyor being a flat belt having a run movable along the outer side of the bend; and

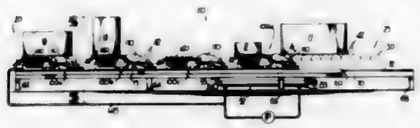
a driving means connected to said pressurizing conveyor for driving said pressurizing conveyor at a greater speed than the speed of said vertical conveyors.

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4,658,951
RECIPROCATING TRANSFER CONVEYOR WITH SENSING ACCUMULATING PADS

Stanley S. Saunders, 315 Old Ivy, Atlanta, Ga. 30343

Filed Feb. 27, 1985, Ser. No. 705,973
Int. Cl.[4] B65G *25/00*
U.S. Cl. 198—718 **16 Claims**



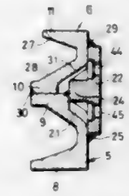
1. An accumulating transfer conveyor, comprising:
a conveyor frame for supporting a plurality of articles to be transferred thereon;
a carriage rail disposed for movement lengthwise of said conveyor frame;
means for reciprocating said carriage rail lengthwise of said conveyor frame;
a plurality of sensing accumulating pads mounted upon said carriage rail for reciprocal movement therewith so as to engage said articles to be transferred along said conveyor frame, each of said sensing accumulating pads including,
a base plate,
a sensing cam pivotally mounted upon the forwardmost portion of said base plate,
means for urging said sensing cam upward such that the uppermost portion of said sensing cam rests at a position extending above said conveyor frame until said sensing cam comes into contact with one of said articles to be transferred thereon,
means for advancing one of said articles along said frame, said article-advancing means being mounted upon said base plate rearwardly of said sensing cam and comprising an article-engaging plate in substantially parallel alignment with said conveyor frame, and
means responsive to said sensing cam for raising and lowering said article-advancing means,
whereby upon the detection of a leading edge of a first article by said sensing cam on the forward stroke of the carriage rail, said sensing cam pivots upwardly as it passes beyond said leading edge and causes said article-advancing means to engage the forward portion of said article and advance said first article forward along said frame, and upon the detection of a trailing edge of a second article preceeding said first article by said sensing cam, said sensing cam pivots downwardly and causes said article-advancing means to disengage from said leading portion of said first article.

4,658,952
SCRAPER-CHAIN CONVEYOR CHANNEL SECTION

Dieter Gründkes; Manfred Redder, both of Lünen; Franz Roling, Nordkirchen; Michael Sauer, Werne-Stockum, and Gunther-Dietmar Schoop, Ottmarsbocholt, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 626,455
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1983, 3324108
Int. Cl.[4] B65G *19/28*
U.S. Cl. 198—735 **19 Claims**

1. A scraper-chain conveyor channel section comprising:
(a) a base structure including:
(i) parallel U-shaped lower profiled bars, each lower profiled bar having a laterally inwardly extending lower flange joined to a laterally inwardly extending top flange by an intermediate lower wall segment forming the lower portion of a laterally outwardly facing recess;
(ii) a floor plate extending between and joined to the top flanges of said lower profiled bars to provide a connection therebetween;
(iii) longitudinal support bars extending exteriorly over substantially the entire lengths of of said lower profiled bars, with upper portions of said support bars which protrude above the level of said top flanges and with longitudinal ribs on said support bars which protrude laterally inwardly into and extend along the lengths of said recesses; and
(iv) means for securing said support bars to said lower profiled bars at vertically spaced first and second regions, said ribs being secured along the lengths thereof by welds to said top flanges at said first region, and said second region being located beneath and laterally outwardly with respect to said first region;



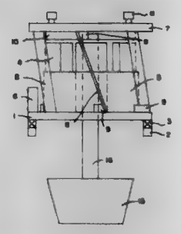
(b) a top structure separable from and supported by said base structure, said top structure including parallel U-shaped upper profiled bars, each upper profiled bar having a laterally inwardly extending bottom flange joined to a laterally inwardly extending upper flange by an intermediate upper wall segment, each upper profiled bar having its bottom flange seated on the top flange of an associated lower profiled bar and having its upper wall segment cooperating with the lower wall segment of the associated lower profiled bar to form the upper portion of the respective laterally outwardly facing recess, said top structure being configured and dimensioned to be received on said base structure between the upper portions of said support bars, with the associated upper and lower profiled bars and support bars comprising the side walls of the channel section; and
(c) means for removably securing the top structure to said base structure at a third region located above and laterally outwardly with respect to said first region.

4,658,953
DEVICE FOR MOVING WORKPIECES BY MEANS OF ELECTROMAGNETIC OSCILLATIONS

Pierre-André Schopfer, Marniere 69, 2068 Hauterive; Francis Richard, deceased, late of Neuchatel; by Ofelia Richard, legal representative, Grand-Rue 10, and by Michele Ducommun, legal representative, VY-D-Etra 37, both of 2000 Neuchatel, all of Switzerland

Filed Mar. 1, 1985, Ser. No. 707,401
Claims priority, application Switzerland, Mar. 5, 1984, 1075/84
Int. Cl.[4] B65G *27/02*
U.S. Cl. 198—757 **7 Claims**

1. A device which is transportable to and from at least one work station for moving workpieces by electromagnetic oscillations comprising:
(a) a base plate formed of magnetic material and including upper and lower faces;
(b) a top plate spaced from the base plate and including upper and lower faces;
(c) a plurality of elongate spring blades connected at their opposite ends to the base and top plates, and disposed obliquely with respect to the plates for supporting the top plate above the base plate during operation of the device;
(d) a magnetic armature carried by the lower face of the top plate;
(e) a plurality of magnetic cores supported on the upper face of the base plate in a circular array and extending toward the magnetic armature but terminating short thereof to define an air gap between the ends of the magnetic cores and the magnetic armature;
(f) a coil wound on each magnetic core, with each magnetic

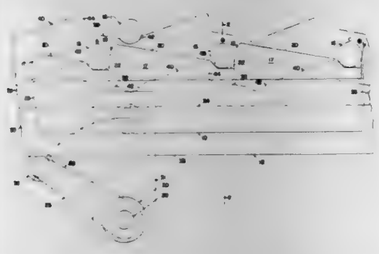


core and its associated coil being electrically independent of the remaining magnetic cores and coils;
(g) an elongate arbor having one end secured to the top plate and extending downwardly through the base plate;
(h) a receptacle supported on the other end of the arbor below the base plate when the device is disposed in a position of operation; and
(i) means for energizing the coils for imparting oscillatory motion to the top plate, arbor and receptacle whereby the base plate is maintained substantially motionless during such energization.

4,658,954
CONVEYOR FOR ROLLABLE ARTICLES

Raymond P. Harlow, Westland, Mich., assignor to Centri-Spray Corporation, Livonia, Mich.

Filed Aug. 30, 1985, Ser. No. 771,006
Int. Cl.[4] B65G *25/00*
U.S. Cl. 198—774 **2 Claims**

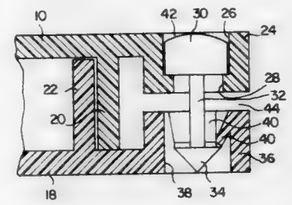


1. In a conveyor comprising a pair of fixed transversely spaced side members adapted to support a plurality of articles for movement in a forwarding direction longitudinally of said side members between a plurality of successive positions, said pair of side members having longitudinally spaced transversely aligned pairs of vertically extending abutments defining said successive positions and longitudinally spaced transversely aligned pairs of downwardly inclined ramps, each pair of ramps extending forwardly from the upper portions of the pair of abutments of one position to the lower portions of the pair of abutments of the next successive position; and a pair of transversely spaced upwardly and downwardly reciprocatable article advancing members disposed intermediate said side members, said article advancing members being adapted to raise articles above said abutments and deposit the raised articles on said inclined ramps for gravity-urged movement thereon in said forwarding direction to the abutments of the successive positions, the improvement wherein:
said pair of article advancing members is provided between each of said successive positions with transversely aligned pairs of surfaces comprising a pair of forwardly and downwardly inclined article advancing surfaces, a pair of forwardly and upwardly inclined article retarding surfaces, a pair of article locating depressions between said article advancing and article retarding surfaces, and a pair of vertical surfaces extending downwardly from the forward ends of the pair of article retarding surfaces to the rearward ends of the next successive pair of article advancing surfaces; said pair of article locating depressions being positioned transversely adjacent to the rearward portion of one of said pairs of ramps and said pair of article retarding surfaces extending forwardly from said pair of article locating depressions substantially coextensively with said one pair of ramps; said pair of article advancing surfaces being adapted in response to upward movement of said article advancing members to raise an article above the pair of abutments at the rear of said one pair of ramps and to cause forward movement of such article to said pair of article locating depressions; and said pair of article retarding surfaces being adapted in response to downward movement of said article advancing members to control the rate of forward movement of such article along the extent of said one pair of ramps to the next successive pair of abutments.

4,658,955
MAILER FOR RECORDING MEDIA

Falk J. Eichner, Coburg, Fed. Rep. of Germany, assignor to Eichner Organisation KG, Coberg, Fed. Rep. of Germany

Filed Apr. 8, 1985, Ser. No. 720,727
Claims priority, application Fed. Rep. of Germany, May 26, 1984, 8416122[U]
Int. Cl.[4] B65D *85/02, 85/07*
U.S. Cl. 206—307 **11 Claims**



1. A container for use in the shipping of flat recording media comprising:
means defining a recording media receiving pocket, said pocket defining means including a pair of cover members, at least part of one of said cover members being moveable relative to the other cover member between an opened and a closed condition by means of an integral hinge assembly to permit access to the media receiving pocket located therebetween;
receiver means, said receiver means being integral with said pocket defining means, said receiver means being positioned on said relatively movable portion of said cover members, said receiver means defining a pair of bores which are in registation with said container in the closed condition, wherein said bores each has a stepped effective diameter, the smaller diameter portions of the bores being adjacent to one another with the container in the closed position, wherein said receiver means further comprises a projection on each of said cover members, said projections extending toward one another, said bores being formed in said projections, a gap being provided between

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the facing ends of said projections with the container in the closed condition; and

a closure element for said pair of bores, the closure element being recieved in said registered bores and permanently engaging said relatively movable members so that said container may not be opened without destruction of said closure element, said closure element being of one-piece construction comprising a head portion, an inserter portion , and a shaft interconnecting said head and inserter portions, said shaft providing a predetermined breaking area, the head and inserter portions of said closure element respectively being received in the larger diameter portions of the bores in said receiver means.

4,658,956

PORTABLE CASE FOR A SMALL SIZE AUDIO-VISUAL SENSORY APPARATUS

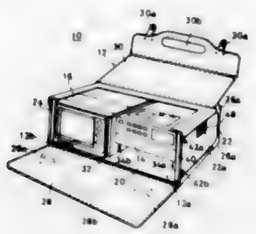
Mituo Takeda; Katunobu Odamoto, and Keiji Uraki, all of Osaka, Japan, assignors to El Planning System Ltd., Osaka, Japan

Filed May 29, 1985, Ser. No. 739,018

Claims priority, application Japan, May 30, 1984, 59-80060[U]; Dec. 29, 1984, 59-200425[U]; Dec. 29, 1984, 59-200426[U]; Dec. 29, 1984, 59-200427[U]; Dec. 29, 1984, 59-200428[U]; Dec. 29, 1984, 59-200429[U]; May, 1985, 60-95146

Int. Cl.⁴ B65D *43/16*

U.S. Cl. 206—320 **10 Claims**



1. A portable case for audio-visual apparatus, comprising:

a first case portion open at its top and front including a bottom portion and three side walls connected thereto so as to form a substantial portion of a generally rectangular box;

a second case portion including a front cover and a top cover each pivotally connected thereto, said top cover being located and configured for covering the top opening and said front cover being located and configured for covering the front opening, said second portion being connected at one edge thereof to said first case portion to complete, when in a closed position, said generally rectangular box;

a partition piece formed in said case for dividing said case into a first section and a second section;

a TV monitor removably mounted in said first section;

means for developing the signal displayed on said TV monitor mounted in said second section; and

power source means, mounted in said case, for receiving AC power source from an external source, converting said AC power to DC power, and supplying DC power to said TV monitor and said developing means.

4,658,957

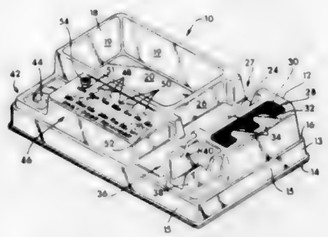
UTILITY TRAY

Gordon T. Guth, Evanston; James D. Morrow, Oak Park, and Lois R. Sherry, Northfield, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 695,314, Jan. 28, 1985, abandoned. This application May 5, 1986, Ser. No. 859,968

Int. Cl.⁴ B65D *83/10*

U.S. Cl. 206—365 **4 Claims**



1. An utility tray for storing a plurality of pharmaceutical items and for providing a convenient work station for administration of a medication by a user comprising a plurality of hypodermic needle syringes and a vial of medication, said tray comprising:

a plurality of walls, a top side and a bottom plate;

a cavity formed by the interior of said walls, side and plate;

a compartment integral with said top side for storing said syringes;

means for reminding an user of the number of doses of medication administered, said reminding means comprising a plurality of spaced-apart holders located on a top side of said utility tray, said holders comprising a plurality of round apertures formed by said top side and providing access for a removable sleeve of said syringe into said cavity and a plurality of retaining rims integral to said top side adjacent said apertures, each rim preventing a portion of said sleeve from falling into said cavity upon insertion of said sleeve into said aperture and means for indicating when said medication is to be administered by a user, said indicating means arranged relative to said spaced-apart holders; and

means for the disposal of said syringe comprising means for access to said cavity from said top side and at least one flap protruding into said access means.

4,658,958

TRANSPARENT ARTICLE

James E. McNulty, Portland, Me., and Robert A. Neal, East Rd., Wales, Me. 04280, assignors to Robert A. Neal and Robert Ray, both of Green, Me.

Filed Oct. 30, 1985, Ser. No. 792,946

Int. Cl.⁴ B65D *73/02, 85/42*

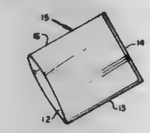
U.S. Cl. 206—328 **23 Claims**

1. An optically transparent, flexible laminate, comprising:

a first transparent, flexible layer of electrostatic free material;

a second transparent, flexible layer of electrostatic free material; and

a third transparent, flexible layer disposed between said first and second transparent layers comprising a mat of electrically conductive fibers in an approximate weight range of





between 0.2 ounces per square yard and 0.5 ounces per square yard.

4,658,959

BIAS TAPE SUPPLY DEVICE

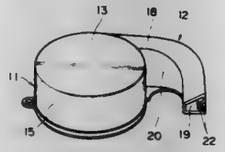
Shigehiro Inoue, Higashiosaka, Japan, assignor to Sanyo Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 21, 1985, Ser. No. 800,490

Claims priority, application Japan, Aug. 30, 1985, 60-189440

Int. Cl.⁴ B65D *85/67*

U.S. Cl. 206—409 **5 Claims**



1. A bias tape supply device comprising: a housing and a tape-dispensing guide part, said housing comprising upper and lower circular walls superimposed in spaced-apart relation with each other, a cylindrical circumferential wall extending therebetween but reserving a circumferentially unwalled space, thereby forming a vessel for containment of the bias tape, said guide part having an overall L-shape and being adapted to extend from said cylindrical circumferential wall at said unwalled space outwardly to thereby form a passageway for the bias tape, said guide part comprising a base end thereof located at said unwalled space, spaced-apart, upper and lower walls, and sapced-apart first and second side walls joining said upper and lower walls and a tape outlet tip for passage and application of the bias tape forming an end of said guide part, said outlet tip being disposed a predetermined distance away from said base end, wherein said side walls gradually decrease in height in the direction toward said tip, with said first side wall retaining a greater height than the second side wall thereby imparting said tip with a substantially triangular cross-section for imparting a substantially folded-over form to the tape at said outlet tip, said first side wall having a pair of projections extending in the direction of said second side wall at the tape outlet tip for guiding the bias tape from said device, and a slit formed in the first side wall between said projections.

4,658,960

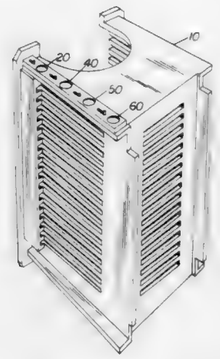
COLOR CODING CASSETTE

Nob T. Iwasa, P.O. Box 3526, San Luis Obispo, Calif. 93403

Filed Oct. 7, 1985, Ser. No. 785,248

Int. Cl.⁴ B65D *1/34, 85/30*

U.S. Cl. 206—459 **15 Claims**



1. A device for

indicating the stage in the processing of the electronic materials,

or indicating the class for processing the electronic materials,

or indicating the class of the result after processing the electronic materials,

or indicating the designation of the step or steps in processing the electronic materials,

or indicating the area in fabricating the electronic materials,

or indicating the line in fabricating the electronic materials,

said device including a carrier designed to hold such materials and indicating means located on the said carrier,

said indicating means comprising:

a. one or more indicator plates, each having an upstanding knob for moving the plate and a colored area adapted to signal the completion of one or more steps in the processing of the materials in the carrier,

or to signal the classification for processing the materials in the carrier,

or to signal the classification of the result after processing the materials in the carrier,

or to signal the designation of the step or steps in the processing of the materials in the carrier,

or to signal the area identification in fabricating the materials in the carrier,

or to signal the line identification in fabricating the materials in the carrier; and

b. cover plate corresponding to and overlying such indicator plate, each cover plate comprising;

1. a first opening of an elongated shape overlying the knob of the indicator plate and adapted to allow the plate to be moved from a non-completion indicating position to a completion indicating position,

or to be moved from classification not-indicating position to a classification indicating position,

or to be moved from designation not-indicating position to a designation indicating position,

or to be moved from identification not-indicating position to a identification indicating position, and back, and

2. a second opening adapted to overlie the colored portion of the indicator plate in either its completion indicating or non-completion indicating position,

or in either its class indicating or class not-indicating position,

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or in either its designation indicating or designation not-indicating position,
or in either its area identification indicating or area identification not-indicating position,
or in either its line identification indicating or line identification not-indicating position;
wherein each indicator plate may be moved
from the non-completion indicating position to the completion indicating position,
or from classification not-indicating position to the classification indicating position,
or from designation not-indicating position to the designation indicating position,
or from area identification not-indicating position to the area identification indicating position,
or from line identification not-indicating position to the area identification indicating position, when
the processing step or steps which correspond to each colored indicator is completed,
or the class which correspond to each colored indicator is adopted,
or the designation which correspond to each colored indicator is adopted,
or area identification which correspond to each colored indicator is adopted,
or line identification which correspond to each colored indicator is adopted, and
indicator plate may be returned
to the non-completion indicating position,
or to class not-indicating position,
or to designation not-indicating position,
or to the area identification not-indicating position,
or to the line identification not-indicating position,
in preparation
for a reuse of the carrier for another group of electronic materials,
or for a reuse of the carrier for another processing step or steps,
or for a reuse of the carrier for another fabrication area or areas,
or for a reuse of the carrier for another fabrication line or lines,
or for a continuous use of the carrier for another group of electronic materials,
or for a continuous use of the carrier for another processing step or steps,
or for a continuous use of the carrier for another fabrication area or areas,
or for a continuous use of the carrier for another fabrication line or lines.

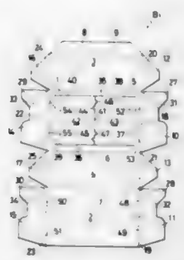
4,658,961

FOLDABLE CASE BLANK

Takeo Tamura, Tokyo, Japan, assignor to Tanabe Machinery Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1985, Ser. No. 787,378
Int. Cl.⁴ B65D *21/02, 5/44*
U.S. Cl. 206—509 **4 Claims**

1. A foldable case blank for forming a box-like case, said blank comprising:
a first plate corresponding to a top wall of said case when said blank is folded;
a second plate corresponding to a bottom wall of said case when said blank is folded;
a third plate corresponding to a front wall of said case when said blank is folded, said third plate integral with said first plate and extending from an end thereof at a first longitudinal fold line along which said blank is folded to form said case;
a fourth plate corresponding to a rear wall of said case opposed to said front wall when said blank is folded, said fourth plate integral with and extending between the other end of said first plate at a second longitudinal fold line and an end of said second plate at a third longitudinal fold line along which said blank is folded for forming said case;
a connecting piece extending from said third plate at a fourth longitudinal fold line and at the end thereof opposite the end from which third plate extends from said first plate,
said first, second, third and fourth longitudinal fold lines extending substantially parallel to one another, and said connecting piece being attachable to said second plate when said foldable blank is folded along said first, second, third and fourth longitudinal fold lines when forming said case;
a respective side plate piece integral with and extending from each said of side first, second, third and fourth plates at respective transverse fold lines along which said blank is folded for forming said case, said transverse fold lines extending substantially perpendicular to said parallel longitudinal fold lines, said side plate pieces corresponding to a pair of opposed side walls of said case when said blank is folded for forming said case, said second plate having engaging hole means extending therethrough at each of said transverse fold lines extending at each side of said second plate; and
a pair of shaping plates provided in said first plate, said shaping plates defined by a pair of spaced apart longitudinal cut lines in said first plate extending parallel to said longitudinal fold lines and the ends of which are spaced respectively from the transverse fold lines extending along



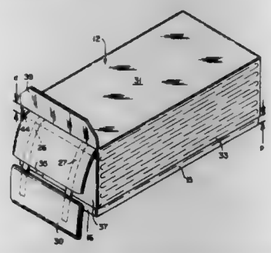
each side of said first plate, a central cut line in said first plate extending between said pair of longitudinal fold lines at a central portion of said first plate, a respective engaging tab means extending towards each side of said first plate at said central portion and defined by said central cut line, a first pair of transverse fold lines each of which extends perpendicular to and between a respective pair of ends of said spaced longitudinal cut lines, and a second pair of transverse fold lines each of which is spaced from a respective one of said first pair of transverse fold lines toward said central portion of said upper plate,
each of said pair of shaping plates being foldable about respective ones of said first and second pairs of transverse fold lines and being removable from said first plate along said cut lines such that
portions of each of said shaping plates defined between said respective ones of said first and second pairs of transverse fold lines abut against said first plate corresponding to said upper wall between said pairs of first transverse fold lines and said transverse fold lines extending along each side of said upper wall for reinforcing said upper wall, and portions of each of said shaping plates defined between respective ones of said pair of second transverse fold lines and said central cut line respectively extend along the surface of a respective one of said pair of opposed side walls for reinforcing said side walls, and said engaging tab means engage said receiving hole means of said second plate corresponding to said bottom wall respectively.

4,658,962

BAG DISPENSING CARTON

Ronald R. Burns, Naperville, and Robert P. Graves, Jr., Downers Grove, both of Ill., assignors to Viskase Corporation, Chicago, Ill.

Filed Apr. 3, 1985, Ser. No. 719,292
Int. Cl.⁴ B65D *83/00*
U.S. Cl. 206—554 **22 Claims**



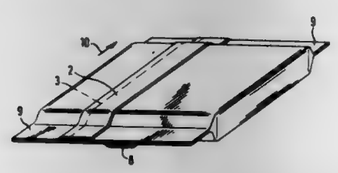
1. A telescoping corrugated board carton including a bottom tray with an upstanding peripheral wall and a top cover telescoped over said bottom tray, said top cover comprising:
(a) a top panel having depending side and end walls joined at common edges and telescopingly fitted over said bottom tray;
(b) one of said end walls being shorter in height than the depending side walls joined to said one end wall so that an upper edge of said one end wall is spaced below said top panel, said upper edge and an adjacent edge of said top panel defining an elongated dispensing slot therebetween which is immediately below said top panel and which extends the full width of said one end wall;
(c) an elongated flap extending from said edge of said top panel and folded downwardly to overlap said one end wall and close said elongated slot; and
(d) adhesive means for removably securing said flap to said one end wall, said adhesive means and elongated flap together providing stacking strength for said carton when said flap is secured to said one end wall.

4,658,963

PACKAGE WITH WEAKENED PORTION FOR OPENING

Wilfried Jud, St. Pölten, Austria, assignor to Folienwalzwerk Bruder Teich Aktiengesellschaft, Obergrafendorf, Austria

Filed Apr. 17, 1985, Ser. No. 724,008
Claims priority, application Austria, Apr. 20, 1984, 1333/84
Int. Cl.⁴ B65D *5/54, 17/34, 85/60*
U.S. Cl. 206—632 **9 Claims**



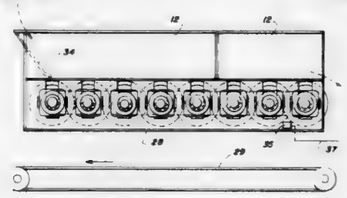
1. A package for packaging solid products with a wrapping formed from a flat, foldable packaging material and provided with a means to aid in opening the wrapping, the wrapping having a strip-shaped lamination segment of the packaging material formed by two layers of the packaging material joined together by a strip-shaped bonding segment located therebetween, a weakness line provided on one of the two layers within the region joined by the strip-shaped bonding segment (15,20,26,32) as the means to aid opening, the weakness line extending in the longitudinal direction of the strip-shaped bonding segment (15,20,26,32) and composed of perforation in said one of the two layers.

4,658,964

ROTARY DISC SCREEN AND METHOD OF OPERATION

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed Sep. 3, 1985, Ser. No. 772,041
Int. Cl.⁴ B07C *5/00;* **B07B** *13/04*
U.S. Cl. 209—552 **4 Claims**



1. A rotary disc screen comprising:
(a) a bed frame having longitudinal sides in parallel spaced relation extending from a material inlet end to a material outlet end;
(b) rotary shafts rotatably carried by and between said frame sides and arranged in spaced parallel relations;
(c) a series of screen discs secured to each shaft in spaced relation such that the screen discs of the adjacent shafts interdigitate to carry material between the inlet and discharge ends of said frame, said discs cooperating to form a screen with open gaps between the screen discs for the fallout of objects sized to fit through said open gaps;
(d) a rotary shaft drive system operative to rotate all of said shafts in a common direction for transporting material from said bed frame inlet to said bed frame outlet; and
(e) control means adjacent said outlet sensitive to the passage of fallout objects through said screen discs adjacent said outlet, said control means being operative for adjusting the speed of rotation of said rotary shafts for maximizing the screening efficiency independently of the quantity of incoming material and thereby at the same time controlling the residence time of material on said series of screen discs in movement between said bed frame inlet and outlet.

4,658,965

DISC SCREEN CLASSIFIER

William C. Smith, West Vancouver, Canada, assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 24, 1985, Ser. No. 790,944
Int. Cl.⁴ B07B *1/14*
U.S. Cl. 209—672 **9 Claims**

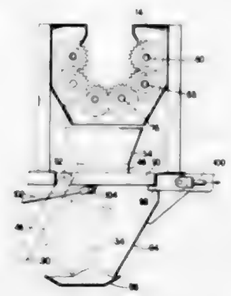
1. Wood chip classification apparatus comprising:
frame means including a classification bin, said bin including a first end and a second end;
feed means mounted at said first end of said classification bin for feeding wood chips into said classification bin;
a plurality of shafts rotationally mounted on said frame means in said classification bin with their axes of rotation parallel to one another and at an acute angle down with respect to horizontal from said first end to said second end;
a plurality of spaced apart disks on each of said shafts with said disks of adjacent shafts disposed in an interdigital relationship, the spacing of said disks defining a plurality of classification zones with increasing spacing from one zone to the next from said first end to said second end;
drive means mounted on said frame and connected to rotate said shafts whereby wood chips tumble from said first end

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towards said second end and are classified through said spaced disks in the respective classification zones; and

collection means including a plurality of collection bins each located beolow a respective,

weighing means including a plurality of load cells each



supporting a respective collection bin and operable to generate an electrical signal representing chip weight;

conveying means below said collection bins; and

dumping means carrying said load cells and said collection bins and operable to empty the contents of said collection bins onto said conveying means.

4,658,966

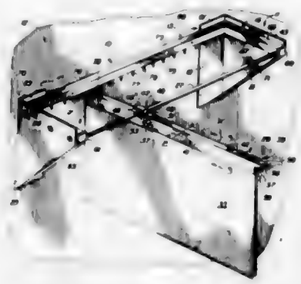
HANGING FILE FOR BLUEPRINTS AND THE LIKE

Daniel Brock, 2138 W. Dixon St., Mesa, Ariz. 85201

Filed Mar. 28, 1986, Ser. No. 845,515

Int. Cl.⁴ A47F *7/16*

U.S. Cl. 211—46 **41 Claims**



1. A hanging file system for releasably suspending a plurality of relatively large flat pages in a hanging relationship of one another comprising:

an elongated rear support member having a lower edge portion, first and second end portions at opposite ends of said rear support member, and a longitudinal axis through said elongated rear support member;

first and second substantially identical end support members generally parallel to one another and having first and second end portions, one end portion of each of said first and second end support members extending forwardly from the first and second end portions of said rear support member, respectively, said first and second end support members being generally perpendicular to the axis of said rear support member;

a front support member operatively carried by said opposite end portion of said first and second end support members, said front support member being generally parallel to the axis of said rear support member and generally perpendicular to said end support members, said rear support member, said front support member, and said first and second end support members forming a generally rectangular frame means;

means for mounting said frame means at least a predetermined vertical distance above floor level;

a plurality of substantially evenly spaced pin means operatively carried by said lower edge portion of said rear support member and depending downwardly therefrom;

an elongated binder means including an elongated lower clamping jaw means extending almost the entire length thereof; and

an elongated slot-forming means extending almost the length of said elongated binder means, means for forming an aperture means at one end of said elongated binder means for receivably engaging one of said plurality of pin means therein and means for operatively engaging said front support means for suspending said elongated binder means from said front support means, the relatively large flat pages being operatively received within said elongated slot for being clamped therein by said lower clamping jaw means for suspending said pages therefrom.

4,658,967

EXTENDIBLE RACK ASSEMBLY

Shu-San Wang, No. 83, 29 Lane, Hua Cheng Road, Hsin Chuang City, Taipei Hsien, Taiwan

Filed Oct. 31, 1985, Ser. No. 793,338

Int. Cl.⁴ A47F *5/08*

U.S. Cl. 211—94 **4 Claims**



1. An extendible rack assembly comprising:

a plurality of bars each of which has a pair of edges and a pair of ridges extending parallel along one side of each bar from one end to the other end, said pair of ridges having two inner faces opposing one another to define a groove in each bar;

at least one connector piece for connecting adjacent ones of said bars end to end, said at least one connector piece having two pairs of opposing forked ends fitted in said grooves of said bars respectively, each of said pairs of forked ends consisting of a split pin with a recess;

wherein said pair of ridges on each of said bars has two flanges projecting inwardly opposite to each other from edges of the ridges near ends of each bar, so as to retain said connector piece in said grooves, and two bosses oppositely projecting from said inner faces of the ridges towards each other so as to engage with said recesses of said split pins; and

at least one hook member with a base means for mounting said at least one hook member over said bars so that said at least one hook member is slideable along said bars.

4,658,968

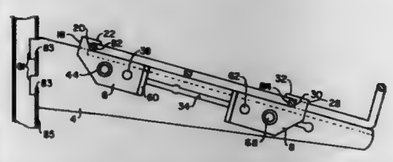
ADJUSTABLE BRACKET ASSEMBLY FOR SUPPORTING A SHELF

Arthur R. Mastrodicasa, 5 Elmcrest Cir., Walpole, Mass. 02081

Continuation of Ser. No. 752,516, Jul. 8, 1985, abandoned, which is a continuation-in-part of Ser. No. 593,665, Mar. 26, 1984, abandoned, which is a continuation-in-part of Ser. No. 667,448, Nov. 1, 1984, abandoned. This application May 8, 1986, Ser. No. 860,836

Int. Cl.⁴ A47G *29/02*

U.S. Cl. 211—187 **1 Claim**



1. In combination, a bracket assembly and a shelf, said assembly comprising a main flat bracket member having a sloped upper surface sloping downwardly from the rear to the front thereof and having vertical attaching means on the rear end thereof, a first flat slide member mounted on said flat bracket member for movement therealong, said first flat slide member having an upstanding hook-like projection thereon defining a first notch to receive and overlie a first shelf portion, a second flat slide member mounted on said flat bracket member for movement therealong and having an upstanding hook-like projection thereon defining a second notch to receive and overlie a second shelf portion, said second notch being opposed to and in alignment with said first notch, said first and second slide members being slidably movable along said main bracket member toward and away from each other, said main bracket member being provided with a single elongated slot extending lengthwise thereof and running parallel to and spaced from said sloped upper surface, a first lock pin carried by said first slide member for securing said first slide member in a selected fixed position along said main flat bracket member, a second lock pin for securing said second flat slide member in a selected fixed position on said main bracket member, each of said first and second lock pins including a reciprocally movable and spring biased pin extending from its respective flat slide member and through said elongated slot, a portion of each of said pins on each slide member being adapted to be biased into position to lock its respective slide member in a selected position along said main flat bracket member, said elongated slot being provided with enlarged portions along the length thereof, each of said pins including a shank portion having a diameter greater than the width of said elongated slot in said main bracket member but less than the diameter of said enlarged slot portions, so that said shank portion may enter a selected one of said enlarged slot portions, and each of said lock pins including a helical spring means for biasing an edge portion thereof into engagement with said selected enlarged slot portion and against said main bracket member.

4,658,969

ADJUSTABLE BRACKET ASSEMBLY FOR SUPPORTING A SHELF

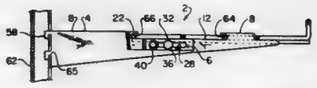
Arthur R. Mastrodicasa, 5 Elmcrest Cir., Walpole, Mass. 02081

Continuation of Ser. No. 763,643, Aug. 8, 1985, abandoned, which is a continuation of Ser. No. 593,665, Mar. 26, 1984. This application May 8, 1986, Ser. No. 860,998

Int. Cl.⁴ A47G *29/02*

U.S. Cl. 211—187 **1 Claim**

1. In combination, a bracket assembly and a shelf, said bracket assembly comprising a main flat bracket member, said main bracket member being a rigid, elongated substantially flat member having upper and lower edge surfaces, said main bracket member having a first hook-like projection on its upper surface proximate a first end of said main bracket member engaging a first shelf portion, said main bracket member having a portion of its upper surface extending beyond said first hook-like projection forming a supporting surface for said shelf, said main bracket member having means at a second end thereof for attaching said main bracket member to a vertical support, a slide member mounted on said main bracket member for movement therealong, said slide member comprising a rigid, elongated member having a flat portion disposed vertically adjacent said flat bracket member between its upper and lower surfaces, said slide member having a second upstanding hook-like projection generally opposed to said first hook-like projection, said second hook-like projection receiving a second shelf portion therein, said slide member being slidably movable along said main bracket member to selectively determine spacing between said first and second hook-like projections, said slide member flat portion having an elongated slot therein, said slot having an enlarged portion therein, a first pin fixed to said flat main bracket member, a shank portion of said first pin extending through said slot, a head at the free end of said shank portion, said head having a diameter larger than the width of said slot enlarged portion to retain said slide member slidably on said main bracket member, and a second pin mounted in the assembly, said second pin comprising a first enlarged head disposed on the side of said main bracket member removed from said slide member, a first enlarged shank portion extending from said first enlarged head, said first enlarged shank portion having a diameter slightly smaller than the width of said slot enlarged portion and greater than the width of said elongated slot, a smaller shank portion extending from said enlarged shank portion and of lesser diameter than said enlarged shank portion and of a diameter slightly less than the width of said elongated slot, said smaller shank portion being adapted to extend through said slot, and a second enlarged head fixed to the end of said second pin remote from said first enlarged head, a spring mounted between said second enlarged head and said slide member, whereby said enlarged shank portion is adapted to enter said slot enlarged portion and urged by said spring to remain in said slot enlarged portion to lock said slide member in a fixed position along said main bracket member, and said enlarged shank portion being provided with a shoulder which is urgable by said spring into forceful engagement with the margins of said slot to secure said slide member on said main bracket member at locations in which said second pin enlarged shank portion is disposed along said slot out of alignment with said slot enlarged portion, said second pin further comprising a lock means interconnecting said main bracket member and said slide member for securing said slide member in a selected fixed position along said main bracket member, such that said first and second hook-like projections retain said shelf at its first and second portions.



4,658,970

DEFLECTION REDUCTION MODULE FOR BOOM HOIST CYLINDER OF MOBILE CRANE

Larry J. Oliphant, Swisher, Iowa, assignor to Kobe Steel Ltd., Kobe, Japan

Filed Nov. 15, 1985, Ser. No. 798,572

Int. Cl.⁴ B66C *23/26*

U.S. Cl. 212—182 **22 Claims**

12. A deflection reduction system for use with a double-acting boom hoist cylinder having opposite ends separated by a boom hoist piston and connected between a boom and a vehicle chassis on which the boom is pivotably mounted, said chassis being deflectable relative to terrain over which the

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vehicle travels and said boom being deflectable relative to said chassis while said vehicle is in motion, said system comprising:

a deflection reduction module for mounting on said boom hoist cylinder and comprising a hydraulic fluid barrel having a hydraulic fluid piston therein, a gas barrel having a gas piston and compressed gas therein for biasing said



gas piston in one direction, said pistons being interconnected so that they are movable in unison, and a spring for biasing said pistons in said one direction;

and valve means selectively operable to interconnect said opposite ends of said boom hoist cylinder in a closed circuit and to connect said closed circuit to said hydraulic fluid barrel.

4,658,971

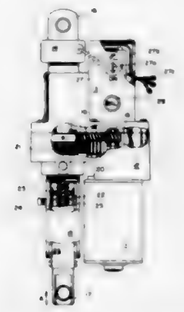
SELF BALANCING ELECTRIC HOIST

Michael Kornely, Centerport, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Dec. 20, 1983, Ser. No. 563,679

Int. Cl.[4] B66C *13/12*

U.S. Cl. 212—159 **13 Claims**



1. A self balancing electric hoist for assisting an operator in positioning and manipulating large supported loads, said hoist comprising:

(a) an electric motor means and a jack screw means mounted between a load and a means for supporting a load, said electric motor means responsive to a controller means to raise and lower the load;

(b) load sensor means for supplying an actual load signal representative of the actual load carried by the hoist;

(c) null signal generating means for generating an adjustable null signal to offset the actual load signal;

(d) means for generating an updrive signal for said motor means if the actual load signal exceeds the null signal by a first predetermined value;

(e) means for generating a downdrive signal for said motor means if the actual load signal exceeds the null signal by a second predetermined value; and

(f) controller means for energizing said motor means in response to either an updrive signal or a downdrive signal to energize said motor only when raising or lowering said load,

whereby an operator may raise or lower the load by manually loading the load in the desired direction of travel to generate an actual load signal that exceeds the null signal by said first or second predetermined value.

4,658,972

METHOD FOR STRETCHING AND FOLDING EXTENSION JIB IN WHEELED TYPE CRANE

Yukio Koizumi, and Hiroshi Miyazawa, both of Akashi, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Division of Ser. No. 460,385, Jan. 24, 1983, Pat. No. 4,595,108. This application Aug. 16, 1984, Ser. No. 624,914

Claims priority, application Japan, Jan. 26, 1982, 57-11329; Jan. 26, 1982, 57-11330; Jan. 26, 1982, 57-11331; Jan. 26, 1982, 57-11332; Apr. 13, 1982, 57-61986; Apr. 13, 1982, 57-61988; Apr. 13, 1982, 57-61987; Apr. 13, 1982, 57-61989; May 18, 1982, 57-84448; Jun. 18, 1982, 57-105892; Jun. 18, 1982, 57-105891; Sep. 21, 1982, 57-165795

Int. Cl.[4] B66C *23/04*

U.S. Cl. 212—270 **2 Claims**



1. A method for extending an extension jib (2) from a folded position wherein said jib (2) is disposed in an upright posture along one side of a telescopic boom (1), said jib (2) being supported at a fore end of said boom (1) in an extended state via right and left jib foot portions (6, 7) rotatably engaged with horizontal boom point pins (4, 5) extending transversely of said boom (1) at a fore end portion thereof, said right and left jib foot portions (6, 7) being positioned on opposite sides of said extension jib so as to be engageable and disengageable with said boom point pins (4, 5), one (7) of said right and left jib foot portions (6, 7) being rotatable relative to said boom (1) about an axis (y) extending in an axial direction of said jib (2), a jib guide (17) mounted on said boom and including an inclined groove (17c) on a jib folding side of a fixed boom section (1A) of said telescopic boom (1), and a guided member (18) provided on said jib (2) for engagement with said jib guide (17); wherein said method comprises:

moving said boom (1) into an inclined position and extending said fore end of said boom such that said guide pin is guided by said jib guide and becomes disengaged from said jib guide;

rotating said jib about a longitudinal axis (x) of said boom point pin (6) into a vertically suspended position; and

rotating said jib (2) in said vertical suspended position through a predetermined angle about said axis (y) extending in the longitudinal direction of said jib (2) so as to engage a foot portion of said jib with one of said boom point pins (5); and

rotating said jib so as to extend from said fore end portion of said boom.

4,658,973

INSULATING JUG OR BOTTLE HAVING A CLOSING MEMBER CARRYING A SEALING MEMBER

Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany

Filed May 29, 1985, Ser. No. 738,947

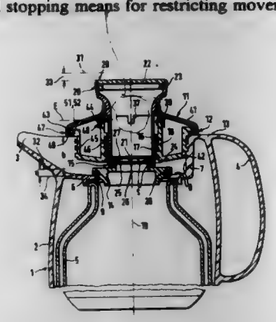
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1984, 3433354

Int. Cl.[4] A47J *41/00;* **B65D** *47/20, 51/14, 81/38*

U.S. Cl. 215—13 R **14 Claims**

1. An insulating jug or bottle having a sealing surface surrounding an opening; a housing for said bottle having a recess

formed in the upper side thereof, a lid having an opening therein for closing said recess, said lid opening being located in the region of the recess; a closing member mounted on the lid for closing the opening in the lid; a sealing member on said closing member, an adjusting mechanism comprising a worm gear for adjusting said closing member between a raised and lowered positioned relative to the housing; said closing member including a hand grip for raising and lowering said closing member; and stopping means for restricting movement of the



hand grio in the closed position and for fixing the lid on the housing in the direction of movement of adjustment of the closing member, the improvement in that an elastic connection is arranged between the sealing member and the closing member facilitating relative movement with limited clearance therebetween in a longitudinal direction relative to the movement of adjustment, whereby the sealing member is prestressed in the closed position towards said sealing surface on the bottle opening.

4,658,974

TRANSPARENT LIQUID CONTAINER BOTTLE WITH TINTED LABEL AND BASE CUP

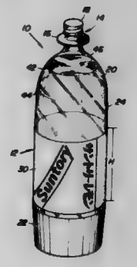
Takashi Fujita, Nishinomiya; Yuko Goto, Ashiya, and Kenji Nishikawa, Nara, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Dec. 30, 1985, Ser. No. 814,764

Claims priority, application Japan, Jan. 8, 1985, 60-740[U]

Int. Cl.[4] B65D *1/02, 23/00, 23/08*

U.S. Cl. 215—12 R **5 Claims**



1. A transparent liquid container bottle comprising:

a transparent bottle body designed to be filled to a predetermined level with a transparent liquid;

a label adhering to and encircling more than half of the circumference of said bottle body, the surface of said label facing said bottle body being tinted, whereby said liquid appears to be tinted; and

a base cup fixed to the bottom of said bottle body and tinted to match the color of said tinted surface of said label.

4,658,975

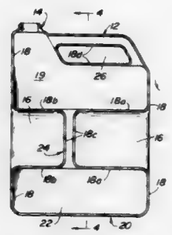
LIQUID CONTAINER WITH HANDLE

Robert L. Cone, Yoder Rd., R.D. #2, Elverson, Pa. 19520

Filed Aug. 30, 1985, Ser. No. 771,084

Int. Cl.[4] B65D *1/02, 1/04, 23/10, 25/30*

U.S. Cl. 215—100 A **8 Claims**



2. Liquid container, comprising:

a peripheral wall defining a hollow top body portion and a hollow bottom body portion, the hollow bottom body portion including a base,

a passage intermediate the top and bottom body portions and bounded by a portion of the peripheral wall defining the top and bottom body portions,

a pouring handle comprising a post connected to the top and bottom body portions and disposed within the passage so as to be gripped by the user,

at least one end of said passage being open to the container exterior, and

said passage being of a cross-sectional dimension and length as measured between said open end of said passage at said container exterior and said post to permit contact between the portion of said peripheral wall bounding said passage and the user's forearm upon gripping of said post by the user whereby said container is supportable by one arm both at said post and at a portion of said peripheral wall bounding said passage.

4,658,976

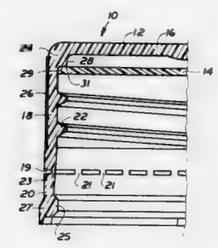
LINED PLASTIC CLOSURE

Elmer E. Pohlenz, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 485,277, Apr. 15, 1983, abandoned. This application Jan. 4, 1985, Ser. No. 687,505

Int. Cl.[4] B65D *53/04*

U.S. Cl. 215—252 **27 Claims**



27. A thermoplastic closure for sealing an open mouth of a threaded container having a cylindrical side surface formed on an exterior portion of said open mouth, and a top sealing surface on a rim of said container, said closure comprising:

(a) an end wall;

(b) a skirt downwardly depending from said end wall having

a thread projecting inwardly therefrom for engaging said threaded container;

(c) an annular shoulder formed at the juncture of said end wall and said skirt having a cylindrical surface downwardly depending from said end wall, a horizontal annular surface extending inwardly from said skirt, and a corner formed at the juncture of said cylindrical surface and said horizontal annular surface below said rim of said container;

(d) a tamper-evident band connected to said skirt by frangible means; and

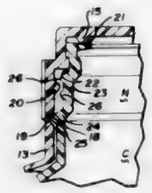
(e) a circular liner positioned adjacent to said end wall between said thread and said horizontal annular surface, said liner having a diameter approximately equal to the inside diameter of said skirt, and the diameter of said cylindrical surface being no greater than the diameter of said cylindrical side surface of said container plus 120% of the thickness of said liner before said liner is reduced in thickness whereby said annular shoulder increases the fidelity of a seal formed between said cylindrical surface of said cap and said cylindrical side surface of said container when said end wall is flexed upwardly.

4,658,977

SNAP ON TWIST OFF TAMPER-PROOF CLOSURE FOR CONTAINERS

Robert E. Crisci, New Castle, Pa., assignor to (Nepco) Northern Eng. & Plastics Corp., New Castle, Pa.

Filed Oct. 21, 1985, Ser. No. 789,712
Int. Cl.[4] B65D *41/48*
U.S. Cl. 215—256 **8 Claims**



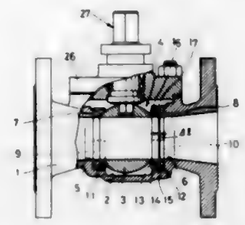
1. In a resilient molded plastic closure for a container of the type having a neck surrounding an opening to the container defined by an inturned flange having upper and lower surfaces and having dual closure retaining means on said neck; said closure comprising means for covering said opening to said container and a depending annular flange surrounding said neck; said depending flange having dual means for engaging said retaining means, one of said dual means comprising an annular groove forming a frangible wall positioned in the inner surface of said depending annular flange, the portion of the depending flange below said annular groove defining a tear skirt, said tear skirt having a pull tab affixed thereto, said means for covering said opening to said container comprising a resilient elastic top portion having said depending annular flange joined thereto at the peripheral edge of said top portion, circumferencially positioned thread like ribs on the inner surface of said depending flange above said annular groove, said closure retaining means on said neck including circumferentially positioned thread like ribs, said thread like ribs on said depending annular flange being engageable with said thread like ribs on said neck only when said portions of said depending annular flange are moved inwardly toward one another, the combination therewith of; at least one annular flexible sealing flange integrally formed on the means for covering said opening in depending relation thereto and the position for sealing relation with said upper surface of said inturned annular flange on said container.

4,658,978

TOP ENTRY BALL VALVE AND A CLAMP THEREFOR

Morio Ikematsu, Takaishi; Tohru Wada, Sakai; Tohru Nakanishi, Osaka, and Nobuo Ishigami, Sakai, all of Japan, assignors to Nippon Ball Valve Co., Ltd., Osaka, Japan

Filed Jun. 24, 1985, Ser. No. 747,959
Int. Cl.[4] F16K *5/06*
U.S. Cl. 251—315 **5 Claims**



1. A top entry ball valve comprising:

a valve body having a valve chamber therein and a top opening connected to said valve chamber;

a valve removably mounted in said valve chamber, said valve sized to fit through said top opening;

a low pressure side seat receiving surface and a high pressure side seat receiving surface being parallel to each other and formed in said valve body on opposite sides of said valve chamber with said valve therebetween;

valve seal means for sealing said valve in said valve body and for allowing said valve and valve seal means to be inserted into and removed from said valve body through said top opening as a unit, said valve means comprising a single seat ring and a seat ring assembly;

said low pressure side seat receiving surface having only said single seat ring between said valve and said low pressure side seat receiving surface;

said high pressure side seat receiving surface having said seat ring assembly between said valve and said high pressure side seat receiving surface; and

said seat ring assembly including an annular seat ring, an annular seat ring holder and an annular belleville spring between said annular seat ring and said annular seat ring holder, said annular seat ring holder having annular groove means extending around the outer periphery thereof;

whereby an improved seal is provided between said valve and said annular seat rings due to pressure from said annular belleville spring of said seat ring assembly and said valve body can be made without intricate machining of the valve body to hold said seat ring assembly in a nonexpanded condition for removal of said valve.

4,658,979

PROPELLANT FILLING AND SEALING VALVE

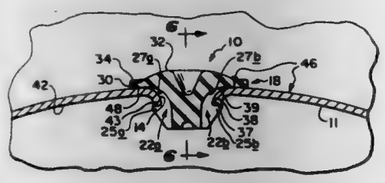
Raymond E. Mietz, Barrington, and Harlen E. Wilkinson, Crystal Lake, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Jan. 13, 1986, Ser. No. 818,563
Int. Cl.[4] B65D *51/16*
U.S. Cl. 220—209 **25 Claims**

1. A propellant filling and sealing valve which permits the injection of propellant pressurizing fluid or gas under pressure through a propellant filling hole in a wall of or for a container and for thereafter sealing the container, said propellant filling and sealing valve comprising:

umbrella sealing means adapted to selectively make, engage, separate from, and then make a non-venting seal with the interior surface of the wall about the propellant filling hole therein;

stem means operatively connected to said umbrella sealing means and adapted to be received in the filling hole for positioning said umbrella sealing means around the filling hole thereby to enable said umbrella sealing means to engage, separate from, and then make the seal with the interior surface of the wall, and having means for channeling pressurizing fluid along said stem means to said umbrella sealing means and into the container during the pressurization of the container; and



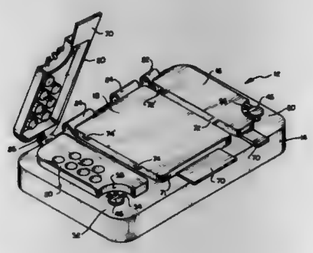
shoulder means operatively joined to said stem means and having a surface adapted to abut the portion of the wall exterior of the container about the filling hole to prevent the valve from moving into the container during pressurization, said shoulder means having passage means therein communicating with, and cooperating with, said channeling means in said stem means and said channeling means serving, with said so-adapted umbrella sealing means, to allow pressurizing fluid to enter the container.

4,658,980

TAMPER EVIDENCING PLASTIC CAN TOP

Robert O. Lindstrom, Bay Village, Ohio, assignor to SCM Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 698,711, Feb. 6, 1985, abandoned. This application Oct. 25, 1985, Ser. No. 792,627
Int. Cl.[4] B65D *41/32*
U.S. Cl. 220—214 **11 Claims**



1. A tamper evidencing container cap comprising

(a) a rectangular shaped cover member;

(b) means defining a plurality of openings in said cover member for pouring, spooning, or sifting container contents confined by said cover member;

(c) at least two side-by-side lids;

(d) hinge means side connecting each of said lids to said cover member;

(e) said lids being adapted to close said cover member openings when the lids are folded on the hinge means into a superimposed relationship with the cover member;

(f) arrow shaped locking means adapted to penetrate holes in said cover member and to engage said cover member in a locking relationship through said holes, including first breakable tamper evidencing means directly connecting said locking means to said lids;

(g) said locking means having enlarged base means to prevent the locking means from falling through said openings into the container contents, said tamper evidencing means in the unbroken state holding the top of said base means in essentially the same plane as that of said lids, in the broken state the top of the base means lying below the plane of said lids; and

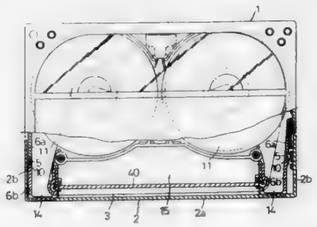
(h) second breakable tamper evidencing means connecting said lids together.

4,658,981

RECORDING TAPE CARTRIDGE

Shinichi Goto, Kyoto, and Toshiyuki Amaike, Osaka, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 610,648, May 16, 1984. This application Oct. 18, 1985, Ser. No. 789,090
Int. Cl.[4] G03B *1/04*
U.S. Cl. 220—338 **11 Claims**



1. A recording tape cartridge comprising:

a case body formed by a top section and a bottom section of generally rectangular configuration with a peripheral wall extending between said top and bottom sections along sides thereof and providing an open front portion;

a lid member having a front lid plate and a pair of side arms projecting inwardly from said lid plate, said lid member being movable between a closed position for closing the front portion of the case body and an opened position;

a supporting shaft mounted on an inner surface of at least one of said side arms;

a shaped supporting recess means defined in the peripheral wall opposing to said supporting shaft for movably supporting said supporting shaft, said supporting recess means being formed from a partial recess in the top section which is juxtaposed adjacent to a partial recess in the bottom section to permit the supporting shaft to enter therebetween from the front when said case is assembled;

a bevelled flange affixed to said supporting shaft and substantially disposed within a counterbore in an inner face of the peripheral wall of the case body for preventing disengagement of the supporting shaft from the supporting recess means.

4,658,982

LABELING APPARATUS WITH IMPROVED LABEL TRANSPORT CONTROL

Joachim Dudzik, Vor dem Klingler 1, 7440 Nürtingen, and Winfried Dudzik, Drosselweg 13, 7441 Neckartailfingen, both of Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 593,042
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310840
Int. Cl.[4] G07F *11/00, 11/68;* B65H *5/28;* B32B *31/00*
U.S. Cl. 221—13 **11 Claims**

1. Apparatus for pulling a band carrying a series of labels from a supply reel, past a label-removing station, thereby creating an empty band and winding said empty band step by step onto a take-up reel so as to create a coil of increasing diameter, said band having a final linear velocity at the end of each of said steps, comprising in combination

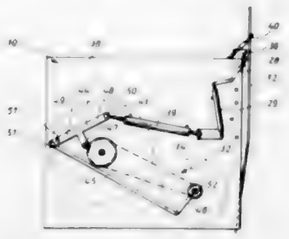
driving means for driving said take-up reel with an angular

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velocity increasing during each of said steps so that said final linear velocity of said band at the end of each of said steps in substantially independent of said diameter of said coil, said driving means including

a take-up axle carrying said take-up reel, said take-up direction control means coupled to said take-up reel, and permitting rotation in a first direction, and blocking rotation in a second direction opposite said first direction,

a first rocker arm, free-wheel means intercoupled between said first rocker arm and said take-up axle, pneumatic



cylinder means having a piston rod moving alternately in winding direction and in a return direction,

a frame, and

linking means for linking said piston rod to said first rocker arm so that said first rocker arm rotates with an increasing angular velocity while said piston rod moves at a predetermined constant speed in said winding direction,

said linking means including a second rocker arm having a fulcrum fastened to said frame, and connecting means connecting said second rocker arm to said piston rod and to said first rocker arm.

4,658,983

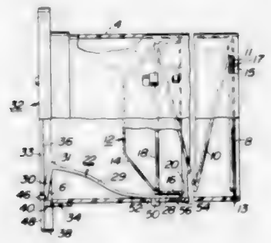
CUP DISPENSER

J. Marshall Suttles, Elberton, Ga., assignor to Royston Corporation, Royston, Ga.

Filed May 28, 1985, Ser. No. 738,344

Int. Cl.⁴ A47F *1/04*

U.S. Cl. 221—44 **9 Claims**



1. A cup dispenser comprising:

means comprising an axially elongated tubular housing, for receiving a nested stack of cups to be dispensed, said housing having an opening at one of its ends;

means within the housing for pushing a stack of cups therein toward the opening;

a plurality of cup-engaging fingers, each comprising a flexible resilient element having one end connected to the tubular housing means at a location spaced axially from said opening, said flexible element being located within the housing and extending toward said opening, and the other end of said flexible element having a leg extending radially outwardly therefrom;

the tubular housing having clearance for each leg, allowing the leg to move radially inwardly, and radially outwardly beyond the wall of the tubular housing; and

retaining means, immovably connected to the tubular housing and extending radially outwardly therefrom, for retaining the legs in adjustable fixed relationship to the tubular housing;

the retaining means and each leg having interengaging means, the interengaging means of the retaining means being immovably connected to the tubular housing, and the interengaging means of the legs being movable toward the interengaging means of the retaining means in directions transverse to the radial directions of movement of the legs and also being movable away from the interengaging means of the retaining means, the resilience of the flexible resilient elements urging the legs against the retaining means in said transverse directions, and the interengaging means of the retaining means and legs preventing radial movement of the legs when the legs are positioned against the retaining means but permitting radial adjusting movement of the legs when the legs are pushed away from the retaining means against the urging action of the flexible resilient elements.

4,658,984

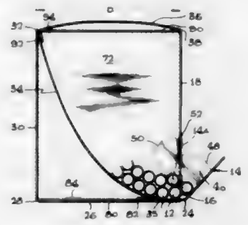
SHIPPING AND DISPENSING CONTAINER FOR DRINKING STRAWS

Donald W. Brunner, Glendale, Calif., assignor to Diamond Straw Incorporated, Los Angeles, Calif.

Filed Jul. 9, 1984, Ser. No. 629,053

Int. Cl.⁴ B65D *5/72, 83/02;* A47F *1/12*

U.S. Cl. 221—64 **5 Claims**



1. Apparatus for storing and dispensing drinking straws comprising:

a container formed of a single sheet of cardboard which includes a substantially vertical flexible front wall, a rear wall, a bottom wall, a top wall, and a straw-supporting inclined wall which extends from the top of the rear wall in a downward-forward incline to the forward portion of the bottom wall, and forming a substantially horizontal surface at the front of the bottom wall; and

a group of drinking straws resting on said inclined wall;

the bottom of the front wall lying above the bottom wall by a distance about equal to the diameter of one of said drinking straws, so when the bottom of the front wall is bent rearwardly it can pass over a single straw to enable grasping of the single straw.

4,658,985

METHOD OF DISPENSING VAPOR TO THE AIR IN A ROOM AND AN APPARATUS FOR CARRYING OUT THE METHOD

Jens Madsen, Abyhoj, and Svend S. Kaae, Aarhus, both of Denmark, assignors to Clean-Tex A/S, Morke, Denmark

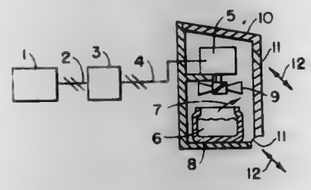
Filed Jul. 15, 1985, Ser. No. 754,840

Int. Cl.⁴ B67B *7/00;* G04C *5/08*

U.S. Cl. 222—1 **6 Claims**

1. Method of dispensing an aromatic vapour to a space from a vapour dispensing substance by a dispensing device allowing

the substance to be dispersed into a room comprising: supplying electric current to the dispensing device to cause the device to allow the vapour dispensing substance to be dispensed to the room, periodically cutting off the electric current to the dis-



pensing device for pre-determined periods of time and gradually increasing the current supply to the dispensing device as the vapour dispensing substance is dissipated to maintain a constant level of vapour concentration until the vapour dispensing substance is used up.

4,658,986

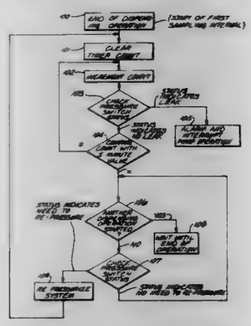
PRESSURE-MONITORING SYSTEM

Edward E. Freed, 4190 Del Mar Ave., Long Beach, Calif. 90807, and Kenneth D. Dowd, 6202 Trinette Ave., Garden Grove, Calif. 92645

Continuation-in-part of Ser. No. 645,025, Aug. 28, 1984, abandoned. This application Jul. 11, 1985, Ser. No. 754,338

Int. Cl.⁴ B67D *5/08;* G01M *3/08;* F04B *49/10*

U.S. Cl. 222—52 **10 Claims**



1. A pressure-monitoring system for automotive fuel service stations comprising:

(a) a fuel storage tank;

(b) at least one fuel dispenser;

(c) a supply line interconnecting the storage tank and the fuel dispenser;

(d) a pump located with respect to the supply line for passing fuel from the storage tank to the fuel dispenser;

(e) means located in the supply line for sensing pressure between the pump and the dispenser; and

(f) control means for defining a sampling interval following the end of a dispensing operation, and being electrically interconnected to the pressure sensing means and the pump, for disabling the pump when the pressure sensed by the sensing means during the sampling interval crosses a predetermined threshold, wherein the control means cooperates with the pressure sensing means throughout an indefinite period of time between dispensing operations to detect a need to repressurize the system, and wherein, upon such detection, the control means responds by causing repressurization of the system.

4,658,987

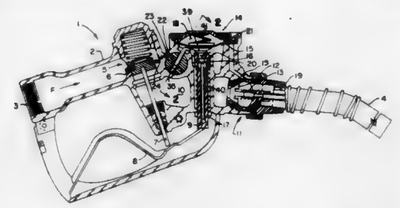
NO PRESSURE SHUT OFF FOR AUTOMATIC FUEL NOZZLE VALVE

Arthur C. Fink, Jr., Franklin County, Mo., assignor to Husky Corporation, Pacific, Mo.

Filed Sep. 9, 1985, Ser. No. 774,014

Int. Cl.⁴ B61D *5/34*

U.S. Cl. 222—52 **5 Claims**



5. A piston means for initiating activation and deactivation; respectively of the operations of a vacuum operated diaphragm for a fuel dispensing nozzle, a latch mechanism operatively associated with said diaphragm, said diaphragm being of a type incorporating a support means and cooperating with the connecting latch mechanism for providing automatic shut off of the fuel dispensing nozzle, said nozzle having a chamber formed therein, said piston means disposed for reciprocal movement within said chamber, said piston means and chamber being transversally arranged within the nozzle, and structural means operatively associated with the piston means to effect initiation of the activation and deactivation respectively of the latch mechanism depending upon the movement of the piston means within the chamber, said structural means operatively associated with the piston means for effecting activation of the latch mechanism as the piston means moves towards one end of the chamber during nozzle shut-off and for effecting deactivation of the latch mechanism as the piston means moves towards the other end of the chamber as fuel flows through the dispensing nozzle.

4,658,988

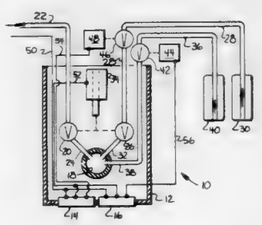
MULTIPLE FLAVOR POST-MIX BEVERAGE DISPENSING APPARATUS

David A. Hassell, Anoka, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed Apr. 2, 1984, Ser. No. 596,124

Int. Cl.⁴ B67D *5/56*

U.S. Cl. 222—129.1 **14 Claims**



1. A multiple flavor post-mix beverage dispensing apparatus comprising

(a) a dispensing head having a nozzle, a normally closed water valve fluidly connected to the nozzle, a first normally closed primary syrup valve fluidly connected to the nozzle, a water line to the water valve, and a primary syrup line to the syrup valve for connection of the head to a source of primary beverage syrup;

(b) a second primary syrup valve in the primary syrup line;
(c) an alternative syrup line to the nozzle for connection of the head to a discrete source of an alternative beverage syrup;
(d) a normally closed aternative syrup valve in the alternative syrup line;
(e) primary actuation means for concurrently opening the water valve and both syrup valves in the primary syrup line while the alternative syrup valve in the alternative syrup line is closed, for dispensing a primary beverage;
(f) secondary actuation means for concurrently opening the water valve and the alternative syrup valve in the alternative syrup line, while the second primary syrup valve is closed, for dispensing an alternative beverage from the head; and
(g) in which the water valve and the first primary syrup valve are commonly connected to said primary actuation means, said primary actuation means including a single actuator, for effecting the operation of the primary actuation means.

4,658,989

DISPOSABLE FLEXIBLE LINER FOR MATERIAL STORAGE AND HANDLING BAG, AND METHOD OF RELEASABLY INSTALLING THE SAME

Vincent C. Bonerb, All-Flow, Inc., 4409 S. Park Ave., Buffalo, N.Y. 14219

Filed Jul. 8, 1985, Ser. No. 752,776
Int. Cl.⁴ B65D *90/04*
U.S. Cl. 222—105 **7 Claims**



1. A disposable, flexible liner for a material-handling bag, the bag including a cup-shaped portion and an inverted frusto-conical connection from the top of the cup shape to a filling opening, the bag having a discharge opening near the center of the bag bottom, the liner comprising: a lantern-shaped body of flexible, disposable material open at both ends, means allowing the lantern-shaped body to expand and conform to the inner wall of the material-handling bag, and releasable adhesive means on the outer surface of the lantern-shaped body for releasably attaching the outer surface of the lantern-shaped body to the inner wall of the material handling bag.

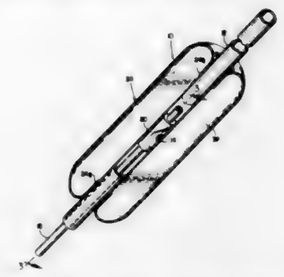
4,658,990

FLUID HOLDING AND DISPENSING DEVICE

Gerald A. Ramage, 3560 SE. Rothe Rd., Milwaukie, Oreg. 97222

Filed Nov. 5, 1984, Ser. No. 668,578
Int. Cl.⁴ B65D *37/00*
U.S. Cl. 222—106 **26 Claims**

1. A fluid container and dispenser device comprising
a reservoir for holding fluid,
an elongate tube extending through said reservoir, said tube having an opening in one side thereof in the region of said reservoir through which fluid may flow between said reservoir and tube, and
valve means movably mounted in said tube for shifting between a first position, closing off said opening to prevent fluid flow, and a second position permitting fluid flow therebetween.

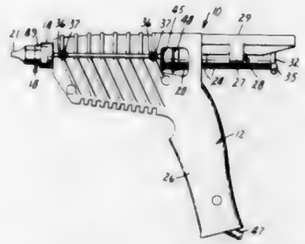


4,658,991

HAND PRESSURE ATTACHMENT FOR USE ON THERMOPLASTIC DISPENSING DEVICE

Michael M. Dziki, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 664,044, Oct. 23, 1984, which is a continuation-in-part of Ser. No. 456,346, Jan. 7, 1983, Pat. No. 4,552,287. This application Feb. 6, 1985, Ser. No. 698,812
Int. Cl.⁴ B67D *5/62*
U.S. Cl. 222—146.5 **1 Claim**



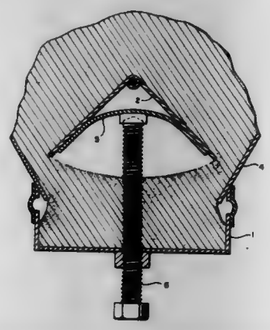
1. In combination, a device adapted for dispensing molten, thermoplastic material from a block of the solid thermoplastic material, said device comprising a frame including a handle with a distal end portion positioned so that an operator can grip the handle with the fingers of one hand; a barrel member mounted on said frame and having an internal melting chamber communicating with an outlet opening through a nozzle; a sleeve with a through opening having one end secured to said barrel member with said through opening communicating with the end of said melting chamber opposite said outlet opening, said sleeve being adapted to receive said block of solid thermoplastic material with one end portion of the block in the melting chamber and the block projecting through said sleeve; means for heating said barrel member to melt the end portion of the block therein; and a feeding mechanism at the end of said sleeve opposite said melting chamber comprising wall means fixed to said frame and defining a passageway adapted to guide the solid thermoplastic material block in alignment with the through opening in said sleeve, a slide having pressure surfaces adapted to receive the end portion of an operator's thumb, and being mounted on said frame for movement along a path generally aligned with the melting chamber from a retracted position spaced from said sleeve to an advanced position more closely adjacent the sleeve and back to said retracted position, said slide being adapted for engaging and advancing the block of thermoplastic material toward the melting chamber during movement of said slide from its retracted to its advanced position, and an attachment comprising a collar releasably engaged around the distal end portion of said handle, a lever having a lower end pivotably mounted on said collar and an upper end positioned for engagement with said pressure surfaces, and means for biasing said lever to bias said slide toward said retracted position.

4,658,992

APPARATUS FOR CONTROLLABLY DISCHARGING POWDER AND/OR PELLETS FROM A HOPPER

Agne Peleus, Malmo, Sweden, assignor to Peleus & Co. KB, Malmo, Sweden

Continuation-in-part of Ser. No. 471,444, Mar. 2, 1983, abandoned. This application Mar. 27, 1986, Ser. No. 843,847
Int. Cl.⁴ B65G *65/40*
U.S. Cl. 222—199 **11 Claims**



1. An apparatus for discharging powder and/or pellets from a hopper having an outlet located adjacent its base, said apparatus comprising:
a control member for controlling the rate of flow of said powder and/or pellets from said outlet, said control member comprises two abutting plates that are downwardly inclined from their point of abutment, said two abutting plates being hinged together at their point of abutment;
adjustment means for adjusting the angular inclination between said two abutting plates, said adjustment means including a screw threaded member and a resilient spring, the resilient spring engaging the underside of said two abutting plates and being adjustable by rotation of the screw threaded member;
a chute located under the control member to receive the powder and/or pellets; and
an outlet defined by said chute for discharging the powder and/or pellets.

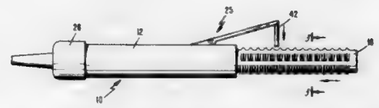
4,658,993

METERING DISPENSER FOR VISCOUS COMPOSITIONS

Richard J. Vlasich, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 2, 1984, Ser. No. 667,623
Int. Cl.⁴ B67D *5/42*
U.S. Cl. 222—390 **7 Claims**

1. A device for dispensing predetermined doses of high viscosity compositions, comprising:
(a) an elongate hollow body having a discharge opening at a front end thereof and an interior region for containing said composition;
(b) plunger means threadedly received within said hollow body for dispensing said composition through the front end in response to rotational movement of said plunger means causing the plunger to longitudinally advance through the body; and
(c) trigger means fixed to said hollow body for engaging with and to rotationally displace said plunger means a predetermined angular interval to thereby advance the plunger within the body, causing a precisely metered amount of composition to be dispensed through the discharge opening,
wherein said plunger means includes a rod having an exterior thread engaging an interior thread formed within the body and a piston mounted on a forward end of the rod within the interior region, said exterior thread being an interrupted thread established by a plurality of thread segments, wherein each thread segment extends for a predetermined angular interval and includes a first or leading end defining an abutment surface engageable with



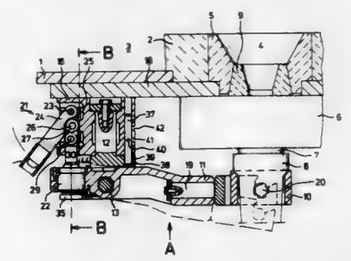
the trigger means to rotate the plunger means when the trigger means is depressed into contact therewith, and
wherein said trigger means includes a lever arm having one end attached to an outer surface of the hollow body and an opposite end projecting rearward beyond the rear end of said body, said opposite end carrying an actuating arm extending tangentially for alignment with an abutment surface of one of said thread segments when the plunger means is inserted into the body, whereby the pressing of said opposite end causes the actuating arm to engage the abutment surface and rotate the plunger rod about its longitudinal axis for said predetermined angular interval until the actuating arm disengages from said abutment surface.

4,658,994

APPARATUS FOR REPLACEABLY MOUNTING A POURING TUBE

Robert Fricker, Unteraegeri, Switzerland, assignor to Stopinc Aktiengesellschaft, Baar, Switzerland

Filed Jun. 12, 1985, Ser. No. 743,971
Claims priority, application Switzerland, Jun. 19, 1984, 2962/84
Int. Cl.⁴ B22D *35/00*; F16H *21/44*
U.S. Cl. 222—607 **12 Claims**



1. An apparatus for use in replaceably mounting a pouring tube in engagement with a discharge nozzle of a vessel, said apparatus comprising:
an arm having a longitudinal axis;
means mounting said arm for pivotal movement about a vertical axis transverse to said longitudinal axis and for tilting movement about a horizontal axis transverse to said longitudinal axis;

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a fixture on a first end of said arm for supporting a pouring tube; and

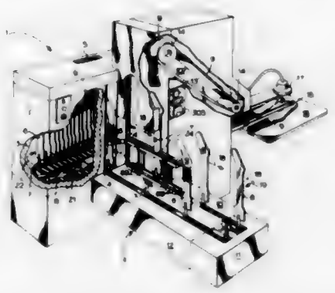
operating means mounted adjacent a second end of said arm for tilting said arm about said horizontal axis between a clamping position, whereat a pouring tube supported by said fixture is pressed against a discharge nozzle of a vessel, and an open position, whereat the pouring tube is spaced from the discharge nozzle, and for enabling said arm when in said open position thereof to be pivoted about said vertical axis between a first position, whereat the pouring tube is aligned with the discharge nozzle, to a second position, whereat the pouring tube is spaced from the discharge nozzle and may be removed from said fixture, said operating means comprising a toggle joint movable between an expanded position and a buckled position, spring means coaxial with said toggle joint in said expanded position thereof and operable between said arm and said toggle joint for biasing said toggle joint to said buckled position thereof, and actuating means for moving said toggle joint between said buckled position, whereat said arm pivots to said open position thereof, and said expanded position against the biasing force of said spring means to thereby pivot said arm to said clamping position thereof.

4,658,995

SOCK BOARDING METHOD AND APPARATUS

Richard M. Teague, Taylorsville, N.C., assignor to Anteg Incorporated, Hickory, N.C.

Filed Jan. 3, 1986, Ser. No. 816,102
Int. Cl.⁴ D06C *5/00*
U.S. Cl. 223—76 **93 Claims**



1. An apparatus for drying flaccid articles on a boarding form and removing the flaccid articles from the boarding form comprising:

(a) a heating chamber having first and second slit-like openings;

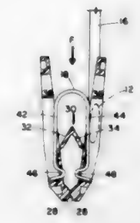
(b) first, second, third and fourth tracks for receiving, transporting and discharging a form carrier, the first track being a continuous track disposed in the heating chamber and having at least one receiver thereon and the second, third and fourth tracks are disposed outside of the heating chamber; the second track being aligned with the first slit and having a channel to receive a form carrier from the first track and transport it to the third track; the third track having a receiver thereon to receive a form carrier and transport same to the fourth track; the fourth track being aligned with the second slit and having a channel thereon to receive a form carrier from the reciever of the third track and discharge same through the second slit to the receiver of the first track.

4,658,996

PINCH CLIP GARMENT HANGER

John G. Warmath, 175 Steuben St., Brooklyn, N.Y. 11205

Filed Sep. 11, 1985, Ser. No. 774,903
Int. Cl.⁴ A47G *25/48*
U.S. Cl. 223—96 **7 Claims**



1. A hanger assembly which comprises:

an elongated cross-bar, a hook positioned at an intermediate portion of said cross-bar and clip members positioned at terminal end portions of said cross-bar, said cross-bar, hook and clip members being integrally formed of a plastic material, each of said clip members comprising cooperating paired jaw members joined together by a connecting member, said connecting member being in the shape of an inverted V, each of said jaw members including a gripping portion for cooperating with each other, each of said jaw members being formed with a channel and a detent; and

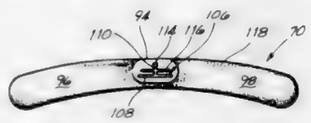
a spring member including leg portions each having a foot member for slidable insertion through a respective channel of each of said paired jaw members to a point wherein each foot member is disposed in a respective detent of each of said jaw members for biasing said gripping portion of said paired jaw members against one another.

4,658,997

DISPLAY HANGER COVER

Stacy B. Nash, P.O. Box 5476, Destin, Fla. 32541

Continuation-in-part of Ser. No. 716,763, Mar. 27, 1985, abandoned. This application Feb. 26, 1986, Ser. No. 833,983
Int. Cl.⁴ A47G *25/20, 25/30*
U.S. Cl. 223—98 **7 Claims**



1. An improved display hanger cover supportable over a clothes hanger to convert the clothes hanger to the utility of a display hanger for a garment, the clothes hanger having oppositely disposed side arms, a hanger neck portion and a hanger hook, the display hanger cover comprising:

an elongated body portion having a hollow interior open at its bottom, the body portion having substantially curvilinearly shaped front and rear walls disposed to be supported over the hanger side arms and having substantially curvilinearly shaped first and second shoulder portions supported by the front and rear walls; and

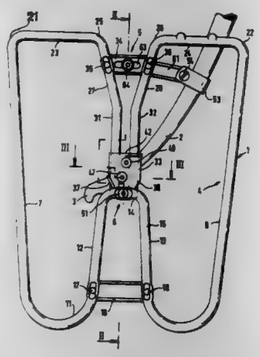
a neck portion supported at the confluence of the first and second shoulder portions and the front and rear walls, the neck portion having a substantially planar upper surface and a hook passage slot communicating with the hollow interior of the body portion, a first slot portion of the hook passage slot being generally shaped for passage therethrough of the planar profile of the hanger hook, a second slot portion of the hook passage slot substantially normally disposed to the first slot portion thereof, the second slot portion dimensioned to permit passage and retention of the hanger hook therein, and a third slot portion of the hook passage slot communicating with the second slot portion and disposed substantially parallel to the first slot portion, the third slot portion dimensioned to receive the hanger neck portion of a wire hanger such that at least a portion of the neck portion of the wire hanger extends therethrough for securing and stabilizing the display hanger cover on the wire hanger.

4,658,998

BICYCLE LUGGAGE CARRIER FRAME

Heinrich Belka, Bielefeld, Fed. Rep. of Germany, assignor to Ege Marby GmbH & Co., KG, Bielefeld, Fed. Rep. of Germany

Filed Aug. 15, 1985, Ser. No. 766,120
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1984, 3430427
Int. Cl.⁴ B62J *9/00*
U.S. Cl. 224—39 **24 Claims**



1. Bicycle luggage carrier frame, particularly lateral pannier-type frame, for lateral attachment to a front wheel fork of a bicycle which, upon attachment to the front wheel fork, extends laterally and effectively vertically parallel to the front wheel of a bicycle, comprising

a pair of approximately vertical, spaced struts (7,8) located in a plane essentially parallel to the plane of rotation of the front wheel of the bicycle;

a cross portion (11) unitary with each of the approximately vertical struts (7, 8) extending from a bottom portion of the struts towards each other;

and upwardly extending projecting portion (12, 13) unitary with each of the cross portions, and extending upwardly between said approximately vertical struts (7,8);

a lower attachment arrangement (6) secured to the upwardly extending portions (12, 13) and attaching said upwardly extending portions together, said attachment arrangement being adapted for attachment at the lower end of the front wheel fork (3) of the bicycle,

whereby said generally vertical struts, said cross portions (11), said upwardly extending portions (12,13) and said attachment arrangement form an essentially W-shaped frame,

the lower attachment arrangement (6) being located adjacent the highest point (14) of the upwardly extending portions (12, 13);

bent-over essentially horizontal portions (23, 24) unitary with said approximately vertical struts joined to upper portions of the approximately vertical struts (7,8) and extending towards each other;

an upper attachment arrangement (5) secured to the upper portions of the struts (7,8) in the region of said essentially horizontal bent-over portions (23,24) for attachment to an upper portion of the wheel fork (2) of the bicycle;

and downwardly directed support strut portions (27,28) unitary with said essential horizontal bent-over portions (23,24), each downwardly directed support strut portion being bent downwardly from the respective essentially horizontal bent-over portion (23, 24) and terminating in a free end, said free ends extending towards the lower attachment arrangement (6) and being secured thereto.

4,658,999

SKI CARRIER

Andreas Hilty, Uznach, Switzerland, assignor to Ing. A. Hilty, Uznach, Switzerland

Filed Jun. 28, 1985, Ser. No. 750,748
Claims priority, application Switzerland, Aug. 6, 1984, 03765/84
Int. Cl.⁴ A45F *3/02*
U.S. Cl. 224—202 **20 Claims**



1. A carrier for a pair of skis each of which has a leading end, a trailing end and a binding between the leading and trailing ends, comprising an elongated, flexible carrying element designed to be connected with longitudinally spaced first and second locations of the skis forward and rearward of the bindings, said carrying element having a length sufficient to suspend the skis from a shoulder, and said carrying element having an extended configuration for suspension of the skis, and a coiled configuration; a coiling device connected with said carrying element for winding the latter into said coiled configuration, said coiling device including a reel, and a housing for said reel; and first and second fastening means connected with said carrying element and designed to relasably fasten the latter to the first and second locations of the skis, said coiling device and one of said fastening means being integrated into a unit, and said one fastening means including a band arranged to fasten said housing to the skis and being designed to clamp said housing between the running surfaces of the skis, the other of said fastening means comprising a sheath designed to receive the trailing ends of the skis and said sheath being further designed to receive said housing.

4,659,000

CARRYING CASE FOR DUAL INSTRUMENTS

Wayne C. Sales, Sterling Heights, and R. L. Thomasson, Troy, both of Mich., assignors to K mart Corporation, Troy, Mich.

Filed Mar. 20, 1986, Ser. No. 841,941
Int. Cl.⁴ A45F *5/00*
U.S. Cl. 224—252 **13 Claims**

1. A portable dual compartmentized case for housing separate instrumentalities comprising:

(a) a base providing an internal compartment for housing an independent instrumentality;

(b) a cover hinged to said base and providing an internal compartment for housing a second independent instrumentality;

(c) hinge means connecting said cover to said base along corresponding edges thereof;
(d) a clasp means for the case for removably attaching the case to a case positioning support;
(e) hinge means provided by said clasp means hingedly connecting said clasp means to said base along a line



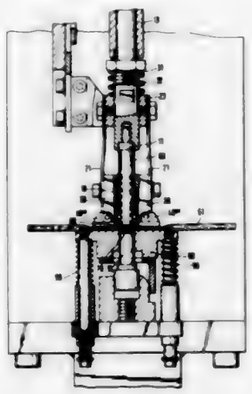
adjacent to one bottom edge thereof at an edge opposite to said corresponding hinged edges of said base and said cover; and
(f) means provided by said base along said line adjacent to said one bottom edge thereof for removably receiving said hinge means of said clasp means whereby said clasp means by movement along said line is removed from said base.

4,659,001

MACHINE FOR APPLYING ARTICLES OF HARDWARE TO TENSIONED TEXTILE MATERIALS

Ernst Hertes, Stolberg/Rhld, Fed. Rep. of Germany, assignor to William Prym-Werke Kg, Stolberg/Rhineland, Fed. Rep. of Germany

Filed Apr. 11, 1984, Ser. No. 599,176
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313682
Int. Cl.[4] A41H *37/00, 37/04*
U.S. Cl. 227—153 **23 Claims**



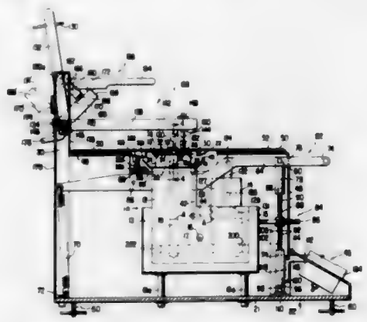
1. A machine for securing components of articles of hardware to sheet-like workpieces, particularly a press for applying components of rivets or the like to textile materials, comprising means for movably supporting in a predetermined plane that portion of a workpiece which is to be provided with at least one component of an article of hardware; work engaging means disposed at one side of said plane opposite said supporting means and including a plurality of grippers movable toward and away from said plane and arranged to hold a component during movement toward said plane, at least one of said grippers being further movable toward and away from each other gripper in substantial parallelism with said plane about an axis which is substantially parallel to said plane, each of said grippers including a carrier, a work-engaging shoe having a work-engaging face, and means for articulately connecting said shoe to the carrier for movement about an axis which is substantially parallel to said plane so that the work-engaging face can lie at least substantially flush against that portion of the workpiece which is located in said plane, said shoes normally abutting each other and together defining an opening larger than and in register with the component which is held by said grippers to allow such component to pass therethrough; drive means for moving said grippers jointly toward and away from said plane and for maintaining said shoes in engagement with the portion of a workpiece in said plane for a selected interval of time; spreading means for moving said at least one gripper and its shoe away from each other gripper while said shoes engage the workpiece so that the shoes stretch the portion of the workpiece in said plane during said interval; and means for affixing at least one component of an article of hardware to the stretched portion of the workpiece during said interval, said affixing means comprising a tool which is disposed at said one side of said plane and is reciprocable toward and away from the portion of a workpiece in said plane, and means for reciprocating said tool, said reciprocating means including a shaft for said tool and means for reciprocating said shaft, said spreading means comprising a sleeve which is fixed to and surrounds said shaft.

4,659,002

APPARATUS FOR REPLACEMENT OF THROUGH-HOLE MOUNTED PCB COMPONENTS

Linus E. Wallgren, Rockville; Robert Fridman, Randallstown, and William J. Siegel, Silver Spring, all of Md., assignors to Pace, Incorporated, Laurel, Md.

Filed Aug. 8, 1985, Ser. No. 763,704
Int. Cl.[4] B23K *1/08, 37/06*
U.S. Cl. 228—8 **17 Claims**



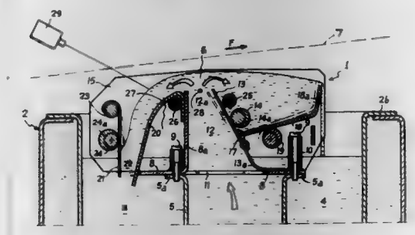
7. An apparatus for removing or installing at least one through-hole mounted component from a printed circuit board or the like, said apparatus comprising means for contacting and supporting the printed circuit board including a compliant mask having at least one hole extending therethrough, said hole being aligned with said component;
said mask including at least one channel disposed therein extending from said hole to an edge of the mask and said apparatus including means for circulatng liquid solder in a closed path, said path including at least said hole and said channel in the mask; and
means for directing liquid solder into said hole in the mask to contact leads of said component and thus facilitate said installation or removal thereof from the board.

4,659,003

HEATING DEVICE FOR GENERATING A WAVE OF SOLDER IN A WAVE SOLDERING MACHINE

Jean-Pierre Simonetti, Gif-sur-Yvette, France, assignor to Outillages Scientifiques et de Laboratories O.S.L. S.A., Carros, France

Filed Nov. 14, 1985, Ser. No. 798,171
Claims priority, application France, Nov. 15, 1984, 84 17449
Int. Cl.[4] B23K *1/08*
U.S. Cl. 228—8 **14 Claims**



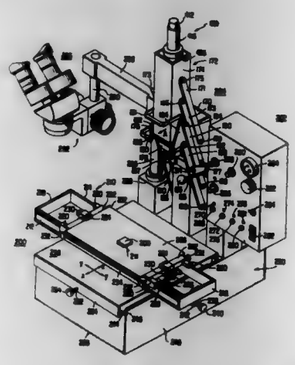
1. Apparatus for generating a wave of solder in a wave soldering machine used for soldering components on printed circuit boards passing continuously through the machine, said apparatus having a nozzle comprising an elongated chamber with convergent walls, and a discharge opening at its upper part, which opening extends below the displacement path of the printed circuit boards, and through the width of said path, said nozzle, being operably connected with a reservoir supplying liquid solder, and being operable to project an upwardly directed stream of solder which forms a wave, said wave licking the lower face of the printed circuit boards and the component leads protruding therefrom, wherein said apparatus is equipped, proximate the opening of the nozzle, with at least one auxiliary heating element capable of heating up the solder in the vicinity of the wave and to keep its temperature there to a value higher than a given value.

4,659,004

DEVICE FOR ATTACHING MODULAR ELECTRONIC COMPONENTS TO OR REMOVING THEM FROM AN INSULATIVE DEVICE

Robert Fridman, Randallstown, Md., assignor to Pace, Incorporated, Laurel, Md.

Continuation-in-part of Ser. No. 583,218, Feb. 24, 1984. This application Sep. 10, 1984, Ser. No. 649,065
Int. Cl.[4] B23K *3/00*
U.S. Cl. 228—6.2 **31 Claims**



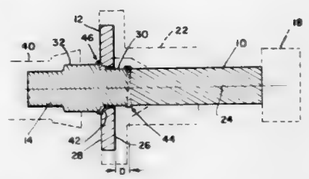
1. A device for attaching modular electronic component to or removing them from a substrate where each component has a plurality of terminals disposed at the periphery thereof, said device comprising:
component removal/installation means including heater means having at least one passage extending therethrough for heating a fluid flowing through said passage;
means for passing the heated fluid from said passage to the terminals of the component to effect melting of solder or the like thereat; and
moving means for moving said component removal/installation means between a first, operative position over the component so that the solder may be melted and a second, inoperative position removed from the component, the first and second positions being substantially disposed in a vertical plane substantially perpendicularly oriented with respect to the substrate, said moving means rendering the movement of the component removal/installation means substantially vertical with respect to the substrate as it either approaches or is removed from said first position and rendering the movement of the component removal/installation means substantially horizontal with respect to the substrate as it approaches or is removed from its second inoperative position, wherein said means for moving the component removal/installation means includes means for moving it through about ninety degrees of a circle and the movement being substantially in said vertical plane.

4,659,005

METHOD OF MANUFACTURING AXLE ASSEMBLIES

Dietmar E. Spindler, 50747 Regency Park Dr., Granger, Ind. 46530

Filed Aug. 17, 1984, Ser. No. 641,705
Int. Cl.[4] B23K *20/12*
U.S. Cl. 228—112 **9 Claims**



1. A method of manufacturing an axle assembly comprising the steps of:
a. locating an axle member in a first workholding means;
b. locating a flange having a central bore in a second workholding means such that the central bore of the flange is aligned with and axially spaced apart from an end of the axle member;
c. locating a spindle in a third workholding means;
d. positioning the third workholding means such that an end portion of the spindle extends through the central bore of the flange, and such that a central portion of the spindle abuts a surface of the flange;
e. welding the central portion of the spindle to said surface of the flange to create a first weld joint in a first substantially vertical plane; and
f. welding said end portion of the spindle to said end of the axle member to create a second weld joint in a second substantially vertical plane spaced apart from said first plane.

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4,659,006

METHOD OF BONDING A DIE TO A SUBSTRATE

Carl Polansky, Landisville, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 26, 1985, Ser. No. 780,299
Int. Cl.[4] B23K *1/20, 31/00*
U.S. Cl. 228—123 6 Claims

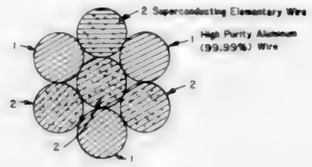
1. In a method of bonding a die to a substrate with a solder preform comprising the steps of:
(a) placing the preform onto said substrate;
(b) contacting the die with said preform; and,
(c) melting the solder to form a bond between said die and said substrate;
the improvement comprising heating the substrate and preform to a temperature below the melting point of the solder preform and thereafter maintaining said temperature while applying pressure to the preform sufficient to reduce the thickness of the preform by at least 40% and cause the preform to adhere to said substrate prior to step (b).

4,659,007

THE METHOD FOR PRODUCING AN AL-STABILIZED SUPERCONDUCTING WIRE

Toshitada Onishi; Hiroshi Tateishi; Kenichi Koyama, all of Niiharu; Shigeo Saito, and Masayuki Nagata, both of Osaka, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo and Sumitomo Electric Indus, Ltd, Osaka, both of, Japan

Division of Ser. No. 382,363, May 26, 1982, Pat. No. 4,506,109.
This application Oct. 31, 1984, Ser. No. 666,632
Claims priority, application Japan, May 28, 1981, 56-81759; May 28, 1981, 56-81760
Int. Cl.[4] H01L *39/24*
U.S. Cl. 228—156 12 Claims



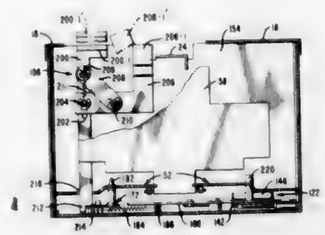
1. A method for producing an Al-stabilized superconducting wire comprising a superconducting elementary wire and a high purity aluminum wire alternately wound around a core, said method comprising alternately winding a superconducting elementary wire and a high purity aluminum wire around a core so that said superconducting elementary wire and high purity aluminum wire are in contact with each other, said core being selected from the group consisting of a superconducting elementary wire, an electrically insulated copper wire, an electrically insulated copper alloy wire, a nonmagnetic metal wire and a nonmagnetic metal alloy core, said aluminum wire serving as a stabilizer in said wire arrangement; impregnating the entire wire arrangement with solder to bond the wound wires together, and subsequently drawing said wire arrangement to increase the adhesion between the wires wound around said core, said impregnated wire arrangement characterized by high mechanical toughness and improved electrical contact for greater electrical stability.

4,659,008

TAMPERING-PROOF CASSETTE USED IN A CASH DISPENSER

Harry L. Howett, Brookville; Robert H. Granzow, Miamisburg, and Dale L. Placke, Dayton, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 12, 1985, Ser. No. 722,954
Int. Cl.[4] E05G *1/00*
U.S. Cl. 232—43.3 5 Claims



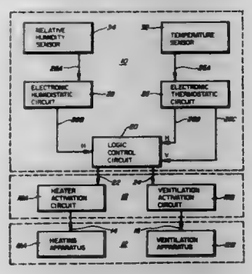
1. A tampering-proof container for storing items comprising:
a housing having first and second openings therein;
a first closure movable between closed and open positions with regard to said first opening;
a second closure movable between closed and open positions with regard to said second opening;
a seal to secure said second closure in said closed position and to permit said second closure to be moved to said open position only upon disabling said seal to thereby give an indication that said second closure has been opened;
means for moving said first closure from said closed position to said open position to enable said items to be removed therethrough and for moving said first closure from said open position to said closed position;
means for indicating a zero position and a number of times that said first closure has been moved from said closed position to said open position after said seal is applied to said second closure;
first locking means cooperating with said indicating means for locking said first closure in said closed position when said first closure has been moved to said open position and returned to said closed position a predetermined number of times; and
second locking means being movable between locking and unlocking positions within said housing and which said second locking means being movable into said locking position with regard to said first locking means when said first locking means locks said first closure in said closed position, said second locking means being moveable to said unlocking position only after said seal is broken and said second closure is moved to said open position to enable said first locking means to be unlocked; said second locking means comprising:
a first member;
means for mounting said first member for movement between said locking and unlocking positions;
a second member pivotally mounted in said housing for movement between a first position in said housing and a second position at least partially out of said housing; and
a third member connected to said first and second members to enable said first member to be moved from said locking position to said unlocking position only when said second closure is in said open position and said second member is moved out of said housing toward said second position.

4,659,009

ENVIRONMENTAL CONTROL SYSTEM WITH HUMIDITY CONTROL AND METHOD

Alfred T. Newell, III, Birmingham, Ala., assignor to A. T. Newell Co. Inc., Birmingham, Ala.

Filed Apr. 4, 1985, Ser. No. 719,743
Int. Cl.[4] B01F *3/02*
U.S. Cl. 236—44 C 8 Claims



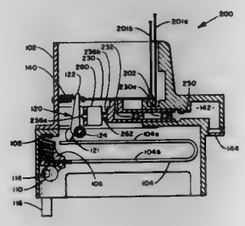
1. In an environmental control system having heating apparatus and temperature responsive means for controlling the heating apparatus, a humidity controlled sub-system, comprising:
means for sensing the relative humidity;
a ventilation system; and
means for actuating the ventilation system in response to the relative humidity exceeding a preselected value until the heating apparatus is actuated by said temperature responsive means to increase the temperature and thereby reduce the relative humidity; and in which
said heating apparatus controlling means includes a humidity sensor and a humidistatic circuit responsive to the humidity sensor for producing a binary actuation signal in response to sensed humidity.

4,659,010

THERMOSTATIC TRANSDUCER

William E. Clark, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 528,814, Sep. 2, 1983, Pat. No. 4,527,735.
This application May 15, 1985, Ser. No. 702,205
Int. Cl.[4] G05D *23/00*
U.S. Cl. 236—87 5 Claims



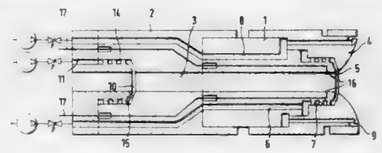
1. A bleed thermostat including:
housing means having a bleed port therein;
thermostatically responsive means located in said housing means;
means for providing a temperature set point and positioning and thermostatically responsive means responsive thereto;
means for supplying pressurized air to said bleed thermostat;
bleed plate means in said housing means having an opening therein coacting within said bleed port and positioned in response to said means for providing a temperature set point and the thermostatic response of said thermostatically responsive means to control bleeding of said pressurized air from said bleed thermostat through a flow path controlled by the coaction of said opening and said bleed port; and
means for sensing the position of said bleed plate means including a fiber optic path having a pair of spaced apart optical fibers in optical alignment for receiving therebetween said bleed plate means which coacts therewith to block or clear said fiber optic path and thereby providing a signal indicative of the position of said opening.

4,659,011

METHOD AND APPARATUS FOR THE SPRAYING OF POWDER

Kurt Moos, Wil, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed Apr. 3, 1981, Ser. No. 250,654
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014133
Int. Cl.[4] B05B *5/00, 7/00, 7/10*
U.S. Cl. 239—3 18 Claims



1. A method for spraying powder, said method comprising the steps of:
conveying to a spray device a stream of powder to be sprayed;
introducing a spray gas into said stream at said spray device to form the powder emerging therefrom into a spray cloud; and
injecting an additional gas into said stream with a tangential and with an axial downstream component of velocity, at a point between about 5 cm. and about 30 cm. upstream of the point where said spray gas is introduced, in such a manner as to cause the concentration of said powder to increase as a function of radial distance in said stream from the axis thereof and to retain this radially unequal distribution of powder from a point where said additional gas is introduced down to a point where said spray gas is introduced.

4,659,012

ELECTROSTATIC SPRAYING PROCESS AND APPARATUS

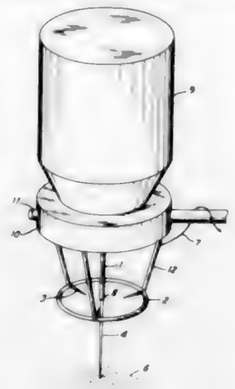
Ronald A. Coffee, Fernhurst, Nr. Haslemere, Great Britain, assignor to Imperial Chemical Industries plc, London, England

PCT No. PCT/GB84/00282, § 371 Date Apr. 17, 1985, § 102(e) Date Apr. 17, 1985, PCT Pub. No. WO85/00761, PCT Pub. Date Feb. 28, 1985
PCT Filed Aug. 14, 1984, Ser. No. 726,891
Claims priority, application United Kingdom, Aug. 18, 1983, 8322307; Aug. 6, 1984, 8420015
Int. Cl.[4] B05B *5/02*
U.S. Cl. 239—3 10 Claims

1. A process for the electrostatic spraying of a liquid having a resistivity of 10^6 ohms. cms. or below, comprising delivering the said liquid to a sprayhead, applying a high electrical potential to the sprayhead so that liquid is projected from the sprayhead under the influence of electrostatic forces, and applying an electrical potential to at least one electrode adjacent the sprayhead so that a corona discharge is produced, the said at least one electrode being so arranged that ions from the discharge bombard liquid emerging from the sprayhead before

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the liquid has been atomised, and the strength of the generally radially directed electrical forces acting upon the surface of the



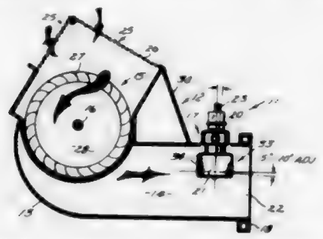
emerging liquid is reduced, whereby the liquid assumes a stable ligamentary form.

4,659,013

SPRAY UNIT FOR CONTROLLED DROPLET ATOMIZATION

Richard L. Ledebuhr, Haslett, and Gary R. Van Ee, Williamston, both of Mich., assignors to Board of Trustees of Michigan State Univ., East Lansing, Mich.

Filed Nov. 14, 1984, Ser. No. 671,521
Int. Cl.⁴ A62C *1/12*; B05B *9/06, 1/20*; F04D *5/00*
U.S. Cl. 239—8 **6 Claims**



1. A spray unit for controlled droplet projection comprising:
a powered, high volume, low-to-medium velocity crossflow vortex fan;
a delivery throat in said fan through which high volume, low-to-medium velocity air moves in a parallel columnar manner; and
a controlled droplet atomizer located in said delivery throat and generating a core of droplets in a plane substantially parallel to said airflow in said delivery throat, the air enveloping said core of droplets and projecting said core of droplets from said fan.

4,659,014

ULTRASONIC SPRAY NOZZLE AND METHOD

J. Michael Soth, and James R. Klemm, both of Des Moines, Iowa, assignors to Delavan Corporation, West Des Moines, Iowa

Filed Sep. 5, 1985, Ser. No. 772,753
Int. Cl.⁴ B05B *1/08*
U.S. Cl. 239—102.2 **12 Claims**

1. In an ultrasonic nozzle of the type wherein a piezoelectric transducer expands and contracts in response to an applied periodic electrical potential so as to develop a plurality of mechanical vibrations on an atomizing surface, the improvement which comprises means for modulating the frequency of the applied periodic electrical potential with respect to time so



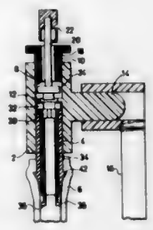
as to periodically vary the amplitude of the vibrations on the atomizing surface.

4,659,015

WATER SPRINKLER

Peretz Rosenberg, Moshav Beit Shearim, Israel

Filed Jun. 27, 1985, Ser. No. 749,448
Claims priority, application Israel, Jul. 20, 1984, 72464
Int. Cl.⁴ B05B *15/02*
U.S. Cl. 239—116 **20 Claims**



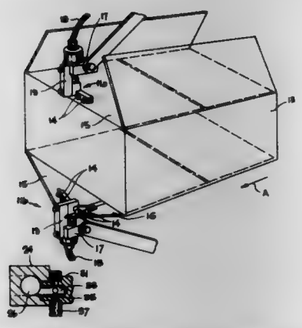
1. A water sprinkler, comprising:
a housing formed with an inlet bore connectable to a source of pressurized water;
a sprinkler nozzle attached to said housing;
a tubular connector having one end removably received within said inlet bore, and its opposite end connectable to the source of pressurized water;
and a strainer element supported within said tubular connector when the latter is received within said inlet bore;
said strainer element being formed with a plurality of open notches along its outer edge defining a plurality of passageways of small cross-sectional area;
said strainer element being further formed with retainer means which retains the strainer element attached to said tubular connector but permits the strainer element to move out of the tubular connector when the tubular connector is removed from said inlet bore;
whereby the passageways defined by said open notches block the flow of solid particles to the sprinkler when the strainer element is within the tubular connector and the tubular connector is within said housing inlet bore during the normal operation of the water sprinkler, but when the tubular connector is removed from the inlet bore while the tubular connector is connected to said souce of pressurized water, the retainer means permits the strainer element to move out of the tubular connector by the pressurized water so that the pressurized water flushes out the solid particles from the tubular connector and from said notches in the strainer element.

4,659,016

HOT-MELT DISPENSER WITH AIMABLE NOZZLES

W. Harrison Faulkner, III, Pacific Grove, Calif., assignor to Slautterback Corporation, Monterey, Calif.

Continuation-in-part of Ser. No. 493,710, May 11, 1983, Pat. No. 4,602,741. This application Oct. 25, 1984, Ser. No. 664,618
The portion of the term of this patent subsequent to Jul. 29, 2003, has been disclaimed.
Int. Cl.⁴ B05B *1/14, 1/24*
U.S. Cl. 239—135 **15 Claims**



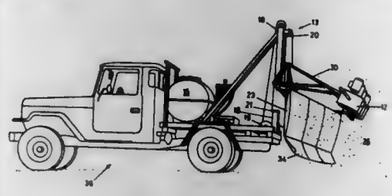
1. An improved nozzle assembly for use with a low pressure, heated dispenser head for hot-melt material, the improvement comprising,
a high heat conductivity, passive metal block connected to a heated hot-melt dispenser head, said metal block providing a heat flow path from said heated dispenser head, through said metal block,
a nozzle manifold in thermal contact, via said metal block, with said heated dispenser head, the nozzle manifold having a dispensing section with nozzles operable at low pressure connected thereto, and a passageway, distinct from said heat flow path, through said manifold connecting said heated dispenser head to the mainfold at an inlet section, said passageway then continuing through said manifold to the nozzles of the dispensing section of the manifold for the dispensing of the hot-melt material, the angle over which said nozzles are aimable being in the range of from 60 to 120 relative to the lengthwise direction of said passageway.

4,659,017

VEHICLE MOUNTED CHEMICAL SOLUTION SPRAYING APPARATUS WITH AIR DEFLECTOR

Keith U. Furness, Eden Hills, Australia, assignor to Furness Caravans Pty. Ltd., Eden Hills and Waikerie Co-Operative Producers Ltd., Waikerie, both of, Australia

Filed Oct. 11, 1985, Ser. No. 786,648
Int. Cl.⁴ B05B *15/04*
U.S. Cl. 239—151 **8 Claims**



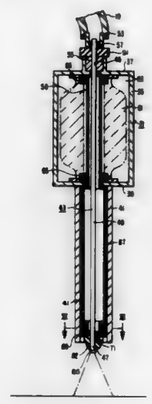
7. A method of spraying an area with a chemical solution, comprising the steps of:
providing a vehicle with tank means for carrying a quantity of the solution, a plurality of generally downwardly directed spray heads, means for conveying the solution from the tank means to the spray heads, an air deflector extending in a transverse direction relative to the vehicle and positioned in a forward longitudinal position relative to the spray heads, and means for adjusting a tilt angle of the air deflector;
driving the vehicle over the area to be sprayed at a speed of between about eleven kilometers per hour and about sixty kilometers per hour; and
controlling the tilt angle of the air deflector such that it exceeds a stalling angle of the air deflector whereby a low pressure zone is created behind the air deflector containing vortices and into which a quantity of droplets discharged from the spray heads is directed and thrown downwardly against the area being traversed;
whereby the amount of droplets that fall outside the area to be sprayed due to side winds will be minimized.

4,659,018

ORBITING NOZZLE DISPERSION APPARATUS

Burt H. Shulman, Poughkeepsie, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1985, Ser. No. 739,939
Int. Cl.⁴ B05B *3/00, 1/34*; B25J *11/00*
U.S. Cl. 239—264 **9 Claims**



1. An orbiting nozzle dispersion apparatus for the application of adhesives or sealants to a substrate comprising:
dispensing tube means having a first end for receiving materials to be dispersed thereinto and a second, nozzle end from which the material is dispersed;
drive means housing having a lower end and an upper end;
support means extending from the lower end of said drive means housing and in which said dispensing tube means is disposed;
a first mounting means at the upper end of said drive means housing means for compliantly supporting said dispensing tube means for non-rotational movement at a location proximate said first end thereof, said first mounting means facilitating orbital movement of said second end of said dispensing tube means;
a second mounting means for supporting said dispensing tube means at a location proximate said second, nozzle end within said support means, said second mounting means being mounted in said support means for rotational movement about a first axis and having a bore therethrough which is offset with respect to said first axis, said second mounting means supporting said dispensing tube at a location proximate said second, nozzle end within said bore by

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bearing means for orbital movement about said first axes; and

motive means mounted in said drive means housing operatively associated with said second mounting means for affecting the rotational movement of said second mounting means, said motive means including a motor having a hollow rotor drive shaft which has a bottom portion extending from the motor and through which the dispensing tube means depends and wherein the second mounting means is fixedly mounted in the bottom of the extending portion, whereby rotational movement about the first axis is imparted to the second mounting means by rotation of the rotor drive shaft such that the rotational movement of said second mounting means imparts orbital movement to said second, nozzle end of the dispensing tube means about the first axis.

4,659,019

SPRAY DEVICE FOR COATING ARTICLES WITH POWDER

Radovan Talacko, St. Gallen, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed May 29, 1985, Ser. No. 738,778

Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420325

Int. Cl.⁴ B05B *5/02*

U.S. Cl. 239—692 **15 Claims**



13. A pneumatic spray device for coating articles with powder, comprising:

a feed channel housing in which a feed channel is provided for the flow of a stream of vehicle-gas and powder therethrough, a downstream end of the feed channel comprising a discharge opening;

an elongated guide body located axially in the feed channel, configured in such a way that the feed channel has an annular powder passage cross section along said guide body, and comprising a material adapted to electrically charge the powder by friction;

a section of the feed channel located directly upstream of the guide body having a full cross-sectional shape, said section of annular cross section having a smaller flow passage cross-section than the section having a full cross-sectional shape; and

an injector with an outlet opening into the feed channel, being situated upstream of the guide member, and being adapted to introduce an acceleration gas axially surrounding the stream of powder and accelerating it in the direction towards the guide body;

the guide body having an upstream end section which is conically tapered in the upstream direction and which extends to the injector and a main body downstream of the upstream end section, said powder passage cross-section being defined between the guide body and the feed channel housing and the cross-sectional sizes of the guide body and the feed channel housing being such that the powder passage cross-section changes gradually from a full cross-section at the upstream end of the conically tapered portion of the guide body to a continuously decreasing annular cross-section along the conically tapered portion of the guide body and remains at a substantially constant annular cross-section along the main body.

4,659,020

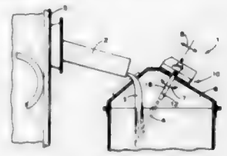
QUICK ADJUSTABLE SHATTER JET MECHANISM

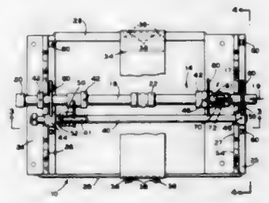
James R. Kutrow, Clinton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 22, 1985, Ser. No. 790,022

Int. Cl.⁴ B05B *3/00;* **C21C** *7/00*

U.S. Cl. 239—752 **9 Claims**





1. An adjustable shatter jet mechanism for supplying a fluid jet to shatter a smelt stream from a smelt spout, comprising:

a frame;

a fluid supply pipe for carrying fluid to form a fluid jet, carried by said frame;

a jet nozzle connected in fluid communication to said pipe for discharge of a fluid jet from the pipe in a selected direction;

nozzle rotation mounting means connected to said pipe for pivoting said pipe relative to said frame for rotation about a longitudinal axis of said pipe for changing the selected discharge direction of said nozzle;

pipe displacement means connected to said mounting means and mounted to said frame for changing a relative position between said pipe and said frame in a direction toward and away from a smelt spout whose smelt stream is to be shattered by the fluid jet to further change said selected discharge direction; and 'wherein said pipe displacement means comprises a bar extending parallel to said pipe and mounted to said frame, a plurality of bushings connected to said bar and including sliding bushing means for rotatably and slidably receiving said pipe, and wherein said nozzle rotation means comprises a handle connected to said pipe for rotating said pipe in said sliding bushings means.

4,659,021

PROCESS FOR PRODUCING PURIFIED BROMINATED AROMATIC COMPOUNDS

Wendell G. Bark, Baton Rouge, La., and John C. Parks, Ballwin, Mo., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 558,495, Dec. 6, 1983, abandoned. This application Oct. 25, 1985, Ser. No. 791,309

Int. Cl.⁴ B02C *19/12;* **C07C** *41/22*

U.S. Cl. 241—18 **15 Claims**

1. A process for purifying a crude wet unground solid brominated aromatic compound containing impurities including elemental bromine and hydrogen bromide, said process comprising mixing said crude wet unground brominated aromatic compound with a current of pre-heated air and grinding said crude brominated aromatic compound while in said current of pre-heated air for a time period of a few seconds up to 3 minutes whereby said pre-heated air raises the temperature of said crude brominated aromatic compound to a temperature sufficient to effect substantial removal of said impurities but below the melting point of said brominated aromatic compound.

4,659,022

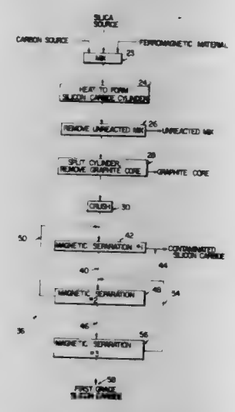
PRODUCTION OF SILICON CARBIDE WITH AUTOMATIC SEPARATION OF A HIGH GRADE FRACTION

Robert J. Seider, Ransomville; Philip J. Guichelaar, Williamsville, and Robert O. Anderson, Akron, all of N.Y., assignors to Kennecott Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 721,761, Apr. 14, 1985. This application Nov. 5, 1985, Ser. No. 795,188

Int. Cl.⁴ B02C *21/00;* **C01B** *31/36*

U.S. Cl. 241—23 **11 Claims**



1. A method for producing silicon carbide and isolating a high grade fraction thereof, said process comprising the following steps:

admixing a silicon source, a carbon source and a ferromagnetic element source;

heating, from a central portion thereof, the admixture to a temperature sufficient to form a cylinder containing silicon carbide, with a temperature gradient being established between said central portion and outer portions of the admixture, whereby said ferromagnetic element migrates from said central portion toward the outer portions;

cooling the cylinder;

crushing the cylinder to form a particulate material; and

magnetically separating a fraction of the particulate material and recovering the remainder as said high grade fraction.

4,659,023

PROCESS AND AN APPARATUS FOR THE PROPORTIONING OF COFFEE POWDER IN A COFFEE MACHINE

Hans-Peter Frei, Oetwil am See, and Arthur Schmed, Oberdürnten, both of Switzerland, assignors to Gesamat AG, Ballwil, Switzerland

Filed Aug. 24, 1984, Ser. No. 643,735

Claims priority, application Switzerland, Aug. 25, 1983, 4649/83

Int. Cl.⁴ B02C *25/00*

U.S. Cl. 241—30 **3 Claims**

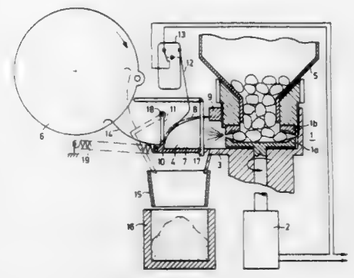
1. A process for proportioning of coffee powder in a coffee machine comprising a grinding mill driven by an electric motor, a closed proportioning chamber having a resilient wall portion, and a processing chamber, the process comprising the steps of:

feeding coffee beans into said grinding mill and operating said grinding mill to produce coffee powder,

discharging the coffee powder from said grinding mill into the closed proportioning chamber,

sensing coffee powder volume alteration in the proportioning chamber, and

generating an electrical signal upon filling the proportioning chamber to a predetermined volume for stopping operation of said electric motor and thereby said grinding mill and for simultaneous opening of the proportioning chamber to discharge its content into the processing chamber;



the step of sensing the coffee powder volume alteration in the proportioning chamber comprising the step of sensing a change in the shape of the resilient wall portion.

4,659,024

AMPUL OPENING DEVICE

Archie M. Frunzi, Lake Hiawatha, and Gregg R. Williams, Budd Lake, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 499,975, Jun. 1, 1983, abandoned. This application Oct. 21, 1985, Ser. No. 789,897

Int. Cl.⁴ B26F *3/00;* **B02C** *19/14*

U.S. Cl. 241—99 **10 Claims**



1. A device for opening an ampul having at its top end a tapered tip adapted to be snapped off from the body of the ampul along a constricted weakened fracture zone to provide access to the interior of the ampul and which fits within the grasp of one's hand or hands, comprising a one-piece body structure including:

(a) an ampul holding member which is essentially a rigid cylindrical member having a relatively flat base and an opening at the opposite end having a diameter which allows easy insertion and removal of an ampul and a depth which allows positioning of the ampul weakened fracture zone above the holding member opening;

(b) an arm member integrally attached to the open end of the ampul holding member and being in line with the vertical axis of said ampul holding member, said arm being of sufficient length to extend slightly beyond the tapered tip of the ampul and possessing sufficient flexibility at the upper portion to allow one to exert force with one's thumb or thumbs so that said arm member makes contact with the upper portion of the ampul tapered tip thereby utilizing the tapered tip as a torque arm to maximize the applied force to fracture the ampul cleanly along the fracture zone in the constricted region, said arm member having no direct contact with the constricted breaking region of the ampul.

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4,659,025

DISINTEGRATOR

Alexei N. Tjumanok, ulitsa Vase, 3, kv. 18, and Yaan V. Tamm, bulvar Sypruse, 11, kv. 3, both of Tallin, U.S.S.R.

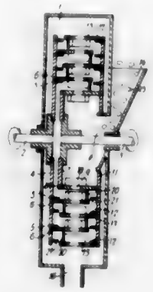
PCT No. PCT/SU84/00066, § 371 Date Jul. 11, 1985, § 102(e) Date Jul. 11, 1985, PCT Pub. No. WO85/02558, PCT Pub. Date Jun. 20, 1985

PCT Filed Nov. 6, 1984, Ser. No. 769,985

Claims priority, application U.S.S.R., Dec. 5, 1983, 3692048

Int. Cl.⁴ B02C *13/20*

U.S. Cl. 241—187 **1 Claim**



1. A disintegrator comprising:

pipes for charging a material to be disintegrated and for discharging resulting comminuted material,

a milling chamber,

two rotors mounted on drive shafts in said milling chamber for rotation opposite relative to each other, a first rotor comprising a first carrier disc mounted on one drive shaft and first disintegrating wheels mounted concentrically thereon, and a second rotor comprising a transfer disc mounted on the other drive shaft in parallel with the carrier disc of the first rotor,

a distribution wheel provided on the periphery of the transfer disc,

a second carrier disc secured to the distribution disc coaxially with the first carrier disc of the first rotor, and

second disintegrating wheels mounted concentrically on the carrier disc, at least one second disintegrating wheel being disposed between two adjacent first disintegrating wheels mounted on the first carrier disc of the first rotor, all of said disintegrating wheels comprising a cylindrical shell having openings and a milling body provided behind each opening on one side thereof, said milling body comprising a circularly bent plate having a concave side facing toward the respective opening and opposite to the direction of rotation of the respective carrier disc,

CHARACTERIZED in that

each of the first and second disintegrating wheels mounted on the carrier discs of the first and second rotors is provided with a pair of guard members installed in two mutually perpendicular planes for preventing the material being disintegrated from getting into spaces between the carrier discs and disintegrating wheels,

one guard member comprising a ring mounted on the periphery of each cylindrical shell on the inner side thereof and substantially perpendicular thereto to extend around the group of the milling bodies provided on this cylindrical shell,

the other guard member comprising a cylindrical ring secured to the inner surface of the respective carrier disc and substantially perpendicular to the respective carrier disc and the one guard member, the outside diameter of the other guard member secured to the carrier disc being substantially equal to the inside diameter of the respective cylindrical shell so as to be slightly offset in the radial direction from the respective cylindrical shell, and the height thereof being substantially equal to the amount of space between the respective carrier disc and the end face of the cylindrical shell so as to extend from the respective carrier disc to a point immediately adjacent the end face of the cylindrical shell, wherein a narrow slit is provided between the other guard member and the cylindrical shell.

4,659,026

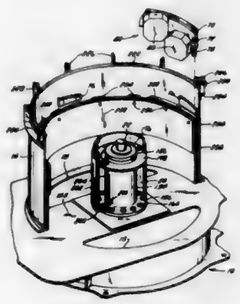
GUARD RINGS FOR VERTICAL SHAFT IMPACT CRUSHER

Lee Krause, Milwaukee; Scott Szalanski, Oak Creek, and David J. Bechler, Menomonee Falls, all of Wis., assignors to Rexnord Inc., Brookfield, Wis.

Continuation-in-part of Ser. No. 624,886, Jun. 27, 1984, abandoned. This application Jan. 31, 1986, Ser. No. 824,747

Int. Cl.⁴ B02C *19/00*

U.S. Cl. 241—275 **9 Claims**



1. A vertical shaft impact crusher of the type having a frame, a rotor supported within a crusher housing mounted on said frame for rotation about a vertical axis on a vertical shaft supported by a central bearing cartridge having an upper peripheral margin, said rotor having a top, an underside and an axial opening through which rock is fed into an impeller chamber which accelerates the rock and throws it outwardly at high speed to impact against an adjacent breaker means where the rock breaks, the improvement comprising:

stationary dust shell means operatively fastened fixedly with respect to said frame while said crusher is in operation, said dust shell means extending vertically with respect thereto coaxially with said rotor axis and having a height extending upward, at least to said upper peripheral margin of said cartridge in close proximity to the underside of said rotor, and being fastened to said bearing cartridge concentrically therewith;

guard ring means comprising a cylindrical ring fastened to the underside of said rotor and depending vertically with respect thereto coaxially with said rotor axis;

said dust shell means and said guard ring means having portions which nest telescopically together, said dust shell means nesting within said guard ring means, and said guard ring means being positioned in concentric, axially overlapping relationship to said dust shell means to provide minimal rotational clearance therebetween so that the dust shell and guard ring cooperate together to restrict the entrance of rock dust and fragments radially into said dust shell and ultimately, into said bearing cartridge.

4,659,027

METHOD AND APPARATUS FOR WINDING TEXTILE YARNS

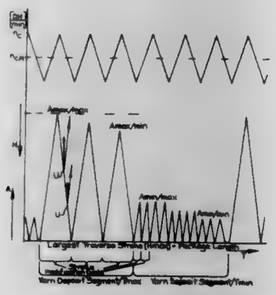
Heinz Schippers, Remscheid, and Friedhelm Lenz, Wuppertal, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Aug. 14, 1985, Ser. No. 765,709

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1984, 3430504; Nov. 17, 1984, 3442095

Int. Cl.⁴ B65H *54/38, 54/32*

U.S. Cl. 242—18.1 **27 Claims**



1. In a method of winding textile yarns into core supported packages in which the yarn is wound about the core at a substantially constant speed while the yarn is guided onto the core by a traversing yarn guide, the improvement therein comprising controlling the traverse of the yarn guide at at least one end of the package in a recurrent series of yarn deposit intervals, with each interval comprising at least two segments, with the first segment including at least one stroke modification cycle which includes the steps of progressively decreasing the length of the strokes of the yarn guide to a relatively large contraction and then progressively increasing the length of the strokes, and with the second segment including at least one stroke modification cycle which includes the steps of progresaively decreasing the length of the strokes of the yarn guide to a relatively small contraction and then progressively increasing the length of the strokes, and with the relatively small contractions of the second segments being less than about 60 percent of the relatively large contractions of said first segments.

4,659,028

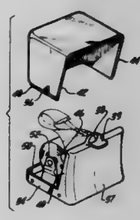
DISPENSER FOR ROLLED TOILET TISSUE AND LIKE MATERIAL

Boyd R. Wren, 305 Berts Dr., Lothian, Md. 20711

Filed May 16, 1985, Ser. No. 734,495

Int. Cl.⁴ B65H *19/00, 35/10*; B65D *85/66, 5/72*

U.S. Cl. 242—55.53 **9 Claims**



7. A dispenser for rolled and perforated toilet tissue comprising, in combination, two elements of molded plastic which interfit to form a six-sided, box-like enclosure,

said first element forming a base portion and an upstanding front wall, integral therewith,

said front wall angled outwardly from said base portion, and

said base portion including means for holding in an axially rotatable condition a roll of toilet tissue having a width X, and said front wall including:

an integral annulus forming a material constricting aperture whose maximum internal dimension is less than X, whereby said material, when fed through said annulus, is bunched laterally, and

a bill-like projection, integral with said annulus and said front wall, extending outwardly from the bottom of said annulus such that said toilet tissue rides thereover as it is drawn from said dispenser; and

said second element forming an integral hood for said first element, including a top portion, two opposedly positioned side wall portions and a back wall portion.

4,659,029

APPARATUS AND METHOD FOR CUTTING AND SPOOLING A WEB OF PAPER

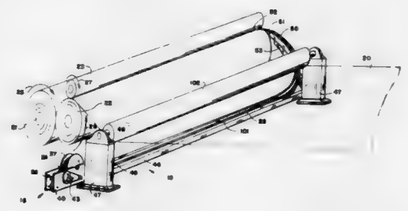
Peter A. Rodriguez, 1785 Selva Marina Dr., Jacksonville, Fla. 32233

PCT No. PCT/US84/00941, § 371 Date Sep. 29, 1985, § 102(e) Date Sep. 29, 1985, PCT Pub. No. WO86/00282, PCT Pub. Date Jan. 16, 1986

PCT Filed Jun. 20, 1984, Ser. No. 800,633

Int. Cl.⁴ B65H *19/26*

U.S. Cl. 242—56 R **40 Claims**



1. In an apparatus for cutting with a tape a travelling web of paper being wound on a first spool and transferring that travelling web onto an empty spool by attaching said tape to said empty spool, the system characterized by:

(1) means for supplying a length of repulpable paper fiber stiff tape;

(2) an elongated guideway with an elongated open slot facing upwardly beneath said travelling web and having opposite open ends adjacent the side edges of said travelling web, said guideway receiving said tape delivered slidingly into one said open end and exiting out of the other said open end; and

(3) a brake means frictionally engaging said tape.

4,659,030

LATERAL POSITIONING AND ADJUSTMENT MECHANISM FOR A WEB PRESS

Gene E. Graves, Centerville, and Dinesh G. Punater, Dayton, both of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Oct. 11, 1985, Ser. No. 786,570

Int. Cl.⁴ B65H *19/30, 16/06*

U.S. Cl. 242—58.6 **10 Claims**

1. A lateral positioner and adjust mechanism for use within an unwind station of a web press, the unwind station including a frame, a shaft for supporting a roll of web material, first and second arms pivotally mounted to said frame and cooperating for supporting said shaft for rotation thereon, means for selec-

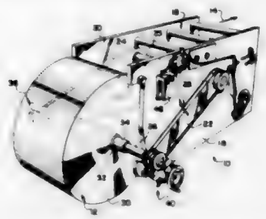
VOL 1077 ISS 3 APR 21 1987 UMI

tively pivotally raising and lowering said arms and for retaining said arms in a raised position, said positioner and adjust mechanism comprising:

said shaft extending at a first end beyond said first arm;

means for defining a first contact surface mounted to said first end of said shaft;

means for defining a second contact surface attached to said first arm positioned beneath said shaft when said shaft is supported by said arms;



one of said first and second contact surface means defining a groove having opposing side groove walls, each of said groove walls defining an outward bevel;

the other of said first and second contact surface means defining thereon a ridge extending upwardly and perpendicular to said shaft, said ridge having opposing side ridge walls, each of said ridge walls having an inward bevel, said ridge being fittable within said groove; and

means for selectively moving said second contact surface means toward and away from said first arm in a direction parallel to said shaft.

4,659,031

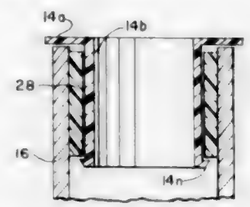
INSERTS AND COOPERATING RETAINING MEANS FOR USE WITH WEB DISPENSING MEANS

Alfred Saraisky, Oakland, N.J., assignor to E & A Enterprises, Oakland, N.J.

Continuation-in-part of Ser. No. 572,990, Jan. 23, 1984. This application Mar. 13, 1986, Ser. No. 839,216

Int. Cl.[4] B65H *16/06*

U.S. Cl. 242—96 **10 Claims**



1. Inserts for use in supporting a dispensing web wrapped about a hollow cylindrical core, each of said inserts comprising:

a substantially hollow cylindrical section having a first and second end, the diameter of said cylindrical section being substantially constant over the length thereof;

a substantially flat annular-shaped flange integral with and extending outwardly from the first end of said cylindrical section;

cylinder retainer means integral with and extending outwardly from the second end of said cylindrical section the diameter of the outer edge of said cylinder retainer means being less than the outer diameter of said first flange;

a hollow cylindrical-shaped force-fit cylinder encircling said hollow cylindrical section and having a length less than the distance between said first flange and said cylinder retainer means so as to be loosely retained about said hollow section and between said first flange and said cylinder retainer means, said force-fit cylinder and said cylindrical section being rotatably slidable relative to one another;

the outer diameter of said force-fit cylinder being at least equal to and preferably slightly greater than the inner diameter of said hollow cylindrical core for force-fittingly retaining said insert within said hollow cylindrical core, while enabling the cylindrical section of said insert to be freely rotatably slidable relative to said hollow cylindrical core.

4,659,032

SPOOLS FOR YARNS, THREADS OR THE LIKE

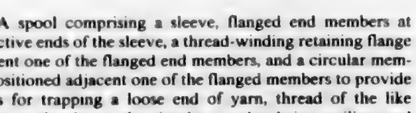
Dieter Rottleb, Gutach, Fed. Rep. of Germany, assignor to Guterman & Co. A.G., Zurich, Switzerland

Filed Aug. 22, 1985, Ser. No. 768,153

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1984, 3431335

Int. Cl.[4] B65H *75/14, 75/28*

U.S. Cl. 242—118.4 **17 Claims**



1. A spool comprising a sleeve, flanged end members at respective ends of the sleeve, a thread-winding retaining flange adjacent one of the flanged end members, and a circular member positioned adjacent one of the flanged members to provide means for trapping a loose end of yarn, thread of the like wound on the sleeve, the circular member being resilient and dish-shaped and being positioned between the thread-winding retaining flange and said one flanged end member, said dish-shaped circular member having an inner axial portion, an outer peripheral portion and at least one intermediate portion joining the inner and outer portions, the inner and outer portions being located in different planes.

4,659,033

APPARATUS FOR PRESTRESSING CONCRETE STRUCTURES OR THE LIKE

Bill R. Bush, West Babylon; Andrew Tripp, Jr., Woodbury, and Tadeusz J. Marchaj, Port Washington, all of N.Y., assignors to Preload Concrete Structures, Inc., Garden City, N.Y.

Continuation-in-part of Ser. No. 504,280, Jun. 14, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,101

Int. Cl.[4] B21F *17/00;* **B65H** *81/08*

U.S. Cl. 242—7.21 **8 Claims**

1. A device for prestressing a structure by having tensioned wire around the periphery of the same, which comprises:

a carriage which travels about the periphery of the structure;

means for paying off wire from a wire supply, the wire supply payoff means being mounted to the carriage;

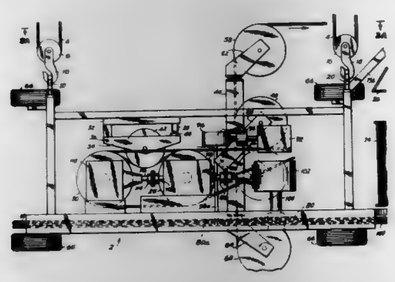
means for tensioning the wire supplied from the wire supply, the wire tensioning means including at least one pair of stress wheels each of which the wire at least partially encircles;

means for measuring the tension in the wire;

means for controlling the tension in the wire; and

driving means to propel the carriage about the periphery of the structure,

wherein the tension measuring means comprises a force measuring means connected to a rotatable center sheave, said sheave being disposed partially between two of the stress wheels so as to contact and partially deflect the wire passing from one of the two stress wheels to the other of the two stress wheels, the center sheave being displacable relative to the position of the stress wheels in response to the resultant force exerted by the wire in contact with the



center sheave such that said resultant force is transmitted to said force measuring means through said center sheave the resultant force of the wire detected by the measuring means being proportional to the tension placed on the wire by the stress wheels.

4,659,034

TOWED AIR TARGET

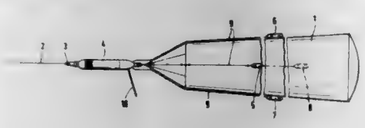
Franz Diekmann, Willich, Fed. Rep. of Germany, assignor to Rhein-Flugzeugbau GmbH, Moenchengladbach, Fed. Rep. of Germany

Filed Nov. 7, 1984, Ser. No. 669,262

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341549

Int. Cl.[4] F41J *9/08*

U.S. Cl. 244—1 TD **3 Claims**



1. Air target to be towed by an aircraft and including a bag further comprising:

a plurality of pressure sensitive transducers arranged on the bag in spaced apart relationship and including (i) a pair of transducers arranged on a circle of and on the periphery of the bag with the center coinciding with the center of the target, said transducers having a wide band spherical response characteristics such that a characteristic results which encloses the bag in its entirety; and

at least one additional transducer on the target's periphery and being axially and azimuthally offset to the transducers of the pair.

4,659,035

RATE ESTIMATION BY MIXING TWO INDEPENDENT RATE SIGNALS

Donald C. Clendeaning, San Jose, Calif., assignor to The United States as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1985, Ser. No. 695,103

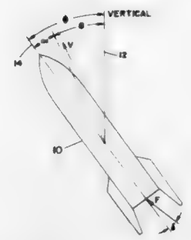
Int. Cl.[4] F42B *15/02*

U.S. Cl. 244—3.21 **9 Claims**

1. A method for providing an angular rate signal for use in attitude control of a missle in a missle flight control system, said missile having an attitude angle between the missile direction of motion and a vertical, said missile having a centerline and a nozzle angle through which thrust is applied with respect to the centerline, which comprises:

(a) measuring the attitude angle;

(b) generating a first estimated rate signal from the measured attitute angle;



(c) measuring the nozzle angle;

(d) generating a second estimated rate signal from the measured nozzle angle; and

(e) mixing said first and second estimated rate signals to provide said attitude rate signal.

4,659,036

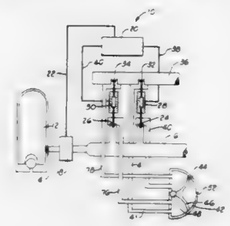
MISSILE CONTROL SURFACE ACTUATOR SYSTEM

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 26, 1983, Ser. No. 535,422

Int. Cl.[4] F41G *7/00;* **F42B** *15/02*

U.S. Cl. 244—3.22 **5 Claims**



1. A missile control surface actuator system for controlling and steering fins on a missile, the actuator system comprising:

a high pressure gas source;

a high pressure manifold connected to the gas source;

a pressure regulator connected between the high pressure source and the high pressure manifold for regulating the amount of high pressure gas to the manifold;

a first and second fill line connected at one end to the manifold;

a first and second fill valve connected in the first and second fill lines for controlling the amount of gas received from the manifold the first and second fill valves each operating independently of each other,

an actuator housing connected to the other end of the first and second fill lines, the actuator having an actuator vane connected to an actuator shaft, the vane rotating the shaft when gas is received in the housing, the shaft is directly connected to one of the missile's fins for controlling and steering the missile;

a first and second vent valve connected to a first and second vent lines, the first and second vent lines connected to the actuator housing for discharging gas from the housing; and

an electrical control system connected to the first and second fill valves, first and second vent valves and the regula-

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tor for opening and closing the valves and controlling the amount of gas received and discharged from the actuator housing.

4,659,037

WING DEPLOYING SYSTEM COMPRISING AN AIRBAG

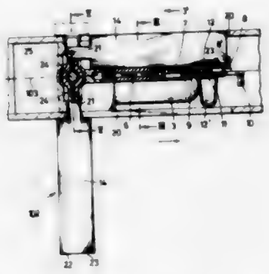
Klaus Unterstein, Duesseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 26, 1985, Ser. No. 769,178

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1984, 3432614

Int. Cl.⁴ F42B *15/053*

U.S. Cl. 244—3.28 **6 Claims**



1. An improved missile body having first flight guide and stabilization means operatively mounted on the tail of the missile body and second flight guide and stabilization means operatively mounted on said missile body in front of said first guide and stabilization means with respect to the direction of flight of said missile body, said second flight guide and stabilization means including a plurality of pivotably mounted wings and means for radially outwardly unfolding said wings from an inoperative to an operative position; said means for radially outwardly unfolding said wings outwardly pivot said wings into an operative position against the direction of flight of said missile body; said missile body has a plurality of slits corresponding in number to the plurality of wings and said wings are fully disposed in said slits when said wings are in their inoperative positions said means for radially outwardly unfolding said wings include at least one inflatable air bag and a pressurized gaseous medium source in operative communication with said air bag, whereby when said plurality of wings are in their inoperative position said air bag is in a collapsed folded condition and said air bag assumes an essentially disk-like shape which is centered about the longitudinal axis of the projectile when inflated by said source of pressurized gaseous medium thereby biasing said plurality of wings outwardly of said missile body.

4,659,038

AIRCRAFT WITH DEPLOYABLE WING PORTIONS

Hans-Jochen Hoeppner, Bremen; Ulrich Kraemer, Syke-Barrien, and Michael Soelter, Bremen, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Bremen, Fed. Rep. of Germany

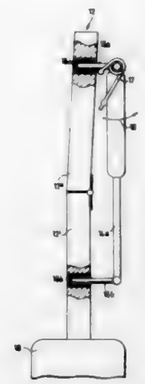
Filed Oct. 4, 1984, Ser. No. 657,601

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336847

Int. Cl.⁴ B64C *3/56*

U.S. Cl. 244—49 **1 Claim**

1. A vehicle having wing portions affixed to the fuselage and pivotable wing portions hinged to said affixed wing portions, each said portions having bores, a pair of gas pressure springs with final phase attenuation and having end pins stuck into said bores, respectively, for jettisoning the gas pressure spring following spring operated and attenuated deployment; and



a jettison assist spring bearing against one of the pins and said gas pressure spring to ensure jettison of the gas pressure spring in the direction away from the fuselage.

4,659,039

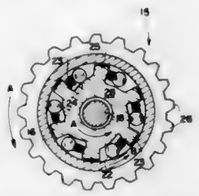
LANDING GEAR DRIVE SYSTEM

Guillermo A. Valdes, 1011 SW. 42nd Ave., Apt. 2, Miami, Fla. 33134

Filed Jul. 29, 1985, Ser. No. 759,696

Int. Cl.⁴ B64C *25/40*

U.S. Cl. 244—103.5 **3 Claims**



1. A landing gear drive system for prespinning a landing wheel of an aircraft prior to landing of the aircraft comprising:

(a) free wheeling clutch means attached to each wheel of said aircraft, said clutch means for coupling to said wheel when the rotational speed of said clutch means is equal to or greater than the rotational speed of said wheel and decoupling from said wheel when the rotational speed of said clutch means is less than the rotational speed of said wheel;

(b) drive motor means coupled to each of said free wheeling clutch means for rotating said clutch means;

(c) first control means for energizing said drive motor means when said wheel is in position for landing;

(d) second control means for adjusting the rotational speed of said clutch means when coupled to said wheel to cause the periphery of said wheel to have the same linear velocity as the ground speed of said aircraft at the point of touchdown thereof, said second control means including means for stopping said drive motor means at said point of touchdown thereby causing said clutch means to decouple from said wheel; said second control means having

(i) a central processing unit (CPU);

(ii) a read only memory having data stored indicative of the circumference of said wheel and the ratio of the rpm of said motor to the rpm of said wheel when said wheel is being driven from said motor;

(iii) a navigational computer having an output connected to said CPU in which digital information representative of the ground speed of said aircraft is presented to said CPU;

(iv) a motor speed controller for controlling the speed of said motor, said motor speed controller connected to and controlled by said CPU;

(v) a tachometer operatively connected to said motor and having an output connected to said CPU;

(vi) a touchdown sensor having an output connected to said CPU;

(vii) a landing gear extension sensor having an output connected to said CPU; and

(viii) said CPU programmed to energize said motor in response to a signal from said landing gear extension sensor to control the speed of said motor to produce a rotational speed of said wheel such that the linear velocity of the periphery of said wheel is equal to the ground speed indication to said CPU from said navigational computer.

4,659,040

AIRCRAFT UNDERCARRIAGE ASSEMBLIES

Graham R. Sinclair, 18 Marie Street, Murarrie, Queensland, Australia

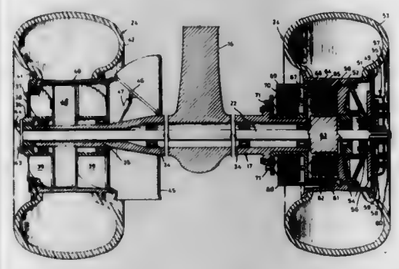
PCT No. PCT/AU84/00085, § 371 Date Jan. 14, 1985, § 102(e) Date Jan. 14, 1985, PCT Pub. No. WO84/04505, PCT Pub. Date Nov. 22, 1984

PCT Filed May 14, 1984, Ser. No. 700,882

Claims priority, application Australia, May 12, 1983, PF9305; May 16, 1983, PF9356

Int. Cl.⁴ B64C *25/40, 25/42, 25/50*

U.S. Cl. 244—103 S **5 Claims**



1. A braking assembly for aircraft or other vehicles including:

a stationary axle housing;

an axle rotatably mounted in the housing and having a hub;

a first ground-engaging wheel operatively connected to the axle, said first wheel having turbine-like spokes interconnecting a tire-mounting rim to said hub;

an airscoop mounted on the axle housing adjacent said first wheel, said airscoop directing air through the spokes to spin said first wheel;

a second ground-engaging wheel rotatably mounted on the axle;

a clutch means operable to releasably connect the second wheel to the axle to enable said second wheel to be spun up to the speed of said first wheel;

first brake means on the housing operably connectable to the axle to provide braking for the first wheel; and

second brake means on the housing operably connectable to the second wheel to provide braking for the second wheel, and wherein

said first and second brake means are mounted on said axle housing adjacent the second wheel, said first and second brake means including friction discs interleaved with braking discs operatively connected to the axle and second wheel, respectively, for applying braking forces to the first and second wheels respectively.

4,659,041

PARACHUTE LANDING OF UNMANNED AIRCRAFT

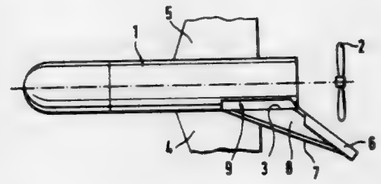
Juergen Dellinger, Achim-Uesen; Ulrich Kraemer, Syke-Barrien; Rainer Schlieske, Ganderkesee, and Heinz Wohlers, Bremen, all of Fed. Rep. of Germany, assignors to MBB GmbH, Bremen, Fed. Rep. of Germany

Filed Oct. 4, 1985, Ser. No. 784,485

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1984, 3437824

Int. Cl.⁴ B64D *17/80*

U.S. Cl. 224—139 **7 Claims**



1. In an unmanned craft the inprovement of a parachute landing system for causing the craft to land while being suspended by a parachute of the system, the improvement comprising:

a fuselage for the craft with a rearwardly, laterally and, thus, asymmetrically arranged opening leading into a storage compartment for the parachute system, there being a flap normally closing said opening in said fuselage but being openable and pivotable in outward direction about an axis being at least approximately normal to the longitudinal axis of the craft;

means for locking and limiting the outward pivoting of said flap to a lateral position that provides a predetermined yawing force on said fuselage; and

said parachute system being contained in the compartment in the interior of the craft behind the opening.

4,659,042

CANOPY LOCATOR

William B. Friddle, II, 8288 Wendstream Way, Edgewood, Md. 21040, and Patrick Van Bibber, 514D Alexander Pl., West Point, N.J. 10996

Filed Jun. 19, 1984, Ser. No. 622,108

Int. Cl.⁴ B64D *17/00*

U.S. Cl. 244—142 **14 Claims**

12. A parachute including a main canopy and a reserve canopy and having secured to the main riser of said main canopy a homing device having means for providing an audible signal, comprising in combination,

a piezocrystal,

a power source for said piezocrystal,

switch means to selectively provide electrical connection between said piezocrystal and said power source,

activator means, said activator means being placed in proximity to said switch means, wherein the presence of said activator means prevents said switch means from completing said connection and the removal of said activator means allows said switch means to complete said connection,

means to periodically interrupt the flow of current from the power source to said piezocrystal thereby producing a

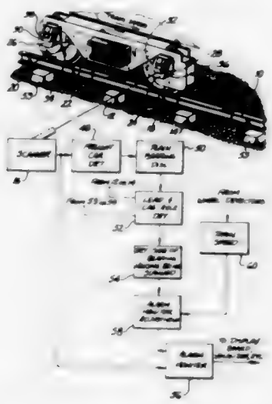
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signal ON period of at least about two seconds and a signal OFF period of at least about two seconds.



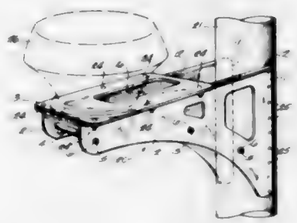
wherein said switch means is held in the open position by a break away cable portion of a release mechanism which causes said main canopy to break away.

4,659,043
RAILROAD HOT BOX DETECTOR
Cornelius A. Gallagher, Syosset, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.
Continuation of Ser. No. 308,263, Oct. 5, 1981, abandoned. This application May 14, 1984, Ser. No. 609,938
Int. Cl.[4] B61K *9/04*
U.S. Cl. 246—169 A **7 Claims**



1. A railroad car hot box detector system comprising:
(a) radiant energy scanner means positioned along a section of track and adapted to scan, in a single direction along said section, surfaces associated with successively passing bearings on different axles on the same side of railroad cars passing the scanner means in either direction and to generate a signal in response to each bearing scanned;
(b) means for determining a direction of movement of said railroad cars;
(c) means for determining if the surfaces of the bearings being scanned dissipate heat generated by said bearings differently from bearing to bearing to distinguish (i) between bearings that are housed and bearings that are exposed and (ii) if the former, (a) if the surfaces of the bearings being scanned are housing inner or outer surfaces and (b) if the surfaces of the bearing being scanned are housing leading or housing lagging surfaces as defined by the direction of movement of the railroad cars;
(d) means for processing said scanner signal; and
(e) means for adjusting said scanner signal processing means as a function of the heat dissipating qualities of the surface of said bearing being scanned.

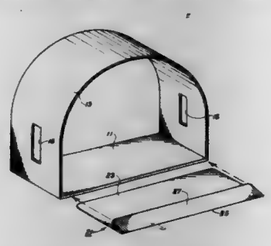
4,659,044
UNIVERSAL KIT FOR SPAR-MOUNTED MOUNT FOR RADAR ANTENNA
Douglas C. Armstrong, 6348 S. 20 St., Milwaukee, Wis. 53221
Filed Sep. 26, 1985, Ser. No. 781,066
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—218.4 **4 Claims**



1. A kit for assembling a mount for a radar antenna, the mount to be attached to a spar on a sailboat or powerboat, comprising in combination:
(1) a base plate for supporting a radar antenna;
(2) port and starboard side plates, each side plate including a horizontal leg and a vertical leg, a flange extending along the horizontal leg, a plurality of mounting holes defined along the vertical leg, and a plurality of connector holes defined along each side plate arranged in pairs with a connector hole in the starboard side plate aligned with a connector hole in the port side plate;
(3) a plurality of compression tubes, there being one compression tube for each pair of connector holes in the port and starboard side plates; and
(4) a plurality of threaded fasteners, there being one threaded fastener for each compression tube, the kit being adapted for assembling a mount to be attached to a spar along the mounting holes of the side plates with the base plate attached to the flanges of the side plates and with the compression tubes fastened between the side plates by the threaded fasteners extending through the connector holes of the side plates and the compression tubes, the compression tubes being adjusted to a length equal to the width of a spar.

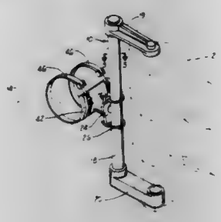
4,659,045
TRASH BAGGING KIT
James P. Flynn, 309 W. Squire Dr., Apartment 3, Rochester, N.Y. 14623
Filed Apr. 16, 1986, Ser. No. 852,524
Int. Cl.[4] B65B *67/04*
U.S. Cl. 248—99 **3 Claims**

1. A trash bagging kit comprising, in combination, a bag holding unit and a ramp unit, said bag holding unit comprising a hollow frame having the general outline of the letter D, with a flat side and a curved wall whose ends terminate at the ends of said flat side, said frame being adapted to have an open end of a trash bag inserted through said frame with marginal portions of the bag folded back over the outside of the frame and to have the flat side of the frame laid on a flat supporting surface with the curved wall of the frame rising upwardly, whereby the bag will be held in an open position to receive input, said ramp unit comprising two stiff sheet portions meeting each other at an acute angle to form a thin edge, the space between said two sheet portions being completely open along its thicker side for easy discharge of any material accumulating between said two sheet portions when said ramp unit is used as a scraper and dustpan and for easy entrance of said flat side of



said frame with bag folded thereover into said space between said two sheet portions, one of said sheet portions being substantially larger than the other and being adapted to be placed under said flat side of said frame when said flat side is placed on a supporting surface, with the other of said sheet portions overlying an edge of said flat side of said frame and protecting a portion of said bag folded over said edge and forming an inclined ramp up which material may be swept from said supporting surface into the open bag held by said frame.

4,659,046
TRAFFIC CONTROL DEVICE MAST ARM BRACKET
A. Philip Pardubn, 14501 Wilson Rd., Edmond, Okla. 73013
Filed Feb. 24, 1986, Ser. No. 832,075
Int. Cl.[4] A47B *96/06*
U.S. Cl. 248—231 **5 Claims**



1. A bracket for securing a traffic control device to a mast arm, comprising:
an elongated member;
means rigidly securing the elongated member to the traffic control device;
a clamp plate having one face shaped to mate with a side of the elongated member and having a tubular section extending from the opposite face thereof;
means for adjustably securing the clamp plate to the elongated member;
an anchor plate having one face shaped to mate with the mast arm and having a tubular section extending from the opposite face thereof split lengthwise and sized to be journaled on the tubular section of the clamp plate; said clamp and anchor plates each having a bore therethrough aligned with their respective tubular sections;
means for adjustably securing the anchor plate to the mast arm;
snap ring means for securing said tubular sections together; and
means for clamping the tubular section of the anchor plate around the tubular section of the clamp plate.

4,659,047
APPLIANCE SUPPORT
Walter Haller, Auckland, New Zealand, assignor to Robinson Industries, Limited, Auckland, New Zealand
Continuation of Ser. No. 603,426, Apr. 24, 1984, abandoned. This application Apr. 18, 1986, Ser. No. 854,674
Claims priority, application New Zealand, Mar. 22, 1984, 207597
Int. Cl.[4] E04G *3/00*
U.S. Cl. 248—274 **2 Claims**



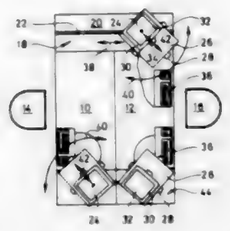
1. An appliance support including an elongate brace member for attachment to a wall or similar surface, and at least two support members for supporting the appliance; the brace member including an attachment plate and an outwardly extending flange; each support member including an elongate and substantially upright portion and an outwardly extending base portion; the support members and the outwardly extending flange having complemental formations for providing support for each support member at longitudinally adjustable positions on the brace member, wherein the formation on the outwardly extending flange includes a downwardly extending portion extending downwardly of the outwardly extending flange and at right angles thereto; and an inwardly extending portion extending inwardly from the downwardly extending portion and spaced apart from and below said flange and wherein the formation on the upright portion of each support member comprises a transverse groove extending thereacross adjacent an upper end thereof for slidably receiving the said inwardly extending portion on the flange.

4,659,048
SUPPORTING DEVICE FOR A DATA DISPLAYING UNIT
Otmar Fabrion, Iltisweg 31, D-7014 Kornwestheim, Fed. Rep. of Germany
Filed May 2, 1985, Ser. No. 729,941
Claims priority, application Fed. Rep. of Germany, May 8, 1984, 3416859
Int. Cl.[4] E04G *3/00*
U.S. Cl. 248—285 **21 Claims**

1. A supporting device for a data display unit, which device is provided with a supporting part which is rotatable about a vertical axis and is displaceable in a horizontal plane and on which the data display unit can be placed, characterized in that the supporting part (**30**) is guided so as to be longitudinally displaceable on a base part (**26**) which, for its part, is connected via an axial/radial bearing (**68**; **102**, **104**) having a vertical axis to a piece of furniture (**10**, **12**; **18**; **44**) provided with the sup-

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porting device, said axial/radial bearing being fitted on a slide (66; 100) which runs on a guide (46, 48, 58, 60, 116, 118, 138, 140) which is formd on a side table (18) or on two work tables (10, 12) which are opposite to each other at a distance.

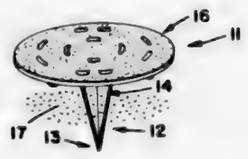


4,659,049

KNOCK-DOWN OUTDOOR COASTER

Nigel S. Watson, 655 San Pablo Ave., Apt. 3, Rodeo, Calif. 94572

Filed Nov. 21, 1985, Ser. No. 800,423
Int. Cl.[4] A47B *91/00*
U.S. Cl. 248—346.1 8 Claims



1. In an outdoor coaster for supporting containers or the like above the surface of the ground, the combination comprising:
- a ground engaging spike having a substantially pointed lower end and a relatively broad upper end,
- a plate member disposed on said broad upper end of said ground engaging spike in a transverse and substantially centered relationship therewith, and
- retainer means for holding said plate member on said ground engaging spike in said transverse substantially centered relationship therewith while enabling selective separation of said plate member from said ground engaging spike,
- said ground engaging spike including first and second flat spike elements each having a substantially pointed lower end and a relatively broad upper edge, a first of said spike elements having a slot extending downward from said upper edge thereof and the second of said spike elements having a slot extending upward from said lower end thereof, said first and second spike elements intersecting with an upper portion of said second element being fitted within said slot of said first element and a lower portion of said first element being fitted within said slot of said second element.

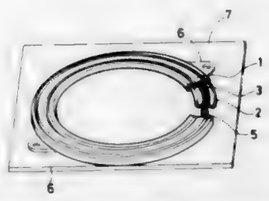
4,659,050

ROTARY SUPPORT DEVICE

Yoshikazu Tabayashi, Suita, Japan, assignor to Osaka Taiyo Co., Ltd., Osaka, Japan

Filed Nov. 14, 1984, Ser. No. 671,350
Claims priority, application Japan, Feb. 23, 1984, 59-26138[U]; Mar. 10, 1984, 59-34632[U]; Jun. 29, 1984, 59-99184[U]
Int. Cl.[4] A47B *91/00*
U.S. Cl. 248—349 4 Claims

1. A rotary support device comprising an upper member in the form of a ring and an upper member in the form of a ring disposed below the upper member and inseparably therefrom, the upper member being supported by the under member rotatably relative thereto, steel balls being interposed between the upper member and the under member and being rotatably held spaced apart approximately equidistantly by a retainer, vertical inner peripheral walls and vertical outer peripheral walls being formed by respectively bending at the inner and outer peripheries of the horizontal walls of the upper and lower members each toward the other opposed member, one of the sets of inner peripheral walls and outer peripheral walls of the two members lapping over each other with a small clearance formed therebetween and the other of the two sets of inner and outer peripheral walls having its extremities each bent through an angle smaller than 90 degrees toward the other opposed lapping peripheral wall in a direction to engage therewith to form annular retaining portions each positioned inwardly of the opposed peripheral wall beyond the extremity thereof by a small dimension, the retainer comprising a plural-



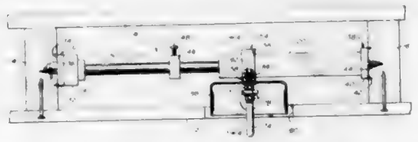
ity of retainer segments connected to one another into a ring, each of the retainer segments being integrally molded from a synthetic resin and comprising a plurality of hollow cylindrical holding portions with open-ended faces arranged on a plane, flexible connecting portions interposed between the holding portions and interconnecting the holding portions in a row, and an engaging piece projecting form the holding portion at one end of the row,
- the engaging piece having a stem projecting from the end holding portion and having the same shape as the connecting portion, and the stem being provided with a protrusion on each side of its forward end,
- a socket piece projecting from the holding portion at the other end of the row for the engaging piece to fit in, and
- the connecting portion between the end holding portion and another holding portion adjacent thereto being provided on each side thereof with a second protrusion having the same shape as the protrusion.

4,659,051

HANGER ASSEMBLY

Clarence E. Propp, Rte. 1, Box 120, College Station, Tex. 77840, and J. Russell Kerr, 19 Cargill La., Bryan, Tex. 77801

Filed Dec. 11, 1985, Ser. No. 807,755
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—546 8 Claims



1. A hanger assembly for spanning and positive attachment between a pair of spaced joists, studs and the like elements having opposed surfaces comprising:
- an inner and outer elongated means engaged such that said hanger assembly is telescopically extensible;

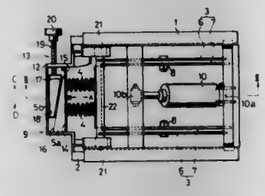
- a first and second plurality of element-engaging means rotatably mounted on the free ends of said inner and outer elongated means, respectively;
- a first and second screw means mounted on the free ends of said inner and outer elongated means, respectively, for pre-engaging their respective element and for drawing their corresponding plurality of element-engaging means into engagement with its corresponding element upon rotation of said outer elongated means; and
- means for rotational immobilization of said outer elongated means with respect to said inner elongated means to facilitate one-handed installation of one of the free ends at a time.

4,659,052

VERTICAL ADJUSTMENT SUPPORT DEVICE FOR A VEHICLE SEAT

Shojiro Nagata, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1986, Ser. No. 824,263
Claims priority, application Japan, Jan. 31, 1985, 60-12414[U]
Int. Cl.[4] B60N *1/02*
U.S. Cl. 248—575 4 Claims



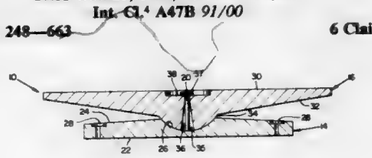
1. A vertical adjustment device for use in a seat of a vehicle comprising:
- a mounting frame adapted to be fixed to the vehicle;
- a seat supporting frame adapted to receive the seat of the vehicle thereon;
- a pair of X-shaped expansion legs each having a first link and a second link, said first and second links of each said expansion leg being pivotally mounted at their respective central portions so as to provide an X-shaped configuration, each said first link being slidably coupled to said seat supporting frame at an upper end thereof and being pivotally coupled to said mounting frame at a lower end thereof, each said second link being pivotally coupled to said seat supporting frame at an upper end thereof and being slidably coupled to said mounting frame at a lower end thereof, the pivotal mounting of the links of each of said X-shaped expansion legs enabling relative rotation so that each of the X-shaped expansion legs can raise and lower said seat supporting frame;
- a support member disposed at an end of at least one of said first and second links of each of said X-shaped expansion legs;
- elastic means secured at one end thereof to said support member, said elastic means being adapted to energize said expansion legs;
- energizing force adjustment means for adjusting the energizing force of said elastic means, said energizing force adjustment means including:
- (a) a pair of wedge members, each being formed in a right triangle configuration and having a slanting surface with a grade and a bottom surface, said pair of wedge members being combined with each other such that the slanting surface of one of said wedge members is in a slidable contact with the slanting surface of the other wedge member whose grade is identical to and in an opposite direction in relation to that of said one wedge member so that the bottom surface of said one wedge member is in a parallel relation to the bottom surface of said other wedge member, said bottom surface of said other wedge member being secured to the end of said elastic means opposite said one end of said elastic means; and
- (b) a feed screw mechanism operatively coupled to said one wedge member, said feed screw mechanism being adapted to move said one wedge member in a direction transversely to a longitudinal direction of said elastic means,
- whereby forward movement of said one wedge member by operation of said feed screw member causes said other wedge member to move in a direction which increases the energizing force of said elastic means so as to rotate said links of each said pair of X-shaped expansion legs and cause the raising of said seat supporting frame, and a rearward movement of said one wedge member by operation of said feed screw member causes said other wedge member to move in a direction which decreases the energizing force of said elastic means so as to rotate said links of each said pair of X-shaped expansion legs and cause the lowering of said seat supporting frame.

4,659,053

TILTABLE MOUNT

Edwin S. Holley, 330 Coachman Dr., Jacksonville, Oreg. 97530, and James A. McBee, 449 N. Central Valley Dr., Central Point, Oreg. 97502

Filed Oct. 25, 1985, Ser. No. 791,619
Int. Cl.[4] A47B *91/00*
U.S. Cl. 248—663 6 Claims



1. A tiltable mount for levelly maintaining equipment mounted thereon, comprising:
- a stationary base member having a planar bottom surface, concave spherical upper surface and a cylindrical, threaded guide shaft extending from within the concave surface normally along a vertical axis through the member;
- a movable support member having an upper planar surface with a recess therein, a convex spherical bottom surface for slidingly engaging the upper concave surface of the base member and a conical aperture having its base at the convex surface and its apex at the planar surface for pivotally receiving the guide shaft of the base member, the guide shaft extending into the recess but below the planar support surface along a vertical axis through the member, the support member capable of selectably tilting omnidirectionally relative to the base member without rotating relative to the vertical axis through the base and support members; and
- a locking lever means threadedly attached to the guide shaft to rotate within the recess perpendicular to the shaft to press the support member against the base member for locking the members against relative movement therebetween and thereby maintaining a selected tilt to the support member.

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4,659,054

LIGHTWEIGHT CONCRETE FORM HAVING A DETACHABLE EQUIPMENT RAIL

J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corporation, Paragould, Ark.

Continuation-in-part of Ser. No. 101,545, Dec. 10, 1979, abandoned, and a continuation-in-part of Ser. No. 170,126, Jul. 18, 1980, Pat. No. 4,349,294, and a continuation-in-part of Ser. No. 311,674, Oct. 15, 1981, Pat. No. 4,540,312, and a continuation-in-part of Ser. No. 407,620, Aug. 8, 1982, abandoned, and a continuation-in-part of Ser. No. 457,732, Jan. 13, 1983. This application Oct. 26, 1984, Ser. No. 665,168

Int. Cl.⁴ E01C *19/50*

U.S. Cl. 249—7 **20 Claims**



1. A concrete form comprising:

a. a horizontal base for contacting an underlying subgrade;

b. a vertical face joined to said base for shaping the edge of an area of plastic concrete;

c. an equipment rail having a linear load bearing upper surface, a width, first and second substantially vertical side surfaces and a lower surface;

d. rail coupling means for loosely coupling said equipment rail to said form to permit immediate assembly or disassembly of the equipment rail/form assembly by substantially vertical, non-rotational relative displacements of said rail with respect to said rail coppling means, including

i. horizontal spacing means contacting the first and second side surfaces of said equipment rail at at least two spaced apart first locations along said rail for maintaining a fixed horizontal spacing between said rail and said vertical form face without transferring significant vertical loads between said horizontal spacing means and said rail, said horizontal spacing means maintaining a closely abutting, loose contact with the first and second side surfaces of said equipment rail, the overlap between said equipment rail and said form base defining a rail overlap zone on said base equal in width to the rail width; and

ii. load transfer means extending across the rail overlap zone and loosely supporting said equipment rail from below at at least two spaced apart second locations along the length of said rail spaced part from the first locations for maintaining the load bearing surface of said equipment rail parallel to said form base and for transferring vertical loads imposed on said equipment rail to said form base;

e. form securing means for rigidly securing said form to the subgrade including

i. stake penetration means for enabling a plurality of spaced apart stakes to be driven through said base into the subgrade to secure said stakes to the subgrade; and

ii. stake securing means for rigidly securing said stakes to said form.

4,659,055

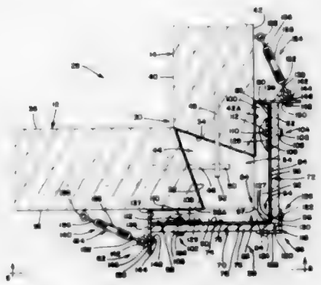
CORNERSTONE MOLD ARRANGEMENT FOR THE OUTER WALLS OF PREFABRICATED BUILDINGS

William K. Hardt, Rte. 4, Box 2270, Lake Geneva, Wis. 53147

Filed Dec. 9, 1985, Ser. No. 806,407

Int. Cl.⁴ E04G *11/00*

U.S. Cl. 249—19 **8 Claims**



1. For a building exterior wall structure in which at a corner of the building the wall structure includes a pair of adjacent precast paels, each having an inside wall surfacing and an exterior wall surfacing, that are disposed in substantial abutting relation at the inside corner of the wall structure and define a groove therebetween extending substantially continuously for the height of the adjacent panels,

a mold for closing the groove with a cementitious material filling that also overlies the margins of each of the panel exterior surfacings that border the groove a predetermined distance,

said mold comprising:

a pair of elongate sheets of cementitious material barrier material secured together to define along adjacent longitudinally extending edges of said sheets an internal corner having a length approximately the height dimension of the groove,

said sheets comprising planar mold surfaces that are substantially normal with respect to each other,

said mold having equally spaced therealong right angle transversely extending ribs that are on the internal corner side of said mold, and that are of like external configuration,

said ribs each having first like end portions terminating at the other longitudinally extending edge of one of said sheets, in flush relation thereto,

said ribs each having second like end portions terminating at the other longitudinally extending edge of said sheets in flush relation thereto,

and including a first flange secured to said one sheet along said other longitudinally extending edge thereof and in normal relation thereto and having one marginal edging of same in substantial congruent relation with said first rib end portions, and a second flange secured to said other sheet along said other longitudinally extending edge thereof and in normal relation thereto and having one marginal edging of same in substantially congruent relation with said second rib end portions,

and means for releasably setting said mold in overlying relation to the groove with said ribs and said flange marginal edges seating against the exterior wall surfacings of the respective precast panels on either side of the groove

free of bracking of said mold against the inside wall surfacings of the precast panels,

whereby, said mold and the groove define a molding space for receiving the cementitious material, and said planar mold surfaces and said ribs configure such cementitious material at the internal corner side of the mold to define vertically separated bodies of quadrilateral configuration that overly the margins of the respective panel exterior surfacings and that present a cornerstone appearance.

4,659,056

ELECTRICALLY HEATED LIGHT-WEIGHT CONCRETE MOLD

Jean A. Michaud-Soret, Paris, France, assignor to Societe Nationale Industrielle et Aerospatiale, France

Filed Sep. 17, 1984, Ser. No. 651,609

Claims priority, application France, Sep. 19, 1983, 83 14838

Int. Cl.⁴ B29C *33/02*

U.S. Cl. 249—78 **4 Claims**



1. A concrete mould with heating elements for producing moulded pieces with large dimensions, particularly great length, of a composite material, the concrete mould comprising: a reinforced concrete support: a mass of lightened thermally insulating concrete, adjacent to and supported by said reinforced concrete support, including a filler of cellular glass balls and glass microspheres divided within said thermally insulating concrete, the thermally insulated concrete having an inner surface with an impression shape contour of the piece to be moulded; a plurality of electrical resistence heating elements on said surface; and, a thin sheet metal layer over said elements, said thin sheet metal extending along the contour of said impression shape.

4,659,057

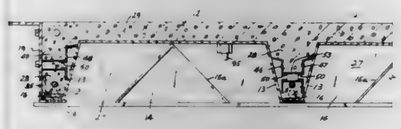
TILT UP CONCRETE WALL PANEL SYSTEM

John V. Felter, P.O. Box 7464, Houston, Tex. 77248

Filed Jun. 26, 1985, Ser. No. 748,931

Int. Cl.⁴ B28B *7/08*

U.S. Cl. 249—97 **3 Claims**



1. Apparatus for forming concrete tilt up wall panels comprising a plurality of form pans, each having a surrounding flange portion, and having a central raised portion sloped downward to said flange portion around its sides, said flange portion having spaced holes therealong, a plurality of parallel spaced guide bars, each guide bar having upwardly projecting lugs uniformly spaced therealong, each of said pans being disposed across a plurality of said guide bars with said guide bar lugs received through said holes to position said pans, said flange portions of adjacent pans being overlapped and common ones of said lugs being received through said holes of said overlapped flange portions, selected ones of said guide bars extending across said pans beneath the central raised portions thereof, support members carried by said selected ones of said guide bars and extending upwardly therefrom into engagement with said central raised portion of said pans to support said pans, said pans defining troughs between said central raised portions, and above said flange portions, side frame members closely disposed along the sides of the outermost of said pans, end frame members closely disposed along the ends of the outermost of said pans, means connecting said side and end frame members to form a rectangular frame closely surrounding said pans and extending above said central raised portions and reinforcing bars extending along said troughs between said pans.

4,659,058

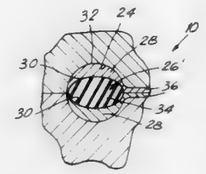
APPARATUS FOR MANUFACTURING ELASTIC RINGS

Leonid Blokh; George Spector, both of 233 Broadway RM 3615, New York, N.Y. 10007

Filed Oct. 1, 1984, Ser. No. 656,531

Int. Cl.⁴ B29C *13/00*

U.S. Cl. 249—119 **1 Claim**



1. An elliptical mold for forming an elliptical elastic ring, comprising; a pair of plates, said plates having mating semi-elliptical cavities, each of said cavities being semi-cylindrical in cross section, each of said cavities having an insert mating with semi-cylindrical configuration of the molds forming said cavities, said inserts having mating concavities which together form a mold cavity having elliptical transverse cross-sections taken by passing a plane transversely through said cavity perpendicular to a major or minor axis of the mold cavity and coincident with a minor or major axis of said mold cavity.

4,659,059

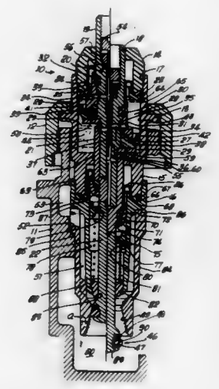
SEALED DASHPOT MECHANISM FOR DELAYED CLOSING PLUMBING VALVES

Earl L. Morris, La Habra Heights; Theodore J. Sally, Graton, and Ron T. Hahn, Fullerton, all of Calif., assignors to Acorn Engineering Company, City of Industry, Calif.

Filed Jan. 27, 1986, Ser. No. 822,383

Int. Cl.⁴ F16K *31/48*

U.S. Cl. 251—54 **18 Claims**



1. An improved, delayed closing plumbing valve of the type including a cartridge mounted in a fixture body, said cartridge

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having hydraulic fluid in a sealed chamber retained between an upper and a lower diaphragm positioned about a longitudinally movable valve stem assembly including deformable valve gasket means for controlling the flow of water and having a one-way piston which separates said chamber into an upper compartment and a lower compartment with a restricted fluid flow path therebetween and having biasing means urging said stem assembly in a direction so that its valve gasket means seats against a valve seat, the cartridge being affixed in a fixture body, wherein the improvement comprises:

removable valve seat means removably affixed at its upper end to send cartridge, said removable valve seat means being free of contact with said lower diaphragm, said valve seat means comprising:

a generally clindrical hollow housing having a partially restricted portion at the inner surface near the lower end thereof which is slightly smaller in inside diameter than the outside diameter of said deformable valve gasket means, but which is large enough to permit the passage of said deformable valve means therethrough, said partially restricted portion comprising a valve seat to prevent the flow of water past said valve seat when said valve gasket is positioned therein;

cartridge and removable valve seat mounting means on the fixture body to direct the flow of all water between the valve gasket and the valve seat; and

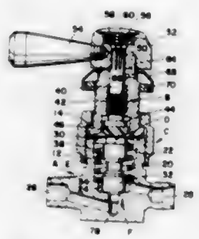
at least one water passageway above said mounting means for the passage of water whereby when said valve means is open, water may pass into the interior of said generally cylindrical hollow housing and outwardly through said at least one passageway, and when said removable valve seat means is removed from said housing, said deformable valve gasket means may be replaced.

4,659,060

STEM TIP SEAL

Gary W. Scheffel, Streetsboro, Ohio, assignor to Nupro Company, Willoughby, Ohio

Filed Feb. 14, 1986, Ser. No. 829,187
Int. Cl.[4] F16K *1/36*
U.S. Cl. 251—332 **12 Claims**



1. A stem tip seal for a shut-off valve comprising:

a valve member adapted for selective movement axially toward and away from an associated circular valve seat;

a generally cylindrical sleeve carried by said valve member and mounted for limited axial movement relative thereto, said sleeve having an end inclined relative to said associated valve seat and defining an outer annular seal surface adapted for cooperative line contact sealing engagement with the associated valve seat;

a generally cylindrical rigid body mounted axially within said sleeve for limited axial movement and defining a first inner annular seal surface adapted for engagement with the associated valve seat at a location radially inwardly of said outer annular seal surface;

an annular chamber formed between said sleeve and said rigid body, said chamber opening axially inwardly from a narrow annular slot located between said first inner annular seal surface and the outer annular seal surface;

a mass of resilient packing material substantially filling said chamber and extending axially outwardly of said slot to define a second inner annular seal surface;

means associated with said rigid body for generating pressure on said packing material when said body is forced axially toward said valve member; and,

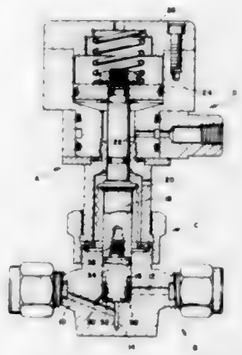
said first inner annular seal surface being configured and positioned to engage the associated seat prior to engagement by either said second inner annular seal surface or said outer annular seal surface as said valve member moves toward the seat.

4,659,061

SEAL RING SHUTOFF STEM TIP

Gary W. Scheffel, Streetsboro, Ohio, assignor to Nupro Company, Willoughby, Ohio

Filed Oct. 15, 1985, Ser. No. 787,689
Int. Cl.[4] F16K *1/36*
U.S. Cl. 251—332 **19 Claims**



1. A stem tip seal for a shutoff valve comprising:

a valve member having a first surface adapted of selective abutting engagement with an associated valve seat;

a retaining sleeve received by said valve member having a first seal surface adapted for cooperative sealing engagement with the associated valve seat, said retaining sleeve being axially movable relative to said valve member in response to movement of said valve member toward and away from engagement with the associated valve seat;

a seal member interposed between said valve member and said retaining sleeve defining a second seal surface, said seal member exerting a biasing force urging said retaining sleeve first seal surface to a position interposed between the valve member first surface and the associated valve seat and said second seal surface being biased to an axial position between said valve member first surface and the associated valve seat whereby said first seal surface and said second seal surface are adapted for sealing engagement with the associated valve seat before the valve member first surface abuttingly engages the associated valve seat; and,

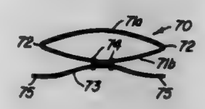
said valve member and said retaining sleeve each having a tapered surface, said tapered surfaces being in spaced-apart facing relation and defining a cavity for confiningly receiving said seal member.

4,659,062

FLOWGRID REGULATOR

Richard J. Mooney, 2552 Neffs La., Salt Lake City, Utah 84109

Filed Mar. 26, 1984, Ser. No. 593,281
Int. Cl.[4] F16K *7/17*
U.S. Cl. 251—61.1 **10 Claims**



1. A bidirectional flowgrid regulator comprising, a valve body that includes a dividing barrier equally separating inlet and outlet flow passages; a throttling plate covering said flow passages and the dividing barrier, said throttling plate having openings therethrough that are holes or slots aligned with the direction of flow through said flow passages to receive fluid therefrom; a diaphram formed of a flexible non-stretchable material that includes a centrally fixed throttling element on one face thereof, said diaphram arranged to enable said throttling element to move into and out of sealing engagement over said openings in said throttling plate; a spring casing attached to said valve body by spring casing attachment means, said spring casing arranged over an upper surface of said diaphram opposite to said throttling element; leaf spring biasing means arranged in said spring casing for urging said throttling element of said diaphram into sealing engagement over said openings in said throttling plate, said leaf spring biasing means composed of a pair of first and second oppositely bowed elliptical spring leaves that face each other and are joined together at their ends to define an ellipse, said second leaf being located between said first leaf and said diaphram, with a third elliptical spring leaf located between said second leaf and said diaphram, said third elliptical leaf having a center portion and two free ends and is connected at said center portion to a center portion of said second leaf of said pair of leaves, each of said third leaf free ends is arranged to contact said upper surface of said diaphram at a location adjacent to an edge of said throttling element and on opposite sides of said dividing barrier; and an inlet means into said spring casing that provides communication between said spring casing and a source of pressurized fluid that provides loading pressure for urging said throttling element of said diaphram into sealing engagement against said throttling plate openings.

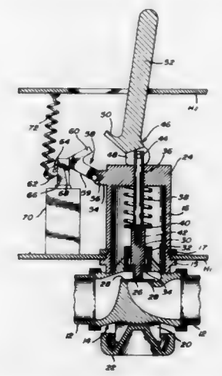
4,659,063

AUTOMATIC FLOOD CONTROL VALVE

Gaston Veillette, 3977 St.Malo, and Claude Giroux, 2891 Rg. St.Malo, both of Ste-Marthe,du Cap, PQ, Canada (G8T 7V7)

Filed Apr. 23, 1986, Ser. No. 854,935
Int. Cl.[4] F16K *31/44*
U.S. Cl. 251—68 **5 Claims**

1. An apparatus for rendering as an automatic shut-off valve, a valve with a sliding stem projecting from a valve body, the apparatus including a jacket adapted to fit over said valve body and to contain the stem, the jacket including a portion extending axially of and containing the stem and having a roof wall normal to the axis of the stem and spaced from the end thereof, the jacket including a plunger slidably mounted to the roof wall and extending therethrough co-axial with the valve stem and adapted to be connected thereto, a compression spring extending between the roof wall and connected to the plunger within the jacket to urge the valve stem to retract within the valve body to close the valve; the plunger pivotally mounting a lever member exteriorly of the jacket, the lever member including a cam head abutting on the roof wall between a plunger extended position and a plunger retracted position, the cam head being offset from the axis of the plunger such that the stem and lever member are normally urged by the spring to a plunger retracted position within the jacket, the lever member including a first lever arm extending radially from the pivot point of the lever member and the plunger, a retaining member pivotally mounted to the exterior of the jacket and including a first member extending from the pivot point, a second arm extending therefrom at an acute angle to the first member and adapted to engage the first lever arm to retain the lever member in a plunger extended position against the urging of the compression spring, the retaining member having a third arm extending from the first member in a direction opposite to the second arm, and connected to a solenoid means whereby the retaining member may be pivoted to disengage the second arm of the retaining member from the first lever arm to allow the plunger to retract the valve stem and thus close the valve.

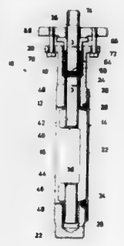


4,659,064

APPARATUS FOR FIXING THE POSITION OF A VALVE ELEMENT SHAFT IN A BORE

William B. Scobie, and Dick R. Dodds, both of Houston, Tex., assignors to Keystone International, Inc., Houston, Tex.

Filed Aug. 1, 1986, Ser. No. 892,785
Int. Cl.[4] F16K *41/02, 1/22*
U.S. Cl. 251—214 **14 Claims**



8. A valve comprising:

a valve body having a flow passage and at least one bore;

a valve stem disposed in said bore, said stem having a plurality of peripherally extending, generally equally spaced, discrete grooves;

a valve closure element disposed in said flow passage to control flow of fluid through said bore, said valve element being secured to said stem;

means providing a stop internally of said bore;

abutment means disposed in said bore and providing at least one inwardly tapered abutment surface, said abutment means being in engagement with said stop means, said valve stem being positioned in said bore such that said

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tapered surface is in generally surrounding relationship to at least one of said grooves;

split ring means received on said valve stem; and

means received in said bore to urge and maintain said split ring in engagement with said tapered surface and said at least one groove whereby said split ring is wedged between said tapered surface and said at least one groove thereby restraining relative axial movement between said valve stem and said valve body and maintaining the position of said valve element in said valve body.

4,659,065

BOLT TENSIONING APPARATUS

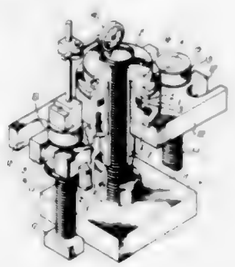
Graham A. Simms, Wolverhampton, England, assignor to Hydra-Tight Limited, Walsall, England

Filed Jan. 23, 1985, Ser. No. 694,159

Claims priority, application United Kingdom, Jan. 28, 1984, 8402326

Int. Cl.⁴ B25B *25/00*

U.S. Cl. 254—29 A **6 Claims**



1. A hydraulic bolt tensioner for applying stress to a bolt including, in combination:

an annular hydraulic jack having a piston and a cylinder,

puller means for attaching to the threads of the bolt to be tensioned, in use the piston operating against the puller means, and

a bridge assembly for supporting the hydraulic jack cylinder,

the bridge assembly having an opening associated therewith enabling access to a nut located on the bolt threads below the puller, the bridge assembly constituted by plate means having opposing sides and including a plurality of outwardly directed notches on each of said opposing sides of the plate means for receiving support leg means adapted to be disposed in different alternative configurations, at least two support leg means symmetrically disposed relative to the piston and cylinder part of the tensioner, each of said support legs provided with baseplate means and at least one of said support leg means being axially-adjustable, the support leg means transmitting the reaction from the piston and cylinder of the bolt tensioner to hardware associated with the bolt which is to be stressed, and providing improved access to the nut on the bolt threads below the puller, said bolt tensioner further including means for measuring the tension developed in the bolt.

4,659,066

SCISSOR JACK

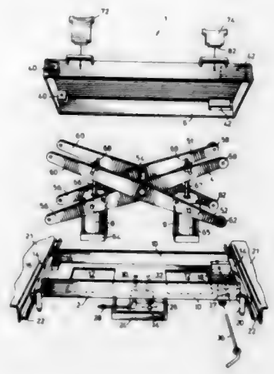
John G. M. VanLierop, Mississauga, Canada, assignor to 554072 Ontario Inc., Mississauga, Canada

Filed Feb. 25, 1985, Ser. No. 704,696

Int. Cl.⁴ B66F *3/00*

U.S. Cl. 254—122 **12 Claims**

1. A jack for use with a lifting device including two parallel support platforms, the jack comprising a base element, a top element, a scissor mechanism between the base and top elements, at least one air piston and cylinder assembly for displacing the top element vertically relative to the base element, four roller assemblies at corners of the jack, each roller assembly comprising one vertical roller, for engaging a side of one support platform to guide the jack therebetween and a horizontal roller for engaging a top surface of a side of one support



platform for horizontal movement of the jack, and spring biasing means mounting the horizontal rollers to the base element, the spring biasing means being such that, when a pre-determined load is applied to the jack, the base element is displaced downwards to contact the support platforms, thereby to restrict further horizontal movement of the jack.

4,659,067

IMPLANT FOR COXOFEMORAL PROSTHESIS

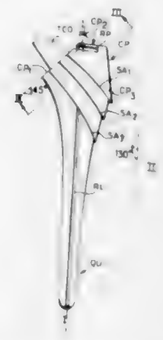
Jacques A. Fournier, 2, Boulevard Edouard Lachaud, 19100 Brive, France

Filed Sep. 10, 1985, Ser. No. 774,586

Claims priority, application France, Sep. 10, 1984, 84 13871

Int. Cl.⁴ A61F *2/32*

U.S. Cl. 623—23 **5 Claims**



1. In a coxofemoral implant comprising

a main body portion,

a lug extending from said body portion for mounting an articulating ball thereto, said lug extending along a first axis upward from said body portion and to one side thereof,

a tapered stem extending downward from said body portion along a second axis,

said stem and a said body portion being adapted for placement within the medullary cavity of a femur after resection at the level of the great trochanter, the improvement in combination therewith comprising

at least one anchoring projection on said body portion, said projection being defined by a surface flaring outwardly in the direction of said stem, said surface terminating at a lower edge having an almond shape, and said edge lying in a plane substantially parallel to said first axis and making an angle of approximately 130° with said second axis,

whereby said prosthesis is easily implanted and whereby downward pressure on the implant brings it into contact with the external cortical femoral wall, so as to distribute stresses over a considerable portion of the femur.

4,659,068

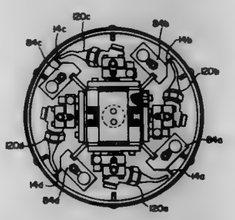
ICE BASKET CRUCIFORM REMOVAL TOOL

Robert E. Meuschke, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 732,123, May 8, 1985, abandoned. This application May 27, 1986, Ser. No. 868,894

Int. Cl.⁴ B23K *7/04*

U.S. Cl. 266—55 **6 Claims**



1. A tool for removing cruciforms from an ice basket having an elongated, generally cylindrical and vertically oriented sidewall, the interior of which is accessible from the upper, open end thereof, each said cruciform extending horizontally within the interior of the ice basket at a position axially displaced from the open, upper end thereof and being attached at its periphery to the interior of said sidewall, comprising:

clamping means for selectively clamping a cruciform to be removed;

means for supporting said clamping means within an ice basket in association with a cruciform to be clamped thereby;

means for selectively actuating said clamping means to clamp the associated cruciform;

means for cutting the cruciform, as clamped by said clamping means, from the ice basket; and

means for mounting said cutting means to said supporting means.

4,659,069

LAMINATED MECHANICAL ELEMENTS

Steven L. Odobasic, 2885 Aurora Ave., #16, Boulder, Colo. 80303

Continuation-in-part of Ser. No. 511,955, Jul. 8, 1983, Pat. No. 4,593,889, which is a continuation-in-part of Ser. No. 412,095, Aug. 27, 1982, Pat. No. 4,521,003. This application Mar. 20, 1985, Ser. No. 714,188

Claims priority, application United Kingdom, Sep. 26, 1984, 8424246

Int. Cl.⁴ B60G *11/18*; B64C *25/64*; F16F *1/16*

U.S. Cl. 267—57.1 A **21 Claims**

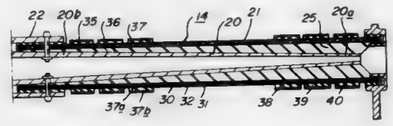
1. A structural member for use in connecting structural elements, comprising:

a flexurally stiff elongate beam having a predetermined torsional stiffness about a longitudinal axis,

an axially stiff tube-like component surrounding said beam and extending therealong in spaced relation therewith for at least a portion of its length, said tube-like component including at least one open section member at least partially extending around said axis and having a pair of spaced longitudinal edges movable lengthwise relative to one another during application of torque, said tube-like component having a torsional stiffness lower than the torsional stiffness of said beam

first connecting means adapted to connect both said beam and tube-like component to one of said structural elements,

second connecting means rotatable about an axis coaxial



with said longitudinal axis and adapted to connect said tube-like component to another of said structural elements, and

bearing means located between at least one portion of said beam and said tube-like component for permitting an end of said tube-like component to twist relative to said beam when torque is applied to said end of said tube-like component and for permitting said second connecting means to transfer shear loads to said beam,

whereby the beam and tube-like component cooperate with the bearing means therebetween to provide a connection characterized by low torsional stiffness, high flexural stiffness and high shear resistance.

4,659,070

AIR SUSPENSION

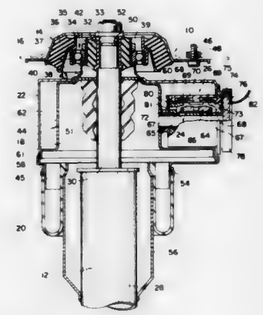
Shuuichi Buma, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Nov. 30, 1984, Ser. No. 677,027

Claims priority, application Japan, Dec. 14, 1983, 58-191487[U]

Int. Cl.⁴ F16F *9/08*

U.S. Cl. 267—64.25 **9 Claims**



1. An air suspension comprising:

a shock absorber;

a main air chamber defined by a first housing and a diaphragm to surround the shock absorber;

an auxiliary air chamber defined by said first housing and a second housing to communicate to said main air chamber and released from a spring action when shut off from the main air chamber;

a valve unit capable of affording and shutting off communi-

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cation between said main and auxiliary air chambers, the valve unit being disposed within a region defined by said first and second housings; and

a means for operating the valve unit compulsorily

4,659,071

PROCESS FOR PRODUCING A PLASTIC LEAF SPRING, AS WELL AS A PLASTIC LEAF SPRING APPROPRIATELY MANUFACTURED ACCORDING TO THIS PROCESS

Herbert Woltron, Moedling, Austria, assignor to Isosport Verbundbauteile Ges. m.b.H., Eisenstadt, Austria

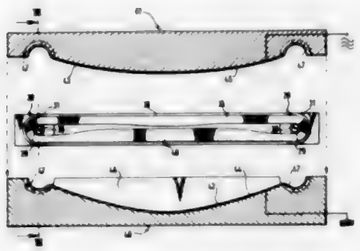
PCT No. PCT/EP85/00076, § 371 Date Oct. 16, 1985, § 102(e) Date Oct. 16, 1985, PCT Pub. No. WO85/03987, PCT Pub. Date Sep. 12, 1985

PCT Filed Mar. 1, 1985, Ser. No. 793,695

Claims priority, application Austria, Mar. 2, 1984, 711/84; Oct. 25, 1984, 3417/84

Int. Cl.[4] B29C *67/14*, *67/18*; F16F *1/18*, *1/36*

U.S. Cl. 267—149 15 Claims



1. A process for producing a leaf spring of elongated shape of variable thickness over its length having a leaf spring body provided with two ends which is composed at least in the essential springy sections of a fiber-reinforced plastic material in which high-strength reinforcing fibers pass at least approximately in the direction of the maximum extension of the spring material occurring under spring loads, and in which spring-eyes are appropriately integrated in the leaf spring body at the spring ends comprising forming a continuous web (**9**) comprised of reinforcing fibers in the form of fiber rovings or fibrous tissues, with the reinforcing fibers appropriately impacted or impregnated with a hardenable plastic substance, placing intermediate layer pieces (**37**) on the continuous web (**9**), winding the continuous web (**9**) in several layers into a continuous reel (**35**) on a rotating pick-up device (**27**) with at least two pick-up elements (**28**), whereby the said intermediate layer pieces (**37**) arrange themselves in the continuous reel (**35**) between contiguous superposed continuous web layers (**36**), placing the continuous reel (**35**) together wiht other components forming the leaf spring into a mold having a molding chamber with a cylindrical shaped contact area, so that the continuous reel (**35**) adjoins along essentially its entire periphery the cylindrical-shaped contact area of the molding chamber whereby appropriately hollow spaces are still present between reinforcing fibers in the molding chamber, optionally filling thereafter the said hollow spaces if present by the introduction of a hardenable plastic substance, solidifying the plastic material in the mold and curing the latter to form a leaf spring blank.

4,659,072

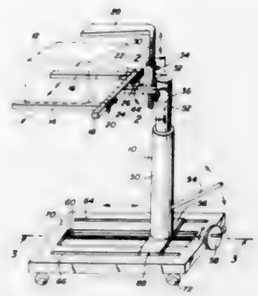
KNITTING MACHINE HEAD EXTRACTOR

Roberto De La Rosa, 3038 Atlantic Ave., Brooklyn, N.Y. 11208

Filed Apr. 9, 1984, Ser. No. 598,068

Int. Cl.[4] B23K *7/10*

U.S. Cl. 269—17 8 Claims



1. A knitting machine head extractor for flat knitting machines, comprising in combination:

(a) a heavy stable base on roller casters;

(b) means for supporting knitting machine heads of varying width, including two fork rails placed parallel to each other which support said knitting head, wherein said fork rails are attached to a fork lift cross arm, and means for moving each of said fork rails independently of the other;

(c) means for moving said knitting machine head laterally in a direction parallel to a horizontal plane;

(d) means for clamping said knitting machine head to said knitting meachine head extractor, including a head clamp, a perpendicular head clamp extension arm, and an extension arm socket with associated clamping lock, whereby said head clamp can be adjusted independently of said fork rails;

(e) means for raising and lowering said knitting machine head; and

(f) means for rotating said knitting machine head about a horizontal axis while said knitting machine head remains electrically connected therby allowing direct access to the underside of said knitting machine head while said knitting machine head is operable, and means for restricting said rotation to a limited arc to prevent the knitting head from sliding off the fork rails.

4,659,073

DATA READING APPARATUS

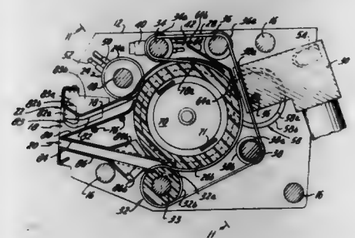
George H. Leonard, Darien, Conn., assignor to GTech Corporation, Providence, R.I.

Filed Nov. 21, 1983, Ser. No. 553,846

Int. Cl.[4] B65H *5/06*

U.S. Cl. 271—3 17 Claims

1. Data reading apparatus including a reading head, entry and exit throats at a common location and sheet-feeding means for carrying inserted sheets continuously along a path from said entry throat in an initial direction, past said reading head and out of said exit throat in a direction approximately opposite the initial direction, said sheet-feeding means including a drum for supporting a sheet opposite the reading head, said drum being movable toward and away from a reading face of said reading head, gaging means cooperating with both said reading head and said drum for limiting the approach of the



drum toward the reading face, and spring means for biasing the drum toward the reading face.

4,659,074

PASSIVE-TYPE TREADMILL HAVING AN IMPROVED GOVERNOR ASSEMBLY AND AN ELECTROMAGNETIC SPEEDOMETER INTEGRATED INTO THE FLYWHEEL ASSEMBLY

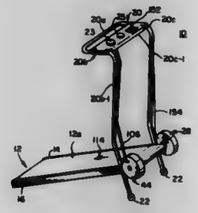
Charles M. Taitel, and Janice B. Taitel, both of Parsippany, N.J., assignors to Landice Products, Inc., Dover, N.J.

Filed Mar. 14, 1985, Ser. No. 711,844

The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.

Int. Cl.[4] A63B *23/06*

U.S. Cl. 272—69 10 Claims



1. A governor assembly for use in treadmills and the like, comprising a rotatable axially movable member;

a governor spring mounted for rotation in said rotatable member;

bias means for normally biasing said rotatable axially movable member in a first direction;

said rotatable axially movable member having a free end;

a pivotally-mounted cam member movable between first and second end positions and having a diagonally-aligned cam surface engageable with the free end of said rotatable axially movable member and limiting movement thereof in said first direction in accordance with the angular orientation of said cam member between said first and second end positions;

said spring having a plurality of flexible integral projections each extending radially outward from the axis of rotation of the governor spring;

each projection having at least one intermediate arm portion extending diagonally outwardly from said axis of rotation;

a brake pad secured to the free end of each of said projections;

said diagonally-aligned intermediate portions forming an angle with the imaginary rotational axis of said governor spring of less than 90°, when said governor spring is stationary, said projections being urged in a direction to increase said angle as a function of increasing rotational speed of said governor spring, the free ends of said projections defining a circular path;

a stationalry member having an annular surface surrounding the imaginary axis of rotation of said projections and positioned a spaced distance from the brake pads on said projections when said governor spring is stationary and adapted to be engaged by sasid brake pads when said governor spring is rotated at a predetermined angular velocity, the value of said angular velocity being a function of the spacing between the brake pads and the stationary surface when the governor spring is statinary, being adjusted by said cam member.

4,659,075

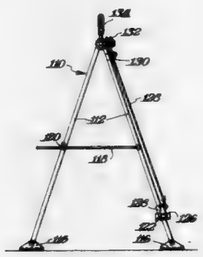
DEVICE FOR SIMULATION OF CLIMBING

William T. Wilkinson, c/o Connolly and Hutz, P.O. Box 2207, Wilmington, Del. 19899-2207

Division of Ser. No. 541,879, Oct. 14, 1983, which is a continuation-in-part of Ser. No. 388,881, Jun. 16, 1982, Pat. No. 4,561,652, which is a continuation-in-part of Ser. No. 235,419, Feb. 17, 1981, Pat. No. 4,340,218. This application Dec. 11, 1985, Ser. No. 807,797

Int. Cl.[4] A63B *21/00*

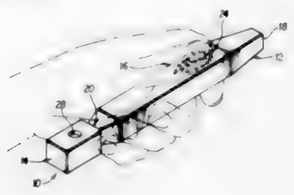
U.S. Cl. 272—70 4 Claims



1. A device for the continuous simulation of climbing comprising a pair of upstanding A-shaped frames pivotally connected at their upper ends to a bridging member, right step means mounted to one of said frames for up and down movement in accordance with the user selectively applying weight on the right foot of the user which in turn is placed on said right step means, left step means mounted to the other of said frames juxtaposed said right step means for up and down movement in accordance with the user selectively applying weight on the left foot of the user which in turn is placed on said left step means, each of said A-frames comprising a pair of legs interconnected by adjustable locking means for permitting said legs to be juxtaposed each other during the inactive condition of said device and for varying the angle between said legs during the operative condition of said device to control the angle of climb of the user, a sleeve slidably mounted on one leg of each of said frames, each of said step means being a step mounted in a cantilevered manner to a respective one of said sleeves, resistance means reacting against said right step means and said left step means opposing the force applied by the user selectively stepping on said right step means and said left step means, a cable adjustably secured at one end to each of said sleeves in such a manner that the effective length of said cable may be varied to control the height of its respective step, and said resistance means reacting against said cable to thereby provide a resistance force to said steps.

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4,659,076
CONSTRUCTION OF HANDBAR FOR RUNNERS
Peter Z. Valentine, 55 Blanche St., Cambridge, Mass. 02139; Franco Vitaliano, Boston, and Ivor S. Smith, Brookline, both of Mass., assignors to Peter Z. Valentine, Cambridge, Mass.
Filed May 14, 1984, Ser. No. 609,648
Int. Cl.⁴ A63B *23/00*
U.S. Cl. 272—93 **16 Claims**



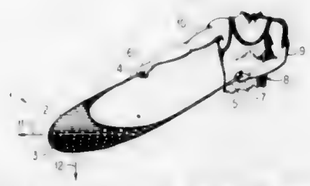
1. A handbar adapted to be held in the hand for use in exercise to stabilize hand movement through both visual and tactile stimulation to thereby increase balance and relaxation during exercise, said handbar comprising a body elongated in length and of overall substantially polygonal outline in sections perpendicular to the longitudinal axis of said body, said body having first and second dissimilar contoured ends, a central region between said ends of an outline substantially throughout its length both concentric and coextensive with the outline of one of said ends and discrete edges around said body and along its length which provide a tactile delineation of each side surface and said polygonal outline and regions along said length, a roughened area located within at least one side surface, said roughened area being located in a lengthwise off-center position and having an overall outline which substantially conforms to the size of a thumbprint, and wherein the side surfaces otherwise are overall substantially relatively smooth and continuous.

4,659,077
EXERCISE DEVICE
Edward J. Stropkay, Chesterland, Ohio, assignor to Fitness Quest, Inc., Canton, Ohio
Filed Sep. 30, 1985, Ser. No. 781,668
Int. Cl.⁴ A63B *69/18, 23/06*
U.S. Cl. 272—97 **19 Claims**



1. An exercise device including:
(a) a base frame having front and rear ends and a spaced pair of parallel elongated tracks extending generally between said ends;
(b) a foot plate movably mounted on each of the tracks for reciprocating movement along said tracks;
(c) roller means rotatably mounted at each of the ends of the frame;
(d) a pair of endless flexible elements each extending along a respective one of the tracks and about the roller means;
(e) cam means mounted on each of the foot plates and engageable with a respective one of the flexible elements for drivingly connecting the foot plate to the respective flexible element upon movement of the foot plate in a first direction and for disengaging the foot plate from said flexible element upon movement of the foot plate in an opposite second direction; and
(f) brake means for providing resistance to the movement of the flexible elements in the said first direction.

4,659,078
FLUID DYNAMIC EXERCISER
Victor S. Blome, 29 Sidney Dr., Savannah, Ga. 31406
Filed Sep. 9, 1983, Ser. No. 530,702
Int. Cl.⁴ A63B *21/00*
U.S. Cl. 272—128 **11 Claims**



1. A device for use by a person for dynamically exercising muscles comprising:
an elongated substantially cylidrically shaped flexible enclosure which decreases in diameter in all radial directions toward each end to a point, each end of said enclosure being pleated into a closed condition by being folded over onto itself many times with the folds being in substantial alignment with the axis of the enclosure;
first and second flexible holding strap means operable to be held by said person in his left and right hands, respectively, said strap means including end portions which fit around the pleated ends of said enclosure;
first and second connecting means securing the ends of said first and second strap holding means, respectively, around the opposite pleated ends of said flexible enclosure, and
a liquid only partially filling said flexible enclosure whereby said flexible enclosure can easily bend and wherein movement of said person's hands holding said holding means causes said liquid to move within said flexible enclosure resulting in dynamically exercising said person's muscles.

4,659,079
BOWLING TRAINING AID AND METHOD FOR USING SAME
William R. Blanchard, 1713 Dixon Blvd., Apt. 148, Cocoa, Fla. 32922
Filed Jul. 26, 1985, Ser. No. 759,158
Int. Cl.⁴ A63B *69/00;* **B65D** *85/00*
U.S. Cl. 273—54 B **15 Claims**



1. A bowling training aid comprising: a handle; at least two loops of flexible material adapted to receive a bowling ball,

said loops intersecting each other at two opposing portions of each loop comprising, respectively, a first intersection and a second intersection. said handle connected to at least one loop proximate said first intersection; means for holding said aid stationary upon a planar surface; and fastening means. associated with at least one of said loops. for opening and closing said loop to allow insertion and removal of a bowling ball.

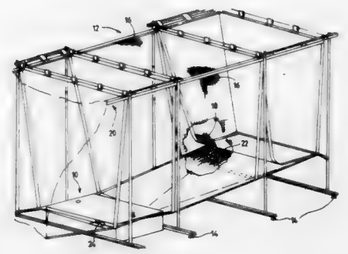
4,659,080
RACQUET HANDLE
Leo D. Stoller, 3113 N. Central Ave., Chicago, Ill. 60634
Filed Jun. 20, 1983, Ser. No. 505,779
Int. Cl.⁴ A63B *49/08*
U.S. Cl. 273—75 **12 Claims**

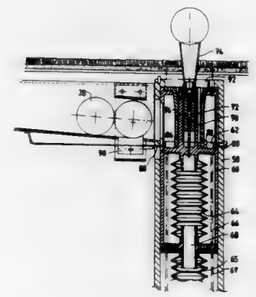


1. A ball racket comprising a frame having a generally oval shape head having a ball impinging portion having major and minor axes, said head being connected to an offset handle which in angularly disposed by 13° from the major axis of said ball impinging portion and lying in the same plane as the ball impinging portion.

4,659,081
GOLF PRACTICE APPARATUS
James L. Cook, Kirkcaldy, United Kingdom, assignor to Cooxint Limited, Great Britain
PCT No. PCT/GB84/00065, § 371 Date Oct. 29, 1984, § 102(e) Date Oct. 29, 1984, PCT Pub. No. WO84/03448, PCT Pub. Date Sep. 13, 1984
PCT Filed Feb. 29, 1984, Ser. No. 668,726
Claims priority, application United Kingdom, Mar. 2, 1983, 8305734
Int. Cl.⁴ A63B *57/00*
U.S. Cl. 273—201 **10 Claims**

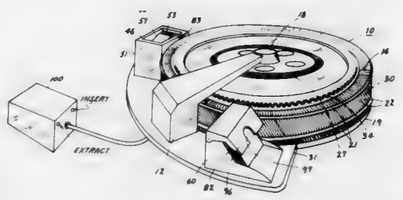
1. Apparatus for the practice of golf, comprising a platform, a tee movable through an opening in the platform between an upper position projecting above the platform and a lower position below the platform, a chamber for a supply of golf balls, means for freeing one ball at a time to be delivered to and squarely positioned on the tee when in said lower position, a pneumatic servo unit mounting the tee, a master pneumatic unit connected to the servo unit by a conduit and moveable by a user to produce a pressure difference causing movement of the servo unit, the pneumatic system comprising the master unit, the servo unit and the conduit including a valve which allows free flow of air in one direction and restricted flow via a calibrated orifice in the other direction, movement of the tee to its upper position being controlled by air flow through the





calibrated orifice such that the tee decelerates smoothly to its upper position.

4,659,082
MONTE VERDE PLAYING CARD DISPENSER
Joel S. Greenberg, Princeton, N.J., assignor to Harold Lorber, Dresher, Pa.
Filed Sep. 13, 1982, Ser. No. 417,384
Int. Cl.⁴ A63F *1/12*
U.S. Cl. 273—149 R **13 Claims**



13. A playing card shuffling apparatus comprising movably mounted storage means having a plurality of compartments for holding playing cards, and card supply means for inserting cards to be shuffled into selected said compartments and for extracting from selected said compartments cards to be dealt as said compartments are brought into registration therewith upon movement of said storage means.

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4,659,083
GOLF CLUB WITH CONVERGING DIRECTIONAL INDICIA

Harry Sacsepanski, 755 Oakleigh, N.W., Grand Rapids, Mich. 49504

Filed Oct. 16, 1985, Ser. No. 787,991
Int. Cl.[4] A63B *53/00, 69/36*
U.S. Cl. 273—164 8 Claims



1. A golf club having a handle, shaft and a head with a striking face and a top surface extending from said face, wherein the improvement comprises:

directional indicia incorporated in said top surface, said indicia including groups of line elements converging toward an axis perpendicular to said face, and disposed so that projections of said lines intersect said axis in front of said face.

4,659,084
GOLF SWING TRAINING APPARATUS

Michael C. Vuick, Pittsburgh, Pa.

Continuation of Ser. No. 564,572, Dec. 22, 1983, abandoned, which is a continuation-in-part of Ser. No. 386,533, Jun. 9, 1982, abandoned, which is a continuation-in-part of Ser. No. 364,506, Apr. 1, 1982, abandoned. This application Aug. 16, 1985, Ser. No. 766,911
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—183 B 8 Claims



1. Golf swing training apparatus for positioning a golfer's legs comprising

(a) a U-shaped base member on which the apparatus is supported, said base member defining an area within which a golfer can stand and address a golf ball,

(b) a boom adjustably supported by said base member and adapted to be positioned behind and toward the place where the golfer stands within said area while addressing a golf ball,

(c) a between-knees contacting member carried by the extended end of the boom,

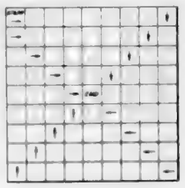
(d) said boom being adjustable to position said between-knees contacting member between the golfer's knees when he addresses the ball so that on his swing one side of said member touches the inside of the golfer's left knee on his backswing only and the other side thereof touches the inside of the golfer's right knee on his downswing only.

4,659,085
BOARD GAME MATCHING NUMBERED SIDES OF RECTANGULAR PIECES

Joseph DeVries, 6855 Thorndale Ave., Chicago, Ill. 60631

Filed Sep. 27, 1985, Ser. No. 781,033
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—236 1 Claim





1. A board game with 81 playing spaces and an equal number of tiles, of which 11 tiles are blank and 70 have a number which is 0 or an integer from 1 to 6 on each of their sides composed of: a set of seven tiles having the numbers {0,0,0,0}, {0,0,0,1}, {0,0,0,2}, {0,0,0,3}, {0,0,0,4}, {0,0,0,5}, {0,0,0,6}; three sets of six tiles in each set, having numbers {0,1,0,1} to {0,6,0,6}, {0,1,1,1} to {0,6,6,6} and {1,1,1,1} to {1,1,1,6}, respectively; three sets of five tiles in each set, having the numbers {1,2,1,2} to {1,6,1,6}, {1,2,2,2} to {1,6,6,6} and {2,2,2,2} to {2,2,2,6}, respectively; three sets of four tiles in each set, having the numbers {2,3,2,3} to {2,6,2,6}, {2,3,3,3} to {2,6,6,6}, and {3,3,3,3} to {3,3,3,6}, respectively; three sets of three tiles in each set, having the numbers {3,4,3,4} to {3,6,3,6}, {3,4,4,4} to {3,6,6,6}, and {4,4,4,4} to {4,4,4,6}, respectively; three sets of two tiles in each set, of {4,5,4,5} and {4,6,4,6} and {4,5,5,5}, {4,6,6,6}, and {5,5,5,5} and {5,5,5,6}; and three unit sets of {5,6,5,6}, {5,6,6,6}, and {6,6,6,6}.

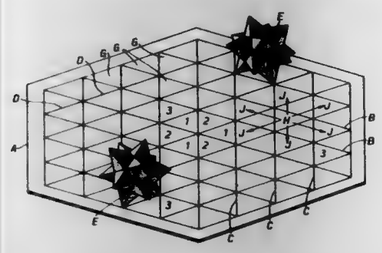
4,659,086
BOARD GAME APPARATUS

Martin J. Colborne, 92B Sutherland Avenue, Biggin Hill, Kent, England (TN16 3HG)

PCT No. PCT/GB84/00277, § 371 Date Apr. 8, 1985, § 102(e) Date Apr. 8, 1985, PCT Pub. No. WO85/00757, PCT Pub. Date Feb. 28, 1985
PCT Filed Aug. 9, 1984, Ser. No. 723,958
Claims priority, application United Kingdom, Aug. 9, 1983, 8321388
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—242 11 Claims

1. Apparatus for playing a game, comprising at least one piece that is a concave polyhedron and has a plurality of vertices that coincide with the vertices of a notional regular polyhedron the faces of which notional polyhedron are capable of tessellating a plane surface, and a board which is marked out with polygons and adjoining one another side-to-side at least

some of the polygons on the board being of identical size and shape to the mirror images of respective ones of the faces of the said notional polyhedron, the polygons being so arranged on the board and the notional polyhedron being such that the

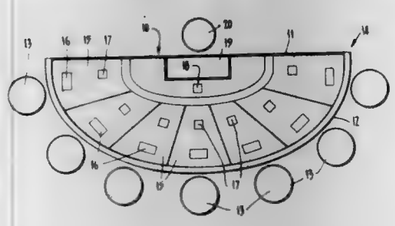


piece can be rolled without slipping on the board with at least two vertices in contact with the board at all times in such a manner that whenever three or more vertices of the piece are in contact with the board a face of the notional polyhedron coincides with a polygon of the board.

4,659,087
CASINO GAME

Margaret Shen, and Barry R. Forrester, both of 21 Bent Street, Sydney, New South Wales, 2000, Australia

Filed Dec. 9, 1985, Ser. No. 806,647
Int. Cl.[4] A63F *1/00*
U.S. Cl. 273—274 8 Claims



1. A card game for a number of players in which each player and the bank is dealt four cards which the player has to make into two groups of two having a highest value, the value being achieved either by adding the face value of the cards, with the court cards having a nominated face value of ten, and disregarding the ten digit should there be one, each player playing against the bank, the player having a winning hand, if both of his pairs are higher than both of the bank pairs, a losing hand, if both of his pairs are lower than both of the bank pairs, and reaching a stand-off if one pair is lower and one pair higher than both of the bank pairs.

4,659,088
ELECTRONIC OPTICAL TARGET SYSTEM MOUNTED IN AN ENCLOSURE

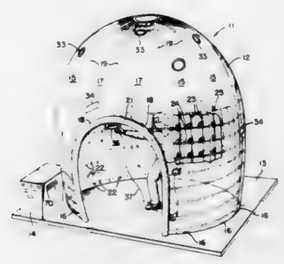
Shirley L. Lee, 5017 Pleasant View Ave., Pocatello, Id. 83202; Michael H. Parish, Rte. 1, Box 1516, and Gary C. Rogers, 210 Hillview Ave., both of Selah, Wash. 98942

Filed Apr. 22, 1985, Ser. No. 725,395
Int. Cl.[4] F41J *5/02*
U.S. Cl. 273—310 18 Claims

1. An electronic game apparatus including a plurality of electrically energizable target elements and player operable target detecting means for detecting when a target element is energized and said detecting means is aimed thereat, comprising:

means forming an enclosure of sufficient dimension to enclose a person therewithin;

a plurality of active elements arranged on a plurality of matrices and mounted at spaced locations on the inner surface of said enclosure wherein each of said matrices is of a dimension at least two by two and comprises a plurality of elongated, intersecting conductors mounted to said enclosure, said elements comprising said target elements



and being selectively energizable for providing a visual signal to a person positioned in said enclosure;

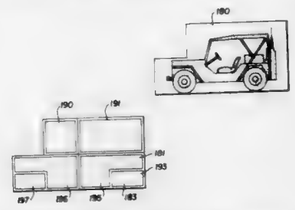
optical sensing means comprising said target detecting means for producing an electrical signal in response to a visual signal generated by an energized active element; and

control means connected to said active elements and adapted to receive a signal from said means for producing an electrical signal for controlling selective activation of said active elements and monitoring said electric signal generating means to detect sensing of said visual signal thereby.

4,659,089
MULTI-SPECTRAL TARGET

Stephen P. Rosa, Bethesda, Md., assignor to TVI Energy Corporation, Beltsville, Md.

Continuation of Ser. No. 555,800, Nov. 28, 1983, Pat. No. 4,546,983, which is a continuation-in-part of Ser. No. 302,878, Sep. 18, 1981, Pat. No. 4,422,646. This application Sep. 30, 1985, Ser. No. 782,245
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.[4] F41J *9/13*
U.S. Cl. 273—348.1 9 Claims



4. A target simulating a military asset comprising

(A) a support frame; and

(B) a substrate having front and rear sides, supported by said support frame, said front side having a visual representation of the miliary asset thereon; and

(C) a plurality of modules each of which is capable of emitting an infrared signal when an electric current is passed therethrough and is supported adjacent another on said rear side of said substrate in correspondence with said visual representation.

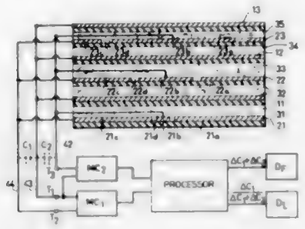
VOL 1077 ISS 3 AP 21 1987 UMI

4,659,090

ELECTRICAL DEVICE FOR INDICATING THE FORCE AND/OR LOCATION OF TARGET IMPACTS OR OTHER FORCES

Yosef Kustanovich, Rehovot, Israel, assignor to Cybertronics Ltd., Rishon Lezion, Israel

Filed Aug. 21, 1985, Ser. No. 767,914
Claims priority, application Israel, Aug. 21, 1984, 72737
Int. Cl.⁴ F41J *5/04*
U.S. Cl. 273—376 **18 Claims**



1. An electrical device capable of indicating the magnitude and location of an applied force comprising at least three layers including:

a continously-conductive electrode layer of electrically-conductive material;

a selectively-conductive electrode layer having a central area of electrically-conductive material and at least one circumscribing area of electrically-conductive material circumscribing said central area and separated therefrom by a gap;

a pressure-sensitive impedance layer between each two electrode layers and forming a first electrical impedance between said continuously-conductive electrode layer and said central area of the selectively-conductive electrode layer, and a second electrical impedance between said continuously-conductive electrode layer and said circumscribing area of said selectively-conductive layer;

said pressure-sensitive impedance layer being compressively-deformable upon application of said force such as to change the values of said first and second electrical impedances,

and means for measuring the values of said first and second electrical impedances, thereby providing an indication of the magnitude and location of said force.

4,659,091

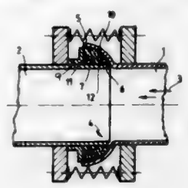
SEALING RING FOR SEALING AN ARTICULATED CONNECTION

Ernst Baasner, Monheim; Klaus Lönne, and Klaus-Peter Majewski, both of Burscheid, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Continuation of Ser. No. 531,452, Sep. 12, 1983, abandoned. This application May 3, 1985, Ser. No. 730,243
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234376
Int. Cl.⁴ F16J *15/12;* **F16L** *27/06;* **B32B** *15/02*
U.S. Cl. 277—1 **32 Claims**

1. A method for making a temperature resistant sealing ring for sealing an articulated connection between two components of an exhaust system of an internal combustion engine, comprising the steps of:

forming a mixture which includes metal fibers and particles of a sliding agent, said metal fibers having an average length of between about 2 and about 8 mm and having an



average diameter of between about 0.05 mm and about 0.6 mm; and

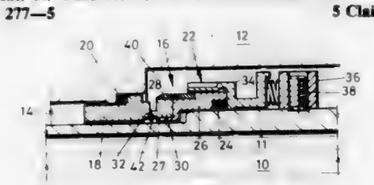
compressing said mixture.

4,659,092

MECHANICAL SEALS

Neil M. Wallace, Manchester, England, and Jacobus A. M. ten Houte de Lange, Wassenaar, Netherlands, assignors to Flexibox Limited, Manchester, England

Filed May 16, 1985, Ser. No. 735,083
Claims priority, application United Kingdom, May 19, 1984, 8412875
Int. Cl.⁴ F16J *15/16, 15/34, 15/54;* **F16B** *4/00*
U.S. Cl. 277—5 **5 Claims**



1. A mechanical seal for use in sealing a rotary shaft exiting a housing containing fluid to be sealed in the housing, the mechanical seal comprising:

a. a stationary seal element adapted to be sealed in the housing;

b. a rotary seal element adapted to be sealed to the shaft;

c. the stationary and rotary seal elements each having an annular seal face adapted to surround the shaft;

d. means urging the rotary and stationary seal elements toward each other to form a running seal between the annular seal faces; and

e. one of the seal elements including:

i. a portion near an axial end of the seal element defining a carrier;

ii. a spigot on the carrier and axially thereof closer to said end;

iii. a seal face member defining said annular seal face on the one seal element, said seal face member being adjacent the spigot in circumferential abutment with the spigot and axial abutment with the carrier along a radial surface, said seal face member on the one seal element forming said running seal with the other seal element; and

iv. a squeeze ring shrink fitted onto the face seal member and the carrier circumferentially to abut both the face seal member and the carrier and axially to enclose the seal face member.

4,659,093

THREE-PIECE OIL-RING WITH AN INWARD PROTRUSION

Yorishige Maeda, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Oct. 3, 1985, Ser. No. 783,642
Claims priority, application Japan, Nov. 30, 1984, 59-180875[U]; Nov. 30, 1984, 59-251644
Int. Cl.⁴ F16J *9/06*
U.S. Cl. 277—139 **9 Claims**



1. A three-piece oil-ring for deposition in an oil-ring groove of a piston reciprocally positioned in a cylinder comprising:

a pair of axially spaced side rails; and

an expander disposed between said side rails to expand said side rails, said expander extending in a circumferential direction and having waves in a radial direction, the ends of said expander abutting, said expander having flat portions at radially inner portions of said waves and bent portions at radially outer portions of said waves, side rail engaging portions being integrally formed at opposite axial sides of each of said flat portions so as to contact an inner surface of said paired side rails, and said expander further including a protrusion protruding radially inwardly from each of said flat portions said protrusion being adapted to extend a portion of the distance between said flat portion and said groove when disposed therein and including a cylindrical portion formed by pressing a central portion of said flat portion, said cylindrical portion including an oil return hole extending therethrough.

4. A three-piece oil-ring for deposition in a oil-ring groove of a piston reciprocally positioned in a cylinder comprising:

a pair of axially spaced side rails; and

an expander disposed within said side rails to expand said side rails, said expander extending in a circumferential direction and having waves in a radial direction, the ends of said expander abutting, said expander having flat portions at radially inner portions of said waves and bent portions at radially outer portions of said waves, side rail engaging portions being integrally formed at opposite axial sides of each of said flat portions so to contact an inner surface of said paired side rails, at least one of said flat portions further including two circumferentially spaced, axially extending slits, the band-like portion defined between said slits being distored so as to form a protrusion which protrudes radially inward from said flat portion.

4,659,094

CENTERING/POSITIONING APPARATUS FOR WAFER AND VACUUM CHUCK

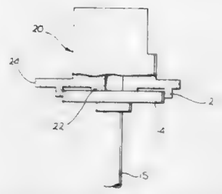
Mark Leonov, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 3, 1985, Ser. No. 730,374
Int. Cl.⁴ B23B *31/00;* **G01B** *5/08*
U.S. Cl. 279—1 L **4 Claims**

1. A device for establishing a desired location for the placement of guides for positioning a semiconductor wafer on a vacuum chuck comprising:

a disc shaped member having a first and second face, said disc shaped member having a circumference substantially identical to that of said semiconductor wafer;

said first face including a cylindrical handle extending therefrom, said handle for placing said device on said chuck, said handle having a longitudinal bore therethrough extending through said disc shaped member;



said second face contacting said chuck, said second face having an annular ring thereon, said ring having an internal circumference substantially identical with the external circumference of said chuck, for retaining said device on said chuck at said desired location;

a circular mesa extending from said second face, said mesa providing a level surface for contacting said chuck, said mesa disposed within said annular ring and concentric with said ring and said bore, said mesa, chuck and disc shaped member being in a parallel relationship;

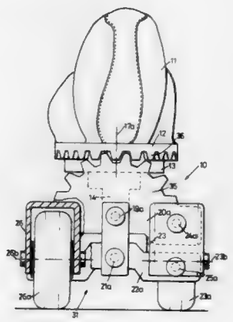
whereby said desired location for said guides is defined.

4,659,095

ROLLER SKATE ARRANGEMENT

Hjalmar S. Halvorsen, Welhavensgt. 13, N-5000 Bergen, Norway

PCT No. PCT/NO85/00005, § 371 Date Sep. 17, 1985, § 102(e) Date Sep. 17, 1985, PCT Pub. No. WO85/03644, PCT Pub. Date Aug. 29, 1985
PCT Filed Jan. 24, 1985, Ser. No. 777,782
Claims priority, application Norway, Feb. 21, 1984, 840636
Int. Cl.⁴ A63C *17/02*
U.S. Cl. 280—11.27 **5 Claims**



1. A roller skate comprising

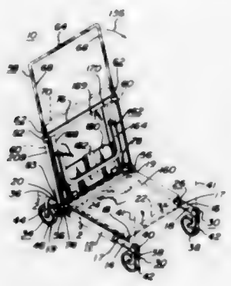
a sole portion;

a pair of bogies supporting said sole portion; each bogie being pivotally mounted about a vertical axis passing through said sole portion, each bogie including a pair of holders, a wheel rotatably mounted in each respective holder about a horizontal axis and a parallelogram pivot arm system connecting said pair of holders to permit lateral tilting of each holder and said wheel therein; and

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control means for controlling pivoting movement of at least a rear one of said wheel bogies, said control means including a first gear wheel secured to said sole portion and a second gear wheel secured to said pivot arm system of said rear bogie and disposed in meshing engagement with said first gear wheel whereby tilting of said sole portion causes tilting of each wheel of said rear bogie and pivoting of said rear bogie about said vertical axis thereof.

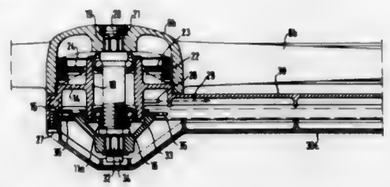
4,659,096
CARRIAGE DEVICE
John Leimgruber, 4822 Seventh Ave., Temple, Pa. 19560
Filed Mar. 6, 1985, Ser. No. 708,808
Int. Cl.⁴ B62B *3/02*
U.S. Cl. 280—39 **17 Claims**



1. A carriage device comprising a base structure, wheel means for movably supporting the base structure having a folded position proximate the base structure and an extended position, handle means for the base structure movable between a folded position proximate to the base structure and an extended position away from the base structure, and wheel positioning means received within and substantially entirely enclosed by the base structure and actuated by the handle means, the wheel positioning means being secured with the wheel means for moving the wheel means between the extended and folded positions as the handle means is moved correspondingly between its extended and folded positions, the base structure comprising a frame having a pair of parallel elongated tubular members with front and rear ends and a plurality of fixtures secured therewith, and the wheel positioning means including a pair of elongated rod elements each having front and rear ends and each being received and substantially enclosed within a respective one of the members and rotatable with the movement of the handle means for moving the wheel means between the extended and folded positions, the rod elements of the wheel positioning means each having gear means which are substantially entirely enclosed by the tubular members and fixtures and are engaged by the handle means for rotating the rod elements wth the movement of the handle means.

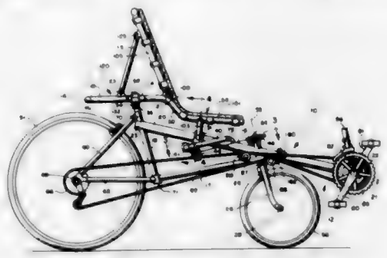
4,659,097
BICYCLE
Gerd Küpper, Bad Salzuflen; Siegfried Zabinski, Bielefeld, and Burghardt Vossen, Gütersloh, all of Fed. Rep. of Germany, assignors to Durkopp System Technik GmbH, Bielefeld, Fed. Rep. of Germany
Filed Aug. 9, 1985, Ser. No. 764,248
Claims priority, application European Pat. Off., Dec. 28, 1984, 84116441.1
Int. Cl.⁴ B62M *9/02*; **B62K** *25/02*
U.S. Cl. 280—281 R **14 Claims**

1. A bicycle comprising:
a bicycle frame;
an identical front and rear wheel;
a front wheel holder designed as a monospar fork rotatably connected to the bicycle frame and tube shaped element attached to said monospar fork inside of which a wheel axle is mounted by means of bearing devices on which axle the front wheel can be attached;
a single arm drive extension connected to the bicycle frame, which drive extension, at its rear end, has a drive device in communication with a rear wheel and which drive extension has a tube shaped element inside of which a wheel axle is mounted by means of bearing devices onto which axle the rear wheel can be attached from one side; and
a brake device;
wherein:



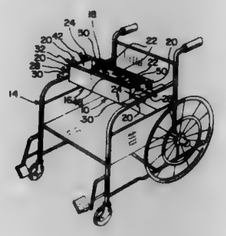
the wheels have wheel hubs which are designed in half shell shapes and are open towards the axle bearing devices, the hubs having a polyhedron shaped axial opening for attaching the wheels onto a tapered axle extension, the wheels being secured by a screw which can be screwed axially into the wheel axle;
the half shell shaped hubs housing a brake device secured to the axle bearing devices, which brake device can be pressed against the inner peripheral surface of the wheel hub in order to brake the bicycle; and
the rear wheel drive being connected to the end of the rear wheel axle opposite to the rear wheel hub inside the drive extension.

4,659,098
SEMI-RECUMBENT BICYCLE
Stephen A. Jacobson, 2719 Payne St., Evanston, Ill. 60201
Filed May 31, 1984, Ser. No. 615,897
Int. Cl.⁴ B62K *3/02*
U.S. Cl. 280—281 LP **35 Claims**



1. A semi-recumbent bicycle comprising:
a single main tube which is straight having a substantially uniform cross-section throughout its length, the axis of said main tube forming an acute angle with the line of the ground such that said main tube is higher at its rear end than at its front end;
means for rotatably supporting a rear wheel, said means for rotatably supporting said rear wheel being connected to the rear end of said main tube; and,
means for rotatably supporting a front wheel such that said front wheel is spaced apart from said rear wheel so that the distance between the centers of the points of contact of said front wheel and said rear wheel with the ground is a distance substantially between about 37 and about 42 inches, said means for rotatably supporting said front wheel being mounted to said main tube at a point on said main tube intermediate the rear end and the front end of said main tube which is closer to the front end than the rear end of said main tube.

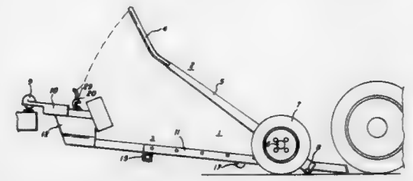
4,659,099
FOOD AND ITEM TRAY FOR A WALKER AND A WHEELCHAIR
Charlotte Malone, 55 W. 4th St., Huntington Station, N.Y. 11746
Filed Mar. 24, 1986, Ser. No. 842,906
Int. Cl.⁴ A47C *7/68*
U.S. Cl. 280—289 WC **3 Claims**



1. A food and item tray for a walker and a wheelchair which comprises:
(a) a lightweight basket having a plurality of mounting clamps for attachment to said walker and said wheelchair, said basket fabricated out of plastic material having an elongated rectangular shape and a large slot in one of longer sides, said mounting clamps including a first set of curved brackets formed extending outwardly from opposite top ends of said basket to engage with framework of said walker and a second set of L-shaped brackets formed extending outwardly from opposite middle ends of said basket to engage with arm rests of said wheelchair;
(b) a removable lightweight housing supported in said basket, said housing having a plurality of built-in various sized compartments for holding items such as dish, cup, silverware and the like which will prevent said items from spilling out therefrom, said housing fabricated out of plastic material having an elongated rectangular shape smaller in length than said basket, said housing having a small drawer in one of longer sides so that when said housing is inserted within said basket said drawer can extend through said large slot and a receptacle is created between end of said housing and said basket for holding a book, newspaper and the like therein; and
(c) a plurality of wing bolts for holding said first set of curved brackets to said framework of said walker and holding said second set of L-shaped brackets to said arm rests of said wheelchair.

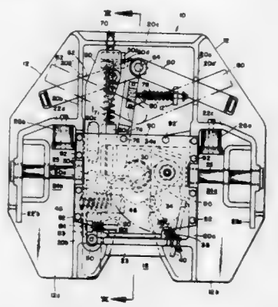
4,659,100
TRAILER
T. L. Welker, 2109 Kessler Ct., Dallas, Tex. 75208
Filed Jan. 21, 1986, Ser. No. 820,024
Int. Cl.⁴ B60P *3/10*
U.S. Cl. 280—414.1 **8 Claims**

1. A trailer comprising a main lever assembly with a first tongue portion, a pair of rearward extensions of said tongue portion and a first rear laterally disposed member connecting said tongue portion and rearward extensions into a semi-rigid frame, said first laterally disposed rear member having a portion adapted in form one part of a hinge; a pair of stub axles severally disposed on said rearward extensions in juxtaposed relation a predetermined distance forward of said hinge part and each having a wheel mounted thereon exteriorly to said extension; a main load-supporting assembly having a second tongue portion adapted for connection to a towing vehicle, a second pair of rearward extensions, a second laterally disposed rear member connecting the rear portions of said second pair of rearward extensions into a rigid load-supporting frame, said second laterally disposed rear member being disposed in mating relation to said first laterally disposed rear member to form a rear hinge movable connecting said main structural assembly



to said main load-supporting assembly; a spring and housing means for positioning said spring between said first tongue portion and said second tongue portion, said spring and housing means including means adapted to interconnect said first tongue portion with said second tongue portion through said spring when said trailer is in condition for towing, to conduct thrust between the tongue portions of said frame assembly and load-supporting assembly through said spring thereby to permit retardably resisted movement therebetween and cushion road-imparted thrust on said wheels when said trailer is in motion.

4,659,101
FIFTH WHEEL
John T. Buckley, Holland, Mich., assignor to Holland Hitch Company, Holland, Mich.
Continuation of Ser. No. 523,439, Aug. 22, 1983, Pat. No. 4,566,715. This application Aug. 15, 1985, Ser. No. 765,794
Int. Cl.⁴ B62D *53/12*
U.S. Cl. 280—434 **3 Claims**



1. A fifth wheel hitch having a bearing plate which is bifurcated toward the rear thereof to form a pair of rearward projections defining therebetween a forwardly converging kingpin-receiving mouth and throat, characterized by:
confinement means on the underside of said bearing plate for forming a jaw-receiving pocket about said throat; said confinement means including a pair of spaced lateral abutment walls astraddle of said throat, and transverse abutments, for defining said pocket; interengaged kingpin-locking jaws in said pocket; and said confinement means

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including jaw retention means at said pocket for normally retaining said jaws in said pocket for operative engagement with a kingpin, and releasable to enable removal of said jaws from said pocket; said jaws including a fixed jaw and a shiftable jaw; said fixed jaw being in engagement with said abutment walls and abutments, thereby peripherally restrained in said pocket against horizontal movement forwardly, rearwardly and sideways; said shiftable jaw being pivotally mounted to said fixed jaw.

4,659,102

FRONT HITCH ASSEMBLY

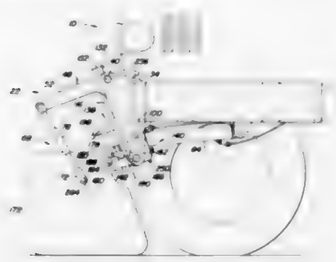
Heinz Stuhrmann, Schwetzingen, and Robert Kryscyk, Ketsch, both of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Nov. 13, 1985, Ser. No. 797,713

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1984, 3442557

Int. Cl.⁴ A01B *63/108, 63/11*

U.S. Cl. 280—481 **13 Claims**



1. A coupling arrangement for attachment to a front end of a vehicle, comprising:

a fixed frame fixed to the vehicle;

an angle lever pivotally coupled to the fixed frame and having first and second legs;

an actuator coupled to one of the legs of the angle lever;

an equipment device including a support member and a guide member projecting therefrom;

an ancillary frame slidably mounted to the fixed frame, the ancillary frame including a guideway for slidably receiving the guide member of the equipment device; and

a coupling strut including means at one end thereof for coupling to the other leg of the angle lever and means at the other end thereof for coupling to the support member of the equipment device.

4,659,103

SELF-LOCKING BINDING PARTICULARLY FOR CROSS-COUNTRY SKIING

Mario Tessaro, Montebelluna, Italy, assignor to MATESS di Mario Tossaro, Montebelluna, Italy

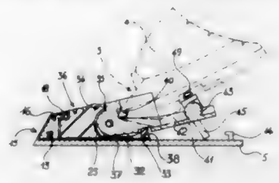
Filed Apr. 2, 1985, Ser. No. 719,394

Claims priority, application Italy, Apr. 11, 1984, 41554A/84

Int. Cl.⁴ A63C *9/18*

U.S. Cl. 280—615 **15 Claims**

1. A self-locking binding particularly for cross-country skiing comprising a plate, an oscillable element, engagement means, release means, spring means and excursion adjustment means, said plate being adapted to be rigidly associated with an upper surface of a ski, said oscillable element being journalled to said plate and adapted for excursion defining oscillatory movement with respect to said plate, said spring means being adapted for biasing said oscillable element towards a plane overlying said plate, said engagement means being adapted for selectively releasably associating at least a toe portion of a cross-country skier's footwear with said oscillable element for co-direction oscillation therewith, said excursion adjustment means being adapted for adjusting said excursion defined by said oscillatory movement of said oscillable element, said release means being adapted for selectively releasing said toe portion of said cross-country skier's footwear from association with said oscillable element, said plate comprising a seat, sides and at least two substantially symmetrical shoulders, said shoulder each having a forward portion, a rear portion, and an upper edge, said shoulders extending upwardly from said sides of said plate, said oscillable element being journalled between said shoulders, on said forward portion of each of said shoulders there being formed, close to said upper edge thereof, a substantially circular hole, on said rear portion of each of said shoulders there being formed an aperture, said seat being formed downwardly on said plate and having a longitudinal extension, said self-locking binding further comprising a foil, said foil having at least two lugs, and at least one grip hook, said lugs being formed anteriorly on said foil, said grip hook



being formed rearwardly on said foil, said seat being adapted for at least partially slideably accommodating said foil, for co-operation with said release means.

5. A self locking binding according to claim 1 wherein said oscillable element comprises a first transverse seat, a first transverse milling and a substantially semi-cylindrical zone having a front portion, and wherein said spring means comprises at least one elastically deformable element adapted for biasing said release means and said oscillable element towards a position overlying said plate, said elastically deformable element having a top rear end, a tab, a bottom rear end and a wedge, said top rear end being attached to said first transverse seat of said oscillable element, said tab being defined at said bottom rear end thereof, said wedge being defined on said tab and adapted for being at least partially, temporarily accommodated in said first transverse milling, said spring means being shaped for mating with said release means.

4,659,104

AUTOMATIC LEVEL CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE WITH FAIL-SAFE SYSTEM THEREFOR

Haruto Tanaka, Yokohama, and Kazunobu Kawabata, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 6, 1985, Ser. No. 795,499

Claims priority, application Japan, Dec. 20, 1984, 59-269305

Int. Cl.⁴ B60G *11/26*

U.S. Cl. 280—707 **19 Claims**

13. A height control system for an automotive vehicle comprising:

a suspension strut disposed between a vehicle body and a vehicular wheel axle;

a first pneumatic chamber associated with said suspension strut and adapted to adjust the vertical separation between said vehicle body and said wheel axle by controlling a pressure therein so as to hold vehicle height at a given height;

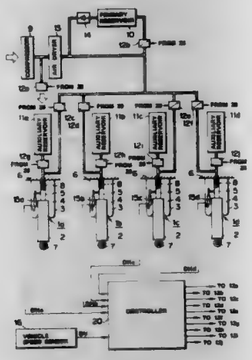
a second pneumatic chamber connected to said first pneumatic chamber through a communication passage;

a pneumatic pressure supply circuit connected to said first pneumatic chamber for introducing and exhausting the pneumatic pressure into and from said first pneumatic

chamber for adjusting the pneumatic pressure within the latter;

a pressure control valve means disposed within said pneumatic pressure supply circuit, for controlling introduction and exhausting of the pneumatic pressure in said first pneumatic chamber;

a damper control valve means disposed within said communication passage for establishing and blocking communication between said first and second pneumatic chambers for adjusting the effective volume of the first pneumatic chamber;



a vehicle height sensor for monitoring vehicle height and producing a vehicle height indicative signal;

a detector responsive to said vehicle height indicative signal for detecting when the vehicle height lies outside of a predetermined height range; and

a controller responsive to said detector detecting said vehicle height outside of said predetermined height range for operating said pressure control valve means so as to adjust vehicle height to within said predetermined height range, said controller also operating said damper control valve means so as to hold said damper control valve means open during vehicle height adjustment.

4,659,105

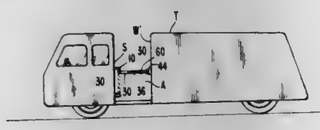
SAFETY BAR

Theodore Zlaylek, Jr., 140 Riverview Ave., Yardley, Pa. 19067

Filed Jan. 17, 1986, Ser. No. 819,666

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 280—748 **12 Claims**



1. A safety bar for protecting the occupant of an emergency vehicle, comprising:

(a) a first bracket having a locking recess, said first bracket being adapted for attachment to a supporting surface located at one side of an area in which said occupant is seated;

(b) a second bracket having a recess adapted for mounting on a supporting surface at the opposite side of said area;

(c) a third bracket adapted to be fixedly mounted upon the supporting surface at the same side of said area as the second bracket;

(d) a tube pivotally connected to the third bracket for swinging movement between a first position in which the tube is aligned with the recess of the first bracket, whereby to extend in front of an occupant seated in said area, and a second position in which the tube is aligned with the recess of the second bracket, whereby to be disposed at one side of and clear of said area;

(e) a locking extension slidably and rotatably mounted in the tube under spring bias tending to engage the same in either of said recesses, said tube having an approximately L shaped slot; and

(f) a handle on the slide projecting through said slot, the L shape of the slot defining communicating, approximately perpendicularly related legs on the slot one of which extends parallel to the length of the tube, the other extending approximately normally to said length, the slide being under spring bias tending to urge the handle toward the second named leg of the slot, said slot having a cam surface against which the handle bears under said spring bias, for normally urging the handle into the second named leg of the slot, thereby to releasably lock the slide within a selected one of said recesses.

4,659,106

SUSPENSION APPARATUS FOR VEHICLE

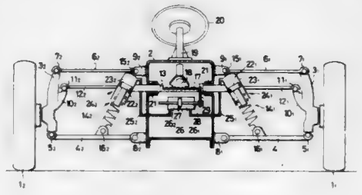
Haruyasu Fujita, Tokyo; Kenji Honma, and Masao Ogawa, both of Shiki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1985, Ser. No. 702,209

Claims priority, application Japan, Feb. 25, 1984, 59-33337

Int. Cl.⁴ B62D *9/02*

U.S. Cl. 280—772 **2 Claims**



1. A suspension apparatus for a vehicle provided between a pair of left and right wheels of the vehicle and the vehicle body, comprising

telescopic members integrally connected to suspension springs and expanded and contracted by means of fluid pressure,

fluid passages for feeding fluid pressurized by a pump to said telescopic members and discharging the fluid from said telescopic members,

controlling valves provided in said fluid passages, each valve having a cylindrical inner valve member, a cylindrical outer valve member rotatably fitted on said inner valve member and a main body containing and supporting said inner and outer valve members for rotation respectively,

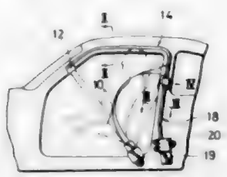
means for connecting each said inner valve member to a steering mechanism to rotate said inner valve member in accordance with the movement of said steering mechanism, and

means for connecting each said outer valve member to one of said telescopic members to rotate said outer valve member in accordance with the movement of said telescopic member relative to the vehicle body,

whereby the controlling valves are connected to the steering mechanism and to said telescopic members to control said valves not only with respect to the steering but also with respect to the movement of the telescopic members relative to the vehicle body so that the vehicle body is caused to decline toward turning center side due to telescopic movement of said telescopic members in accordance with a steering operation.

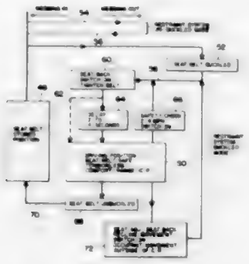
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4,659,107
AUTOMATIC SEAT BELT SYSTEM
Yoshihiro Yokote, Yokohama, Japan, assignor to NSK-Warner K.K., Tokyo, Japan
Filed Oct. 22, 1984, Ser. No. 662,903
Claims priority, application Japan, Nov. 1, 1983, 58-168388[U]
Int. Cl.⁴ B60R *21/02*
U.S. Cl. 280—804 **7 Claims**



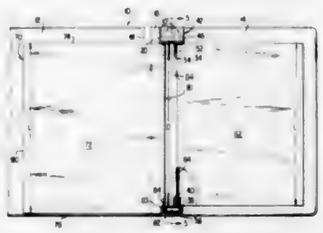
1. An automatic seat belt system including a guide rail arranged along a predetermined path within the room of an automobile, a runner provided movably on the guide rail, and a drive member for causing the runner to move in such a way that a webbing fastened to the runner is displaceable between an occupant restraining position and an occupant-non-restraining position, the system further comprising:
a plurality of brackets provided in contact with the outer wall of the guide rail;
means for securing the brackets on the body of the automobile; and
means for positioning the brackets at desired locations relative to the length of the guide rail, said positioning means comprising a rib formed on the outer wall of the guide rail and extending along the length of the guide rail, and cut-off portions formed in the rib from the longitudinal free edge of the rib toward the guide rail and defining indentations in which the brackets are partly received.

4,659,108
AUTOMATIC SEAT BELT ADJUSTING SYSTEM
John J. Sack, Bloomfield Hills, Mich.; Nazareth Stamboulian, Van Nuys, and Akira Tanaka, Northridge, both of Calif., assignors to American Safety Equipment Corp., Troy, Mich.
Filed Sep. 11, 1985, Ser. No. 774,952
Int. Cl.⁴ B60R *21/10*
U.S. Cl. 280—807 **13 Claims**



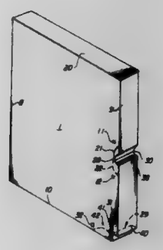
1. An automatically adjustable safety seat belt system for automobiles or other vehicles including a safe tensionless comfort range comprising:
seat belt means for restraining a person in a vehicle seat;
means including a reversible electric motor for automatically adjusting comfort in which the belt means is located close to the body of said person but is spaced safely away from the body;
said system including circuit means for operating said electric motor to retract said seat belt from the fully extended configuration until said seat belt means is tight, and for then pulsing said motor in the opposite direction to shift said belt means into the safe tensionless comfort range; and
means for automatically readjusting said seat belt means to a tensionless comfort range as defined above, whenever the person shifts the position of said seat or leans forward beyond the tensionless range to apply tension to said seat belt;
whereby the possibility of extra slack being present between the belt and the person being protected, and the consequent danger to said person is minimized.

4,659,109
BINDER AND FOLDER FOR USE THEREWITH
Robert G. Donovan, 15 East La., Pittston, Pa. 18640
Filed Jan. 21, 1986, Ser. No. 820,317
Int. Cl.⁴ B42D *1/06, 17/00, 7/00;* **B42F** *15/00*
U.S. Cl. 281—46 **20 Claims**



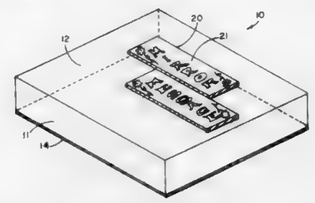
1. In combination, a binder for a multi-leafed device, and a multi-leafed device, said binder including cover portions interconnected for movement relative to one another between open and closed positions, said binder including a portion of stiff construction, a pair of spaced brackets secured to said stiff binder portion so as to be disposed in fixed spaced relation to one another, each bracket having a plurality of spaced prongs extending therefrom toward the other bracket, the prongs on a first one of said brackets being longer than the prongs on a second one of said brackets, the distance between the opposed tips of the prongs on the brackets being less than the length of said multi-leafed device, said distance plus the length of the prongs on said first bracket being at least as great as the length of said multi-leafed device, said distance plus the length of the prongs on said second bracket being less than the length of said multi-leafed device, at least one prong of each of said brackets being inserted between leafs of said multi-leafed device with said multi-leafed device being freely movable along said prongs, and stop means selectively movable to prevent inadvertent release of said multi-leafed device from said prongs so as to retain the multi-leafed device within the binder, the improvement wherein said stop means includes a first portion fixedly mounted on said binder adjacent said first bracket, and a second portion movably connected to said first portion for movement into and out of engagement with the prongs of said first bracket, said second portion when in engagement with the prongs of said first bracket including a surface for engaging a lateral edge of the multi-leafed device to limit movement of said multi-leafed device along the prongs of said first bracket so as to retain at least one prong of each of said brackets inserted between leafs of said multi-leafed device.

4,659,110
MANUAL SHEET SEPARATION SYSTEM
William E. Polk, 2721 St. Mary's St., Raleigh, N.C. 27609-7640
Filed May 31, 1985, Ser. No. 739,895
Int. Cl.⁴ B42F *21/00, 21/12*
U.S. Cl. 283—36 **9 Claims**



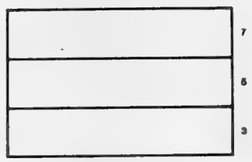
1. A pagination system, said system comprising:
a stack of at least three sheets,
each of said sheets having front and rear faces, a pivotal edge, and at least one free edge, the pivotal edges of said sheets being substantially aligned;
each of said sheets further having a notch removed therefrom along a common one of said at least one free edge, said notches having a perimeter, a length along said common edge, and a center defined by the mid-point of said length;
the notch centers of alternate ones of said sheets being arranged in a first row aligned substantially transversely of said stack, the notch centers of remaining ones of said sheets being arranged in a second row aligned substantially transversely of said stack and displaced a distance along said common edge relative to said first row; and
said distance the notch centers are displaced is less than the length of said notches, such that adjacent notches partially overlap, thereby defining an indentation notch marker.
2. A pagination system, said system comprising:
a stack of at least three sheets,
each of said sheets having front and rear faces, a pivotal edge, and at least one free edge, the pivotal edges of said sheets being substantially aligned;
each of said sheets further having a notch removed therefrom along said at least one free edge, said notches having perimeter, a length along said at least one free edge, and a center defined by the mid-point of said length;
the notch centers of alternate ones of said sheets being arranged in a first row aligned substantially transversely of said stack, the notch centers of remaining ones of said sheets being arranged in a second row aligned substantially transversely of said stack and displaced a distance along said at least one free edge relative to said first row; and
notch marker means for indicating the position of said notches, said notch marker means being positioned on at least one of said faces of each of said sheets adjacent the perimeter of said notches such that the notch marker means of an underlying sheet is covered and obscured by an overlying sheet, the notch marker means of said alternate sheets and said remaining sheets each being aligned substantially transversely of said stack and spaced relative to each other.

4,659,111
MIRROR MESSAGE LABEL
Lawrence Credit, 24391 Chrisanta Dr., Mission Viejo, Calif. 92691
Filed Sep. 23, 1985, Ser. No. 778,892
Int. Cl.⁴ G09F *3/00, 3/10*
U.S. Cl. 283—81 **9 Claims**



1. A mirror message system comprising:
a transparent mirror body;
a viewing surface disposed on said mirror body;
a reflecting surface disposed on said mirror body;
said transparent mirror body having a predetermined mirror diameter (Md) substantially equal to the distance between said viewing surface and said reflecting surface;
a planar label;
said planar label being provided with an elongate shape having a predetermined width that defines an object size (Os);
a front side disposed on said planar label;
a backside disposed on said planar label;
direct indicia disposed on said front side of said label for direct view;
complementary indicia appearing on said backside of said label, said complementary indicia appearing backward for indirect viewing as a mirror image on said reflecting surface; and
means for mounting said planar label on said mirror with said backside facing said reflective surface, said mirror message system being provided with a mirror diameter (Md) that is substantially equal to or greater than said object size (Os) whereby said complementary indicia is readily reflected on said reflecting surface for viewing through said viewing surface of said mirror simultaneously with said direct indicia.

4,659,112
IDENTIFICATION SYSTEM COMPRISING A PARTIALLY REFLECTIVE RETARDATION DEVICE
Daniel T. Reiner, Somis; Lawrence Bolt, Newbury Park; Philip W. Morlan, Jr., Thousand Oaks, and Ali Tavasolian, North Hollywood, all of Calif., assignors to Optical Devices, Incorporated, Camarillo, Calif.
Filed Dec. 3, 1984, Ser. No. 677,427
Int. Cl.⁴ B42D *15/00*
U.S. Cl. 283—90 **18 Claims**



1. A tamper-free identification system comprising an information-bearing substrate made of a flexible but substantially rigid material, a partially transparent partial light reflector superposed over said substrate and a substantially transparent

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90° retarder superposed over said reflector, said reflector being adapted to produce a substantially nondepolarizing light reflection.

4,659,113

METHOD OF SCREENING HALF-TONE PICTURE THEMES

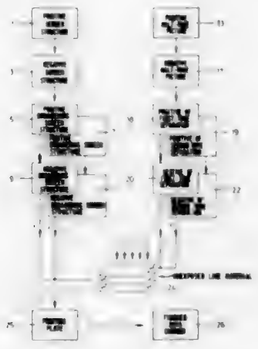
Hans Müller, Munich, and Stefan May, Herbertshausen, both of Fed. Rep. of Germany, assignors to GAO Gesselschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 482,333, Mar. 30, 1983, Pat. No. 4,557,596. This application Jul. 29, 1985, Ser. No. 760,348

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130182; Jul. 30, 1981, 3130183

Int. Cl.⁴ B42D *15/00*

U.S. Cl. 283—94 **10 Claims**



1. A screened picture in which a half-tone picture is reproduced comprising a carrier material upon which is placed a Guilloche-pattern consisting of intertwining and crossing lines, said lines being broadened in differing degrees in areas to define a picture, said degree of broadening of said Guilloche-lines at a given site corresponding to the gray level of the picture at said site.

4,659,114

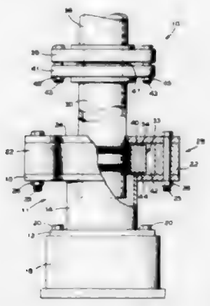
ROTATING PIPE JOINT HAVING A FLOATING SEAL

David W. Gerber, Massillon, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 9, 1983, Ser. No. 521,518

Int. Cl.⁴ F16L *27/00*

U.S. Cl. 285—11 **8 Claims**



1. A pipe joint assembly for sealably connecting two axially aligned pipes for conveyance of pressurized fluid therebetween, one of the pipes rotating with respect to the other, comprising:

a stationary inlet pipe;

a slide pipe having a first end portion fixed to the stationary inlet pipe and a second end portion opposite the first end;

a floating seal mounted on the slide pipe, the floating seal being axially and rotatably moveable relative to the slide pipe, the floating seal having a pair of opposed radial surfaces thereon;

compression ring means disposed between the floating seal and the slide pipe and substantially circumferentially bearing against the slide pipe at a plurality of axially spaced intervals for holding the floating seal to the slide pipe;

a rotatable housing including wall means defining a chamber therein which receives the second end portion of the slide pipe and said floating seal in the chamber;

a rotatable post fixed to the housing for rotation therewith;

means for passing the pressurized fluid from the stationary inlet pipe through the slide pipe from the first end portion to the second end portion and into the chamber which pressurizes the chamber and the rotatable post; and

one of the radial surfaces of the floating seal facing the housing and being spaced therefrom when the chamber is depressurized which forms a gap therebetween and the opposed one of the radial surfaces of the floating seal being exposed to the pressurized fluid during operation of the assembly when the chamber is pressurized so that the floating seal moves relative to the slide pipe due to the pressurized fluid to close the gap between said housing and said one of the radial surfaces.

4,659,115

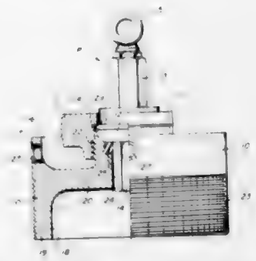
REDUCER COUPLING AND POSITIONER TOOL FOR THE COUPLING

Donald C. Cameron, Tulsa, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Continuation of Ser. No. 456,632, Jan. 7, 1983, Pat. No. 4,573,712. This application Sep. 16, 1985, Ser. No. 776,293

Int. Cl.⁴ F16L *55/00*

U.S. Cl. 285—12 **5 Claims**



1. A reducer coupling for connecting a conduit section of one diameter to a conduit section of a different diameter without damaging the coupling, the coupling comprising:

a one-piece coupler body for connecting conduits of different diameters;

a first cavity in one end of the coupler body, a second cavity in the opposite end of the coupler body and a bridge portion within the coupler body between the first and second cavities;

the coupler body including a hub, the hub extending from the bridge portion into the first cavity, and the hub including fastener means on the hub;

the coupler body including a central opening therein, the opening extending lengthwise through the bridge portion and the hub;

the coupler body including a first upstanding rim which defines the periphery of the first cavity, the first rim being radially spaced from the hub and extending axially along the hub to protect the hub and the fastening means thereon, and a second upstanding rim which defines the periphery of the second cavity;

fastener means on the second upstanding rim; and

means for tightening the coupling on at least one of the conduits without grasping the coupling body whenever properly mated therewith.

4,659,116

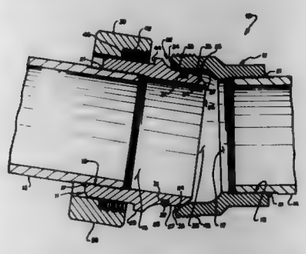
PIPE UNION FOR CRYOGENIC FLUIDS

Donald C. Cameron, Tulsa, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Apr. 29, 1985, Ser. No. 728,077

Int. Cl.⁴ F16L *19/00*

U.S. Cl. 285—27 **18 Claims**



1. A union useful for joining cryogenic fluid conduits in a fluidtight manner, comprising a male part and a female part adapted to be mounted on respective ends of the fluid conduits, said male part having a first inner fluid passage and said female part having a second inner fluid passage, said male and female parts providing respective complementary contoured lead ends, said male contoured lead end having a rounded convex portion extending from the open end, and said female contoured lead end having a rounded convex portion extending from the open end, one of said male and female contoured lead ends having a continuous outer circumferential slot with a resilient sealing member disposed therein, the male and female ends also having a rounded concave portion, said male and female contoured lead ends cooperating by having the convex portions initially cam against one another when joined together to self-align said first and second fluid passage and the concave portion of the female part receiving and engaging the convex portion of the male part and the concave portion of the male part receiving and engaging the convex part of the female part and forming a fluidtight seal by substantially radial compression of the resilient sealing member by the male and female parts, said fluidtight seal being formed independently of operation of a clamping means, and means for releasably clamping the male and female parts together by utilizing a flange portion to prevent longitudinal separation of the male and female parts.

4,659,117

FLEXIBLE COUPLING FOR PIPES IN EXHAUST SYSTEMS OF MOTOR VEHICLES

Wieland Holzhausen, Auerbach, and Kurt Albecker, Rheinstetten-Forchheim, both of Fed. Rep. of Germany, assignors to IWK Regler und Kompensatoren GmbH, Fed. Rep. of Germany

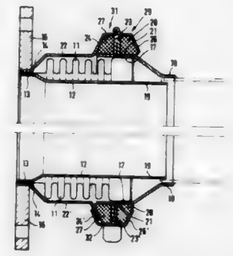
Filed Jul. 27, 1983, Ser. No. 517,694

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 8222490[U]; Jun. 14, 1983, 3321382

Int. Cl.⁴ F16L *55/02*

U.S. Cl. 285—49 **20 Claims**

1. A coupling for producing an articulated connection between tubular parts for conducting exhaust gases from a motor vehicle, of the coupling comprising at least one flexible conducting part insertable between the tubular parts which are thereby connected, said flexible conducting part having connecting ends permanently connected with the respective ends of the tubular parts which are thereby connected, support parts disposed outside a path of the exhaust gases and connected



with ends of said flexible conducting part, and damping members placed outside the path of the exhaust gases and connected with the support parts, said support parts overlapping each other and forming housing-like pocket which moves relative to each other, said damping members being made of compressed metal wire fabric pressed into the housing-like pockets and retained therein under pressure.

4,659,118

PIPE SEAL CONNECTION BETWEEN CONFRONTING ENDS OF TWO COAXIAL RELATIVELY ROTATABLE PIPES

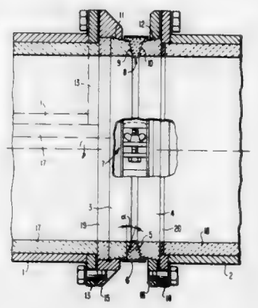
Anton Schwyter, Buonas, and Heinrich Amsler, Baar, both of Switzerland, assignors to Stopinc Aktiengesellschaft, Baar, Switzerland

Filed Apr. 3, 1986, Ser. No. 847,780

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1985, 3515494

Int. Cl.⁴ F16L *9/14*

U.S. Cl. 285—55 **17 Claims**



1. In an assembly including two pipes mounted coaxially with respective pipe ends confronting each other, said two pipes being mounted for relative movement therebetween rotatably but being relatively substantially immovable axially and passing therethrough a molten material, the improvement of means defining a seal between said confronting pipe ends without moving said pipe ends axially toward each other, said seal defining means comprising:

means at said confronting pipe ends defining spaced conical surfaces forming therebetween an annular slot which widens radially outwardly;

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an annular sealing ring positioned within said annular slot; and

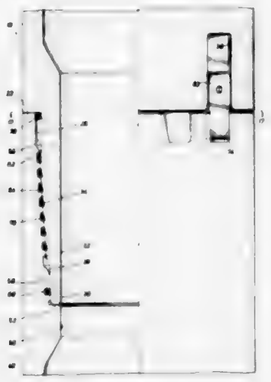
clamping means, circumferentially surrounding said annular sealing ring, for adjustably pressing said sealing ring radially inwardly into sealing contact with said spaced conical surfaces.

4,659,119

LATCHING CONNECTOR

Larry E. Reimert, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Dec. 29, 1983, Ser. No. 566,572
Int. Cl.⁴ F16L *37/22*
U.S. Cl. 285—82 **38 Claims**



1. A connector assembly comprising:

a. a first connector member featuring a recess defined, at least in part, by an internal surface surrounding said recess and including a helical groove;

b. a second connector member, receivable within said recess of said first connector member, featuring an external surface circumscribing said second member and including a helical groove; and

c. helical latch means carried by one of said internal or external surfaces in said helical groove thereof by extending at least partly into such groove, said latch means having a generally rectanglar cross section and being anchored at both ends;

d. wherein:

i. said internal and external surfaces are generally mutually complementary, and the corresponding grooves thereof are of the same pitch; and

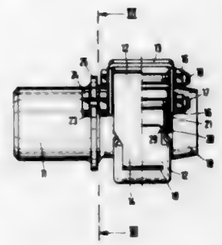
ii. as said second member is received within said first member, said latch means is rotationally flexed about its cross section in said groove of said member carrying said latch means by said surface of said other member, whereafter, with said helical grooves mutually aligned at least in part, said latch means may relax to extend partly out of said groove of said member carrying said latch means and partly into said groove of said other member to latch together said first and second connector members.

4,659,120

TUBE COUPLING

Karl Weinhold, Im Jagdfeld 43, 4040 Neuss, Fed. Rep. of Germany

Filed Feb. 27, 1986, Ser. No. 834,166
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1985, 3511289
Int. Cl.⁴ F16L *15/00*
U.S. Cl. 285—91 **4 Claims**



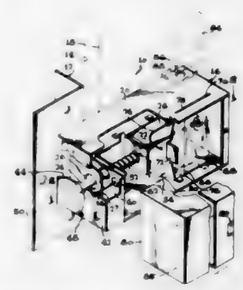
1. A tube coupling comprising: a pair of shells, a first extension joint bolt pivotally linking the shells, wherein said pair of shells have laterally extending clamping flanges, locking means for closing the shells comprising a clamping lever, a spring mechanism, a second extension bolt joint joining the clamping lever to one of the pair of shells and comprising a guide flange having the shape of a closed ring, a connecting socket, said guide flange being connected to the connecting socket and located adjacent to said pair of shells and comprising an at least approximately radial web crossed by the extension joint bolt connecting said pair of shells, and forming an external guide extending in circumferential direction for an extended end of the extension joint bolt linking said clamping lever with one of the pair of shells, said extension joint bolt end comprising a guide head terminating in an annularly reduced portion and said guide flange engaging said portion in a position spaced by at least 90° from a closing position of the coupling, wherein said extended end of extension joint bolt is guided in the area of its reduced portion on the radially outer surface of said guide from said spaced position to a closed position of said shells flange and a recess is provided in the area of the web as a crosspassage for the first extension joint bolt and has a shape of a radially extending oblong hole.

4,659,121

GARAGE DOOR LOCK SYSTEM

Michael H. McGee, 4620 Alla Rd., Los Angeles, Calif. 90066

Filed Mar. 8, 1984, Ser. No. 587,358
Int. Cl.⁴ E05C *1/04*
U.S. Cl. 292—144 **5 Claims**



1. A garage door lock system for locking a garage door to the door frame, and resisting attempts by vandals to unlock the door from the door frame, comprising:

a latch device which is mountable on a garage door and which has a latch with a latch hole;

a lock box which can be fastened to said door frame, said box having a pair of spaced plates and an opening for receiving the latch between the plates, each plate having walls forming a plunger-receiving hole which is wider than said plunger and said plunger-receiving holes being aligned so that when the latch lies between the plates, a plunger can pass through both plunger-receiving holes and the hole in the latch;

a solenoid which includes an energizeable coil with a plunger axis and a plunger extending along said plunger axis in an outward direction from said coil and through said latch hole and plunger-receiving holes when the coil is unenergized, said coil deflecting when said plunger is deflected perpendicular to said axis; and

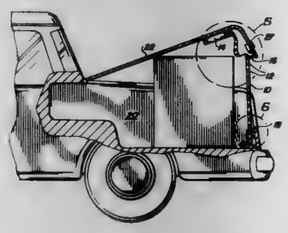
means mounting said coil to said lock box to resiliently bias said coil toward an initial orientation at which said plunger is away from contact with the walls of said plunger-receiving holes, but permitting said plunger to be deflected by vandals against any portion of the walls of a plunger-receiving hole, and returning said coil to said initial orientation when no longer deflected by vandals.

4,659,122

AUTOMOBILE TRUNK TIE-DOWN

David H. A. Miller, 28 S. Linden Dr., Orlando, Fla. 32807

Filed Apr. 25, 1986, Ser. No. 855,952
Int. Cl.⁴ E05C *17/36*
U.S. Cl. 292—262 **6 Claims**



1. An automobile trunk-lid tie-down comprising:

a retracting reel device fastened to an automobile trunk lid;

a flexible strand with one end attached to said reel for rolled retraction thereon;

means for attaching the free end of said strand to the trunk compartment of said automobile; and

means for locking an unrolled length of said strand against retraction onto said reel and against further unrolling from said reel.

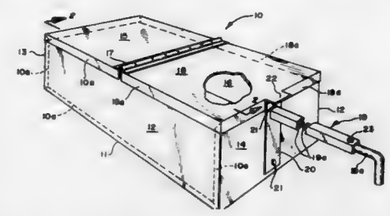
4,659,123

RECEPTACLE FOR ASH REMOVAL

Bruce Mortensen, 609 W. 1200 South, Vernal, Utah 84078

Filed Mar. 3, 1986, Ser. No. 835,721
Int. Cl.⁴ F23J *1/00*
U.S. Cl. 294—9 **7 Claims**

1. A receptacle for removing ashes from a fireplace or stove while the user is at a distance therefrom, comprising a box-like receptacle body having front, rear, side, bottom, and partial top panel walls forming an enclosure for receiving ashes through a top wall opening; a cover panel of a size that completes the top panel wall of said receptacle body when closed, said cover panel having a rim that overhangs the receptacle body in closed position and fits tightly against adjoining panel walls to largely prevent scattering of ashes when said receptacle is being carried; hinge means hinging said cover panel to said receptacle body for opening and closing said top wall opening; an elongate, stiff handle secured at one end to the front panel wall of the receptacle body and extending forwardly therefrom so that the receptacle body is cantilevered relative to a person at and holding the other end of the handle remote from the receptacle body; and a relatively narrow plate having an upper end portion secured to the said other end of the handle, said plate being secured to the front panel wall of



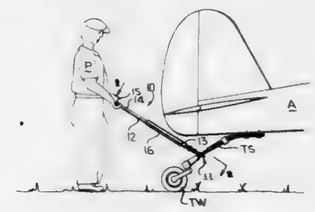
the receptacle body midway of the width thereof and extending substantially from bottom to top of said front panel wall, the walls of said receptacle body being of sheet steel sufficiently thin to enhance sealing of the cover panel when full of ashes and when carried at said other end of the handle remote from said receptacle body, but sufficiently strong to support the load.

4,659,124

TOW BAR FOR TAILWHEEL AIRCRAFT

Billy R. Hillman, P.O. Box 132, Castlewood, Va. 24224

Filed Jan. 28, 1986, Ser. No. 823,457
Int. Cl.⁴ A47F *13/06*; **B25J** *1/02*
U.S. Cl. 294—19.1 **8 Claims**



1. A tow bar particularly adapted for use with tailwheel aircraft comprising an elongated member having opposite end portions, means at a first of said end portions for releasably clamping said elongated member to a tailspring of a tailwheel aircraft, said clamping means includes a pair of relatively movable clamping members, pivot means for pivotally connecting said clamping members to said elongated member first end portion for movement of said clamping members in generally parallel planes normal to the pivot axis of said pivot means, each clamping member being of a generally U-shaped configuration defined by a bight and first and second arms collectively defining therebetween a generally U-shaped slot, a first of each arm terminating in a first nose, a second of each arm terminating in a second nose, said second arms each being pivotally connected by said pivot means to said elongated member first end portion, each clamping member being relatively pivoted between a first open position at which said first arms first noses are in spaced relationship to each other to accommodate therebetween an aircraft tailwheel tailspring and a second closed position at which said first arms first noses are in contiguous relationship to each other to generally encircle therebetween an aircraft tailwheel tail spring, spring means for normally biasing said elongated members selectively to both said open

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and closed positions, means for connecting said spring menas to and between said clamping members at connection points occupying two different planes at opposite sides of said pivot means in the respective open and closed positions whereby said spring means biasingly retains said clamping means in the open position and bias said clamping members to said closed position after said spring means has passed a dead center plan through said pivot means, abutment means carried by each clamping member for contacting said elongated member first end portion in said open position and for contacting the adjacent clamping member second nose in said closed position under the influence of said spring means thereby maintaining said first arm first noses in predetermined relationship to accept and accommodate therebetween an aircraft tailwheel tailspring, said abutment means each being a tail carried in upstanding relationship by each elongated member.

4,659,125

HANDLE ROD STRUCTURE OF GOLF RETRIEVER

Ching Chuan, No. 281, Chen Te Road, Taipei, Taiwan

Filed May 23, 1985, Ser. No. 737,345
Int. Cl.[4] A63B *47/02*; B25G *1/04*; F16B *7/14*
U.S. Cl. 294—19.2 **6 Claims**



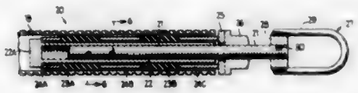
1. A handle rod structure for a golf ball retriever comprising a hollow outer tube, a hollow inner tube, a plunger, an annular sleeve plate and a sectional ring, wherein said inner tube is telescopic with said outer tube and accepts one end of said plunger, the other end of said plunger, together with said inner tube, being slideable within said outer tube; said other end of said plunger further having an annular eccentric groove therein in which said annular sleeve plate fits, said annular sleeve plate having an eccentric inner diameter cooperating with said eccentric groove upon rotation of the inner tube and plunger combination so as to be urged into and out of engagement with the inside of said outer hollow tube, said sectional ring overlying the end of said outer tube.

4,659,126

DUCT PULLING TOOL

Steven E. Breck, Addison, and George E. Armbruster, Park Ridge, both of Ill., assignors to Illinois Bell Telephone Company, Chicago, Ill.

Filed Mar. 21, 1984, Ser. No. 591,961
Int. Cl.[4] B66C *1/44*
U.S. Cl. 294—93 **11 Claims**



1. Apparatus for pulling a duct through a conduit, said apparatus comprising elongated structural means including first and second end portions, said structural means including a tubular member having a closed end defining said first end portion and an internally threaded open end, a stop means provided on said first end portion of said tubular member, and an elongated screw threadedly engaged in said open end of said tubular member; a nut threaded on said screw between said end portions; at least one compressible, resilient tubular sleeve encircling said tubular member and located between said stop means and said nut, said sleeve being longitudinally compressible so as to expand radially outwardly when said nut is displaced toward said first end portion of said structural means to cause said sleeve to securely engage the inner surface of said duct, and coupling means removably attached to said screw at the second end portion independently of said nut for coupling to a pull line.

4,659,127

HOLE CLEANING DEVICE

John P. Hancovsky, McMurray, Pa., assignor to Matthews International Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1986, Ser. No. 834,398
Int. Cl.[4] A01G *3/06*; B26B *3/04*
U.S. Cl. 294—50.7 **16 Claims**



1. A device for cleaning accumulated material from a blind hole comprising:

a head portion having an open interior bounded by sidewalls and having an upper edge and a lower edge and rotatable about a longitudinal axis;

a bottom plate affixed within the head portion and located a spaced distance from the lower edge thereof and aligned perpendicular to the longitudinal axis of the head portion, said bottom plate having a cutout section formed therein and cutting means formed along a side of said cutout section, said cutting means occupying the spaced distance betweem the bottom plate and the lower edge of the head portion; and

shaft means for rotating the head portion about its longitudinal axis whereby said cutting means is adapted to dislodge the accumulated material within the blind hole and wherein continued rotation causes the dislodged material to pass through the cutout section to be retained within a storage reservoir defined by said bottom plate and the sidewalls of the head portion.

4,659,128

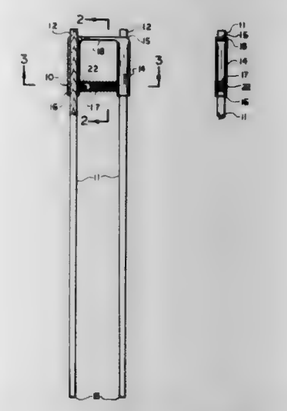
MANIPULATION HOLDER FOR CHOPSTICKS

Seung G. Dong, 8109 W. Broad St., Richmond, Va. 23229

Filed Apr. 14, 1986, Ser. No. 851,542
Int. Cl.[4] A47G *21/10*; A47J *43/28*
U.S. Cl. 294—99.2 **10 Claims**

1. A holder for chopsticks comprising two elongated compliant holding tubes of circular cylindrical internal configuration disposed in substantially parallel relationship and having upper and lower open extremities, a resilient member spanning said tubes adjacent said lower extremities and constructed to exert a force opposing movement of said lower extremities toward each other, and a semi-rigid restraining member spanning said tubes adjacent said upper extremities in parallel relationship to said resilient member and constructed to permit

movement of said lower extremities toward each other while preventing such movement of said upper extremities, the longitudinal axes of said holding tubes, resilient member and restraining member being in coplanar disposition.

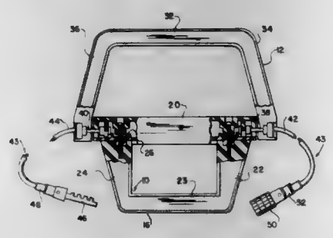


4,659,129

SKI CARRIER WITH LOCK

Roy L. Schuetzeberg, 3206 67th St., Lubbock, Tex. 79413, and Jerome H. Schuetzeberg, 5703 37th St., Lubbock, Tex. 79416

Filed Feb. 26, 1986, Ser. No. 833,907
Int. Cl.[4] A63C *11/02*
U.S. Cl. 294—147 **2 Claims**



1. A ski carrying assembly having

a. a ski holder frame,

b. a resilient band attached to said frame,

c. a pair of skis with bindings having foot pieces strapped by the band to the frame,

d. a handle, and

e. a forward pin part and a rear pin part on the holder frame for pivoting the handle to the holder frame;

wherein the improvement comprises:

f. a forward cable part secured to the forward pin part,

g. a rear cable part secured to the rear pin part,

h. a lock bolt on one of the cable parts,

i. a lock means on the other of the cable parts for releasably locking to the lock bolt,

j. each of said pin parts include knobs and protrusions which fit with flanges on the holder to prevent the pin parts being pulled from the holder, and

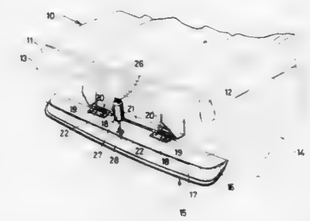
k. said cable wrapped and looped around the skis at the foot pieces of the binding of skis so that the skis cannot be removed when the cable is looped around them.

4,659,130

AUTOMATICALLY POSITIONABLE SPOILER FOR A MOTOR VEHICLE

Leonardo Dimora, Milan, and Emanuele Minutillo, Saronno, both of Italy, assignors to Alfa Romeo Auto S.p.A., Napoli, Italy

Filed Nov. 25, 1983, Ser. No. 555,021
Claims priority, application Italy, Dec. 10, 1982, 24678 A/82
Int. Cl.[4] B62D *37/02*
U.S. Cl. 296—1 S **5 Claims**



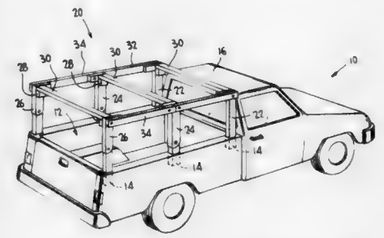
1. A front spoiler for a motor vehicle having a body including a front end, said spoiler being mounted on said motor vehicle below said front end, said spoiler being supported by an element rigid with said body by elastic means for normally maintaining said spoiler in an upper rest position, said spoiler including a normally substantially horizontal flat upper wall having front and rear edges and a normally substantially vertical front wall connected to said flat wall along said front edge, said front wall being L-shaped in cross section and terminating in a lower forwardly directed flange, said elastic means being disposed adjacent said flat wall rear edge, and dampening means extending between said spoiler and said body for dampening vibrations transmitted to said spoiler by said body, said dampening means being in the form of a shock absorber extending between and pivotally connected to said spoiler and said element rigid with said body, said shock absorber is disposed generally vertically and has a lower end connected to said flat wall.

4,659,131

RACK FOR A PICK-UP TRUCK

Walker R. Flournoy, Jr., Rt. 1, Box 120, Hamilton, Ga. 31811

Filed Dec. 3, 1985, Ser. No. 804,106
Int. Cl.[4] B60D *3/00*
U.S. Cl. 296—3 **5 Claims**



1. A collapsible rack adapted for installation over a bed portion of a pick-up truck, the rack comprising a pair of front upright members, a pair of central upright members each comprising two portions hinged together, a pair of rear upright members each comprising two portions hinged together, two front frame members each releasably secured to a front upright member and pivotally attached to a central frame member, two rear frame members each pivotally attached to a central frame

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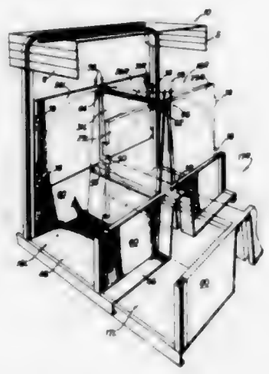
member and to a rear upright member, and three cross-members each extending between a pair of upright members, the cross-members extending between the pair of central upright members and between the pair of rear upright members being releasably secured to the respective upright members.

4,659,132

CONVERTIBLE BEVERAGE BODY FOR DELIVERY TRUCK OR TRAILER

Gerald G. Day, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Feb. 14, 1986, Ser. No. 829,724
Int. Cl.[4] B60P *3/42, 3/24*
U.S. Cl. 296—24 R **14 Claims**



8. A convertible beverage body for a delivery vehicle comprising:

(a) a beverage body having a pair of parallel sidewalls, a rear wall, a plurality of left and right bays, a separate roll-up side door in said sidewall for providing access into each one of said bays, a transverse bulkhead for forming each interior sidewall of each bay, and a substantially vertical bay back panel forming the back wall of a majority of said bays, a rear door providing access into said body through said rear wall, and a wheel housing with a wheel housing bay thereabove and having a wheel housing bay floor;

(b) a longitudinal support beam extending the length of said body along the center thereof, said beam being located entirely beneath the level of said wheel housing bay floor;

(c) means for moving selected ones of said bulkheads for said bays from their transverse position, to a position adjacent to and substantially parallel to one of said sidewalls; and

(d) means for moving selected ones of said bay back panels down to a horizontal position level with said wheel housing bay floor.

4,659,133

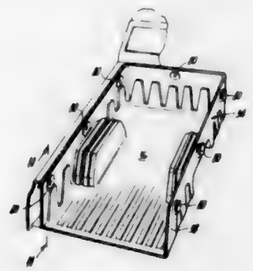
TRUCK BED LINER RETAINER

Jerald Gower, Beaverton, Mich., assignor to Durakon Industries, Inc., Lapeer, Mich.

Filed Sep. 16, 1985, Ser. No. 776,343
Int. Cl.[4] B60D *33/02*
U.S. Cl. 296—39 R **2 Claims**

1. In a truck bed compartment having a front wall and opposed side walls with the upper portion of the walls including a vertical downwardly extending ledge wall which terminates in a lip that extends toward said side walls, and a protective liner within the truck bed compartment including a front wall and opposed side walls engaging said ledge wall, the improvement comprising:

a plurality of retainers for securing said opposed side walls of said protective liner to said vertical ledge wall, each said retainer including a face plate, a support plate affixed to said face plate, an insertable portion affixed at one end to said support plate, and an end plate affixed to the other end of said insertable portion, a rim portion being formed between the outer periphery of said face plate and the outer periphery of said support plate, said insertable portion being generally in the shape of a truncated cone with its smallest exterior dimension affixed to said support plate and its largest exterior dimension affixed to said end plate, and said insertable portion having a generally spiraled cross-section which is inserted through an opening in the liner side wall, and said rim portion engaging the liner side wall at the opening, said insertable portion being rotatable



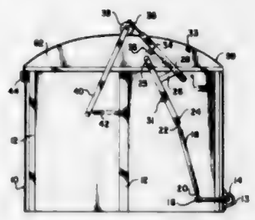
against said lip in a screw-like manner for pulling the rim portion tightly against the protective liner side wall and simultaneously wedging the insertable portion against said lip, said support plate supporting said retainer in the opening as said insertable portion wedges against said lip, and said insertable portion affixed to said support plate at a position offset from the center of said support plate, and said insertable portion further including a flat wall portion for permitting release of the insertable portion from engagement with the lip after the retainer has been rotated past approximately 180° to prevent over-tightening of said retainer, socket means provided in said face plate for receiving the end of a manually operable tool, and fastening means securing said face plate to said liner side wall.

4,659,134

ROLL UP TARP ASSEMBLY

Roy R. Johnson, P.O. Box 332, Barons, Alberta, Canada T0L 0G0

Filed Aug. 29, 1985, Ser. No. 770,759
Int. Cl.[4] B60P *7/04;* **B65H** *75/48*
U.S. Cl. 296—98 **6 Claims**



1. A container assembly comprising:

a container having sides;

sheet means for covering and uncovering the container, said sheet means having opposite ends, a first said end being connected to one side of the container;

support means for supporting the sheet means over the container;

a rotatable hollow member extending over the container, said hollow member being connected to the sheet means and being at a midway position between the sides of the container when the sheet means fully covers the container;

biasing means for rotating the hollow member so the sheet means is rolled up about the hollow member and the hollow member moves to a predetermined said side of the container to uncover the container;

a rotatable elongated member journalled to the container;

drawing means for drawing the sheet means from a rolled up position where the hollow member is adjacent said predetermined side to a fully covered position over the container where the hollow member is at the midway position, said drawing means comprising at least one elongated flexible member having a first end connected to a second said end of the sheet means and a second end connected to the rotatable elongated member;

crank means connected to the elongated member for rotating the elongated member, thereby winding the drawing means on the elongated member and drawing said sheet means over the container; and

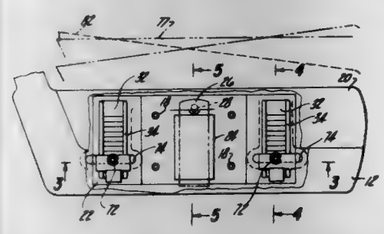
first and second engagement means for selectively stopping rotation of the hollow member when the hollow member is at the midway position to lock the sheet means in the fully covered position, said first engagement means being a notched flange at one end of the hollow member and the second engagement means being near the midway position between the sides of the container, the second engagement means being mounted on a first lever pivotally mounted to the container and having an engagement position where the second engagement means is engagable with the notched flange to stop rotation of the hollow member, the first lever being movable towards another position to rotate the notched flange and the hollow member in a direction which tightens the sheet means.

4,659,135

ADJUSTABLE ARM REST

LeRoy B. Johnson, Perry, Mich., assignor to Schmelzer Corporation, Flint, Mich.

Filed Jan. 20, 1984, Ser. No. 572,660
Int. Cl.[4] A47C *7/54;* **B60N** *3/00*
U.S. Cl. 296—453 **32 Claims**



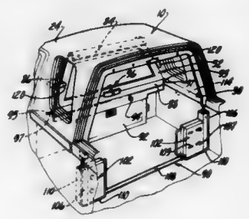
1. In an arm rest assembly adapted to be positioned generally adjacent a seat comprising: a support structure in a vertically fixed relationship at one side of said seat, an elongated and movable arm rest structure, and adjustment means for supporting said arm rest structure on said support structure and for vertically adjusting said arm rest structure to selected positions relative to said seat, said adjustment means including a rack and pawl mechanism, said rack and pawl mechanism having an elongated rack member disposed substantially vertically relative to said seat and connected to one said support and arm rest structures, and pawl member connected to the other of said support and arm rest structures, said pawl member being selectively engageable with said rack member to permit selective incremental movement of said arm rest structure upwardly to said selected positions and to selectively prevent movement of said arm rest structure downwardly relative to said seat, a trip member slidably interconnected with said pawl member for limited movement relative thereto between a first position allowing said engagement between said pawl member and said rack member and a second position between said pawl member and said rack member disengaging said pawl member therefrom, first abutment means abuttingly engageable with said trip element to urge said trip member into said first position disengaging said pawl member from said rack member in response to relative movement of said rack and pawl members from a selected arm rest structure position to the maximum upward arm rest structure position whereby said arm rest structure is movable downwardly to the maximum downward arm rest structure position, and second abutment means abuttingly engageable with said trip member to urge said trip element into said second position reengaging said pawl member with said rack member to permit return selective incremental movement of said arm rest structure in a vertically upward direction to a selected arm rest structure position relative to said support structure.

4,659,136

COLLAPSIBLE ENCLOSURE APPARATUS

John W. Martin, and Judith T. Martin, both of 3133 Bolgos Cir., Ann Arbor, Mich. 48105

Continuation of Ser. No. 599,995, Apr. 13, 1984, abandoned. This application May 12, 1986, Ser. No. 862,327
Int. Cl.[4] B60P *7/02*
U.S. Cl. 296—100 **22 Claims**



15. A door and gate assembly for a longitudinally collapsible and extendible enclosure apparatus for covering at least part of an open bed of a vehicle, the open bed of the vehicle having laterally spaced apart side walls at least partially circumscribing the open bed and at least a pair of wheel wells therein adjacent the opposite side walls, an end portion of the enclosure apparatus having an opening therein and being longitudinally movable relative to the open bed as the apparatus is longitudinally collapsed and extended, the end portion being selectively positionable at various longitudinal locations on the open bed, said door and gate assembly comprising:

a gate frame assembly selectively and removably securable to the vehicle generally at a number of said longitudinal locations other than between the wheel wells in the open bed independently of the position of the end portion of the enclosure apparatus, said gate frame assembly including at least a pair of laterally spaced apart gate frame side members, each of said side members being positionable generally adjacent one of the side walls, and selectively operable adjustment means for forcibly urging said side members away from one another into frictional and abutting engagement with the associated side walls such that said gate frame assembly is thereby removably secured to said vehicle at any of said number of longitudinal positions;

a gate member positionable between the wheel wells and being removably and pivotally attachable to said gate frame assembly between said gate frame side members, said gate member further being pivotally movable relative

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to said gate frame assembly between open and closed gate positions when said gate member is attached to said gate frame assembly, said gate member being removably and pivotally attachable to said gate frame assembly between said side members for said pivotal relative movement at any of said number of longitudinal locations on the open bed independently of the position of the end portion of the enclosure apparatus;

a door member pivotally connected to said end portion of the enclosure apparatus generally adjacent the opening therein and being longitudinally movable therewith, said door member being pivotally movable relative to the end portion at any of said various longitudinal locations between an open door position generally away from the end portion opening and a closed door position substantially covering at least part of the end portion opening, said door member further including door latching means thereon for selectively and releasably securing said door member to said gate member when said door member is closed and said door and gate members are positioned at substantially the same longitudinal location on the open bed of the vehicle; and

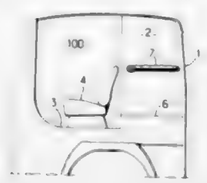
attachment means for removably and selectively attaching said gate member to said door member independently of said gate frame assembly for pivotal movement with said door member relative to the end portion of the enclosure apparatus at any of said various longitudinal locations on the open bed.

4,659,137

BEDDING INSTALLATION FOR ROAD VEHICLE CABS

Claude Chassaing, Versailles; Jean-Claude Collart, Viroflay, and Yves Lubert, La Celle Saint-Cloud, all of France, assignors to Renault Vehicules Industriels, Lyons, France

Filed Oct. 4, 1984, Ser. No. 657,511
Claims priority, application France, Oct. 4, 1983, 83 15771
Int. Cl.⁴ B60N *1/10*
U.S. Cl. 296—190 **6 Claims**



1. A bedding installation for a road vehicle cab having a driver seat, a passenger seat, and a cab with a back wall and side walls, comprising:

upper and lower movable superposed bunks (6, 7) mounted behind said driver seat (4) and said passenger seat and respectively fastened to said back wall (1) of said cab and placed between said side walls of said cab wherein said lower bunk includes a fixed portion (6b) and a pivotable portion (6a) such that upon upward pivoting of said pivotal portion (6a), said lower bunk (6) forms a seat; and

means for pivotably connecting said upper bunk (7) to said cab by a first lengthwise side of said upper bunk (7) and means for holding said upper bunk (7) by a second lengthwise side thereof in a first bedding position and a second, storage position wherein said upper bunk further comprises a padded rim (9) located on said first lengthwise side such that, in said second, storage position, said padded rim (9) comprises a headrest which is positioned above a first lengthwise side of said lower bunk (6) when said lower bunk forms said seat.

4,659,138

DEVICE FOR FASTENING A MOTOR VEHICLE WINDOW, ESPECIALLY A WINDSHIELD OR A REAR WINDOW

August-Wilhelm Göese, Mönsheim, and Nikolaus Winhart, Gloan, both of Fed. Rep. of Germany, assignors to Dr. Ing. H.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 16, 1985, Ser. No. 776,767
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433784
Int. Cl.⁴ B60J *1/00*; B62D *39/00*; F16H *21/44*
U.S. Cl. 296—201 **18 Claims**



1. A device for the fastening of a motor vehicle window to a body frame of a motor vehicle, comprising:

holding plate means firmly connected to said body frame,

supporting means for supporting a lower edge of said window, said supporting means having a width transverse to the vehicle, and

control means interposed between said supported means and said holding plate means for adjusting said supporting means in relation to said holding plate means thereby positioning said window relative to said frame substantially in a direction along a surface plane of the window,

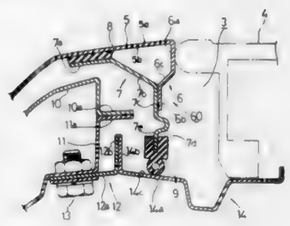
wherein said supporting means is movably adjustable with respect to said holding plate means to provide support to said window over a substantial portion of said width in all adjusted positions of said supporting means.

4,659,139

ROOF STRUCTURE FOR VEHICULAR SUN-ROOF DEVICES

Takahiro Hisaminato, Asaka, and Haruo Watanabe, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1984, Ser. No. 600,818
Claims priority, application Japan, May 11, 1983, 58-70363[U]
Int. Cl.⁴ B60J *7/02*
U.S. Cl. 296—210 **4 Claims**



1. A roof structure for a vehicular sunroof device comprising:

a roof panel having an upper and lower face and including an opening therein;

a downwardly bent extension projecting downward from said roof panel;

a stiffener mounted between said downwardly bent extension and the lower face of said roof panel;

a marginal opening edge being formed by said downwardly bent extension and said stiffener and including a lower end;

a sun-roof frame affixed adjacent to and spaced from said marginal opening edge, said run-roof frame including a flange extending upwardly therefrom and a generally horizontal frame portion extending beneath said lower end of said marginal opening edge;

a roof side bracket including a flange extending upwardly therefrom and being affixed to said flange of said sunroof frame to form a first affixed portion;

an outer panel provided adjacent to said roof panel and including a transversely extending flange;

a roof side rail mounted adjacent to said outer panel and including a transversely extending flange affixed to said flange of said outer panel to form a second affixed portion;

said first affixed portion being located below said second affixed portion; and

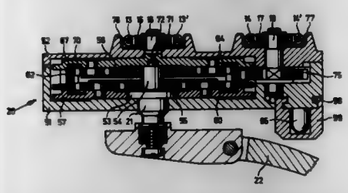
seal means attached to said lower end of said marginal opening edge for abutting against said generally horizontal portion of asid sun-roof frame to close the space between said marginal opening edge and said sun-roof frame.

4,659,140

VEHICLE ROOF

Arpad Fuerst, Munich, and Bernhard Wingen, Feldkirchen, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Mar. 27, 1986, Ser. No. 844,561
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1985, 3511031; Dec. 23, 1985, 3545869
Int. Cl.⁴ B60J *7/057*; F16H *57/10*
U.S. Cl. 296—223 **23 Claims**



1. Vehicle roof having a cover arrangement which covers a roof opening in its closed position, the positioning of the cover arrangement being adjustable by an actuating mechanism having a minimum of two synchronized members with differing speed ratios, connected to a single primary drive, wherein a reversible distributor gear assembly operatively interconnects the primary drive with the cover arrangement, said distributor gear assembly having a plurality of gear elements, an input shaft and at least two output shafts, said distributor gear assembly being operative, via said gear elements and based upon the relative position of at least one of the gear elements of the distributor gear assembly, to drive said output shafts, either singly, or together with differing transmission ratios.

4,659,141

SAFETY DEVICE FOR VEHICLE SUN ROOF

Mitsuyoshi Masuda, Nagoya; Keiki Mori, Toyota, and Kazuyoshi Yukimoto, Kariya, all of Japan, assignors to Aisin Seiki Kabushika Kaisha, Japan

Filed Jun. 6, 1983, Ser. No. 501,276
Claims priority, application Japan, Jun. 7, 1982, 57-97263
The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.
Int. Cl.⁴ B69J *7/057*; F16H *1/28*
U.S. Cl. 296—223 **4 Claims**

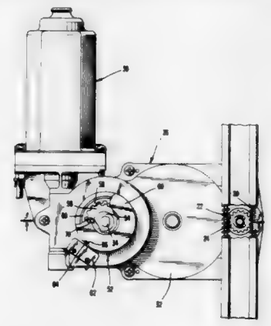
1. A safety device for a vehicle sun roof having a slidably mounted panel operated by a driving apparatus assembled at an opening in the vehicle roof and having at least one rotational drive shaft, said safety device comprising:

an off-set bearing attached to said at least one rotational drive shaft;

a first reduction gear rotatably mounted on said off-set bearing;

a second reduction gear provided on a housing around said rotational drive shaft and further disposed around said first reduction gear, said second reduction gear having radially inward teeth for engagement with said first reduction gear;

a cam plate rotatably attached to one end of said at least one rotational drive shaft, wherein the reduction ratio of said first and second reduction gears is determined so as to



rotate said cam plate through a predetermined angle upon movement of said panel from the fully opened position to the fully closed position thereof under the operation of said driving apparatus;

means for slidably connecting said first reduction gear with said cam plate, wherein said slidably connecting means includes a pin provided on said first reduction gear and a radially elongated channel extending along said cam plate, said pin being slidably engaged within said radially elongated channel, enabling said cam plate to rotate in response to the rotation of said first reduction gear;

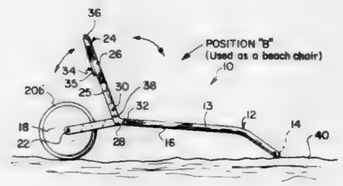
a limit switch attached to said housing and actuated by said cam plate to interrupt the flow of energy to said driving apparatus just before said panel reaches the fully closed position.

4,659,142

COMBINATION BEACH CADDY AND BEACH CHAIR

Peter Kuchinsky, Jr., 15 Stuart Dr., Syosset, N.Y. 11791

Filed May 30, 1986, Ser. No. 868,523
Int. Cl.⁴ A47B *85/04*
U.S. Cl. 297—118 **3 Claims**



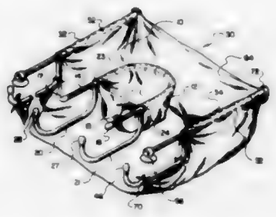
1. A combination beach caddy and beach chair unit comprising:

(a) a first elongated U-shaped frame member having a pair of spaced apart arms and a handle portion;

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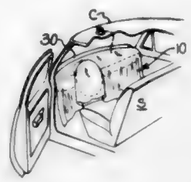
(b) a first web extending between said arms of said first U-shaped frame member;
(c) an axle extending between distal ends of said arms of said first U-shaped frame member;
(d) a pair of rollers rotatably mounted on said axle;
(e) a second U-shaped frame member having a pair of spaced apart arms secured to distal ends thereof transversely to said arms of said first U-shaped frame member between said first web and said axle;
(f) a second web extending between said arms of said second U-shaped frame member so that when said unit is used as said beach caddy an article to be transported is supported between said first and second web in which a person can grip and pull said handle portion allowing said rollers to travel over sand and when said unit is used as said beach chair, said first U-shaped frame member is tipped downwardly allowing said handle portion to make contact with said sand so that said person can sit upon said first web with said second web acting as a backrest for said person;
(g) a pair of annular protrusion members, each of which is affixed to circumference of one of said rollers to increase traction and prevent sea saw movement when said rollers travel over said sand and pavement;
(h) a pair of L-shaped brackets, each secured to said distal end of one of said arms of said second U-shaped frame member and pivotally attached to one of said arms of said first U-shaped frame member between said first web and said axle; and
(i) a rod extending between and affixed to said L-shaped brackets so that said second U-shaped frame member can be held in position when in use and flipped towards said first U-shaped frame member when said unit is being stored.

4,659,143
FOOD CATCHER FOR ATTACHING TO TABLE
Diane MacLennan, 8833 Shoshone Ave., Northridge, Calif. 91325
Filed Jan. 27, 1986, Ser. No. 822,736
Int. Cl.[4] A47D *15/00*
U.S. Cl. 297—182 **7 Claims**



1. A device for catching food and other debris from a child in a seat, wherein the seat is the type that attaches to the edge of a table, the device comprising:
(a) a pair of arms moveable with respect to each other;
(b) attaching means on each arm for attaching each arm to the table spaced apart from the sides of the seat;
(c) extension means on each arm for extending away for the edge of the table; and
(d) catching means between the arms means for hanging under the seat.

4,659,144
PORTABLE SUNSHIELD
Winfield L. Reese, 13 Longbow Ct., River Hills Plantation, Lake Wylie, S.C. 29710
Filed Jun. 25, 1985, Ser. No. 748,576
Int. Cl.[4] A47C *7/00*
U.S. Cl. 257—189 **9 Claims**

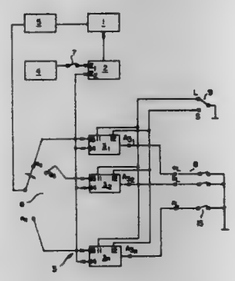


1. A portable sunshield for selectively protecting the front or rear interior surfaces of an automobile, which is characterized by its ability to be easily used without installing hardware or making other modifications to the automobile, and which may be advantageously used in a variety of different automobiles, and wherein the sunshield may be compactly folded so as to be readily stored when not in use, as under the seat of the automobile, so as to be available when it is to be used, said sunshield comprising:
a body formed of a generally rectangular sheet of opaque pliable material wherein the width and the length dimensions of the body are adapted for substantially overlying predetermined interior surfaces of an automobile,
an elongate pocket having a relatively small cross section, connected to and extending widthwise along one side of the body.
relatively distributable weighting means positioned in said pocket so as to provide a weighted pocket to maintain the sunshield in position on interior surfaces of an automobile, said distributable weighting means comprising a plurality of relatively small shiftable components which collectively occupy only a portion of the interior volume of said pocket and do not fill the pocket so that a substantial portion of the pocket remains empty so as to permit the weighting means to be selectively positioned entirely within only a portion of the length of the pocket or distributed throughout the entire length of the pocket, to thereby permit the pocket to be readily folded when it is desired to store the sunshield, and
means closing the pocket to contain said distributable weighting means positioned therein whereby the sunshield may be easily positioned within an automobile and held in place by the weighted pocket without requiring the aid of additional fastening or mounting means and when not in use may be readily folded on itself one or more times to provide a compact package that may be readily stored within the automobile.

4,659,145
ADJUSTABLE VEHICLE SEAT
Hans Obersteiner, Burggasse 10, 9020 Klagenfurt (Karnten), Austria
Filed Dec. 6, 1984, Ser. No. 679,086
Int. Cl.[4] A47C *1/02*
U.S. Cl. 297—330 **4 Claims**

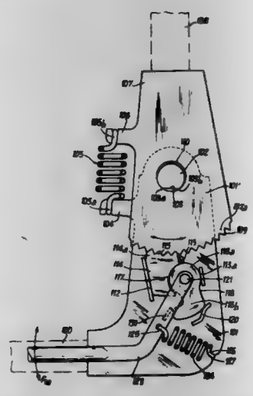
1. Apparatus for controlling the position of a vehicle seat, comprising at least one servo element (1), a servo element control unit (2), an adjusting circuit (4) for presetting the desired positions, and a memory circuit (3) programmable with the desired positions for selection and restoration of the once preset desired positions, characterized in that the adjusting circuit (4) is separate from the memory circuit (3), the memory

circuit (3) containing at least one read-write memory (3_i), and each of these circuits (3, 4) being connected individually to



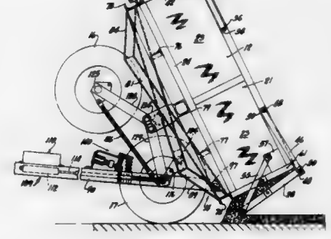
respectively one input (E_1 and E_2, respectively) of the servo element control unit (2).

4,659,146
ARTICULATION OF THE SEAT BACK OF A SEAT FOR VARIOUS VEHICLES
André M. C. Janiaud, Paris, France, assignor to Tubauto, Levallois-Perret, France
Continuation-in-part of Ser. No. 583,259, Feb. 24, 1984, abandoned. This application May 14, 1986, Ser. No. 865,635
Claims priority, application France, Mar. 1, 1983, 83 03318; Jun. 24, 1983, 83 10464
Int. Cl.[4] B60N *1/02*
U.S. Cl. 297—367 **12 Claims**



1. An articulation for a seat back of a vehicle seat, comprising:
a first iron member fixed to the frame of the seat back, said first iron member having an aperture located centrally thereof and an arcuate lower edge having teeth, said aperture having a given cross-section,
a second iron member fixed to the frame of the vehicle seat and including a pin carried at an upper end thereof, said pin having a given cross-section, the given cross-section of said pin being smaller than that of said aperture, and said pin engaging through said aperture whereby said first and second iron members are pivotably coupled,
resilient means, coupled between said first and second iron members, for pivotably biasing said first iron member in a forward direction about said pin,
spaced parallel guide means, carried by said second iron member,
a plate member positioned between said guide means for movement in reciprocable direction relative to said guide means and having a lower surface and an upper edge bearing teeth for locking cooperation with the teeth on the lower edge of said first iron member, and
control means for controlling the motion of said plate member into and out of engagement with said first iron member teeth; said control means including lever means pivotably connected at a first portion thereof to said second iron member, said lever means including at one end thereof means for camming said plate member teeth into engagement with said first iron member teeth,
said given cross-section of one of said aperture and said pin including at least one non-circular portion such that said pin is supported by the wall of said aperture at two different locations, whereby even if there is clearance between the teeth of said first iron member and the teeth of said plate member, the seat back can be positively and securely locked in at least one position relative to said vehicle seat.

4,659,147
DUMP TRAILER
Raimond J. Smiltneek, 12906 W. Fairmount Ave., Butler, Wis. 53007
Filed Nov. 1, 1985, Ser. No. 794,050
Int. Cl.[4] B60P *1/12*
U.S. Cl. 298—20 R **21 Claims**



1. A dump trailer having a trailer bed and a frame affixed to and located below the bed, said frame having first track means which is inclined upwardly from front to rear and a second track means which is inclined downwardly from front to rear when the frame and said bed are in an untilted position,
a towing tongue extending forwardly from said trailer and including means adjacent its forward end for attachment to a prime mover,
wheels means rotatively mounted on said frame for supporting said trailer, p1 first and second roller means mounted on said tongue and in spaced apart relation, said first roller means engaging said first track means and said second roller means engaging said second track means, said second roller means being at a higher elevation than the said first roller means when said bed and frame are in their untilted position, so that rearward movement of said tongue means when said wheel means are locked causes movement of said first roller means upwardly along said first track means and said second roller means downwardly along said second track means thereby tilting said frame and bed upwardly along the axis of said wheel means.

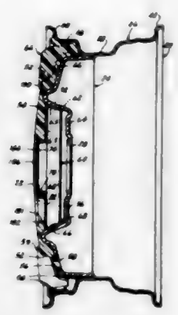
VOL 1077 ISS 3 AP 21 1987 UMI

4,659,148

VEHICLE WHEEL CONSTRUCTION

Paul E. Grill, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Sep. 23, 1985, Ser. No. 778,973
Int. Cl.[4] B60B *7/00*
U.S. Cl. 301—37 P **16 Claims**



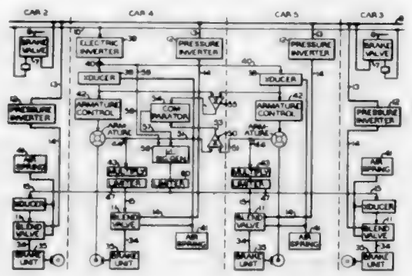
1. In a composite styled vehicle wheel including in combination a metallic portion comprising a wheel mounting disc and a rim secured to said disc and adapted to receive a tire thereon, and a plastic portion comprising an ornamental overlay disposed adjacent and covering at least part of the outboard face of said metallic portion, said overlay comprising a body of an elastomer material, said body being permanently adhesively affixed to said metallic portion, the outboard face of said body being exposed to view from the outboard side of said wheel and having a decorative surface spaced axially of the wheel outboard from said inner face of said body, said outboard face of said body having a contour differing from the contour of the covered part of the outboard face of said metallic portion and adapted to provide decorative contour over at least part of the metallic portion of said wheel, said covered part of said metallic portion comprising said disc and said disc having a central aperture and wheel mounting fastener holes therein in a zone of said disc subject to high temperatures generated during vehicle braking, said overlay having aperture means registering coaxially with said central aperture and holes in said disc and adapted to receive wheel hub mounting parts therein, the improvement wherein said aperture means comprises retainer means secured to the outboard face of said disc and having wall means spaced radially outwardly from said disc central aperture and disc holes, said retainer wall means encircling said disc holes and having a sealing engagement with said outboard face of said disc in a zone thereof spaced radially outwardly of said disc holes for separating said overlay material from the portion of said disc defining said central aperture and disc holes to thereby maintain said overlay material spaced axially away in an outboard direction from the high temperature zone of said disc, said overlay material engulfing at least a portion of said wall means so as to at least partially embed said retainer means in said overlay to thereby hide said retainer means from view and assist in securement thereof to said disc, said retainer wall means having a radially in-turned outboard flange defining a central opening in said retainer means spaced axially outward from said disc central aperture and from said bolt holes and being adapted for releasable engagement with a detachable hub cap for closing said central opening in said retainer means.

4,659,149

CROSS BLENDING ELECTRO-DYNAMIC/FRICTION BRAKE SYSTEM FOR MULTI-CAR TRAIN CONSIST HAVING MIXED POWER AND NON-POWER CARS

Steven C. Rumsey, No. Huntingdon; John R. Reiss, No. Versailles, and Wayne P. Cymbor, No. Huntingdon, all of Pa., assignors to American Standard Inc., Wilmerding, Pa.

Filed Nov. 8, 1985, Ser. No. 796,670
Int. Cl.[4] B60T *13/74*
U.S. Cl. 303—3 **13 Claims**



1. A cross-blending brake system for a train of cars including at least one power car having electro-dynamic brake means therefor and at least one non-power car comprising:

(a) a brake pipe extending continuously through said train of cars in which fluid under pressure is carried;

(b) a signal wire extending continuously through said train of cars in which an electrical current is carried;

(c) a brake valve device including a control handle rotatable in a brake application range between full release and full service brake positions to effect a corresponding variation in the level of said brake pipe fluid pressure and said signal wire current, said brake pipe fluid pressure providing an analog fluid pressure brake demand signal, and said signal wire current providing an analog electric brake demand signal to control said electro-dynamic brake means in accordance with the desired rate of train retardation;

(d) means for providing a feedback signal corresponding to the regenerative current of said electro-dynamic brake means;

(e) means for providing a first control signal, the value of which is the same as the value of said electric brake demand signal when said feedback signal corresponds to said electric brake demand signal and is less than the value of said electric brake demand signal by an amount proportional to the difference between said electric brake demand signal and said feedback signal when said electric brake demand signal exceeds said feedback signal;

(f) a fluid-pressure-operated brake unit on said at least one power car and on said at least one non-power car;

(g) first blending valve means including first and second motor means subject respectively to said fluid brake demand signal and to said first control signal for producing a differential force in response to which said non-power car brake unit is operated to provide friction braking thereat when said differential force occurs as a result of the force exerted by said first motor means being greater than the force exerted by said second motor means;

(h) means for amplifying said feedback signal to provide a second control signal; and

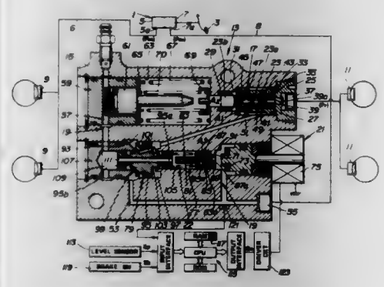
(i) second blending valve means including third and fourth motor means subject respectively to said fluid pressure brake demand signal, and to said second control signal for producing a differential force in response to which said power car brake unit is operated to provide friction braking thereat when said differential force occurs as a result of the force exerted by said third motor means being greater than the force exerted by said fourth motor means.

4,659,150

ELECTRONIC CONTROL SYSTEM FOR AUTOMOTIVE BRAKE SYSTEM FOR CONTROLLING BRAKE PRESSURE IN ACCORDANCE WITH VEHICULAR LOAD

Hitoshi Kubota, Minami-ashigara, and Hideaki Oda, Hamakita, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 30, 1985, Ser. No. 760,561
Claims priority, application Japan, Jul. 31, 1984, 59-159203
Int. Cl.[4] B60T *8/18*
U.S. Cl. 303—6 C **9 Claims**



1. An automotive brake system comprising:

a master cylinder associated with a manual brake actuator for building up hydraulic pressure;

a wheel cylinder connected to said master cylinder through a hydraulic circuit for receiving said hydraulic pressure and braking an associated vehicular wheel;

a pressure control valve means disposed within said hydraulic circuit, said valve means including a reference pressure setting means for setting a reference pressure, said valve means conducting said hydraulic pressure from said master cylinder to said wheel cylinder so as to increase the hydraulic pressure in said wheel cylinder at a rate matching the rate of increase of the hydraulic pressure in said master cylinder while the hydraulic pressure in said master cylinder is below said reference pressure, and to increase the hydraulic pressure in said wheel cylinder at a controlled rate related to the rate of increase of the hydraulic pressure in said master cylinder when the master cylinder pressure exceeds said reference pressure, said reference pressure setting means including a pressure accumulating means for receiving a pressurized fluid from said master cylinder for accumulating fluid pressure therein and adjusting said reference pressure set in said reference pressure setting means, said pressure reference pressure setting means also including means responsive to a rate of increase of said fluid pressure at said master cylinder for adjusting a rate of introduction of said pressurized fluid so as to increase the fluid pressure in said pressure accumulating means at a controlled rate related to the rate of increase of the fluid pressure at said master cylinder such that, when the rate of increase of the fluid pressure at the master cylinder is high, the rate of increase of the fluid pressure in the accumulating means is less than that at the master cylinder;

a detector for detecting the load on the vehicle and producing a load condition indicative signal;

a sensor for monitoring the hydraulic pressure in said master cylinder and producing a pressure indicative signal; and

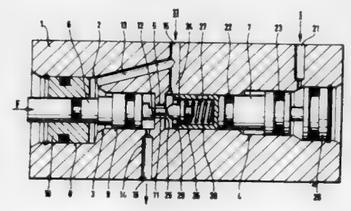
a controller responsive to said load condition indicative signal to derive said reference pressure value corresponding to said reference pressure to be set by said reference pressure setting means on the basis of a predetermined relationship between the load condition indicative signal value and the reference pressure value, said controller responsive to a pressure indicative signal value exceeding said reference pressure value to output a control signal ordering said reference pressure setting means to set the reference pressure at the level derived on the basis of said load condition indicative signal value.

4,659,151

BRAKING PRESSURE CONTROL UNIT FOR A DUAL-CIRCUIT VEHICLE BRAKE SYSTEM ACTUATABLE BY PRESSURE FLUID

Bernd Schopper, Hattersheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jun. 26, 1985, Ser. No. 749,182
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1984, 3424004
Int. Cl.[4] B60T *8/26, 11/00, 17/18*
U.S. Cl. 303—6 C **5 Claims**



1. A braking pressure control unit for a dual-circuit vehicle brake system actuatable by pressure fluid, wherein the relative movement between a closure member furnished with a closure spring and a valve seat of a valve assembly arranged in a housing between inlet and outlet of a first brake circuit in communication with a first pressure source is controlled by a stepped piston that is resiliently urged into said housing by applying an external control force, and wherein the valve seat is fixedly formed with the housing, the stepped piston being located on the side of the valve seat remote from the closure member, and the closure member being actuatable by an extension integrally formed with the stepped piston with said extension penetrating the valve seat, and wherein said relative movement is controllable by a malfunction piston which is slidable in a housing bore in a sealed relationship thereto and whose first effective surface is acted upon by the pressure in the first brake circuit and whose second effective surface is acted upon by the pressure in the second brake circuit which is in communication with a second pressure source of said dual-circuit vehicle brake system, wherein the closure spring is arranged between closure member and malfunction piston and the closure member is movable to bear against a stop of the malfunction piston, wherein with the brake system being intact the closure member (**26**) is resiliently urged by said closure spring into constant abutment against the extension (**11**) of the stepped piston (**6**) when performing its relative movement towards the valve seat (**25**) and wherein upon a pressure failure in said second brake circuit said malfunction piston is translated within its range of said relative movement away from the valve seat (**25**) by the pressure prevailing in said first brake circuit.

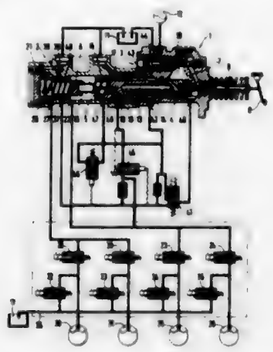
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4,659,152

HYDRAULIC BRAKE SYSTEM WITH SLIP CONTROL

Hans-Dieter Reinartz, Frankfurt am Main, and Helmut Steffes, Eschborn, both of Fed. Rep. of Germany, assignors to ITT Industries Inc., New York, N.Y.

Filed Oct. 9, 1984, Ser. No. 659,280
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338249
Int. Cl.⁴ B60T 8/44
U.S. Cl. 303—114 3 Claims



1. A hydraulic brake system with slip control for use with automotive vehicles having wheel brakes, said system comprising, in combination:

a master cylinder having a stepped master cylinder piston slidably mounted therein adjacent to a working chamber of said master cylinder, said piston having an annular chamber surrounding a central portion of said piston;

a pedal actuated hydraulic brake booster operatively coupled to said master cylinder, said brake booster having a booster piston slidably mounted therein adjacent to a pressure chamber and wherein the end surface of said master cylinder piston adjacent said working chamber is larger than the effective surface of said booster piston;

valve means hydraulically connecting said master cylinder to said wheel brakes, said valve means removing pressure from said wheel brakes during slip control;

an unpressurized reservoir;

second valve means responsive to slip control electronics and connected between the pressure chamber and hydraulically actuated first and second control valves for actuating said control valves during slip control;

said first control valve connected between said working chamber and said annular chamber, said first control valve being normally open and being closed during slip control; and

a said second control valve connected to said supply reservoir, and being connected to said annular chamber the master cylinder piston being actuated in excess of a predetermined travel, said second control valve being normally closed and being opened during slip control.

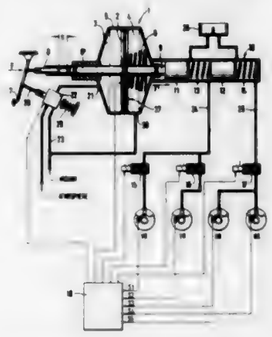
4,659,153

SLIP-CONTROLLED BRAKE SYSTEM

Hans-Christof Klein, Hattersheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 16, 1985, Ser. No. 776,418
Int. Cl.⁴ B60T 8/02
U.S. Cl. 303—114 10 Claims

1. A slip-controlled brake system for automotive vehicles having wheels and wheel cylinders, said system being provided with a power assisted, brake pedal-actuated master cylinder (10), with sensors for the determination of the behavior of rotation of the wheels and of the vehicle speed, with valves (15, 16, 17) in the hydraulic fluid supply lines (24, 25) connecting the master cylinder (10) to the wheel cylinders and with an electronic switching arrangement (18) for the logical linkage and processing of the sensor signals (S1 to S4) and for the generation of valve control signals, with a power-assisted pedal force (F') directed on said master cylinder (10) being temporarily compensatable by an external power acting in opposite direction and with the wheel cylinders being connected, within the phase of reduced pressure in said master cylinder (10), to said master cylinder (10) through the said hydraulic fluid supply lines (24,25) or being cut off due to an actuation of the said valves (15, 16, 17) as a function of the instantaneous behavior of rotation of at least one wheel, with a servo unit (1, 38, 46, 56, 71) arranged in accordance with the principle of a vacuum brake power booster being provided for the generation of the auxiliary power and of the oppositely directed external power, said servo unit (1, 38, 46, 56, 71) comprising a vacuum cylinder with a power piston (2, 41, 50, 73, 98) which, in accordance with the pressure differential in



the power chambers (3, 4; 34, 35; 68, 69; 75, 76; 53, 54) on either side of said power piston (2, 41, 50, 73), transmits a pressure to a push rod (9) which acts upon a master-cylinder piston (11, 12), the pressure differential in the two said power chambers being controllable with the aid of valves (22, 39, 42, 99, 100) as a function of the brake pedal effort (F), wherein a play (s) is provided between the piston rod (8, 31, 84) coupled to the brake pedal (7), on one side, and the push rod (9) of the said master cylinder (10), on the other side, and wherein said piston rod (8, 31, 84) shifts the said push rod (9) on having overcome said play (s) and with a piston (40, 41, 44) subjected to the atmospheric pressure arranged to act, in reaction to the foot effort (F), on the valve member (8', 31, 48, 84) of said servo unit (1, 38, 46, 56, 71) controlling the flow of atmospheric air and a valve (27, 36, 55, 72, 96) arranged in said power piston (2, 41, 50, 73) of said servo unit, a valve (27, 36, 55, 72, 96) effecting the pressure balance between said power chambers (3, 4; 34, 35; 53, 54; 68, 69; and 75, 76) on either side of said power piston (2, 41, 50, 73) to control the power (F') acting on said push rod (9).

4,659,154

COMBINED HOBBY CABINET AND WORK BENCH

Jimmy R. Jenkins, 1814 Mayfield Ave., Garland, Tex. 75041

Filed Sep. 6, 1984, Ser. No. 647,702
Int. Cl.⁴ A47B 47/00
U.S. Cl. 312—277 3 Claims

2. A combination product comprising:

a. a cabinet having a plurality of sides,

b. one side representing the front including a removable front panel member,

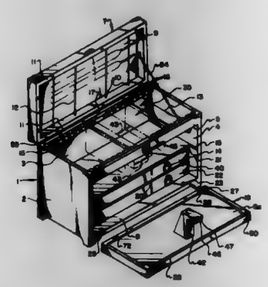
c. said front panel member comprising a front having a swivel handle, a handle supporting plate, and a peripheral trim on the front side of said panel member,

d. said trim on the front side of said panel member being of sufficient height to permit said swivel handle to fold down below its height so that the front side may lay flat on a flat surface,

e. a vise supporting pedestal on the opposite side of said panel member and in alignment with said plate,

f. means for attaching said pedestal to said front panel member that would normally be visible from the front of said cabinet but that is effectively masked by said plate,

g. a second trim near the top interior of said cabinet having a plurality of parallel and aligned notches on each cabinet



side except in a dedicated area reserved for stowage of said pedestal when said cabinet is closed, and wherein

h. that portion of said second trim that is mounted to the top interior of the cabinet is mounted above the top of the removable panel, whereby when the front panel member is removed from the cabinet, the contents of the entire upper area of the cabinet are visible thru a window left by removal of said panel member from the front of the cabinet, and

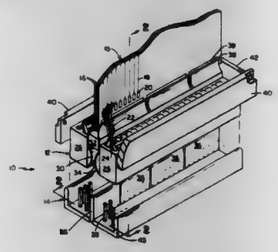
i. the contents of said area comprising a plurality of transparent vertical files having an extended sealing rod cover extending beyond the ends of the files and tightly sealing in the contents of said files, and resting in said notches.

4,659,155

BACKPLANE-DAUGHTER BOARD CONNECTOR

William B. Walkup, Amherst, N.H.; William Chow, San Jose, and Garry C. Gillette, Calabasas, both of Calif., assignors to Teradyne, Inc., Boston, Mass.

Filed Nov. 19, 1985, Ser. No. 799,492
Int. Cl.⁴ H01R 4/66
U.S. Cl. 339—14 R 9 Claims



1. A connector assembly for connecting a daughter printed circuit board having an internal conductive ground plane layer to a backplane, said assembly comprising,

a daughter printed circuit board having an internal conductive ground plane layer,

a daughter board connector element including a plurality of first signal contacts connected to signal lines on a surface of said daughter board near the bottom of said daughter board, said first signal contacts extending outward from said surface and downward, and a ground contact electrically connected to said internal ground plane layer, said ground contact extending along said bottom of said daughter board and downward from said board closer to a plane passing through said ground plane layer than said first signal contacts so as to continue said ground plane layer without interruption by said first signal contacts to provide a short path to ground, and to span a plurality of said signal contacts, said ground contact having an elongated exposed lower contacting portion, and

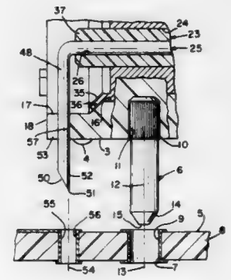
a backplane connector element including a plurality of second signal contacts arranged for mating with respective first signal contacts and a first elongated bus bar aligned with said ground contact so as to contact said contacting portion.

4,659,156

COAXIAL CONNECTOR WITH CIRCUIT BOARD MOUNTING FEATURES

Douglas M. Johnescu, York, and Erlon F. Johnson, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 24, 1985, Ser. No. 748,264
Int. Cl.⁴ H01K 1/00
U.S. Cl. 339—17 C 6 Claims



1. An improved connector having a housing portion with a base for mounting on a printed circuit board, projecting mounting posts extend from the base, a conductive outer shell and a dielectric body are surrounded by the housing portion, a first conductive contact is carried by the dielectric body and projects from the outer shell and has a first contact portion projecting from the housing for insertion into a corresponding aperture of a printed circuit board, the outer shell has a second contact portion projecting from the housing for insertion into a corresponding aperture of a printed circuit board, the free ends of the mounting posts project outwardly further from the base of the housing than the free ends of the first and the second contact portions, and the connector is characterised in that; each mounting post has a taper toward the free end, and each contact portion has a taper toward the free end and with an apex of the taper that intersects a longitudinal external edge of the corresponding contact portion and is aligned with a center line of a corresponding aperture of a printed circuit board, channels extend in the housing and contact supporting surfaces are in the channels, the first and second contact portions are in corresponding channels and the longitudinal external edges of the contacts intersected by the respective tapers engage the contact supporting surfaces of corresponding channels, the contact supporting surfaces of the channels are aligned with center lines of respective apertures in the printed circuit board, whereby upon registration of the free ends of the first and second contact portions with the contact supporting

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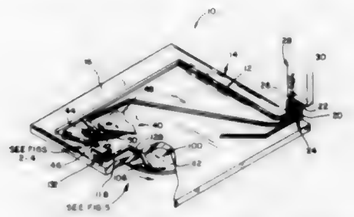
surfaces, colinear alignment of the corresponding apecies, longitudinal external edges and contact supporting surfaces results.

4,659,157

STAMPED CIRCUITRY ASSEMBLY

Daniel Nigg, Rolling Meadows; Robert DeRoss, Naperville; Edward Sommer, Addison; Jack D. Raymer, II, Lisle, and Burke Crane, Bloomingdale, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Sep. 3, 1985, Ser. No. 771,858
Int. Cl.⁴ H01R *29/00*
U.S. Cl. 339—18 R **1 Claim**



1. A stamped circuitry assembly including an integral metal stamping having a plurality of discrete conductive paths, a dielectric substrate having complementary recesses for receiving said conductive paths,

the improvement comprising:

said substrate including an upstanding support wall, a movably mounted table with a surface defining at least one path of movement;

said stamping including a plurality of upstanding finger-like male contacts overlying and coextensive with said support wall so as to form a plug connector slidingly receivable in a plug-receiving cavity of a mating female receptacle connector having a plurality of mating second contacts;

said stamping further including a snap action switch having an elongated resilient spring plate with two parallel elongated spaced-apart slots therein forming two outside support arms each including a pair of spaced offset portions all extending in the same direction transverse to said spring plate and an intermediate flexing arm, a first mounting end and an opposed second free end, contact carrying means at said second free end, the switch further including actuator means deflecting a medial portion of the plate to displace the contact carrying means between first and second bistable positions, said actuator means comprising a rigid member having first and second engaging surfaces disposed on either side of said flexing arm, mounted for pivoting in a first direction to slide said first engaging surface along said flexing arm while deflecting said flexing arm from a first to a second bistable position;

a contact pad carried on the table and having a tapered leading edge, disposed along a portion of said path; and

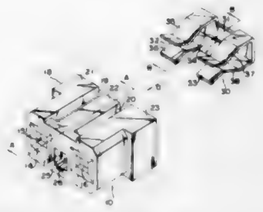
said stamping further including an elongated resilient finger-like contact means having a contact surface disposed on said path so as to electrically engage said contact pad as said table is moved, a moveable support arm extending in a direction transverse to said path, joined at a first end to said finger-like contact means and threadingly jointed at a second end to screw adjustment means operative to reciprocate said support arm in said transverse direction, whereby reciprocation of said support arm causes transverse displacement of said finger-like contact means, with said finger-like contact means engaging said contact pad at different points along its tapered leading edge, to thereby vary the length of the path along said contact pad travelled by said finger-like contact means.

4,659,158

ELECTRIC CONNECTOR WITH CONTACT HOLDING MECHANISM

Haruo Sakamoto, and Motomu Kajiura, both of Tokyo, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1985, Ser. No. 810,363
Claims priority, application Japan, Dec. 28, 1984, 59-202148
Int. Cl.⁴ H01R *13/422*
U.S. Cl. 339—19 **8 Claims**



1. An electrical connector comprising:

a contact including at least one pin receiving portion;

a first click piece formed on the contact;

a second click piece formed on the contact and set apart from the first click piece;

a thermoplastic housing having at least one hollow in which the contact is set, said hollow being defined by a top plate, a bottom plate opposed to the top plate at a distance therefrom, and an opening cut in the rear side of the housing, through which the contact is inserted into the hollow, said top plate having a pair of slits spaced and opposted to each other, one end of each said slit extending to and terminating at the rear side of the housing where the opening is cut in said rear side so that said slits open into the rear side of the housing;

a first retaining portion formed on that portion of the inner surface of the top plate between said one end of the two slits and in the vicinity of the opening, whereby the second click piece is held in position when a pin is inserted in the pin receiving portion of the contact placed within the hollow; and

a second retaining portion formed on the inner surface of the bottom plate so as to face the first retaining portion, whereby the second click piece is held in position when the pin is inserted in the pin receiving portion of the contact placed within the hollow.

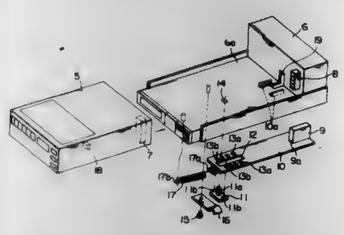
4,659,159

COUPLING DEVICE FOR ELECTRIC DEVICES

Shigeki Takahashi, Saijo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 27, 1985, Ser. No. 706,270
Claims priority, application Japan, Mar. 2, 1984, 59-41107; Jun. 1, 1984, 59-113369
Int. Cl.⁴ H01R *13/62*
U.S. Cl. 339—75 M **5 Claims**

1. A coupling device for electric devices, comprising: a connectable electric unit having a first connector at one end thereof, a main electric unit having a mounting surface on which said connectable unit is to be set, and a second connector provided at one end portion of said mounting surface and adapted to be coupled with said first connector, a stopper projecting from said main electronic unit and movable between a first position where said stopper inhibits said first connector from being coupled with said second connector and a second position where said stopper retracts into said main electrical unit so as to allow the coupling between said first and second connectors, a first means for resiliently urging said stopper toward said first position, a means for locking said stopper at said first position, an unlocking member movable between a third position where said unlocking member projects from said mounting surface and a fourth position where said unlocking member retracts from said mounting



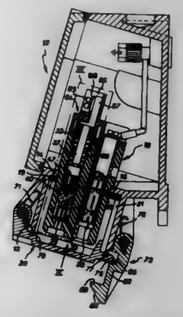
surface, a second means for resiliently urging said unlocking member toward said third position, and a means for releasing the locking of said locking means when said unlocking member moves to said fourth position.

4,659,160

ELECTRICAL CONNECTOR SOCKET SUITABLE FOR USE IN EXPLOSIVE ATOMSPHERE

Pierre Jonval, Neuilly sur Marne, France, assignor to Legrand, Limoges Cedex, France

Filed Dec. 20, 1983, Ser. No. 563,558
Claims priority, application France, Dec. 21, 1982, 82 21430; Jun. 14, 1983, 83 09807
Int. Cl.⁴ H01R *13/53*
U.S. Cl. 339—111 **20 Claims**



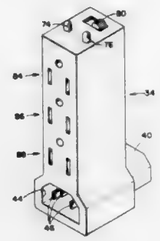
1. A safety connector socket for use with a plug in an explosive environment, said socket comprising at least two phase or neutral receptacles and an optional ground receptacle, means defining fixed explosionproof safety chambers for each of said phase or neutral receptacles, a contact member mounted at the back of each of said safety chambers, a contact piston mounted for movement in each of said chambers and dividing each of the respective chambers into two, front and back, compartments, said phase or neutral receptacles being carried by said contact pistons in the front compartment of the respective chambers, said contact pistons having a first position for entering into contact with plug pins when said receptacles are out of electrical contact with their respective contact members and a second position in which said receptacles are electrically connected to their respective contact members, said contact pistons being responsive to insertion of plug pins for their displacement in said fixed chambers from said first position to said second position.

4,659,161

ADAPTER PLUG FOR PERSONAL COMPUTERS

Kenneth L. Holcomb, 12386 S. Florence, Tulsa, Okla. 74037

Continuation-in-part of Ser. No. 597,387, Apr. 6, 1984, abandoned. This application Dec. 13, 1985, Ser. No. 808,535
Int. Cl.⁴ H01R *13/68, 13/70, 13/717*
U.S. Cl. 339—113 L **7 Claims**



1. An electrical adapter for a small appliance having a recess in one wall thereof, the recess being of a preselected cross-sectional configuration and having a plurality of metal prongs in the recess by which power is supplied to the appliance as by means of an extension cord, the extension cord having a female end thereon configured of mating cross-sectional configuration to be inserted into said recess and having openings in the end thereof to receive the prongs, the openings in the extension cord male end having conductive members therein connected to wires which extend to a source of electrical energy whereby electrical energy is normally supplied to the appliance by the extension cord, the electrical adapter providing means of using the extension cord for supplying electrical energy to the appliance and at the same time provide receptacles for receiving a plurality of other extension cords by which ancillary equipment may be supplied with electrical energy, the electrical adapter comprising:

an elongated body member having, parallel to the body longitudinal axis, a front surface and a rear surface, the front surface having therein a recess of cross-sectional shape substantially identical to the recess in the appliance;

an electrically conductive male plug having prongs received in said recess of shape and orientation substantially identical to the prongs in the recess in the appliance, the recess and prongs being adaptable to receiving an extension cord female end;

an integral boss portion extending from said body rear surface forming a female plug, the boss portion being of cross-sectional configuration substantially identical to the recess in the appliance and having openings in the end thereof to receive the prongs in the male plug recess in the appliance whereby the boss portion may be plugged into the recess in the appliance and said body member being thereby removably supported to the appliance;

a plurality of spaced part openings in said body member front surface forming surface plugs, the openings being arranged in patterns to accept the metal prongs of ancillary extension cords, each opening having means to provide electrical continuity with a prong received therein, and the prongs and conductive members in said body member being electrically interconnected for providing electrical power transfer therebetween.

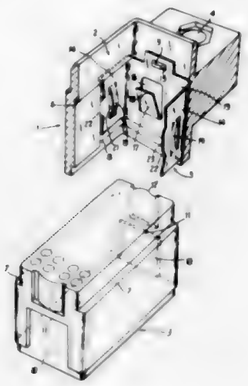
VOL 1077 ISS 3 AP 21 1987 UMI

4,659,162

MULTIPLE CONTACT CONNECTOR CASING AND DEVICE FOR LOCKING CONTACT CARRIER IN CASING

Georges Carteau, Le Blanc Mesnil, France, assignor to Societe Generale pour l'Industrie Electronique (S.O.G.I.E.), S.A., Rosny-Sous-Bois, France

Filed Nov. 5, 1985, Ser. No. 795,276
Claims priority, application France, Nov. 5, 1984, 84 16793
Int. Cl.⁴ H01R *13/516*
U.S. Cl. 339—128 **10 Claims**



10. A device for immobilizing a rectangular insulating block having ends and sides and seated in a casing, of an electrical multiple contact connector, having a rectangular cavity with opposed side walls and opposed end walls, said device comprising, at least one generally "U" shaped elastic clip having a central web and legs projecting from opposite ends of said web, said clip being adapted to be disposed in the cavity, with said web between an end wall of the cavity and an end of the insulating block, and with said legs respectively between the side walls of the casing and the sides of the insulating block, said web having means for hooking onto cooperating means of an end wall of the cavity, resilient means projecting inwardly from said web for engaging an adjacent end of the insulating block, and resilient means on each of said legs for engaging adjacent sides of the block, each of the legs of the clip having free ends adapted to engage a facing shoulder of the cavity for restraining the clip against endwise movement so that dislodgement of said clip from the cooperating means of the end wall of the cavity is prevented.

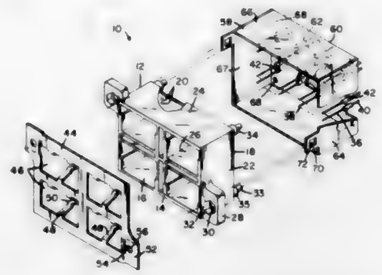
4,659,163

FILTERED SHIELDED CONNECTOR ASSEMBLY

Rickie M. Althouse, Harrisburg; Nicholas L. Gurreri, III, York, and John P. Kling, Mount Joy, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 620,362, Jun. 13, 1984, abandoned. This application Apr. 7, 1986, Ser. No. 849,360
Int. Cl.⁴ H01R *13/648, 13/66*
U.S. Cl. 339—143 R **14 Claims**

1. A filtered and shielded electrical connector, comprising:
dielectric housing means having cavity means therein and rear wall means having apertures extending therethrough;
shield means substantially covering the entirety of said housing means including metal face plate means and metal shell means, said face plate means having opening means corresponding to said cavity means, said shell means having holes in alignment with respective ones of said apertures;
means provided by said shell means and said face plate means securing said shell means and said face plate means together;
electrical filtering means positioned externally of said housing means, said filtering means having holes in alignment with said apertures in said housing means and in alignment with said holes in said metal shell means, said filtering means being electrically commoned to said metal shell means;



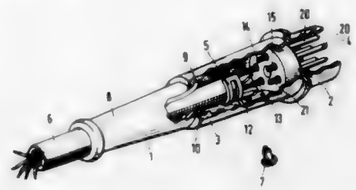
electrical terminal means positioned in said apertures and including first section means disposed in said cavity means and second section means extending through said apertures in said housing means, through said holes in said filtering means and through said holes in said shell means; and
spring finger means, as part of said face plate means extending into said cavity means, for engagement with shielding means of complementary electrical connector means that is matably connectable with the electrical terminal means.

4,659,164

DIODE CONNECTOR

Oswald Reuss, Unterelsbach, Fed. Rep. of Germany, assignor to Preh Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

Filed Apr. 29, 1985, Ser. No. 728,186
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1984, 84132264[U]
Int. Cl.⁴ H01R *4/48*
U.S. Cl. 339—143 R **4 Claims**



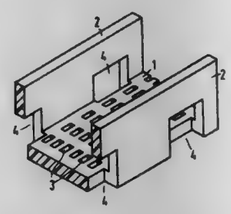
1. A diode connector for providing at least one electrical connection to a cable, having at least one guide pin made of a solid material, an insulating housing with said guide pin inserted into and through said housing, said pin having a connector portion on a front side of said housing and a rear section on a back side of said housing, and a conductor terminal part configured to be fitted snugly onto said rear section, said conductor terminal part consisting of a connector part at one end for crimping onto said cable and a sleeve-like contact spring part at an opposing end, characterized by the fact that said rear section has an axial, concentric bore having a length through the pin and an enclosed lateral slot which extends through a sidewall of said rear section of the guide pin within the length of said axial bore and into said pin as far as said bore, said contact spring part being approximately the length of said rear section and having an enlargement at its opening.

4,659,165

CENTERING STRIP FOR PLUGGING TO A BACKPLANE PRINTED CIRCUIT BOARD

Kurt Glomb, Germering; Heinz Niggl, Holzkirchen; Leo Pelzl, and Karl Zell, both of Niederpoecking, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 2, 1985, Ser. No. 783,111
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1984, 3441301
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 339—176 M **8 Claims**



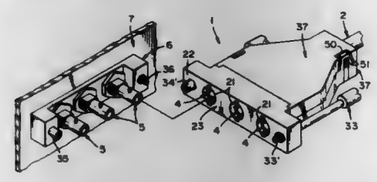
1. In a centering strip for plugging onto contact blades of a backplane printed circuit board, whereby said centering strip serving for the acceptance of spring clips is fashioned as a rectangular housing with at least two opposed upstanding sidewalls open at a top side, the improvement comprising cutouts lying opposite one another are provided in the sidewalls at predetermined intervals, the cutouts sized to receive hooks of a pulling tool from within the housing; whereby centering strips may be plugged onto circuit boards directly next to one another and selectively removed from the contact blades by a pulling tool engaging said cutouts.

4,659,166

CONNECTOR FOR MULTIPLE COAXIAL CABLES

Leroy J. Morningstar, Middletown, and Charles S. Blichasz, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 12, 1985, Ser. No. 797,365
Int. Cl.⁴ H01R *17/18*
U.S. Cl. 339—177 R **5 Claims**



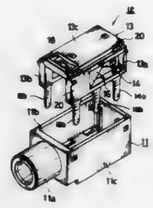
1. An electrical connector, comprising, an insulative body having multiple cavities communicating with a front end and a rear wall of the body, electrical coaxial plugs in respective cavities, the plugs being connected to respective coaxial cables extending from the plugs and projecting from the electrical cable, insulative covers superimposed on one another and covering the coaxial cables, end walls of the covers engaging the electrical cable, latching means on the covers for securing the covers to one another, and recesses in front walls of respective covers, the plugs extending through the front walls and being received in respective recesses, and the front walls partially covering the cavities in the rear wall of the body.

4,659,167

JACK WITH RECESSED CONTACTS

Toru Masuda, Osaka, Japan, assignor to Hosiden Electronics Co., Ltd., Japan

Filed Sep. 21, 1984, Ser. No. 653,105
Claims priority, application Japan, Sep. 30, 1983, 58-183894; Oct. 5, 1983, 58-155498[U]
Int. Cl.⁴ H01R *13/50*
U.S. Cl. 339—182 R **11 Claims**



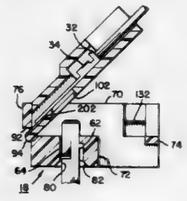
1. A jack with recessed contacts, comprising:
a metal contact collection plate including a plurality of contacts, said contact collection plate having a lateral extent with the contacts being arranged along the lateral extent so that, when the contact collection plate is viewed in development, the contacts do not overlap; and
a contact holding member of molded electrical insulating material molded to a portion of the contact collection plate within which a portion of each contact is recessed, wherein the parts of the contacts remote from the recessed portions are severed when the contact collection plate is punched; at least one pair of said plurality of contacts have contacting areas serving to contact and separate from one another in a contacting and separating operation initiated by a plug being received in and withdrawn from said jack; the contacting areas define contacting faces; the contacts defining the contacting areas are bent so that the contacting faces are in opposed relationship; and the contact holding member being received in and forming a sidewall of a plug-receiving jack body.

4,659,168

ELECTRICAL CONNECTOR

John C. Collier, York, Pa., assignor to Burndy Corporation, Norwalk, Conn.

Filed Sep. 6, 1984, Ser. No. 647,956
Int. Cl.⁴ H01R *13/502*
U.S. Cl. 339—191 M **9 Claims**



1. An electrical connector system comprising;
a plurality of electrically conductive wires;
a tab receptacle coupled to the end of each of said wires;
a plurality of blade contacts, each adapted to be received by a tab receptacle of a predetermined electrically conductive wire; and

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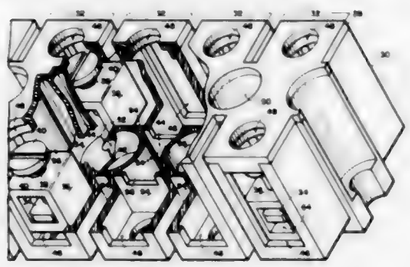
a terminal block assembly, said terminal block assembly including a fixed body portion having a first lower support bar with a first plurality of apertures, an upper support bar and an opening between said first lower support bar and said upper support bar, each of said first plurality of apertures adapted to receive a blade contact, said terminal block assembly also including a movable body portion having a first plate including a second plurality of apertures aligned for the receipt of said blade contacts therethrough, a second plate, and walls coupling said first and second plates, said walls being spaced one from another to form barrels therebetween, said movable body portion including said first and second plates movable relative to said fixed body portion, each of said barrels adapted to receive at least one of said plurality of electrically conductive wires and tab receptacles, said movable body portion having a portion to be matingly received within said opening of said fixed body portion with said blade contacts and tab receptacles being substantially perpendicular after mating in mechanical and electrical contact.

4,659,169

DEAD FRONT TERMINAL BLOCK ASSEMBLY

George Ustin, Croton-on-Hudson, and Andrew P. Soltis, Yonkers, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 445,348, Nov. 29, 1982, abandoned.
This application Feb. 28, 1985, Ser. No. 706,902
Int. Cl.⁴ H01R *13/514, 9/24*
U.S. Cl. 339—198 R **12 Claims**



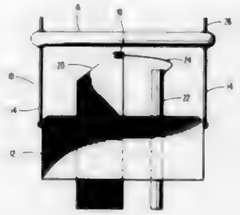
1. A dead-front terminal block assembly comprising:
a plurality of terminals;
a terminal block including complementary insulating parts having walls which collectively define individually-enclosed sections containing respective ones of the terminals and having abutting walls which form partitions dividing respective ones of said individually-enclosed sections into first and second oppositely-disposed outer subsections;
each partition including an aperture defined by the abutting walls forming such partition, and each terminal including a conductive member which extends through the aperture in a respective one of said portions, to the associated outer subsections, such apertured partition serving to secure such conductive member in position;
each of said subsections of each section having an opening for receiving a conductor to be attached to the portion of the conductive member extending into such subsection, such conductor being prevented by said partition from extending into the other subsection of the section,
at least one of said sections containing a terminal which includes a tubular member disposed in one of the outer subsections of such section, the conductive member in such section extending into such tubular member;
such tubular member including means for effecting clamping of a conductor to be inserted between the conductive member and an inside surface of the tubular member, such clamping means comprising a threaded hole formed through one side of the tubular member and a clamping screw inserted in the hole, said screw effecting movement of the tubular member relative to the conductive member when the screw is turned.

4,659,170

PACKAGES FOR ELECTRO-OPTIC DEVICES

James P. Wittke, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 29, 1983, Ser. No. 518,732
Int. Cl.⁴ G02B *5/22*
U.S. Cl. 350—1.1 **4 Claims**



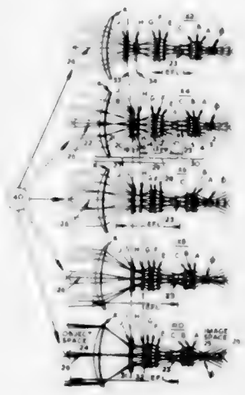
1. In a hermetically sealed package for an electro-optic device comprising an electro-optic device mounted on a header and a cap comprising a metal sleeve bonded to a light-transmissive window sealed to the header so that the light-transmissive window is perpendicular to the optical axis of the device, the improvement which comprises employing an yttrium aluminum garnet crystal as the light-transmissive window.

4,659,171

INFRARED AFOCAL REFRACTOR TELESCOPE

Iain A. Neil, Strathblane, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

Filed May 7, 1985, Ser. No. 731,576
Claims priority, application United Kingdom, May 22, 1984, 8413096
Int. Cl.⁴ G02B *15/16, 1/02*
U.S. Cl. 350—1.2 **5 Claims**



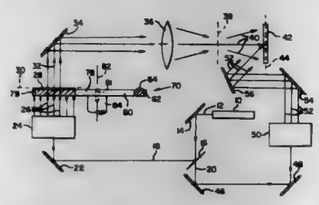
1. An infrared afocal refractor telescope comprising a zoom system, a collecting system and an eyepiece system aligned on a common optical axis, the zoom system being arranged to accept from object space radiation in the infrared waveband, the collecting system being arranged to form a real image from radiation delivered thereto by said zoom system, and the eyepiece system being arranged to deliver radiation from said image to a pupil in image space wherein said collecting system is formed by a single lens component which is fixedly located on said optical axis and said zoom system is formed by an objective lens component fixedly located on said optical axis and by first and second other lens components mounted on respective carriages and separately selectively positionable along said optical axis between said objective lens component and said single lens component, said first and second other lens components each having the same sign of optical power, said objective lens component having positive optical power, the variation in telescope magnification provided by selective positioning of said first and second other lens components being at least 5:1 in range, the locus of movement of said first and said second other lens component being substantially free of curl back, the arrangement being such that relatively small positional adjustments of said first and second other lens components renders the telescope athermalised.

4,659,172

ROTATABLE AND TRANSLATABLE MOUNTING MECHANISM FOR A SPECIMEN PATTERN IN OPTICAL PROCESSING APPARATUS

Daniel L. Cavan, Woodside, Calif., assignor to Insystems, Inc., San Jose, Calif.

Filed May 20, 1985, Ser. No. 736,230
Int. Cl.⁴ G03H *1/02, 1/22*
U.S. Cl. 350—3.83 **10 Claims**



1. In an optical processing apparatus having recording means for making a recording of light information that corresponds to a specimen pattern and light pattern forming means for forming from the recording a light pattern that corresponds to the speciment pattern, a rotatable and translatable mechanism for mounting the specimen pattern and scanning the light pattern, comprising:
a plate for supporting the speciment pattern;
detecting means operatively connected to the plate for detectring the light pattern;
translating means for providing translational movement of the plate in a plane; and
rotating means for rotating the plate about an axis that intersects the plate, the rotating means selectively rotating the plate to a first position so that the recording means is operable to make the recording of light information and to a second position so that the translating means is operable to move the plate in the plane and enable the detecting means to scan and detect the light pattern.

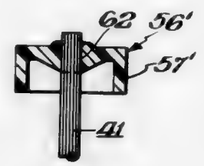
4,659,173

MICROTOMY SPECIMEN BLOCK HAVING A FIBER OPTIC TRANSMISSION MEDIUM THEREIN AND METHOD OF FORMING THE SAME

Allan J. Weiner, Westport, Conn., assignor to RMC, Inc., Tucson, Ariz.

Filed Dec. 15, 1983, Ser. No. 561,524
Int. Cl.⁴ G02B *5/14*
U.S. Cl. 350—96.24 **8 Claims**

6. Apparatus for backlighting a specimen for use in a microtome comprising a plug sized for receipt by the specimen arm of the microtome in a light transmissive relationship with a source of illumination, a portion of the plug being formed of a



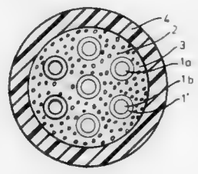
fiber optic transmission medium, the plug having a specimen block mounting surface adapted to receive and support a microtomy specimen block thereon.

4,659,174

OPTICAL CABLE ELEMENT AND CABLE, RESPECTIVELY, AND METHOD OF MANUFACTURING SAME

Hans L. Ditscheid, Bergisch Gladbach, and Walter Burger, Kürten-Herweg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1984, Ser. No. 611,265
Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318233
Int. Cl.⁴ G02B *6/44;* **H01B** *11/02*
U.S. Cl. 350—96.23 **8 Claims**



1. An optical cable element comprising:
one or more optical waveguides, said waveguides not being coupled to each other;
a plurality of strength fibers loosely surrounding the waveguides, said strength fibers extending substantially parallel to each other and to the waveguides, said strength fibers not being coupled to each other or to the waveguides; and
a mantle surrounding the waveguides and fibers;
characterized in that:
the waveguides and fibers occupy 50% to 90% of the volume of the cable element within the mantle, the remaining volume being occupied by air;
each optical waveguide is provided with a thin secondary coating; and
the strength fibers have diameters which are proportioned such that the free effective length of the strength fibers is less than 50% that of the optical waveguides.

4,659,175

FIBER WAVEGUIDE COUPLING DEVICE

Peter V. D. Wilde, Bethlehem, Pa., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 6, 1984, Ser. No. 647,654
Int. Cl.⁴ G02B *6/36*
U.S. Cl. 350—96.20 **17 Claims**

1. Method for alignment of the core of a fiber waveguide to a mating optical element, said fiber waveguide having a core

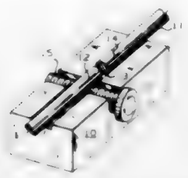
VOL 1077 ISS 3 AP 21 1987 UMI

section and one or more cladding layers surrounding the core section, the method comprising the steps of:

directing a beam of light through the core of the fiber waveguide,

measuring the light output from said mating optical element, and

adjusting the position of the fiber waveguide with respect to the optical element by moving one with respect to the other in two approximately orthogonal directions normal



to the end of the fiber waveguide, said moving step comprising:

moving in a first orthogonal direction at a first rate,

moving in the second orthogonal direction at a second rate substantially greater than the first rate,

detecting the maximum in the light output and stopping the moving when the light output is maximum, and

permanently fixing the position of the fiber waveguide with respect to the optical element.

4,659,176

STRUCTURE AND IMPLEMENT FOR POSITIONING THE LIGHT-RECEIVING EDGE OF THE LIGHT CONDUCTOR ONTO THE FOCUS OF THE LENS

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

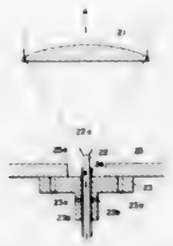
Filed Dec. 27, 1983, Ser. No. 566,073

Claims priority, application Japan, Dec. 31, 1982, 57-230792

The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.

Int. Cl.⁴ G02B *6/36*

U.S. Cl. 350—96.18 **3 Claims**



1. In a structure for positioning the light-receiving edge of an optical conductor means, comprising a lens for focussing light, an optical conductor means having a light-receiving edge, said optical conductor means comprising an optical conductor fiber and a sleeve unitarily disposed about at least a portion of said optical conductor fiber, a supporting plate having an opening coaxial with the axis of said lens, a retaining member receiving said optical conductor means, said retaining member having one part in the form of a flange and another part in the form of a cylindrical section extending from said flange, said flange being perpendicular to the axis of said cylindrical section, said optical conductor means being disposed in said cylindrical section and in said opening in said supporting plate, first adhesive means for adhesively securing said flange to said support member, first adhesive-receiving means for receiving said adhesive means after said flange has been placed on said support plate in a position to dispose said optical conductor means in axial alignment with the optical axis of said lens, said first adhesive-receiving means comprising at least a first opening in said flange, said first opening having an end portion opening up onto a section of said support member such that said first adhesive means is disposed in said first opening and contacts said section on said support member, second adhesive means for adhesively securing said optical conductor means to said cylindrical section, second adhesive-receiving means on said cylindrical section for receiving said second adhesive means after said optical conductor means has been longitudinally placed in a position in said cylindrical section such that said light receiving edge is at the focus of said lens, said second adhesive-receiving means comprising at least one second opening in said cylindrical section of said retaining member, said second opening having an end portion opening up onto a section of said sleeve such that said second adhesive means is disposed in said second opening and contacts said sleeve of said optical conductor means, whereby said light-receiving edge of said optical conductor means is precisely positioned at the focus of said lens.

4,659,177

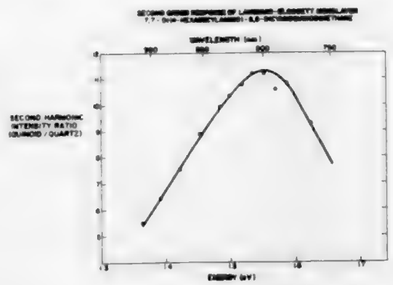
ORGANIC NONLINEAR OPTICAL MEDIA

Eui W. Choe, Randolph; Garo Khanarian, Berekely Heights, both of N.J., and Anthony F. Garito, Radnor, Pa., assignors to Celanese Corporation, New York, N.Y.

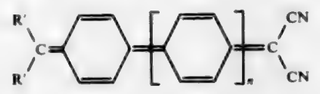
Filed Nov. 13, 1985, Ser. No. 797,465

Int. Cl.⁴ G02B *6/00*; B32B *9/04*; C07C *50/00*

U.S. Cl. 350—96.34 **41 Claims**



1. A nonlinear optical medium comprising a transparent solid substrate with a surface coating of at least one monomolecular layer of uniaxial aligned quinodimethane molecules corresponding to the formula:



where R′ is a substituent selected from hydrogen and aliphatic, alicyclic and aromatic groups containing between about 6–30 carbon atoms; n is an integer with a value between 0–3; and at least one of the R′ substituents is an electron-donating group.

34. An electrooptic light modulating device with a nonlinear optical component comprising a transparent solid substrate with a surface coating of at least one monomolecular layer of uniaxial aligned quinodimethane molecules corresponding to the formula:



where R′ is a substituent selected from hydrogen and aliphatic, alicyclic and aromatic groups containing between about 6–30 carbon atoms, n is an integer with a valve between 0–3; and at least one of the R′ substituents is an electron-donating group.

4,659,178

OPTICAL FILTER

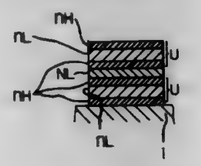
Tetsuo Kyogoku, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 2, 1985, Ser. No. 729,539

Claims priority, application Japan, May 2, 1984, 59-89043

Int. Cl.⁴ G02B *5/28, 5/22*

U.S. Cl. 350—166 **10 Claims**



1. An optical filter comprising:

a plate of colored glass having band-pass filter characteristics and defining a transmission band over a visible region of relatively narrow width, and

an interference multilayer film formed over the colored glass plate and having a reflection band for removing a predetermined range of wavelengths from the transmission band so that the optical filter defines a specified transmission band,

the interference multilayer film including at least two unit layers and a first intermediate low refractive index material layer interposed therebetween, each of the unit layers including two high refractive index material layers and a second intermediate low refractive index material layer interposed therebetween,

wherein the second intermediate low refractive index material layer has an optical thickness of $\lambda_0/2$, and the first intermediate low refractive index material layer and the high refractive index material layers have an optical thickness of $\lambda_0/4$, where λ_0 is a dominant wavelength for the interference multilayer film.

4,659,179

JIG FOR INSCRIBING A SUBSTRATE

Harry P. Dominique, and Clinton A. Waggoner, both of Victoria, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

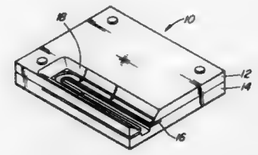
Continuation-in-part of Ser. No. 716,612, Mar. 28, 1985, abandoned, which is a continuation of Ser. No. 418,840, Sep. 16, 1982, abandoned. This application Oct. 16, 1985, Ser. No. 788,220

Claims priority, application Canada, Nov. 18, 1981, 390369

Int. Cl.⁴ G02B *00/00*; A61B *5/08*

U.S. Cl. 350—320 **7 Claims**

1. A jig to facilitate inscription of a pattern on a substrate, said jig comprising a pair of mating plates held together by fastening means, a bottom plate having a groove at one corner of its top surface for positioning and maintaining the position of said substrate during inscription of the pattern on said substrate, and a top plate including a shaped opening which aligns with said groove when the plates are mated to provide a template for the inscription of said pattern on said substrate, wherein said groove provides a substrate-receiving spacing



between said top and bottom plates at said corner to facilitate loading and unloading of said substrate without separating said top and bottom plates.

4,659,180

METHOD OF MOUNTING GALVANOMETER AND MEANS FOR MOUNTING SAME

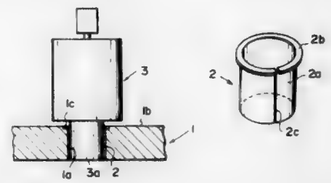
Toru Itakura; Yuji Ohara, and Kazuo Horikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 10, 1984, Ser. No. 569,560

Claims priority, application Japan, Jan. 10, 1983, 58-1952

Int. Cl.⁴ G02B *26/10, 7/00*

U.S. Cl. 350—320 **4 Claims**



1. A method of mounting a galvanometer which comprises securing a cylindrical metal mount of the galvanometer to a plate made of an electrically conductive material via a thin cylindrical insulation bushing into which said cylindrical metal mount is inserted such that said metal mount and said plate are in an electrically insulated relation to each other, said plate having a cylindrical through hole for receiving said bushing, and said bushing having a slit extending over the entire length thereof so that said bushing is discontinuous in the circumferential direction thereof.

4,659,181

LIQUID CRYSTAL DISPLAYS AND METHOD BY WHICH IMPROVED APPARENT VIEWING CONES ARE ATTAINED THEREFOR

Robert G. Mankedick, and Syed Naseem, both of Longwood, Fla., assignors to NCR Corporation, Dayton, Ohio

Filed Jul. 12, 1984, Ser. No. 630,144

Int. Cl.⁴ G02F *1/13*

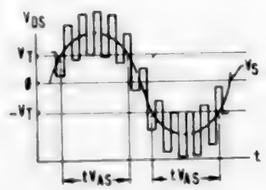
U.S. Cl. 350—332 **10 Claims**

1. In a liquid crystal display of the type which comprises a circuit for driving the display with an electrical energizing signal, said energizing signal comprising an activation signal portion; the improvement wherein said display further comprises means for superimposing an A.C. voltage signal upon said activation signal portion.

2. The liquid crystal display of claim 1 wherein the display is

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of a type which is driven by multiplexing and said energizing driving signal comprises a plurality of regularly recurring



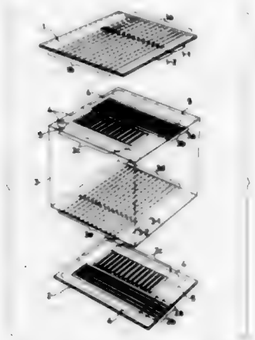
pulses of multiple amplitudes, with said activation signal portion consisting of at least one of said pulses.

4,659,182

MULTILAYERED MATRIX LIQUID CRYSTAL DISPLAY APPARATUS WITH PARTICULAR COLOR FILTER PLACEMENT

Masanobu Aizawa, Yokohama, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,568
Claims priority, application Japan, Mar. 7, 1984, 59-43258
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—339 F **16 Claims**



1. A multilayered liquid crystal display device having a color display, comprising:
- a front substrate of substantially transparent, substantially non-conductive material;
- a rear substrate of substantially transparent, substantially non-conductive material;
- at least one intermediate substrate of substantially transparent, substantially non-conductive material interposed between said front and rear substrates, with respective spaces being provided between said intermediate substrate and said front and rear substrates;
- a first liquid crystal layer in said space between said front substrate and said intermediate substrate;
- a second liquid crystal layer in said space between said rear substrate and said intermediate substrate;
- said intermediate and front substrates having opposed confronting surfaces, and said intermediate and rear substrates having opposed confronting surfaces;
- first signal electrodes on one of said opposed confronting surfaces of said front and intermediate substrates;
- first scanning electrodes on the other of said confronting surfaces of said front and intermediate substrates, at least portions of said first signal electrodes and first scanning electrodes being arranged to intersect each other in a matrix-like fashion, said first liquid crystal layer being interposed between said first signal electrodes and said first scanning electrodes;
- signal electrodes on one of said opposed confronting surfaces of said rear and intermediate substrates;
- second scanning electrodes on the other of said confronting surfaces of said rear and intermediate substrates, at least portions of said second signal electrodes and second scanning electrodes being arranged to intersect each other in a matrix-like fashion, said second liquid crystal layer being interposed between said second signal electrodes and said second scanning electrodes;
- first color layer means arranged opposite the intersecting areas of said first signal and first scanning electrodes, said first color layer means being on the opposite side of said intermediate substrate from said first signal and first scanning electrodes so as not to be interposed between said first signal and first scanning electrodes;
- second color layer means arranged opposite the intersecting areas of said second signal and second scanning electrodes, said second color layer means being on the opposite side of said intermediate substrate from said second signal and second scanning electrodes so as not to be interposed between said second signal and second scanning electrodes;
- whereby a liquid crystal display having a uniform display surface and a clear color display is provided.

4,659,183

BACKLIGHTED LIQUID CRYSTAL DISPLAY

Osamu Suzawa, Shiojiri, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 245,856, Mar. 20, 1981, Pat. No. 4,487,481. This application Dec. 10, 1984, Ser. No. 680,410
Claims priority, application Japan, Mar. 24, 1980, 55-38295; Jun. 5, 1980, 55-75831; Jun. 26, 1980, 55-87056
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—345 **15 Claims**



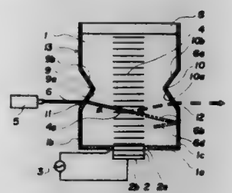
1. A liquid crystal display device comprising:
- a liquid crystal display panel;
- an elongated light source means having a direction of principal elongation for illuminating said liquid crystal display panel;
- a light scattering member of a translucent material, said light scattering member being disposed between said liquid crystal panel and said light source means; and
- a light reflecting member substantially surrounding said light source means and said light scattering member, said light reflecting member having an opening facing said liquid crystal display panel to expose a surface portion of said light passage member;
- said elongated light source means being disposed in a lower central portion of said display device with the display panel overlapping said light source means in plan view;
- wherein the thickness of said light scattering member is gradually reduced towards end portions thereof in the direction of principal elongation of said elongated light source means and the thickness of said light scattering member is gradually reduced towards end portions thereof in a direction orthogonal to said direction of principal elongation of said light source means.

4,659,184

ACOUSTIC OPTICAL LIGHT MODULATOR

Seog H. Sohn, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 14, 1985, Ser. No. 744,543
Claims priority, application Rep. of Korea, Jun. 16, 1984, 5655/84[U]
Int. Cl.⁴ G02F *1/33*
U.S. Cl. 350—358 **3 Claims**



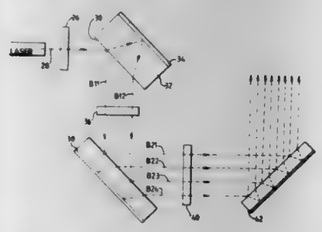
1. An acoustic optical light modulator comprising a hexahedral ultrasonic wave media (1) having a bottom (1*a*) and two sides (1*b*, 1*c*) perpendicular to the bottom, an ultrasonic wave generator (2) attached to the bottom and controlled by a high frequency oscillator (3) connected thereto and a laser source (5) radiating a laser beam (6) incident upon and reflected on a plane (4*a*) of the ultrasonic waves formed in the media, characterized in that the two sides (1*b*, 1*c*) of the media are provided with symmetrical grooves (9, 10) of V-shaped section in the middle portion of the each side thereof, the lower inclined surfaces (9*a*, 10*a*) of the grooves being formed with anti-reflective films (11, 12), and the remaining surface portions of the sides including the upper inclined surface (9*b*, 10*b*) of the grooves and the bottom (1*a*) is coated with heat absorbing films (13) which absorb light and heat.

4,659,185

LIGHT BEAM SPLITTER

John E. Aughton, London, England, assignor to Crosfield Electronics Limited, London, England

Continuation of Ser. No. 561,116, Dec. 13, 1983, abandoned. This application Feb. 21, 1986, Ser. No. 831,673
Claims priority, application United Kingdom, Dec. 21, 1982, 8236294
Int. Cl.⁴ G02B *5/30, 27/14*
U.S. Cl. 350—394 **8 Claims**



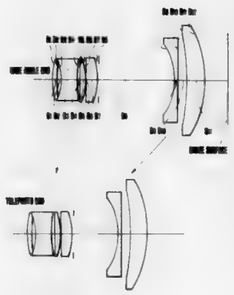
1. Apparatus for producing a plurality of parallel light beams of substantially equal intensity from a single input beam, comprising:
- light source means producing a collimated monochromatic light beam which is either totally non-polarized or is polarized with equal S- and P-polarization components, and
- at least two blocks of isotropic light-transmissive material each having opposed parallel major faces, each block being exclusively silvered on one major face and exclusively uniformly coated to be partially transmissive over the other major face;
- the blocks being positioned in series and having respective thicknesses as measured between their opposed parallel major faces such that the light beam from the source means in a plane normal to both faces strikes the partially-transmissive face of a first block and divides to provide, after internal reflection, a plurality of parallel output beams from the partially-transmissive face, all of which then strike the next block in the series, each such subsequent block receiving the plurality of parallel beams and, by division and internal reflection, emitting for each received beam a plurality of parallel beams, the total energy of a final plurality of parallel beams being substantially equal to that of the original light beam, and said final plurality of parallel beams being equally spaced apart in a lateral direction.

4,659,186

SMALL SIZE ZOOM LENS

Yasuhisa Sato, Kanagawa; Yasuyuki Yamada, Tokyo, and Hiroki Nakayama, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Mar. 8, 1985, Ser. No. 709,445
Claims priority, application Japan, Mar. 12, 1984, 59-46854
Int. Cl.⁴ G02B *9/62, 15/14*
U.S. Cl. 350—423 **10 Claims**



1. A zoom lens comprising:
- a front lens group including, from front to rear, a positive lens unit, a negative lens unit and a positive lens unit and having a positive overall refractive power; and
- a rear lens group on the image side of said front lens group arranged to axially move along with said front lens group and independently of said front lens group, and having a negative overall refractive power,
- said rear lens group including a negative lens and a positive lens arranged behind said negative lens, and satisfying the following conditions:

$$40 < \nu_A < 60$$

$$35 < \nu_B < 55$$

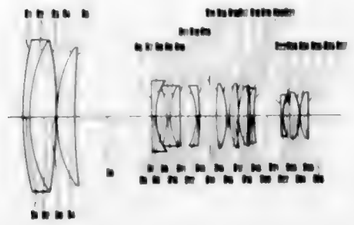
where ν_A is the Abbe number of the negative lens, and ν_B is the Abbe number of the positive lens.

4,659,187

ZOOM LENS USING ELEMENTS MADE OF PLASTIC MATERIALS

Sadahiko Tsuji, Kanagawa, and Sadatoshi Takahashi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 546,083
Claims priority, application Japan, Oct. 29, 1982, 57-191082
Int. Cl.[4] G02B *15/14*
U.S. Cl. 350—427 **12 Claims**



1. A photographic apparatus having a zoom lens, comprising:

a zoom lens which can change its focal length continuously within a predetermined range wherein a first lens group positioned at the frontmost side within said zoom lens has at least one plastic lens and lens systems subsequent to said first lens group having no plastic lenses;

means for receiving a light bundle from said zoom lens to detect whether or not an image of an object is in an in focus state or not; and

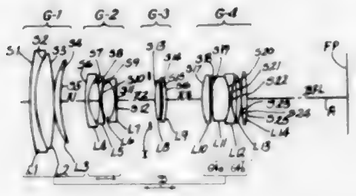
means for shifting said first lens group in the direction of the optical axis relative to said lens systems subsequent to said first lens group corresponding to the in focus state obtained from said detection means for having the light bundle image at an optically conjugate position with a fixed image plane position of said zoom lens and wherein said detection means has an autofocus function and said first lens group is shifted in correspondence with an in focus signal from said detection means.

4,659,188

ZOOM LENS

Melvyn H. Kreitzer, Cincinnati, Ohio, assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Dec. 17, 1984, Ser. No. 682,559
Int. Cl.[4] G02B *9/64, 15/14*
U.S. Cl. 350—427 **15 Claims**



1. In a lens having a range of equivalent focal lengths from a dimension below the diagonal of the image frame of the lens to a dimension at least substantially three times the shortest equivalent focal length where said lens comprises a first positive lens unit, a second negative lens unit, a third positive lens unit, and a fourth positive lens unit, said lens having an aperture defining means in fixed relation to said third lens unit, said first and fourth lens units being axially movable in the same direction and at least one of said second and third lens units being axially movable to vary the equivalent focal length of said lens, said second lens unit having an absolute optical power at least 2.0 as great as the geometrical mean of the extremes of the equivalent focal lengths of said lens; and

$$1.8 > K_4/K_M > 1.0$$

$$1.5 > TR_4 > 1.0$$

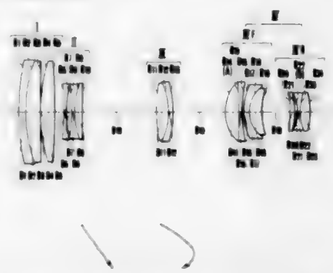
where K_4 is the optical power of said fourth lens unit, K_M is the geometrical mean of the extremes of the equivalent focal lengths of said lens, and TR_4 is the telephoto ratio of said fourth lens unit, said fourth lens unit comprising first and second sub lens units, said first sub lens unit comprising from the object end a first positive element and a doublet formed of a positive element and a following negative element, said second sub lens unit comprising a positive element most closely adjacent the image plane.

4,659,189

ZOOM LENS OF REDUCED TOTAL LENGTH

Nozomu Kitagishi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha

Filed Nov. 19, 1984, Ser. No. 672,795
Claims priority, application Japan, Nov. 25, 1983, 58-222605
Int. Cl.[4] G02B *15/14*
U.S. Cl. 350—427 **13 Claims**



1. A zoom lens comprising a zoom section including a plurality of lens units separated by air spaces, with at least one of the air spaces between two successive lens units being variable for zooming, and an image forming section of positive power arranged in rear of said zoom section and including a front lens unit of positive power and a rear lens unit of negative power, said image forming section satisfying the following conditions:

$$\frac{3.5}{Fim} < \phi a < \frac{5}{Fim}$$

$$0.1\,Fim < D < 0.4\,Fim$$

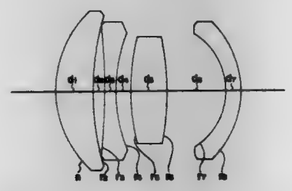
where ϕa is the refractive power of a convergent surface A convex toward the front and having a largest positive power in said front lens unit respectively, B is a divergent surface concave toward the front and having a largest negative power in said rear lens unit, D is the air-reduced axial distance from said convergent surface A to said divergent surface B, Fim is the focal length of said image forming section power of the entire system is taken as 1.

4,659,190

COMPACT PHOTOGRAPHIC CAMERA LENS SYSTEM HAVING AN ASPHERICAL SURFACE OF SHORT OVERALL LENGTH

Shin-ichi Mihara, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Apr. 1, 1985, Ser. No. 718,705
Claims priority, application Japan, Jul. 2, 1984, 59-136886
Int. Cl.[4] G02B *9/34, 13/18*
U.S. Cl. 350—432 **22 Claims**



1. A compact photographic camera lens system of short overall length, comprising:

a first positive meniscus lens component having a convex surface on the object side thereof;

a second biconcave lens componet;

a third biconvex lens component; and

a fourth negative meniscus lens component;

said fourth lens component having only one aspherical surface which is provided on the image side thereof, said aspherical surface being given by the following equation

$$x_8 = \frac{y_8^2}{r_8 + r_8\sqrt{1-(y_8/r_8)^2}} + Ay_8^4 + By_8^6 + Cy_8^8 + Dy_8^{10} \quad \text{(i)}$$

where the sum of all the terms other than the component representing the spherical surface is expressed by

$$Ay_8^4 + By_8^6 + Cy_8^8 + Dy_8^{10} = \Delta x_8,$$

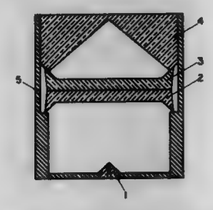
with the conditions $\Delta x_8 \leqq 0$ and $|\Delta x_8| \leqq 5\times10^{-4}f$, $(y_8 \leqq 0.1f)$ being satisfied and with the further conditions $|Ay_8^4| \leqq 0.1|By_8^6|$ with the limits of at least $0.15f \leqq y_8 \leqq 0.2f$ also being satisfied, wherein f represents a focal length of the total system and A, B, C and D represent aspherical constants.

4,659,191

CONICAL SPLIT-IMAGE MICROSCOPIC LENS NO. 3

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Jul. 2, 1985, Ser. No. 751,105
Int. Cl.[4] G02B *13/18*
U.S. Cl. 350—432 **1 Claim**



1. A conical split-image microscopic lens No. 3 M:RT-TR-2RT:C comprising;

a. A lower component lens RT (1) with a concave conical section (7) which refracts an incident beam (6), forming divergent conical beam (9) which is transmitted by convex conical section (8),

b. A first middle component lens TR (2) with a concave conical section (10) which transmits beam (9) and with a convex conical section (11) which refracts beam (9), forming annular beam (12),

c. A second middle component lens RT (3) with a convex conical section (13) whith refracts beam (12), forming convergent conical beam (15) which is transmitted by concave conical section (14), and

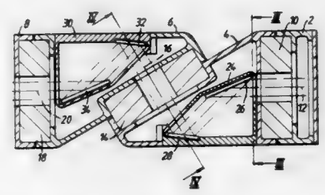
d. An upper component lens RT (4) with a concave conical section (16) which refracts beam (15), forming concentrated circular whole beam (17) which is emitted by planar section (18) parallel to incident beam (6) and to the optic axis.

4,659,192

MANIPULATOR WITH FOUR MIRRORS

John R. Chadwick, Wilmslow, and Brian R. Moody, Darwen, both of England, assignors to Integrated Laser Systems Limited, Salford, England

Filed Sep. 9, 1985, Ser. No. 773,687
Claims priority, application United Kingdom, Sep. 7, 1984, 8422663
Int. Cl.[4] G02B *5/08, 6/00, 7/18, 17/00*
U.S. Cl. 350—486 **7 Claims**



1. A manipulator comprising a first member which is mounted to rotate about a first axis, a second member which is carried by said first member and mounted to rotate about a second axis obliquely inclined to said first axis, a third member which is carried by said second member and mounted to rotate about a third axis obliquely inclined with respect to said second axis and an optical system to transmit a laser beam through said manipulator, said optical system comprising, first and second mirrors carried by said first member and mounted to rotate therewith, said first mirror being situated on said first axis and positioned to reflect a beam of electromagnetic radiation which is substantially parallel to said first axis directly onto said second mirror which is situated on said second axis and third and fourth mirrors carried by said second member and mounted to rotate therewith, said third mirror being situated on said second axis and positioned to reflect said beam of radiation reflected directly from said second mirror directly onto said fourth mirror and said foruth mirror being situated on said third axis and positioned to direct said beam of radiation substantially parallel to said third axis, said first, second and third axes each passing through the same point.

4,659,193

EPIDARK ILLUMINATION DEVICE

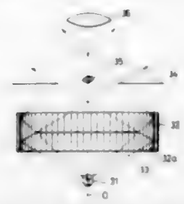
Takashi Nagano, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1984, Ser. No. 663,698
Claims priority, application Japan, Oct. 24, 1983, 58-198821
Int. Cl.[4] G02B *21/10, 5/10*
U.S. Cl. 350—525 **8 Claims**

1. An epidark illumination device comprising a light source arranged on an optial axis, an annular reflecting member having an interior annular reflecting surface on which are located

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a very large number of hairlines extending parallel with said optical axis whereby light from said light source is angularly reflected through an angle which lies in an entrance plane which passes through said optical axis but which is diffused in a plane which extends generally perpendicular to said entrance



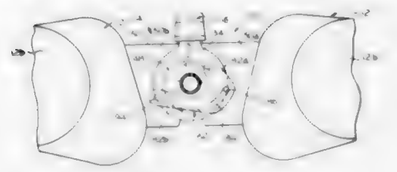
plane, and a light interrupting member arranged concentrically with said reflecting member within said reflecting member so as to prevent light from said light source from directly entering an objective whereby an epidark illumination of an object to be inspected is accomplished.

4,659,194

BINOCULAR FOCUSING MECHANISM

James R. Swartz, Glen Ellyn, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Oct. 15, 1984, Ser. No. 661,060
Int. Cl.⁴ G02B *23/00*
U.S. Cl. 350—552 **21 Claims**



1. In a binocular having a pair of telescopes disposed in parallel relation and having optical means in each of the telescopes for magnifying an object image, the improvement comprising:

means for effecting focus of the optical means by movement thereof, the focus means including a pivotable knob operatively joined to the optical means, the knob being a generally elongated member normally extending generally parallel to the telescopes, the elongated member being mounted between the telescopes in a plane extending generally parallel to the plane defined by the telescopes for pivotable movement about a pivot point located generally at one end thereof, the knob also including a finger contacting portion located generally at the other end of the elongated member, the focus means including a fastener defining the pivot point of the elongated member, the fastener being disposed generally perpendicular to the plane defined by the telescopes;

means for accommodating interpupillary spacing adjustment between the telescopes; and

means for maintaining the elongated member in a plane extending generally parallel to the plane defined by the telescopes independent of the spacing of the telescopes;

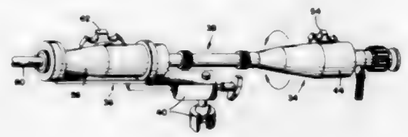
whereby pivotable movement of the elongated member about the pivot point causes movement of the optical means to effect focus and the elongated member is maintained in a plane extending generally parallel to the plane defined by the telescopes to accommodate pivotable movement.

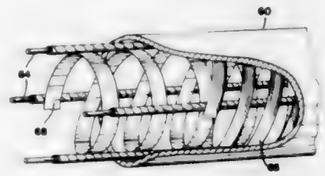
4,659,195

ENGINE INSPECTION SYSTEM

Frank D. D'Amelio, Naugatuck; Michelle d. Maxfield, Stamford, both of Conn.; Dominick G. Esposito, Mamaroneck, and Walter B. Kobyra, Bronx, both of N.Y., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 31, 1986, Ser. No. 824,846
Int. Cl.⁴ G02B *7/00*
U.S. Cl. 350—574 **31 Claims**





17. In an inspection instrument having a generally elongated flexible body extending between a control head at a proximal end thereof and an objective assembly at a distal end thereof for viewing subject matter to be inspected, the improvement comprising:

a tubular elongated flexible guide member having an interior surface and adapted to slidably receive said flexible body therethrough including:

an operating head at a near end of said guide member;

a distal collar at a remote end of said guide member capable of deflection in at least four discrete directions; and

operative means for deflecting said distal collar including:

a plurality of actuating elements movably mounted on said operating head; and

a plurality of operating cables extending between said near end and said remote end along said said interior surface, each of said operating cables being operatively connected to said distal collar and to one of said actuating elements, respectively, such that movement of each of said actuating elements is effective to deflect said distal collar in one of said directions;

said inspection instrument including:

a tubular elongated rigid support member intermediate said control head and said operating head and attached at its ends, respectively, to said control head and said operating head, said support member adapted to slidably receive said body therein and including:

a plurality of coaxial telescoping sections movable between a retracted condition at which said control head is positioned proximate to said operating head and an extended condition at which said control head is positioned distant from said operating head, said objective assembly lying proximate to said distal collar when said support member assumes the extended condition and lying distant from and beyond said distal collar when said support member assumes the retracted condition; and

said inspection instrument including:

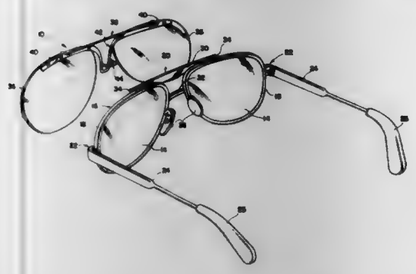
retention means within said guide member engageable with said operating cables and biasing said operating cables against said interior surface.

4,659,196

OPTICAL ACCESSORY FOR USE WITH SPECTACLES

Albert E. Gazeley, San Po Kong, Hong Kong, assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 28, 1985, Ser. No. 706,458
Int. Cl.⁴ G02C *9/00, 7/08*
U.S. Cl. 351—57 **7 Claims**



1. A sun shade device for releasable attachment to prescription glasses, the prescription glasses comprising a pair of lenses, a pair of lens frames each mounting one of the lenses, a nose bridge serving to space the lenses apart and means for providing an abutment extending above each of the lens frames, said sun shade device including:

a pair of sun shades;

means for connecting said sun shades in spaced apart orientation and for presenting a rearwardly extending projection adapted to extend under and rest releasably against the nose bridge of the prescription glasses when said sun shades are operably positioned with respect to the lenses of the prescription glasses; and

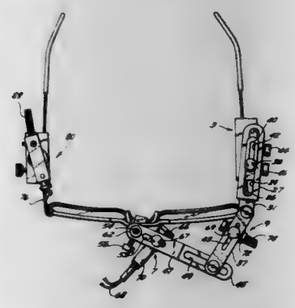
means extending rearwardly from said sun shades for firmly and releasably engaging the edges of said abutments facing away from each other and for exerting a downwardly directed force against both frames of the prescription glasses and urging said projection against the nose bridge of the prescription glasses when said sun shades are operably positioned with respect to the lenses of the prescription glasses.

4,659,197

EYEGLASS-FRAME-MOUNTED EYE-MOVEMENT-MONITORING APPARATUS

Lee S. Weinblatt, 797 Winthrop Rd., Teaneck, N.J. 07666

Filed Sep. 20, 1984, Ser. No. 652,511
Int. Cl.⁴ A61B *3/14*
U.S. Cl. 351—210 **26 Claims**



1. Apparatus adapted to be mounted on an eyeglass frame for monitoring eye movements of a subject wearing said frame, comprising:

a support including means for adjusting the dimensions of said support to a plurality of differently configured eyeglass frames;

fastening means for readily securing said support to said frame and readily removing said support from said frame; and

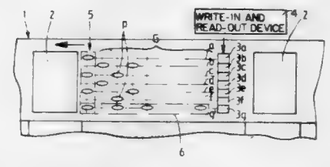
detector means for sensing the eye movements of said subject and including a light source means for reflecting light off the eye, a light sensor for detecting the reflected light, and wire means for activating the light source and for conveying signals detected by said sensor, all of which being carried on said support.

4,659,198

PROCESS AND SYSTEM FOR INSCRIPTION OF CODED INFORMATION ON THE MARGINAL PART OF A PERFORATED CINEMATOGRAPHIC FILM, AND FOR READING THIS INFORMATION

Jean-Pierre Beauviala, Grenoble, and Jean-Pierre Charras, Brignoud, both of France, assignors to Societe anonyme dite: AATON RG., Grenoble, France

Filed Oct. 7, 1985, Ser. No. 784,896
Claims priority, application France, Oct. 8, 1984, 84 15391
Int. Cl.⁴ G03B *21/50*
U.S. Cl. 352—92 **22 Claims**



1. A process for the inscription, on the marginal part of a perforated cinematographic film, of coded information in the form of dots disposed in a matrix of transverse columns and of longitudinal tracks, each transverse column of dots consisting of a combinations corresponding to a different character in a group of information, comprising the steps wherein, before each matrix of dots corresponding to a group of coded information, a first transverse framing pattern is recorded consisting of a unique combination of dots different from all the combinations corresponding to the different characters, then in the course of inscription of the different successive characters constituting the same group of coded information, a second longitudinal framing pattern is recorded along a longitudinal track bordering the matrix, the second longitudinal framing pattern consisting of an alternating pattern, along said track, of dots and absences of dots aligned respectively with the various columns of the matrix in which the successive characters are inscribed.

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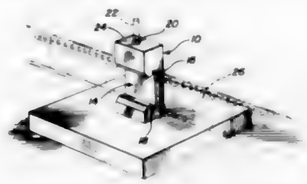
APPARATUS FOR USE IN CODING SPLICED FILM

Richard J. Jarvis, 17 Barrett St., South Burlington, Vt. 05401, and Stephen A. Jarvis, 64 Severance Rd., Colchester, Vt. 05446

Filed Nov. 26, 1985, Ser. No. 802,586
Int. Cl.⁴ G03B *21/50*
U.S. Cl. 352—92 **7 Claims**

1. Apparatus for marking motion picture film and the like, for example for identifying splice locations, the apparatus comprising a holder formed with a channel-like film guide into which a film may be inserted and moved longitudinally through the guide, the guide including upper and lower slots receiving opposite longitudinal edges and marginal portions of

the film, and the holder having an applicator hole opening into one of the slots and applicator means inserted into said hole for



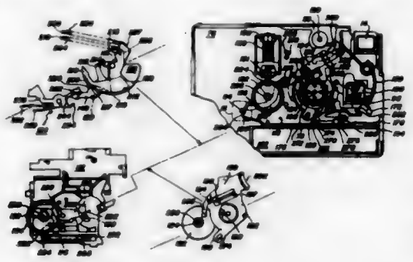
applying a continuous longitudinal mark confined to one of the longitudinal edges of the film as the film moves through the guide.

4,659,200

MOTOR-DRIVEN CAMERA MECHANISM

Robert P. Courtier, Spencerport; Richard A. Gates, Hilton, and Dana W. Wolcott, Honeoye, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1985, Ser. No. 748,533
Int. Cl.⁴ G03B *1/00, 17/42*
U.S. Cl. 354—121 **17 Claims**



1. In a disk camera having a cockable and releasable shutter means, film advancing means, film locating means movable between a film engaging position and a film releasing position, and a driver member arranged for movement in opposite first and second directions and arranged to move said film locating means to said film releasing position, to cock said shutter means, to advance said film, and to move said film locating means into said film engaging position, the improvement comprising:

motor means;

means for applying force generated by said motor means to said driver member to move said driver member in one of said directions; and

compliant means coupled to said driver member operable to move said driver member in the other of said directions to advance said film.

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DRIVE DEVICE FOR CAMERA

Masayuki Suzuki, Kanagawa; Tsunemasa Ohara; Yoichi Tosaka, both of Tokyo; Ryuichi Kobayashi, Kanagawa; Yoshihito Harada, Kanagawa, and Masaharu Kawamura, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha

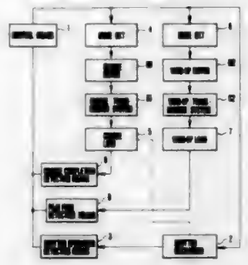
Filed Feb. 6, 1986, Ser. No. 826,784
Claims priority, application Japan, Feb. 10, 1985, 60-24193; Feb. 10, 1985, 60-24194; Feb. 10, 1985, 60-24195; Jul. 9, 1985, 60-150595
Int. Cl.⁴ G03B *1/00, 9/02, 19/12*
U.S. Cl. 354—152 **22 Claims**

1. A drive device for a camera having a plurality of motors alloted to charging of the various portions of the camera and film transportation, comprising:

(a) shutter operating means;

(b) detecting means for detecting completion of a shutter operation by said shutter operating means; and

(c) control means for controlling said plurality of motors to



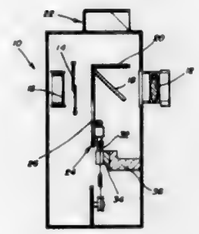
become operative almost simultaneously when the completion of the shutter operation is detected by said detecting means, said control means controlling the operation in such a manner that the operations of said motors are started in slightly displaced timing relation so that their rush currents are prevented from superimposing one upon another.

4,659,202

MIRROR MOUNTING AND DRIVE SYSTEM FOR SLR CAMERAS

Ehsan Sadre-Marandi, Chattanooga, and Anthony G. Fox, Signal Mountain, both of Tenn., assignors to Beattie Systems, Inc., Cleveland, Tenn.

Filed Dec. 12, 1985, Ser. No. 808,525
Int. Cl.⁴ G03B *9/12, 13/02*
U.S. Cl. 354—152 **18 Claims**



1. Mirror displacing apparatus for moving a mirror in a reflex camera between a focusing position and a picture taking position, said apparatus comprising a reciprocable slide plate moveable between an extended focusing position and a retracted picture taking position, means for mounting said mirror on said slide plate at a fixed angular disposition relative to said plate, resilient means urging the slide plate to its retracted position, power driven cam means selectively operative for forcibly driving the slide plate to its extended position against the opposition of the resilient means and for releasing the slide plate for propelled movement to the retracted position under the trust of the resilient means, said power driven cam means comprising a power drive means, a cam rotatably driven by said power drive means in one direction, and a rotatable load wheel operatively connected to said slide plate, said load wheel having follower means for drivingly coupling said load wheel to said cam for driving the slide plate to said extended

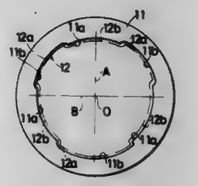
position and for uncoupling from said cam for releasing the slide plate for propelled movement to said retracted position.

4,659,203

BAYONET MOUNT ARRANGEMENT

Masatake Niwa, and Yukio Maekawa, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,144
Claims priority, application Japan, Sep. 2, 1983, 58-162361
Int. Cl.⁴ G03B *17/14;* **G02B** *7/02*
U.S. Cl. 354—286 **10 Claims**



1. In an optical instrument adapted to connect two mating optical units by a bayonet mount arrangement which comprises annular mount members formed on each of the mating optical units and having mating mount surfaces, three sets of angularly separated bayonet claws, one bayonet claw of each set being provided integrally with the mount member of one member of one of the mating optical units and the other bayonet claw of each set being provided integrally with the mount member of the other optical unit, and biasing means provided on the one optical unit for urging the bayonet claws on the mount member of the other optical unit to ensure contact between the mating mount surfaces of the mount members when the connection between the mating optical units is completed, there being a small clearance between the corresponding bayonet claws of each of the sets with the mating mount surfaces being in contact with one another, the improvement of the bayonet arrangement wherein the bayonet claws of the three sets are relatively disposed and dimensioned, such that the corresponding bayonet claws of one of the sets engage one another at an upper peripheral part of the mount members just above the center of the mount members and the corresponding bayonet claws of the remaining two sets engage with one another at lateral side peripheral parts of the mount members diametrically opposite to one another with respect to the center of the mount members in the lateral direction, respectively, when said optical instrument is viewed from its front with said mating optical units connected with one another and held in a normally erect state.

4,659,204

LATCHING MECHANISM FOR PHOTOGRAPHIC APPARATUS

Kenneth J. Launie, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1985, Ser. No. 813,421
Int. Cl.⁴ G03B *17/02, 17/50*
U.S. Cl. 354—288 **7 Claims**

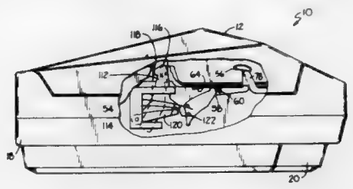
1. Photographic apparatus comprising first and second housing sections connected to each other for movement between a first position in which an opening in one of said first and second housing sections is rendered accessible to permit insertion or removal of a film cassette and a second position in which said opening is closed;

electrical control circuit means for controlling an operation of the photographic apparatus;

latch means movable between a locking position in which said first and second housing sections are maintained in said second position, and a release position for releasing said first and second housing sections for movement into said first position;

manually actuatable means for moving said latch means from said locking position to said release position;

switch means connectable to said electrical control circuit



means and responsive to manual movement of said manually actuatable means for disconnecting said electrical control circuit means from a source of power when said latch means is in said release position; and

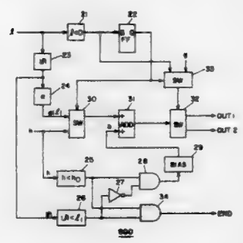
means for releasably retaining said latch means in said release position.

4,659,205

AUTOMATIC FOCUSING APPARATUS

Shotaro Yokoyama, and Takashi Nishibe, both of Yokosuka, Japan, assignors to Fuji Electric Corporate Research & Development Co. Ltd. and Fuji Elec. Co. Ltd., both of Kanagawa, Japan

Filed Apr. 8, 1983, Ser. No. 483,247
Claims priority, application Japan, Apr. 30, 1982, 57-71501
Int. Cl.⁴ G03B *3/00;* **G01J** *1/36*
U.S. Cl. 354—408 **9 Claims**



1. An automatic focusing apparatus for an optical imaging system, which includes an optical system adapted to form an image of an object at a focal plane, the apparatus comprising:

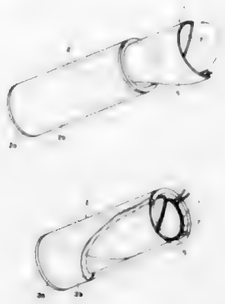
relative image displacement detection means providing a first and a second digital quantity respectively indicative of the direction and magnitude of a focus alteration of the imaging system to achieve a state of focus therein;

image contrast detection means providing a third digital quantity indicative of the change in the contrast of an image formed by the imaging system as the focus thereof is altered;

focus altering means initially responsive to the first and second digital quantities for altering the focus of the imaging system in a direction indicated by the first digital quantity until the third digital quantity indicates a decrease in the contrast of the image with further focus alteration, the focus altering means being subsequently responsive to the third digital quantity for altering the focus of the imaging system until the magnitude of the third digital quantity is less than a first predetermined quantity.

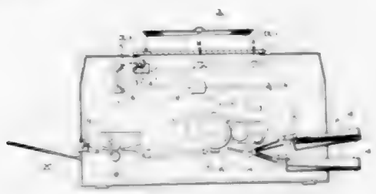
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4,659,206
PHOTOCONDUCTIVE DRUM DEVICE FOR ELECTROSTATIC COPYING MACHINES OR THE LIKE
Masami Kai; Shigeo Kurando, both of Osaka; Toshinobu Katafuchi, Hyogo; Katsumi Amakawa, Nara, and Tetsuji Kajitani, Hyogo, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed May 23, 1985, Ser. No. 737,611
Claims priority, application Japan, May 30, 1984, 59-110443
Int. Cl.[4] G03G *15/00, 21/00*
U.S. Cl. 355—3 DR 6 Claims



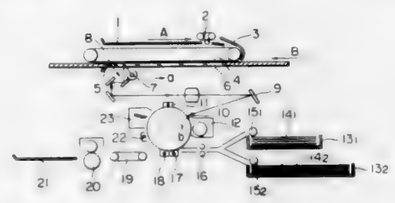
1. A photoconductive drum device for electrostatic copying machines or the like comprising a cylindrical photoconductive drum having a hollow interior and an outer surface comprising a photoconductive layer, and a temperature-maintaining heater comprising a base plate made of a resilient material and a heat generator provided on one surface of the base plate, the base plate having a parallelogrammatic form substantially corresponding to a shape obtained by cutting a hollow cylinder having a diameter approximate to an inside diameter of the drum along a helical cut line and unbending the hollow cylinder, the heat generator having a plurality of straight portions arranged at a specified spacing substantially in parallel with a side edge of the base plate defined by the helical cut line, the heater being bent to a cylindrical form and accommodated in the hollow interior of the photoconductive drum.

4,659,207
COPYING METHOD AND APPARATUS FOR INDEPENDENTLY SCANNING TWO PARTS OF AN ORIGINAL DOCUMENT
Yoshikazu Maekawa, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Jul. 22, 1985, Ser. No. 757,783
Claims priority, application Japan, Jul. 28, 1984, 59-158105
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—8 8 Claims



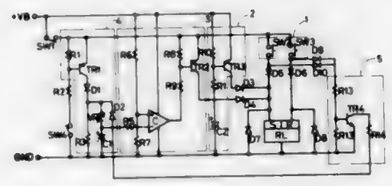
1. A method of copying an original document wherein said original document, placed on an original glass plate, is optically scanned by a movable scanning means, said method comprising: optically scanning a first half side of the original document corresponding to the downstream side in said scanning direction,
forming a copy of the first half side on a copy paper, and optically scanning the second half side of the original document independently of said scanning of said first half side to obtain a copy thereof.

4,659,208
METHOD AND MECHANISM FOR PREVENTING MISOPERATION OF DUAL MODE COPYING MACHINE
Masayuki Miyazaki; Yoshihiko Kudo; Seizi Takahashi; Chiharu Kobayashi, and Akira Sawaki, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Jul. 22, 1985, Ser. No. 757,784
Claims priority, application Japan, Jul. 26, 1984, 59-155752
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—8 6 Claims



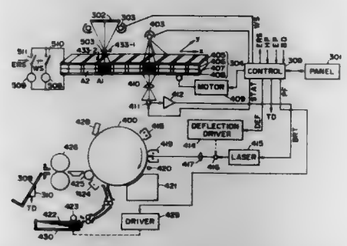
1. An electrostatic recording apparatus having a first mode wherein an original document placed on a document table is scanned by a movable optical system and a second mode wherein an original document is scanned by a stationary optical system during a transportation of said document, said apparatus comprising:
receiving means for receiving a large-sized original document,
selecting means for selecting said second mode, first detecting means for detecting said large-sized original document which is received by said receiving means, and
first means for preventing a selection of said second mode when said detecting means does not detect said large-sized original.

4,659,209
EXPOSURE MODE SELECTRO FOR AUTOMATICALLY SELECTING AUTOMATIC EXPOSURE CONTROL MODE FOR ELECTROPHOTOGRAPHIC COPYING MACHINE
Yoshikado Yamada, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 1, 1985, Ser. No. 707,202
Claims priority, application Japan, Mar. 2, 1984, 59-41075; Mar. 2, 1984, 59-41076
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 E 4 Claims



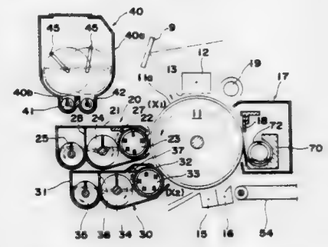
1. An electrophotographic copying machine comprising:
exposure control means for controlling the exposure during a copying operation of the electrophotographic copying machine by varying the intensity of light supplied to expose a copy document, said means for controlling being operable in an automatic exposure control mode in which an amount of light supplied to expose the copy document is automatically determined and a manual exposure control mode in which an amount of light supplied to expose the copy document is manually set;
first means for automatically selecting said automatic exposure control mode of said exposure control means in response to an initial supply of power to said copying machine;
manual switch means for selecting between the automatic exposure control mode and the manual exposure control mode of said exposure control means;
means for counting a predetermined length of time after the occurrence of the copying operation in either of the automatic exposure control mode or the manual exposure control mode,
said means for counting being reset when said automatic exposure selection control mode is selected during a non-copying cycle, or after the completion of any copying cycle, said means for counting being set after said reset operation or upon the initiation of the supply of power to said copying machine; and
second means for automatically selecting said automatic exposure control mode in response to the lapse of said predetermined length of time.

4,659,210
COPYING APPARATUS
Susumu Sugiura, Yamato, and Tadashi Sato, Kokubunji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 329,016, Dec. 9, 1981, abandoned. This application Apr. 12, 1984, Ser. No. 599,523
Claims priority, application Japan, Apr. 23, 1978, 53-48004
The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 R 6 Claims



1. An image forming apparatus for forming images from an image material which stores a plurality of page images to be formed, comprising:
means for irradiating light onto the image material, said irradiating means being disposed on one side of said image material;
a line-configured image photosensing means disposed on the other side of said image material to sense a transmission light from said irradiating means, wherein said image photosensing means reads line image of one of said page images, converts the reading image of each line into electrical signals, and outputs the converted electrical signals in a serial form of a number of pixel data entries for each line;
driving means for providing relative movement between said image material and said photocopying means to perform scanning of the material, so that all line images of a page image on said image material are derived as said electrical signals in a serial form; and
means for controlling said driving means to start the operation in accordance with a signal representing the position of said image material.

4,659,211
COPYING APPARATUS
Tateki Oka, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 3, 1985, Ser. No. 719,739
Claims priority, application Japan, Apr. 5, 1984, 59-68712
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—14 D 12 Claims



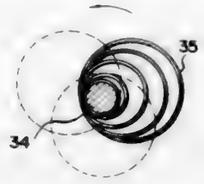
1. In a copying apparatus arranged for forming an electrostatic latent image in the form of a positive image or a negative image on a photosensitive member for obtaining a positive image copy by developing the electrostatic latent image, the improvement comprising:
a first developing means for subjecting the electrostatic latent image to regular development by employment of a developing material composed of a mixture of electrically insulative toner, and carrier capable of triboelectrically charging the electrically insulative toner to a polarity opposite to that of said electrostatic latent image, and
a second developing means for subjecting the electrostatic latent image to reversal development by employment of a developing material composed of a mixture of the electrically insulative toner, and carrier capable of triboelectrically charging the electrically insulative toner to the same polarity as that of said electrostatic latent image, the respective carriers being carriers capable of charging the same insulative toner to respective opposite polarities, whereby the same toner can be used in both developing means.

4,659,212
CLEANING APPARATUS
Issey Ichihara, Chiba, and Toshio Muraoka, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jan. 3, 1985, Ser. No. 688,640
Claims priority, application Japan, Jan. 9, 1984, 59-1655
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—15 15 Claims

1. A cleaning apparatus for cleaning the surface of a movable image bearer, comprising:
cleaning means, arranged in contact with the surface of the image bearer, for removing developer remaining on the surface as the image bearer moves;
casing means for temporarily storing developer removed by said cleaning means;
means, disposed opposite to the surface of the image bearer, for conveying developer out of said casing means;
a flexible coil spring, extending along said conveying means, for oscillating, rocking and rotating the developer in said

casing means to thereby stir the developer in said casing means; and

a rotating shaft extending within said flexible coil spring and turning about its own longitudinal axis parallel to said conveying means so as to extend the full length of said casing means, said flexible coil spring being fixed to said



rotating shaft only at one end of said flexible coil spring and being rotatable in unison with said rotating shaft, said flexible coil spring having inner peripheral surfaces intermittently contacting the rotating shaft so that the radius of rotation of the flexible coil spring, when rotated, does not exceed a predetermined value.

4,659,213

METHOD AND APPARATUS FOR DETECTING AND PROCESSING IMAGE INFORMATION

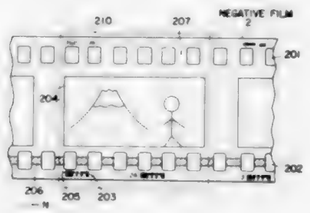
Fumio Matsumoto, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 27, 1986, Ser. No. 845,121

Claims priority, application Japan, Apr. 8, 1985, 60-73793; Aug. 2, 1985, 60-170833

Int. Cl.⁴ G03B *27/32, 27/80*

U.S. Cl. 355—38 **13 Claims**



1. A method for detecting photographic image information which comprises the steps of:

receiving light from an original film and projecting the light upon an image sensor;

detecting image information corresponding to all areas of the original film as pixel units obtained by segmenting a frame of the film; and

detecting marginal information which has been recorded outside of the frame of the original film.

4,659,214

DOCUMENT DETECTING APPARATUS

Yoshinobu Takemura, Nara; Masuo Kawamoto; Masahiro Hashizume, both of Osaka, and Katsumi Nagata, Kyoto, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

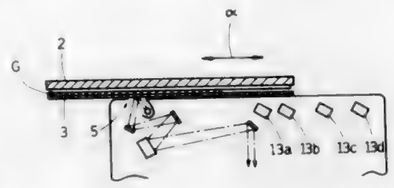
Filed Feb. 14, 1986, Ser. No. 829,777

Claims priority, application Japan, Feb. 21, 1985, 60-33355; Mar. 4, 1985, 60-30667[U]

Int. Cl.⁴ G03B *27/62*

U.S. Cl. 355—75 **6 Claims**

1. A document detecting apparatus comprising an optical measuring means having a light projecting device which emits a measuring light from an inside of to an outside of a copying machine through an original glass plate, and a light receiving device which is installed at a position deviated from a path symmetric to an optical axis of said measuring light with respect to a normal line set up on a surface of the original glass plate and which is directed to receive a scattered light produced from the measuring light scattered at a surface of an original document placed on the original glass plate; a cover closing state detecting means which outputs a closing state



detecting signal when an original cover of the copying machine is closed onto the original glass plate to a specified position immediately before being completely closed; and a judging means which judges that an original document exists when scattered light is received by said light receiving device or that an original document does not exist when scattered light is not received by said light receiving device and said closing state detecting signal is outputted.

4,659,215

OPTICAL FIBER TEST METHOD AND APPARATUS

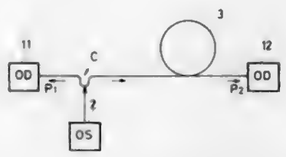
Shin Sumida; Hisashi Murata, and Yutaka Katsuyama, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Nov. 19, 1984, Ser. No. 672,886

Claims priority, application Japan, Nov. 18, 1983, 58-217458; Apr. 18, 1984, 59-77848

Int. Cl.⁴ G01N *21/84, 21/59*

U.S. Cl. 356—73.1 **10 Claims**



1. A method for measuring the optical loss characteristics of an optical fiber comprising the steps of:

bending a test optical fiber at a portion along its length with a small bending radius;

side-illuminating said fiber with light from outside of the bent portion; and

comparing optical powers radiated from both ends of said test optical fiber to obtain the optical loss thereof.

4,659,216

OPTICAL FIBRE REFLECTOMETER

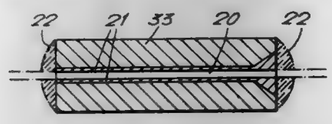
Talal I. Y. Allos, Horseforth; David H. Forbes, Leeds, and Christopher M. Warnes, Garsorth, all of United Kingdom, assignors to Standard Telephones and Cables Public Limited Company, London, England

Filed Aug. 29, 1985, Ser. No. 770,511

Claims priority, application United Kingdom, Sep. 17, 1984, 8423481

Int. Cl.⁴ G01N *21/88*

U.S. Cl. 356—73.1 **4 Claims**



1. An optical fibre reflectometer, which reflectometer includes a biconical multiport optical fibre coupler one port of which is optically coupled with an optical source, a second port of which is ferrule terminated for optical coupling with a test fibre, and a third port of which is optically coupled with a photodetector, wherein the ferrule of the second port is fitted in an optical fibre connector provided with a replaceable slug threaded by a stub length of optical fibre that is optically interposed between the optical fibre in the ferrule and the test fibre.

4,659,217

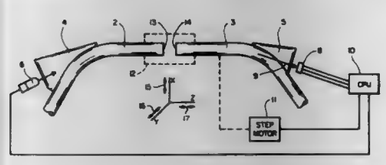
DETERMINING SPLICE ATTENUATION

Nelson M. Shen, San Jose, and John P. Arrington, San Mateo, both of Calif., assignors to Raychem Corp., Menlo Park, Calif.

Filed Jul. 15, 1985, Ser. No. 755,408

Int. Cl.⁴ G01N *21/01, 21/59*

U.S. Cl. 356—73.1 **11 Claims**



1. A method of determining attenuation across an optical fiber splice between a first fiber and a second fiber, comprising the steps of:

moving a first end of a first optical fiber and a second end of a second optical fiber relative to each other along an X and a Y axis, the X and Y axes forming a plane substantially perpendicular to a longitudinal axis of at least one of the first and second fibers;

detecting intensities of light in the second fiber as the first and second fiber ends are moved;

detecting a first maximum intensity of light as the fiber ends are moved in the X direction;

detecting a second maximum intensity of light as the fibers are moved in the Y direction;

detecting a third intensity of light after the fiber ends are optimally substantially aligned and the moving means has stopped moving the first and second fiber ends relative to one another;

securing the first and second ends together subsequent to stopping the moving means;

determining a fourth intensity of light subsequent to securing the first and second fiber end together;

determining an attenuation caused by an optical fiber splice by using the first and second maximum intensities and the third and fourth intensities.

4,659,218

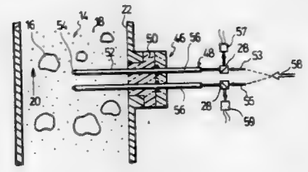
MULTI-PROBE SYSTEM FOR MEASURING BUBBLE CHARACTERISTICS GAS HOLD-UP, LIQUID HOLD-UP AND SOLID HOLD-UP IN A THREE-PHASE FLUIDIZED BED

Hugo I. de Lasa; Shiun-Liang Lee, and Maurice A. Bergougnou, all of London, Canada, assignors to Canadian Patents & Development Corporation, Canada

Filed May 23, 1985, Ser. No. 737,059

Int. Cl.⁴ G01N *21/41*

U.S. Cl. 356—133 **26 Claims**



1. A method for determining one or more physical characteristics of individual bubbles and particle solid hold-up in a gas-liquid-particulate solid system by use of an in situ probe device inserted into said system over which said individual bubbles and solid particle flow, said probe device having a plurality of independent probes, each having a rounded fibre optic end portion projecting into said system, directing a source of incident light onto each of said probes of said device, said rounded end portion being formed with a radius of curvature sufficiently large whereby the angle of incidence of said source light at said rounded portion is greater than the angle of total reflection for said fibre optic when in contact with said gas and the angle of incidence is less than the angle of total reflection for said fibre optic when in contact with said liquid, spatially arranging said plurality of probes of said probe device to detect one or more of said bubble physical characteristics as a bubble flows over said probe device, measuring the change in light intensity of reflected light emerging from each said probe, evaluating said change in light intensities of each said probe over time to determine said one or more bubble characteristics, each said probe being formed of sufficiently thin fibre optic and spaced from said other probes of said device to enable detection of said bubble characteristics for individual bubbles flowing over said probe device, establishing a base line value for measured light intensity emerging from each said probe while said probe is in contact with said liquid and particles, detecting a slight increase relative to said base line value in intensity of said reflected light emerging from said probe, converting said detected slight increase into a value for increased concentration of said particulate solids in said system adjacent said probe in accordance with a predetermined scheme which relates particulate solids concentration to a detected increase in said light intensity relative to said base line value of light intensity of said emerging light.

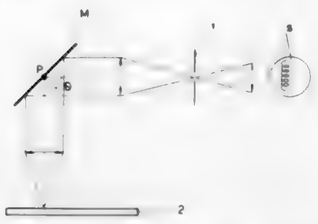
VOL 1077 ISS 3 AP 21 1987 UMI

VOL 1077 ISS 3 AP 21 1987 UMI

4,659,219
SYSTEM FOR DETECTING THE ANGULAR POSITION OF A MECHANICAL DEVICE

Bertrand M. C. de Fleuries; Jean-Pierre L. Coudere, and Jacques J. Lonnoy, all of Paris, France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Oct. 24, 1984, Ser. No. 664,246
Claims priority, application France, Oct. 27, 1983, 83 17136
Int. Cl.[4] G01B *11/26;* **G01C** *1/00;* **G01D** *5/30*
U.S. Cl. 356—152 **6 Claims**



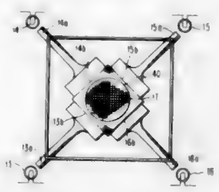
1. A system for accurately measuring the angular position of an angularly-driven object, comprising:
(a) reflecting means on the object for joint angular movement therewith;
(b) means for generating an incident light beam, and for directing the incident beam along a light path through an aperture having a predetermined width dimension to the reflecting means for reflection therefrom, thereby generating a reflected light beam which is movable along a scan direction during said angular movement of the reflecting means;
(c) receiver means in the path of movement of the reflected beam, and including a linear array of photosensitive elements positioned along the scan direction, adjacent elements being spaced apart from each other by a linear distance on the order of said predetermined width dimension, said receiver means being operative for sensing the position of an illuminated element being illuminated by the reflected beam, and for measuring the angular position of the reflecting means and, in turn, of the object as a function of the sensed position of the illuminated element;
(d) clock means for generating a succession of measurement time periods; and
(e) means for correcting the measuring of the angular position of the object, including means for measuring the linear position of one of the elements being illuminated during one of said measurement time periods, means for measuring the linear position of another of the elements being illuminated during the next measurement time period following said one measurement time period, and means responsive to the measured linear positions of said one and said another illuminated elements for generating a correction factor to correct the measuring of the angular position of the object.

4,659,220
OPTICAL INSPECTION SYSTEM FOR SEMICONDUCTOR WAFERS

Joseph J. Bronte, Poughkeepsie; Roland C. Herbert, Hopewell Junction, and Henri A. Khoury, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,292
Int. Cl.[4] G01N *21/55*
U.S. Cl. 356—237 **3 Claims**

3. In an optical inspection method for detecting metallization defects on a semiconductor surface having features metallized thereon wherein light is applied to the wafer surface at an oblique grazing angle and the intensity of said light is monitored, the improvement comprising:

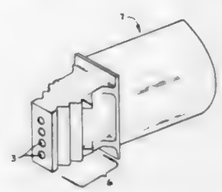


orienting four light sources about the wafer, said light sources defining the sides of a square and said sides being oriented at 45° with respect to the features on the wafer surface.

4,659,221
ENDOSCOPE

Truman F. Kellie, West Chester, Ohio; Teresa M. Motz, Rochester, N.Y.; Mark B. Manley, Sharonville, and Charles W. Donaldson, Blanchester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 26, 1984, Ser. No. 593,168
Int. Cl.[4] G02B *23/24*
U.S. Cl. 356—241 **9 Claims**



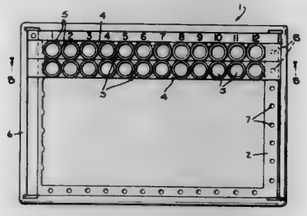
1. Apparatus for examining a cylindrical hole in a turbine engine blade having an illumination axis and an observation axis definable therein, comprising:
(a) illumination means for projecting a light beam along the illumination axis;
(b) support means for supporting the blade such that a longitudinal axis of the cylindrical hole substantially coincides with the observation axis;
(c) beam splitting means for directing the light beam of (a) along the observation axis, into the cylindrical hole, and for transmitting an image of the hole along the observation axis, away from the cylindrical hole; and
(d) observation lens means comprising a short focal length, large aperture lens for enhancing the tunnel-viewing effect of the hole, whereby an observer can view a surface of the hole which is not within his direct line of sight.

4,659,222
MICROCUVETTE SET

Pertti Ekholm, Helsinki, Finland, assignor to Labsystems Oy, Helsinki, Finland

PCT No. PCT/FI83/00082, § 371 Date Sep. 5, 1984, § 102(e) Date Sep. 5, 1984, PCT Pub. No. WO84/02775, PCT Pub. Date Jul. 19, 1984
PCT Filed Dec. 30, 1983, Ser. No. 653,242
Claims priority, application Finland, Jan. 7, 1983, 830056
Int. Cl.[4] G01N *21/03*
U.S. Cl. 356—244 **4 Claims**

1. A microcuvette unit including a plurality of cuvettes arranged in matrix form comprising in combination: a lower frame member defining a first open area about its center and support surfaces about its periphery, an upper locking frame member defining a second open area about its center corresponding to said first open area of said lower frame member, said upper locking frame member being constructed so that its periphery will engage the lower frame member when mounted thereupon to attach said locking frame member to said lower frame member, said locking frame member further defining locking surfaces arranged to be in facing relation with said support surfaces of said lower frame member when said frame members are lockingly attached one to the other, and a plurality of matrixed cuvettes arranged on support plates having at

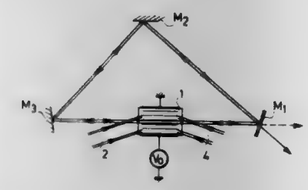


their edges coupling means, said coupling means being configured to cooperate with said support surfaces of said lower frame member so that said plurality of said support plates are disposed in a predetermined orientation when mounted on said lower frame member, whereby upon assembly of said plurality of cuvette matrices and frame members said coupling means of said matrices are lockingly engaged between said members and said first and second central open areas of said frame members are at least of sufficient area to accomodate said cuvettes so that each cuvette in said assembly is upwardly open.

4,659,223
PHOTOREFRACTIVE CRYSTAL INTERFEROMETRIC DEVICE FOR MEASURING AN ANGULAR ROTATIONAL SPEED

Jean-Pierre Huignard, Paris; Hervé Arditty, Marly Le Roi, and Claude Puech, Longjumeau, all of France, assignors to Thomson-Csf, Paris, France

Filed Nov. 1, 1984, Ser. No. 667,164
Claims priority, application France, Nov. 4, 1983, 83 17586
Int. Cl.[4] G01C *19/64*
U.S. Cl. 356—350 **9 Claims**

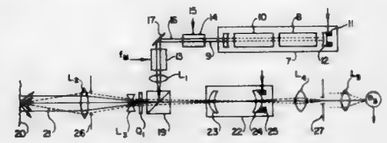


1. An interferometric device for measuring an angular rotational speed, comprising:
optical guide means forming a closed loop in which two contrarotating waves travel;
a photorefractive crystal disposed in the path of a leg of said closed loop;
means for generating an electric field in said photorefractive crystal;
means for interfering two opposed pump waves with said contrarotating waves in said photorefractive crystal, said opposing pump waves being non-colinear and angled with respect to said path at said leg by angles having opposite senses, whereby energy is transferred from said pump waves to said contrarotating waves;
means for mixing said contrarotating waves; and
means for detecting said mixed waves.

4,659,224
OPTICAL INTERFEROMETRIC RECEPTION OF ULTRASONIC ENERGY

Jean-Pierre Monchalin, Montreal, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Nov. 4, 1985, Ser. No. 794,777
Claims priority, application Canada, Nov. 28, 1984, 468883
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—352 **20 Claims**



11. An optical apparatus for measuring the Doppler shift produced in a beam of coherent light when the said beam is scattered by a surface portion of a material undergoing deformation responsive to the presence of an ultrasonic wave comprising:
a laser system for transmitting an incident beam of coherent light,
modulation means for phase modulating the said incident beam by a predetermined frequency f_M,
optical assembly means for directing the said modulated incident beam toward the surface portion of the material undergoing the deformation to produce a scattered beam therefrom and for transmitting the said scattered beam,
an interferometer of the confocal Fabry-Perot type exhibiting a frequency response curve having a peak disposed in the path of the scattered beam transmitted by the optical assembly means for producing an optical interferometer signal,
photodetecting means for detecting the said optical interferometer signal to generate an electrical signal responsive thereto,
output circuit means for processing the said electrical signal to produce an output indicative of the Doppler shift in the scattered beam,
calibration circuit means having a bandpass filter tuned at the said predetermined frequency f_M and being connected to the output circuit to produce a calibration signal, and
feedback means for feeding back the calibration signal to the output circuit means so that the said output is calibrated in real time.

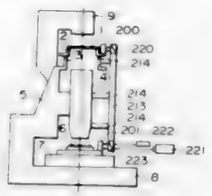
4,659,225
PATTERN EXPOSURE APPARATUS WITH DISTANCE MEASURING SYSTEM

Kazuo Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1985, Ser. No. 722,136
Claims priority, application Japan, Apr. 17, 1984, 59-75806
Int. Cl.[4] G01B *11/02;* **G03B** *27/42*
U.S. Cl. 356—358 **5 Claims**

1. An apparatus for projecting a pattern formed on a first object onto a second object, said apparatus comprising:
first supporting means for supporting the first object;
second supporting means for supporting the second object;
means for projecting the pattern of the first object supported by said first supporting means, onto the second object supported by said second supporting means; and
means for detecting a positional relation between said first

and second supporting means, said detecting means having a light source, a first reflection optical system mounted on said first supporting means, a second reflection optical system mounted on said second supporting means, and a



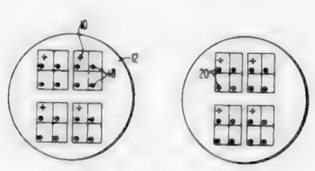
detector for detecting interference between light emitted from said light source and reflected by said first reflection optical system and light emitted from said light source and reflected by said second reflection optical system.

4,659,226

METHOD OF MAKING A SEMICONDUCTOR DEVICE

Hamman Elabd, East Windsor Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 4, 1985, Ser. No. 804,383
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—401 **12 Claims**



1. In a method of making a device which includes at least two parts each having a patterned array along a surface of a substrate with the parts being mounted one on the other with the array on one being aligned with the array on the other, the steps of:

forming on the substrate of each of the parts a first alignment key using the same photolithographic mask,

forming on each of the substrates the features which make up the patterned array of the part being formed on the substrate with each feature being aligned to said first alignment key,

forming on each substrate one or more second alignment keys with each of said second alignment keys being positioned in the same manner with regard to said first alignment key,

placing the substrate of one of the parts over the substrate of the other part, and

aligning the second alignment keys on the two substrates to align the array of one part with the array of the other part.

4,659,227

ALIGNMENT APPARATUS

Mitsuya Sato, Yokohama, and Minoru Yomoda, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

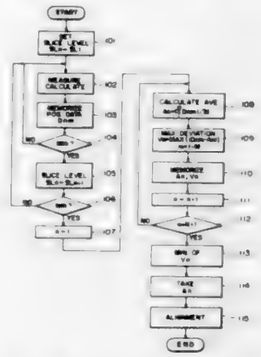
Filed Feb. 8, 1985, Ser. No. 699,867
Claims priority, application Japan, Feb. 13, 1984, 59-22890
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—401 **2 Claims**

1. An alignment apparatus for aligning objects on the basis of a signal obtained by scanning marks on the objects, comprising:

means for scanning the marks on the objects;

means for sensing the marks during the scanning operation by said scanning means;

means for bringing the objects into alignment with each other, wherein said alignment means (i) obtains relative position data from said sensing means on the basis of an extracting datum selected from a plurality of different extracting data; (ii) repeats the position data obtaining



operation a plurality of times with repetition of the scanning operation to obtain a plurality of relative position data; and (iii) determines an average of the relative position data and also determines the maximum deviation from the average;

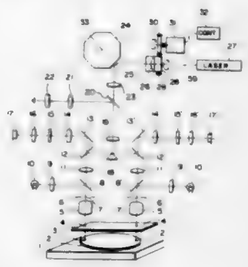
wherein said alignment means is further adapted to repeat operations (i) through (iii) with a different extracting datum and said alignment means performs its alignment operation on the basis of the average of the relative position data corresponding to the minimum of the maximum deviations obtained by the repeated operations.

4,659,228

ALIGNING APPARATUS

Masao Totsuka, Ohmiya, and Akiyoshi Suzuki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 438,628, Nov. 2, 1982, abandoned. This application Sep. 9, 1985, Ser. No. 774,167
Claims priority, application Japan, Nov. 12, 1981, 56-181315
Int. Cl.⁴ G01B *11/00*
U.S. Cl. 356—401 **15 Claims**



1. An aligning apparatus for achieving a predetermined positional alignment of two bodies by scanning first and second bar-like alignment marks provided thereon which are inclined in first and second directions, respectively, relative to a single

scanning line, said first and second directions differing from each other, said apparatus comprising:

beam generating means for sequentially generating two kinds of bar-like beams which are inclined in said first and second directions, respectively, relative to the scanning lines;

beam scanning means for scanning said bar-like beams along the scanning line;

means for detecting said bar-like marks, said detecting means outputting first signals corresponding to said first bar-like marks provided on said two bodies when said bar-like beam inclined in said first direction is scanned along the scanning line and outputting second signals corresponding to said second bar-like marks provided on said two bodies when said bar-like beam inclined in said second direction is scanned along the scanning line;

means for discriminating an amount of deviation between said two bodies based on said first and second signals; and

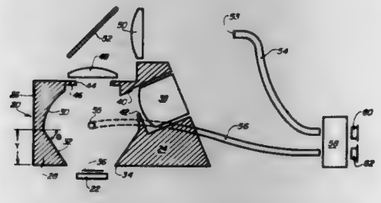
means for moving at least one of said two bodies relative to the other body in accordance with the amount of deviation discriminated by said discriminating means to achieve the predetermined positional alignment of said two bodies.

4,659,229

READHEAD WITH REDUCED HEIGHT SENSITIVITY

Ralph S. Hernicz, Osceola, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 10, 1984, Ser. No. 659,416
Int. Cl.⁴ G01N *21/47*
U.S. Cl. 356—446 **5 Claims**



1. A reflectance photometer for illuminating a sample with diffuse light and sensing the light reflected from the sample comprising a readhead housing, a light source and light sensing means:

said readhead housing consisting of a hemispherically configured upper portion operatively connected to a truncated conical lower portion in which the vertical height of the truncated conical lower portion ranges from 0.5 to 1.09 inch and wherein the interior angle formed by the truncated conical lower portion and the horizontal plane dividing the hemispherically configured upper portion and the truncated conical lower portion of the housing is between 45° and 60°;

wherein the truncated conical lower portion of said housing includes a light transmitting aperture located at the bottom of said readhead housing and wherein the reflectance photometer had a sample carrier mounted a predetermined distance below said aperture;

wherein said readhead housing includes wall structure defining an aperture for transmission of light into said readhead housing from a light source position outside said housing wherein said wall structure is disposed to prevent said light from directly illuminating sample positioned in said sample carrier; and

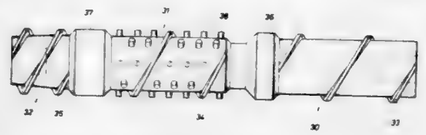
wherein said readhead housing includes wall structure defining at least one aperture for transmission of light reflected from said sample to light sensing means positioned outside said housing.

4,659,230

MIXING ELEMENT FOR COMPOUNDS AND EXTRUDING MACHINERY

Jaime S. Son, and Philip C. Lewellen, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 30, 1985, Ser. No. 739,573
Int. Cl.⁴ B28C *1/16*; B01F *7/08*
U.S. Cl. 366—343 **4 Claims**



1. A mixing rotor element for use in an extrusion and compounding machine, comprising:

a cylindrical shaft member;

a pair of blister elements, said blister elements being formed on the outer surface of said shaft at spaced locations to divide said shaft into a center and two end sections;

a first single flight, said first single flight being formed on the outer surface of one end section of said shaft member;

a second single flight, said second single flight being formed on the outer surface of the center section of said shaft member;

a double flight, said double flight being formed on the outer surface of the other end section of said shaft member; and

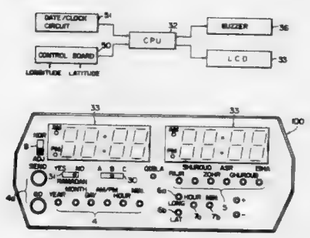
a plurality of rows of mixing pins, said mixing pins being disposed in the land portion of the center section of said shaft member.

4,659,231

ISLAMIC PRAYER CALCULATOR/CLOCK DEVICE

Moghazi F. Barkouki, Ushigomedai Mansion #406, 71 Ichigaya-Yakuoji-cho, Shinjuku-ku, Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,861
Claims priority, application Japan, Feb. 19, 1983, 58-026614; Dec. 23, 1983, 58-248605
Int. Cl.⁴ G04B *19/26*
U.S. Cl. 368—15 **1 Claim**



1. A calculator/clock device, comprising:

(a) a first input means for inputting a date;

(b) a first calculation means for electronically computing, according to a substantially continuous and substantially smooth function of time based on a mathematical model:

(i) first data representing the difference of time by which the mean Sun differs in position from the true Sun; and

(ii) second data representing the angular distance of the solar disc North or South of the celestial equator, at a certain reference time or day on said date inputted via said first input means;

(c) a second input means for inputting the longitude and latitude of a location on the surface of the Earth;

(d) a second calculation means for electronically computing,

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using said first data, third data repreentative of the time of meridian transit of the Sun, on said date, at said longitude as inputted via said second input means;

(e) a third calculation means for electronically computing, using said second data, said third data, said latitude as inputted via said second input means, the times at which the angular position of the Sun relative to the meridian on said date as seen at said location, appropriate for Islamic prayer;

(f) a means for outputting from said third computation means said appropriate times for Islamic prayer.

4,659,232

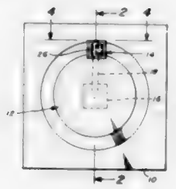
TIMEPIECE

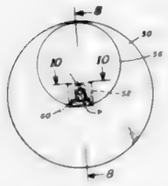
Charles S. Coster, 4 Sparks Pl., Cambridge, Mass. 02138, and Nicholas Edgington, Box 102, Princeton, Mass. 01541

Filed Feb. 22, 1985, Ser. No. 704,495

Int. Cl.[4] G04B *19/00*

U.S. Cl. 368—223 **16 Claims**





1. A timepiece comprising;

a clock face defining a peripherally disposed circumferential face display band,

a digital hour display for displaying in sequence hours one through twelve one at a time,

means for rotating the digital hour display about the circumferential face display band with the position of the display in the clock face band indicative of minutes, and

means for incrementing the hour display on an hourly basis.

4,659,233

TIMEPIECE WITH BUILT-IN TIMER

Norihiko Nakamura, Tokyo, and Hideki Morishima, Yokohama, both of Japan, assignors to Rhythm Watch Co., Ltd., Tokyo, Japan

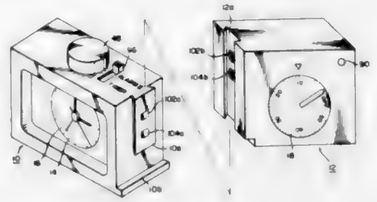
Filed Apr. 11, 1984, Ser. No. 599,151

Claims priority, application Japan, Apr. 12, 1983, 58-65082; Apr. 14, 1983, 58-66780; Apr. 18, 1983, 58-68814; May 6, 1983, 58-79610; Sep. 5, 1983, 58-163968; Mar. 27, 1984, 59-43941[U]

Int. Cl.[4] G04B *23/00*

U.S. Cl. 368—260 **3 Claims**

1. A timepiece comprising a clock section including a time indicating portion driven by a motor through a clock gear train and an alarm setting portion cooperating with said clock gear train to generate an alarm output signal at a preselected time, and a timer section driven by a motor through a timer gear train and including a timer contact unit cooperating with said timer gear train to generate timer output after passage of a preselected time period, one of said clock or timer sections including ridges and the other including dovetailed grooves for being releasably connected with each other, and sets of contacts on the connecting surface of the clock and timer section, the start of said timer section being selectively controlled by the alarm output of said alarm setting portion and by



an alarm pause signal from an alarm pause switch of said alarm setting portion, and further including a secondary alarm/timer changing switch which is selectively actuated to start said timer section singly or to control said timer section by a signal from said alarm setting portion.

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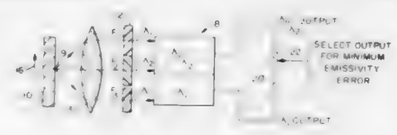
EMISSIVITY ERROR CORRECTING METHOD FOR RADIATION THERMOMETER

Nicholaas L. Brouwer, Allegheny Township, Allegheny County; John M. Urbanic, Churchill Borough, and Albert R. Anderson, White Valley, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 621,698, Jun. 18, 1984, abandoned. This application Apr. 7, 1986, Ser. No. 849,160

Int. Cl.[4] G01J *5/00*

U.S. Cl. 374—121 **1 Claim**



1. A method of measuring the surface temperature of heated metal objects having changing unknown emissivities that are less than unity, the method comprising the steps of:

providing an object having a heated surface radiating infrared energy therefrom;

determining true surface temperature of the object by making an initial measurement thereof that is separate from measurements of infrared energy radiating from the object;

measuring infrared energy radiated from a narrow selected portion of the surface at two different, but closely adjoining wavelengths;

rationing the measurements of the energies at the two wavelengths to provide a first output signal that is a function of the ratio of the infrared energies radiating from the selected portion of the surface at the two wavelengths;

simultaneous with the step of measuring the infrared energies at the two closely adjoining wavelengths, measuring infrared energy radiating from the same narrow selected portion of the surface at one of the wavelengths and providing therefrom a second output signal that is a function of the radiated infrared energy at the one wavelength;

said first measurement and output signal containing errors in the amount of infrared energy radiated from the surface due to the changing emissivities thereof such that the first output signal represents a temperature value that is greater than the true temperature of the surface;

said second measurement and second output signal containing errors in the amount of infrared energy radiated from

the surface due to the changing emissivities thereof such that the second output signal represents a temperature value that is less than the true temperature of the surface, and by an amount that is considerably greater than the amount that the temperature value of the first output signal is different from the true temperature;

correcting for the changing unknown emissivities that affect the amount of infrared energy radiated from the surface by electrically adding the output signals of the first or second measurements;

selecting proportions of the output signals in a manner that allows use of the first or second measurement, or any combination thereof; and

providing thereby means to adjust the output signal such that it represents the true surface temperature, as determined by the initial, separate measurement of true surface temperature.

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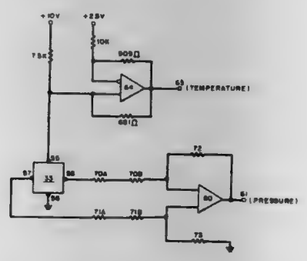
FLUID PRESSURE SENSOR WITH TEMPERATURE INDICATION

William N. Gilmore, Jr., Southfield, Mich., and William H. Leaver, Apex, N.C., assignors to Borg-Warner Automotive, Inc., Troy, Mich.

Filed Apr. 16, 1985, Ser. No. 723,695

Int. Cl.[4] G01K *7/20*; **G01L** *9/06*

U.S. Cl. 374—143 **5 Claims**



1. A pressure and temperature sensor for use in a vehicle control system, comprising:

a single, pressure-responsive semiconductor diaphragm in which the semiconductor diaphragm material defines a plurality of resistors which change resistance as a function of temperature change, which resistors are interconnected to form a Wheatstone bridge circuit having a pair of input terminals and a pair of output terminals;

a first output signal circuit, coupled to the bridge circuit output terminals, for providing a first output signal which varies as a function of the pressure applied to the semiconductor diaphragm;

means for applying an excitation current to the bridge ciruit input terminals;

a second output signal circuit coupled to the bridge circuit input terminals, for providing a second output signal which varies as a function of the temperature of the pressure-responsive semiconductor diaphragm; and

means for using the first and second output signals in the vehicle control system.

4,659,236

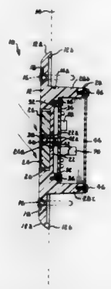
FLUSH MOUNTED TEMPERATURE SENSOR

Michael L. Hobbs, Parkville, Mo., assignor to Tempmaster Corporation, North Kansas City, Mo.

Filed Oct. 21, 1985, Ser. No. 789,661

Int. Cl.[4] G01K *1/14, 1/16*

U.S. Cl. 374—208 **17 Claims**



1. A wall mounted temperature sensor for sensing the air temperature in a building, said sensor comprising:

a generally flat mounting plate adapted to be mounted on the wall in thermal contact therewith to transfer heat to the wall from said mounting plate;

a thermally conductive plate having opposed first and second faces;

means for connecting said sensor plate with said mounting plate in close physical proximity thereto and in a manner to thermally isolate the mounting and sensor plates from one another with said first face of the sensor plate exposed to the air in the building;

an electronic temperature transducer operating at a low power level and generating an output signal representative of the temperature sensed by said transducer, said transducer having electrical leads;

a circuit board having opposite first and second sides and a peripheral edge portion;

an electronic circuit for conditioning said output signal, said circuit including a plurality of heat generating components mounted on said first side of the circuit board;

means for mounting said circuit board on said mounting plate with said peripheral edge portion of the circuit board in contact with said mounting plate and with the board recessed in the wall and said second side facing the mounting plate; and

means for coupling said leads of the transducer with said circuit on said first side of the circuit board with said transducer spaced away from said second side of the board at a location in contact with said second face of the sensor plate, whereby the temperature of the sensor plate is sensed by said transducer and heat generated by said heat generating components is dissipated into the wall by convection and radiation and by conduction from the circuit board to the mounting plate.

4,659,237

DRAWER GUIDE

Reinhold Rapp, Langenau, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Dec. 2, 1985, Ser. No. 804,372

Claims priority, application Austria, Dec. 20, 1984, 4037/84

Int. Cl.[4] F16C *29/04*

U.S. Cl. 384—19 **4 Claims**

1. A concealed guide rail assembly for use on each of opposite sides of an article of furniture for guidin movement of a

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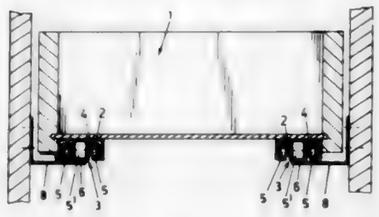
member such as a drawer into and out of a furniture body, said assembly comprising:

a pull-out rail to be mounted on the drawer;

a supporting rail to be mounted on the furniture body;

cylindrical runner rollers mounted in a runner carriage in adjacent arrangement and lying at least substantially in one plane for transmitting the load of the drawer;

said runner carriage having a locking latch for securing said carriage to one of said rails when said supporting and pull-out rails are separated from each other;



said supporting rail having a running flange having a U-shaped configuration having extending from opposite sides thereof horizontal marginal flanges;

said runner rollers of said runner carriage running in a U-shaped channel of said running flange and on the opposite side of said running flange at said marginal flanges; and

said pull-out rail having a C-shaped configuration embracing said runner carriage.

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LINEAR ROLLER BEARING UNIT

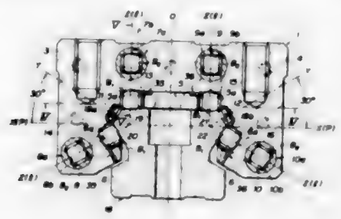
Hiroshi Teramachi, 2-34-8, Higashi-Tanagawa, Setagaya-Ku, Tokyo, Japan

Filed Nov. 8, 1985, Ser. No. 796,619

Claims priority, application Japan, Nov. 13, 1984, 59-237589

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 384—44 **11 Claims**



1. A linear roller bearing unit comprising:

a guide rail having on its opposite sides four loaded roller rolling surfaces;

a bearing body adapted to be mounted on said guide rail for linear motion therealong and having a pair of skirt portions depending from the opposite sides thereof with a longitudinally extending central cavity defined therebetween, said bearing body being formed at the central portion of the inner peripheral surface thereof with a single longitudinally extending central groove and at the inner peripheral surface of each skirt portion with a longitudinally extending side groove, said single central groove being provided at its bottom surface with a pair of longitudinally extending loaded roller rolling surfaces in face-to-face relation with the corresponding loaded roller rolling surfaces on said guide rail, each of said side grooves being provided at its bottom surface with a longitudinally extending loaded roller rolling surface in face-to-face relation with the corresponding loaded roller rolling surface on said guide rail, said bearing body further having four non-loaded roller rolling passages formed therethrough;

four rows of rollers interposed between the opposed loaded roller rolling surfaces on said bearing body and said guide rail; and

retainer means interposed between said bearing body and said guide rail for guiding and holding, in cooperation with the side surfaces of said central and side grooves, said rollers rolling between the opposed roller rolling surfaces.

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BEARING FOR AXIAL LINEAR MOTION

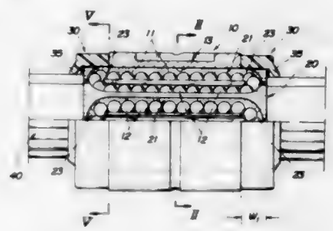
Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed Apr. 29, 1986, Ser. No. 857,153

Claims priority, application Japan, Apr. 30, 1985, 60-63183[U]

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 384—45 **3 Claims**



1. A bearing for axial linear motion comprising:

a substantially cylindrical outer cylinder having a plurality of loaded ball guide grooves and a plurality of non-loaded ball guide grooves formed on the inner peripheral surface thereof such that said loaded ball grooves and said non-loaded ball guide grooves are alternatingly formed in the circumferential direction;

a substantially cylindrical ball retainer received on said outer cylinder and having an axial length greater than that of said outer cylinder and provided on the outer peripheral surface thereof with a plurality of endless track grooves which cooperate with said loaded and non-loaded ball guide grooves of the said outer cylinder so as to permit respective trains of a multiplicity of rolling balls to be recirculated therethrough; and

a pair of substantially ring-shaped end covers fitted and welded to both axial end portions of said ball retainer projecting beyond both ends of said outer cylinder, each of said end cover being provided on the inner surface thereof with ball-turning grooves which radially confront the ball-turning grooves of said endless track grooves in said ball retainer so as to define circular ball-turning passages through which said rolling balls are moved from the loaded regions to the non-loaded regions of said endless track grooves and vice versa.

4,659,240

BEARING PROTECTOR

Thomas E. Rogus, Rte. 2, Box 99, Strandquist, Minn. 56758

Filed Jul. 14, 1986, Ser. No. 885,220

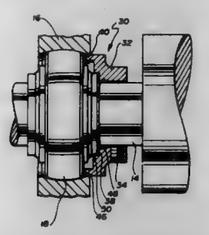
Int. Cl.⁴ F16C *33/74*

U.S. Cl. 384—145 **12 Claims**

1. A device for providing thrust protection to spherical bearings mounted in a housing, the device comprising;

(a) protector means for covering the exposed portion of the seals of a spherical bearing to provide thrust protection to said bearing, said means being constructed and arranged to cover the inner race and substantially all of the outer race of said bearing without contacting the outer race of said bearing;

(b) means for rigidly coupling said protector means to a shaft



attached to said bearing such that said protector means rotates with said shaft; and

(c) said protector means being configured to closely fit over said shaft to limit the entrance of debris into said protector means.

4,659,241

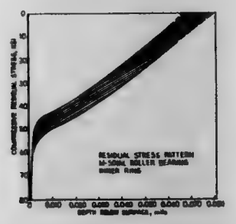
ROLLING ELEMENT BEARING MEMBER

Eric N. Bamberger, Wyoming; John C. Clark, Jr., Oxford, and Alexander H. Nahm, Madeira, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 25, 1985, Ser. No. 705,453

Int. Cl.⁴ F16C *33/62*

U.S. Cl. 384—625 **5 Claims**



1. A rolling element bearing member for cooperation with a shaft rotating at a preselected speed, the member having a ductile core of a hardness of at least 50 Rockwell C had a hardened layer contiguous with the core, wherein:

the member is construction to have a bearing bore in millimeters which, when multiplied by the speed, in revolutions per minute, of the shaft in a preselected bearing operation above a spalling fatigue mode and in a fracture failure mode, equals at least about 2.5 million (DN), the preselected bearing operation developing a predetermined operating hoop tensile stress in the member;

the hardened layer has a compressive residual stress greater than the predetermined operating hoop tensile stress whereby the hardened layer maintains a condition of compressive residual stress during the entire preselected bearing operation and whereby the member has improved resistance to crack initiation and propagation during the preselected operation; and

the member is constructed of an alloy capable of developing and retaining the hardened layer at least at the compressive residual stress.

4,659,242

LEAD LOADING MECHANICAL PENCIL

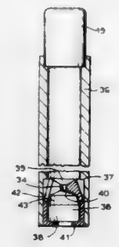
Otto Katz, Schwabach, Fed. Rep. of Germany, assignor to A. W. Faber-Castell, Stein Bei Nuernberg, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 301,971

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042283

Int. Cl.⁴ B43K *21/00, 21/04, 21/22*

U.S. Cl. 401—85 **5 Claims**



1. A lead loading mechanical pencil having an exchangeable container for storing a plurality of leads, comprising a housing and within the housing a lead feeding mechanism including a spring-biased tubular member with a lead clamping means at one end and with a coupling pin at the other end; actuation means for controlling the clamping means; said container including a resiliently deformable bottom wall of annular configuration defining on its outer surface a coupling recess for engaging the coupling pin, said coupling recess having an annular bottom portion formed with a locking opening communicating with the interior of the container, the inner diameter of the locking opening in a disengaged condition of the recess relative to the pin being smaller than the diameter of the leads, and the outer diameter of the pin slightly exceeding the inner diameter of the bottom portion of the recess so that upon coupling the recess with the pin the locking opening is resiliently extended to exceed the diameter of the leads, said container having a cylindrical jacket fitting the interior of said housing, one end portion of said jacket being formed with said bottom wall, said container being assembled of a tubular jacket, of an actuation plug closing the upper end of said jacket and of a separation insert in the lower end of the jacket constituting the bottom wall with the locking opening and the coupling recess, the coupling recess in said insert defining a guiding portion and a conical coupling portion and at least one slot in the bottom wall directed to the locking opening to facilitate its extension when the conical portion is extended by the coupling pin, the guiding portion of said recess having a cylindrical configuration and the base of said conical coupling portion having a funnel-like shape sloping toward said locking opening, the insert having a base wall communicating with the interior of said container, said base wall being of a funnel-like configuration sloping toward said locking opening, and wherein the inner wall of said tubular jacket defines a recessed flange arranged substantially at the level of said bottom wall.

4,659,243

FOUNTAIN TYPE APPLICATOR FOR INK OR THE LIKE AND CARTRIDGE THEREFOR

John P. Winson, c/o Diagraph Corporation, P.O. Box 520, Herrin, Ill. 62948

Filed Apr. 15, 1985, Ser. No. 723,092

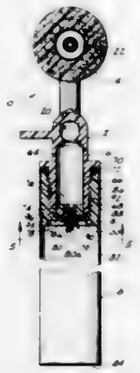
Int. Cl.⁴ B05C *17/02, 1/10*

U.S. Cl. 401—197 **3 Claims**

1. An applicator for liquid such as ink comprising a cartridge for the liquid and a head on the cartridge carrying a roller for application of the liquid, the head having an externally threaded tubular extension on which the cartridge is threaded at one end, the cartridge being shaped and dimensioned to

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serve as a handle for the applicator, the head having a passage for delivery of liquid from the tubular extension to the roller and means adjacent said extension operable by a user while the user is grasping the cartridge for pumping liquid from the cartridge through said passage to the roller, the cartridge comprising a cylindrical sheet metal can having an outer end closure at its end opposite its said one end, a cup-shaped plastic insert in said can at its said one end, said cup-shaped insert being internally threaded for being threadedlly assembled with said tubular extension, said extension having a plug secured in its outer end, said plug having a central bore, a tubular metal piercing member secured in said bore and extending outwardly from the plug, said cup-shaped insert having a bottom with a relatively thin central portion for being punctured by the piercing member on the threaded assembly of the insert and the extension, the can having an annular pressed-in groove spaced from its said one end forming an inwardly directed band around the can, the cup-shaped insert having a skirt extending



down from its bottom having a close fit in the band, the cup-shaped insert at its bottom around the skirt bearing against the band, said piercing member having a tapered body and a cylindrical tip of relatively small diameter extending from the small end of the tapered body for puncturing said relatively thin central portion to provide an opening in the bottom of said insert, the tapered body coming into wedging sealing engagement with the edge of the bottom of the insert all around the opening thus formed in said central portion, said can having a portion extending beyond the rim of the cup-shaped insert at said one end of the can and swaged over on the rim of the insert to hold it in the can, said extension having a flange engageable with said swaged-over portion of the can acting as a stop for the extension when it is threaded into the insert to limit the threading of the extension in the insert to a point where the tapered body of the piercing member is wedged in said opening and said cylindrical tip of the piercing member is inward of the bottom of the insert.

4,659,244

DEVICE FOR RAPIDLY INTERLOCKING OR DISENGAGING, FOR ANTI-THEFT PURPOSES, THE STEERING WHEEL AND THE STEERING COLUMN OF A MOTOR VEHICLE

Michel Malvy, 848 Bd de Stalingrad, 94500 Champigny, and Pierre Jalabert, 27 Route des Pyrénées, 11190 Couiza, both of France

Filed May 16, 1985, Ser. No. 734,841

Claims priority, application European Pat. Off., May 18, 1984, 84401047.0

Int. Cl.⁴ F16D *1/00*

U.S. Cl. 403—24 **12 Claims**

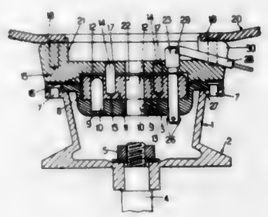
1. An anti-theft device for rapidly disengaging and subsequently interlocking a steering wheel to a steering column of a motor vehicle, comprising:

a base which is secured to the steering column for rotation therewith about a longitudinal axis;

a plate which is secured to the steering wheel for rotation therewith;

an intermediate connecting piece which is located axially between said base and said plate;

a first coupling means for rotatably coupling and decoupling said connecting piece and said base such that said connecting piece is rapidly coupled to or decoupled from said base;



a second coupling means for rotatably coupling and decoupling said connecting piece and said plate such that said connecting piece is rapidly coupled to or decoupled from said plate; and

a releasable holding means for releasably holding said connecting piece axially between said base and said plate with said base coupled to said connecting piece by said first coupling means and with said plate coupled to said connecting piece by said second coupling means whereby the steering wheel is coupled for rotation with the steering column and whereby when said releasable holding means is released said connecting piece is rapidly removable axially from between said base and said plate.

4,659,245

GAS TURBINE

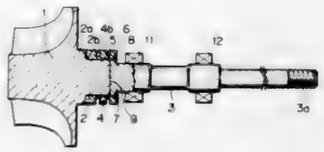
Sumio Hirao, Yokohama, and Kunio Maki, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 30, 1986, Ser. No. 868,561

Claims priority, application Japan, May 31, 1985, 60-82920[U]

Int. Cl.⁴ F16C *9/00*; **F16D** *1/00*

U.S. Cl. 403—30 **4 Claims**



1. A joint structure, comprising:

a metallic shaft including a metallic cylindrical end portion having a cylindrical bore with an open end;

a ceramic shaft received in said cylindrical bore;

said metallic cylindrical portion formed with a ring seal groove;

a brazing filler metal distributed between closely fitted surfaces of said ceramic shaft and said cylindrical bore and extending axially toward said open end of said cylindrical bore up to a predetermined plane where said ring seal groove lies; and

means for closing said open end of said cylindrical bore.

4,659,246

STRUCTURE FOR SCREWING OBJECT ON SHEET METAL

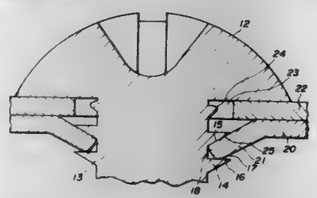
Ichirou Sugiyama, Shiki, Japan, assignor to Crown Screw Corporation, Saitama, Japan

Filed Jan. 7, 1986, Ser. No. 816,878

Claims priority, application Japan, Jul. 24, 1985, 60-164764

Int. Cl.⁴ F16B *25/00, 37/00*

U.S. Cl. 403—408.1 **5 Claims**



1. A structure comprising a screw and an object having a fixing hole and a piece of sheet metal to which the object is fixed by said screw extending through said fixing hole comprising:

said screw having a screw head at one end having a diameter larger than that of the fixing hole for engaging one side of the object, and a shank having a substantially uniform diameter, said shank integral with and extending from said screw head and having an external thread on the outer surface thereof, said thread having

a following flank facing said screw head forming one side of said thread and extending substantially perpendicular to the outer surface of said shank and a leading flank forming the other side of said thread meeting said following flank at a predetermined angle, said thread extending spirally around the outer surface of said shank so that the spacing between the turns of said thread along the outer surface of said shank has a predetermined width as measured in the direction in which the shank extends; and

the piece of sheet metal having a surface for engaging the other side of said object, a receiving hole therethrough, and an annular lip of uniform thickness having in inner circular edge defining said circular receiving hole and an outer circular edge at which said annular lip is bent from the surface of said sheet metal away from the object and at a predetermined angle relative to the surface of said piece of sheet metal so as to form a frustrum shaped depression at the surface of said sheet metal open to and communicating with said receiving hole,

said shank of said screw extending through said frustrum shaped depression and said receiving hole so that said annular lip is engaged between said following and leading flanks of said thread to mate therewith for attaching the object between said screw head and said surface of said piece of sheet metal.

4,659,247

EDGING ELEMENT WITH INTERLACEABLE ELASTIC ANCHORING STRIP

Alfred Steiner, Andelfingen, Switzerland, assignor to Steiner Silidur AG Andelfingen, Andelfingen, Switzerland

Filed Oct. 3, 1985, Ser. No. 783,543

Claims priority, application European Pat. Off., Nov. 9, 1984, 84810543.3

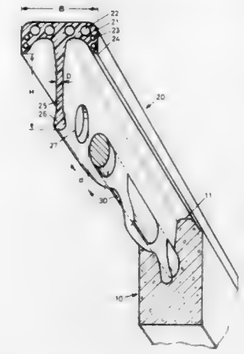
Int. Cl.⁴ E01C *13/00, 5/22*

U.S. Cl. 404—8 **10 Claims**

1. Edging element for playing fields and sports installations, comprising in combination:

an elongate elastic profile top; and

means for anchoring said edging element inside of said profile top in a concrete slab in interlacing relationship with a straight reinforcement rod, comprising an anchoring strip extending along and projecting from said elongate profile top, said anchoring strip having a series of apertures distributed along at least one line parallel to said elongate profile top for receiving said reinforcement rod alternatively from different sides of said anchoring strip being of sufficiently elastic material to form an interlacement with said straight reinforcement rod.



4,659,248

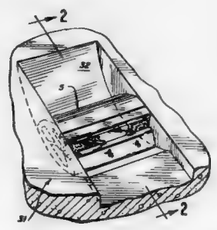
SELF CLEANING PAVEMENT MARKER

Robert M. Flanagan, Lincolnshire, Ill., assignor to Amerace Corporation, Hackettstown, N.J.

Continuation of Ser. No. 322,253, Nov. 17, 1981, abandoned. This application Feb. 18, 1986, Ser. No. 833,634

Int. Cl.⁴ E01F *9/06*

U.S. Cl. 404—10 **17 Claims**



1. A self-cleaning pavement marker for use on the driving surface of a roadway, said marker providing a retroreflective signal visible from an oncoming vehicle traveling on said roadway, comprising, in combination:

a groove formed in said driving surface;

a resilient elastomeric marker body having no rigid or nonelastomeric portions;

said marker body being sized and shaped to fit within and be secured in said groove such that said marker body is generally at no time positioned above the plane defined by said driving surface;

retroreflective lens means secured to an upper portion of said marker body;

said lens means including a front face and a rear face, said rear face having a cube-corner type retroreflective lens system thereon;

said lens means being adapted to retroreflect light impinging on said front face from an oncoming vehicle back toward said vehicle;

said front face of said lens means being overlaid with a material more abrasion-resistant than that material forming said retroreflective lens system;

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said upper body portion being movable between a normal reflective position wherein said lens means is positioned below the plane of said driving surface to retroreflect light impinging on said front face from an oncoming vehicle back toward said vehicle, and a depressed position caused by the force of a vehicle tire passing over said upper body portion; and

wiping means positioned below the plane of said driving surface and adjacent to said front face,

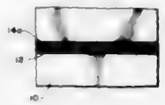
said wiping means being configured and arranged such that said wiping means does not interfere with the retroreflective function of said lens means when said upper body portion is in said normal position but upon movement of said upper body portion to said depressed position and return to said normal position said front face of said lens means moves past said wiping means and in direct contact therewith whereby said wiping means effects a debris-cleaning and wiping function on said front face.

4,659,249

ROADWAY DESTRIPING

J. C. Pemberton, 9920 Sunset Ave., La Mesa, Calif. 92041

Filed Sep. 16, 1985, Ser. No. 776,292
Int. Cl.⁴ E01F *9/08*; E01C *23/16*
U.S. Cl. 404—75 **8 Claims**





1. In a process for de-marking or de-striping a passageway surface, said surface being a first color, and the marking thereon being a second, contrasting color, the step of painting, over said marking, a color substantially indistinguishable from said first color,

said painting being applied in discrete segments distributed generally evenly over said marking, and covering approximately one-half of the total area of said marking,

the smallest dimension of any given segment being sufficiently small that when the surface is viewed by a person in traversing the passageway, the two contrasting colors appear to be a blend approaching said first color.

4,659,250

PAVEMENT EXTRACTOR

Daniel L. Nelson, Rte. 1, South, Box 175, Seminole, Tex. 79360

Filed Jul. 23, 1985, Ser. No. 758,026
Int. Cl.⁴ E01C *23/12*
U.S. Cl. 404—90 **18 Claims**

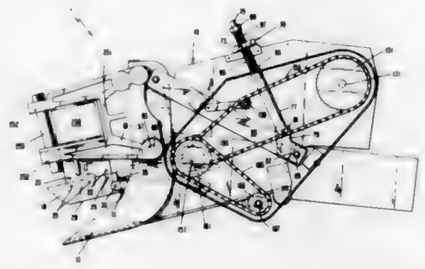
1. An improved pavement extractor comprising:

(a) main housing with a front and back end;

(b) a pair of rippers attached to the front end of said main housing, each said ripper including a top edge and a bottom edge and a substantially pointed front end, said rippers being mounted on the front end of said main housing with the pointed ends facing forward and with a predetermined spacing therebetween;

(c) hold down pressure plate means rigidly mounted on the front end of said housing within said spacing between said rippers and at a predetermined height above the pointed ends of said rippers, said hold down pressure plate means and said rippers defining an opening between said rippers and below said hold down pressure plate means; and

(d) means attaching said extractor to a vehicle, whereby forward movement of said vehicle causes said extractor to move forward and said pointed ends to bite into said pavement and said pavement to be extracted and lifted



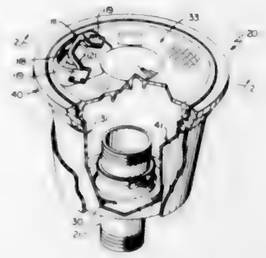
upward along the upper edge of said rippers, said hold down pressure plate means bearing down on a top surface of said pavement between said rippers to thereby cause said extracted pavement to be forced downward and the continued forward movement of said extractor forces said extracted pavement through said opening between said rippers and below said hold down pressure plate means.

4,659,251

LIQUID SPILL CONTAINER AND METHOD OF MAKING AND INSTALLING SAME

William J. Petter; Glenn E. Moore, both of Cincinnati, Ohio; Jack A. McMath, Ft. Thomas, Ky., and Eugene B. Pemberton, Fairfield, Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Sep. 23, 1985, Ser. No. 778,699
Int. Cl.⁴ B65B *3/06*
U.S. Cl. 405—52 **26 Claims**



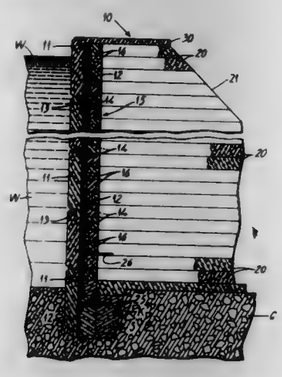
1. In a liquid spill container for use at the inlet of a substantially vertical fill pipe for a storage tank, said container comprising a bottom wall, side wall means extending upwardly from said bottom wall and having at least one portion of said side wall means for being embedded in a fixed manner in a supporting substrate for said side wall means and container, a cover for said container, an opening in said bottom wall for receiving said fill pipe therethrough, and seal means providing a fluid seal between said bottom wall and fill pipe while allowing relative movement therebetween along a vertical axis, the improvement in which said side wall means comprises at least two separate portions having preformed means detachably fastening said portions together in a snap-fitted manner while maintaining said means detachably fastening intact and free of permanent deformation, said one of said portions being the sole means for being embedded in said fixed manner in said substrate to provide the sole support for said container in said substrate and the other of said portions being detachable from said one portion solely by relative axial movement between said portions with said one portion embedded in said substrate through the use of said means detachably fastening to enable replacement of said other portion.

4,659,252

RCC DAM CONSTRUCTION AND METHOD

Donald L. Sexton; Ronald L. Hurt, both of Lexington, Ky., and Richard G. Lewis, Rte. 5, Winchester, Ky. 40391, assignors to Parrott, Ely and Hurt Consulting Engineers, Inc., Lexington; Palmer Engineering Company and Richard G. Lewis, both of Winchester, all of, Ky., a part interest

Filed Sep. 4, 1985, Ser. No. 772,323
Int. Cl.⁴ E02B *7/02*
U.S. Cl. 405—109 **20 Claims**



1. A dam structure or the like for retaining water in a reservoir, comprising:

precast concrete panels assembled in substantially vertical load bearing engagement and including an impervious and substantially continuous liner means;

a poured concrete curtain wall adjacent and downstream of said precast concrete panels, said liner means being in juxtaposition to said curtain wall; and

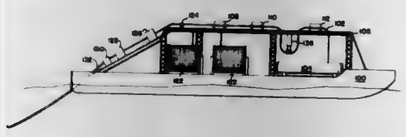
roller compacted concrete adjacent said poured concrete curtain wall.

4,659,253

DEEP WATER CABLE LAYING METHOD USING BUOYANCY MATERIALS

Alan R. Jacobson, 11123 239th Pl. SW., Edmonds, Wash. 98020

Filed Apr. 8, 1985, Ser. No. 721,843
Int. Cl.⁴ F16L *1/04*; B63B *21/00*
U.S. Cl. 405—171 **13 Claims**



1. A method for permanently reducing the apparent weight of nonbuoyant submarine cable intended to rest on the sea bottom at depths in excess of 1500 feet and to facilitate the laying and later recovery of the cable, comprising the following steps:

paying out a long length of nonbuoyant submarine cable from a floating platform for residence on the ocean bottom;

releasably attaching sufficient buoyancy material to the cable as the cable is payed out to produce a cable assembly having a permanently reduced negative buoyancy and wherein the buoyancy material has sufficient resistance to hydrostatic implosion to maintain the reduced negative buoyancy of the assembly on the ocean bottom for the service life of the cable; and

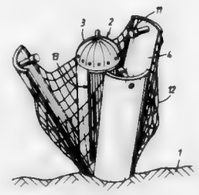
maintaining the attachment of the buoyancy material to the cable while the assembly is in the water.

4,659,254

MARINE UNITS

Charles D. Papworth, Sandford; Andrew L. Pole, Langford; Arthur L. Brake, Winscombe, and Ivan H. Dinnnock, Worle, all of England, assignors to BAJ Limited, Great Britain

Filed Aug. 15, 1985, Ser. No. 766,131
Claims priority, application United Kingdom, Aug. 16, 1984, 8420852
Int. Cl.⁴ E02D *23/02*
U.S. Cl. 405—205 **14 Claims**



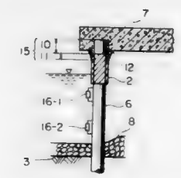
1. A marine unit having an elongated body and a plurality of legs, each said leg being connected to said body by a pivot adjacent one end of said body and each said leg being pivotable from a closed position adjacent to said body to a deployed position extending away from said body, each of said leg being concave on the side facing said body, and said body nesting withing said legs when the legs are in said closed position.

4,659,255

MARINE STRUCTURE OF PRECOATED CORROSION RESISTANT STEEL PIPE PILES

Motoo Shiraishi, Tokyo; Mansei Tanaka, Chiba; Minoru Nakamura, and Koichi Sato, both of Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 633,422, Jul. 19, 1984. This application Dec. 6, 1985, Ser. No. 805,604
Int. Cl.⁴ E02D *5/60*; E02B *17/00*
U.S. Cl. 405—216 **4 Claims**



1. In a marine structure comprising a corrosion resistant steel pipe piling and a concrete slab supported by said piling, said piling comprising a top head portion, splash zone portion and tidal zone portion, said top head portion being inserted into said concrete slab the improvement wherein said top head portion comprises a lower zone and an upper zone, said lower zone, being coated with a coating layer comprising in sequence a primer layer, an adhesive layer and a polyethylene resin

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layer, said polyethylene resin layer having a thickness of 1.5 to 4.5 mm., the upper zone being coated with only said primer layer and said adhesive layer, all of said upper zone and a part of said lower zone being inserted into said concrete slab.

4,659,256
PILES

Roger A. Bullivant, Burton-on-the-Trent, England, assignor to Roger Bullivant of Texas, Inc., Grand Prairie, Tex.

Filed Jan. 31, 1986, Ser. No. 825,087
Claims priority, application United Kingdom, Feb. 2, 1985, 8502709
Int. Cl.⁴ E02D *27/48*
U.S. Cl. 405—230 **14 Claims**

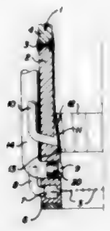


1. A method of supporting a structure comprising:
driving a pile casing through a hole in the structure to be supported until the leading end of the pile casing reaches a desired position, and
introducing a cutter into the top of the pile casing and positioning a cutting element of said cutter at a location at or near the lower surface of the structure to be supported,
actuating the cutter to cut off the pile casing above said location so that the top portion of the pile can be removed, and
introducing concrete into the pile casing and hole through the structure.

4,659,257
METHOD FOR MAKING A HOLE IN THE GROUND, AND HOLLOW BODY OPEN AT THE LOWER AND UPPER SIDES AND ADAPTED FOR USE IN THIS METHOD

Alexander J. Verstraeten, Knokkebeist, Belgium, assignor to Funderingstechnieken Verstraeten B.V., Netherlands

Filed Oct. 18, 1985, Ser. No. 788,763
Claims priority, application Netherlands, Oct. 29, 1984, 8403277
Int. Cl.⁴ E02D *7/24, 11/00*
U.S. Cl. 405—248 **27 Claims**



1. A hollow body having upper and lower sides, the hollow body being open at said lower and upper sides and being adapted for use in a method for forming a hole, such as a foundation element in the ground, said hollow body further comprising:
a plurality of circumferentially-spaced spray nozzles directed into said hollow body at a small distance above a lower edge of the lower side, the spray nozzles being substantially directed to a center point of the hollow body, the center lines of the spray nozzles lying in one transverse plane;
a first supply line connecting the spray nozzles to a pressurized fluid supply;
at least one inlet opening which has a greater cross-sectional area than that of the spray nozzles which opens into the hollow body above the spray nozzles; and
a second supply line adapted to connect the inlet opening to a supply of pressurized fluid.

4,659,258
DUAL STAGE DYNAMIC ROCK STABILIZING FIXTURE AND METHOD OF ANCHORING THE FIXTURE IN ROCK FORMATIONS

James J. Scott, Rolla, Mo., assignor to Scott Limited Partners, Rolla, Mo.

Continuation of Ser. No. 789,789, Oct. 21, 1985, abandoned. This application Aug. 14, 1986, Ser. No. 898,764
Int. Cl.⁴ E21D *20/02*
U.S. Cl. 405—261 **29 Claims**



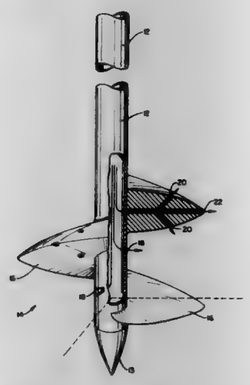
29. A composite package for insertion in a bore hole in a geologic structure for securing a structure stabilizing anchor in the bore hole, said composite package comprising:
(a) a hollow body of a formable plastic material;
(b) a bonding material; and
(c) a casing member encapsulating said hollow body and bonding material such that the hollow body and bonding material form a single composite package for insertion into a bore hole.

4,659,259
METHOD AND DEVICE FOR MIXING STABILIZING CHEMICALS INTO EARTHEN FORMATIONS

Marion G. Reed, Hacienda Heights, and James B. Gibson, Placentia, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 9, 1984, Ser. No. 658,959
Int. Cl.⁴ E02D *3/12*
U.S. Cl. 405—263 **2 Claims**

1. An in-situ mixing device for introducing and mixing hydroxy-aluminum into quick clay formations comprising:
a helical blade having convolutions of at least one revolution and having a central opening therethrough, said convolutions having substantial thickness adjacent said central opening and tapering to an outer edge;
a hollow torque tube having one end inserted through said central opening of said helical blade and fixedly connected therein;
exit ports in said torque tube;
means for pumping the hydroxy-aluminum through the hollow torque tube, out the exit ports and into the formation;
means connecting said pumping means to the upper end of said torque tube;

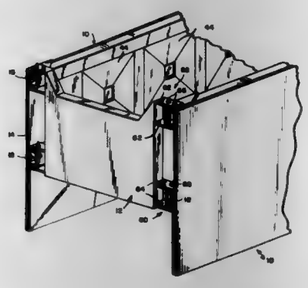


means for rotating said torque tube;
means for controlling the vertical travel speed of said torque tube;
means for rotating the helical blade at a speed different than thread speed; and
bypass channels in the convolutions of said helical blade to permit flow of material thorugh said helical blade when said helical blade is rotated in the formation.

4,659,260
TRENCH BOX

Aldo Morelli, 25 Rockwood Ter., Jamaica Plain, Mass. 02130

Filed Apr. 24, 1986, Ser. No. 855,327
Int. Cl.⁴ E21D *5/00*
U.S. Cl. 405—283 **1 Claim**

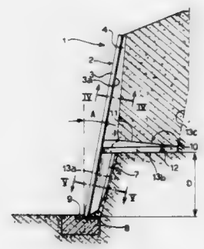


1. A trench box comprising spaced, parallel side wall panels, spaced, parallel channel members secured to the facing sides of said side wall panels throughout their length, one along the top edge and one medially of the top and bottom edges, said channel members being of rectangular cross section, transversely-disposed cross brace panels disposed between the side wall panels at intervals longitudinally of the side wall panels, each cross brace panel being detachably connected by connecting means to the upper and median channel members, said connecting means comprising vertically-spaced flange members embracing the upper and lower sides of the channel members, pins extending through said flanges and the channel members, there being at least two pins extending through the interchanged flanges and channel members at the top to prevent pivotal movement in the side wall panels relative to the cross brace panels and stiffening structure affixed to the facing sides of the side wall panels between the channel members and between the median channel members and the lower edges of the side wall panels comprising angularly-disposed stiffening plates fixed, respective, to the outer sides of the channel members and to the wall panels.

4,659,261
RETAINING WALL FOR EARTH AND SIMILAR MATERIALS

Carlo Chiaves, Turin, Italy, assignor to Wall Patent S.A., Italy

Filed Jun. 27, 1984, Ser. No. 625,164
Claims priority, application Italy, Jul. 7, 1983, 67738 A/83
Int. Cl.⁴ E02D *29/02*
U.S. Cl. 405—286 **5 Claims**

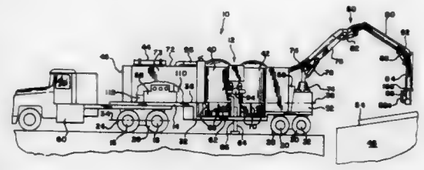


1. A retaining wall for earth and similar material, said wall comprising a concrete footing girder, a series of prefabricated reinforced concrete panels arranged substantially vertically in side-by-side relation on said concrete footing girder for pivotal movement relative to said girder, and a concrete anchoring bed cast in situ and extending horizontally towards the earth to be supported, said anchoring bed being rigidly connected to said panels; wherein said concrete anchoring bed is situated at a level which is at a distance above the bottom of said panels of between 1/5 and ½ of the total height of said panels.

4,659,262
MOBILE SELF CONTAINED PNEUMATIC CONVEYING SYSTEM

Gerhardt van Aalst, Kouderkerk aan den Rijn, Netherlands, assignor to Cyclonaire Bulk Cargo Systems, Inc., Henderson, Nebr.

Filed Mar. 4, 1985, Ser. No. 707,700
Int. Cl.⁴ B65G *53/28*
U.S. Cl. 406—29 **6 Claims**



1. A mobile, self-contained, pneumatic conveying system for use in conveying granular material comprising, in combination;
a mobile trailer having a plurality of wheeled axles and defining a belly section generally mid-length thereof ex-

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tending downwardly from the general surface elevation of said trailer, said trailer having a deck structure on a rear end portion thereof,

at least one transfer kettle supported on said belly section and having an upper end surface of a height approximating a predetermined highway limit,

a vacuum pump supported on said trailer and operatively associated with said kettle in a manner enabling application of a vacuum to said kettle for selectively drawing granular material into said kettle from a source of bulk granular material,

a compressor assembly supported on said trailer in operative association with said kettle in a manner enabling application of fluid pressure to said kettle so as to discharge granular material therefrom,

an articulated vacuum arm assembly including a generally upstanding stand mounted on said deck structure for rotation about a substantially vertical axis offset from the longitudinal centerline of said trailer, said stand defining a pivot axis at its upper end at a height below the height of said kettle, a boom section pivotally connected to the pivot axis of said stand for pivotal movement relative thereto, a jib section pivotally connected to said boom section at an end thereof opposite said stand, a stinger section pivotally connected to said jib section at an end thereof opposite said boom, an intake nozzle connected to an outer end of said jib section, and a conveying line operatively connected to said nozzle and said kettle in a manner enabling granular material to be conveyed from said nozzle to said kettle during operation of said vacuum pump, said vacuum arm assembly being manipulatable to provide three-dimensional control of said nozzle to facilitate operator manipulation of said nozzle in a bulk source of said granular material to break up clumps of the material, and being manipulatable to move said arm assembly to a storage position extending longitudinally forwardly of the trailer ofset from the longitudinal centerline of said trailer and below the height of said upper surface of said kettle, and

control means mounted on said trailer for controlling selected manipulation of said vacuum arm assembly.

4,659,263

CLOSED APPARATUS PROVIDING POTENTIAL FLUIDIZATION FOR HORIZONTALLY CONVEYING POWDER MATERIALS

Jean-Pascal Hanrot, Aix en Provence, and Jacky Volpeliere, Gardanne, both of France, assignors to Aluminum Pechiney, France

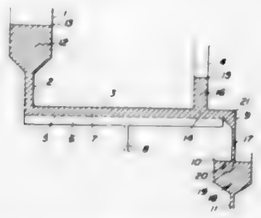
PCT No. PCT/FR83/00211, § 371 Date Jun. 13, 1984, § 102(e) Date Jun. 13, 1984, PCT Pub. No. WO84/01560, PCT Pub. Date Apr. 26, 1984

Continuation of Ser. No. 620,311, Jun. 13, 1984, abandoned. This PCT application Oct. 18, 1983, Ser. No. 821,205

Claims priority, application France, Oct. 22, 1982, 82 17859

Int. Cl.⁴ B65G *53/22*

U.S. Cl. 406—89 **1 Claim**



1. A method for potentially fluidizing and conveying powder materials in a conveyor located between a storage region and a supply hopper, the method comprising the steps of:

(a) completely filling said conveyor with non-fluidized powder material;

(b) supplying a gas to the conveyor to permit fluidizing of the powder material;

(c) preventing fluidization of the powder material by filling a balancing column in communication with said conveyor with powder material to create a pressure head which counterbalances the fluidization gas pressure;

(d) permitting immediate fluidization of the powder upon withdrawal of powder from said supply hopper, due to lowering of the gas pressure in the conveyor,

whereby the fluidized powder material is conveyed to said supply hopper until said hopper is refilled, thereby causing said conveyor to return to a counterbalanced condition.

4,659,264

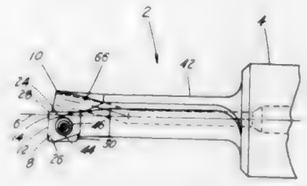
DRILL AND INDEXABLE CARBIDE INSERT THEREFOR

Ernest J. Friedline, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 395,604, Jul. 6, 1982, abandoned. This application Oct. 25, 1985, Ser. No. 792,626

Int. Cl.⁴ B23B *51/02*

U.S. Cl. 408—204 **15 Claims**



1. In a drill, the combination comprising:

(a) a shank having a central axis of rotation and a reduced diameter portion with an end and a recess formed in said end of said reduced diameter portion;

(b) at least one indexable insert having a perforation formed therein; and

(c) fastening means passing through said perforation in said recess and terminating in said recess in said reduced diameter portion for holding said insert on said end of said reduced diameter portion of said shank;

(d) said insert including

(i) a body of hard wear resistant material having top and bottom faces and a peripheral wall joining said top and bottom faces, one of said top and bottom faces acting as a seating face and the other acting as a cutting face,

(ii) first cutting edges formed on opposite sides of said cutting face at the juncture of said cutting face with said peripheral wall, and

(iii) second cutting edges formed on said opposite sides of said cutting face extending from said cutting face toward said seating face, one end of each of said first cutting edges terminating in a juncture with one of said second cutting edges;

(iv) each of said first cutting edges having a negative radial rake surface and each of said second cutting edges having a negative axial and positive radial rake surface;

(v) corresponding ones of said first and second cutting edges when disposed in a cutting orientation on said end of said shank cooperating to form a radiused hole when rotated about said central axis of said shank with said central axis of rotation passing through the axial rake face of said second cutting edge.

4,659,265

TOOL RADIUS COMPENSATION METHOD FOR NUMERICALLY CONTROLLED APPARATUS

Hajimu Kishi, Hino, and Kunio Tanaka, Hachioji, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

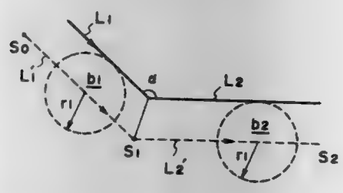
PCT No. PCT/JP82/00199, § 371 Date Jan. 25, 1983, § 102(e) Date Jan. 25, 1983, PCT Pub. No. WO82/04336, PCT Pub. Date Dec. 9, 1982

PCT Filed May 27, 1982, Ser. No. 463,890

Claims priority, application Japan, May 27, 1981, 56-080438

Int. Cl.⁴ B23B *39/26*; G05B *19/24*

U.S. Cl. 409—84 **6 Claims**



1. A tool radius compensation method for a numerically controlled apparatus in which a tool, having a radius, and a workpiece having first and second surfaces, are moved relative to each other by a triaxial drive to enable the tool to three-dimensionally cut the workpiece, positional coordinates of the center of the tool, which is offset at a distance equal to the radius of the tool in a direction normal to a surface to be cut, being computed from commanded positional information to effect the workpiece cutting, said method comprising the steps of:

(a) determining a unit offset vector on a plane defined by vectors normal to the first and second surfaces to be cut at a three-dimensional corner point of the workpiece based on the commanded positional information;

(b) determining the coordinates of the position of the tool center from corrected components along respective X, Y and Z axes of the unit offset vector, the tool radius, and the position of the three-dimensional corner point; and

(c) moving the tool center along a smooth curve contiguous to the path of movement of the tool center before and after the three-dimensional corner point has been cut.

4,659,266

WHEEL CHOCKING ASSEMBLY

Gerhard A. Thelen, St. David; Yan H. Tse, Plymouth Meeting, and Wayne H. Murphy, Pottstown, all of Pa., assignors to Consolidated Rail Corporation, Philadelphia, Pa.

Filed Jan. 16, 1986, Ser. No. 819,880

Int. Cl.⁴ B60T *3/00*; B60P *3/07, 7/08*

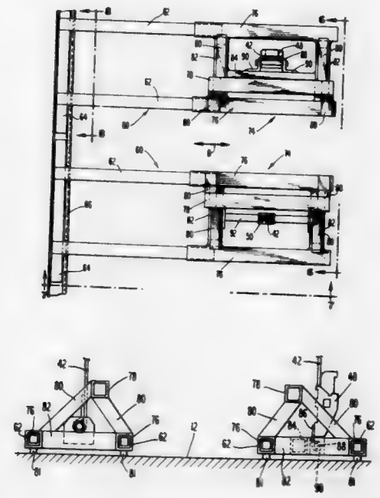
U.S. Cl. 410—10 **9 Claims**

5. A wheel chocking assembly for securing an automobile to the deck of a railroad car comprising:

a channel attached to and extending along the length of the railroad car deck at one side thereof;

at least two pair of support tubes, each of said pairs of support tubes being releasably attached to said channel at various positions along the length thereof and when attached being hingedly coupled to said channel for movement from an engaged position upon the deck to a disengaged position at which said tubes provide substantially no obstruction to the entry and exit of automobiles to or from the railroad car;

at least two wedges, each of which is telescopically mounted to a respective pair of said support tubes; and



at least one strap member adapted to conform to the shape of a wheel, extending over the top thereof, and coupled at its ends to each pair of wedges.

4,659,267

PREFASTENABLE TORQUE-SHEAR BOLT

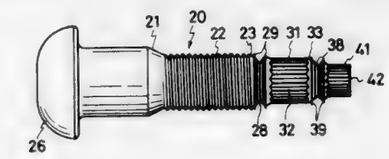
Nobuyoshi Uno; Takayoshi Isa, both of Kitakyushu; Eijiro Kurata, and Hidetoshi Tamasaki, both of Yukuhashi, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Nippon Steel Bolten Co., Ltd., Yukuhashi, both of, Japan

Filed Nov. 29, 1985, Ser. No. 803,654

Claims priority, application Japan, Nov. 29, 1984, 59-252128

Int. Cl.⁴ F16B *31/00*

U.S. Cl. 411—5 **2 Claims**



1. A prefastenable torque shear bolt comprising:

a bolt head at one end of said bolt;

a bolt section extending from said bolt head and having a thread for engaging with a nut;

a first transition section extending and tapered towards the center of said bolt from said bolt section, a full-fastening break-off groove in said first transition section;

a full-fastening grip section extending from said full-fastening break-off groove, said full-fastening grip section having a plurality of wrench-engaging surfaces along the periphery thereof defining a first polygon around said periphery;

a second transition section extending and tapered towards the center of said bolt from said full-fastening grip section, a prefastening break-off groove in said second transition section, the diameter of said bolt at said prefastening break-off groove being less than the diameter of said bolt

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at said full-fastening break-off groove for providing an effective fracture surface of said bolt at said prefastening break-off groove that is smaller than an effective fracture surface of said bolt at said full-fastening break-off groove;

a prefastening grip section extending from said prefastening break-off groove and having a plurality of wrench-engaging surfaces along the periphery thereof defining a second polygon around the periphery of said prefastening grip section;

diameters of first circles circumscribed around and inscribed in said first polygon being larger than diameters circumscribed around and inscribed in said second polygon respectively;

a burr on said bolt associated with the formation of said full-fastening break-off groove and comprised of a first burr adjacent the full-fastening break-off groove and between the full-fastening break-off groove and the bolt section, a burr on said bolt associated with the formation of said prefastening break-off groove and comprised of a second burr adjacent the prefastening break-off groove and between the prefastening break-off groove and the full-fastening grip section,

the ratio between the diameters of said second circumscribed circle and said first circumscribed circle and the ratio between the diameters of said second inscribed circle and said first inscribed circle each being between 0.60–0.85 such that said first burr does not extend radially outward of the thread bottom of said thread and said second burr does not extend radially outward of points on said bolt located on said first inscribed circle.

4,659,268

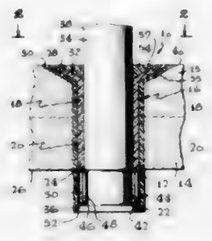
COMPOSITE BLIND FASTENERS

Alfredo R. Del Mundo, Cerritos, and Dean S. Klivans, Chatsworth, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 15, 1986, Ser. No. 863,496

Int. Cl.⁴ F16B *13/04, 39/02*

U.S. Cl. 411—34 **22 Claims**



1. A composite fastener which comprises:

a woven composite outer tube,

a woven composite inner tube positioned around the inside of the outer tube, the inner end of said outer tube extending beyond the adjacent end of said inner tube,

a mandrel positioned within said inner tube and having a circumferential groove around the inner end of said mandrel adjacent the inner end of said outer tube, the mandrel having an outer end extending beyond the outer end of both said tubes,

a flexible O-ring mounted in the groove around said mandrel, said O-ring comprising a first reservoir containing a curable resin, a second reservoir containing an activator to effect curing of said resin and a fracturable membrane separating said reservoirs, said O-ring extending around the inner end of said outer tube and beyond the inner end of said inner tube, and

means for maintaining the outer end of said tubes in fixed position on a substrate to permit pulling the outer extending end of said mandrel with respect to said tubes, to draw said mandrel outwardly within said tubes, and causing said membrane to fracture by contact of said O-ring against the inner end of said inner tube and resulting in mixing of said activator with said resin in said O-ring and forcing the inner end of said outer tube against the substrate to form a bulb against the substrate, thereby locking the fastener on the substrate when the resin is cured.

4,659,269

FASTENING DOWEL OF PLASTICS

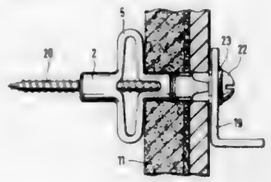
Konrad Stromiedel, Waldachtal, Fed. Rep. of Germany, assignor to Fischerwerke Artur Fischer GmbH & Co. KG, Tumlingen/-Waldachtal, Fed. Rep. of Germany

Filed Sep. 11, 1985, Ser. No. 775,253

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1984, 3437186

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—34 **4 Claims**



1. A fastening dowel, of synthetic plastic material, in combination with a fastening screw received in the fastening dowel for fastening objects to a tiled plasterboard wall of a "wet" room, which wall has a drilled hole and a front face to which a tile is attached, the dowel comprising an elongated shaft including a neck portion to be received in the drilled hole of the tiled plasterboard wall, and an expansible poriton receiving the fastening screw and expandable thereby to fasten an object to said plasterboard wall; and an end flange joined to said neck portion and adapted to rest against an end face of the tile attached to said front face, said neck portion having a circumferential groove, said groove being in an axial direction of the dowel of such a length that it, after the dowel has been inserted into said drilled hole, axially overlaps at both sides thereof said front face of said wall and an edge of the tile facing said front face, said end flange having and injection aperture, and said neck portion having a longitudinal channel which opens into said circumferential groove and is connected to said aperture, said channel and said groove being sealed with a sealing composition injected through said injection aperture and received in said channel and said groove.

4,659,270

EXPANSION DOWEL FORMED OF AN EXPANSION SLEEVE AND A WEDGE-SHAPED EXPANSION ELEMENT

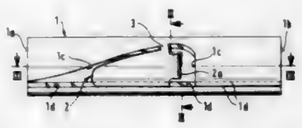
Armin Herb, Peissenberg, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Dec. 17, 1985, Ser. No. 809,945

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1984, 3445963

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—40 **6 Claims**



1. Expansion dowel comprising an axially elongated cylindrically shaped expansion sleeve having a leading end and a trailing end with the leading end being inserted first in a borehole into which the dowel is to be anchored, means at said trailing end for applying a load to said sleeve, and an opening in said sleeve extending in the axial direction thereof and said opening having a pair of opposite edge surfaces extending generally in the axial direction of said sleeve with said edge surfaces converging toward one another toward the leading end, an expansion element located in said opening and said expansion element being wedge-shaped and narrowing toward the leading end of said sleeve, said expansion element being supported in the axial direction by the axially extending edge surfaces of said opening, wherein the improvement comprises that said expansion element is connected to said expansion sleeve by a separable member having a predetermined separation characteristic, said expansion sleeve and expansion element are formed of a metallic material, said separable member is a separable web monolithically connecting said expansion element to said expansion sleeve, and said separable web is located at the trailing end of said expansion element.

4,659,271

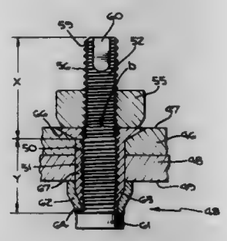
FLUSH BREAK BLIND FASTENER

John D. Pratt, Rancho Cucamonga, and Joseph F. Morrow, Rolling Hills Estate, both of Calif., assignors to Monogram Industries, Inc., Culver City, Calif.

Continuation of Ser. No. 583,030, Feb. 23, 1984, abandoned. This application Aug. 21, 1985, Ser. No. 768,168

Int. Cl.⁴ F16B *13/06*

U.S. Cl. 411—43 **3 Claims**



1. A blind fastener for mounting in aligned openings through two workpieces to connect them together in overlapped outer and inner relation and adapted to be set by wrench means, comprising:

an internally threaded, generally tubular fastener body received within the openings in the workpieces having,

an inner end projecting inwardly beyond the inner workpiece; and

an enlarged body head received in countersunk relation within the outer workpiece with an outer surface substantially flush with the outer surface of the outer workpiece;

an externally threaded cylindrical stem passing in threaded engagement through said fastener body, turning motion of said stem relative to said fastener body in one direction moving said stem in an axially outward direction through said fastener body, said stem having,

an externally threaded first diameter portion for threaded engagement with said fastener body;

an externally threaded second diameter portion with a diameter less than that of the first diameter portion,

an enlarged stem head spaced from the inner end of said fastener body; and

a wrench engaging region spaced from the outer end of said fastener body;

a deformable sleeve around said stem in contact with said stem head, movement of said stem outwardly through said fastener body deforming said sleeve to a fully set condition in overlying contact with the inner surface of the inner workpiece; and

an internally threaded drive nut threadedly mounted on the second diameter portion of said stem in abutment with the outer surface of the enlarged body head, said drive nut and said wrench engaging region being engaged by the wrench means to cause turning of said stem in the one direction relative to said drive nut, said drive nut restraining said fastener body from turning in the workpieces during turning of said stem, further relative turning motion in the one direction between said stem and said fastener body, after said sleeve has reached a fully set condition, shearing said stem across the threads in said second diameter portion in substantial alignment with the outer surface of the enlarged body head, the entire said drive nut remaining threaded to the sheared off outer section of the second diameter portion.

4,659,272

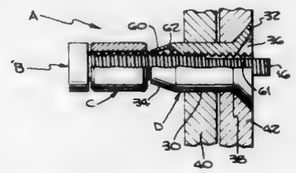
BLIND FASTENER WITH TORQUE LOCK

John D. Pratt, Rancho Cucamonga, Calif., assignor to Monogram Industries, Inc., Culver City, Calif.

Continuation of Ser. No. 581,694, Feb. 21, 1984, abandoned. This application Jul. 8, 1986, Ser. No. 884,875

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—43 **5 Claims**



1. A blind fastener for mounting in aligned openings through two workpieces to connect them together in overlapped outer and inner relation and adapted to be set by wrench means, the fastener comprising:

an internally threaded, generally tubular nut received within the openings in the workpieces, said nut having

an enlarged body head for engagement with the outer surface of the outer workpiece, and

a tapered nose projecting inwardly beyond the inner workpiece, said tapered nose having an outer surface tapered radially inwardly in a direction toward the inserted end of said nut, and an unthreaded inner surface substantially parallel to the tapered outer surface, said tapered nose further having a terminal end that is smaller in diameter than the internal thread diameter of said nut to form an interference fit between said nose and the thread of a screw passing through said nut;

an externally threaded screw passing in threaded engagement through said nut, turning motion of said screw relative to said nut in one direction moving said screw in an axially outward direction through said nut, said screw having

an enlarged screw head spaced from the terminal end of said tapered nose, and

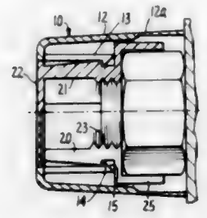
a wrench engaging region spaced from the outer end of said body head; and

a deformable sleeve around said screw in contact with said screw head, movement of said screw outwardly through said nut deforming said sleeve over said tapered nose to a fully set condition in overlying contact with the inner surface of the inner workpiece, the terminal portion of said tapered nose being adapted to frictionally ride on the external threads of said screw at their major diameter throughout turning motion of said screw to form an interference-type torque lock between said nut and said screw

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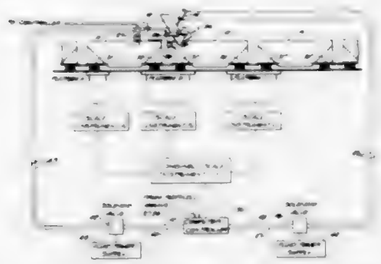
substantially without distortion of the external threads of said screw.

4,659,273
LUG ATTACHMENT
Daniel P. Dudley, Jacksonville, Fla., assignor to Trailer Marine Transport, Jacksonville, Fla.
Filed Nov. 8, 1985, Ser. No. 796,110
Int. Cl.⁴ F16B *41/00*
U.S. Cl. 411—373 **9 Claims**



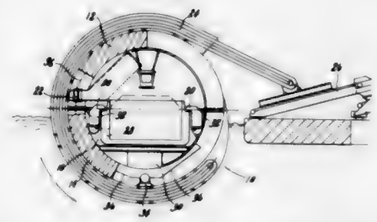
1. A lug attachment for detecting the removal of a wheel lug nut comprising:
- a frangible shroud having an outer skirt and an internal collar;
- an internally threaded member for attaching said shroud to a lug, said member being axially received within the internal collar of said shroud, said member having means for receiving and housing a wheel lug nut upon axial attachment to the lug of the wheel;
- means formed on the internal collar of said shroud for clamping the threads of said threaded member onto threads of a lug as said shroud is moved axially relative thereto into a position of axial attachment; and
- means formed on the internal collar of said shroud for engaging and retaining said threaded member in its axial position of attachment to a lug.

4,659,274
COMPUTER CONTROLLED LOAD-OUT SYSTEM
Rodney C. France, Paducah, Ky., assignor to Accutrol Incorporated, Paducah, Ky.
Filed Nov. 13, 1984, Ser. No. 671,084
Int. Cl.⁴ B65G *67/22*; G01G *19/04*
U.S. Cl. 414—21 **31 Claims**



1. An apparatus for loading a target weight of fluent bulk material into a continuously moving train with cars passing a load-out station comprising:
- a scale means upon which the front and rear of a car is supported during loading being operable to weigh said front and rear of said car before loading and during loading;
- a movable load-out chute at the load-out station to direct fluent bulk material into said car;
- leveling means on said chute to smooth out said fluent bulk material in said car;
- adjustment means for moving said chute up and down; and
- computer means operably connected to said adjusting means and said scale means for comparing the weight of said front and rear of each car in time with the train movement of cut off the flow when a predetermined amount of weight is on said scale means to also control said adjustment means to position said chute in the next identically sized following car to achieve even loading on said front and rear of said next identically sized following car.

4,659,275
BARGE TIPPER
Peter J. Goodwin, Johannesburg, South Africa, assignor to Techni Multidiscipline Services (Proprietary) Limited, Johannesburg, South Africa
Filed May 13, 1985, Ser. No. 733,373
Claims priority, application South Africa, May 16, 1984, 84/3687
Int. Cl.⁴ B63B *35/02*; B65G *67/60*
U.S. Cl. 414—137 **4 Claims**

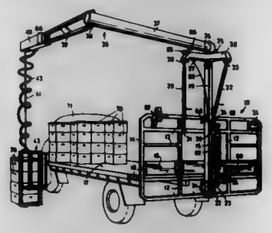


1. A barge tipper comprising a generally cylindrical floating apparatus defining a chamber into which a barge can be floated, at least one closeable end gate arranged to at least partially close-off and seal the chamber, means for holding the barge fixedly within the chamber, means for rotating the apparatus and the barge about a longitudinal axis of the apparatus between a barge-receiving position and a barge-discharging position for discharging material from the barge, at least one first conveyor rotatable with the apparatus and arranged longitudinally alongside the barge for receiving material discharged from the barge, the first conveyor including a material discharging outlet, a guideway mounted on the apparatus so as to extend circumferentially around at least a portion of the apparatus and arranged to rotate with the apparatus, the guideway terminating in an exit opening, a second conveyor disposed within the guideway so as to extend circumferentially around at least a portion of the apparatus, the apparatus being rotatable relative to the second conveyor, the second conveyor including a section thereof located to receive material discharged from the outlet of the first conveyor when the apparatus has been rotated to the barge-discharging position, the second conveyor projecting through the exit opening of the guideway and extending to an external transfer site.

4,659,276
LOAD-HANDLING APPARATUS FOR A VEHICLE
Trevor G. Billett, Swan Creek, via Ulmarra, New South Wales 2462, Australia
Filed Sep. 12, 1985, Ser. No. 775,328
Claims priority, application Australia, Sep. 17, 1984, PG7170
Int. Cl.⁴ B60P *1/54*
U.S. Cl. 414—543 **8 Claims**

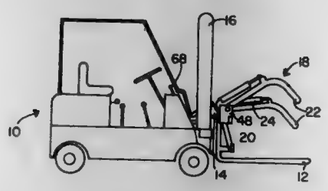
1. Load handling apparatus for a vehicle including:
- a mounting frame applicable to a vehicle,

- a mast pivotally mounted on the mounting frame for movement between a lowered generally horizontal travelling position and a raised generally vertical working position, said mast moving in a plane that is substantially parallel to a plane containing the mounting frame,
- a substantially horizontally-oriented boom carrier universally mounted for pivotal movement on the mast,
- a boom connected to the boom carrier for horizontal pivotal movement about an upright boom axis,
- adjustment means for adjusting the boom carrier relative to



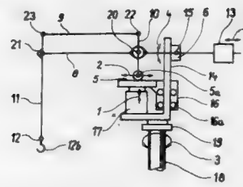
the mast to bring the boom axis vertical by levelling the boom carrier laterally and longitudinally,
- said adjustment means includes first and second members pivotally attached to said boom carrier at one end and pivotally attached at another end to said mounting frame, both of said members being movable in cooperation with said mast between said lowered generally horizontal travelling position and said raised generally vertical working position, and
- a winch-operated lifting cable, with load attachment means, depending from the distal end of the boom.

4,659,277
UNSTABLE LOAD STABILIZING AND HANDLING ATTACHMENT
Lloyd Widener, P.O. Box 11048, Charleston Htgs., S.C. 29415
Filed Dec. 2, 1985, Ser. No. 803,553
Int. Cl.⁴ B66F *9/18*
U.S. Cl. 414—607 **10 Claims**



1. An attachment for an industrial forklift truck having a standard vertically movable carriage including a front plate with horizontal upper and lower beveled lips along its upper and lower edges, a hydraulic pump for pumping hydraulic fluid, and a pair of spaced, forwardly extending tines mounted on said carriage, comprising:
- a mounting bracket, said bracket being connectable to the carriage to move vertically with the carriage; means for attaching said mounting bracket to the carriage independently of the tines, said means engaging the carriage along the upper and lower lips;
- at least two yoke means integral with said mounting bracket; an arm pivotally connected to each of said yoke means, providing a linkage where said arm is positioned to extend over and rotate onto one of the tines;
- at least two boom means connected to and extending from said bracket in close proximity to each of said yoke means, and offset from the pivotal connection between said yoke means and said arm,
- hydraulic extendable/retractable jack means pivotally connected at one end to one of said boom means and at the other end to said arm whereupon said jack means generally overlies a portion of said arm and is generally parallel to said arm;
- hydraulic connection system between said hydraulic jack means and the hydraulic pump of the forklift truck, said hydraulic connection system including hoses extending from a control means to a connecting means attached to the carriage, hoses extending from said connecting means to said jack means and said control means being actuated for simultaneous or independent actuation of each jack means;
- whereby upon actuation of said jack means, said jack extends or retracts, simultaneously pivoting said jack means relative to said arm and said boom and pivoting said arm about said yoke to rotate said arm relative to said carriage.

4,659,278
MANIPULATOR BASED ON THE PANTOGRAPH PRINCIPLE
Joachim Doege; Hanns-Dieter Paschke, and Ke D. Tran, all of Berlin, Fed. Rep. of Germany, assignors to Stahl Aufzüge & Co. KG, Fed. Rep. of Germany
Continuation of Ser. No. 583,892, Feb. 27, 1984, abandoned.
This application Jun. 5, 1986, Ser. No. 873,252
Int. Cl.⁴ B66C *23/04*
U.S. Cl. 414—680 **8 Claims**



1. A load handling mechanism comprising in combination:
- a work beam structure having a proximal end and a distal end and including a pair of parallel arms pivotally interconnected by a pair of parallel pivotal links;
- a vertical pillar including an upper end with said proximal end of said work beam structure mounted thereon at said upper end;
- a trackway supported by said pillar;
- one of said links including a link extension having a distal end extending beyond its pivotal connection to said arms;
- a roller connected to said distal end of said one link for rolling on said trackway;
- a guide mounted at said distal end of said work beam structure;
- vertical arm means including an upper end connected to said guide, and a lower end, the other of said links rigidly connected to said vertical arm means; and
- load connecting means at said lower end of said vertical arm means for connecting a load.

4,659,279
ROBOT WITH IMPROVED CABLE ROUTING AND CLAMPING
Hadi A. Akeel, Sterling Heights, and William H. Poynter, Mt. Clemens, both of Mich., assignors to GMF Robotics Corporation, Troy, Mich.
Filed Dec. 24, 1984, Ser. No. 686,086
Int. Cl.⁴ B25J *11/00*
U.S. Cl. 414—680 **7 Claims**

1. In a robot (10) comprising a base (18) and an arm assembly

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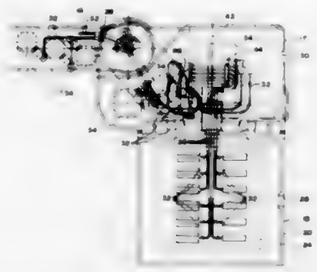
(14, 16) having a pivotal connection that pivotally supports the arm assembly on the base, the improvement comprising:

first and second robot parts (17, 20) mounted on said robot, the first robot part (17) being pivotable about a pivotal axis (43) relative to the second robot part;

at least one flexible cable (28);

first connecting means (66, 68) for fixedly connecting a first portion of the cable to the first robot part to rotate therewith about the pivotal axis; and

second connecting means (40, 42, 44) for fixedly connecting a second portion of the cable to the second robot part; said second connecting means including directing means (44) for retaining and directing said cable in a direction substantially normal to and in the same plane as said pivotal



axis in a substantially unflexed condition of said cable wherein the cable passes substantially through the pivotal axis and wherein said first connecting means includes retaining means (66) for retaining said cable so that said cable has an effective length between said directing and retaining means that does not change during pivoting of such first robot part, said directing and retaining means being disposed on opposite sides of the pivotal axis in a plane substantially normal to the pivotal axis and allowing said cable to flex a limited amount in a direction substantially normal to the pivotal axis during said pivoting and at least one of said directing and retaining means directing its respective retained portion of the cable substantially toward the pivotal axis during substantially the entire range of said pivoting motion.

4,659,280

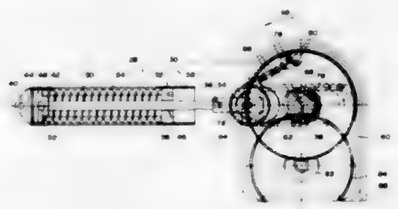
ROBOT WITH BALANCING MECHANISM HAVING A VARIABLE COUNTERBALANCE FORCE

Hadi A. Akeel, Sterling Heights, Mich., assignor to GMF Robotics Corporation, Troy, Mich.

Filed Jan. 22, 1985, Ser. No. 692,995

Int. Cl.⁴ B66C *23/72*

U.S. Cl. 414—720 **7 Claims**



1. A robot comprising:

an arm assembly having a pivotal connection that pivotally supports the arm assembly on the rest of the robot for movement about a pivotal axis;

an energy-storing balancing mechanism including an open loop and an energy-storing member, the member having one end secured to the rest of the robot;

first means for movably connecting the other end of the member to an intermediate portion of said loop to permit the intermediate portion of the loop to move during rotation of the arm assembly; and

second means for connecting the ends of the loop to the arm assembly at a pair of attachment points offset from said pivotal axis, the member having a longitudinal axis extending towards and substantially perpendicular to the pivotal axis wherein the effective length of the member varies and the attachment points rotate about the pivotal axis during relative rotation of the arm assembly about the pivotal axis and wherein the amount of energy stored in the member is dependent on the effective length.

7. An energystoring balancing mechanism adapted for use with a robot having an arm assembly and a pivotal connection which pivotally supports the arm assembly on the rest of the robot for movement about a pivotal axis, the mechanism including an energystoring member, an open loop, first means for movably connecting an intermediate portion of the loop to one end of the member and to permit the intermediate portion of the loop to move during rotation of the arm assembly and second means for connecting the ends of the loop to the arm assembly at a pair of attachment points offset from the pivotal axis, the member having a longitudinal axis extending towards and substantially perpendicular to the pivotal axis, wherein the effective length of the member varies and the attachment points rotate about the pivotal axis during relative rotation of the arm assembly about the pivotal axis and wherein the amount of energy stored in the member is dependent on the effective length.

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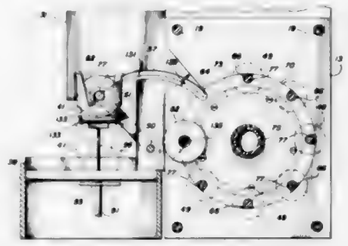
LOADING AND UNLOADING SYSTEM FOR PIECE PART CARRIER

Donald P. Aupperle, Seattle, Wash., assignor to Robbins & Craig Welding & Manufacturing Co., South El Monte, Calif.

Filed Jun. 10, 1985, Ser. No. 743,696

Int. Cl.⁴ B65G *47/02*

U.S. Cl. 414—787 **11 Claims**



1. Loading and unloading apparatus for a piece part carrier, comprising:

a mandrel removably located in a support structure at a first plane;

a pair of mechanical arms adapted to selectively grasp said mandrel at both ends and move said mandrel to a load location at a second plane;

a plurality of bearing surfaces lying in the second plane along a common axis at the load location for removably receiving said mandrel;

a third mechanical arm for selectively grasping one end of said mandrel for moving it along the common axis of the plurality of bearing surfaces; and

means for simultaneously moving a plurality of piece parts into a position intersecting the plane of the bearing surfaces at their common axis;

whereby said mandrel is moved by said third mechanical arm to engage each of the piece parts for loading.

4,659,282

APPARATUS FOR PREVENTING THE SPREADING OF TITANIUM FIRES IN GAS TURBINE ENGINES

Joachim Popp, Dachau, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

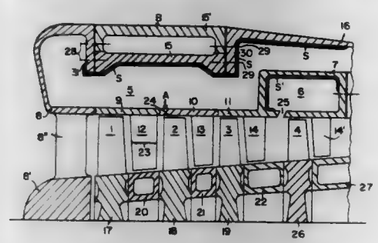
Filed Feb. 22, 1985, Ser. No. 704,525

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407946

The portion of this patent subsequent to Feb. 10, 2004, has been disclaimed.

Int. Cl.⁴ F01D *5/08*

U.S. Cl. 415—177 **15 Claims**



1. An apparatus for preventing the spreading of titanium fires in gas turbine engines having a rotational axis, comprising stator means (7, 8, 9, 10, 11) and rotor means (17, 18, 19, 20, 21, 22) operatively supported in said stator means, said stator means and said rotor means being made, at least partially, of titanium or of a titanium alloy, wherein said stator means comprise a first inner stator section (A) located radially adjacent to and around said rotor means for forming a gap between said rotor means and said first inner stator section (A), and a second outer stator section (B) operatively surrounding said first inner stator section (A) with a radial spacing (5) between said first (A) and second (B) stator sections, said second outer stator section (B) comprising a radiallly inwardly facing surface and a layer (S) of highly heat-conducting material intimately bonded directly to said inwardly facing surface, said heat-conducting layer preventing said spreading of titanium fires.

4,659,283

PROPELLER SYNCHROPHASER ® DEVICE AND MODE LOGIC

Frank R. Niessen, Stafford Springs, and Roy W. Schneider, Ellington, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 30, 1985, Ser. No. 781,586

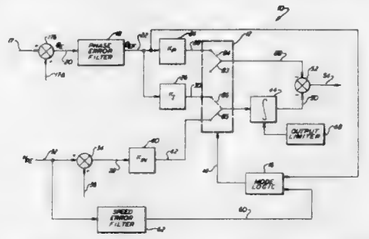
Int. Cl.⁴ B64C *11/50*

U.S. Cl. 416—34 **5 Claims**

1. An improved slave propeller control device (10) for a multi-propeller aircraft having a designated master propeller and at least one associated slave propeller for controlling the speed and phase of the slave propeller with respect to the master propeller, comprising:

speed control means (34, 40, 12, 44), responsive to a slave propeller speed error signal (32) indicative of the difference in magnitude between a master sensed speed signal and a slave sensed speed signal, and responsive to a constant speed difference signal (36) indicative of a selected constant speed difference between the master propeller and the slave propeller for providing a speed bias signal (54) for controlling the slave propeller at the selected constant speed difference such that the master propeller and the slave propeller are periodically in phase; and

phase control means (17*b*, 24, 26, 12, 44, 52), responsive after the speed error signal (32) falls below a selected absolute speed signal magnitude, to a slave propeller phase difference signal (17) indicative of the phase difference between the master propeller and the slave propeller for controlling the speed of the slave propeller in the presence of the difference in magnitude between the phase difference signal (17) and a constant reference phase difference signal



(17*a*) as indicated by a phase error signal (20) having an absolute phase error signal magnitude less than a selected absolute phase error signal magnitude indicative of the phase error between the slave phase and a selected phase difference between the master and slave propellers being less than a selected absolute phase difference value, to provide the speed bias signal (54) to effect the selected phase difference between the master and the slave propeller with minimum transient effect on the speed of the slave propeller.

4,659,284

WIND TURBINES, IMPROVED GEAR BOX ASSEMBLIES, AND A BRAKING SYSTEM ADAPTABLE FOR USE WITH SUCH WIND TURBINES AND IMPROVED GEAR BOX ASSEMBLY

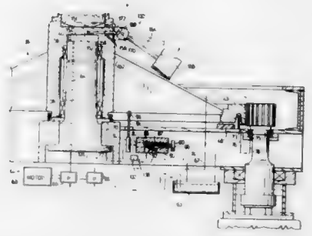
Charles F. Wood, Mississauga, Canada, assignor to Indal Technologies Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 107,933, Dec. 28, 1979, Pat. No. 4,613,282. This application Apr. 3, 1984, Ser. No. 596,393

The portion of the term of this patent subsequent to Apr. 23, 2000, has been disclaimed.

Int. Cl.⁴ F03D *7/06*

U.S. Cl. 416—36 **36 Claims**



1. A braking system for a vertical axis wind turbine, having a rotor having a centrally disposed axis or rotor shaft oriented in the vertical direction, a support for supporting the rotor and permitting the rotor to be elevated, a housing and shaft, for supporting the rotor for rotation, the housing and shaft secured together presenting a space therebetween, means for sealing the space between the housing and shaft, brake pads and a braking surface carried by the vertical axis wind turbine, the space between the housing and shaft when the shaft is received

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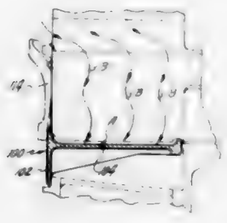
in the housing for receiving hydraulic fluid injected therein under pressure to raise the rotor for rotation, and hydraulic circuitry to feed hydraulic fluid into, and drain fluid from, the space, whereby when the hydraulic fluid is drained from the space, the rotor is lowered causing the brake pads to engage the braking surface to stop the motion of the rotor.

4,659,285

TURBINE COVER-SEAL ASSEMBLY

Robert R. Kalogeros, Glastonbury, and Gary F. Chaplin, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 23, 1984, Ser. No. 633,727
Int. Cl.[4] F01D 5/32
U.S. Cl. 416—95 **2 Claims**



1. For a gas turbine power plant having a turbine rotor comprising a turbine disk circumferentially supporting a plurality of radially extending turbine blades, each of said blades having a root section fitting into a recess formed on the rim of said turbine disk, cover means fitted adjacent the face of said disk at the juncture of said root section to overlie said recess and form a sealing means to prevent windage, each of said cover means including an axially extending portion extending axially into said recess adjacent but spaced from the rim of said disk defining a gap for retaining cooler air migrating thereto from the cooler portion of said turbine rotor for encapsulating cooler air so as to define an insulation barrier against the gas path of said power plant.

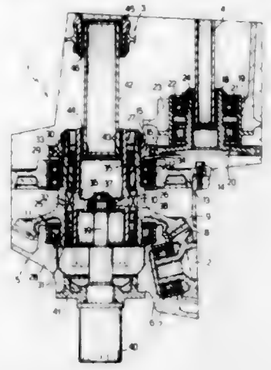
4,659,286

MAIN HELICOPTER DRIVE

Attilio Garavaglia, Gallarate; Enrico Sironi, Macario, and Rinaldo Gonzato, Cassano Magnago, all of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy

Filed May 10, 1985, Ser. No. 733,487
Claims priority, application Italy, May 14, 1984, 484 A/84
Int. Cl.[4] B64C 27/12
U.S. Cl. 416—170 R **5 Claims**

1. Main helicopter drive comprising a tubular drive body and a tubular driven body supported in rotary manner around their own axes, drive means connected angularly to the said tubular drive body, a flywheel fitted onto the said tubular drive body and connected to the said tubular driven body, and a main shaft and countershaft connected angularly to said tubular drive body and to said tubular driven body respectively, and a bearing fitted onto said tubular driven body in a position adjacent to said freewheel; the said tubular driven body (25) having a cylindrical surface (28) constituting a locking surface for the said freewheel (32) and being connected in axially-sliding manner to the freewheel (32); and actuating means (40) being provided for enabling mutual axial displacement of the said tubular bodies between a first position, in which the said freewheel (32) cooperates with the said locking surface (28),



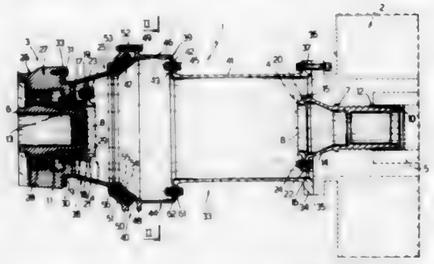
and a second position in which the said freewheel (32) cooperates with the said bearing (33).

4,659,287

HELICOPTER ENGINE-DRIVE ASSEMBLY

Attilio Garavaglia, Gallarate, and Rinaldo Gonzato, Cassano Magnago, both of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy

Filed May 10, 1985, Ser. No. 733,488
Claims priority, application Italy, May 29, 1984, 67545 A/84
Int. Cl.[4] B64C 27/12
U.S. Cl. 416—170 R **3 Claims**



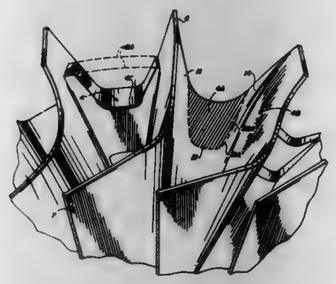
1. Helicopter engine-drive assembly comprising an engine, a drive unit, a propeller shaft extending between the output on the said engine and the input on the said drive unit, and an articulated tubular member connected in removable manner, at one end, to the casing on the said engine and, at the other end, to the casing on the said drive unit, the said propeller shaft extending inside the said articulated tubular body, and the latter comprising at least two segments connected together by means of a universal joint, at least one of said two segments being reducible in length and comprising at least two coaxial portions adapted to engage each other telescopically; removable fastening means aligned axially with the two segments and provided for locking the said two portions in a fully extended end-to-end axial position.

4,659,288

DUAL ALLOY RADIAL TURBINE ROTOR WITH HUB MATERIAL EXPOSED IN SADDLE REGIONS OF BLADE RING

Jeffrey Clark; David Finger, both of Tempe; Ron Vanover, Phoenix, all of Ariz., and Mike Egna, Milford, Mich., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 10, 1984, Ser. No. 680,216
Int. Cl.[4] F01D 5/14
U.S. Cl. 416—186 R **24 Claims**



12. A radial flow turbine rotor comprising:
(a) a blade ring of first superalloy material and including a rim having a hub-receiving surface that defines a generally cylindrical nose region and a generally conical rear region, said blade ring including a plurality of blades extending from said rim and defining saddle regions therebetween, each of the saddle regions being disposed directly between and bounded by a pair of the thin blades;
(b) a hub of second superalloy material having high tensile strength and including a generally cylindrical nose portion and a generally conical rear portion disposed in said nose region and said rear region, respectively, and diffusion bonded to said hub-receiving surface, portions of said rear portion of said hub being exposed in said saddle regions to provide high tensile strength material of said hub in said saddle regions.

24. A method of manufacturing a radial flow turbine rotor, said method comprising the steps of:
(a) providing a blade ring of first superalloy material having high creep rupture strength and including a rim having an inner surface that defines a nose region and an enlarged generally frustoconical rear region, said blade ring including a plurality of thin blades projecting outwardly from said rim and separated by saddle regions;
(b) providing a hub of second superalloy material having high tensile strength and having a nose portion and an enlarged, generally frustoconical rear portion;
(c) inserting said hub into said blade ring;
(d) bonding said hub and said blade portion together; and,
(e) machining away portions of said blade ring in said saddle regions and exposing material of said hub, in said saddle regions,

whereby said radial flow turbine rotor has high tensile strength material exposed in the surface of said saddle regions to reduce effects of fatigue that lead to cracking in said saddle regions.

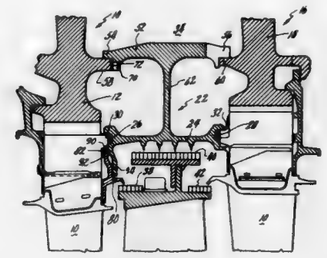
4,659,289

TURBINE SIDE PLATE ASSEMBLY

Robert R. Kalogeros, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 23, 1984, Ser. No. 633,722
Int. Cl.[4] F01D 5/06, 11/02
U.S. Cl. 416—198 A **3 Claims**

1. A pair of axially spaced turbine rotors for a gas turbine power plant, each of said turbine rotors comprising a disk and a plurality of tubine blades circumferentially supported in recesses formed on the outer diameter of said disk and the recesses having side edges, each of said turbine rotors having a front face and a rear face, a plurality of circumferentially spaced side plates mounted on the rear face of one of said turbine rotors contiguous with said disk and each of said blades at the side edge of said recesses to form an axial seal at the junction where said blades are attached to said disk, sealing



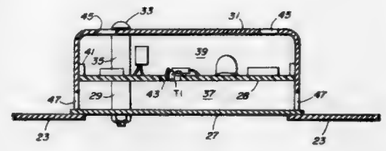
means including a rigid annular support member extending between said rear face of one of said pair of turbine rotors and a front face of the other of said pair of turbine rotors and said annular support member bearing against the front surface of each of said side plates for axially supporting each of said side plates, said rigid annular support member being the sole means for securing said plurality of side plates in position.

4,659,290

FAN SPEED CONTROLLER

Warren R. Kundert, Harvard, Mass., assignor to Control Resources, Inc., Harvard, Mass.

Filed Mar. 25, 1985, Ser. No. 715,663
Int. Cl.[4] F04B 49/10
U.S. Cl. 417—32 **1 Claim**



1. A fan speed controller suitable for controlling a motor-driven fan for cooling heat dissipating electronic equipment, said controller comprising:
electronic power control means responsive to an input signal level for varying the energization of the fan motor;
means for generating a fixed level control signal corresponding to half maximum fan speed;
means, including an air temperature sensing element responsive to the temperature of exhaust air leaving the equipment, for generating a variable level control signal corresponding to the temperature of the exhaust air propelled by said fan; OR circuit means operative to generate an output signal substantially equal to the greatest of any input signal applied thereto, said fixed and variable control signals being applied to said OR circuit as inputs with said OR circuit means output signal being applied to said power control means as the input signal level, whereby, above half maximum, fan speed is controlled in a closed loop as a function of air temperature in a sensed tending to hold exhaust air temperature constant.

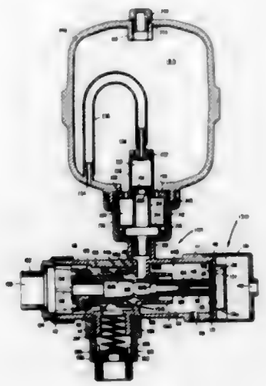
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4,659,291

HYDROELECTRIC SWITCH FOR CONTROLLING ELECTRIC MOTOR DRIVEN PUMP

Osvaldo J. Valdes, Alameda BDO. O'Higgins 4463, Santiago, Chile

Continuation-in-part of Ser. No. 506,781, Jun. 22, 1983, abandoned. This application Aug. 7, 1984, Ser. No. 638,367
Int. Cl.[4] F04B *49/06*
U.S. Cl. 417—44 4 Claims



1. A hydroelectric switch for controlling operation of an electric motor-driven pump based upon a zero, partial or full demand for water in a water system, said hydroelectric switch comprises:

a hollow sylindrical body having an internal bore, a water inlet from the pump, a water system outlet and an air injection pump connection;

a hydro-pneumatic compartment;

an air injection pump means, connecting said hydro-pneumatic compartment to said air injection pump connection, for injecting air into said compartment upon operation of said motor-driven pump;

a hollow valve body member means, disposed in said hollow cylindrical body bore, for limited axial movement therein in response to zero, partial or full demand for water in said system, said hollow valve body member means including a piston rod, having two sides and being sealably mounted in said bore, with variable system water pressure on one side of said piston rod and a relatively constant pressure on the other side of said piston rod and defining holes therein on the variable system water pressure side of said piston rod to communicate the air injection pump means and hydro-pneumatic compartment with said water system outlet,

electrical contact means for completing an electric circuit to operate said electric motor-driven pump when said valve body member means is not in contact with said contact means; and

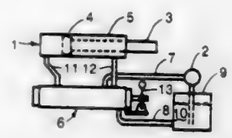
means for biasing said valve body member away from said contact means, said biasing means bias being sufficient to overcome water pressure on said piston rod when said hydro-pneumatic chamber reaches a lower level under partial demand or when there is full demand for water by said water system, but said bias being insufficient to overcome the water pressure on said piston rod when said hydro-pneumatic chamber is full and there is zero demand for water by said water system.

4,659,292

HYDRAULIC POWER BOOSTER APPARATUS

David L. Wells, and Allen M. Johnson, both of West Bend, Wis., assignors to Dennis J. Lawman, Laurens and Richard E. Altringer, Storm Lake, both of, Iowa

Continuation of Ser. No. 752,630, Dec. 20, 1976, abandoned. This application Dec. 6, 1979, Ser. No. 100,859
Int. Cl.[4] F04B *17/00*
U.S. Cl. 417—225 5 Claims



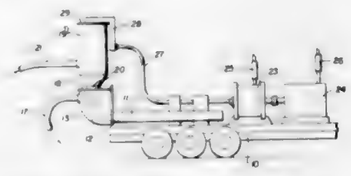
1. A hydraulic booster power apparatus including a power amplifying pump unit having a differential area pumping element movable within a pump chamber unit between first and second positions, said pumping element having opposite sides in said chamber unit, said chamber unit having an inlet means adapted to be connected to receive fluid and an exhaust means for discharging fluid, a control means having an operating means coupled to said differential area pumping element to form a first valve means for selective connection of the chamber unit to the opposite sides of the pumping element and movable therewith, said operating means controlling a plurality of additional valve means in response to movement with the pumping element to control the movement of the operating means and thereby opening and closing of said first valve means to supply fluid to opposite sides of the differential area pumping element and to exhaust fluid from the opposite sides of said differential area pumping element.

4,659,293

PUMPING SYSTEM WITH AIR CONVEYANCE AND METHOD

William R. Evenson, South Houston, Tex., assignor to Lefco Western, Inc., Houston, Tex.

Continuation of Ser. No. 629,815, Jul. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 602,927, Apr. 23, 1984, Pat. No. 4,613,290. This application Oct. 4, 1985, Ser. No. 784,545
Int. Cl.[4] F04B *17/06*
U.S. Cl. 417—231 2 Claims



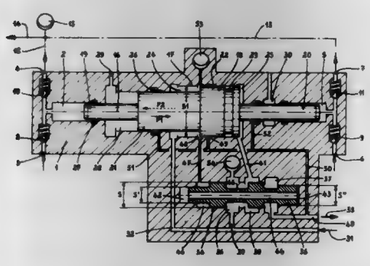
1. A mobile pumping system for sludges and like flowables comprising a vehicular support, a closed tank hopper on the vehicular support, a dual cylinder alternating piston pump connected with the closed tank hopper and being operable to pump material therefrom, an elongated flexible delivery conduit connected with the closed tank hopper and extending therefrom to a remote point of consumption or storage for material being pumped from the tank hopper, an adjustable articulated multi-section boom on the vehicular support, an elongated flexible suction conduit carried by the articulated boom and including a portion extending forwardly of the leading end of the boom adapted to be placed in a remote supply of a flowable requiring pumping, said suction conduit including a rear extension, an upright axis gravity-assisted separator unit mounted on top of the closed tank hopper and being in communication therewith through the bottom of the separator unit and the top of the tank hopper, said rear extension of the suction conduit being connected into the side wall of the separator unit near the bottom thereof, an air blower mounted on the vehicular support and being separated from said pump, closed tank hopper and said separator unit, and another suction conduit means connected between the top of the separator unit and an inlet of said air blower, whereby the air blower maintains a partial vacuum in the closed tank hopper to promote the filling thereof while easing the operation of the dual cylinder alternating piston pump in pumping material from the tank hopper.

4,659,294

HYDRUALIC PRESSURE AMPLIFIER

Jean-Claude S. Barthomeuf, Lacenay, Anse, France, assignor to Eimco Secoma, Societe Anonyme, Meyzieu, France

Filed Jan. 9, 1986, Ser. No. 817,360
Claims priority, application France, Jan. 9, 1985, 85 00540
Int. Cl.[4] F04B *9/10*
U.S. Cl. 417—397 13 Claims



1. A hydraulic pressure amplifier comprising:

a cylinder provided at opposite ends with plunger chambers of smaller cross section and said cylinder and coaxial therewith;

a piston displaceable in said cylinder and formed at opposite ends with respective plungers extending respectively into said plunger chambers and lying along the axis of said piston, said piston being stepped and defining in said cylinder a first annular chamber of relatively smaller effective cross section continuously connected to a source of a primary fluid under pressure, and a second annular chamber of large effective cross section;

a pilot valve formed with a valve member differentially displaceable and connected with said second annular chamber for alternately connecting same with said source and with a return passage for said primary fluid;

means forming a single pilot passage communicating with said cylinder at an orifice disposed at an intermediate location along the length of said cylinder and alternately uncovered and blocked by said piston, said pilot passage being connected to said pilot valve to control the fluid pressure differential displacement of said valve member; and

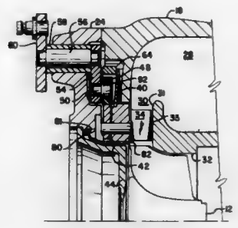
respective check valves allowing a secondary fluid to be induced into said plunger chambers and driven therefrom at high pressure.

4,659,295

GAS SEAL VANES OF VARIABLE NOZZLE TURBINE

Fred E. Burdette, Torrance; Jean-Luc Fleury, and Manfred Roessler, both of Manhattan Beach, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 20, 1984, Ser. No. 602,644
Int. Cl.[4] F01D *17/12*; F02B *37/12*
U.S. Cl. 417—407 26 Claims



1. In association with an engine, a turbocharger for supplying compressed air to said engine comprising:

an exhaust gas driven turbine rotatably mounted to a shaft and having a compressor impeller thereon;

a compressor housing having an inlet and an outlet and enclosing said compressor impeller;

a center housing including bearing means for rotatably supporting the shaft;

a turbine housing including an inlet and an outlet, said turbine housing forming a volute therein for directing exhaust gas from said engine thorugh an annular passage to said turbine;

a flange member mounted between said center housing and said turbine housing and having a recess therein defining a radially inner and outer surface, said surfaces being aligned axially, spaced radially apart and facing each other;

a generally annularly shaped unison ring having a plurality of slots therein and at least three equally spaced roller members rotatably mounted thereto, said rollers engageable with said inner surface during periods of relatively low exhaust gas temperature and engageable with said outer surface during periods of relatively high exhaust gas temperatures;

a generally annular nozzle ring having a plurality of vanes pivotably mounted thereo, each of said vanes having a vane arm which is engageable within a slot in said unison ring;

a spring means for biasing said plurality of vanes against the turbine housing; and

means for preventing rotation of said nozzle ring.

4,659,296

ROTARY VANE PUMP WITH PLURAL OUTLET PORTS AND RELATIONSHIP FOR CAM SURFACE RADII

Ian T. Bristow, Higham, England, assignor to Hobourn-Eaton Limited, Rochester, England

Filed Oct. 30, 1985, Ser. No. 793,096
Claims priority, application United Kingdom, Oct. 30, 1984, 8427354
Int. Cl.[4] F01C *1/344*
U.S. Cl. 418—15 1 Claim

1. A rotary pump comprising:

a housing having a circumferentially extending cam surface on the inner surface thereof;

a rotor in said housing and provided with radial slots;

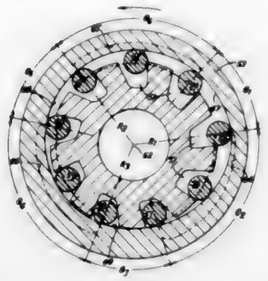
piston means in each of said slots and movable radially in the slots and engaging said circumferentially extending cam surface;

said housing further having an inlet port and at least two

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outlet ports circumferentially spaced from each other and from said inlet port, whereby rotation of the rotor causes fluid from the inlet port to be delivered to said outlet ports,

the profiles of the two portions of said cam surface extending circumferentially on opposite sides of at least one of the outlet ports along which two piston means move respectively for jointly carrying out the instantaneous delivery through said one outlet port, having radii relative to the axis of rotation of said rotor which decrease progressively in the direction of rotation of said rotor, and the difference between the squares of the radii of said two portions relative to the axis of rotation of the rotor at the instantaneous points of contact of said two piston means with the two portions respectively is a constant.



4,659,297

VARIABLE CAPACITY VANE MOTOR HAVING ROTATABLE AND STATIONARY CAM RINGS

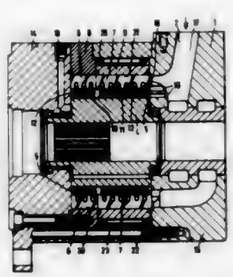
Manfred Kahrs, Wiesbaden, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 4, 1985, Ser. No. 805,345

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1984, 3444262

Int. Cl.⁴ F01C *1/344, 21/14*; F03C *2/00*

U.S. Cl. 418—22 **8 Claims**



1. A vane motor comprising:

a rotor arranged in a housing;

two cam rings disposed in side-by-side relation surrounding the rotor, one of said two cam rings being non-rotatable and the second of said two cam rings being rotatable relative to said one cam ring;

a plurality of vanes associated with each one of the two cam rings respectively, said vanes being slidable in radially extending slots in the rotor and define at least one working chamber located between the rotor and the cam rings;

two opposing side plates one adjacent the non-rotatable cam ring and one adjacent the rotatable cam ring laterally confining the at least one working chamber, said side plate adjacent said rotatable cam ring including an inlet port and an outlet port into said at least one working chamber; and

a rotating device arranged in substantially tangential relationship to the circumference of the rotatable cam ring engaging said rotatable cam ring.

4,659,298

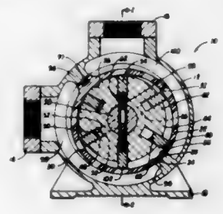
PUMP WITH VANE ACTUATING SYSTEM

Alfred A. Byram, Edmond, and Willie Wystemp, Oklahoma City, both of Okla., assignors to Corken International Corporation, Oklahoma City, Okla.

Filed May 14, 1985, Ser. No. 734,406

Int. Cl.⁴ F04C *18/00*

U.S. Cl. 418—253 **8 Claims**



1. A vane actuating apparatus for a radially slidable vane in a positive displacement pump, said vane actuating apparatus comprising:

a first portion defining a cavity therein;

a second portion having an end reciprocably disposed in said cavity, one of said first and second portions defining a longitudinal slot therein, and the other of said first and second portions defining a transversely disposed hole therein, said slot corresponding to said hole;

biasing means contained within said cavity and disposed between said first and second portions for oppositely biasing said first and second portions; and

means limiting relative movement between said first and second portions comprising a pin disposable in said hole and extending into said slot;

whereby, at least one of said portions may be placed in contact with said vane for radially outwardly biasing said vane when in an operating position within said pump.

4,659,299

MASH PELLETING APPARATUS

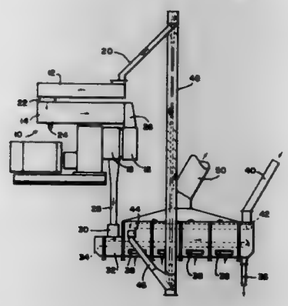
Henry Pierik, Forestville, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.

Filed Oct. 23, 1985, Ser. No. 790,612

Int. Cl.⁴ B29B *9/16*

U.S. Cl. 425—72 R **4 Claims**

1. In combination: A pellet mill having a mash inlet and a pellet outlet; an air cooler having ambient air inlet means, a separate warm pellet inlet, and a cooled pellet outlet; a warm air conduit system comprising at least one warm air conduit constructed to provide air flow paths from the ambient air inlet means, through the air cooler, and through the warm air conduit; means for feeding the warm pellets from the pellet mill to the air cooler warm pellet inlet; means constructed to convey the said pellets from the warm pellet inlet, and through the air flow paths and out the cooled pellet outlet whereby the ambient air is heated by the warm pellets and the warm pellets are cooled by the ambient air thereby providing warm air in the warm air conduit system by the cooling of the warm pellets; and mash conveying means for conveying the mash to the pellet mill mash inlet, said mash conveying means including a mash conveyor passing through the warm air in the warm air conduit system to pre-heat the mash.



4,659,300

WORM EXTRUDER FOR SYNTHETIC RESIN

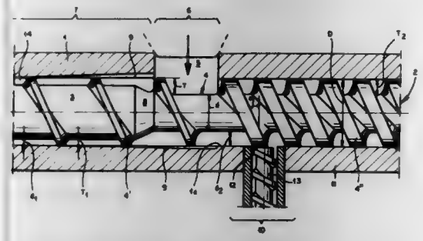
Wilfried Schwarz, Königswinter, Fed. Rep. of Germany, assignor to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 618,195, Jun. 7, 1984, abandoned. This application Dec. 10, 1985, Ser. No. 807,770

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1983, 3320782

Int. Cl.⁴ B29C *47/00*

U.S. Cl. 425—113 **10 Claims**



1. A synthetic resin worm press comprising:

a cylindrical housing formed with a substantially cylindrical bore defined by a wall;

a feed opening formed in said wall, said feed opening communicating with said cylindrical bore over a portion of the length of the worm press, said feed opening defining a feed opening zone only over the length of said feed opening, the press having an intake zone immediately adjoining said feed opening zone in a direction of flow of synthetic resin material through said bore; and

a worm rotatable in said cylindrical bore to displace synthetic resin material introduced into said feed opening zone along said cylindrical bore in said direction of flow, said worm having at least one helical thread rising from a worm core where said helical thread extends along said worm through said feed opening and intake zones, the thread height along said intake zone being smaller than the thread height along said feed opening zone by a factor of 0.5 to 0.9,

said worm core being provided immediately adjacent said feed opening zone, said worm core, extending into said intake zone with a transition piece conically diverging in said direction of flow, and

said wall being formed with a plurality of longitudinally extending rectilinear grooves opening into said cylindrical bore at said feed opening and intake zones and of a progressively decreasing depth in said direction of flow, said grooves beginning at said feed opening zone at a deepest portion, extending the full length of said feed opening zone, and terminating at said intake zone beyond said transition piece in said direction by merging into a surface of said wall of the diameter of said bore.

4,659,301

METHOD OF AND APPARATUS FOR MANUFACTURING MOLDED SLIDE FASTENER COUPLING ELEMENTS

Hiroshi Yoshida, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

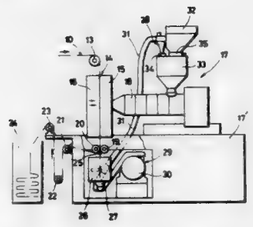
Filed Nov. 14, 1984, Ser. No. 671,313

Claims priority, application Japan, Nov. 15, 1983, 58-214828; Dec. 29, 1983, 58-245936

The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.

Int. Cl.⁴ B29C *45/14*

U.S. Cl. 425—129 R **7 Claims**



1. In the manufacture of a slide fastener chain having molded thereon rows of coupling elements made of a thermal plastic material, an apparatus which comprises in combination:

(a) an injection molding machine having a mold;

(b) a cutting means disposed immediately adjacent to and downstream of said mold for cutting and removing runners and sprues from the rows of coupling elements;

(c) a pelletizing means located adjacent to said cutting means for pelletizing said removed runners and sprues to a predetermind particle size;

(d) a first hopper for receiving and feeding the pelletized runners and sprues;

(e) a second hopper for receiving and feeding a fresh supply of thermal plastic materials;

(f) a mixing hopper for receiving and mixing the pelletized materials from said first and second hoppers for charging to said mold;

(g) a delivery means adjacent to said pelletizing means for delivering the pelletized material therefrom to said first hopper; and

(h) a controlling means associated with at least one of said first and second hoppers for controlling the amount of the feed therefrom to said mixing hopper so that the combined feeds fall within a constant selected ratio.

4,659,302

DECKLE STRUCTURE FOR A FILM EXTRUSION DIE

Mokichi Maejima, Tokyo, Japan, assignor to Jyoboku Seiko Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1985, Ser. No. 806,703

Claims priority, application Japan, Jan. 22, 1985, 60-8434; Sep. 2, 1985, 60-192092

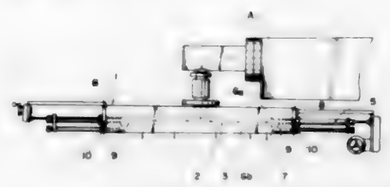
Int. Cl.⁴ B29C *47/16*

U.S. Cl. 425—190 **2 Claims**

1. In a T-shaped extrusion die for extruding a film of ther-

VOL 1077 ISS 3 AP 21 1987 UMI

mally flowable synthetic resin, comprising a die body having a manifold for passing the resin to a discharge orifice, said manifold centrally positioned in said die body and extending longitudinally therein and perpendicular to the resin flow, a pair of lips at the end of said manifold forming said discharge orifice, inner deckles for varying the longitudinal width of the extruded film, a slot passage between said manifold and said discharge orifice, said inner deckles being movable perpendicularly to the direction of the resin flow in said slot passage, inner deckle rods for regulating the width of the extruded film located below the inner deckles and movable in conjunction with and parallel to the moving directions of the inner deckles,



said inner deckle rods being located within the slot passage, the improvement wherein said inner deckles are each divided into an upper inner deckle portion and lower inner deckle portion for varying the width of said extruded film, said upper inner deckle portion and said lower inner deckle portion being shaped to snugly fit in said manifold and said slot passage, and the inner deckle rods are each provided at the tip thereof with a tongue shaped protrusion for preventing the formation of edge beads at both edges of the extruded film, side plates supporting said upper and lower inner deckles portions, and said side plates being divided into an upper and a lower side plate portions just above said inner deckle rods.

4,659,303

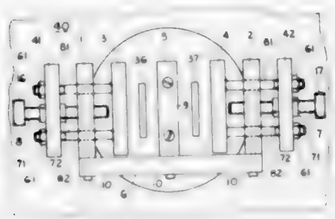
APPARATUS FOR EXTRUDING DOUGH AS USED IN PRODUCING CRISP BREADS

Robert Straka, Pequannock; Robert E. Ross, Wayne, and Fred Vanderveer, Mahwah, all of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Mar. 29, 1984, Ser. No. 594,159

Int. Cl.[4] B29C *47/22*

U.S. Cl. 425—376 R **20 Claims**



1. An extrusion apparatus for extruding an expansible edible substance, the apparatus comprising:

mixing and heating means for mixing and heating dough, said heating and mixing means including a power-driven mixing member and an inlet opening for dough ingredients;

a die head having an elongate die slot through which the dough can pass, the die slot having its long edges disposed substantially vertically;

a means for conveying mixed dough under pressure from the dough mixer to the die head;

a first pair of guide surfaces disposed on either side of the die slot, the guide surfaces being disposed substantially vertically, so that when the mixed dough undergoes vaporization of water and expansion of steam therein as it leaves the die slot, contact between the mixed dough and the two guide surfaces enables uniform escape of water vapour from the two substantially vertical surfaces of the extruded dough, thereby producing a more uniformly textured cellular product.

4,659,304

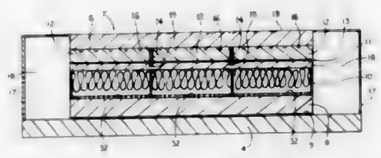
MOLDING

Charles L. Day, Kennebunk, Me., assignor to Palmer-Chenard Industries, Inc., Newington, N.H.

Filed Feb. 11, 1986, Ser. No. 828,730

Int. Cl.[4] B29C *33/02*

U.S. Cl. 425—406 **23 Claims**



1. A mold support assembly for supporting a mold in a molding machine, comprising means for maintaining the temperature of the mold at a desired temperature and an insulating unit disposed between the temperature maintaining means and structure of a molding machine, said insulation unit having an insulating cavity defined by a mold support structure comprising peripheral channel members secured to interconnected, spaced "I" beams, and having thermally reflective means disposed in said cavity remote from said temperature maintaining means.

4,659,305

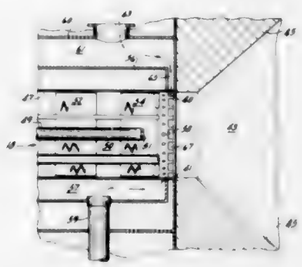
FLUE GAS RECIRCULATION SYSTEM FOR FIRE TUBE BOILERS AND BURNER THEREFOR

Peter K. Nelson, Palmyra, Pa., and Elroy M. Rulseh, Milwaukee, Wis., assignors to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Dec. 30, 1985, Ser. No. 814,901

Int. Cl.[4] F23M *3/00*

U.S. Cl. 431—9 **11 Claims**



1. A fire tube boiler system comprising a burner, a combustion chamber downstream of said burner and a burner housing, a series of fire tubes within said boiler, and an exhaust stack for the gases of combustion, said burner comprising means for injecting at least one fuel and combustion supporting air into said burner, the improvement comprising means for recirculating a minor portion of the gases of combustion, said recirculating means comprising duct means coupled to said stack and to a recirculation fan means, second duct means coupling said fan means to said burner and wherein said burner further includes outlet means for injecting said recirculated gases of combustion downstream of said fuel and combustion supporting air injecting means, wherein said burner housing comprises first and second cylindrical housings, wherein

said first cylindrical housing has an outlet and means for injecting combustion supporting air axially therethrough, said fuel injecting means being located adjacent said combustion chamber but spaced inwardly of said cylindrical housing outlet, and

said second cylindrical housing is surrounding and spaced apart from said first cylindrical housing, means for injecting a fuel gas into the space between said first and second housings, and a plurality of openings in said first housing for injecting said fuel into said burner.

4,659,306

METHOD OF AND SYSTEM FOR DETERMINING THE RATIO BETWEEN THE OXYGEN-CARRYING GAS CONTENT AND THE FUEL CONTENT OF A MIXTURE

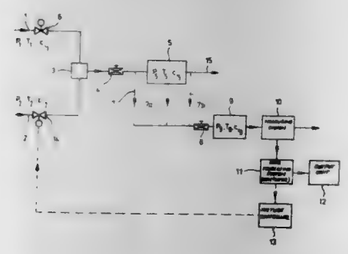
Detlef Altemark, Dorsten; Manfred Weid, Haltern, and Eugen Brockmann, Dorsten, all of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Mar. 8, 1985, Ser. No. 709,696

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1984, 3408397

Int. Cl.[4] F23N *5/00*

U.S. Cl. 431—12 **41 Claims**



1. A method of determining the ratio between the constituents of a mixture comprising oxygen-carrying gas and a fuel, said mixture being intended for combustion by a primary combustion system, the thermodynamic parameters such as composition, temperature and pressure of the constituents of said mixture prior to and after blending said constituents being variable, said method comprising the steps of

providing a secondary combustion system including a reference combustion chamber,

flowing into said reference combustion chamber a mixture comprising part of said oxygen-carrying gas and part of said fuel, said mixture flowing into said reference combustion chamber being reproducibly analogous with the mixture for combustion by said primary combustion system,

reacting said mixture in said reference combustion chamber,

measuring combustion conditions in said reference combustion chamber and

deriving from the data so measured at least one signal for measuring and/or controlling the ratio between said oxygen-carrying gas and said fuel constituents in the mixture for combustion by said primary combustion system.

4,659,307

ALUMINUM HYDROXIDE STABILIZED SWITCH

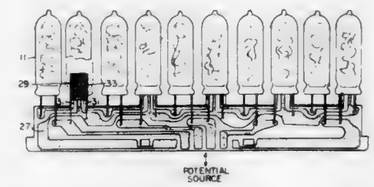
John W. Shaffer, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 22, 1984, Ser. No. 623,605

Int. Cl.[4] F21K *5/00*

U.S. Cl. 431—359 **16 Claims**

1. A humidity resistant radiation-responsive switch for a multilamp photoflash array comprising an admixture of silver carbonate and/or silver oxide, titanium dioxide, a binder and



aluminum hydroxide in the range of about 1.0 to 50.0% by weight of said admixture.

4,659,308

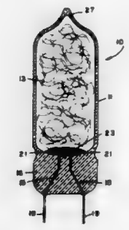
PHOTOFLASH LAMP WITH IMPROVED PRIMER

Ronald E. Sindlinger, Muncy, Pa., assignor to GTE Products Corporation, Danvers, Mass.

Filed Dec. 10, 1985, Ser. No. 807,400

Int. Cl.[4] F21K *5/00*

U.S. Cl. 431—362 **15 Claims**



1. A high-voltage photoflash lamp comprising:

an hermetically-sealed light-transmitting envelope including a combustion-supporting atmosphere therein;

a quantity of filamentary combustible material located within said envelope:

ignition means for igniting said combustible material, said ignition means including a pair of electrical conductors sealed within said envelope and projecting therefrom, each of said conductors including an end portion having access to the interior of said envelope:

a mass of primer material located within said envelope in electrical contact with said end portions of said electrical conductors, said primer material comprising a mixture of a combustible metal powder, an oxidizer, a binding agent, and electrically insulating beads having an average diameter of from about 0.005 inches to about 0.020 inches, wherein part of said combustible powder is in large particle form.

4,659,309

ORTHODONTIC BRACKET WITH RHOMBOIDAL PROFILE

Daniel A. Merkel, Sheboygan, Wis., assignor to American Orthodontics Corporation, Sheboygan, Wis.

Continuation-in-part of Ser. No. 727,331, Apr. 25, 1985, abandoned. This application Oct. 4, 1985, Ser. No. 784,794

Int. Cl.[4] A61C *7/00*

U.S. Cl. 433—9 **12 Claims**

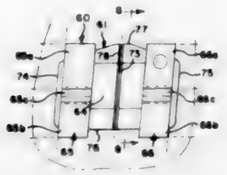
1. An orthodontic bracket for use with an archwire to impart corrective forces to a tooth comprising,

a base portion having a backside for attachment to the tooth,

a plurality of parallel tie wings integral with and extending

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from the base portion, said tie wings having parallel mesial and distal sides, outer labiobuccal faces extending substantially parallel to a plane common to the four corners of said base portion backside, gingival and occlusal tips with outer parallel gingival and occlusal edges, aligned labiobuccally opening archwire slots disposed centrally between the tips and having parallel opposed walls extending parallel to said occlusal and gingival edges, said labiobuccal faces forming an obtuse angle to one of the occlusal or gingival sides, whereby the buccolingual profile of the bracket defines a rhomboidal configuration and diagonal torque built into the bracket, one of said mesial or distal sides forming an obtuse angle with one of said gingival or occlusal sides thereby defining a rhomboidal labiobuccal profile for diagonal angulation.



4,659,310

ORTHODONTIC ARCHWIRE

William J. Kottemann, 755 Tonkawa Rd., Long Lake, Minn. 55356

Continuation-in-part of Ser. No. 693,381, Jan. 22, 1985, Pat. No. 4,585,414, which is a continuation-in-part of Ser. No. 501,482, Jun. 6, 1983, abandoned. This application Nov. 13, 1985, Ser. No. 797,443

The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.

Int. Cl.⁴ A61C *3/00*

U.S. Cl. 433—20 **7 Claims**



1. In an orthodontic system for imparting corrective forces to teeth which includes appliances mounted on the teeth and an archwire connected to said appliances, the improvement being in the archwire which comprises an extruded plastic body of rectangular cross section fitting and coacting with the appliances to apply forces thereto, and a round in cross section solid reinforcing metal core wire disposed centrally within and along the longitudinal axis of said body, the cross sectional area of said core wire being less than half of the total cross sectional area of said archwire, whereby the force capability of said archwire is substantially less than that of a metal archwire of the same total cross sectional area.

4,659,311

APPARATUS FOR MAKING DENTURE

Paul D. Raskin, 1600 39th St., Sacramento, Calif.

Filed Sep. 3, 1985, Ser. No. 772,140

Int. Cl.⁴ A61C *11/00*

U.S. Cl. 433—55 **11 Claims**

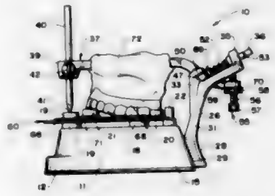
1. Apparatus for reproducing dentures including:

a main base having a trio of first magnetic means fixedly disposed on the upper surface thereof at a trio of spaced locations thereon adapted to magnetically attract a magnetic metallic plate;

a metallic plate loosely disposed on the upper surface of said base and magnetically held thereto by said magnetic means;

guide means associated with both said base and said plate for aligning said plate in a predetermined position on said base;

an articulating member fixedly secured to said base having a main support extending upwardly from said base and fixed thereto, said articulating member including an articulating portion pivotally mounted to said main support extending outwardly over the upper surface of said base and spaced therefrom when in a first position and pivotable to a second position extending generally normal to the plane of the upper surface of said base;



a trio of second movable magnetic means adapted to be both interposed between said first magnetic means and said plate; and adapted to be magnetically mounted on the top of said plate, and

a probe carried at the forward end of said articulating portion at a point thereon away from the pivot point thereof to said main support, said probe being vertically adjustable with respect to said articulating portion and extending vertically downwardly generally normal to the plane of the upper surface of said base when said articulating portion is in said first position, said probe terminating at its lower end in a point adapted to abut against the upper surface of said base when said plate is removed therefrom wherein the trio of second magnetic means are adapted and employed to orient a denture-based cast of the user's jaw configuration, using coordinates designated on the denture-based cast, to the proposed occlusal plane for the correct construction of a new denture.

4,659,312

ATTACHMENT AND LOCKING DEVICE FOR A DENTAL PROSTHESIS

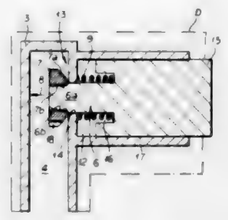
Johannis Bademis, Junkerstr. 11, 7910 Neu-Ulm/Schwaighofen, Fed. Rep. of Germany

Filed Nov. 6, 1985, Ser. No. 795,617

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1984, 3440597

Int. Cl.⁴ A61C *13/12*

U.S. Cl. 433—182 **14 Claims**



1. A slide connector for securing a dental prosthesis to a

residual dental structure in a mouth of a wearer, comprising a male member and a female member adapted to slidably receive said male member upon relative displacement of said members in a given direction, one of said members being attachable to said prosthesis and the other of said members being attachable to said residual dental structure, said female member being formed with a cavity adapted to complementarily receive said male member and being provided with an axially displaceable locking pin, said locking pin having a shank and a head enlarged with respect to said shank and disposed in said cavity, said male member having a slot open in said direction and a rear portion defining a recess for form-fittingly receiving said head, whereby a front portion of said slot is dimensioned to enable said shank to slide therethrough, said female member being further provided with a spring acting on said pin and bearing thereon to yieldably retain said head in said recess whereby displacement of said pin against the force of said spring can release said head from said recess.

4,659,313

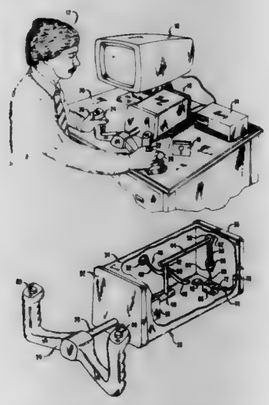
CONTROL YOKE APPARATUS FOR COMPUTERIZED AIRCRAFT SIMULATION

Robert J. Kuster, Belle Mead, and Jay B. Ross, Pennington, both of N.J., assignors to New Flite Inc., Pennington, N.J.

Filed Nov. 1, 1985, Ser. No. 794,131

Int. Cl.⁴ G09B *9/08*

U.S. Cl. 434—45 **14 Claims**



1. A control yoke simulation apparatus comprising:

hand manipulatable means;

shaft means having a long axis and connected to said hand manipulatable means;

bearing means for supporting said shaft means to that said shaft means can move back and forth in said bearing means in the direction of the long axis of said shaft means;

crank means attached to said shaft means for amplifying the rotational movement of said shaft means;

first resilient means connected to said crank means; and,

transducer means attached by said first resilient means to said crank means for translating said rotational movement into an output indicative of the movement of said hand manipulatable means.

4,659,314

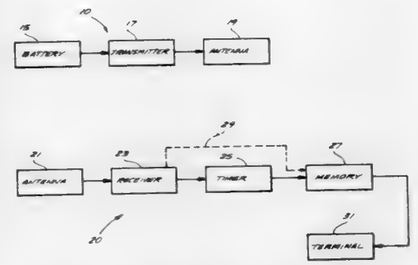
SURVEY TECHNIQUE FOR READERSHIP OF PUBLICATIONS

Lee S. Weinblatt, 797 Winthrop Rd., Teaneck, N.J. 07666

Filed Feb. 7, 1986, Ser. No. 827,757

Int. Cl.⁴ G09B *5/00*

U.S. Cl. 434—236 **18 Claims**



1. A system for surveying the readership of a designated magazine by individuals selected as test subjects, comprising:

a transmitter unit suitably sized for unobtrusive attachment to a copy of said designated magazine and including a power source, and a transmitter means connected to said power source for emitting an identification signal which is unique to said designated magazine; and

a receiver unit adapted to be worn by each of said selected individuals and including detecting means for responding to said identification signal to generate a control signal, memory means for storing a signal representative of each detected occurrence of said control signal, and a power source connected to said detecting means and memory means.

4,659,315

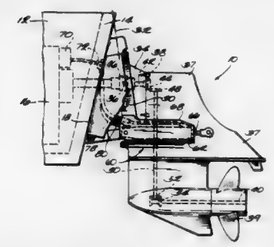
HYDRAULIC SYSTEM FOR MARINE PROPULSION DEVICES

Gerald F. Bland, Glenview; Stephen R. Johason, Waukegan, and Donald K. Sullivan, Arlington Heights, all of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 6, 1985, Ser. No. 731,160

Int. Cl.⁴ B63H *5/12*

U.S. Cl. 440—61 **17 Claims**



1. A marine propulsion device comprising a gimbal housing adapted to be fixedly attached to the transom of a boat and including an end plate adapted to be generally aligned with the boat transom and having an opening, opposite sides, and a rear surface, said gimbal housing also including a first generally vertical side member extending rearwardly from one of the sides of said end plate, and a second generally vertical side member extending rearwardly from the other of the sides of said end plate, a gimbal ring pivotally connected to said gimbal

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housing for pivotal movement relative to said gimbal housing about a generally vertical steering axis, a propulsion unit pivotally connected to said gimbal ring for pivotal movement relative to said gimbal ring about a generally horizontal tilt axis located below said opening, and for pivotal movement with said gimbal ring about said steering axis, a hydraulic cylinder/-piston assembly pivotally connected to said gimbal ring and to said propulsion unit about respective axes respectively fixed relative to said gimbal ring and said propulsion unit for effecting pivotal movement of said propulsion unit relative to said gimbal ring, and conduit means having one end adapted to communicate with a source of hydraulic fluid inside the boat, and an opposite end communicating with said hydraulic cylinder/piston assembly, said conduit means extending through said opening in said end plate, downwardly from said opening in said end plate and inwardly of said side members of said gimbal housing along said rear surface of said end plate in forward relation to said tilt axis and in rearward relation to the transom, and then rearwardly to said hydraulic cylinder/piston assembly.

4,659,316

SHIP WITH PROPELLER SHAFT PARTITION RINGS

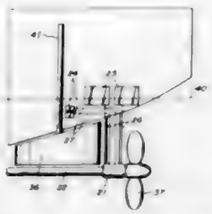
Hideji Ozaki, 568, Kojima, Tomie-Cho, Minamimatsuura-Gun, Nagasaki Pref., Japan

Filed Dec. 26, 1985, Ser. No. 813,936

Claims priority, application Japan, Dec. 31, 1984, 59-202077; Mar. 28, 1985, 60-46509

Int. Cl.⁴ B63H *23/34*

U.S. Cl. 440—83 **5 Claims**



1. A ship including a rudder and a propeller having a propeller shaft arranged adjacent a stern of the ship, wherein said propeller shaft comprises oil-water partition rings encircling the propeller shaft, and a bearing for the propeller shaft is formed with circular grooves which accommodate therein said oil-water partition rings and communicate with at least one oil-water separating pressurizing tank to form a water exhausting passage on an outer side of each said partition ring and an oil exhausting passage on an inner side of the partition ring.

4,659,317

METHOD OF MANUFACTURING A COLOR TV FOCUSING MASK

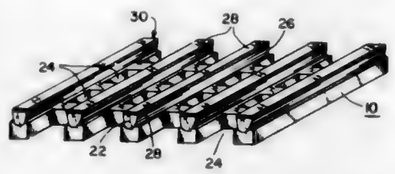
David C. Boyd, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 26, 1981, Ser. No. 267,027

Int. Cl.⁴ H01J *9/00*

U.S. Cl. 445—37 **11 Claims**

10. A method of making a color selection structure for a cathode ray tube which comprises, forming a plurality of recesses in a first surface on the side of a sheet of metal, forming plurality of cavities in a second surface on the opposite side of said sheet of metal, thereafter filling said cavities in said second surface with a dielectric material, firing said material to form durable dielectric portions which are bonded to said sheet of metal, relieving the second surface of said sheet of metal to provide said dielectric as raised insulator portions and forming in the region of said recesses apertures through said sheet of metal adjacent said insulator portions, and providing a conductive surface on said insulator portions in spaced apart relation from said sheet of metal so as to provide a focusing mask



having conductive surface portions separated by insulator portions positioned adjacent apertures extending through said mask.

4,659,318

METHOD TO INTRODUCE A FILL GAS MIXTURE INTO AN ELECTRIC LIGHT BULB, PARTICULARLY HALOGEN INCANDESCENT LAMP

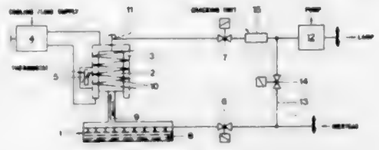
Axel Bank; Gottfried Eichelbrönner, both of Munich; Rainer Haske, Berlin; Karl Stadler, Fidelschlag, and Manfred Gaugel, Fürstenfeldbruck, all of Fed. Rep. of Germany, assignors to Patent Treuhand -Gesellschaft für elektrische Glühlampen m.b.H., Munich, Fed. Rep. of Germany

Filed Nov. 25, 1985, Ser. No. 801,553

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1984, 3443382

Int. Cl.⁴ H01J *9/395*

U.S. Cl. 445—54 **20 Claims**



1. Method to introduce a fill gas mixture into a bulb of an electric lamp, particularly a halogen incandescent lamp,

wherein the fill comprises an inert gas and a halogen containing additive, present in a predetermined quantity necessary for lamp operation,

utilizing the step of

dosing the quantity of the halogen containing additive by controlling the vapor pressure thereof,

characterized, in accordance with the invention, by the steps of

mixing inert gas and halogen containing additive by

providing the halogen containing additive in a vessel (1) in a non-gaseous form, at a first temperature (T_1) which is higher than a second temperature, which second temperature (T_2) results in a vapor pressure which enriches the inert gas with said predetermined quantity of halogen containing additive, and

conducting the inert gas through the vessel (1), thereby enriching the inert gas with the halogen containing additive in excess of the predetermined quantity of halogen containing additive, to thereby provide a mixture of halogen containing additive—excess enriched inert gas; and

processing said mixture to provide therein the predetermined quantity of halogen containing additive to result in a properly dosed or proportioned mixture by

condensing the excess enriched inert gas in a condenser (2) to said second temperature (T_2), to condense out excess halogen containing additive and thereby to obtain the desired inert gas-halogen additive mixture having said predetermined quantity of halogen containing additive therein;

and filling the so-obtained desired inert gas-halogen additive mixture into the lamp.

4,659,319

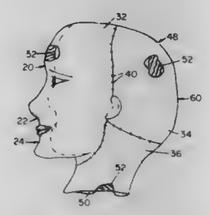
IMAGE IN THREE DIMENSIONS WITH PICTURE COVERING AND FORMING SYSTEM

June L. Blair, 2582 Redick Ave., Omaha, Nebr. 68112

Continuation-in-part of Ser. No. 620,696, Jun. 14, 1984. This application Apr. 8, 1985, Ser. No. 720,527

Int. Cl.⁴ A63H *3/36, 9/00*

U.S. Cl. 446—87 **6 Claims**



1. A process of making a soft, three-dimensional image of a head of a doll, said process comprising the steps of:

(1) providing a photograph, said photograph being a two-dimensional image on a primary sack-making component of flexibly hardenable material capable of receiving a printed likeness, said primary sack-making component defining a forward portion of said head of said doll, said forward portion comprising at least some facial features of said head;

(2) providing a plurality of secondary sack-making components, said secondary components defining a rearward portion of the head of the doll;

(3) securing together the primary sack-making component with said secondary sack-making components so as to form a unitary head-sack which is hollow and has an opening therethrough at the bottom of a neck portion of said head-sack;

(4) inserting soft, flexibly hardenable, molding material into the inside of the unitary head-sack behind the primary sack-making component of the unitary head-sack through the opening;

(5) placing a support means behind the molding material by inserting said support means through the opening, said support means providing support for the unitary head-sack for forming-pressure applied to the outside thereof;

(6) applying pressure against and forming both the head-sack and the molding material into a three-dimensional image by using the photographic image on the primary component as a guide;

(7) and hardening the molding material and the unitary head-sack.

4,659,320

TOY VEHICLE WITH DISC LAUNCHING APPARATUS AND DISKS

Hubert A. Rich, Westminster; Miva A. Filoseta, Los Angeles, and Eric C. Ostendorff, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Sep. 27, 1985, Ser. No. 781,608

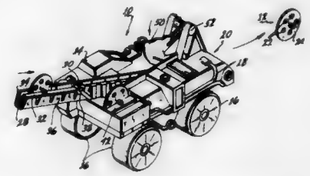
Int. Cl.⁴ A63H *33/18;* **F41B** *3/02*

U.S. Cl. 446—435 **6 Claims**

1. In a toy vehicle with wheels having a chassis on which a disk launching apparatus is mounted, the improvement for the disk launching apparatus comprising;

a track mounted on said chassis including a first surface and a second surface separated by a channel, a plurality of small disk members adapted to be received in said channel, each disk member having a relatively long spindle portion for contacting said first surface and a relatively short spindle portion for contacting said second surface, a launching station at one end of said track, said track being inclined to direct the leading disk member to the launching station;

a catapult lever positioned on the chassis at the launching station and having a segmented peripheral surface facing the track and engaging the relatively long spindle portion of the disk member at the launching station, said wheels having an axis, said catapult lever being pivotally mounted on an axis parallel to the axis of the wheels whereupon imparting pivotal movement to the catapult lever causes a spinning movement to be imparted to said lead disk member thereby launching the spinning disk member upon release of the segmented peripheral surface from the disk member.



4,659,321

SYSTEM FOR CONTROLLING THE TRANSMISSION RATIO OF AN INFINITELY VARIABLE TRANSMISSION

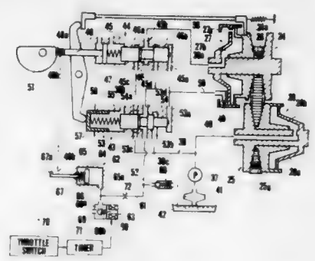
Motohisa Miyawaki, Chofu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,583

Claims priority, application Japan, Nov. 30, 1983, 58-226619

Int. Cl.⁴ F16H *11/04*

U.S. Cl. 474—28 **10 Claims**





1. In a system for controlling the transmission ratio of an

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infinitely variable transmission for a vehicle having a primary pulley having a hydraulically shiftable disc and a hydraulic cylinder for shifting the disc, a secondary pulley having a hydraulically shiftable disc and a hydraulic cylinder for operating the disc of the secondary pulley, a belt engaged with both pulleys, a hydraulic circuit having a pump for supplying pressurized oil, a transmission ratio control valve comprising a spool for shifting the disc of the primary pulley in a downshift direction and an upshift direction, respectively, and a pressure regulator valve for regulating the pressure of the oil, the system including shifting means for shifting the spool of the transmission ratio control valve in the upshift direction and in the downshift direction respectively in dependency on throttle position, the improvement comprising:

first means for detecting a wide open throttle position and thereupon for producing a signal; and

second means responsive to said signal for forcibly shifting for a time said spool of said transmission ratio control valve in the downshift direction from a position of said spool then determined by the shifting means so as to downshift the transmission further from said position.

4,659,322

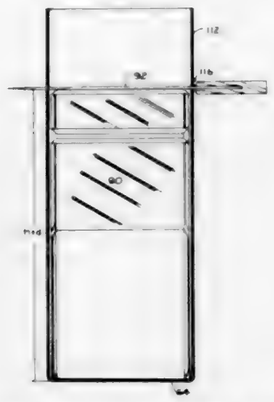
APPARATUS AND METHOD FOR PRODUCING A RESEALABLE CONTAINER

Leon L. Boudia, 74 Cliffside Dr., Daly City, Calif. 94015, and Harry F. Duff, 2448 Mistletoe Dr., Hayward, Calif. 94545

Filed Aug. 23, 1985, Ser. No. 768,624

Int. Cl.⁴ B31B *47/00, 1/14*

U.S. Cl. 493—57 **7 Claims**



1. A method for converting a starting container having a bottom which is rectangular in shape, having a front and back edges of length w and left and right edges of length d,

a front side which is rectangular in shape, having top and bottom horizontal edges of length w and left and right vertical edges of length **1**, said bottom edge of said front side being joined to said front edge of said bottom,

a left side which is rectangular in shape, having top and bottom horizontal edges of length d and left and right vertical edges of length **1**, said bottom horizontal edge of said left side being joined to said left edge of said bottom, and said right vertical edge of said left side being joined to said left vertical edge of said front side,

a right side which is rectangular in shape, having top and bottom horizontal edges of length d and left and right vertical edges of length **1**, said bottom horizontal edge of said left side being joined to said right edge of said bottom, and said left vertical edge of said right side being joined to said right vertical edge of said front side, and

a back side which is rectangular in shape, having top and bottom horizontal edges of length w and left and right vertical edges of length **1**, said bottom horizontal edge being joined to said back edge of said bottom, said left vertical edge being joined to said right vertical edge of said right side, and said right vertical edge being joined to said left vertical edge of said left side,

into a resealable container of height h, wherein said length **1** is greater than the sum of the height h of said resealable container plus d, comprising the steps of:

(a) cutting said front side, back side, left side, and right side of said starting container along the intersection of the plane which is parallel to said bottom of said starting container and which intersects said front side, back side, left side, and right side at a distance of h plus d from said bottom;

(b) cutting said front side, left side, and right side of said starting container along the intersection of the plane which is parallel to said bottom of said starting container and which intersects said front side, left side, and back side at a distance of h plus d minus t from said bottom;

(c) cutting said starting container along the intersection of said front side and said left side, said cut extending from the point on said intersection which is at a distance h from said bottom to the point on said intersection which is at a distance h plus d minus t from said bottom;

(d) cutting said starting container along the intersection of said front side and said right side, said cut extending from the point on said intersection which is at a distance h from said bottom to the point on said intersection which is at a distance h plus d minus t from said bottom;

(e) cutting said starting container along the intersection of said back side and said right side, said cut extending from the point on said intersection which is at a distance h from said bottom to the point on said intersection which is at a distance h plus d minus t from said bottom; and

(f) cutting said starting container along the intersection of said back side and said left side, said cut extending from the point on said intersection which is at a distance h from said bottom to the point on said intersection which is at a distance h plus d minus t from said bottom.

2. An apparatus for use with a cutting tool for converting a starting container having

a bottom which is rectangular in shape, having a front and back edges of length w and left and right edges of length d;

a front side which is rectangular in shape, having top and bottom horizontal edges of length w and left and right vertical edges of length **1**, said bottom edge of said front side being joined to said front edge of said bottom;

a left side which is rectangular in shape, having top and bottom horizontal edges of length d and left and right vertical edges of length **1**, said bottom horizontal edge of said left side being joined to said left edge of said bottom, and said right vertical edge of said left side being joined to said left vertical edge of said front side;

a right side which is rectangular in shape, having top and bottom horizontal edges of length d and left and right vertical edges of length **1**, said bottom horizontal edge of said left side being joined to said right edge of said bottom, and said left vertical edge of said right side being joined to said right vertical edge of said front side;

a back side which is rectangular in shape, having top and bottom horizontal edges of length w and left and right vertical edges of length **1**, said bottom horizontal edge being joined to said back edge of said bottom, said left vertical edge being joined to said right vertical edge of said right side, and said right vertical edge being joined to said left vertical edge of said left side;

into the resealable container of height h, wherein said length **1** is greater than the sum of the height h of said resealable container plus d, comprising:

first planar guiding means for guiding said cutting tool in a plane parallel to the bottom of said starting container at a distance h plus d from said bottom;

second planar guiding means for guiding said cutting tool in a plane parallel to the bottom of said starting container at a distance of h plus d minus t from said bottom;

first vertical guiding means for guiding said cutting tool along the intersection of said left side and said front side of said starting container including stop means for preventing said cutting tool from cutting said starting container at a point closer than h to said bottom;

second vertical guiding means for guiding said cutting tool along the intersection of said right side and said front side of said starting container including stop means for preventing said cutting tool from cutting said starting container at a point closer than h to said bottom;

third vertical guiding means for guiding said cutting tool along the intersection of said right side and said back side of said starting container including stop means for preventing said cutting tool from cutting said starting container at a point closer than h to said bottom; and

fourth vertical guiding means for guiding said cutting tool along the intersection of said left side and said back side of said starting container including stop means for preventing said cutting tool from cutting said starting container at a point closer than h to said bottom.

4,659,323

METHOD FOR MAKING AXIAL-FLOW FILTERS AND APPARATUS THEREFOR

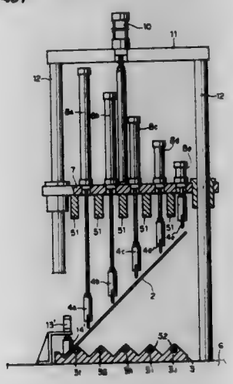
Yuuji Ito, Anjo; Tadahiko Shibata, Nukata; Masahiko Sakai, Takahama; Yukio Ota; Naohiko Kondo, both of Okazaki, and Harukazu Matuyama, Takahama, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

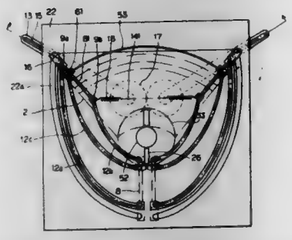
Filed Jan. 11, 1985, Ser. No. 690,757

Claims priority, application Japan, Feb. 20, 1984, 59-29710; Apr. 24, 1984, 59-82488

Int. Cl.⁴ B31B *1/52*

U.S. Cl. 493—457 **15 Claims**





1. A method for making a sectorial-shaped sheet of filter material having parallel curved ends, converging straight sides and curved corrugations extending between said sides parallel to said ends, the steps comprising:

preparing a sectorial-shaped mold having parallel curved ends, straight converging sides and a mold surface defined by longitudinally curved ridges and valleys extending between said sides parallel to said curved mold ends;

clamping an edge portion of a flat sheet of filter material to an upwardly and inwardly inclined side of a ridge of said mold at the smaller concavely curved end thereof so that said sheet becomes concave upward and inclined up over said mold surface;

arranged a set of longitudinally curved forming blades above said clamp sheet, each blade being aligned and positioned to move into mating relation with the bottom of a valley in said mold surface, each blade being narrower than the corresponding valley except at the blade tip so that as each blade moves into said mating relation a gap larger than the thickness of said sheet exists between the sides of the blade and the side walls of the corresponding valley;

moving said set of blades into said mating relation consecutively beginning with that blade closest to said clamed edge portion of said sheet to fold the latter successively across said ridge and beneath said blade tips into said valleys to form longitudinally curved parallel corrugations in said sheet.

4,659,324

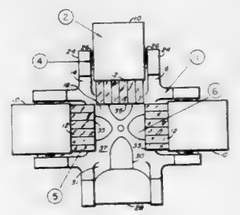
CENTRIFUGE ROTOR WITH AN OFFSET PIVOTAL MOUNT FOR A SAMPLE CONTAINER

John H. Sutton, III, Belmont, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 4, 1984, Ser. No. 616,644

Int. Cl.⁴ B04B *5/02*

U.S. Cl. 494—20 **4 Claims**



1. A rotor assembly comprising:

a rotor yoke having a plurality of substantially L-shaped bifurcated arms radially extending from the center of the rotor yoke;

the arms defining a pair of upright ends extending radially outward and perpendicular to the plane of rotation;

a pair of pivot pins, each extending inwardly from each bifurcated arm and thereby providing a structure for supporting a sample container;

the pivot pins being positioned within each arm to establish an offset fixed pivot in accordance with a relationship, so that the position of said pin within each arm is a function of the tangential velocity of the rotor, so the rotor container assembly is of substantially reduced diameter.

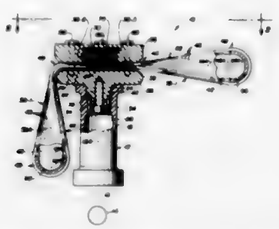
VOL 1077 ISS 3 APR 21 1987 UMI

4,659,325

CENTRIFUGE ROTOR HAVING A FLEXIBLE CARRIER

Paul M. Cole, Wilmington; William G. Johanson, Newark; both of Del.; Ronald F. McConnell, West Chester, Pa.; Peter Popper, and William E. Velvel, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1984, Ser. No. 684,946
Int. Cl.[4] B04B 5/02
U.S. Cl. 494—20 57 Claims



1. A swinging bucket centrifuge rotor for exposing a sample disposed within a sample container to a centrifugal force field comprising:

a central hub connectable to a source of motive energy for rotating the hub about an axis of rotation; and

a sample carrier connectable to the hub, the sample carrier itself comprising a plurality of fibers arranged in a predetermined textile structure, the sample carrier having a flexibly deformable region such that the carrier is adapted to support the sample container during movement of the same in response to centrifugal force from a first, rest, position in which the axis of a portion of carrier in the vicinity of the container is substantially parallel to the axis of rotation to a second, operational, position in which the axis of the carrier substantially perpendicular to the axis of rotation.

4,659,326

APPARATUS FOR IMPLANTING IMPLANTS IN CATTLE

Ronald F. Johnson, 3652 Brocker, and Norman E. Nicklas, 5120 Hurd, both of Metamora, Mich. 48455

Filed Aug. 20, 1984, Ser. No. 642,525
Int. Cl.[4] A61M 5/18
U.S. Cl. 604—62 10 Claims



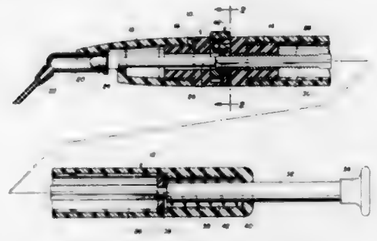
1. An injector for the implantation of implants in animals and used in combination with at least one implant comprising a housing having an internal chamber; a needle operably associated with said housing, said needle having an internal bore communicating with said chamber; plunger means operably associated with said chamber and said needle bore, said plunger means having a forward end movable into said needle bore; manually responsive trigger means for moving said plunger in said chamber and into said needle bore; and means capable of loading and locating an implant in operable association with the forward end of said plunger means to traverse said needle bore during operation of said injector, wherein said trigger means comprises a hollow hand engaging member; a first pivot means connecting said hand engaging member to said housing; a yoke element; second pivot means connecting said yoke element to said member; third pivot means connecting said yoke element to said housing; a slider operably associated with said plunger means having a block engageable with and at least substantially surrounding said plunger means; fourth pivot means connecting said yoke element to said slider; fifth pivot means connecting said block to said slider; and a trip element for moving said block into position of engagement of said plunger means in response to movement of said hand engaging member.

4,659,327

MULTIPLE DOSAGE SYRINGE

Douglas D. Bennett, Cambridge, Md.; Richard E. Welsh, Milford, Del.; Paul D. Hammesfahr, Dover, Del.; Earl C. Francis, Milford, Del., and Thomas V. Kopunek, Lewes, Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Nov. 26, 1985, Ser. No. 801,974
Int. Cl.[4] A61M 5/20
U.S. Cl. 604—135 4 Claims



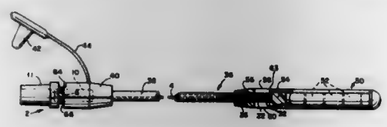
1. A multiple dosage device including in combination an elongated body including a compartment for material to be dispensed, a piston operable in said compartment to engage the material in opposition to a discharge nozzle on said body, a plunger rod in said body operable to engage said piston, pressure means in said body operable constantly against said plunger rod to urge it in a direction to effect discharge of said material from said compartment, elongated racks of teeth respectively on opposite edges of said plunger rod, and a manually-operable stop and release unit movable transversely to said plunger rod between projected and retracted positions and operable in sequence relative to said plunger rod, said unit having a unitary member encircling said plunger rod and including first teeth movable into engagement with the teeth on one of said racks to stop movement of said rod by said pressure means when said unit is in projected position and said unit having a second tooth pivotably carried by said member in opposition to said first teeth and movable relative to said member camlike relative to the opposite rack of teeth on said rod when said unit is depressed from a projected position to permit said pressure means to move said rod in feeding direction a limited predetermined distance which is limited by said second tooth fully meshing with said opposite rack of teeth in a manner to stop feeding movement of said rod until said unit next is operated to effect such feeding movement of said piston by said pressure means.

4,659,328

STYLET

Lawrence A. Potter, Whitehouse, and James Sgro, South Bound Brook, both of N.J., assignors to Biosearch Medical Products, Inc., Somerville, N.J.

Filed Mar. 12, 1984, Ser. No. 588,503
Int. Cl.[4] A61M 25/00
U.S. Cl. 604—170 16 Claims



1. A stylet for stiffening a pliable infusion tube used for selective enteric administration and aspiration of fluids to and from the gastrointestinal tract of a patient, said tube having at least one aperture proximal the distal end thereof, and said stylet capable of being fixed in said tube without interruption of fluid communication through said tube and said aperture comprising:

a wire extending between a proximal end of said tube and said distal end and having a transverse cross-section with an outside perimeter smaller than the inside perimeter of the transverse cross-section of said tube whereby fluid passes between said wire and said tube when in use,

elongated resilient flexible means for providing a flexible tip proximal to the distal end of said stylet, said resilient flexible means comprising a helically coiled spring wire with a linear axis and with spring coils forming loops oriented substantially transversely of said linear axis, said coiled spring wire oriented in the linear direction in the relaxed condition whereby said flexible means returns to the elongated linear condition upon release from severe deformation in any direction, and constructed for passage of fluid therethrough, said flexible means further having two ends, one end having means for presenting said styled from exiting through said aperture and the other end connected to said distal end of said wire, said means for preventing said stylet from exiting said aperture comprising enlarged spring coil loops proximate said one end which have a cross-section dimension greater than said aperture to prevent said flexible means from passing through said aperture, and said enlarged coil loops preceded on said one end by coils of gradually smaller cross-sections whereby a smooth circumferential shoulder is provided for contact with said infusion tube,

connecting means connecting said other end of said resilient means to said distal end of said wire co-linearly with said wire whereby said stylet positioned in said tube stiffens said pliable infusion tube while maintaining fluid communication through said tube and said aperture.

4,659,329

LIQUID DRAINAGE SYSTEM

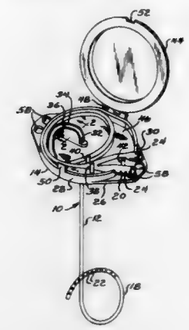
Larry D. Annis, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 635,090, Jul. 27, 1984, abandoned. This application Jun. 4, 1986, Ser. No. 870,601
Int. Cl.[4] A61M 5/32
U.S. Cl. 604—180 11 Claims

1. A liquid drainage system, comprising:

an elongated catheter having a lumen, a distal end for placement in a patient, and a proximal end; and

a retaining assembly comprising, a base plate for placement adjacent the patient, an upright outer wall extending substantially peripherally around the base plate to define a space and having an opening in the wall, said base plate having a lower surface, an aperture in the base plate approximately the size of the catheter to receive the catheter and an upright retaining member within the space defined by the wall and attached to the base plate adjacent the aperture, the retaining member having an upper surface defining a groove between opposed sides of the retaining member and extending directly from said aperture to



receive the catheter in the groove, said catheter being wound around the retaining member only within the wall in at least one coil inside the wall and extending toward the wall opening.

4,659,330

HYPODERMIC SYRINGE NEEDLE GUARD

Robert Nelson, 14661 Gault St., Van Nuys, Calif. 91405, and Robert Flome, 15805 St. Timothy Rd., Apple Valley, Calif. 92307

Filed Nov. 8, 1985, Ser. No. 796,280
Int. Cl.[4] A61M 5/32
U.S. Cl. 604—192 5 Claims



1. A hypodermic syringe needle guard comprising;

a hollow tubular cap means having an open end and a closed end fitting over and shielding said needle;

an elongated handle attached to said hollow tubular cap means proximate said open end, said elongate handle being constructed and arrange to extend a substantial distance away from said cap means so that said cap means can be removed and replaced while keeping hands away from said needle;

hinge means hingedly attaching one end of said handle to said tubular cap means;

securing means secruing the free end of said elongate handle remote from said hinge means to said syringe whereby said elongate handle may be secured out of the way on said syringe when said tubular cap is in place on said needle.

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4,659,331

PROSTHESIS INTERFACE SURFACE AND METHOD OF IMPLANTING

Larry S. Matthews, and Steven A. Goldstein, both of Ann Arbor, Mich., assignors to Regents of University of Michigan, Ann Arbor, Mich.

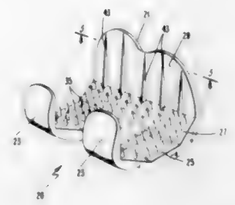
Filed Nov. 28, 1983, Ser. No. 555,812
Int. Cl.⁴ A61F *2/38*
U.S. Cl. 623—20 **12 Claims**

1. A prosthetic member for engaging couplingly with bone tissue of a living being, the prosthetic member comprising:

an interface surface for communicating with the bone tissue, said interface surface having first and second surface regions oriented at a predetermined angle with respect to each other;

a pluralty of first projection members each having a respective portion arranged to project axially along a respective first longitudinal axis and coupled at a base portion thereof to said first surface region of said interface surface, whereby said projection portion extends outwardly from said first surface region of said interface surface; and

a plurality of second projection members each tapering substantially to a point substantially along said second surface region and having an elongated configuration having a predetermined elongation distance determinable along a respective second longitudinal axis, and being formed integrally with said second surface region of said interface surface whereby each such second projection member is partially embedded along a lateral region thereof which is substantially parallel with said second longitudinal axis in said second surface region, said first and second longitudinal axes of said first and second projection members being substantially parallel with one another.



4,659,332

PROCESS FOR DRY-CLEANING TEXTILES AND MICROEMULSION DRY CLEANING COMPOSITION FOR THE USE THEREIN

Karl M. E. Hellsten, Odsmal, Sweden, assignor to Berol Kemi AB, Stenungsund, Sweden

Filed Sep. 20, 1982, Ser. No. 419,664
Claims priority, application Sweden, Sep. 21, 1981, 8105555-0
Int. Cl.⁴ C11D *1/22, 1/831, 3/44;* **D06L** *1/04*
U.S. Cl. 8—142 **10 Claims**

1. A fluid dry cleaning composition in the form of a microemulsion of an aqueous phase comprising emulsifier, aliphatic monoalcohol and water in perchloroethylene, comprising as the principal ingredients:

	Percent by Weight
Perchloroethylene	65–93.8
Emulsifier composed of	2–6
(a) a calcium salt of an alkyl-aryl sulphonic acid with a total of 14 to 22 carbon atoms; and	
(b) a non-ionic surface-active hydrophobic alkylene oxide adduct, in which the alkylene oxide is in the form of ethylene oxide or a mixture of ethylene oxide and alkylene oxide having 3 to 4 carbon atoms, and in which the hydrophobic part of the adduct has from 8 to 30 carbon atoms;	
in a weight ratio (a):(b) within the range 1:4 to 3:1	
Aliphatic monoalcohol having from 4 to 10 carbon atoms	0.2–4
Water	4–20
the ratio of the weight of water to the weight of emulsifier being in excess of 2:1.	

4,659,333

PROCESS FOR FIXING DYES AND PRINTS WITH HOT STEAM CONTAINING AIR

Andres Schaub, Biel-Benken, Switzerland, assignor to CIBA-GEIGY Corporation, Ardsley, N.Y.

Filed Aug. 29, 1985, Ser. No. 770,811
Claims priority, application Switzerland, Sep. 28, 1984, 4647/84
Int. Cl.⁴ D06P *5/20*
U.S. Cl. 8—476 **15 Claims**

1. A process fixing azo, metal complex azo and formazan dyes on textile fabrics with hot steam to give stable shades, which process comprises drying textile fabrics printed with said dyes and then fixing prints so obtained in hot steam that contains 0.5 to 5% by volume of air.

4,659,334

PARTICULATE COMPOSITIONS USED IN PETROLEUM SYSTEMS COMPRISING ENCAPSULATED MATERIALS

William J. Matlach, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 628,709, Jul. 10, 1984, Pat. No. 4,588,640. This application Feb. 20, 1986, Ser. No. 831,390
Int. Cl.⁴ C10L *1/10, 1/14, 1/18, 1/32*
U.S. Cl. 44—51 **12 Claims**

1. A petroleum system containing a solid, particulate composition comprising a solid mixture of a chemical additive which is a low-molecular weight polymer or mixture of polymers containing side chains of at least 12 carbon atoms and an essentially hydrocarbon soluble polymer compatible therewith, said solid mixture having a melting point of above about 50° C. to about 150° C. and having an encapsulating coating thereon which is a high melting point, essentially hydrocarbon insoluble polymer compatible therewith.

4,659,335

IGNITION IMPROVERS FOR FUEL MIXTURES

Christian Wegner, and Helmut Waniczek, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 25, 1985, Ser. No. 715,566
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412078
Int. Cl.⁴ C10L *1/02*
U.S. Cl. 44—53 **19 Claims**

1. An ignition improver for an alcoholic propellant for an internal composition engine which comprises nitrocellulose with a nitrogen content of 9 to 14% by weight and an intrinsic viscosity k of less than 1000 and a polyether with at least three ethylene oxide units; the ratio of nitrocellulose to polyether being from 1:0.2 to 1:2.0 and wherein the concentration of the nitrocellulose in the propellant mixture is 2 to 12% by weight.

10. A fuel mixture for an internal combustion engine comprising an alcohol having from 1 to 6 carbon atoms and an ignition improver, said ignition improver comprising nitrocellulose with a nitrogen content of 9 to 14% by weight and an intrinsic viscosity of less than 1000 and a polyether with at least three ethylene oxide units; the ratio of nitrocellulose to polyether being from 1:0.2 to 1:20; said fuel mixture containing 3 to 20 parts by weight of ignition improver based upon the weight of alcohol and wherein the concentration of the nitrocellulose in the propellant mixture is 2 to 12% by weight.

4,659,336

MOTOR FUEL COMPOSITION

Rodney L. Sung, Fishkill; Michael A. Caggiano, Chelsea, and Milton D. Behrens, Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

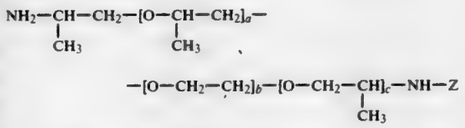
Filed Mar. 28, 1986, Ser. No. 845,719
Int. Cl.⁴ C10L *1/22*
U.S. Cl. 44—62 **18 Claims**

1. A motor fuel composition comprising a mixture of hydrocarbons boiling in the gasoline boiling range containing:

(I) from about 0.0005–0.5 weight percent of the reaction product of:

(a) 1 mole of maleic anhydride;

(b) 1–2 moles of a polyether polyamine represented by the formula:

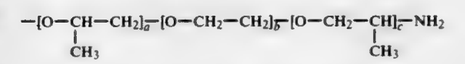


where b has a value from about 5–150, a+c has a value from about 2–20, and Z is selected from the group consisting of

(i) a hydrogen atom;

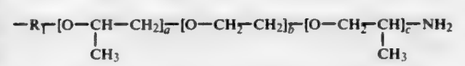
(ii) an alkyl radical having from 1–6 carbon atoms;

(iii) a polyether radical of the formula



where b has a value from about 5–150, and a+c has a value from about 2–20;

(iv) an alkylene polyether radical of the formula



where R_1 is an alkylene radical having from about 1–6

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carbon atoms, b has a value from about 5–150, and a+c has a value from about 2–20; and

(v) a radical of the formula

$$R_2(NH-R_3)_x-$$

where R_2 is an alkyl radical having from about 1–24 carbon atoms, R_3 is an alkylene radical having from about 1–6 carbon atoms, and x has a value from about 1–10; and

(c) 1–2 moles of a hydrocarbyl polyamine of the formula

$$R_2(NH-R_3)_x-NH_2$$

where R_2 is a alkyl radical having from about 1–24 carbon atoms, R_3 is an alkylene radical having from about 1–6 carbon atoms, and x has a value from about 1–10; and

(II) from about 0.01–1.0 volume percent, based on the total volume of the motor fuel composition, of a polyolefin polymer, copolymer, or the corresponding hydrogenated polymer or copolymer, or mixtures thereof, of a C_2–C_6 unsaturated hydrocarbon, said polyolefin polymer or copolymer having a molecular weight in the range from about 500–3500.

4,659,337

MALEIC ANHYDRIDE-POLYETHER-POLYAMINE REACTION PRODUCT AND MOTOR FUEL COMPOSITION CONTAINING SAME

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 756,545, Jul. 19, 1985, abandoned. This application Jan. 23, 1986, Ser. No. 821,727

Int. Cl.⁴ C10L *1/22*

U.S. Cl. 44—63 **24 Claims**

1. A composition comprising the reaction product of 1 mole of maleic anhydride, about 1 to 2 moles of a polyether diamine, and about 1 to 2 moles of a n-alkyl-alkylene diamine, where said polyether diamine reactant is represented by the formula:

$$NH_2-\underset{CH_3}{CH}-CH_2-[O-\underset{CH_3}{CH}-CH_2]_b-$$

$$-[O-CH_2-CH_2]_b-[O-CH_2-\underset{CH_3}{CH}]_c-NH_2$$

where b has a value from about 5 to 150 and a+c has a value from about 2 to 20, and said n-alkyl-alkylene diamine reactant is represented by the formula:

$$R-NH-(CH_2)_n-NH_2$$

where R is an aliphatic hydrocarbon radical having from about 8 to 24 carbon atoms and n has a value from about 1 to 5.

4,659,338

FUEL COMPOSITIONS FOR LESSENING VALVE SEAT RECESSION

Thomas E. Johnston, Mentor, and Casper J. Dorer, Jr., Lyndhurst, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Aug. 16, 1985, Ser. No. 766,615

Int. Cl.⁴ C10L *1/24*

U.S. Cl. 44—68 **49 Claims**

1. A fuel composition for internal combustion engines comprising a major amount of a liquid hydrocarbon fuel and a minor, property improving amount sufficient to reduce valve seat recession when the fuel is used in an internal combustion engine of

(A) at least one hydrocarbon-soluble alkali or alkaline earth metal containing composition containing at least 8 aliphatic carbon atoms and

(B) at least one hydrocarbon-soluble ashless dispersant wherein (A) is the alkali metal or alkaline earth metal salt of a sulfur acid, a carboxylic acid or a phenol.

4,659,339

INHIBITION OF CORROSION IN FUELS WITH MG/AL/SI COMBINATIONS

Walter R. May, and Michael J. Zetlmeisl, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 563,571, Mar. 31, 1975, abandoned. This application Feb. 5, 1979, Ser. No. 9,319

Int. Cl.⁴ C10L *1/30*

U.S. Cl. 44—68 **14 Claims**

1. A corrosion inhibiting composition comprising a combination of aluminum, magnesium and silicon present in a form permitting dispersion in hydrocarbon fuel oil, the weight ratio of Mg to Al being between 0.01 to 100 and the weight ratio, (Mg+Al)/Si, being between 0.01 and 100, aluminum and magnesium constituting 100% of the metals present in said composition.

4,659,340

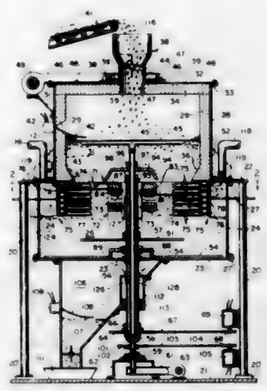
PRESSURIZED DOWNDRAFT GASIFIER

Lloyd E. Weaver, 14 Home Pl., Topsham, Me. 04086

Filed Jun. 24, 1985, Ser. No. 748,325

Int. Cl.⁴ C10J *3/20, 3/32, 3/42*

U.S. Cl. 48—76 **11 Claims**



1. A pressurized downdraft gasifier for extracting high quality gas products from solid carbonaceous fuels having low rates of gasification comprising; gasifying chamber means with a lower burning zone therein, gas lock means connected to the gasifying chamber means for supplying fuel and downdraft combustion air to the gasifying chamber means, ash collection chamber means connected to the gasifying chamber means to receive ash emanating from the burning zone through a throated zone in the bottom of the gasifying chamber means, a cylindrical grate bar assembly concentrically depending from the gasifying chamber means below the throated zone and extending downwardly into the ash collection chamber means, said cylindrical grate bar assembly including circular grate bars vertically-spaced from one another, said ash collection chamber means providing an annular space about the grate bar assembly for receiving gas products passing laterally from beneath the throated zone and through the grate bar assembly, outlet means communicating with the annular space for removing the gas products from the gasifier, rotary drive shaft means extending vertically into the ash collection chamber means and a grate bar clearing assembly connected to the rotary drive shaft means to be driven thereby and having grate clearing blades extending laterally between the circular grate bars to stir ash in the ash collection chamber means and to free the grate bars of clinkers that may be deposited between them.

4,659,341

SILICON NITRIDE ABRASIVE FRIT

David C. Ludwig, Towanda, and Robert J. Dobbs, Monroeton, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 23, 1985, Ser. No. 737,013

Int. Cl.⁴ B24D *3/00*

U.S. Cl. 51—293 **12 Claims**

1. A method for producing an abrasive frit of silicon nitride based material, said method comprising:

(a) forming a body of said silicon nitride based material;

(b) firing said body at a sufficient temperature and for a sufficient time to form a relatively low density body;

(c) crushing said low density body to form fragmented material, a portion of which comprises particles having a size range within the range of from about 0.5 microns to about 150 microns, said particles having essentially sharp edges;

(d) separating said particles from the balance of said fragmented material;

(e) sintering said particles at a sufficient temperature and pressure for a sufficient time to form sintered material having a density of at least about 96% of the theoretical density of said silicon nitride based material;

(f) deaggregating said sintered material to form deaggregated material a portion of which comprises the abrasive frit, said frit having a particle size range within the range of from about 0.5 microns to about 150 microns; and

(g) separating said abrasive frit from the balance of said deaggregated material.

4,659,342

METHOD OF CONTROLLING OPERATION OF AN ELECTROSTATIC PRECIPITATOR

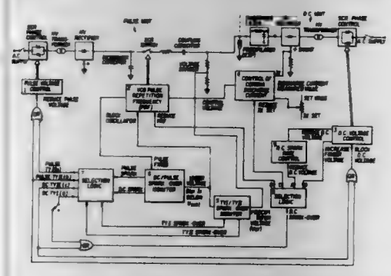
Leif Lind, Copenhagen, Denmark, assignor to F.L. Smidth & Co., Cresskill, N.J.

Continuation-in-part of Ser. No. 331,016, Dec. 15, 1981, abandoned. This application Apr. 30, 1984, Ser. No. 605,180

Claims priority, application United Kingdom, Dec. 17, 1980, 8040463

Int. Cl.⁴ B03C *3/68*

U.S. Cl. 55—2 **18 Claims**



1. A method of controlling the operating parameters of an electrostatic precipitator having electrodes energized by voltage pulses superimposed upon a DC-voltage which provide a precipitator-voltage over time which comprises:

continuously increasing the height of said pulses according to a predetermined rate;

determining reductions in the precipitator-voltage below a preselected value in order to determine spark-over thereof;

categorizing said spark-over according to the time of its occurrence and duration; and

adjusting the operating parameters of the electrostatic precipitator in dependence upon the characteristics of said spark-over.

13. A method of controlling the operating parameters of an electrostatic precipitator energized by voltage pulses superimposed on a DC-voltage which provide a precipitator voltage over time, characterized in that the pulse height is continuously increased with a preselected slope; a spark-over is detected as a reduction in the precipitator-voltage below a selectable set value and is sorted as to its type according to the time of its occurrence and its duration, and the operating parameters of the precipitator are altered, depending upon the type of said spark-over.

4,659,343

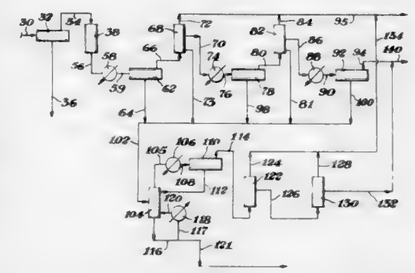
PROCESS FOR SEPARATING CO_2 FROM OTHER GASES

Ralph M. Kelly, Houston, Tex., assignor to The Cynara Company, Houston, Tex.

Filed Sep. 9, 1985, Ser. No. 774,251

Int. Cl.⁴ B01D *53/22*

U.S. Cl. 55—16 **16 Claims**



1. An improved process for separating carbon dioxide from a fluid mixture with hydrocarbons comprising the steps of:

(a) contacting a liquid-hydrocarbon tolerant membrane selectively permeable to carbon dioxide with a fluid mixture comprising carbon dioxide and at least one C_3 to C_8 hydrocarbon;

(b) permeating carbon dioxide from the fluid mixture through the membrane at conditions which result in the presence of at least one condensed liquid hydrocarbon in the fluid mixture in contact with the membrane; and

(c) separating the condensed liquid hydrocarbon from the gases which do not permeate the membrane.

4,659,344

LIQUID MOTOR AND PUMP WITH A STROKE REGULATING GAS MOTOR

Charles R. Gerlach, 639 W. Rhapsody, Sand Antonio, Tex. 78216, and Rodney T. Heath, 4901 E. Main, Farmington, N. Mex. 87401

Division of Ser. No. 277,266, Jun. 25, 1981, Pat. No. 4,402,652. This application Jul. 14, 1983, Ser. No. 513,637

Int. Cl.⁴ B01D *53/26*

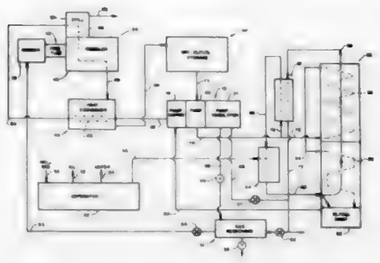
U.S. Cl. 55—29 **24 Claims**

1. A fluid pumping system for use with a natural gas dehydrating system or the like having an absorber apparatus for removing water from wet natural gas to produce dry natural gas by use of a dessicant agent such as glycol, a glycol reboiler means for producing a source of dry glycol from wet glycol received from the absorber apparatus by heat obtained from burning of the natural gas, the system comprising:

a fluid pump means operatively connected between dry glycol source and the absorber means for pumping dry glycol from the dry glycol source to the absorber means;

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a fluid operable primary motor means operatively connected to said pump means for actuating said pump means and having fluid inlet passage means for receiving wet glycol from said absorber and fluid outlet passage means for delivering wet glycol to said glycol reboiler means whereby energy derived from the wet glycol provides the



primary motivating force for said motor means and said pump means; and

a speed control means being operable by the dry natural gas and operatively associated with said pump means and said motor means for automatically regulating the speed thereof.

4,659,345

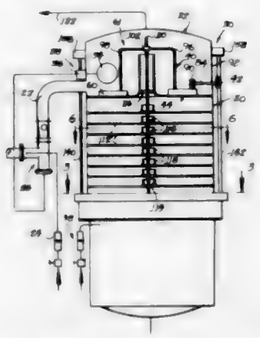
SCRUBBER/DEGASSER APPARATUS

Harry G. Mojonnier, 1238 Franklin Ave., River Forest, Ill. 60305

Continuation-in-part of Ser. No. 654,304, Sep. 24, 1984. This application Jul. 10, 1986, Ser. No. 883,930

Int. Cl.⁴ B01D *53/14*

U.S. Cl. 55—165 **16 Claims**



1. A scrubbing/degassing apparatus comprising: a degassing column for removing extraneous gaseous matter from water; and flow control means for controlling a flow of water to said degassing column, said flow control means comprising an upper reservoir mounted above said degassing column for receiving a supply of water, controllable valve means responsive to predetermined control signals for regulating the flow of water to said upper reservoir, level sensing means operatively coupled with said upper reservoir and responsive to the level of water therein for producing said predetermined control signals in a predetermined systematic fashion in accordance with said level, and means defining an adjustable orifice of selectively variable size intermediate the upper reservoir and the column for delivering water from the upper reservoir to the column; the rate of flow of water from said upper reservoir to said column being controlled by the level of water in the upper reservoir set by said level sensing means together with the selected size of the adjustable orifice.

4,659,346

DEVICE FOR PREVENTING FUEL VAPOR FROM ESCAPING TO THE OUTSIDE AIR FROM A FUEL TANK

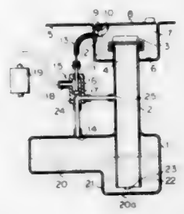
Koji Uranishi, Susono; Takaaki Ito, Mishima, and Toshio Tanahashi, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 22, 1985, Ser. No. 715,160

Claims priority, application Japan, Mar. 24, 1984, 59-055239

Int. Cl.⁴ B01D *53/04, 53/14;* **B65D** *90/28;* **F16K** *24/04*

U.S. Cl. 55—182 **4 Claims**



1. A device for preventing fuel vapor from escaping to the outside air from a fuel tank, comprising:

a vehicle body having a recess formed thereon;

a lid pivotally connected to said vehicle body and normally covering said recess;

a fuel inlet pipe connected to the fuel tank and having a fuel inlet open to said recess, said fuel inlet pipe extending to a bottom interior of said fuel tank;

a cap detachably attached to said fuel inlet and arranged in said recess;

a canister having activated carbon therein;

a control valve having a valve port connected to an upper interior portion of the fuel tank and connected to an upper interior portion of said fuel inlet pipe, said valve port connecting both the interior of said fuel tank and the interior of said fuel inlet pipe to said canister;

a valve body mounted in said control valve, said valve body connected to said lid to cooperate with said lid to close said valve port when said lid is closed and to open said valve port when said lid is opened.

4,659,347

METHOD OF AND DEVICE FOR PURGING WATER FROM CERTAIN CONTAMINANTS

Emil Schrems, Vienna, Austria, assignor to Innova Wiener Innovationsgesellschaft M.B.H., Vienna, Austria

Filed Mar. 9, 1984, Ser. No. 587,931

Claims priority, application Austria, Mar. 11, 1983, 880/83

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—186 **2 Claims**

1. A device for purging water from hydrocarbons, phenols and other contaminants having vapor pressures not substantially less than that of water at a given temperature, consisting of:

an upright vessel provided with a central exhaust port at a top wall of said vessel and a lateral outlet at a lower level adjacent a bottom wall of said vessel;

conduit means connected to a source of water to be purged, said conduit means extending upwardly through a bottom wall of said vessel and terminating centrally inside said vessel above said outlet in a nozzle emitting an upward generally conical spray of finely divided particles of said water in dispersed form;

evacuation means connected to said exhaust port for generating in said vessel a pressure low enough to let part of said water be vaporized together with accompanying contaminants at an ambient temperature and for extracting the resulting vapors from an upper region of said vessel above said outlet;

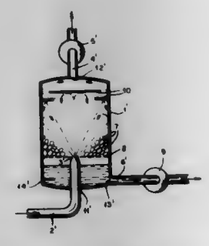
drain means connected to said outlet for removing the remainder of said water from a lower region of said vessel; and

a horizontal center baffle plate in said vessel below said exhaust port and at least one further horizontal baffle plate extending inwardly from a vertical wall of said vessel below said central baffle plate and radially overlapping said central baffle plate to deflect droplets downwardly.

2. A device for purging water from hydrocarbons, phenols and other contaminants having vapor pressures not substantially less than that of water at a given temperature, consisting of:

an upright vessel provided with a central exhaust port at a top wall of said vessel and a lateral outlet at a lower level adjacent a bottom wall of said vessel;

conduit means connected to a source of water to be purged, said conduit means extending upwardly through a bottom



wall of said vessel and terminating centrally inside said vessel above said outlet in a nozzle emitting an upward generally conical spray of finely divided particles of said water in dispersed form;

evacuation means connected to said exhaust port for generating in said vessel a pressure low enough to let part of said water be vaporized together with accompanying contaminants at an ambient temperature and for extracting the resulting vapors from an upper region of said vessel above said outlet;

drain means connected to said outlet for removing the remainder of said water from a lower region of said vessel; and

a horizontal center baffle plate in said vessel below said exhaust port and at least one further horizontal baffle plate extending inwardly from a vertical wall of said vessel below said central baffle plate and radially overlapping said central baffle plate to deflect droplets downwardly;

a horizontal grid extending across said vessel substantially level with said nozzle; and

a particulate filler resting on said grid.

4,659,348

EXHAUST GAS PARTICLE FILTER FOR INTERNAL COMBUSTION ENGINES

Andreas Mayer, Niederrohrdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

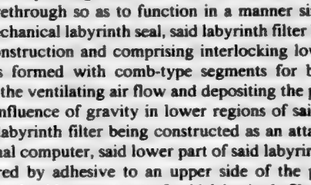
Filed Nov. 20, 1985, Ser. No. 799,984

Claims priority, application Switzerland, Nov. 30, 1984, 5718/84

Int. Cl.⁴ B01D *39/20*

U.S. Cl. 55—320 **9 Claims**

1. Exhaust gas particle filter for internal combustion engines, comprising an exhaust gas particle filter having an inlet side and an outlet side, said filter including an outer filter part and a central filter part, the central filter part having a greater porosity and smaller mass relative to the outer filter part and



defining a flow path from said filter inlet side to said filter outlet side independently of said outer filter part.

4,659,349

FILTER UNIT ON EQUIPMENT REQUIRING VENTILATION FREE OF DUST AND IMPURITIES DURING OPERATION

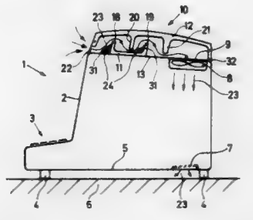
Anton Rodi, Leimen; Jürgen Reithofer, Nussloch, and Peter Blaser, Dielheim, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 24, 1985, Ser. No. 747,988

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3423047

Int. Cl.⁴ B01D *50/00*

U.S. Cl. 55—385 C **6 Claims**



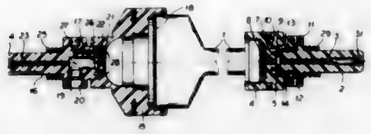
1. Filter device on electrical switch cabinets, housings for electronic systems and like equipment to be maintained free of dust and impurities while being ventilated during operation, comprising a labyrinth filter disposed in a travel path of ventilating air upstream of an air intake opening of the equipment to be ventilated, said labyrinth filter having means for effecting a plurality of sharp changes in direction of flow of the ventilating air therethrough so as to function in a manner similar to that of a mechanical labyrinth seal, said labyrinth filter being of bipartite construction and comprising interlocking lower and upper parts formed with comb-type segments for blocking particles in the ventilating air flow and depositing the particles under the influence of gravity in lower regions of said lower parts, said labyrinth filter being constructed as an attachment for a personal computer, said lower part of said labyrinth filter being secured by adhesive to an upper side of the personal computer, and said upper part of said labyringh filter being superimposed on said lower part thereof and being matched by suitable shaping of outer contours thereof to the shape of the housing of the personal computer, and including corresponding lugs and bores formed in webs as well as press-fitted magnetic inserts with metallic counter members cooperating therewith carried by said upper and said lower parts of said labyrinth filter for forming an exact-fit and quick-release connection of said upper and said lower parts.

4,659,350

AIRTIGHT ROTATING JOINT

Giuseppe Parini, Turin, Italy, assignor to Cselt - Centro Studi e Laboratori Telecomunicazioni S.P.A., Turin, Italy

Filed Jan. 9, 1985, Ser. No. 689,920
Claims priority, application Italy, Jan. 10, 1984, 67017 A/84
Int. Cl.⁴ B01D *46/00*
U.S. Cl. 55—503 **8 Claims**



1. An air-tight rotating joint comprising:
an inlet fitting having an inlet fixed part, and an inlet rotating part sealingly connected to said inlet fixed part;
a reaction conduit sealingly connected to said inlet rotating part;
an outlet fitting having an outlet rotating part sealingly connected to said reaction conduit, and an outlet fixed part sealingly connected to said outlet rotating part,
each of said rotating parts having a respective end zone defining a first chamber along an axis of the respective fitting with a respective end zone of the respective fixed part,
each of said fixed parts being formed with a first axial passage communicating with the respective first chamber,
each of said rotating parts being formed with a second axial passage communicating between the respective first chamber and said reaction conduit;
a respective first O-ring compressed between the end zones of the fixed and rotating parts of each of said fittings outwardly of the respective first chamber for sealing same;
a respective annular second chamber formed between the fixed and rotating parts of each of said fittings outwardly of the respective first O-ring; and
a respective second O-ring of greater diameter than said first O-ring compressed between the end zones of the fixed and rotating parts of each of said fittings outwardly of the respective second chamber for sealing same between the O-rings of the respective fitting,
each of said fixed parts being formed with a respective third passage communicating with the respective second chamber for the supply of a fluid to the respective second chamber,
each of said second chambers being further provided with an outlet for said fluid at least one of which is a fourth passage formed in the respective fixed part and open to the outside.

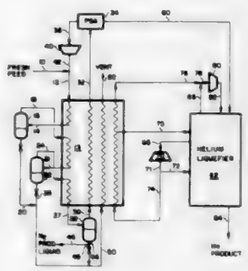
4,659,351

COMBINED PROCESS TO PRODUCE LIQUID HELIUM, LIQUID NITROGEN, AND GASEOUS NITROGEN FROM A CRUDE HELIUM FEED

Wayne G. Stuber, Whitehall; David W. Studer, Wescosville, and Arthur R. Winters Jr., Coopersburg, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 29, 1986, Ser. No. 823,709
Int. Cl.⁴ F25J *3/00*
U.S. Cl. 62—18 **2 Claims**

1. A process for providing refrigeration for the purification and liquefaction of helium from a feed stream consisting essentially of nitrogen and helium with some minor impurites, of the type wherein the helium is purified in a two step process: the first purification step comprising refrigeration the feed stream to condense nitrogen and any impurities from the feed stream, and separating the cooled feed stream into a condensed nitrogen and impurities stream and a gaseous, high-helium content stream; the second purification step comprising warming the gaseous, high-helium-content stream from the first purification step, feeding said stream to a pressure swing adsorber, and removing from the pressure swing adsorber an essentially pure helium stream; and feeding said essentially pure helium stream to a liquefier comprising:
(a) providing said refrigeration by compressing a side stream of the essentially pure helium in a compressor and expanding said compressed stream in an expansion engine thereby producing a cold helium gas stream;
(b) splitting said cold helium stream into two substreams;



(c) circulating a first substream of said cold helium gas stream to the warm end of the liquefier to provide refrigeration duty;
(d) circulating a second substream of said cold helium gas stream to the two step purification to provide refrigeration duty;
(e) separating a portion of said second substream for return to the warm end of the liquefier to provide refrigeration duty; and
(f) recycling the remaining portion of said second substream to the inlet of the compressor in step (a).

4,659,352

REACTIVE ATMOSPHERE PROCESSING OF HEAVY-METAL FLUORIDE GLASSES

Morton Robinson, Agoura, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 21, 1985, Ser. No. 747,472
Int. Cl.⁴ C03C *3/12*
U.S. Cl. 65—2 **13 Claims**

12. A process for treating a molten mixture of fluorozirconate glass to form a glass which is essentially free of zirconium disassociation impurities, said process comprising the step of:
forming a melt of fluorozirconate glass in the presence of an oxygen reactive atmosphere consisting essentially of moisture-free oxygen, said oxygen being present in a sufficient amount to prevent formation of opaque-black disassociation impurities in said melt or remove any of said impurities already present in said melt and wherein oxygen anion impurities are introduced into said glass.

13. A process for treating a molten mixture of fluorozirconate glass to form a glass which is essentially free of anion impurities, said process comprising the steps of:
contacting a melt of fluorozirconate glass with a sufficient amount of a fluorine species reactive gas for a sufficient time to replace substantially all of said oxygen anion impurities with fluoride to provide a melt which is essentially free of disassociation and anion impurities; and
cooling said melt in the presence of said fluorine species reactive gas.

4,659,353

METHOD OF MAKING BIREFRINGENT OPTICAL FIBERS

Giacomo Roba, Cogoleto, Italy, assignor to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Jan. 8, 1986, Ser. No. 817,024
Claims priority, application Italy, Mar. 14, 1985, 67254 A/85
Int. Cl.⁴ C03C *25/02;* **C03B** *37/027*
U.S. Cl. 65—3.12 **2 Claims**

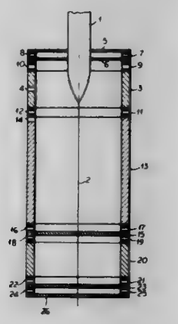
1. A method of making birefringent optical fibers, comprising the steps of:
(a) vapor depositing within a cylindrical supporting tube silicon dioxide doped with germanium oxide produced by a high-temperature vapor-phase reaction in a succession of layers of selected thickness;
(b) during the deposition of each of said layers maintaining a reaction temperature which varies along the circumference of the supporting tube and the surface along which the deposit is to form ranging from a maximum reaction temperature to a minimum reaction temperature and selected so that a refractive index profile is formed along the deposition circumference which varies inversely to the variation in the reaction temperature therealong;
(c) maintaining said minimum reaction temperature so that it is at least equal to a temperature T_o corresponding to a maximum deposition efficiency of germanium oxide under the speed and composition conditions of a mixture of vapor-state reactants from which the deposition occurs, the successive layers further varying the refractive index profile in a radial direction with respect to said tube;
(d) thereafter collapsing said tube; and
(e) drawing a birefringent optical fiber from the collapsed tube.

4,659,354

METHOD OF PRODUCING SILICA OPTICAL FIBRES WITH REDUCED VOLUME AND SURFACE DEFECTS

Giacomo Roba, Cogoleto, Italy, assignor to CSELT-Centro Studie Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Jan. 8, 1986, Ser. No. 817,025
Claims priority, application Italy, Mar. 18, 1985, 67265 A/85
Int. Cl.⁴ C03C *25/02*
U.S. Cl. 65—3.12 **1 Claim**



1. A method of producing an optical fiber with reduced volume and surface defects which comprises the steps of:
(a) heating a silica preform to a glass drawing temperature and drawing an optical fiber therefrom at a transition zone between the fiber and the preform;
(b) chemically activating said transition zone concurrently with the drawing of the fiber and depositing carbon in a nascent state thereon whereby carbon diffuses into said fiber and reacts therewith in accordance with the relation:

$$Si[SiO_2]+C=SiC[SiO_2]$$

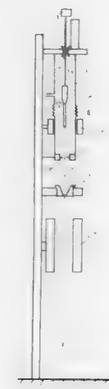
and the square brackets mean a prevailing silica pressure in the preform;
(c) immediately thereafter heating the drawn fiber to a temperature at least equal to but not substantially greater than the vitreous transition temperature; and
(d) thereafter rapidly cooling said fiber.

4,659,355

PROCESSES OF MANUFACTURE OF FLUORIDE GLASS FIBERS AND OPTICAL COMPONENTS

Gwenael Maze, and Vincent Cardin, both of Rennes, France, assignors to Le Verre Fluore S.A., France

Filed May 1, 1985, Ser. No. 729,273
Claims priority, application France, May 7, 1984, 84 07181
Int. Cl.⁴ C03C *25/02*
U.S. Cl. 65—3.12 **22 Claims**



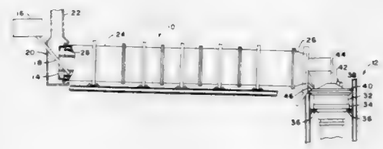
1. A process to manufacture optical fibers and components from bars or molds of fluoride glass consisting in the drawing out of optical quality molds from highly pure fluoride glass and the stretching or the fibering of said molds into optical fibers characterized in that these operations on fluoride glass are carried out in a dry atmosphere free of dust, organic, metallic or mineral vapors under high temperatures until dehydration of the fluoride glass occurs.

4,659,356

KILN CONSTRUCTION

Robert A. Lawhon, Decatur, and James L. Karraker, Mt. Zion, both of Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 12, 1985, Ser. No. 797,085
Int. Cl.⁴ C03B *3/00*
U.S. Cl. 65—27 **12 Claims**



1. A kiln for heating pulverulent material comprising:
an elongated drum with an inner surface, a material inlet end and a material outlet end;
an elongated exhaust duct having an outer wall;

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means for mounting said duct in said drum to extend generally axially within a portion of said drum from said inlet end towards said outlet end and terminating short of said of said outlet end to provide an elongated annular chamber between the inner wall of said drum and the outer wall of said duct;

means to deposit said material in said chamber on the inner surface of said drum at a location adjacent said inlet end; and

means to seal said annular chamber at said material inlet end of said elongated drum to provide a hot gas movement path having its course through said outlet and of said drum towards said inlet end, through said duct, and out of said kiln through said duct, said sealing means preventing hot gas from exiting said drum through said annular chamber so as to reduce circulation of said gas within said elongated annular chamber and entrainment of said material in said gas.

7. A method of heating material as it advances through a heating vessel comprising:

providing an exhaust duct within and spaced from a portion of an elongated drum, said duct extending from a material loading end of said vessel towards a material outlet end of said vessel, said duct terminating short of said material outlet end, wherein said drum and duct form an elongated annular chamber;

sealing the portion of said loading end of said vessel radially outwardly of said duct;

depositing material to be heated within said annular chamber of said heating vessel at said loading end;

advancing said material through said vessel towards said material outlet end;

circulating hot gas in said heating vessel towards said loading end; and

exhausting said gas from said loading end of said vessel through said duct, wherein said sealed portion of said loading end prevents hot gas from exiting said vessel through said annular chamber so that said hot gas enters said exhaust duct and exits said vessel through said duct, said material within said annular chamber being shielded from direct exposure to said hot gas and remaining material within said vessel being heated by direct exposure to said hot gas.

4,659,357

FAN AIR COOLING OF NECK RING AND PARISON MOLD

Wilbur O. Doud, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Sep. 23, 1985, Ser. No. 778,934

Int. Cl.⁴ C03B *9/38*

U.S. Cl. 65—83 **14 Claims**

1. A cooling system for a parison molding portion of an individual section of a glassware molding machine having a neck ring and a parison plunger that cooperate with a parison mold that is disposed circumferentially around the plunger axis to form a parison, said glasware molding machine being of the type having a section box for mounting said parison molding portion thereto and providing a substantially enclosed space within said section box, which cooling system comprises:

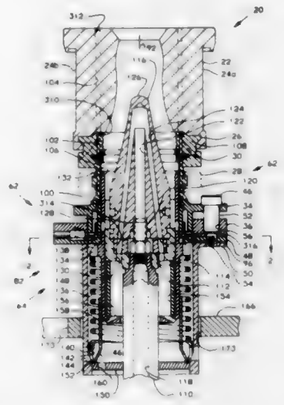
low pressure air providing means connected to said section box for maintaining substantially uncompressed air in said enclosed space of said section box;

guide body means secured to said section box and positioned to guide said parison plunger within said guide body means and along the parison plunger axis, said guide body means provided with a first passageway therethrough;

a receiver cap mounted to said guide body means and having a second passageway therethrough; and

a neck ring associated with said receiver cap for engagement therewith, said neck ring a third passageway internally disposed within said neck ring and extending along its entire length, said first, second and third passageways being disposed substantially parallel to the plunger axis and communicating with each other to provide substantially vertical air flow for effectively cooling said parison molding portion with the low pressure air supplied therethrough from said section box.

10. A method of cooling a parison molding portion of an individual section of a glassware molding machine having a neck ring and a parison plunger that cooperate with a parison mold that is disposed circumferentially around the parison plunger axis to form a parison, said glassware molding machine being of the type having a section box for mounting said parison molding portion thereto and providing a substantially enclosed volume within said section box, which method comprises:



supplying low pressure air to said enclosed volume to provide substantially uncompressed air within said volume;

directing said low pressure air supplied to said enclosed volume through a first passageway positioned substantially vertically within a plunger guide body;

further directing said air substantially vertically through a second passageway within a receiver cap; and

thereafter advancing the air substantially vertically through a third passageway defined by an internal opening disposed in a neck ring and extending along the entire length of said neck ring for effectively cooling said parison molding portion by said low pressure air from said enclosed volume.

4,659,358

MOULD ARRANGEMENT OF A GLASSWARE FORMING MACHINE

Hermann H. Nebelung, Zurich, and Fritz Futterknecht, Oetwil am See, both of Switzerland, assignors to Emhart Industries, Inc., Farmington, Conn.

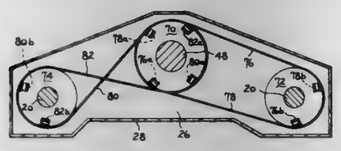
Filed Mar. 6, 1986, Ser. No. 837,617

Claims priority, application United Kingdom, Mar. 19, 1985, 8507076

Int. Cl.⁴ C03B *9/40*

U.S. Cl. 65—360 **7 Claims**

1. A mould arrangement of a glassware forming machine operable to shape molten glass in a mould, the mould arrangement comprising mould portion supporting arms, which are movable to move mould portions supported thereby to open and close the mould, the arrangement also comprising drive means operable to move the supporting arms as aforesaid, the drive means comprising two vertically-extending drive shafts each mounted for turning movement about a vertical axis thereof, each drive shaft being connected to an associated one of the supporting arms so that, when the shaft is turned about its vertical axis, the supporting arm is moved to open or close the mould, connecting means connecting the shafts so that the shafts turn together about their respective axes through equal angles in opposite directions, and motor means operable to turn the shafts about their respective axes to move the supporting arms as aforesaid, wherein the connecting means comprises a cylindrical driving pulley and first and second cylindrical driven pulleys, said first and second driven pulleys being of the same diameter and mounted one on each drive shaft, and four belts interconnecting the pulleys, each of the belts having an end portion attached to the driving pulley and an opposite end portion attached to one of said first and second driven pulleys, the first belt passing clockwise around a portion of the circumference of the driving pulley from its point of attachment thereto, extending between the driving pulley and the first driven pulley tangentially to both pulleys, and passing clockwise around a portion of the circumference of the first driven pulley to its point of attachment thereto, the second belt passing anti-clockwise around a portion of the circumference of the driving pulley from its point of attachment thereto and passing



anti-clockwise around a portion of the circumference of the first driven pulley to its point of attachment thereto, said first and second belts extending parallel to one another between the pulleys and having substantially equal tensions, the third belt passing anti-clockwise around a portion of the circumference of the driving pulley from its point of attachment thereto, extending between the driving pulley and the second driven pulley, tangentially to both pulleys and passing clockwise around a portion of the circumference of the second driven pulley to its point of attachment thereto, and the fourth belt passing clockwise around a portion of the circumference of the driving pulley from its point of attachment thereto and passing anti-clockwise around a portion of the circumference of the second driven pulley to its point of attachment thereto, said third and fourth belts having substantially equal tensions and being arranged so that, between the pulleys, one belt crosses under the other of said belts, the motor means being arranged to turn the driving pulley through a predetermined angle so that the belts cause the first and second pulleys and the drive shafts to turn in opposite directions.

4,659,359

2-CHLORO-4,6-DIAMINO-S-TRIAZINES AS ALGICIDES

Joachim Lorenz, and Reinhardt Grade, both of Bensheim, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 638,548, Aug. 7, 1984, abandoned, which is a continuation of Ser. No. 556,076, Dec. 1, 1983, abandoned, which is a continuation of Ser. No. 376,339, May 10, 1982, abandoned, which is a continuation of Ser. No. 214,297, Dec. 8, 1980, abandoned. This application Dec. 19, 1985, Ser. No. 814,520

Claims priority, application Switzerland, Dec. 18, 1979, 11213/79

Int. Cl.⁴ A01N *59/00, 43/70*

U.S. Cl. 71—67 **1 Claim**

1. In the method of inhibiting the growth of algae in aqueous media susceptible to algae growth by the addition of active chlorine from an alkali or alkaline earth metal hypochlorite source and a 2-chloro-4,6-diamino-s-triazine, the improvements comprising utilizing (1) 2-chloro-4-ethylamino-6-tert-butylamino-s-triazine and (2) concentration ranges of 0.1 to 0.5 mg/l. of active chlorine and 0.1 to 1.0 mg/l. of s-triazine.

4,659,360

PLANT GROWTH AND DEVELOPMENT MODIFICATION USING BENZOXAZOLE DERIVATIVES

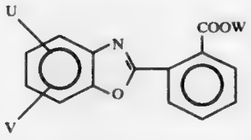
Jonathan S. Baum, Pennington, and Tsong M. Chen, Princeton Junction, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 30, 1984, Ser. No. 676,972

Int. Cl.⁴ A01N *43/12;* **C07D** *263/08*

U.S. Cl. 71—88 **18 Claims**

1. Plant growth and development modifying 2-(2-oxycarbonylphenyl)benzoxazoles of the formula



wherein

U is —OZ, and Z is selected from -phenyl; -phenyl carrying 1 or 2 substituents independently selected from -halogen, -lower haloalkyl, and -acetamido; -naphthyl;

V is -hydrogen; and

W is selected from -hydrogen, -lower alkyl and an agriculturally acceptable cation.

4,659,361

HERBICIDAL IODOPYRIMIDINES

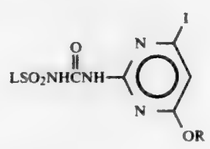
Hugh M. Brown, West Grove, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 619,276, Jun. 11, 1984, abandoned. This application Apr. 12, 1985, Ser. No. 721,602

Int. Cl.⁴ A01N *47/36;* **C07D** *239/47*

U.S. Cl. 71—90 **32 Claims**

1. A compound of the formula

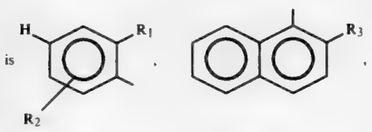


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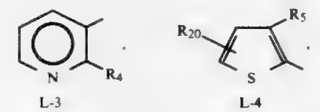
wherein

R is CH_3 or CH_2CH_3;

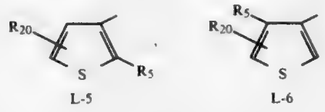
L is



L-1 L-2

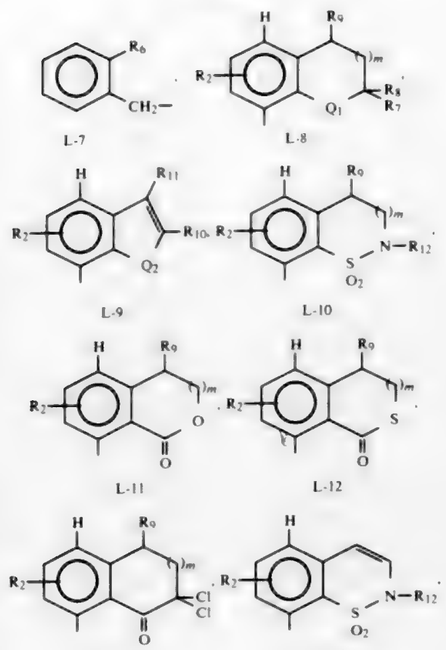


L-3 L-4

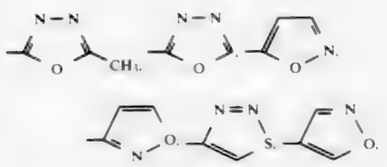


L-5 L-6

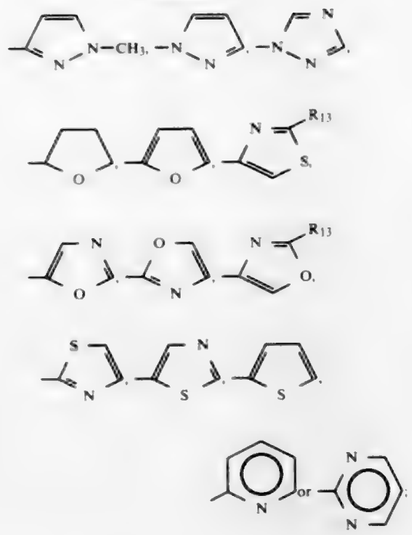
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R_1 is C_1–C_4 alkyl, C_1–C_4 alkoxy, $OCH_2CH_2OCH_3$, F, Cl, Br, NO_2, CF_3, CO_2R_{15}, $SO_2NR_{16}R_{17}$, $C(O)R_{21}$, $CR_{21}(OR_{22})_2$, $SO_2N(OCH_3)CH_3$, OSO_2R_{18}, $S(O)_nR_{19}$, WCF_3, $WCHF_2$, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_1–C_2 alkyl substituted with OCH_3 or OCH_2CH_3, C_6H_5,



-continued



R_2 is H, F, Cl, Br, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, $S(O)_pC_1$–C_4 alkyl, $S(O)_pC_3$–C_4 alkenyl, $S(O)_pC_3$–C_4 alkynyl or C_1–C_2 alkyl substituted with OCH_3 or SCH_3;

R_3 is H, CH_3, OCH_3, F, Cl, Br, $SO_2N(CH_3)_2$, OSO_2CH_3 or $S(O)_nCH_3$;

R_4 is CH_3, CH_2CH_3, OCH_3, OCH_2CH_3, F, Cl, Br, $SO_2NR_{16}R_{17}$, $SO_2N(OCH_3)CH_3$, $S(O)_nR_{19}$, C_3–C_4 alkenyloxy or C_3–C_4 alkynyloxy;

R_5 is C_1–C_3 alkyl, F, Cl, Br, NO_2, CO_2R_{15}, $SO_2NR_{16}R_{17}$, $SO_2N(OCH_3)CH_3$or $S(O)_nR_{19}$;

R_6 is Cl, NO_2, CO_2CH_3, $CO_2CH_2CH_3$, $SO_2N(CH_3)_2$, OSO_2CH_3, SO_2CH_3, SO_2CHCH_3, OCH_3 or OCH_2CH_3;

R_7 is H, CH_3 or CH_2CH_3;

R_8 is H, CH_3 or CH_2CH_3;

R_9 is H or CH_3;

R_{10} is H or CH_3;

R_{11} is H or CH_3;

R_{12} is H, C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, benzyl, C_1–C_4 alkylcarbonyl, C_1–C_4 alkoxycarbonyl, CH_2CN, $CH_2C(O)CH_3$, $CH_2CO_2(C_1$–C_2 alkyl), C_1–C_4 alkyl substituted with 0–3F, 0–1Cl, OH, OCH_3 or OC_2H_5 or C_3–C_4 alkenyl substituted with 1–3F or 1–3Cl;

R_{13} is H or CH_3;

R_{14} is CH_3 or C_2H_5;

R_{15} is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, CH_2CH_2Cl or $CH_2CH{=}CH_2$;

R_{16} is H, C_1–C_3 alkyl;

R_{17} is C_1–C_3 alkyl;

R_{18} is C_1–C_3 alkyl or $N(CH_3)_2$;

R_{19} is C_1–C_3 alkyl or $CH_2CH{=}CH_2$;

R_{20} is H, Cl or CH_3;

R_{21} is H, C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl or C_3–C_6 cycloalkyl;

R_{22} is C_1–C_2 alkyl;

m is 0 or 1;

n is 0 or 2;

p is 0, 1 or 2;

Q_1 is O, S or SO_2;

Q_2 is O or S; and

W is O, S or SO_2;

provided that

(1) the total number of carbon atoms of R_{16} and R_{17} is less than or equal to four; and

(2) when m is 1, then R_9 is H;

and their agriculturally suitable salts.

4,659,362

HERBICIDAL 5-PYRIMIDYLCYCLOHEXAN-1,3-DIONE DERIVATIVES

Keith G. Watson, Box Hill North, and Graeme J. Farquharson, Reservoir, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

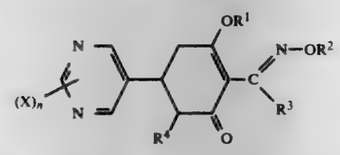
Filed Aug. 22, 1983, Ser. No. 525,481

Claims priority, application Australia, Sep. 2, 1982, 5700; May 18, 1983, 9406

Int. Cl.⁴ A01N *43/54*; C07D *239/26, 239/30, 239/34*

U.S. Cl. 71—92 **8 Claims**

1. A compound of the formula:



wherein:

X are independently selected from the group consisting of C_1 to C_6 alkyl and C_1 to C_6 alkoxy;

R^1 is selected from the group consisting of hydrogen and the alkali metals;

R^2 is selected from the group consisting of C_1 to C_3 alkyl, allyl and propargyl;

R^3 is selected from C_1 to C_3 alkyl;

R^4 is hydrogen; and

n is the integer 3.

4,659,363

N-(2-NITROPHENYL)-2-AMINOPYRIMIDINE DERIVATIVES, THE PREPARATION AND USE THEREOF

Adolf Hubele, Magden; Helmut Zoedler, Bottmingen; Peter Riebli, Buckten, all of Switzerland, and Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

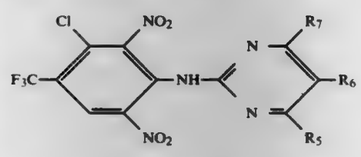
Filed Jul. 18, 1984, Ser. No. 632,161

Claims priority, application Switzerland, Jul. 25, 1983, 4049/83

Int. Cl.⁴ C07D *239/42*; A01N *43/54*

U.S. Cl. 71—92 **9 Claims**

1. A compound of the formula



wherein R_5 and R_7 are selected from the group consisting of chloro, chloromethyl, methyl, methoxy, trichloromethyl, methoxyethoxy, ethoxyethoxyethoxy, propargyloxy, 2,2,2-trifluoroethoxy, 2-pyridylthio and 4-chlorophenoxy, and R_6 is hydrogen, chlorine or bromine.

4,659,364

1-(2-OXYAMINOSULPHONYLPHENYLSULPHONYL)-3-HETEROARYL-ISO-(THIO)-UREAS

Hans-Joachim Diehr; Christa Fest, both of Wuppertal; Rolf Kirsten, Monheim; Joachim Kluth, Langenfeld; Klaus-Helmut Müller, Duesseldorf; Theodor Pfister, Monheim; Uwe Priesnitz, Solingen; Hans-Jochim Riebel, Wuppertal; Wolfgang Roy, Langenfeld; Hans-Joachim Santel, and Robert R. Schmidt, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

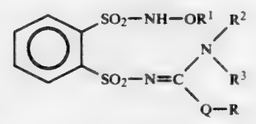
Filed Aug. 23, 1985, Ser. No. 769,192

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431930

Int. Cl.⁴ C07D *239/69*; A01N *43/54*

U.S. Cl. 71—92 **8 Claims**

1. A 1-2-oxyaminosulphonylphenylsulphonyl)-3-heteroaryliso(thio)-urea of the formula



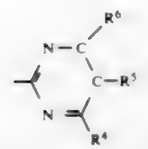
in which

R is C_1–C_{12}-alkyl (which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, C_1–C_4-alkyl-carbonyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylamino-carbonyl or di-(C_1–C_4-alkyl)-amino-carbonyl): C_3–C_6-alkenyl, C_3–C_6-alkinyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-C_1- or C_2-alkyl; phenyl-C_1- or C_2-alkyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl); or phenyl (which is optionally substituted by one or more radicals from halogen, cyano, nitro, hydroxyl, carboxyl, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, amino, C_1–C_4-alkyl-amino or di-(C_1–C_4-alkyl)-amino, C_1–C_4-alkylcarbonyl-amino, C_1–C_4-alkoxy-carbonyl-amino, (di)-C_1–C_4-alkylamino-carbonyl-amino, formyl, C_1–C_4-alkyl-carbonyl, benzoyl, C_1–C_4-alkoxy-carbonyl, phenoxycarbonyl, benzyloxycarbonyl, phenyl, phenoxy, phenylthio, phenylsulphonyl phenylamino, phenylazo, pyridyloxy, pyrimidyloxy, C_1–C_4-alkyl-carbonyloxy, C_1–C_4-alkoxy-carbonyl-oxy, C_1–C_4-alkyl-amino-carbonyl-oxy and di-(C_1–C_4-alkyl)-amino-carbonyl-oxy;

R^1 is C_1–C_{12}-alkyl (which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, C_1–C_4-alkyl-carbonyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylamino-carbonyl or di-(C_1–C_4-alkyl)-amino-carbonyl); C_3–C_6-, alkenyl, C_3–C_6-alkinyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-C_1- or C_2-alkyl; phenyl-C_1- or C_2-alkyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl); or phenyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy, C_1- or C_2-fluoroalkoxy, C_1–C_4-alkylthio, trifluoromethylthio or C_1–C_4-alkoxy-carbonyl),

R^2 is hydrogen; C_1–C_4-alkyl (which is optionally substituted by fluorine, chlorine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphonyl, C_1–C_4-alkylcarbonyl, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkylamino-carbonyl or di-(C_1–C_4-alkyl)-amino-carbonyl) C_3–C_6-alkenyl; C_3–C_6-alkinyl; or phenyl-C_1- or C_2-alkyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkoxy-carbonyl),

R^3 is



R^4 is hydrogen, fluorine, chlorine, bromine, hydroxyl, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkylthio (which is optionally substituted by fluorine and/or chlorine), amino, C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino,

R^5 is hydrogen, fluorine, chlorine, bromine or C_1–C_4-alkyl,

R^6 is hydrogen, fluorine, chlorine, bromine, hydroxyl, C_1–C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), C_1–C_4-alkylthio (which is optionally substituted by fluorine and/or chlorine), amino, C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino, and

Q is oxygen or sulfur,

or a strong acid-adduct thereof.

6. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound or adduct according to claim 1.

4,659,365

HERBICIDAL 2-CHLORO-2'-FLUOROALKOXYACETANILIDES

Kazuhiko Koano; Koichi Araki; Kaoru Ikeda; Keiji Endo, and Mitsuru Hikido, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

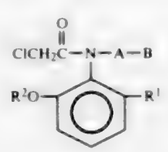
Filed Aug. 26, 1985, Ser. No. 769,123

Claims priority, application Japan, Aug. 29, 1984, 59-179974

Int. Cl.⁴ A01N *37/24, 43/56;* **C07C** *103/375;* **C07D** *231/12*

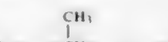
U.S. Cl. 71—92 **5 Claims**

1. An acetanilide derivative of formula (I):



(I)

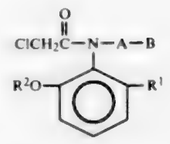
wherein R^1 is a lower alkyl group; R^2 is a fluorine-substituted lower alkyl group; A is



or $-CH_2CH_2-$; B is hydrogen, lower alkoxy, pyrazolyl or pyrazolyl substituted by lower alkyl.

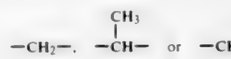
2. A herbicidal composition, comprising:

as the active ingredient, a herbicidally effective amount of at least one acetanilide derivative of formula (I):



(I)

wherein R^1 is a lower alkyl group; R^2 is a fluorine-substituted lower alkyl group; A is



or $-CH_2CH_2-$; B is hydrogen, lower alkoxy, pyrazolyl or pyrazolyl substituted by lower alkyl.

4,659,366

2-(ALKOXIMINOALKOXYCARBONYL)-PHENYLSULPHONYLUREA HERBICIDES AND FUNGICIDES

Jörg Stetter, Wuppertal; Robert R. Schmidt, Bergisch-Gladbach; Hans-Joachim Santel, Cologne; Gerd Hänssler, and Ludwig Eue, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

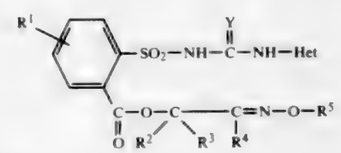
Filed Mar. 27, 1985, Ser. No. 716,869

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1984, 3413490

Int. Cl.⁴ A01N *43/54;* **A61K** *31/505;* **C07D** *239/48*

U.S. Cl. 71—92 **10 Claims**

1. A 2-(alkoximinoalkoxycarbonyl)-phenylsulphonylurea of the formula



in which

R^1 represents hydrogen, halogen, alkyl, halogenoalkyl, alkoxy with in each case up to 4 carbon atoms or nitro,

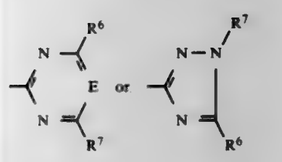
R^2 represents hydrogen, alkyl with up to 8 carbon atoms or aryl which has 6 to 10 carbon atoms and is optionally substituted by halogen, cyano, nitro and/or in each case straight-chain or branched alkyl, alkoxy or halogenoalkyl with in each case up to 4 carbon atoms and, where appropriate, up to 9 identical or different halogen atoms,,

R^3 represents hydrogen or alkyl with up to 4 carbon atoms,

R^4 represents hydrogen or cyano, alkyl, alkoxy, alkylthio, alkoxyalkyl, alkylthioalkyl, alkoxycarbonyl with in each case up to 6 carbon atoms in the individual alkyl parts or aryl which has 6 to 10 carbon atoms and is optionally monosubstituted or polysubstituted by identical or different substituents, substituents on the aryl being those mentioned in the case of R^2

R^5 represents hydrogen, alkyl, alkenyl, alkinyl, halogenoalkyl, halogenoalkenyl, alkoxyalkyl, alkylthioalkyl with in each case up to 6 carbon atoms in the individual alkyl, alkenyl or alkinyl parts and, where appropriate, up to 9 identical or different halogen atoms, or aralkyl which has up to 4 carbon atoms in the alkyl part and is optionally monosubstituted or polysubstituted by identical or different substituents in the aryl part, substituents on the aryl being those mentioned in the case of R^2,

Y represents oxygen or sulphur and Het represents a heterocyclic radical of the formula



wherein

E represents nitrogen or the CH group and

R^6 and R^7 independently of one another each represent alkyl, alkoxy or alkoxyalkyl with in each case up to 6 carbon atoms in the individual alkyl parts.

6. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

4,659,367

CYCLOHEXENONE DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Michael Keil, Freinsheim; Dieter Jahn, Edingen-Neckarhausen; Rainer Becker, Bad Durkheim; Norbert Goetz, Worms; Bruno Wuerzer, Otterstadt, and Norbert Meyer, Ladenburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

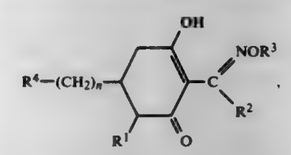
Filed Dec. 7, 1984, Ser. No. 679,243

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344352; Aug. 10, 1984, 3429437

Int. Cl.⁴ A01N *43/02;* **C07D** *333/22, 333/02*

U.S. Cl. 91—90 **14 Claims**

1. A cyclohexenone derivative of the formula



(I)

where R^1 is hydrogen or alkoxycarbonyl of 2 to 5 carbon atoms, R^2 is alkyl of 1 to 4 carbon atoms, R^3 is alkyl of 1 to 4 carbon atoms, alkenyl of 3 or 4 carbon atoms, alkynyl of 3 or 4 carbon atoms or haloalkenyl of 3 or 4 carbon atoms and 1 to 3 halogen atoms, R^4 is a tetrahydrothienyl or dihydrothienyl or said groups in which the sulfur atom is replaced by sulfinyl or sulfonyl group as a ring member and is unsubstituted or substituted by 1, 2 or 3 alkyl groups of 1 to 4 carbon atoms, and n is 0 or 1, with the proviso that n is not 0 when R^4 is a 5-membered ring containing a sulfinyl or sulfonyl group, and salts thereof.

9. A process for combatting the growth of unwanted plants, wherein the unwanted plants and/or the area to be kept free from unwanted plant growth are treated with a herbicidally effective amount of a cyclohexenone derivative of the formula I as set forth in claim 1, or a salt thereof.

4,659,368

PHENYL-SUBSTITUTED SULFONAMIDES

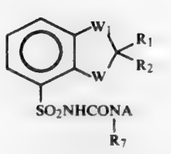
Linda G. Carter, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 649,542, Sep. 11, 1984, Pat. No. 4,595,407, which is a division of Ser. No. 437,366, Nov. 1, 1982, Pat. No. 4,502,882, which is a continuation-in-part of Ser. No. 363,379, Mar. 29, 1982, abandoned. This application Feb. 11, 1986, Ser. No. 828,249

Int. Cl.⁴ C07D *239/69;* **A01N** *43/54*

U.S. Cl. 71—92 **22 Claims**

1. A compound selected from



I

wherein

W is O, S, SO or SO_2;

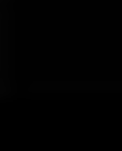
W_1 is O, S, SO or SO_2;

R_1 is H or CH_3;

R_2 is H or C_1–C_4 alkyl;

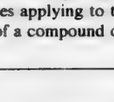
R_3, R_4, R_5, R_6 and R_7 are independently H or CH_3;

A is



X is CH_3, OCH_3 or Cl;

Y is C_2H_5, CH_3, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$, SCH_3, $N(CH_3)_2$, $CH(OCH_3)_2$ or



and

Z is CH;

provided that when X is Cl, then Y is NH_2, $NHCH_3$, $N(CH_3)_2$ or OCH_3.

18. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,659,369

HERBICIDAL ACETALS AND KETALS

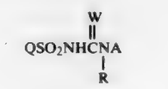
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 644,259, Aug. 27, 1984, abandoned. This application Jul. 16, 1985, Ser. No. 754,709

Int. Cl.⁴ C07D *239/69, 407/04;* **A01N** *43/54*

U.S. Cl. 71—92 **49 Claims**

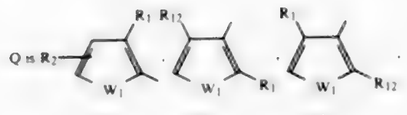
1. A compound of the formula



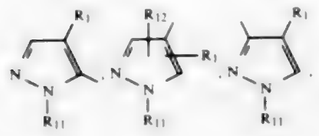
I

wherein

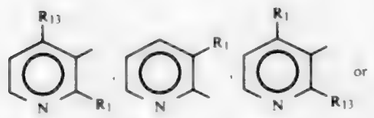
VOL 1077 ISS 3 AP 21 1987 UMI



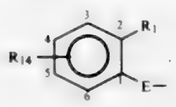
Q-1 Q-2 Q-3



Q-4 Q-5 Q-6

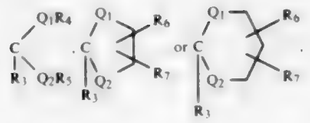


Q-7 Q-8 Q-9

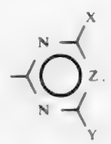


Q-10

R is H or CH_3;
R_1 is

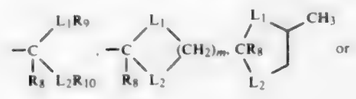


E is CH_2 or a single bond;
R_2 is H, C_1–C_2 alkyl or Cl;
R_3 is H, C_1–C_3 alkyl or C_1–C_3 alkoxy;
R_4 and R_5 are independently C_1–C_2 alkyl;
R_6 and R_7 are independently H or C_1–C_2 alkyl;
W is O or S;
W_1 is O or S;
Q_1 and Q_2 are independently O, S or NCH_3;
A is



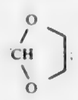
A-1

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino or di(C_1–C_3)alkylamino;
Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3)alkylamino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylsulfinylalkyl, C_1–C_4 haloalkyl, C_2–C_5 alkylsulfonylalkyl, C_3–C_5 cycloalkyl, C_2–C_4 alkynyl, C_2–C_5 alkylthioalkyl, C(O)R_8,



or

$N(OCH_3)CH_3$;
m is 2 or 3;
L_1 and L_2 are independently O or S;
R_8 is H or CH_3;
R_9 and R_{10} are independently C_1–C_2 alkyl;
R_{11} is C_1–C_3 alkyl;
R_{12} is H, F, Cl, NO_2, C_1–C_2 alkyl, C_1–C_2 alkoxy, C_1–C_2 alkylthio, C_1–C_2 alkylsulfinyl, C_1–C_2 alkylsulfonyl, di(C_1–C_2)alkylsulfamoyl or CO_2(C_1–C_2alkyl);
R_{13} is H, C_1–C_2 alkyl, C_1–C_2 alkoxy, Cl, F or NO_2;
R_{14} is H, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 haloalkyl, C_1–C_3 haloalkoxy, Cl, Br, F, NO_2, di(C_1–C_3)alkylsulfamoyl, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, amino, C_1–C_3 alkylamino, di(C_1–C_3)alkylamino, CH_2OCH_3, CH_2SCH_3 or CH_2CN
Z is CH;
and their agriculturally suitable salts; provided that
(a) when X is Cl, F, Br or I, then Y is OCH_3, OC_2H_5, $N(OCH_3)CH_3$, $NHCH_3$, $N(CH_3)_2$ or OCF_2H;
(b) when Y is cyclopropyl, X is other than Cl, F, Br or I;
(c) when R_3 is C_1–C_3 alkoxy, then Q_1 and Q_2 are oxygen;
(d) when R_3 is H or C_1–C_3 alkyl, then Q is Q-1 through Q-9;
(e) when the total number of carbon atoms of X and Y is greater than four, then the combined number of carbons of the substituents on Q is less than or equal to ten;
(f) when W is S, then A is A-1, R is H, and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or



(g) when E is CH_2, then R_{14} is H, CH_3, OCH_3, Cl or NO_2 and is not in the 4-position.

32. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid inert diluent.

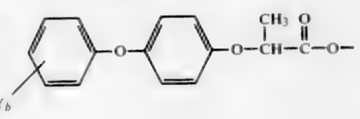
4,659,370

SUBSTITUTED PHENOXYPROPIONATES AND HERBICIDAL COMPOSITIONS CONTAINING SAME AND THEIR HERBICIDAL USE

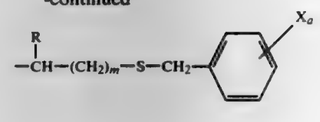
Junichi Saito; Kazuomi Yasui, both of Tokyo; Kozo Shiokawa, Kanagawa, and Atsumi Kamochi, Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Division of Ser. No. 483,974, Apr. 11, 1983, Pat. No. 4,500,346. This application May 22, 1984, Ser. No. 612,933
Claims priority, application Japan, Apr. 20, 1982, 57-64702
Int. Cl.[4] **C07C** *69/76;* **A01N** *39/02*
U.S. Cl. 71—98 **18 Claims**

1. A substituted phenoxypropionate of the formula



-continued



in which
Y represents a halogen atom or a trifluoromethyl group and b is 1 or 2,
R represents a hydrogen atom or a methyl group,
X represents a hydrogen atom, a halogen atom, a nitro group, a lower alkyl group or a lower alkoxy group, and a and m independently represent 1 or 2.

15. A method of combating weeds which comprises applying to the weeds, or their habitat; a herbicidally effective amount of a substituted phenoxypropionate as claimed in claim 1.

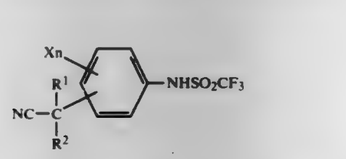
4,659,371

TRIFLUOROMETHANESULFONANILIDE COMPOUNDS AND HERBICIDAL COMPOSITIONS CONTAINING THEM

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kuniaki Shimizu, Shimizu; Ikumi Urushibata, Shizuoka, and Ikuo Kajiwara, Shizuoka, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

Filed Jun. 9, 1986, Ser. No. 871,870
Claims priority, application Japan, Jun. 11, 1985, 60-125228
Int. Cl.[4] **A01N** *41/06;* **C07C** *143/74*
U.S. Cl. 71—103 **16 Claims**

1. A trifluoromethanesulfonanilide compound having the formula:



(I)

wherein each of R^1 and R^2 is a lower alkyl group, X is a halogen atom or a trifluoromethyl group, n is an integer of 0 to 2, and R^1 and R^2 may form, together with the adjacent carbon atom, a ring which may be substituted by a lower alkyl group.

14. A method for killing weeds which comprises applying a herbicidally effective amount of a compound of the formula I as defined in claim 1 to a locus to be protected.

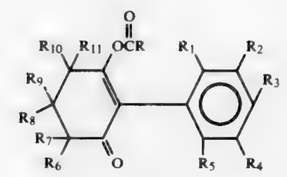
4,659,372

BIOCIDAL 2-ARYL-1,3-CYCLOHEXANEDIONE ENOL ESTER COMPOUNDS

Thomas N. Wheeler, Raleigh, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 781,781, Mar. 28, 1977, Pat. No. 4,422,870. This application Nov. 28, 1983, Ser. No. 555,538
The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.
Int. Cl.[4] **A01N** *37/36;* **C07C** *69/66*
U.S. Cl. 71—106 **9 Claims**

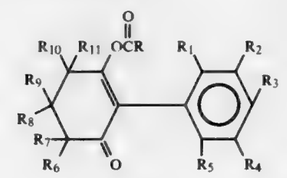
1. A compound of the formula:



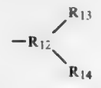
wherein:
R_1, R_2, R_4 and R_5 are individually hydrogen, methyl, halogen, or nitro with the proviso that when R_1 is hydrogen or nitro, then R_5 cannot be hydrogen or nitro;
R_3 is hydrogen, methyl, or halogen;
R_6 through R_{11} inclusive are individually hydrogen, C_1 to C_8 alkyl, CF_3, unsubstituted phenyl, or
R_8 and R_9 together may form an alkylene or alkenylene chain completing a 3 to 7 membered ring structure; and
R is C_1–C_{17} alkyl, C_4 alkenyl, C_3–C_9 cycloalkyl, C_1–C_6 alkyl substituted C_3–C_6 cycloalkyl, unsubstituted or non-ortho C_1–C_6 alkyl, C_1–C_6 alkoxy, halo, or nitro substituted phenyl.

3. A miticidal composition comprising an acceptable carrier and as the active toxicant, a miticidally effective amount of the compound of claim 1.

7. A compound of the formula:



wherein:
R_1 is ethyl;
R_2 to R_5 inclusive are individually hydrogen, methyl, CF_3 or halogen,
with the proviso that halogen atoms may not occupy adjacent positions on the aromatic ring;
R_6, R_7, R_{10} and R_{11} are hydrogen;
R_8 and R_9 are individually hydrogen, unbranched C_1–C_4 alkyl, isopropyl, tertiary butyl, diethyl methyl, cycloalkyl, or CF_3,
with the proviso that when R_8 or R_9 is ethyl, isopropyl or diethyl methyl, R is an unbranched C_1–C_{15} alkyl; or
R_8 and R_9 together form a cyclopentyl or cyclohexyl ring,
with the proviso that when R_8 and R_9 together form a cyclohexyl ring, R is an unbranched C_1 to C_{14} alkyl; and
R is
unbranched C_1 to C_{17} alkyl, unsubtituted C_3–C_6 cycloalkyl, unbranched C_1 to C_6 alkyl C_3–C_6 cycloalkyl, tertiary butyl, unsubstituted or non-ortho C_1 to C_4 alkyl, halo or nitro substituted phenyl, or ortho-substituted C_1–C_6 alkyl phenyl or



wherein:
R_{12} is C_1 to C_7 alkyl, and
R_{13} and R_{14} are individually C_1 to C_3 alkyl.

8. A herbicidal composition comprising an acceptable carrier and as the active toxicant, a herbicidally effective amount of the compound of claim 7.

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4,659,373

PROCESS FOR PREPARING FINELY DIVIDED HIGHLY REACTIVE MAGNESIUM AND USE THEREOF

Borislav Bogdanovi , Mülheim, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle MbH, Mulheim, Fed. Rep. of Germany

Filed Nov. 7, 1984, Ser. No. 669,209
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340492
Int. Cl.⁴ B22F 9/00
U.S. Cl. 75—0.5 A 11 Claims

1. A process for preparing a highly reactive finely divided magnesium comprising thermally decomposing a magnesium-containing compound selected from the group consisting of

(i) a magnesium anthracene and/or its derivatives prepared from magnesium and anthracene and/or its alkyl or phenyl derivatives,

(ii) a magnesium butadiene and/or its alkyl or phenyl derivatives prepared from magnesium and a conjugated diene having the general formula $R^1-CH=CR^2-CH=CH-R^3$, wherein R^1, R^2 and R^3 are the same or different and represent H, a linear or branched alkyl group having from 1 to 6 carbon atoms or a phenyl residue, and

(iii) a magnesium hydride-prepared from magnesium and hydrogen either in the presence of homogenous catalysts comprising a halide of a metal of the Subgroups IV to VII of the Periodic System and an organomagnesium compound or a magnesium hydride and in the presence of a polycyclic aromatic or a tertiary amine, after hydrogenating magnesium with magnesium anthracene or magnesium diene, said thermal decomposition taking place at a pressure from 10^{-6} to 1 bar and in the absence or presence of an organic apretic solvent, either the decomposition being carried out in the presence of a co-reactant being added only after completion of the precipitation of the highly reactive magnesium, or in the absence of such co-reactant, the magnesium obtained by said decomposition being isolated as a highly reactive powder.

4,659,374

MIXED BINDER SYSTEMS FOR AGGLOMERATES

Allan M. Alanko, Freeland, and William H. Atwell, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 14, 1985, Ser. No. 744,605
Int. Cl.⁴ C22B 1/244
U.S. Cl. 75—3 17 Claims

1. A method of making agglomerates for use in the production of metals and metal alloys, said method comprising the steps of

(A) wet mixing (1) a material or materials capable of being reduced, (2) a carbonaceous reducing agent, and (3) a mixed binder system;

(B) forming the wet mixture of step (A) into agglomerates using pressure, and

(C) drying the agglomerates formed in step (B);

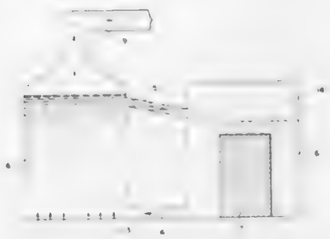
wherein said mixed binder system consists essentially of a primary binder and a secondary binder; wherein said primary binder is selected from the group consisting of coal tar pitch, asphalt, and petroleum pitch; wherein said secondary binder is selected from the group consisting of lignosulfonate salts, carbohydrates, and silicates; and wherein the weight ratio of the primary binder to the secondary binder varies from about 20:1 to 1:20 in said mixed binder system.

4,659,375

METHOD OF HEATING, MELTING AND COAL CONVERSION

Ernest S. Geskin, 21 Karen Pl., Edison, N.J. 08817

Continuation of Ser. No. 476,012, May 2, 1983, Pat. No. 4,561,886, which is a division of Ser. No. 196,265, Oct. 14, 1980, Pat. No. 4,422,872. This application Dec. 31, 1985, Ser. No. 815,223
Int. Cl.⁴ C22B 7/00
U.S. Cl. 75—29 2 Claims



1. A method of heating gases for combustion, operating turbines, and heating of a material, comprising the steps of

providing a melt deposited in a vessel said vessel including two vessel elements, the melt being a melt selected from the group consisting of a metal, a slag which is a mixture of metal oxides and nonmetal axides, and a metal and a slag;

supplying coal, air, fluxes and hot flue gases into the melt;

passing the flue gases leaving the melt through a gas heater;

passing a gas to be heated through one of said vessel elements;

circulating the melt between said two vessel elements; and

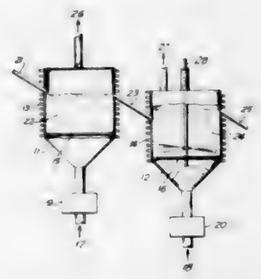
supplying the gas which has been heated during passing through said one vessel element, to a gas consumer.

4,659,376

FLUID BED REDUCTION TO PRODUCE MOLYBDENUM METAL

Kent H. Carpenter, and Roger F. Sebenik, both of Ann Arbor, Mich., assignors to Amax Inc., Greenwich, Conn.

Continuation of Ser. No. 614,213, May 25, 1984, abandoned. This application Dec. 18, 1985, Ser. No. 810,891
Int. Cl.⁴ C22B 1/14
U.S. Cl. 75—84 4 Claims



1. In the process for the stage-wise reduction of molybdenum trioxide to molybdenum metal wherein said molybdenum trioxide contains an impurity amount of at least one impurity from the group consisting of lead, zinc, bismuth and copper and wherein, in the first stage, molybdenum trioxide is reduced to molybdenum dioxide at a temperature not exceeding 650° C. and in the second stage molybdenum dioxide is reduced to molybdenum metal at a temperature of at least about 700° C., the improvements comprising accomplishing each of said stages in a fluid bed employing a fluidizing-reducing gaseous atmosphere introduced as uncracked ammonia in said first stage and said second stage is conducted using a fluidizing-reducing atmosphere introduced as a gas selected from the group consisting of uncracked ammonia and hydrogen with mechanical stirring of the bed, to accomplish substantial removal of said impurity from material being treated and production of excessive fines in the molybdenum product is avoided.

4,659,377

METHOD FOR PRODUCING AN OXIDATION RESISTANT MAGNESIUM ALLOY MELT

George Foerster, Greeneville, Tenn., assignor to NL Industries, Inc., New York, N.Y.

Division of Ser. No. 427,752, Sep. 29, 1982, Pat. No. 4,543,234, which is a continuation-in-part of Ser. No. 195,236, Oct. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 41,802, May 23, 1979, abandoned. This application Sep. 23, 1985, Ser. No. 779,235
Int. Cl.⁴ C22B 9/00
U.S. Cl. 75—96 8 Claims

1. A method of producing a magnesium alloy melt, comprising the steps of:

a. melting a magnesium alloy characterized by having good resistance to oxidation in the molten state, good corrosion resistance and good tensile strength, said alloy consisting essentially of up to 12 percent of aluminum, up to 30 percent of zinc, up to 1.5 percent of silicon, from 0.04 percent to 0.15 percent of manganese, and a given amount of dissolved beryllium, the given amount constituting from 0.0025 percent to 0.0125 percent of the alloy, balance essentially magnesium, wherein the manganese content of the alloy is sufficiently low that it does not prevent dissolution of the given amount of beryllium and wherein the relative proportions of aluminum and zinc are such that the alloy is castable and ductile, and is not subject to hot cracking; and

b. protecting the magnesium alloy melt against oxidation by blanketing it with an atmosphere containing at least 80 percent by volume of nitrogen.

4,659,378

SOLDERABLE ADHESIVE LAYER

Hans Volz, Schwieberdingen, and Peter Kersten, Leonberg, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 22, 1984, Ser. No. 623,757
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323196
Int. Cl.⁴ C22C 19/07, 38/10; H01L 21/88, 23/48
U.S. Cl. 420—8 1 Claim

1. A solderable adhesive layer comprising a thin layer of an alloy consisting of a metal selected from the group of cobalt, iron or a combination thereof, and a metalloid, said metalloid being germanium.

4,659,379

NICKEL ANODE ELECTRODE

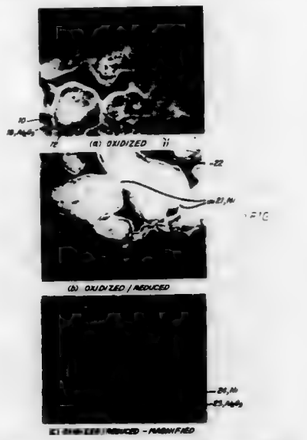
Prabhakar Singh, Bethel, and Mark Benedict, Monroe, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed Apr. 16, 1985, Ser. No. 723,665
Int. Cl.⁴ C22C 29/12
U.S. Cl. 75—234 23 Claims

1. A method of producing a nickel anode electrode comprising the steps of:

oxidizing a nickel alloy material in particle form to produce in its exterior nickel oxide and in its interior nickel metal throughout which is dispersed an oxide of the alloying material;

compacting said nickel alloy particles to form a porous cohesive structure,



and simultaneously reducing and sintering said compact of said oxidized nickel alloy material to produce nickel metal in the material exterior, whereby a sintered porous anode component is formed having nickel metal in its exterior and in its interior nickel metal throughout which is dispersed an oxide of the alloying material.

4,659,380

WATER-BORNE PERMANENT COATING COMPOSITIONS AND PROCESSES THEREFOR

Jonathan K. Winters, Portsmouth, Ohio, and Fredrick B. Savell, III, Mobile, Ala., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 382,853, May 24, 1982, abandoned. This application Sep. 11, 1985, Ser. No. 774,638
Int. Cl.⁴ C04B 9/02; B05D 1/08
U.S. Cl. 106—14.14 6 Claims

1. A water reducible, dispersible coating composition, comprising:

A. about 27 to 40 wt% of a water reducible, dispersible alkyd resin derived from isophthalic acid;

B. about 1 to 15 wt% of a coupling agent;

C. about 0.1 to 3.5% wt% of concentrated ammonium hydroxide;

D. 1 or more metal containing driers, said metal constituents being in the range of about 0.1 to 5 wt%;

E. about 0.025 to 0.2 wt% of a chelating agent;

F. about 45 to 97 wt% of water;

G. about 0.01 to 1% water soluble metal inhibitor;

wherein the average molecular weight of the resin is in the range of 150 to about 450 and the acid value in the range of 15 to about 100; said coupling agent is selected from the group consisting of ethers, ethanol, isopropanol, isobutanol and mixtures thereof; said driers are selected from the group consisting of a cobalt drier, a manganese drier and mixtures thereof; said chelating agent is 1,10-phenanthroline; and wherein the pH of said composition is adjusted to the range of about 7 to 10.

4,659,381

FLAME RETARDED ASPHALT BLEND COMPOSITION

Robert B. Walters, Morrison, Colo., assignor to Manville Corporation, Denver, Colo.

Filed Mar. 28, 1986, Ser. No. 845,712
Int. Cl.⁴ C09D 5/18
U.S. Cl. 106—18.16 8 Claims

1. A flame retarded asphalt composition consisting essentially of a blend of:

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(a) thermoplastic elastomer modified bitumen;
(b) 20–30 wt % inert filler
(c) 1–20 wt % of at least one halogenated flame retardant; and
(d) 1–5 wt % of at least one inorganic phosphorus containing compound selected from the group consisting of ammonium phosphate compounds and red phosphorus.

4,659,382

WATERFAST INK JET COMPOSITIONS AND PROCESS

Henry R. Kang, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1985, Ser. No. 797,312
Int. Cl.⁴ C09D *11/10*
U.S. Cl. 106—22 **26 Claims**

1. An ink jet composition comprised of a major amount of water, a hydroxyethylated polyethylenimine polymer, and a dye component wherein the polymer has incorporated therein from about 65 percent by weight to about 80 percent by weight of hydroxyethyl groups.

4,659,383

HIGH MOLECULAR WEIGHT, HOT MELT IMPULSE INK JET INK

An-Chung R. Lin, New Town, and Theodore M. Cooke, Danbury, both of Conn., assignors to Exxon Printing Systems, Inc., Brookfield, Conn.

Continuation-in-part of Ser. No. 610,627, May 16, 1984, Ser. No. 565,124, Dec. 23, 1983, abandoned, and Ser. No. 394,153, Jul. 1, 1982, abandoned, said Ser. No. 610,627, is a continuation-in-part of Ser. No. 507,918, Jun. 27, 1983, Pat. No. 4,484,948, which is a continuation of Ser. No. 331,604, Dec. 17, 1981, Pat. No. 4,390,369, said Ser. No. 565,124, is a continuation of Ser. No. 394,153,. This application Aug. 27, 1984, Ser. No. 644,542
Int. Cl.⁴ C09D *11/06*
U.S. Cl. 106—27 **30 Claims**

1. A hot melt impulse ink jet ink, comprising:
(a) 0.1 to 10 wt. % coloring agent; and
(b) a vehicle for carrying said coloring agent in said ink, comprising:
(i) 30–100 wt % of C_{20}–C_{24} acid(s);
(ii) 0–50 wt % of ketone(s) having a melting points of 65°–120° C. and
(iii) 0–30 wt % of C_{14}–C_{19} acid(s) or alcohol(s)
said ink being solid at room temperature.

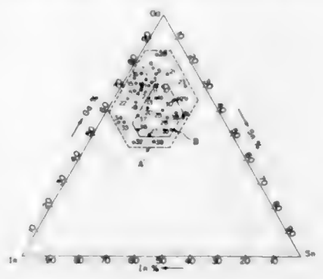
4,659,384

GALLIUM ALLOY FOR DENTAL RESTORATIONS

Yasuhito Daigo, Tokyo; Takashi Horibe, Fukuoka; Kengo Inage; Shigeyasu Naruse, both of Chigasaki; Takashi Nara, Abiko; Yoshizo Okamoto, Kitakyushu, and Hironobu Yamamoto, Musashino, all of Japan, assignors to Tokuriki Honten Company, Limited, Tokyo, Japan

Filed Jun. 20, 1985, Ser. No. 746,883
Claims priority, application Japan, Sep. 7, 1984, 59-187524; Sep. 7, 1984, 59-187525; Sep. 7, 1984, 59-187527; Sep. 7, 1984, 59-187528; Sep. 7, 1984, 59-187530; Sep. 7, 1984, 59-187531; May 14, 1985, 60-102375
Int. Cl.⁴ A61K *5/01;* **C22C** *28/00;* **C09K** *3/00*
U.S. Cl. 106—35 **10 Claims**

1. A gallium alloy for dental restorations which is hardenable at mouth temperature or around 37° C. or more which comprises:
(a) a multicomponent liquid gallium alloy;
(b) a metal or metal alloy powder;
said multicomponent liquid gallium alloy being triturated with said metal or metal alloy powder producing a triturated mixture, said triturated mixture having a heterogeneous structure after hardening and said triturated mixture comprising 9–47% gallium, 1–35% indium, 0.2–38% tin and 1–68% silver, and at



least one element selected from the group consisting of 0.4–35% palladium, 0.5–25% copper and 0.4–12% zinc.

4,659,385

BUILDING MATERIAL MANUFACTURING FROM FLY ASH

Nick G. Costopoulos, and H. Kent Newhouse, both of P.O. Box 248, Lingle, Wyo. 82223

Filed Aug. 23, 1982, Ser. No. 410,389
Int. Cl.⁴ C04B *7/35*
U.S. Cl. 106—87 **8 Claims**

1. A lightweight, insulating building material produced by the method comprising the steps of:
preparing a mixture consisting essentially of:
(a) Type C fly ash;
(b) water, equal to 30% to 60% of the volume of said fly ash;
(c) hydrogen peroxide in solution with the water at a concentration in the range of 0.5% to 3.0% by weight;
(d) a water miscible bonding agent; and
(e) an air entrainer; and
allowing the mixture to foam and harden at ambient temperature.

4,659,386

PROCESS FOR PRODUCING LIGHTWEIGHT CALCIUM SILICATE ARTICLES

Shoichi Nagai; Saburo Hiraoka; Shinji Hama, and Mitsuo Senga, all of Nagoya, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1986, Ser. No. 826,906
Claims priority, application Japan, Feb. 25, 1985, 60-35591
Int. Cl.⁴ C04B *7/34*
U.S. Cl. 106—120 **6 Claims**

1. A process for producing steam-cured lightweight calcium silicate articles by using a powdery siliceous material, powdery calcareous material, and cellulose pulp as main raw materials, said process comprising mixing short acrylic fibers of 1 to 10 mm in fiber length to which an organic silicon compound has adhered, into a slurried mixture of said raw materials.

4,659,387

NITROCELLULOSE MOISTENED WITH TERTIARY ALCOHOLS AND THE USE THEREOF IN POLYURETHANE LACQUERS

Erhard Lähmann, Bomlitz, and Lutz Hoppe, Walsrode, both of Fed. Rep. of Germany, assignors to Wolff Walsrode AG, Walsrode, Fed. Rep. of Germany

Filed Jul. 30, 1985, Ser. No. 760,373
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1984, 3430437
Int. Cl.⁴ C08L *1/18*
U.S. Cl. 106—195 **8 Claims**

1. A nitrocellulose which comprises a moistening agent comprising a lower aliphatic tertiary alcohol, said moistening agent being present in an amount of at least 25% by weight, based on dry weight.

4,659,388

ADDITIVE COMPOSITION FOR FOODS OR DRUGS

Satoshi Innami, Tokyo, and Yoshitaka Fukui, Himeji, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Jun. 6, 1985, Ser. No. 741,974
Claims priority, application Japan, Jun. 8, 1984, 59-117504
Int. Cl.⁴ A23L *1/04;* **C08L** *1/02*
U.S. Cl. 106—163.1 **7 Claims**

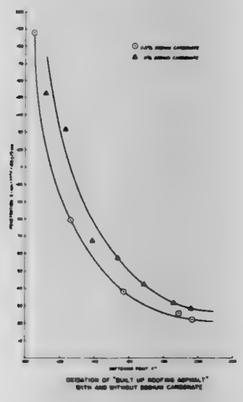
1. A dry solid composition suitable for use as a food and drug additive or for treating intestinal disorders, consisting essentially of (1) from 15 to 65 percent by weight of microfibrillated cellulose and (2) from 85 to 35 percent by weight of a water-soluble saccharide effective to prevent agglomeration of the fibrils of said microfibrillated cellulose.

4,659,389

METHOD AND COMPOSITION OF ASPHALTIC ROOFING FLUXES

Robert H. Wombles, Worthington; Donald D. Carlos, Louisville, and Charles R. Gannon, Ashland, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 580,968, Feb. 16, 1984, Pat. No. 4,544,411. This application Jul. 23, 1985, Ser. No. 758,180
Int. Cl.⁴ C08L *95/00*
U.S. Cl. 106—279 **4 Claims**



1. An improved process for air oxidizing an acceptable asphaltic roofing flux; wherein the improvement comprises compounding into said flux prior to air oxidizing a sufficient amount of a highly branched hydrocarbyl species to decrease the time to complete air oxidation.

4,659,390

METHOD AND MANUFACTURE FOR MOISTURE-STABLE, INORGANIC, MICROPOROUS SACCHARIDE SALTS

Bary L. Zeller. Pleasantville, N.Y.; Randal P. McKay, Parsmus, N.J., and Fouad Z. Saleeb, Pleasantville, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 401,767, Jul. 26, 1982, abandoned. This application Nov. 26, 1984, Ser. No. 674,626
Int. Cl.⁴ C13F *1/00, 3/00*
U.S. Cl. 127—29 **16 Claims**

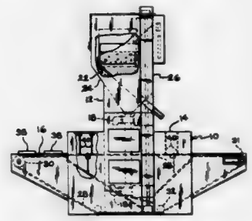
1. A method for producing a volatile flavor or aroma or gas-containing, microporous, non-hygroscopic, water-soluble cation-saccharide salt having a surface area of at least 10 m^2/g comprising the steps of:
(a) forming an aqueous solution of an inorganic compound and a water-soluble saccharide, said compound being present in an amount effective to raise the pH of the solution to between 9 and 14, and wherein the molar ratio of inorganic cation to saccharide is from about 0.5 to 1.5 moles of cation to 1.0 mole of saccharide;
(b) providing conditions such that the inorganic compound dissociates to form a dissolved cation and dissolved anion and a saccharide-cation salt is formed, said salt being soluble in water and insoluble in alcohol;
(c) spraying the saccharide-cation-containing solution of step (b) into a frigid, dehydrating solvent which quickly solidifies and dehydrates the spray droplets;
(d) separating the solidified particles from the solvent; and thereafter,
(e) loading the dried microporous particles of step (d) with sorbed gas or volatiles at from 0.1 to 20% by weight.

4,659,391

METHOD AND APPARATUS FOR REMOVING EXCESS MATERIAL FROM SAND CORES

Udo Kuehn, Onsted, Mich., assignor to B & U Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 529,260, Sep. 6, 1983, abandoned. This application Mar. 29, 1985, Ser. No. 717,914
Int. Cl.⁴ B24C *3/12;* **B08B** *7/00*
U.S. Cl. 134—7 **4 Claims**



2. A method for removing flash and other excess material from sand cores comprising the steps of:
(a) providing a low pressure stream of moving air,
(b) feeding a dense accumulation of impact particles into said stream, said particles being formed of a material with a hardness of D60–D70 shore, and
(c) directing said stream of mixed air and particles at a velocity in the range of 65–110 ft/sec against said cores so as to dislodge flash and other excess material therefrom.

4,659,392

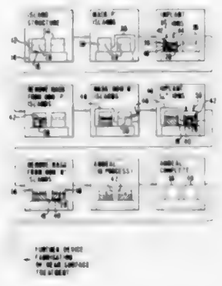
SELECTIVE AREA DOUBLE EPITAXIAL PROCESS FOR FABRICATING SILICON-ON-INSULATOR STRUCTURES FOR USE WITH MOS DEVICES AND INTEGRATED CIRCUITS

Prahalad K. Vasudev, Santa Monica, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 714,287, Mar. 21, 1985. This application Jul. 30, 1986, Ser. No. 890,449

Int. Cl.⁴ H01L *21/263, 21/225*

U.S. Cl. 148—1.5 **11 Claims**



1. A process for fabricating a semiconductor device, comprising the steps of:

furnishing a sapphire substrate with a monocrystalline silicon layer thereon;

forming at least two islands in said silicon layer such that each of said islands and said substrate defines an interface therebetween;

implanting oxygen ions into a first one of said islands under implantation conditions sufficient to amorphize and N^+ dope a thin layer in said first island adjacent its interface with said substrate ano so that said substrate is not amorphized;

implanting silicon ions into a second one of said islands and an underlying portion of said sapphire substrate under implant conditions sufficient to amorphize and P^+ dope a thin layer in said second island adjacent its interface with said substrate; and

annealing said first and second silicon islands to achieve downward epitaxial recrystallization of the amorphized layers of said first and second islands from the respective crystalline portions of the silicon remote from the respective interfaces with said substrate.

4,659,393

PROCESS FOR THE THERMAL TREATMENT OF ALUMINUM ALLOY SHEETS

Jean Bouvaist, and Daniel Ferton, both of Grenoble, France, assignors to Societe de Transformation de l'Aluminium Pechiney, Paris, France

Division of Ser. No. 900,304, Apr. 26, 1978, Pat. No. 4,196,021. This application Aug. 9, 1979, Ser. No. 65,149

Claims priority, application France, Jun. 2, 1977, 77 17476

The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.

Int. Cl.⁴ C22F *1/04*

U.S. Cl. 148—2 **2 Claims**

1. A process for obtaining aluminum-based alloy sheets having improved mechanical properties, wherein particles comprising the insoluble phase $Al_{12}Mg_2Cr$ have an average diameter of between about 800° A and about 1000 Å, due to a thermal treatment comprising the successive steps of:

(a) casting a plate having the composition comprising by weight:

zinc	5.2 to 6.2%
magnesium	1.9 to 2.5%
copper	1.2 to 2.9%
chromium	0.18 to 0.25%
iron	<0.12%
silicon	<0.10%
manganese	<0.06%
titanium	<0.06%
aluminum	balance;

(b) effecting homogenization of the plate by subjecting the plate to a temperature below about 477° C. which temperature is below the melting point of metastable eutectics for a period of about 4 to about 12 hours;

(c) at least hot rolling; and

(d) solution heat treating, quenching and tempering wherein the solution heat treatment is carried out in two stages comprising a first stage at a temperature of between 465° C. and about 485° C. for a period of about 15 minutes to about 4 hours and a second stage at a temperature of between about 505° C. and about 535° C. for a period of about 30 to about 90 minutes.

4,659,394

PROCESS FOR PREPARATION OF HIGHLY ANTICORROSIVE SURFACE-TREATED STEEL PLATE

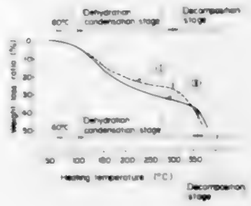
Tomihiro Hara; Takeshi Adaniya, both of Yokohama; Masaaki Yamashita, and Akira Enatsu, both of Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,765

Claims priority, application Japan, Aug. 31, 1983, 58-157769; Aug. 31, 1983, 58-157770; Feb. 17, 1984, 59-28204

Int. Cl.⁴ C23C *22/24*

U.S. Cl. 148—6.2 **25 Claims**



1. A process for the preparation of a highly anticorrosive surface-treated steel plate, which comprises subjecting a plated surface of a steel plate having a plating layer of the zinc or aluminum type to the following treatments:

(a) subjecting the steel plate to a chromate treatment to form a chromate film,

(b) treating the steel plate with an organic composite silicate solution comprising an organic resin, a colloidal silica compound and a silane compound and containing an epoxy resin in an amount of at least 15% by weight based on the total solids to form an organic composite silicate film formed on said chromate film and consisting essentially of colloidal silica, organic resin and silane in an amount deposited of 0.5 to 4.0 g/m² on the chromate film, and

(c) heat-treating the steel plate at a temperature of 100° to 300° C.

4,659,395

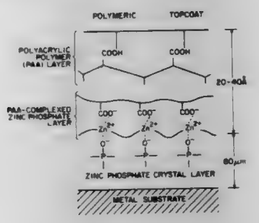
DUCTILE POLYELECTROLYTE MACROMOLECULE-COMPLEXED ZINC PHOSPHATE CONVERSION CRYSTAL PRE-COATINGS AND TOPCOATINGS EMBODYING A LAMINATE

Toshifumi Sugama, Mastic Beach; Lawrence E. Kukacka, Port Jefferson, and Neal R. Carciello, Bellport, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 5, 1985, Ser. No. 795,141

Int. Cl.⁴ C23C *22/17*

U.S. Cl. 148—6.15 Z **17 Claims**



1. A metal lamina consisting of a steel and non ferrous metal base and a precoat polymer layer consisting of a zinc phosphating layer modified by a polymer coating of about 20A–40A thickness of a polyelectrolyte selected from the group consisting of polyacrylic acid, polymethacrylic acid, polyitaconic acid, and poly-L-glutamic acid, said precoat polymer layer was applied from a zinc phosphate and polyelectrolyte composition wherein the polyelectrolyte is present in about 0.5–5% by weight and has a molecular weight of about 10,000–300,000.

4,659,396

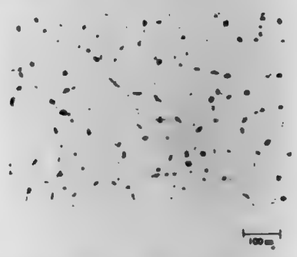
METAL WORKING METHOD

Bernard W. Lifka, New Kensington; John Liu, Lower Burrell, and Roger D. Doherty, Wynnewood, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 30, 1984, Ser. No. 636,134

Int. Cl.⁴ C22F *1/04*

U.S. Cl. 148—11.5 A **21 Claims**



1. A method comprising providing aluminum in the form of Al-Mg-Si alloy having Mg_2Si particles for stimulating nucleation of new grains, and deforming the aluminum under conditions for causing recrystallization to occur during deformation or thereafter, without subsequent heating being required to effect recrystallization, the total content of dispersoid forming elements Cr, Mn and Zr being at a level permitting such recrystallization to occur, the recrystallized aluminum having an average grain count of greater than 41 grains/mm².

4,659,397

MANUFACTURING PROCESS FOR PLATE OR FORGING OF FERRITE-AUSTENITE TWO-PHASE STAINLESS STEEL

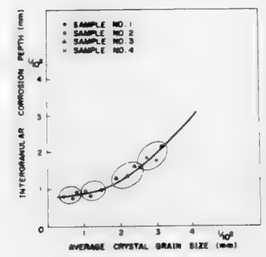
Mineo Kobayashi; Takeshi Yoshida; Masahiro Aoki, all of Jyouetsu; Masao Okubo, and Masaaki Nagayama, both of Niihama, all of Japan, assignors to Nippon Stainless Steel Co. Ltd. and Sumitomo Chemical Co., Ltd., both of Osaka, Japan

Filed Aug. 31, 1984, Ser. No. 646,896

Claims priority, application Japan, Sep. 1, 1983, 58-161087

Int. Cl.⁴ C21D *7/13*

U.S. Cl. 148—12 E **12 Claims**



1. A manufacturing process for plating and forging ferrite-austenite two-phase stainless steel to have superior nitric acid resistance, comprising the steps of:

providing ferrite-austenite two-phase stainless steel which contains not more than about 0.03% of C, not more than about 2.0% of Si, not more than about 2.0% of Mn, Cr. in the range of about 25 to 35%, Ni in the range of about 6 to 15%, N in the range of greater than about 0.03% to less than about 0.35%, and the balance Fe and inevitable impurities, and satisfies the following expression:

$$-13 < Ni\ eq - 1.1Cr\ eq + 8.2 < -9$$

where Ni eq = Ni% + 0.5Mn% + 30×(C+N)% and Cr eq = Cr% + 1.5Si%;

controlling the heating temperature of an ingot within the range of greater than about 900° C. to not more than about 1,200° C.;

hot working said ferrite-austenite two-phase stainless steel to a forging ratio of greater than about 5; and

maintaining the average crystal grain size at not more than about 0.015 mm.

4,659,398

METHOD FOR REDUCING INTERNAL STRESSES OF ROLLER STRAIGHTENED RAILS

Wilhelm Heller, Duisburg; Lutz Weber, Mühlheim; Reinhard Schweitzer, Düsseldorf, and Jürgen Flügge, Duisburg, all of Fed. Rep. of Germany, assignors to Krupp Stahl Aktiengesellschaft, Bochum, Fed. Rep. of Germany

Filed Jan. 14, 1986, Ser. No. 818,837

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1985, 3501522; Jan. 18, 1985, 3501523

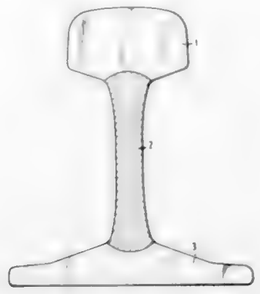
Int. Cl.⁴ C21D *1/00, 6/00;* B21B *1/08;* B21D *3/02*

U.S. Cl. 148—12 R **6 Claims**

1. A method of heat treating for reducing internal stresses in the head and base portions of roller straightened rails, said rails having a web portion, the method comprising annealing the straightened rail in a temperature range of about 200° C. to 700° C. by continuously conveying the rail in front of a heating apparatus at a speed adapted to the capacity of the heating apparatus, said speed ranging between 0.2 m/minute and 1

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m/s, wherein during said conveying, heating only the web portions of the rails to the annealing temperature, and after



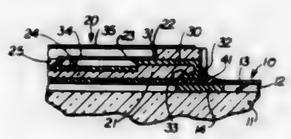
reaching said annealing temperature, cooling the rails at room temperature.

4,659,399

SOLDER COMPOSITION

Felix Barajas, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Feb. 10, 1986, Ser. No. 827,378
Int. Cl.⁴ B23K *35/34*
U.S. Cl. 148—24 **20 Claims**



1. A solder composition especially adapted for soldering components in electronic circuits to form solder joints substantially free from cracking, which comprises a major portion of finely divided solder metal and a minor portion of a suitable vehicle for said solder metal, said solder metal containing about 0.2 to about 3% of particulate aluminum, by weight of the solder metal.

4,659,400

METHOD FOR FORMING HIGH YIELD EPITAXIAL WAFERS

Danny Garbis, South Huntington; Joseph J. Chan, Kings Park; Amadeo J. Granata, Mount Vernon; Philip Coniglione, Glen Cove; Thomas D. Briglia, Hauppauge, and Lawrence E. Laterza, Coram, all of N.Y., assignors to General Instrument Corp., New York, N.Y.

Filed Jun. 27, 1985, Ser. No. 750,488
Int. Cl.⁴ H01L *7/36, 21/20*
U.S. Cl. 148—175 **38 Claims**

1. A method for forming an epitaxial wafer from a silicon substrate, the method comprising the steps of:

slicing the substrate to form a wafer;

annealing the wafer; and

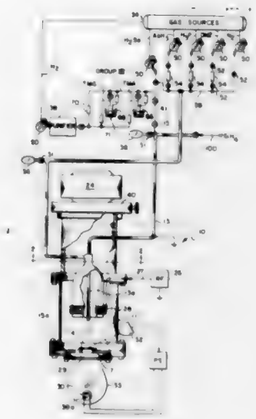
forming an epitaxial layer of given resistivity of the surface of the wafer by (a) growing an epitaxial layer of said given resistivity, (b) removing a substantial portion, but not all, of the grown epitaxial layer, and (c) regrowing the epitaxial layer of said given resistivity to the required thickness.

4,659,401

GROWTH OF EPITAXIAL FILMS BY PLASMA ENCHANCED CHEMICAL VAPOR DEPOSITION (PE-CVD)

L. Rafael Reif, Newton, and Clifton G. Fonstad, Jr., Arlington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 10, 1985, Ser. No. 742,930
Int. Cl.⁴ H01L *21/203, 21/26*
U.S. Cl. 148—175 **13 Claims**



1. An epitaxy process for growing epitaxial layers on a substrate comprising the steps of:

(a) placing the substrate in a vacuum chamber;

(b) introducing a first set of gaseous reactants into the chamber and establishing a steady state flow of gaseous reactants in said chamber;

(c) after steady state flow is achieved heating said substrate to a temperature high enough to obtain epitaxial deposition from the first set of reactants when a decomposition reaction occurs between the reactants but low enough to prevent such decomposition from occurring;

(d) generating a plasma in at least one of said reactants of said first set of reactants to impart sufficient energy to the set of reactants to result in decomposition thereby depositing a first epitaxial layer on said substrate having an abrupt transition from substrate to layer;

(e) terminating said plasma generation to abruptly cease deposition of said first layer when the first layer is sufficiently thick;

(f) introducing a second set of reactants into said chamber and establishing a steady state flow of the second set of reactants;

(g) after steady state flow is achieved heating said substrate to a temperature high enough to obtain epitaxial deposit from the second set of reactants when a decomposition reaction occurs between the reactants but low enough to prevent such decomposition from occurring;

(h) generating a plasma in at least one reactant of said second set of reactants to impart sufficient energy to result in decomposition thereby depositing a second epitaxial layer on said first layer having an abrupt transition from first layer to second layer;

(i) terminating said plasma generation to abruptly cease deposition of said second layer when the second layer is sufficiently thick.

4,659,402

CROSS-LINKED DOUBLE BASE PROPELLANT HAVING IMPROVED LOW TEMPERATURE MECHANICAL PROPERTIES

Theodore F. Comfort, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 14, 1977, Ser. No. 860,422
Int. Cl.⁴ C06B *45/10*
U.S. Cl. 149—19.4 **6 Claims**

1. In a crosslinked composite modified double base propellant composition comprising nitrocellulose, energetic nitoester plasticizer, organic or inorganic oxidizing agents and mixtures thereof, binder prepolymer and isocyanate crosslinking agents, the improvement comprising employing, lacquer grade nitrocellulose containing 12.1% to 12.6% nitrogen as the nitrocellulose source, and employing a mixture comprising polyglycoladipate having a hydroxyl functionality of 1.9 to 4.0 and polycaprolactone having a hydroxyl functionality of about 2 to about 3 in which the weight ratio of polyglycoladipate to polycaprolactone is about 5 to 1 to about 1 to 5 as the binder prepolymer, the percent by weight of nitrocellulose being from about 0.1% to about 10% and the weight of the binder prepolymer being from about 5% to about 25%, based on the weight of the propellant composition.

4,659,403

HYDRAZINE STABILIZERS FOR NC PROPELLANTS

Ernest J. Kirschke, Tallahassee, Fla., and Eugene F. Rothgery, North Branford, Conn., assignors to Olin Corporation, Stamford, Conn.

Filed Mar. 25, 1986, Ser. No. 843,897
Int. Cl.⁴ C06B *47/08*
U.S. Cl. 149—36 **7 Claims**

1. A nitrocellulose based propellant powder stabilized by the addition of a stabilizing amount of a hydrazide compound to the propellant.

4,659,404

METHOD OF MAKING LOW THERMAL EXPANSIVITY AND HIGH THERMAL CONDUCTIVITY SUBSTRATE

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 539,449, Oct. 6, 1983, Pat. No. 4,569,692. This application Jun. 24, 1985, Ser. No. 747,634
Int. Cl.⁴ C22C *29/12*
U.S. Cl. 156—62.2 **23 Claims**

1. The process of forming a substrate for an electronic application, comprising the steps of:

providing first material particles having a coefficient of thermal expansion in the range of about -20×10^{-7} to about 50×10^{-7} in/in°C.;

providing second material particles having a coefficient of thermal expansion in the range of about 100×10^{-7} to about 239×10^{-7} in/in/°C.;

mixing said first material particles with said second material particles; and

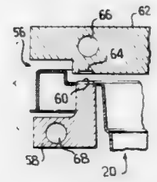
bonding the mixture of said first and second material particles together with a bonding agent to form a coherent composite being a strong, resistant to thermal shock substrate having a coefficient of thermal expansion substantially less than about 100×10^{-7} in/in/°C., said bonding agent adhering to said first and second material particles while maintaining the individual characteristics of the first and second material particles.

4,659,405

METHOD AND APPARATUS FOR MAKING A SEALING LIP FOR LID ON THERMOFORMED CONTAINER

John Walter, Evergreen Park, Ill., assignor to Continental Can Company, Inc., Stamford, Conn.

Division of Ser. No. 766,354, Aug. 16, 1985, Pat. No. 4,595,117. This application Apr. 3, 1986, Ser. No. 847,529
Int. Cl.⁴ B32B *31/20*
U.S. Cl. 156—69 **9 Claims**



1. A method of forming on a sealing surface on a peripheral lip of a thermoformed plastic container, said method comprising the steps of providing a pair of forging tools with one of said tools having a supporting ledge and the other of said tools having a recess aligned with said supporting ledge and of a lesser width, seating a peripheral lip of a thermoformed plastic container on said supporting ledge and while providing lubrication between at least said other tool and said container forcibly engaging said other tool with a surface of said peripheral lip in opposition to said one tool to reduce the thickness of said peripheral lip and to form an upstanding rib on said peripheral lip having an upper surface spaced from an underside of said peripheral lip a preselected constant distance.

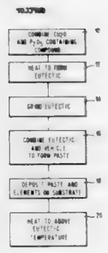
5. The method of claim **1** wherein a cover is applied to the container by bonding to the rib.

4,659,406

METHOD OF BONDING TO CERAMIC AND GLASS

Srinivasa S. N. Reddy, LaGrangeville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 22, 1985, Ser. No. 725,598
Int. Cl.⁴ B32B *18/00, 31/06*
U.S. Cl. 156—89 **16 Claims**



1. A method of bonding at least one metal element to a ceramic or glass substrate comprising the steps of

forming a particulate material that includes a eutectic composition of Cu_2O and P_2O_5 by preparing a mixture of Cu_2O and a source of P_2O_5, heating the mixture, and grinding the resultant eutectic material,

combining the particulate eutectic material with a liquid organic vehicle to form a paste

depositing the paste on the surface of a ceramic substrate in contact with the element to be bonded, and

heating the substrate to a temperature above the eutectic temperature of the particulate eutectic material.

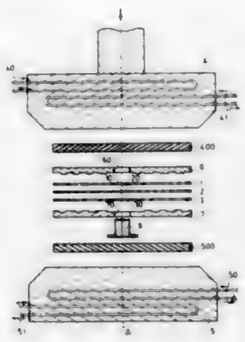
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4,659,407

PROCESS FOR MANUFACTURING OPTICAL DISKS BY PRESSING

Jean-Pierre Lacotte, Villeneuve la Garenne; Sylvain Kretschmer, Paris; Pierre Oprandi, Villiers le Bel, and Georges Broussaud, Sceaux, all of France, assignors to Thomson-CSF, Paris, France

Filed Jul. 2, 1984, Ser. No. 627,096
Claims priority, application France, Jul. 4, 1983, 83 11071
Int. Cl.⁴ B32B *31/20*
U.S. Cl. 156—196 **7 Claims**



1. A process for manufacturing optical disks wherein reading of the disks may be carried out by transmission or reflection, said disks having given thickness greater than 300 micrometers and being recorded on at least one face by means of a compression press comprising a pair of jaws movable with respect to each other, each supporting respectively a first recorded master and a second master, countermaster or recorded master, said process comprising a step of positioning, between the masters, a stack of at least two sheets of identical thermoformable material closely placed in touch with each other whose total cumulated thickness is equal to said given thickness and the steps of subjecting this stack to a pressure-temperature cycle, said pressure being exerted by bringing the jaws of the press together for compressing the stack of thermoformable sheets and the temperature cycle comprising raising the temperature from ambient temperature so as to exceed the softening point of the material and returning to ambient temperature; so as to obtain, after these steps, bonding together of the sheets forming said stack and duplication of the recording on each recorded master on one of the main faces of the stack.

4,659,408

MULTI-LAYER SHEET STRUCTURE, METHOD OF MAKING SAME AND CONTAINERS MADE THEREFROM

Dwight D. Redding, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 614,878, May 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 482,350, Apr. 5, 1983, abandoned. This application Oct. 2, 1984, Ser. No. 657,003
Int. Cl.⁴ B32B *31/00*
U.S. Cl. 156—244.17 **7 Claims**

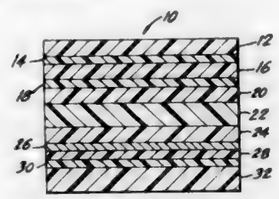
1. A method of making a paperless multi-layer sheet structure comprising the steps of

(a) coextruding three polymeric layers to form a film substructure of said layers and uniaxially orienting said film to an orientation ratio of from about 2/1 to about 6/1, said layers being, consecutively, a polyethylene layer, a first adhesive layer and an orienting polymer layer;

(b) priming a surface of said orienting polymer layer with a primer;

(c) extrusion laminating a layer of polyethylene to said primed surface of said orienting polymer layer;

(d) extrusion laminating said polyethylene layer to an aluminum foil layer using a second polymeric adhesive layer as the extrusion laminant, and



(e) coextrusion of coating said foil with a coextrudate a third adhesive layer and polyethylene to complete the sheet structure.

4,659,409

METHOD AND MEANS FOR PREPARING FLOOR COVERING USING A TEMPLATE

Hafiz Arafat, 7231 Rue Godbout, Rancho Palos Verde, Calif. 90274

Filed Sep. 6, 1985, Ser. No. 773,025
Int. Cl.⁴ B32B *31/10, 31/18*
U.S. Cl. 156—249 **8 Claims**



1. A method of dividing over-lay material supplied in rolls of a given width into joinable grain or design matching pieces to cover an irregularly shaped floor area including the steps of providing a translucent template of a width scaled in correspondence with said given material width and carrying orientation indicia aligned or parallel representing said scale, removably adhering said template to a correspondingly scaled drawing of said floor area, cutting said template into separate aligned or parallel portions within the floor area of said drawing from the rest of the template, removing said portions of said template and adheringly repositioning the same on another surface in said aligned or parallel positions to render an overall scaled length to fix the total length of the over-lay material when converted from said scale and to preserve said requirement, preparing said full scale length of over-lay material from said portions of template, and cutting full-scale pieces of said over-lay material corresponding to each of said portions of said template.

4. A template for use in conjunction with a scaled drawing of a floor area to be covered with an over-lay material having a grain or design running the length of said material which is supplied in a given width in which said template is cut into portions for appropriate joining and installation over said floor area comprising a sheet of translucent material of a width

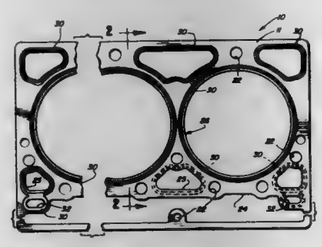
scaled to the given width of said over-lay material and said drawing, said sheet carrying orientation indicia scaled to said drawing and said sheet adopted to be cut into pieces with the corresponding orientation indicia aligned or parallel for each piece to carry out the grain or design of said over-lay material along said length, said pieces include repositioning adhesive on one side thereof for removably affixing to said scaled drawing, yet removable to another surface for orientation and alignment to determine the overall scaled length of said over-lay material while maintaining the constant scaled width.

4,659,410

METHOD OF MAKING A SILK-SCREENED GASKET OF ENHANCED SEALING CHARACTERISTICS

Donald J. McDowell, Riverside, and Jerri L. Cooper, Lombard, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed Apr. 1, 1985, Ser. No. 718,643
Int. Cl.⁴ B32B *31/12*
U.S. Cl. 156—277 **3 Claims**



1. A method of making an automotive engine gasket assembly of enhanced sealing characteristics comprising the steps of

providing a gasket body defining at least two clear-through combustion openings, said gasket body being adapted to be positioned between a pair of engine members to be sealed to each other, said gasket body comprising an expansive metal core having two main surfaces and at least one compressible facing layer of compressed fiber-elastomer material,

providing a silk screen through which a fluid silicone sealant material is adapted to be squeezed in a desired sealing pattern directly onto said facing layer,

providing on said silk screen a fluid, moisture-carbon dioxide curable, silicone sealant material which is curable in the presence of high humidity and carbon dioxide levels, and squeezing said desired sealing pattern directly onto said facing without the intervention of a barrier coat,

preheating said gasket body to a temperature of at least 150° F. for from about 15 seconds to 4 minutes, and

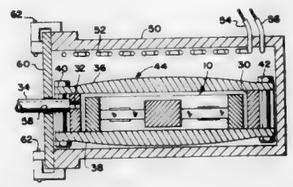
then, after preheating said gasket body, positioning said gasket body in a chamber and exposing said gasket body in said chamber to a conditioned atmosphere of high relative humidity of from at least about 85% relative humidity and of a carbon dioxide content greater than the carbon dioxide content of ambient air and from about 5% to about 20% carbon dioxide for at least three minutes, thereby to cure said silicone sealant material to form an elastomeric silicone sealing pattern on said gasket body.

4,659,411

BONDING OF STRAIN GAGES

Sherif S. Gindy; Kishan D. Amlani, both of Troy, and Thomas J. Ellwood, Mt. Clemens, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 28, 1984, Ser. No. 655,620
Int. Cl.⁴ B32B *31/00*
U.S. Cl. 156—285 **5 Claims**



1. A method of attaching an electrical strain gage to a structure to be strained comprising the steps of:

(a) providing a foil-type strain gage;

(b) applying an adhesive to the surface of one of said foil-type gage and the surface of said structure;

(c) applying said foil to said structure with said adhesive and pressing about the surface and periphery of said foil to effect an initial fluid pressure seal;

(d) applying positive fluid pressure directly to the exterior surfaces of said gage and said structure to press said gage against said structure;

(e) maintaining said fluid pressure and heating said gage until said adhesive is fully cured.

4,659,412

METHOD FOR ADHERING A COATING MATERIAL TO DENSIFIED RANDOM-FIBER COMPOSITE SHEET

Ritchey O. Newman, Midland, Mich., and Steven E. Finlayson, Granville, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 22, 1984, Ser. No. 663,601
Int. Cl.⁴ B32B *31/12*
U.S. Cl. 156—322 **18 Claims**

1. A method for adhering a coating material to at least one surface of a densitifed random-fiber composite sheet, said sheet being prepared from fibrous reinforcement materials, binders and a heat-fusible organic polymer, which comprises applying sufficient heat to said surface to cause the heat-fusible organic polymer to soften and releases at least a portion of the length of fibrous materials present at the surface of said sheet whereby said portion of the fibrous component of said sheet projects outward from a plane defined by said surface, and contacting said surface with a coating material of sufficient viscosity to flow around said projected portion of the fibrous component and physically interact to anchor to the projected fibrous component.

8. The method of claim 1 wherein the coating material is an adhesive and includes the additional step of adhering said densified random-fiber composite sheet to a substrate.

4,659,413

AUTOMATED SINGLE SLICE CASSETTE LOAD LOCK PLASMA REACTOR

Cecil J. Davis, Greenville; John E. Spencer, Plano; Randall E. Johnson, Carrollton; Rhett B. Jucha, Celeste; Frederick W. Brown, Tarrant, and Stanford P. Kohan, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1984, Ser. No. 664,448
Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*
U.S. Cl. 156—345 **35 Claims**

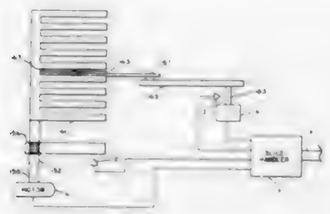
1. An apparatus for the manufacturing of semiconductor devices from semiconductor wafers having a plurality of semi-

VOL 1077 ISS 3 AP 21 1987 UMI

conductor circuit patterns on at least a first surface of the semiconductor wafer, the apparatus comprises:

reacting means for providing a stream of reacting gases to react with the semiconductor wafer to create circuit elements according to the semiconductor circuit pattern thereby;

handling means for handling the wafers and includes a chamber means for bringing the wafers into contact with the reacting gas, degassing means for degassing of a plurality of semiconductor wafers, port means for preventing the contamination of the chamber means and to provide a port



for the transfer of the semiconductor wafers from the degassing means to the chamber means;

exit means for storing the plurality of semiconductor wafers and the circuit elements and to isolate them from the chamber means, second port means for providing a port for the transfer of the semiconductor wafer between the chamber means and the exit means, and transfer means for transferring the semiconductor wafer from the degassing means to the chamber means and from the chamber means to the exit means; and

control means for controlling the operation of the apparatus.

4,659,414

APPARATUS FOR MANIPULATING UNITING BANDS IN MACHINES OF THE TOBACCO PROCESSING INDUSTRY

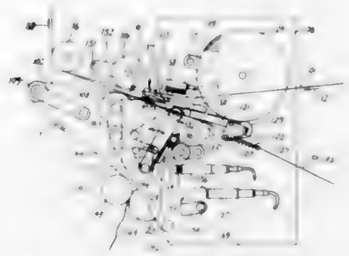
Bob Heitmann; Karl-Heinz Schlüter, both of Hamburg, and Wolfgang Steiniger, Börnsen, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. Kg., Hamburg, Fed. Rep. of Germany

Filed Jun. 21, 1984, Ser. No. 623,184

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323393; Jan. 21, 1984, 3402022

Int. Cl.⁴ B32B *31/00*; **B31F** *5/00*; **B44C** *1/00*; **G03D** *15/04*

U.S. Cl. 156—361 **26 Claims**



1. Apparatus for delivering discrete adhesive-coated uniting bands to web splicing means at a web splicing station in a tobacco processing machine wherein the uniting bands adhere to and form a row on a strip-shaped flexible carrier which forms a reel of superimposed convolutions, comprising unwinding means for unwinding the strip stepwise so as to locate successive uniting bands of the row of such uniting bands in a first predetermined position; removing means for removing from the carrier that uniting band which occupies said first position, including means for advancing the band from said first to a second predetermined position; transferring means for transferring uniting bands from said second position to the web splicing means at the splicing station, said removing means comprising a member which is movable back and forth with reference to said transferring means about a predetermined axis; and means for moving said unwinding means in synchronism with said transferring means and said removing means.

4,659,415

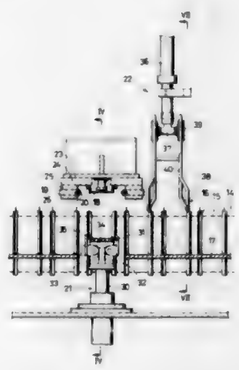
CAP HEAT-SEALING APPARATUS FOR CONTAINERS

Masao Shimokawa, and Yoshio Tada, both of Tokushima, Japan, assignors to Shikoku Kakooki Co., Ltd., Tikushima, Japan

Filed Jun. 13, 1985, Ser. No. 744,186

Int. Cl.⁴ B32B *31/24*

U.S. Cl. 156—379.7 **6 Claims**



1. A cap heat-sealing apparatus for containers wherein a container made of a paper laminate and a aluminum foil layer comprise a body provided with a seam, said seam being twice as thick as the material of the container and extending longitudinally of the body, said body being fitted at an opening edge with a fitting portion of a thermoplastic synthetic resin cap, said thermoplastic synthetic resin cap formed on a peripheral edge portion of a square cap and thereafter the fitting portion is heat-sealed to the opening edge of the container, the improvement comprising:

(a) a container transport conveyor provided with container holders and driven intermittently so that the container holders are stopped at a specified heat-sealing position;

(b) pressing means for pressing the fitting portion to the container opening edge, said pressing means comprising a stationary pressing member downwardly projecting from a lower surface of a horizontal support plate extending over and across the container holder, said stationary pressing member having an outer peripheral surface shaped in the form of a square in conformity with an inner peripheral surface of the fitting portion, four movable pressing members arranged around the stationary pressing member each having a V-shaped pressing face when seen from above to conform with an outer peripheral surface portion of the stationary pressing member including one corner thereof so that when the movable pressing members are brought toward the stationary pressing member, the V-shaped pressing faces of each movable pressing member forming a square in combination to conform with the entire outer peripheral surface of the stationary pressing member, a slide guide member for movably holding each movable pressing member diagonally of the square formed by the outer peripheral surface of the stationary

pressing member, and a means for moving each movable pressing member toward or away from the stationary pressing member, said means for moving comprising four hydraulic cylinders disposed outside the movable pressing members each hydraulic cylinder having a piston rod, said piston rod being connected to the movable pressing member, each hydraulic cylinder being attached to a lower surface of the horizontal support plate so that the piston rod of each hydraulic cylinder is arranged in parallel with a direction of travel of the movable pressing member, each piston rod being positioned inside each hydraulic cylinder with a front end of the piston rod directed inward;

(c) container lifter means for raising a container from a container holder to a level for placing the fitting portion of the cap fitted in the opening of the container around the outer peripheral surface of the stationary pressing member; and

(d) heating means for heating the container opening edge and the fitting portion, said heating means comprising a main heater for heating said opening edge and said fitting portion, and an auxiliary heater for locally preheating one part of said container including the seam existing in the container opening edge and one part of the fitting portion fitted in the container opening, the main heater being a high frequency coil in the form of a square ring attached to the horizontal support plate surrounding the stationary pressing member, and the auxiliary heater having at least one hot air injecting nozzle, said auxiliary heater being arranged with an orifice of at least one hot air injecting nozzle, said orifice being oriented toward the container held by the container holder, said container stopped in advance of a heat-sealing position with reference to a direction of travel of the container holders and, said injection nozzle further being oriented toward the portion of the cap fitted on the container to be preheated.

4,659,416

THERMAL BAR CODE PRINTER FOR LABEL APPLICATOR

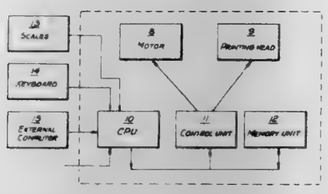
Erik Johansson, Lund, Sweden, assignor to Ecupan AB, Staffanstorp, Sweden

Continuation of Ser. No. 455,449, Jan. 4, 1983, abandoned. This application Sep. 21, 1984, Ser. No. 652,993

Claims priority, application Sweden, Jan. 7, 1982, 8200031

Int. Cl.⁴ B41J *3/20*

U.S. Cl. 156—384 **5 Claims**



1. A label printer for printing a bar code and other information on a temperature sensitive paper by means of a printing head, comprising: an elongated, flat substrate having a first surface and a second surface; a plurality of resistance dots arranged on seid second surface of said substrate; circuit means connected to said resistance dots, said circuit means supplying power pulses having a frequency of a few thousand Hertz to selected resistance dots to heat said resistance dots in accordance with the information to be printed on said temperature sensitive paper to print a label on said paper; a metal heat sink block having a surface in contact with said first surface of said substrate, said substrate being mounted in heat transmitting contact with said heat sink block; at least one temperature sensor for said heat sink block to control the pulse width of said power pulses to produce a printing dot or printing line on said temperature sensitive paper, several pulses being delivered to each resistance dot for printing a corresponding dot or line on said paper during the supply of power pulses oscillating the temperature of said resistance dot between a high temperature and a low temperature, both of which are above the minimum temperature for coloring said temperature sensitive paper.

4,659,417

APPARATUS FOR SUPPLYING FLEXIBLE WORKPIECE

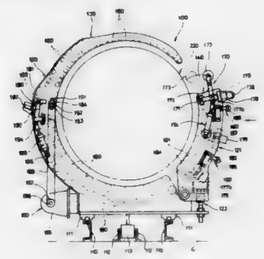
Hideto Yamamoto, Hiratsuka, Japan, assignor to Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1984, Ser. No. 680,464

Claims priority, application Japan, Dec. 28, 1983, 58-245374

Int. Cl.⁴ B29D *30/00, 30/30*

U.S. Cl. 156—405.1 **10 Claims**



1. An apparatus for receiving, transporting and joining a first belt-shaped flexible workpiece, such as a tire component, to a second, belt-shaped flexible workpiece, in constructing a tire, said apparatus comprising an annular chamber having an opening adapted to receive said first belt-shaped flexible workpiece, means for moving said first workpiece upon introduction to said annular chamber and circumferentially through said annular chamber to shape said first workpiece to an annular configuration, means for moving said annular chamber with said first workpiece therein relative to a drum having an exterior cylindrical surface onto which said second belt-shaped flexible workpiece is mounted, means for bringing an end portion of said first workpiece into contact with said second workpiece and means for imparting relative rotational movement to said workpieces to concentrically mount said workpieces one upon the other.

8. An apparatus for receiving, transporting and joining a first belt-shaped flexible workpiece, such as a tire component to a second, belt-shaped flexible workpiece, said apparatus comprising an annular chamber having an opening adapted to receive said first belt-shaped flexible workpiece and having a plurality of rollers arranged in generally opposed bands defining a path for movement of said first workpiece therebetween, means for moving said first workpiece upon introduction to said annular chamber and circumferentially through said annular chamber to shape said first workpiece to an annular configuration means for moving said annular chamber with said first workpiece therein relative to a drum having an exterior cylindrical surface onto which said second belt-shaped flexible workpiece is mounted, means for centering said workpieces relative to each other, means for bringing an end portion of said first workpiece into contact with said second workpiece and means for imparting relative rotational movement to said workpieces to concentricaly mount said workpieces one upon the other.

4,659,418

Patent Not Issued For This Number

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4,659,419

LAMINATOR FOR STICKING FILM SHEET ON PANEL SURFACE

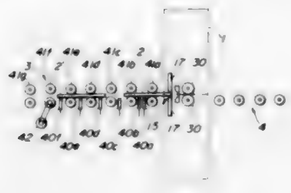
Eiichi Miyake, Osaka, Japan, assignor to Hakuto Co., Ltd., Tokyo and Sanei Giken Co., Ltd., Osaka, both of, Japan

Filed May 1, 1984, Ser. No. 607,114

Claims priority, application Japan, May 11, 1983, 58-82241; Oct. 3, 1983, 58-184659

Int. Cl.⁴ B32B *31/18, 31/20*

U.S. Cl. 156—522 **14 Claims**



1. A laminator used for sticking a film sheet, cut from a continuous film web having a leading end, onto the surface of a panel having a forward end and rearward end, comprising:

a main body;

conveyor means, extended on both sides of the main body, for transferring a panel through the main body;

support frames arranged in the main body;

a tacking station positioned between the support frames and arranged in the path of the conveyor means;

film supplying means, arranged in the main body and positioned above the conveyor means, for supplying a continuous film web along a predetermined path to the tacking station in a given direction and at a given speed;

block members mounted on the support frames, said block members being movable along the predetermined path of the continuous film web toward and away from the tacking station;

means, mounted between the block members, for tacking a leading end of the continuous film web to a forward end of the panel while moving toward and away from the panel at the tacking station;

pressure roller means, arranged behind the tacking means in the path of the conveyor means, for compression sticking therebetween the film sheet being received from said film supplying means onto the surface of the panel in a continuous operation from the forward end to the rearward end of the panel; and

a cutter mounted on said block members for movement together with said block members toward the tacking station in the same direction and at the same speed as the continuous film web is supplied to the tacking station and is being stuck onto the surface of the panel and movable across the continuous film web while said film web is moving toward the tacking station for cutting the film sheet into a length such that the end of the cut film sheet will match the position of the end of the panel;

whereby the film sheet is stuck onto the surface of the panel by the pressure roller means without any temporary interruption in the sticking operation and without making any linear roll mark across the film sheet on the panel.

4,659,420

SHOE SUBSTRATE REINFORCING MACHINE

Albert I. Morse, Beverly, and John F. Martin, Essex, both of Mass., assignors to USM Corporation, Farmington, Conn.

Filed Apr. 14, 1986, Ser. No. 851,200

Int. Cl.⁴ B65H *9/04*

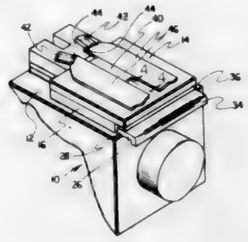
U.S. Cl. 156—556 **2 Claims**

1. A machine for depositing powder in a selected configuration, fusing the configured powder into a laminate, and adhering the fused laminate to a shoe substrate to reinforce the substrate, comprising: a transfer structure including

(a) a spindle;

(b) a transfer support mounted on said spindle, having a plurality of faces, and movable from position to position by rotation of said spindle;

(c) at least one base attached to said transfer support, the base including an attached guide plate, guide means secured to said guide plate, and detent means secured to said guide plate; and



(d) at least one pad assembly slidable into said guide means of said base, each pad assembly including a backing plate having portions to be guided by said guide means, a stopping plate attached to said backing plate for abutting against said guide means when said backing plate is slid to its desired location on said guide plate, backing plate means for cooperating with said detent means to releasably maintain said backing plate at its desired location when said backing plate is located on said guide plate, a pad secured to said stopping plate for supporting a shoe substrate, and a handle attached to said backing plate for sliding said pad assembly into and out of said guide means.

4,659,421

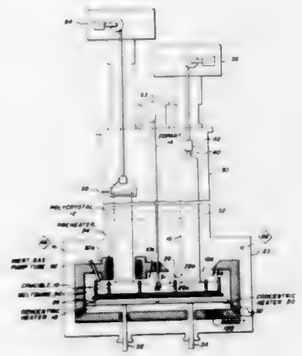
SYSTEM FOR GROWTH OF SINGLE CRYSTAL MATERIALS WITH EXTREME UNIFORMITY IN THEIR STRUCTURAL AND ELECTRICAL PROPERTIES

David N. Jewett, Harvard, Mass., assignor to Energy Materials Corporation, So. Lancaster, Mass.

Continuation-in-part of Ser. No. 307,748, Oct. 2, 1981, abandoned. This application Apr. 16, 1985, Ser. No. 723,942

Int. Cl.⁴ C30B *13/10, 15/02, 27/02*

U.S. Cl. 156—617 SP **18 Claims**



1. A process for growing single crystal material comprising:

providing a quantity of a melt of feed material from which a single crystal is grown in a non-rotating pool that is sufficiently shallow to avoid the formation of substantial convection cells within said melt, said melt having a replenishment zone wherein crystal-forming feed material is added to the melt and at least one growth zone laterally displaced from the replenishment zone;

feeding solid material for growing a single crystal into the replenishment zone;

melting the solid material;

inducing a controlled, directed flow of the melted feed material from the replenishment zone to the growth zone;

providing internal guide members within the melt for guiding the melted feed material from the replenishment zone to the growth zone;

seeding, shouldering, and pulling a single crystal from the growth zone;

wherein the melted feed material flow is cooperatively induced and guided so that at least a portion of the directed flow passes under the growing single crystal to produce a thin boundary layer containing a uniform distribution of impurities with no substantial disturbance of thermal gradients in the growth zone.

4,659,422

PROCESS FOR PRODUCING MONOCRYSTALLINE LAYER ON INSULATOR

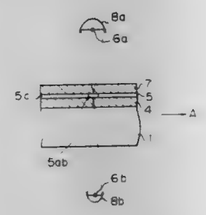
Junji Sakurai, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 22, 1984, Ser. No. 592,067

Claims priority, application Japan, Mar. 31, 1983, 58-055873

Int. Cl.⁴ C30B *13/22*

U.S. Cl. 156—617 R **8 Claims**



1. A process for producing a monocrystalline layer on an insulating layer formed on a front side of a semiconductor substrate having at least one impurity region containing impurities under said insulating layer, comprising the steps of:

providing a nonmonocrystalline layer with a back side on said insulating layer over said at least one impurity region in said substrate; and

heating a local portion of said nonmonocrystalline layer without causing substantial redistribution of said impurities in said at least one impurity region by irradiating said local portion with two energy beams emitted from two respective rod-like heat sources located apart from and parallel to said substrate, wherein a first of said energy beams irradiates said nonmonocrystalline layer from the front side of said nonmonocrystalline layer with an energy density that is larger than that of the other energy beam, and said other energy beam irradiates either the front side of said nonmonocrystalline layer or a back side of said substrate, while moving said energy beams relative to said nonmonocrystalline layer, wherein said nonmonocrystaline layer is locally melted and transformed to a monocrystalline layer during said moving as a result of the irradiation.

4,659,423

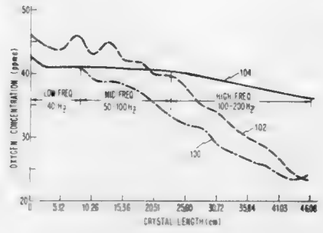
SEMICONDUCTOR CRYSTAL GROWTH VIA VARIABLE MELT ROTATION

Kyong-Min Kim, Hopewell Junction; Pavel Smetana, Poughkeepsie, and Wolfgang A. Westdorp, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1986, Ser. No. 856,872

Int. Cl.⁴ C30B *15/30, 35/00, 13/24, 13/30*

U.S. Cl. 156—617 SP **48 Claims**



1. An improvement in an apparatus for growing a semiconductor crystal by the Czochralski method, said apparatus comprising a crucible for containing a molten material from which the semiconductor crystal is grown, a heater for melting said material and maintaining said material in a molten state, and a seed holder for holding a monocrystalline seed and means operable to dip said seed into said molten material and to withdraw said seed from said molten material to thereby grow a crystal of increasing length therefrom, said improvement comprising;

rotation means designed for rotating only said molten material at a rotation rate apart from said crucible rotation rate; and

means for controlling said rotation means to increase the rotation rate of said molten material as a function of the increasing length of said crystal grown from said molten material.

4,659,424

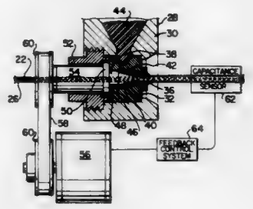
MANUFACTURE OF ELONGATE MEMBERS OF INDEFINITE LENGTH

Gordon D. Baxter, Kingston, and Oleg Axiuk, Pincourt, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 9, 1986, Ser. No. 849,629

Int. Cl.⁴ H01B *13/14*

U.S. Cl. 156—51 **7 Claims**



6. A method for producing an elongate member of indefinite length having at least two laterally spaced elongate elements surrounded by an extruded non-circular jacket of polymeric material comprising:

passing the elements in laterally spaced relationship along a passline through a core tube in a cross-head and then

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through a non-circular die orifice of an extrusion die of the cross-head while extruding a molten polymeric dielectric material around the elements;

monitoring a parameter indicative of the angular positions of the elements within the extruded jacket at a position downstream from the die orifice; and

upon any monitored value differing from that required for desired angular positions of the elements, controllably rotating the core tube within the cross-head to adjust its angular position and to change the angular positions of the elements relative to the die orifice and towards the desired angular positions within the jacket.

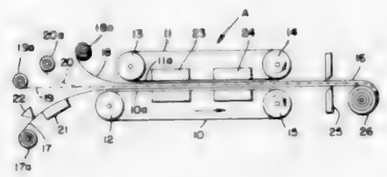
7. A method according to claim 6 wherein the elongate member comprises at least two elongate elements in the form of electrically conductive wires and the jacket is a dielectric material, the method comprising monitoring the capacitance of the elongate member and controllably rotating the core tube upon any monitored capacitance value differing from that desired for the elongate member.

4,659,425

CONTINUOUS PROCESS FOR THE MANUFACTURE OF PRINTED CIRCUIT BOARDS

Eugene A. Eggers, Binghamton, and William J. Summa, Endwell, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Feb. 3, 1986, Ser. No. 825,562
Int. Cl.⁴ B44C *1/22;* **B32B** *31/08*
U.S. Cl. 156—630 **8 Claims**



1. A method for the continuous manufacture of a composite circit board which comprises the continuous steps of

coating the surface of a metal foil with a layer of a liquid thermosetting resin free of a volatile solvent,

heating the foil to a temperature below the curing temperature of the resin to further fluidize the resin,

advancing the heated resin coated foil into contact with a sheet of reinforcing cloth to form a foil/cloth assembly,

continuously conveying the assembly between a pair of rotating endless belts having mutually facing surfaces mutually pressable against one another in a heating zone heated to the curing temperature of the resin,

pressing the mutually facing surfaces of the belts against the assembly to simultaneously compress the assembly and impregnate the assembly with the resin,

curing the resin in the heating zone whereby there is formed a composite structure bonded together with the cured resin, and then

cooling the composite structure while the belts remain pressed against the composite structure to obtain the circuit board.

7. The method of claim 1 wherein the metal foil layers of the cooled composite are etched to form circuits to obtain a printed circuit board.

4,659,426

PLASMA ETCHING OF REFRACTORY METALS AND THEIR SILICIDES

Clyde R. Fuller, Plano; Gordon P. Pollack, Richardson; Robert H. Eklund, Plano, all of Tex., and Dave Monahan, Palo Alto, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 3, 1985, Ser. No. 730,717
Int. Cl.⁴ H01L *21/306;* **C23F** *1/02;* **B44C** *1/22;* **C03C** *15/00*
U.S. Cl. 156—643 **45 Claims**

1. A method for patterning thin-film interconnects, comprising the steps of:

depositing a thin film of a composite layer structure comprising both polycrystalline silicon and a metal silicide on a predetermined substrate, having a patterned masking material in a predetermined pattern thereon;

providing a reagent gas flow in proximity to said thin film of metal, said reagent gas flow including a carbonyl source gas; and

applying rf power to create a plasma in proximity to said thin film of metal.

4,659,427

VIA FORMATION FOR MULTILAYERED METALIZATION

Vincent J. Barry, Tempe; Brenda A. Boucher-Puputti, Mesa; Thomas W. Fitzgerald, Scottsdale, and Edward J. Bawolek, Chandler, all of Ariz., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 31, 1984, Ser. No. 687,694
Int. Cl.⁴ B44C *1/22;* **C23F** *1/02;* **C03C** *15/00;* **B29C** *37/00*
U.S. Cl. 156—643 **2 Claims**

1. A method for enhanced formation of vias in an integrated circuit device that includes a multilayer metalization level characterized by a top layer comprising a tungsten alloy, the method comprising the steps of:

(a) heating the device to a temperature of approximately 400° C. in a substantially inert ambient containing traces of oxygen or nitrogen for a period of time sufficient to develop a thin, superficial, distinctly colored film atop the tungsten alloy layer,

(b) laying an interlevel dielectric layer atop the superficial layer,

(c) etching away predetermined portions of the interlevel dielectric to a depth sufficient to expose the colored superficial layer, and

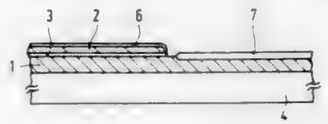
(d) etching away the exposed portions of the superficial layer in a plasma etch.

4,659,428

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE MANUFACTURED BY MEANS OF THE METHOD

Henricus G. R. Maas, and Johannes A. Appels, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 628,373, Jul. 5, 1984, abandoned. This application Mar. 17, 1986, Ser. No. 840,164
Claims priority, application Netherlands, Jul. 15, 1983, 8302541
Int. Cl.⁴ H01L *21/306*
U.S. Cl. 156—643 **12 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of

forming an oxidation-preventing layer on a first layer of silicon,

forming a second layer of silicon on said oxidation-preventing layer,

removing at least one portion of said second silicon layer from said oxidation-preventing layer,

oxidizing all exposed surfaces of the remaining parts of said second silicon layer,

removing exposed portions of said oxidation-preventing layer on said first silicon layer,

removing the oxidized surface parts of said second silicon layer by etching,

thermally oxidizing exposed portions of said first silicon layer and said remaining exposed parts of said second silicon layer to form a thick oxide layer on said first silicon layer and a thinner oxide layer on said remaining parts of said second silicon layer such that the thinner oxide layer does not entirely cover the remaining exposed portion of said oxidation-preventing layer,

removing the exposed portion of said oxidation-preventing layer by etching,

entirely removing said thinner oxide layer on said remaining parts of said second silicon layer by mask-free etching, wherein the upper portion of said thick oxide layer is removed while the lower portion of said thick oxide layer remains on said first silicon layer,

etching at least one groove into said first silicon layer at said removed portion of said oxidation-preventing layer, said groove separating a first part of said first silicon layer from a second part of said first silicon layer, said first part of said first silicon layer being strongly n-type conducting, and said first part having a higher doping concentration than at least said remaining part of said second silicon layer, and

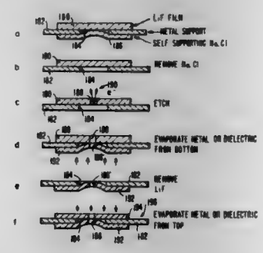
during said etching of at least one groove, removing said remaining parts of said second silicon layer.

4,659,429

METHOD AND APPARATUS FOR PRODUCTION AND USE OF NANOMETER SCALE LIGHT BEAMS

Michael Isaacson, and Aaron Lewis, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 520,041, Aug. 3, 1983. This application Aug. 12, 1985, Ser. No. 764,467
Int. Cl.⁴ B44C *1/22;* **C03C** *15/00;* **G03B** *27/02;* **G03F** *9/00*
U.S. Cl. 156—644 **17 Claims**



1. A method of making an aperture mask for passing spectral phenomena having a wavelength greater than the diameter of the mask aperture, comprising:

depositing by vapor deposition a support layer on the bottom surface of a thin substrate, said substrate having a central opening sufficiently large to encompass all of the apertures of said aperture mask, said support layer spanning said central opening;

depositing by vapor deposition a resist layer on the top surface of said thin substrate and on the top surface of said support layer in the area of said central opening, whereby said resist layer spans said central opening;

removing said support layer, whereby said resist layer is self-supporting over said central opening;

producing by electron beam etching at least one aperture through said resist layer within the area of said central opening, each said aperture having a diameter of less than about 500 Å;

depositing by vapor deposition to a thickness of about 500 Å a first metal layer on the bottom surface of said thin metal support and on the bottom surface of said resist layer exposed within the area of said central opening, said first metal layer having apertures corresponding to the apertures formed in said resist layer; and

removing said resist layer to provide a free-standing optically opaque mask having at least one aperture.

4,659,430

PROCESS FOR MAKING A PHOTOGRAPHIC SUPPORT

Shigehisa Tamagawa, and Tetsuro Fuchizawa, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 614,450, May 25, 1984, abandoned, which is a continuation of Ser. No. 435,342, Oct. 19, 1982, abandoned. This application Apr. 24, 1986, Ser. No. 856,867
Claims priority, application Japan, Oct. 21, 1981, 56-168136
Int. Cl.⁴ D21H *1/34, 3/10*
U.S. Cl. 162—135 **6 Claims**

1. A process for the preparation of a photographic support having improved edge-soiling properties which comprises:

treating a pulp slurry with a sodium salt of a fatty acid having 12–22 carbon atoms, a water-soluble aluminum salt, and a polyamide-polyamine-epichlorohydrin resin, followed by treatment with an alkylketene dimer having an alkyl group of 8–30 carbon atoms;

preparing a paper sheet from the pulp slurry, said paper sheet containing said water-soluble aluminum salt in the amount of 0.5–3.0% by weight, said polyamide-polyamine-epichlorohydrin resin in the amount of 0.1–2.0% by weight, said salt of a fatty acid in the amount of 0.5–3.0% by weight, and said alkylketene dimer in the amount of 0.2–2.0% by weight, wherein the ratio by weight of the salt of a fatty acid against the alkylketene dimer ranges from ¼ to 10/1, all weights being based upon the amount of the dried pulp of the paper sheet; and

coating the paper sheet on both sides with a polyolefin resin.

4,659,431

CATIONIC SIZING AGENT FOR PAPER, AND A PROCESS FOR ITS PREPARATION

Joachim Probst, Leverkusen; Ulrich Beck, Bornheim, and Heinz Bäumgen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1985, Ser. No. 691,991
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1984, 3401573
Int. Cl.⁴ D21H *3/38*
U.S. Cl. 162—168.2 **8 Claims**

1. A cationic sizing agent for paper, in the form of an aqueous colloidal solution having mean particle diameters of 15 to 200 nm, wherein said sizing agent is obtained by a method in which a water-soluble cationic chemically pure terpolymer emulsifier consisting of

(a) 7–40% by weight of N,N-dimethylaminoethyl acrylate and/or methacrylate,

(b) 40–80% by weight of styrene and

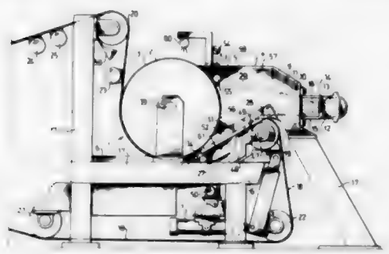
(c) 4–40% by weight of acrylonitrile

is dissolved in an aqueous medium, the sum of the components (a) to (c) always being 100% by weight and at least 10% of the N,N-dimethylamino groups of the terpolymer being quaternized and the remainder being protonated, and, in the presence of 10 to 70% by weight, relative to the monomer mixture below, of this emulsifier,

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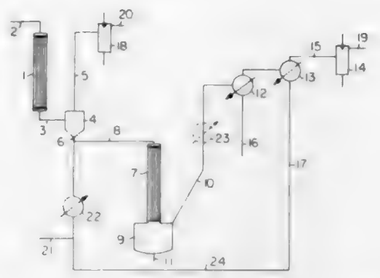
(d) 0 to 90% by weight of acrylonitrile and/or methacrylonitrile,
(e) 5 to 95% by weight of styrene and
(f) 5 to 95% by weight of an acrylic and/or methacrylic acid ester of a C_1–C_{12} alcohol having 1 to 12 C atoms in the alcohol radical,
the sum of the components (d) to (f) always being 100% by weight, are emulsified, and the emulsion thus obtained is subjected to free radical-initiated emulsion polymerization at temperatures from 20° to 150° C

4,659,432
VAT PAPER MACHINE
Erik G. Stenberg, Karlstad, Sweden, assignor to KMW Aktiebolag, Karlstad, Sweden
Filed Jun. 11, 1985, Ser. No. 743,437
Claims priority, application Sweden, Jun. 29, 1984, 8403472
Int. Cl.⁴ D21F *1/00*
U.S. Cl. 162—318 **11 Claims**



1. A vat paper machine comprising a vat having a bottom wall,
a headbox connected to the vat for providing a continuous supply of stock to a predetermined level in the vat,
a rotatable cylinder mold having a wire gauze covered outer surface, said cylinder mold is positioned relative to the vat that upon rotation of the cylinder mold, the wire gauze covered surface is brought into contact with the stock in the vat to form a first web thereon by draining water from the stock through said wire gauze covered surface,
an outer wire forming an endless loop in said vat machine,
a breast roll located adjacent the bottom wall of said vat and supporting said outer wire so as to extend along a path of travel from the breast roll through the vat along said bottom wall and then over and around a portion of the circumference of said cylinder mold,
and said bottom wall of the vat including a platform located between said breast roll and said cylinder mold and underlying said outer wire, and said platform including slit means forming at least one drainage passage for forming a second web on the outer wire by draining water from the stock through said outer wire and through said at least one drainage passage, said at least one drainage passage being parallel to the axis of rotation of the cylinder mold and being arranged at a predetermined distance upstream from the nip defined by the outer wire and the cylinder mold, whereby the second web formed on the outer wire is couched with the first web to form a unitary web.

4,659,433
CONCENTRATING AND DEHYDRATING APPARATUS FOR MALEIC ANHYDRIDE
Roland Kotwica, Pont-Sainte-Maxence, France, assignor to Societe Chimiques des Charbonnages, Paris, France
Division of Ser. No. 272,819, Jun. 11, 1981, Pat. No. 4,414,398. This application Aug. 12, 1983, Ser. No. 522,772
Claims priority, application France, Jun. 13, 1980, 80 13117
Int. Cl.⁴ B01D *3/02*
U.S. Cl. 202—173 **4 Claims**



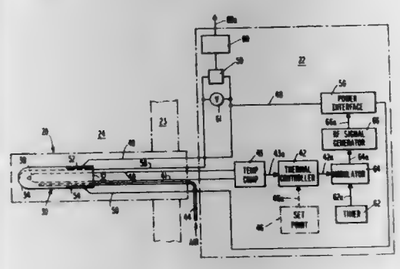
1. Apparatus for concentrating and dehydrating maleic acid to form maleic anhydride, comprising: at least first and second vertical, independent and distinct, falling thin-film, multitubular evaporators of the static type arranged in series, wherein the first thin-film multitubular evaporator of the static type has an upper part and a lower part and includes a feedpipe at the upper part and a discharge pipe at the lower part; a separator connected by its sidewall to the discharge pipe from the first evaporator and including a first discharge pipe at the upper portion thereof and a second discharge pipe at the lower part thereof, the second thin-film multitublar evaporator of the static type having a feedpipe having an upper part and a lower part connected to the second discharge pipe from the separator and including discharge means only at the lower part thereof; a boiler having an upper part and a lower part, said upper part of said boiler being connected to and in open communication with the lower part of the second evaporator, and said boiler further including a first discharge pipe for liquid at the lower part of the boiler and a second discharge pipe for vapor at the upper part of the boiler; a scrubber; condenser means having a pipe for discharge of the condensates, said condenser means being serially connected between the scrubber and the second discharge pipe from the boiler; and a recycle pipe connecting the discharge pipe from the condenser means with the second discharge pipe from the separator.

4,659,434
GAS SENSOR
John N. Driscoll, Wellesley Hills, and Edwards S. Atwood, Natick, both of Mass., assignors to HNU Systems, Inc., Newton, Mass.
Division of Ser. No. 726,957, Apr. 26, 1985, abandoned, which is a continuation of Ser. No. 526,914, Aug. 26, 1983, abandoned. This application Dec. 18, 1985, Ser. No. 810,412
Int. Cl.⁴ G01N *27/30, 27/46*
U.S. Cl. 204—1 T **2 Claims**

1. A method for detecting SO_2 gas in a gaseous or liquid sample, said method comprising testing said sample in an electrochemical cell comprising a body and within said body a detection electrode, a reference electrode, a liquid electrolyte connecting said electrodes, and a membrane permeable to said gas in close proximity to said detection electrode and arranged to separate said electrodes and said electrolyte from said sample, said liquid electrolyte being an aqueous buffer solution buffered to a pH value of between 6.0 and 7.2 and being initially essentially free of any salt capable of dissociating to form in said electrolyte HSO_3 or SO_3, said electrolyte containing at least 25% v/v of a water miscible solvent having a dielectric constant of at least 10 and being non-interfering with said detection and reference electrodes, said testing comprising measuring a change in potential between said reference electrode and said detection electrode.

2. A method for detecting SO_2 gas in a gaseous or liquid sample, said method comprising testing said sample in an electrochemical cell comprising a body and within said body a detection electrode, a reference electrode, a liquid electrolyte connecting said electrodes, and a membrane permeable to said gas in close proximity to said detection electrode and arranged to separate said electrodes and said electrolyte from said sample, said liquid electrolyte being an aqueous buffer solution buffered to a pH value of between 4.8–6.0 and being initially essentially free of any salt capable of dissociating to form in said electrolyte HSO_3 or SO_3, said testing comprising measuring a change in potential between said reference electrode and said detection electrode.

4,659,435
INTEGRALLY HEATED ELECTROCHEMICAL CELL METHOD AND APPARATUS
Jack A. Brothers, Painted Post; William T. Kane, Big Flats; Harold A. Brouneus, Painted Post, all of N.Y.; Margaret M. Layton, Raleigh, N.C., and Paul L. Walsh, Elmira, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Continuation of Ser. No. 467,812, Feb. 18, 1983, abandoned, Ser. No. 488,094, Apr. 25, 1983, abandoned, and Ser. No. 488,371, Apr. 25, 1983. This application Aug. 9, 1985, Ser. No. 764,234
Int. Cl.⁴ G01N *27/58*
U.S. Cl. 204—1 T **90 Claims**



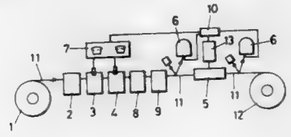
47. An electrochemical cell comprising:
an electrolyte;
integral cell electrode/heater means contacting the electrolyte and adapted for heating at least a portion of the electrolyte to an elevated temperature for ionic conduction operation; and
a pair of lead means each extending from a different location on the integral cell electrode/heater means for coupling said integral cell electrode/heater means in a circuit across an electric current source; and
a second cell electrode means separately contacting the electrolyte and adapted for developing an ionic conduction across the heated electrolyte and a related emf with the integral cell electrode/heater.

78. A method of operating an apparatus for sensing a particular gaseous substance, the apparatus comprising an electrochemical cell heated to an elevated temperature for ionic conduction operation and circuit means for responding to an ionic emf developed by the electrochemical cell, the electrochemical cell comprising a solid electrolyte exhibiting increased conductivity to ions of the gaseous substance when heated to the elevated temperature, a first cell electrode contacting the electrolyte and exposed to a sample gas and a second cell electrode also contacting the electrolyte at a separate location and generating a predetermined potential, the electrochemical cell developing an ionic emf between the two cell electrodes related to the concentration of the particular gaseous substance in the sample gas, comprising the steps of:
resistively heating at least a portion of one of the two electrodes to said elevated temperature; and
measuring the ionic emf developed between the two cell electrodes after the electrolyte has been heated to said elevated temperature.

4,659,436
PARTICULATE DIAMOND-COATED METAL ARTICLE WITH HIGH RESISTANCE TO STRESS CRACKING AND PROCESS THEREFOR
Marvin A. Kaylor, San Leandro, Calif., assignor to Augustus Worx, Inc., San Leandro, Calif.
Filed Feb. 24, 1986, Ser. No. 832,825
Int. Cl.⁴ C25D *15/00*
U.S. Cl. 204—16 **17 Claims**

1. In a method for depositing a particulate abrasive on a metallic substrate by electroplating thereon a metal other than copper with said particulate abrasive dispersed therein, the improvement comprising electroplating said metallic substrate with copper from an alkaline solution containing copper ions prior to depositing said particulate abrasive.

4,659,437
METHOD OF THERMAL DIFFUSION ALLOY PLATING FOR STEEL WIRE ON CONTINUOUS BASIS
Takeshi Shiba; Toshiaki Shimizu, and Fumihiro Yanase, all of Ono, Japan, assignors to Tokusen Kogyo Kabushiki Kaisha, Hyogo, Japan
Filed Jan. 4, 1985, Ser. No. 688,841
Int. Cl.⁴ C25D *7/06, 5/50*
U.S. Cl. 204—28 **6 Claims**



5. In a method of continuously alloy plating steel wire with at least two different kinds of metal, the method including the step of continuously plating respective layers of each metal onto running steel wire with electrical plating currents of a plating apparatus, and the step of continuously subjecting the plated layers to thermal diffusion by applying heat thereto with a thermal diffusing apparatus, downrun of the plating apparatus during the step of continuously plating to form an alloy plating on the running steel wire, the improvement including the steps of:
during the step of plating and the step of subjecting the plated layers to thermal diffusion, continuously directing X-rays against, and measuring first characteristic X-rays of, the metals plated on the steel wire, prior to the thermal diffusion thereof, with a first energy dispersive type X-ray fluorescence analyzer which includes a first X-ray fluorescence tube and a first analyzing part,
producing first variation value signals in the first analyzer related to the measured first characteristic X-rays, indicative of the variations along the length of the wire of the quantities of the respective metals plated onto the steel wire during the step of continuously plating,
producing first control signals related to the first variations value signals and controlling the electrical plating currents with the first control signals,
during the step of plating and the step of subjecting the plated layers to thermal diffusion, continuously directing

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X-rays against, and measuring second characteristic X-rays of, the metals of the alloy plating plated on the steel wire, after the thermal diffusion thereof, with a second energy dispersive type X-ray fluorescence analyzer which includes a second X-ray fluorescence tube and a second analyzing part,

producing a second variation value signal in the second analyzer related to the measured second characteristic X-rays, indicative of the variations along the length of the wire of diffusion of the metals in the alloy during the step of continuously subjecting the plated layers to thermal diffusion, and

producing a second control signal related to the second variation value signal and controlling the quantity of heat applied to the plated layers by the thermal diffusing apparatus with the second control signal.

4,659,438

PROCESS FOR THE TREATMENT OF STAINLESS STEEL FOR A DIRECT GALVANIC GOLD PLATING

Werner Kuhn, and Wolfgang Zilske, both of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,705

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020371

Int. Cl.⁴ C25D *5/36*

U.S. Cl. 204—34 **19 Claims**

1. A process for the pretreatment of stainless steel to make it adaptable to direct electrolytic gold plating in an acid gold plating bath having a pH below 3 comprising placing a stainless steel part in a cyanide containing aqueous solution consisting of water, an alkali hydroxide and alkali cyanide alone or together with at least one member of the group consisting of alkali metal phosphates, alkali metal condensed phosphates, alkali metal carbonates and alkali metal silicates and then treating the stainless steel first cathodically and then anodically.

4,659,439

SURFACE TREATMENT OF ALUMINUM OR ALUMINUM ALLOYS

Hiroshi Watanabe; Isao Shimamura, both of Hiratsuka; Masao Abe, Yokohama, and Masashi Mizusawa, Fujisawa, all of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 533,533, Sep. 16, 1983, Pat. No. 4,526,671. This application Mar. 21, 1985, Ser. No. 714,491

Claims priority, application Japan, Sep. 24, 1982, 57-167441; Jul. 15, 1983, 58-129143

Int. Cl.⁴ C25D *11/06*

U.S. Cl. 204—37.6 **3 Claims**

1. A method for the surface treatment of anodized aluminum or aluminum alloys, which comprises treating aluminum or an aluminum alloy having an anodically oxidized film on the surface thereof according to the steps of:

(1) dipping the anodized aluminum or aluminum alloy in a first solution containing at least one salt at a concentration of about 10–50 g/l at a temperature of about 40°–65° C. for about 10–30 minutes, said salt being selected from calcium salts, magnesium salts, strontium salts, zinc salts, titanium salts and aluminum salts so as to cause the salts to permeate into the micropores of the anodized film to from a product therein; and

(2) subsequently dipping the thus-treated aluminum or aluminum alloy in a second solution at a temperature of about 30°–60° C. for about 10–30 minutes, said second solution containing one or more substances selected from the group consisting of sulfuric acid, phosphoric acid, nitric acid, hydrochloric acid, sulfamic acid, aliphatic acid, aliphatic sulfonic acid, aromatic acid, aromatic sulfonic acid, and the derivatives and substituted compounds of said organic acids, said substances reacting, with the product from said salt formed in the micropores of the anodically oxidized film as a result of said dipping step (1), to convert the thus-formed product into a white or grayish white compound, said substances being present in the second solution in a concentration of 1–50 g/l.

4,659,440

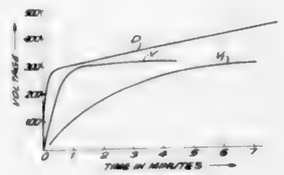
METHOD OF COATING ARTICLES OF ALUMINUM AND AN ELECTROLYTIC BATH THEREFOR

Rudolf Hradcovsky, 27 W. Beach St., Long Beach, N.Y. 11561

Filed Oct. 24, 1985, Ser. No. 790,937

Int. Cl.⁴ C25D *11/08*

U.S. Cl. 204—58 **76 Claims**



1. A method of coating aluminum and aluminum alloys predominating in aluminum with a hard, adherent, smooth, uniform and corrosion-resistant coating, which method comprises immersing the aluminum or its said alloy in an aqueous electrolytic solution comprising an alkali metal silicate, a peroxide, a water-soluble carboxylic group-containing organic acid and a water-soluble fluoride, said aluminum or its alloy serving as the anode, immersing a second metal in said electrolytic solution in which said second metal serves as the cathode, applying an electrical voltage potential between said electrodes, raising said voltage to about 300 volts within about 1 to about 5 seconds, and thereafter gradually raising said voltage to about 450 volts over a period of a few minutes until the desired coating thickness is formed.

4,659,441

PROCESS FOR PREPARING TETRAALKYL 1,1,2,2-ETHENE-TETRACARBOXYLATE

Stephen A. Noding, Brusly, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 17, 1986, Ser. No. 840,106

Int. Cl.⁴ C25B *3/00*

U.S. Cl. 204—59 R **9 Claims**

1. A process for the electrolytic preparation of tetramethyl 1,1,2,2-ethenecarboxylate from diethyl malonate, which process comprises:

(a) subjecting a liquid electrolysis medium containing diethyl malonate, an iodide ion electrolyte and methanol to an electrical current having a current density within the range of from about 15 mA/cm^2 to about 80 mA/cm^2; and

(b) thereafter recovering the tetramethyl 1,1,2,2-ethenecarboxylate produced in (a) from the remaining liquid electrolysis medium.

4,659,442

METHOD OF REDUCING THE LOSS OF CARBON FROM ANODES WHEN PRODUCING ALUMINUM BY ELECTROLYTIC SMELTING, AND AN INERT ANODE TOP FOR PERFORMING THE METHOD

Tormod Naterstad; Knut Bergli, both of Årdalstangen, and Jan Hurlen, Oslo, all of Norway, assignors to Årdal og Sunndal Verk AS, Oslo, Norway

Filed Jan. 23, 1985, Ser. No. 694,115

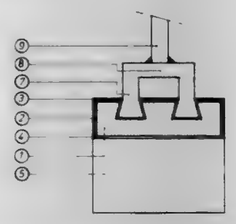
Int. Cl.⁴ C22D *3/12*; **B01K** *3/04*

U.S. Cl. 204—67 **16 Claims**

1. A prebaked anode assembly for use in the production of aluminum by electrolytic smelting with reduced carbon loss, said assembly comprising:

an anode rod fixed to a yoke having contact studs;

an inert anode top consisting of a carbon core covered with at least one protective layer, said contact studs being connected to an upper portion of said carbon core, and said carbon core having a lower surface free of said protective layer; and



an operative carbon anode glued to said lower surface of said carbon core by a layer of adhesive such that said operative carbon anode extends downwardly from said lower surface, whereby after substantial consumption of said operative carbon anode during use, the resultant remaining anode butt may be removed and a new operative carbon anode may be glued to said lower surface.

4,659,443

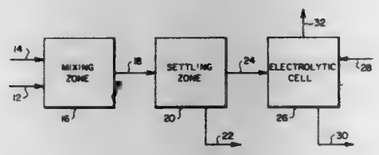
HALOGENATED AROMATIC COMPOUND REMOVAL AND DESTRUCTION PROCESS

Harlan J. Byker, Columbus, Ohio, assignor to PCB Sandpiper, Inc., Columbus, Ohio

Filed Aug. 22, 1984, Ser. No. 643,148

Int. Cl.⁴ C02F *1/46*

U.S. Cl. 204—131 **21 Claims**



1. A method for removing a halogenated aromatic compound from a liquid carrier contaminated therewith and for dehalogenating the halogenated aromatic compound removed from said liquid carrier, which comprises:

(a) mixing said carrier contaminated with said halogenated aromatic compound with a solvent to form a mixture in a mixing zone for extracting said halogenated aromatic compound into said solvent, said solvent being immiscible with said carrier, stable under electrolysis conditions, and stable to chlorine;

(b) withdrawing said mixture from said mixing zone and passing same into a settling zone for permitting said mixture to form a carrier layer diminished in halogenated aromatic compound content and a solvent layer enriched in halogenated aromatic compound content;

(c) withdrawing said solvent layer enriched in halogenated aromatic compound content from said settling zone and passing same into an electrolytic cell containing an anode and a cathode, said cell additionally containing an electrolyte soluble in said solvent and a source of hydrogen ions which does not include water; and

(d) impressing an electric potential between said anode and said cathode to cathodically dechlorinate said aromatic compound.

4,659,444

METHOD FOR PRODUCING CARBON FIBER REINFORCED CARBON MATERIAL

Kouichi Iwata, and Yukinori Yamashita, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 9, 1985, Ser. No. 753,049

Claims priority, application Japan, Jul. 10, 1984, 59-143844

Int. Cl.⁴ C25D *1/18*

U.S. Cl. 204—180.9 **8 Claims**

1. A method for producing carbon fiber reinforced carbon material comprising:

adhering self-sinterable carbonaceous fine powder to a resinous carrier which can be ionized in a liquid,

dispersing the carrier carrying the self-sinterable carbonaceous fine powder in a liquid,

placing a carbon fiber substrate and an opposite electrode in the formed dispersion,

applying DC voltage between the substrate and the opposite electrode to deposit the carrier carrying the self-sinterable carbonaceous fine powder on the substrate by electrophoresis,

heating and/or drying the carbon fiber self-sinterable carbonaceous fine powder-carrier complex, and

calcining the complex to form carbon fiber reinforced carbon material.

4,659,445

PROCESS FOR COATING HOLLOW BODIES, WHICH ARE OPEN ON ONE END

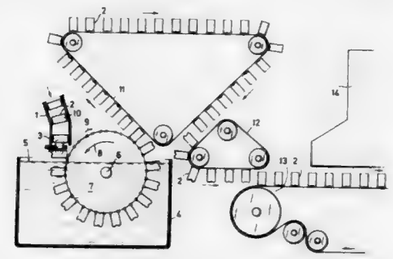
Wolfgang Bogdan; Hans-Peter Patzschke, both of Wuppertal, and Hans-Jürgen Schlinsog, Cremlingen, all of Fed. Rep. of Germany, assignors to Herberts Gesellschaft mit Beschrankter Haftung, Wuppertal, Fed. Rep. of Germany

Filed Jan. 31, 1984, Ser. No. 575,454

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304940

Int. Cl.⁴ C25D *13/00*

U.S. Cl. 204—181.1 **21 Claims**



1. Process for coating electrophoretically the insides and outsides of hollow bodies, open at one end, with lacquer comprising submerging each hollow body by dipping it with its opening pointing slightly downwards in a continuous operating cycle into an electrophoretic immersion bath, and while submerged in the bath coating electrophoretically the inside and outside of said hollow body by passing an electrical current through the electrophoretic immersion bath, and also while submerged in the bath moving said hollow body in such a way that its opening points upward, and subsequently, with its opening pointing slightly downwards, lifting said hollow body out of the bath, and then passing said hollow body through one or several drying kilns with an endless means of transportation.

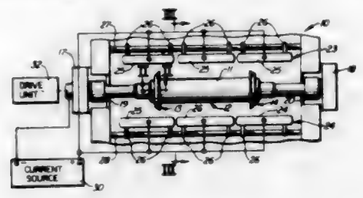
VOL 1077 ISS 3 AP 21 1987 UMI

4,659,446

APPARATUS FOR ELECTROPLATING PRINTING CYLINDERS

Donald A. Shafer, Kansas City; Ronald Walker, Lee's Summit, and Clarence Yeo, Raytown, all of Mo., assignors to Hallmark Cards, Inc., Kansas City, Mo.

Filed May 15, 1985, Ser. No. 734,563
Int. Cl.[4] C25D *17/00*
U.S. Cl. 204—212 **6 Claims**



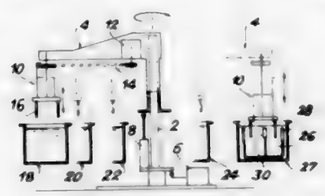
1. In apparatus for electroplating the cylindrical surface of a metal cylinder, support and connection means for support of said cylinder and for connection thereof to a negative current supply terminal, anode means for connection to a positive current supply terminal, container means for containing a plating bath and for support of said anode means and said support and connection means to at least partially imerse said anode means and said cylinder in the plating bath for electrodeposition of metal on the surface of said cylinder, and a shield of a non-conductive acid-resistant material affixed to said cylinder at one end thereof and extending radially outwardly therefrom and into the bath to reduce plating current concentrarion at said one end of said cylinder, said shield including a surface portion facing toward the opposite end of said cylinder and extending from an inner edge adjacent said cylinder surface at said one end of said cylinder to an outer edge located in a plane transverse to the axis of said cylinder and spaced outwardly at a uniform radial distance from said cylindrical surface, said surface portion of said shield and said outer edge having a configuration and being so positioned relative to said cylinder as to protect the end of said cylinder form being plated and as to permit deposition of a layer of metal of substantially uniform thickness and grain structure extending on said cylindrical surface from said one end thereof to positions thereof spaced a substantial distance from said end thereof.

4,659,447

APPARATUS AND INSTALLATION FOR PRODUCING AN ELECTROLYTIC METALLIC DEPOSIT OF CONSTANT THICKNESS

Michel Anzola, Bretigny/Orge; Daniel Lefevre, Longvilliers, and Patrick Massicot, Vanves, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 5, 1986, Ser. No. 836,478
Claims priority, application France, Mar. 12, 1985, 85 03590
Int. Cl.[4] C25D *17/06*
U.S. Cl. 204—212 **12 Claims**



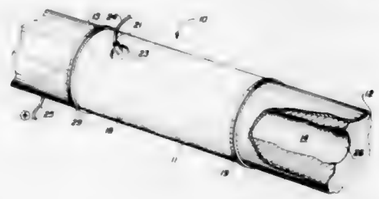
1. An apparatus for producing a metallic deposit of constant thickness on elongated metal parts of revolution, wherein said apparatus comprises a plate mounted in rotary manner and having a plurality of height-regulatable rods distributed over a circle, each rod having a bore able to receive a threaded end of a part to be treated, a cover mounted around each rod and sliding thereon between a top position and a bottom position and means for connecting each rod to the negative terminal of a direct current source.

4,659,448

SOLID STATE ELECTROCHEMICAL POLLUTION CONTROL DEVICE

Arnold Z. Gordon, Lyndhurst, Ohio, assignor to IGR Enterprises, Lyndhurst, Ohio

Filed Nov. 12, 1985, Ser. No. 796,879
Int. Cl.[4] C25B *9/00, 15/08*
U.S. Cl. 204—277 **29 Claims**



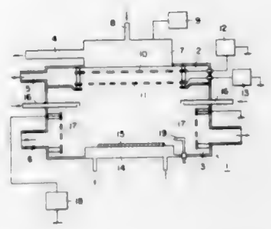
1. A solid electrochemical cell adapted to alter the composition of gas streams passing therethrough comprising: a porous, high surface area body, a high surface area, a porous solid electrolyte, the interior of which permits the passage of a gas stream therethrough, forming the body of the cell interior; a gas communicating passageway through the cell length; a first electronically conductive region and a second electronically conductive region, said regions disposed in electronically opposing segments of the cell; a first electrode connection member located in said first conductive region and a second opposing electrode connector member located within said second conductive region.

4,659,449

APPARATUS FOR CARRYING OUT DRY ETCHING

Toru Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 3, 1985, Ser. No. 804,043
Claims priority, application Japan, Dec. 6, 1984, 59-258134
Int. Cl.[4] C23F *1/02*
U.S. Cl. 204—298 **12 Claims**



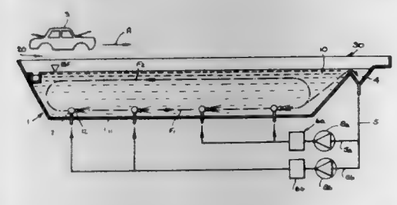
1. A dry etching apparatus comprising:
(a) a chamber for accompanying a sample to be etched;
(b) a suction unit for reducing a pressure within said chamber;
(c) a gas introducing unit for introducing at least one of a reactive gas and a nonreactive gas into said chamber;
(d) opposite electrodes disposed in said chamber across which is applied a high frequency voltage to excite said reactive gas for generating activated species allowing said sample to be etched due to chemical reaction;
(e) an ion irradiation unit for irradiating ions, said sample being etched due to physical reaction of an ion beam formed by said ions; and
(f) means for varying the energy and density of said ion beam, and the density of said activated species, to thereby control the relative amounts of said physical reaction and said chemical reaction.

4,659,450

APPARATUS FOR MAKING AN ELECTRO-IMMERSION FINISH BY FORCED CIRCULATION OF A LIQUID BATH IN A TANK

Arno Lauke, Münster, Fed. Rep. of Germany, assignor to BASF Farben & Fasern AG, Münster, Fed. Rep. of Germany

Division of Ser. No. 519,412, Aug. 1, 1983, Pat. No. 4,568,438.
This application Nov. 20, 1985, Ser. No. 799,914
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1982, 3228797; Aug. 18, 1982, 3230660
Int. Cl.[4] C25D *13/12, 13/24*
U.S. Cl. 204—299 EC **7 Claims**



1. An apparatus for providing an electro-immersion finish comprising:
an immersion tank for holding a liquid bath, said immersion tank having a first end, a second end opposite to and spaced a length from said first end, and a bottom;
a liquid bath disposed in said immersion tank, said liquid bath having a top surface;
means for immersing an electrically conductive substrate in said liquid bath near the first end of said immersion tank and for transporting said electrically conductive substrate immersed in said liquid bath along said length in a direction from said first end to said second end of said immersion tank;
electrode means disposed in said liquid bath for applying a voltage between said electrically conductive substrate and said electrode means;
means for removing bath liquid from said liquid bath located at said second end of said tank;
a plurality of nozzle means means each having a discharge opening located near the bottom of said immersion tank with said discharge openings oriented to discharge liquid in the direction of transport from said first end to said second end of said immersion tank;
said nozzle means being disposed spaced apart along said length parallel to said direction of transport from near said first end to near said second end of said immersion tank;
conduit means for placing said means for removing bath liquid and said nozzle means in fluid communication and for forcibly and continuously ejecting bath liquid through said discharge openings of said nozzle means;
whereby said bath liquid is forcibly and continuously circulated near the bottom of said immersion tank concurrent to the direction of transport of said electrically conductive substrate and along said length of said immersion tank; and
whereby said bath liquid is forcibly and continuously circulated near said top surface of said liquid bath counter to the direction of transport of said electrically conductive substrate and along the length of said immersion tank.

4,659,451

REFERENCE ELECTRODE FOR HIGH PRESSURE LIQUID

Isao Fujita, and Takashi Shirai, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Jul. 26, 1985, Ser. No. 759,435
Claims priority, application Japan, Aug. 30, 1984, 59-132485[U]
Int. Cl.[4] G01N *27/30*
U.S. Cl. 204—435 **1 Claim**



1. A reference electrode for use in testing a high temperature liquid at a high pressure, comprising:
an elongated small diameter internal liquid containing body having an internal liquid containing space therein and a liquid junction one side of which is exposed to the high pressure liquid to be tested and the other side of which is exposed to the internal liquid contained in said internal liquid containing space;
elongated reference electrode body surrounding a portion of the length of said internal liquid containing body remote from said liquid junction and defining an elongated pressure compensating space between said internal liquid containing body and the inside of said reference electrode boy, said pressure compensating space being open outwardly of said reference electrode body toward said liquid junction at a part thereof which is exposed to the high pressure liquid to be tested when the reference electrode is in position for normal use, said pressure compensating space receiving the high pressure liquid to be tested therein;
an elongated annular flexible bellows between said spaces and in liquid tight engagement with said internal liquid containing body for compensating for the pressure of the high pressure liquid to be tested on the internal liquid through said liquid junction; and
heat dissipating fins on the part of said reference electrode body around said bellows for radiating heat from high temperature liquid in said elongated pressure compensating space for preventing destruction of said bellows due to heat.

4,659,452

MULTI-STAGE HYDROFINING PROCESS

Jerald A. Howell, Bartlesville, Okla., assignor to Phillips Petroleum, Bartlesville, Okla.

Filed May 23, 1986, Ser. No. 866,424
Int. Cl.[4] C10G *65/10, 65/12*
U.S. Cl. 208—89 **18 Claims**

1. A hydrotreating process comprising the steps of:
(1) contacting (a) a substantially liquid hydrocarbon-containing feed stream, which also contains at least about 3 ppmw nickel, at least about 5 ppmw vanadium and at least about 0.5 weight-% Ramsbottom carbon residue, simultaneously with (b) a free hydrogen containing gas and (c) a fixed bed containing a solid, substantially unpromoted inorganic refractory material selected from the group consisting of alumina, silica, magnesia, metal silicates, metal aluminates, aluminosilicates, aluminum phosphate and mixtures thereof, under such contacting conditions as to produce an intermediate liquid product stream having a lower content of nickel and vanadium than said hydrocarbon-containing feed stream; and
(2) heating at least a portion of said intermediate liquid product stream in the presence of a free hydrogen containing gas under hydrovisbreaking conditions as to obtain a liquid product containing less Ramsbottom carbon residue and less hydrocarbon material boiling in excess of about

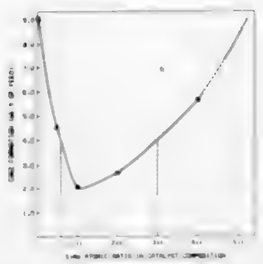
1000° F. at 1 atm than said intermediate liquid product stream obtained in step (1).

4,659,453

HYDROVISBREAKING OF OILS

Simon G. Kukes, and Jerald A. Howell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 5, 1986, Ser. No. 826,406
Int. Cl.[4] C10G *45/04*
U.S. Cl. 208—108 **17 Claims**



1. A process for hydrotreating hydrocarbon-containing feed streams comprising the step of contacting:

(A) a substantially liquid hydrocarbon-containing feed stream, which also contains Ramsbottom carbon residue in excess of about 0.1 weight-%, simultaneously with

(B) a free hydrogen-containing gas, and

(C) a substantially liquid catalyst composition prepared by mixing (a) liquid water, (b) ammonium sulfide and (c) at least one molybdenum and oxygen containing compound, wherein the amounts of (a), (b) and (c) are such that a substantially clear solution is obtained and the atomic ratio of S:Mo in composition (C) is in the range of from about 0.6:1 to about 3.0:1;

wherein said contacting is carried out under such conditions and with such amounts of (A), (B) and (C) as to obtain a liquid hydrocarbon-containing product having reduced amounts of Ramsbottom carbon residue and reduced amounts of hydrocarbons boiling in excess of 1000° F.

4,659,454

HYDROCRACKING OF HEAVY FEEDS PLUS LIGHT FRACTIONS WITH DISPERSED DUAL FUNCTION CATALYST

Philip Varghese, Voorhees, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 685,199, Dec. 21, 1984, abandoned.
This application Sep. 30, 1985, Ser. No. 782,187
The portion of the term of this patent subsequent to Aug. 5, 2003, has been disclaimed.
Int. Cl.[4] C10G *47/02*
U.S. Cl. 208—111 **18 Claims**

1. A process for hydrocracking a heavy natural or synthetic oil charge stock to lower boiling hydrocarbon products wherein at least about 75% of said heavy natural or synthetic oil charge stock boils above 400° C. and contains 5 to 50 wt % of a lighter fraction having a boiling point within the range of 150° C. to 400° C. and having a Conradson carbon content in excess of 1 weight percent based on the weight of said heavy oil, which comprises

(a) adding to said charge stock a thermally decomposable metal compound in an amount equivalent to about 10 to about 950 weight ppm, calculated as the elemental metal, based on said heavy oil feed, said metal being selected from the group of Groups IVB, VB, VIB, VIIB, and VIII of the Periodic Table of Elements and mixtures thereof;

(b) adding to said charge stock a separate acidic zeolite catalyst solid having an alpha value of at least 1 and a Constraint Index less than 1 and having no added active metal deposited thereon, in an amount equal to 0.1 to 10 weight percent of said feed;

(c) reacting said oil containing said catalyst and said acidic solid under hydrocracking conditions in a hydrocracking zone to convert at least 25 percent of said heavy oil to lighter materials;

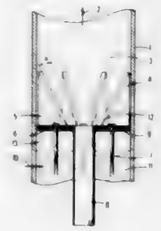
(d) recovering a hydrocracked oil as a product of the process.

4,659,455

PROCESS FOR WITHDRAWING CATALYST PARTICLES FROM A REACTION ZONE

Didier Dall, Lyons; Jean-Paul Euzen, Dardilly; Rémy Patoux, Oullins, and Pierre Renard, Saint Nom la Breteche, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 7, 1985, Ser. No. 699,376
Claims priority, application France, Feb. 7, 1984, 84 02035
Int. Cl.[4] C10B *31/02, 31/12*
U.S. Cl. 208—152 **5 Claims**



1. A process for progressively withdrawing catalyst from a catalyst bed contained in a substantially vertical, elongate and cylindrical reaction zone during the catalytic treatment therein of a fluid charge, said catalytic treatment comprising:

(a) progressively circulating the catalyst downwardly through the reaction zone, counter-currently with said charge, while maintaining said catalyst in the reaction zone by support means of a shape adapted to correspond substantially to a section of the reaction zone, said support means being provided at the lower part of the reaction zone,

(b) periodically or continually fluidizing the lower part of the catalyst bed and progressively discharging the catalyst from the reaction zone through at least one withdrawal duct extending from the lower part of the reaction zone, and

(c) upwardly circulating the fluid charge formed of a liquid and a gas, by first introducing the major part of the charge in the lower part of the reaction zone, by injecting the major part of the gaseous phase of the charge into the catalyst bed through a plurality of holes provided in said support means and by introducing a major part of the liquid phase of the charge into the catalyst bed through a plurality of substantially vertical pipes, the lower end of each pipe dipping from the bottom of the reaction zone into said liquid charge and the upper end of each pipe opening above said support means, the process for withdrawing the catalyst particles comprising:

moving at least a portion of the catalyst said particles through at least one flared zone shaped as an inverted cone or a pyramid, whose vertical axis substantially coincides with the axis of a substantially vertical withdrawing duct, said flared zone being discontinuous and

formed of a plurality of elongate and narrow members each shaped as a substantially triangular or trapezoidal strip, the axes of the strips of a given flared zone substantially converging towards the substantially vertical axis of a given withdrawing duct, so as to induce, inside the one or more flared zones, the motion of the catalyst particles towards at least one of said withdrawing ducts, the angle (α) and the angle (α) being about from 30°-70°, said angle α being defined as the angle of the axis of one of said withdrawing ducts with either (i) a generatrix of the cone frustrum when the flared zone is frustroconical or (ii) with one edge of the pyramid when the flared zone is pyramidal,

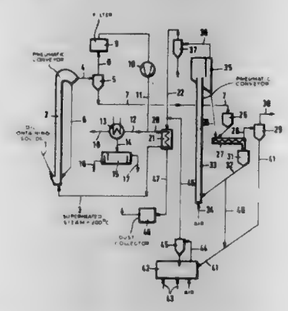
in order to orient the assembly of catalyst particles towards a withdrawing duct and to move towards a withdrawing duct the catalyst particles which have passed below said flared zone, between said strips, and thus to prevent accumulations of particles which might be formed between said support means and said strips, fluidizing the catalyst particles in the lower part of the reaction zone and above the support means by injecting through said catalyst bed support means the liquid and gaseous charge, the pressure drop for the gases, through the support means ranging from 0.1 to 1.5 kgf/cm^2, each of said ducts for introducing the liquid phase being substantially discontinuous over at least a portion of said duct dipping into the liquid at the bottom of the reactor.

4,659,456

PROCESS OF DRYING AND HEATING OIL-CONTAINING SOLIDS

Roland Rammler, Konigstein; Hans J. Weiss; Ingo Dreher, both of Oberursel; Jorg Schmalfeld, Friedrichsdorf, and Karl-Heinz Bietz, Friedberg, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Ag, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 625,949, Jun. 29, 1984, abandoned.
This application Sep. 26, 1985, Ser. No. 781,304
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323770
Int. Cl.[4] C10G *1/02*; C10B *53/06*
U.S. Cl. 208—407 **10 Claims**



1. A process for recovering hydrocarbons from a flowable oil-containing solid consisting essentially of tar sand, oil sand or diatomaceous earth, said process comprising the steps of:

(a) directly contacting said solid in a drying zone with superheated steam fed to said zone at a temperature of at least 200° C. to produce dried and heated solids at a temperature of 50° C. to 250° C. and a mixed vapor phase;

(b) separately withdrawing said dried and heated solids and said mixed vapor phase from said drying zone;

(c) separating a portion of said mixed vapor phase from a remainder of said mixed vapor phase;

(d) heating, at least in part by indirect heat exchange with a hot flue gas, said remainder of said mixed vapor phase to a temperature of at least 200° C. and recycling the thus-heated remainder of said mixed vapor phase substantially free from solids to said drying zone of step (a) as said superheated steam thereof;

(e) cooling said portion of said mixed vapor phase separated in step (c) in a cooling zone to produce a hydrocarbon-containing aqueous condensate and leaving a small amount of permanent gas;

(f) recovering liquid hydrocarbons from the condensate produced in step (e) in a separation zone; and

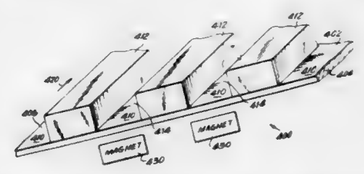
(g) heating said dried and heated solids produced in step (a) to a temperature of 400° C. to 600° C. to distill off a gaseous and vaporous product which is condensed to form a hydrocarbon product, and to form a fine-grain solid residue containing carbon.

4,659,457

GRAVITY-MAGNETIC ORE SEPARATORS AND METHODS

Edward Martinez, 1 Alpine Ct., Huntington Ct., Belle Mead, N.J. 08502

Division of Ser. No. 482,040, Apr. 4, 1983, Pat. No. 4,565,624. This application Sep. 30, 1985, Ser. No. 781,953
Int. Cl.[4] B03C *1/06*
U.S. Cl. 209—40 **10 Claims**



1. An apparatus for separating magnetic or weakly magnetic material from non-magnetic material having a lower specific gravity than said magnetic or weakly magnetic material, said magnetic or weakly magnetic material and said non-magnetic material being combined in a mixture with a non-magnetic liquid, said apparatus being effective for separating magnetic or weakly magnetic particles, said apparatus comprising:

a generally planar surface having a feed end and a tailing end, said surface sloping downward from said feed end to said tailing end with said mixture flowing over said surface from said feed end to said tailing end;

a plurality of riffles extending along said surface and forming a plurality of troughs for trapping said high specific gravity material for effecting at least a partial gravity separation of said high specific gravity magnetic or weakly magnetic material from said non-magnetic material as said mixture flows over said surface;

means for applying a magnetic force beneath said surface for augmenting said gravity separation with magnetic separation by attracting said magnetic or weakly magnetic material toward said surface for further aiding said particles to become trapped within said troughs, there being no other forces applied to said magnetic or weakly magnetic material in opposition to said magnetic and gravity forces;

means for intermittently reducing said magnetic force to prevent the buildup of said magnetic or weakly magnetic material on said surface by permitting motion of said magnetic or weakly magnetic material;

means for reciprocating said surface generally parallel to said riffles for discharging said trapped magnetic or weakly magnetic material from said troughs, the lower specific gravity non-magnetic material flowing over said riffles for discharge at a location remote from the discharge of said magnetic or weakly magnetic material.

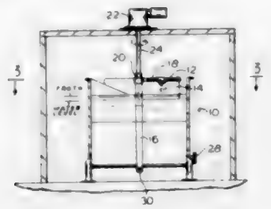
VOL 1077 ISS 3 AP 21 1987 UMI

4,659,458

APPARATUS AND METHOD FOR FROTH FLOTATION EMPLOYING ROTATABLY MOUNTED SPRAYING AND SKIMMING MEANS

Ti-Hua Chin, Voorhees, and Robert F. Turner, Jr., Turnersville, both of N.J., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 19, 1985, Ser. No. 810,865
Int. Cl.[4] B03D *1/02, 1/14*
U.S. Cl. 209—164 **10 Claims**



8. A method for froth flotation separation of the components of a slurry having particulate matter therein, said method comprising the steps of:

(i) introducing a slurry containing particulate matter to at least one spray nozzle mounted above the liquid level of a froth flotation cell;

(ii) circumferentially rotating said at least one spray nozzle in a given direction about a vertical axis defined by said cell;

(iii) spraying said slurry onto the surface of said liquid as said at least one nozzle is rotated thereby creating a froth on the surface of said liquid contained in said flotation cell; and

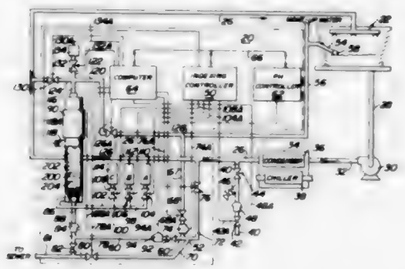
(iv) skimming said froth created by said at least one rotating spray nozzle from said liquid surface by circumferentially rotating a skimmer means in said given direction ahead of said at least one rotating spray nozzle in said given direction, whereby there is provided a continual time interval between froth creation and froth skimming.

4,659,459

AUTOMATED SYSTEMS FOR INTRODUCING CHEMICALS INTO WATER OR OTHER LIQUID TREATMENT SYSTEMS

Richard P. O'Leary, Wayne, and Davie B. Lawhon, Bensalem, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jul. 18, 1985, Ser. No. 756,524
Int. Cl.[4] B01J *14/00*
U.S. Cl. 210—87 **21 Claims**



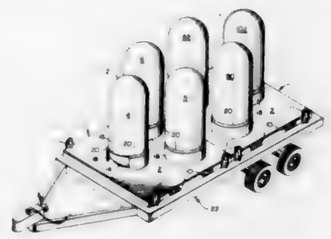
In a systen containing a first fluid and into which a second fluid is to be introduced to treat said first fluid, each of said fluids having a respective first parameter, with the value of the first parameter of said second fluid being different from the value of the first parameter of said first fluid, comprising apparatus for introducing said second fluid into said system and for determining the flow rate at which said second fluid is introduced into said system for introduction into said first fluid, said apparatus comprising a passageway coupled to said system for carrying a portion of said first fluid therethrough and fluid introduction means connected therewith for introducing said second fluid into said passageway at a first location, said fluid introduction means effecting the production of an interface between said first and second fluids in said passageway, with said fluids immediately adjacent said interface not being mixed appreciably, said passageway being connected to said system and having a known volumetric capacity measured from said first location to a second location located in said passageway downstream of said first location, said passageway being constructed so that said first and second fluids and said interface therebetween flow past said second location, detecting means located at said second location for monitoring said first parameter of the fluids flowing thereby to sense the presence of said second fluid by detecting the first parameter of said second fluid adjacent said interface, and means responsive to said detecting means for determining the velocity of said second fluid flowing through said passageway and for calculating the flow rate of said second fluid based on said velocity and said known volumetric capacity of said passageway.

4,659,460

MOBILE FLUID PURIFICATION UNIT

Richard S. Muller, Richmond, and Richard C. Dickerson, Virginia Beach, both of Va., assignors to Ecolochem, Inc., Norfolk, Va.

Continuation of Ser. No. 613,766, May 24, 1984, abandoned, which is a continuation of Ser. No. 485,479, Apr. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 268,382, May 29, 1981, Pat. No. 4,383,920. This application Mar. 25, 1985, Ser. No. 715,581
Int. Cl.[4] C02F *9/00*
U.S. Cl. 210—93 **13 Claims**



1. A mobile liquid purification unit comprising:

(1) a skid forming a movable platform;

(2) a set of three or more liquid purification treatment tanks each having a lower substantially rounded head including a circumferential bead adjacent one end thereof at a location above said lower head and mounted on said skid by a sleeve for each tank mounted on the skid, the bead of each tank engaging an upper rim surface at respective sleeve to rest thereon and joined thereto by a bonding agent for stably securing each of said tanks to said sleeve, each of said treatment tanks containing a liquid purification treatment material, each of said treatment tanks further having a liquid inlet, a liquid outlet, a purification treatment material inlet, and a purification treatment material outlet;

(3) a unit inlet means adapted to be connected to a source of raw liquid to be purified;

(4) a unit outlet means for delivering purified liquid;

(5) liquid conduit means and valve means for conveying said raw liquid from said unit inlet means to said treatment tanks and between said treatment tanks and from said treatment tanks to said unit outlet means, said conduit means and said valve means being selectively connected to said treatment tanks whereby said treatment tanks are capable of being operated (a) in series, (b) in parallel, and (c) in a combination of series and parallel;

(6) measuring means for monitoring the quality of the purified liquid outlet; and

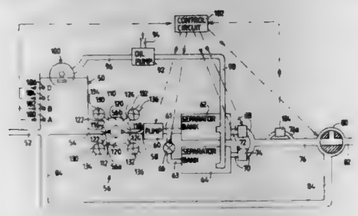
(7) said skid being structurally adapted for novement with said tanks secured thereon to said source of raw liquid.

4,659,461

LIQUID SEPARATING APPARATUS

Noel Carroll, Sherbrooke Road, Sherbrooke 3789, Victoria, Australia

PCT No. PCT/AU84/00098, § 371 Date Jan. 28, 1985, § 102(e) Date Jan. 28, 1985, PCT Pub. No. WO84/04703, PCT Pub. Date Dec. 6, 1984
PCT Filed Jun. 1, 1984, Ser. No. 702,239
Claims priority, application Australia, Jun. 1, 1983, PF9645
Int. Cl.[4] B04C *3/04*
U.S. Cl. 210—104 **1 Claim**



1. Liquid separating apparatus comprising a receptacle for liquid to be separated, a bank of cyclone separators, coupling means interconnecting said bank of cyclone separators with said receptacle, for flow therethrough of said liquid from the receptacle through the separators, for separating the liquid into components of differing densities, and regulating means for effecting selective variation of the delivery rate through said bank of separators in accordance with the quantity of liquid in said receptacle, said regulating means comprising:

(a) valve means in said coupling means and operable to vary the number of said separators into which flow from the receptacle through the bank of separators is effected;

(b) selectively variable choke means positioned to vary the flow of at least one of the separated components from at least one separator in said bank of separators;

(c) controllable pump means in said coupling means from the receptacle to the bank of separators, said pump means being controllable to vary the flow rate through said coupling means;

(d) at least first, second, third and fourth level sensors disposed to detect conditions where said liquid level is at least equal to respective progressively higher first, second, third and fourth levels in said receptacle, and;

(e) control means operatively coupled to said sensors, pump means, valve means and choke means, said control means being effective in use to control said pump means, choke means and valve means whereby

(i) when said liquid level is above said first level, but below said second level, the pump means is operated at a first speed whilst said valve means is controlled to block flow to at least a first separator included in said bank of separators and said choke means is conditioned to a first condition at which it is effective to provide a first relatively great constriction of flow from the bank separators,

(ii) when said liquid level is between said second and third levels, the pump is operated at a second speed greater than said first speed, whilst said valve means and choke means are conditioned substantially in the same condition as when the liquid level is between said first and second levels

(iii) when the liquid level is between said third and fourth levels, the pump means is operated at a third speed greater than said second speed, said valve means is conditioned so that said liquid is delivered to a number of said separators greater than is the case where said liquid level is between said first and third levels and said choke means is conditioned to said first condition thereof and,

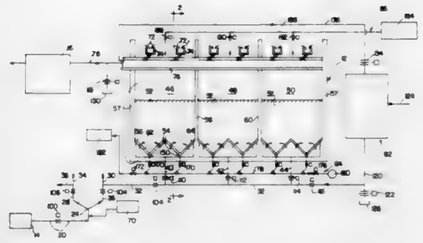
(iv) when said liquid level is above said fourth level, the pump means is operated at said third speed, said valve means is conditioned to substantially the same condition as when said liquid level is between third and fourth levels and said choke means is conditioned to a second condition at which it is effective to provide less restriction to flow from said at least one separator than when the choke means is in said first condition thereof.

4,659,462

APPARATUS FOR PRETREATMENT OF WATER USING A BED OF GRANULAR ACTIVATED CARBON

Robert L. Chapman, Redding, Calif., assignor to CH_2M Hill, Inc., Corvallis, Oreg.

Continuation of Ser. No. 605,060, Apr. 30, 1984, abandoned. This application Oct. 24, 1985, Ser. No. 790,652
Int. Cl.[4] C02F *1/28, 1/52*
U.S. Cl. 210—202 **2 Claims**



1. A water treatment plant comprising:

water pretreatment means having a pretreatment inlet for receiving pretreated water and a pretreatment outlet for delivery of water from the pretreatment means, said water pretreatment means defining a pretreatment water flow path between the pretreatment inlet and the pretreatment outlet and including at least one granular activated carbon bed means in said pretreatment flow path, said carbon bed means comprising carbon granules greater than or equal to the size of particles resulting from screening carbon through a 50 mesh screen, and less than or equal to the size of particles resulting from screening carbon through a 4 mesh screen, whereby said carbon bed means performs a dual function as an adsorption zone and flocculating zone;

said pretreatment means further including means for adding coagulating chemicals to said water at a location upstream of the carbon bed means and for delivering the coagulating chemicals and water to the carbon bed means;

water delivery means for delivering pretreated water upwardly into and through said carbon bed means at a flow rate sufficient to expand the bed up to approximately 30%, said water delivery means including means for adjusting and controlling the flow rate of water to said carbon bed means to control said carbon bed expansion and the degree of solids collection by said carbon bed means;

downstream water treatment means including a first inlet

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coupled to the water pretreatment outlet for receiving pretreated water from said water pretreatment means and a first outlet for delivery of treated water from said downstream water treatment means, said downstream water treatment means defining a first water flow path between said first inlet and first outlet, said downstream water treatment means including at least one filter means in said first water flow path for filtering the water received from said water pretreatment means;

cleaning means for delivering cleaning water to the pretreatment inlet of the carbon bed means at a rate which expands the carbon bed in an amount sufficient to flush collected solids from the bed, said cleaning means further comprising cleaning water supply means for supplying cleaning water which has been pretreated by passage through a carbon bed means, and means for diverting cleaning water and solids at the pretreatment outlet away from the first inlet of the downstream treatment means;

backwash cleaning means for passing water in a countercurrent direction through the pretreatment water flow path, said backwash cleaning means comprising means for supplying backwash cleaning water which has been pretreated by passage through a carbon bed means, said backwash cleaning means also including means for delivery of solids containing backwash cleaning water which has passed through the carbon bed means to the first inlet of the downstream water treatment means; and

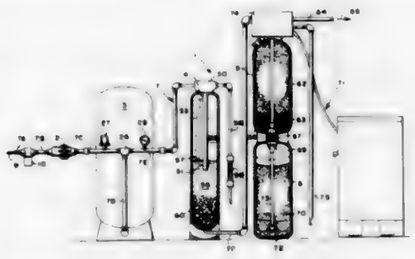
means for selectively removing contaminated carbon from the lower portion of the carbon bed means and for introducing fresh carbon at the top of the carbon bed means.

4,659,463

SYSTEM TO REMOVE CONTAMINANTS FROM WATER

James W. Chandler, and William D. Chandler, both of Ashland, Ohio, assignors to Water Soft, Inc., Ashland, Ohio

Filed Oct. 10, 1984, Ser. No. 659,327
Int. Cl.[4] C02F *1/74*; B01D *15/00*
U.S. Cl. 210—202 **22 Claims**



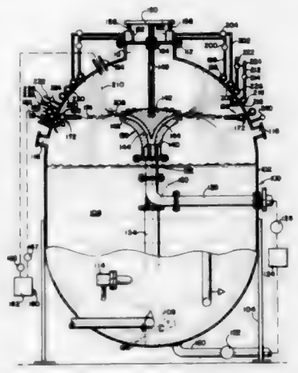
1. A system for removing contaminants from water under pressure comprising means to entrain sufficient air in the water substantially to oxidize contaminants contained in the water; first water supply line means fluidically connecting the means to entrain with an aeration and precipitation means; the aeration and precipitation means including an aeration tank having an inlet to spray the air laden water from the means to entrain into the pressurized air head to further expose the air laden water to oxygen, vent means in the air tank intermittently to remove excess air and any residual gases from the pressurized air head in the aeration tank, rocks in the bottom of the aeration tank having a surface layer thereon formed by the water in the water column depositing oxidized contaminants as a precipitate layer during movement through the rocks and a first outlet adjacent the bottom of the aeration tank, the water and any contaminants contained therein after passing through the rocks leaving the aeration tank through the first outlet; second water line means fluidically connecting the first outlet of the aeration and precipitation means with a filter tank; the filter tank having an opening, a second outlet and a filter bed therein, the water and any contaminants therein from the aeration and precipitation means sequentially passing through the opening, filter bed and second outlet of the filter tank finally to filter the water for selective delivery to service.

4,659,464

APPARATUS FOR DISPERSING SLUDGE WITH GAS IMPINGEMENT

Charles A. Long, Jr., Birmingham, Ala., assignor to Long Enterprises, Inc., Birmingham, Ala.

Continuation-in-part of Ser. No. 650,960, Sep. 14, 1984, Pat. No. 4,582,612, which is a continuation-in-part of Ser. No. 560,058, Dec. 9, 1983, Pat. No. 4,487,699. This application Jan. 30, 1986, Ser. No. 823,899
Int. Cl.[4] C02F *1/78*
U.S. Cl. 210—221.1 **9 Claims**



1. In an apparatus for use in a sewage sludge treatment system comprising means for enhancing the surface area of the sludge to be treated and the time of interaction of finely divided sludge particles with oxygen-rich atmosphere including a vessel including sludge inlet means for conveying sludge to the vessel to be accumulated in a lower portion of the vessel, a sludge delivery means having a discharge end for delivering the sludge from the lower portion to an upper portion of the vessel, oxygen inlet means for delivering oxygen to the upper portion of the vessel, sludge outlet means for removing sludge from the lower portion of the vessel, and gas outlet means for removing gas from the upper portion of the vessel, first sludge dispersing means and a plurality of second sludge dispersing means located within the upper portion of the vessel, the first sludge dispersing means being generally axially aligned with and attached to the discharge end of the sludge delivery means, the first sludge dispersing means including a plurality of channeling means for channeling the sludge from the sludge delivery means through outlets in the first sludge dispersing means toward the second sludge dispersing means, each of the second sludge dispersing means being generally aligned with a channeling means of the first sludge dispersing means, wherein the improvement comprises:

a recycling means for recycling the gas from the upper portion of the vessel through a pumping means to pressurize the gas and into the second dispersing means,

the second dispersing means comprising means for enabling a stream of pressurized gas from a plurality of gas dispersing nozzle assemblies to impinge upon a major portion of the sludge being channeled from the first sludge dispersing means and to divide and disperse the sludge particles within the upper portion of the vessel to become oxygenated as they interact with oxygen in the upper portion of the vessel, and to enable the oxygenated particles to fall to and to be collected in the lower portion of the vessel, each nozzle assembly directing a stream of the pressurized gas toward one outlet of the channeling means of the first dispersing means,

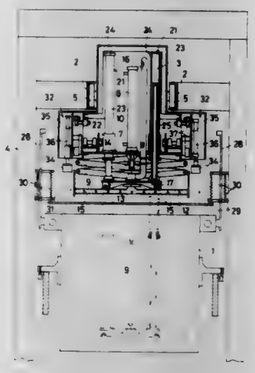
the outlets of the first sludge dispersing means being arranged radially about the first sludge dispersing means, the nozzle assemblies being arranged radially about the first sludge dispersing means and along an inner wall of the vessel in generally horizontal alignment with the outlets.

4,659,465

WASHING APPARATUS FOR FILTER PRESSES

Mitsugi Makinoda, Kobe, Japan, assignor to Kurita Machinery Manufacturing Company, Osaka, Japan

Filed Aug. 7, 1985, Ser. No. 763,215
Claims priority, application Japan, Aug. 17, 1984, 59-125472[U]
Int. Cl.[4] B01D *25/32, 33/00*
U.S. Cl. 210—225 **7 Claims**



1. A washing apparatus for filter presses comprising:

a plurality of filter plates supported in stacked relationship for relative opening and closing movement of adjacent filter plates;

guide members mounted above said filter plates;

a carriage movably mounted on said guide members for movement in the direction of said opening and closing of said filter plates;

a pantograph device having an upper link overlap region pivotally connected to said carriage, a lower link overlap region and an intermediate pivot point between said upper and lower link overlap regions;

a washing liquid spraying pipe mounted on said lower link overlap region;

a pressure medium operated actuator mounted on said carriage operatively connected to said pantograph device at said intermediate pivot point so that operation of said actuator vertically advances and retracts said pantograph device to respectively lower and raise said spraying pipe;

a plurality of spraying nozzles operatively mounted in spaced relation on said spraying pipe in the direction of the width of said filter plates; and

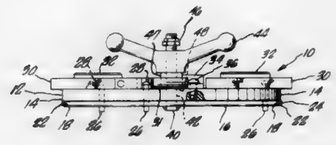
a flexible washing liquid conduit movably supported on said carriage and having one end thereof connected to said spraying pipe and the other end connectable to a source of washing liquid so that said one end can move with said spraying pipe to feed washing liquid to said pipe to spray through said nozzles as said pipe is lowered and raised.

4,659,466

QUICK RELEASE COVER ASSEMBLY FOR A LIQUID FILTER HOUSING

Richard S. Farr, Los Angeles, and Myron G. Rasmussen, Fullerton, both of Calif., assignors to Farr Company, El Segundo, Calif.

Filed Mar. 1, 1985, Ser. No. 707,160
Int. Cl.[4] B10D *35/30*
U.S. Cl. 210—238 **16 Claims**



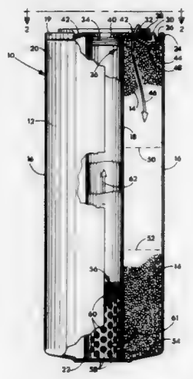
1. A cover assembly for a liquid filter housing comprising an outer cover plate disposed under and carried by said outer cover plate, said inner cover plate having a diameter less than said outer cover plate and defining a beveled side wall spaced from the under side of said outer cover plate so as to define a groove therebetween, an annular sealing member disposed in said groove between said outer and inner cover plates and about a portion of said beveled side wall, a plurality of locking dogs secured to said outer cover plate and extending radially therefrom and being adapted to engage said filter housing, manually operable means disposed interiorly of said sealing member for drawing together said cover plates about said sealing member to press said sealing member outwardly therefrom whereby upon disposing said cover assembly on said filter housing such that said locking dogs engage said housing and drawing together said plates, said sealing member abuts said filter housing and forms a liquid tight seal between said filter housing and said cover assembly.

4,659,467

SPIN CONNECTION ADSORPTION FILTER

Michael R. Spearman, 1030 W. Larpenteur Ave., St. Paul, Minn. 55113

Filed Jul. 15, 1985, Ser. No. 754,998
Int. Cl.[4] B01D *15/00, 53/04*
U.S. Cl. 210—282 **1 Claim**



1. A freely orientable, readily attachable spin-on gas or liquid filter comprising:

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(a) a tank that comprises an elongated cylindrical shell that has a closed end and an open end;
(b) a fluid communication means comprising first and second ports located at said open end wherein said first port is circular and is located centrally and said second port is concentric with and surrounds said first port, said second port being formed by a plurality of apertures located along the circumference of a circle that is concentric with said first port;
(c) an elongated cylindrical core having a length substantially equal to the length of said shell and having first and second ends wherein said first end is adjacent said closed end of said shell and includes a multitude of apertures in communication with the space between said core and said shell and said second end is an alignment with said first port, said core constructed to provide a completely closed fluid channel from its second end to said multitude of apertures in said first end, said cylindrical core centrally supported by material located in said tank;
(d) a material that removes impurities from a fluid by adsorption in accordance with the mass transfer zone principle, said material filling said tank in the space between said shell and said core from substantially said open end to substantially said closed end of said core, said material operable for filtering impurities in either flow direction, said shell having a length that is at least twice as long as the length of the mass transfer zone of said material for the intended application of said material and said multitude of apertures extends along said first end for a distance that is less than the length of the mass transfer zone; and
(e) an annular cap that seals off said open end of said shell except for said first and second ports, said circular first port formed in said cap and female threads formed therein so that said filter is readily attachable to an outer pipe, said cap comprising a first and second ridge concentric with said first port wherein said first ridge and said second ridge encircles both said first port and said second port and an annular sealing gasket positioned between said ridges to thereby seal said second port, said annular cap and said cylindrical shell joined together by an annular crimped lip to thereby hold said material in said cylindrical shell.

4,659,468

FILTERING COLUMN FOR FILTERING HEAVY FUELS UNDER PRESSURE AT HIGH TEMPERATURE

Guy Aillet, Franconville, and Jacques Ecabert, Montmorency, both of France, assignors to Societe D'Exploitation des Etablissements Rellumix, Paris, France

Filed Sep. 28, 1982, Ser. No. 425,618
Int. Cl.⁴ B07B *23/00*
U.S. Cl. 210—352 **8 Claims**



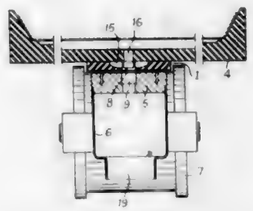
1. A filtering column structure for filtering heavy fuels under pressure and at high temperature, said column structure comprising a perforated hollow metal tubular body having a longitudinal axis, a stack of metal rings disposed around the hollow body and having deformations which form spacing means and define therebetween filtering interstices, said rings having an inside diameter exceeding the outside diameter of the hollow body so as to define between an inner periphery of each ring and an outer periphery of said hollow body a limited radial clearance which allows radial play and deformation only within the elastic limit of each individual ring, and retaining means for axially retaining the stack of rings on said hollow body in an undetachable manner with axial clearances allowing axial play between adjacent rings exceeding said radial clearance, said retaining means comprising a first element mounted on the tubular body in axially fixed relation to the tubular body and a second element axially movably mounted on the tubular body, and means permanently retaining said second element on the tubular body and allowing said axial movability thereby insuring said axial play.

4,659,469

TIGHTNESS DEVICE BETWEEN THE CONVEYOR BELT AND THE COLLECTING BOX WITH ONE OR MORE COMPARTMENTS OF A VACUUM BELT FILTER

Guy Gaudfrin, Allée du Bec de Canard, Golf, 78860 Saint Nom La Breteche, France

Filed Nov. 7, 1985, Ser. No. 795,925
Claims priority, application France, Nov. 23, 1984, 84 17916
Int. Cl.⁴ B01D *33/14*
U.S. Cl. 210—400 **12 Claims**



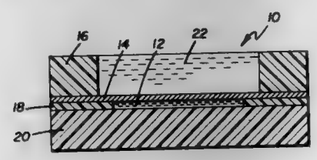
1. In an endless belt filter system comprising an endless conveyor belt wound over two drums having respective horizontal axes in spaced-apart relationship, with one of said drums being rotatably driven, said belt having a substantially U-shaped cross-section and being formed with transverse channels across a substantially horizontal base of said U-shaped cross-section and with discharge holes arranged perpendicularly to said base and being located substantially at the center of each of said channels, a fixed collecting vacuum box having a longitudinal upper opening and being located below an upper portion of said conveyor belt and extending over part of the length of said upper portion, and a tightness device interposed between said conveyor belt and said fixed vacuum box, the improvement wherein said tightness device comprises:
a single endless friction belt, separate from the conveyor belt and interposed between the conveyor belt and the vacuum box, said friction belt having an upper face in contact with a surface of the conveyor belt so as to be driven by the conveyor belt and a lower face for sliding over said vacuum box;
a guide means for maintaining said friction belt in substantial alignment with said vacuum box; and
said endless friction belt being provided with cavities and associated apertures in the lower face of said cavities in registry with the upper opening of the vacuum box, said cavities at the upper face of the friction belt having a transverse length relative to the width of said endless friction belt greater than a width of said discharge holes in the conveyor belt.

4,659,470

THERMAL CASTING PROCESS FOR THE PREPARATION OF ANISOTROPIC MEMBRANES AND THE RESULTANT MEMBRANE

Gerard T. M. Caneba, and David S. Soong, both of Albany, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 10, 1985, Ser. No. 753,515
Int. Cl.⁴ C08J *9/28, 9/34;* **B29C** *39/38*
U.S. Cl. 210—500.21 **17 Claims**



1. A method for making an anisotropic polymer membrane, comprising the steps of:
providing a binary solution at an initial temperature having a predetermined concentration of a polymeric component dissolved in a solvent;
casing said binary solution onto a substrate so that a predetermined shape is formed, said shape having a first face, an oppositely disposed second face, and an interior therebetween; and,
reducing said initial temperature adjacent said first face at a first cooling rate, while reducing said initial temperature at said second face at a second cooling rate, said second cooling rate being slower than said first cooling rate, so that as said initial temperature at said first face is reduced, said interior develops a graded pore size distribution, with pores decreasing in size from said second face toward said first face.

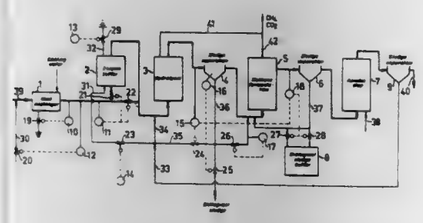
16. An anisotropic polymeric membrane prepared by the method of claim 1.

4,659,471

METHOD OF CONTROLLING AN ANAEROBIC TREATMENT PROCESS

Nils L. Molin, Lund; Thomas G. Welander, Malmö ; Bengt G. Hansson, Hörby; Per-Erik Andersson, and Göran E. Anaergren, both of Sundsvall, all of Sweden, assignors to Purac Aktiebolag, Lund, Sweden

Filed Aug. 6, 1984, Ser. No. 637,817
Claims priority, application Sweden, Aug. 10, 1983, 8304355
Int. Cl.⁴ C02F *3/28, 11/04;* **C12P** *5/02*
U.S. Cl. 210—603 **7 Claims**



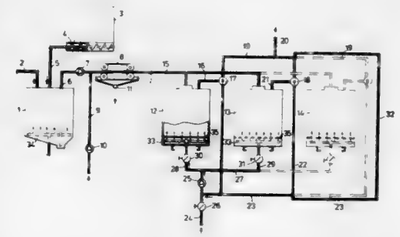
1. A method of controlling an anerobic treatment process for the treatment of wastewater from the manufacture of peroxide bleached mechanical or chemi-mechanical pulp, comprising the steps of:
hydrolyzing the wastewater;
carrying out a methane fermentation of the wastewater;
aerobically treating the wastewater;
carrying out at least two sludge separations including separating a first sludge from the wastewater after the hydrolyzing step and separating a second sludge from the wastewater after the aerobic treating step;
partially recycling an amount of said sludge from at least said first of said at least two sludge separation steps to the hydrolyzing step; and
continuously measuring and controlling the redox potential of outgoing water from the hydrolyzing step to a value between −400 and −260 mV measured with a platina electrode and with a calomel electrode as reference electrode, the controlling being conducted by regulating the amount of added sludge from the at least two sludge separations or by passing ingoing wastewater directly to the aerobic treating step.

4,659,472

METHOD FOR PRODUCING A COMPOSTABLE MIXTURE OF SLUDGE FROM SEWAGE PURIFICATION PLANTS

Tore H. Nordlund, Torshälla, and Lars E. Ljungkvist, Upsala, both of Sweden, assignors to Purac AB, Lund, Sweden

Filed Dec. 27, 1984, Ser. No. 686,910
Claims priority, application Sweden, Jan. 4, 1984, 8400043
Int. Cl.⁴ C02F *11/14*
U.S. Cl. 210—609 **7 Claims**



1. A method for composting a sludge obtained from a sewage purification plant, which comprises the steps of
(a) mixing said sludge in its undewatered fluid state (1) with 10–20% of a water staurated finely divided carbon-carrier selected from the group of sawdust, peat and bark and (2) with an effective amount of a polyelectrolyte to aid in dewatering said sludge,
(b) injecting sufficient air into said sludge and said carbon-carrier during said mixing operation to initiate aerobic decomposition of said sludge,
(c) mechanically dewatering the resultant mixture to a dry substance content of at least about 28 percent by weight, and
(d) subjecting the dewatering mixture resulting from step (c) to an aerobic composting process in a plurality of transportable containers, including a first container and a second container, producing a partially composted material and exhaust air containing microorganisms; and recycling at least a portion of the exhaust air from said second container to said first container to initiate formation of enzymes in the composted material.

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4,659,473

PROCESS FOR MAINTAINING A CHARGE OF A MICROPOROUS MOLDED ARTICLE

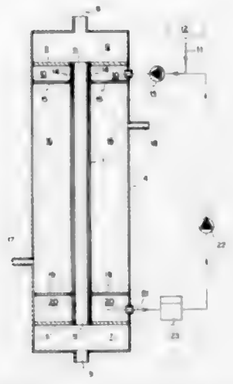
Wolfgang Klein, Klingenberg, and Klaus Schneider, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed Mar. 5, 1985, Ser. No. 708,398

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1984, 3408511; May 21, 1984, 3418870

Int. Cl.⁴ B01D *13/01*

U.S. Cl. 210—638 **20 Claims**



1. A process comprising maintaining a charge of a medium in a microporous molded article for carrying out a facilitated material transport process wherein said medium facilitates transport of said material through said medium, said molded article having a pore system extending throughout its structure, by supplying a charging medium only to a surface of the molded article which does not participate in the facilitated material transport process while the facilitated material transport process is being carried out.

4,659,474

DYNAMICALLY FORMED MEMBRANES

Mordechai Perry, Petach Tikvah; Reuven Kotraro; Charles Linder, both of Rehovot, and Gershon Aviv, Tel Aviv, all of Israel, assignors to Aligena AG, Basel, Switzerland

Filed Nov. 22, 1983, Ser. No. 554,214

Claims priority, application Switzerland, Nov. 23, 1982, 682882

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—638 **8 Claims**

1. A process for the preparation of dynamically formed membranes comprising a polymeric thin layer deposed on a polymeric, porous support comprising the steps of:

(a) depositing a chemically reactive polymer from a dilute aqueous solution under pressure to form a thin layer onto a polymeric porous support containing functional groups reactive with said thin-layer polymer, and

(b) crosslinking said thin-layer polymer deposited on the porous support with polyfunctional, low molecular weight compounds;

wherein:

(c) the polymeric porous support comprises at least one functional moiety selected from the group consisting of cellulosics, cellulose derivatives, bisphenol-epoxy adducts, polyvinyl alcohol chemically modified through reaction with an organic compound containing at least two functional groups, polymers of acrylonitrile chemically modified by reaction with hydroxylamine or hydroxylamine and an organic compound containing at least two functional groups, aromatic polysulfones, and polystyrenes containing reactive groups, preferably attached to the moieties of these polymers; and

(d) the polyfunctional, low molecular weight compounds of (b) are at least one of a group consisting of organic compounds containing reactive multiple bonds, epoxide, aziridine, aldehyde, imidate, isocyanate, hydroxyl, and anhydride groups, compounds containing substituents detachable as tertiary amines or as anions, preferably halogen anions, and compounds containing any combination of these moieties.

4,659,475

COMPOSITE REVERSE OSMOSIS MEMBRANE COMPRISING CROSSLINKED POLY(AMINE-EPIHALOHYDRIN ADDUCT)

Tsung K. Liao, Kansas City, Mo., and Cecil B. Chappelow, Leawood, Kans., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Mar. 19, 1984, Ser. No. 590,736

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—654 **27 Claims**

1. A semi-permeable crosslinked polymeric membrane having adequate flux and solute rejection and a resistance to oxidative degradation which comprises the reaction product of a di- or trifunctional aromatic carboxylic acid compound, that is reactive with amine or hydroxy groups, selected from the group consisting of aromatic carboxylic acid halides and aromatic carboxylic acid anhydrides; and a polymerized adduct of a polyamine compound of the formula, $NH_2—(A—NH)_n—H$, wherein A is a $C_{6\text{-}18}$ arylene or a $C_{2\text{-}6}$ alkylene and n is an integer of 1-6 or, $NH_2—(B—NH)_n—H$ wherein B is

or, $NH_2—(B—NH)_n—H$ wherein B is

$$—CH_2(CH_2)_y—(CH)_x(CH_2)_yCH_2—$$
(OH)

n, x and y are independently an integer of 0–6 and n+x+y is greater than or equal to 2; and an epihalohydrin compound of the formula:

$$CH_2\!\!<\!\!\overset{O}{}\!\!>\!\!CH—(CH_2)_m—X$$

wherein X is halogen and m is an integer of 1 to 6.

3. A method for the desalinization of sea water which comprises contacting water having high salinity with the semi-permeable membrane of claim 1 under conditions of high pressure resulting in flux of purified water through the membrane and the rejection of salinity by the membrane.

4,659,476

METHOD FOR THE TREATMENT OF LIQUIDS ON GRANULAR MATERIALS

Jean Burriat, Clamart; Bernard Causse, Paris, and Jean-Marie Rovel, Rueil Malmaison, all of France, assignors to Degremont, Rueil Malmaison, France

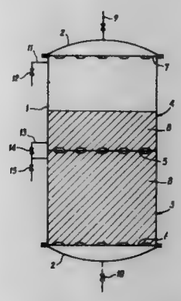
Filed Nov. 13, 1985, Ser. No. 797,813

Claims priority, application France, Nov. 28, 1984, 84 18108

Int. Cl.⁴ B01J *49/00*

U.S. Cl. 210—675 **5 Claims**

1. In a method of treatment of a liquid containing particles in suspension and ionic impurities, said method comprising percolating said liquid downwardly from top to bottom through a bed of granular ion exchange resin, thereby transferring said ionic impurities to said granular ion exchange resin and during which said particles in suspension are filtered from said liquid by an upper layer portion of said granular ion exchange resin, periodically ionically regenerating said granular ion exchange resin by passing upwardly from bottom to top through said bed of granular ion exchange resin a regeneration liquid, and periodically removing said particles in suspension from said granular ion exchange resin, the improvement comprising conducting said percolating, regenerating and removing operations within a single receptacle divided into a lower compartment entirely filled with said granular ion exchange resin and an upper compartment filled partially with an amount of said granular ion exchange resin including said upper layer portion thereof, and wherein said removing comprises:



prior to each said regenerating operation, passing a current of washing liquid upwardly from bottom to top through said receptacle and thereby through said lower compartment, without expanding or decompacting said granular ion exchange resin therein, and through said upper compartment, while expanding and decompacting said granular ion exchange resin therein, and thus removing said particles in suspension from said granular ion exchange resin in said upper compartment; and

passing the thus removed particles in suspension from said receptacle.

4,659,477

FIXATION OF ANIONIC MATERIALS WITH A COMPLEXING AGENT

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20817, and Aaron Barkatt, Silver Spring, Md., assignors to Pedro B. Macedo, Bethesda and Theodore A. Litovitz, Annapolis, both of, Md.

Continuation-in-part of Ser. No. 408,162, Aug. 16, 1982, abandoned. This application Jul. 28, 1983, Ser. No. 517,472

Int. Cl.⁴ B01D *15/04;* **G21F** *9/02, 9/12;* **B01J** *20/02*

U.S. Cl. 210—679 **14 Claims**

1. A process for removing iodide anions form a liquid containing said iodide anions which comprises passing said liquid over a composition comprising a porous charcoal having interconnected pores, and characterized in that its internal surface contains complexing groups of heavy metal cations selected from the group consisting of mercury and silfer capable of forming a stable complex with iodine, said cations being present in an amount effective to complex the iodide anions, said amount being at least about 0.001% by dry weight, and forming a complex between the heavy metal cations of said composition and said iodide anions.

4,659,478

FLUID ABSORBING METHOD

Bernard E. Stapelfeld, and Donald L. Beaver, Jr., both of Altoona, Pa., assignors to Sermac Industries, Inc., Altoona, Pa.

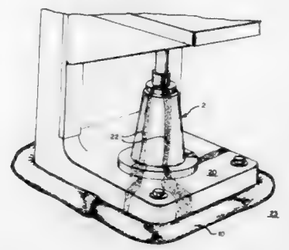
Filed Mar. 27, 1985, Ser. No. 716,761

Int. Cl.⁴ B01D *15/00*

U.S. Cl. 210—690 **5 Claims**

1. A method of controlling oil spills around a machine tool base comprising the steps of:

(a) arranging at least one elongate tubular fabric member filled with a highly absorbent particulate material of capillary nature and wicking action around the boundary of the tool base, wherein the particulate material of capillary nature is ground corn cob cores and chaff;



(b) interengaging the ends of said tubular member to form a continuous member around said tool base; and

(c) lifting and replacing each tubular member as it becomes filled with absorbed oil.

4,659,479

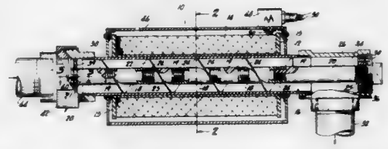
ELECTROMAGNETIC WATER TREATING DEVICE

Raymond E. Stickler, 9909 W. Hawthorne, Mequon, Wis. 53092; Terry L. Eggerichs, 2604 W. Rogers, Milwaukee, Wis. 53215, and Kenneth J. Larson, 320 Joanne Dr., Brookfield, Wis. 53005

Filed Dec. 19, 1984, Ser. No. 683,723

Int. Cl.⁴ C02F *1/48;* **B03C** *1/00*

U.S. Cl. 210—695 **12 Claims**



1. A method of treating an aqueous liquid for reducing scale formation, corrosion and the growth of algae, including the steps of:

providing a core within and spaced from a conduit, said core having alternating sections of a ferrous magneticly permeable material and a nonferrous nonmagnetic material, energizing an electromagnetic coil surrounding said pipe for generating a magnetic field within said conduit such that said magneticly permeable sections are magnetized with adjacent ends having opposite polarities,

passing the liquid to be treated through said conduit in a helical flow path defined by a baffle, said fluid moving around said core as it advances through said conduit and which moves transversely through the magnetic fields between adjacent ends of the magneticly permeable ferrous sections and in contact with the magneticly permeable ferrous material.

4,659,480

WATER TREATMENT POLYMERS AND METHODS OF USE THEREOF

Fu Chen, Newtown, and Keith A. Bair, Hatboro, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

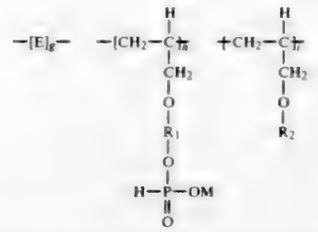
Continuation-in-part of Ser. No. 545,563, Oct. 26, 1983, abandoned. This application Jan. 3, 1986, Ser. No. 816,173

Int. Cl.⁴ C02F *5/14*

U.S. Cl. 210—697 **13 Claims**

1. Method of controlling the deposition of calcium phosphate on the structural parts of a system exposed to an aqueous

medium containing calcium phosphate under deposit forming conditions, said method comprising adding to said aqueous medium, an effective amount for the purpose of an effective water soluble polymer having repeat units of the structure:



wherein E in the above formula is the repeat unit obtained after polymerization of an α,β ethylenically unsaturated compound, R_1 is a hydroxy substituted lower alkylene group having from about 1–6 carbon atoms or a non-substituted lower alkylene group having from about 1–6 carbon atoms; R_2 comprises a hydroxylated lower alkyl (C_1–C_6) group, M is a water soluble cation or hydrogen, the molar percentage of g in said polymer being between about 40–90 molar %, the molar percentage of h being between about 2–40 molar % and the molar percentage said polymer being between about 1–35 molar %, the total of g, h, and i equalling 100 molar %.

4,659,481

WATER TREATMENT POLYMERS AND METHODS OF USE THEREOF

Fu Chen, Newtown, Pa., assignor to Betz Laboratories Inc., Trevose, Pa.

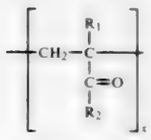
Continuation of Ser. No. 545,563, Oct. 26, 1983, abandoned. This application May 16, 1986, Ser. No. 864,049
The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.
Int. Cl.⁴ C02F *5/14*
U.S. Cl. 210—697 **12 Claims**

1. A method of inhibiting the corrosion of metal parts in contact with a cooling water system with little or no attendant deposition of scale on said metal parts, which corrosion inhibition is obtained by providing for the formation of a protective passive oxide film on the metal surface in contact with said aqueous medium, which method comprises

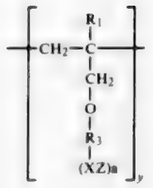
assuring that the pH of said aqueous medium is 5.5 or above;

assuring that the aqueous medium contains a calcium or other appropriate ion concentration selected from the group consisting of zinc, nickel and chromium and mixtures thereof; and adding to said aqueous medium

(1) a water soluble polymer comprising repeat unit moieties (a) and (b) wherein said repeat unit (a) comprises the structure



and wherein said repeat unit (b) comprises the structure



wherein each R_1 is independently H or lower alkyl (C_1–C_3), R_2 is OH or OM, M is a water soluble cation, R_3 is a hydroxy substituted alkylene radical having from 1 to about 6 carbon atoms, X is SO_3, Z is H or a water soluble cation or cations, and a is 1, the molar ratio x:y of said polymer being between about 30:1 to 1:20;

(2) a water soluble orthophosphate compound; and

(3) a water soluble polyphosphate compound, said polymer being such that together with the orthophosphate compound is effective to promote the metal oxide film with no attendant deposition, and the amount of (1), (2) and (3) being added being sufficient to provide a substantially scale-free protective passive oxide film on the metallic surface.

4,659,482

WATER TREATMENT POLYMERS AND METHODS OF USE THEREOF

Fu Chen, Newtown, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

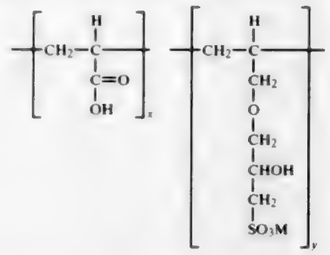
Continuation-in-part of Ser. No. 545,563, Oct. 26, 1983, abandoned. This application May 9, 1986, Ser. No. 861,785
The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.
Int. Cl.⁴ C02F *5/14*
U.S. Cl. 210—699 **6 Claims**

1. A method for simultaneously inhibiting corrosion and scale formation including calcium carbonate in a cooling water system, comprising

(a) maintaining the pH of said cooling water system within the pH range of about 7.5 to about 9.0;

(b) maintaining the cooling water system in a state of supersaturation with respect to calcium carbonate;

(c) adding from about 0.5–50 ppm of a water soluble acrylic acid/allylhydroxypropylsulfonate ether copolymer or water soluble salt form thereof to said cooling water system, based upon one million parts of water in said system; said copolymer having the formula:



wherein M is a water soluble cation; wherein the molar ratio x:y is from about 3:1–6:1 and wherein the number average molecular weight of said copolymer is from about 5,000 to 10,000;

(d) adding to said cooling water system from about 0.2–50 ppm of water soluble phosphonate compound to said cooling water; and

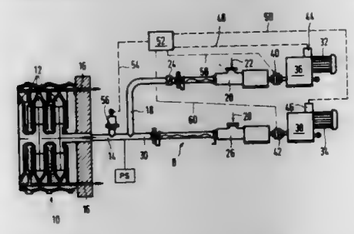
(e) adding to said cooling water system from about 0.1–15 ppm of a zinc compound adapted to liberate Zn^{2+} ions in water.

4,659,483

METHOD OF AND A MEANS FOR FEEDING MATERIAL TO A FILTERING APPARATUS

Willi Gries, Rodgau, Fed. Rep. of Germany, assignor to Netzsch-Mohnopumpen GmbH, Waldkraiburg, Fed. Rep. of Germany

Filed Jun. 6, 1985, Ser. No. 741,791
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1984, 3426523
Int. Cl.⁴ C02F *1/52*; B01D *25/12*
U.S. Cl. 210—709 **8 Claims**



1. A method for feeding material to be filtered to a filter press (**10**) by means of at least one filling pump (**20**) and one high pressure pump (**26**) connected in parallel whereby the charging pressure generated by the pumps is increased to a final pressure which is substantially maintained until the end of the filtration, comprising the steps of:

decreasing first gradually the quantity of material being fed per time unit by lowering the normal speed (n_{Fmax}) of the filling pump (**20**) to a given lower operating speed (n_{Fmin}) while maintaining constant speed (n_{Hmax}) of the high pressure pump (**26**);

lowering, upon reaching said lower operating speed (n_{Fmin}) of the filling pump (**20**), the speed (n_H) of the high pressure pump (**26**) to further reduce the quantity of material being fed;

raising again, when a preliminary increase of the absorption capacity of the filter press occurs, first the speed (n_H) of the high pressure pump (**26**) to its former value and increasing subsequently the quantity of material being fed by increasing the speed (n_F) of the filling pump (**20**); and

turning off the filling pump (**20**) when the absorption capacity has decreased so far that the high pressure pump (**26**) (is sufficient for feeding the filter press (**10**) without its speed (n_H) surpassing a predetermined value (n_{Hmax}).

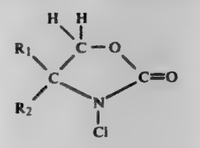
4,659,484

METHOD FOR TREATING AIR-COOLING SYSTEM'S AQUEOUS MEDIUM

Shelby D. Worley, and Larry J. Swango, both of Auburn, Ala., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 27, 1986, Ser. No. 866,680
Int. Cl.⁴ C02F *1/50*
U.S. Cl. 210—755 **16 Claims**

1. A method for controlling the growth of the microorganism *Legionella pneumophila* in a recirculating aqueous medium in an air-cooling system, which comprises adding to said recirculating aqueous medium a bactericidal amount of a 3-chloro-2-oxazolidinone represented by the graphic formula:



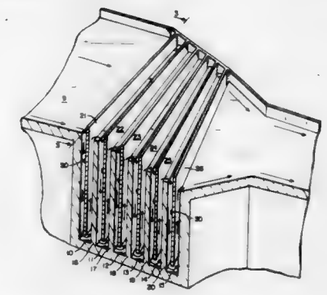
wherein R_1 is a C_1–C_4 alkyl, and R_2 is selected from the group consisting of C_1–C_4 alkyl, hydroxy, hydroxymethyl, C_1–C_4 alkoxy and —Ph—R, wherein Ph is phenylene and R is selected from the group C_1–C_4 alkyl, C_1–C_4 alkoxy and hydroxy.

4,659,485

METHOD AND APPARATUS FOR AERATING FLOWING WATER RACEWAYS

Dominic S. Arbisi, Minnetonka, and Thomas A. Rasmussen, Moundsview, both of Minn., assignors to Aeras Water Resources, Inc., Eden Praire, Minn.

Filed Jan. 31, 1986, Ser. No. 824,776
Int. Cl.⁴ C02F *7/00*
U.S. Cl. 210—758 **3 Claims**



1. Apparatus for aerating flowing water in a raceway comprising:

a plurality of aerating chambers arranged to successively receive in cascading arrangement the water flow to be aerated,

a plurality of divider baffles interposed into each chamber with the lower edge of each baffle spaced upwardly from the botom of each chamber to divide each chamber into an upstream down flow side and a downstream upflow side and having the upper edge thereof sufficiently elevated above the upstream water level to cause diversion of the entire flow downwardly and upwardly through each chamber, means for supplying pressurized water and means for supplying pressurized air, and

a plurality of downwardly directed aerating nozzles fluidly connected to each of said means and mounted in each of said chambers on the upstream down flow side of the respective divider baffles positioned to direct a flow of air and water into the down flow stream so that the combined force of air and water discharged and the downwardly flowing water received at the top of the chamber will carry the discharged air downwardly into the chamber bottom and around the lower edge of the respective baffles to ensure maximum absorption of the air into the water stream, the upper ends of successive chambers being disposed at progressively lower elevations from the upstream to downstream direction of flow through the chambers, whereby the decrease in water density progressively through successive aerating chambers progressively reduces the head pressure in the chambers so that the flow through is assisted by the density differentials between the respective down flow and upflow densities within the chambers.

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4,659,486

USE OF CERTAIN MATERIALS AS THINNERS IN OIL-BASED DRILLING FLUIDS

Bobby R. Harmon, Aberdeen, Scotland, assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 675,502, Nov. 28, 1984, abandoned, which is a continuation of Ser. No. 474,614, Mar. 11, 1983, Pat. No. 4,502,963. This application Feb. 11, 1986, Ser. No. 829,454

Claims priority, application United Kingdom, Nov. 3, 1982, 8231375

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.[4] C09K *3/00, 9/00*

U.S. Cl. 252—8.5 **17 Claims**

1. A method of treating a returned drilling fluid comprising a water-in-oil emulsion to reduce the viscosity of said returned fluid comprising:

admixing said returned fluid containing colloidally suspended formation particles with an additive comprising a fatty acid polyester in an amount sufficient to reduce the viscosity of said returned fluid, said fatty acid polyester being derived from at least one member selected from the group consisting of 12 hydroxystearic acid and an admixture of ricinoleic acid and oleic acid.

4,659,487

CONCENTRATED FABRIC SOFTENERS

Adolf May, Hofheim am Taunus; Hans-Walter Bücking, Kelkheim, and Manfred Schreiber, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 461,435, Jan. 27, 1983, abandoned. This application Dec. 2, 1985, Ser. No. 804,311

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204165

The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.

Int. Cl.[4] D06M *11/00*

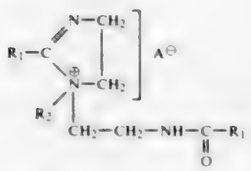
U.S. Cl. 252—8.8 **5 Claims**

1. A concentrated fabric softener having stability against phase separation and gel formation consisting substantially of

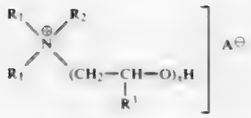
(a) 30 and up to 50 weight % of a compound of the formulae



(I)



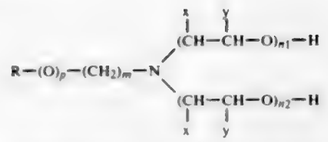
(II)



(III)

in which R_1 is alkyl or alkenyl having from 8 to 22 carbon atoms, R_2 is alkyl having from 1 to 4 carbon atoms, R_3 is methyl or hydrogen, x is a number of from 1 to 5 and A is an anion such as $Cl^{(-)}$, $Br^{(-)}$, $CH_3OSO_3^{(-)}$ or $CH_3OSO_3^{(-)}$,

(b) from 2 to 20 weight % of a fatty amine polyglycol ether of the formula IV



(IV)

in which R is alkyl or alkenyl having from 8 to 22 carbon atoms, x and y each are hydrogen or methyl with the proviso that x and y are not simultaneously methyl, n_1 and n_2 together are an integer of from 2 to 50 and p and m either are simultaneously zero, or p is 1 and m is 1, 2 or 3;

(c) from 3 to 30 weight % of a C_1–C_3-alcohol;

(d) an acid in an amount which is equimolar to component (b), and

(e) water in an amount remaining to complete 100%.

4,659,488

METAL WORKING USING LUBRICANTS CONTAINING BASIC ALKALINE EARTH METAL SALTS

James N. Vinci, Mayfield Hts., Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Sep. 18, 1985, Ser. No. 777,475

The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.

Int. Cl.[4] C10M *135/04*

U.S. Cl. 252—33 **46 Claims**

1. A method for lubricating metal during working thereof which comprises applying to said metal a water-free composition comprising (A) a major amount of a lubricating oil; (B) a minor amount of a basic alkaline earth metal salt of at least one acidic organic compound, or a borated complex of said basic alkaline earth metal salt; and (C) a minor amount of at least one sulfurization product of an aliphatic, arylaliphatic or alicyclic olefinic hydrocarbon containing from about 3 to about 30 carbon atoms, said sulfurization product containing active sulfur.

4,659,489

LUBRICANT DISPERSIONS FOR PAPER COATING COMPOSITIONS

John A. Hill, Somerville, and Gregory J. Flynn, Branchville, both of N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Jun. 22, 1984, Ser. No. 623,471

Int. Cl.[4] C10M *105/08*

U.S. Cl. 252—40.5 **7 Claims**

1. High solids dispersions in water having from about 50% by weight to about 75% by weight solids and from about 25% by weight to about 50% by weight water, the solids content comprising:

Component	Parts by Weight
calcium stearate	1.00
at least one calcium stearate dispersing agent	about 0.01 to about 0.10
at least one nonionic lubricant having a molecular weight between about 230 to about 10,000	about 0.05 to about 5.00
urea	about 0.01 to about 1.00

4,659,490

AQUEOUS METAL-WORKING COMPOSITION AND PROCESS

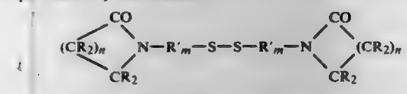
Rector P. Louthan; Merlin R. Lindstrom; Bernard A. Baldwin, all of Bartlesville, Okla., and Gary D. Macdonell, Louisville, Ky., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 24, 1985, Ser. No. 791,027

Int. Cl.[4] C10M *173/00*

U.S. Cl. 252—47.5 **17 Claims**

1. A composition comprising an aqueous metal-working fluid and at least one N,N'-dilactam-disulfide in an amount sufficient to impart extreme pressure lubricating properties to the metal-working fluid wherein the N,N'dilactam-disulfide is represented by the formula:



wherein m is 0 or 1, n is an integer between one and ten, both inclusive, R is the same or different and is selected from hydrogen and alkyl groups having 1 to 6 carbon atoms, and wherein R' is the same or different and is selected from alkyl groups having from 1 to 18 carbon atoms.

4,659,491

LUBRICATING OIL CONTAINING A POLYMER HAVING A FUNCTIONALIZED BACKBONE WHICH CONTAINS AN ELECTRON WITHDRAWING GROUP

Phillip B. Valkovich, Spring, Tex., and Kechia J. Chou, Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 405,836, Aug. 6, 1982, abandoned. This application Dec. 24, 1984, Ser. No. 686,162

Int. Cl.[4] C10M *145/00, 149/00*

U.S. Cl. 252—47.5 **9 Claims**

1. A lubricant composition comprising a major portion of a lubricating oil and admixed therewith a dispersing amount of a polymer of $\overline{M}_n$ of 300–100,000 containing a carbon-to-carbon backbone and particularly characterized by the presence of as a side chain a (1-aminomethyl) propen-2-yl group bearing an electron withdrawing group.

4,659,492

ALKENYL-SUBSTITUTED CARBOXYLIC ACYLATING AGENT/HYDROXY TERMINATED POLYOXYALKYLENE REACTION PRODUCTS AND AQUEOUS SYSTEMS CONTAINING SAME

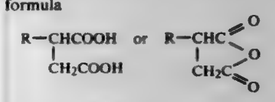
Richard W. Jahnke, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 11, 1984, Ser. No. 618,966

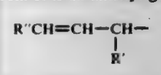
Int. Cl.[4] C10M *173/00, 129/00*

U.S. Cl. 252—49.3 **20 Claims**

1. A composition comprising the water-dispersible ester/acid or ester/salt of (A) at least one compound represented by the formula



wherein R is an alkenyl group represented by the formula



and R' and R'' are independently hydrogen or straight chain or substantially straight chain hydrocarbyl groups of at least one carbon atom, with the proviso that R has from about 8 to about 30 carbon atoms, with (B) at least one water-soluble hydroxy terminated polyoxyalkylene, said polyoxyalkylene containing oxypropylene and oxyethylene chains and a nucleus derived from a reactive hydrogen compound based on a polyamine.

4,659,493

PROCESS FOR PRODUCING NOVEL PRODUCTS BY HYDROGEN FLUORIDE WITH ESTERS OF FATTY ACIDS

Heinz-Rudi Feist; Hans Buchwald, both of Hanover; Boleslaus Raschkowski, Wiedensahl, and Werner Rudolph, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Sep. 28, 1984, Ser. No. 655,568

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1983, 3335870; Jul. 18, 1984, 3426438

Int. Cl.[4] C10M *105/34;* **C09F** *7/00*

U.S. Cl. 252—54.6 **10 Claims**

1. A mixture containing:

(a) a wax adduct comprising the product produced by a process comprising the step of reacting hydrogen fluoride with at least one unsaturated wax at a temperature of less than 100° C., said wax having a melting point of less than about 60° C. and said product having a fluorine content in the range of about 0.1% to 4.3 by weight; and

(b) A fluorochlorohydrocarbon which is suitable for use as a cooling lubricant and which has a boiling point of more than 20° C.

4,659,494

CARPET CLEANING COMPOSITION CONTAINS A CELLULOSE POWDER FROM A HARDWOOD SOURCE

Heinz-Dieter Soldanski, Essen; Bernd-Dieter Holdt, and Ursula Meier, both of Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 22, 1985, Ser. No. 768,525

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1984, 3437629

Int. Cl.[4] C09K *3/22*

U.S. Cl. 252—88 **14 Claims**

1. In a powder-form dry cleaning composition for textiles which is free from zeolites and urea-formaldehyde resin, and which consists essentially of about 35–70% of an adsorbent, about 25–60% of water, and about 5–22% of an organic solvent, the improvement wherein said adsorbent is predominately a cellulose powder derived from a hardwood cellulose having a particle size of from about 5 to about 50 μm is present therein, said cellulose powder being essentially colorless and substantially free from lignin and other impurities associated with the hardwood sources, all percentages being by weight based upon the total composition.

4,659,495

BATH PRODUCT AND METHOD FOR TREATING BATH WATER

Vincent N. Figliola, 7265 Village Dr., Las Cruces, N. Mex. 88001

Continuation-in-part of Ser. No. 486,724, Apr. 20, 1983, abandoned. This application Aug. 2, 1985, Ser. No. 761,985

Int. Cl.[4] C11D *17/00*

U.S. Cl. 252—90 **9 Claims**



1. A bath water and skin conditioning product comprising:

(a) a water permeable bag;

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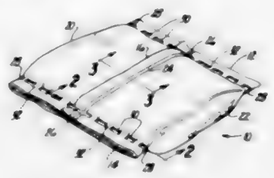
(b) a water soluble, water conditioning powder located within the bag for conditioning a supply of bath water and the skin of a bather, the powder consisting essentially of moisturizing beads;
(c) a handle to facilitate holding and moving the bag in the bath water; and
(d) connecting means connecting the handle to the bag, wherein the bag allows water to pass into and through the bag to dissolve the powder therein, said dissolution being capable of being controlled and facilitated by manipulation of said handle and bag.

4,659,496

DISPENSING POUCH CONTAINING PREMEASURED LAUNDERING COMPOSITIONS

Steven R. Klemm, Grand Rapids, and Michael R. Foote, Hudsonville, both of Mich., assignors to Amway Corporation, Ada, Mich.

Filed Jan. 31, 1986, Ser. No. 825,018
Int. Cl.⁴ C11D *17/00*
U.S. Cl. 252—90 **22 Claims**



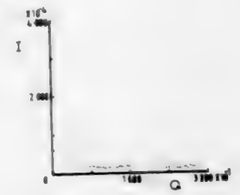
1. The method of packaging a mixed quantity of first and second distinct materials for subsequent release from the package in a phased sequence whereby substantially all of the first material but less than a majority of the second material will be automatically released from the package when the package and its contents are subjected to a first set of ambient conditions, and the majority of the second material will be automatically released from the package only when the package and its contents are subjected to a second set of ambient conditions, the first material being fully water soluble and the second material being no more than partially water soluble under the first set of ambient conditions, and the second material having a melting point which is above the temperatures normally encountered during the first set of ambient conditions but which is less than the temperatures encountered during the second set of ambient conditions, the method comprising the steps of:
(1) forming a pouch-like dispensing package from a porous fabric, with the porosity being selected to permit passage of water and of said second material when in its melted condition but to normally prevent passage of either of said first and second materials therethrough when said package is kept out of water and below the melting point of said second material;
(2) forming a plurality of supplementary openings in said package, which openings are normally in a substantially closed condition wherein the minimum dimension of each of said openings is small enough relative to the form and dimensions of said first and second materials that no more than an insignificant amount of said first material and none of said second material will pass therethrough during normal handling of said package, said openings tending to remain in their substantially closed condition as a result of the natural lay of the fabric, the shape of said package, and the placement of said openings therein, but said openings tending to enlarge their minimum dimension when said package is exposed to the first set of ambient conditions, including simultaneous submergence in water, agitation and impact, the enlarged condition of said openings permitting an increased rate of water flow into and out of said package to effect complete dispensing of undissolved and dissolved portions of said first material from the package while still being small enough relative to the form and dimensions of said second material to prevent dispensing of said second material from said package; and
(3) placing a desired mixture of said first and second materials into said package and closing said package except for said pores and supplementary openings.

4,659,497

LIQUID DETERGENT COMPOSITIONS

Brian J. Akred, Whitehaven; Edward T. Messenger, Workington, and William J. Nicholson, Whitehaven, all of England, assignors to Albright & Wilson Limited, Warley, England

Division of Ser. No. 464,019, Feb. 4, 1983, Pat. No. 4,515,704.
This application May 3, 1985, Ser. No. 730,349
Claims priority, application United Kingdom, Feb. 5, 1982, 8203398; Apr. 13, 1982, 8210670; Jul. 2, 1982, 8219227; Dec. 23, 1982, 8236664
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.⁴ C11D *1/12, 7/14, 7/16*
U.S. Cl. 252—135 **27 Claims**



1. A substantially stable, Non-sedimenting, Pourable, fluid, detergent composition having a yield point of at least 10 dynes cm^{-2} and containing Active Ingredients and Builder, said composition having a payload of at least 25% by weight and comprising: at least one, predominantly aqueous, liquid Separable Phase containing sufficient dissolved Electrolyte to provide from 2 to 4.5 gram ions per liter of said phase, of total alkali metal, alkaline earth metal or ammonium; suspended solid particulate Builder; and one or more other Separable Phases Interspersed therewith; the Electrolyte being sufficient to salt out at least a substantial proportion of the surfactant from said predominantly aqueous phase to form a part of said other phase or phases thereby inhibiting sedimentation of said Builder.

4,659,498

SKI AND SURFBOARD WAX REMOVER

Wilmer B. Stoufer, 8133 Naranja Dr., Jacksonville, Fla. 32217

Filed Oct. 15, 1985, Ser. No. 787,632
Int. Cl.⁴ C11D *7/50, 7/24, 9/24*
U.S. Cl. 252—153 **16 Claims**

15. A composition for removing wax from a surface, consisting essentially of (a) about 87.5 parts by weight of a terpene hydrocarbon, (b) about 6.3 parts of tall oil fatty acids, (c) about 21 parts by weight of rosin and (d) about 4.1 parts by weight of triethanolamine.

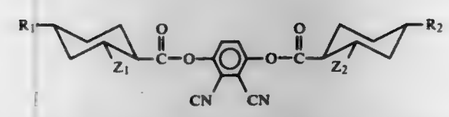
4,659,499

LIQUID CRYSTAL MATERIALS

Joseph P. Ferrato, Bath, Ohio, assignor to Crystaloid Electronics Company, Hudson, Ohio

Filed Dec. 31, 1984, Ser. No. 688,008
Int. Cl.⁴ C09K *19/60, 19/30, 19/46;* C07C *121/75*
U.S. Cl. 252—299.1 **19 Claims**

1. A compound having the formula:



wherein R_1 and R_2 can be the same or different and are selected from the group consisting of an alkyl having from 1 to about 22 carbon atoms, an alkoxy having from 1 to about 20 carbon atoms, a 4-alkyl substituted phenyl having from 7 to 26 carbon atoms, a 4-alkoxy substituted phenyl having from 7 to 18 carbon atoms, a fluoro substituted phenyl having from 1 to 3 fluoro groups, and a fluoroalkyl substituted phenyl having from 1 to 3 fluoro groups and from 1 to 6 carbon atoms; wherein Z_1 and Z_2 can be the same or different, and wherein Z_1 and Z_2 are each an alkyl group having from 1 to 4 carbon atoms.

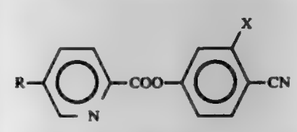
4,659,500

ESTER DERIVATIVE HAVING A POSITIVE DIELECTRIC ANISOTROPY

Shigeru Sugimori, Fujisawa; Kazunori Nigorikawa, and Yasuyuki Goto, both of Yokohama, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Sep. 11, 1985, Ser. No. 774,945
Claims priority, application Japan, Sep. 11, 1984, 59-190378
Int. Cl.⁴ C09K *19/54, 19/34;* G02F *1/13;* C07D *213/79*
U.S. Cl. 252—299.5 **4 Claims**

1. An ester derivative expresed by the formula



(I)

wherein R represents an alkyl group or an alkoxy group each having 1 to 10 carbon atoms and X represents F or Cl.

4. A liquid crystal composition having at least two components at least one of which is a compound as set forth in claim 1.

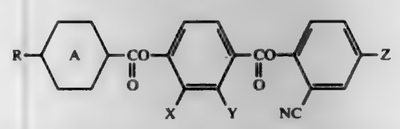
4,659,501

2-CYANO-4-HALOGENOPHENYL SUBSTITUTED-BENZOATES

Shigeru Sugimori, Fujisawashi; Toyoshiro Isoyama, and Yasuyuki Goto, both of Yokohamashi, all of Japan, assignors to Chisso Corporation, Kitaku, Japan

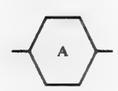
Filed Jan. 17, 1985, Ser. No. 692,166
Claims priority, application Japan, Jan. 30, 1984, 59-14767; Mar. 14, 1984, 59-48372; Mar. 19, 1984, 59-52483
Int. Cl.⁴ C09K *19/54, 19/30, 19/20;* C07C *121/52*
U.S. Cl. 252—299.5 **9 Claims**

1. A 2-cyano-4-halogenophenyl substituted-benzoate expressed by the formula

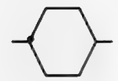


(I)

wherein R represents an alkyl group or an alkoxy group each of 1 to 10 carbon atoms;



represents



or



;

X and Y each represent H or a halogen atom of F or Cl and at least one of X and Y is necessarily H; and Z represents a halogen atom of F or Cl.

4,659,502

ETHANE DERIVATIVES

Julie E. Fearon, Hull; Wendy E. Smith, Lincoln; George W. Gray, Cottingham; David Lacey; Kenneth J. Toyne, both of Hull, all of Great Britain, and Georg Weber, Erzhausen, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jan. 17, 1985, Ser. No. 691,980
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 3401320
Int. Cl.⁴ G02F *1/13;* C09K *19/34, 19/32, 19/30*
U.S. Cl. 252—299.61 **20 Claims**

1. In a liquid crystalline phase comprising at least two liquid crystal components, the improvement wherein at least one liquid crystal component is an ethane derivative of the formula

$$R^1-A^1-CH_2CH_2-A^2-(A^3)_n-R^2$$

wherein
R^1 is H; alkyl of 1–12 C atoms; alkyl of 1–12 C atoms in which one or two non-adjacent CH_2 groups are independently replaced by O, alkylcarbonyl of 1–12 c atoms; alkylcarbonyloxy of 1–12 c atoms; alkoxycarbonyl of 1–12 c atoms; F; Cl; or Br;
R^2 is —CN or $—Z^2—A^4—CN$,
A^1 is —A—, —A—A^5— or —A^5—A—,
A^2 is 1,4-phenylene; 1,4-phenylene substituted by one of F, Cl, CH_3, or CN; or 1,4-phenylene wherein two CH groups are replaced by N atoms,
A is 1,4-cyclohexylene or 1,4-bicyclo(2,2,2)-octylene,
A^3 and A^4 each independently is 1,4-cyclohexylene; 1,4-phenylene; 1,4-phenylene substituted by one of F, Cl, CH_3, or CN; or 1,4-phenylene wherein two CH groups are replaced by N atoms,
A^5 is 1,4-phenylene or 1,4-phenylene wherein two CH groups are replaced by N atoms,
n is 0 or 1,
Z^2 is $—CH_2CH_2—$, $—CH_2O—$, $—OCH_2—$ or —O—CO— and
with the provisos that:
(a) at least one of the groups A^2 and A^3 is laterally substituted, and
(b) if A^1=A, or $R^1—A^1$=trans-4-(trans-4-alkylcyclohexyl)-cyclohexyl, n is 1.

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4,659,503

PYRIDYLTHIOPHENES

Rudolf Eidenschink, Münster, and Bernhard Scheuble, Aisbach, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschränkter Huftung, Darmstadt, Fed. Rep. of Germany

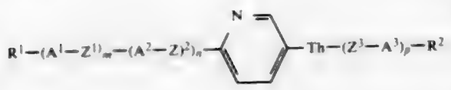
Filed Dec. 21, 1984, Ser. No. 685,083

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346175

Int. Cl.[4] C09K *3/34*; G02F *1/13*; C07D *409/04*, *409/14*

U.S. Cl. 252—299.61 25 Claims

1. A liquid crystalline phase comprising at least two liquid crystalline compounds, wherein at least one liquid crystalline compound is a pyridylthiophene of the formula



wherein

Th is a thiophene-2,4- or -2,5-diyl ring,

R^1 and R^2 are each independently an alkyl group of 1–15 C atoms, C_{1-15}-alkyl in which one or two non-adjacent CH_2 groups are replaced by O atoms, F, Cl, Br, CN or —O—COR, and one of R^1 or R^2 can also be H,

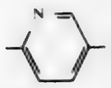
A^1, A^2 and A^3 are each independently 1,4-phenylene, 1,4-cyclohexylene, 1,3-dioxane-2,5-diyl, piperidine-1,4-diyl, 1,4,-bicylo-(2,2,2,)-octylene or pyrimidine-2,5-diyl, or one of these groups substituted by 1–F atoms, or said 1,4-cyclohexylene or substituted 1,4-cyclohexylene group substituted in the 1-, 4- or 1- and 4-positions by alkyl, alkoxy, fluorinated alkyl or fluorinated alkoxy, each of 1–5 C atoms, F, Cl, Br or CN,

Z^1, Z^2 and Z^3 are each independently —CO—O—, —O—CO—, $—CH_2CH_2—$, $—OCH_2—$, $—CH_2O—$ or a single bond,

(m+n+p) is 0, 1 or 2, and

R is alkyl of 1–5 C atoms,

or an acid addition salt of such a compound which is basic the ring



being designated Py.

4,659,504

PREPARATION OF PHYTATE-SALT FREE GEL DENTIFRICE

Harry Hayes, Warrington, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 676,751, Nov. 30, 1984, Pat. No. 4,575,456.

This application Feb. 10, 1986, Ser. No. 808,780

Int. Cl.[4] A61K *7/16*; B01J *13/00*

U.S. Cl. 252—315.3 4 Claims

1. The process of preparing a phytate-salt free gel dentifrice consisting essentially of forming a preblend of a liquid vehicle containing humectant and a gelling agent, mixing therewith an antinucleating agent containing at least one phosphonic group and adding thereto a polishing agent comprising a synthetic precipitated, amorphous silica gel having an average particle size of 1 to 30 microns and

(a) a surface area of 1 to 600 m^2/g,

(b) a pore volume of 0.05 to 0.5 cm^3/g,

(c) a product of surface area (in m^2/g) × pore volume (in cm^3/g) less than or equal to 240,

(d) a calculated pore diameter of 1.5 to 2.5 nm

and said dentifrice consisting essentially of said liquid vehicle in amount of about 20–90% by weight and including water in amount of about 1–10% by weight, about 0.2–5% by weight of said gelling agent, about 10–50% by weight of said polishing agent and about 1–15% by weight of said antinucleating agent.

4,659,505

AZEOTROPIC LIKE COMPOSITION

Naonori Enjo, Suita, and Yukio Omure, Takatsuki, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Feb. 19, 1986, Ser. No. 830,800

Claims priority, application Japan, Feb. 20, 1985, 60-32329

Int. Cl.[4] B01F *1/00*; C23G *5/28*, *5/32*, *5/36*

U.S. Cl. 252—364 1 Claim

1. An azeotropic like composition comprising 95 to 93% by weight of tetrachlorodifluoroethane and 5 to 7% by weight of isooctane.

4,659,506

GRANULAR STABILIZER FOR CHLORINE-CONTAINING POLYMERS AND PROCESS FOR PREPARATION THEREOF

Seiichi Nakamura; Mamoru Saito, and Toshiaki Sugawara, all of Tsuruoka, Japan, assignors to Mizusawa Industrial Chemicals, Ltd., Osaka, Japan

Filed Aug. 9, 1984, Ser. No. 639,068

Int. Cl.[4] C09K *15/04*; C08K *9/12*

U.S. Cl. 252—399 14 Claims



1. A granulated stabilizer for chlorine-containing polymers which comprises

granules of fusion bonded organic solid binder coated individual primary particles of a powdery stabilizer, wherein said organic solid binder is a metal soap, a wax, or a chlorine-containing polymer and the powdery stabilizer is selected from the group consisting of a basic lead salt represented by the formula:

$$nPbO{\cdot}PbX_{2/m}$$

wherein n is a number of from 0.5 to 5,

X is an organic anion or an inorganic acidic oxide anion, and

m is the valency of the anion X,

and a lead silicate of formula:

$$PbO{\cdot}pSiO_2$$

wherein p is a number of from 0.1 to 10;

said granules being obtained by copolverizing the powdery stabilizer with less than the critical liquid absorption amount of the powdery polymer of the organic solid binder, said amount being in the range of from 2 to 15 parts by weight of binder per 100 parts by weight of powdery stabilizer, whereby the powdery stabilizer is simultaneously pulverized into individual primary particles and said particles are uniformly coated with said binder, and thereafter, granulating the coated primary particles at a temperature higher than the melting point of the organic solid binder, whereby the coated primary particles are fusion bonded through the organic solid binder into granules having an average particle size of from 0.1 to 2 mm.

4,659,507

SILICON FIBER AND METHOD OF MAKING THE SAME

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

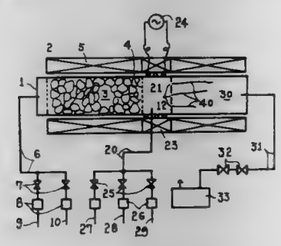
Division of Ser. No. 647,544, Sep. 5, 1984, Pat. No. 4,604,231.

This application Apr. 23, 1985, Ser. No. 726,407

Claims priority, application Japan, Sep. 5, 1983, 58-162795

Int. Cl.[4] H01B *1/00*

U.S. Cl. 252—500 4 Claims



1. A silicon fiber manufacturing method comprising the steps of:

causing silicon and silicon tetrafluoride (SiF_4) to react with each other at a temperature above 1000 C. to form SiF_2 gas;

forming $(SiF_2)_n$ (where $n>1$) from the SiF_2 gas; and

passing the (SiF_2) through pores, thereby manufacturing a silicon fiber having a structure expressed by $(SiF_2)_n$.

4,659,508

ELECTRICALLY-CONDUCTIVE SINTERED COMPACT OF SILICON NITRIDE MACHINABLE BY ELECTRICAL DISCHARGE MACHINING AND PROCESS OF PRODUCING THE SAME

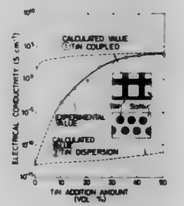
Matsuo Higuchi; Masaya Miyake; Hisao Takeuchi, and Eiji Kamijo, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 4, 1985, Ser. No. 794,675

Claims priority, application Japan, Nov. 5, 1984, 59-232674

Int. Cl.[4] C04B *35/58*, *35/56*

U.S. Cl. 252—516 7 Claims



1. An electrically-conductive sintered compact of silicon nitride machinable by electrical discharge machining, said sintered compact consisting essentially of a matrix of silicon nitride particles having an average particle size of 2 μm or less, 0.01–1.0% by volume, based on the total mixture volume, of MgO, Al_2O_3 or a mixture of MgO and Al_2O_3 powder as a sintering assistant and an additive powder of an electrical conductivity agent selected from the group consisting of at least one of TiN and TiC, in a proportion of 30–40 volume percent, based on the total mixture volume wherein portions of said additive powder are physically coupled with said matrix of silicon nitride particles such that the sintered compact exhibits an electrical conductivity of $10^2 S{\cdot}cm^{-1}$ or greater.

4,659,509

AROMA COMPOSITION

Yoshinori Asakawa, Tokushima, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

Filed Apr. 17, 1985, Ser. No. 724,118

Claims priority, application Japan, Apr. 27, 1984, 59-87440; Aug. 21, 1984, 59-174766

Int. Cl.[4] A61K *7/46*; C11B *9/00*

U.S. Cl. 252—522 R 6 Claims

1. An aroma composition, comprising an olfactorily sensible amount of 3,7-dimethyl-2-(2-methyl-1,2-epoxypropyl)hexahydroindan-2-ol.

4,659,510

TRIMETHYLCYCLOHEXENYL COMPOUNDS AND AROMA COMPOSITIONS CONTAINING THE SAME

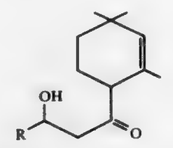
Takashi Ohnishi; Shigeaki Suzuki; Yoshiji Fujita, and Takashi Nishida, all of Kurashiki, Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Nov. 14, 1984, Ser. No. 671,194

Int. Cl.[4] A61K *7/46*; C07C *49/21*

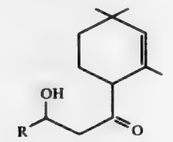
U.S. Cl. 252—522 R 9 Claims

1. A trimethylcyclohexenyl compound of the general formula



wherein R is a lower alkyl group.

6. A perfume, fragrance composition which contains an olfactorily sensible amount of a trimethylcyclohexenyl compound of the general formula



wherein R is a lower alkyl group.

4,659,511

METHOD FOR SOLIDIFYING RADIOACTIVE WASTE

Tetsuo Fukasawa, Hitachi; Masaharu Ohtsuka, Sapporo; Naohito Uetake, Hitachi, and Yoshihiro Ozawa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP84/00250, § 371 Date Jan. 16, 1985, § 102(e) Date Jan. 16, 1985, PCT Pub. No. WO84/04624, PCT Pub. Date Nov. 22, 1984

PCT Filed May 18, 1984, Ser. No. 697,581

Claims priority, application Japan, May 18, 1983, 59-85828; May 30, 1983, 59-95376

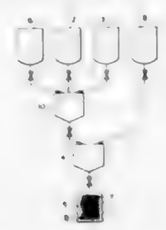
Int. Cl.[4] G21F *9/16*

U.S. Cl. 252—628 15 Claims

1. A method for solidifying radioactive waste which comprises mixing the radioactive waste with a solidifying agent prepared by mixing an alkali metal silicate as a solidifying filler; an inorganic compound as a hardening agent for reacting with

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said alkali metal silicate; cement as a water absorbent for absorbing liberated water generated in the course of the hardening reaction between said alkali metal silicate and said inorganic compound; and water; wherein said inorganic compound contains an ion able to bind with an alkali metal in said alkali metal silicate to form a low-solubility salt,



said inorganic compound being a compound of a polyvalent metal ion selected from the group consisting of Ca^{2+}, Mg^{2+}, Al^{3+}, and Fe^{3+} or an H^+ ion and an ion selected from the group consisting of TaO_3^-, AlF_6^{3-}, NbO_3^-, SiF_6^{2-}, SiO_3^{2-}, BeF_4^{2-}, $B_4O_7^{2-}$, F^-, IO_4^-, ClO_4^-, BF_4^- and ReO_4^-

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4,659,512

FIXATION OF DISSOLVED METAL SPECIES WITH A COMPLEXING AGENT

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20817, and Aaron Barkatt, Silver Spring, Md., assignors to Pedro B. Macedo, Bethesda and Theodore A. Litovitz, Annapolis, both of, Md.

Filed Dec. 21, 1983, Ser. No. 563,840

Int. Cl.⁴ G21F 9/12; C02F 1/42; B01J 20/00; C01G 1/00

U.S. Cl. 252—629 **26 Claims**

1. A process for removing metal species of Group IVb through Group IIIa, inclusive, of the Periodic Table from a liquid containing said metal species which comprises treating a porous support having interconnected pores, said porous support being silicate glass or silica gel having an internal surface covered by silicon-bonded hydroxyl groups, with an amine complexing agent capable of forming a stable complex with said metal species whereby the internal surface of said porous support contains said amine complexing agent, said amine complexing agent being a neutral or basic water soluble alkylene amine having 2 to 5 amine groups, said amine complexing agent being present in said porous support in an amount effective to complex the metal species and form a complex between said amine complexing agent and said metal species, and passing said liquid over said porous support in a packed column to form a complex between said amine complexing agent and said metal species.

20. A process for removing metal species of Group IVb through Group IIIa, inclusive, of the Periodic Table from a liquid containing said metal species which comprises passing said liquid over a composition in a packed column comprising a porous support having interconnected pores, said porous support being charcoal having an internal surface containing an amine complexing agent capable of forming a stable complex with said metal species, said amine complexing agent being a neutral or basic water soluble alkylene amine having 2 to 5 amine groups, said amine complexing agent being present in an amount effective to complex the metal species and form a complex between the amine complexing agent of said composition and said metal species.

4,659,513

DISPROPORTIONATION OF UNSATURATED ACIDS IN ROSIN OR TALL OIL

Joao M. G. Correia, Lisbon, Portugal, assignor to Enichem Elastomers Limited, Hardley, United Kingdom

Filed Mar. 6, 1986, Ser. No. 836,993

Claims priority, application United Kingdom, Mar. 8, 1985, 8506023

Int. Cl.⁴ C09F 1/00

U.S. Cl. 260—97 **6 Claims**

1. An improvement in a process for disproportionating unsaturated acids in rosin or tall oil by heating with a catalyst comprising iodine, an iron compound and ammonia, an ammonium salt, urea or an amine, the improvement comprising a pretreatment step of heating the starting material with an effective amount not in excess of 0.5% by weight of elemental sulphur, based on the weight of starting material, whereby to improve the colour and/or to reduce the oxidised acid content of the final disproportionated product with no significant disproportionation during the pretreatment step.

4,659,514

ESTERIFICATION OF ROSIN ACID WITH CALCIUM HYDROXYBENZYL PHOSPHONATE CATALYST

Donald Beuke, Kingswood, Tex., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 27, 1986, Ser. No. 822,437

Int. Cl.⁴ C09F 1/00, 5/00

U.S. Cl. 260—104 **7 Claims**

1. In an esterification procedure wherein a rosin acid is reacted with an equivalent amount or a maximum 30% excess of an alcohol at elevated temperatures in the presence of a catalyst for a period of time sufficient to yield an ester having a maximum acid number of 15, the improvement comprising conducting said reaction in the presence of from about 0.05–10.0%, by weight, of calcium bis[monoethyl-(3,5-di-tert-butyl-4-hydroxybenzyl)phosphonate] as said catalyst.

4,659,515

PROCESS FOR THE PREPARATION OF 6-DEMETHYL-6-DEOXY-6-METHYLENE-5-OXYTETRACYCLIN AND THE 11A-CHLORO-DERIVATIVE THEREOF

György Lugosi, Göd; Mária Hima née Toth, Budapest; Mária Bakonyi, Budapest, and Sándor Szoke, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt, Budapest, Hungary

Filed Aug. 31, 1984, Ser. No. 646,574

Claims priority, application Hungary, Sep. 2, 1983, 3061/83

Int. Cl.⁴ C07C 103/19

U.S. Cl. 260—351.5 **6 Claims**

1. A process for the preparation of a compound selected from the group consisting of 6-demethyl-6-deoxy-6-methylene-5-oxytetracycline and 11a-chloro-6-demethyl-6-deoxy-6-methylene-5-oxytetracycline or a pharmaceutically acceptable acid addition salt thereof in a yield of at least 85% and in pure form, which comprises treating 11a-chloro-5-oxytetracycline-6,12-hemiketal or a pharmaceutically acceptable acid addition salt thereof with a dehydrating mixture formed by the reaction of chlorosulfonic acid and formic acid and isolating the 11a-chloro-6-demethyl-6-deoxy-6-methylene-5-oxytetracycline or the pharmaceutically acceptable acid addition salt thereof thus obtained, or optionally dehalogenting the 11a-chloro-6-demethyl-6-deoxy-6-methylene-5-oxytetracycline or the pharmaceutically acceptable acid addition salt thereof by reaction with a reducing agent, to yield the 6-demethyl-6-deoxy-6-methylene-5-oxytetracycline or the pharmaceutically acceptable acid addition salt thereof.

4,659,516

STEROID DERIVATIVES

Jean Bowler, Sandbach, and Brian S. Tait, Macclesfield, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Filed Oct. 1, 1984, Ser. No. 656,466

Claims priority, application United Kingdom, Oct. 12, 1983, 8327256

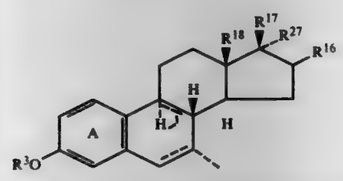
Int. Cl.⁴ C07J 00/00; A61K 31/56

U.S. Cl. 260—397.5 **8 Claims**

1. A steroid derivative of the formula:

ST—A—X—R^1

wherein ST is a 7α-linked steroid nucleus of the general formula:



wherein the dotted lines between carbon atoms 6 and 7, and carbon atoms 8 and 9, of the steroid nucleus indicate that there is an optional double bond between carbon atoms 6 and 7, or that there are two optional double bonds between carbon atoms 6 and 7 and carbon atoms 8 and 9;

wherein the aromatic ring A may optionally bear one or two of a member selected from the group consisting of halogen and alkyl substituents;

wherein R^3 is hydrogen or alkyl, alkanoyl, alkoxycarbonyl, carboxyalkanoyl or aroyl each of up to 10 carbon atoms;

wherein R^{16} is hydrogen, alkyl of up to 6 carbon atoms which is preferably in the β-configuration, or hydroxy which is preferably in the α-configuration;

wherein either R^{17} (in the β-configuration) is hydroxy or alkanoyloxy, carboxyalkanoyloxy or aroyloxy each of up to 10 carbon atoms; and R^{27} (in the α-configuration) is hydrogen or alkyl, alkenyl or alkynyl each of up to 6 carbon atoms; or R^{17} and R^{27} together form oxo (=0);

wherein R^{18} is alkyl of up to 6 carbon atoms;

wherein A is straight-or branched-chain alkylene, alkenylene or alkynylene each of from 3 to 14 carbon atoms, which may have one or more hydrogen atoms replaced by fluorine atoms, or has the formula

$$-A^1-Y-A^{11}-$$

wherein A^1 and A^{11} are each alkylene or alkenylene, optionally fluorinated, having together a total of 2 to 13 carbon atoms and Y is —O—, —S—, —SO—, and —SO_2—, —CO— or —NR— wherein R is hydrogen or alkyl of up to 3 carbon atoms;

or A^1 is alkylene or alkenylene, optionally fluorinated, and A^{11} is a direct link or alkylene or alkenylene, optionally fluorinated, such that A^1 and A^{11} together have a total of 1 to 12 carbon atoms, and Y is —NRCO—, —CONR—, —COO—, —OCO— or phenylene wherein R has the meaning stated above;

wherein R^1 is hydrogen, or alkyl, alkenyl, cycloalkyl, halogenoalkyl, carboxyalkyl, alkoxycarbonylalkyl, aryl or arylalkyl each of up to 10 carbon atoms, or dialkylaminoalkyl wherein each alkyl is of up to 6 carbon atoms, or R^1 is joined to R^2 as defined below;

and wherein X is —$CONR^2$—, —$CSNR^2$—, —NR^{12}—CO—,

$$\begin{matrix} & & NR^{22} \\ & & \| \\ -NR^{12}- & C & -NR^2- \end{matrix},$$

—NR^{12}—CS—, —NR^{12}—$CONR^2$—, —SO_2NR^2— or —CO—;

or, when R^1 is not hydrogen, is —O—, —NR^2—, —(NO)R^2—, —(PO)R^2—, —NR^{12}—COO—; —NR^{12}—SO_2—, —S—, —SO— or —SO_2—;

wherein R^2 is hydrogen or alkyl of up to 6 carbon atoms, or R^1 and R^2 together form alkylene or halogenoalkylene such that, with the adjacent nitrogen atom, they form a heterocyclic ring of 5 to 7 ring atoms, one of which atoms may be a second heterocyclic atom selected from oxygen, sulphur and nitrogen;

wherein R^{12} is hydrogen or alkyl of up to 6 carbon atoms; and wherein R^{22} is hydrogen, cyano or nitro; or a salt thereof when appropriate.

4,659,517

HALOGEN LABELED COMPOUNDS INCLUDING ESTRADIOL DERIVATIVES, THEIR SYNTHETIC INTERMEDIATES AND THE SYNTHESES THEREOF

Jay Spicer, Kansas City; William P. Duncan, Prairie Village, both of Kans., and Gary A. Rotert, Kansas City, Mo., assignors to Bio-Medical Research Laboratories, Inc., Overland Park, Kans.

Filed Oct. 22, 1984, Ser. No. 663,600

Int. Cl.⁴ A61K 43/00; C07J 1/00

U.S. Cl. 260—397.5 **56 Claims**

1. A process for the preparation of an iodo-substituted compound of the estrane series comprising a step of reacting RX, with a source of iodide ions, I-, to form RI; wherein:

(a) X is a triflate leaving group having a formula: —O-SO_2CF_3

(b) R is an estrane series substrate having ability to undergo nucleophilic substitution at a carbon substituted by X; and, R is otherwise generally insensitive to iodide ions.

27. A radioactive composition by the process of claim 1, 3 or 21 for use in diagnostic and therapeutic medicine, said composition including:

(a) a radioactive estradiol component comprising 16 alpha-^{123}I-17-beta-estradiol;

(i) said estradiol component having a specific activity of substantially greater than 2,000 curies per millimole.

4,659,518

PREPARATION OF CARBOXYLIC ACIDS

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., Little Ferry, N.J.

Filed Dec. 24, 1980, Ser. No. 219,786

The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.

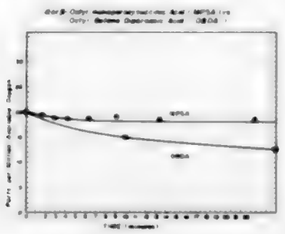
Int. Cl.⁴ C07C 51/12

U.S. Cl. 260—413 **2 Claims**

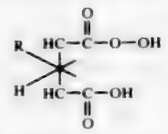
1. A process for the preparation of a carboxylic acid which comprises reacting a hydrocarbyl alcohol with carbon monoxide in the presence of a molybdenum-nickel cocatalyst in the presence of an iodide and in the presence as a promoter of an organo-phosphorus compound or an organo-nitrogen compound wherein the phosphorus and nitrogen are trivalent.

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4,659,519
PROCESS FOR SYNTHESIZING ALKYL MONOPEROXYSUCCINIC ACID BLEACHING COMPOSITIONS
Hao Ku, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.
Filed Jul. 2, 1984, Ser. No. 626,826
Int. Cl.⁴ C07C *87/00*
U.S. Cl. 260—502 R **14 Claims**



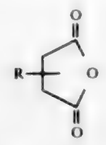
1. A process for synthesizing the monoperoxyacid having the general structure:



wherein R is an unsubstituted or substituted straight chain alkyl of 6 to 16 carbon atoms, unsubstituted or substituted branched chain alkyl of 6 to 20 carbon atoms, or a phenyl group substituted with one or more of H, alkyl of 1 to 14 carbon atoms, F, Cl, NO_3, OSO_3M, or COOM, and M is further defined as H, an alkali metal or ammonium cation, said process comprising:

(a) combining:

(i) an alkylsuccinic anhydride of the general structure:



wherein R is defined as above;

(ii) a water immiscible organic solvent;

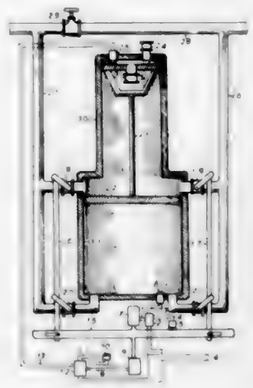
(iii) a water soluble organic solvent, said water immiscible organic solvent being in a ratio with said water soluble organic solvent of at least 2:1; and

(iv) hydrogen peroxide, said hydrogen peroxide being in a ratio with said anhydride in a ratio of at least 2:1; and

(b) agitating under heat; said process producing substantially no diperoxy acid.

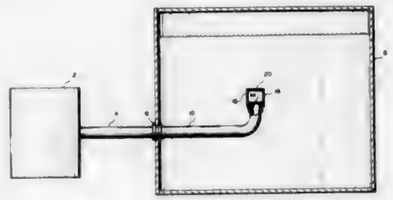
4,659,520
AIR INJECTOR
Stephen C. Tarver, P.O. Box 127, Gillette, Wyo. 82716
Filed Feb. 20, 1986, Ser. No. 831,176
Int. Cl.⁴ B01F *3/04*
U.S. Cl. 261—25 **2 Claims**

1. A device to inject air into water under pressure comprising: An enclosed elongated housing around two pistons connected to each other by a connecting rod, and positioned to slide alternately toward one end of said housing and then toward the other, said pistons being propelled back and forth by water under pressure entering alternately through two openings, one on each side of the driving piston, and alternately exiting through two openings on the opposite sides of said driving, and further including a means to alternately open



and close said openings in pairs, said means being activated by movement of said pistons, and also a check valve mounted in the other piston to allow air to pass through it in one direction but not the other and further including a check valve mounted in said housing to allow air to enter said housing above said other piston from the outside.

4,659,521
METHOD FOR CONDENSING A GAS IN A LIQUID MEDIUM
Carl E. Alleman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation of Ser. No. 717,352, Mar. 29, 1985, abandoned. This application May 5, 1986, Ser. No. 860,696
Int. Cl.⁴ B01F *3/04*
U.S. Cl. 261—123 **10 Claims**

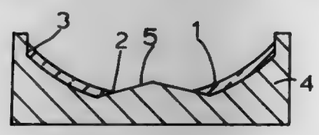


1. A process for condensing a gas in a liquid medium which is maintained at conditions at which said gas will condense, comprising:

passing said gas through an orifice to produce a high velocity gas-stream;

impinging said high velocity gas-stream against a flat plate disposed in a central area of said liquid medium at such velocity so as to cause said gas-stream to form a thin sheet of tiny gas bubbles fanning out in all directions before substantial condensing of said gas occurs in said liquid medium, thereby reducing gas hammer effects and minimizing disruption of said liquid medium by said gas condensing in said liquid medium.

4,659,522
METHOD OF SPIN CASTING AN OPHTHALMIC DEVICE WITH A CENTRAL APERTURE
Charles W. Neefe, 811 Scurry, P.O. Box 429, Big Spring, Tex. 79720
Continuation-in-part of Ser. No. 751,484, Jul. 3, 1985, which is a continuation-in-part of Ser. No. 740,569, Jun. 3, 1985, Pat. No. 4,637,791, which is a continuation-in-part of Ser. No. 642,114, Jul. 17, 1984, Pat. No. 4,534,915, which is a continuation-in-part of Ser. No. 506,873, Jul. 5, 1983, abandoned, which is a continuation-in-part of Ser. No. 417,641, Sep. 9, 1982, Pat. No. 4,416,837. This application Jul. 31, 1986, Ser. No. 891,122
Int. Cl.⁴ B29D *11/00*
U.S. Cl. 264—2.1 **14 Claims**



2. A method of spin casting a corneal device having a central open aperture by the steps of providing a concave spin casting mold having a centrally located convex cone, placing a liquid monomer in the concave spin casting mold, rotating the concave spin cast mold around the central axis of the concave mold and the convex centrally located cone, allowing the surface of the rotating liquid monomer to assume a concave shape surrounding the central convex cone, allowing the rotating liquid lens monomer to polymerize forming a solid open aperture corneal device, removing the corneal device having an open central aperture from the spin casting mold.

4,659,523
PRODUCTION OF IODINE STAINABLE POLYESTER POLARIZER FILM
John H. Rogers, Greenville; Michael J. Hopper, Taylors, and Michael R. Martin, Greenville, all of S.C., assignors to American Hoechst Corporation, Somerville, N.J.
Filed Nov. 30, 1984, Ser. No. 676,980
Int. Cl.⁴ B29D *7/00*
U.S. Cl. 264—1.3 **16 Claims**

1. A process for preparing an iodine stainable polyester film which consists of:

(a) extruding a moving molten web of polyester film; and

(b) quenching said moving beg to solidify it in a substantially amorphous form; and

(c) applying an anchor coating to at least a portion of the surface of said film wherein said anchor coating promotes adhesion of polyvinyl alcohol to polyester film; and

(d) applying a coating of a dispersed aqueous composition of polyvinyl alcohol to at least a portion of the surface of said film; and

(e) stretching the moving web in a direction transverse to the direction of motion while heating said web at a temperature of from about its glass transition temperature to about 160° C.; and

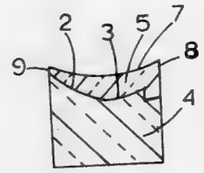
(f) crystallizing said moving web by heating it to a temperature in the range of 130° C. to 240° C. without stretching said web; and

(g) cooling said web to substantially ambient atmospheric room temperature

(h) subsequently passing said web through a staining bath containing iodine and one or more iodine salts;

(i) subsequently passing said web through an aqueous stabilizing bath containing boric acid and borax, with the proviso that said polyvinyl alcohol be from 95 to 99 percent hydrolyzed and that the dry coating weight of said polyvinyl alcohol be from 1.0 to about 2.1 pound of coating per thousand square feet of film prior to stretching.

4,659,524
METHOD OF MOLDING BIFOCAL CONTACT LENSES
Charles W. Neefe, 811 Scurrys St., P.O. Box 429, Big Spring, Tex. 79720
Continuation-in-part of Ser. No. 710,983, Mar. 12, 1985, abandoned. This application Aug. 27, 1985, Ser. No. 769,678
Int. Cl.⁴ B29D *11/00*
U.S. Cl. 264—2.5 **17 Claims**



1. A method of molding a bifocal contact lens having a crescent shaped reading segment made by the steps of providing a metal convex mold member, cutting the shorter radius near focusing convex optical surface in the central area of the metal convex mold, cutting a longer radius convex distant focusing optical surface having from 0.25 to 3.5 prism diopters and positioned to intersect the near focusing segment forming a crescent shaped shorter radius near focusing segment, placing the convex metal bifocal mold in a metal cylinder and applying a heated and softened resinous material to the convex metal bifocal mold surface, allowing the heated and softened plastic resinous material to assume the shape of the metal convex bifocal mold, allowing the heated and softened resinous material to cool and form a solid concave image of the convex material bifocal mold, placing the solid concave bifocal resinous mold in a silicone rubber sleeve and covering the concave bifocal resinous mold with a transparent liquid lens monomer allowing the liquid lens monomer to polymerize to form a solid transparent convex replica of the concave resinous bifocal mold, removing the concave resinous bifocal mold and the transparent lens material from the silicone rubber sleeve and cutting a concave optical surface on the lens material to form a bifocal lens, removing the bifocal lens from the concave resinous mold.

4,659,525
DASHBOARD REPAIR METHOD
Lawrence L. Speer, 6585 Boneta Rd., Medina, Ohio 44256
Filed Nov. 12, 1985, Ser. No. 797,047
The portion of the term of this patent subsequent to Apr. 9, 2002, has been disclaimed.
Int. Cl.⁴ B32B *35/00*
U.S. Cl. 264—36 **5 Claims**

1. A method of repairing a damaged dashboard or similar article, said method comprising the steps of:

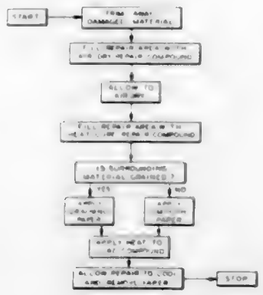
trimming away damaged material to form a repair area in the undamaged material,

substantially filling said repair area with an air drying repair compound,

allowing said repair compound to air dry,

applying, over said air drying repair compound, a heat curable repair compound comprising from 55 to 80 percent of a plastisol compound having a consistency like that of a soft paste and from 20 to 45 percent of a polyester resin and wherein, just prior to application of the heat curable

repair compound, the constituents thereof are first mixed together,



applying heat to said heat curable repair compound to cure said compound.

4,659,526

SLIP CASTING FORMING METHOD AND MOLD

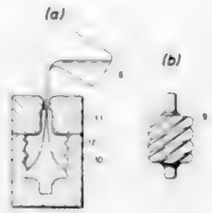
Takashi Shimaguchi, Ibaraki; Tatsuo Natori, Kashiwa; Akihide Watanabe, Ibaraki, and Keiichi Koike, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 2, 1985, Ser. No. 719,073

Claims priority, application Japan, Apr. 2, 1984, 59-63319; Nov. 9, 1984, 59-234979

Int. Cl.⁴ B28B *1/26*

U.S. Cl. 264—86 **13 Claims**



1. In a forming method wherein a slip containing water is cast into a mold, and the mold is removed after hardening of the slip; a slip casting forming method characterized in that powders insoluble in the water of said slip are used as a bone material of said mold and are patterned by using as a water-soluble binder, a material selected from the group consisting of a carbonate, a chloride, a phosphate and a sulfate.

4,659,527

METHOD OF MOLDING A LIGHT-WEIGHT, CELLULAR CONCRETE PANEL HAVING A WINDOW OR CERAMIC PLATE EMBEDDED THEREIN

Takao Kataishi, Kagamihara, and Syonin Suenaga, Kohnan, both of Japan, assignors to Misawa Homes Company Limited, Tokyo, Japan

Continuation of Ser. No. 581,173, Feb. 17, 1984, abandoned. This application Feb. 10, 1986, Ser. No. 827,679

Claims priority, application Japan, Feb. 17, 1983, 58-25131; Jun. 15, 1983, 58-107445

Int. Cl.⁴ B28B *1/50, 23/00, 23/22;* **E04B** *2/00*

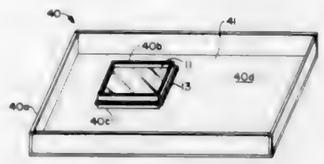
U.S. Cl. 264—46.4 **16 Claims**

1. A process for preparing a concrete panel for use in a building, comprising:

providing a mold with a mold cavity for molding a concrete panel, the concrete panel having at least one opening therein;

inserting at least one glass member, without a frame, into the mold cavity at the location of said concrete panel opening such that the edges of said glass member extend into the mold cavity of said mold;

casting curable light-weight cellular concrete having a substantially cellular foam structure in said mold to form a concrete panel having the edges of said at least one glass member embedded therein;



autoclave-curing said concrete panel of curable concrete with the edges of said glass member embedded therein;

wherein said concrete is selected to have a resistance to compression lower than that of said glass member due to the compressibility of cells of said concrete adjacent said glass member, such that, upon curing, said concrete around said edges of said glass member will deform to allow for differential expansion of said glass member and said concrete without substantial damage to said glass member.

4,659,528

METHOD OF MAKING AN ELECTROLYTE-PERMEABLE, HETEROGENEOUS POLYMER SHEET FOR A GAS DIFFUSION COMPOSITE ELECTRODE

Keith R. Plowman, and Charles E. Goldsmith, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 678,139, Dec. 4, 1984, Pat. No. 4,581,116. This application Jan. 24, 1986, Ser. No. 822,084

Int. Cl.⁴ B29C *43/24, 71/00;* **B29D** *7/01*

U.S. Cl. 264—49 **14 Claims**

1. A method for the preparation of an electrolyte-permeable polymer sheet useful in the formation of a composite electrode for an electrochemical cell, comprising the steps of:

(A) preparing an interconnected, hydrophilic island material first dispersion in a liquid dispersion medium, said island material comprising a blend of about 1 to about 10 percent by weight of a hydrophobic polymer and an electrically conductive, hydrophilic, particulate material containing admixed therewith an electrochemically active catalyst;

(B) preparing a hydrophobic matrix material second dispersion in a liquid dispersion medium comprising a blend of a hydrophobic polymer and a pore-forming ingredient;

(C) precipitating said hydrophobic polymer onto said pore-forming ingredient and onto said particulate material and drying to remove substantially all of said liquid dispersion medium and produce dry blends of (A) and (B);

(D) mixing dried blends (A) and (B) with a liquid dispersion medium to produce a cohesive and pliable dough;

(E) subjecting the dough to a fibrillation step in which the mixture is shear-blended and formed into said electrolyte-permeable polymer sheet;

(F) sintering, and

(G) removing said pore-forming ingredient.

4,659,529

METHOD FOR THE PRODUCTION OF HIGH STRENGTH POLYACRYLONITRILE FIBER

Toshiyuki Kobashi, and Seiji Takao, both of Okayama, Japan, assignors to Japan Exlan Company, Ltd. and Toyo Boseki Kabushiki Kaisha, both of Osaka, Japan

Division of Ser. No. 593,239, Mar. 26, 1984, Pat. No. 4,535,027. This application May 6, 1985, Ser. No. 730,857

Claims priority, application Japan, Apr. 20, 1983, 58-70449

Int. Cl.⁴ D01F *6/18*

U.S. Cl. 264—182 **7 Claims**

1. A method of producing a high strength polyacrylonitrile fiber having a tensile strength not less than 20 g/d which comprises the following steps:

(i) preparing a spinning solution of a polymer mainly composed of acrylonitrile, said polymer having a weight average molecular weight not less than 400,000, in which solution, the polymer molecular chains are sufficiently loosened or extended, and wherein the polymer is dissolved in an inorganic solveat under reduced pressure for defoaming so that the solution will not contain air bubbles;

(ii) spinning the thus-obtained solution to form gel filaments having a diameter within the range from 50 to 300μ;

(iii) coagulating said gel filaments at a temperature lower than room temperature;

(iv) subjecting the gel filaments to a multistage stretching which comprises the stages of stretching the gel filaments, stretching in hot water, and stretching in steam or in a high boiling point medium having a boiling point higher than 100° C. and

(v) drying the filaments at a temperature lower than 130° C. under tension to avoid a strength drop associated with heat relaxation.

4,659,530

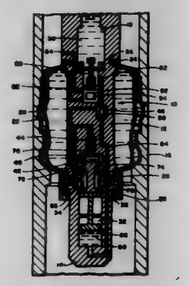
METHOD OF TAKING AN IMPRESSION WITH AN INTERNAL BORE IMPRESSION TOOL

Charles L. Boyers, Carmel, and John W. Finlayson, Ventura, both of Calif., assignors to Vetco Gray Inc, Houston, Tex.

Division of Ser. No. 745,053, Jun. 17, 1985, Pat. No. 4,616,987. This application Jun. 16, 1986, Ser. No. 874,778

Int. Cl.⁴ B29C *45/00*

U.S. Cl. 264—315 **1 Claim**



1. The method of taking an impression of an area in the internal bore of a tubular member or joint comprising the steps of lowering a tool having molding compound therein in an unmixed state and having a pair of inner and outer membranes of resilient material.

pressurizing said tool to cause said molding compound to mix and to be directed between said pair of inner and outer membranes of resilient material,

expanding said mixed compound and pair of membranes of resilient material a predetermined amount so that the outer membrane engages and conforms to said area,

holding said expanded compound and membranes until the compound cures to form a mold including an impression of said area,

retracting said mold still within said membranes and withdrawing the tool for examination of the impression made of the area in question.

4,659,531

METHOD AND APPARATUS FOR MANUFACTURING A HOLLOW PLASTIC PRODUCT

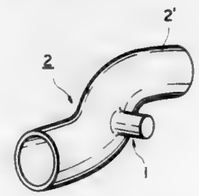
Yasuo Ezaki, Nitta, Japan, assignor to Excell Corporation, Tokyo, Japan

Filed Oct. 22, 1984, Ser. No. 663,810

Claims priority, application Japan, Feb. 13, 1984, 59-22993

Int. Cl.⁴ B29C *49/20*

U.S. Cl. 264—515 **7 Claims**



1. A process for manufacturing a hollow plastic product including at least one tubular section and at least one projecting section projecting outwardly from said tubular section, comprising the steps of:

preparing a first mold half engraved with a first groove defining a part of a mold cavity corresonding in shape to said hollow plastic product to be molded, said first groove including at least one tubular portion and at least one projecting portion which correspond to said tubular and projecting sections of the product, respectively;

supplying a clump of first molten molding material to said at least one projecting portion of said first mold half;

supplying a parison of second molten molding material to said at least one tubular portion of said first mold half;

bringing a second mold half engraved with a second groove defining the remaining part of the mold cavity into contact with the first mold half whose said at least one projecting portion has been supplied with said clump and said at least one tubular portion has been supplied with said parison; and

introducing a pressurized gas into said parison while maintaining said first and second mold halves clamped together, thereby carrying out blow molding to have said clump and said parison integrated together.

5. Apparatus for manufacturing a hollow plastic product including at least one tubular section and at least one projecting section which projects outwardly from an outer surface of said tubular section, comprising:

a first mold half engraved with a first groove including at least one tubular portion corresponding to said tubular section of said product and at least one projecting portion corresponding to said projecting section of said product;

first supplying means for supplying a parison of first molding material into said tubular grooved portion of said first mold half;

second supplying means for supplying a clump of second molding material into said projecting grooved portion of said first mold half;

a second mold half engraved with a second groove, which defines a mold cavity corresponding in outer shape to said product to be manufactured when said second mold half is brought into mating contact with said first mold half;

means for bringing said second mold half into mating contact with said first mold half after having supplied said

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parison into said tubular grooved portion and said clump into said projecting grooved portion; and

means for introducing a pressurized gas into said parison while maintaining said first and second mold halves clamped together after said second mold half has been brought into mating contact with said first mold half to carry out blow molding thereby causing said clump to become integrated with said parison.

4,659,532

INTERNAL DUSTING OF FILM TUBES COMPOSED OF THERMOPLASTICS

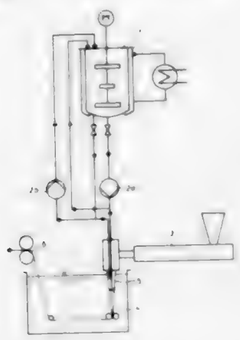
Wolfgang Renger, Bomlitz-Bommelsen, Fed. Rep. of Germany, assignor to Wolff Walsrode AG, Walsrode, Fed. Rep. of Germany

Filed Jul. 30, 1985, Ser. No. 760,375

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3429963

Int. Cl.⁴ B29C *47/88*

U.S. Cl. 264—518 **10 Claims**



1. A process for producing anti-blocking film tubes composed of thermoplastic resin, wherein the tube which is still substantially molten is cooled internally with an aqueous suspension containing an anti-blocking agent directly after its extrusion, the suspension is subsequently sucked from the interior of the tube, and the tube which is additionally cooled on its exterior in a water bath is freed from remaining fluid using squeezing rollers.

4,659,533

PROCESS FOR THE FORMATION OF LARGE VOID-FREE THERMOPLASTIC ARTICLES

Harold C. Abramson, Jr., Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 16, 1985, Ser. No. 776,712

Int. Cl.⁴ B29C *35/16, 45/72, 71/02*

U.S. Cl. 264—570 **8 Claims**

1. A process of the injection molding of synthetic resinous thermoplastic articles having a minimal dimension of about 0.75 inch, the steps of the method comprising heat plastifying a synthetic resinous thermoplastic composition, injecting the resultant heat plastified synthetic resinous composition into a mold, cooling at least the exterior portion of the injected thermoplastic resinous composition to a temperature at which the resultant article is self supporting, transferring the injection molded article to a pressure vessel, subjecting the molding to a fluid pressure, using a liquid, in a range of from about 1000 to about 6000 pounds per square inch, and thereby preventing the formation of internal voids which are visible to the naked eye while cooling the entire injection molded article below its heat plastifying temperature.

4,659,534

PRODUCTION OF THIN-WALLED CYLINDRICAL BODY OF AROMATIC POLYESTER

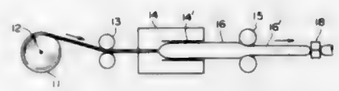
Tooru Matsubayashi, Sagamihara, and Seiichi Yamashiro, Kodaira, both of Japan, assignors to Teijin Limited, Higashi, Japan

Filed Oct. 23, 1984, Ser. No. 664,071

Claims priority, application Japan, Oct. 24, 1983, 58-197560; Oct. 25, 1983, 58-198244

Int. Cl.⁴ B29C *55/28*

U.S. Cl. 264—566 **17 Claims**



1. A process for producing a thin-walled cylindrical body of an aromatic polyester, which comprises

(A) heating a continuous thick-walled tubular body of an aromatic polyester having ethylene terephthalate as main recurring units by introducing it continuously into a heating zone while feeding a pressure fluid into the thick-walled tubular body,

(B) expanding the heated thick-walled tubular body into a cylindrical form within the heating zone or after it has passed through the heating zone, and

(C) continuously stretching and taking up the resulting cylindrical expanded body simultaneously with the expansion or after the expansion has substantially ended, while at least forming a fold-free portion in the expanded body in its longitudinal direction, said stretching and taking-up being carried out by using at least two means for intermittently holding the cylindrical expanded body to seal the pressure fluid and achieving the sealing of the pressure fluid by a combination of the holding and releasing of the cylindrical expanded body by said means.

4,659,535

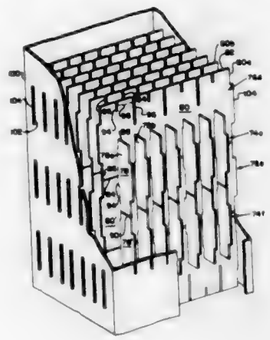
GRID STRUCTURE FOR FUEL ROD CONSOLIDATION CANISTER

Michael V. Couture, Holyoke, Mass., and Ronald Keklak, Amston, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 24, 1984, Ser. No. 686,173

Int. Cl.⁴ G21C *19/00*

U.S. Cl. 376—261 **16 Claims**



1. In a nuclear fuel rod consolidation system comprising a box and grid combination for consolidating fuel rods by funneling an initially loosely packed rectangular array of fuel rods into a more tightly packed rectangular array of fuel rods, said combination including:

an upright, elongated tapered box having a front, a back, and two side panels, and

a grid structure mounted within said box for receiving the loosely packed, rectangular array of fuel rods into the upper end of the grid and urging the fuel rods into a tightly packed rectangular array at the lower end of the grid,

said grid structure having a multiplicity of flat, vertically oriented trapezoidal segments interconnected to form a plurality of vertically overlapping grid layers, each overlapping layer oriented transversely to the other, the layers having alternating row and column orientation and forming a substantially continuous honeycomb of longitudinal cells, the cross-sectional area of each cell decreasing from the uppermost layer to the lowermost layer such that when the fuel rods are inserted through respective individual cells at the top of the grid structure, the fuel rods are funneled by the cells to form the tightly packed array.

4,659,536

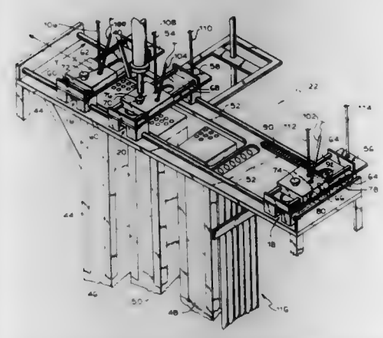
SYSTEM AND METHOD FOR CONSOLIDATING SPENT FUEL RODS

Thomas O. Baudro, Gales Ferry, Conn., assignor to Proto-Power Corporation, Groton, Conn.

Filed Jun. 14, 1985, Ser. No. 745,402

Int. Cl.⁴ G21C *19/32*

U.S. Cl. 376—261 **30 Claims**



1. A system for consolidating spent fuel rods from spent fuel assemblies, comprising:

a consolidation container in which the fuel rods may be packed;

a frame capable of holding a fuel assembly and the container during consolidation, the frame permitting each of the fuel assembly and the container to be removed;

tool means with gripper means for gripping and releasing a rod, the tool means including means for moving the gripper means upwardly and downwardly;

a first indexing head having first guide means for guiding the gripper means while the gripper means moves downwardly;

a first rail, the first indexing head being slidably mounted on the first rail;

a second indexing head having second guide means for guiding the gripper means while the gripper means moves downwardly;

a second rail, the second indexing head being slidably mounted on the second rail; and

a third rail, the first rail and the second rail being slidably mounted on the third rail;

wherein the first indexing head is slidable on the first and third rails to a first position that is above a preselected rod in the fuel assembly; and

wherein the second indexing head is slidable on the second and third rails to a second position that is above a preselected location in the container.

4,659,537

APPARATUS FOR MAINTENANCE OF NUCLEAR FUEL ASSEMBLIES

Daniel Beunéche, Collonges Au Mont D'Or, and Pierre Amiet, Condrieu, both of France, assignors to Framatone et Cogema, Paris, France

Filed Nov. 16, 1983, Ser. No. 552,559

Claims priority, application France, Nov. 16, 1982, 82 19162

Int. Cl.⁴ G21C *19/00*

U.S. Cl. 376—261 **16 Claims**



1. Apparatus for maintainance and repair of a nuclear fuel assembly of the type comprising: a skeleton having an upper end piece, a lower end piece and tie members connecting said end pieces and removably fixed to at least said upper end piece; and a bundle of fuel rods retained between said end pieces, said apparatus comprising:

(a) a cell vertically displaceable in a water tank and provided at the upper part thereof with a base plate having an opening for passage of one said fuel assembly and clamping means operable for clamping said nuclear fuel assembly below said upper end piece and releasing said nuclear fuel assembly,

(b) a centering assembly constructed for insertion to and removal from a location over the upper end piece of the fuel assembly and provided with locking means for releasable connection of said centering assembly and said upper end piece and with guiding passages;

(c) remote handling tool means for moving said centering assembly to and from said location over said upper end piece and for operating said locking means;

(d) and additional tools means insertable along said guiding passages for disconnecting the tie members from the upper end piece;

(e) an insertable unit arranged for slidable insertion over and around said upper end piece and provided with indexing means co-operating with associated indexing means on the base plate for preventing rotation of said insertable unit and upper end piece;

(f) and a grasping tool for handling said centering assembly and said insertable unit, having: a handling pole; downwardly directed vertical guide cylinders fast with said pole and arranged to engage over said centering means; and an internal tube mounted for rotation within said pole and provided at the lower end thereof with a rotatable plate provided with means for engaging with co-operating means in said columns for connection of the tool and insertable unit.

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4,659,538

APPARATUS FOR LIMITING THE EFFECT OF AXIAL HYDRAULIC FLOW FORCE EXERTED ON FUEL ASSEMBLIES OF WATER-COOLED NUCLEAR REACTORS

Joseph M. Leclercq, Saint Didier, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation-in-part of Ser. No. 488,006, May 2, 1983, abandoned, which is a continuation of Ser. No. 242,297, Mar. 10, 1981, abandoned. This application Jan. 6, 1984, Ser. No. 568,694
Claims priority, application France, Mar. 26, 1980, 80 06694
Int. Cl.⁴ G21C *3/12*
U.S. Cl. 376—364 **7 Claims**



1. In a light water nuclear reactor having upper and lower core plates disposed within a pressure vessel, centering pins located on facing surfaces of the core plates, a plurality of fuel assemblies vertically disposed between the upper and lower core plates, the fuel assemblies being formed for limited axial movement between the plates, and upper and lower ends of the fuel assemblies having housings for receiving said centering pins, the pins penetrating axially into the housings, and an upward coolant water flow through said fuel assemblies which exerts an axial hydraulic flow force thereon, apparatus for limiting the effect of variations in said axial hydraulic flow force on said fuel assemblies comprising an elastic sleeve positioned within each housing of each fuel assembly for receiving a corresponding one of said centering pins, the sleeve comprising a cylindrical member having a slit in a wall thereof and a C-shaped cross section, and having an inner diameter which is less than the diameter of said corresponding penetrating pin so that the sleeve is expanded by the pin, the inner diameter being selected such that the sleeve grips and exerts on the pin because of the elasticity of the sleeve a predetermined frictional force, said frictional force being selected to prevent, during normal operation of the reactor, axial movement of the fuel assembly caused by variations in said axial hydraulic flow force which are less than said predetermined frictional force and to permit axial movement of the fuel assembly while exerting a braking action thereon during variations in axial hydraulic flow force which exceed said predetermined frictional force, and wherein each housing further includes hydraulic damping means for limitng axial movement of the fuel assembly during abnormal variations in said hydraulic flow force which exceed said predetermined frictional force.

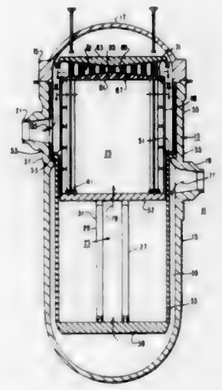
4,659,539

NUCLEAR REACTOR

James E. Kimbrell, Penn Hills; Charles H. Boyd; David A. Altman, both of Plum Borough; Donald G. Sherwood, Monroeville, and Glenn E. Bost, Pleasant Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 29, 1983, Ser. No. 490,101
Int. Cl.⁴ G21C *15/00*
U.S. Cl. 376—377 **17 Claims**

17. A nuclear reactor including a vessel, a nuclear core within said vessel, said vessel having at least a generally horizontal inlet nozzle and a generally horizontal outlet nozzle for circulating coolant through said core, control-rod assemblies including control rods moveable from a plenum vertically above said core into said core, drive rods for said control rods and guide means for said control rods within said plenum, said drive rods extending vertically above said control rods, said coolant, after passing through said core, flowing generally vertically through and about said guide means and generally vertically out, a calandria, said calandria including a plurality of vertical hollow members and horizontal supporting means for supporting said members, and means for mounting said calandria contiguous to the top of said guide means, with said drive rods each guided within, and protected by, a corresponding hollow member and the part of said calandria external to said hollow members in communication with said outlet nozzle, said supporting means permitting said coolant to flow from



the top of said guide means into said calandria externally of said hollow members, said coolant thereafter flowing to said outlet nozzle generally transversely to said hollow members through said calandria, said hollow members each having a mass, stiffness and strength such that said members resist failure as a result of the transverse flow of said coolant, and said supporting means being so shaped that the volumes of hypothetical contiguous annular sections regarded as making up the total volume of the calandria, between said supporting means, through which said coolant flows laterally of said hollow members, increases towards the periphery of said calandria so that the flow velocity of said coolant is relatively constant as said coolant from said guide means extending towards the periphery penetrates into said volume.

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COMPOSITE CONSTRUCTION FOR NUCLEAR FUEL CONTAINERS

Bo-Ching Cheng; Herman S. Rosenbaum, both of Fremont, and Joseph S. Armijo, Saratoga, all of Calif., assignors to General Electric Company, San Jose, Calif.

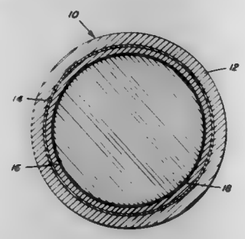
Division of Ser. No. 97,378, Nov. 26, 1979, Pat. No. 4,445,942. This application Feb. 9, 1984, Ser. No. 578,742
Int. Cl.⁴ G21C *3/06*
U.S. Cl. 376—417 **9 Claims**

1. A container for nuclear fuel for service in nuclear fission reactors, comprising:

(a) a casing of metal selected from the group consisting of zirconium and zirconium alloys;

(b) a composite lining of at least two individually deposited copper layers superimposed over the inside surface of said metal casing in sufficient thickness to provide a composite copper lining providing an effective chemical and physical barrier to reactor fuel fission products and conditions;

(c) a layer of oxide of the metal of the casing selected from the group consisting of zirconium and zirconium alloys on the inside surface of said metal casing and intermediate said inside surface and the individually deposited composite lining of layers of copper superimposed over said inside surface; and,



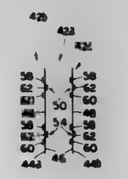
(d) said composite lining of layers of copper being composed of an underlying steam permeable, thin porous layer of copper having been initially deposited on the inside surface of the metal casing while said surface was substantially oxide free, and an overlying second layer of subsequently deposited copper.

4,659,541

NUCLEAR FUEL ROD SUPPORT GRID WITH IMPROVED MULTIPLE DIMPLE ARRANGEMENT

John A. Rylatt, Monroeville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1985, Ser. No. 729,387
Int. Cl.⁴ G21C *3/34*
U.S. Cl. 376—442 **6 Claims**



1. In an improved fuel rod support grid including a plurality of interleaved straps arranged so as to form a matrix of hollow cells, each cell for receiving one fuel rod and being defined by pairs of opposing elongated walls which are shared with adjacent cells, each wall of said pairs thereof, which define a single cell, having one side forming a part of the perimeter of said single cell and having an opposite side forming part of the perimeter of one of several cells disposed about and adjacent to said single cell, the improvement which comprises:

(a) a first set of dimples formed at an upper end of each wall of said pairs thereof defnining each cell of said grid; and

(b) a second set of dimples formed at a lower end of each wall of said pairs thereof defining each cell of said grid;

(c) each of said first and second sets of dimples being composed of a pair of upper and lower dimples which project outwardly from the same one side of the wall in which said dimples of said set are formed and a center dimple being located between and adjacent to said upper and lower dimples and which projects outwardly from the opposite side of the wall in which said dimples of said set are formed;

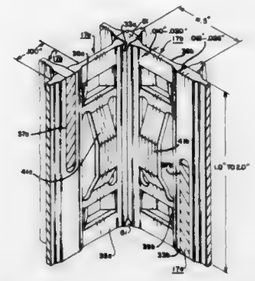
(d) said dimples in said first and second sets thereof being adapted to resiliently and frictionally engage fuel rods when received through adjacent ones of said respective cells.

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GRID STRUCTURE FOR NUCLEAR FUEL ASSEMBLY

John S. Kerrey, North Columbia, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 3, 1984, Ser. No. 657,422
Int. Cl.⁴ G21C *3/34*
U.S. Cl. 376—442 **7 Claims**



1. A grid structure for a fuel assembly of a nuclear reactor, the said assembly including a plurality of nuclear fuel elements, the said structure including a plurality of straps, each of said straps having a plurality of slots extending along one dimension thereof, said slots extending inwardly of the edge along said one dimension, a first set of said straps being interfitted with a second set of said straps by interlacing of each straps of said first set at its slots with the straps of the second set and by the interlacing of each strap of said second set at its slots with the straps of the first set, said straps by the interfitting as aforesaid providing channels within each of which a fuel element is disposed, each channel being bounded by oppositely disposed sections of two pairs of straps, each pair of oppositely disposed sections including resilient means engaging the fuel element in the channel which they bound for supporting the fuel element in said compartment laterally, each of said straps having strips extending coextensively with said slots having a thickness greater than the thickness of said strap between said coextensively extending strips, the interlacing of a strap of said first set and a strap of said second set forming a thick region of intersection of said last-named strap of said first set and said last-named strap of said second set, said first and second straps being joined by welding at each said region of intersection, the said greater thickness of said interlaced straps at said each region of intersection being sufficient to support a weld.

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CROSS BRACE FOR STIFFENING A WATER CROSS IN A FUEL ASSEMBLY

Chun K. Lui, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

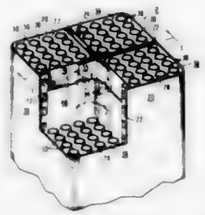
Filed Nov. 16, 1984, Ser. No. 672,042
Int. Cl.⁴ G21C *3/32*
U.S. Cl. 376—444 **8 Claims**

1. In a fuel assembly having a plurality of elongated fuel rods disposed in side-by-side relationship so as to form any array of spaced fuel rods, an outer tubular flow channel surrounding said fuel rods so as to direct flow of coolant/moderator fluid along said fuel rods, and a hollow water cross extending through said outer flow channel and having a plurality of hollow panels which extend radially from a central axis of said water cross and define an open inner flow channel for subcooled moderator fluid flow through said fuel assembly, said panels of said water cross being interconnected at their outer ends with angularly displaced portions of said tubular outer flow channel so as to divide said array of fuel rods into a plurality of subgroups and being interconnected with one another at their inner ends so as to define a central channel

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portion which extends the axial length of said water cross, the improvement which comprises:

means disposed in said central channel portion and interconnecting each of said panels with the others thereof so as to reinforce and stiffen said panels at their inner ends to prevent deflection of said water cross panels and thereby prevent deflection of said outer channel.



4,659,544

UNITARY STRUCTURE OF TAG GAS CAPSULE AND END CAP OF NUCLEAR FUEL CLADDING TUBE

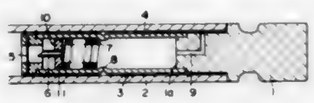
Takeo Sawayama; Izumi Iimura, both of Naka, and Hisaya Miyazaki, Yokohama, all of Japan, assignors to Doryokuro Kakuneeryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 620,041

Claims priority, application Japan, Jun. 30, 1983, 58-118540

Int. Cl.⁴ G21C *3/10*

U.S. Cl. 376—451 **10 Claims**



1. An end cap and tag gas device for closing an end of a cladding tube of a nuclear fuel element and for introducing tag gas into the fuel element, comprising:

an end cap body hermetically sealable to the cladding tube for closing an end of the cladding tube by welding said end cap body to an end of the cladding tube; and

a tag gas capsule for sealingly containing tag gas therein, said capsule being connected integrally to said end cap body to form a unitary structure and so as to be inserted in the cladding tube when said end cap body is welded to the end of the cladding tube;

said capsule including means, responsive to an elevated temperature of the fuel element in a nuclear reactor, for unsealing said capsule without the application of an external force to said capsule so as to allow tag gas in the capsule to escape therefrom;

said end cap body having an exposed outer surface having indicia indicative of information concerning the tag gas in said tag gas capsule.

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HYDRIDE BLISTER-RESISTANT ZIRCONIUM-BASED NUCLEAR FUEL ROD CLADDING

Harry M. Ferrari, Edgewood Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 7, 1984, Ser. No. 607,871

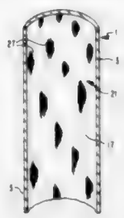
Int. Cl.⁴ G21C *3/06*

U.S. Cl. 376—457 **17 Claims**

1. A nuclear fuel rod comprising:

a metallic tubular cladding formed from a zirconium alloy, containing a nuclear fuel therein, and having end sealing means thereon to hermetically seal said nuclear fuel within said metallic tubular cladding;

a discontinuous thin film, about 0.01 to about 5 microns thick, of material, selected from the group consisting of nickel metal and nickel base-zirconium alloys, on the internal surface of said metallic tubular cladding to provide a nickel metal film over 1–40 percent of the area of said internal surface; and



whereby multiple sites of said thin film are provided for hydride transport from the interior of the nuclear fuel rod, so as to prevent localized hydride transport and resulting hydride blistering, and cladding failures resulting therefrom.

4,659,546

FORMATION OF POROUS BODIES

Michael W. Kearns, Dudley, England, assignor to IMI Titanium Limited, Birmingham, England

Filed Dec. 24, 1985, Ser. No. 813,467

Claims priority, application United Kingdom, Jan. 26, 1985, 8502021

Int. Cl.⁴ B22F *3/16*

U.S. Cl. 419—2 **10 Claims**

1. A method of manufacturing a porous body including the stages of placing a quantity of particulate material in a container capable of being made gas-tight, evacuating said container, admitting to said container a gas, compacting said particulate material at a temperature above ambient temperature to form a compact within said container under a pressure which results in the particulate material being bonded together around discrete gas-containing pores and also reduces the volume of the initially formed pores within said compact so that the gas in said pores is at a higher pressure than that in the initially formed pores, permitting said compact to cool while maintaining said pressure until a temperature is reached below which the material will not yield, removing said pressure, and subsequently heat treating said compact at a temperature within a range which permits the pressure within said pores to exceed the material flow stress and thereby expand to provide a porous body.

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INHOMOGENEOUS SINTERED BODY

Lars-Erik Svensson, and Ove Thornblad, both of Höganäs, Sweden, assignors to Höganäs AB, Höganäs, Sweden

PCT No. PCT/SE85/00217, § 371 Date Jan. 8, 1986, § 102(e) Date Jan. 8, 1986, PCT Pub. No. WO85/05352, PCT Pub. Date Dec. 5, 1985

PCT Filed May 23, 1985, Ser. No. 829,127

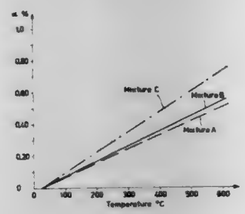
Claims priority, application Sweden, May 24, 1984, 8402811

Int. Cl.⁴ B22F *7/00*

U.S. Cl. 419—6 **20 Claims**

1. A process for preparing an inhomogeneous sintered body by adjoining metal powder with refractory ceramic powder at normal powder metallurgical pressures and sintering conditions, characterized thereby that the sintered body is manufactured in one layer, or in several layers having different mixing

rations between the ceramics and metal used, and that in the ceramics part and in the mixing zone there is admixed monoaluminum phosphate or alumina (or aluminum hydrate) and phosphoric acid (or dry phosphoric acid).



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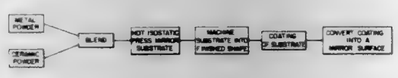
FABRICATION OF METAL MATRIX COMPOSITE MIRROR

Jacob D. Gubbay, Winchester, and Edward J. Hall, Lexington, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 13, 1986, Ser. No. 829,378

Int. Cl.⁴ B22F *3/26*

U.S. Cl. 419—10 **12 Claims**



1. The method for fabricating a high precision mirror from a near-net-shape mirror substrate of a discontinuous-reinforced metal matrix composite (MMC) material which includes the steps of:

heat treating the near-net-shape mirror substrate for hardening thereof;

machining the hardened near-net-shape mirror substrate into a semi-finished mirror substrate thereof;

heat treating the semi-finished mirror substrate to relieve stress thereof;

machining the heat treated semi-finished mirror subtrate to form a finished mirror substrate thereof;

applying a coating upon a surface of said finished mirror substrate to form a coated surface thereof;

converting said coated surface of the finished mirror substrate into a mirror surface; and

applying a protective coating on the mirror surface of said finished mirror substrate.

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BLOOD OXYGENATOR USING A HOLLOW FIBER MEMBRANE

Eiichi Hamada; Atsushi Nakashima, and Jun Kamo, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 682,858

Claims priority, application Japan, Mar. 14, 1984, 59-48793

Int. Cl.⁴ A61M *1/14, 1/18*; B01D *13/00*

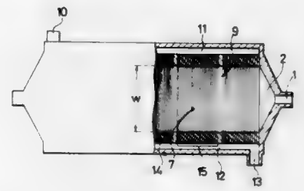
U.S. Cl. 422—48 **7 Claims**

1. A blood oxygenator comprising:

a housing having a blood inlet, a blood outlet, a gas inlet, a gas outlet, and a blood-gas contact chamber therein, said chamber having an entrance in communication with said blood inlet and an exit in communication with said blood outlet, said chamber having an overall length (b) as measured in a direction between said entrance and said exit, an overall width (w) measured in a direction perpendicular to said direct line, and an overall thickness (a) measured in a direction perpendicular to both said overall length and said overall width;

bundles of semi-permeable hollow fiber membrane disposed in said chamber and extending across said width (w) thereof, said membrane being made of a material suitable for the oxygenation of blood; and

a potting material securing together opposite ends of said bundles in such a way as to allow their open ends to communicate respectively with said gas inlet and said gas outlet, the space around said bundles communicating with said blood inlet and said blood outlet, wherein a blood flow path is established from said blood inlet, through said chamber and to said blood outlet,



said oxygenator further comprising means for minimizing hemolysis of blood flowing along said blood flow path, said means for minimizing hemolysis comprising blood flow restriction means in the form of at least one baffle extending into said blood flow path in the direction of said thickness of said chamber and forming a plurality of compartments in said chamber,

said at least one baffle extending substantially parallel to said bundles, the location of said at least one baffle with respect to said length of said chamber being such that the maximum thickness (a) of each said compartment formed by said at least one baffle is no greater than the length (b_1) of each said compartment as measured in the direction of said length of said chamber.

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METHOD AND APPARATUS FOR MEASURING BLOOD COAGULATION TIME

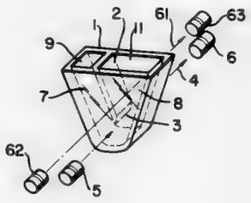
Kurt Schildknecht, Rotkreuz, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 20, 1982, Ser. No. 379,840

Claims priority, application Switzerland, Jun. 16, 1981, 3953/81; Mar. 25, 1982, 1843/82

Int. Cl.⁴ G01N *21/03, 33/86*

U.S. Cl. 422—73 **8 Claims**



1. An apparatus for measuring blood coagulation time comprising:

(a) a cuvette at least a portion of which is made of a translucent material for receiving a blood sample and at least one reagent to thereby form a blood sample-reagent mixture, said cuvette having a bottom and an upper portion, the upper portion having an opening for receiving a blood sample and at least one reagent and a partition which divides the upper portion into two chambers, the partition

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having opposing faces which intersect at an acute angle to form a sharp, wedge-shaped edge, said edge being situated within the cuvette at a predetermined distance from the bottom of the cuvette to permit unobstructed communication between the two chambers to permit flow of a blood sample-reagent mixture from one chamber to the other around the edge when variable air pressure is applied to the cuvette thereby causing a clot to form on said edge;

(b) means for producing variable air pressure which communicates via an opening with one of the chambers in the upper portion of the cuvette, said air pressure producing means also causing movement of a blood sample-reagent mixture from one of the chambers to the other around the sharp edge of the partition, thereby forming a clot on said edge;

(c) first electro-optical means for detecting a first point of time corresponding to the initial presence of a blood sample-reagent mixture in the cuvette with a first light beam which traverses the cuvette at a level situated above the sharp edge of the partition in relation to the bottom of the cuvette;

(d) second electro-optical means for detecting a second point of time corresponding to the formation of a clot on the sharp edge of the partition with a second light beam which traverses the cuvette along a path which passes generally close to and below the sharp edge of the partition, so that a clot formed on the edge is in that path of the second light beam and is therefore detectable therewith; and

(e) signal processing means electrically connected to the first and the second electro-optical means for measuring the time interval between the first and the second points of time, said interval being representative of the coagulation time of a blood sample.

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PROCESS FOR SEPARATION OF NEPTUNIUM FROM AN ORGANIC PHASE IN THE RECOVERY OF IRRADIATED FUEL AND/OR FERTILE MATERIALS

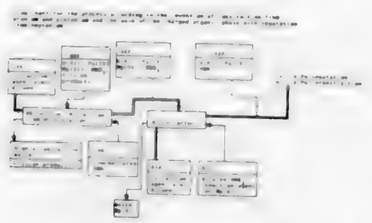
Zdenek Kolarik, Karlsruhe, and Robert Schuler, Germersheim, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 649,009

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1983, 3332954

Int. Cl.⁴ C01G *56/00*

U.S. Cl. 423—10 **16 Claims**



1. Process for separating neptunium from an organic phase, which is developed in the recovery of irradiated nuclear fuel and/or fertile material, the organic phase being developed by dissolving the irradiated nuclear fuel and/or fertile material in an aqueous, strong acid to form an aqueous phase containing uranium-, plutonium- and neptunium ions, as well as tritium in form of tritiated water and of fission products in ionic form, and then transferring the uranium-, plutonium- and neptunium ions, as well as portions of the tritium in form of tritiated water and fission products in ionic form from the aqueous phase into an organic phase comprised of an extraction agent dissolved in a diluent, the organic phase then being subjected to a first wash step and a second wash step, the wash steps being decontamination steps, respectively, with respect to fission products, comprising: treating the organic phase, charged predominantly with uranium (VI), plutonium (IV) and neptunium (VI) before the organic phase is further fed to a uranium-plutonium separation or to a uranium-plutonium coreextraction by:

(a) bringing the organic phase, after the first wash step, into contact with an aqueous reduction and stripping solution containing diluted HNO_3 being free of tritiated water, butyraldehyde and a low concentration of sulfamic acid in countercurrent flow as the second wash step for selectively reducing Np (VI) to Np (V) and for selectively stripping Np (V) with respect to U and Pu, from the organic phase into an aqueous phase;

(b) bringing the aqueous phase resulting from (a), which is charged with Np (V) and with portions of tritium and fission products, into contact with a solution of fresh extraction agent solution having a flow which corresponds to from 1/13.3 to 1/3.3 of the flow of the organic phase coming out from the first wash step and to be contaminated, to assure the selectivity of the stripping of Np (V) with respect to U and Pu; and

(c) separating the aqueous phase resulting from step (b) containing Np (V), tritium and fission products from the solution of fresh extraction agent employed in step (b), and staying uncoupled from the first wash.

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SCAVENGERS FOR THE REMOVAL OF IMPURITIES FROM ARSINE AND PHOSPHINE

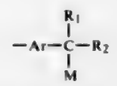
Glenn M. Tom, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jul. 21, 1986, Ser. No. 888,180

Int. Cl.⁴ C01B *13/00*

U.S. Cl. 423—219 **3 Claims**

1. A process for removing oxidants, protic acids and compounds that can be metallated, from a hydride selected from the group consisting of arsine and phosphine, said process comprising (1) contacting the hydride with a scavenger comprising the reaction product of the hydride and a metallated macroreticulate polymer having a plurality of pendant functional groups or mixtures of functional groups having the general formula:



where Ar is an aromatic hydrocarbon radical containing from one to three rings, R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen and alkyl hydrocarbon radicals containing from 1 to 12 carbon atoms and M is a metal selected from the group consisting of sodium, potassium and lithium, said metallated macroreticulate polymer having within its pores a compound of M selected from the group consisting of a 1–12 carbon alkyl compound and a hydride, or mixtures thereof and (2) separating the hydride from the macroreticulate polymer scavenger.

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PROCESS FOR REMOVAL OF UNDESIRABLE GASEOUS COMPONENTS FROM HOT FLUE GASES

Gerhard Linde, Grunwald, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 539,943, Oct. 7, 1983, abandoned. This application Dec. 21, 1984, Ser. No. 685,082

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237387

Int. Cl.⁴ C01B *17/00;* **B01D** *19/00, 39/00, 57/00*

U.S. Cl. 423—243 **21 Claims**

1. A process for desulfurizing hot flue gases generated by the combustion of carbonaceous fuels, comprising the steps of:

(a) cooling flue gas containing SO_2 and SO_3 to a temperature range between below the acid dew point and above 0° C.; and

(b) scrubbing the flue gas with a solvent in a scrubbing column to obtain a desulfurized gas, wherein said solvent comprises more than 50% tetraethyleneglycol dimethylether; and

(c) regenerating resultant solvent loaded with SO_2 for reuse in the scrubbing process.

4,659,554

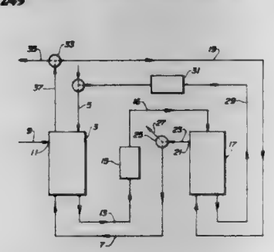
LOW-ENERGY PROCESS FOR SEPARATION OF HYDROGEN ISOTOPES

Samuel Levinson, North Brunswick; George G. Libowitz, Brookside, and Arnulf J. Maeland, Succasunna, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 4, 1984, Ser. No. 617,001

Int. Cl.⁴ B01D *59/33;* **C01B** *4/00, 6/24*

U.S. Cl. 423—249 **11 Claims**



1. A process of enriching hydrogen with at least one heavy hydrogen isotope, comprising the steps of:

(a) counter-currently contacting, in a first multistage reaction zone, a metal hydride exhibiting an inverse isotope effect and being substantially free of deuterium and tritium with a gas comprising protium and at least one of deuterium and tritium, wherein said gas is comprised of (1) a first gaseous component comprising protium and the natural abundance of deuterium and tritium and (2) a second gaseous component comprising protium and greater than the natural abundance of at least one of deuterium and tritium, for a time sufficient to product a metal hydride comprising protium and at least one of deuterium and tritium above about an amount which would be produced by reaction with normal hydrogen, and a resulting gas comprising protium and less than about the natural abundance of at least one of deuterium and tritium by maintaining, in said first reaction zone during contacting, a temperature whereat said metal protide is less stable than the metal deuteride and the metal tritide;

(b) transferring said metal hydride enriched in at least one of deuterium and tritium from said first reaction zone to a seond multistage reaction zone, said metal hydride in said second reaction zone being at a temperature whereat the metal protide is more stable than the corresponding metal deuteride and the metal tritide;

(c) counter-currently contacting, in said second multistage reaction zone, said metal hydride enriched in at least one of deuterium and tritium with a gas comprising protium and less than about the natural abundance of deuterium and tritium for a time sufficient to produce a metal hydride substantially free of deuterium and tritium and a gas comprising protium and greater than about the natural abundance of at least one of deuterium and tritium by maintaining, in said second reaction zone during contacting, a temperature whereat said metal protide is more stable than the metal deuteride and metal tritide;

(d) transferring said metal hydride substantially free of deuterium and tritium from the second multistage reaction zone to the first multistage reaction zone;

(e) withdrawing the gas comprising protium and greater than about the natural abundance of at least one of deuterium and tritium from said second reaction zone and recovering at least a portion of the gas comprising protium and greater than the natural abundance of at least one of deuterium and tritium.

4,659,555

PROCESS FOR THE PREPARATION OF BASIC COPPER CARBONATE

Werner Gottfried, Altlussheim; Ernst Mack, and Lothar Witzke, both of Brühl, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG 03, Essen, Fed. Rep. of Germany

Filed Apr. 26, 1985, Ser. No. 727,861

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417629

Int. Cl.⁴ C01G *3/00*

U.S. Cl. 423—419 R **6 Claims**

1. A process for the preparation of basic copper carbonate from a copper etching process waste solution comprising adding the waste solution with stirring into a 5 to 15 weight percent alkali-metal carbonate solution at a temperature of 40° to 70° C., and not allowing the pH of the mixture to fall below 6.5, and subsequently separating the basic copper carbonate from the solution.

4,659,556

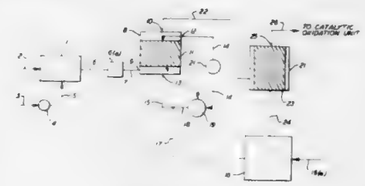
SINGLE STEP PURIFICATION OF SULFUR DIOXIDE GAS PREPARED BY THE COMBUSTION OF SULFUR CONTAINING COMPOUNDS

Donald A. Eros, Wilmington, Del., assignor to General Chemical Corporation, Morristown, N.J.

Filed Mar. 4, 1983, Ser. No. 472,304

Int. Cl.⁴ C01B *17/98, 17/48, 17/74*

U.S. Cl. 423—522 **9 Claims**



1. A process for removing solid materials and water from a process stream comprising sulfur dioxide, water and entrained solid materials prior to the catalytic conversion of the sulfur dioxide to sulfur trioxide, said process stream being produced by the combustion of one or more sulfur containing materials, said process consisting essentially of the steps of:

scrubbing said process gas stream to remove entrained solids with a sulfuric acid composition containing at least about 85 weight percent sulfuric acid based on the total weight of the composition; and

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feeding said scrubbed stream into a sulfuric acid mist eliminating means.

4,659,557

PROCESS FOR PRODUCING FERROUS SULPHATE IN GRANULE FORM

Uwe Lenz, Frechen, and Günter Ritter, Brühl, both of Fed. Rep. of Germany, assignors to Rheinische Braunkohlenwerke AG., Köln, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,693

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208699

Int. Cl.⁴ C22B *1/14, 1/08;* **C01G** *41/14*

U.S. Cl. 423—558 **13 Claims**

1. A process for producing pourable and storable ferrous sulphate consisting essentially of mixing ferrous sulphate heptahydrate and brown coal dust capable of absorbing a substantial amount of moisture in such amount to form granuales of ferrous sulphate and brown coal wherein the brown coal and the ferrous sulphate heptahydrate are mixed together in a proportion of 6:1 to 1:6.6 by volume and wherein the brown coal dust has a moisture content of 8% to 10%.

4,659,558

ORAL DELIVERY SYSTEM COMPRISING A PLURALITY OF TINY PILLS FOR DELIVERING DRUG IN THE STOMACH AND INTESTINE

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 360,477, Mar. 22, 1982, Pat. No. 4,434,153. This application Jan. 17, 1984, Ser. No. 571,618

The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.

Int. Cl.⁴ A61K *9/22, 9/26*

U.S. Cl. 424—470 **5 Claims**

1. An orally administrable device for the controlled delivery of a beneficial drug to the gastrointestinal tract over a prolonged period of time, the orally administrable device comprising:

(a) a matrix shaped and sized for admittance into the gastrointestinal tract and comprising a pharmaceutically acceptable non-toxic, non-hydrated cellulosic gum that absorbs and imbibes fluid from the gastrointestinal tract, expands and exhibits a 2 to 50 fold volume increase for retaining the deivce in the gastrointestinal tract over an extended period of time, said cellulosic gum a member selected from the group consisting of noncross-linked, covalent cross-linked and ionic cross-linked cellulosic gums, said cellulosic gum selected from the group consisting of naturally and synthetic cellulosic gum materials:

(b) a plurality of tiny pills dispersed throughout the cellulosic matrix, the tiny pills comprising:

(1) a dosage amount of a beneficial orally administrable drug, and,

(2) a wall comprising a pharmaceutically acceptable release rate bioerodible material that releases the drug in the gastrointestinal tract, the material a member selected from the group consisting of a polyester, a polymide, and a polyorothoester substantially surrounding the dosage amount of beneficial drug; and,

(c) wherein, when the device is in the gastrointestinal tract, the device executes a therapeutic program by delivering drug for imparting a beneficial efect.

4,659,559

GAS FUELED FUEL CELL

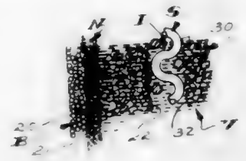
Ralph C. Struthers, 39503 Calle El Fuente, Saugus, Calif. 91350

Filed Nov. 25, 1985, Ser. No. 801,428

Int. Cl.⁴ H01M *8/14, 4/86*

U.S. Cl. 429—46 **11 Claims**

1. An elongate fuel cell structure including an anode electrode part at one end defining a longitudinally inwardly opening anode gas chamber, a cathode electrode part at the other end defining a longitudinally inwardly opening cathode gas chamber spaced from and opposing the anode gas chamber, said anode and cathode electrode parts have ports communicating with said chambers and connected with supplies of anode and cathode fuel gases, an intermediate unit between and separating the anode and cathode parts and the anode and cathode gas chambers, said unit includes a pair of longitudinally spaced structurally sound and dimensionally stable porous gas and liquid permeable anode and cathode laminates with flat, longitudinally outwardly disposed outer surfaces disposed toward their related anode and cathode chambers and flat spaced opposing inner surfaces, deposits of catalytic material at the outer surfaces of the andode and cathode laminates establishing chemically reactive interface zones at those surfaces, gas permeable hydrophobic barriers at the outer surfaces of said laminates between the gas chambers and chemical reaction interface zones at said laminates, an ion permeable acid-salt melt electrolyte compound between the laminates and permeating the laminates to said chemical reaction interface zones, a dielectric frame structure about the perimeter of the unit between the opposite ends thereof holding said parts and laminates together and sealingly containing the electrolyte within the unit and electric terminals on the anode and cathode parts connected with an external electric circuit conducting free electrons from the anode part and to the cathode part.



4,659,560

DEODORANT COMPOSITIONS

Brian Bews, Isleworth; Peter Critchley, Camberley; James A. Durrant, Bedfont; Malcolm R. D. Stebles, Maidenhead, and Leigh R. H. Tipping, Twickenham, all of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 287,006, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 175,229, Aug. 5, 1980, abandoned. This application Mar. 14, 1985, Ser. No. 710,954

Claims priority, application United Kingdom, Aug. 10, 1979, 7927924; Aug. 10, 1979, 7927922; Aug. 10, 1979, 7927920

Int. Cl.⁴ A61K *7/32, 9/12*

U.S. Cl. 424—47 **14 Claims**

1. A deodorant lotion, stick or aerosol composition for reducing axillary body odor comprising a suspension of an effective amount of a particulate deodorant active material in a physiologically acceptable carrier liquid or gel medium containing less than 80% water by weight of the carrier medium, wherein said deodorant active ingredient is selected from the group consisting of the oxides of magnesium and lanthanum and mixtures thereof, and wherein the deodorant composition does not suppress the secretion of perspiration.

4,659,561

PROCESS FOR TREATING THE ORAL CAVITY

Paula Fives-Taylor, and Charles P. Novotny, both of Burlington, Vt., assignors to The University of Vermont and State Agricultural College, Burlington, Vt.

Continuation-in-part of Ser. No. 467,800, Feb. 18, 1983, abandoned. This application Mar. 22, 1985, Ser. No. 714,948

Int. Cl.⁴ A61K *7/16, 9/68, 35/74, 39/09*

U.S. Cl. 424—48 **8 Claims**

1. In the art of utilizing toothpaste and mouthwash dentifrice and chewing gum daily in the morning and after meals to prevent formation of dental plaque, whiten the teeth and retard incidence of dential caries formation, the improvement which comprises the step of utilizing topically for 20 seconds in the morning and after means, (a) one ounce of mouthwash containing 50 milligrams per 500 milliliters, or (b) a toothpaste containing 0.05 grams per kilogram, or (c) a chewing gum containing 0.05 g./100 g., of lyophilized fimbrial antigen from *Streptococcus sangius,* the antigen characterized by being the only antigen obtained from surface material from adherent *S. sanguis* and detected in crossed immunoelectrophoresis against antibodies made against whole adherent *S. sanguis* cells that is

(i) missing from surface material from non-adherent *S. sanguis* cells, and

(ii) is capable of binding to antibodies made against *S. sanguis* fimbriae.

4,659,562

COSMETIC MAKE-UP COMPOSITION

Jean-Pierre Arraudeau; Jeanne Patraud, both of Paris, and Louis Le Gall, Bures S/Yvette, all of France, assignors to L'Oreal, Paris, France

Filed Oct. 11, 1983, Ser. No. 540,752

Claims priority, application France, Oct. 12, 1982, 82 17051

Int. Cl.⁴ A61K *7/021*

U.S. Cl. 424—63 **4 Claims**

1. A cosmetic make-up composition in the form of a powder comprising

(a) from 0 to 20 weight percent of a fatty body selected from the group consisting of an oil and a mixture of an oil and a wax, said oil comprising a member selected from the group consisting of paraffin oil, petrolatum oil, mineral oil having a boiling point between 310° and 410° C., Purcellin oil, perhydrosqualene, calophyllum oil, sweet almond oil, palm oil, avocado oil, olive oil, ricin oil, wheat germ oil dimethylpolysiloxane, butyl myristate, isopropyl myristate, cetyl myristate, isopropyl palmitate, butyl stearate, hexadecyl stearate, isopropyl stearate, octyl stearate, isocetyl stearate, decyl oleate, hexyl laurate, propylene glycol dicaprylate, diisopropyl adipate, oleyl alcohol, linoleic alcohol, linolenic alcohol, isostearyl alcohol, octyl dodecanol, isopropyl lanolate, isocetyl lanolate, glycol octanoate, glycerol octanoate, glycol decanoate, glycerol decanoate and cetyl ricinoleate, said wax comprising a member selected from the group consisting of microcrystallin wax, paraffin wax, petrolatum wax, ozokerite, montan wax, beeswax, spermaceti wax, lanolin wax, lanolin alcohols, hydrogenated lanolin, hydroxylated lanolin, acetylated lanolin, lanolin fatty acids, alcohol of acetylated lanolin, candellila wax, Carnauba wax, Japan wax, cocoa butter, hydrogenated ricin oil, hydrogenated palm oil, hydrogenated tallow, hydrogenated coconut oil, polyethylene wax, propylene glycol monomyristate, myristyl myristate, silicone wax, cetyl alcohol, stearyl alcohol, mono-, di- and triglycerides solid at 25° C., stearyl monoethanolamide, rosin, glycol abietate, glycerol abietate, sucroglyceride and the oleates, myristates, lanolates, stearates and dihydroxy stearates of calcium, magnesium, zinc and aluminum;

(b) from 1 to 70 weight percent of at least one colored pigment selected from the group consisting of black iron oxide, carbon black, chromium oxide, yellow iron oxide, brown iron oxide, red iron oxide, ultramarine, titanium dioxide, silver metallic powder, aluminum metallic powder, manganese pyrophosphate, ferric blue, carmine and organic lakes;

(c) from 5 to 90 weight percent of a component selected from the group consisting of talc, rice starch, wheat starch, oat germ powder, wheat germ powder and kaolin; and

(d) from 0.5 to 20 weight percent, as a binding agent for components (a)–(c), above, a mixture of from 5 to 95 percent by weight of said mixture of finely divided silica having an average particle diameter of from 2 to about 10μ and about 95 to about 5 percent by weight of said mixture of finely divided polyethylene fibers having a fibrillar structure and having a specific area of 5 to 15 m^2/g.

4,659,563

HIGH TITER ANTI-RESPIRATORY SYNCYTIAL VIRUS INTRAVENOUS IMMUNE GLOBULIN

Milton B. Dobkin, Lafayette, Calif., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 27, 1986, Ser. No. 822,560

Int. Cl.⁴ A61K *39/42*

U.S. Cl. 424—86 **8 Claims**

1. A method for raising serum antibody titers to respiratory syncytial virus in patients with or at risk of such infection by intravenously injecting a therapeutic amount of an intravenously injectable immune globulin having a titer of antibody to respiratory syncytial virus of at least about 1:250,000 at a globulin concentration of about 5% by weight, as determined by an enzyme-linked immunosorbent assay, which comprises the steps of:

(a) screening plasma from donors for a titer of antibody to respiratory syncytial virus of at least about 1:110,000, as determined by an enzyme-linked immunosorbent assay,

(b) pooling the donor plasma selected according to step (a) above,

(c) preparing an immune globulin from the plasma pooled according to step (b) above, and

(d) rendering the immune globulin obtained according to step (c) above intravenously injectable.

4,659,564

SKIN TREATMENT PRODUCT

Ian R. Cox, and Zia Haq, both of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

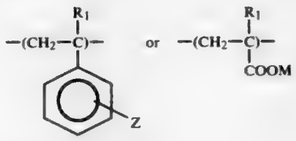
Filed Feb. 21, 1985, Ser. No. 703,775

Claims priority, application United Kingdom, Feb. 24, 1984, 8404844

Int. Cl.⁴ A61K *7/00, 7/32, 7/34, 7/38*

U.S. Cl. 424—65 **9 Claims**

1. A skin treatment product for absorbing axillary perspiration comprising an effective amount of a particulate absorbent polymeric material in combination with a powder, liquid or gel carrier medium, characterised in that the polymeric material is a highly porous, crosslinked polymeric material comprising units of the formula



where

R_1 is hydrogen or methyl

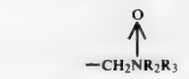
Z comprises one or more of the following substituents

(a) $—SO_3H$

(b) $—SO_3M$

(c) $—CH_2N^+R_2R_3R_4An^-$

(d) $—CH_2N^+R_2R_3HAn^-$



(e)

(f) $—CH_2O(CH_2CH_2O)_6H$

(g) $—CH_2SO_3H$

(h) $—CH_2SO_3M$

(i) $—CH_2OSO_3M$

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(j) —COOM

R_2, R_3 and R_4, which may be the same or different, are alkyl, hydroxyalkyl, cycloalkyl or aryl or R_2 and R_3 form part of a ring, and where for substituent (c) the total of the carbon atoms for the groups $R_2+R_3+R_4$ is less than 10 and for each of substituents (d) and (e) the total of the carbon atoms for the groups R_2+R_3 is less than 8,

M is an alkali metal, ammonium or substituted ammonium ion,

An is an anion derived from an inorganic acid or from an organic acid containing less than 8 carbon atoms, and

q has a value of 2 to 50,

the porous structure of the polymeric material comprising continuously interconnected cavities or chambers resulting from the polymerisation of a high internal phase emulsion in which the internal phase is constituted by water in an amount of 75–99% by weight of the emulsion and the external phase by monomer and cross-linking agent.

4,659,565

AMINE OXIDE HAIR CONDITIONER

Kim R. Smith; Raymond O. Johannessen, and James E. Borland, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jul. 1, 1985, Ser. No. 751,005

Int. Cl.⁴ A61K *7/06, 7/08;* **C07C** *135/02*

U.S. Cl. 424—70 **17 Claims**

1. A hair shampoo composition adapted to increase body without causing static induced flyaway, said composition comprising:

(a) from about 0.5 to 5 weight percent of a di-C_{6-18} primary alkyl methylamine oxide conditioning agent,

(b) from about 5 to 20 weight percent of a water soluble detergent that is compatible with said conditioning agent, and

(c) water.

4,659,566

COMPOSITIONS AND METHODS FOR PERMANENTLY WAVING OR STRAIGHTENING HAIR

Henry G. Petrow, 32 Garfield Dr., Watertown, Mass. 02172

Filed Aug. 21, 1984, Ser. No. 642,921

Int. Cl.⁴ A61K *7/09, 7/11;* **A45D** *7/00*

U.S. Cl. 424—71 **20 Claims**

1. A reducing composition for reducing disulfide bonds of keratin, comprising an aqueous solution of a water soluble iodide salt and a water soluble keratin reducing thioglycolate salt, in which the concentration of the iodide salt is from about 0.05 to about 1 molar and the concentration of the thioglycolate salt is from about 0.4 to about 1.2 molar.

4,659,567

MOLECULES WITH ANTIBODY COMBINING SITES THAT BIND TO HYDROLYTIC TRANSITION STATES

Alfonso Tramontano, and Richard A. Lerner, both of La Jolla, Calif., assignors to Scripps Clinic & Research Foundation, La Jolla, Calif.

Filed Sep. 7, 1984, Ser. No. 648,406

Int. Cl.⁴ A61K *39/00;* **C07F** *9/40, 9/65;* **C07D** *209/48*

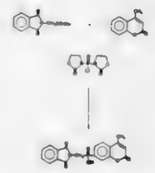
U.S. Cl. 424—85 **10 Claims**

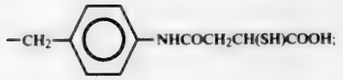
1. Antibodies that include an epitope that binds to and thereby stabilizes a tetrahedral carbon intermediate in the hydrolysis of an ester and that are raised in an animal host to a phosphonate of the formula

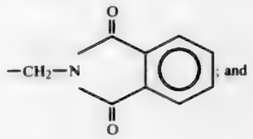


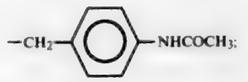
wherein R_1 is



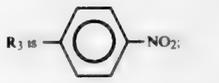


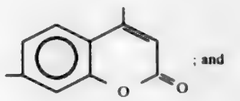






R_2 is H;

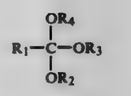




; and

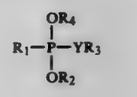
R_4 is (i) a second bond between the oxygen and central phosphorous atom, (ii) hydrogen or (iii) C_1–C_4 alkyl;

said phosphonate having a conformation that substantially corresponds to the conformation of the tetrahedral carbon intermediate in the hydrolysis of an ester of the formula:

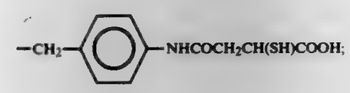


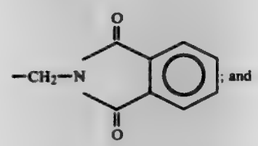
wherein R_1, R_2, R_3 and R_4 are as defined above.

5. A compound of the formula:

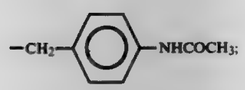


wherein R_1 is

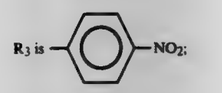


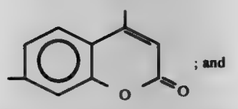


; and



R_2 is H;





; and

R_4 is (i) a second bond between the oxygen and central phosphorous atom, (ii) hydrogen or (iii) C_1–C_4 alkyl.

4,659,568

PROCESS FOR SOLUBILIZATION, PURIFICATION AND CHARACTERIZATION OF PROTEIN FROM INSOLUBLE PROTEIN AGGREGATES OR COMPLEXES AND COMPOSITIONS OF MATTER THEREFROM

Conrad J. Heilman, Jr., Chester, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 27, 1985, Ser. No. 706,533

Int. Cl.⁴ C07K *3/28, 3/14, 3/18, 3/20*

U.S. Cl. 424—88 **20 Claims**

1. A process for solubilizing, purifying and characterizing a protein from a protein aggregate or complex which comprises layering a suspension of the protein aggregate or complex onto an urea step gradient of two or more varying concentrations; centrifuging the urea step gradient with the protein aggregate or complex layered thereon; and identifying the urea concentration step or steps at which the protein is in solution.

4,659,569

PROCESS FOR THE PRODUCTION OF VIRUS VACCINE

Masakazu Mitsuhashi, and Shunsaku Koyama, both of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Jan. 4, 1982, Ser. No. 336,943

Claims priority, application Japan, Feb. 9, 1981, 56-17643

Int. Cl.⁴ A61K *39/12, 39/145, 39/165, 39/17*

U.S. Cl. 424—89 **8 Claims**

1. A process for producing virus vaccine having a substantially diminished immunoglobulin E antibody producibility and remarkably enhanced producibility of immunoglobulin G and immunoglobulin M antibodies, said process comprising the steps of:

providing a water-soluble polysaccharide selected from the group consisting of pullulan, elsinan, hydrolysates thereof, and mixtures thereof, said polysaccharide having a molecular weight from 1,000 to 100,000,000, and bearing a functional group capable of covalently linking with a pathogenic virus, said functional group being a member selected from the group consisting of carbodimide, imidocarbonate, halogenoalkyl, aldehyde and isocyanate groups, and aromatic amino groups in the form of diazonium salts;

forming a water-soluble conjugate of a pathogenic virus and said polysaccharide by allowing one part by weight of the virus to react with 0.01 to 100 parts by weight of the polysaccharide at a pH in the range of 3 to 12 and a temperature in the range of 0° to 100° C. for 0.1 to 50 hours to thereby detoxify said virus; and

recovering said water-soluble conjugate for use as a virus vaccine having a substantially diminished immunoglobulin E antibody producibility and remarkably enhanced producibility of immunoglobulin G and immunoglobulin M antibodies.

4,659,570

PREPARATION CONTAINING STABILIZED PHYSIOLOGICALLY ACTIVE SUBSTANCE

Yoshitake Terano, Ikeda, Japan, assignor to Suntory Limited, Osaka, Japan

Filed Apr. 25, 1985, Ser. No. 727,261

Claims priority, application Japan, Apr. 26, 1984, 59-84990

Int. Cl.⁴ A61K *45/02;* **C12P** *21/00*

U.S. Cl. 424—85 **5 Claims**

1. A preparation of stabilized polypeptide having gamma-interferon activity which comprises a polypeptide having gamma-interferon activity and a modified gelatin, said gelatin having been obtained by (1) decomposing a physically modified gelatin and forming urea bridges by treatment with a diisocyanate, (2) decomposing said physically modified gelatin and succinylating the decomposition product with succinic anhydride, or (3) condensing said physically modified gelatin with glyoxal and oxidizing the condensation product with hydrogen peroxide, said physically modified gelatin being further characterized as easily water soluble and obtained by spray-drying a gelatin, freeze-drying a gelatin, or drying the same by radiofrequency induction heating.

4,659,571

COMPRESSED POWDER FORMULATION CONTAINING ORGANOPHILIC CLAY AND A PROCESS FOR MAKING THE FORMULATION

Dennis Laba, Middlesex, N.J., assignor to NL Industries, Inc., New York, N.Y.

Filed Mar. 20, 1985, Ser. No. 713,897

Int. Cl.⁴ A61K *7/32, 7/34, 7/36, 7/38*

U.S. Cl. 424—65 **28 Claims**

1. A dry, compressed powder formulation consisting essentially of:

(a) from about 10 to about 99.95% by weight of an organophilic clay; and

(b) from about 0.05% to about 90% by weight of at least one topical agent, wherein the compressed powder formulation is in solid form, maintains its physical integrity upon handling, has a payout which is substantially uniform and which is from about 10 to about 100 milligrams and retails at least about 90% of its original payout after being contacted with water.

4,659,572

BURN WOUND DRESSING MATERIAL

Douglas G. Murray, Willowdale, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Continuation-in-part of Ser. No. 722,435, Apr. 15, 1985, abandoned, and Ser. No. 406,523, Aug. 9, 1982, abandoned, said Ser. No. 722,435, is a continuation of Ser. No. 456,446, Jan. 7, 1983, abandoned. This application Nov. 12, 1985, Ser. No. 796,759

Int. Cl.⁴ A61K *31/74*

U.S. Cl. 424—448 **19 Claims**

1. A burn wound-adherent dressing material comprising a complex of gelatin of Bloom # of 80 to 350 and a water-soluble polyethylenimine of molecular weight of 10,000 to 100,000, in a weight ratio of gelatin to polyethylenimine of 7:3 to 3:7, said burn wound dressing material being in the form of a substantially uniform, aqueous coating which when applied to a burn wound sets to a gel and dries to a continuous wound-adherent film in situ.

4,659,573

MINERAL OIL SUBSTITUTE FOR TOILETRIES AND COSMETICS

Louis B. Frischling, Lawrence, and Stephen M. Greenberg, New York, both of N.Y., assignors to Lipo Chemicals, Inc., Paterson, N.J.

Filed Feb. 14, 1985, Ser. No. 701,389

Int. Cl.⁴ A61K *7/021, 7/031, 7/06, 7/15*

U.S. Cl. 424—63 **19 Claims**

1. An ester blend suitable for use as a mineral oil substitute in cosmetics and toiletries comprising tridecyl trimellitate blended with at least one additional ester selected from the group consisting of dipentaerythritol hexacaprylate/hexacaprate, tridecyl stearate and neopentyl glycol dicaprylate/dicaprate, said blend comprising about 5 to about about 85 wt. % tridecyl trimellitate based on the weight of the blend.

4,659,574

METHOD OF PROCESSING MUSSLES

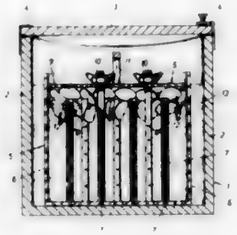
Lars G. Carlsson, Göteborg, and Sven A. Lundvall, Eklandagatan 23A, S-412 82 Göteborg, both of Sweden, assignors to Sven Albert Lundvall, Goteborg, Sweden

Continuation of Ser. No. 491,975, May 5, 1983, abandoned. This application Dec. 6, 1985, Ser. No. 805,582

Claims priority, application Sweden, May 10, 1982, 8202913

Int. Cl.⁴ A23L *1/333*

U.S. Cl. 426—68 **11 Claims**



1. An improved method of preparatory processing and storage of mussles, comprising the steps of heating said mussles in their shells in the presence of a liquid up to a point when they tend to open, compacting said mussles by the application of an external pressure throughout the entire heating process, the external pressure being sufficient to prevent all but a few of said mussles from opening, and when said heating process is completed, cooling said mussles sufficiently that they no longer tend to open in the absence of the external pressure and relieving said external pressure on said mussles to stop the compacting action when the mussles have cooled.

4,659,575

METHOD AND APPARATUS FOR ENTRAINING GAS IN ICE CREAM MIX

Armin Fiedler, Chicago, Ill., assignor to Twistee Treat Corporation, North Fort Myers, Fla.

Filed Sep. 23, 1985, Ser. No. 778,874

Int. Cl.⁴ A23G *9/04*

U.S. Cl. 426—317 **15 Claims**

1. The method of entraining gas into an unfrozen ice cream mix which comprises: introducing a compatible, overrun-producing gas to a lower portion of a tank containing unfrozen mix at elevated pressure until sufficient gas bubbles are entrained in the ice cream mix to provide the desired overrun, and including the step of introducing to the top of said tank a pressurized gas having a lower tendency to be absorbed by said unfrozen ice cream mix to maintain a predetermined pressure thereon to permit said entrained ice cream mix to be stored under pressure.

4,659,576

SHELF OR REFRIGERATOR STABLE RAW ALIMENTARY PASTE

Leland K. Dahle, Cherry Hill, and Erich P. Montgomery, Marlton, both of N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Aug. 3, 1982, Ser. No. 404,777

Int. Cl.⁴ A23L *1/16*; A21D *2/22, 2/14, 10/00*

U.S. Cl. 426—324 **39 Claims**

1. A raw, moist alimentary paste stable against bacterial decomposition comprising a raw dough formed into a shape suitable for cooking and consumption, said raw dough comprising flour, water and an edible acid in sufficient amount to provide a pH level of below about 5.0 in said alimentary paste and to impart to said raw dough stability against bacterial decomposition.

4,659,577

METHOD FOR THE DECAFFEINATION OF ROASTED COFFEE EXTRACTS

James F. Meinhold, Boonton, N.J.; Joseph A. Musto, Bronx, N.Y.; Karl C. Kramer, Dunellen, N.J., and Martin Gottesman, deceased, late of Paramus, N.J. (by Karen Gottesman, executrix), assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 655,198, Sep. 27, 1984, abandoned. This application Oct. 31, 1985, Ser. No. 793,505

Int. Cl.⁴ A23F *5/22*

U.S. Cl. 426—387 **23 Claims**

1. A method of decaffeinating aqueous roasted coffee extracts which comprises:

(a) loading an organic caffeine solvent with hydrolyzed roasted coffee solids obtained from roasted coffee grounds after the grounds have been at least thoroughly atmospherically extracted of at least 20% of the solids therein;

(b) contacting an aqueous extract of roasted and ground coffee with the loaded organic caffeine solvent of (a) for a period of time sufficient to transfer at least 96% of the caffeine from the aqueous roasted coffee extract to the loaded caffeine solvent;

(c) separating the roasted decaffeinated coffee extract from which the caffeine has been transferred from the then caffeine-containing loaded organic caffeine solvent; and

(d) drying the roasted decaffeinated coffee extract.

4,659,578

METHOD OF STORING PERISHABLES SUCH AS MEAT

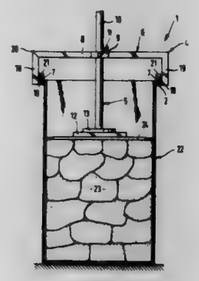
Jürgen Schlegel, Umkirch, Fed. Rep. of Germany, assignor to Vesten AG, Stans, Switzerland

Filed Dec. 8, 1983, Ser. No. 559,231

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 8236195[U]; European Pat. Off., May 20, 1983, 83105018.2

Int. Cl.⁴ C12C *3/04*

U.S. Cl. 426—418 **3 Claims**



1. A method of storing pieces of fresh meat, comprising the steps of confining the pieces of fresh meat in an open-top vessel so as to form a stack of neighboring pieces; placing into the vessel a cover to overlie the stack of neighboring pieces and applying pressure to the cover to pressurize the stack in the vessel to such an extent (a) that juices are squeezed out of the pieces and rise above the stack and (b) that voids between the neighboring pieces as well as between the vessel and the stack are eliminated; and storing the pieces in the vessel under pressure without requiring refrigeration for a period of up to several weeks by applying pressure to said cover or a separate cover to bear against the neighboring pieces of the stack so as to prevent the development of voids.

4,659,579

DEHYDRATION PROCESS FOR MOIST VEGETABLES

Jacques Cuel, Paris, France, assignor to Beghin-Say S.A., Thumeries, France

PCT No. PCT/FR83/00147, § 371 Date Mar. 26, 1984, § 102(e) Date Mar. 26, 1984, PCT Pub. No. WO84/00475, PCT Pub. Date Feb. 16, 1984

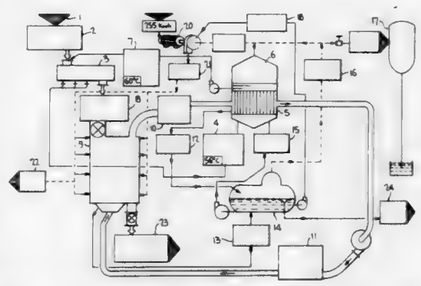
PCT Filed Jul. 19, 1983, Ser. No. 601,622

Claims priority, application France, Jul. 30, 1982, 82 13400

Int. Cl.⁴ A23B *7/02*

U.S. Cl. 426—465 **8 Claims**

1. A continuous dehydration process for moist vegetables comprising (a) subjecting moist vegetables to a pressing operation; (b) concentrating the juice obtained in said pressing operation in an evaporator to a concentration of less than about 60% by weight of dry matter; (c) steeping moist vegetables prior to the pressing operation of (a) above with the concentrated juice obtained in (b) above; (d) introducing the vegetables subjected to the pressing operation into a drier; (e) feeding heater elements of the drier with vapor, said vapors being produced by the evaporation of juice in step (b) above; and (f) heating the evaporator used in (b) above with a mixture of air and vapor issuing from the drier.



4,659,580

METHOD AND APPARATUS FOR EXTRUDING AND CUTTING A FOOD MATERIAL

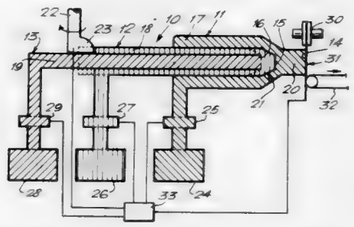
Anders G. Svengren, Hjaernarp, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Filed Jun. 17, 1985, Ser. No. 745,600

Claims priority, application European Pat. Off., Jul. 30, 1984, 84109002.0

Int. Cl.⁴ B29C *47/06*; A21C *3/04*

U.S. Cl. 426—516 **13 Claims**



1. A process for manufacturing a product in which a filling material is completely enclosed in a coating material, comprising:

(a) continuously extruding the coating material;

(b) extruding the filling material intermittently such that it flows within and is surrounded by the continuously extruded coating material; and

(c) extruding further coating material alternately intermittently with respect to the extrusion of the filling material such that the further coating material flows within the continuously extruded coating material after extrusion of the filling material to form a plug of coating material at the rear end of the filling material.

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4,659,581

METHOD OF PRODUCING GRANULAR CHEMICAL SEASONING OF HIGH SPECIFIC VOLUME AND PRODUCT

Eiji Satasi; Nagaoki Okamoto, both of Osaka, Japan; James G. Fritz, Scotchplains, N.J., and Hiroshi Kimura, New York, N.Y., assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 505,834, Jun. 20, 1983, abandoned, which is a continuation of Ser. No. 302,526, Sep. 16, 1981, abandoned. This application Oct. 17, 1985, Ser. No. 788,109

Int. Cl.[4] A23L *1/228, 1/229*

U.S. Cl. 426—537 17 Claims

1. A granular chemical seasoning consisting essentially of a material chemical seasoning consisting essentially of about 88 to 99 parts by weight of monosodium glutamate and about 12 to 1 part by weight of a water-soluble salt of 5'-ribonucleotide, a thickening agent of guar gum and sodium alginate comprising about 0.5 to 8 weight percent of the solid content of said granular chemical seasoning and a foaming agent of glycerine fatty acid ester comprising about 0.25 to 2 weight percent of the solid content of said granular chemical seasoning; said granular chemical seasoning having a specific volume of about 3.5 to 6 cm^3/g.

7. A method of producing a granular chemical seasoning having a specific volume of about 3.5 to 6 cm^3/g which comprises adjusting an aqueous solution of a material chemical seasoning consisting essentially of about 88 to 99 parts by weight of monosodium glutamate and 12 to 1 part by weight of 5'-ribonucleotide to a viscosity of about 8,000 to 25,000 centipoises with a thickening agent of guar gum and sodium alginate in an amount of 0.5 to 8 weight percent of the solid content of said chemical seasoning, adding a foaming agent of glycerin fatty acid ester in an amount equal to about 0.25 to 2 weight percent of the solid content of said chemical seasoning, foam-mat drying the mixture and disintegrating the same.

4,659,582

COMPRESSIBLE SOFT CONFECTION

Wayne J. Puglia, Bayville; Andrew T. Lombardo, Bronx, both of N.Y.; Kasit J. Patnaasinth, Stamford, Conn., and Walter Vink, Bloomton, N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 553,006, Nov. 17, 1983, abandoned, which is a continuation of Ser. No. 312,608, Oct. 19, 1981, abandoned. This application Oct. 8, 1985, Ser. No. 785,625

Int. Cl.[4] A21D *13/00*; A23G *1/00, 3/00*

U.S. Cl. 426—549 17 Claims

1. An unbaked compressed soft tablet having good breakage resistance, flexibility and flavor, and, in baked form, textural qualities of a baked composition which essentially consists of, in a % by weight of said compressed soft tablet,

about 5 to 40% of a filler material selected from the group consisting of graham cracker crumbs, shortbread crumbs, devils food crumbs, pulverized grains, pulverized grains, pulverized nuts, unbaked flour, baking soda and mixtures thereof,

fatty material recrystallized around particles of said filler material, said fatty material being in the form of either about 5 to 20% of fat or oil or about 20 to 55% of chocolate or synthetic chocolate,

about 25 to 60% of a direct compaction vehicle which binds said particles of recrystallized fatty material and filler material, under compression, into a chewable tablet,

about 0.05 to 8.4% of flavoring material, and

about 0 to 2.5% of an emulsifier,

said tablet having been formed from said components in the absence of water in a dry mechanical process.

4,659,583

METHOD FOR THE PULVERIZATION OR GRANULATION OF NUTS AND SEEDS

Hitoshi Hashimoto, Kamakura; Takuzo Shibata, 17-31, 4-chome, Shiba, Kawaguchi-shi, Saitama-ken; Teruo Nagano, 52-1-5-305, 4-chome, Saiwa-cho, Tachikawa-shi, Tokyo; Kozo Hara, Yokohama; Nobuhiro Kawahara, Fujisawa, and Ikuo Yashiki, Yokohama, all of Japan, assignors to Ensuiko Sugar Refining Co., Ltd., Yokohama; Takuzo Shibata, Kawaguchi and Teruo Nagano, Tokyo, all of, Japan

Filed Jul. 29, 1985, Ser. No. 760,292

Claims priority, application Japan, Oct. 3, 1984, 59-206192

Int. Cl.[4] A23L *1/36*

U.S. Cl. 426—629 22 Claims

14. A method for the preparation of pulverized or granulated nuts or seeds which consists essentially of admixing nuts or seeds with (i) a cyclodextrin in an amount from 1 to 300% by weight based on the weight of the nuts or seeds and (ii) water in an amount from 200 to 1000% by weight based on the weight of the nuts or seeds and mechanically grinding the resulting mixture to form a pulverized or granulated mixture and spray drying said pulverized or granulated mixture.

4,659,584

EYE ROD, PROCESS AND APPARATUS FOR LOADING THE SAME WITH SOLUTIONS OR SUSPENSIONS OF ACTIVE SUBSTANCE

Leonhard Schilk, Biberach, Fed. Rep. of Germany, assignor to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed Apr. 11, 1986, Ser. No. 851,009

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1985, 3513288

Int. Cl.[4] A61K *9/22*; A61M *35/00*; A01N *1/02*; B05C *11/00*

U.S. Cl. 427—2 11 Claims



1. A process for loading eye rods with a solution or suspension of active substance, said process comprising the steps of applying said solution or suspension of active substance, in the form of droplets of constant volume, with the aid of a micrometering device which always releases the same number of droplets to each eye rod, onto the intended zones of each of said eye rods, rotating each of said eye rods in order to distribute said solution or suspension over said zone and removing the solvent or suspension agent by evaporation, so as to leave the dried active substance on each of said eye rods.

4,659,585

PLANARIZED CERAMIC SUBSTRATES

Kenneth L. Elias, Essex Junction; Stuart R. Martin, Bristol, and William J. Slattery, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1985, Ser. No. 747,598

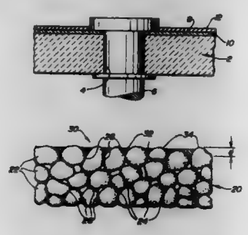
Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—5 10 Claims

1. A method of smoothing the surface of a ceramic substrate comprising the steps of:

providing a ceramic substrate of oxides bonded with a silicon bearing phase; and

chemical vapor depositing silicon nitride onto a major surface of said ceramic substrate thereby preferentially depositing said silicon nitride onto said silicon bearing bonding phase.



4,659,586

PROCESS FOR ELECTROSTATICALLY SPRAYING INORGANIC POWDERS

Hans-Joachim Schittenhelm, Leverkusen, and Werner Joseph, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 16, 1985, Ser. No. 787,834

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1984, 3439007

Int. Cl.[4] B05D *1/06*

U.S. Cl. 427—27 3 Claims

1. A process for the electrostatic spraying on metal substrates of mixtures of different inorganic powders which differ in density, particle size and electrical resistance, comprising first forming uniform agglomerates as the different powders, and then spraying the uniform agglomerates, wherein the inorganic powders contain Si—OH groups, the inorganic powders comprise a mixture of enamel frit and coloring matter, and a silicon-organic compound which reacts with the Si—OH groups of the mixture and an organic hydroxyl group-containing compound are added to the mixture before or during crushing to form the agglomerates.

4,659,587

ELECTROLESS PLATING PROCESS AND PROCESS FOR PRODUCING MULTILAYER WIRING BOARD

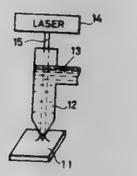
Midori Imura, Tokyo; Makoto Morijiri, Hitachi; Masanobu Hanazono, Mito; Shinichi Kazai, Hadano; Youzi Miura, Hitachi, and Hiroyuki Ogino, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 10, 1985, Ser. No. 786,056

Claims priority, application Japan, Oct. 11, 1984, 59-211355; Oct. 27, 1984, 59-225134; Feb. 15, 1985, 60-26421

Int. Cl.[4] C23C *18/16*

U.S. Cl. 427—35 15 Claims



1. An electroless plating process comprising irradiating a surface of a workpiece with a radiation energy beam to effect activation of the surface necessary for electroless plating,

wherein irradiation of the surface of said workpiece with said radiation energy beam is effected in an electroless plating liquid to allow activation of the surface and subsequent formation of a plating film to sequentially proceed on said surface, and

the activation of the surface of said workpiece with said radiation energy beam is effected without a previous activation treatment with an activating liquid.

4,659,588

METHOD OF PRODUCING OPTICAL RECORDING MEDIUM

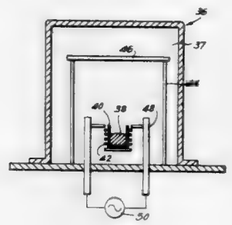
Noboru Yamada; Kenichi Nishiuchi, and Mutsuo Takenaga, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 26, 1984, Ser. No. 624,571

Claims priority, application Japan, Jun. 27, 1983, 58-116317; Dec. 9, 1983, 58-233009

Int. Cl.[4] B05D *3/06, 5/06*

U.S. Cl. 427—42 42 Claims



1. A method of producing an optical recording medium comprising the steps of:

(a) mixing tellurium dioxide TeO_2 and a reducing substance capable of reducing said TeO_2;

(b) forming a sintered body containing part of said TeO_2 in reduced form by heat-treating the mixture obtained in step (a) to cause said part of TeO_2 to react with and be reduced by said reducing substance; and

(c) evaporating and depositing tellurium compound optical recording thin film on a support by using said sintered body obtained in step (b) as a vacuum deposition source in cooperation with a chemically stable container.

4,659,589

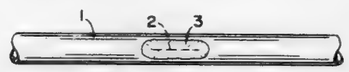
PROCESS FOR APPLYING A SEALING COMPOSITION

Rene C. Jimenez, Tampa, Fla., assignor to Renbec International Corp., Tampa, Fla.

Filed Jun. 21, 1985, Ser. No. 747,326

Int. Cl.[4] B32B *35/00*

U.S. Cl. 427—140 21 Claims



1. A process for applying a sealant comprising the steps of:

(a) applying a layer of an alpha-cyanoacrylate over the rupture or opening to be sealed and over the area adjacent to said rupture or opening, said alpha-cyanoacrylate being liquid at 20° C. and having the formula CH_2=C(CN)—COOR wherein R is a hydrocarbon radical selected from the group consisting of aliphatic, aromatic and cycloaliphtic hydrocarbon groups of 1–10 carbon atoms and alkoxy, chloro and fluoro derivatives of said hydrocarbon groups in which alkoxy groups there are 1–4 carbon atoms therein; and

(b) spreading on the said layer of alpha-cyanoacrylate a layer

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of a powdered solid having hydroxyl, carboxylate or both hydroxyl and carboxylate groups therein.

4,659,590

PERVAPORATION SEPARATION OF ETHANOL-WATER MIXTURES USING POLYETHYLENIMINE COMPOSITE MEMBRANES

Hermann H. Neidlinger, Lakewood; Paul O. Schissel, Golden, and Richard A. Orth, Denver, all of Colo., assignors to United States Department of Energy, Washington, D.C.

Filed Jun. 19, 1985, Ser. No. 746,592

Int. Cl.⁴ B01D *25/04, 29/46;* **B05D** *4/18, 5/00*

U.S. Cl. 427—244 **7 Claims**

1. The method of separating an ethanol-water mixture through a membrane film, comprising:

providing a polymeric membrane film having a first and second side and consisting essentially of ethylenimine polymers supported on a microporous member and having a partially cross-linked and heat-cured surface, said cross-linking having been achieved by the use of a cross-linking agent consisting essentially of an isocyanate compound;

providing an ethanol-water feed solution on said first side of said membrane film;

applying a pressure differential between said first and said second sides of said membrane film sufficient to induce a diffusion flow of a permeate from the feed solution through said membrane; and

recovering said permeate on said second side of said membrane film.

4,659,591

METHOD OF COATING TUNGSTEN PREFERENTIALLY ORIENTATED IN THE <111> DIRECTION ON A SUBSTRATE

Georg F. Gärtner, Aachen, and Peter A. Janiel, Würselen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1985, Ser. No. 798,097

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1984, 3446334

Int. Cl.⁴ C23C *16/00*

U.S. Cl. 427—253 **13 Claims**

1. A method of manufacturing tugnsten oriented in the <111> direction comprising the steps of

reactively depositing tungsten hexafluoride and hydrogen from a gaseous phase at an overall pressure of 10 to 100 hPa onto a substrate,

enriching an inert carrier gas with a rare earth metal acetyl acetonate hydrate, and

flowing said inert carrier gas and rare earth metal acetyl acetonate hydrate across said substrate and a growing tungsten layer together with said reactive gases of tungsten hexafluoride and hydrogen.

4,659,592

PROCESS FOR THE PRODUCTION OF LAMINATED MATERIALS

Kirkor Sirinyan, Bergisch-Gladbach; Friedrich Jonas, Aachen, and Rudolf Merten, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 543,575, Oct. 19, 1983, abandoned. This application Jun. 28, 1985, Ser. No. 750,579

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242162

Int. Cl.⁴ C23C *18/30*

U.S. Cl. 427—304 **6 Claims**

1. A process for the production of a solderable metallized laminated material comprising

(a) coating a solder-resistant core material with a solder-resistant, non-conductive polymer film,

(b) activating without oxidative pretreatment and without mechanical abrading, on the polymer film which has not been completely hardened,

(c) conducting a wet-chemical metallization of the polymer film and

(d) hardening the polymer film, wherein

the activation is carried out with a solution or dispersion of an organometallic compound in an organic solvent,

said polymer film having dimensional stability under heat for a period of at least 20 minutes ≦140° C. and having a specific electrical surface resistance of at least 10^{10} Ωcm^{-1} and said polymer film being based on an aromatic polyether-sulphone, an aromatic polyether, a polyamide, a polyimide, a polyamidoimide, a polyester-imide, a polyester-amide, an isocyanurate-containing polyester, a polybenzoxazinedione, an aromatic polyphenylenesulphide, a polyparabanic acid, a polyurethane or a polyhydantoin,

the metallization being carried out to a thickness of the coating in the range of 0.01 to 5 μm,

and the hardening being achieved by subjection to a final heat-treatment.

4,659,593

PROCESS FOR MAKING COMPOSITE MATERIALS CONSISTING OF A FIRST REINFORCING COMPONENT COMBINED WITH A SECOND COMPONENT CONSISTING OF A LIGHT ALLOY AND PRODUCTS OBTAINED BY THIS PROCESS

Jean-Philippe Rocher, Chalais; Jean-Michel Quenisset, Pessac; Rene Pailler, Cestas, and Roger Naslain, Pessac, all of France, assignors to Messier Fonderie d'Arudy, Arudy, France

PCT No. PCT/FR83/00068, § 371 Date Dec. 19, 1983, § 102(e) Date Dec. 19, 1983, PCT Pub. No. WO83/03625, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 14, 1983, Ser. No. 567,403

Claims priority, application France, Apr. 15, 1982, 82 06448; Sep. 17, 1982, 82 15689

Int. Cl.⁴ B22D *19/14*

U.S. Cl. 427—310 **21 Claims**



1. A process for making a composite material formed of a first carbon-based or carbide surface coated fibrous reinforcing component and a second component consisting of a light alloy matrix comprising:

treating such first component with a fluorine-containing agent in the form of a solution or a suspension, in a solvent, capable of wetting the fibers of said reinforcing component and optionally containing a fugitive binder; and

later removing said solvent and binder, said solution being saturated or nearly saturated with potassium fluorozirconate which has been heated to a temperature ensuring in the solution a sufficient amount of fluorozirconate.

4,659,594

COMPOSITION AND METHOD FOR CORROSION INHIBITION

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 1, 1981, Ser. No. 298,682

Int. Cl.⁴ B05D *3/02;* **C08K** *5/01;* **C08L** *63/02*

U.S. Cl. 427—386 **7 Claims**

1. A method for treating a metal surface to inhibit corrosion thereof, comprising contacting the metal surface with a composition comprising an epoxy resin, an effective amount of a curing agent for the epoxy resin, a hydrocarbon diluent present in at least an amount sufficient to maintain the composition in an essentially fluid state, and an onium salt present in an amount of from about 0.5 weight percent to about 80 weight percent, based on the weight of the composition.

4,659,595

ETHYLENE VINYL ACETATE COMPOSITIONS FOR PAPER SATURATION

James L. Walker, Whitehouse Station, and Marie E. Yannich, Cranbury, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Oct. 7, 1985, Ser. No. 784,901

Int. Cl.⁴ B32B *27/10, 29/00*

U.S. Cl. 427—391 **15 Claims**

1. A saturated paper product characterized by an excellent balance of toughness, strength, fold, tear and delamination resistance comprising a web containing cellulose fibers saturated with an aqueous emulsion prepared by the emulsion polymerization at a pH of 2 to 7 of:

(a) a vinyl ester of an alkanoic acid having 1 to 13 atoms interpolymerized with the following comonomers:

(b) 5 to 30% by weight of ethylene;

(c) 0.5 to 6% by weight of an N-methylol containing copolymerizable monomer;

(d) 1 to 5% by weight of an alkenoic acid having from 3 to 6 carbon atoms or an alkenedioic acid having from 4 to 6 carbon atoms;

(e) 0.2 to 3% by a weight of a latex stabilizer; and

(f) 0 to 1% by weight of at least one polyunsaturated copolymerizable monomer;

said web fibers being saturated with said composition in an amount of from about 10 to 100 parts by weight on a solids weight basis per 100 parts by weight of fibers.

9. A process for manufacturing a paper product characterized by an excellent balance of toughness, strength, fold, tear, and delamination resistance which comprises the steps of:

(I) saturating a web containing cellulose fibers with a composition comprising an aqueous emulsion prepared by the emulsion polymerization at a pH of 2 to 7 of:

(a) a vinyl ester of an alkanoic acid having 1 to 13 carbon atoms interpolymerized with the following comonomers:

(b) 5 to 30% by weight of ethylene;

(c) 0.5 to 6% by weight of an N-methylol containing copolymerizable monomer;

(d) 1 to 5% by weight of an olefinically unsaturated carboxlyic; alkenoic acid having from 3 to 6 carbon atoms or an alkenedioic acid having from 4 to 6 carbon atoms;

(e) 0.2 to 3% by weight of a latex stabilizer; and

(f) 0 to 1% by weight of at least one polyunsaturated copolymerizable monomer;

said web fibers being saturated with from about 10 to 100 parts by weight on a solids weight basis per 100 parts by weight of fibers with said composition; and

(II) subjecting said saturated sheet to temperatures above 100° C. to remove excess water and to effect cure of the saturant.

4,659,596

SMOOTH-LOOK FOOTWEAR PROCESS

Karl A. Karim, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 603,058, Apr. 23, 1984, abandoned. This application Nov. 12, 1985, Ser. No. 797,056

Int. Cl.⁴ B05D *3/02*

U.S. Cl. 427—393.5 **15 Claims**

1. A process for dulling molded block copolymer compositions comprising coating the surface of a molded block copolymer rubber composition with a matting solution comprising a polymeric binder which is compatible with the molded block copolymer rubber composition, a matting agent, a surfactant and a suitable solvent and evaporating the solvent.

4,659,597

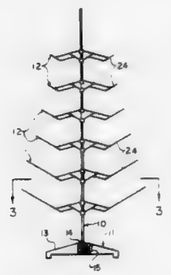
COLLAPSIBLE ARTIFICIAL CHRISTMAS TREE

Arthur H. Lau, 109 Princeton Rd., Colonial Heights, Va. 23834

Filed Feb. 14, 1986, Ser. No. 829,691

Int. Cl.⁴ A47G *33/06*

U.S. Cl. 428—9 **5 Claims**



1. An artificial Christmas tree transformable in configuration between a compact storage state and an erected state comprising:

(a) an elongated rigid trunk having upper and lower extremities,

(b) a base constructed to engage said lower extremity in a manner to support said trunk in a vertically upright disposition, and

(c) a series of branch assemblies positioned upon said trunk, each assembly comprising:

(1) an upper collar slidably disposed upon the trunk,

(2) a number of first lever arms uniformly disposed about said trunk, having upper extremities pivotably attached to said upper collar in a manner permitting movement of said arms in vertical paths, said arms being downwardly angled away from said trunk to lowermost extremities,

(3) a lower collar affixed to the trunk,

(4) a second lever arm associated with each first lever arm in vertically coplanar relationship, each second lever arm having a lower extremity pivotably attached to said lower collar in a manner permitting movement of said arm in a vertical path, said second arms being upwardly angled away from said trunk to an uppermost extremity which pivotably engages the associated first lever arm,

(5) an elongated branch element pivotably attached to the lowermost extremity of each first lever arm and extending between an outermost extremity and an innermost extremity located below said first lever arm, and

(6) a third lever arm pivotably interconnected to each second lever arm and the innermost extremity of the associated branch element to form a parallelogram having pivotal movement at its four apexes, whereby

(7) sliding movement of said upper collar downwardly

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upon the trunk toward said lower collar causes the branch elements to be laterally displaced from the trunk and upwardly angled therefrom to produce the erected state of the tree, and opposite movement of said upper collar causes said first, second and third lever arms and branch elements to be drawn close to said trunk and in substantially parallel alignment therewith, producing the storage state of the tree,

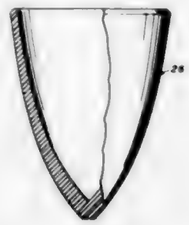
(8) the dimensions of each branch assembly of said series being such that the outermost extremities of the branch elements in the erected state extend further from the trunk in descending the members of the series.

4,659,598

RADOME STRUCTURE

G. Robert Traut, S. Killingly, Conn., assignor to Rogers Corporation, Rogers, Conn.

Division of Ser. No. 263,191, May 13, 1981, Pat. No. 4,615,859. This application Aug. 5, 1985, Ser. No. 762,712
Int. Cl.⁴ H01Q 1/40
U.S. Cl. 428—35 5 Claims



1. A unitary structure, said structure having an axis and comprising:

a tip portion, said tip portion being symmetrical with respect to the axis of the unitary structure and being continuous;

a tubular portion extending from and being integral with said tip portion, said tubular portion being coaxial with said tip portion and terminating at an annular surface having an external diameter greater than the maximum diameter of said tip portion; and

said tip and tubular portions being comprised of a fiber filled polymeric composite, the majority of said fibers being randomly oriented in a plane parallel to the nearest interior surface of the unitary structure.

4,659,599

POLYAMIDE-BASED TUBULAR PACKAGING FILM

Hans Strutzel, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 30, 1985, Ser. No. 781,904
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1984, 3436682
Int. Cl.⁴ F16L 11/00
U.S. Cl. 428—36 18 Claims

1. A tubular packaging film suitable for use as a sausage casing, wherein said tubular film consists essentially of a polymer mixture of, on a 100 parts polymer basis:

from about 30 parts to about 95 parts of a polyamide selected from the group consisting of homopolyamides, copolyamides, and mixtures thereof; and

from about 70 parts to about 5 parts of a polyester having repeating units selected from the group consisting of terephthalic units and a mixture of terephthalic and isophthalic units acids.

4,659,600

HIGH STRENGTH FOAMED ARTICLES

Adolph V. DiGiulio, Wayne, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 802,901, Nov. 29, 1985, Pat. No. 4,622,346. This application Jul. 16, 1986, Ser. No. 886,136
Int. Cl.⁴ B27N 5/02
U.S. Cl. 428—35 2 Claims

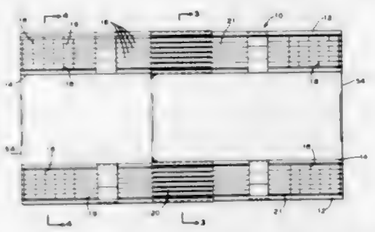
1. Foamed articles having improved strength and thermal properties molded from expandable styrene polymer beads comprising (a) styrene polymer beads having 8–35% by weight of a copolymer of 99.15–99.98% by weight of styrene monomer and 0.02–0.85% by weight of divinylbenzene diffused throughout but distributed primarily at or near the surface of said beads, and (b) 3–12% of a blowing agent selected from the group consisting of aliphatic hydrocarbons containing 4–6 carbon atoms, halogenated hydrocarbons which boil at a temperature below the softening point of the polymer, and mixtures of these; said styrene polymer beads selected from the group consisting of polymers of styrene, alpha-methylstyrene, nuclear-methylstyrene, para-tert-butyl-styrene, chlorostyrene, dichlorostyrene, mixtures of these, and copolymers of at least 50% styrene and up to 50% of other mono-ethylenically unsaturated monomers copolymereizable therewith; and said styrene monomer being selected from the group consisting of styrene, alpha-methylstyrene, nuclear-methyl-styrene, para-tert-butylstyrene, monochlorostyrene, dichlorostyrene and mixtures thereof.

4,659,601

ADJUSTABLE MULTILAYER THERMAL MIRROR INSULATION

Patrick H. Elliott, and James L. Funk, both of Lancaster, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 12, 1984, Ser. No. 587,759
Int. Cl.⁴ B32B 1/08; F16L 59/08
U.S. Cl. 428—36 5 Claims



1. An improved adjustable multilayered thermal mirror insulation unit of the type having a first section and a second section; the first and second sections having open ends telescoped relative to each other and overlapping to define an adjustment zone; each of the first and second sections including an inner case, an outer case, and a plurality of reflective sheets mounted between the inner and outer cases in spaced parallel relationship, first and second spacer means mounted in fixed relationship between adjacent ones of the reflective sheets outside of the adjustment zone for maintaining the reflective sheets in said spaced parallel relationship; the improvement comprising an assembly wherein each of the reflective sheets of the first section has an end disposed between and spaced from two reflective sheets of the second section; a plurality of first spacer means attached to one surface of the reflective sheets of the first section; a plurality of second spacer means attached to one surface of the reflective sheets of the second section that is opposed to and spaced from the surface of the reflective sheets of the first section having the first spacer means; the second spacer means bearing against the opposed surface of the reflective sheets of the first section and the first spacer means bearing against the opposed surface of the reflective sheets of the second section; each of the second spacer means being located alternately between pairs of first spacer means, the first and second spacer means being located along the length of the adjustment zone in parallel relationship whereby ends of the first and second sections can telescopically move relative to each other.

4,659,602

BROAD SPECTRUM CAMOUFLAGE MAT

Jorgen Birch, 923 7th St., Apt. E, Santa Monica, Calif. 90403

Filed Nov. 12, 1985, Ser. No. 796,847
Int. Cl.⁴ F41H 3/00
U.S. Cl. 428—88 20 Claims



1. A camouflage mat, comprising a backing layer, a body of tufted yarn strands secured to the backing layer, the strands being formed of extended plastic fibers which integrally embody selected camouflage properties responsive to electromagnetic wavelengths outside the visible spectrum, and an infrared-blocking sheet secured to a target-facing undersurface of the backing layer.

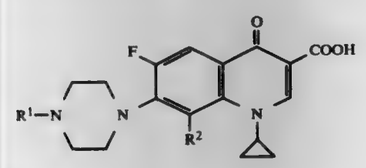
4,659,603

IMMUNOSTIMULATING AGENTS

Klaus Grobe, Odenthal; Volker Klimetzek, Velbert; Karl G. Metzger; Klaus G. Stünkel, both of Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 17, 1985, Ser. No. 735,494
Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420116
Int. Cl.⁴ A61K 39/00, 31/495
U.S. Cl. 424—88 8 Claims

1. An immunostimulating composition comprising an antigen and an immunostimulating effective amount of a cyclopropylquinolone-3-carboxylic acid of the formula



in which

R^1 is hydrogen, methyl, ethyl or β-hydroxyethyl, and

R^2 is hydrogen, chlorine or fluorine,

or a physiologically tolerated salt thereof.

4,659,604

ADHESIVE/NAIL PLATE TRUSS ASSEMBLY

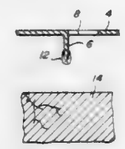
Alan L. Lambuth, Boise, Id., assignor to Boise Cascade Corporation, Boise, Id.

Filed Feb. 20, 1986, Ser. No. 831,284
Int. Cl.⁴ B32B 3/06
U.S. Cl. 428—99 7 Claims

1. An assembly for connecting the wooden members of a truss, comprising

(a) a metal connecting plate having a generally planar body portion and a plurality of integral nail-like projections extending from one side of and in a direction normal to the plane containing said body portion; and

(b) a thin layer of adhesive material arranged on the surface of said projections, said adhesive comprising a two component thermoset material which cures to a rigid and permanent band on both wood and metal surfaces at an ambient temperature, whereby when the members of wood are arranged in a desired configuration with the



connecting plate bridging the junction therebetween and when the nail-like projections of the connecting plate are driven into the adjoining beams, the friction between the projections and the beams mixes the adhesive components and the joint formed between the beams has an increased resistance to tensile, shear, and rotational forces owing to the adhesive bond between the metal plate and the wooden members.

4,659,605

ELECTROLESS DEPOSITION MAGNETIC RECORDING MEDIA PROCESS AND PRODUCTS PRODUCED THEREBY

Michael Malik, Livonia, and Joseph L. Greene, Highland, both of Mich., assignors to Richardson Chemical Company, Des Plaines, Ill.

Filed May 16, 1984, Ser. No. 610,684
Int. Cl.⁴ H01F 10/02
U.S. Cl. 427—129 49 Claims

1. A process for producing a high magnetic storage device having improved magnetic recording properties, said process comprising the steps of:

cleaning the surface of a substrate for said device to provide a substantially oil and oxide free substrate surface;

electrolessly depositing a non-magnetic nickel-phosphorus layer on said device; and,

electrolessly depositing a magnetic cobalt-phosphorus layer consisting essentially of cobalt and phosphorus on said nickel-phosphorus layer, said electroless cobalt-phosphorus deposition being conducted in an ammonia-free bath containing a source of cobalt ions, a source of hypophosphite ions, and a complexor constituent which includes, conjointly, an effective amount of each of a source of citrate ions and a low molecular weight, bath soluble amino acid.

4,659,606

SUBSTRATE MEMBERS FOR RECORDING DISKS AND PROCESS FOR PRODUCING SAME

Toshiaki Wada, Takatsuki, and Yoshiaki Katsuyama, Muro, both of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Apr. 26, 1985, Ser. No. 727,740
Claims priority, application Japan, Apr. 27, 1984, 59-85655
The portion of the term of this patent subsequent to Aug. 26, 2003, has been disclaimed.
Int. Cl.⁴ G11B 5/82
U.S. Cl. 428—141 17 Claims

1. A substrate member for recording disks comprising a sputtered film formed of at least one member selected from the group consisting of Al_2O_3, SiO_2, and Si_3N_4 on the surface of an alumina base ceramic material having therein micropores of no

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more than 5 microns and a relative theoretical density of no less than 96%, said sputtered film having a surface roughness



of no more than 80 angstroms, being substantially pore-free and strain-free on the surface, and having a thickness of 0.3 to 30 microns.

4,659,607

RETOUCHABLE MAT FILM

Shinzi Katsoka; Yukio Shinagawa, and Shinji Sakaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 582,659, Feb. 23, 1984, abandoned, Division of Ser. No. 509,078, Jun. 29, 1983, abandoned. This application Dec. 2, 1985, Ser. No. 803,786

Claims priority, application Japan, Jun. 30, 1982, 57-114358

Int. Cl.⁴ B41N *1/24*

U.S. Cl. 428—143 **15 Claims**

1. A retouchable mat film, comprising:

a hydrophobic support having formed thereon:

a mat layer comprising:

a crystalline silicon dioxide matting agent having a particle size within the range of 0.5 to 10μ; and

a binder comprised of a mixture of poly(methyl methacrylate) or a copolymer containing at least 80 wt% of methyl methacrylate and a hydrophilic polymer wherein the mixture includes the hydrophilic polymer in an amount within the range of 80 to 20 wt% based on the total weight of the binder; and wherein the ratio of the matting agent to the poly(methyl methacrylate) or copolymer containing at least 80 wt% of methyl methacrylate is 5:1 or less by weight.

4,659,608

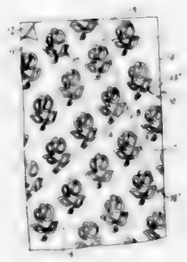
EMBOSSED FIBROUS WEB PRODUCTS AND METHOD OF PRODUCING SAME

Galyn A. Schulz, Appleton, Wis., assignor to James River-Norwalk, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 116,230, Jan. 28, 1980, abandoned, which is a continuation of Ser. No. 001,741, Jan. 8, 1979, abandoned. This application May 17, 1983, Ser. No. 494,685

Int. Cl.⁴ D04H *1/64;* **B32B** *3/30, 31/20*

U.S. Cl. 428—171 **4 Claims**



1. A strip of absorbent fibrous web tissue having a cross-machine direction and a machine direction and adapted for spiral wrapping into a roll in its machine direction, said strip comprising a first and a second series of uniformly spaced parallel rows of identically oriented emboss elements of identical size and shape impressed into said tissue from one side only, said first series crossing said second series, each said row comprising a pattern of identical boss elements equally spaced from one another within the rows, said first series of rows being disposed at an angle of from about 40° to about 57° to the machine direction and the second series of rows being disposed at an angle of from about 15° to about 23° to the machine direction wherein the ratio of the transverse dimension across each boss and the spacing between said rows is between about 1.2 and about 6.5.

4. An improved roll package of absorbent fibrous web sheet product having a cross-machine direction and a machine direction spirally wound in said machine direction and comprising a first and second series of uniformly spaced parallel rows of identically oriented boss elements of identical size and shape equally spaced from one another and impressed in said web from one side only forming said bosses on the opposite side of said sheet, said first series of parallel rows being disposed at an angle from about 40° to about 57° to the machine direction, and the second series of parallel rows being disposed at an angle of from about 15° to about 23° to the machine direction wherein the ratio of the transverse dimension across each boss and the spacing between rows is between about 1.2 and about 6.5.

4,659,609

ABRASIVE WEB AND METHOD OF MAKING SAME

Gregory C. Lamers; Dan D. Endres, both of Appleton; Maung H. Win, Neenah, and Cary K. Kuenn, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 2, 1986, Ser. No. 859,172

Int. Cl.⁴ B32B *3/00*

U.S. Cl. 428—194 **9 Claims**

1. A layered abrasive web comprising a supporting layer and a meltblown abrasive layer thermally bonded together, said meltblown abrasive layer having a basis weight of from about 5 to about 25 grams per square meter and essentially consisting of fibers having an average fiber diameter of at least about 40 micrometers.

4,659,610

STRUCTURES MADE USING AN INORGANIC-BINDER COMPOSITION

Stephen George, and Thomas H. George, both of Clinton, N.J., assignors to Subtex, Inc., New York, N.Y.

Continuation of Ser. No. 598,864, Apr. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 585,909, Mar. 2, 1984, Pat. No. 5,507,355. This application Apr. 10, 1986, Ser. No. 851,284

Int. Cl.⁴ B32B *27/14;* **C04B** *35/02;* **D02G** *3/00;* **D04H** *1/58*

U.S. Cl. 428—198 **9 Claims**

1. As an article of manufacture, a heat and flame resistant structure comprising:

(a) a filler selected from at least one member of the group consisting of particulate matter, fibers, filaments or yarn; and

(b) an inorganic binder composition comprising colloidal silica, monoaluminum phosphate, aluminum chlorohydrate, and an alkyl tin halide catalyst;

said structure comprising a composite where said inorganic binder composition is present in a range from a minimal amount to substantially bind said fillers to one another up to a maximum amount to form a matrix around said fillers and said catalyst is present in an amount effective to increase the bonding of said inorganic binder composition when applied to said fillers.

4,659,611

CIRCUIT SUBSTRATE HAVING HIGH THERMAL CONDUCTIVITY

Nobuo Iwase, Kamakura; Kazuo Anzai, Tokyo; Kazuo Shinozaki, Inagi; Akihiko Tsuge, Yokohama; Kazutaka Saitoh, Kawasaki; Kiyoshi Iyogi, Tokyo; Noboru Sato, Yokohama, and Mitsuo Kasori, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 27, 1985, Ser. No. 706,280

Claims priority, application Japan, Feb. 27, 1984, 59-34163; Feb. 27, 1984, 59-34165; Oct. 1, 1984, 59-204101; Nov. 15, 1984, 59-239471

Int. Cl.⁴ C04B *35/52, 35/58;* **B32B** *15/04, 5/16*

U.S. Cl. 428—209 **25 Claims**

1. A high thermal conductivity circuit substrate, comprising (a) a sintered aluminum nitride ceramic substrate consisting essentially of at least one member selected from the group consisting of an oxide of yttrium, an oxide of a rare earth metal and an oxide of an alkali earth metal, said member present in an amount of from about 0.01% to about 15% of metal equivalent by weight, the balance being essentially aluminum nitride and incidental impurities and (b) a conductive path or layer made from electrically conductive thick film paste formed on said ceramic substrate;

wherein the bond strength between said circuit substrate and said conductive path or layer is at least about 1 kg/mm².

25. A high thermal conductivity circuit substrate, comprising (a) a sintered aluminum nitride ceramic substrate consisting essentially of at least one member selected from the group consisting of an oxide of yttrium, an oxide of a rare earth metal and an oxide of an alkali earth metal, said member present in an amount of from about 0.01% to about 5% metal equivalent by weight, the balance being essentially aluminum nitride and incidental impurities and (b) a conductive path or layer made from electrically conductive thick film paste formed on said ceramic substrate;

wherein the bond strength between said circuit substrate and said conductive path or layer is at least about 1 kg/mm².

4,659,612

POLYMER FILM LAMINATE AND METHOD FOR ITS PREPARATION

Ricardo Balloni, Fairport, N.Y.; Kevin M. Donovan, Milford, Conn., and Jay K. Keung, Macedon, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 13, 1986, Ser. No. 829,051

Int. Cl.⁴ B32B *7/02*

U.S. Cl. 428—213 **15 Claims**

1. A polymer film laminate possessing a low coefficient of friction, good receptivity for water-based coatings and good optical clarity which comprises:

(a) an upper layer coextensively adherent to the upper surface of a core layer (b), said upper layer (a) being derived from an isotactic polypropylene polymer containing an anti-blocking effective amount of anti-blocking agent and a coefficient of friction-reducing amount of silicone oil;

(b) a core layer derived from an isotactic polypropylene; and,

(c) a lower layer coextensively adherent to the lower surface of core layer (b), said lower layer (c) being derived from an isotactic polypropylene polymer containing an anti-blocking effective amount of anti-blocking agent,

said layers (a), (b) and (c) each being essentially devoid of any substance which would appreciably reduce the receptivity of the exposed surfaces of layers (a) and (c) to water-based coatings.

4,659,613

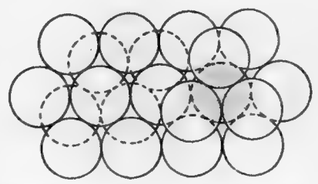
PARTS COATED WITH THICK COATING COMPOSITIONS OF UNI- AND POLYMODAL TYPES

Mark F. Mosser, Sellersville, and Bruce G. McMordie, Philadelphia, both of Pa., assignors to Sermatech International, Inc., Limerick, Pa.

Division of Ser. No. 566,514, Dec. 29, 1983, Pat. No. 4,617,056. This application Feb. 10, 1986, Ser. No. 802,827

Int. Cl.⁴ B32B *7/02, 5/16;* **C09D** *5/10*

U.S. Cl. 428—215 **21 Claims**



1. A coated metal or coated ceramic part which exhibits improved salt corrosion and oxidation resistance, which part is coated with a cured coating composition or a cured binder which comprises phosphate ions and ions of the group of chromate or molybdate ions, and an atomized aluminum powder having an average particle size (as expressed in terms of the median equivalent spherical diameter (ESD), that is greater than at least 15 μm, and having a size distribution such that at least about 5% of the particles by weight are retained on a 325 mesh screen.

2. The metal part of claim 1 which is a thick multilayer coating, each layer being from about 0.003 to about 0.030 inch thick.

4,659,614

ULTRASONICALLY BONDED NON-WOVEN FABRIC

Joseph Vitale, Charlotte, N.C., assignor to Perfect Fit Industries, Monroe, N.C.

Filed Jul. 18, 1985, Ser. No. 756,423

Int. Cl.⁴ B32B *7/02*

U.S. Cl. 428—218 **10 Claims**



1. A quilted fabric comprising:

a dense packed layer of non-woven, weldable material;

a loose packed batt of non-woven, weldable material having a thickness substantially greater than said layer, said batt being juxtaposed to said layer; and

a plurality of welds joining said layer to said batt.

4,659,615

COPOLYESTER FILM AND A HOT MELT ADHESIVE COMPRISING SAID FILM

Masao Ishii, and Keishiro Igi, both of Kurashiki, Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed May 3, 1985, Ser. No. 730,055

Claims priority, application Japan, May 14, 1984, 59-97357

Int. Cl.⁴ B32B *27/06, 27/36*

U.S. Cl. 428—220 **10 Claims**

1. A hot melt adhesive in the form of a film of a copolyester, having excellent bonding strength in high speed adhestion, comprising: (a) a copolyester which comprises, as a dicarbox-

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ylic acid component, 80 to 97 mole percent of terephthalic acid and 3 to 20 mole percent of isophthalic acid and, as a diol component, 60 to 85 mole percent of 1,4-butanediol and 15 to 40 mole percent of diethylene glycol, and said copolyester having a reduced viscosity in the range of 0.8 to 1.4 dl/g and a melting point in the range of 160° to 200° C.; and said film having (b) a heat of crystal fusion in the range of 5 to 10 cal/g, (c) a haze value of 5 to 35 percent, and (d) an initial Young's modulus in the range of 3×10^3 kg/cm^2 to 30×10^3 kg/cm^2 and a thickness in the range of 40 to 200 μm.

4,659,616

FIBER MATERIAL FOR THE MANUFACTURE OF COATINGS FOR ELASTIC CALENDER ROLLS AND IMPROVED CALENDER ROLLS

Dieter Cordier, Jägerthal 11, D-6702 Bad Dürkheim, Fed. Rep. of Germany

Continuation of Ser. No. 577,181, Feb. 6, 1984, abandoned. This application Dec. 20, 1985, Ser. No. 814,540

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1983, 3303703

Int. Cl.[4] D04H *1/08*

U.S. Cl. 428—281 **9 Claims**

1. An elastic supercalender roll for glazing paper comprising a core and a surface surrounding said core composed of highly axially compressed fiber web material in the form of consolidated individual pieces of cellulosic fibers each containing a sufficient amount of carbon fibers to improve the scorching resistance of the surface.

4,659,617

FIBROUS APATITE AND METHOD FOR PRODUCING THE SAME

Shigeo Fujii, Kawagoe; Shoichi Mori, and Jyoichi Tabuchi, both of Oi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1985, Ser. No. 773,482

Claims priority, application Japan, Sep. 11, 1984, 59-190413; Sep. 14, 1984, 59-193159; Oct. 31, 1984, 59-229283; Oct. 31, 1984, 59-229284; Feb. 26, 1985, 60-35262; Feb. 26, 1985, 60-35263

Int. Cl.[4] B32B *7/02;* **C01B** *15/16;* **A61C** *8/00;* **B29C** *33/40*

U.S. Cl. 428—221 **24 Claims**



1. An apatite fiber comprising one or more apatites selected from a group of apatites represented by the general formula:

$$M_{10}(ZO_4)_6X_2$$

wherein M represents Ca, Ba, Mg, Sr, Pb, Cd, Fe and the like ZO_4 represents PO_4, AsO_4, VO_4, CO_3 and the like, and X represents F, Cl, OH and the like.

12. A method of producing a fibrous apatite in cotton-like form comprising the steps of:

(a) preparing a dispersion of apatite by dispersing fine apatite particles uniformly in a solution of binder in water, said apatite being one or more apatites selected from a group of apatites represented by the general formula:

$$M_{10}(ZO_4)_6X_2$$

wherein M represents Ca, Ba, Mg, Sr, Pb, Cd, Fe and the like, ZO_4 represents PO_4, AsO_4, VO_4, CO_3 and the like, and X represents F, Cl, OH and the like;

(b) continuously extruding the thus prepared dispersion through a plurality of spinning orifices while simultaneously stretching the dispersion into a fibrous state with the aid of a high speed air flow to form a stream of fine fibers;

(c) heating said fiber stream to evaporate the water in the fibers;

(d) blowing said water-removed fiber stream upon a collector means to form a cotton-like product of apatite bonded by the binder; and

(e) if required, calcining said cotton-like product.

4,659,618

COMPOSITE MOLDED PRODUCT

Takao Yazaki; Satoru Hattori; Kazuhide Hattori; Takumi Matsuno; Nobuhiro Shibuya; Kazuhide Hayama, and Isao Itoh, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1986, Ser. No. 888,372

Claims priority, application Japan, Jul. 30, 1985, 60-168167

Int. Cl.[4] B32B *3/26, 7/12*

U.S. Cl. 428—317.7 **8 Claims**



1. A composite molded product having a structure that an olefin-based resin molded product and a urethane foam are integrally laminated with an adhesive resin layer, said adhesive resin having a composition comprising

(A) 55 to 90% by weight of an olefin-based resin;

(B) 1 to 30% by weight of an ethylene/acrylic acid copolymer; and

(C) 10 to 30% by weight of a styrene-based resin.

4,659,619

COLOR CHANGEABLE FABRIC

Clarence R. Tate, Fairfield, Ill., assignor to Thalatta, Inc., Fairfield, Ill.

Continuation of Ser. No. 726,518, Apr. 24, 1985, abandoned, which is a division of Ser. No. 605,270, Apr. 30, 1984, Pat. No. 4,528,237, which is a division of Ser. No. 272,531, Jun. 11, 1981, Pat. No. 4,457,723. This application Feb. 21, 1986, Ser. No. 831,627

Int. Cl.[4] B32B *5/16*

U.S. Cl. 428—321.5 **28 Claims**



6. An article of manufacture comprising a transparent material containing at least one vein of transparent liquid, said liquid containing rotatable color-coded micromagnets dispersed therein.

4,659,620

INFORMATION MEDIUM ADAPTED TO BE WRITTEN BY THERMO-OPTICAL MEANS AND METHOD OF MANUFACTURING SAME

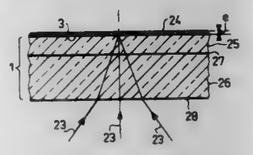
Alain Benhamou, Alfortville, France, assignor to Societe Anonyme Dite Alcatel Thomson Gigadisc, Paris, France

Filed Aug. 2, 1985, Ser. No. 761,866

Claims priority, application France, Aug. 9, 1984, 84 12602

Int. Cl.[4] B32B *15/04, 15/08;* **B05D** *3/06*

U.S. Cl. 428—328 **18 Claims**



1. Metal layer for an information medium adapted to be written by thermo-optical means and comprising a heat-sensitive structure adapted to store information to be read by optical means and having a thermal recording metal layer with an overall thickness between 100 and 300 A which, when incident writing radiation impinges on it, causes a transient localize temperature rise which, above a temperature threshold, causes a change in the optical characteristics of said heat-sensitive structure, manufactured by a method wherein said thermal recording metal layer is formed by depositing a continuous thin film of polycrystalline aggregate over an acceptor surface of said structure by means of an incident influx of particles of a precious metal and a transition metal more readily oxidized then said precious metal, in which method, in order to obtain a defined metallic composition, said metal particles are extracted from target means exposed to bombardment by other particles resulting from an electrical discharge in a rare gas at reduced pressure and confined by a magnetic field, said acceptor surface collecting said metal particles with a residual energy content giving rise to a density of nucleation sites increased relative to that for a similar deposit obtained by vacuum evaporation; said target means having an exposed area of said precious metal and an exposed area of said transition metal.

4. Metal layer according to claim 1, forming a polycrystalline aggregate having an average grain size not exceeding 70 Angströms.

4,659,621

RELEASE AGENT DONOR MEMBER AND FUSING ASSEMBLY CONTAINING SAME

Patrick J. Finn, Webster, N.Y.; Linda M. Glover, Denver, Colo.; Arnold W. Henry, Pittsford, and Adalbert A. Lux, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

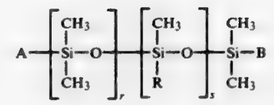
Filed Aug. 22, 1985, Ser. No. 768,528

Int. Cl.[4] B32B *25/20;* **G03G** *15/20*

U.S. Cl. 428—339 **12 Claims**

1. A release agent donor member for a toner fixing system in an electrostatographic imaging apparatus having a conformable donor surface layer comprising the crosslinked product of:

(a) at least one addition curable vinyl terminated or vinyl pendant polyorganosiloxane having the formula of:



where A, B and R are methyl or vinyl provided the vinyl functionality is at least 2, $0<s/r\leq1,350<r+s<2700$;

(b) from about 5 to about 150 parts by weight per hundred parts of polyorganosiloxane of finely divided filler;

(c) a polyfunctional silicon hydride crosslinking agent;

(d) a crosslinking catalyst,

said crosslinking agent and catalyst being present in an amount sufficient to promote crosslinking of said polyorganosiloxane.

4,659,622

ESSENTIALLY LINEAR POLYMER HAVING A PLURALITY OF AMIDE, IMIDE AND ESTER GROUPS THEREIN, A TINNABLE AND SOLDERABLE MAGNET WIRE, AND A METHOD OF MAKING THE SAME

Donald J. Barta, Ossian, and George H. Sollner, New Haven, both of Ind., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Continuation of Ser. No. 481,756, Apr. 4, 1983, Pat. No. 4,611,050. This application Apr. 2, 1986, Ser. No. 847,263

Int. Cl.[4] B32B *15/00;* **H01B** *7/00*

U.S. Cl. 428—379 **15 Claims**

1. A tinnable and solderable and thermostable magnet wire comprising a conductor and a continuous, flexible, and essentially concentric coating of an insulating material superimposed thereon, said insulating material being the condensation product of at least one polycarboxylic acid five member ring forming reactant, at least one ethylenically unsaturated polycarboxylic acid five or six member lactam ring forming reactant, at least one difunctional amino five or six member ring forming reactant, at least one polyfunctional hydroxyl compound, at least one polycarboxylic acid reactant having not more than two carboxylic acid ester forming radicals, and at least one polycarboxylic acid reactant having two or more carboxylic acid ester forming radicals with at least two of the radicals in the 1,2 position relative to each other, the bonds of said condensation product when cured on said conductor being in part thermolabile in a molten solder bath.

4,659,623

ACRYLIC FIBERS FOR PRODUCING PREOXIDIZED FIBERS

Osamu Yoshinari; Yoshifumi Kawakatsu; Hayashi Takahashi, and Hideaki Fukuizumi, all of Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed May 14, 1984, Ser. No. 610,080

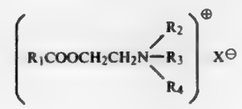
Claims priority, application Japan, May 14, 1983, 58-83483

Int. Cl.[4] D02G *3/00*

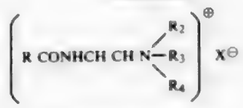
U.S. Cl. 428—395 **10 Claims**

1. Acrylic fibers for producing preoxidized fibers, said fibers having a fluorine-containing surface active agent applied thereto and at least one phosphoric surface active agent selected from the group consisting of compounds represented by the following formulae (I), (II) and (III) applied thereto:

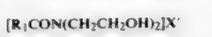
(I)



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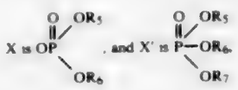


(II)



(III)

wherein R_1 represents an aliphatic hydrocarbon group having 1 to 17 carbon atoms, R_2, R_3 and R_4 which may be the same or different, each represents a hydrogen atom, a lower alkyl group, a hydroxyethyl group or a hydroxyispropyl group,



wherein R_5, R_6 and R_7, which may be the same or different, each represents a hydrogen atom or a hydroxyethyl group, wherein said acrylic fibers comprise a polymer obtained from at least 95 mole % acrylonitrole and not more than 5 mole % vinyl monomer copolymerizable with acrylonitrile.

4,659,624

HYBRID AND UNIDIRECTIONAL CARBON-CARBON FIBER REINFORCED LAMINATE COMPOSITES

Robert E. Yeager, Greenville; Isaac E. Harder, Grand Prairie, and Earl L. Stone, III, Arlington, all of Tex., assignors to LTV Aerospace & Defense Company, Dallas, Tex.

Filed Nov. 25, 1983, Ser. No. 554,872
Int. Cl.[4] B32B *9/00*
U.S. Cl. 428—408 **24 Claims**

1. The process for producing carbon-carbon structural laminates which comprise plies of unidirectional resin impregnated carbon or graphite filament tape comprising the steps of:
(a) laying up the plies of the carbon-carbon material in a manner such that the fibers of said filament tape plies are laid along predetermined directions so as to provide the part to be fabricated with increased strength along a predetermined direction of applied force;
(b) curing said laid up laminate under pressures sufficient to provide controlled evolution of volatiles, at increasing temperatures until cured;
(c) pyrolyzing said cured laminate at elevated temperatures; and
(d) densifying the resulting laminate material.

4,659,625

POLYMERIC MULTILAYER STRUCTURES INCORPORATING A LAYER OF VINYL FLUORIDE OR VINYLIDENE FLUORIDE POLYMER WHICH IS BONDED TO A POLAR POLYMER LAYER

Pierre Decroly, Rhode-Saint-Genèse, and Claude Debennau, Waterloo, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Apr. 17, 1985, Ser. No. 724,106
Claims priority, application France, Apr. 19, 1984, 84 06372
Int. Cl.[4] B32B *27/08, 27/36*
U.S. Cl. 428—412 **12 Claims**

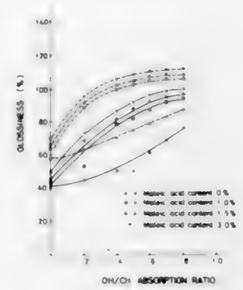
1. A polymeric multilayered structure, comprising:
a fluoropolymer layer comprised of one of a vinyl fluoride polymer and a vinylidene fluoride polymer;
a polar polymer layer comprised of a polar polymer;
a vinyl acetate polymer layer consisting essentially of a vinyl acetate polymer which is one of a homopolymer of vinyl acetate and copolymers of vinyl acetate and ethylene containing at least 50 percent by weight of vinyl acetate, and being interposed between said fluoropolymer layer and said polar polymer layer, whereby said fluoropolymer layer and said polar polymer layer are bonded together.

4,659,626

MAGNETIC RECORDING MEDIUM

Kiyoto Fukushima, Saku; Shigeru Takamatsu, Komoro, and Eiji Kitaura, Saku, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 1, 1985, Ser. No. 750,446
Claims priority, application Japan, Jul. 2, 1984, 59-135226
Int. Cl.[4] G11B *5/702*
U.S. Cl. 428—425.9 **7 Claims**



1. A magnetic recording medium which comprises a dispersion of magnetic particles in a resinous binder, and a base to which the dispersion is solidly applied, said resinous binder comprising a copolymer composed of vinyl chloride, a vinyl alkylcarboxylate, another monomer copolymerizable with vinyl chloride, and a saponified vinyl alkylcarboxylate and having an OH/CH absorption ratio according to the infrared absorption spectrum of 0.2 to 0.7, a polyurethane resin having in its molecule a $-SO_3M$ group in the range of about 10 to 1000 g equivalent 10^4 g and wherein M represents an alkali metal atom, and a rubbery binder ingredient comprising polyurethane resin or polyester resin or both containing no $-SO_3M$ group wherein M represents an alkali metal atom, and a polyisocyanate.

4,659,627

MAGNETIC RECORDING MEDIUM WITH LUBRICANT

Fred C. Chung, Palo Alto, and Ross P. Clark, San Jose, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Oct. 17, 1984, Ser. No. 661,983
Int. Cl.[4] G11B *5/70*
U.S. Cl. 428—447 **25 Claims**

1. A high-durability/low-abrasivity coating for magnetic records using transducer heads which contact the record, at least periodically, this coating including one or more harsh pigment constituents dispersed in a binder, the binder including a novel migratory lubricant system incorporated therein, this lubricant system comprising a liquid fluoro-silicone and a fatty acid ester combined therewith;
the fluoro-silicone constituting at least a few tenths wt.% of the dry coating solids, barely sufficient to optimize durability and abrasivity, the fluoro-silicone-ester system being sufficiently incompatible with the binder and being of sufficient concentration, sufficiently low viscosity and sufficiently moderate to low molecular weight as to enhance migration of the lubricant.

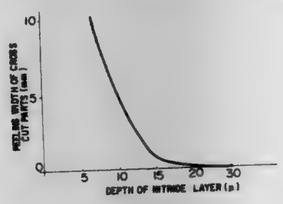
22. A magnetic recording composition including pigment dispersed in a binder, this binder including a highly migratory lubricant system incorporated therein, this lubricant system including fluoro-silicone material and fatty acid ester material, said materials being sufficiently incompatible and of sufficient concentration, sufficiently low viscosity and sufficiently moderate to low molecular weight as to enhance migration of the lubricant and to so optimize operational durability and abrasion resistance of the composition as well as minimizing clog and generation of debris.

4,659,628

METHOD OF PRESUBSTRATE TREATMENT FOR PAINTING UTILIZING A GAS SOFT NITRIDING

Teruoki Watanabe, Kawagoe; Yahiko Nakamura, Sayama; Akio Hidaka, Kawagoe; Shunji Kobayashi, and Hiroyoshi Nozaki, both of Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 51,347, Jun. 25, 1979, abandoned. This application Jul. 9, 1985, Ser. No. 753,812
Claims priority, application Japan, Jun. 27, 1978, 53-77638
Int. Cl.[4] B32B *9/00, 15/04*
U.S. Cl. 428—457 **16 Claims**



1. A paint priming method for a ferrous material, comprising the steps of:
treating said ferrous material so as to provide said material with a directly paintable primed surface by gas soft nitriding an outer surface of said ferrous material with a mixed gas containing 10%–30% ammonia (NH_3), 2.5%–4.5% carbon monoxide (CO), and the remainder comprising N_2 gas, to form a nitride layer having a thickness greater than 15μ on said outer surface of said ferrous material, said mixed gas generating no free carbon, the main phase of said nitride layer being ε phase, said nitride layer having no carbon adhering thereto; and
applying paint directly on the surface of said nitride layer.

15. A product formed in accordance with the method of claim 1.

4,659,629

FORMATION OF A PROTECTIVE OUTER LAYER ON MAGNESIUM ALLOYS CONTAINING ALUMINUM

Charles D. Gartner, and Patrick L. Hagans, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 25, 1985, Ser. No. 801,352
Int. Cl.[4] B32B *15/04*
U.S. Cl. 428—469 **17 Claims**

1. A magnesium based alloy containing a minor amount of aluminum having an outer layer comprising aluminum oxide and magnesium oxide prepared by exposing said alloy to electroless coating conditions in the presence of a molten fused salt eutectic mixture comprising an organic component and at least one of a nitrate or nitrite, wherein the proportion of aluminum present in said outer layer is enriched in proportion to the amount of aluminum present in said magnesium based alloy.

4,659,630

TREATMENT OF LEATHER WITH RESINS AND LACQUERS DERIVED FROM POLYAMINOACRYLATES

Werner Walther, Stuttgart, Fed. Rep. of Germany, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 440,287, Nov. 9, 1982, Pat. No. 4,529,754. This application May 20, 1985, Ser. No. 736,096
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1981, 3144452; Switzerland, Sep. 7, 1982, 5312/82
Int. Cl.[4] B32B *9/02, 9/04*
U.S. Cl. 428—473 **34 Claims**

1. A method for coating leather comprising applying to the leather a water-soluble reaction product of
(a) a water-soluble acrylic polymer or copolymer having pendant amine groups and
(b) a glycidyl ether of a di- or polyhydric alcohol or monomeric phenolic compound having 2–4 aromatic hydroxy groups,
with the proviso that per amine equivalent of component (a) 0.5–0.85 epoxide equivalents of component (b) are present.

12. Leather coated according to the method of claim 1.

4,659,631

CORROSION RESISTANT DUPLEX PLATED SHEET STEEL

Tatsuo Kurimoto, Wakayama; Yoshihiko Hoboh, Osaka; Hiroshi Ohishi, Wakayama; Ryoichi Noumi, Minoo, and Shigeru Wakano, Kobe, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed May 15, 1985, Ser. No. 734,134
Claims priority, application Japan, May 17, 1984, 59-97580; Feb. 21, 1985, 60-33486
Int. Cl.[4] B32B *15/01*
U.S. Cl. 428—624 **22 Claims**

1. A corrosion resistant duplex plated sheet steel, which comprises a sheet steel having on at least one surface thereof a lower layer of Zn base alloy plating and an upper layer thereon of a zinc plating having a coating weight of 0.1–5 g/m^2 or a zinc alloy or zinc composite plating having a coating weight of 0.1 to 10 g/m^2 wherein the ratio of the coating weight of the lower layer to that of the upper layer is at least 1.5:1, said zinc alloy or zinc composite plating for the upper layer comprising, on a weight basis as metal:
at least 80% Zn, and one or more additives as Zn corrosion inhibitors selected from the group consisting of:
not greater than 7% Ni,
not greater than 7% Co,
not greater than 7% Mn,
not greater than 7% Sn,
not greater than 10% Ti,
not greater than 10% Al,
not greater than 10% Mg, and
not greater than 10% Si.
wherein the duplex plated sheet steel when covered by conventional paint films displays resistance to both cosmetic corrosion comprising paint creepage and red rust corrosion, and crater formation.

4,659,632

COBALT ALLOY FOR BUILD-UP WELDING HAVING IMPROVED RESISTANCE TO WELD CRACK

Masaki Morikawa, Iwatsuki; Junya Ohe, Urawa; Akifumi Mishima, and Sadao Saitoh, both of Omiya, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 477,136, Mar. 21, 1983, abandoned. This application Dec. 7, 1984, Ser. No. 679,467
Claims priority, application Japan, Apr. 7, 1982, 57-57904
Int. Cl.[4] B32B *15/01*
U.S. Cl. 428—679 **18 Claims**

1. A composite article comprising a metal substrate having a cobalt-base alloy built-up surface portion consisting essentially of a cobalt-base alloy welding metal which has been deposited

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on said substrate by an overlay welding process using a cobalt-base welding metal which consists essentially of 1.1 to 3.0% Si, 0.2 to 0.5% C, 25.0 to 30.0% Cr, 0.1 to 1.0% W, 0.2 to 3.0% Fe, 0.4 to 6.0% Mo, 0.1 to 2.0% Mn, 1.0 to 4.0% Ni, the balance being Co and incidental impurities, the percentage being on a weight basis, said built-up surface portion having high resistance to wear and to weld cracking.

4,659,633

MAGNETIC RECORDING MEDIUM

Yoshitaka Yamaguchi, Yokohama, and Kenji Sumiya, Suita, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Mar. 11, 1986, Ser. No. 838,476
Claims priority, application Japan, Mar. 16, 1985, 60-52735
Int. Cl.⁴ G11B *5/72*
U.S. Cl. 428—695 **9 Claims**

1. A magnetic recording medium comprising a substrate and one or two magnetic layers at least a surface of which contains at least one compound selected from the group consisting of a compound of the formula:

$$F-(CF_2)_n-COO-(RO)_m-CO-R'-COOH \quad (I)$$

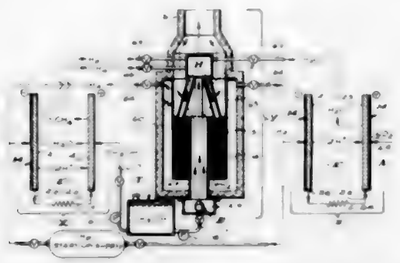
wherein R is a C_2–C_{10} alkyl group, R' is a C_2–C_{10} alkyl or alkenyl group, n is an integer of 4 to 20 and m is an integer of 5 to 50 and salts thereof.

4,659,634

METHANOL HYDROGEN FUEL CELL SYSTEM

Ralph C. Struthers, 39503 Calle El Fuente, Saugus, Calif. 91350

Continuation-in-part of Ser. No. 682,983, Dec. 18, 1984, abandoned. This application Feb. 3, 1986, Ser. No. 825,446
Int. Cl.⁴ H01M *8/06*
U.S. Cl. 429—19 **8 Claims**



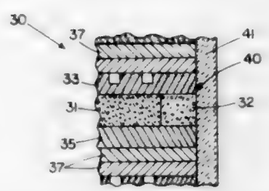
1. An electro chemical electric power generating apparatus comprising first and second electro chemical fuel cells including spaced anodes and cathodes, electrolytes between the anodes and cathodes, and external electric circuits connecting the anodes and cathodes, a steam-methane reformer which operates to reform steam and methane gas into a hydrogen rich gas fuel, the cathode and anode fuels of the first fuel cells are methanol and hydrogen and the byproducts of chemical reaction thereof are water and methane gas, the cathode and anode fuels of the second fuel cell are oxygen and hydrogen and the byproduct of chemical reaction thereof is water, the methane gas byproduct of the first fuel cell and the water byproduct of the first and second fuel cells are conducted to the steam-methane reformer and reformed thereby into hydrogen rich fuel gas, the hydrogen rich fuel gas reformed by the steam-methane reformer is conducted to and feeds the anodes of the fuel cells.

4,659,635

ELECTROLYTE MATRIX IN A MOLTEN CARBONATE FUEL CELL STACK

Carl A. Reiser, and Donald L. Maricle, both of Glastonbury, Conn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 27, 1986, Ser. No. 867,123
Int. Cl.⁴ H01M *8/14*
U.S. Cl. 429—41 **17 Claims**



1. A porous matrix for containing molten carbonate electrolyte in a high temperature fuel cell comprising

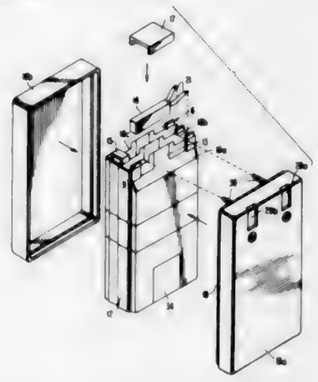
a substantially flat sheet of porous ceramic material having a central body with a first pore size average and marginal portions with a second pore size average, said first pore size average being substantially smaller than said second pore size average.

4,659,636

SEALED STORAGE BATTERY

Yoshie Suzuki, Chigasaki; Kiichi Koike, Fujisawa; Minoru Kadowaki, Yokohama, and Minoru Yoshinaka, Fujisawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP84/00561, § 371 Date Nov. 29, 1985, § 102(e) Date Nov. 29, 1985, PCT Pub. No. WO85/04526, PCT Pub. Date Oct. 10, 1985
PCT Filed Nov. 22, 1984, Ser. No. 807,067
Claims priority, application Japan, Mar. 29, 1984, 59-61564
Int. Cl.⁴ H01M *10/06, 2/02*
U.S. Cl. 429—54 **8 Claims**



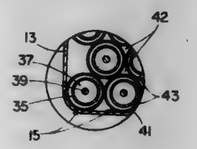
1. A sealed storage battery comprising: a plurality of flattened unitary cells each having a polar plate group, including an anode plate, a cathode plate and a separator separating the polar plates from each other, an electrolyte retained by the polar plate group, and an outer bag in which both the polar plate group and the electrolyte are sealed, said bag being made of a film or sheet of synthetic resin; a safety valve in the outer bag for each unitary cell; a rigid casing accommodating the unitary cells in a stack extending in the thickness direction of said cells and having a space in the upper portion thereof between adjacent cells, said unitary cells being held under pressure in the stacked direction; and a thermostat electroconductively connecting said cells in series and provided in said space.

4,659,637

ELECTROCHEMICAL CELL WITH HIGH CONDUCTIVITY GLASS ELECTROLYTE

Paul A. Nelson, Wheaton; Ira D. Bloom, Lisle, and Michael F. Roche, Glen Ellyn, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 17, 1986, Ser. No. 853,104
Int. Cl.⁴ H01M *6/18*
U.S. Cl. 429—104 **17 Claims**



1. A secondary electrochemical cell with chalcogen containing positive electrode material and alkali metal containing negative electrode material comprising

an electrically conductive housing having a first portion thereof at negative electrode polarity, a second portion thereof at positive electrode polarity and an electrically insulative seal between the first and second portions;

a plurality of elongated tubes of ionically conductive glass electrolyte affixed lengthwise along substantially parallel axes within the first portion of said housing, the tubes containing the positive electrode material;

a pluality of elongated electrical conductors, each axially disposed in one of the plurality of glass electrolyte tubes, said conductors extending lengthwise beyond the glass electrolyte tubes into common electrical contact with the second portion of said housing;

a plurality of curved protective shields placed lengthwise in the first portion of said housing at least partially encompassing individual glass electrolyte tubes to form columnar annuli for containing the negative electrode material, said shields placed sufficiently close to the outer surfaces of the glass electrolyte tubes to permit molten negative electrode material to wick therebetween, and each of said shields contacting adjacent shields at lengthwise surface portions to define columnar regions of molten negative electrode material,

electrical terminal means coupled to said first and second housing portions for charging and withdrawing the electrical energy of said cell.

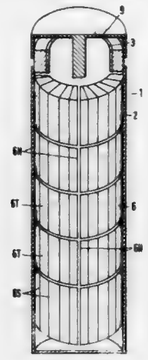
4,659,638

ELECTROCHEMICAL STORAGE CELL

Philippe Rozé, Wiesloch-Baiertal, and Guenther Steinleitner, Schriesheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Dec. 20, 1985, Ser. No. 811,945
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1984, 3446779
Int. Cl.⁴ H01M *10/39*
U.S. Cl. 429—104 **3 Claims**

1. Electrochemical storage cell of the sodium and sulfur type with an anode space and a cathode space which are separated from each other by a solid electrolyte and are bounded at least in places, by a metallic housing with the cathode space, which contains the sulfur electrode, formed of fiber-shaped material of graphite or carbon saturated with sulfur pressed and subsequently ground with a particle size which corresponds to ¼ to ¾ of the thickness (d_S) of the sulfur electrode, which is formed by at least two half shells which are shaped to conform to the



outer shape of the solid electrolyte, pressed and subdivided at least in regions into a large number of sections by cutting and/or sawing, and the ratio of the thickness (d_S) of the sulfur electrode to the wall thickness (d_K) of the solid electrolyte has a value p between 3 and 5, and the sulfur electrode has a breaking strength of at most 40 MPa, a porosity of 10 to 50% and a pore size of 0.2 to 2 mm.

4,659,639

PHOTOSENSITIVE MEMBER WITH AN AMORPHOUS SILICON-CONTAINING INSULATING LAYER

Hiroshi Mizuno, Ikoma; Shuji Iino, Itami; Izumi Osawa, Ikeda, and Isso Doi, Toyonaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 10, 1984, Ser. No. 648,737
Claims priority, application Japan, Sep. 22, 1983, 58-175818; Sep. 22, 1983, 58-175819
Int. Cl.⁴ G03G *5/082*
U.S. Cl. 430—65 **12 Claims**

1. A photosensitive member which comprises a photoconductive layer that includes amorphous silicon, and an insulating layer on said photoconductive layer, said insulating layer including amorphous silicon, carbon, oxygen and fluorine, said insulating layer having a thickness of about 0.01 to 3 microns.

4,659,640

SELF-FIXING LIQUID ELECTROGRAPHIC DEVELOPERS CONTAINING POLYESTER TONERS AND DISPERSED WAX AND PROCESSES FOR USING THE SAME

Domenic Santilli, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,487
Int. Cl.⁴ G03G *9/12*
U.S. Cl. 430—119 **12 Claims**

1. An electrographic method of forming a self-fixed toner on a support, comprising:

(a) establishing a latent electrostatic image on the surface of said support

(b) developing said image with a self-fixing, liquid electrographic developer comprising a volatile, electrically insulating liquid carrier and, dispersed in said carrier,

(i) toner particles comprising a polyester binder and

(ii) wax,

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to form an unfixed toner image comprising said toner, wax and volatile carrier, and

(c) fixing said toner image by allowing said volatile carrier to evaporate from said toner image at room temperature,

wherein the concentration of said wax in said developer is sufficient to fix said toner and wax to said surface in the absence of externally applied heat other than that from ambient conditions.

4,659,641

BEAD POLYMERIZATION PROCESS FOR TONER RESIN COMPOSITIONS

Thomas L. Mahalek, Rochester, and David R. Santo, East Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 702,773, Feb. 19, 1985, Pat. No. 4,603,167. This application Jul. 14, 1986, Ser. No. 884,859

Int. Cl.⁴ G03G *9/08*

U.S. Cl. 430—137 **11 Claims**

1. An improved process for affecting the preparation of toner particles which comprises admixing resin particles prepared by a bead polymerization reaction which comprises (1) providing a solution mixture of water, suspension agent, and surfactant; (2) adding thereto while stirring a monomer component, a low molecular weight wax, and a polymerization initiator; (3) affecting polymerization of the monomer by heating the solution resulting; and (4) separating the polymer generated from the reaction mixture, with pigment particles, and a terpolymer of styrene, methylmethacrylate, and acrylonitrile.

4,659,642

POSITIVE WORKING NAPHTHOQUINONE DIAZIDE COLOR PROOFING TRANSFER PROCESS

Stephan J. W. Platzer, Califon; Gabor I. Koletar, Berkeley Heights, and Richard L. Shadrach, Belle Mead, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Oct. 22, 1984, Ser. No. 663,607

Int. Cl.⁴ G03G *7/20, 11/12, 5/18*

U.S. Cl. 430—143 **18 Claims**

1. A method for forming a colored image which comprises:

A. providing a photosensitive element which comprises, in order:

(i) a substrate having a release surface; and

(ii) a single, colored photosensitive layer on said release surface, which photosensitive layer comprises a light sensitive, positive working, naphthoquinone diazide compound; a resinous binder composition, which composition contains a major amount of at least one resin selected from the group consisting of a polyvinyl butyral polymer and a styrene-maleic anhydride copolymer half ester; and at least one colorant; and

(iii) an adhesive layer directly adhered to said photosensitive layer, which adhesive layer comprises a polyvinyl acetate polymer and which adhesive layer has a softening point in the range of from about 60° C. to about 180° C.; and thereafter

B. either

(i) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; and imagewise exposing said photosensitive layer to actinic radiation; or

(ii) imagewise exposing said photosensitive layer to actinic radiation; and laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; or

(iii) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and imagewise exposing said photosensitive layer to actinic radiation; and removing said substrate by the application of peeling forces; and

C. removing the exposed areas of said photosensitive layer with a liquid developer, which removing is conducted at a temperature at which said adhesive layer is substantially non-tacky.

4,659,643

HEAT-SENSITIVE RECORDING DIAZO MATERIAL WITH RECORDING SENSITIZER

Katsuhiko Ishida, Takatsuki; Masaharu Nojima, Amagasaki, and Tosaku Okamoto, Osaka, all of Japan, assignors to Kanzaki Paper Manufacturing Co. Ltd., Tokyo, Japan

Filed Oct. 21, 1985, Ser. No. 789,710

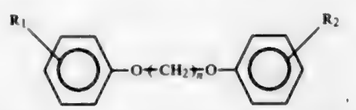
Claims priority, application Japan, Oct. 27, 1984, 59-226186

Int. Cl.⁴ G03C *1/60, 1/54*

U.S. Cl. 430—157 **4 Claims**

1. A heat-sensitive recording material comprising a substrate and a heat-sensitive recording layer thereon; said heat-sensitive recording layer comprising a light-sensitive diazonium salt, a coupler compound reactive with said diazonium salt in the presence of a fused basic compound to form a color, a heat-fusible basic compound and a recording sensitizer;

wherein said recording sensitizer comprises at least one compound represented by the formula (I)



wherein R_1 and R_2 are each hydrogen, chlorine, alkyl having 1 to 4 carbon atoms, phenyl, benzyl or alkoxy having 1 to 4 carbon atoms and n is an integer of 1 to 4; and

wherein said coupler compound is present in an amount of about 0.1 to 10 parts by weight per one part by weight of said diazonium salt; said heat-fusible basic compound is present in an amount of about 1 to 30 parts by weight per one part by weight of said diazonium salt; and said recording sensitizer is present in an amount of about 1 to 30 parts by weight per one part by weight of said diazonium salt.

4,659,644

DIAZO-TYPE THERMOSENSITIVE RECORDING MATERIAL WITH HYDRAZONE COUPLER AND CHELATING METAL COMPOUND

Takayuki Hoshina, Fuji; Michihisa Takahashi, Tachikawa; Masanori Rimoto, Mishima, and Masanaka Nagamoto, Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 19, 1984, Ser. No. 683,513

Claims priority, application Japan, Dec. 22, 1983, 58-242979

Int. Cl.⁴ G03C *1/58;* **G01D** *15/10;* **B41M** *5/18*

U.S. Cl. 430—182 **10 Claims**

1. A diazo-type thermosensitive recording material comprising a support material and a thermosensitive coloring layer formed on said support material, said thermosensitive coloring layer comprising a diazonium compound, a coupler combination and a thermo-fusible or thermo-softening material, said coupler combination being a combination of a hydrazone-type coupler selected from the group consisting of compounds of the formulae (I) to (V) and two-valence metal compound capable of chelating with a coupled product produced by the coupling of said diazonium compound and said hydrazone-type coupler,



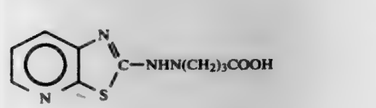
(I)

(II)

-continued



(III)



(IV)

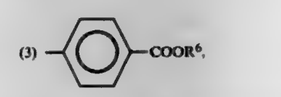


(V)

wherein R^1 represents 2-pyridyl, phenyl or 2-benzothiazolyl, and R^2 represents

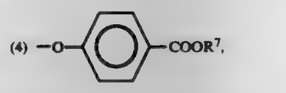
(1) —COOR³, wherein R^3 represents hydrogen or lower alkyl having 1 to 6 carbon atoms,

(2) —R^4—COOR⁵, where R^4 represents lower alkylene having 1 to 5 carbon atoms, and R^5 represents hydrogen or lower alkyl having 1 to 6 carbon atoms,



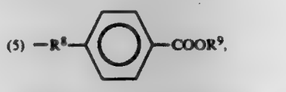
(3)

wherein R^6 represents hydrogen or lower alkyl having 1 to 6 carbon atoms,



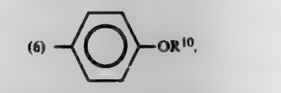
(4)

wherein R^7 represents hydrogen or lower alkyl having 1 to 6 carbon atoms,



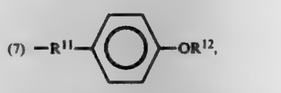
(5)

wherein R^8 represents lower alkylene having 1 to 6 carbon atoms, and R^9 represents hydrogen or lower alkyl having 1 to 6 carbon atoms,



(6)

wherein R^{10} represents hydrogen or lower alkyl having 1 to 6 carbon atoms,



(7)

wherein R^{11} represents lower alkylene having 1 to 5 carbon atoms, and R^{12} represents hydrogen or lower alkyl having 1 to 6 carbon atoms,

(8) —COR^{13}, wherein R^{13} represents lower alkyl having 1 to 6 carbon atoms or phenyl, and

(9) —OR^{14}, wherein R^{14} represents hydrogn, lower alkyl having 1 to 6 carbon atoms, or phenyl,

(10) —R^{15}—O—R^{16}, wherein R^{15} represents lower alkylene having 1 to 6 carbon atoms, and R^{16} represents hydrogen, lower alkyl having 1 to 6 carbon atoms, or phenyl said coupled product being a formazan dye and the diazonium compound and the coupler combination being present in the coloring layer in amounts and relationship to produce a chelated formazan dye when subjected to image forming thermal exposure.

4,659,645

PHOTOSENSITIVE MIXTURE AND PHOTOSENSITIVE RECORDING MATERIAL WITH DIAZONIUM SALT POLYCONDENSATION PRODUCT AND FREE RADICAL RADIATION POLYMERIZABLE COMPOSITION

Hans-Dieter Frommeld, Wiesbaden; Walter Lutz, Hochheim, and Hartmut Steppan, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 9, 1985, Ser. No. 753,132

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1984, 3425328

Int. Cl.⁴ G03C *1/60, 1/68, 1/70*

U.S. Cl. 430—175 **5 Claims**

1. A photosensitive mixture comprising

(a) about 5% to 60% by weight of a photosensitive diazonium salt polycondensation product;

(b) about 10% to 65% by weight of a compound that is polymerizable by a free-radical process, comprising at least two terminal ethylenically unsaturated groups and having a boiling point, at normal pressure, above 100° C.;

(c) about 0.05% to 10% by weight of a polymerization initiator that by the action of actinic radiation forms free radicals; and

(d) about 5% to 80% by weight of a polymeric binder that is insoluble in water, but soluble in organic solvents,

wherein said diazonium salt polycondensation product is comprised of first recurring units and second recurring units that are linked by bivalent intermediate members derived from a carbonyl compound which is capable of condensation, (i) each of said first recurring units being derived from a diphenyl amine-4-diazonium salt compound which is unsubstituted or substituted by an alkyl group, an alkoxy group or a halogen atom represented by the formula $(R^1—R^3—)_qR^2—N_xX$, in which

X denotes an anion of a diazonium compound,

q denotes an integer from 1 to 3,

R^1 denotes an arylene group of the benzene or naphthalene series,

R_3 denotes a single bond or one of the following groups:

—$(CH_2)_q$—NR^4—,

—O—$(CH_2)_r$—NR^4—,

—S—$(CH_2)_r$—NR^4—,

—S—CH_2—CO—NR^4,

—O—R^5—O—,

—O—,

—S— and

—CO—NR^4—,

q denoting an integer from 0 to 5,

r denoting an integer from 2 to 5,

R^4 denotes a hydrogen atom, an alkyl group having 1 to 5

carbon atoms, an aralkyl group having 7 to 12 carbon atoms or an aryl group having 6 to 12 carbon atoms, and R^5 denotes an arylene group having 6 to 12 carbon atoms;

(ii) said second recurring units being diazonium group-free radicals of a phenol ether, an aromatic thioether or an aromatic hydrocarbon; and

(iii) said diazonium salt polycondensation product containing an average number of 0.1 to 50 units of said second recurring units per 1 unit of said first recurring units.

4,659,646

SILVER SALT DIFFUSION TRANSFER PHOTOGRAPHIC MATERIAL

Noriyuki Inoue, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 18, 1985, Ser. No. 745,975

Claims priority, application Japan, Jun. 18, 1984, 59-124725

Int. Cl.⁴ G03C *5/54, 1/02*

U.S. Cl. 430—230 **6 Claims**

1. A silver salt diffusion transfer photographic material comprising a silver halide emulsion layer comprising silver halide grains wherein at least 80 percent of the total number of said silver halide grains are accounted for by coarse silver halide grains larger than about 0.6 μm in diameter and fine silver halide grains of from 0.1 to 0.4 μm in diameter, and said fine silver halide grains constitute at least 10 percent of the total number of silver halide grains, wherein said material includes an image receiving layer made of regenerated cellulose containing a silver precipitating agent and is adapted for processing in the presence of a hydroxyl amine developer and a silver halide solvent.

4,659,647

PHOTOSENSITIVE SILVER HALIDE MATERIAL FOR OBTAINING HALF-TONE BLACK-AND-WHITE IMAGES AND METHOD FOR HALF-TONE HIGH-CONTRAST REPRODUCTION

Alberto Vacca, Carcare/Savona, and Angelo Vallarino, Spotorno/Savona, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 10, 1985, Ser. No. 807,285

Claims priority, application Italy, Dec. 17, 1984, 24093 A/84

Int. Cl.⁴ G03C *1/06*

U.S. Cl. 430—264 **12 Claims**

1. A silver halide photosensitive material for obtaining black-and-white half-tone dot or line images, comprising coated on a support one or more hydrophilic colloidal layers, characterized by the fact that at least one of them includes a high-chloride fine grain silver halide emulsion wherein said silver halide has an average grain size less than or equal to 0.15 micron containing with a vinyl addition hydrophobic polymer latex in combination with a stabilizer selected from the group consisting of 4-hydroxy-1,3,3a,7-tetrazaindenes, benzotriazoles and benzimidazoles.

4,659,648

PLASMA DEVELOPABLE PHOTORESIST COMPOSITIONS CONTAINING N-SUBSTITUTED 3-VINYLCARBAZOLES

Frank P. Tiso, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

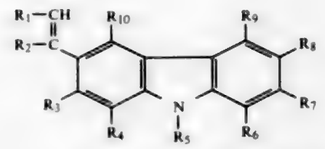
Filed Oct. 21, 1985, Ser. No. 789,601

Int. Cl.⁴ G03C *1/70, 1/76, 1/94, 5/16*

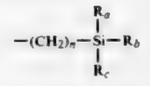
U.S. Cl. 430—272 **9 Claims**

5. A photoresist element comprising a substrate, wherein the substrate is silicon, copper or aluminum, coated with a photoresist composition comprising:

(a) at least one monomer having the general formula



wherein R_1-R_4, and R_6-R_{10} are independently hydrogen, a C_1-C_3 alkyl group or a C_1-C_3 alkylene group, and R_5 is hydrogen, a C_1-C_3 alkyl group, or an organo silyl group having the general formula



wherein R_a, R_b, and R_c are each independently a C_1-C_3 alkyl group or a C_1-C_3 alkoxy group and n is a integer from 0 to 3;

(b) a photoinitiator selected from the group consisting of tetraiodoethylene, α,α,β,β-triiodostyrene, iodoform, bromoform, and hexabromoethane;

(c) a film forming chemical binder that does not phase separate from the rest of the photoresist; and

(d) a solvent.

4,659,649

PHOTOSENSITIVE SYSTEMS SHOWING VISIBLE INDICATION OF EXPOSURE

Peter Dickinson, and Michael Ellwood, both of Broadstairs, England, assignors to Sericol Group Limited, London, England

Filed Apr. 30, 1984, Ser. No. 605,252

Claims priority, application United Kingdom, May 6, 1983, 8312416

The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.

Int. Cl.⁴ G03C *1/68, 1/727*

U.S. Cl. 430—280 **11 Claims**

1. A composition which changes colour on exposure to actinic radiation comprising a photosensitive iodonium or sulphonium salt and a non-photosensitizing dyestuff which exhibits a readily visible colour change when protonated.

4. A composition according to claim 1 which also comprises a cationically curable monomer, oligomer or polymer which, at least in the cured state, is film forming.

5. A composition according to claim 4 in which the said monomer, oligomer, or polymer is an epoxy compound.

4,659,650

PRODUCTION OF A LIFT-OFF MASK AND ITS APPLICATION

Holger Moritz, and Gerd Pfeiffer, both of Holzgerlingen, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1986, Ser. No. 840,344

Claims priority, application European Pat. Off., Mar. 22, 1985, 85103349

Int. Cl.⁴ B05D *5/12;* **H01L** *21/312*

U.S. Cl. 430—313 **11 Claims**

1. Method for producing a lift-off mask, wherein a positive resist containing a weak base is deposited on a substrate, exposed imagewise, cured, blanket exposed and developed, characterized in that a positive resist is used containing polyvinyl phenol as a film forming component, that development is effected in an alkaline solution at a temperature of $<10°$ C., that after development, the resist pattern is exposed, using light

having a wavelength ranging from 300 to 320 nm, and subsequently heat-treated at a temperature ranging from 150° to 280° C.

4,659,651

SILVER HALIDE PHOTOGRAPHIC MATERIALS CONTAINING A BLOCKED PHOTOGRAPHIC REAGENT

Morio Yagihara, and Akihiko Ikegawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

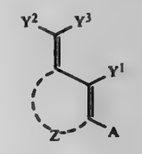
Filed Jul. 11, 1985, Ser. No. 753,847

Claims priority, application Japan, Jul. 13, 1984, 59-145593

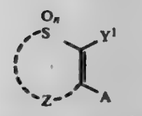
Int. Cl.⁴ G03C *1/46, 1/02*

U.S. Cl. 430—542 **21 Claims**

1. A silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer having associated therewith at least one blocked photographic reagent represented by formula (I) or (II):



(I)



(II)

wherein, A represents a moiety of a photographic reagent or a moiety of a precursor of a photographic reagent bonded to the ring containing Z through a hetero atom; Y^1, Y^2 and Y^3 each represents a hydrogen atom or a substituent or Y^1 and Y^3 in formula (I) together form a ring; Z represents an atomic group necessary for forming a carbon ring or a heterocyclic ring; and n represents 1 or 2.

4,659,652

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Toshio Kawagishi, and Kiyoshi Nakazyo, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 23, 1985, Ser. No. 768,654

Claims priority, application Japan, Aug. 24, 1984, 59-176352

Int. Cl.⁴ G03C *1/08, 7/00, 7/26, 7/32*

U.S. Cl. 430—558 **8 Claims**

1. A silver halide color photographic material comprising a support having thereon at least one silver halide emulsion layer, wherein said material includes at least one 1H-pyrazolo(1,5-b)(1,2,4)triazole magenta coupler in which a substituted or unsubstituted aryloxy group is attached to the coupling active site.

4,659,653

HEAT DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Kazo Sato; Yoshiharu Yabuki; Hiroyuki Hirai, and Ken Kawata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

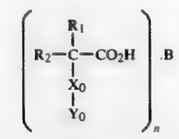
Filed Aug. 26, 1985, Ser. No. 769,300

Claims priority, application Japan, Aug. 24, 1984, 59-176399

Int. Cl.⁴ G03C *1/02*

U.S. Cl. 430—559 **10 Claims**

1. A heat developable light-sensitive material comprising a support having thereon a light sensitive silver halide emulsion layer and at least one of a reducing agent or a reductive dye providing substance, wherein one layer contains a base precursor represented by the following general formula (I):

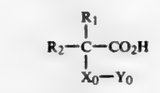


(I)

wherein R_1 and R_2, which may be the same or different, represent a hydrogen atom; a halogen atom; a substituted or unsubstituted alkyl group, cycloalkyl group, alkenyl group, alkynyl group, aralkyl group, aryl group, heterocyclic group, amino group, alkoxycarbonyl group, aryloxycarbonyl group, carbamoyl group, sulfamoyl group, alkoxy group, aryloxy group, acylamino group or acyloxy group; a sulfonyl group, a phosphonyl group, a phosphinyl group, a thio group and a sulfinyl group which are substituted by a substituted or unsubstituted alkyl group or aryl group; a cyano group; a carboxy group or a salt of a carboxy group; R_1 and R_2 may combine with each other to form a ring; X_0 represents an oxygen atom or an



group wherein one covalent bonds is to the carbon atom adjacent to X_0 in formula (I), the second covalent bond is to Y_0 and R_3 represents a hydrogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group; Y_0 represents a group accelerating a reaction of decarboxylation by heating; B represents an organic base; n is 1 when B is a monoacid base, n is 2 when B is a diacid base, and n is a reciprocal of a number of a carboxyl group when an



group is a polybasic free acid.

4,659,654

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE EMULSION

Iku Metoki; Akio Suzuki; Eiji Yoshida; Kiyoshi Sato, and Masumi Hosaka, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1985, Ser. No. 780,379

Claims priority, application Japan, Sep. 28, 1984, 59-201976

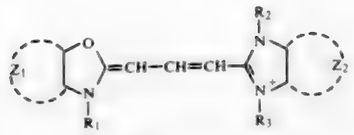
Int. Cl.⁴ G03C *1/19, 1/08*

U.S. Cl. 430—567 **24 Claims**

1. A silver halide photographic light-sensitive emulsion which comprises

silver halide particles, chemically sensitized, the average concentration of the silver iodide of which is from 0.5 to 10 mole% and which have inside part wherein not less than 20 mole% silver iodide is present locally; and

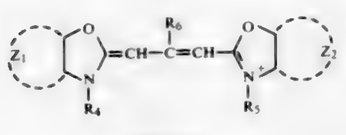
at least one of those compounds having the following Formulas [I], [II] and [III]:



[I]

$(X_1^-)_{n-1}$

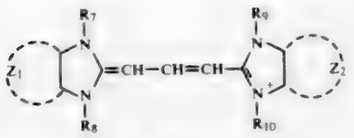
wherein R_1, R_2 and R_3 each is a substituted or unsubstituted alkyl, alkenyl or aryl group, provided at least one of the R_1 and R_3 is a sulfoalkyl or carboxyalkyl group; X_1^- is anion; Z_1 and Z_2 each is a group of nonmetallic atoms necessary to complete a substituted or unsubstituted benzene ring; and n is 1 or 2, provided n is 1 when an intramolecular salt is formed,



[II]

$(X_2^-)_{n-1}$

wherein R_4 and R_5 each is a substituted or unsubstituted alkyl, alkenyl or aryl group, provided at least one of the R_4 and R_5 is a sulfoalkyl or carboxyalkyl group; R_6 is a hydrogen atom, a lower alkyl or aryl group; X_2^- is anion; Z_1 and Z_2 each is a group of nonmetallic atoms necessary to complete a substituted or unsubstituted benzene ring; and n is 1 or 2, provided n is 1 when an intramolecular salt is formed,



[III]

$(X_3^-)_{n-1}$

wherein R_7 and R_9 each is a substituted or unsubstituted lower alkyl group; R_8 and R_{10} each is a lower alkyl, hydroxyalkyl, sulfoalkyl or carboxyalkyl group; X_3^- is anion; Z_1 and Z_2 each is a group of non-metallic atoms necessary to complete a substituted or unsubstituted benzene ring; and n is 1 or 2, provided n is 1 when an intramolecular salt is formed, said particles grown in a mother liquor, said liquor having a pAg above 10.5 at least once during growth before sensitization.

4,659,655

METHOD FOR ISOLATING PRODUCT-PRODUCING CELLS

Sam Rose, San Francisco, Calif., assignor to Bio-Response, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 325,051, Nov. 25, 1981. This application Nov. 23, 1982, Ser. No. 443,191

Int. Cl.⁴ C12N *11/04;* **G01N** *33/53, 33/556, 33/563*

U.S. Cl. 435—7 **4 Claims**

1. A method for isolating desired cells, which make and secrete a particular product, from a population of cells containing the desired cells in admixture with undesired cells which either do not make and secrete the particular product or which make and secrete the particular product at a rate per unit time which is lower than that of desired cells, comprising the steps of:

(a) affixing to the surface of red blood cells a ligand which exhibits specific affinity for the particular product;

(b) encapuslating the cells of said cell population and red blood cells of step (a) within discrete beads made of a material which (1) will retain cells within the bead structure while permitting the cells to be nourished within the bead by nutrient medium, (2) retain the red blood cells of step (a) within the bead, (3) permit introduction into the bead of agents comprising complement which are capable of bringing about lysis of red blood cells and (4) permit egress from the beads of the hemoglobin of red blood cells lysed via complement-mediated lysis, the encapsulation being performed under conditions which substantially result in the presence in each bead of no more than one individual cell from the population and a plurality of red blood cells of step (a);

(c) suspending said beads in a nutrient medium capable of supporting growth of cells of said population within said beads;

(d) permitting sufficient time to elapse for particular product to be made and secreted by desired cells and for such particular product to bind to the ligand therefor carried on the surface of the red blood cells within those beads containing a desired cell;

(e) incubating the beads with agents comprising complement under conditions which bring about complement-mediated lysis within beads of red blooc cells which carry on their surface a complex of ligand and desired product, such lysis resulting in escape from those beads of the hemoglobin of the lysed red blood cells therein, thereby reducing the density of such beads relative to other beads;

(f) suspending said beads in a gradient medium which permits beads of distinguishable density difference to aggregate at distinguishable vertical levels in the gradient medium; and

(g) separating from said gradient medium those beads which aggregate at the uppermost vertical level in said gradient medium.

4,659,656

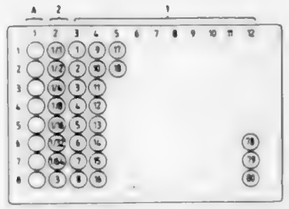
METHOD OF DETECTING MASTITIS IN COWS

Markus Sandholm, Helsinki, Finland, assignor to Labsystems Oy and Eflab Oy, both of Helsinki, Finland

Filed Jun. 13, 1984, Ser. No. 620,157

Int. Cl.⁴ G01N *33/53;* **C12Q** *1/38*

U.S. Cl. 435—7 **4 Claims**



1. A method for the quantitative determination of mastitis in a cow comprising (a) coprecipitating casein, cream and α_2-macroglobulin from a milk sample, (b) mixing said clear and substantially α_2-macroglobulin free solution with a known amount of trypsin, (c) measuring the activity of the amount of trypsin which is present in said milk sample, and (d) comparing the obtained measurement of excess trypsin with a standard.

4,659,657

CHROMOGENIC AND FLUOROGENIC ESTERS FOR PHOTOMETRIC OR FLUORIMETRIC DETERMINATION OF PHOSPHATASES OR SULPHATASES

Horst Harnisch, Much, Fed. Rep. of Germany, and Otto S. Wolfbeis, Graz, Austria, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

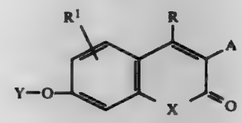
Filed Dec. 14, 1983, Ser. No. 561,391

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3248043; Jun. 10, 1983, 3321041

Int. Cl.⁴ C12Q *1/42, 1/34;* **C07D** *405/04*

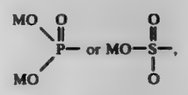
U.S. Cl. 435—21 **12 Claims**

1. A compound of the formula



wherein

Y denotes an acid radical



M represents hydrogen or an alkali metal, pyridinium or ammonium ion, which can be substituted by 1–4 C_1–C_2-alkyl radicals or C_1–C_2-hydroxyalkyl radicals,

X represents —O— or —NQ—,

Q represents hydrogen, C_1–C_4-alkyl which is optionally substituted by 1–2 OH groups, or C_1–C_4-alkoxycarbonyl,

R represents hydrogen, chlorine, bromine, cyano or carbamoyl,

A represents a benzoxazol-2-yl, benzothiazol-2-yl, thiazol-2-yl, benzimidazol-2-yl, quinazol-4-on-2-yl, 5-phenyl-1,3,4-thiadiazol-2-yl or 4-pyridyl radical which is optionally substituted by one or two C_1–C_4-alkyl, chlorine, C_1–C_4-alkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, cyclohexyl, phenyl or sulpho radicals, and

R^1 represents hydrogen or an SO_3H group.

11. In the photometric or fluorimetric determination of phosphatase or sulphatase activity in a sample by contacting the sample with a compound which undergoes a detectable change in dependence upon the amount of phosphatase or sulphatase activity, measuring the extent of said change, and thereby determining the amount of phosphatase or sulphatase activity in the sample, the improvement which comprises employing as the compound a compound according to claim 1.

4,659,658

LECTIN-COATED LATEX AGGLUTINATION ASSAY FOR NEISSERIA GONORRHOEAE

Laurence R. McCarthy, and H. Mark Perks, both of Baltimore, Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Dec. 26, 1984, Ser. No. 686,190

Int. Cl.⁴ G01N *33/546, 33/569, 33/571*

U.S. Cl. 435—34 **13 Claims**

1. A method for determining whether an unknown microorganism is *Neisseria gonorrhoeae* comprising:

(a) preparing a mixture in a fluid by combining an unknown microorganism suspected to be *Neisseria gonorrhoeae* and a reagent consisting of a latex containing from about 0.1 to 5.0 weight percent of a polymeric particle, said particle having coated thereon from about 1 to 150 ug per ml of latex of wheat germ agglutinin, said coating of said wheat germ agglutinin onto said particle being effected by physical adsorption;

(b) subjecting said mixture to conditions conducive to binding said microorganism to said wheat germ agglutinin;

(c) observing said mixture for agglutination; and

(d) identifying said microorganism as *Neisseria gonorrhoeae* if agglutination is observed and determining that said microorganism is not *Neisseria gonorrhoeae* if agglutination is not observed.

4,659,659

DIAGNOSTIC METHOD FOR DISEASES HAVING AN ARTHRITIC COMPONENT

Raymond A. Dwek, and Thomas W. Rademacher, both of Oxford, United Kingdom, assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 22, 1985, Ser. No. 693,075

Int. Cl.⁴ C12Q *1/34;* **G01N** *33/53, 33/564*

U.S. Cl. 435—18 **1 Claim**

1. A method for the diagnosis of rheumatoid arthritis or osteoarthritis as a sole syndrome or as a component of other rheumatic diseases comprising determining the deficiency of outer-arm galactosylation of an IgG component or fragment thereof in a patient's blood serum or plasma or synovial fluid by assaying for the incidence of non-reducing terminal outer arm N-acetylglucosamine residues of said IgG component or fragment and comparing with corresponding normal control values.

4,659,660

A47934 ANTIBIOTIC AND PROCESS FOR PRODUCTION THEREOF

Robert L. Hamill, Greenwood, and Ralph E. Kastner, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 607,864, Jun. 22, 1984, Pat. No. 4,537,879, which is a division of Ser. No. 403,842, Jul. 30, 1982, Pat. No. 4,462,942. This application Jun. 3, 1985, Ser. No. 740,926

Int. Cl.⁴ C12P *21/04, 17/18;* **C12N** *1/20;* **C12R** *1/465*

U.S. Cl. 435—71 **5 Claims**

1. A method of producing the A47934 antibiotic which comrpises cultivating *Streptomyces toyocaensis* NRRL 15009, or an A47934-producing variant or mutant thereof, in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic saslts under submerged aerobic fermentation conditions until antibiotic activity is produced by said organism in said culture medium.

4,659,661

PROCESS FOR THE PREPARATION OF FERMENTATION BROTH FOR COENZYME B_{12} AND OTHER CORRINOID PRODUCTION

László Szemler; Eva C. Pechány; Mária Langer; Gyula Hruby, all of Budapest, and Valéria Sike, Almásfüzitó, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Filed Sep. 7, 1984, Ser. No. 648,792

Claims priority, application Hungary, Sep. 16, 1983, 3210/83

Int. Cl.⁴ C12P *19/42, 39/00;* **C12N** *1/20;* **C12R** *1/01*

U.S. Cl. 435—86 **6 Claims**

1. A process for the preparation of a fermentation broth containing Coenzyme B_{12} which comprises the following steps:

(a) providing an inoculum fermentation broth containing anaerobic, mesophilic methane-producing bacteria of a mixed population, said mixed population comprising strains deposited in the Hungarian National Collection, National Institute of Hygiene, Nos. 00076, 00079, and 00272;

(b) removing 5 to 15 vol % of the inoculum fermentation broth containing the anaerobic, mesophilic methane-producing mixed bacteria, and replacing same with an equal

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amount of a first nutrient broth, and after homogenization, anaerobically fermenting the inculum fermentation broth at 32° to 34° C. for 6 to 8 days;

(c) after reaching an assimilation velocity of at least 0.15 to 0.2 g methanol/liter fermentation broth/hour, continuing the removal of fermentation broth as described in step (b) but replacing the fermentation broth removed with a maintaining broth supplemented with ammonium sulfate and o-xylidene, and continuing fermentation for about 7 to 10 days, until the velocity of methanolysis reaches 0.3 g of methanol/liter of fermentation broth/hour, thereby reaching a state of semi-continuous fermentation;

(d) obtaining a semicontinuously operating maintaining fermentation broth which contains about 15 to 25 mg/liter of Coenzyme B_{12};

(e) determining the content of the methanol and Coenzyme B_{12} of the inoculum fermentation broth removed during step (b) as well as the pH thereof;

(f) treating the inoculum fermentation broth removed during step (b) with additional nutrients to obtain a second fermentation broth having about 26 to 32 mg/liter of Coenzyme B_{12}; and

(g) repeating steps (b), (d), (e) and (f) daily.

4,659,662

BATCH FERMENTATION PROCESS

Win-Pen Hsu, Woodhaven, N.Y., assignor to J. E. Siebel Sons' Company, Inc., Chicago, Ill.

Filed Mar. 26, 1984, Ser. No. 593,627

Int. Cl.⁴ C12P *7/06;* **C12C** *11/00;* **C12G** *1/00;* **C12N** *11/10*

U.S. Cl. 435—161 **12 Claims**

1. A process for producing an ethanol-containing product by batch fermentation, comprising the steps of:

(a) providing a fermentable substrate containing compounds which can be converted to ethanol in the presence of yeast;

(b) providing a plurality of yeast-containing particles comprised of living yeast cells substantially encapsulated within a porous, semi-permeable matrix material which is insoluble in said fermentable substrate, the pores of said matrix material being sized so as to retain therein said yeast cells yet be permeable to said compounds in the fermentable substrate;

(c) contacting a batch of said fermentable substrate with a plurality of said yeast-containing particles at conditions at which said yeast cells effect conversion of compounds in said substrate to ethanol and carbon dioxide, said contacting being performed in a vessel in which is arranged a retaining means, said retaining means comprising a semi-permeable surface which is permeable to said substrate and substantially impermeable to said yeast-containing particles, said retaining means being submerged within said substrate and effective for substantially maintaining said yeast-containing particles in contact with said fermentable substrate below said retaining means for the duration of the fermentation process, said yeast-containing particles being freely-movable within at least a portion of said substrate during said fermentation process and said yeast-containing particles floating upward in the substrate toward the retaining means as carbon dioxide is formed within the particles; and

(d) continuing said contacting of said fermentable substrate and yeast-containing particles until a desired degree of conversion of said substrate to an ethanol-containing product is achieved.

4,659,663

METHODS FOR ISOLATING CELL FUSION PRODUCTS

Woodring E. Wright, Irving, Tex., assignor to Board of Regents, University of Texas System, Austin, Tex.

Filed Oct. 1, 1984, Ser. No. 656,658

Int. Cl.⁴ C12P *21/00;* **C12N** *15/00, 5/00;* **C12R** *1/91*

U.S. Cl. 435—172.2 **20 Claims**

1. A method for isolating the fusion product of two cells comprising the steps:

(a) introducing into cells of a first cell population a first antitoxin antibody that is specific for a first toxin;

(b) introducing into cells of a second cell population a second antitoxin antibody that is specific for a second toxin, the second toxin being different from the first toxin;

(c) mixing cells from the first antitoxin-containing first cell population with cells from the second antitoxin-containing second cell population under conditions which promote the fusion of cells of the first cell population to cells of the second cells population to produce a fusion mixture;

(d) culturing the fusion mixture in a medium containing an amount of the first and second toxin sufficient to inhibit the survival of unfused cells and permit the survival of fused cells to thereby permit isolation of the fusion product of cells of the first cell population with cells of the second cell population; and

(e) isolating the fusion product.

4,659,664

STRUCTURES CONTAINING IMMOBILIZED MICROBIAL CELLS

Francis de Buda, Santa Barbara, Calif., assignor to Excel-Mineral Company, Inc., Goleta, Calif.

Filed May 10, 1985, Ser. No. 732,685

Int. Cl.⁴ C12N *11/14, 11/10, 11/12, 11/04*

U.S. Cl. 435—176 **4 Claims**

1. In a microbial sphere or bead the exterior of which is formed of an insoluble fluid membrane in which microbial cells are immobilized within the sphere or bead the improvement comprising:

said membrane including on a dry weight basis from about 10 to about 40% by weight of a hydrocolloid selected from the group consisting of alginic acid, carboxymethyl cellulose, methylethylcellulose and polyvinyl alcohol, from about 10 to about 40% by weight particles of a −100 mesh standard Tyler screen size of sericitic clay and from about 10 to about 40% by weight of said cells:

said sericitic clay being effective to improve the strength characteristics and the resistance to tearing of said membrane.

4,659,665

ENZYME MEMBRANES FOR ELECTRODES

Amihay Freeman, Ben-Shemen, and Ruth Tor, Kiryat Ono, both of Israel, assignors to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel-Aviv, Israel

Filed Aug. 20, 1984, Ser. No. 642,245

Claims priority, application Israel, Sep. 2, 1983, 69644

Int. Cl.⁴ C12N *11/04, 11/14, 11/08;* **C12M** *1/40*

U.S. Cl. 435—182 **8 Claims**

1. A membrane or film comprising an acrylamide/methacrylamide copolymer in a respective molar ratio of about 70/30, substituted with acyl hydrazide groups, crosslinked with a crosslinking agent and containing a biologically active protein, said membrane or film having a thickness of about 30 to 100 microns.

4,659,666

PURE ALKALINE PHOSPHATASE, ITS PREPARATION AND USE

Keith May, Bedford; Mohamed M. Gani, Felmersham, and Stephanie J. Senior, Bedford, all of Great Britain, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Oct. 26, 1984, Ser. No. 665,156

Claims priority, application United Kingdom, Oct. 28, 1983, 8328918

Int. Cl.⁴ C12N *9/96, 9/16;* **G01N** *33/53*

U.S. Cl. 435—188 **4 Claims**

1. The enzyme alkaline phosphatase which has the following physical and chemical properties:

(i)

molecular weight: approximately 80 000 with 2 subunits of 40 000

(ii)

activator: Mg^{++} inhibitor: EDTA

(iii)

thermal stability: 45° C. or below

(iv)

optimum temperature: 35°–45° C.

(v)

pH stability: 6–11

(vi)

pH optimum: 10

(vii)

specific activity: 3000–5000 units/mg

(viii)

isoelectric range: between pH 5.0 and 6.0.

4,659,667

PROCESS TO RECOVER CRYSTALLINE ENZYMES AND CRYSTALLINE ENZYMES PRODUCED THEREBY

Jack W. Brewer, and Chong Y. Kim, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 705,556, Jan. 26, 1985, abandoned. This application May 20, 1985, Ser. No. 735,971

Int. Cl.⁴ C12N *9/56, 9/00, 9/28, 9/54;* **C12R** *1/10*

U.S. Cl. 435—222 **6 Claims**

1. A method for the recovery of an enzyme from its aqueous solution formed during the fermentation of an enzyme secreting bacteria in a suitable aqueous growth medium to form an enzyme solution containing biomass and other low molecular weight impurities from the fermentation of the bacteria which method consists essentially of the steps of:

(a) subjecting the aqueous growth medium to liquid/solid separatory techniques to thereby separate the biomass from the liquid phase;

(b) subjecting the liquid phase to ultrafiltration to thereby remove low molecular weight impurities; and

(c) evaporating the liquid phase while maintaining the pH of the system at a level ±2.5 units from the isoelectric point of the enzyme to thereby bring the enzyme in solution to a point of supersaturation and precipitate the enzyme in the form of pure cyrstals.

4,659,668

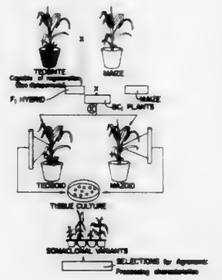
CONTROLLED REGENERATION OF CORN PLANTS AND BREEDING STRATEGIES THEREWITH

Maro R. Sondahl, Mt. Laurel, and David A. Evans, Burlington, both of N.J., assignors to DNA Plant Technology Corporation, N.J.

Filed Apr. 6, 1984, Ser. No. 597,472

Int. Cl.⁴ C12N *5/00, 5/02;* **A01B** *79/00*

U.S. Cl. 435—240 **16 Claims**



1. A method for the controlled regeneration of *Zea diploperennis* comprising:

forming callus from explant of somatic, nonembryo tissue from *Zea diploperennis* on a first callus prompoting medium supplemented with 2,4-dichlorophenoxy acetic acid (2,4-D);

subculturing said callus;

inducing plantlet regeneration by transferring said callus to a second regeneration promoting medium characterized by the absence of 2,4-D;

inducing shoot and root formation by transferring said plantlets to a third dilute basal salts root promoting medium.

4,659,669

MICROBIAL EXPRESSION OF HUMAN INFLUENZA HEMAGGLUTININ PROTEINS

Dennis G. Kleid, San Mateo; Debi P. Nayak, Los Angeles, and Alan R. Davis, Culver City, all of Calif., assignors to Regents of the Univ. of California, Berkeley and Genentech, Inc., S. San Francisco, both of, Calif.

Filed Mar. 2, 1981, Ser. No. 239,301

Int. Cl.⁴ C12N *15/00, 1/20, 1/00;* **C07H** *21/04;* **C12P** *21/00, 21/02, 19/34*

U.S. Cl. 435—243 **10 Claims**

1. A replicable microbial expression vehicle containing a promoter-operator sequence capable of expressing heterologous proteins in a microorganism, and a methionine codon followed by DNA encoding at least one antigenic determinant of human influenza hemagglutinin, wherein transcription of said DNA in a transformant microorganism is under control of said promoter-operator sequence, and wherein said DNA lacks the sequence of the prepeptide of the human influenza hemagglutinin.

4,659,670

BIOLOGICAL DESULFURIZATION OF COAL

Stanley E. Stevens, Jr., and Wilella D. Burgess, both of State College, Pa., assignors to The Standard Oil Company

Filed May 18, 1983, Ser. No. 495,657

Int. Cl.⁴ D06M *16/00;* **C12P** *39/00;* **C12N** *1/26;* **C10G** *32/00*

U.S. Cl. 435—262 **20 Claims**

1. A process for the selective preparation of a mixed culture of microorganisms, ATCC No. 39327, comprising:

(a) enriching a site of microorganisms with an organic sulfur containing composition;

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(b) providing coal and a nutrient medium as a growth substrate for the microorganisms produced as a result of step (a) and maintaining an essentially neutral pH during the growth of said microorganisms on said growth substrate for a time sufficient to obtain microorganisms capable of reproducible metabolism of organic sulfur, ATCC No. 39327.

17. A process for the microbial desulfurization of coal comprising:

contacting an aqueous coal slurry with ATCC No. 39327 in the presence of a nutrient medium.

4,659,671

ENZYMATIC SEPARATION OF RACEMIC MIXTURES OF HYDROXY COMPOUNDS

Alexander M. Klibanov, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 1, 1983, Ser. No. 510,335
Int. Cl.⁴ C12N *9/14, 9/16*; C07P *41/00*
U.S. Cl. 435—280 **9 Claims**

1. A method for resolution of a racemic threonine, comprising the following steps:

a. reacting the racemic threonine and phosphorus oxychloride to form a monoorthophosphate ester of threonine;

b. contacting the monoorthophosphate ester with wheat germ acid phosphatase under conditions whereby said phosphatase preferentially hydrolyzes the L-monoorthophosphate ester of threonine to yield L-threonine; and

c. separating L-threonine; and the monoorthophosphate ester of D-threonine.

4,659,672

COLONY REPLICATING DEVICE

Richard B. Provonchee, Camden, and Donald W. Renn, Glen Cove, both of Me., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 5, 1982, Ser. No. 345,966
Int. Cl.⁴ C12M *1/00*
U.S. Cl. 435—287 **1 Claim**



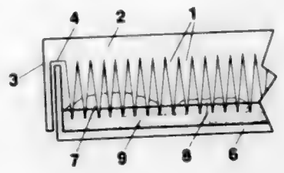
1. A device for replicating bacterial or other cell colonies comprising a layer formed of hydrocolloid material having an exposed surface which, when contacted with a cell colony, absorbs moisture therefrom and into said layer and thereby picks up the colony on such surface, and means to which said layer is attached at a location remote from its exposed surface for use in manipulating said device into contact with a colony and during subsequent formation of replicates therof, wherein said means for manipulating said device includes a resilient pad, a pair of relatively moisture-impervious, self-supporting, flexible planar members, and means securing said planar members to opposite sides of said resilient pad with opposing surfaces thereof in substantially parallel relationship, one of said planar members having the layer of hydrocolloid material attached thereto and the other of said planar members facilitating the flexing of the device to impart a convex contour to said layer prior to and after contact with a colony and during replication to thereby minimize air entrapment or vacuum formation between said layer and the surface with which it is contacted.

4,659,673

REPLICATOR FOR CULTURES OF MICROORGANISMS

Lewis R. Brown, 5 Hialeah Dr., Starkville, Miss. 39759

Filed Nov. 1, 1985, Ser. No. 793,959
Int. Cl.⁴ C12M *1/32*
U.S. Cl. 435—293 **1 Claim**



1. A cylindrical structure with peripheral side walls,

a circumferential groove in the bottom of the structure having an outer diameter of 90 millimeters, an inner diameter of 86 millimeters, and a depth of seven millimeters,

an array of pointed protrusions inside the groove, the points of the protrusions extending downward to within two millimeters of the bottom of the side walls, the bases of the protrusions being coplanar with the bottom of the groove, the points of the protrusions being spaced 0.75 millimeters apart, and

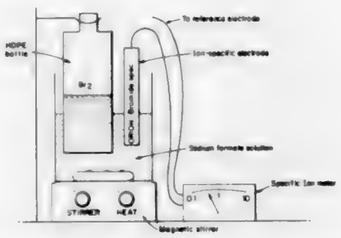
a unique protrusion on the inner periphery of the groove to serve as an index mark.

4,659,674

QUALITY CONTROL METHOD FOR CONTAINERS

Bernard D. Bauman, Coopersburg, and Rajendra K. Mehta, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 28, 1983, Ser. No. 536,604
Int. Cl.⁴ G01N *15/08, 33/44*
U.S. Cl. 436—5 **7 Claims**



1. A method for determining the permeability of a polymeric article to a nonpolar fluid comprising the steps of:

(a) allowing bromine to diffuse through a polymeric article for a preselected period of time of 0.5–6 hours at 10°–40° C.;

(b) converting bromine which has diffused through the polymeric article to bromide ion by a chemical reaction;

(c) quantitatively measuring the amount of bromide ion formed in step (b) with a bromide ion-specific electrode as a measure of the permeability of the polymeric article to bromine; and

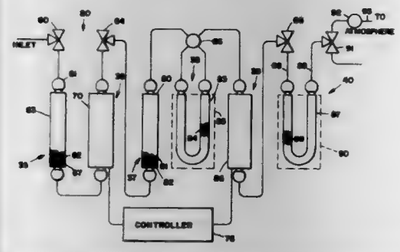
(d) determining the permeability of the polymeric article to a nonpolar fluid by correlating the bromine permeability of the article to long-term permeability of the article to the nonpolar fluid by comparison with a calibration curve specific for the nonpolar fluid.

4,659,675

PREDICTING HYDROCARBON POTENTIAL OF AN EARTH FORMATION UNDERLYING A BODY OF WATER BY ANALYSIS OF SEEPS CONTAINING LOW CONCENTRATIONS OF METHANE USING IMPROVED CRYOGENIC ENTRAPMENT

Gerard J. Demaison, Orinda, and Isaac R. Kaplan, Sherman Oaks, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 363,351, Mar. 29, 1982, abandoned, which is a continuation-in-part of Ser. No. 282,841, Jul. 13, 1981, Pat. No. 4,340,391. This application May 31, 1984, Ser. No. 616,505
The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.
Int. Cl.⁴ G01N *33/24*
U.S. Cl. 436—29 **5 Claims**



1. Method of on-site collection and examination of microliter concentrations of methane in sea water so as to predict hydrocarbon potential of an earth formation, said formation containing a hydrocarbon pool that is the source of said methane, said method comprising:

(i) at known geographic locations, continuously sampling said sea water at a selected depth;

(ii) continuously vacuum separating said collected sea water into liquid and gas phases;

(iii) continuously monitoring said gas phase of said sea water for hydrocarbons;

(iv) quantitatively separating methane in said gas phase of step (iii) from interfering gas species also in said gas phase of step (iii) in the presence of an air carrier vented to the atmosphere and flowing at a known flow rate;

(v) quantitatively oxidizing said methane of step (iv) to carbon dioxide and water vapor and then cryogenically trapping out the resulting carbon dioxide and water vapor in the presence of said air carrier, using a bed of granules maintained at dry ice temperature and composed of an inert, porous organic polymer cross-linked to form a lattice network of high surface area for retention of the carbon dioxide without phase change and for trapping out of the water vapor by freezing; and

(vi) isotopically examining the carbon and deuterium distribution of said carbon dioxide and water vapor of step (v) so as to determine biogenic and/or thermogenic origin of said methane.

4,659,676

FLUORESCENT TRACERS FOR HYDROPHOBIC FLUIDS

Richard H. Rhyne, Jr., 1702-B Cinnamon Path, Austin, Tex. 78704

Filed Apr. 17, 1985, Ser. No. 724,369
Int. Cl.⁴ G01N *33/28, 21/64*
U.S. Cl. 436—56 **13 Claims**

1. A method of determining the level of hydrophobic fluid drilling mud conditioner contained in water-base drilling mud circulated through a borehole being drilled comprising the steps of:

providing a hydrophobic fluid drilling mud conditioner comprising a dissolved porphyrin, said porphyrin being substantially soluble in acidic aqueous solutions, substantially insoluble in neutral or alkaline aqueous solutions and fluorescing at a wavelength between about 600 nm and 800 nm when irradiated at a wavelength between about 350 nm and 550 nm;

mixing said hydrophobic fluid drilling mud conditioner into the drilling mud to produce a conditioned mud;

circulating the conditioned mud through the borehole;

extracting a sample of circulated conditioned mud with an amount of a hydrophobic solvent for said porphyrin, to produce a porphyrin solution;

reextracting the porphyrin from an amount of the porphyrin solution into an acidic aqueous solvent to produce an acidic aqueous solution of porphyrin;

irradiating the acidic aqueous solution of porphyrin at a wavelength between about 350 nm and about 550 nm and measuring fluorescence at a wavelength between about 600 nm and about 800 nm; and

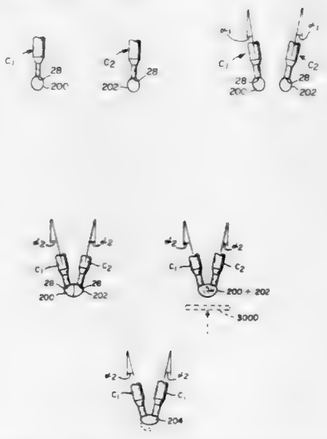
determining, from the fluorescence measured, the level of drilling mud conditioner in the circulated conditioned drilling mud.

4,659,677

METHOD PROVIDING LIQUID MIXING OUTSIDE CONTAINERS

Clyde P. Glover, Pittsford, and Vratislav M. Michal, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 498,448, May 26, 1983, abandoned. This application Mar. 22, 1985, Ser. No. 714,356
Int. Cl.⁴ G01N *1/00*; B01L *3/02*
U.S. Cl. 436—174 **6 Claims**



1. A method of mixing two low relative viscosity liquids, the method comprising the steps of

(a) forming a drop of each liquid so as to be pendent from separate respective platforms, and

(b) during or after said step (a), moving said platforms from a first spaced-apart position to a second position in which drops pendent from said platforms coalesce while still pendent from said platforms, and intermix.

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4,659,678

IMMUNOASSAY OF ANTIGENS

Gordon C. Forrest, Ingatestone; Philip R. P. Salacinski, Stratford, and Kenneth Siddle, Lode, all of England, assignors to Serono Diagnostics Limited, Great Britain

Filed Sep. 26, 1983, Ser. No. 535,882

Claims priority, application United Kingdom, Sep. 29, 1982, 8227826

Int. Cl.⁴ G01N *33/563, 33/53, 33/577;* **B65D** *69/00*

U.S. Cl. 436—512 **9 Claims**

1. A method of immunoassay of an antigen having multiple epitopes in a liquid sample which comprises incubating a mixture of:

(a) the liquid sample,

(b) labelled antibodies to the antigen under assay,

(c) a reagent comprising antibodies to the antigen under assay conjugated with a reagent Z, said reagent Z being a hapten or antigenic substance, and,

(d) an antibody reagent raised to reagent Z which selectively interacts with reagent Z by non-covalent bonding, but which is not directly bindable to either component (a) or component (b) the said reagent (d) being bound to a solid phase support and

at least said components (b) and (c) comprising monoclonal antibodies;

separating the solids fraction from the liquid fraction, determining the amount of label in one of the said fractions and, therefrom the amount of antigen present in the sample.

4,659,679

INSULATIVE COMPOSITION AND METHOD OF MAKING ARTICLES THEREFROM

Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186

Filed Jan. 25, 1985, Ser. No. 694,857

Int. Cl.⁴ C04B *35/14, 14/04*

U.S. Cl. 501—99 **8 Claims**

1. A composition of matter comprising by weight: 30%–75% of rice hull ash compound of 85%–95% SiO_2 and 15%–5% C; 65%–20% refractory fiber and the balance refractory cement.

2. A method of forming a refractory fiber product comprising the steps of providing a slurry of water and rice hull ash comprised of 85%–95% SiO_2 and 15%–5% C; 70%–20% by weight of the ash refractory fiber; applying the mix to the inside of a vacuum mold; applying vacuum to draw the mix against the screen to remove the moisture therefrom and form an internal sleeve; adding a curing agent and drying the finished product at temperatures in the range of 100 degrees F. to 500 degrees F.

4,659,680

STABILIZED ZIRCONIA BODIES OF IMPROVED TOUGHNESS

Donald L. Guile, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 20, 1984, Ser. No. 642,091

Int. Cl.⁴ C04B *35/48*

U.S. Cl. 501—104 **9 Claims**

1. A ceramic body exhibiting a modulus of rupture in excess of 50,000 psi and a toughness greater than 5 $MPa\sqrt{m}$ consisting essentially of ZrO_2 partially stabilized through the presence of 0.5–10% by weight Y_2O_3 as the primary stabilizing oxide and 1–10% by weight total of at least one secondary stabilizing oxide selected from the group of MgO, CaO, CuO, ZnO, and CeO_2, said body consisting essentially of about 50–70% by volume cubic ZrO_2, greater than 20% and up to 50% by volume tetragonal ZrO_2 present as islands within the cubic ZrO_2 grains and having dimensions of about 0.25–0.75 micron, and less than 10% by volume monoclinic ZrO_2 present along the grain boundaries and having dimensions of about 1–10 microns.

5. A method for making a ceramic body exhibiting a modulus of rupture in excess of 50,000 psi and a toughness greater than 5 $MPa\sqrt{m}$ consisting of ZrO_2 partially stabilized through the presence of Y_2O_3 as the primary stabilizing oxide and at least one secondary stabilizing oxide selected from the group of MgO, CaO, CuO, ZnO, and CeO_2 which comprises the steps of:

(a) preparing a batch consisting essentially, in weight percent on the oxide basis, of 0.5–10% Y_2O_3, 1–10% total of at least one member of the group of MgO, CaO, CuO, ZnO, and CeO_2, and the remainder ZrO_2;

(b) shaping said batch into a body of a predetermined configuration;

(c) firing said body at a temperature between about 1600°–1800° C. for a period of time sufficient to produce an integral sintered body;

(d) cooling said sintered body at a rate in excess of 100° C./hour to a temperature between about 1000°–1475° C.;

(e) holding said body within that range of temperatures for a period of time sufficient to induce the precipitation of tetragonal ZrO_2 as islands within cubic ZrO_2 grains and having dimensions of about 0.25–0.75 microns, thereby producing a body consisting essentially of about 50–70% by volume cubic ZrO_2, greater than 20% and up to 50% by volume tetragonal ZrO_2, and less than 10% by volume monoclinic ZrO_2 present along the grain boundaries and having dimensions of about 1–10 microns; and then

(f) cooling said body to room temperature.

4,659,681

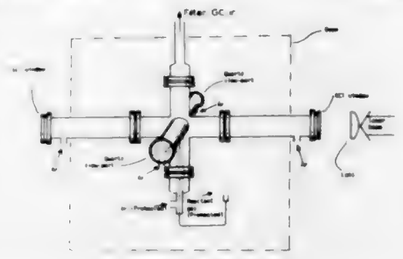
PROMOTED IRON-CARBON-BASED CATALYSTS PRODUCED IN THE PRESENCE LASER RADIATION

Gary W. Rice, Whitehouse Station; Rocco A. Fiato, Scotch Plains, and Stuart L. Soled, Pittstown, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 20, 1985, Ser. No. 735,768

Int. Cl.⁴ B01J *37/34, 27/22*

U.S. Cl. 502—5 **12 Claims**



Laser Synthesis Reactor

1. A composition of matter comprising finely divided non-pyrophoric iron-carbon catalytic particles comprising iron and carbon in the substantial absence of silicon, a substantial portion of which is cementite, produced in a reaction zone in the presence of laser radiation under such conditions of laser flux density, power adsorption, concentration of iron compound reactants selected from the group consisting of iron carbonyls, iron acetylacetonate, and ferrocene, and pressure sufficient to produce non-pyrophoric iron-carbon particles having average diameters between 1 and 100 nm, and which particles are subsequently impregnated with at least 2% of a promoter selected from the group of the salts and oxides of alkali and alkaline earth metals.

2. The composition of claim 1 wherein at least a portion of the iron is in the α and γ phase.

3. The composition of claim 1 wherein the particles contain at least some free carbon.

4,659,682

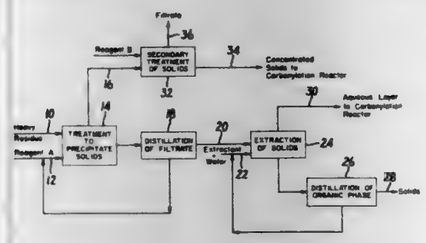
RECOVERY OF NOBLE METAL VALUES FROM CARBONYLATION RESIDUES

Joseph Pugach, Ridgewood, N.J., assignor to The Halcon SD Group, Inc., Little Ferry, N.J.

Filed Jul. 8, 1985, Ser. No. 752,697

Int. Cl.⁴ B01J *38/68, 31/40;* **C07C** *51/56*

U.S. Cl. 502—24 **6 Claims**



1. A process for recovering rhodium from the high molecular weight residues containing organic carbonyl and acetate functions formed in rhodium-lithium catalyzed carbonylation reactions in which esters and ethers are combined with carbon monoxide in the presence of iodides to form anhydrides, comprising:

(a) separating and concentrating the residue from the carbonylation reaction mixture by removing volatile components thereof;

(b) treating at temperatures above ambient the separated residue of (a) with a reagent capable of precipitating a solid containing substantially all of the rhodium content of said residue and consisting of at least one member of the group consisting of, cyclohexanol, tertiary aliphatic alcohols, and carboxylic acid esters from the group consisting of butyl acetate and ethylidene acetate; and

(c) separating the precipitated solid of (b).

2. A process of claim 1 further comprising:

(d) returning said solid separated in (c) to the carbonylation reaction mixture for reuse.

4. A process of claim 2 wherein said separated solid of (c) is treated with at least one solvent selected from the group consisting of alkanes, cycloalkanes, aromatics, ethers and cyclic ethers, to concentrate the rhodium values by removing a portion of the organic content of said solids.

4,659,683

REGENERATION OF INACTIVE AND POISONED PLATINUM CATALYSTS

Werner Biffar, Frankenthal; Otto Hofstadt, Ludwigshafen; Klaus Kartte, Beindersheim; Erwin Thomas, Freinsheim, and Franz-Josef Weiss, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 3, 1986, Ser. No. 835,271

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1985, 3507832

Int. Cl.⁴ B01J *23/96, 38/68;* **C22B** *11/04;* **C01B** *21/14*

U.S. Cl. 502—24 **1 Claim**

1. A process for regenerating a platinum catalyst which is applied on a carrier and has become poisoned by metals as a result of extensive use in the preparation of hydroxylammoniumsalts by the catalytic reduction of nitric oxide with hydrogen in an aqueous mineral acid, which process comprises: dissolving platinum and the metallic impurities in nitric acid or aqua regia; neutralizing the solution and precipitating the metallic impurities from the neutralized solution by means of a precipitating agent selected from the group consisting of 8-hydroxyquinoline, 1,5-diphenylthiocarbazone, quinaldine and 5,7-dibromo-8-hydroxyquinoline, the purified platinum solution being thereafter reused for the preparation of the catalyst.

4,659,684

REMOVAL OF ARSENIC, VANADIUM AND/OR NICKEL COMPOUNDS FROM SPENT CATECHOLATED POLYMER

Richard H. Fish, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 735,228, May 17, 1985, Pat. No. 4,604,191, which is a continuation-in-part of Ser. No. 597,627, Apr. 6, 1984, Pat. No. 4,518,490, which is a division of Ser. No. 699,886, Feb. 8, 1985, Pat. No. 4,552,854. This application Mar. 21, 1986, Ser. No. 842,574

Int. Cl.⁴ B01J *20/34, 38/64, 38/60;* **C02F** *1/42*

U.S. Cl. 502—25 **9 Claims**

1. Process of removal of compounds containing at least one of vanadium and nickel from spent catecholated polymer comprising:

(a) acidifying a spent catecholated polystyrene-divinylbenzene polymer containing at least one of vanadium and nickel, which has been removed from a petroliferous liquid in the presence of an amine stabilizer by contact with said cathecholated polymer, with sufficient of an acidifying agent to hydrolyze the catechol moieties of the polymer and thereby to release the at least one of vanadium and nickel complexed therewith, the hydrolysis and release providing a regenerated catecholated polystyrene-divinylbenzene polymer; and,

(b) separating said regenerated catecholated polystyrene-divinylbenzene polymer from said at least one of vanadium and nickel.

8. Process of removal of compounds containing arsenic and at least one of vanadium and nickel from mixed spent catecholated polymer comprising:

(a) acidifying a spent catecholated polymer having arsenic and at least one of vanadium and nickel complexed with catechol moieties of said polymer with sufficient of an acidifying acid to hydrolyze and release at least some of the at least one of vandium and nickel and to form a solid phase including catecholated polymer and a liquid phase including the released vanadium and/or nickel;

(b) separating said solid phase from the liquid phase,

(c) treating said catecholated polymer of the solid phase with an aqueous solution of at least one carbonate or bicarbonate selected from the group consisting of ammonium, alkali and alkaline earth metal carbonates and bicarbonates at a temperature in the range of about 20° to 100° C., at substantially atmospheric pressure and at a basic pH not greater than about 10, the treating being sufficient to release at least some of the arsenic from the catecholated polymer; and,

(d) isolating the catecholated polymer from the released arsenic.

9. Process according to claim 8 wherein said acidifying operation is carried out to obtain a pH in the range of about 2 to 4 and said arsenic treating operation is carried out at a pH in step (c) in the range of about 8–10.

4,659,685

HETEROGENEOUS ORGANOMETALLIC CATALYSTS CONTAINING A SUPPORTED TITANIUM COMPOUND AND AT LEAST ONE OTHER SUPPORTED ORGANOMETALLIC COMPOUND

William M. Coleman, III, Lake Jackson, Tex.; Gregory F. Schmidt, Midland, Mich.; Richard E. Campbell, Jr., Midland, Mich., and Mark S. Delaney, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 17, 1986, Ser. No. 840,165

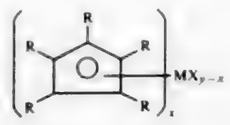
Int. Cl.⁴ C08F *4/64*

U.S. Cl. 502—113 **8 Claims**

1. A catalyst composition which comprises (1) at least one titanium compound represented by the formula $TiR'_xX'_{4-x}$ wherein each R' is independently a hydrocarbyl or hydrocarbyloxy group having from about 1 to about 20 carbon atoms;

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X' is a halogen and x has a value from 1 to 4 supported on an inert inorganic support material and (2) at least one organometallic compound represented by the following formula



wherein M is selected from the group consisting of Sc, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Y, Zr, Nb, Mo, Ce, Pr, Nd, Th, Pa or U; each R is independently hydrogen or a hydrocarbyl group having from 1 to about 10 carbon atoms; each X is independently hydrogen, a hydrocarbyl or a hydrocarbyloxy group having from 1 to about 20 carbon atoms, or a halogen, and wherein two of such R groups can be joined so as to form a multiring compound; x has a value from 1 to the valence of M minus one and y has a value equal to the valence of M; and wherein component (2) is either non-supported or is supported on an inert inorganic support material.

4,659,686

METHOD FOR TREATING CARBON SUPPORTS FOR HYDROGENATION CATALYSTS

Bonnie W. Griffiths, and John B. Michel, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 564,373, Dec. 22, 1983, abandoned. This application Feb. 3, 1986, Ser. No. 825,746

Int. Cl.⁴ B01J *23/02, 23/44*

U.S. Cl. 502—183 **4 Claims**

1. In a method for making a carbon-supported metal hydrogenation catalyst, wherein the metal is a platinum group metal from Group VIII of the Periodic Table, comprising treating the carbon support with alkali metal and coating the support with the platinum group metal, the improvement which comprises:

(i) impregnating the carbon support with an alkali or alkaline earth metal until said carbon sorbs an amount of 0.1 to 1.0 mole percent of said metal based on the carbon,

(ii) calcining the impregnated carbon after step (i),

(iii) contacting the impregnated carbon from step (ii) with the platinum group metal in an aqueous solution, and

(iv) contacting the impregnated carbon with rhenium cocatalyst after step (iii).

4,659,687

HYDROGENATION CATALYSTS AND PROCESS OF MAKING SAID CATALYST

Ted H. Cymbaluk, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 17, 1984, Ser. No. 682,466

Int. Cl.⁴ B01J *21/02, 31/00, 27/24, 27/053*

U.S. Cl. 502—207 **15 Claims**

1. A method for preparing a hydrogenation catalyst which comprises contacting an alumina-supported nickel arsenate with at least one borohydride compound; wherein said at least one borohydride compound conforms to the following formula:

$$M(BH_4)_n$$

wherein M is a monovalent or divalent cation selected from the group consisting of:

NR'_4; wherein each R' is independently C_1 through C_{10} alkyl, cycloalkyl, aryl aralkyl and alkaryl, alkali metals, and alkaline earth metals;

wherein n=1 if M is a monovalent cation and n=2 if M is a divalent cation.

4,659,688

MIXED METAL ORTHOPHOSPHATES

Simon G. Kukes; Gerhard P. Nowack, and Robert L. Banks, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 788,297, Oct. 17, 1985, Pat. No. 4,613,719. This application May 2, 1986, Ser. No. 858,973

Int. Cl.⁴ B01J *27/18; C07C 2/02*

U.S. Cl. 502—208 **9 Claims**

1. A composition of matter comprising a mixture of copper-(II) orthophosphate, zirconium orthophosphate and aluminum orthophosphate, wherein the atomic ratio of Al contained in said aluminum orthophosphate to Cu contained in said copper-(II) orthophosphate is in the range of from about 0.5:1 to about 5:1 and wherein the atomic ratio of Zr contained in said zirconium orthophosphate to Cu contained in said copper (II) orthophosphate is in the range of from about 0.5:1 to about 5:1.

5. A composition of matter in accordance with claim 1 having a weight ratio of (Cu+Zr+Al) to P in the range of from about 1.5:1 to about 3:1.

4,659,689

METHOD OF PREPARATION OF HIGH ACTIVE PHASE (AMM)OXIDATION CATALYSTS WITH IMPROVED PERFORMANCE AND ATTRITION RESISTANCE

Dev D. Suresh, Macedonia; Robert J. Zagata, Seven Hills; Maria S. Friedrich, Lyndhurst, and Michael J. Seely, Chagrin Falls, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Mar. 5, 1986, Ser. No. 836,269

Int. Cl.⁴ B01J *23/04, 23/18, 23/28*

U.S. Cl. 502—311 **8 Claims**

1. A process for producing a supported bismuth molybate catalyst comprising (1) adding a dried mixture comprising the metal salts of the active phase of said catalyst to an aqueous sol containing a support material for the catalyst and an acid to form a slurry, (2) heating the resulting aqueous slurry to dryness to form a dried catalyst precursor and (3) calcining the dried mixture to form the catalyst.

4,659,690

ACID AGGLOMERATION OF REFRACTORY GEL IN POLAR ORGANIC DILUENT

Max P. McDaniel, and Emory W. Pitzer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 565,070, Dec. 23, 1983, abandoned. This application Dec. 24, 1984, Ser. No. 685,411

Int. Cl.⁴ B01J *21/04, 31/00, 27/24, 27/14*

U.S. Cl. 502—439 **57 Claims**

1. A method of reducing fines in a refractory material comprising:

(a) combining an acidic composition in a liquid polar organic compound with said refractory material to provide a workable mixture of liquid and solids;

(b) working said mixture until a decrease in volume of the solids occurs; and

(c) drying the thus worked material.

4,659,691

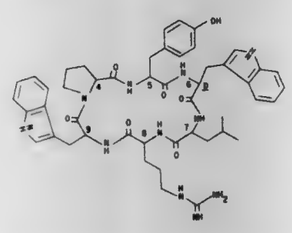
NOVEL CYCLIC HEXAPEPTIDE LHRH ANTAGONISTS

Daniel F. Veber, Ambler, and Roger M. Freidinger, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

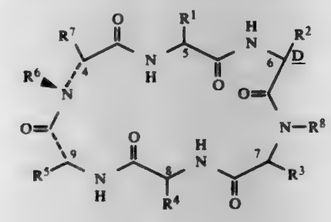
Filed Feb. 8, 1985, Ser. No. 699,778

Int. Cl.⁴ A61K *37/43;* **C07K** *5/12, 7/20*

U.S. Cl. 514—11 **10 Claims**



1. A cyclic hexapeptide compound having the formula:



I

wherein:

R^1 is benzyl, p-hydroxybenzyl, 4-imidazolylmethyl or 3-indolylmethyl;

R^2 is a radical, derived from glycine or a D-amino acid, said radical selected from H, C_1-C_4 linear or branched alkyl, benzyl, halobenzyl, aminomethylbenzyl, C_1-C_4 alkylbenzyl, where the phenyl ring of the benzyl moieties can have 1–3 substituents, C_1-C_4 alkoxybenzyl, trifluoromethylbenzyl, 3-quinolylmethyl, 1- or 2-naphthylmethyl, 3-pyridylmethyl, 4-imidazolylmethyl, C_3-C_7 cycloalkylmethyl, 3-(9,10-dihydro-9-anthryl)methyl, 3-(p-biphenylyl)methyl, 3-(2-fluorenyl)methyl, 3-(9-anthryl)methyl, 3-(benzhydryl)-methyl, $(CH_2)_{2\text{-}4}$-NH_2 or $(CH_2)_{2\text{-}4}$-NH-C(=NH)NH_2;

R^3 is H or C_1-C_5 linear or branched alkyl;

R^4 is $(CH_2)_{2\text{-}4}$-NH_2 or $(CH_2)_{2\text{-}4}$-NH C(=NH)-NH_2;

R^5 is H, C_1-C_4 linear or branched alkyl, benzyl, halobenzyl, C_1-C_4 alkylbenzyl, where the phenyl ring of the benzyl moieties can have 1–3 substitutents, C_1-C_4 alkoxybenzyl, trifluoromethylbenzyl, 3-quinolylmethyl, 3-pyridylmethyl, 1- or 2-naphthylmethyl, 4-imidazolylmethyl, C_3-C_7 cycloalkylmethyl, 3-(9,10-dihydro-9-anthryl)methyl, 3-(p-biphenylyl)methyl, 3-(2-fluorenyl)methyl, 3-(9-anthryl)-methyl, or 3-(benzhydryl)methyl;

R^6 is C_1-C_4 linear or branched alkyl;

R^7 is H, C_1-C_4 linear or branched alkyl, benzyl, halobenzyl, C_1-C_4 alkylbenzyl, where the phenyl ring of the benzyl moieties can have 1–3 sbstitutents, C_1-C_4 alkoxybenzyl, trifluoromethylbenzyl, 3-quinolylmethyl, 1- or 2-naphthylmethyl, 4-imidazolylmethyl, 3-indolylmethyl, C_3-C_7 cycloalkylmethyl, 3-(9,10-dihydro-9-anthryl)methyl, 3-(p-biphenylyl)methyl, 3-(2-fluorenyl)methyl, 3-(9-anthryl)-methyl, or 3-(benzhydryl)methyl;

R^8 is H or methyl;

wherein R^6 and R^7 can also jointly be alkylene, attached together to form —$(CH_2)_{3\text{-}4}$—; and

wherein amino acid residues 4 and 9 are interconnected through a cis-amide structure; and pharmaceutically acceptable salts thereof.

4,659,692

CATIONIC OLIGOPEPTIDES HAVING MICROBICIDAL ACTIVITY

Robert I. Lehrer, Santa Monica, and Michael E. Selsted, Los Angeles, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 443,087, Nov. 19, 1982, Pat. No. 4,543,252, which is a continuation-in-part of Ser. No. 341,394, Jan. 21, 1982, abandoned. This application May 11, 1984, Ser. No. 609,410

The portion of the term of this patent subsequent to Sep. 24, 2002, has been disclaimed.

Int. Cl.⁴ A61K *37/02;* **C07K** *7/10*

U.S. Cl. 514—12 **14 Claims**

1. A method for inhibiting microbial growth in an environment susceptible to said microbial growth, said method comprising:

administering to said environment a microbial growth inhibiting amount of a cationic oligopetide of not more than about 35 amino acids having a sequence of the formula:

$$Z_{0\text{-}2}\text{—}aa^1\text{—}aa^2\text{—cys—}aa^4\text{—cys—arg—}aa^7\text{—}aa^8\text{—}aa^9\text{—cys}$$
$$aa^{11}\text{—}aa^{12}\text{—}aa^{13}\text{—glu—arg—}aa^{16}\text{—}aa^{17}\text{—gly—}aa^{19}\text{—cys—}$$
$$\text{—}aa^{21}\text{—}aa^{22}\text{—}aa^{23}\text{—gly—}aa^{25}\text{—}aa^{26}\text{—}aa^{27}\text{—}aa^{28}\text{—}aa^{29}\text{—cys}$$
$$\text{cys—}aa^{32}\text{—w}$$

wherein:

aa^1 is val or gly;

aa^2 is val, ile, arg, ser or phe;

aa^4 is ala val or thr;

aa^7 is arg, lys or gly;

aa^9 is leu, 21eu, phe or ser;

aa^{11} is leu, pro, ser or gly;

aa^{12} is pro, asn, lys, phe or ser;

aa^{13} is arg, leu, ser or gly;

aa^{16} is arg, phe or ala;

aa^{17} is ala, ser or ile;

aa^{19} is phe, tyr, asp or ser;

aa^{21} is arg, lys or thr;

aa^{22} is ile or val;

aa^{23} is arg or asn;

aa^{25} is arg, ala or val;

aa^{26} is ile or arg;

aa^{27} is his, val or phe;

aa^{28} is pro, tyr or thr;

aa^{29} is leu, arg or phe;

aa^{32} is arg, ser or pro; and

w is -02 arg.

4,659,693

N,N'-DIALKYL SUBSTITUTED GUANIDINO AMINO ACYL RESIDUE SUBSTITUTED GRF-ANALOG PEPTIDES

John J. Nestor, San Jose, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 605,346, Apr. 30, 1984, abandoned. This application Feb. 28, 1985, Ser. No. 707,007

Int. Cl.⁴ A61K *37/43;* **C07K** *7/10, 7/08*

U.S. Cl. 514—12 **26 Claims**

1. A GRF-analog peptide of the formula

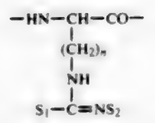
$$R_1\text{—}R_2\text{—}R_3\text{—}R_4\text{—Ile—Phe—Tyr—}R_8\text{—Ser—}R_{10}\text{—Arg—}R_{12}\text{—}$$
$$\text{—}R_{13}\text{—Leu—}R_{15}\text{—Gln—Leu—}R_{18}\text{—Ala—Arg—Lys—Leu—}$$
$$\text{—Leu—}R_{24}\text{—}R_{25}\text{—Ile—}R_{27}\text{—}R_{28}\text{—Arg—Gln—Gln—Gly—Glu—}$$
$$\text{—}R_{34}\text{—Asn—Gln—Glu—}R_{38}\text{—}R_{39}\text{—}R_{40}\text{—}R_{41}\text{—}$$
$$\text{—}R_{42}\text{—Thr—}R_{43}\text{—}R_{44}$$

and the pharmaceutically non-toxic salts thereof wherein

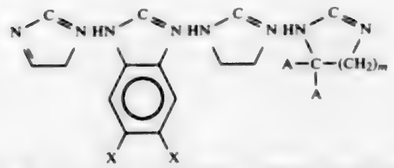
R_1 is H, D or L H-Tyr, N-MeTyr, His or R_2 excluding D- or L-Ala and D- or L-Leu;

R_2 is D- or L-Ala, D- or L-Leu or an amino acyl radical represented by the following structural formulas:

(a)

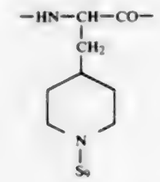


wherein
n is 1 to 5;
S_1 is alkyl of 1 to 12 carbon atoms, or $—NHS_3$ wherein S_3 is hydrogen, alkyl of 1 to 12 carbon atoms, halo lower alkyl, cycloalkyl, phenyl, benzyl, morpholino or $—(CH_2)_nN(S_4)_2$ wherein n is 1 to 5 and S_4 is lower alkyl;
S_2 is hydrogen, or S_3 or S_1 and S_2 comprise a ring represented by the following structural formulas:



wherein m is 1 to 7; A is hydrogen, alkyl of 1 to 6 carbon atoms or cycloalkyl; ad X is halo or A or

(b) a substituent of the formula



wherein S_9 is hydrogen, alkyl of 1 to 12 carbon atoms, phenyl or phenyl lower alkyl; with the proviso that when R_1 is an amino acyl residue of formula I, III or IV, R_2 is not an amino acyl residue of formula I, III or IV, and when R_1 is D or L Tyr, N MeTyr or His, R_2 may not be D or L Ala or Leu;

R_3 is Asp, Asn or Glu; R_4 is Ala or Gly; R_8 is Asn or Ser; R_{10} is Tyr, D-Tyr or Phe; R_{12} is Lys or Arg; R_{13} is Ile or Val; R_{15} is Gly or D-Ala; R_{18} is Ser or Tyr; R_{24} is Gln or His; R_{25} is Glu or Asp; R_{27} is D,L-Ala, D,L-Nle, D,L-Ile, D,L-Leu, D,L-Met, D,L-Val; R_{28} is Asn, Ser or D-Ala; R_{34} is Arg, Ser or Ala; R_{38} is Gln, Arg or Ser; R_{39} is Arg or Gly; R_{40} is Ala, Ser, Arg or Des-R_{40}; R_{41} is Arg, Phe, Lys or Des-R_{41}; R_{42} is Val, Phe, Ala, Gln, Gly, Ile, Leu, Lys, Pro or Des-R_{42}; and R_{43} is Asn, Arg or des-R_{43}; R_{44} is Leu, or Des-R_{44}; and GRF-analog fragments thereof which at contain least so many amino acids as to include R_{28}-Arg and the N-terminal fragment R_1-R_2-R_3-R_4- as defined herein.

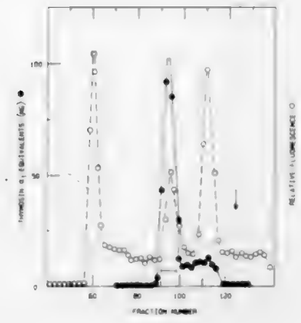
4,659,694
PROTHYMOSIN ALPHA

(I) **Bernard L. Horecker, New York, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.**

Continuation-in-part of Ser. No. 546,211, Oct. 27, 1983, abandoned. This application Aug. 13, 1984, Ser. No. 639,757

Int. Cl.⁴ A61K *17/24*; **C07K** *7/48, 13/00*

U.S. Cl. 514—12 **4 Claims**



1. A substantially homogeneous peptide and the pharmaceutically acceptable acid and base addition salts thereof, wherein said peptide comprises about 113 amino acid residues; wherein the isoelectric focusing point of said peptide is about 3.55; wherein about one half of the amino acid residues in said peptide consist of glutamic acid and aspartic acid; wherein said peptide does not contain methionine, cysteine or aromatic amino acids; wherein said peptide has the amino acid sequence starting from the amino terminal end:

(III)

(IV)

1 10
Ser—Asp—Ala—Ala—Val—Asp—Thr—Ser—Ser—Glu—Ile—

20
—Thr—Thr—Lys—Asp—Leu—Lys—Glu—Lys—Lys—Glu—

30
—Val—Val—Glu—Glu—Ala—Glu—Asn—Gly—Arg—Asp—

40
—Asn—Pro—Ala—Asn—Gly—Asn—Ala—Glu—Asn—Glu—

50
—Glu—Asn—Gly—Glu—Gln—Glu—Ala—Asp—Asn—Glu—

60
—Val—Asp—Glu—Glu—Glu—Glu—Glu—Gly—Gly—Gly—

70
—Glu—Glu—Asx—Gly—Gly—Glx—Glx—Glx—Glx—Glx—

80
—Glx—Glx—Glx—Glx—Glx—Asn—Gly—Asp—Glu—Asp—

90
—Glu—Glu—Ala—Glu—Ala—Pro—Thr—Gly—Lys—Arg—

100
—Val—Ala—Glu—Asp—Asp—Glu—Asp—Asp—Asp—Val—

110
—Glu—Thr—Lys—Lys—Gln—Lys—Lys—Thr—Asp—

—Glu—Asp—Asp—

4,659,695
METHOD OF TREATMENT OF PROSTATE CANCER

Fernand Labrie, 2735 boul Liegeois, St-Foy, Québec, G1W 1Z9, Canada

Filed Feb. 8, 1985, Ser. No. 699,711

Int. Cl.⁴ A61K *37/24*

U.S. Cl. 514—15 **44 Claims**

1. A method of treating prostate cancer in a warm-blooded male animal in need of such treatment which comprises blocking the testicular hormonal secretions of said animal by surgical or chemical means and administering to said animal therapeutically effective amounts of an antiandrogen in association with at least one inhibitor of sex steroid biosynthesis, or pharmaceutical compositions thereof.

4,659,696
PHARMACEUTICAL COMPOSITION AND ITS NASAL OR VAGINAL USE

Shin-ichiro Hirai, Kyoto; Hiroaki Okada, Suita, and Takatsuka Yashiki, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 22, 1983, Ser. No. 487,836

Claims priority, application Japan, Apr. 30, 1982, 57-73731; Feb. 11, 1983, 58-21899

Int. Cl.⁴ A61K *37/02, 37/21*

U.S. Cl. 514—15 **22 Claims**

1. A pharmaceutical composition which consists essentially of physical mixture of a hydrophilic, physiologically active polypeptide and cyclodextrin, said composition being a uniform mixture in dosage form.

4,659,697
ANTIANAEMIC COMPOSITION AND A PROCESS FOR PRODUCING THE SAME

Kentaro Tanaka, 1-26, Misaki 1-chome, Kofu-shi, Yamanashi-ken, Japan

Division of Ser. No. 496,744, May 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 334,615, Dec. 28, 1981, abandoned. This application Feb. 4, 1985, Ser. No. 698,218

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—23 **8 Claims**

1. An antianaemic composition produced by a process comprising:

(1) cultivating a yeast in a population of 5×10^5 to 3×10^6/ml of a medium selected from the group consisting of a grape juice, an apple juice, a semi-synthetic culture medium and a synthetic culture medium, said medium containing a saccharose in 5 to 25% by weight, in the presence of 10 to 70 ppm, in terms of iron, of an iron compound to form a cultured broth comprising water, alcohol and an organoiron (II) compound which is a divalent iron-containing complex composed of Fe, C. H. and O and having a molecular weight in the range of about 10^2 to about 5×10^3, and

(2) removing the alcohol from the cultured broth to an extent that the resulting cultured broth has an alcohol content of less than about 1% by volume.

4,659,698
PHARMACEUTICAL COMPOSITIONS BASED ON XYLOSIDES AND LYXOSIDES OF PURINE AND PYRIMIDINE BASES USED IN A METHOD OF TREATING VIRUSES

Jean-Louis Imbach, 1108, rue de Las Sorbes, 34000 Montpellier; Gilles Gosselin, Montpellier, and Jean De Rudder, Versailles, all of France, assignors to Synthelabo, Paris and Jean-Louis Imbach, Montpellier, both of, France

Continuation of Ser. No. 503,560, Jun. 13, 1983, abandoned. This application May 16, 1985, Ser. No. 734,846

Claims priority, application France, Jun. 14, 1982, 82 10289

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—49 **6 Claims**

1. A method for the treatment of viral diseases which comprises administering to an animal suffering from a viral disease a viral disease treating effective amount of 1-(β-D-xylofuranosyl)-cytosine.

4,659,699
PROCESS FOR FREEZE DRYING CYCLOPHOSPHAMIDE

Daniel L. Francis, Ravenna, Ohio, assignor to Cetus-Ben Venue Therapeutics, Emeryville, Calif.

Continuation-in-part of Ser. No. 524,899, Aug. 22, 1983, abandoned. This application May 21, 1984, Ser. No. 612,626

Int. Cl.⁴ A61K *31/70*; **C07H** *1/00*

U.S. Cl. 514—53 **21 Claims**

1. A two-stage process for freeze-drying cyclophosphamide ("CPA") hydrate, comprising, in a first stage,

(a) freezing an aqueous solution of a dosage amount of CPA and an excipient selected from the group consisting of a polyhydroxy alcohol having from 5 to about 9 carbon atoms, a monosaccharide having from 5 to about 10 carbon atoms, a disaccharide and a polysaccharide, provided said excipient is present in an amount at least 0.5 times the equivalent weight ("equiv wt") of anhydrous CPA, by cooling and freezing the solution to a temperature in the range from about −20° C. to about −50° C.;

(b) maintaining vacuum control after the temperature of the product is in the range from above about −50° C. to about 25° C. until the moisture content of the freeze-dried material is less than about 2% based on the total net wt of CPA product; and, in a second stage;

(c) rehydrating the freeze-dried material by (i) contacting the freeze-dried material with live steam until the relative humidity to which the material is exposed is about 80–85%, and (ii) maintaining the relative humidity at this level such that the material attains a moisture content in the range from 2% to 7% by wt, based on the net wt of CPA product, so as to maintain the integrity of said CPA hydrate; whereby a cake of CPA hydrate and excipient having uniform appearance and consistency is produced.

4,659,700
CHITOSAN-GLYCEROL-WATER GEL

David S. Jackson, Princeton, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Mar. 2, 1984, Ser. No. 585,714

Int. Cl.⁴ A61K *31/725*

U.S. Cl. 514—55 **5 Claims**

1. A gel or gel-like membrane consisting essentially of water, chitosan and glycerol, and having a 3-dimensional gel structure.

4,659,701
VINYLBENZYL PHOSPHATES, AND THEIR USE FOR TREATING DERMALOGICAL DISORDERS

Hans-Heiner Wuest, Dossenheim; Fritz-Frieder Frickel, Deidesheim, and Axel Nuerrenbach, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

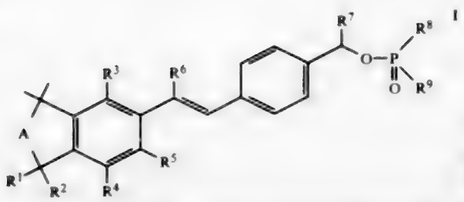
Filed Sep. 20, 1985, Ser. No. 778,191

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1984, 3438386

Int. Cl.⁴ A61K *31/66*; **C07F** *9/145*

U.S. Cl. 514—130 **4 Claims**

1. A vinylbenzyl phosphate of the formula I



where A is a methylene or ethylene radical which is unsubstituted or substituted by C_1–C_4-alkyl, R^1 and R^2 are each hydrogen or methyl, R^3 is hydrogen, methyl, hydroxyl or C_1–C_6-alkoxy, R^4 and R^5 are each hydrogen, C_1–C_4-alkyl, methoxy or halogen, R^6 is hydrogen, C_1–C_6-alkyl or C_3–C_6-cycloalkyl, R^7 is hydrogen or C_1–C_4-alkyl and R^8 and R^9 are each a radical $—OR^{10}$ or $—NR^{11}R^{12}$, where R^{10} is hydrogen, C_1–C_8-alkyl, aryl or aralkyl, R^{11} and R^{12} are each hydrogen or C_1–C_6-alkyl, and its physiologically tolerated salts.

2. The method of treating dermatological disorders in a patient suffering therefrom which comprises administering to the patient an effective amount of a compound as set forth in claim 1.

4,659,702

S-(SUBSTITUTED ALLYLIC) TRITHIOPHOSPHONATE INSECTICIDES

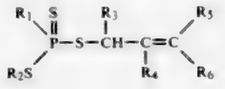
Charles G. Chavdarian, Martinez, and Valerie F. Heusinkveld, Berkeley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 600,677, Apr. 16, 1984, abandoned. This application Feb. 15, 1985, Ser. No. 700,730.

Int. Cl.[4] A01N *57/00*; **C07F** *9/40*

U.S. Cl. 514—134 **68 Claims**

1. A compound having the formula



in which

R_1 is methyl or ethyl;

R_2 is C_4–C_6 branched alkyl or C_5–C_6 cycloalkyl;

R_3 is hydrogen, methyl or ethyl;

R_4 is hydrogen, C_1–C_4 alkyl, phenyl, halogen or halo-(C_1–C_4alkyl); and

R_5 and R_6 are hydrogen, halogen, C_1–C_4 alkyl or phenyl; or R_3 and R_5 taken together form a trimethylene ring;

provided that:

(a) if R_3, R_5 and R_6 are each hydrogen, then R_4 is not hydrogen;

(b) if R_4 is hydrogen, then R_5 and R_6 are not both C_1–C_4 alkyl; and

(c) if R_4 is halogen, then R_5 and R_6 are hydrogen or halogen.

4,659,703

S-ALLYL TRITHIOPHOSPHONATE INSECTICIDES

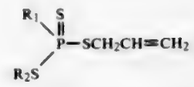
Charles G. Chavdarian, Martinez, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 16, 1985, Ser. No. 809,464

Int. Cl.[4] A01N *57/04*; **C07F** *9/40*

U.S. Cl. 514—134 **7 Claims**

1. A compound having the formula



in which R_1 is methyl or ethyl and R_2 is C_3–C_5 alkyl.

2. A method for inhibiting or controlling insects comprising applying to an insect, the locus of an insect or a locus at which insecticidal control is desired, an insecticidally effective amount of a compound as defined in claim 1.

4,659,704

19-HYDROXYALDOSTERONE AND ITS PREPARATION

Marcel Harnik, and Yoel Kashman, both of Tel Aviv, Israel, assignors to Ramot University Authority for Applied Research & Industrial Development Ltd., Tel Aviv, Israel

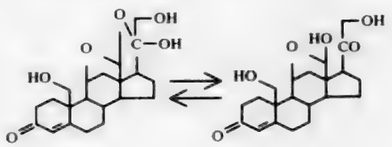
Filed May 21, 1985, Ser. No. 736,548

Int. Cl.[4] A61K *31/58*

U.S. Cl. 514—172 **5 Claims**



1. 19-Hydroxyaldosterone of the formula



12b 12a

4,659,705

FUNGICIDAL ALPHA-AZOLYLGLYCOLS

Bernd Zeeh; Eberhard Ammermann; Ernst Buschmann, all of Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 449,316, Dec. 13, 1982, Pat. No. 4,554,285. This application May 7, 1985, Ser. No. 731,457

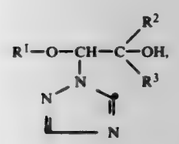
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150204

The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.

Int. Cl.[4] A01N *43/50, 43/64*; **C07D** *233/60, 249/08*

U.S. Cl. 514—184 **3 Claims**

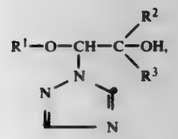
1. An alpha-azolylglycol of the formula



(I)

wherein R^1 is alkyl of 1–4 carbon atoms, R^2 is 2,4-dichlorophenyl and R^3 is methyl and X is N.

2. A process for combating fungi, wherein a fungicidally effective amount of an alpha-azolylglycol of the formula



(I)

where R^1 is is branched or straight-chain alkyl of 1 to 4 carbon atoms, R^2 is unsubstituted phenyl or phenyl monosubstituted or disubstituted by chlorine or bromine R^3 is straight-chain alkyl or 1 to 6 carbon atoms or branched alkyl or 3 to 6 carbon atoms and X is N, or a plant-tolerated salt or metal complex thereof, ia allowed to act one areas, plants or seed threatened by fungus attack, or on the fungi themselves.

4,659,707

AMINOACYL DERIVATIVES OF 4,9-DIHYDRO-10H-PYRIDO[3,2-B]THIENO[3,2-E][1,4]DIAZEPINONE AND OF 4,9-DIHYDRO-10H-PYRIDO[3,2-B]THIENO[3,4-E][1,4]DIAZEPINONE, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Roberto Giano; Ettore Parini; Salvatore Malandrino, and Giancarlo Tonon, all of Milan, Italy, assignors to Dompe' Farmaceutici S.p.A., Milan, Italy

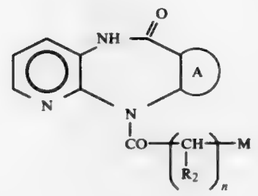
Filed Jul. 29, 1986, Ser. No. 891,696

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1985, 3529372

Int. Cl.[4] A61K *495/14*; **C07D** *31/55*

U.S. Cl. 514—215 **9 Claims**

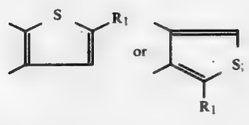
1. A compound of formula I



(I)

wherein

A is



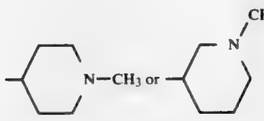
R_1 is hydrogen or methyl;

n is 0, 1 or 2;

R_2 is hydrogen or methyl when n is 1 and is hydrogen when n is 2;

when n is different than zero, M is a 5- or 6-membered cyclic amino group, optionally containing another heteroatom such as oxygen, sulfur or nitrogen;

when n is zero, M is one of the following groups:



their salts with pharmaceutically acceptable acids and possible enantiomeric forms thereof.

9. A pharmaceutical composition having antiulceric, antisecretoric, antimuscarinic and spasmolytic activity comprising as the principal active ingredient an effective amount of at least one compound according to formula I together with a pharmaceutically acceptable carrier.

4,659,706

SULFINYL AND SULFONYL SUBSTITUTED 3-BENZAZEPINES

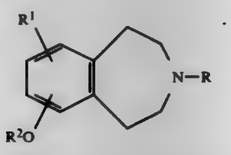
William E. Bondinell, and Herbert S. Ormsbee, III, both of Wayne, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Dec. 20, 1985, Ser. No. 811,789

Int. Cl.[4] C07D *223/16*; **A61K** *31/55*

U.S. Cl. 514—213 **10 Claims**

1. A compound of the formula:



in which:

R is hydrogen, or lower alkyl or C_3–C_5alkenyl;

R^1 is SOR^3, SO_2R^3 or $SO_2NR^4R^5$;

R^2 is hydrogen or lower alkanoyl;

R^3 is lower alkyl or trifluoromethyl; and

R^4 and R^5 are hydrogen or lower alkyl

or a pharmaceutically acceptable acid addition salt thereof.

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4,659,708

ANTI-LEISHMANIAL LEPIDINE DERIVATIVES

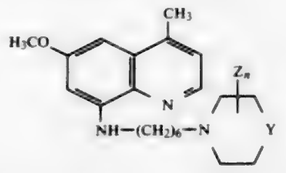
Leslie M. Werbel, Ann Arbor, Mich., and Edgar A. Steck, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 183,514, Sep. 2, 1980, abandoned. This application Aug. 20, 1981, Ser. No. 294,661

Int. Cl.[4] **C07D** *401/00, 279/12;* **A61K** *31/435, 31/54*

U.S. Cl. 514—222 **56 Claims**

1. A lepidine compound having the formula:



wherein

Z represents methyl and n is an integer from 0 to 2;

Y represents —O—, —S—, —S(O)—, —S(O)$_2$—, and —N(R′)—;

R′ represents hydrogen, lower alkyl, mono- or di-R″ substituted lower alkyl, sulfonyl, saturated 1,4-diazepinyl, lower alkyl N-cyanocarboximidothioate, —C(O)R‴, phenyl, pyridyl, naphthyl, or mono or disubstituted phenyl wherein the substituent is lower alkyl, lower alkoxy, phenyl-lower alkoxy, amino, lower alkylamino, hydrogen or halogen;

R″ represents hydroxy, lower alkoxy, phenyl-lower alkoxy, amino, lower alkyl substituted amino, phenyl, halogenated phenyl, or sulfonyl; and

R‴ represents lower alkyl, lower alkoxy, phenyl-lower alkoxy, amino, lower alkyl substituted amino; and a pharmaceutically acceptable salt thereof.

4,659,709

2,3-DIHYDROBENZOFURAN-5-SULFONAMIDE DERIVATIVES USEFUL AS ANTIHYPERTENSIVE DIURETIC AGENTS

Hiroshi Harada; Yoshihiro Matsushita; Masuhisa Nakamura, all of Osaka, and Yukio Yonetani, Nara, all of Japan, assignors to Shionogi & Co., Osaka, Japan

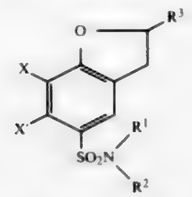
Filed Aug. 12, 1985, Ser. No. 764,785

Claims priority, application Japan, Sep. 5, 1984, 59-186971

Int. Cl.[4] **A61K** *31/34;* **C07D** *307/85, 307/80*

U.S. Cl. 514—229 **6 Claims**

1. A compound represented by the following formula:



and the pharmaceutically acceptable salts thereof, wherein

R^1 and R^2 are the same or different from each other, and each is hydrogen, lower alkyl, 4- to 7-membered cycloalkyl, phenyl substituted by halo or alkoxy, unsubstituted phenyl, phenyl(lower alkyl), lower alkoxycarbonyl, or morpholino(lower alkyl); or

NR^{1}R^2 represents lower alkyl substituted or unsubstituted pyrrolidine, piperidine or morpholino,

R^3 is a group represented by COR^4 or CH$_2$R^5,

R^4 is hydroxy or a group represented by OR^6 or NR^{7}R^8,

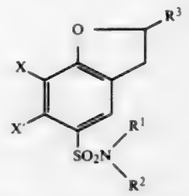
R^5 is hydroxy, lower alkoxy, lower aliphatic acyloxy, or halogen,

R^6 is lower alkyl, aryl, carboxymethyl or a lower alkyl ester thereof, hydroxymethyl or a lower aliphatic acylate thereof, or 3-phthalidyl,

R^7 and R^8 are the same or different from each other, and each is hydrogen or lower alkyl, and

X and X′ are the same or different from each other, and each is hydrogen or halogen.

6. An antihypertensive diuretic agent containing an antihypertensive effective amount of a compound represented by the following formula:



or a pharmaceutically acceptable salt thereof as an active ingredient, wherein

R^1 and R^2 are the same or different from each other, and each is hydrogen, lower alkyl, 4- to 7-membered cycloalkyl, phenyl substituted by halo or alkoxy or unsubstituted phenyl, phenyl(lower alkyl), lower alkoxycarbonyl, or morpholino(lower alkyl); or

NR^{1}R^2 represents lower alkyl substituted or unsubstituted pyrrolidine, piperidine or morpholino,

R^3 is a group represented by COR^4 or CH$_2$R^5,

R^4 is hydroxy or a group represented by OR^6 or NR^{7}R^8,

R^5 is hydroxy, lower alkoxy, lower aliphatic acyloxy, or halogen,

R^6 is lower alkyl, aryl, carboxymethyl or a lower alkyl ester thereof, hydroxymethyl or a lower aliphatic acylate thereof, or 3-phthalidyl,

R^7 and R^8 are the same or different from each other, and each is hydrogen or lower alkyl, and

X and X′ are the same or different from each other, and each is hydrogen or halogen and an inert pharmaceutically acceptable carrier.

4,659,710

1,7-NAPHTHYRIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Susumu Sato; Haruyoshi Honda; Teruo Koumoto, all of Chiba; Kazuo Isomae, Narashino; Tadayuki Kuraishi, Chiba, and Tatsuhiko Katori, Tonemachi, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

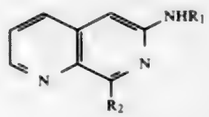
Filed Apr. 11, 1986, Ser. No. 850,820

Claims priority, application Japan, Apr. 17, 1985, 60-81967

Int. Cl.[4] **A61K** *31/44, 31/535;* **C07D** *221/00, 413/14*

U.S. Cl. 514—234 **2 Claims**

1. A 1,7-naphthyridine derivative represented by the following general formula (I):



(I)

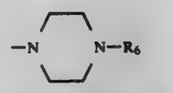
wherein

R$_1$ means a COR$_3$ group; in which R$_3$ is an alkyl group, a phenyl group which may optionally be substituted by one or more alkyl, alkoxy, hydroxyl and/or halogen, or a styryl group, and

R$_2$ denotes a piperidino or morpholino group, an



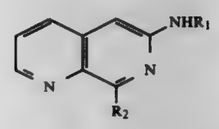
group, in which R$_4$ is a hydrogen atom or an alkyl or hydroxyethyl group and R$_5$ is an alkyl, amino, hydroxyethyl, hydroxypropyl, dihydroxypropyl, dialkylaminoethyl, phenylethyl, alkoxyphenylethyl or pyridylmethyl group, or an



group, in which R$_6$ is an alkyl, phenyl or hydroxyethyl group or a cinnamoyl group which may optionally be substituted by one or more alkyl, alkoxy and/or hydroxyl groups and/or halogen atoms; or

an acid addition salt thereof.

2. A pharmaceutical composition containing, as an effective ingredient, a 1,7-naphthyridine derivative represented by the following general formula (I):



(I)

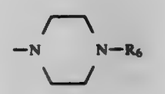
wherein

R$_1$ means a COR$_3$ group; in which R$_3$ is an alkyl group, a phenyl group which may optionally be substituted by one or more alkyl, alkoxy, hydroxyl and/or halogen, or a styryl group, and

R$_2$ denotes a piperidino or morpholino group, an



group, in which R$_4$ is a hydrogen atom or an alkyl or hydroxyethyl group and R$_5$ is an alkyl, amino, hydroxyethyl, hydroxypropyl, dihydroxypropyl, dialkylaminoethyl, phenylethyl, alkoxyphenylethyl or pyridylmethyl group, or an



group, in which R$_6$ is an alkyl, phenyl or hydroxyethyl group or a cinnamoyl group which may optionally be substituted by one or more alkyl, alkoxy and/or hydroxyl groups and/or halogen atoms; or an acid addition salt thereof in association with a pharmaceutically acceptable carrier.

4,659,711

1,2,3,4-TETRAHYDROPHTHALAZINE AND HEXAHYDROPYRIDAZINE COMPOUNDS FOR TREATING HYPERTENSION

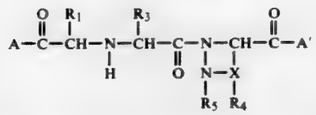
Fu-chin Huang, Boonton, N.J.; Howard Jones, Ossining, and Wan-Kit Chan, Yorktown Heights, both of N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Continuation of Ser. No. 462,644, Jan. 31, 1983, abandoned. This application Oct. 4, 1985, Ser. No. 785,086

Int. Cl.[4] **C07D** *237/04;* **A61K** *31/50*

U.S. Cl. 514—247 **18 Claims**

1. Compounds of the formula



and pharmaceutically acceptable salts thereof, wherein

X is a chain of 3 carbon atoms;

A and A′ are independently hydroxy or C$_{1\text{-}9}$ alkoxy;

R$_1$ is hydrogen, C$_{1\text{-}9}$ alkyl, phenyl or phen C$_{1\text{-}9}$ alkyl;

R$_3$ is hydrogen, C$_{1\text{-}9}$ alkyl, or w-amino C$_{1\text{-}9}$ alkyl;

R$_4$ is hydrogen, phenyl, phen C$_{1\text{-}9}$ alkyl, C$_{3\text{-}9}$ cycloalkyl, or phenyl fused to the ring containing X to form a phthalazine; and

R$_5$ is hydrogen, C$_{1\text{-}9}$ alkyl, phenyl or phen C$_{1\text{-}9}$ alkyl.

18. The method of alleviating hypertension in a host suffering therefrom, comprising administering to said host a therapeutically effective amount of one or more compounds or salts according to claim **1**.

4,659,712

FODDER ADDITIVE AND A PROCESS FOR THE PREPARATION

István Perjé; Lázló Szporny; András Selmeczi; László Vereczkey; Imre Klebovich; Edit Tóth; György Hajós; József Törley; Ferenc Simon; Péter Sárközy, and Attila Misley, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Oct. 24, 1985, Ser. No. 790,856

Claims priority, application Hungary, Oct. 25, 1984, 3976/84

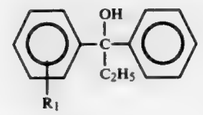
Int. Cl.[4] **A61K** *31/50, 31/065, 31/495*

U.S. Cl. 514—249 **9 Claims**

1. A method of preventing buildup of quinoxaline-2-carboxylic acid metabolite of carbadox in an animal subject which comprises the steps of:

feeding a fodder containing carbadox to said animal subject, whereby quinoxaline-2-carboxylic acid metabolite of carbadox accumulates in the liver of the animal subject with time; and

promoting elimination of said quinoxaline-2-carboxylic acid metabolite of carbadox from the liver of said animal subject by administering to said animal subject an effective amount of the compound of the Formula (I)



wherein R$_1$ is trihalomethyl.

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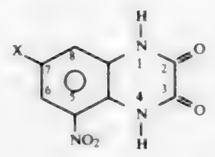
4,659,713

QUINOXALINEDIONE COMPOUNDS USEFUL FOR CONTROLLING COCCIDIOSIS

D. Kendall Hass, Modesto, Calif., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Oct. 1, 1984, Ser. No. 656,391
Int. Cl.⁴ A61K *31/50*
U.S. Cl. 514—249 **9 Claims**

1. A method for controlling coccidiosis in animals which comprises orally administering to said animals an effective coccidiosis-controlling amount of one or more active compounds corresponding to the formula



wherein

X represents H, Cl, Br, F, I, CCl_3, CCl_2F, $CClF_2$, CHF_2 or CF_3; and

tautomers or physiologically acceptable salts thereof, the effective amount being in the range of from about 0.1 to about 100 mg/kg of body weight of the animal per day.

4,659,714

ANESTHETIC METHODS FOR MAMMALS

Stephen R. Watt-Smith, London, England, assignor to Dentsply, Ltd., Weybridge, England

Filed Mar. 27, 1984, Ser. No. 593,724
Int. Cl.⁴ A61K *31/505, 31/44, 31/445, 31/415, 31/24, 31/165, 31/135*
U.S. Cl. 514—260 **9 Claims**

1. The method of anesthetizing the mouth of a mammal comprising the steps of:

applying an anesthetic agent to at least a portion of the mouth of the mammal; the improvement comprising co-applying to said mouth portion an amount of a vasoconstrictor sufficient to prolong the anesthetic effect of the anesthetic agent upon the mouth portion; and subsequent to said applications administering an alpha adrenoreceptor blocking agent to said mouth portion in an amount sufficient to reduce the prolongation.

4,659,715

METHOD OF INHIBITING BODY FAT STORES

Albert H. Meier, and Anthony H. Cincotta, both of Baton Rouge, La., assignors to Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Filed Mar. 7, 1986, Ser. No. 837,148
Int. Cl.⁴ A61K *31/44*
U.S. Cl. 514—288 **8 Claims**

1. A method for treating a vertebrate animal to reduce its body fat stores without substantial concomitant loss in its body weight, which method comprises administering to a vertebrate animal in need of such treatment an effective dosage of an ergot-related prolactin-inhibiting compound.

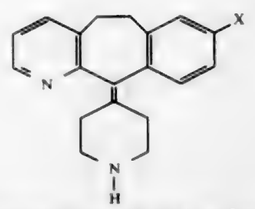
4,659,716

ANTIHISTAMINIC 8-(HALO)-SUBSTITUTED 6,11-DIHYDRO-11-(4-PIPERIDYLIDENE)-5H-BENZO[5,6-]CYCLOHEPTA[1,2-b]PYRIDINES

Frank J. Villani, Fairfield, and Jesse K. Wong, Union, both of N.J., assignors to Schering Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 580,304, Feb. 15, 1984, abandoned. This application Mar. 12, 1986, Ser. No. 838,974
Int. Cl.⁴ A61K *31/445;* **C07D** *401/08*
U.S. Cl. 514—290 **16 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein X represents Cl or F.

14. A method for treating allergic reactions in a mammal which comprises administering to said mammal an anti-allergic effective amount of a compound as defined in claim 1.

4,659,717

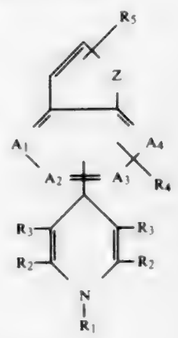
DIHYDROPYRIDINES USEFUL IN THE TREATMENT OF ANGINA AND STROKE

James H. Wikel, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 21, 1985, Ser. No. 768,071
Int. Cl.⁴ A61K *31/44;* **C07D** *495/04*
U.S. Cl. 514—301 **20 Claims**

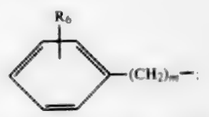
1. A compound of the formula

I



wherein:

R_1 is hydrogen, C_1–C_4 alkyl, or



each R_2 is independently hydrogen, methyl, or amino;

each R_3 is independently hydrogen, $—COR_7$, $—CO_2R_7$, or $—S(O)_nR_7$;

R_4 is hydrogen, methyl, methoxy, halo, nitro, or amino;

R_5 is hydrogen, methyl, methoxy, halo, or C_1–C_4 alkylthio;

R_6 is hydrogen, halo, C_1–C_4 alkoxy, C_1–C_4 alkyl, or nitro;

m is 0, 1, 2, 3, 4;

Z is O, S, or NH;

three or four of A_1, A_2, A_3, and A_4 are CH, and the remaining of A_1, A_2, A_3, and A_4, if any, is N;

R_7 is $—alk—(Y—alk—)_r—R_8$, allyl, propargyl, C_3–C_6 cycloalkyl, phenyl, or phenyl substituted with one to three substituents selected from C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, or halo;

each "alk" is a straight or branched chain C_1–C_6 alkylene radical;

Y is —O—, —NH—, or a bond;

t is 0 or 1;

R_8 is hydrogen, phenyl, pyridyl, —CN, or $—NR_9R_{10}$;

R_9 and R_{10} are independently C_1–C_3 alkyl or benzyl, or when taken together with the nitrogen atom to which they are attached from a pyrrolidino, piperidino, or homopiperidino ring, wherein the dihydropyridine group can be attached to any available carbon atom of the bicyclic ring system, provided that when Z is NH or O, one of A_1, A_2, A_3, and A_4 must be N, and further provided that when Z is S and each of A_1, A_2, A_3, and A_4 is CH, the benzothiphene represented thereby must be attached at the 3- or 4-position thereof to the dihydropyridine group, and pharmaceutically acceptable salts thereof.

9. A method of causing vasodilation in mammals which comprises administering to a mammal in need of such treatment an effective amount of compound according to claim 1.

4,659,718

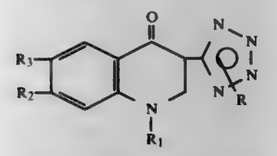
ANTIHYPERTENSIVE 3-TETRAZOYL-4-QUINOLONES

Roy V. Davies, and Richard D. Green, both of Nottinghamshire, England, assignors to The Boots Company Plc, England

Continuation of Ser. No. 642,060, Aug. 20, 1984, abandoned. This application Jun. 26, 1985, Ser. No. 749,015
Claims priority, application United Kingdom, Aug. 20, 1983, 8322470; May 25, 1984, 8413535
Int. Cl.⁴ A61K *31/41;* **C07D** *401/04*
U.S. Cl. 514—312 **29 Claims**

1. A quinolone of the formula I

I



in which the dotted lines between positions 2 and 3 of the quinolone ring represents an optional bond, R is hydrogen, 1-methyl or 2-lower alkyl; R_1 is lower alkyl; R_2 is hydrogen, halo, lower alkyl, lower alkoxy, trifluoromethyl, cyano, difluoromethoxy, methylsulphinyl, phenylsulphinyl or the group $—NR_4R_5$ or the N-oxide thereof wherein R_4 and R_5 are the same or different lower alkyl; and R_3 is hydrogen, fluoro, lower alkyl or lower alkoxy provided that, when R_3 is lower alkoxy, R_2 is other than lower alkoxy.

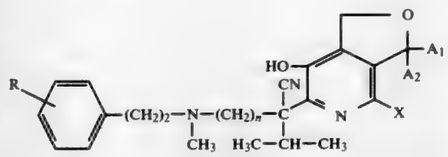
4,659,719

6-PHENETHYLAMINOALKYL-FURO-(3,4-c)-PYRIDINE DERIVATIVES AND THERAPEUTIC COMPOSITIONS CONTAINING THE SAME

André Esanu, Paris, France, assignor to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.), Paris, France

Filed Oct. 21, 1985, Ser. No. 789,731
Claims priority, application United Kingdom, Oct. 27, 1984, 8427218
Int. Cl.⁴ A61K *31/44;* **C07D** *491/048*
U.S. Cl. 514—302 **3 Claims**

1. A 1,3-dihydro-6-[1-cyano-1-isopropyl-N-phenethyl-N-methyl-ω-aminoalkyl]-7-hydroxy-furo-(3,4-c)-pyridine derivative of the formula



wherein, each of A_1 and A_2 independently represents a hydrogen atom, a straight chain saturated or unsaturated hydrocarbon group having from 1 to 5 carbon atoms, a thienyl or furyl group, a phenyl or phenylalkyl group or a phenylalkenyl group, each of the groups represented by A_1 and A_2 being unsubstituted or being substituted by one or more chlorine or fluorine atoms, trifluoromethyl groups, alkyl groups having from 1 to 5 carbon atoms, alkoxy groups having from 1 to 5 carbon atoms, alkylthio groups having from 1 to 5 carbon atoms, dialkylamino groups in which each alkyl group has from 1 to 5 carbon atoms, dialkylaminoalkoxy groups in which each of the two alkyl groups and the alkoxy group has from 1 to 5 carbon atoms or α or β-alkoxy-N-pyrrolidinyl groups in which the alkoxy group has from 1 to 5 carbon atoms; R represents from one to three methoxy groups; n is 2,3,4 or 5; and X represents a hydrogen or chlorine atom; and pharmaceutically acceptable salts of such compounds.

2. A therapeutic composition of matter comprising as an essential ingredient therein a compound according to claim 1 in an amount effective to act as a calcium antagonist together with an appropriate diluent or carrier.

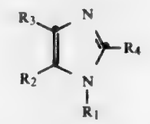
4,659,720

5-AMINO OR SUBSTITUTED AMINO IMIDAZOLES USEFUL TO TREAT COCCIDIOSIS

John C. Chabala, Westfield; Michael H. Fisher, Ringoes, and Arthur A. Patchett, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

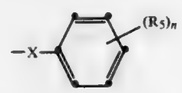
Continuation-in-part of Ser. No. 450,848, Dec. 20, 1982, abandoned. This application Nov. 16, 1983, Ser. No. 551,150
Int. Cl.⁴ A61K *31/44, 31/47;* **C07D** *401/04, 401/06*
U.S. Cl. 514—313 **13 Claims**

1. A compound having the formula



wherein:

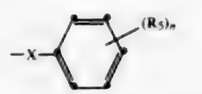
R_1 is mono-substituted phenyl or mono-substituted phenyl alkyl wherein the substituent is trifluoromethyl, loweralkanoyl, nitro, carboxy, carbalkoxy, acetamido, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl or



wherein n is from 1 to 5, R_5 is as defined as below and X is O, S, SO, SO_2, CH_2, CO, CHOH, CHCN or $C{=}NR_6$ where R_6 is hydrogen, loweralkyl, hydroxy, loweralkoxy, amino, loweralkylamino, or diloweralkylamino;

R_1 is also polysubstituted phenyl or polysubstituted phenylalkyl wherein the substituents are two to five R_5 wherein

R_5 is independently halogen, cyano, trifluoromethyl, loweralkanoyl, nitro, loweralkyl, loweralkoxy, carboxy, carbalkoxy, trifluoromethoxy, acetamido, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, trichlorovinyl, trifluoromethylthio, trifluoromethylsulfinyl, or trifluoromethylsulfonyl or



where R_5, X, and n are as defined above;

provided that if the monosubstituent or one of the polysubstituents is halogen, loweralkyl or loweralkoxy, such groups are in positions other than those ortho to the positions of attachment of the phenyl to the imidazole or the alkyl, which is in turn attached to the imidazole;

R_1 may also be phenacyl, pyridyl, pyridylmethyl, naphthyl, naphthylmethyl, quinolyl, or quinolylmethyl;

R_2 is amino, mono or diloweralkylamino, acetamido, acetimido, ureido, formamido, formimido or guanidino;

R_3 is carbamoyl, cyano, carbazoyl, amidino or N-hydroxycarbamoyl; and

R_4 is hydrogen, loweralkyl, hydroxy, amino, mono- or diloweralkylamino, phenyl, cyano, loweralkoxy, loweralkanoyloxy, loweralkylthio, loweralkylsulfinyl, or loweralkylsulfonyl.

13. A method for preventing or treating coccidiosis which comprises administering to an animal in need of such treatment an amount of a compound of claim **1** effective to prevent or treat coccidiosis.

4,659,721

ALKANOL DERIVATIVES, AND PHARMACEUTICAL PREPARATION CONTAINING THESE COMPOUNDS

Helmut Schickaneder, Eckental; Stefan Postius, Nürnberg; Istvan Szelenyi, Schwaig; Peter Mörsdorf, Cadolzburg; Rolf Herter, Schwabach, and Kurt H. Ahrens, Nürnberg, all of Fed. Rep. of Germany, assignors to Ludwig Heumann & Co. GmbH, Nürnberg, Fed. Rep. of Germany

Filed Jan. 22, 1985, Ser. No. 693,204

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404786

The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.

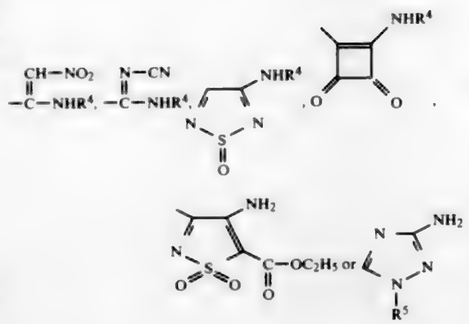
Int. Cl.[4] **C07D** *417/12, 31/41*

U.S. Cl. 514—326 **10 Claims**

1. A compound of the formula I

$$R^1R^2N-(CH_2)_m-Q-CH_2X-CH_2-Y-(CH_2)_n-NHR^3 \quad (I)$$

wherein R^1 and R^2, which may be identical or different, represent hydrogen, C_{1-10}-alkyl, C_{5-6}-cycloalkyl, amino, lower alkylamino or lower dialkylamino when m=1 or $(NH_2)_2C=$ when m=0 or R^1 and R^2 together with the nitrogen atom to which they are attached represent a 5- to 8-membered heterocyclic ring which is unsubstituted or substituted with a methyl group, m stands for 0 or 1 and Q denotes a furan, thiophene, thiazole or benzene ring, X stands for a sulphur or oxygen atom or for the group —CHOH, Y represents a single bond or the group —CHOH, n denotes 1 or 2 and R^3 represents one of the groups



wherein R^4 denotes a hydrogen atom, a C_{1-3}-alkyl group or a propargyl group and R^5 denotes a hydrogen atom or a C_{1-3}-alkyl group, and their physiologically acceptable salts and hydrates.

10. A pharmaceutical composition for use in inhibiting the secretion of gastric acid and for the treatment of peptic ulcers and hyperacidic gastritis comprising as the principal active ingredient an effective amount of a compound according to claim **1** in admixture with a pharmaceutically acceptable carrier.

4,659,722

BACTERICIDAL N-(2,2,2 TRICHLOROETHYL)PYRIDINECARBOXAMIDES

Taizo Nakagawa, Ohmiya; Eiichi Tanaka, Yono; Kengo Koike; Hiromi Yoshida, both of Ageo, and Hiroshi Yoshida, Urawa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1985, Ser. No. 761,169

Claims priority, application Japan, Aug. 20, 1984, 59-171522; Jan. 22, 1985, 60-8518; Jan. 28, 1985, 60-12497

Int. Cl.[4] **A61K** *31/44;* **C07D** *213/81, 213/82, 401/12*

U.S. Cl. 514—332 **11 Claims**

1. A compound of the formula:

$$R_1-CONHCH(CCl_3)-X-R_2 \quad (I)$$

wherein

X is oxygen, sulfur or



R_1 is 3-pyridyl or 4-pyridyl,

R_2 is $C_1\sim C_{12}$-alkyl; C_3 or C_4-alkenyl; C_5- or C_6-cycloalkyl which may be substituted by C_1- or C_2-alkyl; pyridyl; pyridylmethyl; phenethyl; cyano alkyl having one or two carbon atoms; methoxymethyl; methoxymethylpropyl; phenyl; phenyl which is substituted by one or more of $C_1\sim C_4$-alkyl, $C_1\sim C_4$-alkoxy, nitro, halogen, trifluoromethyl, allyl and methoxycarbonyl; benzyl; benzyl which is substituted by one or more of methyl, nitro, methoxy and chloro; α-methylbenzyl; $C_1\sim C_6$-alkyl which is substituted by halogen when X is oxygen or



C_2- or C_3-alkyl which is substituted by dimethylamino; furfuryl or thienylmethyl; and

R_3 is hydrogen, $C_1\sim C_4$-alkyl, cyanomethyl, methoxycarbonylmethyl or 1-(propoxycarbonyl)ethyl.

10. A bactericidal composition which comprises, as an effective component, a compound of the formula:

$$R_1-CONHCH(CCl_3)-X-R_2 \quad (1)$$

wherein

X is oxygen, sulfur or



R_1 is 3-pyridyl or 4-pyridyl,

R_2 is $C_1\sim C_{12}$-alkyl; C_3 or C_4-alkenyl; C_5- or C_6-cycloalkyl which may be substituted by C_1- or C_2-alkyl; pyridyl; pyridylmethyl; phenethyl; cyano alkyl having one or two carbon atoms; methoxyethyl; 1-methoxymethyl-propyl; phenyl; phenyl which is substituted by one or more of $C_1\sim C_4$-alkyl, $C_1\sim C_4$-alkoxy, nitro, halogen, trifluoromethyl, allyl and methoxycarbonyl; benzyl; benzyl which is substituted by one or more of methyl, nitro methoxy or chloro; α-methylbenzyl; $C_1\sim C_6$-alkyl which is substituted by halogen when X is oxygen or



C_2- or C_3-alkyl which is substituted by dimethylamino; furfuryl or thienylmethyl; R_3 is hydrogen, $C_1\sim C_4$-alkyl, cyanomethyl, methoxycarbonylmethyl or 1-propoxy carbonyl-ethyl and adjuvant(s).

4,659,723

SUBSTITUTED AZOLYLALKYL PYRIDINYL ETHERS

Karl H. Büchel, Burscheid; Udo Kraatz, Leverkusen; Jörg Stetter, Wuppertal; Paul Reinecke, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

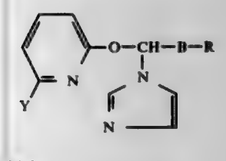
Filed Nov. 15, 1985, Ser. No. 798,525

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1984, 3443597

Int. Cl.[4] **C07D** *401/12;* **A01N** *43/40, 43/50*

U.S. Cl. 514—341 **8 Claims**

1. An azolylalkyl pyridinyl ether of the formula

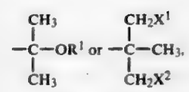


in which

Y is fluorine or chlorine,

B is a keto group or a CH(OH) group,

R is phenyl; phenyl substituted by at least one member selected from the group consisting of chlorine and phenyl;



R^1 is phenyl, or phenyl substituted by at least one member selected from the group consisting of fluorine and chlorine,

X^1 is fluorine or chlorine, and

X^2 is hydrogen, fluorine or chlorine.

5. A fungicidal composition comprising a fungicidally effective amount of a compound as claimed in claim **1** in admixture with a diluent.

4,659,724

CERTAIN 1-[4-(5-CYANO-2-PYRIDYLOXY)PHENYL-BENZOYL UREAS HAVING PESTICIDAL PROPERTIES

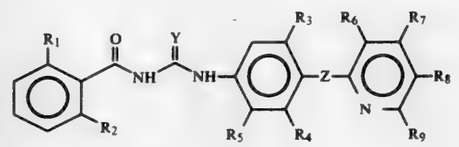
David T. Chou, Raleigh, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 454,847, Dec. 30, 1982, abandoned. This application Apr. 26, 1985, Ser. No. 727,678

Int. Cl.[4] **C07D** *213/64;* **A01N** *43/40*

U.S. Cl. 514—344 **26 Claims**

1. A compound of the formula:



wherein:

Y represents oxygen;

Z represents oxygen;

R_1 and R_2 are independently hydrogen, halogen or lower alkyl;

R_3 and R_4 are independently halogen or methyl;

R_5 represents hydrogen, halogen or methyl;

R_6 represents hydrogen or lower alkyl;

R_7 represents hydrogen;

R_8 represents cyano; and

R_9 represents hydrogen.

20. A method of controlling insects and acarids which comprises subjecting said pests to a pesticidally effective amount of a compound of claim **1**.

4,659,725

3-(2-PYRIDYLAMINOALKYLAMINO)CYCLOBUTENEDIONES AND PYRIDONES USEFUL AS HISTAMINE H_1-ANTAGONISTS

Robert J. Ife, Stevenage, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 735,036, May 17, 1985, Pat. No. 4,607,106, which is a division of Ser. No. 563,496, Dec. 20, 1983, Pat. No. 4,532,246. This application Jun. 19, 1986, Ser. No. 876,049

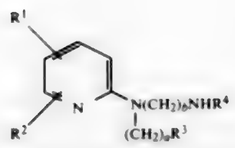
Claims priority, application United Kingdom, Dec. 23, 1982, 8236637; Aug. 19, 1983, 8322349

Int. Cl.[4] **A61K** *31/395, 31/38;* **C07D** *211/80, 213/04*

U.S. Cl. 514—352 **11 Claims**

1. A compound of formula (1):

VOL 1077 ISS 3 AP 21 1987 UMI



or a pharmaceutically acceptable salt thereof, where

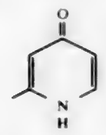
R^1 and R^2 are the same or different and are hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy or halogen;

R^3 is optionally substituted phenyl or optionally substituted pyridyl, where the optional substituent is one C_{1-6} alkyl, C_{1-6} alkoxy, or hydroxy group or halogen atom; or optionally substituted thiazolyl, optionally substituted furanyl or optionally substituted thienyl where the optional substituent is one C_{1-6} alkyl or C_{1-6} alkoxy group or halogen atom;

a is from 1 to 6

b is from 2 to 4 and

R^4 is a group of formula (3):



or a group of formula (4):



where R^5 is hydrogen, C_{1-6} alkyl, or $(CH_2)_dR^6$ where d is 1–6 and R^6 is optionally substituted phenyl, optionally substituted pyridyl, where the optional substituent is one C_{1-6} alkyl, C_{1-6} alkoxy or hydroxy group or halogen atom; optionally substituted thiazolyl, optionally substituted furanyl or optionally substituted thienyl, where the optional substituent is one C_{1-6} alkyl or C_{1-6} alkoxy group or halogen atom.

11. A method of blocking histamine H_1-receptors which comprises administering to a subject an effective amount to block said receptors of a compound according to claim 1.

4,659,726

NOVEL 4,5-BIS (4-METHOXYPHENYL)-2-(PYRROL-2-YL) THIAZOLES AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Koichiro Yoshino, Suita; Norihiko Seko, Osaka; Koichi Yokota, Sakai; Keizo Ito, Osaka, and Goro Tsukamoto, Toyonaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

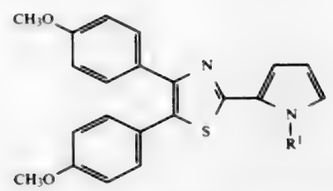
Filed Apr. 12, 1985, Ser. No. 722,322

Claims priority, application Japan, Apr. 19, 1984, 59-79924; Jul. 25, 1984, 59-156184; Feb. 28, 1985, 60-40802

Int. Cl.⁴ A61K *31/425;* **C07D** *277/24, 277/28*

U.S. Cl. 514—365 **7 Claims**

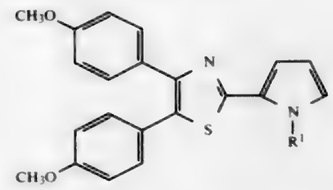
1. A 4,5-bis(4-methoxyphenyl)-2-(pyrrol-2-yl)-thiazole compound of the formula:



(1)

wherein R^1 is C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, 2,2,2-trifluoroethyl, a group of the formula: $—CH_2COOR^2$ (R^2 is C_{1-8} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, or phenyl-C_{1-2} alkyl), or a group of the formula: $—(CH_2)_n—A—R^3$ (A is oxygen or sulfur, R^3 is C_{1-4} alkyl or C_{2-4} alkenyl, and n is 1, 2 or 3).

7. A pharmaceutical composition useful for prophylaxis and treatment of platelet aggregation diseases, which comprises as an active ingredient an effective amount of a 4,5-bis(4-methoxyphenyl)-2-(pyrrol-2-yl)thiazole compound of the formula:



(3)

(4) wherein R^1 is C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, 2,2,2-trifluoroethyl, a group of the formula: $—CH_2COOR^2$ (R^2 is C_{1-8} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, or phenyl-C_{1-2} alkyl), or a group of the formula: $—(CH_2)_n—A—R^3$ (A is oxygen or sulfur, R^3 is C_{1-4} alkyl or C_{2-4} alkenyl, and n is 1, 2 or 3) in admixture with a conventional pharmaceutically acceptable carrier or diluent.

4,659,727

ETHENE DERIVATIVES

Adnan H. Al-Shaar, Benfleet; Barbara J. Broughton, Croydon; Robert K. Chambers, Erith; David W. Gilmour, Greenford; Diane M. Kelsey; Peter Lowden, both of Chelmsford; Edward Lunt, Clapton; David J. Lythgoe, Gidea Park; Ian McClenaghan, Ingrave; Duncan C. McDougall, Ilford; Libert C. Saunders, Grays; Keith A. J. Stuttle, Rochford, and Peter J. Warne, South Woodford, all of England, assignors to May & Baker Limited, Essex, England

Filed Sep. 10, 1985, Ser. No. 774,467

Claims priority, application United Kingdom, Sep. 11, 1984, 8422916

Int. Cl.⁴ C07D *277/42;* **A61K** *31/425*

U.S. Cl. 514—370 **3 Claims**

1. The compound: 1,1-bis(phenylsulfonyl)-2-(thiazol-2-ylamino)-ethene.

3. A method for the treatment of an arthritic disorder which comprises administering to a patient an effective amount of a compound according to claim 1 or a pharmaceutically acceptable salt thereof.

4,659,728

HYDROXY SUBSTITUTED 4,5-DIPHENYL-2-OXAZOLE PROPANOIC ACID

Alan J. Lewis, Audubon; Richard P. Carlson, Lansdale, and Horace Fletcher, 3rd, Pottstown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Feb. 25, 1985, Ser. No. 704,824

Int. Cl.⁴ C07D *263/44;* **A61K** *31/42*

U.S. Cl. 514—374 **5 Claims**

1. Crystalline 5-(4-hydroxyphenyl)-4-phenyl-2-oxazolepropanoic acid or a pharmaceutically acceptable salt thereof.

3. A method for reducing inflammation in a mammal which comprises administering, orally or parenterally, an antiinflammatory amount of 4-(4-hydroxyphenyl)-5-phenyl-2-oxazolepropanoic acid, or 5-(4-hydroxyphenyl)-4-phenyl-2-oxazolepropanoic acid, or a pharmaceutically acceptable salt thereof, to a mammal in need thereof.

4,659,729

NOVEL 4H-1,2,4-TRIAZOLE DERIVATIVES

Jean Meier, La Varenne Saint Hilaire, and Francois Clemence, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Continuation-in-part of Ser. No. 552,747, Nov. 17, 1983, Pat. No. 4,512,997, which is a continuation of Ser. No. 292,790, Aug. 14, 1981, abandoned. This application Feb. 21, 1984, Ser. No. 582,051

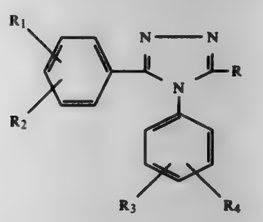
Claims priority, application France, Aug. 22, 1980, 80 18354

The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.

Int. Cl.⁴ C07D *249/08;* **A61K** *31/395, 31/41*

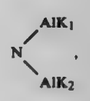
U.S. Cl. 514—383 **18 Claims**

1. A compound selected from the group consisting of 4H-1,2,4-triazoles of the formula

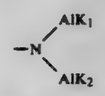


I

wherein R_1, R_3 and R_4 may be in different positions of the benzene ring and are individually selected from the group consisting of hydrogen, —OH, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, $—CF_3$, $—NO_2$, $—NH_2$ and NH—AlK and



R_2 is selected from the group consisting of $—NO_2$, $—NH_2$, —NH—AlK and



and AlK, AlK_1 and AlK_2 are alkyl of 1 to 4 carbon atoms or R_1 and R_2 together and/or R_3 and R_4 together are methylenedioxy, R is ethyl, and their non-toxic, pharmaceutically acceptable acid addition salts.

7. An analgesic composition comprising an analgesically effective amount of at least one compound of claim 1 and an excipient.

4,659,730

AROMATASE INHIBITING IMIDAZOLE DERIVATIVES

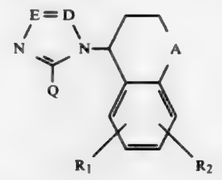
Kenneth S. Hirsch, New Palestine; Charles D. Jones, and Harold M. Taylor, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 18, 1984, Ser. No. 621,581

Int. Cl.⁴ A61K *31/415;* **C07D** *405/04, 233/58*

U.S. Cl. 514—396 **12 Claims**

1. A method of inhibiting aromatase in a mammal which comprises administering to said mammal an aromatase inhibiting amount of a compound of the formula



wherein:

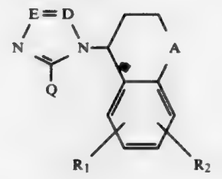
Q is hydrogen or methyl,

A is a bond, $—CH_2—$, —O—, or —S—;

E and D are each CH; and

R_1 and R_2 are each independently hydrogen, C_1–C_3 alkyl, halo, trifluoromethyl, or C_1–C_3 alkoxy, or a pharmaceutically acceptable salt thereof.

5. A method of treating estrogen-dependent diseases in a mammal which comprises administering to said mammal an effective amount of a compound of the formula



wherein:

Q is hydrogen or methyl,

A is a bond, $—CH_2—$, —O—, or —S—;

E and D are each CH; and

R_1 and R_2 are each independently hydrogen, C_1–C_3 alkyl, halo, trifluoromethyl, or C_1–C_3 alkoxy, or a pharmaceutically acceptable salt thereof.

4,659,731

2-(4,5-DIHYDRO-1H-IMIDAZOL-2-YL)-2,3-DIHYDROINDOLE DERIVATIVES AND THEIR APPLICATION AS α_2 RECEPTOR ANTAGONIST OR α_1 RECEPTOR AGONISTS

Denis Bigg, Jouy en Josas; Jacques Menin, Vitry S/Seine; Christian Maloizel, Meudon, and Jean Merly, Fontenay Aux Roses, all of France, assignors to Synthelabo, Paris, France

Filed Feb. 5, 1986, Ser. No. 826,500

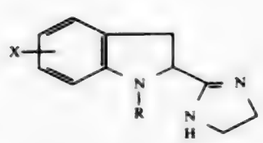
Claims priority, application France, Feb. 8, 1985, 85 01774; Feb. 8, 1985, 85 01775

Int. Cl.⁴ A61K *31/415;* **C07D** *403/00*

U.S. Cl. 514—397 **15 Claims**

1. A compound of formula (I)

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(I)

in which

X is halogen (C_{1-4})alkoxy, (C_{1-4})alkyl or allyloxy or, when R is substituted or unsubstituted phenyl, X can also denote a hydrogen atom and

R is linear or branched (C_{1-6})alkyl, (C_{3-6})cycloalkyl-(C_{1-4})alkyl, (C_{3-6})alkenyl, benzyl which is unsubstituted or substituted by one or more halogen, methyl, methoxy and methylenedioxy substituents, or phenyl of formula



in which Y is hydrogen, halogen, linear or branched (C_{1-6})alkyl or linear or branched (C_{1-6})alkoxy or an addition salt thereof with a pharmaceutically acceptable acid.

4,659,732

LIPOXYGENASE INHIBITING 1-ARYLALKYL-, 1-ARYLTHIO-, AND 1-ARYLOXYPYRAZOLE-4,5-DIONES

Hartmut Stegelmeier, Hilden; Volker Fiedler, Leverkusen, both of Fed. Rep. of Germany; Mithat Mardin, Madison, Conn.; Dieter Mayer, Werne, Fed. Rep. of Germany; Elisabeth Perzborn, Wuppertal, Fed. Rep. of Germany, and Friedel Seuter, Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

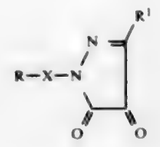
Filed Aug. 27, 1985, Ser. No. 769,928

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3432062

Int. Cl.[4] A61K *31/415;* **C07D** *231/28*

U.S. Cl. 514—404 **10 Claims**

1. A pyrazoledione of the formula



wherein

R represents a carbocyclic aryl which has 6 to 12 C atoms and is optionally substituted by 1 to 3 indentical or different substituents from the group consisting of halogen, trifluoromethyl, alkyl, alkenyl, alkoxy, alkylamino, cyano, trifluoromethoxy, nitro, hydroxyl, SO_n-alkyl (n=0 to 2) or SO_n-trifluoromethyl (n=0 to 2), alkyl and alkoxy each having 1 to 4 C atoms and alkenyl having 2 to 4 C atoms,

R^1 represents hydrogen or a hydrocarbon radical which has 1 to 18 C atoms and is optionally substituted by 1 to 3 halogen atoms and a hydroxyl, loweralkoxy, or carboxy group and

X represents one of the groups $—CH_2—CH_2—CH_2—$, $—O—CH_2—CH_2—$, $—S—CH_2—CH_2—$, $—CH_2—CH_2—$, $—CH_2—$ or



the oxygen or sulphur atom being bonded to the radical R.

9. A method of treating a patient prophylactically or therapeutically for respiratory tract allergies, asthma, bronchitis, emphysema, shock lung, pulmonary hypertension, an inflammation, inflammatory rheumatism, thromboembolism, ischaemias and infarcts, cardiac arrhythmias, or arteriosclerosis, which comprises administering to such patient an amount effective therefor of a pyrazoledione according to claim 1.

4,659,733

METHOD FOR TREATING HYPERTENSION WITH 2,3-DIAMINO-1,4-BUTANEDITHIOL; 4,5-DIAMINO-1,2-DITHIANE; AND N-ACYL AND N-ALKYL DERIVATIVES THEREOF

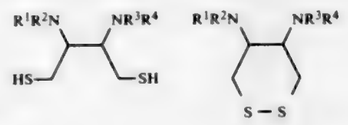
Mark T. DuPriest, Arlington, and Billie M. York, Jr., Fort Worth, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Dec. 6, 1984, Ser. No. 678,833

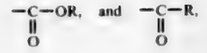
Int. Cl.[4] A61K *31/385, 31/095, 31/13*

U.S. Cl. 514—436 **7 Claims**

1. A method of treating hypertension comprising administering an anti-hypertensive effective amount of a composition which comprises as the active ingredient, a compound selected from the group consisting of:



wherein: R^1, R^2, R^3, and R^4 are independently selected from the group consisting of: H,



and wherein R, R^1, R^2, R^3, and R^4 are selected from the group consisting of substituted and unsubstituted alkyl having 1–6 carbon atoms and phenyl, wherein said alkyl moieties have from 1–4 carbon atoms; and wherein said substituent or substituents are selected from the group consisting of halogen, alkyl having from 1–6 carbon atoms, amino, carboxyl, and hydroxyl; and the pharmaceutically acceptable salts thereof.

4,659,734

OLINECARBOXYLIC ACID DERIVATIVES

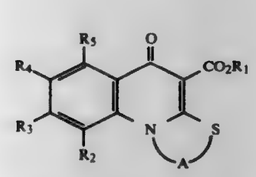
Hiroshi Enomoto, Nagaokakyo; Masahiro Kise, Nakakyo; Masakuni Ozaki, Joyo; Masahiko Kitano, and Iwao Morita, both of Kyoto, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Aug. 15, 1983, Ser. No. 523,329

Int. Cl.[4] A61K *31/495;* **C07D** *417/14*

U.S. Cl. 514—255 **14 Claims**

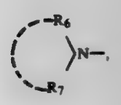
1. A compound of the formula



(I)

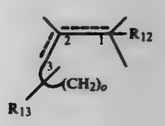
R_1 is hydrogen, alkali metal, alkaline earth metal, lower alkyl, pivaloyloxymethyl or phthalidyl;

R_2, R_3, R_4 and R_5 are the same or different and are hydrogen, halogen, lower alkoxy or



wherein R_6 and R_7 are lower alkyl or R_6 and R_7 together with the nitrogen atom to which they are attached form a five- to seven-membered heterocyclic ring having said nitrogen atom as the sole hetero atom or having nitrogen, sulfur or oxygen as additional hetero atoms, said heterocyclic ring being unsubstituted or substituted by lower alkyl, lower alkenyl, hydroxy(lower alkyl), (lower alkoxy) (hydroxy)lower alkyl, phthalidyl, formyl, acetyl, carboxypropionyl, carboxybutyroyl, palmitoyl or carboxybenzoyl;

A is an unsaturated hydrocarbon chain of one to five carbon atoms, unsubstituted or substituted by lower alkyl; lower alkoxy; lower alkylthio; hydroxy; halogen; lower alkyl substituted by halogen, amino, loweralkoxycarbonyl, carboxy, loweralkoxy, loweralkylthio, loweracyloxy or hydroxy; loweralkylamino; carboxy; nitro; cyano; carbonyl; imino; or by substituted or unsubstituted phenyl, phenylthio, phenylamino or phenoxy; or A is



wherein o is 1 or 2 and the dotted line is a double bond between the depicted 1- and 2- or 2- and 3-positions, R_{12} is not present when said double bond is between 1- and 2-positions or is hydrogen, lower alkyl or phenyl when said double bond is between 2- and 3-positions, and R_{13} is hydrogen, lower alkyl or phenyl; and

R_2 and R_3 or R_3 and R_4 or R_4 and R_5 together may be alkylenedioxy of 1 to 5 carbon atoms which form a ring with the carbon atoms to which they are attached; or a pharmaceutically acceptable salt thereof.

14. A method of treatment of bacterial or fungal infections in mammals, which comprises administering to the sufferer an anti-bacterial or anti-fungal effective amount of the compound according to claim 1.

4,659,735

BENZOFURANYL (THIENYL) PROPENYL DERIVATIVES USEFUL AS RODENTICIDES

Michael Klaus, Rhein, Fed. Rep. of Germany; Peter Loeliger, Muttenz, and Harald Weiser, Hochwald, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

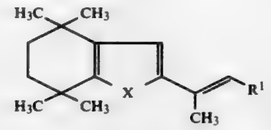
Division of Ser. No. 507,857, Jun. 27, 1983, Pat. No. 4,535,086. This application Apr. 19, 1985, Ser. No. 725,181

Claims priority, application Switzerland, Jul. 6, 1982, 4117/82; May 19, 1983, 2728/83

Int. Cl.[4] A61K *31/348;* **C07D** *333/54*

U.S. Cl. 514—443 **9 Claims**

1. A compound of the formula



wherein X is —O— or —S—; R^1 is a group Ar—R^2; Ar is phenyl, furyl or thienyl; R^2 is a group $—CO_2R^3$, —C(O)R^4, $—CH_2OR^3$, or lower alkylsulphonyl; R^3 is hydrogen or lower alkyl; and R^4 is hydrogen, hydroxy, amino, lower alkylamino, di-(lower alkyl)amino or lower alkyl, or a salt thereof.

4,659,736

BENZOYL UREA COMPOUNDS AS AGENTS FOR REPELLING SNAILS AND SLUGS

Klemens Schlüter, Singapore, Singapore, and Hans-Jürgen Schnorbach, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

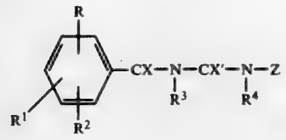
Filed Jan. 11, 1985, Ser. No. 691,089

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1984, 3402074

Int. Cl.[4] A01N *37/02, 37/10, 43/32, 47/28*

U.S. Cl. 514—452 **6 Claims**

1. A method of repelling slugs and snails comprising applying to a plant infested with or to a locus infested with said slugs and snails a repellent amount of at least one benzoyl urea of the formula



in which

R, R^1 and R^2 each independently is hydrogen, alkyl or alkoxy of 1 to 6 carbon atoms or halogen,

R^3 and R^4 each independently is hydrogen, alkyl, alkoxy or alkylthio of 1 to 6 carbon atoms, phenyl, phenoxy, phenylthio, or phenylalkyl, phenylalkoxy or phenylalkylthio having 1 to 4 carbon atoms in the alkyl moiety,

Z is a phenyl, pyridyl, pyridyl-N-oxide, oxazolyl, phenoxyphenyl, pyridyloxyphenyl, phenylazobenzene or phenylpyrimidinyl radical; wherein the radical Z is optionally substituted by at least one of halogen, nitro, cyano, C_1–C_4-alkyl which can be substituted by fluorine or chlorine, C_1–C_4-halogenoalkoxy, C_1–C_4-halogenoalkylthio or $—O—CQ_2—CQ_2—O—$, wherein Q each independently is hydrogen, fluorine or chlorine, and

X and X′ each independently is oxygen or sulphur.

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4,659,737

SUBSTITUTED AMINOMETHYL BENZOPYRANS HAVING ANTI-HYPERTENSIVE ACTIVITIES

Hans-Joachim Kabbe, Leverkusen; Ulrich Niewöhner, Wermelskirchen; Arno Widdig, Odenthal; Andreas Knorr, Wuppertal; Bernward Garthoff, Hilden, and Stanislav Kazda, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 23, 1985, Ser. No. 715,434

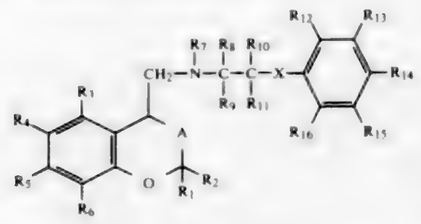
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3411993

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.⁴ A61K *31/355, 31/495;* **C07D** *311/58, 405/46*

U.S. Cl. 514—456 **15 Claims**

1. A substituted benzopyran of the formula



in which

A represents a single bond or double bond,

R_1 and R_2 are identical or different and represent hydrogen, C_1–C_6-alkyl, C_5–C_7-cycloalkyl, phenyl, which can be unsubstituted or monosubstituted or disubstituted by C_1–C_4-alkyl, halogen and/or C_1–C_4-alkoxy, or, C_7–C_9-phenylalkyl, the phenyl radical of which is unsubstituted or monosubstituted or disubstituted by C_1–C_4-alkyl, halogen and/or C_1–C_4-alkoxy, or R_1 and R_2, together with the included C atom of the chroman ring, form a 4- to 7-membered saturated carbocyclic ring;

R_3 to R_6 are identical or different and represent hydrogen, hydroxyl, halogen, C_1–C_6-alkyl, C_5–C_7-cycloalkyl, phenyl, which is unsubstituted or monosubstituted by or disubstituted by C_1–C_4-alkyl, halogen and/or C_1–C_4-alkoxy, or C_7–C_9-phenylalkyl, the phenyl radical of which is unsubstituted or monosubstituted or disubstituted by C_1–C_4-alkyl, halogen and/or C_1–C_4-alkoxy;

R_7, R_8, R_9, R_{10} and R_{11} are identical or different and represent hydrogen or C_1–C_6-alkyl,

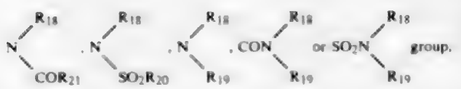
X represents a single bond or methylene which is unsubstituted or monosubstituted or disubstituted by C_1–C_4-alkyl, or represents oxygen or $—NR_{17}$,

wherein

R_{17} represents hydrogen or C_1–C_4-alkyl, or

R_{17} together with R_7 forms a C_2-alkylene bridge,

R_{12}, R_{13}, R_{14}, R_{15} and R_{16} each independently represents hydrogen, hydroxyl, chlorine, fluorine, alkyl having 1–4C atoms, alkoxy having 1 to 3C atoms, phenylalkoxy having up to 8C atoms or trifluoromethyl, and one or two of these substituents each independently represents nitro, cyano or the



wherein

R_{18} and R_{19} are identical or different and each represents hydrogen or alkyl having 1–4C atoms which is unsubstituted or monosubstituted to trisubstituted by halogen,

R_{20} represents alkyl having 1–6C atoms which is unsubstituted or monosubstituted to trisubstituted by halogen, and

R_{21} represents hydrogen, alkyl, alkoxy or alkylamino, each having 1–4C atoms per alkyl and alkoxy group, the alkyl radical being unsubstituted or monosubstituted to trisubstituted by halogen, and

R_{21} and R_{13} or R_{13} and R_{14} together optionally represent an alkylenedioxy group having 1 or 2C atoms or the group $—CH=CH—CH=CH—$, or

R_{18} together with R_{21} are a trimethylene or tetramethylene radical,

or a pharmaceutically acceptable addition salt thereof.

14. A method of lowering the blood pressure of a patient which comprises administering to a patient in need thereof an anti-hypertensive effective amount of a compound or salt according to claim 1.

4,659,738

TOPICAL PROPHYLAXIS AGAINST SCHISTOSOMAL INFECTIONS

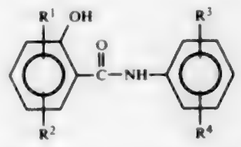
Robert E. Miller, Gaithersburg, and Willis A. Reid, Jr., Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 15, 1985, Ser. No. 702,114

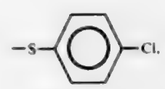
Int. Cl.⁴ A61K *31/21, 31/165*

U.S. Cl. 514—514 **31 Claims**

1. A method for preventing shistosomal infections in an animal exposed to schistosome-infested water which comprises applying to the skin of said animal prior to exposure of the skin to the schistosome-infested water a composition comprising a 2-hydroxy-benzoic anilide selected from the compounds represented by the formula



wherein R^1 is hydrogen, Cl, Br, I or F; R^2 is NO_2, Cl, Br, I or F; R^3 is hydrogen, hydroxy, Cl, Br, I, F, alkyl (having 1 to 3 carbon atoms),



CF_3; and R^4 is NO_2, NCS or R^3 is an amount sufficient to achieve an antipenetrant effect against cercaria of infectious schistosome parasites.

4,659,739

AGRICULTURAL AND HORTICULTURAL GUANIDINE-TYPE FUNGICIDE AND PROCESS FOR PRODUCTION THEREOF

Nobuyuki Yoshioka; Yasuji Okunishi; Yasuhisa Miura, all of Hasaki; Yoshikazu Mori, Sahara; Yasuki Kataoka, Shisui, and Eiichi Adachi, Yokohama, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Feb. 25, 1985, Ser. No. 705,365

Claims priority, application Japan, Feb. 24, 1984, 59-33978

Int. Cl.⁴ C07C *129/16, 133/10;* **A01N** *33/04*

U.S. Cl. 514—555 **8 Claims**

1. An agricultural and horticultural guanidine-type fungicide of low phytotoxicity comprising as an active ingredient an addition salt between a fungicidal guanidine compound and an acid having an oleophilic group with 9 to 25 carbon atoms in total, said fungicidal guanidine compound being at least one compound selected from the group consisting of 1,1'-iminodi(octamethylene)diguanidine, 1,8-diguanidinooctane, 1,12-diguanidinododecane, bis(8-guanidinooctyl)ether, bis(8-guanidinooctyl)thioether, 8-guanidinooctyl-3-guanidinopropyl ether and aliphatic polyamines having a guanidino group introduced thereinto, said acid having an oleophilic group being at least one acid selected from the group consisting of a sulfuric acid monoester, a sulfonic acid, a phosphoric acid monoester and a phosphoric acid diester.

7. A method for protecting agricultural and horticultural plants from the effects of plant disease causing fungi which comprises applying to the plants or to the soil in which the plants grow a fungicidally effective amount of the low phytotoxic fungicide of claim 1.

4,659,740

COSMETIC PREPARATIONS COMPRISING NOVEL ELASTIN DERIVATIVES

Thomas C. Usher, Nassau, The Bahamas, assignor to Polydex Pharmaceuticals Ltd., Nassau, The Bahamas

Filed Feb. 14, 1985, Ser. No. 701,960

Int. Cl.⁴ A61K *7/48;* **C09F** *7/00*

U.S. Cl. 514—773 **10 Claims**

1. A cosmetic preparation for application to the skin which comprises a fatty acid amide of solubilized elastin in which the fatty acid moiety is attached to an N-terminal group of the elastin molecule.

4,659,741

β-[2-(HALOGENOBENZYL)-PHENOXY]-ETHYLAMINE DERIVATIVES

Jean-Yves Lacolle, La Celle St Cloud, and Bernard Dauree, Poissy, both of France, assignors to Institut de Recherches Chimiques et Biologiques Appliquees (I.R.C.E.B.A), Paris, France

Filed Nov. 27, 1984, Ser. No. 675,297

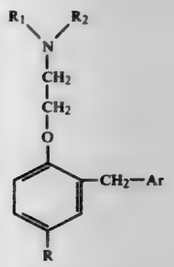
Claims priority, application France, Nov. 29, 1983, 83 19056

Int. Cl.⁴ A61K *31/14;* **C07C** *87/30*

U.S. Cl. 514—643 **11 Claims**

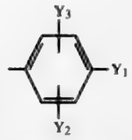
1. A β-[2-(halogenobenzyl)-phenoxy]-ethylamine derivative selected from the group consisting of:

(i) N,N-dialkyl-β-[2-(polychlorobenzyl)-4-alkylphenoxy]-ethylamines of the general formula



(I)

wherein R represents a C_1–C_8-alkyl group having a linear or branched hydrocarbon chain, R_1 and R_2, can be identical or different and each represent a C_1–C_4-alkyl group, and Ar represents a polychlorophenyl group of the formula



(II)

wherein Y_1 is Cl, Y_2 is H or Cl, and Y_3 is H or Cl, and wherein at least one of Y_2 and Y_3 is Cl; and

(ii) addition salts thereof.

11. A therapeutical composition comprising, in association with a physiologically acceptable excipient, a pharmaceutically effective amount of a compound according to claim 1.

4,659,742

PROCESS FOR MANUFACTURING A MIXTURE OF METHANOL AND HIGHER ALCOHOLS FROM SYNTHESIS GAS

Philippe Courty, Houilles; Daniel Durand, Rueil Malmaison; André Sugier, Rueil Malmaison, and Edouard Freund, Rueil Malmaison, all of France, assignors to Institut Francais du Petrol, Rueil-Malmaison, France

Continuation of Ser. No. 478,764, Mar. 25, 1983, abandoned. This application Jul. 1, 1985, Ser. No. 750,240

Claims priority, application France, Mar. 26, 1982, 82 05368

Int. Cl.⁴ C07C *27/06*

U.S. Cl. 518—713 **17 Claims**

1. In a process for manufacturing primary alcohols, comprising reacting carbon oxides, said oxides being CO,CO_2 or a mixture thereof, with hydrogen, in the presence of a multimetallic catalyst, the improvement wherein said catalyst comprises copper, cobalt, aluminum, and at least one alkali or alkaline-earth metal A selected the group consisting of lithium, sodium, potassium, rubidium, cesium, beryllium, magnesium, calcium, strontium, and barium, such that the atomic ratios of said metals are:

Cu/Co=0.1–5, Al/Co=0.7–4, metal A/Co=0.05–1.5;

wherein the proportions by weight of each metal element with respect to the total metals weight are:

copper=10–65%

cobalt=5–50%

aluminum=5–40%

metal A=0.1–15%

and wherein the catalyst has a homogeneity such that the cobalt/aluminum atomic ratio varies less than 15% from the average value of said ratio, determined on a 5 nanometer scale.

4,659,743

PROCESS AND CATALYST FOR CONVERTING SYNTHESIS GAS TO LIQUID HYDROCARBON MIXTURE

V. Udaya S. Rao, Monroeville, and Robert J. Gormley, Pittsburgh, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 310,246, Oct. 9, 1981, abandoned. This application Oct. 18, 1983, Ser. No. 542,558

Int. Cl.⁴ C07C *1/04*

U.S. Cl. 518—715 **7 Claims**

1. A method of converting a major fraction of carbon monoxide within a gas mixture including hydrogen and carbon monoxide to produce an aliphatic hydrocarbon product with less than 10% by weight aromatics, said product having a major proportion by weight of C_5 and higher hydrocarbons in the gasoline boiling point range with a research octane rating of more than 80 comprising

forming a catalyst consisting essentially of a mixture of cobalt, thoria and crystalline zeolite having a silica to alumina ratio of about 25–50 and a pore size of 5 to 6

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angstroms wherein cobalt is included at 6–20%, thoria is included at 0.5–3% and crystalline zeolite is included at 75–93% by weight; and

contacting said catalyst with said gas mixture including hydrogen and carbon monoxide at a temperature essentially of 280° C. at 20–30 atmospheres pressure whereby said aliphatic hydrocarbon is formed.

6. A catalyst for the conversion of a major fraction of hydrogen and carbon monoxide gases at a temperature essentially of 280° C. at 20–30 atmospheres pressure to a liquid aliphatic hydrocarbon product with less than 10% by weight aromatics, said product having a major proportion by weight of C_5 and higher hydrocarbons in the gasoline boiling range with a research octane rating of more than 80, said catalyst consisting essentially of:

a crystalline zeolite molecular sieve having a uniform pore size of about 5–6 angstroms diameter and a silica to alumina ratio of about 25–50;

about 6–20 weight percent cobalt and about 0.5–3 weight percent thoria dispersed throughout about 75–93 weight percent zeolite molecular sieve in physical mixture therewith.

4,659,744

FLUOROCARBON ANION EXCHANGERS AND PROCESSES FOR THEIR PREPARATION

Kiyohide Matsui, Sagamihara; Yoshiyuki Kikuchi, Tokyo; Tsunejiro Hiyama, Sagamihara; Etsuko Tobita, Urawa; Kiyosi Kondo, Yamato; Akira Akimoto, Hohfu; Toru Seita, and Hiroyuki Watanabe, both of Shin-nanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo and Sagami Chemical Research Center, Tokyo, both of, Japan

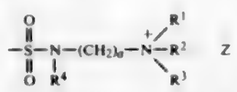
Filed Jun. 25, 1984, Ser. No. 624,029

Claims priority, application Japan, Dec. 28, 1982, 57-227443

Int. Cl.⁴ B01J *41/14*; C08F *8/02*

U.S. Cl. 521—32 **5 Claims**

1. A fluorocarbon anion exchanger which is composed of a fluorocarbon polymer comprising a perfluorocarbon main chain and a pendant chain attached to the main chain, characterized in that the pendant chain has a terminal group represented by the formula:



(I)

where R^1 is a lower alkyl group, an aromatic group or an alkyl group containing quaternary ammonium group(s), R^2 is a lower alkyl group, an aromatic group or a hydroxy-lower alkyl group, or R^1 and R^2 together form a tetramethylene or pentamethylene group, R^3 is a lower alkyl group, R^4 is a hydrogen atom, a lower alkyl group or an alkyl group containing quaternary ammonium group(s), a is an integer of 2 to 5, and Z is a counter ion for the quaternary ammonium ion.

4,659,745

PROCESS FOR PRODUCING MODIFIED STYRENIC POLYMER BEADS FOR HIGH STRENGTH FOAMED ARTICLES

Adolph V. DiGiulio, Wayne, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 802,901, Nov. 29, 1985, Pat. No. 4,622,346. This application Jul. 7, 1986, Ser. No. 882,804

The portion of the term of this patent subsequent to Nov. 11, 2003, has been disclaimed.

Int. Cl.⁴ C08J *9/18*

U.S. Cl. 521—59 **3 Claims**

1. A process for forming expandable styrene polymer beads having a styrene monomer/divinylbenzene copolymer relatively uniformly dispersed throughout the bead for use in producing foamed cups with improved strength and thermal properties comprising:

(a) forming an aqueous suspension of initial styrene polymer beads having a weight average molecular weight of 230,000 to 350,000 with a polydispersity (Mw/Mn) of 2 to 3.1, with the aid of suitable suspending agent system;

said initial styrene polymer beads being selected from the group consisting of polymers of styrene, alpha-methylstyrene, nuclear-methylstyrene, para-tert-butylstyrene, chlorostyrene, dichlorostyrene, mixtures of these, and copolymers of at least 50% styrene and up to 50% of other mono-ethylenically unsaturated monomers copolymerizable therewith;

(b) forming a comonomer solution of styrenic monomer and divinylbenzene; said styrene monomer being selected from the group consisting of styrene, alpha-methylstyrene, nuclear-methylstyrene, para-tert-butylstyrene, monochlorostyrene, dichlorostyrene and mixtures thereof;

(c) forming an emulsion comprising a suitable emulsifier and a portion of said comonomer solution;

(d) adding the emulsion to the styrene polymer bead suspension at 25°–75° C. to allow the comonomers to be absorbed into the beads;

(e) forming a second emulsion comprising a suitable emulsifier, the remaining portion of said comonomer solution, and free-radical-producing catalyst;

(f) adding the second emulsion to the suspension of said beads absorbed with comonomers at 25°–75° C., at a rate such that the rate of absorption of comonomer/catalyst by said beads is at least equivalent to the rate of addition of emulsified comonomer/catalyst solution, then allowing said suspension to stand for 30 minutes to 4 hours, and then raising the temperature to 80°–95° C., and maintaining to suspension at said temperature to polymerize said comonomers; and

(g) heating said suspension at a temperature of 115° C. to about 135° C. to substantially complete the polymerization of said styrene monomer and divinylbenzene to form beads having copolymer relatively uniformly distributed throughout the beads;

(h) cooling the suspension to 105° C. or less;

(i) adding a non-ionic surfactant and 3–12% by weight based on polymer of a blowing agent selected from the group consisting of aliphatic hydrocarbons containing 4 to 6 carbon atoms, halogenated hydrocarbons which boil at a temperature below the softening point of the polymer, and mixtures of these;

(j) heating the suspension at a temperature of from 80°–150° C. to impregnate the polymer beads with blowing agent; and

(k) cooling the suspension to room temperature, acidifying the suspension, and separating the impregnated beads from the aqueous system.

4,659,746

OLEFIN POLYMER FOAMS

Barry Topcik, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 684,687, Dec. 21, 1984. This application Dec. 12, 1985, Ser. No. 806,157

Int. Cl.⁴ C08J *9/10*

U.S. Cl. 521—89 **12 Claims**

1. A foamable composition comprising an olefin polymer, azodicarbonamide, p,p'-oxybis-benzene sulfonyl hydrazide in an amount of about 0.7 to about 3 parts by weight, a monomeric acrylate ester of a polyhydric compound in an amount of about 0.3 to about 2 parts by weight and an organic peroxide in an amount of about 0.5 to about 2 parts by weight wherein the weight is based on olefin polymer content of said composition.

4,659,747

CYCLOHEXANEDIMETHANOL/DIAMINE MIXTURES AS RIM EXTENDERS

Louis M. Alberino, Cheshire; James R. Pritchard, Wallingford, and Nancy P. Vespoli, Guilford, all of Conn., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 15, 1986, Ser. No. 863,621

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—159 **22 Claims**

1. In a polyurethane polyurea polymer prepared by the catalyzed reaction injection molding of an organic polyisocyanate, an optional high molecular weight compound having at least two active hydrogen containing groups, and an extender mixture comprising (i) an aromatic diamine wherein at least one of the positions ortho to each amine group of said diamine is substituted by a lower alkyl group and (ii) a low molecular weight diol, the improvement which comprises employing as said diol a bis (hydroxyalkyl)cycloalkane.

4,659,748

METHOD AND COMPOSITION FOR REPAIRING CEMENTITIOUS SURFACES

Carl E. Boddie, Houston, Tex., assignor to Industrial Polymers, Inc., Houston, Tex.

Filed Dec. 12, 1985, Ser. No. 808,250

Int. Cl.⁴ C08G *18/14*

U.S. Cl. 521—170 **12 Claims**

1. A method for repairing a fault in a cementitious surface, comprising the steps of:

(a) injecting into the fault a reactive composition comprising:

(i) a polyol having reactive hydroxyl groups, and

(ii) a polyisocyanate having reactive isocyanate groups wherein the reactive isocyanate groups are present in the composition in an amount of from about 1% to about 20% in excess of a stoichiometric equivalent amount of the reactive hydroxyl groups, and

(b) allowing the composition to react in the presence of water so as to produce a foamed polymeric matrix.

4,659,749

CASTING MIXTURE COMPRISING CHINA CLAY, SILICA AND AN STYRENE-ACRYLIC COPOLYMER LATEX

Marshall E. Sornik, 8200 Shore Front Pkwy., Rockaway Beach, N.Y. 11693

Filed Aug. 19, 1985, Ser. No. 766,499

Int. Cl.⁴ C08K *3/34*, *3/36*

U.S. Cl. 523—122 **4 Claims**

1. A casting mixture for forming ceramic articles comrising a ceramic slip, said slip being formed with from 30% to 60% by weight china clay, from 5% to 10% by weight silica, and from 30% to 60% by weight water; and in combination therewith an emulsion of a styrene acrylic copolymer latex, said emulsion comprising from 3% to 35% of the mixture by volume.

4,659,750

FLUID LOSS CONTROL IN OIL FIELD CEMENTS

Lawrence P. Sedillo, Houston; John C. Newlove, Kingwood, and Robert C. Portnoy, Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jun. 4, 1985, Ser. No. 741,079

Int. Cl.⁴ C09K *7/00*

U.S. Cl. 523—130 **5 Claims**

1. An aqueous slurry which consists essentially of:

(a) a cement;

(b) about 0.05 to 5.0 wt% of a copolymer of N-vinylpyrrolidone and a salt of styrenesulfonic acid and based on the dry weight of said cement;

(c) about 0.05 to 5.0 wt% of a dispersant of a metal salt of formaldehyde condensed naphthalenesulfonic acid base on the dry weight of said cement the ratio of said copolymer to dispersant ranging from 3:1 to 1:3 by weight; and

(d) water, said cement, said copolymer and said dispersant being dispersed in said water to form said aqueous slurry and said wt% being based on the total weight of said slurry.

4,659,751

SIMPLIFIED METHOD FOR OBTAINED STRONG ADHESIVE BONDING OF COMPOSITES TO DENTIN, ENAMEL AND OTHER SUBSTRATES

Rafael L. Bowen, Gaithersburg, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

Continuation-in-part of Ser. No. 699,079, Feb. 7, 1985, which is a continuation-in-part of Ser. No. 516,956, Jul. 25, 1983, Pat. No. 4,521,550, which is a continuation-in-part of Ser. No. 457,029, Jan. 10, 1983, Pat. No. 4,514,527. This application Feb. 3, 1986, Ser. No. 825,319

Int. Cl.⁴ A10N *1/02*; A65K *3/00*; C09K *3/00*

U.S. Cl. 523—116 **46 Claims**

1. A method for preparing the surface of dentin, enamel, or other natural or industrial substrates containing or capable of binding metallic ions, for adhesion of composite materials or resins, which method comprises:

(a) first contacting with the surface an aqueous solution or solutions comprising (1) at least one strong acid and (2) at least one compound selected from the group consisting of (1) N-phenylglycine, (2) the adduct of N (p-tolyl) glycine and glycidyl methacrylate, (3) the addition reaction product of N-phenylglycine and glycidyl methacrylate, and (4) other amino acids;

(b) then contacting with the surface a solution comprising at least one monomer selected from the group consisting of (1) the addition reaction product of pyromellitic acid dianhydride and 2-hydroxyethyl methacrylate, (2) the addition reaction product of 3,3',4,4'-benzophenonetetracarboxylic dianhydride and 2-hydroxyethyl methacrylate, (3) 4-methacryloxyethyltrimellitic anhydride, and (4) other compounds containing at least one group or moiety capable of free radical polymerization and at least one aromatic ring or moiety containing electron-withdrawing substituents that do not interfere with free radical polymerization.

4,659,752

GLASS FIBER REINFORCED THERMOPLASTICS

Willy H. Piret, Jalhay, Belgium, assignor to Owens-Corning Fiberglas Coporation, Toledo, Ohio

Filed Dec. 20, 1985, Ser. No. 811,211

Int. Cl.⁴ C08K *3/40*

U.S. Cl. 523—206 **13 Claims**

1. A tough, glass fiber reinforced thermoplastic composite consisting essentially of a thermoplastic matrix and coated glass fibers wherein the coating on the glass fibers contains 2 to 6 weight percent of thermoplastic rubber based on the weight of the matrix wherein the thermoplastic rubber is a 40 to 60 weight percent blend of polyethylene and a block copolymer of ethylene and propylene.

4,659,753

SIZING AGENT FOR GLASS FIBERS

Christoph Tiburtius; Anna Marx; Hans-Ulrich Buschhaus, all of Cologne, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 5, 1984, Ser. No. 658,340

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336845

Int. Cl.⁴ C08K *9/00*

U.S. Cl. 523—209 **11 Claims**

1. In an aqueous sizing agent for glass fibers comprising

(a) a film-forming polymer,

(b) a silane or siloxane bonding agent, and
(c) optionally a lubricant, wetting agent and/or other conventional additives,
the improvement which comprises including therein as a cross-linking agent a water-soluble or water-dispersible blocked polyisocyanate and blocked polyisocyanate being prepared from tris-(iscyanatohexyl)-biuret optionally mixed with higher homologues thereof.

4,659,754

DISPERSIONS OF FIBRES IN RUBBER

Douglas C. Edwards, and James A. Crossman, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Nov. 18, 1985, Ser. No. 798,875
Int. Cl.[4] C08J *3/20*
U.S. Cl. 523—214 **23 Claims**

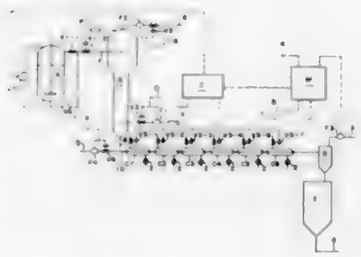
1. A plasticized fibre composition useful for reinforcing polymers, said composition comprising 100 parts by weight of fibrillated fibres selected from the group consisting of cellulose, glass fibres, asbestos, mineral wool, rayon, nylon, polyester, polypropylene and polymeric paraphenylene terephthalamide, and mixtures of two or more of said types of said types of fibres, and from about 80 to about 125 parts by weight of a plasticiser that is liquid at processing temperatures, said plasticizer being compatible with the chosen fibre or fibres and substantially homogeneously dispersed thereon so as effectively to wet the fibre surfaces with the plasticizer.

4,659,755

METHOD OF CONTINUOUSLY OPERATING A COUNTER-FLOW WASHING COLUMN

Tadashi Asanuma; Tatso Oboka, and Yoshiyuki Funakoshi, all of Osaka, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jun. 20, 1985, Ser. No. 746,848
Claims priority, application Japan, Jun. 21, 1984, 59-126496
Int. Cl.[4] C08F *6/24*
U.S. Cl. 523—303 **5 Claims**



1. A method of continuously operating a counter-flow washing column by:
(a) introducing slurry, which consists of solid polymer particles and a diluent and is continuously extracted from a continuous polymerization zone into the upper portion of the counter-flow washing column, said polymerization zone including a last reaction cell just before the counter-flow washing column,
(b) introducing washing liquid into the lower portion of the counter-flow washing column and extracting it from the upper portion of the counter-flow washing column, and
(c) extracting washed slurry from the lower portion of the column and introducing it into a heat tube to separate the vapor of the washing liquid and the solid polymer particles,
the improvement wherein the extraction amount of the washed slurry from the lower portion of the column is controlled by means of:
(i) controlling the quantity of heat added to the heat tube, and further
(ii) separately introducing a liquid into the heat tube and controlling the amount of liquid separately introduced into the heat tube, said control of the extraction amount of the wash slurry by means (i) and (ii) being carried out by monitoring the amount of the slurry in the last reaction cell of the continuous polymerization zone and regulating the amount of extracted slurry in response to fluctuations in the amount of slurry produced in the polymerization zone through said control means (i) and (ii).

4,659,756

FATTY ETHENOID ACYLAMINOORGANOSILICON COMPOUNDS AND THEIR USE IN COMPOSITIONS FOR COATING GLASS

Eric R. Pohl, Thornwood, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 563,980, Dec. 20, 1983, Pat. No. 4,548,842.
This application Aug. 2, 1985, Ser. No. 761,893
Int. Cl.[4] C08L *63/00, 83/00, 72/01*
U.S. Cl. 523—402 **7 Claims**

1. A novel coating composition comprising:
(a) a fatty ethenoid acylaminoorganosilicon compound represented by the formula:

$$Y[N(Y)_xR_{2-c}]_z[N(W)R^1]_y[N(Y)_bR_{2-b}^2]_z(HX)_w \quad (I)$$

wherein R and R^1 are individually selected from the group consisting of divalent alkylene groups containing from two to six carbon atoms inclusive, divalent arylene groups containing from six to twelve carbon atoms inclusive, divalent alkyl substituted arylene groups containing from seven to twenty carbon atoms inclusive, and a divalent group of the formula

$$-\overset{O}{\overset{\|}{C}}R^3-$$

wherein R^3 is a divalent alkylene group containing from two to six carbon atoms inclusive; R^2 is a monovalent alkyl or aryl group containing from one to ten carbon atoms or hydrogen; W is either hydrogen, or

$$-\overset{O}{\overset{\|}{C}}R^4$$

wherein R^4 is a monovalent hydrocarbon group containing from 8 to 24 carbon atoms and containing at least one double bond; Y is selected from the group consisting of hydrogen;

$$-\overset{O}{\overset{\|}{C}}R^4$$

wherein R^4 is as defined above; R^2; and $-R^5Si(OR^6)_{3-a}(R^7)_a$ wherein R^5 is a divalent alkylene group containing from two to six carbon atoms inclusive, R^6 and R^7 are individually a monovalent alkyl or aryl group containing from one to six carbon atoms inclusive; and R^6 may also be a silicon containing moiety wherein the oxygen atom is directly bonded to the silicon atom of the R^6 silicon containing moiety; X is selected from the group consisting of a halogen atom, a hydroxy group, an ester group and an anhydride group and a has a value of zero, one, or two; b has a value of zero, one or two; c has a value of zero or one; x and y have values such that x+y equal one to thirty with the proviso that x is at least one; z is zero or one; w has a value equal to from zero to the sum of x+y+z provided that w does not exceed the total nitrogen atom in free amine form; with the proviso that at least one Y is $-R^5Si(OR^6)_{3-a}(R^7)_a$; and at least one other Y is

$$-\overset{O}{\overset{\|}{C}}R^4;$$

(b) a dispersing agent; and
(c) an organic polymer.

4,659,757

POLYESTER RESIN COMPOSITION FOR FORMING AN IMPACT RESISTANT ARTICLE

Takashi Okamoto, Osaka, and Fumio Ohama, Kyoto, both of Japan, assignors to Unitika Ltd., Japan

Filed Mar. 7, 1986, Ser. No. 836,862
Claims priority, application Japan, Mar. 8, 1985, 60-47008; Apr. 5, 1985, 60-73277; Jun. 11, 1985, 60-126641
Int. Cl.[4] C08L *67/02*
U.S. Cl. 523—436 **18 Claims**

1. A polyester resin composition for forming an impact resistant article comprising from 40 to 97 parts by weight of polyethylene terephthalate and from 3 to 60 parts by weight of at least one polyester selected from
(1) an ethylene terephthalate-based polyester comprising from 5 to 25 wt% of at least one dibasic acid represented by formula (I)

(I)



wherein A and B each represents a hydrogen atom, an alkyl group, or a phenyl group, and n is an integer of not less than 10, and an ester bond-forming derivative thereof,
(2) an ethylene terephthalate-based polyester comprising 3 to 25 wt% of at least one polyalkylene glycol having a molecular weight of from about 500 to 20,000, and
(3) a polyarylate, which composition further contains, per 100 parts by weight of the polyester, (a) from 0.05 to 10 parts by weight of at least one of an inorganic crystal nucleating agent having an average particle diameter of not more than 50 μm, an organic compound containing a metal salt of a carboxyl group, and a polymer compound containing a metal salt of a carboxyl group, (b) from 3 to 30 parts by weight of a modified polyolefin or modified olefin elastomer prepared by adding from 0.001 to 10 mol% of an alicyclic carboxylic acid containing a cis-double bond in the ring or its functional derivative to a polyolefin or olefin elastomer, (c) from 1 to 30 parts by weight of a copolymer comprising from 80 to 99 wt% of an α-olefin, from 1 to 20 wt% of glycidyl methacrylate or glycidyl acrylate, and up to 19 wt% of vinyl acetate, (d) from 0.3 to 10 parts by weight of an ester-based plasticizer, and (e) up to 150 parts by weight of a fibrous reinforcing material.

4,659,758

HEAT STABLE PHENOLIC COMPOSITION

Vincent R. Landi, Danielson, and Bruce B. Fitts, Quinebaug, both of Conn., assignors to Rogers Corporation, Rogers, Conn.

Continuation of Ser. No. 541,957, Oct. 14, 1983, abandoned.
This application Feb. 27, 1986, Ser. No. 834,313
Int. Cl.[4] C08K *3/04, 7/02, 7/14, 7/06*
U.S. Cl. 524—35 **24 Claims**

1. A thermal resistant phenolic molding material consisting essentially of:
thermosetting phenolic resin;
fiber reinforcement material selected from the group consisting of glass, asbestos, carbon, ceramic and cellulose;
rubber compositions which embrittle on heating; and
at least one sulfur donor compound wherein said sulfur donor compound has an effective weight percent of less than about 1.6 weight percent of the total molding material;
said phenolic resin being present in a greater weight percent than said rubber compositions; and
wherein said rubber compositions which embrittle on heating and said sulfur donor compound combine to impart resistance to thermal degradation of said phenolic molding material.

4,659,759

BITUMENOUS COMPOSITIONS

Andre Jevanoff, La Hulpe, Belgium, and Edward N. Kresge, Watchung, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 624,386, Jun. 25, 1984, abandoned.
This application Apr. 9, 1985, Ser. No. 721,191
Claims priority, application United Kingdom, Jun. 28, 1983, 8317540
Int. Cl.[4] C08J *3/04;* **C08L** *23/06, 23/12*
U.S. Cl. 524—68 **17 Claims**

1. A bitumenous composition which comprises bitumen and, dispersed therein in an amount sufficient to modify the bitumen to improve its low temperature and high temperature properties, a modifier comprising a polyolefin component containing polyethylene and polypropylene the ratio of polyethylene to polypropylene being about 40:60 to 60:40, and an elastomeric component, said elastomeric component consisting essentially of an ethylene-propylene copolymer having a broad compositional distribution with regard to its ethylene content, said copolymer being a copolymer having polymeric chains of ethylene content at least 5 wt % absolute greater than the average ethylene content of the copolymer, and polymeric chains of ethylene content at least 5 wt. % absolute less than said average.

4,659,760

POLYMER MIXTURE COMPRISING A POLYPHENYLENE ETHER AND A POLYAMIDE

Roelof van der Meer, AZ Bergen op Zoom, Netherlands, assignor to General Electric Company, Selkirk, N.Y.

Filed May 30, 1985, Ser. No. 739,401
Int. Cl.[4] C08R *5/53;* **C08L** *9/06*
U.S. Cl. 524—141 **7 Claims**

1. A a reaction product of a polymer mixture comprising a polyphenylene ether and a polyamide, characterized in that the polymer mixture comprises the reaction product of the following constituents:
(a) 1–99% by weight of polyphenylene ether,
(b) 99–1% by weight of polyamide, and
(c) 0.01–10% by weight of an oxidized polyolefin wax
based upon the weight of a and b together, the reaction product is prepared by extruding at a temperature of at least 285° C. and at least 200 r.p.m.

4,659,761

ZINC OXIDE IN POLY(ARYLENE SULFIDE) COMPOSITIONS

John E. Leland; James S. Dix, and Robert S. Shue, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 18, 1983, Ser. No. 476,667
Int. Cl.[4] C08K *5/54*
U.S. Cl. 524—262 **31 Claims**

1. A composition for encapsulating an active electronic component comprising:
(i) about 25 to about 45 weight percent poly(arylene sulfide),
(ii) about 0.1 to about 10 weight percent zinc oxide,

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(iii) about 5 to about 30 weight percent reinforcement, and
(iv) about 40 to about 60 weight percent filler; wherein said weight percentages are based upon the total weight of (i), (ii), (iii) and (iv); and wherein the viscosity of said composition does not exceed about 800 poise as tested on a capillary rheometer at 650° F. and at a shear rate of 1000 $(sec)^{-1}$.

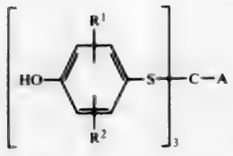
4,659,762

TRIS (SUBSTITUTED HYDROXYPHENYLTHIO) TRITHIOORTHOESTER STABILIZERS FOR POLYMERS

Linda A. Jenkins, Palisades Park, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 25, 1986, Ser. No. 889,044
Int. Cl.⁴ C08K *5/36;* **C07C** *149/36;* **C10M** *135/30*
U.S. Cl. 524—331 **14 Claims**

1. A compound of the formula



wherein

R^1 and R^2 are independently hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenyl, phenyl substituted by alkyl of 1 to 18 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 18 carbon atoms; and

A is hydrogen, alkyl of 1 to 30 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, aryl, aryl substituted by alkyl of 1 to 18 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms.

11. A composition of matter comprising an organic material subject to oxidative, thermal or actinic degradation stabilized with an effective stabilizing amount of a compound of claim 1.

4,659,763

MODIFIED POLYPHENYLENE ETHER-POLYAMIDE COMPOSITIONS

Robert R. Gallucci, Pittsfield, Mass., and Roger W. Avakian, Braschaat, Belgium, assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 6, 1986, Ser. No. 816,468
Int. Cl.⁴ C08K *5/07, 5/08*
U.S. Cl. 524—358 **20 Claims**

1. A novel resin composition comprising (a) one or more polyphenylene ether resins, (b) one or more polyamide resins and (c) one or more quinone compounds and the reaction products thereof, wherein the quinone compound is employed in an amount sufficient to increase the strength or elongation of the composition as compared to an unmodified polyphenylene ether-polyamide blend.

4,659,764

POLYVINYL CHLORIDE RESIN COMPOSITIONS FOR MOLDING

Matsuura Isao, Ibaraki; Masanori Kobayashi, Kobe, and Akira Wakatsuki, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 12, 1986, Ser. No. 840,521
Claims priority, application Japan, Jan. 30, 1984, 59-16594; Oct. 12, 1984, 59-214807
Int. Cl.⁴ C08K *5/09*
U.S. Cl. 524—399 **3 Claims**

1. In a powder resin composition for powder molding which comprises a dry-blended mixture of a polyvinyl chloride resin, a plasticizer, a stabilizer, a pigment and a filler, the improvement wherein the composition comprises a stabilizer mixture represented by the formula:

$$(RCOO)_2Me$$

wherein R represents a C_5–C_8 alkyl group and Me represents a mixture of barium and zinc in a metal weight ratio of 1:2 to 5:1 and at least one inorganic magnesium compound selected from the group consisting of magnesium oxide, magnesium hydroxide, magnesium phosphate, magnesium perchlorate, basic magnesium carbonate and inorganic magnesium/aluminum compounds, the amounts of said stabilizer mixture and said magnesium compound being 0.1–10 parts by weight and 0.1–5 parts by weight, respectively, based on 100 parts by weight of the polyvinyl chloride resin.

4,659,765

ELASTOMERIC COMPOSITIONS

Nan-I Liu, and Russell J. McCready, both of Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 19, 1985, Ser. No. 702,546
Int. Cl.⁴ C08L *67/02, 79/08*
U.S. Cl. 524—447 **29 Claims**

1. A thermoplastic molding composition comprising an admixture of

(A) one or more thermoplastic elastomeric polymers characterized as having ether, ester and imide linkages and wherein the ether linkages are present as high molecular weight polyoxyalkylene or copolyoxyalkylene units derived from long chain ether diamines,

(B) one or more high molecular weight thermoplastic polyesters, and

(C) one or more homopolymer or copolymer modifier resins having as a major constituent units derived from one or more monomers selected from the group consisting of vinyl aromatics, esters of acrylic and alkyl acrylic acids and conjugated dienes.

23. The composition of claim 1 which further comprises up to 50% by weight, based on the total composition, of clay.

24. The composition of claim 23 wherein the clay is a Kaolin clay which has been treated with a sizing or coupling agent.

4,659,766

GRAFT COPOLYMER - PLASTICIZED PVC BLENDS AS THERMOPLASTIC ELASTOMERS

John C. Falk, Northbrook, and Leland B. Kliever, Naperville, both of Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Dec. 19, 1983, Ser. No. 562,890
Int. Cl.⁴ C08L *51/00*
U.S. Cl. 524—504 **4 Claims**

1. A thermoplastic elastomer composition comprising:

(a) from 70 to 30 parts by weight of a high rubber graft copolymer;

(b) from 30 to 70 parts by weight of a PVC resin; and

(c) from 45 to 65 parts by weight of a plasticizer for PVC resins.

4,659,767

IMPACT MODIFIED POLYESTER BLENDS

Steven R. Dunkle, Flanders, and Charles D. Mason, Chatham, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 10, 1985, Ser. No. 690,290
Int. Cl.⁴ C08L *67/02*
U.S. Cl. 524—504 **20 Claims**

1. An impact modified linear saturated polyester blend comprising: polymers consisting essentially of;

(A) from about 50 to about 86 percent by weight based upon the total polymer weight of the blend of a linear saturated polyester; and

(B) from about 14 to about 50 percent by weight based upon the total polymer weight of an impact modifying amount of a combination of

(1) from about 10 to about 46 percent based upon the total polymer weight of the blend of an acrylate-containing core-shell polymer having an elastomeric core and a rigid thermoplastic shell; and

(2) from 4 to about 8 percent by weight based upon the total polymer of a copolymer of an alpha-olefin having 2 to 8 carbon atoms and a monomer selected from an unsaturated carboxylic acid having 3 to 8 carbon atoms and salts and anhydrides thereof; the ASTM D-256 notched Izod impact value of said blend being greater than that of a blend having either the core-shell polymer or the alpha-olefin copolymer alone in the same amount as said combination.

4,659,768

THERMOSETTING FLUOROCARBON POLYMER COATINGS

Anthony J. Tortorello, Des Plaines, and Clark A. Higginbotham, Crystal Lake, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Feb. 3, 1986, Ser. No. 825,593
Int. Cl.⁴ C08L *61/00*
U.S. Cl. 524—512 **12 Claims**

1. A thermosetting solvent solution coating composition comprising volatile organic solvent having dissolved therein at least about 45% of a fluorocarbon polymer together with at least about 10% of an hydroxy-functional organic soluble copolymer of from 3% to 8% of 2-hydroxyethyl acrylate, balance consisting essentially of nonreactive monoethylenically unsaturated monomers, and an aminoplast curing agent in an amount to cure said hydroxy-functional copolymer, said proportions being by weight based on the total weight of resin solids.

4,659,769

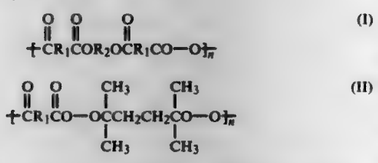
PROCESS FOR PREPARING A NON-AQUEOUS LIQUID DISPERSION OF POLYMER MADE WITH A POLYMERIC PEROXIDE

Hiroshi Ohmura, Aichi, and Masaharu Nakayama, Nagoya, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 221,162, Dec. 29, 1980, abandoned. This application Feb. 9, 1983, Ser. No. 465,074
Claims priority, application Japan, Dec. 28, 1979, 54-170248; Dec. 28, 1979, 54-170249
Int. Cl.⁴ C08F *293/00, 4/38, 4/36, 299/00*
U.S. Cl. 524—529 **5 Claims**

1. A method for producing a non-aqueous liquid dispersion of polymers which consists essentially of the steps of:

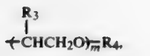
(a) copolymerizing (i) one or more polymeric peroxides selected from the group consisting of the compounds having the formulas I and II,



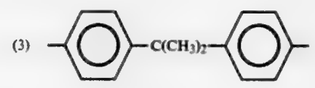
(I)

(II)

wherein R_1 is a C_1–C_{18} alkylene or substituted alkylene group, a C_3–C_{15} cycloalkylene or substituted cycloalkylene group, a phenylene or substituted phenylene group, R_2 is (1) a C_2–C_{10} alkylene group or substituted alkylene group, (2) a group having the formula of

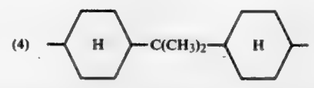


wherein R_3 is hydrogen or methyl, m is an integer of 1 to 13, and R_4 is alkylene,



(3)

or



(4)

and n is from 2 to 20, with (ii) a first vinyl monomer component consisting of one or more, first, vinyl monomers, wherein (i) and (ii) are dissolved in an organic liquid A, thereby obtaining a solution of a copolymer having peroxy bonds therein dissolved in said organic liquid A,

(b) then adding (iii) a second vinyl monomer component consisting of one or more, second, vinyl monomers which are different from said first vinyl monomers or a mixture of said second vinyl monomer component and said organic liquid A into said solution of said copolymer having peroxy bonds therein and subjecting the resultant mixture to block copolymerization, in the absence of an organic liquid B and an organic liquid C, under solution polymerization conditions, effective to obtain a solution of a block copolymer dissolved in said organic liquid A, said block copolymer consisting essentially of polymer blocks of said first vinyl monomer component and polymer blocks of said second vinyl monomer component, and

(c) then admixing said organic liquid B or said organic liquid C to said solution of said block copolymer in said organic liquid A, or to said block copolymer which has been prepared by removing said organic liquid A from said solution of said block copolymer, so as to insolubilize a part of said block copolymer whereby to obtain said dispersion;

with the provisos that said organic liquid A is a solvent for said copolymer having peroxy bonds therein and for said block copolymer, said organic liquid B is a non-solvent for polymer blocks consisting of units of said first vinyl monomer component but is a solvent for polymer blocks consisting of units of said second vinyl monomer component, and said organic liquid C is a solvent for polymer blocks consisting of units of said first vinyl monomer component but is a non-solvent for polymer blocks consisting of units of said second vinyl monomer component.

4,659,770

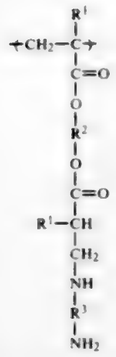
COATING COMPOSITION OF AN AMINE POLYMER AND A BLOCKED POLYISOCYANATE

Joseph A. Vasta, Wilmington, Del., assignor to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 3, 1986, Ser. No. 825,472
Int. Cl.⁴ C08L *33/26, 33/14, 25/14*
U.S. Cl. 524—553 **13 Claims**

1. A coating composition comprising about 10–80% by weight of a binder and 20–90% by weight of an organic carrier; wherein the binder consists essentially of

A. 30–90% by weight, based on the weight of the binder, of an amine polymer consisting essentially of polymerized ethylenically unsaturated monomers and polymerized constituent of the formula:



where R^1 is H, or CH_3, R^2 is an aliphatic group and R^3 is a cycloaliphatic group; wherein the polymer has a weight average molecular weight of about 2,000 to 50,000; and

B. 10–70% by weight of a blocked organic polyisocyanate.

4,659,771

POLYACRYLATE DISPERSIONS

Daniel H. Craig, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 768,283, Aug. 22, 1985, abandoned. This application Jan. 23, 1986, Ser. No. 880,932

Int. Cl.[4] C08L *33/08, 33/10, 93/04*

U.S. Cl. 524—700 **20 Claims**

1. A process for preparing an acrylic polymer latex by the aqueous emulsion polymerization of an acrylic ester, a methacrylic ester or mixtures thereof, and, optionally, a minor amount of a comonomer, in the presence of a protective colloid and a polymerization initiator, wherein the improvement comprises conducting the polymerization in the presence of from about 0.1% to 5%, by weight of the total monomer, of a substantially completely water-soluble conjugated unsaturated monomer.

4,659,772

NOVEL POLYMER/POLYOLS AND USES THEREOF

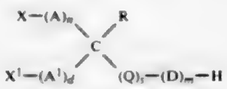
Kenneth L. Hoy, St. Albans, and Glenn A. Taylor, S. Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 536,315, Sep. 27, 1983, Pat. No. 4,581,470. This application Dec. 12, 1985, Ser. No. 808,260

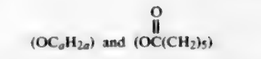
Int. Cl.[4] C08L *25/12*

U.S. Cl. 524—755 **12 Claims**

1. A normally liquid, stable polymer/polyol composition formed by polymerizing in the presence of a free radical catalyst, (1) from about 10 to about 50 weight percent of at least one ethylenically unsaturated monomer dissolved or dispersed in (2) from about 50 to about 90 weight percent of a polyol having the general formula:



wherein A and A^1 are individually connective atoms which may be the same or different and are selected from the group consisting of carbon and oxygen or combinations thereof; C is a carbon atom; Q is a member selected from the group consisting of O, CH_2O, C_2H_4O, C_3H_6O and C_4H_8O; D is a member selected from the group consisting of,



where a has a value of one to four; H is hydrogen; R is selected from the group consisting of hydrogen, alkyl and aryl; X and X^1 may be the same or different and are individually selected from the group consisting of OH, NHR and H, X and X^1 being selected such that the combination of X and X^1 and their respective adjacent atomic units A and A^1 provide a functional group reactive with an isocyanate radical; n and d are individually intergers of 0 to 10 of which the sum of n and d is at least 1 and does not exceed 10; s is either 0 or 1; and m is an integer of at least about 16.

4,659,773

PROCESS FOR PREPARING AMIDOALKANESULFONIC ACIDS POLYMERS

Hiroshi Itoh; Atsuhiko Nitta, both of Yokohama, and Hideo Kamio, Odawara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

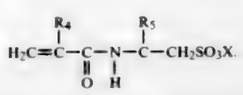
Division of Ser. No. 582,574, filed as PCT JP83/00201, Jun. 22, 1983, published as WO84/00165, Jan. 19, 1984, abandoned. This application Aug. 23, 1985, Ser. No. 755,780

Claims priority, application Japan, Jun. 24, 1982, 57-107538

Int. Cl.[4] C08F *28/02*

U.S. Cl. 524—817 **2 Claims**

1. A process for preparing a copolymer emulsion which comprises copolymerizing at least one monomer having a radical-polymerizable unsaturated bond with an unsaturated amido- and phenyl-substituted alkanesulfonic acid salt of general formula



wherein R_4 and R_5 are each hydrogen or alkyl group having 1 to 4 carbon atoms and X is an alkali metal, alkaline earth metal or ammonium ion, in an aqueous medium which does not contain an emulsifying agent, to produce a copolymer insoluble in water when used in combination with said unsaturated amido- and phenyl-substituted alkanesulfonic acid; wherein at least one of said monomers is a hydrophobic monomer, and the amount of said unsaturated amido- and phenyl-substituted alkanesulfonic acid salt is about 0.1 to about 20 percent by weight based on the weight of said monomer having a radical-polymerizable unsaturated bond.

4,659,774

SUPPORT FOR SOLID-PHASE OLIGONUCLEOTIDE SYNTHESIS

Thomas R. Webb, Belmount, Calif., and Chien-Pin S. Hsu, King of Prussia, Pa., assignors to American Hoechst Corporation, Somerville, N.J.

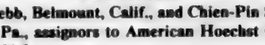
Filed Nov. 1, 1985, Ser. No. 794,016

Int. Cl.[4] C08F *8/32;* **C07H** *21/02*

U.S. Cl. 525—54.2 **22 Claims**

1. A polymer support/nucleoside-linker composite having the general formula

wherein P' is a polymer support which bears oxirane, aziridine or episulfide groups; S' is a nucleoside-linker having the general formula



wherein W and Z each independently comprise a nucleophile selected from the group consisting of amine, alcohol and thio

groups; X and Y, which independently may or may not be present, comprise groups of high hydrophilicity; and a, b, c are integers from 0 to 9, where a plus b plus c exceeds 6; wherein P' is conjugated through a carbon thereof to S' by means of a covalent bond with either of said nucleophile W or Z.

4,659,775

PROCESS FOR THE PREPARATION OF PYRROLO[3,4-c]PYRROLES, AND NOVEL PYRROLO[3,4-c]PYRROLES

Johannes Pfeninger, Marly; Abul Iqbal, Ettingen; Alain C. Rochat, Fribourg, and Olof Wallquist, Marly, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 1, 1985, Ser. No. 793,866

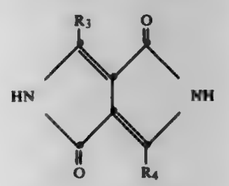
Claims priority, application Switzerland, Nov. 7, 1984, 5336/84

Int. Cl.[4] C08K *5/34*

U.S. Cl. 524—92 **8 Claims**

1. A method for the mass coloration of organic material of high molecular weight which comprises

incorporating in said organic material an effective coloring amount of a compound of formula (8)



(8)

wherein

R_3 is an alkyl, aralkyl or ortho-substituted isocyclic or heterocyclic aromatic radical, and

R_4 is an alkyl, aralkyl or isocyclic or heterocyclic aromatic radical.

4,659,776

PHYSICALLY-AMELIORATED STYRENE POLYMER/THERMOPLASTIC ELASTOMER POLYBLENDS

Robert J. Russell, Westerville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 605,755, May 1, 1984, abandoned, which is a continuation-in-part of Ser. No. 377,283, May 12, 1982, abandoned, which is a continuation of Ser. No. 99,177, Nov. 30, 1979, Pat. No. 4,371,663. This application Apr. 15, 1985, Ser. No. 723,384

Int. Cl.[4] C08L *53/00*

U.S. Cl. 525—95 **4 Claims**

1. A polyblend thermoplastic composition having outstanding environmental stress crack resistance, the composition comprising the cross-linked reaction product of an intimate admixture of:

(a) a styrene polymer containing polymerized therein at least about 60 percent by weight, of at least one alkenyl aromatic monomer of the Formula



(I)

wherein G is selected from the group consisting of hydrogen and methyl and Ar is an aromatic radical, selected from the group consisting of benzene, alkyl, and halo-ring-substituted aromatic units of from 6 to about 10 carbon atoms, with any balance of unsaturated material copolymerized with the Formula (I) monomer in said styrene polymer being at least one other ethylenically unsaturated material that is copolymerizable with styrene; and

(b) a thermoplastic rubber elastomer cross-linkable, sulphur vulcanizable block copolymer which is comprised of:

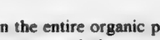
at least one elastomer block of synthetic rubber connected to

at least one styrene polymer block, the styrene polymer of said block being hereinbefore defined;

said thermoplastic rubbery elastomer block copolymer being comprised of at least about 20 weight percent of said elastomer block with the balance being said styrene polymer block;

the styrene polymer and the elastomer block copolymer together containing at least about 40 weight percent of the styrene polymer therein with the balance being said thermoplastic elastomer block copolymer;

(c) between about 50 and about 1,000 parts per million by weight based on total polyblend composition weight of a thermally-activatable, peroxy oxygen-containing organic peroxide which is miscible in and with said styrene polymer and block copolymer which has in its general structure at least one of the characterizing linkage units of the Formula:



(III)

wherein the entire organic peroxide contains from 2 to about 30 carbon atoms in its general structure and is thermally decomposable at a temperature in the range that is greater than about 100° C. less than that at which thermal degradation of the involved styrene polymer block copolymer occurs, the peroxy oxygen containing organic peroxide being present in a cross-link promoting effectively reactive quantity

(d) at least one material that is inter-reactive with the rubber elastomer constituent in said styrene polymer block copolymer polyblends under influence of said peroxide, which material is selected from the group consisting of:

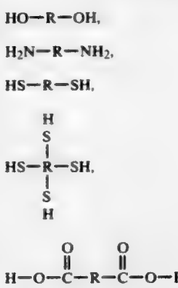
(d.1) at least one member selected from the group consisting of sterically-hindered and decomposable-type compounds of the general Formula:



(IV)

wherein each Z is an independently-chosen radical containing from 1 to about 12 carbon atoms selected from the group consisting of alkyl, cycloalkyl and aryl; and each X is independently selected from the group consisting of fluoro-, chloro-, bromo-, iodo-, methyl, cyclohexyl and phenyl, incorporated in the polyblend in an amount between about 100 and about 5,000 ppm;

(d.2) at least one member selected from the group consisting of a polyol, diamine, dithiol, tetrathiol and dicarboxylic acid of the general Formulae:



(V-A)

(V-B)

(V-C)

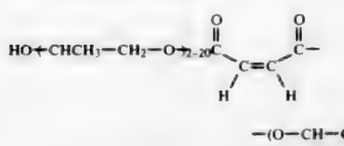
(V-D)

(V-E)

wherein the formulas V-A, V-B, V-C and V-E, R is a divalent radical having from one to about 20 carbons selected from the group consisting of alkylene, substituted alkylene, cycloalkylene, substituted cycloalkyl-

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ene, divalent aromatic and substituted divalent aromatic and for formula V-D, R is a tetravalent radical having from one to about 20 carbons selected from the group consisting of alkanetetryl, substituted alkanetetryl, cycloalkanetetryl, substituted cycloalkanetetryl, arenetetryl, and substituted arenetetryl; and a polyalkylene oxide dicarboxylate capable of forming a cross-linked network when polymerized with a monomer of Formula (I), via a transesterification mechanism, including those of the formula:



(V-F)

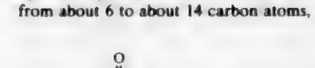
$$HO\text{+}CHCH_3—CH_2—O\text{+}_{2\text{-}20}C(=O)—C(H)=C(H)—C(=O)—O\text{+}CHCH_3—CH_2—O\text{+}_{2\text{-}20}OH$$

which are incorporated in said polyblend composition in an amount between about 100 and about 5,000 ppm;

(d.3) at least one member selected from the group consisting of hydroxy alkyl esters of polyalkylene oxide fumarates, maleates and succineates which form cross-linked networks when polymerized with Formula (I) monomer via a transesterification mechanism, compounds of the general Formulae:

$$L—B—L \quad \text{(VI-A)}$$

wherein each L is independently selected from the group consisting of vinyl, isopropenyl and allyl and B is a divalent aromatic nucleus, including alkyl-, cycloalkyl- and aryl-substituted derivatives thereof, containing from about 6 to about 14 carbon atoms,



(VI-B)

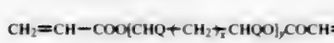
$$HC_2\equiv C—Q—\overset{O}{\overset{\|}{C}}—O—Q—O—Q—C\equiv CH_2.$$

(VI-C)

$$H_2C\equiv C—Q—OQ—Q—C\equiv CH_2.$$

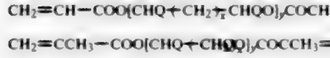
wherein each Q is independently selected from the group consisting of divalent aliphatic, cycloaliphatic and aromatic groups having up to 12 carbon atoms,

diacrylates, dimethylacrylates, dimaleates and difumarates of the Formulae:



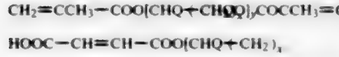
(VI-D)

$$CH_2\equiv CH—COO\text{+}CHQ—CH_2\text{+}_xCHQO\text{+}_yCOCH\equiv CH_2.$$



(VI-E)

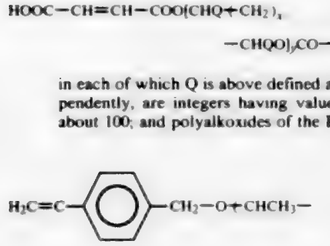
$$CH_2\equiv CCH_3—COO\text{+}CHQ—CH_2O\text{+}_yCOCCH_3\equiv CH_2.$$



$$HOOC—CH\equiv CH—COO\text{+}CHQ—CH_2\text{+}_x$$

$$—CHQO\text{+}_yCO—CH\equiv CH—COOH$$

in each of which Q is above defined and X and y, independently, are integers having values between 1 and about 100; and polyalkoxides of the Formula:



(VI-G)

$$H_2C\equiv C—\text{[C6H4]}—CH_2—O\text{+}CHCH_3—$$

$$—CH_2—O\text{+}_xCH_2—\text{[C6H4]}—C\equiv CH_2.$$

in which x is an integer as above defined, and incorporated in said polyblend composition in an amount between about 0.5 and about 3 weight percent.

4,659,777

POLYSILOXANE/POLY(OXAZOLINE) COPOLYMERS

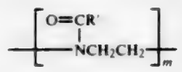
Judy S. Riffle, and Iskender Yilgor, both of Oakland, Calif., assignors to Thoratec Laboratories Corp., Berkeley, Calif.

Filed Nov. 27, 1985, Ser. No. 802,753

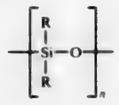
Int. Cl.⁴ C08F 8/00

U.S. Cl. 525—100 **14 Claims**

1. A block copolymer comprising blocks of the formula



and blocks of the formula



wherein R is alkyl of 1 to 4 carbon atoms, fluoroalkyl of 1 to 4 carbon atoms or aryl of 5 to 10 carbon atoms; R′ is hydrogen, alkyl of 1 to 4 carbon atoms or aryl of 5 to 10 carbon atoms; and n and m are independently 1 to about 200.

4,659,778

NARROW MOLECULAR WEIGHT POLYESTER OLIGOMERS AND METHOD OF PREPARATION

Roy C. Williams, Orchard Park, N.Y., assignor to NL Chemicals, Inc., Houston, Tex.

Filed Apr. 21, 1986, Ser. No. 854,105

Int. Cl.⁴ C08F 8/00; C08L 63/00

U.S. Cl. 525—107 **17 Claims**

1. A polyester composition having an average molecular weight of greater than 500 comprising a most prevalent compound having a main polyester chain containing at least 17 and fewer than 52 carbon atoms and at least 6 and fewer than 18 oxygen atoms, at least 52 weight percent of the molecules of said composition having a molecular weight within 50% of the average molecular weight of the composition; less than 40 weight percent of the molecules of the composition having a molecular weight greater than 150% of the average molecular weight of the composition and less than 8 weight percent of the molecules of the composition having a molecular weight less than 50% of the average molecular weight of the composition, said polyester composition containing at least 1.6 equivalents of unreacted hydroxy groups or at least 1.6 equivalents of unreacted carboxy groups per mole and said composition containing at least four equivalents of ester links in the main chains of the molecules per mole of composition, said composition containing side groups selected from hydrogen and halogenated and unhalogenated groups attached to the main chain through a carbon atom, each of said unhalogenated side groups containing no more than six carbon atoms and no more than one oxygen atom and each of said halogenated side groups containing no more than nine carbon atoms provided that, the main chains of the molecules of such compositions having an average molecular weight of 620 or less, pass through at least two equivalents of aromatic groups per mole of composition.

7. A method for manufacturing the composition of claim 1 which comprises the steps of:

(a) essentially completely reacting a compound A with a compound B;

(b) essentially completely reacting the reaction product of step (a) with a compound C; and

(c) repeating step (b) as often as required to obtain the desired main chain length, molecular weight and properties, substituting the reaction product from the previous step (b) for the reaction product of step (a);

wherein A is a diol or triol of from 2 to 10 carbon atoms or a dicarboxylic or tricarboxylic acid of from 4 to 10 carbon atoms; B is an anhydride of up to 10 carbon atoms or an oxirane of up to 10 carbon atoms, provided that when A is a diol or triol, B is an anhydride and when A is a carboxylic acid, B is an oxirane; C is an anhydride or up to 10 carbon atoms or an oxirane of up to 10 carbon atoms provided that when the reaction product of the previous step is hydroxy terminated, C is an anhydride and when the reaction product of the previous step is carboxy terminated, C is an oxirane.

4,659,779

SOLID SOLUTION OF AMINE AND POLYMERIZED PHENOL AS EPOXY RESIN CURE ACCELERATOR

Madan M. Bagga, and Christopher H. Bull, both of Trumpington, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 2, 1986, Ser. No. 847,371

Claims priority, application United Kingdom, Apr. 2, 1985, 8508628

Int. Cl.⁴ C08G 59/26, 59/68

U.S. Cl. 525—118 **11 Claims**

1. A curable composition comprising

(a) an epoxide resin

(b) an effective amount of a nitrogen-containing latent curing agent for the epoxide resin and

(c) as cure accelerator dispersed as a powder in a mixture of (a) and (b), an effective amount of a solid solution of a nitrogen base having a boiling point above 130° C. and a phenolic polymer which is an addition polymer of a phenol bearing an unsaturated substituent.

4,659,780

ACRYLOURETHANE REACTION PRODUCT

Andrew P. Stamegna, Wilmington, Del., and Clifford H. Strolle, Springfield, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 18, 1985, Ser. No. 712,768

Int. Cl.⁴ C08F 265/02

U.S. Cl. 525—131 **9 Claims**

1. The ungelled reaction product, by weight based on total polymer solids, of

(a) 50–70% of an acrylic prepolymer having a number average molecular weight of 2,000–10,000 and an average of 5–15, hydroxyl groups per chain said prepolymer comprising the following monomers in percent by weight based on the prepolymer:

40–60% of one or more of butyl methacrylate or butyl acrylate

10–30% lauryl methacrylate

20–40% of one or more of hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl acrylate or hydroxypropyl methacrylate, and

0–30% of one or more of styrene, methyl methacrylate and ethylmethacrylate,

(b) 20–35% of at least one of a monomeric diol and an oligomeric diol having a number average molecular weight of 200–2,000,

(c) 5–15% of an aliphatic or aromatic diisocyanate, and

(d) 1.0–4.0% of a monofunctional alcohol, said reaction being performed by first forming the acrylic prepolymer of (a) then mixing with (a) the diol of (b) and the alcohol of (d), then mixing therewith the diisocyanate of (c).

4,659,781

REACTIVE ACRYLIC OLIGOMER, GRAFTED ACRYLIC RESINOUS COMPOSITION BASED ON SAID OLIGOMER AND COATING COMPOSITION CONTAINING THE SAME

Yoshitaka Okude, and Eiji Itoh, both of Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed May 18, 1984, Ser. No. 612,019

Claims priority, application Japan, May 19, 1983, 58-88960; May 19, 1983, 58-88961; May 24, 1983, 58-91930

Int. Cl.⁴ C08F 271/02, 291/12, 265/04

U.S. Cl. 525—279 **3 Claims**

1. A resinous composition of an acrylic graft copolymer having backbone chain and basic grafted chains obtained by the process which comprises polymerizing at least one α,β-ethylenically unsaturated monomer having no oxirane and carboxyl groups, at least 30% of said monomers being basic monomers selected from the group consisting of amino acrylates or methacrylates and vinyl pyridines, in an organic solvent in the absence of a chain transfer agent and in the presence of solubilized azo initiator having carboxyl group and a tertiary amine, to obtain an end carboxyl bearing basic acrylic oligomer, reacting the thus obtained oligomer with a compound having one α,β-ethylenically unsaturated bonding and an oxirane ring to obtain a reactive basic acrylic oligomer, and copolymerizing the same with at least one α,β-ethylenically unsaturated monomer which will constitute the backbone chain, through radical polymerization.

4,659,782

ACRYLIC STAR POLYMERS CONTAINING SINGLE-AND MULTI-FUNCTIONAL MONOMERS IN THE CORE

Harry J. Spinelli, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 627,913, Jul. 5, 1984, abandoned. This application Sep. 3, 1985, Ser. No. 771,682

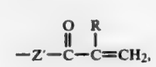
Int. Cl.⁴ C08F 265/06

U.S. Cl. 525—293 **14 Claims**

1. An acrylic star polymer comprising

a. a crosslinked core comprising a polymer derived from a mixture comprising

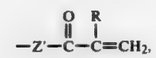
i. from a small but effective amount for the purpose of decreasing the crosslink density in the core to 99% by weight of one or more monomers, each having one group



$$—Z'—\overset{O}{\overset{\|}{C}}—\overset{R}{\overset{|}{C}}=CH_2,$$

and

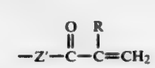
ii. the balance one or more monomers, each having at least two groups,



$$—Z'—\overset{O}{\overset{\|}{C}}—\overset{R}{\overset{|}{C}}=CH_2,$$

and

b. attached to the core, at least 5 arms comprising polymer chains derived from one or more monomers, each having one group,



$$—Z'—\overset{O}{\overset{\|}{C}}—\overset{R}{\overset{|}{C}}=CH_2$$

in each of which R is the same or different and is H, CH_3, CH_3CH_2, CN or CO_2R' and Z′ is O or NR′, wherein R′ is $C_{1\text{-}4}$ alkyl, wherein:

at least 50% of the molecules of such star polymers have at least from 5 to 2,000,000 arms,
such arms being of 1 or more types, wherein:
i. the polymer chains comprising one of the types of arms have the same or different molecular weight and are derived from the same or different monomers as the polymer chains comprising the others of said types of arms, and
ii. the polymer chains comprising each type of arms have an arm polydispersity of 1.0 to 2.0, where said arm polydispersity is the weight average molecular weight divided by the number average molecular weight of the polymer chains of that type, and,
said star polymers, comprising both core and arms of 1 or more types, have a molecular polydispersity of 1.0 to 2.0, wherein said molecular polydispersity is the weight average molecular weight divided by the number average molecular weight of the molecules.

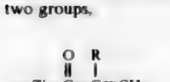
4,659,783

ACRYLIC STAR POLYMERS CONTAINING MULTIFUNCTIONAL MONOMERS IN THE CORE

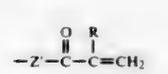
Harry J. Spinelli, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 627,913, Jul. 5, 1984, abandoned. This application Sep. 3, 1985, Ser. No. 771,683
Int. Cl.⁴ C08F 265/06
U.S. Cl. 525—293 **6 Claims**

1. A soluble acrylic star polymer comprising
(a) a crosslinked core consisting essentially of a polymer derived from one or more monomers, each having at least two groups,



and
(b) attached to the core, at least 5 arms comprising polymer chains derived from one or more monomers, each having one group.



in each of which R is the same or different and is H, CH_3, CH_3CH_2, CN or CO_2R' and Z' is O or NR', wherein R' is C_{1-4} alkyl, wherein:
at least 50% of the molecules of such star polymers have at least from 5 to 2,000,000 arms, wherein the ratio of the number of arms to the number of difunctional acrylic repeat units in the core is less than or equal to 1:1, and
(c) wherein the soluble is defined as that nothing separates out from a solution of 1% weight of the star polymer in 99% solvent of toluene, glyme or tetrahydrofuran upon centrifuging at 17,000 rpm for 30 minutes.

4,659,784

BLOCK COPOLYMERS OF N,N-DISUBSTITUTED ACRYLAMIDES

David Y. Chung, Edison, N.J., and Lu H. Tung, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 502,399, Jun. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 353,723, Mar. 1, 1982, abandoned. This application Jun. 27, 1986, Ser. No. 879,838
Int. Cl.⁴ C08F 297/02
U.S. Cl. 525—294 **8 Claims**

1. A block copolymer, having the configuration ABA wherein the A blocks are individually selected from the group consisting of random copolymers of an N,N-disubstituted acrylamide with a member selected from the group consisting of styrene, vinyltoluene, tertiary-butylstyrene and mixtures thereof, and block copolymers of the configuration DE-wherein D is a block of poly N,N-disubstituted acrylamide and E is a block of a polymer of styrene, vinyltoluene, tertiary-butylstyrene or a mixture thereof, with the further limitation that the ratio of N,N-disubstituted acrylamide to a member selected from the group consisting of styrene, vinyltoluene, tertiary-butylstyrene and mixtures thereof in such random copolymers of block copolymers is from about 1:99 to 99:1; B is a block polymer of 1,3-butadiene, isoprene, or a mixture of 1,3-butadiene or isoprene and from 0–15 percent by weight based on the weight of the B block of a member selected from the group consisting of styrene, vinyltoluene, tertiary-butylstyrene and mixtures thereof, the ABA block copolymer having a molecular weight as determined by gel permeation chromatography from about 5000 grams per mole to 10^6 grams per mole and the content of polymerized 1,3-butadiene or isoprene in the ABA block copolymer being 5–95 weight percent based on the total weight of the ABA block copolymer.

4,659,785

HOT-MELT ADHESIVE COMPOSITION

Riichiro Nagano, Hiroshima, and Toshihiro Sagane, Yamaguchi, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 514,785, Jul. 18, 1983, abandoned. This application Aug. 13, 1985, Ser. No. 764,977
Claims priority, application Japan, Jul. 16, 1982, 57-123018; Aug. 5, 1982, 57-135718
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.⁴ C08F 255/04
U.S. Cl. 525—324 **13 Claims**

1. A hot-melt adhesive composition comprising a styrene-type hydrocarbon-modified polyolefin (c) composed of 100 parts by weight of a crystalline polyolefin backbone (a) having a degree of crystallinity of at least 10% and 0.15 to 50 parts by weight of styrene-type hydrocarbon branches (b) bound at intervals along the polyolefin backbone, wherein said styrene-type hydrocarbon-modified polyolefin (c) is obtained by graft-copolymerization of the polyolefin (a) with the styrene-type hydrocarbon (b) in the heat-molten state in the presence of a radical initiator whereby the content of homopolymer of the styrene-type hydrocarbon is not more than 150 mole%, based on the amount of the styrene-type hydrocarbon bonded to the polyolefin backbone, said modified polyolefin (c) having an intrinsic viscosity (η) of 0.5 to 5 dl/g, a degree of crystallinity of at least 10% and a weight average molecular weight $\overline{M}w$/number average molecular weight $\overline{M}n$ ratio of from 1 to 15, and wherein said crystalline polyolefin backbone is an ethylene copolymer selected from the group consisting of ethylene/alpha-olefin copolymers and ethylene/vinyl monomer copolymers.

4,659,786

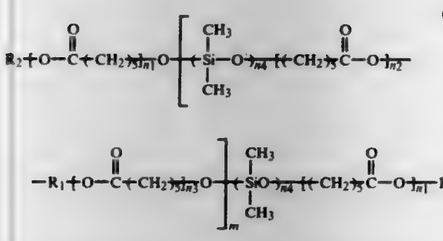
LOW MODULUS THERMOPLASTIC ELASTOMERIC POLYESTER-POLYSILOXANE BLOCK COPOLYMERS

Michio Kawakami, Sendai; Yoshima Araki, Izumi; Kenkichi Murakami; Hidetoshi Oikawa, both of Sendai; Michio Nakanishi, Niiza, and Makoto Hosotani, Sendai, all of Japan, assignors to Tohoku University, Sendai, Japan

Filed Jun. 3, 1985, Ser. No. 740,259
Claims priority, application Japan, Sep. 11, 1984, 59-188911
Int. Cl.⁴ C08G 63/08, 81/00
U.S. Cl. 525—415 **7 Claims**

1. A polyester-polysiloxane block copolymer represented by the following general formula

(I)



wherein
R_1 is a polymerization initiator residue of ε-caprolactone having two or more terminal OH,
R_2 is a polymerization initiator residue of ε-caprolactone having a single terminal OH,
n_1 is from about 20 to about 200,
n_2+n_3 is from about 20 to about 400,
n_4 is from about 60 to about 800, and
m is from about 0 to about 20.

4,659,787

METHOD FOR MAKING EPOXY CURING AGENTS

Lowell O. Cummings, San Anselmo, Calif., assignor to Chemcrete International Partnership, Belmont, Calif.

Division of Ser. No. 656,140, Sep. 28, 1984, Pat. No. 4,574,145, which is a continuation-in-part of Ser. No. 396,319, Jul. 8, 1982, Pat. No. 4,490,510. This application Nov. 14, 1985, Ser. No. 798,006
Int. Cl.⁴ C08G 8/28; C08L 61/24, 61/34
U.S. Cl. 525—504 **24 Claims**

1. A method for making a urea-formaldehyde polyamine compound for use in curing epoxy resins, comprising the steps of
(a) reacting urea and paraformaldehyde in a lower alcohol under basic conditions and well above room temperature,
(b) adding acid to make the reaction strongly acidic, with resulting exotherm,
(c) holding the reaction at about 70°–120° C. for about an hour, and
(d) bringing the pH to about 7.0,
(e) removing the resulting urea-formaldehyde monomer, consisting mainly of urea-formaldehyde ether monomer, from the remaining material,
(f) reacting each mole of the urea-formaldehyde ether monomer with about two to about four moles of an aliphatic, cycloaliphatic, or aromatic polyamine to split the ether group of the urea-formaldehyde ether molecule and form a carbon-nitrogen bond to an amine group at a site of the ether splitting.

4,659,788

RADIATION CURABLE ADHESIVE COMPOSITION FOR SURFACE PROTECTIVE FILM

Tomohisa Ohta; Akihiko Dobashi; Hisashige Kanbara, all of Shimodate, and Yasuyuki Seki, Hitachi, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1985, Ser. No. 718,290
Claims priority, application Japan, May 7, 1984, 59-90368
Int. Cl.⁴ C08L 61/28
U.S. Cl. 525—518 **6 Claims**

1. A radiation curable adhesive composition for surface protective films which consists essentially of 100 parts by weight of an acrylic liquid oligomer having one or more acryloyl double bonds at terminal groups or side chains in its molecule, 0.2 to 20 parts by weight of a chain transfer agent selected from the group consisting of a thiol compound, a disulfide and a halide, and 0.2 to 20 parts by weight of an N-methylol compound selected from the group consisting of compounds having two or more methylol groups or alkyl etherified methylol groups in its molecule; said acrylic liquid oligomer having an acrylic acid alkyl ester or a methacrylic acid alkyl ester as a main chain.

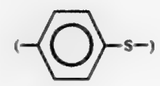
4,659,789

PHENYLENE SULFIDE RESIN COMPOSITIONS

Takayuki Katto; Masahito Tada; Toshitaka Kouyama, and Yo Iizuka, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1986, Ser. No. 821,916
Claims priority, application Japan, Jan. 31, 1985, 60-17306
Int. Cl.⁴ C08F 283/00
U.S. Cl. 525—537 **13 Claims**

1. A phenylenesulfide resin composition which comprises:
(I) a poly-p-phenylenesulfide,
(II) a poly-m-phenylenesulfide, and
(III) a phenylenesulfide block copolymer consisting essentially of a repeating unit



(A) and a repeating unit



(B), wherein from 20 to 5,000 units on the average of the repeating units (A) linked together exist in the molecular chain in the form of the block component and wherein the molar fraction (X) of the repeating unit (A) is in the range of 0.10 to 0.95;
the mixing ratio of the components (I), (II) and (III) satisfying the equations:

$$\frac{I}{I+II} = 50 \text{ to } 95\% \text{ by weight}$$

$$\frac{II}{I+II} = 50 \text{ to } 5\% \text{ by weight}$$

$$\frac{I+II}{I+II+III} = 50 \text{ to } 95\% \text{ by weight}$$

$$\frac{III}{I+II+III} = 50 \text{ to } 5\% \text{ by weight}$$

4,659,790

HEAT-RESISTANT COPOLYMER OF ALPHA-METHYLSTYRENE AND ACRYLONITRILE, PROCESS FOR PREPARING THE SAME, AND THERMOPLASTIC RESIN COMPOSITION CONTAINING THE SAME

Yasuyuki Shimozato; Syuji Tsuchikawa; Shinichi Kimura, all of Yokkaichi, and Masahiko Noro, Yokohama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1985, Ser. No. 724,543
Claims priority, application Japan, Jun. 5, 1984, 59-113853; Jun. 29, 1984, 59-133056
Int. Cl.⁴ C08F 2/00
U.S. Cl. 526—87 **17 Claims**

1. A heat-resistant copolymer which contains 74–82% by weight of (A) alpha-methylstyrene and 18–26% by weight of (B) acrylonitrile and which contains (a) 0–10% by weight of the monomer chain: —(A)— (A)—(A)—, (b) at least 50% by

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weight of the monomer chain: —(A)—(A)—(B)—, and (c) no more than 50% by weight of the monomer chain: —(B-)—(A)—(B)— wherein the total amount of chains (a), (b) and (c) is 100% by weight, said copolymer being prepared by a process, comprising:

feeding (A) 25–82% by weight of alpha-methylstyrene and (B) 3–12% by weight of acrylonitrile in a (A) to (B) weight ratio of less than 9 into a reactor;

emulsifying the charged monomer;

initiating the polymerization of the monomers at a temperature of 67°–90° C.;

continuing the polymerization reaction at said temperature and simultaneously, continuously or intermittently feeding acrylonitrile or a mixture of alpha-methylstyrene and acrylonitrile into the polymerization medium after the polymerization reaction has progressed for at least 1 hour so that the weight ratio of alpha-methylstyrene to acrylonitrile in the unreacted monomers within the system is maintained at at least 7, while continuing the polymerization at the said temperature until the amounts of acrylonitrile and alpha-methylstyrene reach their predetermined levels within the above stated ranges.

4,659,791

INTERNALLY COATED REACTION VESSEL FOR USE IN OLEFINIC POLYMERIZATION

Keith L. Gardner, Avon, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Filed Sep. 11, 1984, Ser. No. 648,925

Int. Cl.⁴ C08F 2/24

U.S. Cl. 526—62 **6 Claims**

1. A process for substantially eliminating the build-up of polymers on the internal surfaces of a polymerization reaction vessel during the polymerization of vinyl chloride monomer in an aqueous reaction medium which comprises applying to said surfaces a coating comprised of at least one phenolic compound selected from the group consisting of self condensed phenols, phenols condensed with amines, phenols condensed with aromatic aldehydes and phenols condensed with aliphatic aldehydes and wherein at least one water phase polymerization inhibitor selected from the group consisting of nitrites and phosphites and a chelating agent selected from the group of salts consisting of aluminum and magnesium is either in said coating or coated on said coating or is added to said aqueous reaction medium, said water phase polymerization inhibitor is used at a level from about 0.01 ppm to about 200 ppm based on the weight of said aqueous reaction medium, and wherein said chelating agent is used at a level from about 5 ppm to about 500 ppm based on the weight of said aqueous reaction medium, and polymerizing said vinyl monomer.

4,659,792

PROCESS FOR PRODUCTION OF 4-METHYL-1-PENTENE POLYMER OR COPOLYMER

Norio Kashiva, Iwakuni, and Kunisuke Fukui, Obtake, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 609,007, May 10, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 814,166

Claims priority, application Japan, May 11, 1983, 58-80936

Int. Cl.⁴ C08F 4/02, 10/14

U.S. Cl. 526—73 **1 Claim**

1. A process for producing a polymer or copolymer of 4-methyl-1-pentene, which comprises polymerizing 4-methyl-1-pentene or copolymerizing 4-methyl-1-pentene with up to about 20 mole % of an olefin having 2 to 20 carbon atoms at a temperature of from about 20° C. to about 100° C. and a pressure of from atmospheric to about 20 kg/cm², in the presence of a catalyst comprising

(A) a solid active titanium catalyst component composed of magnesium, titanium, halogen and a di(C_1–C_{20})alkyl ester in which the two alkyl groups may be identical or different, of dicarboxylic acids in which one carboxyl group is attached to each of the adjoining carbon atoms (at the ortho-position) of an aromatic hydrocarbon moiety having 6 to 20 carbon atoms, and the magnesium/titanium atomic ratio of the catalyst component (A) is from about 2 to about 100, the halogen/titanium atomic ratio of the catalyst component (A) is from about 4 to about 100 and the diester/titanium mole ratio of the catalyst component (A) is from about 0.2 to about 10, said titanium catalyst being characterized by not substantially liberating a titanium compound when treated with hexane at room temperature, and

(B) a tri(C_1–C_{15})-alkyl aluminum compound and

(C) an organosilicon compound represented by the following formula

$$R^1{}_{3}Si(OR^2)$$

wherein each of R^1 and R^2 represents a hydrocarbon group with 1 to 5 carbon atoms, and the three R^1 groups may be identical or different,

wherein prior to the polymerization or copolymerization, a methyl-pentene is pre-polymerized or pre-copolymerized in the presence of a catalyst comprising the catalyst component (A), a part of the catalyst component (B) and a part of the catalyst component (C) to form about 1 to about 1000 grams, per millimole of titanium atom, of a methylpentene polymer or copolymer, and the pre-polymerization or pre-copolymerization is carried out at a temperature of about −20° C. to about +70° C., and the polymerization or copolymerization is carried out at a temperature higher than that of the pre-polymerization or pre-copolymerization.

4,659,793

PREPARATION OF AQUEOUS SOLUTIONS OF COPOLYMERS OF DICARBOXYLIC ACIDS HAVING A LOW DICARBOXYLIC ACID MONOMER CONTENT

Mo-Shu Yang, Hixson, Tenn., assignor to Alco Chemical Corporation, Chattanooga, Tenn.

Filed Mar. 3, 1986, Ser. No. 835,242

Int. Cl.⁴ C08F 2/16

U.S. Cl. 526—91 **9 Claims**

1. In the process for the manufacture of water-soluble copolymers of a monoethylenically unsaturated dicarboxylic acid having from 4 to 6 carbon atoms and an α,β-ethylenically unsaturated monomer, said copolymers having a weight average molecular weight of from about 2,000 to about 1,000,000, in which said dicarboxylic acid which is at least partially neutralized is reacted with an α,β-ethylenically unsaturated monomer selected from the group consisting of (a) a monocarboxylic acid having from 3 to 10 carbon atoms and the alkali metal and ammonium salts thereof, (b) an organic sulfonic acid compound and the alkali metal and ammonium salts thereof, and (c) a vinyl monomer free of carboxyl and sulfonic acid groups, and mixtures of said (a), (b) and (c) monomers, at an elevated temperature in an aqueous polymerization system substantially free of an organic chain transfer agent, and in which said dicarboxylic acid is first dissolved in said aqueous polymerization system and is at least partially neutralized, and said α,β-ethylenically unsaturated monomer or monomers and a water-soluble initiator are added to said aqueous polymerization system during a period of from 3 to 10 hours, the total amount of monomers employed in said reaction comprising at least about 30 percent, by weight, of said aqueous polymerization system, the improvement which comprises reacting from about 25 to about 55 percent by weight, based on total weight of monomers, of said dicarboxylic acid with from about 45 to about 75 percent of any of said monomers (a), (b), and (c), and mixtures thereof, and carrying out said polymerization reaction at a temperature of from about 80° to about 100° C. in the presence of from about 1 to about 250 ppm, of a metal ion selected from the group consisting of Zn^{++}, Co^{+++}, Co^{++}, Cu^{++}, Mo^{++}, Fe^{+++}, Fe^{++}, Cr^{+++}, Ni^{++}, Ce^{++++} and Ce^{++}, based on the total weight of the aqueous polymerization system, said concentration of said metal ions being increased proportionally with increase in the molar ratio of said dicarboxylic acid monomer to the total of said (a), (b) and/or (c) monomers, the pH of said polymerization system being maintained in the range of from about 2 to about 4 when the molar ratio of dicarboxylic acid monomer to other monomers is from about 1:4 to about 1:3, and from about 4 to about 6 when the molar ratio of dicarboxylic acid monomer to other monomers is from about 1:1.5 to about 1:1.

4,659,794

PROCESS FOR THE POLYMERIZATION OF POLYMERS OF VINYL CHLORIDE

Gilbert Sielfeld, Marl, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 446,101, Dec. 2, 1982, abandoned. This application Feb. 5, 1985, Ser. No. 698,274

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1981, 3147672

The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.

Int. Cl.⁴ C08F 2/20

U.S. Cl. 526—200 **13 Claims**

1. A process for the production of a homopolymer or copolymer of vinyl chloride comprising suspension polymerizing vinyl chloride monomer and a comonomer when a copolymer is produced, in the presence of a monomer-soluble catalyst, and a suspension stabilizer, wherein the suspension stabilizer is a suspension stabilizing effective amount of

(A) methylhydroxypropylcellulose having a methoxy substitution degree of 20–32%, a hydroxypropoxy substitution degree of 2–10%, and a viscosity of 30–70 mPa.s (measured in a 2% aqueous solution at 20° C., Ubbelohde capillary viscometer);

(B) a combination of:

(a) methylcellulose with a methoxy substitution degree of 22–34% and a viscosity of 7–20 mPa.s (measured in a 2% aqueous solution according to Brookfield at 20° C. and 20 rpm) and

(b) methylcellulose having a methoxy substitution degree of 22–34% and a viscosity of 50 mPa.s to 4,000 mPa.s (measured in a 2% by weight aqueous solution according to Brookfield at 20° C. and 20 rpm), or methylhydroxypropylcellulose having a methoxy substitution degree of 20–32%, a hydroxypropoxy substitution degree of 2–10%, and a viscosity of 100–3,000 mPa.s (measured in a 2% aqueous solution according to Brookfield at 20° C. and 20 rpm), or a mixture thereof; or a miture of A and B;

and wherein the polymerization is conducted in the presence of 0.4–8% by weight, based on the weight of monomer, of an ethylene-vinyl acetate copolymer with a vinyl acetate content of 38–55% by weight and an ethylene content of 62–45% by weight and with a viscosity number of 95–200 ml/g (measured in toluene in a concentration of 0.005 g/cc at 25° C.).

4,659,795

PROCESS FOR PRODUCING POLYMERIC RESIN

Koichi Tsutsui, Yawata; Yoshio Eguchi, Ikeda, and Hiroyoshi Katsuka, Toyonaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 281,209, Jul. 6, 1981, abandoned, which is a continuation of Ser. No. 83,944, Oct. 11, 1979, abandoned, which is a continuation of Ser. No. 960,560, Nov. 14, 1978, abandoned, which is a continuation of Ser. No. 852,966, Nov. 18, 1977, abandoned, which is a continuation of Ser. No. 757,502, Jan. 7, 1977, abandoned, which is a continuation of Ser. No. 624,574, Oct. 21, 1975, abandoned, which is a continuation of Ser. No. 391,756, Aug. 27, 1973, abandoned. This application May 13, 1983, Ser. No. 493,046

Claims priority, application Japan, Aug. 25, 1972, 47-85036; Feb. 20, 1973, 48-20575

Int. Cl.⁴ C08F 265/02, 267/02; C08G 18/81

U.S. Cl. 526—301 **1 Claim**

1. A process for producing a self-hardening polymer which comprises subjecting to polymerization at 40° to 100° C. a mixture comprising:

(A) a blocked isocyanate group-containing ethylenically unsaturated polymerizable compound and

(B) an active hydrogen atom-containing ethylenically unsaturated compound selected from the group consisting of an unsaturated hydroxyalkyl compound, an unsaturated carboxylic acid and an unsaturated carboxylic acid amide,

the ratio of blocked isocyanate groups in component (A) to one active hydrogen atom in component (B) being 0.2 to 2, component (A) being obtained by:

(1) addition of an unsaturated hydroxyalkyl compound, an unsaturated carboxylic acid or an unsaturated carboxylic acid amide to a polyisocyanate compound, prepared by reacting a polyisocyanate with a blocking agent in a proportion of 0.01 to 0.8 of the active hydrogen atom in the blocking agent to one isocyanate group in the polyisocyanate, or

(2) addition of a blocking agent to an ethylenically unsaturated monomer containing an isocyanate group, prepared by addition of an unsaturated hydroxyalkyl compound, an unsaturated carboxylic acid or an unsaturated carboxylic acid amide to a polyisocyanate,

said polyisocyanate being:

hexamethylene diisocyanate, ethylene diisocyanate, propylene diisocyanate, tetramethylene diisocyanate, decamethylene diisocyanate, triphenylmethane triisocyanate, 4,4'-ethylene-bis-(cyclohexylisocyanate), 4,4'-methylene-bis(cyclohexylisocyanate), ω,ω'-diisocyanate-1,3-dimethylbenzene, phenylene diisocyanate, lysine diisocyanate methyl ester, isophorone diisocyanate, trimethylhexamethylene diisocyanate, diphenylmethane-4,4'-diisocyanate or 3,3'-dimethyldiphenylmethane-4,4'-diisocyanate or their adducts with ethylene glycol, diethylene glycol, propylene glycol, trimethylolpropane, hexamethylene glycol, 1,3-butylene glycol, cyclohexanedimethanol, neopentyl glycol or pentaerythritol, their biuret type compounds or their allophanate type compounds.

4,659,796

AMINE-MODIFIED WAX

Shinji Horie, and Tetsuji Kakizaki, both of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 712,654, Mar. 18, 1985. This application Jul. 14, 1986, Ser. No. 885,440

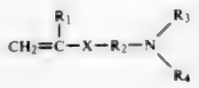
Claims priority, application Japan, Mar. 28, 1984, 59-60142

Int. Cl.⁴ C08F 255/02

U.S. Cl. 526—310 **15 Claims**

1. An amine-modified homogeneous wax comprising 60–100% by weight of an unoxidized olefininc wax having a number average molecular weight of from 800 to 6,000 and a weight average molecular weight to number average molecu-

lar weight ratio of at least 1.05:1, being at least partially grafted with a tertiary amine unit-containing vinyl monomer selected from the group consisting of vinylpyridine, vinylpiperidine or a compound having the formula:



wherein R_1 is a hydrogen atom or a lower alkyl group, R_2 is a lower alkylene group, R_3 and R_4 each is a lower alkyl group or an aryl group, and X is a linking group to the unsaturated carbon atom; in the presence of a radical initiator which does not generate a carboxyl radical, and which is used in an amount of from 0.1 to 1.2 moles per mole of the vinyl monomer; and 0 to 40% by weight of a polymer of the tertiary amine unit-containing vinyl monomer, wherein the total amount of the tertiary amine unit-containing vinyl monomer in the composition is about 0.3 to 40% by weight.

4,659,797

MATRIX MATERIALS AND A PROCESS FOR THEIR PREPARATION

Wulf von Bonin, Leverkusen; Johannes Blahak, Krefeld; Ulrich von Gizycki, Leverkusen, and Lothar Preis, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Apr. 2, 1986, Ser. No. 847,373

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1985, 3513980

Int. Cl.⁴ C08G *18/32*

U.S. Cl. 528—28 **19 Claims**

1. A process for the production of matrix materials based on polyurethane in which

(a) a phenol which is at least bifunctional is reacted with

(b) an aromatic isocyanate which is at least difunctional in the presence of

(c) 1–40 wt. % soft segment former containing long chain aliphatic groups with at least six carbon atoms in the aliphatic group and an isocyanate reactive group and having a molecular weight of from 800 to 10,000 in quantities such that from 90 to 130 equivalent percent of isocyanate groups based on the total of isocyanate reactive groups in (a) and (c) are initially present.

4,659,798

NOVEL ROOM TEMPERATURE VULCANIZABLE POLYDIORGANOSILOXANE COMPOSITIONS

Eric R. Pohl, Tarrytown, and Enrico J. Pepe, Amawalk, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 24, 1985, Ser. No. 748,357

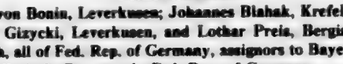
Int. Cl.⁴ C08G *77/04*

U.S. Cl. 528—33 **12 Claims**

1. A room temperature, moisture-curable polydiorganosiloxane composition comprising

(i) an α,ω-dihydroxypolydimethylsiloxane; and

(ii) a poly-(alkoxysilylalkyl)amine of the formula:



wherein

R is C_1–C_4 alkyl;

R^1 is C_1–C_4 alkyl;

R^3 is hydrogen, methyl or ethyl;

R^2 is C_3–C_8 alkylene; and

a and b are 0, 1 or 2.

4,659,799

AMINE VAPOR CURABLE COATING COMPOSITION OF AN ACRYLIC POLYMER AND A POLYISOCYANATE

Robert C. Nahas, Voorhees, N.J., and Clifford H. Stroile, Springfield, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 3, 1985, Ser. No. 804,134

Int. Cl.⁴ C08G *18/62, 18/18, 18/79*

U.S. Cl. 528—73 **13 Claims**

1. A coating composition curable by a vaporous amine catalyst comprising about 20–80% by weight of film forming binder and correspondingly about 80–20% by weight of a liquid carrier; wherein the binder consists essentially of

A. an acrylic polymer containing hydroxyl groups and amine containing groups selected from the group consisting of secondary amine groups, tertiary amine groups, pyridine groups, amino ester groups, hydroxy aminoester groups and the polymer has a weight average molecular weight of about 2,000–50,000 determined by gel permeation chromatography using polymethyl methacrylate as the standard and wherein the acrylic polymer consists essentially of (1) polymerized monomers of an alkyl methacrylate or an alkyl acrylate and mixtures thereof or wherein the alkyl groups have 1–12 carbon atoms, (2) polymerized monomers of hydroxyl alkyl methacrylate or hydroxy alkyl acrylate or mixtures thereof wherein the alkyl groups have 2–4 carbon atoms and (3) polymerized ethylenically unsaturated amine containing monomer; and

B. an aliphatic polyisocyanate.

4,659,800

PROCESS FOR PRODUCING CATHODICALLY DEPOSITABLE PAINT BINDERS

Wolfgang Daimer; Rudolf Schipfer, both of Graz, and Günther Monschein, Kalsdorf, all of Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Feb. 26, 1986, Ser. No. 833,014

Claims priority, application Austria, Feb. 26, 1985, 564/85

Int. Cl.⁴ C08G *59/00*

U.S. Cl. 528—103 **16 Claims**

1. Cathodically depositable binders water-dilutable upon protonation comprising the reaction product of amine adducts of polyglycidylethers of polyphenols, having an amine value, stemming exclusively from tertiary amine groups, of between about 30 and about 130 mg KOH/g, a hydroxyl value stemming exclusively from primary hydroxyl groups of between about 20 and about 200 mg KOH/g and an average molecular weight of from about 1000 to about 20,000, with from 0.5 to 20% b.w. based on said adduct of polyoxyalkylene glycidyl ethers to provide an adduct having polyoxyalkylene segments and an epoxy value of practically zero.

4,659,801

THIAZOLINETHIONE-CONTAINING POLYMER

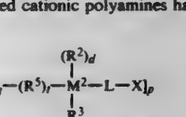
Alan R. Katritzky, Gainesville, Fla.; Steven M. Heilmann, N. St. Paul, Minn.; Larry R. Krepski, White Bear Lake, Minn.; Jerald K. Rasmussen, Stillwater, Minn., and Richard D. Tarr, Gainesville, Fla., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 10, 1985, Ser. No. 807,351

Int. Cl.⁴ C08G *73/06*

U.S. Cl. 528—226 **18 Claims**

1. A polymer having incorporated in its backbone thiazolinethione heterocyclic units having the formula



wherein

R is H or an alkyl or an alkoxyalkyl group of 1 to 20 carbon atoms, or an aryl, aralkyl, alkaryl, or alkoxyaryl group of 6 to 20 carbon atoms.

4,659,802

CATIONIC COMPOUNDS HAVING CLAY SOIL REMOVAL/ANTI-REDEPOSITION PROPERTIES USEFUL IN DETERGENT COMPOSITIONS

Donn N. Rubingh, and Eugene P. Gosselink, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

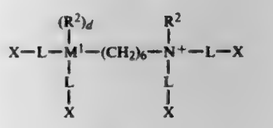
Continuation-in-part of Ser. No. 452,649, Dec. 23, 1982, abandoned. This application Nov. 22, 1983, Ser. No. 553,551

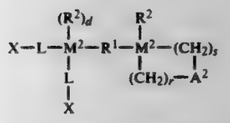
Int. Cl.⁴ C08G *65/26*

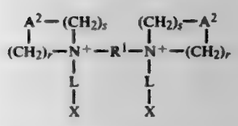
U.S. Cl. 528—405 **12 Claims**

1. A water-soluble cationic compound having clay soil removal/anti-redeposition properties selected from the group consisting of:

(1) ethoxylated cationic diamines having formulas A, C, or D:

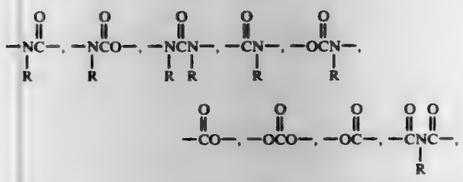
A 





(2) ethoxylated cationic polyamines having the formula:

and (3) mixtures thereof, wherein A^1 is



or —O—; R is H or C_1–C_4 alkyl or hydroxyalkyl; R^1 is C_2–C_{12} alkylene, hydroxyalkylene, alkenylene, arylene, or alkarylene; each R^2 is C_1–C_8 alkyl or hydroxyalkyl, benzyl, or the moiety —L—X; each R^3 is C_1–C_4 alkyl or hydroxyalkyl, the moiety —L—X, or two R^3 or one R^2 and R^3 together form the moiety $—(CH_2)_r—A^2(CH_2)_s—$, wherein A^2 is —O— or $—CH_2—$, r is 1 or 2, s is 1 or 2 and r+s is 3 or 4; R^4 is a substituted C_3–C_{12} alkyl, hydroxyalkyl, alkenyl, aryl or alkaryl group having p substitution sites; R^5 is C_1–C_{12} alkylene, hydroxyalkylene, alkenylene, arylene or alkarylene, or a C_2–C_3 oxyalkylene moiety having from 2 to about 20 oxyalkylene units provided that no O—O or O—N bonds are formed; M^1 is an N^+ or N group; each M^2 is an N^+ or N group and at least one M^2 is an N^+ group; X is a nonionic group selected from the group consisting of H, C_1–C_4 alkyl or hydroxyalkyl ester or ether groups, and mixtures thereof; L is a hydrophilic chain which consists entirely of the moiety $—(CH_2CH_2O)_n—$; d is 1 when M^1 or M^2 is an N^+ group and is 0 when M^1 or M^2 is an N group; for said cationic diamines, n is at least about 6; for said cationic polyamines, n is at least about 3; p is from 3 to 8; q is 1 or 0, t is 1 or 0, provided that t is 1 when q is 1.

4,659,803

PROCESS FOR PURIFYING POLYPHENYLENE OXIDES OBTAINED BY INTERRUPTION OF THE COPPER-AMINE CATALYZED POLYCONDENSATION OF ORTHO-DISUBSTITUTED PHENOLS

Martin Bartmann, Recklinghausen; Hanns-Jörg Bax; Klaus Burzin, both of Marl; Wilfried Ribbing, Dorsten, and Srinivasan Sridhar, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 18, 1984, Ser. No. 632,125

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1983, 3332377

Int. Cl.⁴ C08G *63/70*

U.S. Cl. 528—491 **21 Claims**

B 1. A process for obtaining a purified polyphenylene oxide comprising:

(i) catalyzing the polycondensation of at least one precursor monomer with a catalyst where said catalyst comprises a copper-amine species;

(ii) interrupting said polycondensation with an aqueous acid; and

C (iii) treating said interrupted polycondensation with water or steam at a temperature of from 60° to 150° C.

4,659,804

(BIS-1,7-S-ACETAMIDOMETHYL-L-CYSTEINE)-SALMON CALCITONIN

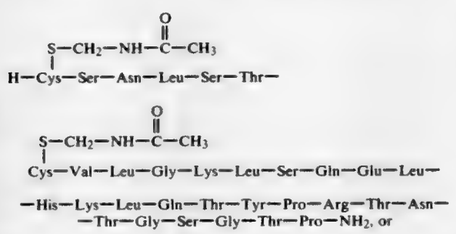
Ronald C. Orlowski, Frankfort; Jay K. Seyler; Robert L. Colescott, both of Bourbonnais; Glenn L. Stahl, Bradley; Takashi Enkoji, Park Forest; James E. Geever, Bourbonnais, and Everett Flanigan, Kankakee, all of Ill., assignors to Armour Pharmaceutical Company, Tuckahow, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,197

Int. Cl.⁴ C07K *7/36*

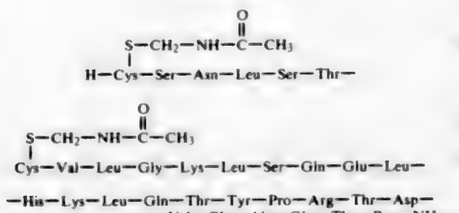
U.S. Cl. 530—307 **1 Claim**

1. A pharmaceutically active peptide having the structure



—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asn—Thr—Gly—Ser—Gly—Thr—Pro—NH_2, or

-continued



4,659,805

RECOMBINANT ALVEOLAR SURFACTANT PROTEIN

James W. Schilling, Jr., Palo Alto; Robert T. White, Fremont, and Barbara Cordell, San Francisco, all of Calif., assignors to California Biotechnology, Inc., Mountain View, Calif.

Filed Dec. 11, 1984, Ser. No. 680,358
Int. Cl.⁴ C07K *13/00*; A61K *37/02*
U.S. Cl. 530—350 **14 Claims**

1. Human alveolar surfactant protein (ASP) in substantially pure form having the amino acid sequence encoded by the DNA shown in FIG. 3 as exon II-IV DNA and that portion of the exon I DNA encoding mature ASP amino acid sequence.

and by the naturally occurring allelic variants thereof,

wherein the ASP is selected from the group consisting of the aforesaid directly encoded amino acid sequence, and

said directly encoded amino acid sequence wherein at least one proline residue is substituted for by a hydroxypyroline residue, and

wherein said ASP may be in glycosylated or unglycosylated form.

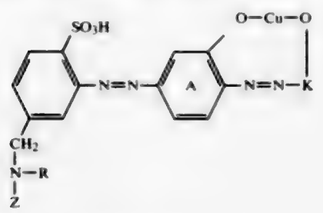
4,659,806

DISAZO COPPER COMPLEX REACTIVE DYESTUFFS

Horst Jäger, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,542
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1979, 2925942
Int. Cl.⁴ C09B *45/30, 62/08, 62/24*
U.S. Cl. 534—625 **4 Claims**

1. Copper complexes of disazo dyestuffs, of the formula



wherein

R denote H or C_1–C_4-alkyl,

Z denotes a mono-, di- or tri-halogenopyrimidinyl radical or a mono- or di-halogenotriazinyl radical,

K denotes the radical of a 1-hydroxy- or 2-hydroxy-naphthalenesulfphonic acid and the benzene or naphthalene nucleus A can contain further substituents, in particular chlorine atoms or C_1–C_4-alkyl, C_1–C_4-alkoxy or sulpho groups.

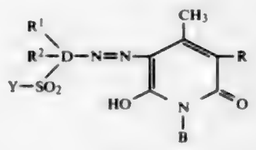
4,659,807

WATER-SOLUBLE PYRIDONE MONOAZO COMPOUNDS SUITABLE AS FIBER REACTIVE DYESTUFFS

Marcos Segal, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 22, 1985, Ser. No. 757,687
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1984, 3427188
Int. Cl.⁴ C09B *62/527, 62/53*; D06P *1/384, 3/66*
U.S. Cl. 534—642 **20 Claims**

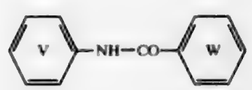
1. A water-soluble monoazo compound of the formula



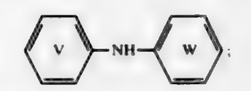
(1)

in which:

D is a benzene ring or a naphthalene ring or a radical of the formula (2) or (3)



(2)



(3)

R^1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 bis 4 carbon atoms, hydroxy, nitro or halogen, if D is a benzene ring, and

R^2 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen, carboxy or sulfo, if D is a benzene ring, or

R^1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, carboxy, halogen, sulfo or a group of the formula $—SO_2—Y$ (where Y has the meaning mentioned hereinafter), if D is a naphthalene ring, and

R^2 is hydrogen or sulfo, if D is a naphthalene ring, or

R^1 is, if D is a radical of the formula (2), hydrogen, nitro, chlorine or alkoxy of 1 to 4 carbon atoms, and is bonded to the benzene ring V, and

R^2 is, if D is a radical of the formula (2), hydrogen, chlorine, sulfo, or nitro and is bonded to the benzene ring W, or

R^1 is, if D is a radical of the formula (3), hydrogen, nitro or sulfo, and is bonded to the benzene ring V, and

R^2 is, if D is a radical of the formula (3), hydrogen, chlorine or sulfo and is bonded to the benzene ring W;

the group $—SO_2—Y$ is bonded in the formulae (2) and (3) to V or W, and the azo group is bonded to W;

Y is vinyl or ethyl substituted in the β-position by a substituent which eliminates as an anion under alkaline conditions;

R is hydrogen or carbamoyl;

B is alkyl of 1 to 4 carbon atoms substituted by one sulfato, phosphato, carboxy or sulfo;

M is hydrogen or an alkali metal;

the moieties B, R^1, R^2 and R can have meanings which are identical to or different from one another.

4,659,808

PROCESS FOR PRODUCING KETALS OF 2-KETOGULONIC ACID OR ITS ESTERS

Koichi Matsumura, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 25, 1984, Ser. No. 654,248
Claims priority, application Japan, Sep. 28, 1983, 58-181305
Int. Cl.⁴ C07H *1/00*
U.S. Cl. 536—18.5 **13 Claims**

1. A process for producing ketals of 2-ketogulonic acid or of its esters, which comprises reacting 2-ketogulonic acid or its esters with a ketone in the presence of a ketal formation catalyst selected from the following:

(1) copper, or an oxide, hydroxide or salt thereof when used in the presence of hydrogen chloride or hydrogen bromide or cupric chloride and cupric bromide;

(2) hydrogen iodide, hydriodic acid, a compound existing in the form of hydrogen iodide in the reaction system or a system liberating hydrogen iodide in the reaction system;

(3) perchloric acid; or

(4) antimony pentafluoride or antimony pentachloride.

4,659,809

PROCESS FOR PRODUCTION OF SUGAR KETALS

Koichi Matsumura, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 25, 1984, Ser. No. 654,249
Claims priority, application Japan, Sep. 27, 1983, 58-179872
Int. Cl.⁴ C07H *1/00*
U.S. Cl. 536—18.5 **8 Claims**

1. A process for producing a sugar ketal, which comprises reacting a tetrose, a pentose, a hexose, or a sugar alcohol or a deoxy-sugar thereof with a ketone in the presence of antimony pentachloride or antimony pentafluoride.

4,659,810

PROCESS FOR THE PREPARATION OF 1-AZIDOALDOSES

Joachim Thiem, Münster; Hans-Matthias Deger, Hofheim am Taunus; Cenek Kolar, Marburg, and Matthias Kreuzer, Münster, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 28, 1985, Ser. No. 749,752
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1984, 3424183; Feb. 2, 1985, 3503620
Int. Cl.⁴ C07H *1/00*
U.S. Cl. 536—22 **17 Claims**

1. The process for the manufacture of 1-azidoaldoses which comprises reacting a 1-fluoro-aldose with a metal azide in the presence of a polar, water-miscible solvent.

17. A process as claimed in claim 1, wherein the 1-azidoaldoses are prepared directly and without the use of intermediates carrying protective groups.

4,659,811

ALKALINE REFINED GUM AND USE THEREOF IN IMPROVED WELL-TREATING COMPOSITIONS

Shang-Ren Wu, St. Anthony, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 29, 1984, Ser. No. 614,588
Int. Cl.⁴ C08B *37/00*
U.S. Cl. 536—114 **14 Claims**

1. In a process of refining polygalactomannan by treating with an aqueous alkali solution, the improvement comprising: treating 100 parts by weight of polygalactomannan-containing gum splits with a minimum of 150 parts by weight of an aqueous alkali solution for a minimum of 15 minutes at a temperature in the range of from about room temperature to about 110° C., provided however, that the aqueous alkali solution is added in a sufficient amount whereby water is present in a minimum amount of 60% total weight.

4,659,812

CEPHALOSPORIN INTERMEDIATES

Shimpei Aburaki, Tokyo; Yukio Narita; Jun Okumura, both of Yokohama; Takayuki Naito, Kawasaki, all of Japan, and Donald G. Walker, Liverpool, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Aug. 20, 1985, Ser. No. 767,562
Int. Cl.⁴ C07D *501/18*
U.S. Cl. 540—222 **3 Claims**

1. Temperature stable crystalline salts of 7-amino-3-(1-methylpyrrolidinio)methyl-3-cephem-4-carboxylate substantially free of Δ^2 isomer, selected from the group consisting of the mono-hydrochloric and sulfuric acid addition salts.

4,659,813

CRYSTALLIZATION PROCESS FOR CEFTAZIDIME DERIVATIVE

Ronald C. Browning, Greenwood, and Melvin G. Pleiss, Jr., Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 669,482, Nov. 8, 1984, abandoned. This application Nov. 22, 1985, Ser. No. 801,110
Int. Cl.⁴ C07D *499/44*; A61K *31/545*
U.S. Cl. 540—225 **8 Claims**

1. A process for preparing ceftazidime pentahydrate in crystalline form which comprises acidifying an aqueous solution of ceftazidime having a pH between about 5.5 and about 6.5 to a pH of between about 4.0 and about 4.7 at a temperature between about 5° C. and about 15° C., and maintaining during crystallization the acidity of said solution by controlled acidification at a pH between about 4.0 and about 4.7.

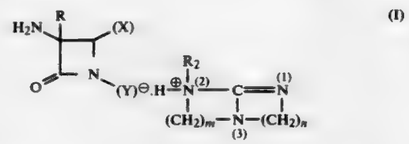
4,659,814

SALTS OF AMINO-BETA-LACTAMIC ACIDS AND PROCESS FOR THE PREPARATION THEREOF

Alberto Palomo-Coll; Juan Cabré-Castellvi, and Antonio L. Palomo-Coll, all of Barcelona, Spain, assignors to Gema, S.A., Barcelona, Spain

Filed May 18, 1984, Ser. No. 612,053
Claims priority, application Spain, May 26, 1983, 522728
Int. Cl.⁴ C07D *205/08, 471/04*
U.S. Cl. 540—355 **7 Claims**

1. Guanidine salts of amino-betalactamic acids having the formula I



(I)

where: m=n=0 to represent in this case that the atom of N(1) supports a hydrogen or a methyl group; the atom of N(2) a methyl group and the atom of N(3) two methyl groups, forming an open chain guanidine; or m=n=3;

(Y) is a group selected from PO_3H and SO_3;

(X) is a hydrogen atom or a methyl group;

R is an atom of hydrogen or a methoxy or ethoxy group; and

R_2 is an atom of hydrogen or a methyl, ethyl, benzyl or phenyl group.

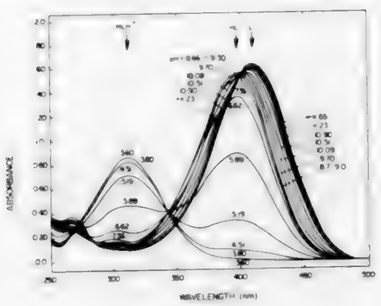
VOL 1077 ISS 3 AP 21 1987 UMI

4,659,815

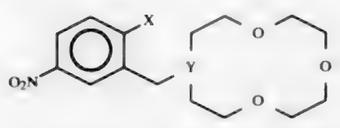
CHROMOGENIC AZA-12-CROWN-4 ETHERS AND METHOD OF USING SAME FOR THE DETECTION OF LITHIUM

Gilbert E. Pacey, Oxford, Ohio, and Ken-ichi Sasaki, Nagoya, Japan, assignors to The President and Trustees of the Miami University, Oxford, Ohio

Filed Feb. 4, 1985, Ser. No. 698,019
Int. Cl.⁴ C07D *273/01*
U.S. Cl. 540—467 **7 Claims**



3. A reagent composition comprising:
(a) a polar solvent selected from the group consisting of water and chloroform, and
(b) a crown ether dissolved in said solvent, said crown ether having the formula



wherein X and Y vary with the pH of said composition whereby the predominate structure is
(i) X is O^- and Y is N when the pH is 11 or greater;
(ii) X is O^- and Y is NH^+ when the pH is approximately 8, and
(ii) X is OH and Y is NH^+ when the pH is 5 or less.

4. A composition for extracting lithium ion comprising an aqueous solution containing:
(a) the reagent composition of claim **3**; and
(b) a basic buffer comprising a non-lithium Group I or Group II metal hydroxide providing a total concentration of hydroxide ion in said aqueous solution in the range 1×10^{-2}M to 1×10^{-1}M.

4,659,816

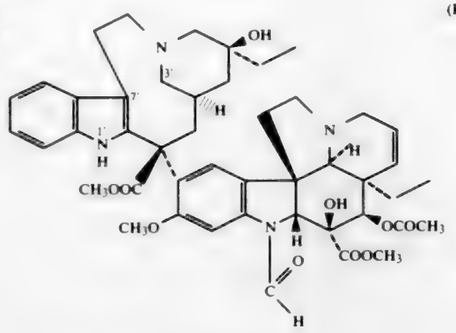
PROCESS FOR THE PREPARATION OF DIMERIC ALKALOIDS

Csaba Szántay; Katalin Honty; Lajos Szabó; Tibor Keve, and Tibor Ács, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Filed Jan. 4, 1985, Ser. No. 688,932
Claims priority, application Hungary, Jan. 6, 1984, 49/84
Int. Cl.⁴ C07D *519/04*
U.S. Cl. 540—478 **3 Claims**

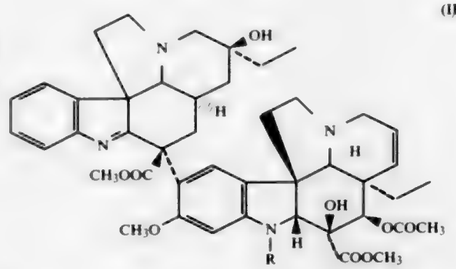
1. A process for the preparation of vincristine of formula (I)

(I)



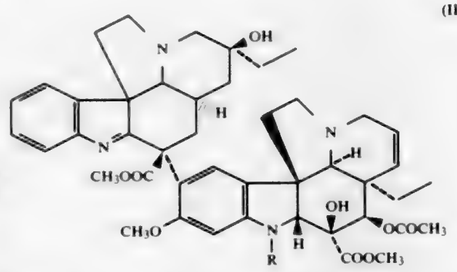
which comprises
(a_1) oxidizing the compound of formula (II)

(II)



wherein R stands for methyl, or the acid addition salt thereof with chromium(VI) oxide or bichromate or chromic acid alcohol ester in an inert solvent to form the compound of the Formula (II) where R is formyl and selectively reducing the compound of formula (II), wherein P stands for formyl, so obtained with a borohydride and isolating the vincristine of formula (I) obtained, or
(a_2) selectively reducing the compound of formula (II)

(II)



wherein R stands for formyl and isolating the vincristine of formula (I) obtained.

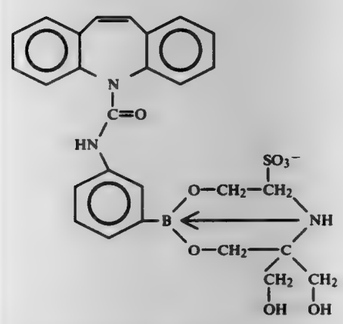
4,659,817

REPORTER COMPOUNDS CONTAINING BORON

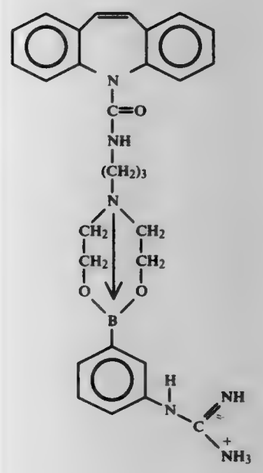
Paul M. Gallop, Chestnut Hill, and Mercedes Paz, Brookline, both of Mass., assignors to The Children's Medical Center Corporation, Boston, Mass.

Division of Ser. No. 259,705, May 1, 1981, Pat. No. 4,496,722, which is a continuation-in-part of Ser. No. 132,908, Mar. 24, 1980, abandoned. This application Aug. 8, 1984, Ser. No. 638,756
Int. Cl.⁴ C07D *223/26*
U.S. Cl. 540—541 **2 Claims**

1. A compound of the formula



2. A compound of the formula



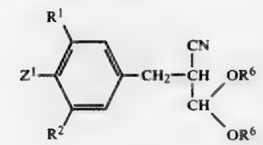
4,659,818

INTERMEDIATES FOR BENZYLPYRIMIDINES

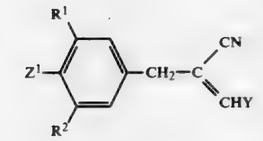
Ivan Kompis, Oberwil; Gérald Rey-Bellet, Basel, and Guido Zanetti, Füllinsdorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 279,106, Jun. 30, 1981, Pat. No. 4,515,948, which is a continuation of Ser. No. 63,292, Aug. 2, 1979, abandoned, which is a continuation of Ser. No. 795,828, May 11, 1977, abandoned, which is a continuation of Ser. No. 504,416, Sep. 9, 1974, abandoned. This application Feb. 27, 1985, Ser. No. 706,227
Claims priority, application Switzerland, Jul. 22, 1974, 10063/74; Sep. 12, 1975, 13057/75
Int. Cl.⁴ C07D *295/12*
U.S. Cl. 544—163 **8 Claims**

1. A compound of the formula



or



wherein Z^1 is nitro, amino, pyrrolo, pyrrolidino, piperidino, $-NHR^4$, $-N(R^4)_2$, $-NHR^5$, $-N(R^4)(R^5)$, $-NR^4COOR^4$, $-NHCOOR^4$, $-NHCONHR^3$, $-NHCSNHR^3$ or $-NR^3NH_2$, R^6 is lower alkyl or taken together with the other R^6 is lower alkylene, Y is lower alkoxy, thioether or amino R^1 and R^2, independently, are C_{1-3} alkoxy, C_{2-3} alkenyl or C_{2-3} alkenyloxy; R^4 is C_{1-3}alkyl or C_{2-3} alkenyl, R^5 is C_{1-4}alkanoyl, C_{1-4}alkanoyl bearing a lower alkoxy substituent, a residue of a monocyclic aromatic acid, or a residue of an aromatic sulfonic acid, or a residue of an aliphatic sulfonic acid and R^3 is hydrogen, C_{1-3} alkyl or C_{2-3} alkenyl.

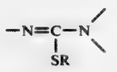
4,659,819

PRODUCTION OF S-SUBSTITUTED ISOTHIOUREAS

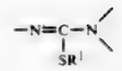
Dennis E. Jackman, Prarie Village; Dietmar B. Westphal, Lenexa, both of Kans., and Thomas Schmidt, Ginsterweg, Fed. Rep. of Germany, assignors to Mobay Corporation, Pittsburgh, Pa. and Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 18, 1984, Ser. No. 632,132
Int. Cl.⁴ C07D *253/06, 251/38, 239/38*
U.S. Cl. 544—182 **12 Claims**

1. A process for converting a triazine or pyrimidine containing in the ring an S-substituted isothioura group of the formula



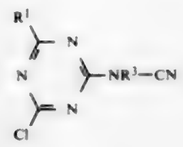
to the corresponding triazine or pyrimidine containing in the ring an S-substituted isothiourea group of the formula



wherein
R is an alkyl, alkenyl, aryl or aralkyl radical, and
R^1 is hydrogen, or an alkyl, alkenyl, aryl or aralkyl radical, but is different from R,
which comprises reacting the starting compound with R^1SH.

4,659,820
PROCESS FOR THE PREPARATION OF 4-ALKOXY-6-ALKYL-2-CYANAMINO-1,3,5-TRIAZINES
Rudolf Fuss, Cologne, and Hans-Jochem Riebel, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Feb. 13, 1986, Ser. No. 829,671
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1985, 3507749
Int. Cl.⁴ C07D *251//16*
U.S. Cl. 544—194 **1 Claim**

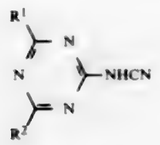
1. A 6-alkyl-4-chloro-2-cyanamido-1,3,5-triazine of the formula



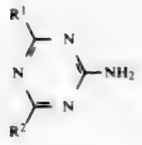
in which
R^1 is C_1–C_6-alkyl, and
R^3 is hydrogen, Na, K or one equivalent of Ca.

4,659,821
PROCESS FOR THE PREPARATION OF 4-ALKOXY-6-ALKYL-2-CYANOAMINO-1,3,5-TRIAZINES
Rudolf Fuss, Cologne, and Hans-Jochem Riebel, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Feb. 13, 1986, Ser. No. 829,669
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1985, 3507750
Int. Cl.⁴ C07D *251//16*
U.S. Cl. 544—194 **2 Claims**

1. A process for the preparation of a 4-alkoxy-6-alkyl-2-cyanoamino-1,3,5-triazine of the formula



in which
R^1 is alkyl with 1 to 6 carbon atoms, and
R^2 is alkoxy, with 1 to 6 carbon atoms,
comprising reacting a 4-alkoxy-6-alkyl-2-amino-1,3,5-triazine of the formula



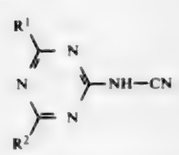
with a cyanogen halide of the formula

Hal—CN

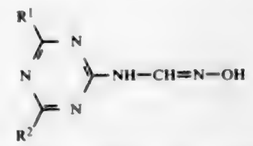
in which
Hal is halogen,
in liquid phase at a temperature between −20° and +60° C. in the presence of twice the molar amount of butyl-lithium and in the presence of a diluent, adding water and acidifying.

4,659,822
PROCESS FOR THE PREPARATION OF 2-CYANOAMINO-1,3,5-TRIAZINES
Uwe Priesnitz, Solingen, and Hans-Jochem Riebel, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Feb. 13, 1986, Ser. No. 829,670
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1985, 3507751
Int. Cl.⁴ C07D *251/16, 251/18*
U.S. Cl. 544—194 **3 Claims**

1. A process for the preparation of a 2-cyanoamino-1,3,5-triazine of the formula



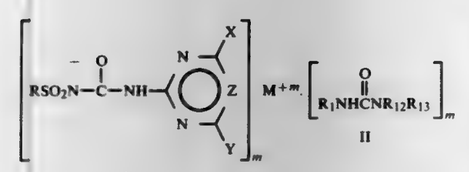
in which
R^1 is alkyl with 1 to 6 carbon atoms, and
R^2 is alkoxy, alkylamino or dialkylamino with 1 to 6 carbon atoms in each alkyl radical,
which comprises reacting an oxime of the formula



with methanesulphonyl chloride in the presence of an acid acceptor and in the presence of a diluent at a temperature between about 0° and 160° C.

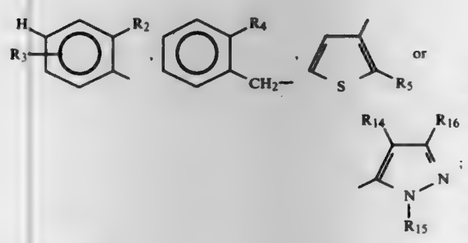
4,659,823
HERBICIDAL COMPLEXES WITH UREAS
Earl P. Moore, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.
Continuation-in-part of Ser. No. 617,605, Jun. 5, 1984, abandoned. This application Nov. 12, 1985, Ser. No. 797,026
Int. Cl.⁴ C07C *251/42, 251/46, 239/42, 239/47*
U.S. Cl. 544—212 **9 Claims**

1. A complex selected from:

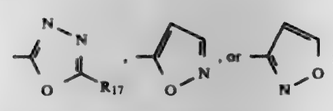


I

wherein
R is



R_1 is H or CH_3;
R_2 is F, Cl, Br, C_1–C_4 alkyl optionally substituted with 1–3 atoms of F or Cl, $SO_2NR_6R_7$, $S(O)_nR_8$, $SO_2NCH_3(OCH_3)$, CO_2R_9, OSO_2R_{10}, OR_{11}, NO_2, C_2–C_4 alkenyl, $CONR_6R_7$, phenyl,



R_3 is H, F, Cl, Br, CH_3, OCH_3 or CF_3;
R_4 is Cl, NO_2, CO_2R_{10};
R_5 is Cl, Br, $SO_2NR_6R_7$, $S(O)_nR_{10}$, CO_2R_{10}, C_1–C_3 alkyl, NO_2, $CON(CH_3)_2$ or $SO_2N(OCH_3)CH_3$;
R_6 is H or C_1–C_3 alkyl;
R_7 is H or C_1–C_2 alkyl;
R_8 is C_1–C_3 alkyl or C_1–C_3 alkyl substituted with 1–5 atoms of F, Cl or Br;
R_9 is C_1–C_4 alkyl, $CH_2CH_2OCH_3$, CH_2CH_2Cl or $CH_2CH{=}CH_2$;
R_{10} is C_1–C_3 alkyl;
R_{11} is C_1–C_4 alkyl, C_1–C_3 alkyl substituted with 1–5 atoms of F, Cl or Br, $CH_2CH{=}CH_2$ or $CH_2C{\equiv}CH$;
R_{12} is H, C_1–C_{12} alkyl, C_3–C_6 cycloalkyl or C_3–C_6 alkenyl;
R_{13} is H, CH_3 or CH_2CH_3 or R_{12} and R_{13} may be taken together to be $—(CH_2)_4—$ or $—(CH_2)_5—$ or R_1 and R_{12} may be taken together to be $—(CH_2)_2—$;
R_{14} is C_1–C_3 alkyl, F, Cl, Br, NO_2, CO_2R_{10}, $SO_2N(CH_3)_2$, SO_2R_{12}, or phenyl;
R_{15} is H, C_1–C_3 alkyl, or $CH_2CH{=}CH_2$;
R_{16} is H or CH_3;
R_{17} is H or CH_3;
n is 0 or 2;
M is an alkali metal cation, magnesium or calcium;
Z is CH or N;
X is CH_3, OCH_3 or $OCHF_2$;
Y is CH_3, OCH_3, $CH(OCH_3)_2$, $OCHF_2$, C_2H_5, OC_2H_5, OCH_2CF_3 or CH_2OCH_3; and
m is 1 or 2.

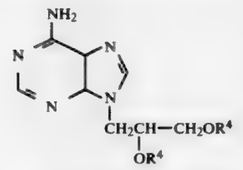
4,659,824
ACID ADDITION PRODUCTS OF N-GLYCIDYL COMPOUNDS
Hinrich Möller, Monheim, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
Filed Aug. 23, 1984, Ser. No. 643,611
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1983, 3330640; European Pat. Off., Jul. 4, 1984, 84107759.7
Int. Cl.⁴ C07D *403/06, 233/02, 249/12, 253/06*
U.S. Cl. 544—221 **18 Claims**

1. A process for the production of a reaction product of a poly-N-glycidyl compound having at least one five-membered or six-membered heterocyclic ring system containing at least two

groups in the ring thereof, wherein R is glycidyl, and wherein said reaction product contains at least one N-glycidyl substituent comprising reacting said poly-N-glycidyl compound with a free acid comprising a hydrohalic acid, a pseudohydrohalic acid, or an acid of phosphorus; an alkali metal salt of said free acid; or a mixture of said free acid and said alkali metal salt; in an amount of from about 1 to about 20 moles of acid, salt, or mixture thereof per mole of N-glycidyl compound in aqueous medium at a reaction temperature of from about 0° C. to about 60° C. at a reaction pH of from about 2 to about 10 within a range of at most about 2 units on the pH scale for a period of time sufficient to provide a ring-opened addition product containing at least one N-glycidyl substituent and at least one hydroxypropyl substituent substituted with the anion of said acid or said salt wherein said addition product is obtained in a yield of at least 50% of the theoretical yield.

4,659,825
ISOMERIC O-PHOSPHONYLMETHYL DERIVATIVES OF ENANTIOMERIC AND RACEMIC 9-(2,3-DIHYDROXYPROPYL)ADENINE
Antonin Holy; Ivan Rosenberg, and Karel Slama, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie, Czechoslovakia
Filed Jan. 6, 1984, Ser. No. 568,719
Claims priority, application Czechoslovakia, Jan. 6, 1983, 88-83
Int. Cl.⁴ C07F *9/38, 9/65;* **C07H** *19/16*
U.S. Cl. 544—244 **1 Claim**

1. Isomeric O-phosphonymethyl derivatives of enantiomeric and racemic vicinal diols having the formula I



wherein one R^4 is a hydrogen atom and the other R^4 is a $—CH_2P(O)(OH)_2$ group, and the configuration at the carbon atom in the position 2 is R, S or RS.

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4,659,826

SYNTHESIS OF SALICYLAMIDES WITH IMPROVED YIELD AND PURITY

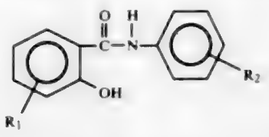
Joshua Schwarz, Brooklyn, N.Y., assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 555,760, Nov. 28, 1983, abandoned. This application Nov. 20, 1984, Ser. No. 673,307

Int. Cl.⁴ C07C *103/22*

U.S. Cl. 544—277 **19 Claims**

1. A method of synthesizing and recovering with high yield and purity salicylamide compounds of the formula:



wherein R_1 is a substituent having the formula, $-COC_nH_{2n+1}$ wherein n is an integer with a value of from 1 through to about 15 and R_2 is a substituent selected from the group consisting of —H, $—NO_2$, —F, —Cl, —Br, —I, $—CF_3$, $—CBr_3$, $—CCl_3$, $—Cl_3$ and R_1 which comprises the steps of:

(a) heating a phenyl salicylate ester bearing an R_1 substituent on the benzene ring of the salicylic acid portion thereof with an R_2 substituted aniline in a mole ratio of said ester to said substituted aniline of about one to one to one to two at a temperature of above about 150° C. for about 2 to about 6 hours to form a reaction mixture;

(b) dissolving the reaction mixture in a solvent selected from the group consisting of polar organic solvents, non-polar halogenated hydrocarbons and mixtures thereof to form a dissolved reaction mixture;

(c) acidifying the dissolved reaction mixture with an aqueous solution of a Lowry-Bronsted acid to form an acidified dissolved reaction mixture;

(d) refluxing the acidified dissolved reaction mixture to produce a final reaction mixture;

(e) adding water to the final reaction mixture to precipitate the product salicylamide compound; and

(f) recovering the precipitated product salicylamide compound from the final reaction mixture.

4,659,827

PROCESS FOR PRODUCING 2,4,5,6-TETRACHLOROPYRIMIDINE BY WAY OF 5,6-DICHLORO-2,4-DIHYDROXYPYRIMIDINE WHICH WAS PRODUCED FROM THE CORRESPONDING 5,6-DICHLORO-2,4-DI(TRIHALOMETHYL)-PYRIMIDINE AND A PROCESS FOR PRODUCING 2,4-DIHYDROXYPYRIMIDINE DERIVATIVES

Karl J. Herd, Odenthal, and Karl H. Schündehütte, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

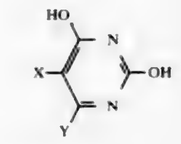
Filed Nov. 6, 1985, Ser. No. 795,390

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1984, 3441935

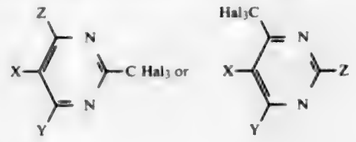
Int. Cl.⁴ C07D *239/30, 239/36, 239/54, 239/62*

U.S. Cl. 544—299 **6 Claims**

1. Process for the preparation of 2,4-dihydroxypyrimidines which, in one of the possible tautomeric forms, correspond to the formula



wherein
X=H, Cl, Br or C_1–C_4-alkyl and
Y=X or OH,
characterised in that pyrimidines of the formula



wherein
Hal=Cl or Br and
Z=Hal or OH,
are heated in an aqueous-alkaline medium.

4,659,828

DIMETHYL SULFATE QUATERNARY AMMONIUM SALT OF 1-ACRYLOYL-4-METHYL PIPERAZINE

Dodd W. Fong, Naperville, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 15, 1984, Ser. No. 621,339

Int. Cl.⁴ C08F *8/10*

U.S. Cl. 544—399 **3 Claims**

1. The methyl chloride or dimethyl sulfate quaternary ammonium salt of 1-acryloyl-4-methyl piperazine.

4,659,829

METAL PEROXIDE COMPLEXES, THEIR MANUFACTURE AND USE FOR OXIDIZING HYDROCARBONS TO ALCOHOLS AND/OR KETONES

Lucien Saussine, Chatou; Alain Robine, and Hubert Mimoun, both of Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

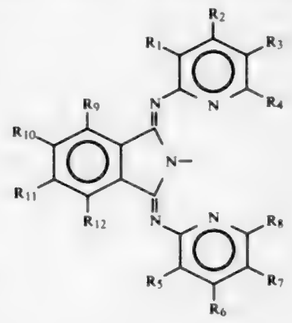
Filed Jan. 31, 1985, Ser. No. 696,835

Claims priority, application France, Jan. 31, 1984, 84 01587; Feb. 2, 1984, 84 01736

Int. Cl.⁴ C07D *401/14;* **B01J** *31/22;* **C07B** *41/02, 41/06*

U.S. Cl. 546—2 **8 Claims**

1. Metal peroxide complexes of the general formula LnMXpY wherein L is a ligand of formula (A),



(A)

in which n=1 or 2, p=0 or 1 and n+p=2, both ligands L being either identical or different when n=2, R_1 to R_{12}, identical or different, are a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, an alkoxy group, an alkoxy-alkyl group, a halogen atom, a nitro group, or two adjacent groups R_1 to R_{12} form an aromatic ring together with the carbon atoms to which they are linked,

X is an acetate, a propionate, a benzoate, a pivalate, a stearate, a 2-ethyl-hexanoate, an octoate, a napthenate, trifluoroacetate, or a hydroxide,

M is cobalt, manganese, iron or copper and

Y is a peroxo group or a group of formula OOR wherein R is alkyl or aralkyl group.

4,659,830

PROCESS FOR THE PRODUCTION OF ZINC 2-MERCAPTOPYRIDINE N-OXIDE

Manfred Maurer, Kirchheim; Winifried Orth, Hassloch, and Werner Fickert, Mannheim, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 695,410, Jan. 25, 1985, Pat. No. 4,632,991, which is a continuation of Ser. No. 395,660, Jul. 6, 1982, abandoned. This application Jul. 15, 1986, Ser. No. 885,878

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 31278639

Int. Cl.⁴ C07D *213/89*

U.S. Cl. 546—6 **1 Claim**

1. Crystals of zinc 2-mercaptopyridine-N-oxide in a readily filterable, washable and easily suspendable form prepared by reacting in the absence of a surfactant an aqueous solution of an alkali metal salt of 2-mercaptopyridine N-oxide and an aqueous solution of a water soluble zinc salt at a temperature in the range of 35° to 100° C. in the presence of 10 to 50% by weight of an at least partially water soluble organic solvent based on the weight of the sodium 2-mercaptopyridine N-oxide solution to form a precipitate of crystalline zinc 2-mercaptopyridine N-oxide, recovering said crystals and optionally comminuting the crystals.

4,659,831

PROCESS FOR THE PREPARATION OF ANTHRAQUINONE IMIDES

Bernd Dill, Rheinfelden, Fed. Rep. of Germany, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 2, 1984, Ser. No. 657,104

Claims priority, application Sweden, Oct. 6, 1983, 5432/83

Int. Cl.⁴ C07C *97/24;* **C07D** *471/22*

U.S. Cl. 546—31 **8 Claims**

1. In a process for the preparation of an anthraquinone imide by condensing a vattable anthraquinone compound which contains at least one primary amino group with a halogenated anthraquinone, benzanthrone, anthranthrone, pyranthrone, dibenzanthrone, phthaloylacridone, flavanthrone dibenzpyrenequinone or isoviolanthrone, which halogen compounds are unsubstituted or further substituted by halogen, alkyl, alkoxy, acylamino or fused benzene rings, at a temperature of 180° to 210° C. in an inert organic solvent in the presence of a base and a copper catalyst, the improvement which comprises first carrying out the condensation until a reaction of 60 to 95% has taken place, and then subjecting the reaction mixture, without isolating the reaction product, to an aftertreatment at a temperature of 215° to 250° C., the aftertreatment being carried out under overpressure.

4,659,832

PROCESS FOR THE PREPARATION OF OCTAHYDRO-OXAZOLO [4,5-g]QUINOLINES

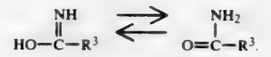
John M. Schaus, and Robert D. Titus, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 10, 1985, Ser. No. 743,198

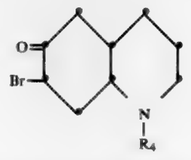
Int. Cl.⁴ C07D *498/04, 215/02*

U.S. Cl. 546—83 **4 Claims**

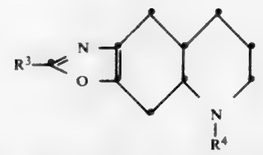
1. The process which comprises reacting a urea or a tautomeric isourea of the formulas



with a trans-(±) racemate, or an enantiomer thereof, of the formula



to yield a trans-(±)-2-permissibly substituted-5-substituted-4,4a,5,6,7,8,8a,9-octahydro-oxazolo[4,5-g]quinoline or an enantiomer thereof of the formula



wherein R^4 is methyl, ethyl or n-propyl and R^3 is NH_2, $NH(C_{1\text{-}3}$ alkyl), or $N(C_{1\text{-}3}$ alkyl)$_2$.

4,659,833

OPTICALLY ACTIVE ISOCARBOSTYRIL DERIVATIVES AND A METHOD OF PREPARING THE SAME

Toshihiro Takahashi; Noriyoshi Sueda; Masahiro Tsuji, all of Kawagoe; Yoshiyuki Tahara, Tsurugashima; Hiroyasu Koyama, Ageo; Yoshikuni Suzuki, Ohmiya; Masao Nagase, Kawagoe, and Toshiji Sugai, Fukuoka, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 562,237, Dec. 16, 1983, Pat. No. 4,526,893. This application May 8, 1985, Ser. No. 731,963

Claims priority, application Japan, May 8, 1984, 59-90173

The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.

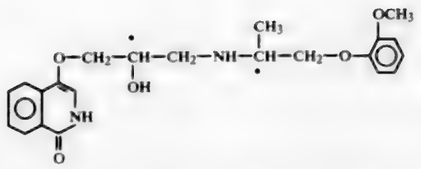
Int. Cl.⁴ C07D *217/24*

U.S. Cl. 546—142 **4 Claims**

1. An optically active isocarbostyril derivative isolated as the (S-S)-isomer, (S-R)-isomer, (R-S)-isomer or (R-R)-isomer and represented by the formula (II):

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(II)



wherein the asymmetric carbon atoms, each having an asterisk attached thereto as shown, exhibit either the (S)-configuration or the (R)-configuration, or a pharmaceutically acceptable acid addition salt of said isocarbostyril derivative.

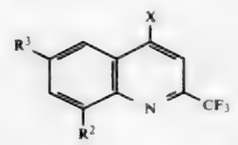
4,659,834

PROCESS FOR THE PREPARATION OF FLUOROMETHYL-QUINOLINE DERIVATIVES

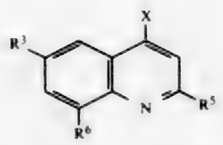
Zoltán Salamon; Ilona Imre née Virág, both of Tiszavasvári, and Magdolna Sebestyén, Hajdunánás, all of Hungary, assignors to Alkaloida Vegyeszeti Gyar, Tiszavasvari, Hungary

Filed Dec. 5, 1983, Ser. No. 558,161
Claims priority, application Hungary, Dec. 11, 1982, 4003/82
Int. Cl.⁴ C07D *215/18*
U.S. Cl. 546—180 **4 Claims**

1. A process for the preparation of a compound of the formula (I)



wherein
R^2 is trifluoromethyl or chloro;
R^3 is hydrogen or chloro; and
X is halogen,
which comprises the step of fluorinating a compound of the formula (II)



wherein
R^5 is $—CFCl_2$, $—CF_2Cl$ or $—CCl_3$; and
R^6 is chloro or trichloromethyl, with a mixture of antimony(III)fluoride and antimony(V)chloride or a mixture of antimony(III)fluoride and antimony(V)bromide wherein the molar ratio of antimony(III) to antimony(V) is 1-5:1 and the ratio of fluorine-chlorine or fluorine-bromine is 0.8 to 3.0 and the fluorine content of the reagent, related to the halogen atom, is 1.1 to 2.8 molar equivalent at 40° to 180° C.

4,659,835

PREPARATION OF TETRACHLOROPYRIDINE

David J. Koranek, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 3, 1986, Ser. No. 816,029
Int. Cl.⁴ C07D *211/72*
U.S. Cl. 546—345 **8 Claims**

1. A process for preparing tetrachloropyridine comprising reacting in water, pentachloropyridine with an amount of a metal effective to convert said pentachloropyridine to tetrachloropyridine, said process being conducted in the absence of an added mineral or organic hydrogen donating acid.

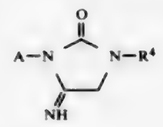
4,659,836

IMIDAZOLIDINONE IMINES

James A. Schwindeman, Fairlawn, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 742,690, Jun. 10, 1985, abandoned. This application Aug. 5, 1986, Ser. No. 894,502
Int. Cl.⁴ C07D *413/04*
U.S. Cl. 548—133 **1 Claim**

1. A compound of the formula:



wherein A is



wherein
X is CH or N;
R is up to C_6 alkyl, haloalkyl or cycloalkyl, up to C_5 alkenyl or alkynyl, $—R^2—O—R^3$ or $—R^2S—R^3$ wherein R^2 is up to C_6 alkylene and R^3 is up to C_6 alkyl, phenyl or benzyl; and R^4 is up to C_3 alkyl or allyl.

4,659,837

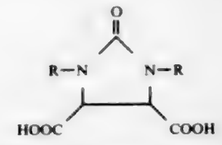
METHOD FOR THE PREPARATION OF 1,3-DISUBSTITUTED 4,5-CIS-DICARBOXY-2-IMIDAZOLIDONES

Walter Trautmann, Neustadt, Fed. Rep. of Germany, and Friedrich Vogel, Mountain Lake, N.J., assignors to BASF Aktiengesellschaft, Ladwigshafen, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,286
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150723
Int. Cl.⁴ C07D *233/32*
U.S. Cl. 548—321 **8 Claims**

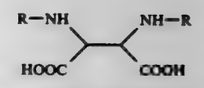
1. A process for the preparation of a 1,3-disubstituted 4,5-cis-dicarboxy-2-imidazolidone having the formula

(I)



in which R stands for an aliphatic hydrocarbon radical with 1 to 8 carbon atoms, or an aromatic hydrocarbon radical, comprising:
(A) reacting a diaminosuccinic acid compound having the formula

(II)



with phosgene in the presence of an alkali metal hydroxide, wherein when R is an aliphatic hydrocarbon radical with 1 to 8 carbon atoms said diaminosuccinic acid is present as an aqueous suspension maintained at a pH of about 7 to about 11 and a temperature of 0° C. to 60° C., and when R is an aromatic hydrocarbon radical, said diamino succinic acid is present as an aqueous suspension maintained at a pH of about 9.5 to about 12.5 and a temperature of 0° C. to 60° C., and wherein said diaminosuccinic acid is gassed with phosgene to obtain a reaction mixture containing the desired reaction product (I),
(B) separating said unreacted compound (II) from the resultant reaction solution at a pH of 3.5 to 4.5,
(C) extracting said reaction mixture with a water-miscible organic solvent at a pH value of less than 1.0 to recover compound (I).

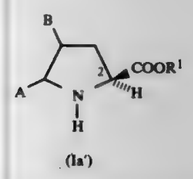
4,659,838

METHOD OF RESOLVING BICYCLIC IMINO-α-CARBOXYLIC ACID ESTER RACEMATES

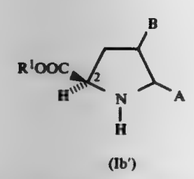
Ulrich Lerch, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 13, 1984, Ser. No. 681,329
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345355
Int. Cl.⁴ C07D *209/12, 209/52*
U.S. Cl. 548—452 **20 Claims**

1. A process for resolving racemic mixtures of bicyclic imino-α-carboxylic acid esters into the components of formulae Ia′ and Ib′



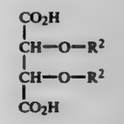
(Ia′)



(Ib′)

in which the carbon atom in the 2-position is in the S configuration in formula Ia′ or in the R configuration in formula Ib′, and in which R^1 stands for alkyl of 1 to 6 carbon atoms, cycloalkyl of 4 to 8 carbon atoms or aralkyl of 7 to 13 carbon atoms and A and B together form a chain of the formula $—(CH_2)_n—$ wherein n is 3, 4, 5 or 6, or a chain of the formula $—(CH_2)_p—CH=CH—(CH_2)_q—$ wherein (p+q) is 1, 2, 3 or 4 by crystallizing diastereoisomeric salts, which process comprises preparing the salts of the racemic mixture of compounds of formulae Ia′ and Ib′ with optically active O,O-diacyltartaric acids of formula II

(II)



in which R^2 denotes aroyl of 7 to 11 carbon atoms, in an ester, a ketone, an ether, a lower alcohol, a nitrile or a halogenated hydrocarbon as a solvent, or in a mixture of two or more solvents selected from the group consisting of esters, ketones, ethers, lower alcohols, nitriles and halogenated hydrocarbons, and
(a) cleaving the salt into the pure enantiomer of formula Ia′ or Ib′ by adding a base, or
(b) purifying the diastereoisomeric salt by recrystallization, reprecipitation or trituration, and cleaving the salt into the pure enantiomer of formula Ia′ or Ib′ by adding a base.

16. A diastereoisomeric salt of a bicyclic imino-α-carboxylic acid ester of formula Ia′ or Ib′ as set forth in claim 1 in which A, B, R^1, n, p and q, and the configurations of the carbon atoms in the 2-position are as defined in claim 1, with an optically active O,O-diacyltartaric acid of formula II.

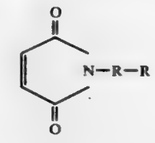
4,659,839

COUPLING AGENTS FOR RADIOLABELED ANTIBODY FRAGMENTS

Robert A. Nicolotti, Ferguson, and Richard T. Dean, Chesterfield, both of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Oct. 10, 1984, Ser. No. 659,456
Int. Cl.⁴ C07D *207/40;* A61K *43/00, 49/00;* G01N *33/563*
U.S. Cl. 548—546 **5 Claims**

1. A coupling agent for joining a paramagnetic or radionuclide metal ion with an antibody Fab′ fragment comprising a compound of the formula:



wherein R is selected from $—(CH_2)_n—$ in which n is an integer from 1 to 20 and phenylene and R′ is a group which is capable of chelating a radionuclide metal ion.

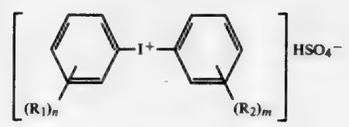
4,659,840

METHOD FOR PREPARING DIARYL IODONIUM SALTS

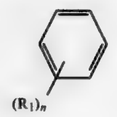
Isoo Shimizu; Yasuo Matsumura, both of Yokohama, and Yoshihisa Inomata, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,556
Claims priority, application Japan, Mar. 9, 1983, 58-37315
Int. Cl.⁴ C07D *207/407, 25/00*
U.S. Cl. 548—549 **6 Claims**

1. In a process for preparing diaryliodonium bisulfate salts of the formula:

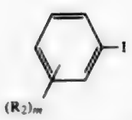


by coupling an aryl compound of the formula:



with an iodoaryl compound of the formula:

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in the presence of an oxidizing agent wherein

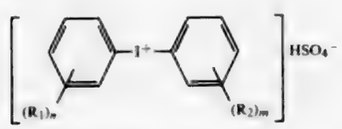
R_1 is hydrogen, C_1–C_{12} alkyl, C_3–C_{12} cycloalkyl, phenyl, naphthyl or C_1–C_{12} alkyl substituted phenyl or naphthyl;

R_2 is hydrogen, C_1–C_{12} alkyl, C_3–C_{12} cycloalkyl, C_1–C_{12} alkoxy, phenyl, naphthyl, C_1–C_{12} alkyl substituted phenyl, C_1–C_{12} alkyl substituted naphthyl, N,N-di(C_1–C_{12} alkanoyl)amine group or C_1–C_{12} alkane dicarboximido group; and

m and n are independently integers from 1–3;

the improvement comprising, adding directly to the aryl and iodoaryl compounds an oxidizing agent selected from the group consisting of persulfates and peroxides of alkali earth metals and ammonium salts and sulfuric acid in sufficient concentration to effect the formation of the diaryliodonium salt, said concentration of sulfuric acid being in the range from about 40% to about 85% by weight.

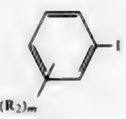
4. In a process for preparing diaryliodonium bisulfate salts of the formula:



by coupling an aryl compound of the formula:



with an iodoaryl compound of the formula:



wherein

R_1 is C_1–C_{12} alkoxy, N,N-di(C_1–C_{12} alkanoyl)amino group or C_1–C_{12} alkane dicarboximido group;

R_2 is hydrogen, C_1–C_{12} alkyl, C_3–C_{12} cycloalkyl, C_1–C_{12} alkoxy, phenyl, naphthyl, C_1–C_{12} alkyl substituted phenyl, C_1–C_{12} alkyl substituted naphthyl, N,N-di(C_1–C_{12} alkanoyl)amino group or C_1–C_{12} alkane dicarboximido group; and

m and n are integers from 1–3;

the improvement comprising, adding directly to the aryl and iodoaryl compounds an oxidizing agent selected from the group consisting of persulfates and peroxides of alkali earth metals and ammonium salts and sulfuric acid in sufficient concentration to effect the formation of the diaryliodonium salt, said concentration of sulfuric acid being in the range from about 1% to about 35% by weight.

4,659,841

PROCESS FOR THE PREPARATION OF INDOLES

Makoto Imanari; Hiroshi Iwane; Katsufumi Kuzira, and Takatoshi Seto, all of Ibaraki, Japan, assignors to Research Association for Utilization of Light Oil, Tokyo, Japan

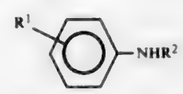
Filed Jul. 5, 1985, Ser. No. 751,865

Claims priority, application Japan, Jul. 10, 1984, 59-142783; Mar. 19, 1985, 60-55460

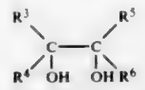
Int. Cl.⁴ C07D *209/08*

U.S. Cl. 548—508 **25 Claims**

1. A process for producing an indole compound, comprising: reacting an aniline compound of the formula:



wherein R^1 is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy, halogen or nitro, and R^2 is hydrogen or C_{1-4} alkyl and a 1,2-glycol compound of the formula:



wherein R^3–R^6, are the same or different, and each represents hydrogen, C_{1-4} alkyl or C_{1-4} alkyl substituted by halogen, hydroxy or cyano in a liquid phase in the presence of a catalyst comprising CdX_2^1 and KX^2, wherein X^1 and X^2, are the same or different, and each represents bromine or iodine.

4,659,842

PHTHALIC ANHYDRIDE PROCESS AND PRODUCT

Hans H. Vahlenkamp, Matawan, and Frank A. Calabrese, Parsippany, both of N.J., assignors to BASF Corporation, Wyandotte, Mich.

Filed Jun. 19, 1985, Ser. No. 746,412

Int. Cl.⁴ C07D *307/89*

U.S. Cl. 549—247 **6 Claims**

1. A process for producing a phthalic anhydride product having a novel particle configuration comprising spheroids, needle-like crystalline configurations, and amorphous particles; the process comprising:

A. feeding molten phthalic anhydride at a temperature between about 131° and 155° C. into a spray nozzle in a closed cycle congealing chamber, and discharging the molten phthalic anhydride from the spray nozzle, at a pressure of 10–300 pounds per square inch for nozzle orifices having a diameter from 1.0 to 4.0 mm, into a flow of inert gas at a temperature of about −10° to 70° C. to remove heat and congeal the product;

B. exhausting gas from the congealing chamber and passing the exhausted gas into a cyclone separator; and

C. passing the exhaust gas from the cyclone separator through a standard cooling system to remove heat therefrom so that the temperature thereof is lowered to about −10° to 70° C., whence it is introduced into the congealing chamber; and

D. removing the congealed phthalic anhydride product and transferring the product to a hopper or other storage means.

6. Phthalic anhydride in the form of a mixture of spheroids, needle-like crystalline configurations, and amorphous particles, the mixture having a bulk density of 450–700 grams per liter and a particle size of 100–700 microns.

4,659,843

PROCESS FOR PREPARING 3-METHYL-2-BUTENE-4-OLIDE (4-METHYL-2(5H)-FURANE-2-ONE)

Paul Binger, and Hans-Joachim Weintz, both of Mülheim/Ruhr, Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim/Ruhr, Fed. Rep. of Germany

Filed Feb. 1, 1985, Ser. No. 697,354

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1984, 3403793

Int. Cl.⁴ C07D *307/32*

U.S. Cl. 549—295 **7 Claims**

1. A process for preparing 3-methyl-2-butene-4-olide by the codimerization of methylene-cyclopropane with carbon dioxide (CO_2), characterized in that the codimerization is carried out at a temperature of 100° C. to 200° C. in the presence of a mixture of a palladium(O) compound and a phosphane or phosphite compound which mixture is stable in the reaction mixture, with CO_2 under a pressure of 10 to 110 bar.

4,659,844

CYCLIC ETHERS WHICH ARE SUBSTITUTED IN A α-POSITION BY AN ISOCYANIDE-DICHLORIDE GROUP, AND A PROCESS FOR THEIR PREPARATION

Tillmann Hassel, Cologne; Hanns P. Müller, Odenthal-Blecher, and Horst Böshagen, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

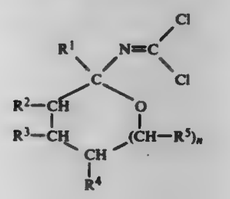
Filed Jul. 25, 1985, Ser. No. 759,033

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1984, 3429432

Int. Cl.⁴ C07D *309/04, 307/22*

U.S. Cl. 549—424 **4 Claims**

1. A cyclic ether, substituted in the α-position by an isocyanide-dichloride group, of the formula



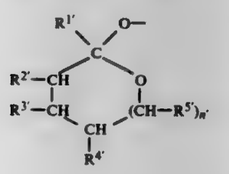
I

in which

R^1 is alkanoyloxymethyl, alkanesulfonyloxymethyl, benzoyloxymethyl or tolylsulfonyloxymethyl or hydrogen,

n is 0 or 1 and

R^2, R^3, R^4 and R^5 independently of one another are hydrogen, halogen, nitro, alkanoyloxy, alkansulfonyloxy, benzoyloxy, tolylsulfonyloxy, alkanoyloxymethyl, alkanesulfonyloxymethyl, benzoyloxymethyl or tolylsulfonyloxymethyl or the radical of a cyclic ether of the formula



II

in which

n', $R^{1'}$, $R^{2'}$, $R^{3'}$, $R^{4'}$ and $R^{5'}$, independently of one another and independently of the values n,

R^1, R^2, R^3, R^4 and R^5 in the formula I which correspond to them have the meaning indicated for n, R^1, R^2, R^3, R^4 and R^5 under formula I, subject to the proviso that at least one of the radicals R^1, R^2, R^3, R^4 and R^5 and at least one of the radicals $R^{1'}$, $R^{2'}$, $R^{3'}$, $R^{4'}$ and

R^5 is alkanoyloxy, alkansulfonyloxy, benzoyloxy, tolylsulfonyloxy alkanoyloxymethy, alkanesulfonyloxymethyl, benzoyloxymethyl or tolylsulfonyloxymethyl and that not more than one of the radicals R^2, R^3, R^4 or R^5 and none of the radicals $R^{2'}$, $R^{3'}$, $R^{4'}$ or $R^{5'}$ represent the radical of a cyclic ether of the formula II.

4,659,845

PROCESS FOR THE PRODUCTION OF N-METHYLCARBAMATES

Franco Rivetti, Schio; Franco Mizia; Guido Garone, both of Milan, and Ugo Romano, Vimercate, all of Italy, assignors to Enichem Sintesi S.p.A., Palermo, Italy

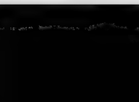
Filed May 7, 1985, Ser. No. 731,538

Claims priority, application Italy, Feb. 8, 1985, 19453 A/85

Int. Cl.⁴ C07D *317/44*; C07C *125/067*

U.S. Cl. 549—438 **18 Claims**

1. In a process for the preparation of N-methylcarbamates having the formula



(I)

wherein RO— is a naphthol or substituted phenol radical, wherein diphenyl carbonate reacts with methylamine to form phenyl-N-methylurethane, phenyl-N-methylurethane is thermally decomposed to form methyl isocyanate and the methyl isocyanate is reacted with a substituted phenol or a naphthol to form the N-methylcarbamate (I), the improvement comprising:

(a) feeding streams of diphenyl carbonate and methylamine in a molar ratio of from 0.8–1:1 to a first reaction space with a first recycle mixture discharged from the first reaction space and containing phenyl-N-methylurethane, phenol and unreacted diphenyl carbonate;

(b) reacting diphenyl carbonate and methylamine and the first recycle mixture as a liquid phase at a temperature of from 20° C. to 80° C. in the absence of an organic solvent to form a first reaction product containing phenyl-N-methylurethane, phenol and unreacted diphenyl carbonate;

(c) feeding to a second reaction space streams of the first reaction product and a second recycle mixture discharged from a third reaction space, the second recycle mixture containing phenyl-N-methylurethane and phenol;

(d) reacting the streams of the first reaction product and the second recycle mixture in a liquid phase at a temperature of from 180° C. to 220° C. at a pressure of from 200 mmHg to atmospheric pressure in the absence of an organic solvent to partially decompose phenyl-N-methylurethane and thereby obtain a second reaction product containing unreacted phenyl-N-methylurethane and methyl isocyanate;

(e) forwarding the phenol and unreacted phenyl-N-methylurethane to a third reaction space;

(f) distilling phenol and unreacted phenyl-N-methylurethane in the third reaction space to thereby obtain phenol and the second recycle mixture;

(g) feeding methyl isocyanate formed in the second reaction space to a fourth reaction space;

(h) reacting methyl isocyanate with substituted phenol or naphthol in the fourth reaction space in the presence of an inert organic solvent and a basic catalyst at a temperature of from 0° to 50° C. to thereby obtain N-methylcarbamate.

4,659,846

PREPARATION OF 2,5-DILOWERALKYL-1,4:3,6-DIANHYDROSORBITOLS

Manfred Maurer, Kirchheim/Weinstrasse; Winfried Orth, Hassloch/Pfalz, and Werner Fickert, Mannheim, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Fed. Rep. of Germany

Filed May 2, 1986, Ser. No. 859,006
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1985, 3521809
Int. Cl.[4] C07D *493/04*
U.S. Cl. 549—464 7 Claims

1. In a process for the preparation of 2,5-diloweralkyl-1,4; 3,6-dianhydrosorbitols by reacting 1,4; 3,6-dianhydrosorbitol with an alkylating agent in an alkaline aqueous-organic solvent solution, the improvement comprising using a tertiary alkanol as the organic solvent.

4,659,847

CHEMICALLY STABLE COLLOIDAL ANTIMONY OXIDE

Toshiyuki Kobeshi, and Hideo Naka, both of Okayama, Japan, assignors to Japan Exlan Company, Ltd., Osaka, Japan

Filed Mar. 29, 1985, Ser. No. 717,838
Claims priority, application Japan, May 25, 1984, 59-107049
Int. Cl.[4] C07F *9/68*
U.S. Cl. 556—5 9 Claims

1. Chemically stable colloidal antimony oxide which has been stabilized by reacting it with an organosilicon compound at a temperature of from 30° C. to 100° C. for a period of from 10 minutes to 3 hours in which the organosilicon compound is present in an amount of from 0.5 to 25 weight % based on the antimony and whose pH has been regulated to within the range of from 2 to 12, said organosilicon compound having the structural formula:



wherein R is a C_{1-8} substituent containing no amino group, mercapto group, methacryloxy group, or halogen atom; each of R_1 and R_2 is a C_{1-4} substituent; and R_3 is a C_{1-4} alkyl group, alkoxy-substituted alkyl group or acetyl group.

4,659,848

TITANIUM COMPOSITIONS

Peter D. Kay, Hartlepool, and Michael C. Girot, Stockton on Tees, both of England, assignors to Tioxide Group PLC, England

Filed Jul. 12, 1985, Ser. No. 754,292
Claims priority, application United Kingdom, Jul. 20, 1984, 8418517
Int. Cl.[4] C07F *7/28*
U.S. Cl. 556—24 10 Claims

1. An organotitanate comprising the reaction product of a titanium orthoester and at least a monoalkyl phosphate in which the alkyl group contains up to 6 carbon atoms and in which the total molar ratio P:Ti in the product is less than 2.

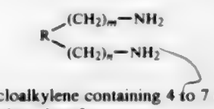
4,659,849

MACROMOLECULAR COORDINATION COMPOUND CONTAINING PLATINUM WITH ANTITUMOR ACTIVITY IN RODENTS

Jaroslav Drobník; Dagmar Noskovà; Frantisek Rypácek; Marie Metalová, and Vladimír Sandek, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Czechoslovakia

Filed Nov. 8, 1985, Ser. No. 796,288
Claims priority, application Czechoslovakia, Nov. 9, 1984, 8539-84
Int. Cl.[4] C07F *15/00*
U.S. Cl. 556—137 3 Claims

1. Macromolecular antitumor compound containing platinum, wherein hydroxy groups in side chains of a polymer, which is selected from a group consisting of comprising poly(amino acids), polysaccharides and polyamides containing alpha-hydroxy-acids, have the character of primary, secondary or tertiary alcohols and are completely or in part esterified with a carboxylic group in the C4 position of 1,2,4-tricarboxybenzene, whereas the carboxyls in the position C1 and C2 bind an atom of platinum with coordination bonded amino ligands represented by two molecules of monoamine selected from the group comprising ammonia, alkylamine with a linear or branched alkyl chain containing 1 to 6 carbon atoms, and cycloalkylamine with a cycloalkyl group formed from 4 to 7 carbon atoms, or represented by diamine of the general formula I,



I

where R is cycloalkylene containing 4 to 7 carbon atoms and m=0,1 or 2 and n=1 or 2.

4,659,850

POLYORGANO(HYDRO)SILAZANE AND PROCESS FOR PRODUCING SAME

Mikiro Arai, Saitama; Takeshi Isoda, Niiza, and Osamu Funayama, Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1986, Ser. No. 849,755
Claims priority, application Japan, Dec. 28, 1985, 60-293472
Int. Cl.[4] C07F *7/10*
U.S. Cl. 556—409 19 Claims

1. A polyorgano(hydro)silazane represented by the following compositional formula (I):

$$(RSiHNH)_x[(RSi(H)_{1.5}N]_{1-x} \quad (I)$$

wherein R may be different and is selected from the group consisting of an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a group other than these groups in which the atom directly bound to Si is carbon, an alkylsilyl group, an alkylamino group, and an alkoxy group, and $0.4<x<1$.

4,659,851

NOVEL ORGANOSILICON COMPOUNDS

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 26, 1986, Ser. No. 844,057
Int. Cl.[4] C07F *7/08, 7/18*
U.S. Cl. 556—431 13 Claims

1. An organosilicon compound of the general formula

$$(R^1O)_m(R^2O)_{4-m-p}R^3_pSi,$$

$$R^4[OSi(OR^2)_{3-p}R^3_p]_2,$$

$$(R^1O)_m(R^2O)_{3-m}SiR^5Si(OR^1)_r(OR^2)_{3-r}$$

or

$$R^4[OSi(OR^2)_2R^5Si(OR^2)_3]_2$$

where

R^1 represents a radical selected from the group consisting of

$CH_2=CHCH_2R^6-$,

$CH_2=CHR^6OR^7-$,

$CH_2=CHR^6OC(O)R^8$,

$CH_2=CHR^9C(O)OR^7-$,

and

$(CH_2=CHR^6O)_2R^{10}-$;

R^2 represents an alkyl radical containing from 1 to 4 carbon atoms;

R^3 represents a monovalent hydrocarbon or fluorinated hydrocarbon radical;

R^4 represents a radical selected from the group consisting of

$CH_2=CHR^{10}<$,

$CH_2=CHR^6OR^{10}<$,

$CH_2=CHR^6OC(O)R^{10}<$

and

$CH_2=CHR^9C(O)OR^{10}<$;

R^5 represents hydrocarbylene containing at least 2 carbon atoms;

R^6 represents a hydrocarbylene or substituted hydrocarbylene radical where the substituent is hydroxyl or alkoxy;

R^7 is selected from the same group as R^6, with the proviso that R^7 contains at least 2 carbon atoms;

R^8 is selected from the same group as R^6;

R^9 represents a radical selected from the same group as R^6;

R^{10} represents a trivalent hydrocarbon radical;

n is 1 or 2;

p is 0 or 1;

r is 0 or 1; and

$4-n-p$ is at least 2.

4,659,852

4-CHLOROMETHYLPHENYL METHYL DICHLOROSILANE

Toshio Shinohara; Masahiko Ogawa, and Akio Yokoo, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1986, Ser. No. 909,101
Claims priority, application Japan, Sep. 19, 1985, 60-207153
Int. Cl.[4] C07F *7/08*
U.S. Cl. 556—476 2 Claims

1. 4-Chloromethylphenyl methyl dichlorosilane.

4,659,853

PROCESS FOR THE PRODUCTION OF ISOTHIOCYANATE DERIVATIVES

Yun-Lung Fu, New Haven, and Peter J. Strydom, Fairfield, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 22, 1986, Ser. No. 821,297
Int. Cl.[4] C07C *155/02, 155/08*
U.S. Cl. 558—19 10 Claims

1. A process for the production of thionocarbamate, thiourea and dithiocarbamate derivatives of a carbonyl isothiocyanate which comprises:

(1) reacting a compound having the formula:

(I)

wherein R is a C_1–C_8 alkyl radical, a C_3–C_4 alkene radical or a C_6–C_{10} aryl radical and X is a halogen atom, with a compound having the formula:

MSCN (II)

wherein M is an alkali or alkaline earth metal, lead or NH_4 and a compound having the formula:

R^1YH (III)

wherein R^1 is a C_1–C_{10} alkyl radical, a C_6–C_{10} aryl radical or a C_1–C_8 alkoxy radical and Y is oxygen, sulfur or NR^2, wherein R^2 is hydrogen or R^1, in the presence of (A) a solvent for the compounds or (B) water and a catalyst comprising a six-membered mononuclear or ten-membered, fused, polynuclear, aromatic heterocyclic compound having 1 or 2 nitrogen atoms as the only hetero atoms in the ring, and provided that when Y is oxygen or sulfur the solvent can be an excess of the compound of Formula (III), at a temperature ranging from about −10° C. to about 120° C. for up to about 16 hours and

(2) recovering the resultant derivative.

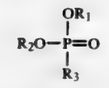
4,659,854

METHOD OF PREPARING DIALKYLPHENYLPHOSPHONATES

Karl E. Reineke, Mohegan Lake, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 2, 1986, Ser. No. 869,538
Int. Cl.[4] C07F *9/40*
U.S. Cl. 558—98 13 Claims

1. A method of preparing a triorganophosphonate represented by the formula:



wherein R_1 and R_2 and R_3 are the same or different organoradicals; and

wherein the process comprises mixing in a liquid reaction medium; (1) a soluble metal alkoxide reactant with; (2) at least a stoichiometric amount of an organophosphonic dihalide reactant, with the proviso that the reactants are mixed at a rate sufficient to cause a temperature rise to at least 60° C. within 15 minutes.

4,659,855

ARYL SULFONYL FLUORIDE COMPOUNDS

James C. Powers, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed May 9, 1983, Ser. No. 493,064
Int. Cl.[4] C07C *141/14, 143/70*
U.S. Cl. 558—23 3 Claims

1. A compound of the formula:

$$2-(R^1-Y-X)-C_6H_4-SO_2F$$

wherein

X is selected from the group consisting of NH, O, S, and CF_2,

Y is selected from the group consisting of CO, S, SO, O, CF_2, NH, and CH_2, and

R^1 is a C_{1-5} perfluoroalkyl.

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3. A substituted diphenyl compound of the formula:

$$2\text{—}(C_6H_5\text{—}R^3)\text{—}C_6H_4\text{—}SO_2F$$

wherein R^3 is a linear spacing gorup of 0.45 to 1.7 nm bridging the two phenyl rings and is composed of 3 to 11 uncharged atomic groupings selected from the group consisting of CO, CH_2, CF_2, SO_2, O, NH, and S.

4,659,856

4,4'-BIS-(β-HYDROXYETHYLSULFONYL)-BIPHENYL AND ITS ESTERS

Hartmut Springer, Königstein, and Gerd König, Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 12, 1985, Ser. No. 775,138

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1984, 3433981

Int. Cl.⁴ C07C *141/18, 147/10, 69/017;* C07F *9/145*

U.S. Cl. 558—26 **3 Claims**

1. A compound of the formula

$$Z\text{—}CH_2\text{—}CH_2\text{—}SO_2\text{—}\langle\rangle\text{—}\langle\rangle\text{—}SO_2\text{—}CH_2\text{—}CH_2\text{—}Z$$

in which the radicals Z, which are identical to one another, each denotes a hydroxy group or a sulfato, thiosulfato or phosphato group.

4,659,857

INSECTICIDAL CINNAMAMIDE COMPOUNDS AND METHOD FOR CONTROLLING INSECTS THEREWITH

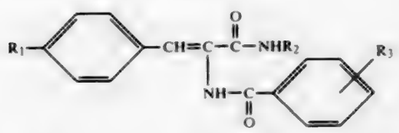
David G. Kuhn, Bucks County, Pa., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 4, 1985, Ser. No. 772,511

Int. Cl.⁴ C07C *143/68, 103/82*

U.S. Cl. 558—58 **13 Claims**

1. A compound having the formula:



wherein R_1 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, CF_3CH_2O, CF_3O, F, Cl, Br, CF_3, NO_2, CF_2HS, CF_2HO, $(R)_2N$-SO_3, R-CO-NH or CHY_2CF_2O; Y is F, Cl or Br; R is C_1–C_4 alkyl; R_2 is CH_3, C_2H_5, branched C_3–C_5 alkyl or cyclopropyl; R_3 is hydrogen, Cl, C_1–C_4 alkyl, C_1–C_4 alkoxy or CN.

4,659,858

PREPARATION OF 2,3-DIHYDRO-1,3,2-BENZODIAZAPHOSPHOLE-2-OXIDES

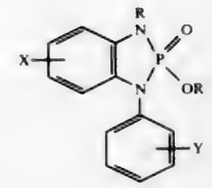
Kurt H. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 19, 1985, Ser. No. 811,067

Int. Cl.⁴ C07F *9/24*

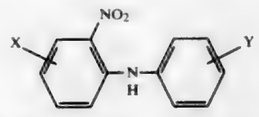
U.S. Cl. 558—81 **3 Claims**

1. A process for preparing a compound of the formula



(I)

which comprises treating 2-nitro-diphenylamine of the formula



with a trialkyl phosphite $(RO)_3P$, R being an alkyl of up to five carbon atoms, X and Y each representing an unsubstituted or halogen-substituted alkyl, alkenyl or alkoxy, cyano, alkylsulfonyl, alkoxycarbonyl or a halo group at a temperature ranging from about 80° C. to about 165° C.

4,659,859

2-ALKOXY-1-ALKOXY PHOSPHORYL DICHLORIDES

Rosanne Bonjouklian, and Michael L. Phillips, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 627,322, Jul. 2, 1984, abandoned. This application Jul. 24, 1986, Ser. No. 888,905

Int. Cl.⁴ C07F *9/14*

U.S. Cl. 558—188 **1 Claim**

1. A compound of the structure

$$R^1\text{—}CHOR\text{—}CH_2O\text{—}P(=O)Cl_2$$

wherein R is C_{1-6} alkyl and R^1 is a straight-chain C_{10-24} straight chain alkyl radical.

4,659,860

THIOESTER OF N-PHOSPHONOMETHYLGLYCINE

John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

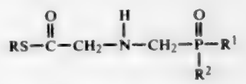
Continuation of Ser. No. 361,219, Mar. 24, 1982, Pat. No. 4,495,363, which is a division of Ser. No. 630,392, Nov. 10, 1975, abandoned, which is a continuation of Ser. No. 362,712, May 22, 1973, abandoned, which is a division of Ser. No. 170,385, Aug. 9, 1971, Pat. No. 3,799,758, which is a continuation-in-part of Ser. No. 123,057, Mar. 10, 1971, abandoned. This application Apr. 13, 1984, Ser. No. 600,227

The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.

Int. Cl.⁴ C07C *153/07*

U.S. Cl. 558—231 **10 Claims**

1. A herbicidally active compound represented by the formula



wherein R^1 and R^2 are selected from the group consisting of —OH, —OR^6 wherein R^6 is a salt-forming cation selected from

the group consisting of cations of alkali metals, alkaline earth metals, copper, zinc, manganese, nickel, ammonium, and organic ammonium, provided that when the organic group is aryl the ammonium salt is a primary amine salt, and mixtures of such salts; and OR^3 wherein R^3 is selected from phenyl or ethyl, and R is a monovalent hydrocarbon group having from 1 to 18 carbon atoms.

4,659,861

NOVEL NITRILE FUNCTIONAL GLYCOL ETHER ACETALS

Robert L. Reierson, and Gary P. Rabold, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 3, 1981, Ser. No. 317,801

Int. Cl.⁴ C07C *121/16, 121/66, 121/75, 121/28*

U.S. Cl. 558—448 **6 Claims**

1. A compound of the formula:

$$NC\text{—}Alk\text{—}CH\text{—}(O\text{—}CHR\text{—}CH_2O)_mR')_2$$

where Alk is a divalent C_{2-10} moiety selected from the group consisting of alkylene and aryl, cyano, alkoxy and alkoxycarbonyl substituted derivatives thereof; R independently each occurrence is hydrogen, methyl, or ethyl; R' is lower alkyl; and m independently each occurrence is an integer from zero to about 20 provided that in at least one occurrence m is greater than or equal to 1.

4,659,862

PROCESS OF PREPARING NITRODIHYDROARYL CARBONYL COMPOUNDS

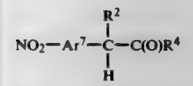
Thaliyil V. Rajanbabu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 3, 1984, Ser. No. 606,631

Int. Cl.⁴ C07C *87/127*

U.S. Cl. 560—20 **17 Claims**

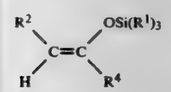
1. A process for making a nitroaryl carbonyl compound of the formula



comprising (a) mixing a nitroaryl compound of the formula

$$ArNO_2$$

and a silane of the formula



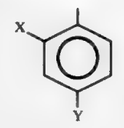
under anhydrous conditions; (b) cooling the mixture to a temperature below about −20° C.; (c) adding a fluoride-containing compound that will provide fluoride ions under reaction conditions selected from tris(dialkylamino)sulfonium difluorotrimethylsilicate and n-butylammonium fluoride; and (d) adding bromine or an oxidizing agent selected from tetrachloro-1,4-benzoquinone, tetrachloro-1,2-benzoquinone, 2,3-dichloro-5,6-dicyano-1,4-benzoquinone, sulfuryl halide and n-bromosuccinimide; wherein:

R^1, individually, is C_{1-4} alkyl or phenyl, provided that no more than one of R^1 is phenyl;

R^2 is H or C_{1-12} alkyl;

R^4 is C_{1-12} hydrocarbyloxy;

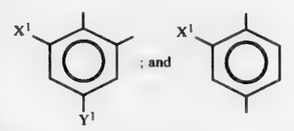
Ar is a radical of the formula



wherein:

X and Y are independently selected from H, F, Cl, Br, CF_3, R^5 and OR^5; provided that when X and Y are other than H, they are independently selected from F, Cl, Br, CH_3, C_2H_5, and OR^7;

Ar^7 is a divalent radical selected from



wherein:

X^1 and Y^1 are independently selected from H, F, Cl, Br, CF_3, R^5 and OR^5; provided that when X^1 and Y^1 are other than H, they are independently selected from F, Cl, Br, CH_3, C_2H_5, and OR^7 and X^1 is adjacent to the nitro group;

R^5 is C_{1-12} hydrocarbyl; and

R^7 is C_{1-4} alkyl.

4,659,863

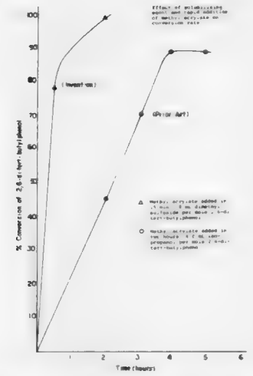
PHENOLIC ESTER SYNTHESIS

Lester P. J. Burton, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

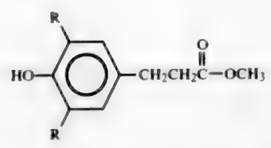
Filed Sep. 12, 1985, Ser. No. 775,166

Int. Cl.⁴ C07C *69/76*

U.S. Cl. 560—75 **24 Claims**

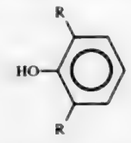


1. A process for the preparation of excellent yields of a methyl ester of formula I:



(I)

wherein the R are independently selected from alkyl having 1–12 carbon atoms, cycloalkyl have 5–8 carbon atoms, aryl having 6–12 carbon atoms, and alkaryl or aralkyl having 7 to 12 carbon atoms, consisting essentially of (a) providing in a reaction mixture of about one mole part methyl acrylate and about one mole part phenol of formula II:



(II)

wherein R is as defined above, an alkali metal alkaline catalyst so as to form in said reaction mixture an alkali metal phenolate reactive intermediate and (b) reacting said reaction mixture in the presence of at least about 0.10 mole part of an agent effective to solubilize said alkali metal phenolate and effective to increase the rate of reacting said reaction mixture; wherein said methyl acrylate is added to said phenol in step (a) in a period of less than 60 minutes and the formation of undesirable by-products is reduced.

4,659,864

METHOD FOR RACEMIZATION OF CHRYSANTHEMIC ACID OR ITS ESTER

Gohfu Suzukamo, Ibaraki, and Masami Fukao, Shiga, both of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Jun. 14, 1985, Ser. No. 744,546

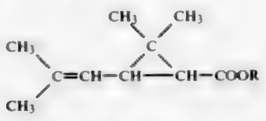
Claims priority, application Japan, Jun. 15, 1984, 59-124346; Jun. 18, 1984, 59-125892

Int. Cl.⁴ C07C *51/353*; C07B *20/00*

U.S. Cl. 560—124 **25 Claims**

1. A method for racemization of an optically active chrysanthemic acid, which comprises contacting said acid with an aluminum bromide compound.

4. A method for racemization of an optically active chrysanthemic acid ester of the formula:



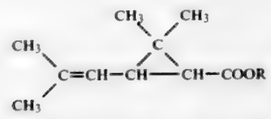
wherein R is selected from the group consisting of an alkyl group and a cycloalkyl group, said alkyl group may be substituted with a group selected from the group consisting of a cycloalkyl group and an aryl group, with alkyl group having from 1 to 20 total carbon atoms including the substituent, said cycloalkyl group may be substituted with a group selected from the group consisting of an alkyl group and an alkoxy group, said cycloalkyl group having from 5 to 20 total carbon atoms including the substituent, said method comprising:

contacting said ester with an aluminum bromide compound in the presence of an organic hydroperoxide.

6. A method for converting isomers selected from the group consisting of a racemic cis isomer and a mixture of the racemic cis and trans isomers of chrysanthemic acid into the corresponding racemic trans-rich isomer, said method comprising:

contacting said acid with an aluminum bromide compound.

9. A method for the conversion of isomers selected from the group consisting of a racemic cis isomer and a mixture of racemic cis and trans isomers of chrysanthemic acid ester of formula:



wherein R is selected from the group consisting of an alkyl group and a cycloalkyl group, said alkyl group may be substituted with a group selected from the group consisting of a cycloalkyl group and an aryl group, said alkyl group having from 1 to 20 total carbon atoms including the substituent, said cycloalkyl group may be substituted with a group selected from the group consisting of an alkyl group and an alkoxy group, said cycloalkyl group having from 5 to 20 total carbon atoms including the substituent, into the corresponding racemic trans-rich isomer, said method comprising:

contacting said ester with an aluminum bromide compound in the presence of an organic hydroperoxide.

4,659,865

PROCESS FOR PRODUCING ETHYLIDENEDIACETATE

Tomiya Isshiki, Tokyo; Yasuhiko Kijima; Yuh Miyauchi, both of Matsudo, and Takayuki Yasunaga, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Continuation of Ser. No. 429,156, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 185,685, Sep. 10, 1980, abandoned. This application Jul. 30, 1984, Ser. No. 636,067

Claims priority, application Japan, Sep. 13, 1979, 59-117660

Int. Cl.⁴ C07C *67/36, 67/38*

U.S. Cl. 560—232 **18 Claims**

1. A process for producing ethylidenediacetate which comprises reacting methyl acetate or dimethyl ether, carbon monoxide and hydrogen in the presence or absence of a solvent and in the presence of a catalyst consisting essentially of (a) as a main catalyst component, a combination of (1) at least one metal material selected from the group consisting of nickel and nickel compounds and (2) at least one metal material selected from the group consisting of cobalt and cobalt compounds, and (b) as a secondary catalyst component, at least one material selected from the group consisting of iodides having the formula RI_n wherein R is an alkyl radical having 1 to 4 carbon atoms and n is an integer of 1 to 3, under substantially anhydrous conditions, the amount of each of the metal materials (1) and (2) being in the range of from 5×10^{-3} to 1.0 mol per liter of the total amount of the starting material and solvent if present, and the amount of the secondary catalyst component being in the range of 10^{-4} to 10 equivalent weight per liter of the total amount of the starting material and solvent if present.

4,659,866

CONTINUOUS PREPARATION OF FORMAMIDE

Kaspar Bott, Wachenheim; Gerd Kaibel, Lampertheim; Herwig Hoffmann, Frankenthal; Rudolf Irnich, Bobenheim, and Otto Kratzer, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 10, 1982, Ser. No. 347,578

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106054

Int. Cl.⁴ C07C *102/06*

U.S. Cl. 564—137 **2 Claims**

1. A process for the continuous preparation of formamide from methyl formate and ammonia, pure methanol being recovered, wherein

(a) the reaction of methyl formate and ammonia in substantially equimolar quantities is carried out predominantly in the liquid phase in the upper region of a reaction column R having a total of from 15 to 30 theoretical plates, with said reaction column R being operated at a pressure ranging from atmospheric to about 2 bar and wherein a temperature gradient is maintained therein which under atmospheric pressure ranges from 30°–62° C. at the top of said column to 110°–130° C. at the bottom and from 50°–80° C. at the top and 110°–130° C. at the bottom when employing a pressure of about 2 bar,

(b) the methanol formed in this reaction is removed, together with small amounts of formamide, from the column in vaporous form at the level of plates 1-5 (counted from the bottom),

(c) the formamide is removed from this methanol/formamide mixture, together with small amounts of methanol, as a bottom fraction in a distillation column D1 and recycled to R, pure methanol is taken off column D1 as a top fraction and recovered, and

(d) the small amounts of methanol contained in the bottom product from R, which substantially consists of formamide and in this column should be at from 110° to 130° C., are separated off in a distillation colum D2.

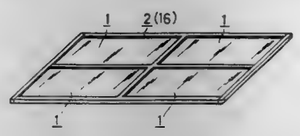
VOL 1077 ISS 3 AP 21 1987 UMI

4,659,867

PHOTOELECTRIC CONVERSION PANEL AND ASSEMBLY THEREOF

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan

Division of Ser. No. 614,211, May 25, 1984, Pat. No. 4,571,446.
This application Dec. 9, 1985, Ser. No. 806,405
Claims priority, application Japan, May 25, 1983, 58-92177
The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.
Int. Cl.⁴ H01L *25/02*
U.S. Cl. 136—251 **7 Claims**



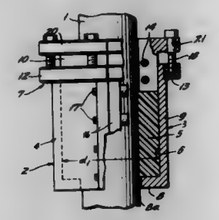
6. A photoelectric conversion panel assembly comprising:
a plurality of photoelectric conversion panels disposed side by side in a frame;
wherein each photoelectric conversion panel comprises a light-transparent substrate and a laminated member formed on the light-transparent substrate and comprising, in sequence, a light-transparent first conductive layer, at least one PIN tupe non-single crystal semiconductor laminate photoelectric conversion member, and a second conductive layer;
wherein the light-transparent substrate of each photoelectric conversion panel is formed of glass and has such a flexibility that it can be bent with a bend radius less than 3 m; and
wherein the frame is a flexible plastic frame reinforced with carbon fibers.

4,659,868

APPARATUS FOR RESTRICTING WATER PROPAGATION ALONG A SUBMERGED CABLE

Angelo Sala, Merate, Italy, assignor to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed Oct. 29, 1985, Ser. No. 792,441
Claims priority, application Italy, Oct. 31, 1984, 23418 A/84
Int. Cl.⁴ H02G *1/00*
U.S. Cl. 174—23 R **8 Claims**



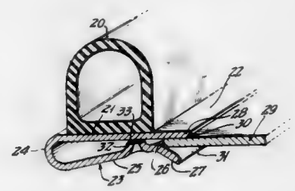
1. In combination, a multi-layer, electric, submarine cable having interstices therewithin along which water can spread, said cable being compressible so that the size of said interstices can be reduced by compressing the cable and said cable having a cut therein which is exposed to water, and constricting apparatus for uniformly compressing a length of said cable radially and thereby restricting the flow of water longitudinally of the cable, said appatatus comprising:
a rigid, hollow cylinder having an interior wall of a size greater than the exterior size of the cable to be constricted and surrounding said length of cable adjacent said cut, said cylinder having stop means at one end thereof with an opening therein at least as large as the exterior size of said cable but smaller than the size of said interior wall and said cylinder being free to move with said length of cable;
a compressible and deformable sleeve between said interior wall and said length of cable, said sleeve having an exterior surface engaging said interior wall and having a central bore substantially equal to the exterior size of said length of cable;
an annular body in said hollow cylinder at the opposite end thereof and engageable at one end thereof with said sleeve, said body being movable axially with respect to said hollow cylinder; and
compressing means acting between said body and said hollow cylinder and pressing said body against said sleeve and thereby compressing and deforming said sleeve, whereby said sleeve radially compresses said cable and reduces the size of said interstices therein.

4,659,869

CLIP-ON STRIP FOR RFT/EMI SHIELDING

Robert B. Busby, Pawling, N.Y., assignor to Pawling Rubber Corporation, Pawling, N.Y.

Continuation of Ser. No. 755,202, Jul. 11, 1985, abandoned, which is a continuation of Ser. No. 506,010, Jun. 20, 1983, abandoned. This application Jan. 30, 1986, Ser. No. 824,297
Int. Cl.⁴ H05K *9/00*
U.S. Cl. 174—35 GC **1 Claim**

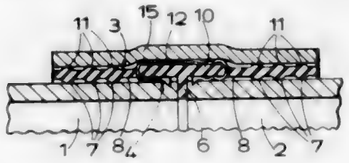


1. In an RFI/EMI shielding strip for electronic cabinets and the like and of the type comprising an elongated rolled metal strip of generally U-shaped cross section formed by front and back principal walls and having open and closed edges, said strip being of great length in relation to its width and being adapted to frictionally engage the edge of a cabinet panel, and a generally coextensive length of resilient, conductive elastomer mounted on and conductively associated with the front wall of said roller metal strip, the improvement characterized by
(a) the front wall of said strip, on which said conductive elastomer is mounted, being substantially flat over most of its width,
(b) said front wall having an edge projection along the open edge of the strip extending beyond the free end extremity of the back wall to form an installation guide surface,
(c) said back wall having convergent and divergent wall portions, relative to said front wall, forming a throat area intermediate the side edges of the strip,
(d) the back wall of said strip extending divergently from said throat area toward the closed edge of the strip,
(e) a plurality of sharp, pointed grounding elements periodically spaced along the length of the back wall of said strip for establishing metal-to-metal contact between said strip and the panel to which said strip is mounted,
(f) said grounding elements projecting at least slightly closer to said front wall than the back wall in the region of said throat,
(g) said grounding elements being located closely adjacent said throat area but spaced on the side thereof toward said closed edge of the strip,
(h) said grounding elements being spaced apart along the length of said strip, with a separation of at least about two

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inches to accommodate progressive manual application of an elongated strip to an electronic cabinet.

4,659,870
SOCKET-LESS PIPE JOINTS
Conrad D. Jones, Shrewsbury, England, assignor to Glynwed Consumer & Building Products Limited, England
Filed May 3, 1985, Ser. No. 730,684
Claims priority, application United Kingdom, May 5, 1984, 8411590
Int. Cl.[4] H01R 4/26, 4/38; F16L 17/04
U.S. Cl. 174—84 S **13 Claims**



1. A socket-less pipe joint between butting ends of two metal pipes comprising:

a tubular gasket of flexible electrically insulating material having internal and external circumferential surfaces and which is fitted over and spans said butting ends, there being an internal intermediate annular rib projecting from said internal circumferential surface which fits between and is abutted by said butting ends and further internal annular ribs which project from said internal circumferential surfaces, are spaced from said intermediate annular rib towards the opposite ends of said gasket and sealingly engage circumferentially around said butting ends;

a bridge element of electrically conductive material being of substantially rigid strip form of a width substantially less than the circumference of said gasket and attached to said gasket longitudinally thereof, and having an intermediate portion which is disposed at said external circumferential surface and end portions which extend through the material of said gasket, lie against said internal circumferential surface at opposite sides of said intermediate annular rib, between that rib and said further internal annular ribs, in engagement with said butting ends; and

clamping means substantially co-extensive with said gasket extending circumferentially about said gasket, bearing on said intermediate portion of said bridge element and compressively sealing said gasket around said butting ends and urging said end portions of said bridge element into engagement with said butting ends, the construction and arrangement being such that said bridge element provides an electrically conductive path between said pipes without interfering with the fit of said intermediate annular rib between said butting ends and the integrity of the circumferential sealing engagement of said further internal annular ribs with said butting ends.

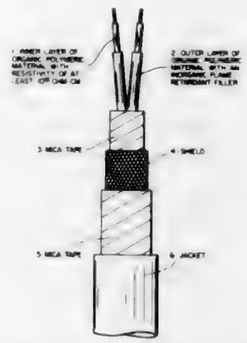
4,659,871
CABLE WITH FLAME RETARDED CLADDING
Timothy S. Smith, Trowbridge, and Richard J. Murphy, Chippenham, both of England, assignors to Raychem Limited, London, England
Continuation of Ser. No. 537,315, Sep. 28, 1983. This application Jun. 24, 1986, Ser. No. 879,550
Claims priority, application United Kingdom, Oct. 1, 1982, 8228092; Feb. 17, 1983, 8304415
Int. Cl.[4] H01B 7/02
U.S. Cl. 174—113 R **10 Claims**

1. A multiconductor electric cable which comprises:

(a) a bundle of electrical conductors each of which is electrically insulated from each other conductor by means only of an insulating coating of an organic polymeric material that is extruded onto the individual conductors;

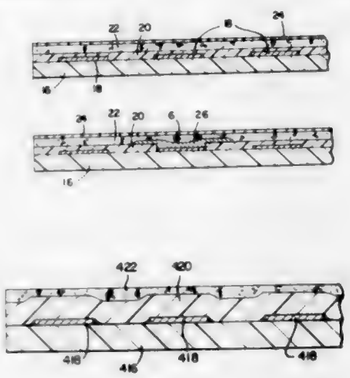
(b) a mineral tape wrapped around the bundle of electrical conductors; and

(c) an outer cable jacket; wherein each insulating coating has a thickness in the range of from 0.1 to 0.4 mm and com-



prises an inner layer and an outer layer, the inner layer having a volume resistivity of at least 10^{10} ohm cm and the outer layer including an inorganic flame retardant filler that causes the insulating coating to leave an electrically insulating residue on combustion and will prevent shorting of the conductors when maintained at 800° C. for 90 minutes.

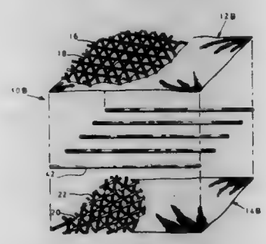
4,659,872
FLEXIBLE FLAT MULTICONDUCTOR CABLE
Ronald A. Dery; William G. Gentry; Warren C. Jones; Clifton C. May, Jr., all of Winston-Salem, and Steven G. Wentink, Kernersville, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 30, 1985, Ser. No. 728,956
Int. Cl.[4] H01B 7/08
U.S. Cl. 174—117 A **24 Claims**



1. A multiconductor flat cable comprising a flexible insulating substrate; a plurality of conductors disposed thereon, the conductors comprising a conductive ink comprising a solidified polymer having conductive material dispersed therein; and a dielectric coating overlying the conductors, the dielectric coating comprising a flexible solidified dielectric ink, the conductive ink solidified polymer and the solidified dielectric

ink each being curable from a solvated state in which the conductive ink and dielectric coating were screen printable.

4,659,873
FABRIC TOUCH SENSOR AND METHOD OF MANUFACTURE
William A. Gibson, Knox County, and John E. Talmage, Jr., Anderson County, both of Tenn., assignors to Elographics, Inc., Oak Ridge, Tenn.
Filed Jul. 19, 1985, Ser. No. 756,733
Int. Cl.[4] G08C 21/00
U.S. Cl. 178—18 **31 Claims**



1. An electrographic sensor for providing positional information related to a selected point/region touched by a user, which comprises:

a first sheet, capable of having electrical potentials introduced therein, extending across such sensor, said first sheet defining a perimeter;

a further sheet, capable of having electrical potentials introduced therein, extending across such sensor, said further sheet defining a perimeter substantially conforming to said perimeter of said first sheet;

separator means interposed between said first and further sheets for preventing contact between said first and further sheets until such sensor is touched by such user at such selected point/region;

means for generating orthogonal electrical potentials within such sensor in X and Y directions whereby such positional information is provided in the form of electrical signals corresponding to X- and Y-coordinates of such selected point/region touched by such user; and

wherein at least one of said first and further sheets is fabricated from a plurality of crossed electrically conductive threads forming a fabric.

4,659,874
X-Y POSITION SENSOR
Waldo L. Landmeier, Phoenix, Ariz., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Sep. 23, 1985, Ser. No. 779,350
Int. Cl.[4] G08C 21/00
U.S. Cl. 178—19 **3 Claims**

1. A position sensor comprising a stylus and a sensing pad, said sensing pad having an array of generally parallel planar sensing conductors,

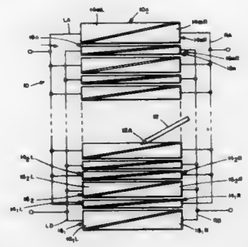
A. each of said conductors having a relatively wide base end and decreasing in width to a relatively narrow apex end,

B. said conductors being arranged in complementary pairs, each pair having

1. a first conductor whose base end is disposed at a first edge of said pad and whose apex end is disposed at a second edge opposite said first edge and

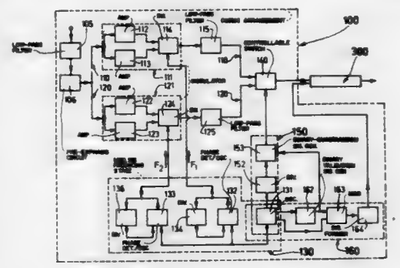
2. a second conductor whose apex end is disposed at said first edge and said base end is disposed at said second edge,

C. an ascending set of said conductor pairs in which the widths of said pairs vary from a minimum at a third edge of said pad to a maximum at a fourth edge opposite third edge, and



D. a descending set of said conductor pairs, interleaved with said ascending set and in which the widths of said conductor pairs vary from a maximum at said third edge to a minimum at said fourth edge.

4,659,875
ELECTRONIC SYSTEM FOR THE SECRET TRANSMISSION OF AUDIO SIGNALS
Michel Taurin, Cachan; Jean-Michel Pernot, Fontenay-Aux-Roses, and Gérard J. M. Marie, Santeny-Villecresnes, all of France, assignors to La Radiotechnique, Suresnes, France
Filed Jan. 24, 1983, Ser. No. 460,418
Claims priority, application France, Jan. 29, 1982, 82 01462
Int. Cl.[4] H04M 1/70
U.S. Cl. 380—19 **14 Claims**



1. A system for the secret transmission of audio signals, comprising a coding arrangement, at least one transmission channel and a decoding arrangement, characterized in that:

(A) the coding arrangement comprises the following circuits:

(a) an input low-pass filter;

(b) two parallel signal paths at the output of this filter, each path comprising a modulator and a low-pass filter connected thereto, each modulator comprising two parallel amplifiers having a gain factor equal to +1 and −1, respectively and a change-over switch which alternately connects the output of the amplifier having the gain factor +1 and the output of the amplifier having the gain factor −1 to the input of the low-pass filter in dependence on the state of a binary modulation signal having the frequency F_1 for one modulator and the frequency F_2 for the other modulator,

(c) a stage for generating the two modulation signals of the frequencies F_1 and F_2;

(d) a first change-over switch which alternately switches through one of the outputs of the two signal paths in dependence on the state of the binary signal applied to this change-over switch from a first stage for generating binary quasi-random signals the encoded audio signals to be

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transmitted being available at the output of this change-over switch;

(B) the decoding arrangement comprises the following circuits:

(e) a stage for recovering the modulation signals of the frequencies F_1 and F_2;

(f) a second change-over switch which alternately switches through one of the modulation signals of the frequencies F_1 and F_2 in dependence on the state of a binary signal applied to this change-over switch from a second stage for regeneration said binary quasi-random signals, which stage is synchronized with the corresponding stage of the coding arrangement;

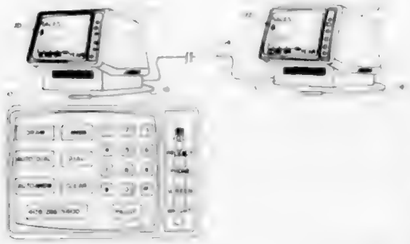
(g) a demodulator comprising two parallel amplifiers having gain factors equal to +1 and −1, respectively to which the received, encoded audio signals are applied and a change-over switch to which the output signal of the said second change-over switch is applied and which alternately connects the output of the amplifier having the gain factor +1 and the output of the amplifier having the gain factor −1 to the input of an output low-pass filter in dependence on the state of the signals at the output of this second change-over switch, the decoded audio signals at the output of the output low-pass filter corresponding to the original audio signals.

4,659,876

AUDIOGRAPHICS COMMUNICATION SYSTEM

Thomas M. Sullivan, San Jose; Robert M. Pleva, Livermore, and Thomas P. Matthews, San Jose, all of Calif., assignors to SPI Soft Pac International, San Jose, Calif.

Filed Aug. 30, 1983, Ser. No. 527,797
Int. Cl.⁴ H04M *11/06*
U.S. Cl. 379—96 **9 Claims**



1. An integrated audiographics communications system comprising

a common telephone line,

a plurality of audiographics telephone terminals connected to said common telephone line, each of said terminals including

means for dialing a telephone number to establish a single telephone connection between two or more of said terminals,

display means,

light pen means for enabling a user to visually write text or draw graphics information on said display means,

means for simultaneously transmitting and receiving data over only said signal telephone connection, said data including spoken audio information and digital text or graphics transmit information,

said display means including means for visually displaying said received text or graphics data, thereby providing a common display between said terminals having an ordinary telephone connection to one another,

an integrated speakerphone for providing an audio speech signal corresponding to said spoken audio data simultaneously with the visually displayed text or graphics data,

means for generating said digital graphics transmit information corresponding to said written text or drawn graphics information, and

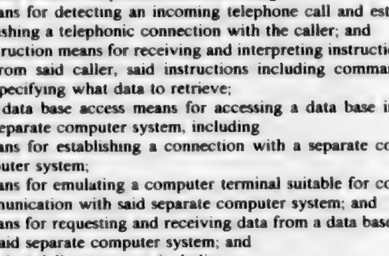
audio means for generating audio transmit information corresponding to spoken audible information.

4,659,877

VERBAL COMPUTER TERMINAL SYSTEM

Eric A. Dorsey, Palo Alto; Keith M. Williams, Fremont; Harihar J. Vyas, San Jose, and Gabriel F. Groner, Palo Alto, all of Calif., assignors to Speech Plus, Inc., Mountain View, Calif.

Filed Nov. 16, 1983, Ser. No. 552,292
Int. Cl.⁴ H04M *11/00*
U.S. Cl. 379—88 **14 Claims**



1. A communications system for verbal telephonic communication of textual data in remote computer systems, comprising:

(a) text-to-speech (TTS) means for translating digitally stored textual data into analogue speech signals corresponding to the verbal expression to said textual data;

(b) telephonic receiving means for receiving a request for data from a telephone caller, including

means for detecting an incoming telephone call and establishing a telephonic connection with the caller; and

instruction means for receiving and interpreting instructions from said caller, said instructions including commands specifying what data to retrieve;

(c) data base access means for accessing a data base in a separate computer system, including

means for establishing a connection with a separate computer system;

means for emulating a computer terminal suitable for communication with said separate computer system; and

means for requesting and receiving data from a data base in said separate computer system; and

(d) data delivery means, including

means, responsive to said instructions from said caller, for extracting a portion of said data, wherein said portion of said data is selected in accordance with said instructions received from said caller; and

means for routing said portion of said data to said TTS means for translation thereby; and

means for routing said speech signals from said TTS means to said caller by means of said telephonic connection.

4,659,878

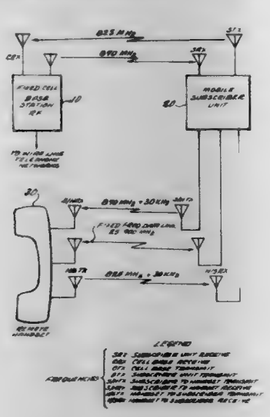
METHOD AND APPARATUS FOR INTERFERENCE FREE COMMUNICATIONS BETWEEN A REMOTE HANDSET AND A HOST SUBSCRIBER UNIT IN A CELLULAR RADIO TELEPHONE SYSTEM

Gilbert M. Dinkins, Appomattox, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Sep. 11, 1985, Ser. No. 774,712
Int. Cl.⁴ H04M *11/00*
U.S. Cl. 370—71 **20 Claims**

1. In a mobile cellular radio telephone subscriber unit capable of voice communications with an assigned cellular base station over an assigned rf frequency channel, the improvement comprising:

offset rf communications channel transceiver means for voice communications over an offset rf frequency channel which differs by a predetermined frequency from said assigned rf frequency channel; and



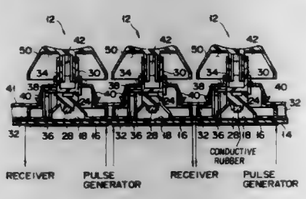
control data link means for transmitting by rf, data representing said offset frequency channel.

4,659,879

KEY SWITCH

Hiroshi Hasegawa, Tokyo, Japan, assignor to Topre Corporation, Tokyo, Japan

Filed Dec. 24, 1985, Ser. No. 813,064
Claims priority, application Japan, Mar. 11, 1985, 60-47775
Int. Cl.⁴ H01H *13/70*; **H01G** *5/01*; **G08C** *9/02*
U.S. Cl. 200—5 A **11 Claims**



1. A key switch interposed between a pulse generator and receiver circuit, comprising:

a substrate prepared from dielectric materials and having opposed first and second surfaces;

a first electrode formed on the first surface of the substrate and adapted to be electrically connected to one of the pulse generator and the receiver circuit;

a second electrode provided on the second surface of the substrate opposite to the first surface thereof to constitute a capacitor for pulsatively storing a static capacity in cooperation with the first electrode and substrate;

a first fixed contact formed on one of said first and second surfaces of the substrate in electric contact with the electrode positioned on said one surface;

a second fixed contact formed on said one surface of the substrate in the proximity of said first fixed contact and adapted to be in electric connection to other of said pulse generator and said receiver circuit; and

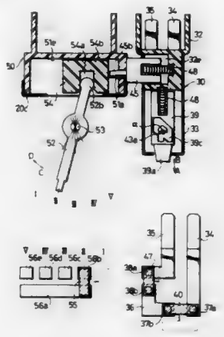
changeover means for effecting electric connection and disconnection between said first and second fixed contacts thereby to connect said pulse generator to said receiver circuit via said capacitor.

4,659,880

COMPOSITE SWITCH

Shiro Kondo, and Kenji Sawada, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Continuation of Ser. No. 706,104, Feb. 27, 1985, abandoned. This application Jun. 10, 1986, Ser. No. 873,116
Claims priority, application Japan, Feb. 27, 1984, 59-27118[U]
Int. Cl.⁴ H01H *3/00, 9/00*
U.S. Cl. 200—5 R **6 Claims**



1. A composite switch comprising:

a switch assembly, including a main switch and an auxiliary switch, having a pair of terminals, a main pair of fixed contacts, and an auxiliary pair of fixed contacts, wherein one of said terminals is electrically connected to one contact of said main pair of fixed contacts, the other of said terminals is electrically connected to one contact of said auxiliary pair of fixed contacts, and the other contact of said main pair of fixed contacts is electrically connected to the other contact of said auxiliary pair of fixed contacts, said main pair of fixed contacts being spaced apart and adapted to be bridged by a main movable contact member, and said auxiliary pair of fixed contacts being spaced apart and adapted to be bridged by an auxiliary movable contact member, said pair of terminals being electrically connected in a series circuit when said main movable contact member of said main switch and said auxiliary movable contact member of said auxiliary switch are moved to bridge said main and auxiliary pair of fixed contacts, respectively;

an operating member for moving said main movable contact member to connect or disconnect said main pair of fixed contacts with each other;

a selector switch having a plurality of fixed contacts arrayed in a plurality of positions and an acutuating member for moving a movable contact in contact with any of said plurality of fixed contacts; and

an auxiliary member operable between said switch assembly and said selector switch, said auxiliary member moving said auxiliary movable contact member to connect or disconnect said auxiliary pair of fixed contacts when said actuating member of said selector switch is moved to a predetermined position.

4,659,881

MULTIDOME MULTISTAGE SWITCH ASSEMBLY

David R. Dowe, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 27, 1986, Ser. No. 822,567
Int. Cl.⁴ H01H *3/12*
U.S. Cl. 200—5 R **9 Claims**

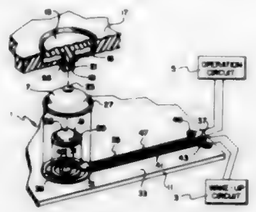
5. An improved electrical switch assembly of the type wherein a pair of conducting resilient domes snap inwardly to produce corresponding switching functions when pressure is

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applied at their respective centers and snap outwardly to produce opposite switching functions when the applied pressure is removed, and wherein the improvement comprises:

means supporting said pair of domes one within the other in spaced relation with their respective centers substantially in alignment; and

pressure applying means movable in line with the centers of



the outer and inner domes to a first predetermined position to snap the outer dome inwardly, to produce a first switching function, and to a second predetermined position to snap the inner dome inwardly, to produce a second switching function, whereby respective stages of tactile feedback are provided by the snapping actions of the two domes in response to movement of said pressure applying means to its first and second positions.

4,659,882

SLIDE SWITCH

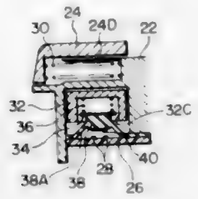
Kazuhiko Hayashi, Aichi; Masayosi Iwata; Mikio Tada, both of Gifu, and Hirotoshi Mizuno, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Nov. 20, 1985, Ser. No. 799,818

Claims priority, application Japan, Nov. 21, 1984, 59-177232[U]

Int. Cl.⁴ H01H *3/00, 15/02*

U.S. Cl. 200—16 R **5 Claims**



1. A slide switch comprising:

a stationary body having a hollow portion; a knob and first biasing means for biasing said knob conjointly mounted to and relatively movable with respect to said stationary body;

a holder means for holding a movable contact therein, said holder means being movably disposed in said hollow portion of said stationary body;

an insulating plate having fixed contacts opposing said movable contact, said insulating plate being fixed to said stationary body;

movement translating means for translating a first movement of said knob into a second movement of said holder means, the direction of said first movement being perpendicular to the direction of said second movement;

a second biasing means disposed on said insulating plate and providing supporting means for said movable contact;

a third biasing means within said holder means series connected to said second biasing means for additionally biasing said movable contact and said holder means relative to said fixed contacts and said knob, said third biasing means having an elastic modulus larger than that of said second biasing means.

4,659,883

REPEAT LOCK AND INHIBITOR FOR STARTERS OF COMBUSTION ENGINES

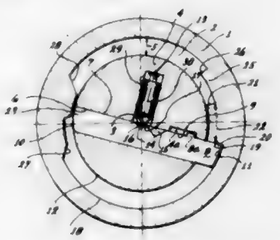
Klaus Poschet, Baldham, Fed. Rep. of Germany, assignor to Schaltbau GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 26, 1985, Ser. No. 769,473

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1984, 3432256

Int. Cl.⁴ H01H *27/08*

U.S. Cl. 200—43.03 **5 Claims**



1. Repeat lock and inhibitor for ignition devices, for preventing repeated operation of a starter in a combustion engine, comprising:

having a substantially cylindrica interior space, there being a center accordingly;

a flat disk having a circular periphery and being disposed in said space and coaxially thereto for rotation on the center, the disk being rotated upon insertion of an ignition key in an ignition lock and upon turning thereof, said disk having its circular periphery spaced from the cylindrical interior wall of said case;

said disk being provided with a chord like channel, bounding said center on one side;

a slide lock, slidably held in the channel, having curved end pieces being complementary to the circular periphery of the disk, and being longer than said channel but shorter than the internal diameter of said cylindrical space;

the slide lock having two juxtaposed grooves with a common apex line as border, the apex or crest line running transversely to the direction of movement and length extensions of the slide lock;

a spring biased lock element in the disk and having an edge for entering the groove to thereby hold the slide lock in a first and second end position respectively, the end positions differing as to which of respectively first and seconds ends of the slide lock extends beyond the periphery of the disk;

a first, radially inwardly extending extension of the case defining a first stop for engaging the first projecting end of the slide lock when in the first end position;

a second and a third stop defined by radial inward extension of the case and being separated by a shoulder having dimension such that upon radial abutment with the second end of the slide lock the latter is prevented from assuming the second end position,

the second stop positioned at an end of the shoulder for engagement with the second end of the slide lock and in ignition position of the disk, preventing further turning of the disk;

the third stop being at another end of the shoulder such that the slide lock when in the second end position abuts the third stop upon attempting repeat ignition and turning of the disk and key towards ignition position; the bias of the blade shifting the slide lock into the second end position,

when upon opposite rotation of the disk the second end of the slide lock clears the shoulder;

first cam means for engaging the first end of the slide lock and shifting same as the disk is turned out of a resting position toward ignition but said shifting being not farther than permitted by the shoulder; and

second cam means effective on turning of the disk in opposite direction and engaging the second end of the slide lock into the first end position, further rotation then being prevented upon abutment of the slide lock element with its first end against said first stop.

4,659,884

SAFETY INTERLOCK SWITCHING DEVICE FOR PROTECTING EQUIPMENT

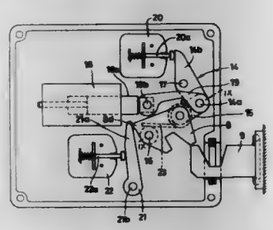
Jakob Wollenhaupt, Cologne, Fed. Rep. of Germany, assignor to Helmut Letzel, Cologne, Fed. Rep. of Germany

Filed Aug. 16, 1985, Ser. No. 766,817

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 84109757

Int. Cl.⁴ H01H *3/00, 9/20*

U.S. Cl. 200—50 R **11 Claims**



1. Safety interlock switching device for protecting equipment, in particular in current conducting equipment, wherein a given protection device (5), normally closed during dangerous operation condition and opened during non-dangerous operating condition, the switching device comprising a housing, a toggle lever (14, 15) provided with a pivotable locking lever (8) pivotable between two dead center positions; an actuating element (9) stationarily mounted on said protection device, said locking lever cooperating with said actuating element, switch means connected to and cooperating with said toggle lever, said actuating element and said locking lever being provided with locking means cooperating with each other so that in one dead center position of the toggle lever (14, 15) the locking lever (8) and the actuating element (9) interlock with each other and the dangerous operating condition may be switched on by said switch means and in the other dead center position the dangerous operating condition is switched off by said switch means thus releasing the actuating element (9) and the protection device (5) therewith, said toggle lever and said switch means being disposed in said housing which is closed and is not accessible from the outside, said housing being provided with an insertion opening for inserting the actuating element (9) into said housing.

4,659,885

VACUUM INTERRUPTER

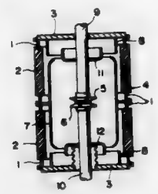
Yoshiyuki Kashiwagi; Yasushi Noda, both of Tokyo, and Kaoru Kitakizaki, Higashimine, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Mar. 20, 1984, Ser. No. 591,481

Claims priority, application Japan, Mar. 22, 1983, 58-47561; Jul. 21, 1983, 58-134078; Jul. 30, 1983, 58-139872; Sep. 22, 1983, 58-175655; Sep. 27, 1983, 58-178696; Sep. 27, 1983, 58-178698; Sep. 27, 1983, 58-178699

Int. Cl.⁴ H01H *33/66*

U.S. Cl. 200—144 B **19 Claims**



1. A vacuum interrupter comprising a pair of separable electrodes (5, 6), each of which consists of a generally disc-shaped and magnetically arc-rotating portion (13) and a contact-making portion (14) projecting from an arcing surface of the magnetically arc-rotating portion (13), the magnetically arc-rotating portion (13) surrounding the contact-making portion (14), the conductivity of the contact-making portion (14) being different from that of the magnetically arc-rotating portion (13), a plurality of fingers (17) defined by a plurality of slots (16), each of which extends radially and circumferentially of the magnetically arc-rotating portion (13), and a vacuum envelope which is electrically insulating and enclosing the electrodes (5, 6) in a vacuum-tight manner, wherein said magnetically arc-rotating portion (13) of at least one (6) of the electrodes (5, 6) is made of a complex metal including 20 to 70% copper by weight and possessing a 2 to 30% IACS electrical conductivity and said contact-making portion (14) of said at least one electrode (6) is made of a complex metal including at least chromium and iron and possessing a 20 to 60% IACS electrical conductivity, the conductivity of the contact-making portion (14) of said at least one electrode (6) being higher than that of the magnetically arc-rotating portion (13) of said at least one electrode (6).

4,659,886

DISCONNECT SWITCH FOR A METAL-CLAD, GAS-INSULATED HIGH-VOLTAGE SWITCHGEAR

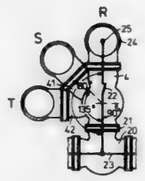
Willi Olsen; Dieter Lorenz, and Hans-Peter Dambietz, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 6, 1986, Ser. No. 871,653

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1985, 3521945

Int. Cl.⁴ H01H *33/60*

U.S. Cl. 200—148 R **11 Claims**



1. A disconnect switch for use in a multi-pole section of a metal-clad, gas-insulated, high-voltage switchgear with each

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of the poles located within an enclosed housing terminating in two end faces with two feedthrough insulators and having two conductors passing through said feedthrough insulators, each conductor having an end surrounded by and connected to a rounded hollow shielding body with a distance between the shielding bodies defining the boundaries of an isolation gap, the first shielding body includes a movable contacting the end of the first conductor and being operable by means of a rotating insulator element to move from the first shielding body to bridge the isolation gap and contact the opposite end of the second conductor within the second shielding body which has the same longitudinal axis as the movable contact; the axis of the rotating insulator element being perpendicular to the longitudinal axis of the movable contact, characterized by:

the axis of the rotating insulator element is perpendicular to the plane of the phase-current path of the section;

the first shielding body is approximately spherical in shape and has a center lying on the axis of the rotating insulator element and also lying on the longitudinal axis of the movable contact;

the first shielding body has an interior surface and on the interior surface has at least one connection surface for receiving means for connecting with the end of the first conductor; and

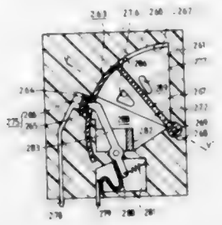
the mid-perpendicular of the connection surface lies in the plane of the phase-current of the section.

4,659,887

SWITCH DEVICE HAVING AN INSULATING SCREEN INSERTED BETWEEN THE CONTACTS DURING BREAKING

Elie Belbel, Epinay Sur Seine; Christian Blanchard, Nanterre; André Haury, Le Raincy, and Michel Lauraire, Courbevoie, all of France, assignors to La Telemecanique Electrique, France

Filed Nov. 25, 1985, Ser. No. 802,094
Claims priority, application France, Nov. 26, 1984, 84 17964
Int. Cl.[4] H01H *33/06*
U.S. Cl. 200—151 **5 Claims**



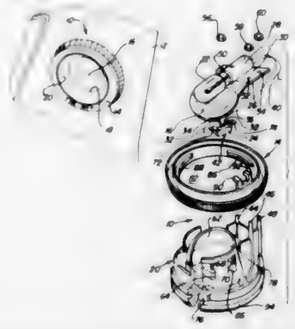
1. A switch containing inside a housing two mutually mobile contacts, devices to control the opening of this switch, a mobile screen and driving devices designed to move an edge of this screen very fast between the contacts so that the arc that strikes between these contacts when they part is sheared between the screen edge and an insulating surface contained in the housing, characterized in that the screen provided with an opening that lets through one of the switch contacts and an insulating mobile shutter to which it is joined, move at the same time inside a cavity of the body, so as to enclose between themselves and the surfaces of this cavity a variable volume that houses one of the contacts; this volume expands sharply when the energy of the arc generated between parting contacts is transferred to the gases contained within the volume, and is connected to the atmosphere in a particular position of the screen where the opening no longer lets the contact through.

4,659,888

SWITCH DEVICE HAVING AN INSULATING SCREEN INSERTED BETWEEN THE CONTACTS DURING BREAKING

Elie Belbel, Epinay sur Seine; Christian Blanchard, Nanterre; André Haury, Le Raincy, and Michel Lauraire, Courbevoie, all of France, assignors to La Telemecanique Electrique, France

Filed Dec. 23, 1985, Ser. No. 812,599
Claims priority, application France, Dec. 28, 1984, 84 19993
Int. Cl.[4] H01H *9/32*
U.S. Cl. 200—151 **7 Claims**



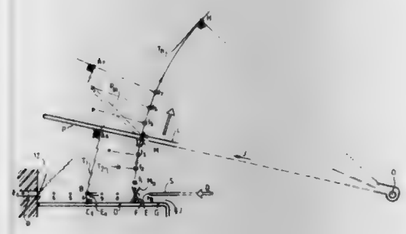
1. A switching apparatus including in a small-size housing a contacting structure which comprises first and second contact supports respectively provided with first and second contact elements, said first and second contact supports being movable with respect to each other between a closed state in which said contact elements have contact surfaces bearing on each other and open state in which said contact elements are separated from each other; an isolating screen slidably mounted in said housing and guided in a determined plane by guiding means, said plane passing through a space portion located between said contact surfaces in said open state, an insulated wall extending perpendicularly to said plane, mechanical means for causing opening of the contacts, a tripping mechanism adapted for propelling said screen from a first position which corresponds to said closed state of the contact elements wherein said screen is distant from said contact elements to a second position which corresponds to said open state of the contact elements wherein said screen passes between said contact elements and has a forward edge which comes into abutment against said wall, coupling means between said tripping mechanism and said mechanical means, said coupling means being adapted so as to synchronize opening of the contacts and releasing of the tripping means in such a manner that the forward end of the screen arrives between the two contact elements at a high speed when said contact elements are momentarily separated by a distance slightly greater than the thickness of said screen, first and second conducting extensions extending towards said wall respectively from said first and second contact suppots, said conducting extensions comprising two arc guiding opposite surfaces each having at least in a first region adjacent to a corresponding contact element, a portion substantially parallel to said plane and an end portion which is close to said insulated wall said contacting structure further having, for each pair of positions of the contact supports and of the edge of the screen, following the passage of said screen between said contact elements, a possible arc path which extends between two points of said opposite surfaces and which passes through a point of said forward edge, said possible arc path being shorter than an arc path extending between said contact elements and passing through said point of the edge and said two points moving along said arc guiding surfaces while the contact supports are opening.

4,659,889

VEHICLE READING/COURTESY LAMP

Les K. Kaminski, Sterling Heights, and Clyde Sheffield, Royal Oak, both of Mich., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Filed Mar. 17, 1986, Ser. No. 840,278
Int. Cl.[4] H01H *19/00*
U.S. Cl. 200—330 **4 Claims**



1. A vehicle reading/courtesy lamp comprising a generally cylindrical lamp body having a central opening therethrough, a bulb mounted on the lamp body and positioned to cast light through the lamp body opening, a switch actuating ring on the lamp body, the ring having at least one radially inwardly extending projection on the inner periphery thereof, the lamp body having at least one radially outwardly extending projection on the outer periphery thereof, the ring being mounted on the lamp body with the projections initially passing by each other and with the ring and lamp body subsequently being rotated relative to each other to place the projections in overlapping relationship to prevent separation of the ring and the lamp body, an electrical switch electrically connected to the bulb to control energization of the bulb, the switch being mounted on one of the ring and lamp body, the switch having a switch actuating lever extending towards the other of the ring and lamp body, the other of the ring and lamp body having a pair of spaced apart arms each of which extends to one side of the switch actuating lever, one of the arms being in contacting relationship with the switch actuating lever upon relative rotation of the ring and lamp body in one direction to move the lever to one position and the other of the arms being in contacting relationship with the switch actuating lever upon relative rotation of the ring and lamp body in the opposite direction to move the lever to a second position to permit turning of the switch on or off, the switch actuating lever limiting relative rotation of the ring and lamp body to prevent the projections moving to a position where they do not overlap thus preventing separation of the ring and lamp body.

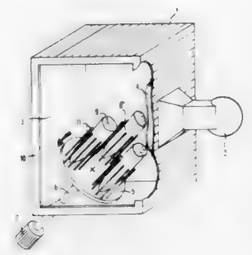
4,659,890

PROCESS AND APPARATUS FOR MICROWAVE HEATING FOODS

Toai L. Viet, Vevey, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Dec. 16, 1985, Ser. No. 809,224
Claims priority, application Switzerland, Jan. 25, 1985, 329/85
Int. Cl.[4] H05B *6/78*
U.S. Cl. 219—10.55 M **17 Claims**

1. A process for heating foods, oblong in shape, comprising loading and arranging the oblong shaped foods lengthwise in holders about the periphery of and perpendicular to the plane of a rotatable plate such that the foods are capable of freely rotating about their lengthwise axes in the holders, exposing the loaded plate and foods to a microwave energy field while rotating the plate about its axis such that the plate is vertically inclined to the microwave energy field and such that the foods



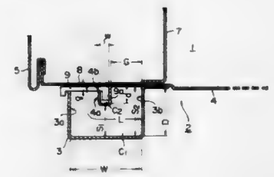
are entrained within the holders by the rotating movement of the plate and rotate freely within the holders about their lengthwise axes and make a planetary movement.

4,659,891

MICROWAVE OVEN HAVING AN ELECTROMAGNETIC ENERGY SEAL

Kimiaki Yamaguchi, Ikoma; Masahiro Nitta, Nara; Kazuyuki Inoue, Yamatokoriyama; Teruo Hirose, Hirakata, and Yoshihiro Toda, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 25, 1986, Ser. No. 844,000
Claims priority, application Japan, Mar. 27, 1985, 60-62513
Int. Cl.[4] H05B *6/76*
U.S. Cl. 219—10.55 D **6 Claims**



1. A microwave oven having an electromagnetic energy seal, comprising

a heating chamber having an entrance opening therein;

means for irradiating said heating chamber with high-frequency energy;

a door for opening and closing the entrance opening of said heating chamber;

a first sealing cavity formed along at least one of a peripheral edge portion of said entrance opening and a portion of said door opposite to said peripheral edge portion of said entrance opening, said first sealing cavity having an opening therein; and

a second sealing cavity disposed within the opening of said first sealing cavity, said second sealing cavity having a depth and a width which is less than one-half the corresponding depth and width of said first sealing cavity, respectively.

4,659,892

VALVE SEAT INDUCTION HEATING APPARATUS

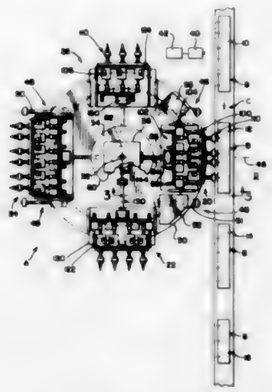
Michael R. Hammond, Clawson, Mich., and Robert V. Vickers, Chagrin Falls, Ohio, assignors to Tocco, Inc., Boaz, Ala.

Filed Jul. 26, 1985, Ser. No. 759,249
Int. Cl.[4] H05B *6/14*
U.S. Cl. 219—10.57 **19 Claims**

1. An induction heating apparatus for heat treating the valve

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seats for a plurality of engine component designs comprising: conveyor means for moving the engine component designs along a horizontal conveyor line, said conveyor line including a single predetermined heat treating station; a plurality of inductor means, each of said inductor means corresponding to one of said plurality of engine component designs and including at least one inductor coil for heat treating the valve seats of the corresponding engine component design; first means for selectively locating each of said inductor means at a transfer



position adjacent to and spaced from said heat treating station in response to a corresponding engine component design presented at said heat treating station by said conveyor means; second means operable transverse to the conveyor line for selectively moving said inductor means from said transfer position to an operative heat treating position with respect to the valve seats of such corresponding design; and, power supply means selectively connected to said inductor means at the heat treating station for energizing the inductor coil thereof at the heat treating position.

4,659,893

METHOD AND APPARATUS FOR CONTROLLING THE GAP CONDITIONS IN TRAVELLING WIRE EDM BY ELECTROMAGNETIC FORCE

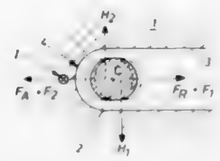
Roland Martin, Dingy-en-Vuach, France, assignor to Charmilles Technologies S.A., Geneve, Switzerland

Filed Oct. 16, 1985, Ser. No. 787,983

Claims priority, application Switzerland, Oct. 16, 1984, 4954/84

Int. Cl.⁴ B23H *1/02, 7/02, 7/32*

U.S. Cl. 219—69 M **18 Claims**



1. In a method for cutting by machining electrical discharges an electrode workpiece by means of an electrode wire stretched and longitudinally displaced between guide members, wherein the relative speed of displacement of the electrode workpiece and of the wire guide members is controlled as a function of the conditions of electrical discharges, the improvement for controlling said conditions of electrical discharges comprising producing in a machining zone between said electrode wire and said electrode workpiece an auxiliary magnetic field substantially perpendicular to the electrode wire by passing through the electrode workpiece and proximate the machining zone an electrical current in a direction substantially parallel to said electrode wire, and varying said electrical current as a function of machining conditions such as to pull the electrode wire away from the electrode workpiece in the event of short circuit and to push the electrode wire towards the electrode workpiece in the event of a decrease in electrical discharge energy.

4,659,894

CAPACITOR-TYPE HF POWER SUPPLY FOR ELECTRICAL MACHINING

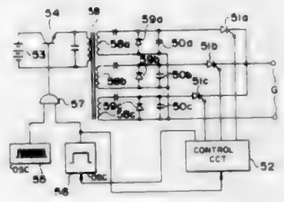
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Division of Ser. No. 45,177, Jun. 4, 1979, Pat. No. 4,516,009. This application Dec. 14, 1984, Ser. No. 682,060

Claims priority, application Japan, Jun. 14, 1978, 53-72446; Jun. 16, 1978, 53-53446; Jun. 21, 1978, 53-75117; Sep. 20, 1978, 53-115449

Int. Cl.⁴ B23H *7/14;* **H02M** *3/335*

U.S. Cl. 219—69 P **7 Claims**



1. A capacitor-type power supply for electrical machining, comprising:

a plurality of capacitors connected in parallel with one another across a machining gap;

a plurality of electronic discharging switches respectively inserted in and individual to respective discharging circuits of said capacitors with said machining gap;

circuit means for charging said capacitors having a periodically operated electronic charging switch means inserted therein and connected between a source of charging current and a plurality of said capacitors;

a first control pulse generator for periodically turning said switch means into conduction at a first frequency and independent of conditions of said gap; and

a second control pulse generator for providing control pulses at a second frequency and successively operating said discharging switches to permit said plural capacitors to be discharged through said gap successively.

4,659,895

AUTOMATIC SYSTEM FOR ASSEMBLY AND WELDING OF MOTOR VEHICLE BODIES

Gaetano Di Rosa, Pino Torinese, Italy, assignor to Fata European Group S.p.A., Italy

Filed Sep. 1, 1983, Ser. No. 528,515

Claims priority, application Italy, Sep. 2, 1982, 23102 A/82

Int. Cl.⁴ B23K *9/12, 37/04*

U.S. Cl. 219—79 **4 Claims**

1. An automatic assembly and welding system, particularly for motor vehicle bodies, wherein a plurality of different components may be delivered to and assembled at a single welding station, comprising:

means defining a welding station including welding apparatus for assembling parts of motor vehicle bodies;

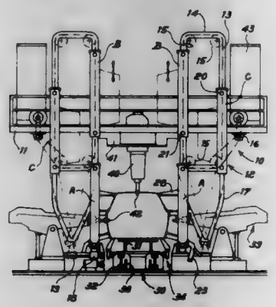
a rise and travel device comprising horizontal conveyor means for conveying vehicle frames to said welding station along a generally horizontal path; and

a pair of vertical conveyor mechanisms located on opposite sides of said welding station, each adapted to selectively convey to said welding station a plurality of different body parts for assembly at said welding station;

each of said vertical conveyor mechanisms comprising endless chain means and body part clamping means operating to deliver said body parts to said welding station by conveyance thereof along juxtaposed vertical paths;

said body part clamping means each including a plurality of clamping devices driven by said endless chain means for clamping and conveying a plurality of different body parts;

each of said clamping devices including a generally elongate frame member having an upper and a lower wheel and said vertical conveyor mechanisms further including guid-



ance means engaging said upper and lower wheels for establishing orientation of said frame members relative to said welding station during conveyance of said body parts;

said guidance means including

means for bringing said frame members along a downwardly directed path to a generally vertically oriented position adjacent said welding station, and

means for shifting said upper and lower wheels away from said welding station after assembly thereat of a body part thereby to laterally move said frame members away from said welding station;

said endless chain means thereafter operating to drive said frame members vertically upwardly away from said welding station to enable mounting thereon of a new body part with circulation of said frame members along a path established by said endless chain means operating to repeatedly deliver body parts to said welding station.

4,659,896

METHOD AND APPARATUS FOR DETECTING A BRAZE MELT

Eugene T. Krasicki, McCandless Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 4, 1985, Ser. No. 720,104

Int. Cl.⁴ B23K *1/00*

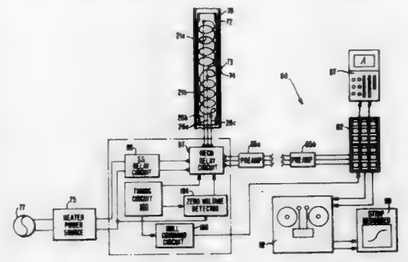
U.S. Cl. 219—85 BM **33 Claims**

12. A method of using the electrical resistance coil of a radiant heater assembly during a brazing operation to determine when the coil melts an electrically conductive brazing material disposed on the outside of a sleeve disposed within a tube, comprising the steps of:

(a) positioning the heating coil inside the sleeve in the vicinity of the brazing material;

(b) electrically connecting the heating coil first to a heater power source in order to generate a brazing heat, disconnecting the heating coil from the heater power source, and then connecting the heating coil to a source of relatively low power alternating current in order to induce eddy currents in the brazing material;

(c) monitoring changes in the impedance of the coil while the low power alternating current flows therethrough;



(d) repeating steps (b) and (c) until a substantial change in the impedance of the coil is detected, and

(e) noting when the impedance of the coil changes substantially.

4,659,897

METHOD OF MAKING A WATCHCASE

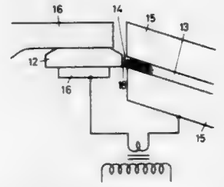
Tsuneji Takasugi, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 491,728, May 5, 1983, abandoned. This application Jan. 28, 1986, Ser. No. 822,969

Claims priority, application Japan, May 6, 1982, 57-75910; May 7, 1982, 57-76182

Int. Cl.⁴ B23K *11/14*

U.S. Cl. 219—93 **3 Claims**



1. A method of making a watchcase having a case body, (12), (20), (30) made of metal and a band, (13), (21) made of metal with two ends, said band having two engaging surfaces for connecting the two ends of the band to the case body characterized by the steps of forming two cylindrical projections, (18), (27), (32) on each engaging surface, each cylindrical projection having an area of from 0.07 to 0.40 mm^2 and a height of from 0.05 to 0.20 mm and joining the band to the case body by projection welding the two engaging surfaces to the case body.

4,659,898

METHOD OF ATTACHING A THERMOCOUPLE TO A METAL SURFACE

Stanley R. Spiegelman, Churchhill Boro; Philip E. Miller, Greensburg; Nathaniel Washington, Monroeville, and Vincent J. Grande, Verona, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 7, 1985, Ser. No. 699,361

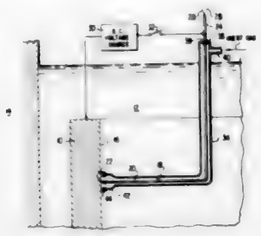
Int. Cl.⁴ B23K *11/32*

U.S. Cl. 219—117.1 **14 Claims**

1. A method of mounting a thermocouple assembly on a surface of a metal member wherein the thermocouple assembly

includes an elongated tubular metal sheath having a metal tip portion closing one end, a pair of spaced thermocouple conductors extending axially along the sheath and being insulated from each other and from the metal sheath with the conductors being connected to each other adjacent said one end of the sheath to form a measuring junction which is axially spaced from said metal tip portion, said method comprising the steps of:

positioning said thermocouple assembly so that a longitudi-



nal axis of said sheath extends perpendicular to said surface of the metal member;

pressing said thermocouple assembly against said surface of said metal member so that an outer end surface of said tip portion contacts said surface of said metal member; and

fusion welding said tip portion to said surface of said metal member by connecting a source of d.c. potential across said sheath and said metal member and passing a d.c. current through said metal sheath and said metal member for a desired period of time.

4,659,899

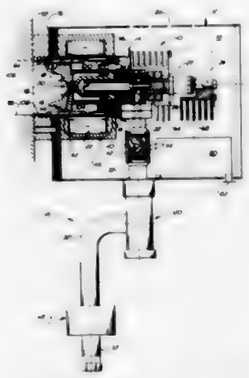
VACUUM-COMPATIBLE AIR-COOLED PLASMA DEVICE

David G. Welkie, Chanhassen, and Robert L. Gerlach, Minnetonka, both of Minn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 664,195, Oct. 24, 1984, abandoned. This application Feb. 26, 1986, Ser. No. 833,575

Int. Cl.⁴ B23K *15/00*

U.S. Cl. 219—121 PN **19 Claims**



1. A plasma generating device for use as a source of ions while operating at high vacuum and at high voltage relative to an ion extracting system, comprising:

a gun comprising a body having an outer diameter section and having a cylindrical cavity connected to a source of plasma-forming gas, a cylindrical cathode member mounted coaxially in the cylindrical cavity, and a nozzle anode affixed to the body in coaxial, plasma-forming relationship with the cathode member and the cylindrical cavity; and

a mounting structure generally encircling the gun, comprising a mating flange adapted for vacuum sealing connection to an ion extracting system in electrical contact therewith, a metallic ring welded to the outer diameter section of the body and extending forward therefrom, a ceramic ring brazed to the first metallic ring and extending forward therefrom, and a second metallic ring situated between the ceramic ring and the mating flange, the second metallic ring being brazed to the ceramic ring and welded to the mating flange, such that the mounting structure supports the gun in vacuum relationship with and in electrical isolation from the ion extracting system.

4,659,900

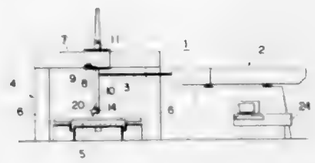
LASER CUTTING MACHINE

Luigi Gilli, and Domenico Peiretti, both of Torino, Italy, assignors to Prima Industrie S.p.A., Italy

Filed Jun. 19, 1985, Ser. No. 746,295

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121 LG **7 Claims**



1. A laser cutting machine, comprising:

a focusing head having first and second head portions movable relative to each other in the axial direction;

an exit nozzle and a focusing lens coupled to one of said first and second portions;

a joint structure which supports said focusing head;

a control unit;

drive means supported by said joint structure and controlled by said control unit for moving said focusing head along a specified path in space;

means for maintaining a predetermined, invariant distance between the exit nozzle and a workpiece to be cut, said distance maintaining means comprising a servomechanism means for controlling the relative movement of said two head portions in the axial direction independently of said control unit to maintain said distance between said nozzle and said workpiece.

4,659,901

PARTICULATE COLLECTION SYSTEM FOR LASER WELDING APPARATUS

Stuart L. Rieben, Mt. Lebanon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 10, 1984, Ser. No. 629,529

Int. Cl.⁴ B23K *27/00*

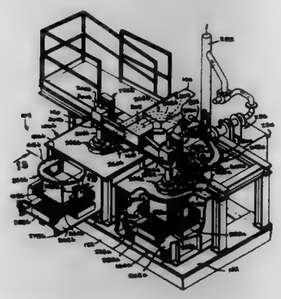
U.S. Cl. 219—121 LC **24 Claims**

1. Welding apparatus for directing a welding beam onto a work piece made of a material, whereby extraneous particles of the work piece are thrown off, and for collecting and disposing of the extraneous work piece particles, said welding apparatus comprising:

(a) a welding chamber for receiving the work piece and for establishing a welding environment about the work piece, said welding welding chamber having an opening and input port means for introducing a non-reactive gas into said welding chamber to establish the welding environment within said welding chamber;

(b) output port means associated with said welding chamber for permitting the escape of the non-reactive gas therefrom;

(c) means for generating and directing the welding beam through said output port means, into said welding chamber and onto the work piece;



(d) manifold means disposed about said output port means for receiving and collecting said non-reactive gas and the work piece particles suspended therein; and

(e) sealing means associated with said opening for operating in a first mode for sealing said opening to prevent escape of the non-reactive gas except through said output port means and said manifold means, and in a second mode to permit escape of the non-reactive gas through said opening.

4,659,902

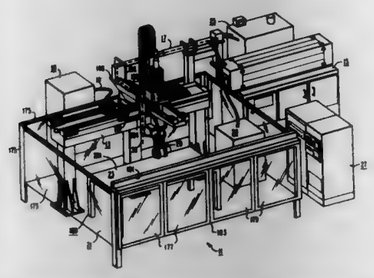
ROBOT LASER SYSTEM

Roger L. Swensrud, Plum Boro; Mark D. White, South Park Twp.; Michael J. Janosik, Pittsburgh; Daniel P. Soroka, Imperial, and Joseph J. Zelezniak, Upper St. Clair Twp., all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 22, 1985, Ser. No. 725,451

Int. Cl.⁴ B23K *26/02*

U.S. Cl. 219—121 LU **19 Claims**



1. A robot laser work cell comprising in combination:

a robotic system having one or more mechanical joints defining at least in part a first axis of motion and a second axis of motion, which axes of motion define a contour path through the robotic system's geometric range of motion, wherein each of said mechanical joints defines in part a frame member;

an integral laser beam delivery system for the delivery of a beam along any point within said geometric range of motion, said integral laser beam delivery system including a plurality of optical joints and tubular members disposed between adjacent optical joints and through which tubular members the beam passes as it travels from optical joint to optical joint, wherein the optical joints of the laser beam delivery system have a housing with a reflective surface disposed therein mounted on the frame member of each mechanical joint of the robot so as to be in synchronous association with each mechanical joint and wherein the tubular members disposed between adjacent optical joints and through which tubular member the beam passes as it travels from optical joint to optical joint are expansible and collapsible with respect to each other and are rigidly attached between the frame member of each mechanical joint with which said adjacent optical joints are in synchronous association, wherein said reflective surface establishes a constant geometric relation between the segment of the beam impinging on the reflective surface and the axis of motion associated with the mechanical joints whereby the optical joints along with the tubular members disposed therebetween and each axis of motion of the robot are synchronous and incapable of mutual interference;

an air filtration and drying system in communication with said tubular members of the laser beam delivery system, said air filtration and air drying system rendering a preferred environment within the tubular members which is substantially free of dust and condensation during the system's operation; and

a safety enclosure system substantially surrounding a work envelope defined by the geometric range of motion of the robot which safety enclosure functions both as a line of defense against unauthorized entrance into the work envelope and as an early warning system to individuals proximate the work cell should the safety enclosure be contacted by laser energy.

4,659,903

PROCESS AND MACHINES FOR AUTOMATICALLY WELDING OR CUTTING THE JUNCTION POINT BETWEEN A MAIN PIPE AND A SECONDARY BRANCH PIPE

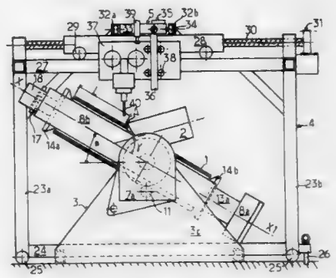
Jean Berne, Aix-en-Provence, and Georges Livet, Martigues, both of France, assignors to Societe Nouvelle des Ateliers et Chantiers du Havre, Le Havre, France

Filed Jun. 28, 1984, Ser. No. 625,451

Claims priority, application France, Jul. 22, 1983, 83 12307

Int. Cl.⁴ B23K *9/12*

U.S. Cl. 219—125.11 **6 Claims**



2. A machine for automatically welding or cutting the junction line between a main pipe and a branch pipe, comprising:

a pipe support which bears the branch pipe to be welded or cut so that the branch pipe can pivot about a first axis merged with the axis of said main pipe and about a second horizontal axis perpendicular to the first axis and which comprises two servomotors each equipped with a feedback loop for automatically rotating the branch pipe to be welded or cut about said axis;

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a travelling gantry crane which comprises means for locking it in fixed position above said pipe support and which bears a mobile welding or cutting assembly mounted on three carriages which may move, respectively, along three axes each perpendicular with the two others, of which one is vertical wherein each carriage is driven along one of said three axes by a servomotor associated with a feed-back loop; and

a computer into which are introduced before beginning a work, the geometric data which define the pipes to be welded and the junction line between said pipes, which computer is programmed for calculating the three coordinates of each point of said junction line with respect to the three axes of displacement of said carriages and two angles corresponding to the orientation of the piece to be welded or cut about said two axes of rotation of said piece, and said computer is programmed for transmitting said three coordinates and said two angles as reference values, respectively, to each of said five feed-back loops;

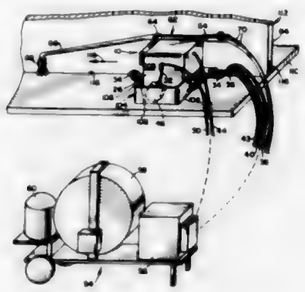
wherein said pipe support comprises a fixed frame and a pivoting frame which is articulated on said fixed frame about a horizontal axis and which is driven in rotation about said axis by a servomotor associated with a feed-back loop, and said pivoting frame is a rectangular frame comprising a U-shaped piece composed of a crosspiece and of two lateral arms which bear in their middle opposite journals supported in bearings forming said horizontal axis, and a jack is housed in each of said lateral arms which are hollow, and said rectangular frame further comprises a mobile transverse beam which constitutes a fourth side of said rectangular frame and which is maintained by said jacks.

4,659,904

SHUT-DOWN CONTROL DEVICE FOR WELDING CARRIAGE AND METHOD

Walter M. Greineder, Lancaster, Pa., assignor to High Steel Structures, Inc., Lancaster, Pa.

Filed Jul. 1, 1985, Ser. No. 750,853
Int. Cl.[4] B23K *9/12*
U.S. Cl. 219—130.21 **34 Claims**



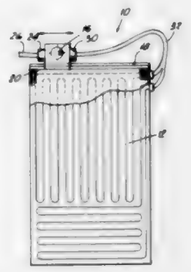
1. An arc welding device comprising a weld carriage for movement along a weld plate, the carriage having a frame, a drive wheel on the frame engagable with the plate, an idler wheel on the frame engagable with the plate, a drive motor for rotating the drive wheel to move the carriage along a weld path on the plate; and arc welding gun on the carriage aimed toward a weld area extending along the plate; a speed sensor on the carriage connected to the idler wheel, the sensor including means for generating an output signal in response to rotation of the idler wheel; arc welding control means for providing welding current and weld wire to the gun and power to the drive motor; and delay shutdown control means connected to the speed sensor and to the arc welding control means for monitoring the sensor output signal and shutting down the carriage and the arc of the weld gun by disconnecting the drive motor from power, disconnecting the gun from arc welding current and stopping the delivery of weld wire to the gun when the sensor output signal is interrupted for a timing interval sufficiently long to permit the drive motor to move the carriage over minor obstructions on the drive plate but insufficiently long for injury to the weld plate by the arc of the stationary welding gun.

4,659,905

ELECTRIC BLANKET

Kenneth Gabrosek, and George Spector, both of 233 Broadway RM 3615, New York, N.Y. 10007

Filed Sep. 26, 1985, Ser. No. 780,189
Int. Cl.[4] H05B *3/34*
U.S. Cl. 219—212 **4 Claims**



1. An electric blanket for a person with arthritis and circulatory problems in their legs which comprises:

(a) an upper heating element within said blanket and encompassing substantially a major area of said blanket so as to provide a uniform degree of heat over a body portion of a person when said upper heating element is energized;

(b) lower heating element within said blanket and encompassing substantially a minor area of said blanket so as to provide a uniform degree of heat over feet portion of said person when said lower heating element is energized; and

(c) a control switch operatively associated with said upper and lower heating elements so as to independently energize each of said upper and lower heating elements and to energize both upper and lower heating elements together further comprising a built-in track along top of said blanket so that said control switch can enegage said track to be slideably adjustable along said track for easy access by said person using said control switch.

4,659,906

INFRARED PANEL EMITTER AND METHOD OF PRODUCING THE SAME

Edward J. Furtek, East Kingston, N.H., assignor to Vitronics Corporation, Newmarket, N.H.

Continuation-in-part of Ser. No. 572,362, Jan. 20, 1985, Pat. No. 4,602,238. This application Jul. 1, 1985, Ser. No. 750,893
The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.
Int. Cl.[4] H05B *3/68*
U.S. Cl. 219—345 **11 Claims**

1. An infrared panel emitter having a peak temperature rating of at least about 800° C., said panel emitter comprising:

a metal foil having an etched pattern for emitting primary radiation;

two layers of paper, one layer being disposed on each side of said primary emitting means, said paper being stable at temperatures of at least 1000° C.;

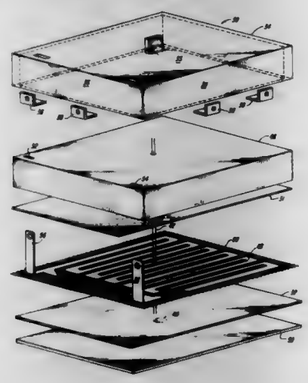
an insulating layer disposed adjacent one of said paper layers; and

a secondary emitting layer disposed adjacent the other of said paper layers, said secondary emitting layer comprising an electrically-insulating, high emissivity material having a secondary emitting surface which is disposed on a side opposite of said other paper layer, said secondary emitting layer absorbing radiation from said primary emitting means and emitting secondary infrared radiation at said secondary emitting surface.

6. A method for producing an infrared panel emitter comprising the steps of:

placing an insulating layer into a metal housing;

laying a first layer of high temperature resistant paper over the insulating layer;



supporting a metal foil element having an etched pattern on a mesh sheet;

inserting the metal foil element and the mesh sheet into the housing adjacent the first layer of paper;

laying over the metal foil element and mesh sheet a second layer of high temperature resistant paper;

covering the assembly with a rigid, infrared transparent secondary infrared emitting layer;

compressing the layers of the assembly against one another;

heating the metal foil element to vaporize the mesh sheet;

cooling the metal foil to leave a void in place of the mesh sheet coextensive with the surface of the metal foil element; and

locking the layers in position.

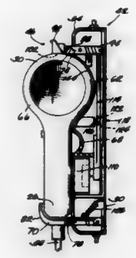
4,659,907

WALL MOUNTED DEVICE WITH HAND-HELD HAIR DRYER

Matthew L. Andis; Richard L. Urbush, and Thomas C. Maddocks, all of Racine, Wis., assignors to Andis Company, Racine, Wis.

Filed Mar. 21, 1983, Ser. No. 477,510
Int. Cl.[4] A45D *20/00*; H01H *3/16*
U.S. Cl. 219—370 **21 Claims**

13. A device comprising a hand-held hair dryer including spaced first and second portions, and hair dryer mounting means adapted to be attached to a support, said mounting means including means for supporting and releasably preventing detachment of said hair dryer from said mounting means and including means for receiving said first portion of said hair dryer, and manually movable means engageable with said second portion for releasably retaining said first portion in said receiving means, and for permitting withdrawal of said hair dryer from said receiving means when manually moved, switch means for energizing and deenergizing said hair dryer, means operably connecting said manually movable means to said switch means for energizing said hair dryer in response to movement in one direction of said manually movable means and for de-energizing said hair dryer in response to reverse



movement of said manually movable means, and means for preventing reverse movement of said manually movable means when said receiving means is not engaged by said first portion of said hair dryer.

4,659,908

ELECTRIC OVEN

André Bouillet, Cormelles-le-Royal, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France

Filed Mar. 27, 1986, Ser. No. 844,781
Claims priority, application France, Apr. 5, 1985, 85 05250
Int. Cl.[4] F24C *7/06*; H05B *1/02*
U.S. Cl. 219—386 **7 Claims**



1. An electric oven comprising an enclosure defining a cooking chamber therein, an opening in said enclosure in communication with the chamber, and a door for closing said opening, said door being arranged to assume a first position, in which the opening is fully closed, and a second position, in which the door is partially open so that air can circulate into and out of the chamber through the opening, further comprising first and second electrical heating elements arranged within said cooking chamber, and switch means for coupling the heating elements to power supply terminals, wherein said switch means is movable between a first, grill operating position, in which the power supply terminals are coupled to said first heating element, and a second, oven operating position, in which the power supply terminals are coupled to at least said second heating element, and further comprising movement transmission members cooperable with said switch means and with said door, said movement transmission members being arranged to ensure that movement of the switch means from its second position to its first, grill operating position, automatically causes the door to move from its first position to its second, partially open position.

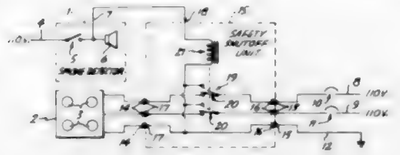
VOL 1077 ISS 3 APR 21 1987 UMI

4,659,909

KITCHEN RANGE SAFETY SHUTOFF

Arthur E. Knutson, 22325 4th Pl. West, Bothell, Wash. 98021

Filed Jan. 23, 1986, Ser. No. 821,626
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—452 **4 Claims**



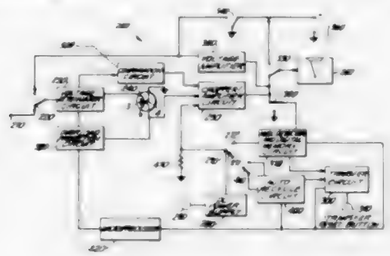
1. A safety shutoff for a range installation including an electric range having an electric heating element and means for normally conveying power to the range, such power-conveying means including manually resettable circuit breaker means for cutting off the supply of power through the power-conveying means to the range when current exceeding a predetermined current is detected, said shutoff comprising a smoke detector mounted externally of the range and including means for supplying an electrical signal when smoke is detected, and power cutoff means connected to and actuated by said signal-supplying means for automatically interrupting the supply of power through the power-conveying means to the range when smoke is detected, said power cutoff means including means for automatically grounding the power-conveying means upon receipt of said signal so as to actuate the circuit breaker means and require manual resetting of the circuit breaker means before the supply of power to the range can be resumed.

4,659,910

AC-DC TRANSFER STANDARD TEMPERATURE SENSOR REVERSAL ERROR COMPENSATION CIRCUIT

Archie J. Harrison, Jr., 37 Richard Dr., Mount Arlington, N.J. 07856; Jerry Harper, 214 Central Ave., West Caldwell, N.J. 07006, and Fred L. Katzmann, 48 Bennett Ave., Cedar Grove, N.J. 07009

Filed Apr. 30, 1985, Ser. No. 728,886
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—497 **5 Claims**



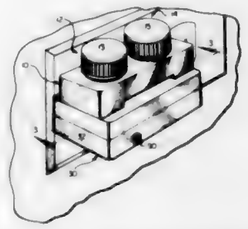
1. A compensation circuit for errors caused by current passing through the heater element of a thermal transfer device having a heater element and a temperature sensor, the temperature sensor generating an uncompensated sensor signal whose amplitude is dependent upon the amplitude of the voltage across the heater element, said circuit comprising:
   (a) means for generating digital information that is a function of the amplitude of the voltage across the heater element;
   (b) means, responsive to the digital information generating means, for generating a reversal error compensation signal; and
   (c) means for generating a compensated sensor signal, responsive to the reversal error compensation signal and the uncompensated sensor signal;
   whereby the amplitude of the compensated sensor signal is approximately that of the sensor signal generated by the thermocouple in the absence of Peltier and Thompson effects.

4,659,911

PLUG-IN CONTACT LENS DISINFECTOR WITH BIMETALLIC TIMER

Francis E. Ryder, Arab, and Rowland W. Kanner, Guntersville, both of Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed May 14, 1985, Ser. No. 734,410
Int. Cl.[4] H05B *3/06*
U.S. Cl. 219—521 **28 Claims**



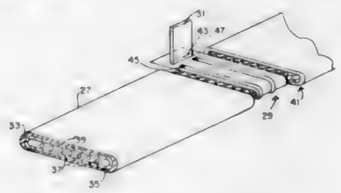
1. A modular contact lens disinfecting system comprising: a first, combination carrying case-and-heater module comprising a pair of receptacles for receiving a pair of contact lenses therein, heater means responsive to a predetermined electrical current for producing heat, said heater means being configured and positioned in said first module for radiating heat to said receptacles for disinfecting contact lenses therein, and electrical connector means coupled with said heater means for receiving said predetermined electric current to thereby effect heating of said heater means; and an energizing-and-timer module including a housing, AC plug means coupled with said housing for coupling with an AC receptacle to receive said predetermined electrical current, mating electrical connector means for complementary mating with the electrical connector means of said case-and-heater module, and timer means coupled in electrical circuit intermediate said plug means and said mating electrical connector means for controlling the time duration during which said predetermined electrical current is applied to said mating electrical connector means.

4,659,912

THIN, FLEXIBLE, AUTOREGULATING STRAP HEATER

Rodney L. Derbyshire, Menlo Park, Calif., assignor to Metcal, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 623,238, Jun. 21, 1984. This application Oct. 5, 1984, Ser. No. 658,245
Int. Cl.[4] H05B *3/58*
U.S. Cl. 219—535 **18 Claims**



1. A temperature autoregulating heater system that is highly flexible so that it may be tightly wrapped about bodies of irregular shape or quite small radii and having a power to mass ratio such as to be virtually massless, whereby as a result of intimate contact between said heater and the body to be heated

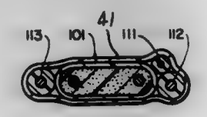
and the low mass of the heater, such body may be rapidly heated, said heater comprising
   a thin, flexible layer of electrical insulating material having opposed elongated surfaces,
   a thin, narrow, conductor formed on one of said elongated surfaces,
   a thin, layer of magnetic material,
   said insulating material having a layer of adhesive on another of said elongated surfaces whereby said insulating material may be contacted with and retained on said layer of magnetic material, and
   means permitting application of power of said to said conductor to cause the temperature of said magnetic material to approach its Curie temperature.

4,659,913

ELONGATE ELECTRICAL ASSEMBLIES

John A. Midgley, San Carlos, and Richard H. Hulett, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 369,309, Apr. 16, 1982, abandoned. This application Jun. 14, 1985, Ser. No. 745,349
Int. Cl.[4] H05B *3/34*
U.S. Cl. 219—549 **18 Claims**



1. An elongate composite heating device which comprises (1) an elongate electrical self-regulating heater comprising
   (a) a first elongate electrical connection means;
   (b) a second elongate electrical connection means; and
   (c) a plurality of electrical heating elements which are connected in parallel between the first and second connection means;
   (2) a third elongate electrical connection means;
   (3) a fourth elongate electrical connection means;
   (4) a fifth elongate electrical connection means; and
   (5) a connecting body of insulating material which physically secures the heater (1) and the third, fourth and fifth elongate electrical connection means to each other;
the heater (1) and the third, fourth and fifth elongate electrical connection means being electrically insulated from each other throughout the length of the device.

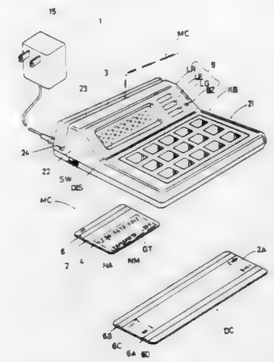
4,659,914

MAGNETIC CARD DISCRIMINATOR

Hiroatsu Kondo, and Yasukiyo Yamamoto, both of Toyonaka, Japan, assignors to I. M. Electronics Co., Ltd., Osaka, Japan

Filed Jul. 16, 1985, Ser. No. 755,662
Claims priority, application Japan, Mar. 11, 1985, 60-49159; Mar. 11, 1985, 60-49160; Mar. 11, 1985, 60-35169[U]
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—380 **7 Claims**

1. A magnetic card discriminator, comprising:
   card reading means for reading a card registration number magnetically recorded on a magnetic card;
   registration number memory means for storing said card registration number read by said card reading means;
   invalid number memory means for storing previously determined invalid registration numbers as registration numbers of cards not to be used, and being able to store additional invalid registration numbers from an external storage medium containing said additional invalid registration numbers;
   processing means for fetching said registration number from said registration number memory means, comparing it with said invalid registration numbers stored in said invalid number memory means, and outputting a signal signifying the coincidence or noncoincidence of the two; and
   alarm means connected to said processing means and being activated in response to said signal signifying the coincidence of said comparison;



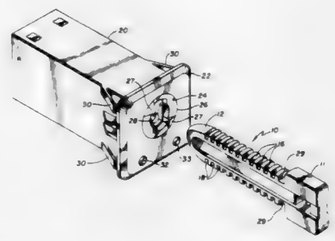
said card reading means, said card reading means, registration number memory means, invalid number memory means, processing means, and alarm being combined in a single unit.

4,659,915

RECEPTACLE DESIGN FOR USE WITH ELECTRONIC KEY-LIKE DEVICE

William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Burnsville, Minn.

Division of Ser. No. 471,424, Mar. 2, 1983, Pat. No. 4,620,088. This application Oct. 4, 1985, Ser. No. 784,225
Int. Cl.[4] G06K *7/06*
U.S. Cl. 235—441 **3 Claims**



1. An electrical receptacle which is electrically activated by insertion and rotation of an electronic key-like device having electrical contact surface areas thereon for mating with corresponding contacts in the receptacle, the receptacle comprising:
   an elongate housing defining an elongate interior housing chamber having an open end into which an electronic key-like device may be inserted and rotated in the chamber;
   a set of spaced electrical contacts, arranged in the chamber so that, as an inserted key-like device is rotated in the receptacle, each contact thereon is urged into engagement with a respective receptacle contact, and
   receptacle contact guard means defining a keyway, the guard means being rotatably carried within the receptacle housing chamber such that the key-like device, when inserted into the contact guard means, may be rotated to cause accompanying rotation of the guard in the housing from a "guard" position to an "access" position, the guard serving as a barrier for preventing access to the receptacle

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contacts via the keyway when in the "guard" position and allowing contact of the key-like device contacts to the receptacle contacts when in the "access" position.

4,659,916

ARRANGEMENT FOR CORRECTING THE POSITION OF A LASER BEAM GUIDED BY MEANS OF AN ARTICULATED OPTICAL SYSTEM

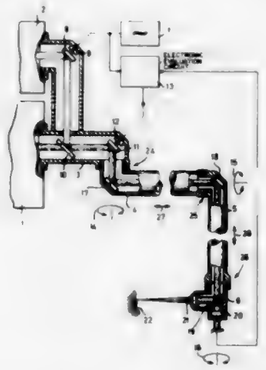
Gerhard Müller, Aalen; Gerhard Hohberg, Oberkochen, and Peter Greve, Essingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Feb. 13, 1985, Ser. No. 701,168

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406676

Int. Cl.⁴ G05D *3/12*; **G02B** *17/06*; **B23K** *26/04*

U.S. Cl. 250—201 **8 Claims**



1. An arrangement for correcting the position of a laser beam having a multiplicity of rays and guided by means of an articulated optical system defining an optical axis and including a plurality of arm segments pivotally connected one to the other at respective pivot joints so as to define an articulated arm having an input end and an output end, the articulated arm being subjected to deformations and the like which can cause the laser beam to deviate from said optical axis, the arrangement comprising:

optical modulating means for modulating the laser beam with respect to its direction before said laser beam enters the input end of the articulated arm;

a plurality of deflectors disposed at corresponding ones of said joints for guiding said laser beam along said articulated arm and which can be subjected to an unwanted tilt against said optical axis as a consequence of said deformations;

beam splitter means for splitting off a portion of the rays of the laser beam to form a component beam;

position-sensitive detector means arranged at the output end of said articulated arm for receiving said component beam thereon and for generating electrical signals in response to a deviation of said component beam from said optical axis and providing a measure of the cumulative effect of the degree of rotation between the input end and the output end of said articulated arm;

a control unit for receiving said electrical signals of said detector means and for generating a control signal for correcting said deviation and compensating for said unwanted tilt in a direction determined according to the measured degree of rotation; and,

adjustable beam deflecting means arranged at the imput end of said articulated arm for adjusting the position of said laser beam in response to said control signal.

4,659,917

FOCUS DETECTOR HAVING FIRST AND SECOND NON-OVERLAPPING SENSOR SERIES

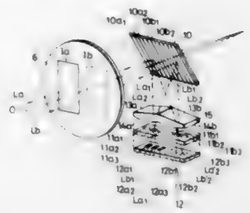
Takashi Suzuki, Yokohama; Susumu Matsumura; Kenji Suzuki, both of Kawasaki, and Keiji Otaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,952

Claims priority, application Japan, Mar. 13, 1982, 57-40016

Int. Cl.⁴ G01J *1/20*

U.S. Cl. 250—201 **8 Claims**



1. An optical system for detecting the status of focus, comprising:

an image-forming optical system;

a sensor portion disposed near a predetermined image plane of said image-forming optical system, said sensor portion having a first sensor series and a non-overlapping second sensor series, said first sensor series having a plurality of first sensor units, each of said first sensor units having a first lens portion and a first sensor, said first lens portion having a light-condensing characteristic at least in a predetermined one-dimensional direction, said first sensor being disposed at a first position to receive light from said first lens portion, said second sensor series having a plurality of second sensors units, each of said second sensor units having a second lens portion and a second sensor, said second lens portion having a light-condensing characteristic at least in said one-dimensional direction, said second sensor being disposed at a second position to receive light from said second lens portion; and

a beam splitting element disposed between said image-forming optical system and said predetermined image plane, said beam splitting element deflecting a light beam passed through said image-forming optical system in a plurality of directions and directing a first one of the deflected light beams to said first sensor series and a second one of the deflected light beams to said second sensor series;

whereby detection of the state of focus of said image-forming optical system is effected by the use of output signals from said first and second sensor series which correspond to the image intensity distributions regarding respective object images.

4,659,918

PATTERN TRACER WITH DUAL SCAN SLOWDOWN CIRCUIT

Enn Vali, Burlington, Canada, assignor to Westinghouse Canada Inc., Hamilton, Canada

Filed Jan. 22, 1985, Ser. No. 693,571

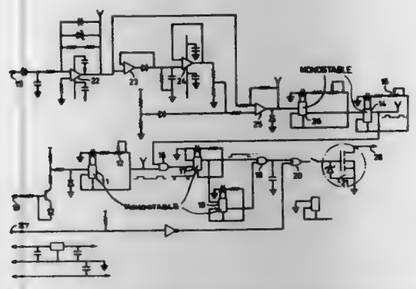
Claims priority, application Canada, Mar. 21, 1984, 450132

Int. Cl.⁴ G05B *1/00*

U.S. Cl. 250—202 **4 Claims**

1. In a circular scanning optical pattern tracer, means to generate a first signal indicative of intersection of the pattern and an optical scan of a first diameter, means to generate a second signal indicative of intersection of the pattern and an optical scan of a second diameter, means to produce from said first and second signals respective control signals of adjustable duration, means to detect coincidence of said control signals and produce in response thereto, a slowdown signal indicative

of the deviation of the pattern from a straight line in advance of the center of rotation of said circular scan and means to



utilize said slowdown signal to control the tangential velocity of said tracer.

4,659,919

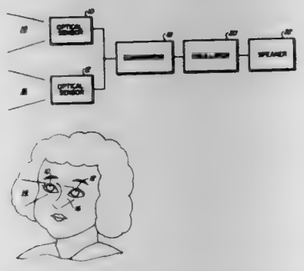
OPTICAL SENSING CIRCUIT FOR AUDIO ACTIVATION OF TOYS

William E. Price, 402 E. Roger Rd., Tucson, Ariz. 85705

Continuation of Ser. No. 479,574, Mar. 28, 1983, abandoned. This application Feb. 14, 1986, Ser. No. 830,482

Int. Cl.⁴ G01V *9/04*; **H01J** *40/14*

U.S. Cl. 250—209 **25 Claims**



23. A toy generating audible sounds in response to particular variations of light received by at least two portions of said toy, comprising in combination:

(a) optical sensor means having first and second light sensors positioned at first and second locations within said toy for viewing first and second light fields, said optical sensor means including an output terminal for providing an output signal having first and second output states, the output signal assuming a first output state when said first light sensor receives relatively more light than said second light sensor, the output signal assuming a second output state when said second light sensor receives relatively more light than said first light sensor;

(b) trigger pulse means coupled to said output terminal of said optical sensor means and responsive to transitions of the output signal between the first and second output states for generating a trigger pulse in response to such transitions;

(c) audio generator means coupled to said trigger pulse means and responsive to said trigger pulse for generating audio signals for a predetermined duration; and

(d) a speaker coupled to said audio generator means for providing audible signals in response to said audio signals.

4,659,920

IMAGE SENSOR ARRAYS WITH SERIES REDUNDANCY

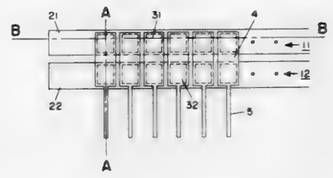
Masaharu Nishiura, Yokosuka, and Shinichiro Nagakusa, Nagano, both of Japan, assignors to Fuji Electric Company, Ltd., Kawasaki, Japan

Filed Feb. 28, 1985, Ser. No. 706,409

Claims priority, application Japan, Aug. 25, 1984, 59-177089

Int. Cl.⁴ H01J *40/14*

U.S. Cl. 250—211 J **3 Claims**



1. A line image sensor which involves the scanning of an image line by line photosensor elements which are aligned in rows and which compensate for defective elements by redundancy comprising at least first and second parallel rows of closely spaced photosensor elements, corresponding elements of the rows being in registry, a plurality of separate output leads, a different one common to each set of corresponding elements of the rows, and means for focusing a line image being scanned on each of the rows in succession, whereby an output signal is available at each output lead if any element to which it is connected is operative.

4,659,921

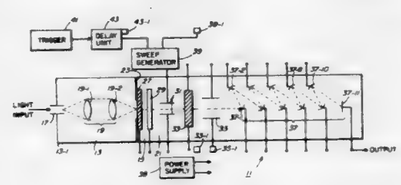
ULTRAFAST GATED LIGHT DETECTOR

Robert R. Alfano, 3777 Independence Ave., Bronx, N.Y. 10463

Filed Mar. 1, 1984, Ser. No. 585,242

Int. Cl.⁴ H01J *31/50*

U.S. Cl. 250—213 VT **15 Claims**



1. A gated light detector comprising a housing having therein:

a. a photocathode for receiving a light signal and producing emission of electrons in proportion to the intensity of the light signal,

b. an accelerating mesh for accelerating the electrons emitted by the photocathode into a deflection field,

c. sweeping electronic means for sweeping the electrons in the deflection field over a defined angular distance at a defined rate,

d. a first microchannel plate for performing electron multiplication on at least some of the swept electrons,

e. electron multiplication means comprising a dynode chain for performing electron multipication on at least some of the electrons emitted from said first microchannel plate,

f. variable aperture means for limiting the electrons passed from the first microchannel plate to the electron multiplication means, and

g. anode means for receiving electrons from the dynode chain and producing an analog electrical signal output.

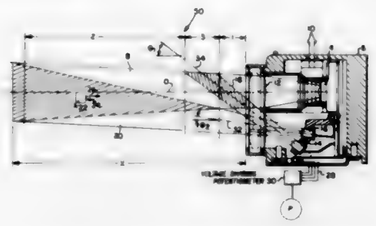
VOL 1077 ISS 3 AP 21 1987 21 UMI

4,659,922

OPTICAL SENSOR DEVICE FOR DETECTING THE PRESENCE OF AN OBJECT

Eugene F. Duncan, Wauwatosa, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 19, 1985, Ser. No. 703,055
Int. Cl.⁴ G01V *9/04*; G08B *13/18*
U.S. Cl. 250—221 **5 Claims**



1. A sensor device for detecting the presence of an object located within at least one of three zones within a sensing field of a radiation detector, said device comprising:

radiation detector means having a sensing field of predetermined length and operative to detect the presence of an object within said field upon receipt of radiation reflected from said object towards said detector means and to provide an output signal;

first radiation source means positioned to provide a first radiation beam of controllable intensity that angularly intersects said sensing field to provide a first zone in said sensing field from which said reflected first radiation is able to be received by said detector means;

second radiation source means positioned to provide a second radiation beam of controllable intensity that angularly intersects said sensing field to provide a second zone in said sensing field from which said second reflected radiation is able to be received by said detector means, and said first and second radiation beams overlapping a common portion of said sensing field to provide an intermediate third zone between said first and second zones within said sensing field from which said object will reflect said radiation and said reflected radiation is able to be received by said detector means;

means for supplying power from a power source to said first and second radiation source means;

and control means comprising means for selectively adjusting said power supplied to said first and second radiation source means to correspondingly change the relative intensities of the respective first and second radiation beams thereby to cause said detector to receive sufficient reflected radiation from an object in any of said zones at correspondingly different distances from said detector means within said sensing field to provide said output signal.

4,659,923

FIBER OPTIC INTERFEROMETER TRANSDUCER

John W. Hicks, Jr., Northborough, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 241,861, Mar. 9, 1981, abandoned. This application Nov. 9, 1983, Ser. No. 549,875
Int. Cl.⁴ H01J *5/16*
U.S. Cl. 250—227 **32 Claims**

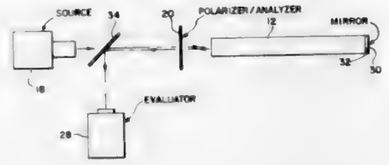
1. A transducer comprising:

an optical fiber having at least two different optical paths extending over a given length with the propagation constant of at least one of said paths being variable in response to an environmental factor applied to at least a portion of said given length;

means for introducing light energy of fixed phase relationship into both said paths at one end of said length of optical fiber;

means for combining the light energy transmitted along each said path so as to provide interference therebetween;

evaluating means for evaluating said interference and for providing an output related thereto; and



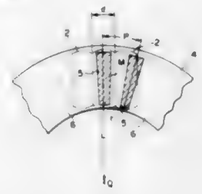
reflective means adjoining the other end of said fiber length for reflecting said light energy transmitted along both said paths back toward said one end, and said introducing means located at said one end includes means for combining the reflected energy.

4,659,924

ROTARY ENCODER WHEREIN PHASE DIFFERENCE IS ADJUSTED BY THE RADIAL POSITION OF THE SENSOR HEAD

Ichiro Tokunaga, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Mar. 6, 1985, Ser. No. 708,717
Claims priority, application Japan, Mar. 6, 1984, 59-31218[U]
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **6 Claims**



1. A rotary encoder comprising:

a code disk rotatable about an axis in a plane and having a plurality of strip-like reflection portions spaced equidistantly apart by a predetermined pitch on a circumferential part of one surface of said disk in said rotation plane, said strip-like portions extending in a radial direction relative to said rotation axis;

a sensor head disposed opposite said circumferential part of said one surface of said code disk facing said reflection portions and having a light emitting portion and a pair of light receiving portions on each side of said light emitting portion such that light emitted by said light emitting portion is reflected by said reflective portions and received by said light receiving portions to provide two output signals having a phase difference between them, and

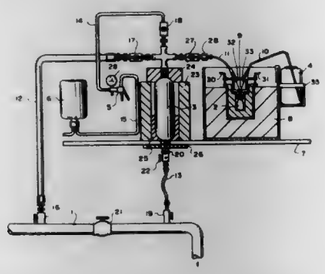
means for mounting and movably adjusting said sensor head along a radial direction of said one surface relative to said rotation axis such that a predetermined phase difference between the two output signals can be obtained.

4,659,925

HIGH PRESSURE WELL RADIOISOTOPE INJECTION SYSTEM

George A. Burbidge, Nepean, and Judy E. Stuart, Mississauga, both of Canada, assignors to Atomic Energy of Canada Limited, Ontario, Canada

Filed Oct. 9, 1984, Ser. No. 658,781
Claims priority, application Canada, Mar. 15, 1984, 449666
Int. Cl.⁴ G01V *5/00*
U.S. Cl. 250—260 **14 Claims**



1. Apparatus for adding radioactive tracer material into a high-pressure line for fluid being pumped into an injection well comprising:

a shielded pressure flask;

a container of carrier fluid;

a container of radioactive tracer material;

means to evacuate said pressure flask;

means to connect said container of radioactive material to said shielded pressure flask and to said container of carrier fluid so that after evacuation of said pressure flask said carrier fluid is transferred to said container of radioactive tracer material and thence to said pressure flask, said carrier fluid carrying with it said radioactive tracer material; and

means to connect said shielded pressure flask to the high-pressure line whereby said carrier fluid with said radioactive tracer material is flushed into the high-pressure line.

4,659,926

HIGH RESOLUTION PARTICLE SPECTROMETER

Lawrence L. Kesmodel, Bloomington, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

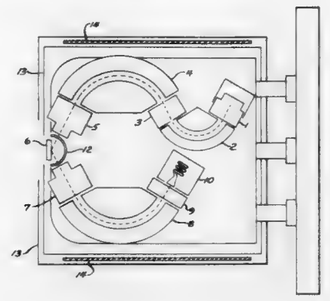
Continuation of Ser. No. 613,151, May 23, 1984, Pat. No. 4,559,449. This application Aug. 26, 1985, Ser. No. 769,214
The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.
Int. Cl.⁴ H01J *49/48*, *40/00*
U.S. Cl. 250—305 **25 Claims**

3. A device for detecting with high-resolution the particle energy loss of a sample comprising:

a. monochromator means for selecting charged particles having substantially the same energy for impingment upon the sample, the monochromator means having a defined deflection plane and at least two stages;

b. source means for producing, collimating and focusing a beam of charged particles both in-plane and out-of-plane relative to the defined plane of the monochromator means;

c. intermediate lens means for focusing the beam of charged particles as it passes between the first and second stages of the monochromator means; and



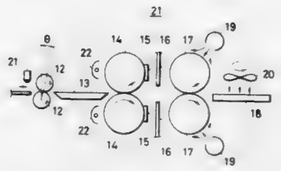
d. means for detecting the beam of charged particles after it is deflected from the sample to determine the particle energy loss of the sample.

4,659,927

IMAGE TRANSFER APPARATUS AND METHOD

Tomohisa Tago, Shizuoka; Shinji Hamada, Kanagawa; Shinichi Ichikawa, Kanagawa, and Yoshimoto Tanase, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 31, 1985, Ser. No. 739,596
Claims priority, application Japan, May 31, 1984, 59-112020; May 31, 1984, 59-112021
Int. Cl.⁴ G03C *5/16*; H05B *1/00*
U.S. Cl. 250—318 **13 Claims**



1. An image transfer device for transferring an image from an image sheet (**6**) to an image-receiving sheet (**5**) while said sheets are superposed, said image transfer device comprising:

a plurality of heated rollers (**14**) for simultaneously feeding, heating, and pressing said superposed sheets;

auxiliary heating means (**22**) for heating surfaces of said heated rollers, said auxiliary heating means being actuatable for heating only portions of said heated rollers where a surface temperature thereof is lowered due to insertion of said superposed sheets; and

a sheet sensor (**21**) for generating a detecting signal indicative of said superposed sheets,

wherein said auxiliary heating means is actuatable in response to said detecting signal.

4,659,928

FOCAL PLANE ARRAY INFRARED DEVICE

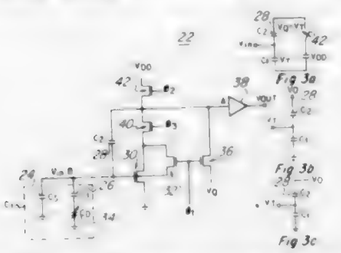
Claude E. Tew, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 22, 1985, Ser. No. 725,967
Int. Cl.⁴ G01J *5/04*; H01L *31/00*
U.S. Cl. 250—332 **6 Claims**

1. A focal plane array infrared device comprising:

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(a) optical means for receiving and focusing infrared energy emanating from a scene;
(b) a focal plane detector array for receiving the focused infrared energy and producing electrical signals representative of the infrared energy impinging thereon;
(c) a multiplexer for multiplexing the focal plane detector array electrical signal output;
(d) a preamplifier connected to the multiplexer for amplifying the electrical signals to a working level; and
(e) a data processing means for processing the data representative of the infrared image of the scene, said data processing means including
(f) a dynamic amplifier circuit means for reducing substantially the 1/f time correlated noise during read out of the focal plane detector array which amplifier includes a solid state transistor amplifier, a plurality of capacitors selectively connected together and to the transistor amplifier and a plurality of solid state switches operatively connected to the plurality of capacitors for selectively controlling the operation of the capacitors for substantially obtaining background noise performance from the electrical signals representative of the detected infrared signals, the plurality of switched capacitors further including a control means operatively connected to the plurality of solid state switches for selectively controlling their operation to reduce the amount of heat generated resulting in increased detector cooling efficiency.

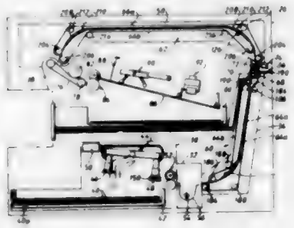


4,659,929

RADIOGRAPHIC SYSTEM INCLUDING A TRANSPORT SYSTEM HAVING TWO INDEPENDENT PORTIONS FOR SERIAL CONTINUOUS TRANSPORTING OF IMAGE PLATES

Shigemi Fujiwara, Ohtawara; Katsuhide Koyama, Tokyo, and Hiroshi Kageyama, Utsunomiya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 29, 1985, Ser. No. 728,656
Claims priority, application Japan, May 14, 1984, 59-97957
Int. Cl.⁴ G01T *1/10*; G03B *42/02*
U.S. Cl. 250—327.2 **2 Claims**



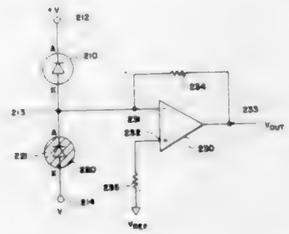
1. A system for making a radiation image on a stimulable phosphor sheet having a phosphor layer on one side thereof, comprising:
a radiation source;
a housing comprising:
a stimulable phosphor sheet supply region having a substantially light-tight supply magazine including a bottom and in which a plurality of stimulable phosphor sheets are stacked with the sides of the sheets opposite the phosphor layer side facing upward away from the bottom of the supply magazine;
a stimulable phosphor sheet collecting region having a substantially light-tight receiving magazine having a bottom;
a transport system including first and second independent portions, each including opposed transport bands, said first portion adapted for transporting the stimulable sheets serially from the supply magazine to said second portion, said stimulable phosphor sheets being serially exposed to radiation from said radiation source while being mounted between the transport bands of said second portion and said second portion adapted for transporting an exposed stimulable phosphor sheet to the receiving magazine while an unexposed phosphor sheet is disposed in said first portion, the second portion including arcuate portions adapted to cause unexposed sheets serially fed from the supply magazine to turn up with the phosphor layer side thereof facing the radiation source during feeding of unexposed sheets to the exposure position and to cause the exposed sheets to turn with the side opposite to the phosphor layer facing upward away from the bottom of the receiving magazine upon feeding of exposed sheets to the receiving magazine;
a take-up and feeding means adapted for taking up the unexposed sheets from the supply magazine one by one and feeding the taken-up sheets to the transport system; and
a discharging means adapted for disposing the exposed sheet transported by said transport system in said receiving magazine with the opposite side of said sheets facing upward away from the bottom of the receiving magazine.

4,659,930

RADIATION HARD VISIBLE LIGHT READOUT CIRCUIT

Allan P. Johnson, Minneapolis, Minn., and Ronald W. Shovan, Clearwater, Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 27, 1985, Ser. No. 814,341
Int. Cl.⁴ G01J *1/00*; H01J *40/14*
U.S. Cl. 250—336.1 **8 Claims**



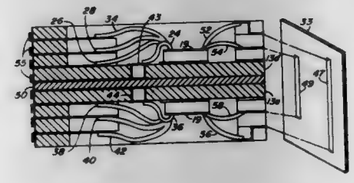
1. A radiation hard visible light readout circuit responsive to laser beam emissions comprising:
a first photodetector responsive to visible light, said first photodetector having a first terminal means being electrically connected to a first energization source, and a second terminal means electrically connected to a common interconnection means;
a second photodetector having substantially identical electrical and thermal characteristics as said first photodetector, said second photodetector having a first terminal means being electrically connected to a second energization source, and a second terminal means electrically connected to said common interconnection means, said second photodetector having mask means for blocking visible light incident on said second photodetector and permitting X-ray and gamma radiation to pass therethrough and impinge on said second photodetector; and
means having an input means electrically connected to said common interconnection means for providing an output signal as a function of current flowing into said input means.

4,659,931

HIGH DENSITY MULTI-LAYERED INTEGRATED CIRCUIT PACKAGE

Charles E. Schmitz, Irvine; Richard C. Wimberly, Huntington Beach, and Donald J. Carlson, Tustin, all of Calif., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 8, 1985, Ser. No. 731,988
Int. Cl.⁴ H01L *27/14*; H05K *1/14*
U.S. Cl. 250—338 **17 Claims**



1. A high density multi-layered integrated circuit module comprising:
a plurality of thin film substrate layers disposed in substantially overlapping registry to form a non-conductive supporting body, a plurality of said substrate layers having electronic devices mounted thereon;
insulating sheets disposed intermediate said layers;
a plurality of detector element connectors formed along a first edge portion of said body;
metalized conductive patterns formed along a major surface of a plurality of said layers, said conductive patterns having first portions interconnecting said detector element connectors and said electronic devices, and second portions for communicating signals between said electronic devices and external electronics, said conductive pattern second portions being formed on the surface of said layers and extending to edge portions thereof;
an electrical interconnect formed along a second edge portion of said body, said interconnect being connectable to external electronics and to said conductive pattern second portions at said layer edge portions; and
a plurality of electrically conductive connectors disposed transverse to said layers, said conductive connectors electrically connecting said conductive pattern second portions formed on different layers.

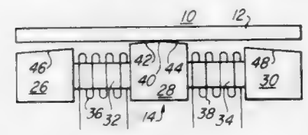
4,659,932

APPARATUS FOR INTERLACING INFRARED ENERGY

Walter F. Roll, Blue Ridge, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 29, 1985, Ser. No. 728,627
Int. Cl.⁴ G02B *26/10*
U.S. Cl. 250—347 **8 Claims**

1. An apparatus for interlacing infrared energy comprising: an electromagnetic radiant energy reflector means including a core of magnetic material, said core of magnetic material having a body portion and a mirror reed portion, said body portion forming a fulcrum in operative association with a central portion of the mirror reed portion and a coil surrounding a portion of the body portion of the core on either side of said fulcrum so that when the coil is selectively energized, the mirror reed portion is selectively rotatable in two preselected scan directions relative to said fulcrum.

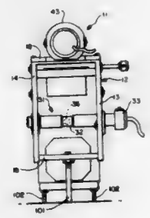


4,659,933

SURFACE ANALYZER AND METHOD

Erik W. Anthon, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 556,618, Nov. 28, 1983, abandoned. This application Oct. 4, 1985, Ser. No. 784,211
Int. Cl.⁴ G01N *21/47, 21/55*
U.S. Cl. 250—372 **27 Claims**



1. In an analyzer for analyzing the surface of an object which is substantially opaque to ultraviolet light, a substantially light-tight housing having aperture means therein for viewing the surface of the object to be analyzed, illuminator means carried by the housing including a source of ultraviolet light and optical imaging means for directing light from the source through the aperture means and onto the surface of the object to illuminate the surface of the object, collector means carried by the housing including means responsive to ultraviolet light, optical imaging means for receiving ultraviolet light from said surface through said aperture means and directing it onto the means responsive to ultraviolet light and means carried by the housing permitting relative tilting movement between the surface of the object and the housing so that substantially only scattered reflected ultraviolet light is collected in one position of the housing and substantially only specularly reflected ultraviolet light is collected in a second position of the housing.

4,659,934

METHOD AND APPARATUS FOR REDUCING SCHLIEREN NOISE IN A LIQUID CHROMATOGRAPH

Robert W. Allington, Lincoln, Nebr., assignor to ISCO, Inc., Lincoln, Nebr.

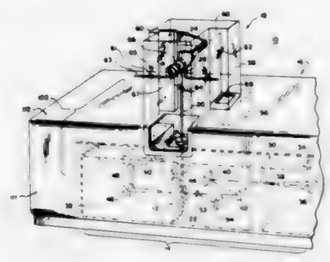
Continuation-in-part of Ser. No. 527,954, Aug. 31, 1983, Pat. No. 4,523,097. This application Jun. 6, 1984, Ser. No. 617,700
The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.
Int. Cl.⁴ G01N *23/00*
U.S. Cl. 250—458.1 **9 Claims**

1. A method of operating a liquid chromatograph having at least a chromatographic column, a sample injection valve, and a flow cell comprising the steps of:
applying electrical power to an absorbance detector within an enclosure containing at least the flow cell and a portion of the chromatographic column;

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blowing air from the enclosure into an air chamber that encloses a sample injection valve and at least a part of a chromatographic column and recirculating the air from a location near the sample injection valve along the column toward the flow cell at a rate in the range of 1 to 100 volumes of air per minute for each volume of capacity in the air chamber until temperature changes with respect to time at each location are within less than 0.1 degree Celsius within the enclosure and chamber within a one minute time period;

passing eluant through the column and flow cell after the temperature has stabilized;



transmitting a beam of light having a wavelength within a range of wavelengths of 180 nanometers to 3,000 nanometers through the flow cell from a source of light that varies less than ten percent in intensity in a one minute period;

detecting changes in the absorbance of light flowing through said flow cell; and

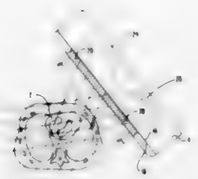
discontinuing the blowing of air after the temperature has stabilized and permitting it to flow at a rate of at least 0.001 volume of air per minute for each volume of capacity of the air chamber.

4,659,935

BILATERAL COLLIMATOR FOR ROTATIONAL CAMERA TRANSAXIAL SPECT IMAGING OF SMALL BODY ORGANS

Eric G. Hawman, Buffalo Grove, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Feb. 21, 1985, Ser. No. 703,789
Int. Cl.[4] G21K *1/02*
U.S. Cl. 250—505.1 **9 Claims**



1. In combination:

a rotational camera transaxial SPECT camera; and

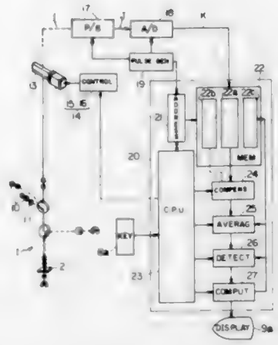
a bilateral collimator, comprising a radiation-absorbing material having passageways through which radiation can pass, said passageways being divided into first and second groups and defining respectively first and second views of a body organ to be imaged.

4,659,936

LINE WIDTH MEASURING DEVICE AND METHOD

Atsushi Kikkawa, Osaka; Noriyuki Kondo, and Atsushi Tamada, both of Kyoto, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Nov. 26, 1985, Ser. No. 810,787
Claims priority, application Japan, Mar. 22, 1985, 60-59161
Int. Cl.[4] G01N *21/86*
U.S. Cl. 250—560 **12 Claims**



1. A line width measuring device, for measuring the line width of a line in a pattern on a specimen, comprising:

a magnifying optical system through which said line pattern of the specimen to be examined is projected under predetermined magnification;

a photo-electric conversion means for converting the image of said pattern projected under magnification, said photo-electric conversion means comprising a one dimensional image sensor array and a P/S conversion circuit for outputting serial output signals;

an A/D converter for A/D converting of the signals outputted by said photo-electric conversion means;

a signal processing means for computing the line width of line pattern according to the output signal from said A/D converter; and

means for outputting the computed result.

4,659,937

OPTICAL DEVICE FOR MEASURING THE DIAMETER AND DETECTING SURFACE DEFECTS OF MOVING WIRE

Paolo Cielo, Montreal, and Ghislain Vaudreuil, Boucherville, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Nov. 12, 1985, Ser. No. 797,048
Int. Cl.[4] G01N *21/86, 21/88*
U.S. Cl. 250—560 **16 Claims**



1. A non-contact type apparatus for simultaneously detecting surface defects and measuring the diameter of an elongated object moving along its longitudinal axis comprising:

an incoherent optical source system for emitting incoherent optical rays;

an optical system situated between the optical source system and the object for focusing the optical rays to form a substantially converging uniform laminar beam lying in a plane substantially perpendicular to the longitudinal axis of the object and for projecting the said laminar beam toward the said object; and

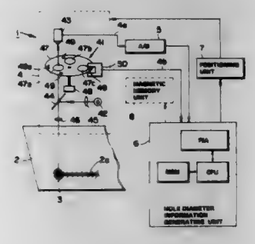
an optical detector system aligned with the optical system on the opposite side of the object for receiving the optical rays to generate a detector signal indicative of the surface defects and the diameter of the object.

4,659,938

SYSTEM FOR GENERATING HOLE DIAMETER INFORMATION OF PRINTED BOARD AND THE LIKE

Yoshiyuki Aoyama; Shuitsu Funabashi, and Masaaki Matsuzaka, all of Fujisawa, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1984, Ser. No. 654,384
Claims priority, application Japan, Sep. 27, 1983, 58-178951
Int. Cl.[4] G06K *7/10*
U.S. Cl. 250—566 **6 Claims**



1. A system for generating hole diameter information of each holing position on a printed board comprising;

a pattern figure having a plurality of marks, the location of the marks corresponding to the holing positions for a printed board, each mark being indicated by an identification color representing a predetermined hole diameter;

detecting means for generating a detection signal containing color information of the identification color of one of each of the plurality of marks; and

hole diameter information generating means including positioning means for sequentially positioning the detecting means at a position corresponding to one of the plurality of marks, the hole diameter information generating means further including hole diameter determining means responsive to the detection signals from said detecting means for determining the identification color of the mark and for converting the determined identification color into a hole diameter based on a predetermined color information-hole diameter table.

4,659,939

OPTICAL SCANNING SYSTEM INCLUDING AN AMPLIFIER

John L. Loreazo, Southbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 726,745, Apr. 24, 1985, abandoned. This application Aug. 28, 1985, Ser. No. 770,127
Int. Cl.[4] G06K *7/10*
U.S. Cl. 250—566 **8 Claims**

1. An optical scanning system comprising:

(a) a light source;

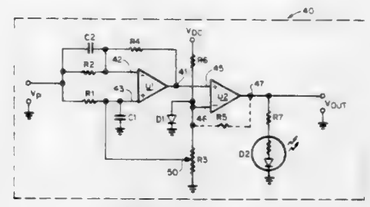
(b) first lens means for focusing light from said source;

(c) means for sequentially passing objects to be scanned through said focused light;

(d) photodetector means for producing an output representative of the intensity of light reflected from or transmitted through said object;

(e) amplifier means having differential inputs and an output for amplifying said photodetector output;

(f) first circuit means for rapidly coupling said photodetector output to one of said differential inputs; and



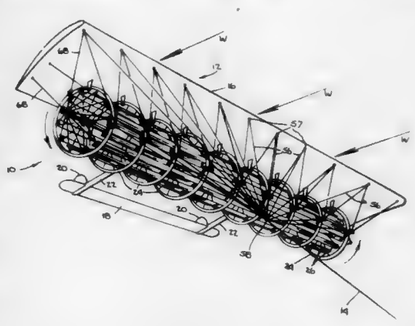
(g) second circuit means for coupling an integral of said photodetector output to the other of said differential inputs to provide a background reference level substantially proportional to the background between said objects.

4,659,940

POWER GENERATION FROM HIGH ALTITUDE WINDS

David H. Shepard, Greenwich, Conn., assignor to Cogaitronics Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 372,362, Apr. 28, 1982. This application Oct. 11, 1985, Ser. No. 786,874
Int. Cl.[4] F03D *3/02*
U.S. Cl. 290—55 **12 Claims**



1. Apparatus for extracting energy from wind at high altitude, comprising:

means for supporting a load at said high altitude;

means for flexibly tethering said load supporting means to the surface of the earth;

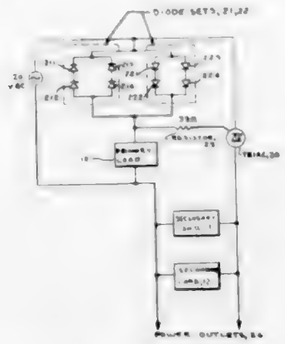
a plurality of elongated parallel airfoil elements supported by said load supporting means, said airfoil elements lying on the surface of an imaginary horizontal circular cylinder and rotatable about the horizontal axis of said cylinder in a closed cylindrical path;

means for positioning said airfoil elements relative to said cylindrical surface whereby relative wind substantially normal to said axis exerts a force on said airfoil elements, causing said elements to rotate about said horizontal axis; and

means responsive to the movement of said airfoil elements about said horizontal axis for transmitting power to the surface of the earth.

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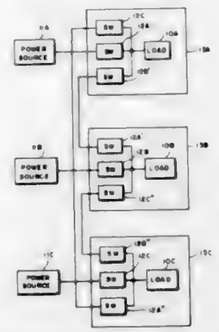
4,659,941
POWER SENSING DEVICE
Jaime J. Quiros, Mesa, Ariz., and John G. Pennett, Monument, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jul. 19, 1985, Ser. No. 756,549
Int. Cl.⁴ H03K *17/00*
U.S. Cl. 307—11 **1 Claim**



1. In combination with an electrical power source, a primary load, and a plurality of secondary loads, a power sensing device comprising:
first and second rectifier means connected in a parallel circuit with each other, said first and second rectifier means being connected in a series circuit with said electrical power source and said primary load;
a plurality of power outlets with a first and second terminal which electrically connects each of said plurality of secondary loads so that they are in a parallel circuit with each other, said first terminal of said plurality of power outlets being electrically connected to a junction where said primary load is connected to said electrical power source;
a resistor with a terminal electrically connected to the junction between said primary load and said first and second rectifier means; and
a triac having a source, gate, and drain terminals, its source terminal being the input terminal for the sensing means, its drain terminal being the output terminal of the sensing means, and its gate terminal being electrically connected to said resistor to form the sensing terminal of the sensing means, said triac sensing when said primary load is turned on by detecting a current conducted through said resistor to its gate terminal, said triac conducting current from its source to its drain terminal in response thereto to supply power to said plurality to power outlets, said triac also sensing when said primary load is turned off by detecting an absence of current on its gate terminal, said triac removing power from said plurality of power outlets in response thereto by discontinuing any current flow between its source and drain terminals.

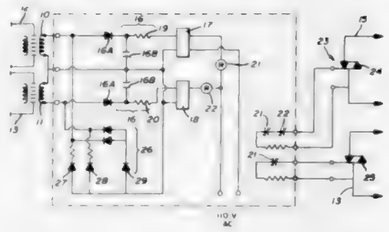
4,659,942
FAULT-TOLERANT POWER DISTRIBUTION SYSTEM
Jeffrey A. Volp, North Andover, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Filed Jun. 3, 1985, Ser. No. 740,828
Int. Cl.⁴ H02B *1/24*
U.S. Cl. 307—19 **12 Claims**

1. A fault-tolerant DC power distribution system comprising
a plurality of DC power sources;
a plurality of nodes responsive to said power sources for supplying power to one or more loads associated with said nodes, each of said nodes including a plurality of switching circuits each of which comprises
means for automatically providing a diode operation to supply DC power to the load of said node when power is first applied to said nodes from said power sources;



means for thereafter providing bi-directional DC current flow through said switching circuit in a manner such that a low voltage drop is produced in each direction; and
means in series with said bi-directional current providing means for disabling said switching circuit when the current therein exceeds a preselected value.

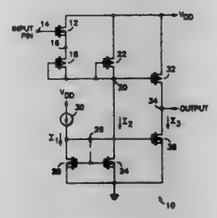
4,659,943
PEAK DEMAND LIMITER
Robert L. Virant, 14794 Lefflingwell Rd., Box 88, Berlin Center, Ohio 44401
Filed Mar. 19, 1986, Ser. No. 841,304
Int. Cl.⁴ H02J *3/00*
U.S. Cl. 307—39 **1 Claim**



1. A peak demand limiter circuit for controlling the overall load demand for electrical power in several load circuits by monitoring the same and their connection with a source of electrical power, the peak demand limiter circuit characterized by its monitoring mode that requires no power consumption in said mode, said peak demand limiter circuit comprising a saturable core transformer positioned around said load circuits and a rectifier circuit to modify a signal generated by said saturable core transformer upon any of said monitored load circuits reaching a pre-determined load level, a logic processor in connection with said rectifier circuit and driven by output power from said saturable core transformer via said rectifier circuit, a plurality of gate signal relays responsive to said logic processor, a primary load control circuit and a load triac in connection with said load circuits for interupting said series of said load circuits responsive in operation to said signal generated by said saturable core transformer, means for varying the pre-determined load level by increasing or decreasing amper

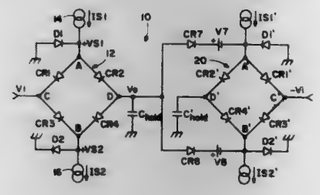
turns on said saturable core transformers so that said saturable core transformer response can be varied.

4,659,944
HIGH VOLTAGE DETECTION CIRCUIT
James A. Miller, Sr.; Robert N. Allgood, and Richard W. Ulmer, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 8, 1985, Ser. No. 720,789
Int. Cl.⁴ H03K *5/153*
U.S. Cl. 307—350 **6 Claims**



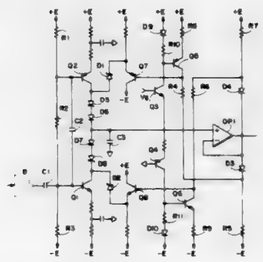
1. A circuit for providing an output signal having a voltage level of a predetermined magnitiude in response to an input voltage having an absolute magnitude greater than an absolute magnitude of an reference voltage, comprising:
a current source for providing a reference current;
first means coupled to the current source for providing a first control voltage;
second means, having a terminal adapted to receive the input voltage and providing a second control voltage in response to the magnitude of the input voltage relative to the reference voltage; and
an output stage coupled to the first and second means, for providing the output signal in response to the first and second control voltages, said first control voltage establishing a sink current of the output stage proportional to the reference current, and said second control voltage establishing a first predetermined source current if the input voltage magnitude is greater than the reference voltage magnitude and establishing a second predetermined source current otherwise.

4,659,945
SAMPLING BRIDGE
Arthur J. Metz, Gervais, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Apr. 1, 1985, Ser. No. 718,625
Int. Cl.⁴ H03K *17/16, 17/74*; G11C *27/02*
U.S. Cl. 307—353 **13 Claims**



1. A sample and hold circuit comprising:
a holding capacitor;
a sampling bridge comprising a plurality of diodes each having inherent parallel capacitance, said sampling bridge coupling a voltage signal to be sampled to the holding capacitor when the sampling bridge diodes are forward biased by an applied strobe current, and substantially uncoupling the voltage signal from the holding capacitor when the sampling bridge diodes are reverse biased by a strobe current direction reversal, said sampling bridge being of the type which generates a holding capacitor charging current following strobe current reversal due to imbalanced charging of said inherent parallel capacitance of said plurality of diodes; and
means for generating a compensating holding capacitor charging current of opposite phase to the holding capacitor charging current generated by the sampling bridge following strobe current direction reversal.

4,659,946
MEMORY GATE FOR ERROR SAMPLER
Agoston Agoston, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Apr. 14, 1986, Ser. No. 851,859
Int. Cl.⁴ H03K *17/16*; G11C *27/02*
U.S. Cl. 307—353 **4 Claims**



1. A memory gate for an error sampler, comprising a memory capacitor having a first terminal connected to a reference potential level and also having a second terminal, and current steering means having an input terminal for receiving current, an output terminal connected to the second terminal of the capacitor, and a control terminal, said current steering means having a first state in which the potential at the control terminal of the current steering means bears a first predetermined relationship with the potential at the output terminal and current received at the input terminal is delivered to the output terminal, and a second state in which the potential at the control terminal of the current steering means bears a second predetermined relationship to the potential at the output terminal and current received at the input terminal is diverted from the output terminal, and the memory gate also comprising follower means to bias the potential at the control terminal of the current steering means towards said first predetermined relationship with the potential at the output terminal of the current steering means, and switch means responsive to a gate control signal to place the potential at the control terminal in said second predetermined relationship with the potential at said output terminal.

4,659,947
PLA WITH FORWARD-CONDUCTION BIPOLAR "AND" ARRAY AND I^2L "OR" ARRAY
Setsuo Ogura; Shizuo Kondo; Eiji Minamimura, all of Takasaki, and Makoto Furihata, Tamamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 26, 1984, Ser. No. 665,385
Claims priority, application Japan, Oct. 26, 1983, 58-199020
Int. Cl.⁴ H03K *19/082*
U.S. Cl. 307—466 **10 Claims**

1. A semiconductor integrated circuit comprising a programmable logic array which includes a NAND or an AND gate array to which a plurality of input signals are applied, and

a NOR or an OR gate array to which a plurality of output signals from said NAND or AND gate array are applied and which includes means for producing a NOR or and OR output based on said plurality of output signals, wherein said NAND



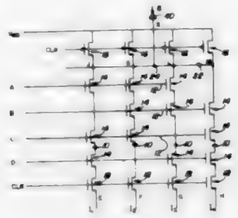
or AND gate array includes a plurality of forward bipolar transistors which are driven to operate in the forward direction by a plurality of said input signals to produce said plurality of output signals, wherein said NOR or OR gate array is comprised of an integrated injection logic (I1L) device.

4,659,948

PROGRAMMABLE LOGIC ARRAY

Stephen K. Sunter, and Yachin Afek, both of Nepean, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 18, 1983, Ser. No. 514,443
Int. Cl.⁴ H03K *19/096, 19/173, 19/20*
U.S. Cl. 307—469 **3 Claims**



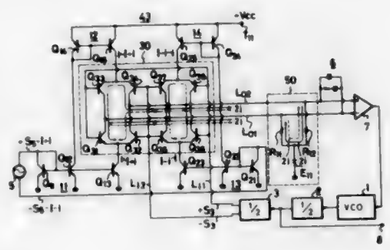
1. A single plane programmable logic array (PLA) having a reference potential rail, a first series of logic input terminals, a second series of logic input terminals, and a regular row-column array of switching FET structures, the PLA being programmable to render the switching FET structures operable as switching FETs at selected positions of the row-column matrix, the resulting switching FETs being source-to-drain series connected in individual array columns and having their gates common connected in rows, each column having a respective PMOS control FET at a first end with a source terminal thereof connected to said reference potential rail, respective input logic terminals of said first series being commonly connected to the gates of a respective row of switching FETs, each column having a respective NMOS control FET at a second end, the NMOS control FETs having source terminals connected to respective input logic terminals of said second series, the programmed PLA having an output end having column outputs, each dependent on logic states at the first and second series of logic input terminals and on the presence of switching FETs at the selected positions in the column, and wherein at the first end of each column, a drain-drain connection exists between the PMOS control FET and the adjacent switching FET, said programming being such as to produce at the column outputs of the array at least one conducting lead joining at least two of said drain-drain connections whereby the logical OR of the column outputs of joined columns is available.

4,659,949

PHASE-LOCKED LOOP CIRCUIT

Taiwa Okanobu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 611,503, May 17, 1984. This application Jan. 9, 1986, Ser. No. 817,506
Claims priority, application Japan, May 25, 1983, 58-92065
Int. Cl.⁴ G01R *25/00;* **H03L** *7/00*
U.S. Cl. 307—511 **6 Claims**



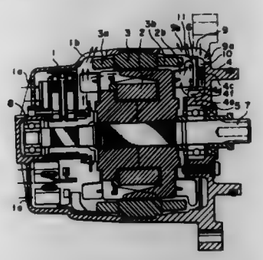
1. A phase-locked loop circuit for providing a phase-locked output signal synchronized with a pilot signal having a first pilot component and a second pilot component of opposite polarity to the first pilot component, the circuit comprising:
- a voltage-controlled oscillator for providing the phase-locked output signal at a frequency determined by a locking signal;
- input signal generating means for providing an input signal synchronized with said phase-locked output signal;
- converting means responsive to the pilot signal for converting the first pilot component into a first reference signal in phase with the first pilot component and having a predetermined DC level and for converting the second pilot component into a second reference signal in phase with the second pilot component and having said predetermined DC level;
- a voltage source;
- base signal generating means connected to the voltage source and said converting means for providing first and second base signals having said predetermined DC level;
- phase-difference signal generating means connected to the converting means to receive said first and second reference signals and to the base signal generating means to receive said first and second base signals and operable in response to said input signal for alternately providing first and second current paths connecting said first base signal and said second reference signal to cancel the DC components therefrom and for alternately providing third and fourth current paths connecting said second base signal and said first reference signal to cancel the DC components therefrom, said first and third current paths and said second and fourth current paths being provided together;
- voltage deriving circuit means connected to the phase-difference signal generating means and including a control signal current path connecting said first and third current paths with said second and fourth current paths and having two control signal output terminals, two series-connected resistors between said control signal output terminals, and a bias terminal between said resistors for accepting a bias potential; and
- amplifier means connected to said first and second control signal output terminals for generating said locking signal in response to said control signal.

4,659,950

CHARGING GENERATOR FOR A VEHICLE

Hitoshi Gotoh, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1985, Ser. No. 815,012
Claims priority, application Japan, Jan. 12, 1985, 60-2713[U]
Int. Cl.⁴ H02K *9/00*
U.S. Cl. 310—59 **3 Claims**



1. A charging generator for a vehicle, comprising:
- an annular casing having an axis, and having a radially outer periphery and front and rear axial side walls defined by axially spaced front and rear brackets which are fixed to one another;
- a rotary shaft extending through said casing along said axis and being rotatably supported by bearings of said front and rear brackets;
- a rotor mounted on said rotary shaft;
- a stator fixed to one of said brackets;
- at least one window in said front bracket, at least a portion of said at least one window extending along a portion of said outer periphery between said rotor and said front side wall; and
- partition plate fixed within said front bracket between said rotor and said front side wall, said partition plate extending radially to said at least one window and being spaced from said rotor and said front side wall to divide each said at least one window into an air intake window and an air discharge window, said air intake and discharge windows being connected by a radially extending air inlet passage on one side of said partition plate and a radially extending air discharge passage on the other side of said partition plate.

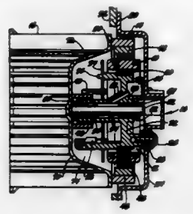
4,659,951

BRUSHLESS BLOWER MOTOR WITH LOAD PROPORTIONAL COOLING FOR CONTROL CIRCUITRY

Donald F. Angl, Dayton; Jack W. Savage, Centerville, and Ralph D. Unterborn, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1986, Ser. No. 829,488
Int. Cl.⁴ H02K *9/06*
U.S. Cl. 310—62 **4 Claims**

1. A brushless motor driven blower including a centrally disposed stator assembly, a rotor disposed about the stator assembly and supporting an annular blower for rotation therewith, a rotor cup member extending into the blower for supporting the rotor with respect to the stator and defining a protected compartment between it and an axial end of the stator assembly, and a circuit board containing motor control circuit elements mounted on the stator assembly within the protected compartment, the improvement wherein:
- two or more radially displaced openings are formed in the rotor cup member within having generally equal area the blower so that a portion of the air moved by the blower in operation thereof passes through the protected compartment to cool the motor control circuit elements due to an air pressure differential between the radially displaced



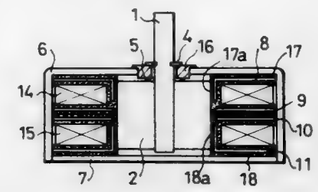
openings, such pressure differential being established by the movement of air by the blower.

4,659,952

MOTOR AIR GAP BEARING ARRANGEMENT

Naoki Uajo, and Takamichi Fuke, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Continuation of Ser. No. 686,229, Dec. 26, 1984, abandoned. This application Jul. 7, 1986, Ser. No. 882,285
Claims priority, application Japan, Dec. 27, 1983, 58-214899[U]
Int. Cl.⁴ H02K *7/08, 5/16*
U.S. Cl. 310—90 **4 Claims**



1. A stepping motor comprising:
- a housing having a first side and a second side;
- a shaft rotatable about an axis and rotatably supported by a bearing positioned at said first side of said housing;
- a permanent magnet rotor mounted on said shaft and having a predetermined rotor diameter;
- a stator plate group formed by an upper stator plate and a lower stator plate spaced apart from and parallel to each other and lying in planes perpendicular to said shaft axis, said stator plates having central inner holes concentric with each other and said shaft axis, an inner cylindrical surface connecting the stator plates along their central inner holes, said cylindrical surface and central inner holes having an inside diameter only slightly greater than said rotor diameter such that said rotor is disposed in close sliding contact with said cylindrical surface when said rotor is assembled in the central inner holes of said stator plate group, and a coil winding around an external side of said cylindrical surface between said upper and lower stator plates; and
- a dry coating layer made of a non-magnetic, self-lubricating material applied to at least said inner cylindrical surface of said stator plate group such that said rotor is smoothly and stably rotated in contact with said dry coating layer without any liquid or other lubricant applied between said stator plate group and said rotor and without the necessity for a second bearing for said shaft at said second side of said housing.

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4,659,953

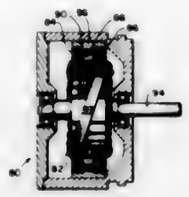
MAGNETIC STRUCTURE FOR SYNCHRO AND TACHOMETER

John R. Lussen, Moultonborough, N.H., assignor to Resolvex Corporation, Meredith, N.H.

Continuation of Ser. No. 642,991, Aug. 21, 1984, abandoned. This application Oct. 24, 1986, Ser. No. 921,898

Int. Cl.⁴ H02K *39/00*

U.S. Cl. 310—111 **11 Claims**



1. A magnetic transducer comprising:

an annular magnet having two axially disposed, concentric pole pieces of opposite polarity, each said magnetic pole piece including a plurality of magnetically coupled, radially inwardly directed pole sections having the same magnetic polarity;

rotor means having a continuous magnetic structure aligned to confront said radially directed pole sections for selectively completing the magnetic path between one of said axially disposed poles of one polarity and an angularly displaced one of said axially disposed poles of the opposite polarity according to the angular position of said rotor with respect to said annular magnet;

a first sensor coil disposed about at least one said magnetic pole section of each polarity and including both of said pole pieces, wherein only the pole sections of one magnetic polarity of the pole pieces within said first sensor coil is included in the magnetic path selectively completed by said rotor; and

a second sensor coil electrically connected to said first sensor coil and disposed about at least one said magnetic pole section of each polarity and including both of said pole pieces, wherein only the pole section of one magnetic polarity of the pole pieces within said second sensor coil is included in the magnetic path selectively completed by said rotor, and wherein

the polarity of the pole section completing the magnetic path in the pole sections about which said first sensor coil is disposed is opposite to the polarity of the magnetic pole section completing the magnetic path in the pole section about which said second sensor coil is disposed.

4,659,954

CARBON BRUSHES IN SEALED SILICONE ENVIRONMENT WITH CONTROLLED VAPOR PRESSURE

George H. Gounoe, Jr., E. Stroudsburg, Pa., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 6, 1985, Ser. No. 806,065

Int. Cl.⁴ H02K *9/20*

U.S. Cl. 310—248 **7 Claims**

1. A carbon brush and metallic contact member system for a dynamoelectric machine, comprising:

at least one metallic contact member rotatable by said dynamoelectric machine;

at least one carbon brush in sliding contact with said at least one metallic contact member;

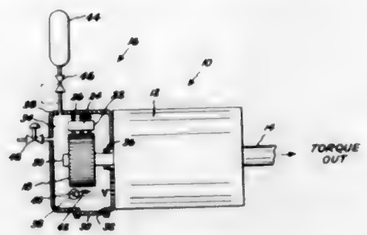
a sealable housing containing said at least one metallic contact member and said at least one carbon brush;

means for providing a positive pressure of a dry inert gas in said sealable housing;

means for maintaining a predetermined vapor pressure of a silicon lubricant in said sealable housing including;

(a) means for containing a supply of said silicone lubricant in said sealable housing;

(b) said silicone lubricant being of a type whose vapor pressure is related to its temperature; and,



(c) thermostatically controlled means for mantaining said supply of said silicone lubricant at an operating temperature which provides said predetermined vapor pressure.

4,659,955

SURFACE-PROPAGATING ACOUSTIC WAVE DEVICE

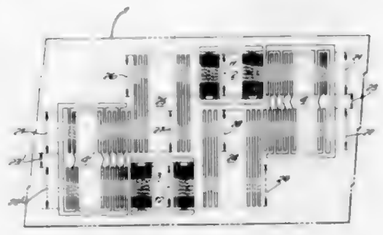
John Schofield, Coulsdon, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1985, Ser. No. 737,625

Claims priority, application United Kingdom, Jun. 15, 1984, 8415353

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—313 D **15 Claims**



1. A surface acoustic wave bandpass electrical filter comprising a piezoelectric substrate able to propagate acoustic waves at a surface thereof, input transducing means arranged to launch acoustic wave energy along a propagation track at said surface, output transducing means arranged to receive acoustic wave energy from a further propagation track at said surface which is substantially parallel to but does not overlap said first track, and electrical reflective multistrip coupling means arranged to receive acoustic wave energy from the input transducing means and to relaunch at least part of that energy as acoustic wave energy back towards the output transducing means, said input and output transducers being formed by respective interdigital electrode arrays each comprising parallel strip electrodes which are respectively connected to a corresponding one or other of a pair of bus bars extending along the corresponding sides of the interdigital electrode array, and in which the respective reflective coupling means includes a reflective multistrip coupler comprising a first and second array of mutually parallel conducting strips arranged respectively across an input and an output propagation track, each array including a first set of mutually insulated alternately widely and closely spaced strips, and a second set of electrically interconnected strips arranged so that at least one strip from the second set is situated between substantially every widely spaced pair of strips forming the first set, each strip forming a widely spaced pair in the first set of one array being respectively connected to a corresponding strip forming a closely spaced pair in the first set of the other array and the second set of strips in both arrays being connected together, and at least one forward multistrip coupler included in the surface acoustic wave propagation path and arranged to couple the corresponding ends of the input and output transducers via said reflective multistrip coupler in a manner such that the input and output transducers are spaced apart transversely.

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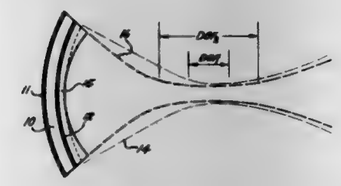
COMPOUND FOCUS ULTRASONIC TRANSDUCER

Cassir R. Trzaskos, Amsterdam, and John D. Young, Rexford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 694,581, Jan. 24, 1985. This application Apr. 3, 1986, Ser. No. 847,998

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—335 **2 Claims**



1. A compound focus C-scan ultrasonic transducer comprising:

a single, one-piece piezoelectric ceramic transducer element spherically curved to focus ultrasonic energy and having a radius of curvature R_1 and metallic electrodes on the front and back surface thereof to which electrical leads are connected:

a sound absorbing backing bonded to said back surface; and

means consisting of an epoxy layer bonded to said front surface that has a radius of curvature R_2 which is less than R_1 and serves as a coveer layer for said transducer, a lens to improve the focusing and result in an increased depth of field, and an impedance matching layer having a thickness at the center between one-quarter wavelength at the preassigned transducer center frequency and up to 20% less than one-quarter wavelength, thereby resulting in an increased bandwidth.

4,659,957

METHOD OF MANUFACTURING AND ADJUSTING A COLOR PICTURE TUBE

Eberhard Nill, Oberesslingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 17, 1984, Ser. No. 682,419

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346361

Int. Cl.⁴ H01J *29/07, 29/82, 9/42*

U.S. Cl. 313—402 **4 Claims**

1. A color picture tube comprising:

a glass bulb having a non-transparent interior coating;

three electron gun systems disposed in said glass bulb;

a screen closing one end of said glass bulb;

a shadow mask assembly disposed between said three electron gun systems and said screen;

at least four phosphor strip portions on said shadow mask assembly on the side thereof facing said three electron gun systems, each of said phosphor strip portions lying outside the range of the raster pattern of said picture tube during normal operation thereof, each of said phosphor strip portions transmitting light upon impingement by an electron beam extending beyond said normal raster pattern and each of said phosphor strip portions being associated with the center of a corresponding edge of said shadow mask assembly, a plurality of openings in said interior coating, each of said openings optically coupled with a corresponding one of said phosphor strips; and

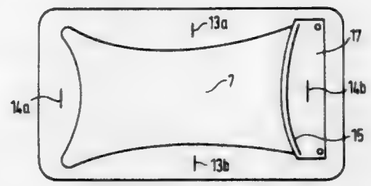


photo sensitive means outside said glass bulb for detecting light emitted from said phosphor strip portions through said plurality of openings whereby the correct mounting position of a deflection unit mounted on said picture tube may be determined.

4,659,958

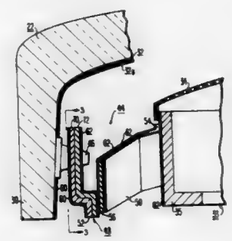
SUPPORT MEANS FOR USE WITH A LOW EXPANSION COLOR-SELECTION ELECTRODE

Ralph J. D'Amato, East Hempfield Township, Lancaster County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 24, 1985, Ser. No. 779,649

Int. Cl.⁴ H01J *29/07*

U.S. Cl. 313—405 **13 Claims**



1. In a color picture tube including a faceplate panel having a cathodoluminescent screen thereon and a color selection electrode mounted in said faceplate panel by support means, the improvement comprising

said support means including a bimetal element having at least one emissivity modifying means disposed on a portion thereof facing said faceplate panel, thereby rendering said support means responsive to changes in temperature of said faceplate panel for moving said color selection electrode relative to said screen.

4,659,959

SHADOW MASK FOR A COLOR PICTURE TUBE AND PICTURE TUBE INCORPORATING THE SAME

Carlo L. Fonda, Anagni, Italy, assignor to Videocolor, Montrouge, France

Filed Nov. 21, 1984, Ser. No. 673,826

Claims priority, application France, Nov. 25, 1983, 83 18852

Int. Cl.⁴ H01J *29/07*

U.S. Cl. 313—407 **2 Claims**

1. In a TV tube having a shadow mask including a peforated

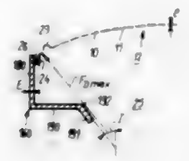
VOL 1077 ISS 3 AP 21 1987 UMI

surface peripherally extending to a skirt, a support frame for the mask comprising:

a first flange attached at spaced points along the periphery thereof to the skirt;

a second flange forming a generally L-shaped cross-section with the first flange;

a frame rigidifying third flange extending from the second



flange in a direction generally opposite the first flange and toward an axis of the tube, at most, at an angle substantially equal to the maximum deflection of a beam directed toward the mask-frame junction thereby ensuring beam impingement across the entire mask surface including the junction while blocking the second and first flanges from impingement thus minimizing temperature variations across the mask surface.

4,659,960

ELECTRODE STRUCTURE FOR A SPARK PLUG

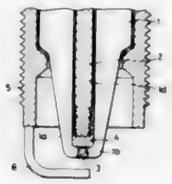
Akihiro Toya; Junichi Kagawa; Kazunori Yokota, and Hiroaki Mori, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed May 8, 1985, Ser. No. 731,942

Claims priority, application Japan, May 9, 1984, 59-90900; May 21, 1984, 59-100374; May 31, 1984, 59-109696

Int. Cl.⁴ H01T *13/16, 13/20*

U.S. Cl. 313—141 **5 Claims**



1. A spark plug comprising a ceramic insulator having a top end and a tapered portion with a decreasing diameter towards a bottom end;

said ceramic insulator having a central bore extending from the top end of the insulator and a bottom end bore extending from the bottom end of the insulator to the central bore, said bottom end bore having a smaller diameter than said central bore;

a terminal electrode disposed in said central bore;

an electrode element comprised of sintered ceramic powder particles of a size between 10 and 200 μm coated with a noble metal to a thickness of 0.1 to 20 μm disposed in said bottom end bore, said electrode element being joined to said terminal electrode by electro-conductive glass sealing means in a manner such that said electrode elements serves as a firing tip for said terminal electrode;

metal holder means supporting said ceramic insulator; and

a ground electrode connected to said metal holder means, said ground electrode being positioned so as to form a gap with said electrode element.

4,659,961

CUP MEMBER OF AN IN-LINE ELECTRON GUN CAPABLE OF REDUCING A COMA ABERRATION

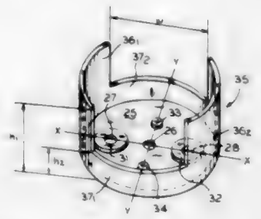
Kazuaki Naiki, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 661,363, Oct. 16, 1984, abandoned. This application Aug. 21, 1986, Ser. No. 899,758

Claims priority, application Japan, Oct. 17, 1983, 58-193793; Oct. 17, 1983, 58-193794

Int. Cl.⁴ H01J *29/51, 29/76*

U.S. Cl. 313—413 **4 Claims**



1. A cup member for use in combination with a color cathode ray tube comprising a face plate, a funnel portion for receiving a deflection yoke means and having a first end joined to said face plate and a second end opposite to said first end, said second end being closed to define within said funnel portion a hollow space in cooperation with said face plate, an in-line electron gun enclosed in said hollow space adjacent to said second end, said gun having three beam exits which are for three electron beams, respectively, said three beam exits being aligned on a predetermined straight line to form rasters, said deflecting yoke means being positioned outside said hollow space for deflecting said three electron beams along said straight line, said beams being deflected at a high horizontal deflection frequency which produces a coma aberration that said deflection yoke means cannot adequately minimize, said high horizontal deflecting frequency being higher than 15.75 kHz, said cup member being positioned between said beam exits and said face plate adjacent said exits so as to individually control said three electron beams, said cup member reducing the coma aberration which appears on said rasters at said high horizontal deflecting frequency and which said deflection yoke means cannot minimize, said cup member comprising:

a planar plate having three apertures formed along said predetermined straight line; and

a collar portion having a part of first protrusions extending transversely of said predetermined straight line passing through said three apertures, and a pair of second protrusions contiguous to said first protrusions, each second protrusion having a height in the range of 2 mm to 6 mm, inclusive, so as to make said asymmetrical coma aberration which cannot be corrected by said deflection yoke means substantially negligible at said specific horizontal deflecting frequency.

4,659,962

LOW PRESSURE DISCHARGE LAMP

Yamazaki Hitoshi, Yokohama; Takeda Takao, Chigasaki; Nakano Shizuo, Kamakura; Yamamoto Kouji, Kanagawa; Ito Hiroshi, Meguroohoomachi, and Imai Jun, Hiratsuka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1985, Ser. No. 708,080

Int. Cl.⁴ H01J *61/30, 61/36*

U.S. Cl. 313—493 **3 Claims**

1. A low pressure discharge lamp comprising:

a base plate including a cover part and a bottom part;

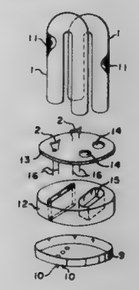
one pair of electrodes extending through said base plate and being sealed thereto;

two glass tubes coated with a fluorescent layer on their inner

walls and each having two open ends brought into juxtaposition by the bending of the tubes;

said cover part having two holes with each hole being smaller than an open end of said glass tubes;

said bottom part having an opening in communication with said two holes, said opening having a width equal to the width of said holes and a length equal to the distance from opposite sides of opposite holes;



said glass tubes being sealingly bonded with an adhesive to said base plate so that one open end of each glass tube receives one of said electrodes while the other open end of each of said glass tubes is sealingly bonded to said base plate so as to be in communication with one of said holes, said glass tubes being connected in series through said holes in said opening.

4,659,963

GAS-DISCHARGE DISPLAY APPARATUS WITH A SPACER FRAME AND METHOD FOR FABRICATING THIS FRAME

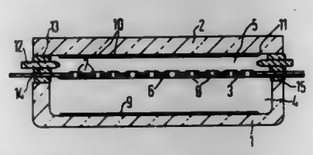
Wilhelm Huber, Goldach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 2, 1984, Ser. No. 636,915

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328036

Int. Cl.⁴ H01J *17/49*

U.S. Cl. 313—493 **14 Claims**



1. Gas discharge display device comprising:

(a) a vacuum-tight, gas filled envelope closed on one side by a front plate and on a side opposite thereto by a back plate parallel to the front plate, said plates disposed one behind the other;

(b) a control unit having regularly spaced passage openings dividing the interior of the envelope into a back space as a gas discharge spasce and a front space as a post-acceleration space, said control unit having a plurality of electrode planes extending parallel to the plates;

(c) at least one plasma cathode and at least one plasma anode in the gas discharge space, wherein in operation a gas discharge burns at least temporarily between each plasma cathode and a corresponding plasma anode with electrons from the discharge pulled through openings of the control unit into the post-acceleration space;

(d) said front plate carrying on its backside a cathodoluminescent layer as well as an electrically conducting layer as a post-acceleration anode;

(e) at least one conductor as a post-acceleration cathode in the foremost electrode plane of the control unit, said post-acceleration cathode spaced from the post-acceleration anode by a spacer frame which extends around the post-acceleration space between the front plate and the back plate;

(f) means for accelerating the voltage in the post-acceleration space which remains free of discharge to several kV; the combination therewith of

(g) said spacer frame having a rough surface at least on its inside, said spacer frame reducing breakdown caused by high voltage, wherein the rough surface has an average roughness depth R_z within the range $1\ \mu m \leqq R_z \leqq 100\ \mu m$.

4,659,964

DISPLAY TUBE

Johannes H. T. van Roosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

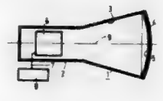
PCT No. PCT/JP84/00078, § 371 Date Feb. 22, 1985, § 102(e) Date Feb. 22, 1985, PCT Pub. No. WO85/04047, PCT Pub. Date Sep. 12, 1985

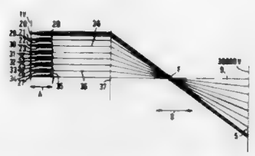
PCT filed Dec. 4, 1984, Ser. No. 677,940

Claims priority, application Netherlands, Dec. 27, 1983, 8304444

Int. Cl.⁴ H01J *23/16, 29/96*

U.S. Cl. 315—3 **6 Claims**





1. A display tube comprising an evacuated envelope containing a display screen, an electron gun system for producing a plurality of electron beams directed toward the display screen and for focusing said electron beams at said display screen, and deflection means for producing a deflection field to effect deflection of the electron beams across the display screen;

characterized in that the electron gun system comprises, disposed along an axis thereof:

(a) a plurality of electron sources arranged transversely of the axis for individually emitting electrons;

(b) a first electrode means for producing immediately adjacent the electron sources an accelerating field having a strength exceeding 600 V/mm, said accelerating field effecting acceleration of the electrons emitted from said electron sources into respective closely-spaced electron beams which are narrow with respect to a cross-sectional area collectively defined thereby and which have respective central axes that are parallel to each other; and

(c) a second electrode means for producing an electron lens having a cross-sectional area which is relatively large with respect to said area collectively defined by the electron beams and being located such that said electron beams pass through a central region thereof, said electron lens effecting convergence of the electron beams substantially at a focus thereof disposed in the deflection field, and

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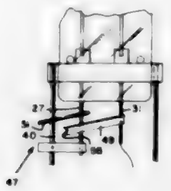
effecting said focusing of said electron beams at said display screen.

4,659,965

HIGH PRESSURE DISCHARGE LAMP WITH THERMAL SWITCH

Robert P. Bonazoli, Hamilton, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Filed Nov. 16, 1983, Ser. No. 552,514
Int. Cl.⁴ H01J 7/44
U.S. Cl. 315—60 **6 Claims**



1. An electric discharge lamp having thermal switching means comprising:

an outer glass envelope having a pair of electrically conductive leads sealed therein and passing therethrough;

an arc tube within said outer glass envelope, said arc tube having an electrode within each end electrically coupled to an electrical conductor sealed into and passing therethrough and connected to one of said electrically conductive leads with a starting electrode within one end of said arc tube adjacent one of said electrodes and electrically coupled to an electrical conductor passing through said arc tube and coupled to an electrically conductive lead, said arc tube having a fill of ionizable gas and subject to electrolysis at increased temperatures; and

thermal switching means internal of said outer glass envelope and external of said arc tube, said thermal switching means including a bimetal strip and spring-like member spaced from one another in a common plane substantially normal to said adjacent electrical conductors with each affixed to one of said electrical conductors, said bimetal strip and said spring-like member electrically coupled to an electrode and to said adjacent starting electrode with said bimetal strip having a notch formed to receive said spring-like member and short-circuit said electrical conductors upon application of heat to said bimetal strip, to thereby maintain a common potential on both the starting and adjacent electrodes during operation.

4,659,966

RAPID-START FLUORESCENT LAMP INTEGRATED CIRCUIT BREAKER STRUCTURE AND MANUFACTURE

William J. Roche, Essex, Mass., assignor to GTE Products Corporation, Danvers, Mass.

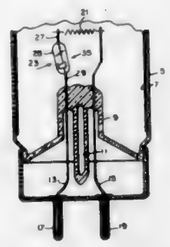
Filed Mar. 28, 1985, Ser. No. 717,193
Int. Cl.⁴ H01J 7/44
U.S. Cl. 315—73 **5 Claims**

1. A rapid-start fluorescent lamp comprising:

an elongated tubular glass envelope having a phosphor-coated inner wall surface;

a pair of spaced electrodes disposed within said glass envelope;

a pair of electrical leads sealed into and passing through each end of said envelope with one of said pair of electrical leads directly connected to one of said pair of spaced electrodes and the other one of said pair of electrical leads formed to provide a circuit breaker connected to said electrode, said circuit breaker including first and second leads, one of said circuit breaker leads connected to said electrode, the other one of said circuit breaker leads connecting said other one of said pair of electrical leads, said first lead formed to provide a U-shaped configuration with first and second spaced upstanding leg members and said second lead connected to a bi-metal strip extending between said upstanding leg members with said bi-metal



strip contacting said first leg member at ambient temperatures, disposed intermediate said leg members at a given range of temperatures and contacting said second leg member at temperatures greater than said range of temperatures.

4,659,967

MODULATION CIRCUIT FOR A LIGHT EMITTING DEVICE

Randy L. Dahl, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 29, 1985, Ser. No. 759,813
Int. Cl.⁴ H05B 37/02
U.S. Cl. 315—307 **4 Claims**

4. A modulation circuit for a light emitting device having a power supply, a ground and an output being coupled to said light emitting device, said modulation circuit comprising:

voltage regulating means for regulating the voltage of said modulation circuit, said voltage regulating means having a first, second and third ports, said first port being coupled to said power supply of said modulation circuit;

modifying means comprising a resistor in series with a capacitor for modifying said voltage signal from said voltage regulating means, said modifying means having a first, second, third and fourth ports, said first port connecting said resistor to said second port of said voltage regulating means, said second port being coupled to said third port of said voltage regulating means, and said third port connecting said capacitor to said ground of said modulation circuit;

switch means for providing a signal, said switch means having an input, an output, and a control line, said input being coupled to said fourth port of said modifying means and said output being coupled to said output of said modulation circuit; and

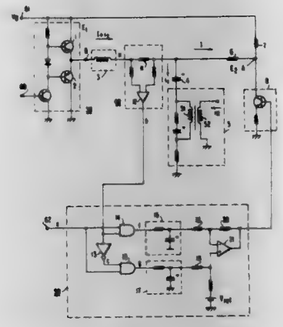
oscillating means for providing an oscillating signal, said oscillating means having an output being coupled to said control line of said switch means.

4,659,968

VERTICAL DEFLECTION CIRCUIT

Aki Nakamura, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1986, Ser. No. 866,846
Claims priority, application Japan, Jun. 20, 1985, 60-93986
Int. Cl.⁴ H01J 29/54
U.S. Cl. 315—398 **8 Claims**



1. A method for automatically vertically centering a video display on the face of a CRT, comprising the steps of:

(a) detecting the zero crossing points of a bipolar sawtooth vertical deflection signal flowing through a vertical deflection coil,

(b) time comparing the detected zero crossing points with the pulse durations of a signal representing the overall time duration of each raster scan, and

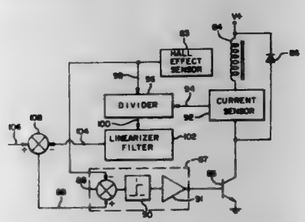
(c) applying a d.c. correction current component to the vertical deflection signal in response to the time comparison to adjust the zero crossing points such that they bisect the time duration pulses.

4,659,969

VARIABLE RELUCTANCE ACTUATOR HAVING POSITION SENSING AND CONTROL

Joseph J. Stupak, Jr., Portland, Oreg., assignor to Synektron Corporation, Portland, Oreg.

Filed Aug. 9, 1984, Ser. No. 639,187
Int. Cl.⁴ H02K 33/00
U.S. Cl. 318—128 **6 Claims**



1. A variable reluctance actuator, comprising:

(a) coil means for producing a magnetic field in response to an electrical current therein;

(b) actuator means for forming a magnetic circuit with said coil means, at least two portions of said actuator means comprising magnetic material and being mounted for movement relative to each other so that the reluctance of said magnetic circuit is variable in response to said movement;

(c) control means for varying the magnitude of said electrical current in said coil means; and

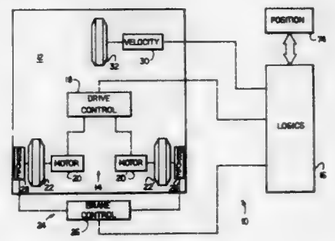
(d) position sensing circuit means for producing a position signal representative of the relative position of said two portions of said actuator means throughout a range of movement relative to each other, said position sensing circuit means including first sensor means responsive to the magnitude of the flux density of said magnetic field at a location in said magnetic circuit, and seocnd sensor means separate from said first sensor means and responsive to the magnitude of said electrical current in said coil means for producing a current magnitude signal representative of the magnitude of said electrical current and proportional to changes therein throughout said range of movement and throughout any changes in the magnitude of said electrical current.

4,659,970

VEHICLE DOCKING APPARATUS AND METHOD

Grant C. Melocik, Chardon, Ohio, assignor to Caterpillar Industrial Inc., Mentor, Ohio

Filed Aug. 14, 1986, Ser. No. 896,378
Int. Cl.⁴ H02P 3/04
U.S. Cl. 318—269 **5 Claims**



1. Apparatus for controllably stopping a vehicle, said vehicle having a vehicle drive means for controllably propelling said vehicle at a velocity responsive to a velocity command signal, at least one ground engaging wheel equipped with a respective vehicle brake adapted to controllably stop said vehicle in response to brake actuation signals, and a transducer means for sensing said vehicle velocity and responsively producing an actual velocity signal, comprising:

a logic control means for producing said velocity command signal and said brake actuation signal in response to predetermined operating conditions;

position determining means for producing a controlled stop signal in response to said vehicle being positioned a predetermined distance from a desired stop location, and an absolute stop signal in response to said vehicle being positioned at said desired stop location; and

wherein said logic control means receives said actual velocity signal, said controlled stop signal and said absolute stop signal, produces said brake actuation signal having a value sufficient to partially engage said vehicle brake and said velocity command signal having a value sufficient to continue to propel said vehicle at a predetermined low velocity in response to receiving said controlled stop signal, and produces said velocity command signal having a minimum value in response to receiving said absolute stop signal.

5. A method for controllably stopping a vehicle, said vehicle having a logic control means for producing a velocity command signal and a brake actuation signal in response to predetermined operating conditions, a vehicle drive means for controllably propelling said vehicle at a velocity responsive to said velocity command signal, at least one ground engaging wheel equipped with a respective vehicle brake adapted to for controllably stop said vehicle in response to said brake actuation

signal, and a transducer means for sensing said vehicle velocity and responsively producing an actual velocity signal, comprising the steps of:

producing a controlled stop signal in response to said vehicle being positioned a predetermined distance from a desired stop location;

producing said brake actuation signal having a magnitude sufficient to partially engage said vehicle brake and said velocity command signal having a value sufficient to continue to propel said vehicle at a predetermined low velocity in response to said controlled stop signal;

producing an absolute stop signal in response to said vehicle being positioned at said desired stop location; and

producing said velocity command signal having a minimum value in response to said absolute stop signal.

4,659,971

ROBOT CONTROLLING SYSTEM

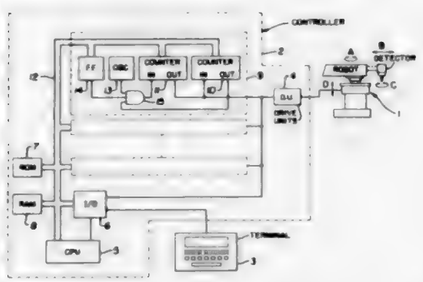
Hayao Suzuki, and Yoshiharu Matsuoka, both of Tokyo, Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Aug. 16, 1985, Ser. No. 766,907

Claims priority, application Japan, Aug. 16, 1984, 59-170952

Int. Cl.⁴ G05B *19/42*

U.S. Cl. 318—568 **22 Claims**



1. In a robot controlling system at least having means for locating a hand at an arbitrary point along a plane, means for turning said hand in an arbitrary direction about an axis vertical to said plane, and means for actuating said hand according to a hand position coordinate and a hand direction angle stored in a RAM based on a robot absolute coordinate system and a programmed sequence, the improvement comprising:

means defining one local coordinate system according to a plurality of reference points in the robot absolute coordinate system;

means for storing a hand position coordinate of said local coordinate system and a hand direction angle relative to a coordinate standard axis of said local coordinate system at each operating position of the hand;

means for transforming said hand position coordinate of said local coordinate system to said hand position coordinate of the robot absolute coordinate system; and

means for correcting the hand direction angle relative to the coordinate standard axis of said local coordinate system by an angular displacement of the coordinate standard axis of said local coordinate system relative to a coordinate standard axis of the robot absolute coordinate system.

4,659,972

SERVO SYSTEM FOR POSITIONING AND DRIVING A MOVABLE MEMBER USING TWO REFERENCE VOLTAGES

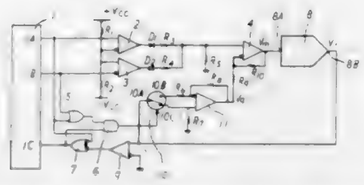
Gohji Uchikoshi, Higashimurayama, and Akio Terada, Tokyo, both of Japan, assignors to Nakamichi Corporation, Kodaira, Japan

Filed Dec. 11, 1985, Ser. No. 807,810

Claims priority, application Japan, Dec. 17, 1984, 59-190943[U]

Int. Cl.⁴ G05B *5/01*; G11B *21/08, 21/10*

U.S. Cl. 318—616 **4 Claims**



1. A servo system for positioning and driving a movable member comprising:

means to generate a position signal of sinewave form in response to movement of said movable member with the frequency of said position signal depending on the velocity of movement of said movable member;

means to differentitate said position signal of sinewave form and to rectify the thus differentiated signal to generate a modified signal;

means to selectively generate one of first and second reference signals of different DC voltages;

means to selectively compare said position signal with said first reference signal to generate a first control signal or to selectively compare said modified signal with said second reference signal to generate a second control signal;

and means to control said movable member to position said movable member in response to said first control signal and to drive said movable member in response to said second control signal.

4,659,973

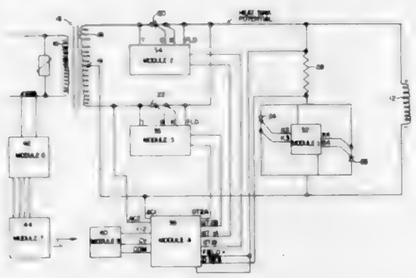
BRUSHLESS EXCITER FOR CONTROLLING EXCITATION OF A SYNCHRONOUS MACHINE

Frederick A. Stich, Milwaukee, Wis., assignor to Siemens Energy & Automation, Inc., Atlanta, Ga.

Filed Apr. 30, 1986, Ser. No. 858,361

Int. Cl.⁴ H02P *5/40*

U.S. Cl. 318—718 **34 Claims**



1. A brushless exciter for controlling excitation of a synchronous machine, comprising:

a center tapped rotating transformer;

a discharge resistor;

a field winding having one end coupled to the ends of the rotating transformer and the other end connected to the discharge resistor and center tap of the rotating transformer;

a first SCR and a second SCR each connected in series with and between the field winding and rotating transformer;

a third SCR and a fourth SCR each connected in series with and between the field winding and the discharge resistor and connected antiparallel to one another;

first means, connected to the gates of the third and fourth SCRs, for controlling the firing of the third and fourth SCRs in response to sensing the induced field voltage;

second means, connected to the gate of the first SCR, for controllably firing the first SCR and controlling the application of field current and level of excitation;

third means, connected to the gate of the second SCR, for controllably firing the second SCR and controlling the application of field current and level of excitation; and

fourth means, connected to the first, second and third means, the field winding, the discharge resistor and the center tapped rotating transformer, for monitoring the presence, frequency and phase angle of the discharge current and determining the time for field application and removal.

4,659,974

CONTROLLING ELECTRICAL PHASE CONNECTIONS TO A THREE-PHASE DEVICE

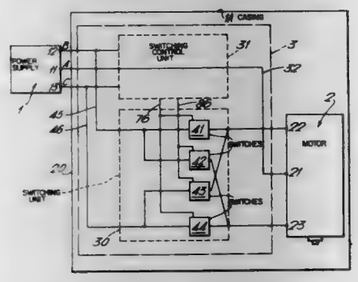
Anton M. Bax, Forthampton, and Jonathan C. May, Weymouth, both of England, assignors to Smiths Industries Public Limited Company, London, England

Filed Dec. 11, 1985, Ser. No. 807,701

Claims priority, application United Kingdom, Dec. 14, 1984, 84 31691

Int. Cl.⁴ H02P *7/36*

U.S. Cl. 318—806 **11 Claims**



1. A circuit for ensuring correct application of three phase outputs of a three-phase power supply to three phase inputs of an electrical device, the circuit comprising: three inputs, said three inputs being adapted for connection respectively to each phase output of the power supply; three outputs, said three outputs being adapted for connection respectively to said three phase inputs of the device; means for supplying power to a first of said circuit outputs in phase with the power at a first of said circuit inputs; first, second, third and fourth switching means; means connecting said first and second switching means in series between said second circuit input and said second and third circuit outputs respectively; means connecting said third and fourth switching means in series between said third circuit input and said second and third circuit outputs respectively; means for producing two sets of output pulses when the signal at the second circuit input has two respective different predetermined relationships with respect to the signal at the first circuit input; means for determining the relationship of the signal at the third circuit input relative to the signal at the first circuit input on occurrence of a pulse in said two sets of output pulses; switching control means for controlling operation of said switching means in accordance with said two sets of output pulses; and means for inhibiting supply of one or other of said two sets of output pulses to said switching control means in accordance with the relationship of the signal at the third circuit input relative to the signal at the first circuit input on occurrence of a pulse in the respective sets of output pulses, such that either said first switching means and said fourth switching means, or said second switching means and said third switching means are rendered conductive, with the other two switching means being rendered non-conductive.

4,659,975

REMOTE SPEED CONTROLLER FOR A MOTOR

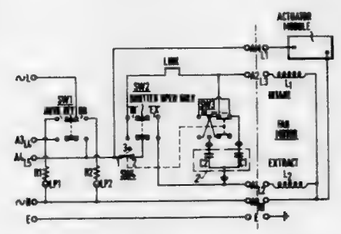
David Vincent, Burgess Hill, United Kingdom, assignor to Vent-Axia Limited, Crawley, England

Filed Oct. 3, 1985, Ser. No. 783,405

Claims priority, application United Kingdom, Oct. 4, 1984, 8425119

Int. Cl.⁴ H02P *7/40*

U.S. Cl. 318—814 **7 Claims**



1. A remote speed controller for a motor having a removable capacitor pack, the controller comprising:

a switching unit connected to means for receiving a capacitor pack;

and a capacitor pack having a plurality of capacitor means;

the switching unit comprising a single switch connected in circuit with an AC voltage source and windings of said motor, whereby operation of said single switch can selectively connect individual capacitor means of said pack or groups of said capacitor means to the windings to vary thereby the speed of the motor in accordance with the capacitors connected.

4,659,976

METHOD AND APPARATUS FOR MAXIMIZING UTILIZATION OF AN ELECTRIC MOTOR UNDER LOAD

Fredrick R. Johanson, Westerville, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 24, 1985, Ser. No. 726,709

Int. Cl.⁴ H02P *7/28*

U.S. Cl. 318—332 **21 Claims**

1. A method of adjusting the load on an electric motor having a known speed/torque relationship to maximize its utilization comprising the steps of:

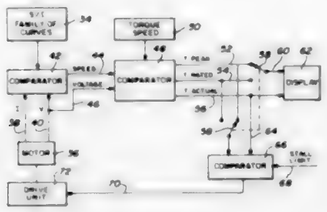
a. generating a first signal representing the actual instantaneous speed of said motor;

b. generating a signal representing the actual instantaneous motor line voltage;

c. comparing said first generated speed signal to data representing a known speed/torque relationship of said motor at said instantaneous voltage to generate a second signal representative of instantaneous actual torque, a third signal representative of rated torque and a fourth signal representative of peak torque at said instantaneous line voltage;

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d. comparing said third or fourth signals representing, respectively, the rated or peak torques of said motor at said instantaneous line voltage with said second signal representing actual torque; and



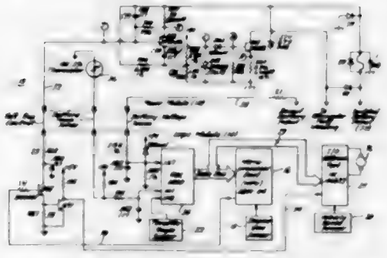
e. varying said load on said motor in accordance with said actual torque comparison to obtain said maximum utilization of said motor.

4,659,977

MICROCOMPUTER CONTROLLED ELECTRONIC ALTERNATOR FOR VEHICLES

William R. Kissel, Milford; Min Sway-Tin, Troy; Daniel P. Merchant, Warren, and Douglas C. Frantz, Berkley, all of Mich., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Filed Oct. 1, 1984, Ser. No. 655,806
Int. Cl.⁴ H02J *7/14, 7/24*
U.S. Cl. 320—64 **22 Claims**



1. In a charging system for a vehicle powered by an internal combustion engine including an alternator driven by the internal combustion engine for supplying a charging current to the battery of the vehicle whenever the field windings of the alternator are excited by a supply of current therethrough; an improved voltage regulation system for controlling the excitation of said field windings in accordance with the voltage level of said battery, including:

means for providing a battery voltage signal on a first sense line related to the voltage level at the positive terminal of the battery;

means for providing a temperature signal on a second sense line related to the temperature of the battery;

power switching means for controlling the supply of current through said alternator field windings; and

logic control means located remote from said power switching means and including an integrated circuit microprocessor connected to said first and second sense lines and to said power switching means via a control line and programmed to determine in accordance with the temperature signal on said second sense line the desired battery voltage level, compare the desired battery voltage level with the actual battery voltage level as determined from said first sense line, and control the actuation of said power switching means by producing a control signal on said control line in accordance with said comparison;

said microprocessor being further programmed to control the operation of said internal combustion engine;

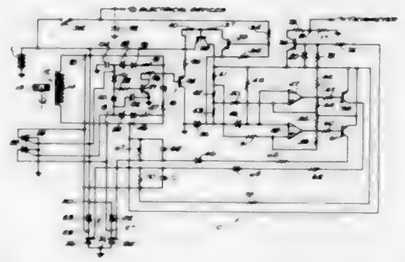
said logic control means further including diagnostic circuit means connected between said control line and said microprocessor for detecting when said power switching means is not conducting current through the field windings of the alternator despite the production of said control signal by said microprocessor.

4,659,978

REGULATOR OVERVOLTAGE CIRCUIT

Peter Dogadko, Chicago, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 13, 1986, Ser. No. 818,193
Int. Cl.⁴ H02J *7/14*
U.S. Cl. 320—71 **22 Claims**



1. A regulator for regulating the charging of a battery from a source of alternating current, said regulator comprising rectifier means having a first pair of terminals and a second pair of terminals and operable for converting alternating current applied to said first pair of terminals to a unidirectional charge current and for applying the charge current to the battery through said second pair of terminals, first means responsive to voltage between said first pair of terminals for substantially removing the charge current from said second pair of terminals when the voltage between said first pair of terminals reaches a predetermined threshold, and second means responsive to the voltage between said first pair of terminals for providing a low impedance path between said second pair of terminals upon the voltage between said first pair of terminals reaching a predetermined threshold.

4,659,979

HIGH VOLTAGE CURRENT SOURCE CIRCUIT AND METHOD

Stephen R. Burnham, Tucson, Ariz., and Stephen F. Ulbrich, Manitou Springs, Colo., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed Nov. 27, 1985, Ser. No. 802,709
Int. Cl.⁴ G05F *3/08*
U.S. Cl. 323—312 **19 Claims**

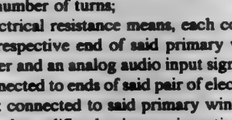
1. A constant current source circuit comprising in combination:

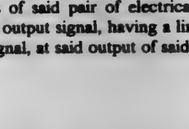
(a) a first transistor having a collector, a base, and an emitter;

(b) a second transistor having a collector, a base, and an emitter, the second transistor having a punch-through voltage V_{PT} that is less in magnitude than the magnitude of BV_{CEO} breakdown voltage of the second transistor;

(c) means for coupling the emitter of the first transistor to a first supply voltage conductor and means for coupling the collector of the first transistor to the emitter of the second transistor;

(d) means for applying a first bias voltage to the base of the first transistor to turn it on and means for applying a second bias voltage to the base of the second transistor to turn it on; and





(e) constant current conducting means for coupling the collector of the second transistor to an external circuit to which a constant current is to be supplied.

4,659,980

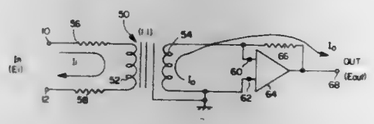
Patent Not Issued For This Number

4,659,981

INPUT TRANSFORMER CIRCUIT

John L. Lumadea, Boca Raton, Fla., assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 24, 1985, Ser. No. 779,633
Int. Cl.⁴ H01F *27/42*
U.S. Cl. 323—356 **9 Claims**



1. An input transformer circuit, comprising:

a transformer having core laminations and primary and secondary windings each having first and second ends and an equal number of turns;

a pair of electrical resistance means, each connected at one end to a respective end of said primary winding of said transformer and an analog audio input signal to the circuit being connected to ends of said pair of electrical resistance means not connected to said primary winding;

an operational amplifier having an inverting input, a non-inverting input, and an output, said ends of said secondary winding being connected respectively to said inverting and non-inverting inputs of said operational amplifier;

means for connecting said non-inverting input and said transformer core laminations to ground potential; and

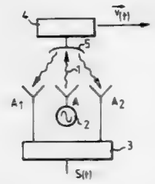
means for connecting said input of said operational amplifier to said inverting input, whereby an input signal connected to said ends of said pair of electrical resistance means produces an output signal, having a linear relationship to said input signal, at said output of said operational amplifier.

4,659,982

MICROWAVE APPARATUS AND METHOD OF OPERATION TO DETERMINE POSITION AND/OR SPEED OF A MOVABLE BODY OR DISCONTINUITY OR CHANGE IN A MATERIAL

Jean-Claude Van de Velde, Mons-En-Baroeul; Yves Leroy, and Ahmed Mamouni, both of Villeneuve D'Ascq, all of France, assignors to Centre National de la Recherches Scientifique, Paris, France

Filed Jun. 5, 1985, Ser. No. 741,604
Claims priority, application France, Jun. 21, 1984, 84 10286; Mar. 12, 1985, 85 03990
Int. Cl.⁴ G01R *23/16*
U.S. Cl. 324—77 G **25 Claims**



1. A method of determining the position and/or the speed of a movable body which comprises,

positioning on said movable body a microwave source of which the characteristics are predetermined and a transmitting antenna A connected with said source,

positioning at least two receiving antennas A1 and A2 at fixed positions spaced laterally from the path of movement of said movable body and spaced from one another by a distance ZD on a line at least approximately parallel to the path of movement of said movable body, connecting inputs of a correlator to said receiving antennas A1 and A2, emitting a single microwave signal by means of said microwave source and said transmitting antenna A toward said receiving antennas A1, A2, picking-up by means of said receiving antennas A1 and A2 signals due to microwave radiation of said emitted microwave signal, the signal received by antenna A1 being designated v1(t) and the signal received by antenna A2 being designated v2(t),

directing said signals v1(t) and v2(t) received by said antennas A1 and A2 respectively to said correlator, said correlator delivering an output signal S(t) given by the following relation:

$$S=Kv1(t)\cdot v2(T-\tau)=Kv1v2\cos(\phi+2\pi f\tau)$$

in which K is a constant charateristic of the circuit, v1(t) and v2(t) are the voltage received by the antennas A1 and A2 respectively of which the amplitudes are v1 and v2 respectively, ϕ is the phase shift corresponding to the difference of the wave paths between the transmitting antenna A and the receiving Antennas A1 and A2 spaced by the distance ZD and τ is the delay time introduced by the correlator, and analyzing the frequency spectrum of the output signal S(t) of the correlator.

4,659,983

METHOD AND APPARATUS FOR DETECTING A SHORTED SCR

Paravila O. Jacob, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 27, 1985, Ser. No. 780,990
Int. Cl.⁴ G01R *31/02*
U.S. Cl. 324—51 **1 Claim**

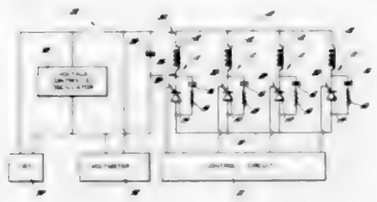
1. A method for detecting a shorted SCR in a circuit com-

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prising a plurality of parallel branches, each branch containing an inductor in series with an SCR and a snubber circuit in parallel with the SCR, the method comprising the steps of;

coupling a capacitor across the inductors one at a time,

exciting the capacitor-inductor circuit with a frequency



suitable to induce a resonant condition provided the inductor is in series with a normal SCR and whereby resonance will not occur if the inductor is in series with a shorted SCR, and

sensing circuit resonance thereby detecting whether the SCR in series with the selected inductor is shorted.

4,659,984

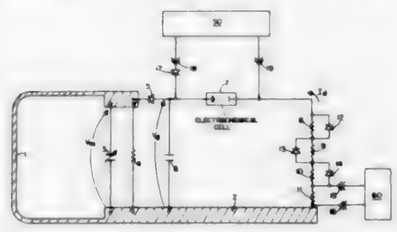
PASSIVE INTEGRATING ELECTROMAGNETIC FIELD DOSIMETER

James D. Doss, 905 Tewa Loop, Los Alamos, N. Mex. 87544

Filed Dec. 6, 1984, Ser. No. 679,207

Int. Cl.⁴ G01R *21/04*

U.S. Cl. 324—95 **21 Claims**



1. An apparatus for passively quantitatively measuring the time-integrated power of electromagnetic radiation radiation incident on a surface, the apparatus comprising in combination:

a. antenna means for receiving and interacting with the incident electromagnetic radiation and generating therefrom an alternating voltage, the alternating voltage having a substantially proportional relationship to the incident electromagnetic radiation;

b. means for receiving the alternating voltage and for producing therefrom a direct voltage, the direct voltage having a substantially proportional relationship to the alternating voltage;

c. passive series and parallel connected, linear, and non-linear resistance means for receiving the direct voltage and for generating therefrom a first direct current having magnitude which is substantially proportional to the square of the direct voltage;

d. a first electrochemical storage cell for receiving the first direct current and for interacting therewith to produce a response, the magnitude of the response being substantially proportional to the time-integral of the first direct current; and

e. means for measuring the magnitude of the response, whereby the magnitude of the response is substantially proportional to the time-integrated power of the incident electromagnetic radiation.

4,659,985

ELECTRIC METER HAVING AT LEAST TWO DISPLAY REGISTERS SELECTED ACCORDING TO A PARAMETER

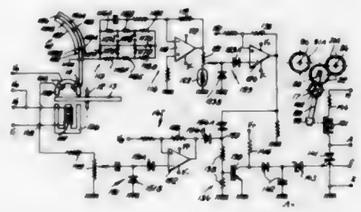
Julio J. Bianchi, Lanus Oeste, Argentina, assignor to General Electric Company, Somersworth, N.H.

Filed Nov. 27, 1984, Ser. No. 675,433

Claims priority, application Argentina, Dec. 15, 1983, 295133

Int. Cl.⁴ G01R *11/57, 11/63*

U.S. Cl. 324—116 **3 Claims**



1. An electric meter comprising:

a sensor disk;

means for driving said sensor disk at a speed proportional to a current consumed by a load;

a main register;

an auxiliary register;

means for sensing a voltage applied to said load;

means for driveably connecting said sensor disk to said main register under a first condition of said voltage and current and for driveably connecting said sensor disk to said auxiliary register under a second different condition of said voltage and current whereby separate accumulation of energy usage is provided; said first condition including either one of said voltage and said current being less than first and second predetermined thresholds, respectively; and

said second condition including both of said voltage and said current simultaneously exceeding said first and second predetermined thresholds, respectively.

4,659,986

ELECTRICAL TEST CONNECTOR FOR SIMULTANEOUS TESTING OF A PLURALITY OF ELECTRICAL COMPONENTS

Werner Elster, Gelnhausen; Horst Koch, Mittel-Gründau; Gustav Ost, Hasselroth; Werner Simon, Westergrund; Karl Deckelmann, Aschaffenburg, and Ino Taiti, Hasselroth, all of Fed. Rep. of Germany, assignors to W.C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Sep. 19, 1984, Ser. No. 652,745

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1983, 3336502

Int. Cl.⁴ G01R *31/00*

U.S. Cl. 324—158 F **14 Claims**

1. An article of manufacture comprising

a test clamp unit for simultaneously clamping and testing a plurality of components (2) mounted on a carrier strip and having projecting connection pins (5*a*, 5*b*), including

two elongated clamping jaws (A, B) movable between a clamped and a released position and having facing surfaces of insulating material;

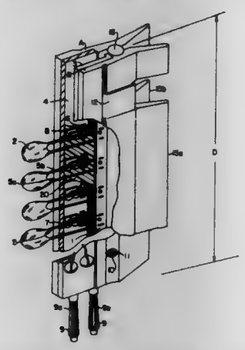
a first connecting track (4) having a conductive surface, arranged on the facing surface of one (A) of the jaws;

means for locating the carrier strip (1) in the transverse direction between the clamping jaws;

a first externally accessible terminal connection means (9*a*), electrically connected to said conductive surface of the first connecting track (4),

one of the contact pins (5*a*) engaging the conductive surface of the first connecting track (4);

a plurality of electrical contact means (6,8) electrically insulated with respect to said conductive surface of the first connecting track (4) engageable with another one (5*b*) of the contact pins of the components to be tested, secured to said one (A) of the clamping jaws, and positioned uniformly spaced from each other along the transverse direction of the respective clamping jaw;



a second connecting track (7) electrically connecting together the plurality of electrical contact means (6,8) arranged in said one (A) of the jaws;

a second externally accessible terminal connection means (9*b*), electrically connected to said second connecting track (7); and

means (15*b*) for clamping the carrier strip (1) and the electrical components thereon between said clamping jaw upon movement of said jaws into clamped position.

4,659,987

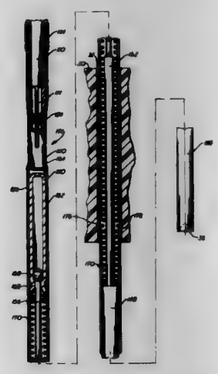
ELECTRICAL CIRCUIT TEST PROBE AND CONNECTOR

Thomas D. Coe, Boxford, and Robert F. Gross, Melrose, both of Mass., assignors to QA Technology Company, Exeter, N.H.

Filed Mar. 25, 1985, Ser. No. 715,539

Int. Cl.⁴ G01R *31/26, 31/02*

U.S. Cl. 324—158 P **8 Claims**



1. An electrical circuit test probe for mounting in a mounting hole in a test fixture board comprising:

(a) a cylindrical socket tube of an electrically conductive material sized to snugly fit within the mounting hole of the fixture board, said socket tube including means for electrically connecting to an electrical conductor on one end, and being open on its opposite end;

(b) a longitudinal plunger member of an electrically conductive material having inner and outer ends and a first cylindrical portion slide fitted into said open opposite end and terminating on said outer end in an electrical contact for contacting circuits to be tested, said inner end of said first cylindrical portion being disposed within said socket tube and having a second cylindrical portion extending therefrom along a common longitudinal axis and being of a smaller diameter to form a shoulder where said two cylindrical portions join one another, said inner end of said second cylindrical member having a resiliently flexible wand extending therefrom at an angular offset to said common longitudinal axis, said wand terminating in a bulbous contact member of a diameter substantially the same as said second cylindrical portion;

(c) a cylindrical plunger tube of an electrically conductive material disposed within said socket tube and in electrical contact therewith adjacent said electrical connecting means with said contact member disposed therein and with said wand passing through an opening through which said contact member cannot pass; and,

(d) a compression spring disposed between said shoulder and said plunger tube to create a bias force on said plunger member towards its extended position whereby said contact member is maintained in good electrical contact with the inner surface of said plunger tube by said biasing force from said offset of said wand as said plunger member is moved into and out of said socket tube.

4,659,988

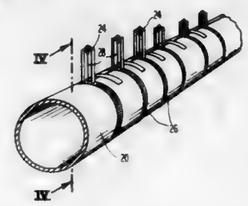
APPARATUS INCLUDING DISTANCE SENSORS MOUNTED ON ROTATING SHAFT FOR MEASURING DISTANCES INSIDE A TURBINE

John G. Goff, 941 Fariston Dr., Drexel Hill, Pa. 19026, and George W. Johnson, Jr., 2 Cambridge Rd., Dowaingtown, Pa. 19335

Division of Ser. No. 487,354, Apr. 25, 1983, Pat. No. 4,596,952, which is a continuation-in-part of Ser. No. 461,190, Jan. 26, 1983, abandoned. This application Jan. 3, 1986, Ser. No. 816,136

Int. Cl.⁴ G01B *7/14, 35/00*

U.S. Cl. 324—207 **3 Claims**



1. An apparatus for measuring distances inside a turbine having inner and outer cylinders comprising:

a rotatable shaft concentrically disposed inside a volume defined by the inner and outer cylinders of the turbine, the inner and outer cylinders having a generally radially symmetric interior surface;

a plurality of transversely projecting elements of predetermined length on the shaft and spaced along the shaft; and

a plurality of measuring means, each of the measuring means being fixed to one of the elements at a predetermined radius from the center line of the shaft, each of the measuring means being fixed proximate the interior surface of the inner and outer cylinders of the turbine, and each of the measuring means being adapted to measure the distance between the measuring means and the interior surface of the inner and outer cylinders of the turbine at a predetermined angular orientation of the shaft.

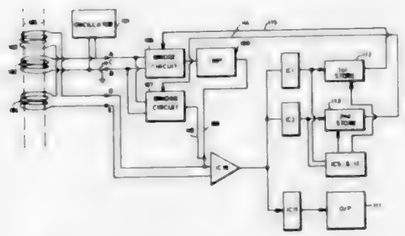
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4,659,989

INDUCTIVELY BALANCED METAL DETECTOR CIRCUIT WITH ORTHOGONAL BALANCING SIGNALS AND INCLUDING PHASE AND POLARITY DETECTION

Bruce G. Kerr, Amersham, United Kingdom, assignor to Goring Kerr Limited, United Kingdom

Division of Ser. No. 347,228, Feb. 9, 1982, Pat. No. 4,563,645.
This application Oct. 21, 1985, Ser. No. 789,547
Claims priority, application United Kingdom, Feb. 9, 1981, 8103943
Int. Cl.[4] G01N *27/72*; G01R *33/12*
U.S. Cl. 324—233 **4 Claims**



1. Metal detection apparatus comprising:
an oscillator coil connected to an oscillator;
detector coil means inductively coupled to the oscillator coil, said detector coil means including first and second detector coils disposed on opposite sides of the oscillator coil, said detector coils being electrically connected in series and in opposite polarity;
balancing circuit means for providing balancing signals, the balancing circuit means comprising:
(a) first and second means for producing first and second balancing signals having orthogonal phase components at the frequency of oscillation of the oscillator, each balancing signal having a magnitude controlled, respectively, by first and second feedback signals;
(b) signal combining means coupled to said first and second means for producing first and second balancing signals and to said detector coil means for producing a combined output signal by combining said balancing signals with a signal induced in the detector coil means;
(c) control means connected to receive said combined output signal produced by the signal combining means and including means for producing first and second signals which are a function of the magnitude of orthogonal phase components in the combined output signal and having means for storing said first and second signals; and
(d) feedback means connected to receive the first and second signals stored by the storing means of the control means and being connected to the first and second means to control the magnitude of the balancing signals produced by said first and second means for producing first and second balancing signals;
and detection circuit means connected to said signal combining means to receive said combined output signal for determining when the magnitude of a given phase component of the combined output signal assumes a first polarity and then an opposite polarity, whereby passage of metal between said first and second detector coils which produces changes of inductive coupling between the oscillator coil and the detector coil means is detected, said detection circuit comprising:
a phase sensitive detector responsive to said combined output signal for comparing the phase thereof with a reference phase derived from said oscillator means;
first voltage comparator means for comparing the output of the phase sensitive detector with a first reference voltage to determine whether said first polarity has been assumed and provide an output in response thereto;
second voltage comparator means for comparing the output of the phase sensitive detector with a second reference voltage to determine whether said second polarity has been assumed and provide an output in response thereto; and,
trigger means responsive to the occurrence of output from the first and second voltage comparator within a predetermined time interval to indicate the presence of metal.

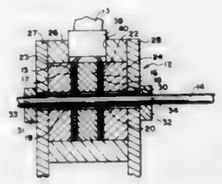
4. Metal detector apparatus including:
an oscillator coil;
oscillator means connected to feed oscillatory electrical signals through the oscillator coil;
detector coil means inductively coupled to the oscillator coil;
balancing circuit means for providing balancing signals, the balancing circuit means comprising:
(a) first and second means for producing first and second balancing signals having orthogonal phase components at the frequency of oscillation of the oscillator, each of said first and second means comprising a bridge of two pairs of variable capacity diodes, each pair being connected in series opposition, said balancing signals having an amplitude which is controlled by first and second feedback signals;
(b) signals combining means coupled to said first and second means for producing first and second balancing signals and to said detector coil means for combining said balancing signals with the signal induced in the detector coil means;
(c) control means connected to receive the combined signal produced by the combining means and including means for producing first and second signals which are a function of the magnitude of orthogonal phase components in the combined signal, and including means for storing said first and second signals, feedback means connected to receive the first and second signals stored by the storing means of the control means and being connected to the first and second means for controlling the magnitude of the balancing signals produced by said first and second means for producing balancing signals; and detection circuit means connected to said combining means and responsive thereto for detecting the presence of metal which produces changes of inductive coupling between the oscillator coil and the detector coil means.

4,659,990

EDDY CURRENT TEST SYSTEM INCLUDING A MEMBER OF HIGH PERMEABILITY MATERIAL EFFECTIVE TO CONCENTRATE FLUX IN A VERY SMALL REGION OF A PART

Rocco Torre, Mt. Clemens, Mich., assignor to Magnaflux Corporation, Chicago, Ill.

Continuation of Ser. No. 493,420, May 10, 1983, abandoned.
This application Jul. 1, 1986, Ser. No. 881,491
Int. Cl.[4] G01N *27/82*
U.S. Cl. 324—238 **1 Claim**



1. An eddy current testing system for detection of inhomogeneities in a wire comprising:

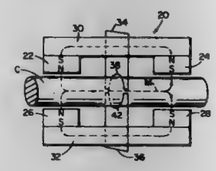
an ac source;
a test coil assembly energized from said ac source and arranged to be positioned in proximity to said wire to develop an output signal varying as a function of characteristics of a part of said wire which affects the electrical impedence of said test coil assembly, having a first end plate with a central aperture therein, a first annular insulating member adjacent said first end plate on one side thereof, a first flat spiral coil disposed against said first annular insulating member on its side opposite said first end plate, a first washer of magnetic material disposed against said coil on its side opposite said first annular insulating member, a central annular insulating member disposed against said first washer on its side opposite said coil, a second washer of magnetic material disposed against said central insulating member on its side opposite said first washer, a second flat spiral coil disposed against said second washer on its side opposite said central insulating member, a second annular insulating member adjacent said second coil on its side opposite said second washer, a second end plate having a central aperture disposed against said second annular insulating member on its side opposite said second coil, a tube extending through said apertures of said first and second end plates, said insulating members, said washers and said coils, wear shoe means disposed against each of said first and second end plates on their sides opposite said first and second annular insulating members, a sleeve disposed intermediate and connected to said first and second end plates for engaging said coil assembly; and
means responsive to said output signal to indicate changes in the characteristics caused by inhomogeneties in the wire.

4,659,991

METHOD AND APPARATUS FOR MAGNETICALLY INSPECTING ELONGATED OBJECTS FOR STRUCTURAL DEFECTS

Herbert R. Weischedel, South Windsor, Conn., assignor to NDT Technologies, Inc., South Windsor, Conn.

Filed Mar. 31, 1983, Ser. No. 480,883
Int. Cl.[4] G01N *27/82*; G01R *33/12*
U.S. Cl. 324—241 **18 Claims**



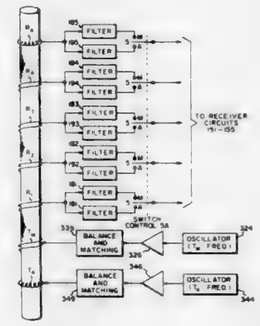
1. A magnetic inspection device for nondestructively detecting loss in metallic cross section and localized discontinuities in elongated objects, such as wire cables, rods, pipes, and the like comprising:
magnet means having two opposite magnetic poles spaced from one another for positioning and relative movement adjacent an elongated magnetically permeable object with the poles at longitudinally spaced stations of the object, and for inducing in sections of the object between the stations, magnetic flux at the saturation level, the magnet means also defining a ferromagnetic flux return path between the poles externally of the object for completing the flux circuit; and
magnetic flux detector means having a sensing coil interlaced with the flux circuit through the ferromagnetic flux return path at a position between the poles and laterally of the elongated object and circumscribing the portion of the flux circuit in the return path of the magnet means without circumscribing the elongated object and having a sensing portion of the coil located adjacent the exterior surface of the elongated object between the two magnetic poles of the magnetic means for sensing perturbations in leakage flux at the exterior surface caused by defects in the object, as the object and inspection device move relative to one another.

4,659,992

METHOD AND APPARATUS FOR ELECTROMAGNETIC LOGGING WITH REDUCTION OF SPURIOUS MODES

Brian Clark, Ridgefield, Conn., and Gerald S. Huchital, Houston, Tex., assignors to Schlumberger Technology Corp., New York, N.Y.

Division of Ser. No. 391,097, Jun. 23, 1982, Pat. No. 4,574,242.
This application Nov. 4, 1985, Ser. No. 782,768
The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.
Int. Cl.[4] G01V *3/30*
U.S. Cl. 324—338 **10 Claims**



3. Apparatus for determining properties of formations surrounding a borehole, comprising:
an elongated logging device moveable in the borehole;
a main transmitter and an auxiliary transmitter mounted on the device;
a main receiver and an auxiliary receiver mounted on the device in spaced relationship to the transmitters;
means for energizing the main transmitter to transmit electromagnetic energy at a first frequency;
means for energizing the auxiliary transmitter to transmit transverse magnetic electromagnetic energy at a second frequency;
means for frequency separating the energy received at the main receiver into a first frequency main receiver signal and a second frequency main receiver signal;
means for frequency separating the transverse magnetic electromagnetic energy components received at the auxiliary receiver into a first frequency auxiliary receiver signal and a second frequency auxiliary receiver signal; and
means for generating a corrected main receiver signal as a function of the main receiver signals and the auxiliary receiver signals.

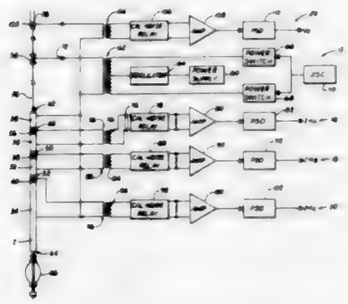
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4,659,993

APPARATUS INCLUDING AN EQUIPOTENTIAL HOUSING AND PLURALITY OF FOCUSED CURRENT ELECTRODES FOR ELECTRICALLY LOGGING A WELL FORMATION AT MORE THAN ONE LATERAL DISTANCE FROM A BOREHOLE

Terry D. Wesnack, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 10, 1985, Ser. No. 690,353
Int. Cl.[4] G01V *3/24*
U.S. Cl. 324—375 **1 Claim**



1. A well logging apparatus for obtaining information for measuring electrical properties of a formation intersected by a well bore, comprising:

cable means for moving a housing through the well bore;

an elongated housing having a continuous substantially equal potential along its length, said housing including:

a first electrically conductive cylindrical member having a first threaded end portion, and said first cylindrical member having a second end portion opposite said first threaded end portion and connected to said cable means;

a first electrically conductive hub member having a second threaded end portion connected to said first threaded end portion so that said first hub member is connected in electrical short-circuit relationship with said first cylindrical member, and said first hub member having a third threaded end portion longitudinally opposite said second threaded end portion;

a second electrically conductive cylindrical member having a fourth threaded end portion connected to said third threaded end portion so that said second cylindrical member is connected in electrical short-circuit relationship with said first hub member, and said second cylindrical member having a fifth threaded end portion longitudinally opposite said fourth threaded end portion;

a second electrically conductive hub member having a sixth threaded end portion connected to said fifth threaded end portion so that said second hub member is connected in electrical short-circuit relationship with said second cylindrical member, and said second hub member having a seventh threaded end portion longitudinally opposite said sixth threaded end portion;

a third electrically conductive cylindrical member having an eighth threaded end portion adapted to be connected to said seventh threaded end portion so that said third cylindrical member is adapted to be connected in electrical short-circuit relationship with said second hub member; and

additional threadedly connected sets of one respective electrically conductive cylindrical member and one respective electrically conductive hub member, each of said sets having respective longitudinally opposite threaded end portions so that each of said sets is adapted for connection between said seventh and eighth threaded end portions in electrical short-circuit relationship therewith to selectably change the length of said housing but to maintain electrical short-circuit continuity throughout the length of said housing;

a plurality of electrically conductive focused current members attached to said housing so that said members are longitudinally spaced from each other but are disposed all within the continuous substantially equal potential length of said housing, each of said members including respective means for providing a respective focused current path from which a focused current can leave said housing, said plurality of electrically conductive focused current members including:

first electrode means, insulatedly mounted on said first hub member and electrically connected to said housing, for providing a first focused current path from which a first focused current can leave said housing;

second electrode means, insulatedly mounted on said second hub member and electrically connected to said housing, for providing a second focused current path from which a second focused current can leave said housing; and

additional electrode means, each of which is insulatedly mounted on the hub member of a respective one of said additional sets for electrically connecting to said housing, for providing selectable additional focused current paths from which additional focused currents can leave said housing from those of said additional sets selectably connected between said seventh and eighth threaded end portions;

current return means for receiving currents flowing from said plurality of electrically conductive focused current members, said current return means including a single electrode, regardless of the number of said additional sets connected between said seventh and eighth threaded end portions, spaced from said housing on said cable means and disposed within the well bore when said housing is disposed in the well bore;

means for enabling focused currents to flow simultaneously from said plurality of electrically conductive focused current members to generate simultaneously different, respective depths of investigation within the formation, said means for enabling including power supply means for applying a single voltage signal between said housing and said current return means regardless of the number of said additional sets connected between said seventh and eighth threaded end portions so that said first focused current and said second focused current and any and all said additional focused currents are generated in response to said single voltage signal; and

current detector means for detecting the focused currents flowing through said plurality of electrically conductive focused current members.

4,659,994

BATTERY TESTER

Mark D Poljak, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 12, 1985, Ser. No. 764,687
Int. Cl.[4] G01N *27/46*
U.S. Cl. 324—426 **10 Claims**

1. A battery tester for determining the acceptability of a Lithium Sulfur Dioxide ($LiSO_2$) battery having one or more cells therein, said tester comprising:

first and second comparison circuit means and logic means, the first comparison circuit means having a first series of series interconnected components, namely: first comparator means, first and second flip-flop means, and AND gate means, a forward bias input of the first comparator means being connected to a positive battery terminal means, a negative bias input of the first comparator means being connected to negative bias source means, the input of the first flip-flop means being connected to the output of the first comparator means while the output of the first flip-flop means is connected to an input of the AND gate means, the output of the gate means being connected to the input of the second flip-flop means,

first resistor means parallel connected to the first comparison circuit means between the first comparator means and the terminal means,

the second comparison circuit means having a second series of series interconnected components, namely: second resistor means, capacitor means, buffer means, and second comparator means, the second resistor means being parallel connected to the first comparison means between the first comparator means and the first resistor means, the capacitor means being interposed between and interconnected to the second resistor means and the buffer means, the forward bias input of the second comparator means being connected to the buffer means, the negative bias input of the second comparator means being connected to negative bias source means, the output of the second comparator means being connected to another input of the gate means,

normally-open first switch means having solenoid means for selectively closing same, the first switch means being interposed between and interconnected to the first resistor means and a ground,

normally-closed second switch means having solenoid means for selectively opening same, the second switch means having one terminal parallel connected to the second comparison circuit means between the capacitor means and the buffer means, the second switch means having another terminal connected to a ground,

the logic means having first and second lead means connected to the solenoid means of the first and second switch means respectively, and the logic means having third and fourth lead means connected to another input of the first and second flip-flop means respectively,

said first lead means being energized by said logic means to energize the solenoid means of said first switch means so as to close the first switch means at a first predetermined time thereby placing a battery to be tested under load by said first resistor means, said first comparator means for comparing the output terminal voltage of the battery in relation to a predetermined negative biased reference voltage at the negative bias input of the first comparator means when the first switch means is closed,

said second lead means being energized by said logic means to energize the solenoid means of the second switch means so as to open the second switch means at a second predetermined time, said second comparator means for comparing the output voltage of the battery in relation to a predetermined negative biased reference voltage at the negative bias input of the second comparator means when the second switch means is opened,

said third lead means being energized by said logic means for timely transmitting a first pulse to the other input of the first flip-flop means so as to cause triggering of the first flip-flop means output to the input of the gate means when the voltage output of the first comparator means is sufficient, and

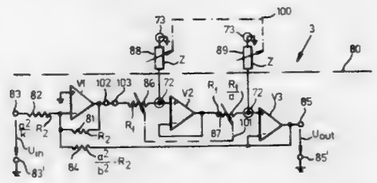
said fourth lead means being energized by said logic means for timely transmitting a second pulse so as to cause triggering of an output from said second flip-flop means when the input of the second flip-flop means is energized by the output of said gate means as the result of both inputs of said gate means having simultaneously sufficient voltages from the outputs of both the first flip-flop means and the second comparator means during evaluation of a battery by the tester.

4,659,995

ACTIVE FOURTH-DEGREE FILTER ELEMENT

Karl H. Feistel, Nuremberg, Fed. Rep. of Germany, assignor to Karl-Heinz Feistel, Nuremberg, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,420
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1983, 3329195
Int. Cl.[4] H03F *1/00*; H03B *1/66*
U.S. Cl. 328—167 **16 Claims**



1. An active filter element of the fourth degree, comprising:

a four-terminal network with a pair of input terminals and a pair of output terminals, one of said input terminals and one of said output terminals being grounded, another of said input terminals and another of said output terminals being ungrounded;

a nonaccumulating basic circuit between said input and output terminals including an inverting adder and two voltage followers respectively provided by a first, a second and a third operational amplifier in cascade with one another, each of said operational amplifiers having a noninverting input, an inverting input and output, the output of said third operational amplifier being connected to said ungrounded output terminal;

a first series resistor having an upstream end connected to the output of said first operational amplifier and a downstream end connected to the noninverting input of said second operational amplifier;

a second series resistor of the same resistance magnitude as said first series resistor having an upstream end connected to the output of said second operational amplifier and a downstream end connected to the noninverting input of said third operational amplifier;

a reactive first transverse impedance inserted between ground and the downstream end of said first series resistor, forming therewith a first frequency-dependent voltage divider; and

a second transverse impedance identical with said first transverse impedance inserted between ground and the downstream end of said second series resistor, forming therewith a second frequency-dependent voltage divider, the inverting inputs of said second and third operational amplifiers being connected with feedback loops, the noninverting input of said first operational amplifier being grounded, the inverting input of said first operational amplifier being connected by means of three further resistors individually to the ungrounded input terminal, to the output of said first operational amplifier and to the output of the third operational amplifier, said transverse impedances having resistances, the resistance ratio of said series resistors to said transverse impedances being adjustable by adjusting magnitudes of said series resistances for varying the bandwidth of the filter element.

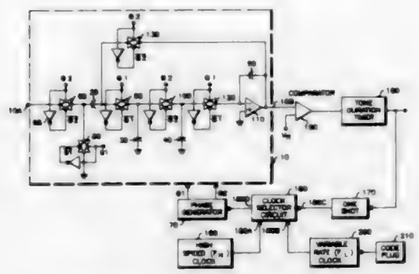
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4,659,996

METHOD AND APPARATUS FOR DE-RINGING A SWITCHED CAPACITOR FILTER

Mark Nadir, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1984, Ser. No. 584,052
Int. Cl.[4] H03B 1/00, 1/10; H03K 5/00
U.S. Cl. 328—167 6 Claims



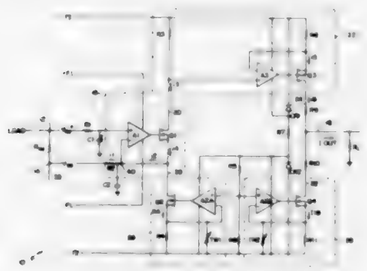
1. A method for de-ringing a switched capacitor filter including at least one capacitive element coupled to at least one switched capacitor resistive element comprising the steps of:
clocking said at least one switched capacitor resistive element at a first predetermined clocking frequency, and
substantially increasing the frequency at which said at least one switched capacitor resistive element is clocked to a second predetermined clocking frequency such that energy stored in said filter is rapidly dissipated.

4,659,997

DIFFERENTIAL VOLTAGE MEASURING CIRCUIT

Michael R. Ferland, Nashua, N.H.; Roger V. Burns, Jr., Plymouth, and J. Anson Wheeler, Jr., Cohasset, both of Mass., assignors to Teradyne, Inc., Boston, Mass.

Filed Oct. 15, 1985, Ser. No. 787,755
Int. Cl.[4] H03F 3/45
U.S. Cl. 330—257 10 Claims



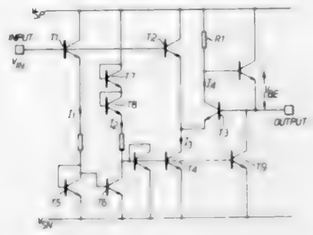
1. Apparatus for measuring for difference between two voltages and rejecting common mode signals comprising
means for generating at a first point in said apparatus a first current proportional to said difference at a voltage related to the common mode voltage of said two voltages,
a circuit path between a high voltage source and a low voltage source,
said path including a node that is connected to said first point and between said high voltage source and said low voltage source,
said two voltages being between the voltages of said high and low voltage sources,
a circuit element along said circuit path between said node and one of said high and low voltage sources, said circuit element being connected to said means so as to produce a second current through it that is indicative of said voltage difference and is independent of the voltage across it,
said second current also flowing through a second point on said circuit path between said node and said one voltage source,
a portion of said common mode voltage appearing across said circuit element,
a first offset current source along said circuit path between said node and the other of said high and low voltage sources,
said offset current source providing an offset current from said node, permitting said first current to be of either polarity, and
a current mirror connected to said second point for providing at a third point in said apparatus a current identical to said second current, whereby the magnitude of said second current can be determined without affecting its value by sensing said third current.

4,659,998

VOLTAGE FOLLOWER

George H. S. Rokos, Bishops Stortford, England, assignor to STC plc, London, England

Filed May 6, 1985, Ser. No. 730,562
Claims priority, application United Kingdom, May 11, 1984, 8412036
Int. Cl.[4] H03F 3/45, 1/26
U.S. Cl. 330—260 8 Claims



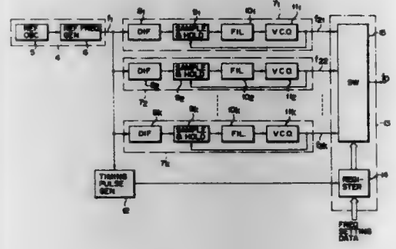
1. A voltage follower circuit, which includes an input via which input signals to the circuit are received, an output at which output signals of the circuit occur, an amplifier stage to which the input signals are applied from said input, a comparator stage having first and second inputs, an output from the amplifier stage being applied to the first input of the comparator stage so that the input signals to the circuit reach the first input of the comparator stage via the amplifier stage, a connection between the output of the voltage follower circuit and the second input of the comparator stage via which the circuit's output signals are applied to the comparator stage for comparison thereby with the input signals to the circuit, and circuit means associated with the output of the voltage follower circuit whereby the result of said comparison is used to control the current which flows to the output of the circuit in response to the application of said input signals to the circuit's input, wherein as a result of the connection of the output of the amplifier stage via the comparator stage to the output of the voltage follower circuit the differential current produced due to any difference in magnitude between the input signal and the output signal is effective to adjust the amplification provided by the amplifier stage, and wherein a negative feedback connection is provided around the comparator stage from an output of the comparator stage to the amplifier stage to reinforce circuit accuracy.

4,659,999

DIRECT FREQUENCY SYNTHESIZER WHICH IS STEP-WISE VARIABLE AND HAS PHASE CONTINUITY AND PHASE REPRODUCIBILITY WHEN SWITCHING FREQUENCIES

Hatsuo Motoyama, Tokyo, and Tetsuo Igawa, Atsugi, both of Japan, assignors to Aaritsu Electric Company Limited, Tokyo, Japan

Filed Oct. 24, 1984, Ser. No. 664,401
Claims priority, application Japan, Oct. 31, 1983, 58-202676
Int. Cl.[4] H03L 7/00; H03B 21/02
U.S. Cl. 331—2 32 Claims



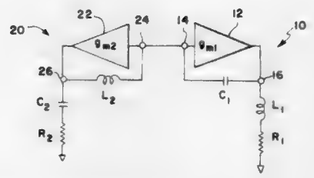
1. A direct frequency synthesizer, which is step-wise variable and has phase continuity and phase reproducibility when switching frequencies of an output signal, said direct frequency synthesizer comprising:
first reference frequency generating means for generating a first reference frequency signal;
a plurality of second reference frequency generating means coupled to said first reference frequency generating means for generating a plurality of second reference frequency signals each being a continuous sine wave with a frequency having an integral multiple relationship with said first reference frequency signal but with mutually different frequencies, said plurality of second reference frequency signals having a timing alignment whereby their respective phases are aligned in the same period of said first reference frequency signal;
timing pulse generating means coupled to said first reference frequency signal for generating a timing pulse only when the phases of all of said plurality of second reference frequency signals are substantially equal in said timing alignment;
frequency setting data registration means for receiving said timing pulse and a frequency switch command for renewedly registering frequency data to be set only upon generation of a timing pulse following receipt of said frequency switch command to thereby generate a renewedly registered frequency data signal; and
switching means for receiving said plurality of second reference frequency signals and said renewedly registered frequency data signal from said frequency setting data registration means to selectively switch to and output one signal corresponding to said renewedly registered frequency data of said plurality of second reference frequency signals to thereby maintain the phase continuity and phase reproducibility of the output signal before and after switching.

4,660,000

LOW PHASE NOISE OSCILLATOR USING TWO PARALLEL CONNECTED AMPLIFIERS

Leonard L. Kleinberg, Annapolis, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 14, 1986, Ser. No. 862,959
Int. Cl.[4] H03B 5/12, 5/36
U.S. Cl. 331—56 17 Claims



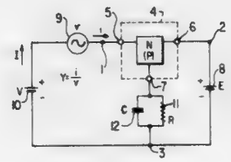
16. An oscillator comprising:
a first amplifier circuit having a transconductance, an inductive load impedance, and a capacitive input susceptance;
a second amplifier circuit having a transconductance, a capacitive load impedance, and an inductive input susceptance; and
circuit means interconnecting said first and second amplifier circuits in parallel so that said inductive input susceptance of said second amplifier circuit adds negative input conductance to said first amplifier circuit for rendering it operational as a Hartley-type oscillator and said capacitive input susceptance of said first amplifier circuit adds negative input conductance to said second amplifier circuit for rendering it operational as a Colpitts-type oscillator.

4,660,001

THREE-TERMINAL NEGATIVE ADMITTANCE NETWORK

Cornelis M. G. Zwarts, Gatineau, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Apr. 22, 1985, Ser. No. 725,998
Int. Cl.[4] H03B 5/08
U.S. Cl. 331—115 11 Claims



1. An electrical network having an input terminal, an output terminal and a common terminal and exhibiting a negative admittance to a high frequency AC input signal applied between the input terminal and the common terminal, comprising:
a transistor having an input electrode, an output electrode and a common electrode,
the input terminal connected to the input electrode to apply the high frequency AC input signal to the input electrode of the transistor,
the output terminal coupled with the output electrode of the transistor,
phase shift means comprising phase shift resistors and phase shift capacitors and bridging the common electrode and the common terminal so that there is created a phase-shift

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between the current and the voltage of the AC input signal and

the said resistors and the said capacitors are chosen as to their values to produce the phase-shift of more than 90° between the said current and the said voltage.

4,660,002

HIGH FREQUENCY OSCILLATOR USING A DIODE FOR FREQUENCY SWITCHING AND FM MODULATION

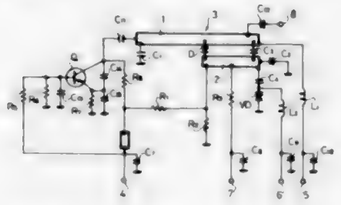
Kouta Iijima, and Takeshi Tasemura, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Mar. 14, 1986, Ser. No. 840,321

Claims priority, application Japan, Mar. 14, 1985, 60-36386[U]

Int. Cl.⁴ H03B 5/18; H03C 3/22

U.S. Cl. 332—16 T 1 Claim



1. A high frequency oscillator comprising:

an oscillation transistor;

a resonant strip line unit connected at one end to said oscillation transistor, said strip line unit consisting of a main strip line member and an auxiliary strip line member, one terminal of said auxiliary strip line member being high-pass connected to one terminal of the main strip line member, and the other terminal of said auxiliary strip line member being connectable through a switch diode to said main strip line member to place said auxiliary strip line member in parallel with the main strip line member for switching the characteristic impedance of the strip line unit;

an output terminal connected to the other end of the strip line unit which is adapted to provide first-frequency and second-frequency output signals in accordance with switching of the switch diode to On and Off conditions, respectively;

a switchable voltage input terminal connected to said main strip line member for biasing said switch diode to the On or Off conditions in accordance with a switching voltage signal applied thereto;

a varactor diode having one terminal connected to a portion of said auxiliary strip line member and its other terminal connected to ground, said varactor diode being connected to a control voltage input terminal for changing the capacitance of said varactor diode for channel switching in accordance with a control voltage applied to said control voltage input terminal; and

a modulating signal input terminal directly connected to a portion of said auxiliary strip line member such that upon application of a modulating signal to the modulating signal input terminal during the Off condition of the switch diode, the second-frequency signal is subjected to FM modulation.

4,660,003

DEVICE FOR LIMITING THE POWER TRANSMISSION OF RADIOWAVE TRANSMITTERS

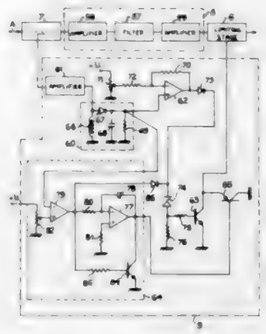
Claude Chaniat, Aubergenville, and Michel Allanic, Herblay, both of France, assignors to Thomson-LGT, Chatou, France

Filed Jun. 17, 1985, Ser. No. 745,628

Claims priority, application France, Jun. 18, 1984, 84 09479

Int. Cl.⁴ H03H 7/24; H04B 1/18

U.S. Cl. 333—17 L 8 Claims



1. A device for limiting the transmission power of a radiowave transmitter including a chain for amplification of the radio signal to be transmitted, comprising a limiting stage, having control inputs, for attenuating the electric signal to be amplified before applying it to the input of the amplifying chain, a coupler for generating a control signal equal to at least part of the signal to be amplified, a delay device coupled between the coupler and the limiting stage for delaying the signal to be amplified which is delivered by the coupler before applying said signal to the input of the limiting stage, as well as control means coupled between the coupler and the control inputs of the limiting stage and responsive to the control signal for blocking said limiting stage and preventing transmission of the signal to be amplified to the input of the amplifying chain when the level of the signal to be amplified oversteps a predetermined amplitude threshold and for holding the limiting stage in the blocked state after the level of the signal to be amplified has fallen back below the predetermined threshold during a sufficient period of time t_2 to ensure that the signal which has been delayed by the delay device and arrives at the input of the limiting stage cannot be amplified by the amplifying chain when its level still oversteps the predetermined amplitude threshold.

4,660,004

DUPLEXER INCLUDING INTEGRAL INTERDIGITAL TRANSMITTER AND RECEIVER FILTERS AND THREE-QUARTER WAVELENGTH ANTENNA TRANSFORMER SECTION

Ronald E. Jackowski, Belmont, Calif., assignor to Orion Industries, Inc., Cleveland, Ohio

Filed May 8, 1985, Ser. No. 732,161

Int. Cl.⁴ H01P 2/05; H03H 7/46

U.S. Cl. 333—134 3 Claims

1. A multiple filter microwave filtering device comprising:

(a) a first interdigital filter having a first predetermined resonant frequency, with a first group of spaced parallel resonators therein, said first group having a first and a second end;

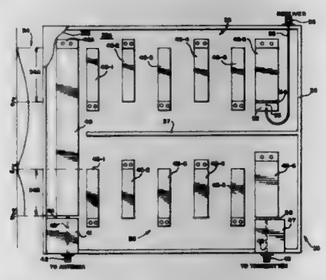
(b) a second interdigital filter having a second predetermined resonant frequency, with a second group of spaced parallel resonators therein, said second group having a first and a second end;

(c) a first transformer section positioned adjacent said first end of said first group and first connecting means for electrically connecting said first transformer section to a first cable connector, and a second transformer section positioned adjacent said first end of said second group and second connecting means for electrically connecting said second transformer section to a second cable connector;

(d) a common transformer section extending adjacent said second end of said first filter and adjacent said second end of said second filter, said common transformer section having a predetermined first portion aligned with one of said resonators at said second end of said first group to couple rf energy having said first resonant frequency therebetween, and a predetermined second portion, spaced from said first portion, and aligned with one of said resonators at said second end of the second group to couple rf energy having said second resonant frequency therebetween;

(e) a conductive rectangular frame defining opposed, spaced apart major faces and bounding said first and second filters, said frame including an elongated conductive divider extending between said first and second filters and nearly to said common transformer section, and thereby separating the first and second filters, a third cable connector affixed to said frame, and

first and second spaced apart conductive face plates attached to spaced apart surfaces of said frame, covering said major faces with said first and second filters positioned therebetween; and



(f) means for electrically connecting a selected region of said common transformer section to said third cable connector

wherein the length of each of the resonators in the first group is equal to one-quarter of the wavelength of said resonant frequency of said first filter, the length of each of the resonators in the second group is equal to one-quarter of the wavelength of said resonant frequency of said second filter, and wherein the length of the common transformer section is equal to an odd number of quarter wavelengths of a frequency that is substantially close to said resonant frequencies of the first and second filters;

wherein a first quarter wavelength section of said odd number of quarter wavelengths in said common transformer section is aligned with resonators of said first group, and a third quarter wavelength section of said odd number of quarter wavelengths in said common transformer section is aligned with resonators of said second group, said first group of resonators being spaced approximately one-quarter wavelength from said second group of resonators by a second quarter wavelength section of said odd number of quarter wavelengths in said common transformer; and

wherein each of said resonators of said first and second groups includes a T-shaped structure with a rectangular conductive mounting base and a relatively thin rectangular resonator section integral with the mounting base, each mounting base having opposed faces attached to an inner surface of said first and second face plates to support that resonator.

4,660,005

HIGH FREQUENCY ELECTRICAL NETWORK

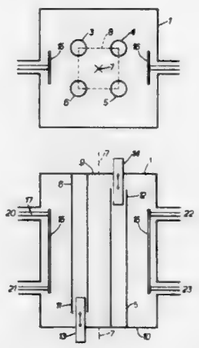
Ronald Hutchinson, Chelmsford, England, assignor to The Marconi Company Limited, Stanmore, England

Filed Aug. 6, 1985, Ser. No. 762,784

Claims priority, application United Kingdom, Aug. 10, 1984, 8420361

Int. Cl.⁴ H01P 1/213

U.S. Cl. 333—134 19 Claims



1. A high frequency network including a transmission line device in the form of a closed cavity having two opposite conductive end plates and a connecting side wall structure; four quarter wave resonators mounted within the cavity and being disposed symmetrically about an axis passing through both end plates, one pair of mutually opposite resonators being mounted on one end plate, and the other pair being mounted on the other end plate; and a coupling loop being mounted on the side wall structure so that it couples equally with the two closest resonators.

4,660,006

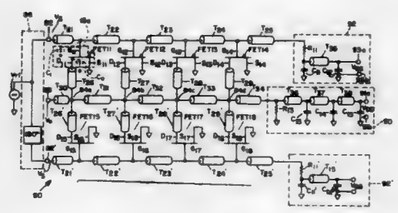
RADIO FREQUENCY MULTIPLIER PRODUCING AN EVEN HARMONIC OUTPUT

Yusuke Tajima, Acton, and Robert A. Pucel, Needham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 15, 1985, Ser. No. 723,593

Int. Cl.⁴ H03B 19/14

U.S. Cl. 333—218 19 Claims



1. A frequency multiplier, having an input terminal fed by an input signal having a fundamental frequency f_o and an output terminal, comprising:

means, fed by the input signal, for providing first and second signals, each having the frequency f_o;

means for providing a differential phase shift of an odd multiple of 180° between said first and second signals;

a first plurality of non-linear devices, each one thereof having an input electrode and an output electrode;

first means, fed by the first signal, for successively feeding

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said first signal, to the input electrodes of the first plurality of non-linear devices;

wherein in response to the first signal an output signal is provided at the output electrode of each non-linear device having frequency components f_o, $2f_o$, $3f_o$ . . . , nf_o where n is a positive integer;

a second plurality of non-linear devices, each one thereof having an input electrode, and an output electrode;

second means, fed by the second signal, for successively feeding said second signal to the input electrodes of the second plurality of non-linear devices;

wherein response to the second signal an output signal is provided at the output electrode of each non-linear device having frequency components f_o, $2f_o$, $3f_o$ . . . , nf_o where n is a positive integer;

a radio frequency transmission line coupled to the output terminal and connected to the output electrode of each one of the first plurality of non-linear devices and the output electrode of each one of said second plurality of non-linear devices to couple each one of said signals to the output terminal; and

wherein the signal fed from each non-linear element of the first plurality of non-linear elements and the signal fed from each respective non-linear element of the second plurality of non-linear elements have a differential phase shift of odd multiples of 180° for the fundamental frequency components of f_o and odd harmonics of f_o and a differential phase shift of even multiples of 180° for even harmonics of f_o to provide at the output terminal an output signal having at least one even harmonic of f_o with substantially no frequency components at the fundamental frequency f_o and odd harmonics of f_o.

4,660,007

METHOD OF PRODUCING LEAKY COAXIAL CABLE

Hugh A. Edwards, Renfrew, and John W. Patchell, Carleton Place, both of Canada, assignors to Allied Corporation, Morris Township, Morris County, N.J. and Senstar Security Systems Corporation, Kanata, Canada

Division of Ser. No. 533,853, Sep. 19, 1983, Pat. No. 4,599,121. This application Dec. 30, 1985, Ser. No. 814,688
Claims priority, application Canada, Apr. 15, 1983, 426019
Int. Cl.⁴ H01P *3/06*
U.S. Cl. 333—237 **1 Claim**



1. A graded leaky coaxial cable comprised of a center conductor, a dielectric surrounding the center conductor, and a braided conductive shield woven around and surrounding the dielectric, the shield having progressively fewer ends along the length thereof whereby progressively larger non-conductive gaps are formed separated by closely woven groups of wires, facilitating controlled penetration of a radio frequency field through said shield, the center conductor and shield each having particular resistance per unit length, the resistance of the shield increasing with decreasing number of ends therein, the shield being woven in groups of ends over two and under two, the numbers of wires in alternate upper and lower groups decreasing by one in successive coextending predetermined lengths, the final two lengths being approximately the same, the immediately previous length thereto being approximately 1½ times the length of the last length, and the first length being slightly longer than the last length where there is a further length between the first length and said previous length, and the first length being approximately two-thirds the length of the last length where there is no further length between the first length and said previous length, and the further length being slightly longer than said previous length.

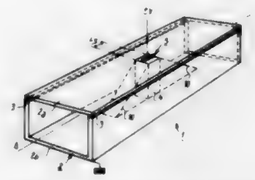
4,660,008

PIN DIODE SWITCH MOUNTED IN A RIDGE WAVEGUIDE

Raymond Heary, Fontenay aux Roses; Michel Heitzmann, Combs la Ville, and Gilles Sillard, Plaisir, all of France, assignors to Thomson-CSF, Paris, France

Filed Sep. 27, 1984, Ser. No. 654,872
Claims priority, application France, Sep. 30, 1983, 83 15650
Int. Cl.⁴ H01P *1/15*
U.S. Cl. 333—258 **8 Claims**





1. A PIN diode for an electromagnetic wave switch which has a ridged metallic rectangular waveguide, having a longitudinal axis (Δ), and having internal dimensions allowing the propagation of millimetric waves comprising:

a PIN diode mounted in the ridged space provided by said guide, said diode having zones P^+ and N^+, each of said zones having a thickness that is smaller than the respective skin thickness of the zones P^+ and N^+ at the operating frequency involved;

said PIN diode being in the form of a parallelepipedic bar having one rectangular straight section having a dimension aligned with respect to the longitudinal axis (Δ) of the guide which is a multiple of the half-wavelength of a guided wave that occurs at said operating frequency;

wherein for said operating frequency being about 94 GHz, the resistivity of said zones P^+ and N^+ of said diode are each respectively about 0.007 Ω-cm, and the waveguide upon which the diode is placed is made of copper having a respective skin thickness for zones P^+ and N^+ of about 15 microns, the thickness of each zone P^+ and N^+ being between 2 to 5 microns.

4,660,009

MODULAR INTEGRAL CIRCUIT INTERRUPTER

John A. Wafer, Brighton Twp., and Kurt A. Grunert, Beaver, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 29, 1985, Ser. No. 759,718
Int. Cl.⁴ H01H *77/06, 83/22*
U.S. Cl. 335—6 **17 Claims**

1. A circuit interrupter comprising:

an electrically insulating housing including a bottom wall;

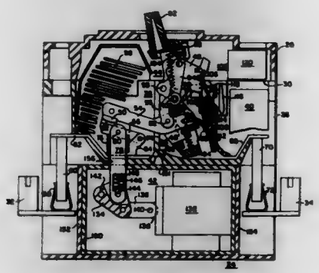
a circuit breaker having first and second separable contacts operable between open and closed positions;

the circuit breaker including a trip mechanism having a releasable lever movable when released to a tripped position to cause automatic opening of the contacts;

the first contact being mounted on a first arm coupled to the releasable lever;

the second contact being mounted on a second arm of which at least a portion is substantially parallel to the first arm to cause current limiting repulsion of the contacts in response to a predetermined overcurrent condition;

electromagnetic actuating means detachably connected to the second arm for moving the second contact between open and closed positions; and



modular sensor means detachably connected for monitoring current flow and for automatically actuating the electromagnetic actuating means and the trip mechanism including the releasable lever in response to another predetermined overcurrent condition; whereby the circuit breaker is operable either with or without at least one of said means.

4,660,010

ROTARY LATCHING SOLENOID

James E. Burton, Vandalia, Ohio, assignor to Ledex, Inc., Vandalia, Ohio

Filed Oct. 15, 1985, Ser. No. 787,410
Int. Cl.⁴ H01F *7/08*
U.S. Cl. 335—228 **14 Claims**



1. A rotary latching solenoid, comprising:

electric energizing coil means,

a case receiving said coil means therein,

armature means extending through said coil means and said case and being linearly movable relative thereto and rotatably movable relative thereto about a central longitudinal axis of said armature means, said armature means having a raised sector with a sector face extending from said axis, and a central shaft extending along and coaxial with said axis,

base means receiving said shaft therethrough and positioned adjacent to said armature means, said base means having a raised sector with a cooperating sector face extending radially from said axis,

means for rotating and axially displacing said armature means relative to said base means to a latched position when said coil means is energized, wherein said sector faces of said armature and said base are adjacent to and facing each other, and to an unlatched position, wherein said sector faces are rotationally spaced from each other, and

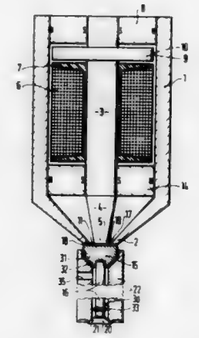
permanent magnet means positioned to form a flux flow path across said sector faces when said armature means is in said latched position, whereby said armature means is held in said latched position.

4,660,011

POLARIZED ELECTROMAGNET FOR A FUEL INJECTION VALVE

Ferdinand Reiter, Markgrönningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 8, 1986, Ser. No. 860,936
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1985, 3520142
Int. Cl.⁴ H01F *7/08*
U.S. Cl. 335—230 **17 Claims**



1. An electromagnet for controlling a fuel injection valve for fuel injection systems in internal combustion engines, having an armature (**15**) an outer (**1**) and inner (**3**) core of soft-magnetic material, a magnetic coil (**6**) within said outer core surrounding said inner core, a first permanent magnet (**8, 40**) disposed on one side of said magnetic coil (**6**) and a second permanent magnet (**14**) disposed on the other side of said magnetic coil; said second permanent magnet (**14**) is annular in embodiment and is radially magnetized; a first working air gap (**18**) formed between said outer core (**1**) and said armature (**15**) and a second working air gap (**19**) formed between said inner core (**3**) and the armature; and said permanent magnets (**8, 14, 40**) are poled such that their magnetic fields at the working air gaps (**18, 19**) extend counter to the electromagnetic field induced by the magnetic coil (**6**).

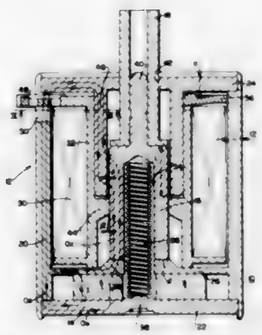
VOL 1077 ISS 3 AP 21 1987 UMI

4,660,012

POLARIZED ELECTROMAGNETIC RELAY WITH MAGNETIC LATCHING FOR AN ELECTRIC CIRCUIT BREAKER TRIP RELEASE

Michel Bonnias, Lax, and Pierre Schaeller, Grenoble, both of France, assignors to Merlin Gerin, Grenoble France

Filed Nov. 4, 1985, Ser. No. 794,465
Claims priority, application France, Nov. 22, 1984, 8418009
Int. Cl.[4] H01F 7/08
U.S. Cl. 335—234 10 Claims



1. Polarized electromagnetic relay with magnetic latching, notably of a trip device for an electric circuit breaker, comprising :

a fixed magnetic circuit made of ferromagnetic material comprising a tubular frame affixed at its opposite ends to a first and a second parallel flange, extending perpendicularly to the longitudinal axis of the frame,

an annular permanent magnet with axial magnetization whose coplanar front surfaces of opposed polarities come into contact respectively with the internal wall of the first flange and one of the faces of a magnetic flux-diverter,

a moving armature mounted to slide axially according to the direction of the longitudinal axis between a latched position and a released position, said armature being urged into the released position by a return spring, and in the latched position being pressed against the flux-diverter by the magnetic attraction force of the permanent magnet which is of greater intensity than the bias of the return spring,

an actuating member associated with the armature and passing axially through an opening in the second flange, the armature and actuating member assembly forming the moving assembly of the relay,

a first axial air gap (d) corresponding to the gap between the flux-diverter and the moving armature,

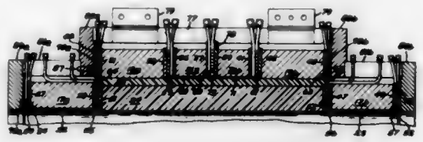
a trip coil coaxially mounted on an insulating bushing inside the frame surrounding the moving armature and extending axially between the flux-diverter and the second flange, excitation of said coil causing in the magnetic circuit a magnetic flux (ϕ_C) which opposes the polarization flux (ϕ_U) of the permanent magnet in the first air gap (d), so as to release the armature and enable it to move from the latched position to the released position by means of the return spring, wherein the second flange of the magnetic circuit is fitted with a fixed internal sleeve of tubular shape made of ferro-magnetic material, extending partially in an annular space located coaxially between the bushing and the moving armature, the latter being separated from said sleeve by a second radial air gap (j1) which remains uniform during the translation movement of the armature, and the axial overlap distance (L) of the armature by the sleeve in the latched position of the relay is greater than the thickness (11) of the second flange and/or than that (12) of the frame.

4,660,013

COMPACT WHOLE BODY RESISTIVE MAGNETIC RESONANCE IMAGING MAGNET

Evangelos T. Laskaris, Schenectady, and Madabushi V. Chari, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 23, 1985, Ser. No. 779,366
Int. Cl.[4] H01F 5/00
U.S. Cl. 335—299 16 Claims



1. A resistive magnet comprising:

a cylindrical radio frequency/gradient coil assembly;

a first and second cylindrically shaped main coil situated coaxially on either side of said radio frequency/gradient coil assembly, said first and second main coil and said radio frequency/gradient coil assembly all having the same inside diameter, defining a magnet bore;

a cylindrical correction coil assembly surrounding said radio frequency/gradient coil assembly;

means for securing said first and second cylindrically shaped main coil to said cylindrical correction coil assembly, said cylindrical coil assembly providing axial support for said first and second main coil; and

a third cylindrical main coil surrounding said correction coil.

4,660,014

ELECTROMAGNETIC PULSE ISOLATION TRANSFORMER

Eric P. Wenaas, Del Mar, and Ralph M. Wheeler, San Diego, both of Calif., assignors to Jaycor, San Diego, Calif.

Filed Jun. 19, 1985, Ser. No. 747,000
Int. Cl.[4] H01F 15/04
U.S. Cl. 336—84 C 14 Claims

1. An isolation transformer for connection between a source of alternating current power and electronic components, the operation of which is adversely affected by voltage excursions caused by electromagnetic pulses, said transformer comprising:

a core defining at least one window;

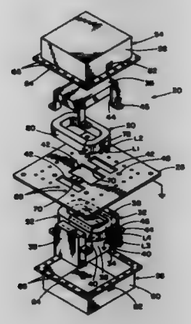
a primary coil surrounding a first portion of said core and extending through a said at least one window in said core;

a secondary coil, spaced from said primary coil, surrounding a second portion of said core and extending through a said at least one window in said core;

a metallic isolation plate disposed between said coils;

a metallic housing mounted on said plate and receiving said primary coil and the portion of said core on the primary coil side of said plate; and

an electrically conductive coating disposed about said primary coil and insulated therefrom, said coating being electrically connected to said housing so that said housing, said plate and said coating form a Faraday cage, said plate extending beyond said housing and forming a mounting flange for said transformer.

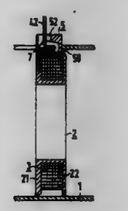


4,660,015

COIL BODY AND CONNECTIONS TO AN EXTERNAL LINE

Albin Finck, Gerbrunn; Ronald Gleixner, Ochsenfurt; Horst Hoechsmer, Sugenheim, and Wolfgang Pieper, Wuerzburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 7, 1985, Ser. No. 763,406
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1984, 3431471
Int. Cl.[4] H01F 15/10
U.S. Cl. 336—192 4 Claims



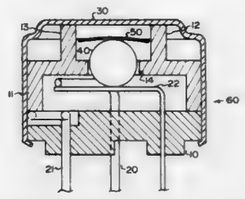
1. A coil body for a small synchronous motor, comprising a coil winding inserted on a winding bobbin between first and second frontal flanges and having insulated and strain-relieved connections to external connecting lines passing through axially open slotted openings of a swivel cover of one-piece construction with the second flange and fastened radially outside to the first frontal flange; coil winding ends of the inserted winding and conductor ends of the external connecting lines each connected to connecting pins which are located in the first frontal flange and which radially overhang the frontal flanges; said coil body formed by connecting the conductor ends, which have their insulated ends radially pointed to the outside parallel to the connecting pins which radially extend from the first frontal flange, to the connecting pins; bending the ends of the connecting pins toward the second frontal flange; folding over the swivel cover and clamping the connecting lines above the conductor ends into said axially open slotted openings of the swivel cover, said slotted openings maintaining the strain-relieved connections with the connecting lines extending radially from the cover.

4,660,016

MINIATURE THERMAL SWITCH ELONGATED BIMETALLIC ELEMENT

Dennis K. Karr, Sykesville, Md., assignor to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 549,942, Nov. 9, 1983. This application Mar. 15, 1985, Ser. No. 712,457
Int. Cl.[4] H01H 37/04, 37/52
U.S. Cl. 337—372 4 Claims



1. A thermal switch comprising:

a bistable bimetallic element having two ends lying generally in a plane, comprising first and second layers, and having a generally rectangular shape with a length between said ends greater than the width thereof,

first and second electrical contacts,

means for moving at least one of said contacts between a first position in which said contacts make an electrical connection, and a second position in which said contacts are separated; said means including a spacer member, and means capturing said spacer member to allow movement of said member only in a given direction; and said means for moving being arranged to move said at least one of said contacts into a given one of said positions when said bimetallic element is in one stable condition, and

means for constraining the position of said bimetallic element, said means for constraining including said spacer member; first and second substantially planar abutment surfaces disposed substantially in a plane perpendicular to said given direction, and arranged to be engaged by said ends when said element is in said one stable condition, said element having clearance to move in said given direction when in the other stable condition; first and second substantially parallel abutment surfaces, spaced apart a distance greater than said width such that the element fits therebetween with clearance allowing limited movement in the width direction; and means constraining movement of said element in the length direction and having clearance with respect to said ends, whereby said bimetallic element is free-floating when in said other stable condition.

4,660,017

CHIP-TYPE VARISTOR

Takamichi Momoki, Nagai, and Shunichi Harada, Yamagata, both of Japan, assignors to Marcon Electronics Co., Ltd., Nagai, Japan

Filed Feb. 12, 1986, Ser. No. 828,713
Claims priority, application Japan, Mar. 4, 1985, 60-31439[U]
Int. Cl.[4] H01C 7/10
U.S. Cl. 338—21 7 Claims

1. A chip-type varistor comprising:

a platelike varistor element made of a sintered body having rounded sides and corners;

a pair of platelike electrodes of a first polarity and different lengths formed on two major surfaces of said varistor element and electrically insulated from each other;

a pair of platelike electrodes of a second polarity and different lengths formed on two major surfaces of said varistor element and electrically insulated from each other, one of

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said electrodes of the second polarity partially overlapping one of the electrodes of the first polarity;

a first external electrode formed on one of the two ends of said varistor element and connecting the electrodes of the first polarity; and





a second external electrode formed on the other end of said varistor element and connecting the electrodes of the second polarity,

wherein that portion of said varistor element which is sandwiched by the overlapping portions of the electrode of the first polarity and the electrode of the second polarity provides varistor characteristics.

4,660,018

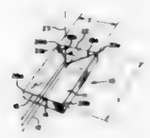
HALL EFFECT PROBE

Victor W. Hatch, 5200 SE. Jennings Ave., No. 1, Milwaukie, Oreg. 97222

Continuation-in-part of Ser. No. 629,580, Jul. 11, 1984, abandoned. This application Dec. 17, 1984, Ser. No. 682,810

Int. Cl.[4] H01L *43/02*

U.S. Cl. 338—32 H 11 Claims





1. A Hall effect probe including a rectangular wafer having a substantially planar surface comprising:

(a) an input lead attached to said wafer at a mid-point of a first edge;

(b) first and second output leads attached to said wafer at respective corners of a second edge of said wafer;

(c) said second edge being parallel to said first edge;

(d) said leads extending towards each other across the surface of said wafer to an obtuse angle with respect to said first edge toward a point on the surface of said wafer, at which point said first and second output leads intersect one another; and

(e) wherein the area of the surface of the wafer bounded by said first and second output leads and by said second edge of said wafer is approximately equal to a predetermined fraction of the total surface area of the wafer, said fraction determined by the ratio of the length of the second edge to the total perimeter of the wafer.

4,660,019

SWITCH WITH SPEED CONTROL

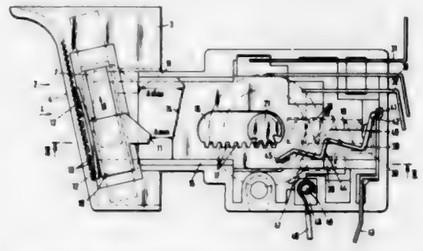
Karl-Heinz Bauer, Bad Neustadt/Saale; Franz Rutterschmidt, Heustreu, and Gerhard Spiller, Saal/Saale, all of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co., Bad Neustadt/Saale, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 671,632

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1983, 3342474

Int. Cl.[4] H01C *10/38*

U.S. Cl. 338—179 15 Claims



1. A switch having a switch cover and a key displaceable longitudinally with said cover, a spring positioned to provide opposing force to displacement of said key, an electrical switching bridge positioned to be displaced to a switched position at the beginning of said key displacement, and a variable resistor operatively connected to be varied as a function of the longitudinal displacement of said key, characterized by a slide mounted so as to be displaceable in a crosswise direction on said key, said slide acting as a variable limiting function for the permitted range of longitudinal displacement of said key.

4,660,020

TURN SIGNAL CANCELLING APPARATUS FOR USE IN VEHICLES

Yukio Miyamaru, Tokyo; Kaoru Hatanaka, Saitama; Shigeo Kawada, Saitama, and Yasuo Shibata, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 417,878, Sep. 14, 1982. This application Nov. 22, 1985, Ser. No. 800,711

Claims priority, application Japan, Sep. 16, 1981, 56-145773

Int. Cl.[4] B62J *3/00*; B60Q *1/34*

U.S. Cl. 340—134 2 Claims

1. A turn signal cancelling apparatus for use in a motorcycle having a turning handlebar, comprising:

speed detecting means for providing a speed signal responsive to the speed of said motorcycle;

handlebar turning angle detecting means providing an output signal responsive to the turning angle of said handlebar;

switch means for controlling a pair of blinker lamps, said switch means being manually operable by a driver of said motorcycle and having selectable positions including a neutral position and a pair of operative positions for selectively activating said blinker lamps, said switch means providing a selection signal responsive to the selection of said positions;

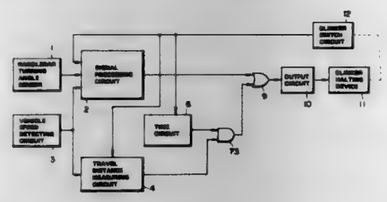
electrical returning means for driving said switch means to

return from one of said operative positions to said neutral position;

time measuring means for receiving said selection signal so as to provide an output signal responsive to the time elasped after said blinker lamp has been activated;

distance measuring means for receiving said speed signal and said selection signal so as to provide an output signal responsive to the distance covered by said motorcycle after said blinker lamp has been activated;

an AND gate for receiving said output of said time measuring means and said output of said distance measuring means so as to provide an output signal;



an OR gate for receiving said output of said turning angle detecting means and said output of said AND gate so as to provide an output signal;

said electrical returning means being connected with said OR gate for driving said switch means upon receipt of said output signals of said OR gate;

said turning angle detecting means comprises a return angle detecting means for detecting the return angle of said handlebar by comparing the turning angle of said handlebar with the maximum turning angle of said handlebar after said blinker lamp has been activated; and

said return angle detecting means has a peak holding circuit.

4,660,021

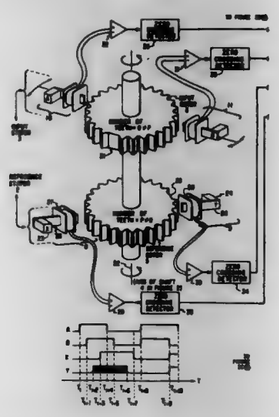
METHOD AND APPARATUS FOR REDUCING CROSSTALK EFFECTS UPON PHASE MEASUREMENT

Robert W. Leiby, 2024 W. Stuart, Fort Collins, Colo. 80526

Division of Ser. No. 479,046, Mar. 25, 1983, Pat. No. 4,567,462. This application Aug. 26, 1985, Ser. No. 770,334

Int. Cl.[4] G04C *9/06*

U.S. Cl. 340—347 P 12 Claims



1. A method of reducing the effects of crosstalk upon a phase measurement between two signals comprising the steps of:

generating a reference signal at a first frequency;

generating a data signal at a second frequency unequal to the first frequency, there being K-many cycles of the data signal in a length of time L equal to that for J-many cycles of the reference signal, where J and K are unequal integers;

selecting a point in time as a reference time;

detecting reference and data signals zero crossings that are affected by the crosstalk;

causing the effect of the crosstalk upon the reference signal to achieve general self-cancellation by determining for one or more integral multiples of J-many consecutive cycles of the reference signal and relative to the reference time the average time of occurrence of a reference signal zero crossing;

causing the effect of the crosstalk upon the data signal to achieve general self-cancellation by determining for an equal number of integral multiples of K-many consecutive cycles of the data signal and relative to the reference time the average time of occurrence of a data signal zero crossing; and

measuring the phase of the data signal relative to the reference signal by observing what portion of the length of time L is the difference between the average time of occurrence for a reference signal zero crossing and the average time of occurrence for a data signal zero crossing.

4,660,022

SYSTEM FOR GUIDING THE BLIND

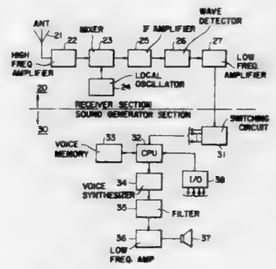
Takeshi Osaka, 439-18, Kitairiso, Sayama-City, Saitama-Prefecture, Japan

Filed Oct. 29, 1984, Ser. No. 665,772

Claims priority, application Japan, Dec. 6, 1983, 58-229113

Int. Cl.[4] G08B *3/10*

U.S. Cl. 340—407 4 Claims



1. A system for guiding a blind person to a preselected destination comprising:

at least one receiver/sound generator unit disposed at said destination including a sound generator storing data of a predetermined unique content, and a receiver receiving an electromagnetic control signal from outside to actuate said sound generator, said sound generator producing unique sounds indicative of said destination in response to said control signal; and

a portable transmitter/control unit carried by said blind person for producing said electromagnetic control signal, upon activation by said blind person.

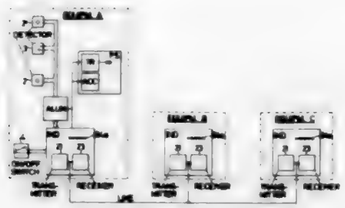
VOL 1077 ISS 3 AP 21 1987 UMI

4,660,023

LOCALITY SUPERVISION SYSTEM

Rolf A. B. Thera, Lillherabyvagen 8, S-191 45 Sollentuna, and Hans G. Holmgren, Bergatersvagen 12, S-191 40 Sollentuna, both of Sweden

Filed Jul. 25, 1984, Ser. No. 634,450
Int. Cl.[4] G08B *19/00*
U.S. Cl. 340—521 **12 Claims**



1. A protective system for a plurality of sites, like homes, each having local apparatus in communication with corresponding local apparatus in the other of said plurality of sites, said local apparatus at a given site comprising:

detector means for sensing an abnormal condition;

means for generating an identification signal unique to said given site;

means coupled to said detector means for modifying said identification signal in response to the detection of an abnormal condition;

transmitter means coupled to said generating means and said modifying means for transmitting a site identification signal to the other sites, said site identification signal being a combination of the identification signal and the modified identification signal;

site recognition means obtaining said site identification signal from the other sites for identifying each of said plurality of sites from its identification signal;

determining means coupled to said recognition means for generating an alarm signal in response to a modified identification signal and for associating the abnormal condition with the particular one of said sites where it occurred;

indicator means coupled to said recognition means and said determining means for displaying the condition of each of said sites; and

control means for repeatedly initiating at preset intervals a cycle of generating an identification signal for said given site with said generating means, modifying such identification signal with said modifying means when an abnormal condition is detected at said given site, transmitting said site identification signal with said transmitter means, obtaining identification signals from others of said sites with said site recognition means, determining an abnormal condition in any of said sites with said determining means, and displaying the condition of each of said sites with said indicator means.

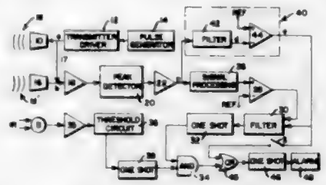
4,660,024

DUAL TECHNOLOGY INTRUDER DETECTION SYSTEM

Richard L. McMaster, Pittsford, N.Y., assignor to Detection Systems Inc., Fairport, N.Y.

Filed Dec. 16, 1985, Ser. No. 809,220
Int. Cl.[4] G08B *19/00, 13/18*
U.S. Cl. 340—522 **7 Claims**

1. A dual-technology intruder detection system comprising first and second intruder-detecting subsystems, each being adapted to detect intrusion by a different technology and to produce an output signal in response to intrusion detection, means for normally activating an alarm in response to the production of output signals from said first and second subsystems within a predetermined time interval, a supervisory circuit, operatively connected to one of said subsystems for producing a supervisory signal in response to a malfunction of said one subsystem, and default means, responsive to said supervisory signal, for causing said alarm-activating means to activate an alarm in response to receipt of an output signal from only the other of said subsystems.

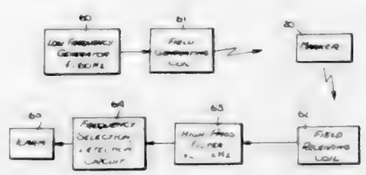


4,660,025

ARTICLE SURVEILLANCE MAGNETIC MARKER HAVING AN HYSTERESIS LOOP WITH LARGE BARKHAUSEN DISCONTINUITIES

Floyd B. Humphrey, Bradfordwoods, Pa., assignor to Sensormatic Electronics Corporation, Boca Raton, Fla.

Filed Nov. 26, 1984, Ser. No. 675,005
Int. Cl.[4] G08B *13/24*
U.S. Cl. 340—572 **44 Claims**



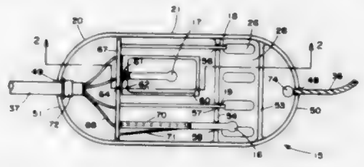
1. A marker for use in an article surveillance system in which an alternating magnetic field is established in a surveillance region and an alarm is activated when a predetermined perturbation to said field is detected, said marker comprising a body of magnetic material with retained stress and having a magnetic hysteresis loop with a large Barkhausen discontinuity such that exposure of said body to an external magnetic field, whose field strength in the direction opposing the magnetic polarization of said body exceeds a predetermined threshold value, results in regenerative reversal of said magnetic polarization, and means for securing said body to an article to be maintained under sureveillance.

4,660,026

FLUID STATE DETECTOR

Brian L. Chandler, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jan. 24, 1986, Ser. No. 822,268
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—604 **7 Claims**



1. Apparatus for detecting the presence of fluids comprising:

a first monitoring element having a surface exposed for contact with the fluids to be monitored;

a second monitoring element having a surface encapsulated in a thermal insulator;

each of said monitoring elements having an electrical characteristic that changes with temperature; and

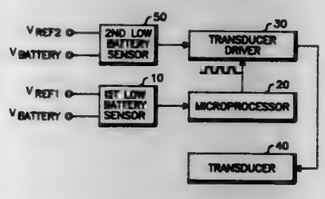
electrical circuit means for heating said monitoring elements, said circuit including output means responsive to changes in said characteristic to provide an indication of the fluid environment of said elements.

4,660,027

REDUCED POWER CONSUMPTION LOW BATTERY ALERT DEVICE

Walter L. Davis, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1984, Ser. No. 646,618
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—636 **19 Claims**



1. A depleted battery indicator for a device being powered by a battery, said battery indicator comprising:

audio annunciator means for providing an audible alert;

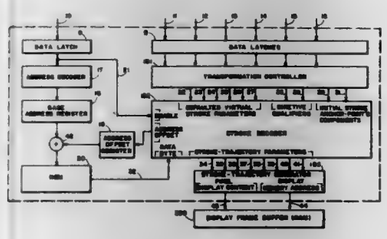
circuit means, connected to said annunciator means, for determining when said battery has been depleted to a first predetermined voltage and generating a first signal to activate said annunciator means whereby said alert is provided at a first power level and for determining when said battery has been depleted to a second predetermined voltage and generating a second signal to further activate said annunciator means whereby said alert is provided at a second power level wherein said second power level is less than said first power level, thereby prolonging battery life.

4,660,028

STROKE-VECTOR CHARACTER GENERATOR

Oliver T. Yu, Vancouver, Canada, assignor to Microtel Limited, Burnaby, Canada

Filed Nov. 1, 1984, Ser. No. 667,231
The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.
Int. Cl.[4] G09G *1/10*
U.S. Cl. 340—739 **17 Claims**



1. In an electronic graphic display system, a character generator for generating a series of signals for use in displaying characters on a display screen, said generator comprising:

means for receiving a first data signal defining the character type to be displayed, the character field dimensions, and the character drawing point;

first memory means for storing a plurality of encoded binary valued stroke-drawing directives for the particular character defined by said first data signal;

second memory means for storing encoded initial values for each character-shape dependent stroke attribute, said initial values being independent of the character type;

decoding means for receiving said encoded stroke-drawing directives corresponding to the character type specified by said first data signal and for receiving said encoded initial values, said decoding means decoding said encoded stroke-drawing directives and said encoded initial values and sequentially applying the decoded drawing directives to the decoded initial values thereby generating a series of stroke signals representing a series of interconnected stroke-vectors;

scaling means for receiving said stroke signals and said first data signal, said scaling means generating a series of scaled stroke signals by scaling the length of each stroke-vector so that the character image is scaled to the character field dimensions defined by said first data signal; and

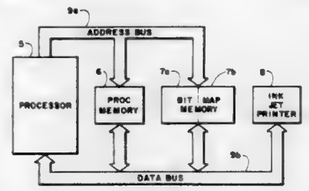
conversion means converting said scaled stroke signals into a series of signals designating the start/stop position of each interconnected stroke-vector, said series of signals defining a character image for the character type defined by said first data signal.

4,660,029

METHOD OF PROVIDING RASTER INFORMATION FOR A GRAPHICS DISPLAY EMPLOYING LINKED LISTS

Pavel Houda; Richard A. Springer, both of Tualatin, and Rodney B. Belshee, Tigard, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 6, 1984, Ser. No. 628,182
Int. Cl.[4] G09G *1/14*
U.S. Cl. 340—744 **9 Claims**



1. The method of providing information for a graphics display in response to identification, in the form of high level graphics commands, of graphics to be portrayed, comprising the steps of:

receiving commands for said graphics,

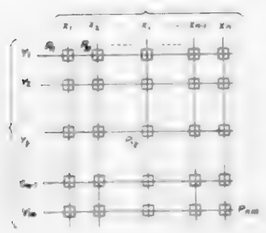
dividing said commands into lists related to regions of the display,

transforming the commands sequentially by lists into information for writing to respective regions of said display,

and transferring commands from one list to a crossing list as they relate to graphics extending beyond a currently written region of said display into another region whereby to continue the writing of a transferred command in the last mentioned region, including employing said crossing list in writing the last mentioned region.

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4,660,030
LIQUID CRYSTAL VIDEO DISPLAY DEVICE
Shuji Maezawa, Suwa, Japan, assignor to Seiko Epson Kabushiki Kaisha, Japan
Filed May 29, 1984, Ser. No. 615,022
Claims priority, application Japan, May 31, 1983, 58-96509
Int. Cl.[4] G09G 3/36
U.S. Cl. 340—784 13 Claims



1. A liquid crystal video display device for receiving a video signal generated in accordance with an interlace method comprising:

driving means for receiving a video signal and generating scanning signals and video information signals in response to said video signals;

liquid crystal display means; and

coupling means for coupling said driving means to said display means,

said display means including:

a first substrate formed with a plurality of scanning electrodes, said scanning electrodes being positioned substantially parallel to the direction of video signal scanning;

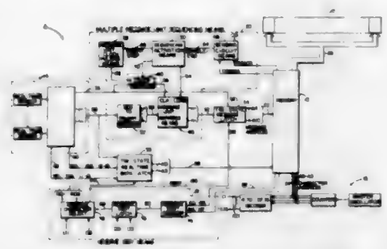
a second substrate formed with a plurality of signal electrodes, said signal electrodes being positioned substantially perpendicular to the direction of said scanning electrodes, wherein picture elements are defined at the intersection of each of said scanning electrodes and signal electrodes, said scanning electrodes being grouped into at least two interlaced sets;

liquid crystal material held between said first and second substrates;

a plurality of non-linear elements, at least one of said elements being provided at each intersection of said scanning electrodes and signal electrodes,

said driving means providing first scanning signals to a first set of scanning electrodes, said first scanning signals being shifted sequentially among the scanning electrodes of said first set at least once each scanning period; providing second scanning signals to a second set of scanning electrodes, said second scanning signals being shifted among the scanning electrodes of said second set so that the second scanning signals are applied to the scanning electrodes of said second set adjacent a driven scanning electrode of said first set, said second scanning signals partly overlapping the scanning signal applied to said driven scanning electrode; and providing a video information signal to the signal electrodes during a period which is a fraction of a scanning period whereby a non-interlace type display in which each of the picture elements is driven each scanning period is produced.

4,660,031
SYSTEM FOR DISPLAYING ALPHANUMERIC MESSAGES
Gerald L. Buchas, Bristol, Conn., assignor to The Arthur G. Russell Company, Incorporated, Bristol, Conn.
Filed Aug. 5, 1983, Ser. No. 520,630
Int. Cl.[4] G09G 3/20
U.S. Cl. 340—792 15 Claims



1. An alphanumeric visual display system for displaying a preprogrammed message made up of a number of complete message units in a sequence, said system comprising:

a unitary visual display device having a limited number of character stations at each of which any one of a multiple of characters may be displayed by the application thereto of a set of binary coded signals;

memory means for storing a plurality of complete message units, each of said complete message units including a plurality of characters not greater in number than the number of character stations of said display device and having binary coded signals representative of each character to be displayed at each of the number of character station locations stored at corresponding character locations in said memory means, said complete message units forming a plurality of complete messages and at least one of the complete messages is made up of a number of the complete message units in sequence;

sequencing means for causing each of said complete message units of a complete message to be displayed by said visual display device in a time-spaced relationship one complete message unit at a time;

first signal means for indicating the first complete message unit in a sequence of complete message units in a complete message, each of said complete message units having one predetermined character location in said memory for storing a first binary coded signal representative of said first signal means;

first sensing means for sensing said first signal means, and

means responsive to the sensing of said first signal means for activating said sequencing means.

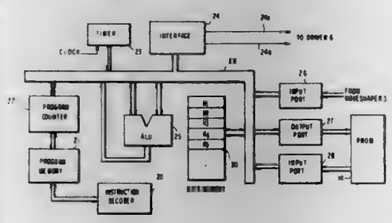
4,660,032
RADIO PAGING RECEIVER OPERABLE ON A WORD-SCROLLING BASIS
Kazuyuki Tsunoda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Division of Ser. No. 838,205, Mar. 10, 1986, which is a continuation of Ser. No. 484,037, Apr. 11, 1983, abandoned. This application Aug. 14, 1986, Ser. No. 896,369
Claims priority, application Japan, Apr. 13, 1982, 57-62022
Int. Cl.[4] G08B 1/00
U.S. Cl. 340—825.44 2 Claims

1. A paging receiver adapted to receive a radio frequency paging signal containing a preamble, a subscriber address code and a message code represented by a plurality of blocks of characters and blanks between successive characters, comprising:

a linear array of display elements;

a memory having a plurality of storage locations for storing said message code therein; and

data processing means responsive to said preamble for detecting a match between the received address code and a predetermined code, storing said message code into said memory in response to the detection of said match, reading a first sequence of characters including the beginning of a word from said memory and displaying same on said display elements, sequentially detecting a blank between successive characters stored in said memory, reading a second sequence of characters including the beginning of a word from the storage positions of said memory immediately following the detected blank, and updating said display elements with the characters of the second sequence read out of the memory such that the beginning of said updated display is the start of a word;



wherein said data processing means comprises a microcomputer programmed to execute the following steps:

(a) reading a sequence of characters out of storage locations of said memory which are specified by a variable and displaying same on said display elements;

(b) introducing a first, longer pause;

(c) detecting a blank in a storage location which immediately follows said sequence;

(d) if said blank is not detected, varying a variable by one;

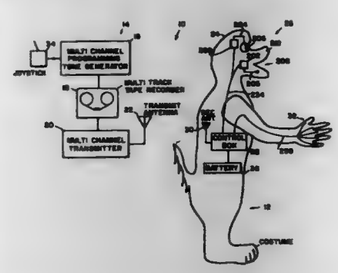
(e) reading a sequence of characters out of storage locations of said memory which are specified by said variable and display elements;

(f) introducing a second, shorter pause;

(g) repeating the steps (c) to (f) until said blank is detected in the step (c);

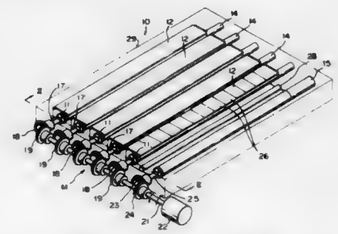
(h) varying said variable by one to repeat the steps (a) to (g).

4,660,033
ANIMATION SYSTEM FOR WALK-AROUND COSTUMES
Gordon C. Brandt, 1595 Noe St., Suite 11, San Francisco, Calif. 94131-2365
Filed Jul. 29, 1985, Ser. No. 760,001
Int. Cl.[4] A63H 5/00; H04Q 7/00; H01H 5/20
U.S. Cl. 340—825.72 17 Claims



1. A full-size walk-around costume apparatus comprising a costume, including a movable mouth, and a programming/-playback system for controlling the movements of said mouth of said costume in synchrony with a prerecorded audio track, said programming/playback system including means for generating a tone, means for controlling the amplitude of said tone, means for converting said tone into a series of pulses to form a pulse chain which corresponds to said amplitude of said tone, means for modulating a carrier signal with said pulse chain and means for transmitting said modulated pulse chain, said costume further including means for receiving said modulated pulse chain, means for converting said modulated pulse chain into an electrical pulse, and means for controlling the position of said mouth with said electrical pulse.

4,660,034
INFORMATION INPUT MACHINE
Toshinobu Futagawa, 3-3-23, Nishishinjuku, Shinjuku-ku, Tokyo, Japan
Filed Dec. 3, 1984, Ser. No. 677,178
Int. Cl.[4] H04Q 1/00; G08B 5/00
U.S. Cl. 340—825.79 15 Claims



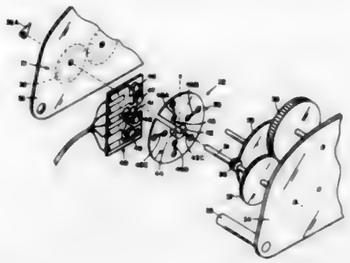
1. An input machine for inputting information corresponding to a desired item printed on film to select desired data from a data base, said machine comprising, a plurality of planar support members arranged substantially parallel to each other and lying substantially in a single plane, a plurality of films on each of whcih the plurality of items to be inputted are printed and which are adapted to be shifted on the corresponding planar support members, means for shifting the films simultaneously on the corresponding support members, a plurality of first rollers, said each film being wound, from its one end, on a corresponding first roller, a second roller, all of said film being wound together, from the other ends thereof, on the second roller, and said means for shifting the films comprising means for selectively rotating all of the first rollers and second roller.

4,660,035
REMOTE MONITORING SYSTEM
Gary R. Hoffman, Glen Arm, Md., assignor to General Services Engineering, Inc., Baltimore, Md.
Division of Ser. No. 374,626, May 3, 1982, Pat. No. 4,608,563. This application May 23, 1985, Ser. No. 737,092
Int. Cl.[4] G08C 19/16
U.S. Cl. 340—870.02 4 Claims

1. Apparatus for the remote reading of a household-type of meter having a meter portion provided with a front panel for a plurality of decade dials, including a unit decade dial cooperating with a point mounted on a rotating shaft journaled in the panel, the apparatus comprising a printed circuit board having sensing means carried thereon, means for mounting the board to the back of the panel, the board having a side edge with an arcuate cut-out formed therein to receive the shaft, whereby the board may be mounted to the panel without requiring a disassembly of the meter portion, a wheel comprising a relatively-thin disc mounted on the shaft rearwardly of the printed circuit board and in close juxtaposition thereto, the disc having an open radial slot formed therein for receiving the shaft as the

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disc is passed laterally over the shaft, whereby the disc may also be mounted on the shaft without requiring a disassembly of the meter poriton, means on the disc for cooperation with the sensing means on the printed circuit board for generating a



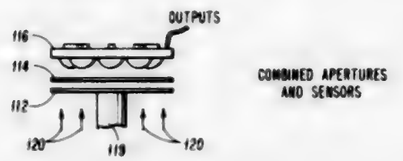
signal at a predetermined positon of the shaft, an electronic control circuit responsive to the signal for generating an output pulse, and a remote counter responsive to the output pulse for providing a remote indication of the accumulated meter reading.

4,660,036

AMPLIFIED MOTION ENCODER

Donald E. Mosier, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 17, 1985, Ser. No. 734,998
Int. Cl.[4] G08C *19/36*
U.S. Cl. 340—870.29 **5 Claims**



1. An apparent motion amplifier comprising first and second shutter means disposed in a rotatably attached and spaced parallel relationship, each having a respective plurality of apertures evenly spaced in an annular pattern, coordinated with respect to each other, one shutter having fewer apertures than the other, said first and second shutter means coincident on a single axis of rotation and for amplifying apparent motion, wherein one of said shutter means has a coarse position index aperture disposed thereon having a minimum size defined by the maximum number of adjacent and simultaneously activated apertures in said first shutter means, plus at least one.

4,660,037

CURRENT LOCATION INDICATION APPARATUS FOR USE IN AN AUTOMOTIVE VEHICLE

Yukinobu Nakamura, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,132
Claims priority, application Japan, Jan. 28, 1982, 57-12004; Mar. 3, 1982, 57-33411
Int. Cl.[4] H04N *7/18*
U.S. Cl. 340—990 **3 Claims**

1. A current location indicating apparatus for use in an automotive vehicle, comprising:
- current travel distance detection means for detecting a current cumulated travel distance of the vehicle;
- bearing detection means for detecting a current bearing or heading of the vehicle following the current travel distance of the vehicle;
- signal processing means for obtaining a current locational data in terms of two-dimensional coordinates of the moving vehicle in accordance with the outputs from both said detection means while controlling the entire system;
- path of travel store means for sequentially storing the locational data in terms of the two-dimensional coordinates varying from time to time which are obtained from said signal processing means and holding the contents thereof as current continuous locational information on the moving vehicle;
- display means having a display screen;
- map or geographic image information store medium means for preliminarily storing map information about an image of a map, said map being divided by a grid into component maps having a size thereof corresponding to a quarter of the total area of said display screen, said map information being prepared pixel by pixel in the raster mode with respect to respective said component maps;



- store medium regeneration means for reading out said map information from said store medium means;
- said signal processing means controlling said display means so as to indicate visually a map or geographic image in accordance with the current read-out map information and to display with a marking showing the state of travel of the vehicle on said display screen in accordance with the locational data stored in said path of travel store means;
- said signal processing means controlling said store medium regeneration means to read out said map information with respect to at least four of said component maps which are selected by said signal processing means in accordance with current locational change of said marking in such a manner that said marking may constantly exist within a central area of said display screen; and
- manual operating means connected to said signal processing means for giving commands to said signal processing means so as to selectively specify an area map desired to be shown on said display screen of said display means and properly initialize said marking on said display screen.

4,660,038

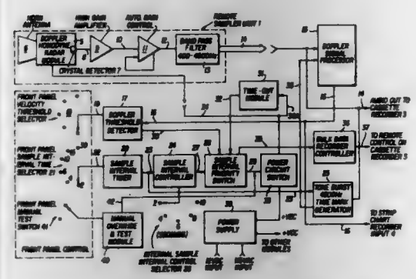
DOPPLER DISTROMETER FOR THE MEASUREMENT OF HYDROMETER SIZE DISTRIBUTION

Eugene F. Grenekar, III, Marietta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Filed Oct. 28, 1983, Ser. No. 546,311
Int. Cl.[4] G01S *13/95*
U.S. Cl. 342—26 **17 Claims**

1. An apparatus for determining a size distribution of hydrometeors, comprising:
- source means for providing continuous wave radiation;
- reflecting means coupled to said source means for directing said radiation toward said hydrometeors;
- receiving means cooperating with said source means for receiving radiation reflected by said hydrometeors;
- detector/filter means coupled to said receiving means for converting said reflected radiation into a first signal constituting a velocity spectrum of said hydrometeors;

- recording means for recording said first signal in electrical form; and



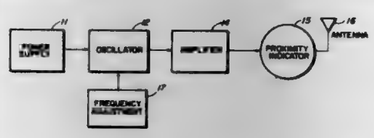
- transforming means coupled to said recording means for transforming said first signal into a signal constituting said size distribution of said hydrometeors.

4,660,039

SYSTEM FOR LOCATING A SPORT OBJECT

Mary S. Barricks, 320 E. Brook Hollow, Phoenix, Ariz. 85022, and Robert A. Yereance, 6942 W. Olive Ave., Phoenix, Ariz. 85348

Filed Feb. 14, 1985, Ser. No. 701,716
Int. Cl.[4] G01S *13/04*
U.S. Cl. 342—27 **18 Claims**



14. A sports projectile having apparatus affixed thereto for location by a source of electrical signals having a selected frequency, said projectile comprising:
- (a) an outer surface bounding the peripheral region of said projectile; and
- (b) at least one conducting strip formed on the outer surface of the sports projectile, said conducting strip having an effective length that is N quarter wavelengths at the selected frequency, where N is an integer, said conductive strip increasing the electrical load on the signal source when the distance therebetween is reduced.

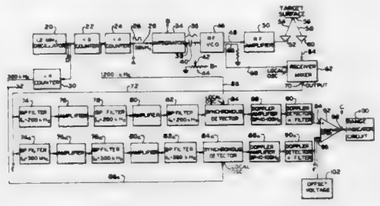
4,660,040

TARGET RANGE SENSING APPARATUS

Norman Grandos, Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Jul. 8, 1985, Ser. No. 752,711
Int. Cl.[4] G01S *13/32*
U.S. Cl. 342—128 **7 Claims**

1. Target range sensing apparatus comprising:
- first means for generating a frequency modulated signal having a modulating frequency with a predetermined frequency deviation;
- second means coupled to said first means for transmitting said frequency modulated signal to a target;
- third means for receiving a reflection signal of said frequency modulated signal from the target;
- fourth means coupled to said first means and said third means for mixing said first means frequency modulated signal with said third means reflection signal to obtain a mixed signal having harmonics, range related time difference and doppler phase difference components;
- fifth means coupled to said fourth means for tuned filtering of said mixed signal to obtain one harmonic and at least one other harmonic of said harmonics and for detecting said one harmonic signal to obtain a first doppler signal



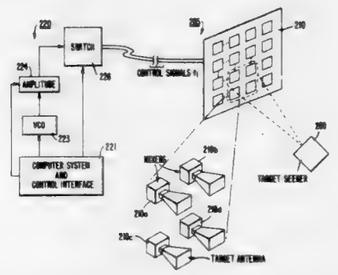
- and detecting said other harmonic signal to obtain a second doppler signal;
- sixth means coupled to said fifth means for comparing the amplitudes of said first and second doppler signals and providing a first output when said first doppler signal is greater in amplitude than said second doppler signal for indicating a predetermined range to the target.

4,660,041

RADAR SCENE SIMULATOR

Vance H. Maples, Kent, and George A. Eastman, Renton, both of Wash., assignors to Boeing Aerospace Company, Seattle, Wash.

Filed Sep. 22, 1983, Ser. No. 534,699
Int. Cl.[4] G01S *7/40*
U.S. Cl. 342—170 **43 Claims**



1. A device for simulating radar scenes to be detected by an FM/CM target seeker radar emitting target seeking signals, said deivce comprising:
- (a) an array of antenna systems sending to said target seeking radar scene simulation signals synchronized with said target seeking signals, each of said antenna systems including means for adjusting the scene simulation signals sent by that system and each of said adjusting means including means for mixing said target seeking signals with at least one of a plurality of control signals to form said scene simulation signals; and
- (b) control means connected to each of said antenna systems in said array for sending said plurality of control signals to each antenna system.

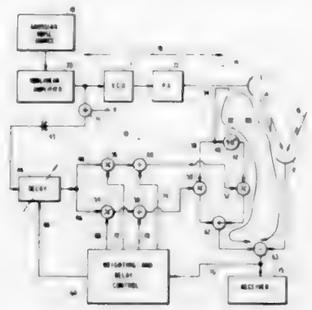
VOL 1077 ISS 3 AP 21 1987 UMI

4,660,042

CANCELLATION SYSTEM FOR TRANSMITTER INTERFERENCE WITH NEARBY RECEIVER

Joel L. Ekstrom, McLean, Va., assignor to Litton Systems, Inc.

Filed Feb. 24, 1984, Ser. No. 583,196
Int. Cl.[4] G01S 7/42; H04B 1/48
U.S. Cl. 342—175 3 Claims



1. A system for cancelling interference in a receiver input from a nearby transmitter producing a transmitter signal which is frequency modulated by a transmitter modulation signal, the system comprising:

a receiving antenna;

first deriving means for deriving a first signal representative of the transmitted signal;

cancellation signal means for deriving cancellation signals from said first signal, said cancellation signals comprising second and third signals bearing an orthogonal phase relationship therebetween;

second deriving means for deriving a fourth signal representative of the modulation associated with said transmitted signal;

said fourth signal being coupled through variable delay means for incorporating a selectable amount of delay into said fourth signal;

cancellation modulation signal means for deriving cancellation modulation signals from said fourth signal, said cancellation modulation signal means comprising fifth and sixth signals;

first and second modulator means;

second signal and said fifth signal being applied to said first modulator means;

said third signal and said sixth signal being applied to said second modulator means;

first adding means for adding the respective outputs of said first and second modulator means;

subtractor means for subtracting the output of said first adding means and the output of said receiving antenna;

the output of said subtractor being fed to the input of said receiver.

4,660,043

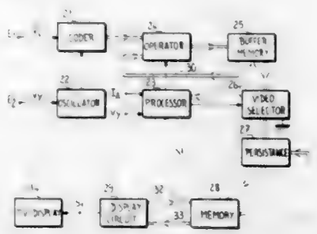
METHOD FOR PROCESSING VIDEO SIGNALS IN A DIGITAL IMAGE TRANSFORMER

Christian Lachaise; Jean-Pierre Andries, and Christian Chagny, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 18, 1983, Ser. No. 514,907
Claims priority, application France, Jul. 20, 1982, 82 12651
Int. Cl.[4] G01S 7/04
U.S. Cl. 342—185 8 Claims

1. In a digital image transformer having an oscillator for generating a sampling frequency in response to sync pulses from a radar and a coder for receiving from an antenna a radar scan of a target video signals represented by polar coordinates, a method of converting the video signals from polar coordinates into cartesian coordinates, the method comprising:

phase locking the sampling frequency to the sync pulses for carrying out distance sampling of the video signals, the sampling frequency being fixed, whereby distance errors made by the radar in determining the distance of the target are eliminated; and



triggering the plotting of the video signals, the triggering being initiated by the sync pulses and the video signals being representative of the values of the rotational angles of the antenna detected at the time of emission of the sync pulses;

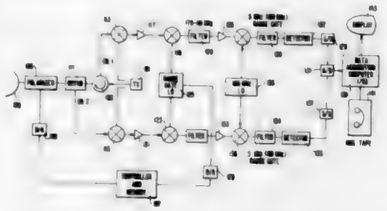
whereby the polar coordinates representing the video signals are converted into corresponding cartesian coordinates for display.

4,660,044

SPINNING LINEAR POLARIZATION RADAR MAPPING METHOD

Mathew E. Lavelle, Auburn, Wash., assignor to The Boeing Company, King County, Wash.

Filed Aug. 29, 1983, Ser. No. 527,489
Int. Cl.[4] G01S 13/89
U.S. Cl. 342—188 20 Claims



2. A method for indicating the location of targets at range points within a target area comprising the steps of:

radiating a polarized signal of cyclically varying frequency at the target area, each of the range points being associated with a different one of said frequencies of said radiated signal;

selectively changing the polarization of said radiated signal;

receiving return signals comprising reflections of the radiated signal from objects located within the target area, each of the return signals having a characteristic polarization and frequency, and an amplitude corresponding to the reflectivity of the associated object; and

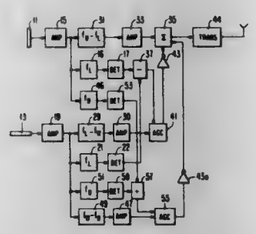
generating a radar map of the target area indicating the associated ranges of reflective objects within the target area for each polarization of the radiated signal.

4,660,045

SYSTEM FOR COMPENSATING POLARIZATION ERRORS

John F. Clark, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 497,895, May 25, 1983. This application Oct. 19, 1983, Ser. No. 543,495
Claims priority, application United Kingdom, Jun. 24, 1982, 8218257
Int. Cl.[4] H04B 7/10; H01Q 21/24
U.S. Cl. 342—361 18 Claims



1. A method for compensating for the cross coupling interference in first channel signals having a first sense of polarization as received at a first antenna pick-up means by second channel signals of a second opposite sense of polarization in a frequency reuse by polarization diversity system wherein signals in each of said first and second opposite sense polarizations are in given channels or frequency bands separated by a guard band and said channels in said first polarization are offset in frequency from said channels in said second polarization such that each channel center frequency of the second polarization is provided at the guard band between channels of the first polarization, said compensating method comprising the steps of:

sensing the second channel signals by second pick-up means adapted to receive said second opposite sense polarization;

sensing the ratio of the amplitudes of the second polarization signals at the guard band frequencies adjacent said first channel as received at said second and first antenna pick-up means;

reducing the amplitude of the second channel signals sensed by the second antenna pick-up means in proportion to said ratio; and

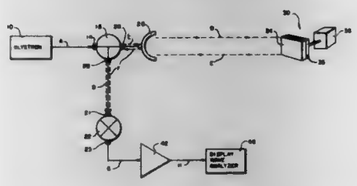
differentially summing said reduced amplitude second channel signals with said first channel signals received by said first antenna pick-up means.

4,660,046

SINGLE POWER SOURCE DATA TRANSMISSION SYSTEM

Marvin J. Foral, 75 Springs Dr., Doylestown, Pa. 18901

Filed Jun. 1, 1984, Ser. No. 616,037
Int. Cl.[4] G01S 13/52
U.S. Cl. 342—160 3 Claims



1. A single power source data transmission system, comprising:

a source of constant radio frequency energy;

antenna means at a first station operatively connected to said source for receiving a major portion of the energy therefrom for transmission within a narrow beam, and for receiving radio frequency energy propagated within the beam;

a reflective flat plate at a second station remote from said first station positioned in a plane normal to the direction of the beam for reflecting the transmitted energy back toward said antenna means, the reflected energy being modulated at a frequency in direct proportion to vibrations of said plate; and

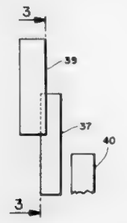
processing means, operatively connected to said source and said antenna means receiving the remaining portion of the energy from said source and the reflected energy for determining the modulating frequency.

4,660,047

MICROSTRIP ANTENNA WITH RESONATOR FEED

Ronald I. Wolfson, Northridge, and William G. Sterns, Canoga Park, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Oct. 12, 1984, Ser. No. 660,176
Int. Cl.[4] H01Q 1/48
U.S. Cl. 343—700 MS 3 Claims



1. A radiating element comprising:

a microstrip including a ground plane first conductor;

a dielectric microstrip substrate having first and second opposite sides, said first substrate side being bonded to said first conductor;

a conductive resonator resident intermediate a microstrip feed line and a conductive dipole, said microstrip feed line spaced from said conductive resonator, said conductive resonator and said microstrip feed line being bonded to said second substrate side;

a dielectric spacer having first and second opposite sides, said first spacer side being bonded to and over said second substrate side, to and over said conductive resonator and to and over said microstrip feed line; said conductive dipole being bonded to said dielectric spacer second side and spaced from said conductive resonator for optimizing bandwidth and efficiency of the radiating element.

4,660,048

MICROSTRIP PATCH ANTENNA SYSTEM

David W. Doyle, Wyle, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 18, 1984, Ser. No. 683,217
Int. Cl.[4] H01Q 1/38
U.S. Cl. 343—700 MS 9 Claims

1. A microstrip antenna comprising:

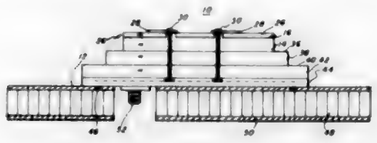
(a) a groundplane substrate;

(b) a hybrid stripline circuit disposed above the groundplane substrate, said hybrid circuit having an input terminal for receiving microwave energy and an output port for outputting polarized microwave energy;

(c) a layer of dielectric material formed on the hybrid circuit;

(d) a plurality of antenna forming electrical conducting and

dielectric layers alternatively formed on the ground plane of the hybrid circuit beginning with the electrical conductive layer and ending with a top dielectric layer; (e) a conductive flag formed on the top dielectric layer; and



(f) a feedpin electrically interconnecting the hybrid circuit and conductor flag for capacitively feeding the antenna forming conductive layers.

4,660,049

EXTENSIBLE ROD ANTENNA FOR VEHICLES

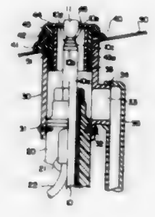
Masaki Shiakawa, Yamato, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1985, Ser. No. 723,854

Claims priority, application Japan, Apr. 20, 1984, 59-58075[U]

Int. Cl.⁴ H01Q *1/10, 1/32*

U.S. Cl. 343—715 **1 Claim**



1. An extensible rod antenna system for vehicles comprising:
an extensible rod antenna element formed of telescopic conductive rods;
a housing for storing said extensible rod antenna element;
an upper fitting member and a cylindrical lower fitting member for mounting the extensible rod antenna element to a fitting hole of a vehicle wall, said cylindrical lower fitting member further having said housing extending therein and coupled thereto;
a drainage outlet formed on a side wall of the cylindrical lower fitting member at a point which is between a top of the housing and said upper fitting member; and
a drainage pipe, one end of the pipe being connected to the drainage outlet and the other end opening outside of the vehicle whereby water can be drained away to prevent a leakage of water into gaps between said telescopic conductive rods.

4,660,050

DOPPLER RADAR VELOCITY MEASUREMENT HORN

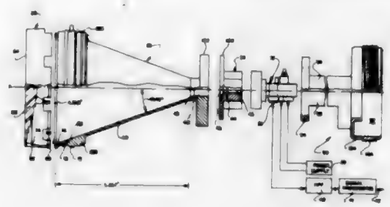
Oliver A. Phillips, Long Beach, Calif., assignor to TRW Inc., Cleveland, Ohio

Filed Apr. 6, 1983, Ser. No. 482,527

Int. Cl.⁴ H01Q *1/32, 19/08*

U.S. Cl. 343—753 **29 Claims**

1. Apparatus for use in a doppler radar velocity measurement system, comprising
means including a rectangular waveguide for generating an RF wave in said rectangular waveguide, said RF wave having a frequency in the range of 24 GHz,
waveguide transformer means for providing a smooth RF transition between said rectangular waveguide and a circular waveguide,
a circular pyramidal horn antenna having a flared section with a mouth and a throat, said horn also including a circular waveguide section formed at the throat of said flared section, said circular waveguide being coupled to said waveguide transformer for receiving said RF wave from said waveguide transformer and being dimensioned so that said RF wave can propogate in only the TE_{11} mode, mode generator means disposed at the junction of said circular waveguide and the throat of said flared sec-



tion for generating a TM_{11} mode RF wave, said flared section guiding both RF wave modes from said mode generator means into free space, wherein said flared section has an interior mouth diameter of about 4.4 inches and a flare angle of about 39° so that the length of said flared section is only about 5.3 inches, and
a dielectric lens positioned across the mouth of said flared section, said RF lens being spaced axially from the mouth of said horn so as to reduce the standing wave ratio in said horn, and having a focal length corresponding approximately to its axial spacing from the phase center of said horn antenna.

4,660,051

THERMAL TRANSFER PRINTING METHOD

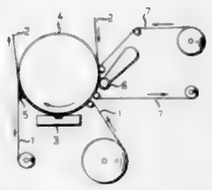
Eiichi Sasaki, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 603,208, Apr. 23, 1984, abandoned. This application Jan. 30, 1986, Ser. No. 824,303

Claims priority, application Japan, Apr. 27, 1983, 58-74668

Int. Cl.⁴ G01D *15/10*

U.S. Cl. 346—76 PH **7 Claims**



1. A thermal transfer printing method comprising the steps of:
applying a coat of colored material by thermal transfer to the entire surface of a record medium web to form thereon a coating of a specific background color before recording of images thereon is performed;
superposing the record medium web over a carrier web having a coat of dry ink meltable by heat applied to its surface and pressing them together, with the coating of a specific background color facing the carrier web, as they are fed between a printhead including a plurality of individual thermal elements and a platen roller; and
selectively energizing the thermal elements to record images on the record medium web by thermal transfer of the coat

of dry ink from the carrier web onto selected portions of the record web.

4,660,052

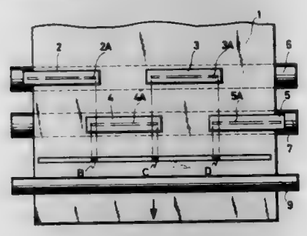
HEAT-SENSITIVE RECORDING APPARATUS

Mitsuhiro Kaiya; Masaki Dendo; Masashi Shimada; Hideki Ohnuki, and Mineo Ogura, all of 31-1, Kameido 6-chome, Koto-ku, all of Tokyo, Japan

Filed Jun. 6, 1986, Ser. No. 871,719

Int. Cl.⁴ G01D *15/10;* **B41J** *3/20*

U.S. Cl. 346—76 PH **2 Claims**



1. A heat-sensitive recording apparatus having a linear thermal head, characterized in that a plurality of said thermal heads are arranged in a plurality of rows, each of which has a plurality of said thermal heads extending over a platen roiler and in the direction of the width of recording paper, in such a manner that heating resistors in said thermal heads in adjacent rows overlap one another with respect to the direction in which said recording paper is moved.

4,660,053

THERMAL TRANSFER RECORDING APPARATUS

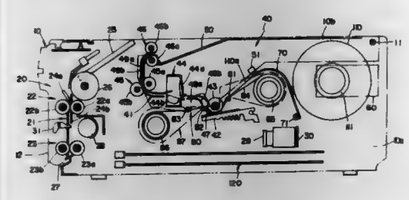
Teruo Tsutsumi, Tama; Sadao Ikeda, Hachioji, and Toshio Takagi, Hino, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Aug. 30, 1985, Ser. No. 770,997

Claims priority, application Japan, Aug. 31, 1984, 59-182939; Sep. 25, 1984, 59-200282; Sep. 25, 1984, 59-200288; Sep. 25, 1984, 59-200289

Int. Cl.⁴ G01D *15/10*

U.S. Cl. 346—76 PH **14 Claims**



1. A thermal transfer recording apparatus, comprising:
frame means for supporting the thermal transfer recording apparatus, said frame means including a casing frame having an opening along an upper part thereof and a cover frame mounted on said upper part for openably covering said opening of said casing frame;
a thermal head mounted on said casing frame;
a recording paper holder mounted on said casing frame for rotatably holding a roll of recording paper wound about a core;
ink ribbon holding means mounted on said casing frame for holding an ink ribbon feeding roll and an ink ribbon take-up roll both of which are adapted to wind a supply of ink ribbon thereabout;
a platen roller mounted on said cover frame for bringing both said recording paper and said ink ribbon in pressure contact with said thermal head;
a cutter mounted on said cover frame for cutting a part of said recording paper;
recording paper guide means for guiding said recording paper between said thermal head and said platen roller to said cutter after said recording paper is unwound from said roll of recording paper; and
ink ribbon guide means for guiding said ink ribbon between said thermal head and said platen roller to said ink ribbon take-up roll after said ink ribbon is unwound from the said ink ribbon feeding roll.

4,660,054

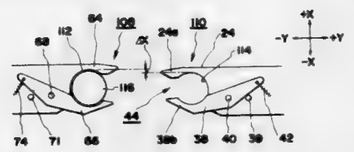
PEN CHANGER WITH ORTHOGONAL PICK UP FROM THE TURRET

Osamu Kajikawa, and Shuso Matsumoto, both of c/o Mutoh Industry Ltd., 3-1-3, Ikejiri, Setagaya-ku, Tokyo, Japan

Filed Jun. 10, 1985, Ser. No. 742,967

Int. Cl.⁴ G01D *9/00, 15/16, 9/28*

U.S. Cl. 346—139 R **2 Claims**



1. A method of transferring writing instruments for an automatic drawing machine between a writing instrument storage magazine and a writing head which are relatively movable toward and away from each other, said method comprising:
providing a plurality of writing instrument holding means on said magazine, each having a fixed holding arm and a pivotally movable holding arm pivotable toward and away from said fixed holding arm and spring loaded toward said fixed holding arm for gripping a writing instrument therebetween with the axis of the writing instrument transverse to the line of movement of said writing head, said fixed holding arm having a pointed projection on the outer end thereof extending toward said movable holding arm;
a further writing instrument holding means on said writing head having a further fixed holding arm and a further pivotally movable holding arm pivotable toward and away from said further fixed holding arm and spring loaded toward said further fixed holding arm for gripping a writing instrument therebetween with the axis of the writing instrument extending in the same direction as the axis of the writing instrument in the instrument holding means on said magazine, said further fixed holding arm having a pointed projection on the outer end thereof extending toward said further movable holding arm, said fixed holding arm and said further fixed holding arm being generally opposed to each other and said movable holding arm and said further movable holding arm being generally opposed to each other when said writing head is at the end of its movement toward said magazine, and said opposed holding arms and further holding arms being offset relative to each other in the direction of the axis of the writing instrument for permitting the further holding arms to move past each other when said writing head is moving toward said magazine;
bringing a desired one of said writing instrument holding means into a position opposed to said writing head when said writing head is at the end of its movement toward said magazine;
moving the writing head and magazine relatively toward each other with a writing instrument in the further holding arms to transfer the writing instrument to the maga-

VOL 1077 ISS 3 AP 21 1987 UMI

zine while moving said magazine and writing head relative to each other in a direction orthogonal to the plane defined by the axis of the writing instrument and the line of relative movement of the writing head and the magazine for moving the further fixed holding arm so that it is slightly offset from said fixed holding arm in a direction away from said movable holding arm, and moving the holding arms and further holding arms past each other in the direction of the relative movement of the magazine and writing head toward each other for causing the projection on said fixed holding arm to move the writing instrument toward and against said spring loaded further movable holding arm and to cause the holding arms to grip the writing instrument, and then moving the writing head and magazine relatively away from each other for causing the writing instrument to remain gripped in the magazine; and

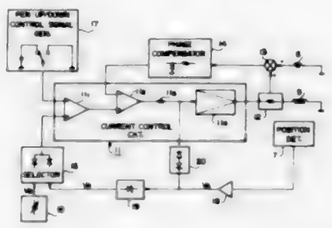
moving the writing head and magazine relatively toward each other with a writing instrument in the holding arms to transfer the writing instrument to the writing head while moving said magazine and writing head relative to each other in a direction orthogonal to the plane defined by the axis of the writing instrument and the line of relative movement of the writing head and the magazine for moving the further fixed holding arm so that it is slightly offset from said fixed holding arm in a direction toward said movable holding arm, and moving the holding arms and further holding arms past each other in the direction of the relative movement of the magazine and writing head toward each other for causing the projection on said further fixed holding arm to move the writing instrument toward and against said spring loaded movable holding arm and to cause the further holding arms to grip the writing instrument, and then moving the writing head and magazine relatively away from each other for causing the writing instrument to remain gripped in the writing head.

4,660,055

PEN CONTROL CIRCUIT

Toyoaki Ezaki, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1986, Ser. No. 847,069
Claims priority, application Japan, Apr. 3, 1985, 60-70467
Int. Cl.⁴ G01D *15/24*
U.S. Cl. 346—139 R **11 Claims**



1. A pen control circuit comprising:

a current control circuit for driving a pen upward or downward with respect to a recording surface in accordance with a polarity of a current supplied to a drive coil, and controlling a driving force in accordance with a magnitude of the current supplied to said drive coil;

a feedback circuit, connected to a first input and an output of said current control circuit, for adding a pen speed detection signal and a current detection signal from said drive coil and supplying a feedback signal to said current control circuit;

a clipper, an output of which is connected to a second input of said current control circuit and an input of which is connected to a pen position detection signal, for extracting the pen position detection signal only when a level of the pen is higher than a predetermined level with respect to the recording surface; and

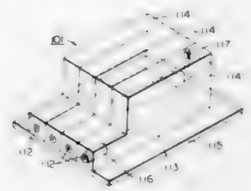
a selector, inputs of which are respectively connected to a pen pressure setting signal and said clipper and an output of which is connected to a third input of said current control circuit, for selecting first, an output from said clipper as a drive current setting value of said current control circuit during an initial pen-down period and second, the pen pressure setting signal as the drive current setting value after the output from said clipper is disabled.

4,660,056

LIQUID JET RECORDING HEAD

Katsuyuki Yokoi, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1985, Ser. No. 714,518
Claims priority, application Japan, Mar. 23, 1984, 59-54350; Mar. 23, 1984, 59-54351; Mar. 23, 1984, 59-54352; May 8, 1984, 59-90211
Int. Cl.⁴ G01D *15/18;* **B41J** *3/20*
U.S. Cl. 346—140 R **4 Claims**



1. A liquid jet recording device, comprising:

a recording head unit having a bottom with a peripheral boundary, said head unit including a liquid pathway having an outlet for forming flying droplets by discharging liquid at the tip portion thereof and an energy generating member provided along said liquid pathway;

temperature detecting means in a part of said head unit for detecting the temperature of the liquid; and

heating means controlled by a detection signal from said temperature detecting means for generating heat to heat the liquid, said heating means being attached to said bottom of said head unit and having at least a portion extending beyond at least a portion of the peripheral boundary of said bottom of said head unit.

4,660,057

HEATER POWER CONTROLLER FOR INK JET PRINTER

Masato Watanabe, Hachioji; Yasuhiko Tanaka, Fuchu, and Kiyotaka Murakami, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 571,847, Jan. 18, 1984, abandoned. This application Mar. 10, 1986, Ser. No. 838,442
Claims priority, application Japan, Jan. 21, 1983, 58-8291
Int. Cl.⁴ G01D *15/18;* **H05B** *1/02*
U.S. Cl. 346—140 R **3 Claims**

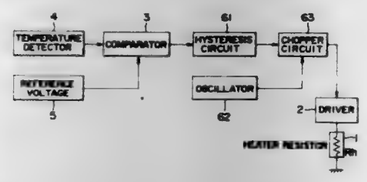
1. A heater power controller for an ink jet printer comprising

a detecting means for detecting a temperature of an ink in a print head of the jet printer, said detecting means generating a detection signal corresponding to the temperature,

a comparator for making a comparison between the detection signal and a reference signal,

a chopping means for chopping an output signal of said comparator, whereby said output signal is converted into a chopper signal, and

a regulating means for adjusting a duty ratio of said chopper signal according to characteristics of a heater for heating the ink,



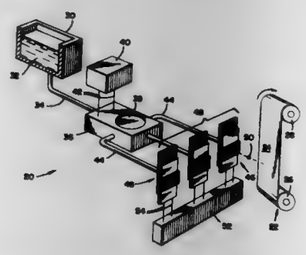
whereby said chopper signal is converted into a control signal.

4,660,058

VISCOSITY SWITCHED INK JET

Robert A. Cordery, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 11, 1985, Ser. No. 774,763
Int. Cl.⁴ G01D *15/16*
U.S. Cl. 346—140 R **4 Claims**



1. Apparatus for projecting printing fluid droplets towards a printing surface comprising:

a reservoir of printing fluid;

an orifice plate having at least one orifice in communication with said reservoir through which the fluid can be projected in droplets towards the printing surface;

pump means for imparting discontinuous pressure pulses to the fluid to cause oscillation of the fluid meniscus within the orifice; and

switch means at the orifice including:

a plurality of overlying, contiguous layers formed on said orifice plate in the region of the orifice including, successively:

an inner passivation layer immediately adjacent said orifice plate and composed of thermal insulating material;

a thin film heater overlying said inner passivation layer and operable for heating the fluid to an elevated temperature of at least 70° C. within a maximum of 150 microseconds to enable droplets to be projected through the orifice; and

a pair of electrodes formed on opposite sides of the orifice overlying said thin film heater; and

an outer passivation layer overlying said pair of electrodes;

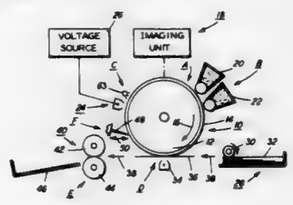
said switch means being operable for selectively regulating the viscosity of the fluid at the orifice to thereby control the projection of droplets through the orifice and onto the printing surface in response to a pressure pulse.

4,660,059

COLOR PRINTING MACHINE

John F. O'Brien, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1985, Ser. No. 801,434
Int. Cl.⁴ G01D *15/10*
U.S. Cl. 346—157 **14 Claims**



1. An apparatus for printing a document in at least two different colors, including:

a receiving member;

means for projecting ions onto the surface of said receiving member and recording at least two electrostatic latent images thereon, wherein said projecting and recording means comprises means for generating a flow of ions toward said receiving member, and means for modulating the ions flowing toward said receiving member to deposit ions thereon in an image wise pattern to record the electrostatic latent images on said receiving member;

means for developing each of the electrostatic latent images recorded on said receiving member with different color marking particles;

means for transferring simultaneously the different color marking particles from said receiving member to the document to print the desired information thereon; and

means for substantially permanently fusing the marking particles to the document.

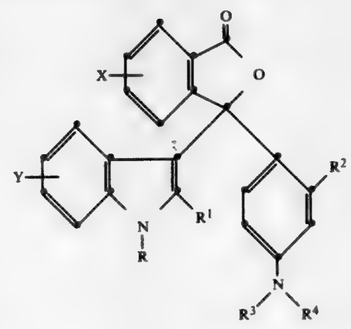
4,660,060

IMAGING SYSTEMS CONTAINING 3-(INDOL-3-YL)-3-(4-SUBSTITUTED AMINOPHENYL)PHTHALIDES

William M. Hung, Cincinnati, Ohio, and Angelique M. Black, Covington, Ky., assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Filed Jun. 17, 1985, Ser. No. 745,555
Int. Cl.⁴ B41M *5/16, 5/18, 5/22*
U.S. Cl. 346—220 **6 Claims**

1. A substrate for use in transfer imaging comprising a support sheet coated with a layer containing as a color-forming substance a 3-(1-R-2-R^1-5/6-Y-indol-3-yl)-3-(2-R^2-4-N-R^3-N-R^4-aminophenyl)-X-phthalide having the formula



wherein:

R represents alkylene-O-R^5 in which alkylene represents $-C_2H_4-$ or $-C_3H_7-$ and R^5 represents non-tertiary C_1 to C_6 alkyl, C_2 to C_6 alkenyl, phenyl or phenyl substituted by one or two of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, halo, nitro, amino or amino substituted by one or two of non-tertiary C_1 to C_4 alkyl;

R^1 represents non-tertiary C_1 to C_4 alkyl or phenyl;

R^2 represents hydrogen, halogen, non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_8 alkoxy, dialkylamino in which alkyl is non-tertiary C_1 to C_4 alkyl, N-alkylamido in which alkyl is non-tertiary C_1 to C_4 alkyl, or trifluoromethyl;

R^3 and R^4 independently represent non-tertiary C_1 to C_8 alkyl, alkylene-O-R^5, alkylene-O-alkylene-O-R^5 benzyl, or benzyl substituted in the phenyl ring by one or two of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, halo or nitro, or R^3 and R^4, taken together with the nitrogen, represent piperidinyl, pyrrodidinyl or morpholinyl;

X represents hydrogen, nitro,



in which Z represents OR^6 wherein R^6 represents hydrogen, a non-tertiary C_1 to C_{16} alkyl, benzyl or benzyl substituted in the phenyl ring by one or two of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, halo or nitro, or one to four halogens; and

Y represents hydrogen or one or two of non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, halo or nitro.

4,660,061

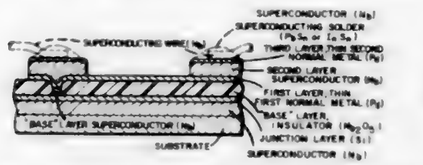
INTERMEDIATE NORMAL METAL LAYERS IN SUPERCONDUCTING CIRCUITRY

Mark F. Sweeny; Meir Gershenson, both of St. Paul; David L. Fleming, Edina, and Robert E. Barta, Eagan, all of Minn., assignors to Sperry Corporation, Blue Bell, Pa.

Continuation of Ser. No. 562,618, Dec. 19, 1983, abandoned. This application Dec. 16, 1985, Ser. No. 808,385

Int. Cl.[4] H01L *39/22*

U.S. Cl. 357—5 **24 Claims**



1. In a superconducting device comprising a first superconducting layer, a junction layer on said first superconducting layer, an insulating layer on said first superconducting layer, at least one superconducting area on said junction layer surrounded by said insulator layer, superconducting connector pad means disposed over said superconducting area, and superconducting wire means electrically connected to said superconducting connector pad means, the improvement comprising a first metal layer disposed over said insulator layer and intermediate said superconducting area and said connector pad means and a second metal layer disposed between said connector pad means and said superconductor wire means wherein said first metal layer covers said superconducting area and said first and second metal layers are sufficiently thin to allow quantum mechanical tunneling between said connector pad means and said superconducting area and said connector pad means and said superconducting wire means, respectively

4,660,062

INSULATED GATE TRANSISTOR HAVING REDUCED CHANNEL LENGTH

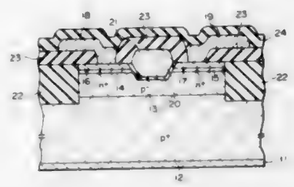
Junichi Nishizawa, and Tadahiro Ohmi, both of Miyagi, Japan, assignors to Handotai Kenkyu Shinkokai, Miyagi, Japan

Filed Sep. 16, 1983, Ser. No. 532,940

Claims priority, application Japan, Sep. 16, 1982, 57-161980

Int. Cl.[4] H01L *29/78*

U.S. Cl. 357—23.3 **22 Claims**



1. An insulated gate static induction transistor comprising:

a semiconductor substrate;

a source region and a drain region formed in a surface of said semiconductor substrate, said source and drain regions having high impurity concentrations;

a channel region formed on said substrate extending between said source region and said drain region, said channel region having a length of 1 μm or less and a low impurity concentration of 1×10^{15} cm^{-3} or less, said length and said impurity concentration permitting punch-through between said source and drain regions;

a high impurity concentration region having a conductivity type opposite to that of said source region formed beneath said channel region;

a gate insulating layer extending into said channel region farther inwardly of said substrate than said source region and having a substantially flat inward surface parallel to said substrate surface, said source and drain regions defining a controlled current path therebetween through an internal portion of said channel region; and

a gate electrode positioned on the flat surface of said gate insulating layer, wherein diffusion potentials of said substrate, said gate electrode and said source region provide a normally off characteristic, and wherein an exponential relationship exists between a non-saturating drain current characteristic and a drain voltage characteristic.

4,660,063

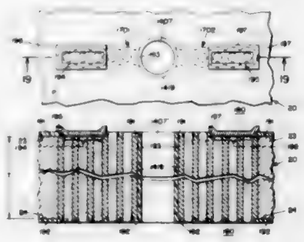
IMMERSION TYPE ISFET

Thomas R. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 18, 1985, Ser. No. 713,143

Int. Cl.[4] H01L *29/06, 29/66, 27/26*

U.S. Cl. 357—25 **15 Claims**



1. A nonplanar ISFET device comprising:

a semiconductor body of a first conductivity type having

first and second opposing major surfaces and a plurality of high-aspect-ratio, closely-spaced bores extending into the body from the first major surface thereof, including a bore with a relatively large cross-section extending between the first and second major surfaces of the body and being centrally situated among the plurality of high-aspect-ratio bores;

first and second impurity regions of a second conductivity type in the body, each one comprising a plurality of impurity zones, each zone being substantially concentric with a respective one of the plurality of high-aspect-ratio bores and overlapping one or more neighboring zones, the first and second impurity regions being separated and longitudinally intersected by the relatively large cross-section bore;

first and second connection means making electrical contact to the first and the second impurity regions, respectively, from the first major surface of the body, and

an ion-sensitive insulating layer covering the inner surface of the relatively large cross-section bore.

4,660,064

CHARGE COUPLED DEVICE HAVING A FLOATING DIFFUSION REGION AND A PRECHARGE DIFFUSION REGION WHICH ARE ALIGNED SO AS TO INCREASE THE OUTPUT GAIN

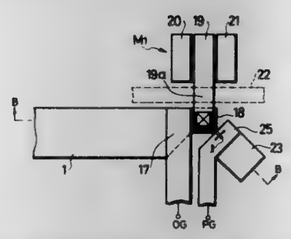
Masaharu Hamasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 31, 1986, Ser. No. 824,452

Claims priority, application Japan, Feb. 5, 1985, 60-20684

Int. Cl.[4] H01L *29/78;* **G11C** *19/28*

U.S. Cl. 357—24 **2 Claims**



1. A charge transfer device which has an output section which is a floating diffusion type comprising a semiconductor substrate, a floating diffusion region formed in said substrate adjacent the output of said charge transfer device and in a first plan view formed with two straight lines which form a substantially 90 degree corner which defines its outer limits, a pre-charge drain formed in said substrate and in a first plan view formed with a straight edge which defines its limits and which is aligned at substantially 45 degrees to said two straight lines which form said 90 degree corner of said floating diffusion region, and a pre-charge gate electrode formed in said substrate and having two parallel edges in a first plan view and located between said pre-charge drain region and said floating diffusion region such that one of said parallel edges is adjacent to and extends in the same direction as said straight edge of said pre-charge drain and the other edge of said pre-charge gate electrode in said first plan view is adjacent said 90 degree corner of said floating diffusion region and is aligned at substantially 45 degrees to said two straight lines which form said 90 degree corner of said floating diffusion region.

4,660,065

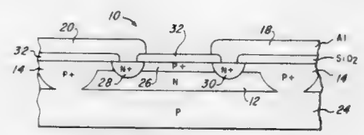
HALL EFFECT DEVICE WITH SURFACE POTENTIAL SHIELDING LAYER

Fernando D. Carvajal, McKinney, and Joe R. Trogolo, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 502,905, Jun. 10, 1983. This application Jul. 8, 1985, Ser. No. 752,496

Int. Cl.[4] H01L *27/22*

U.S. Cl. 357—27 **2 Claims**



1. An integrated Hall effect device comprising:

a semiconductor substrate of one conductivity type;

a semiconductor layer of an opposite conductivity type overlying said substrate;

an isolating region of said one conductivity type formed in said semiconductor layer and extending from the surface thereof to at least the surface of said substrate to contact said substrate, said isolating region surrounding a portion of said semiconductor layer to encompass and isolate an island thereof;

a second region of said one conductivity type formed in said island extending a predetermined depth beneath and entirely across the surface of said island, extending at least to contact said isolating region to create an isolated surface over said island, said second region being of depth of between about 0.5 and 2.0 microns, wherein said island contains a Hall effect current path entirely therewithin away from said surface and above said substrate; and

a plurality of spaced apart third regions of said opposite conductivity type formed in said second region extending below the lower surface of said second region to contact preselected portions of said first region of said semiconductor layer, to form current and voltage sense contacts to said Hall effect device.

4,660,066

STRUCTURE FOR PACKAGING FOCAL PLANE IMAGERS AND SIGNAL PROCESSING CIRCUITS

Lee R. Reid, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 415,787, Sep. 8, 1982. This application Aug. 19, 1985, Ser. No. 767,063

Int. Cl.[4] H01L *27/14*

U.S. Cl. 357—30 **18 Claims**

1. An image focal plane array structure, comprising:

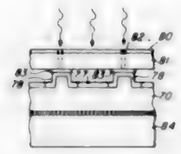
(a) a first semiconductor substrate having a first and second surface,

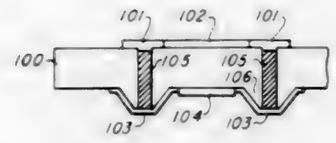
(b) an array of image detection elements located upon said first surface,

(c) electrically conductive material disposed on said first surface, connected to said image detection elements and extending through said first semiconductor substrate to said second surface,

(d) at least one second semiconductor substrate having a third and a fourth surface, said third surface including portions of semiconductor material integral with said substrate material and extending therebeyond out of said substrate and defining electric circuit means between said portions, and

(e) electrically conductive material disposed on said portions and coupled to said electric circuit means,





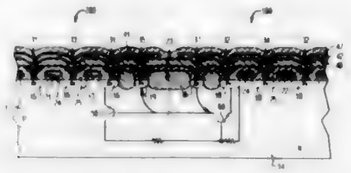
(f) said electrically conductive material disposed on said portions being in intimate contact with said electrically conductive material on said second surface.

4,660,067

COMPLEMENTARY MOS INTEGRATED CIRCUIT HAVING MEANS FOR PREVENTING LATCH-UP PHENOMENON

Masaki Ebina, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 30, 1985, Ser. No. 760,452
Claims priority, application Japan, Jul. 30, 1984, 59-159802
Int. Cl.⁴ H01L *27/02*
U.S. Cl. 357—42 **6 Claims**



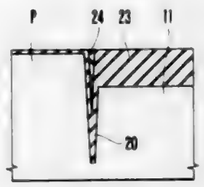
1. A MOS integrated circuit comprising:
a semi-conductor substrate of one conductivity type;
a well-region of another conductivity type formed in said semi-conductor substrate;
a first MOS field effect transistor of a first channel type formed in said well-region, said first MOS field effect transistor having source and drain regions of said one conductivity type;
a second MOS field effect transistor of another channel type formed in said semi-conductor substrate outside said well region, said second MOS field effect transistor having source and drain regions of said another conductivity type;
a high impurity region formed in said well region and having said another conductivity type, said high impurity region surrounding said first MOS field effect transistor;
a first insulator film covering said semiconductor substrate, said well-region, said first and second MOS field effect transistors and said high impurity region, said first insulator film having first holes exposing first contact portions of said drain regions in said first and second MOS field effect transistors and a plurality of second holes exposing a plurality of second contact portions of said high impurity region, said second holes being arranged to substantially surround said first MOS field effect transistor;
first wiring layers covering said first insulator film and connected with said first contact portions through said first holes;
a second wiring layer covering said first insulator film and connected with said second contact portions through said second holes, said second wiring layer substantially surrounding said first MOS field effect transistor;
a second insulator film covering said first and second wiring layers and having third holes exposing third contact portions of said first wiring layers and a plurality of fourth holes exposing a plurality of fourth contact portions of said second wiring layer, said fourth holes being arranged to substantially surround said first MOS field effect transistor;
a third wiring layer covering said second insulator film and connected with said third contact portions through said third holes, said third wiring layer crossing said high impurity region and interconnecting said first and second MOS field effect transistors to form an electrical circuit;
a fourth wiring layer covering said second insulator film and connected with said fourth contact portions through said fourth holes, said fourth wiring layer substantially surrounding said first MOS field effect transistor; and
a means for supplying a constant potential to said fourth wiring layer.

4,660,068

SUBSTRATE STRUCTURE OF SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Kazuhito Sakuma, Ebina; Yoshinobu Arita; Masaki Sato, both of Ischara, and Nobuyoshi Awaya, Zama, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 525,570
Claims priority, application Japan, Aug. 24, 1982, 57-145471
Int. Cl.⁴ H01L *27/12*
U.S. Cl. 357—49 **6 Claims**



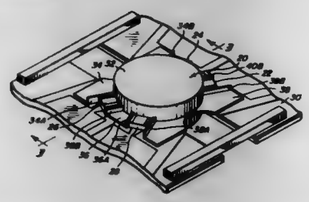
1. A substrate structure of a semiconductor device comprising:
a silicon substrate;
an element region selectively formed on said silicon substrate; and
a relatively thick field oxide region formed adjacent to said element region; and
an element isolating region formed between said element region and said field oxide region, said element isolating region being in direct contact with said field oxide region; and
said element isolating region being provided with a relatively deep groove of greater than two micrometers formed in said silicon substrate and having a relatively small width of less than one micrometer, and the thickness of said field oxide region being of the same order of magnitude as the depth of said groove; and
a silicon oxide insulating film formed on the inner wall of said groove; and
a silicon nitride insulating film disposed on said silicon oxide insulating film; wherein surfaces of said element region, the element isolating region and the field oxide region on said silicon substrate are formed substantially flat.

4,660,069

DEVICE WITH CAPTIVATE CHIP CAPACITOR DEVICES AND METHOD OF MAKING THE SAME

Ronald P. Kochanski, Arlington Heights, and Detlef W. Schmidt, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 559,560, Dec. 8, 1983. This application May 14, 1986, Ser. No. 864,751
Int. Cl.⁴ H01L *23/48, 23/42, 23/16, 27/02*
U.S. Cl. 357—68 **5 Claims**



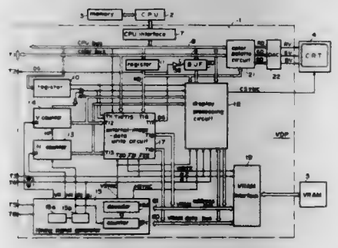
1. A semiconductor device with fixture means for positioning and holding a plurality of separate and additional component parts in an external predetermined relationship with said semi-conductor device, comprising:
a central semiconductor body portion having a plurality of rigid conductive leads extending radially outwardly therefrom,
each of said conductive leads having at least one upstanding sidewall portion being spaced and aligned in a predetermined manner with respect to said central body portion,
said conductive leads cooperatively being disposed apart to form a space therebetween whereby said upstanding sidewal! portions function as fixtures for engaging and mechanically holding a separate component part when inserted therebetween.

4,660,070

VIDEO DISPLAY PROCESSOR

Kazuhiko Nishi; Takatoshi Ishii; Ryozo Yamashita, all of Tokyo; Shigemitsu Yamaoka, and Takatoshi Okumura, both of Hamamatsu, all of Japan, assignors to ASCII Corporation, Tokyo and Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, both of, Japan

Filed May 22, 1985, Ser. No. 736,828
Claims priority, application Japan, May 25, 1984, 59-106092
Int. Cl.⁴ H04N *5/44*
U.S. Cl. 358—11 **7 Claims**



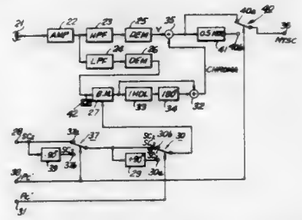
1. A video display processor adapted to be connected to memory means and a video display unit for displaying a video image on a screen of the video display unit in accordance with image data stored in the memory means, said video display processor comprising:
(a) first receiving means for receiving an external video image data from an external video device;
(b) designating means for designating an external mode which is a mode processing said external video image data;
(c) address data generating means for generating address data in accordance with a synchronizing signal synchronized with said external video image data and for supplying said address data to the memory means when said external mode is designated; and
(d) first feeding means for feeding said external video image data to respective addresses of the memory means indicated by said address data when said external mode is designated, whereby said external video image data are written into corresponding addresses of said memory means, respectively.

4,660,071

CONVERSION OF LINE SEQUENTIAL TELEVISION COLOR SIGNAL TO SIMULTANEOUS SIGNALS BY ALTERNATING CARRIER PHASE INJECTION

Michio Kuribayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 19, 1984, Ser. No. 683,364
Claims priority, application Japan, Dec. 22, 1983, 58-241062; Dec. 22, 1983, 58-241063
Int. Cl.⁴ H04N *11/20, 9/65*
U.S. Cl. 358—11 **4 Claims**



1. A method for converting a line sequential television color signal to a simultaneous signal, in a field signal to frame signal conversion comprising the steps of:
selecting one of two color signals altrenately every one horizontal scanning period;
applying the selected color signal to a balanced modulator;
providing a first carrier and a second carrier shifted in phase from said first carrier by ninety degrees;
supplying one of said first carrier and said second carrier in alternating fashion to said modulator in synchronism with the alternating selection of the color signal said step of supplying one of said carriers including a step of selecting one of said first carrier and said second carrier alternately every one vertical scanning period, and every one horizontal scanning period resulting in an output signal being outputted by said modulator;
delaying said modulator output signal by one horizontal scanning period to provide a delayed signal;
introducing a phase shift of 180 degrees between said delayed signal and said modulator output signal;
subsequent to said phase shifting, mixing said delayed signal with said modulator output signal in a first mixer to produce an output carrier of said first mixer;
mixing a luminance signal with said first mixer output carrier in a second mixer to produce a combined signal;
delaying said combined signal of said second mixer by a half horizontal scanning period to provide a delayed combined signal; and
switching alternately between said elayed combined signal and said combined signal every one vertical scanning

period to extract field signals from said combined signal of said second mixer.

4,660,072

TELEVISION SIGNAL TRANSMISSION SYSTEM

Takahiko Fukinuki, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1984, Ser. No. 578,528
Claims priority, application Japan, Mar. 18, 1983, 58-44238
Int. Cl.⁴ H04N *11/14*
U.S. Cl. 358—12 **23 Claims**





3. A color television signal generating apparatus comprising:
(a) first means for obtaining a luminance signal and a color signal of a video signal;
(b) first modulating means for modulating a first subcarrier by said color signal in order to obtain a modulated color signal;
(c) second modulating means for modulating a second subcarrier by one part of said luminance signal to obtain a modulated luminance signal; and
(d) multiplexing means for multiplexing another part of said luminance signal, said modulated color signal and said modulated luminance signal;
wherein the phase of at least said first subcarrier changes by substantially 180° every scanning line of said television signal, the phase of said first subcarrier on a current scanning line being substantially equal to that of said first subcarrier on a scanning line located just over said current scanning line and delayed by about one field period from said current scanning line, the phase of said second subcarrier on said current scanning line being substantially 180° out of phase to that of said second subcarrier on a scanning line just over said current scanning line and delayed by about one field period.

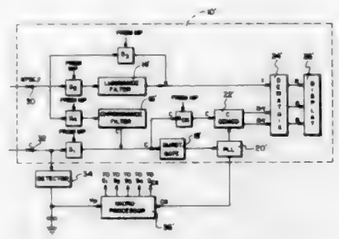
4,660,073

VIDEO APPARATUS FOR SELECTIVELY PROCESSING EITHER COMPOSITE OR COMPONENT COLOR VIDEO SIGNALS

Hans P. Baumeister, Charchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1984, Ser. No. 683,115
Int. Cl.⁴ H04N *9/64*
U.S. Cl. 358—21 R **10 Claims**

1. Video apparatus comprising:
means for selectively receiving at least composite color video signals and component color video signals having at least first and second components, said receiving means including first input means for selectively receiving either said composite color video signals or said first component of said component color video signals and second input means for receiving said second component of said component color video signals; and
means for producing a control signal when a component



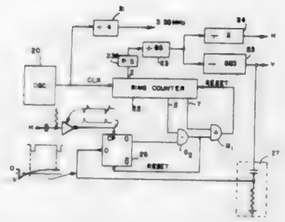
color video signal is received by said receiving means, wherein said producing means (1) includes means for detecting the second component received by said second input means, and (2) produces said control signal in response to detection of said second component.

4,660,074

NTSC COLOR TELEVISION TRANSMISSION WITHOUT CHROMA CRAWL

Jonathan M. Schine, 626 S. Hudson Ave., Los Angeles, Calif. 90005

Filed Oct. 15, 1985, Ser. No. 787,156
Int. Cl.⁴ H04N *9/44, 11/14*
U.S. Cl. 358—16 **4 Claims**



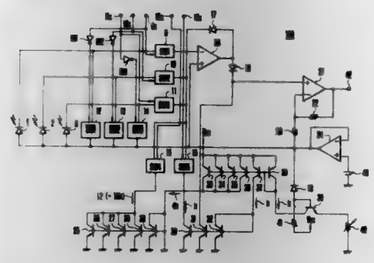
1. A method for an improved color television transmission compatible with NTSC standards of interlaced fields comprised of the steps of generating a color subcarrier at about 3,579,545 Hz by dividing down a clock frequency of four times the desired color subcarrier, dividing said clock frequency to produce a controlled horizontal scan rate at about 15,768 Hz with 227 cycles of color subcarrier per line, and dividing said clock frequency to produce a controlled vertical scan rate for interlaced fields, each at a rate of about 30.035 Hz with 59,718.5 cycles of said color subcarrier per field, and extending the horizontal shift pulse by the period of one half cycle of the color subcarrier, thereby to invert the phase of the color subcarrier during successive scan lines of interlaced fields.

4,660,075

COLOR INFORMATION DETECTING DEVICE

Seiji Hashimoto, and Shinji Sakai, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Oct. 25, 1984, Ser. No. 664,707
Claims priority, application Japan, Oct. 28, 1983, 58-203402; Oct. 28, 1983, 58-203403
Int. Cl.⁴ H04N *9/73*
U.S. Cl. 358—29 **21 Claims**



1. A color information detecting device comprising:
a plurality of color sensing means for sensing different color lights from one another;
converting means for non-linearly converting an input signal;
current source means for generating a plurality of predetermined levels of constant current;
changeover means for selectively inputting the outputs of said color sensing means and said plurality of predetermined levels of constant current into said converting means for generating non-linearly converted outputs, respectively; and
computing means for computing said non-linearly converted outputs each other to generate a color temperature information removed of a temperature error.

8. A non-linear converting device comprising:
photo-electric transducer means for converting incident lights into electrical signals;
a first constant current source for supplying a predetermined constant current;
a second constant current source for supplying a constant current equal to a predetermined number of times the supplied current of said first constant current source;
converting means for non-linearly converting an input signal;
changeover means for selectively applying the outputs of said photo-electric transducer means, and said first and said second constant current sources to said converting means; and
correction means for correcting temperature errors contained in the outputs of the photo-electric transducing means through said converting means by using the outputs of the first and second constant current sources through said converting means.

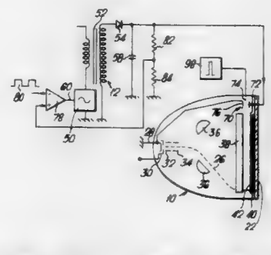
4,660,076

COLOR DISPLAY APPARATUS INCLUDING A CRT WITH INTERNAL SWITCHING VALVE

Alan G. Knapp, Crawley, and Harold W. Ellis, Guildford, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 11, 1984, Ser. No. 598,958
Claims priority, application United Kingdom, Apr. 20, 1983, 8310707
Int. Cl.⁴ H04N *9/27*; H01J *29/10, 29/80, 43/00*
U.S. Cl. 358—73 **7 Claims**

1. A color display apparatus comprising:
(a) a color display tube comprising an envelope containing:
(1) a screen having first and second luminescent layers and a screen electrode parallel thereto, said layers luminescing in respective colors when excited by electrons accelerated through respective higher and lower accelerating potential differences;
(2) a channel plate electron multiplier having an input and an output side, said output side being parallel to and spaced apart from the screen;
(3) an electron gun for producing an electron beam; and
(4) means for scanning the electron beam across the input side of the channel plate electron multiplier; and
(b) means for controllably producing said higher and lower accelerating potential differences between the screen electrode and the output side of the channel plate electron multiplier, said means including:
(1) a thermionic valve contained within the color display tube envelope and comprising an anode electrically connected to the screen electrode, a cathode adapted for electrical connection to a reference voltage, and a grid; and
(2) high voltage power supply means for selectively ap-



plying higher and lower voltages to the screen electrode in response to an applied switching signal, said power supply means including a variable voltage power supply having an output electrically connected to said screen electrode, feedback circuitry electrically connected to said screen electrode for sensing the voltage at the screen electrode, screen voltage control circuitry having an input for receiving said switching signal, having an input electrically connected to said feedback circuitry, and having an output electrically connected to said variable voltage power supply for applying a control voltage to the power supply to maintain the screen electrode voltage constant at the selected voltage despite fluctuations of electric current in the screen electrode; and
(3) a pulse source electrically connected to the grid for applying a pulse thereto for momentarily increasing the valve's anode current whenever the voltage applied to the screen electrode by the high voltage power supply means changes from the higher voltage to the lower voltage.

4,660,077

COLOR IMAGE FORMING APPARATUS

Naoto Kawamura, Yokohama, and Katsuhito Dei, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

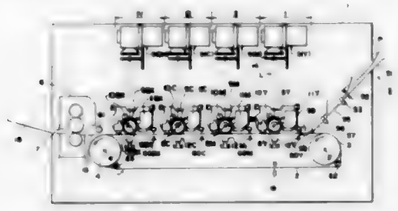
Continuation of Ser. No. 585,232, Mar. 1, 1984, abandoned. This application Aug. 5, 1986, Ser. No. 892,466
Claims priority, application Japan, Mar. 8, 1983, 58-37716
Int. Cl.⁴ H04N *1/46*; G03G *15/01*
U.S. Cl. 358—75 **5 Claims**

1. Color image recording apparatus for recording a color image on a recording medium, said apparatus comprising:
a plurality of image forming media;
means for forming respective images, each of a different color, on each of said image forming media;
means for sequentially transferring the images respectively

formed on said image forming media onto a recording medium;

means for conveying the recording medium along a predetermined path;

means for generating a position signal which indicates that the recording medium is at a predetermined position on the predetermined path upstream of one of said image forming media, the image on which is to be first transferred to the recording medium by said transferring means;



means for designating an area on the recording medium to which the respective images are to be transferred; and

means for controlling the start timing of the formation of a respective image on said one of said image forming media by said image forming means in accordance with the position signal generated by said position signal generating means and the area on the recording medium designated by said designating means.

4,660,078

CODER-DECODER FOR TRANSMISSION AND/OR RECEPTION OF TELEVISION PICTURES VIA DIGITAL LOW-SPEED CHANNEL

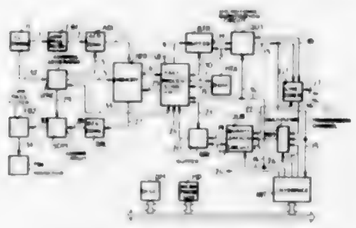
Benedetto Riolfo, Turin; Mario Guglielmo, Montalenghe, and Giovanni Baronetti, Turin, all of Italy, assignors to Sip-Societa Italiana per l'Esercizio Telefonico S.p.A., Turin, Italy

Filed Sep. 20, 1984, Ser. No. 652,770

Claims priority, application Italy, Sep. 29, 1983, 68002 A/83

Int. Cl.⁴ H04N *7/133*

U.S. Cl. 358—133 **10 Claims**



1. Coder-decoder of television pictures which can operate in transmission-and reception mode or in transmission-or-reception mode, comprising a digital converter of an analogic picture signal thus obtaining digital samples of a picture signal in transmission and an analogic converter of digital samples of a picture signal in reception, characterized in that it comprises:

a video memory (MTR) containing digital samples of a picture frame and being addressed by an address generator (SYNC), synchronized by a video synchronism signal (32), with two addressing modes, called below sequential and block-by-block addressing modes, and alternatively operating in time intervals corresponding to the visualized and not visualized part of picture signal of each line of analogic picture signal, said sequential addressing being used for writing digital samples coming from said digital converter (ADC) and reading digital samples sent to the analogic converter (DAC), said block-by-block addressing causing a subdivision of each field into equal areas and being used for reading or writing blocks of digital samples coming from or addressed to a fast processing unit (UEV);

said fast processing unit (UEV) carrying out the bidimensional transform of digital sample blocks received from the video memory (MTR) for obtaining blocks of transformed coefficients sent to a transmission buffer (BTR); this unit carrying out also the bidimensionsl antitrasform of blocks of transformed coefficients received from a reception buffer (BRC) for obtaining blocks of digital samples in reception to be sent to the video memory (MTR); said transform and antitransform operations being caried out only in correspondence with significant transformed coefficients, according to a map of significant coefficients depending on the degree of redundancy reduction chosen by the user;

a transmission quantization circuit (QUT) for carrying out dichotomic quantization operations on the transformed coefficients received from the transmission buffer (BTR) for obtaining quantized coefficients at variable length depending on the coefficient index, this circuit using several quantization laws, each consisting of a given number of thresholds of suitable value, and carrying out the quantization of each transformed coefficient using a quantization law chosen as a function of the expected length of each quantized coefficient, said length determining the number of thresholds of the relevant quantization law;

a reception quantization circuit (QUR) for carrying out dichotomic operations on quantized coefficients received at the input for assigning them suitable quantization levels considered as values of the transformed coefficients sent to the reception buffer (BRC), the circuit several quantization laws, each consisting of a given number of suitable levels, these assignments being carried out using a quantization chosen as a function of the quantized coefficient length;

a control unit (MP) which supplies a signal of choice of operation mode, the map of significant coefficients, the map of bit assignment and quantization levels and thresholds.

4,660,079

RECEIVING DEVICE IN AN ASYNCHRONOUS VIDEO INFORMATION TRANSMITTING SYSTEM

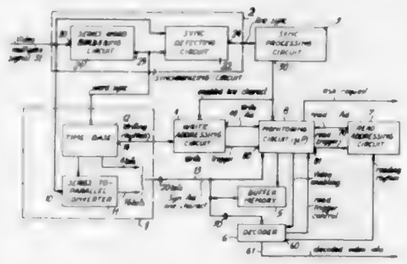
Daniel P. Y. Devimeux, and Jean-Claude R. Jolivet, both of Paris, France, assignors to Societe Anonyme De Telecommunications, Paris, France

Filed Oct. 19, 1984, Ser. No. 662,594

Claims priority, application France, Oct. 21, 1983, 83 16768

Int. Cl.⁴ H04N *7/04, 7/08, 7/093*

U.S. Cl. 358—141 **11 Claims**



1. A receiving device in an asynchronous digital video information transmitting system for receiving a multiplex video signal including fixed-length words representative of picture line and field synchronizations and variable-length words representative of video information, comprising

(a) means for detecting the picture line and field synchronization fixed-length words;

(b) means connected with said detecting means for transcoding the video information variable-length words into video information fixed-length words;

(c) a buffer memory for storing the transcoded video information; and

(d) means controlled by said detecting means and connected with said transcoding means for monitoring the writing and reading addresses in said buffer memory in accordance with said detected synchronization fixed-length words.

4,660,080

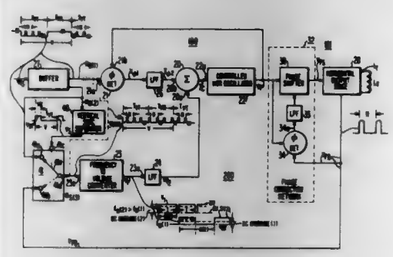
SYNCHRONIZATION CIRCUIT RESPONSIVE TO TIME-MULTIPLEXED SIGNALS

Wolfgang F. W. Dietz, New Hope, Pa., and Sammy S. Henig, Secaucus, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 24, 1985, Ser. No. 813,392

Int. Cl.⁴ H04N *5/04;* **H03L** *7/00*

U.S. Cl. 358—158 **17 Claims**



1. A synchronization circuit for a video apparatus responsive to a synchronizing input signal of a video source that contains synchronizing information at a first frequency for generating a repetitive output signal that is synchronized to said input signal, comprising:

a controllable source of said repetitive output signal;

means responsive to said input signal for supplying a repetitive first control signal at a second frequency; and

second means having coupled thereto said synchronizing input signal and said output signal and being responsive to said first control signal for applying said synchronizing input signal to said controllable source during a first portion of a given cycle of said repetitive first control signal to perform a given control function in said controllable source, and for applying said output signal, instead of said input signal, to said controllable source during a second portion of said given cycle as a substitute for said synchronizing input signal to perform said given control function.

4,660,081

VIDEO SIGNAL PROCESSING APPARATUS HAVING INTERPOLATORS SWITCHABLE BETWEEN AN INPUT AND AN OUTPUT OF A FIELD MEMORY

Atma Heerah, Cambridge, England, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Apr. 8, 1985, Ser. No. 721,253

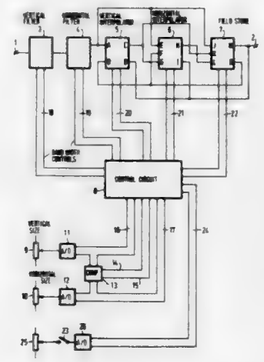
Claims priority, application United Kingdom, Apr. 26, 1984, 8410706

Int. Cl.⁴ H04N *9/74, 5/262*

U.S. Cl. 358—160 **7 Claims**

1. In video signal processing apparatus for television signals encoded in digital form and having a horizontal interpolator, a vertical interpolator and a field store, the improvement comprising:

a horizontal interpolator, a vertical interpolator and a field store with a plurality of inputs and outputs, each input being capable of receiving or ignoring information presented thereto, each output connected to a common path being selectively activatable;



control circuit means for individually switching said horizontal and vertical interpolators between said input and output of said field store in dependence on whether said television picture is to be compressed or expanded in the horizontal or vertical direction; and

picture size controlling apparatus connected to provide signals to said control circuit for configuring said horizontal interpolator, vertical interpolator and field store inputs and outputs.

4,660,082

OUTPUT CORRECTION IN IMAGE REPRODUCTION

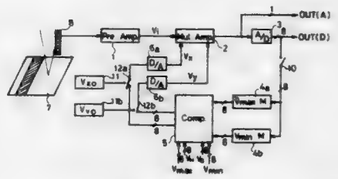
Kunio Tomohisa, and Masamichi Cho, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 19, 1985, Ser. No. 746,621

Claims priority, application Japan, Aug. 24, 1984, 59-175885

Int. Cl.⁴ H04N *5/14, 1/40*

U.S. Cl. 358—163 **29 Claims**



1. A method of simultaneously carrying out calibration and shading correction of an output of a photosensor array in an input scanning device of an image reproducing system by adjusting gain V_Y and offset V_X values of an output amplifier of the array, comprising the steps of:

(a) storing, in a first memory, first density reference voltage data V_1 obtained by scanning, with the photosensor array, a first density reference board to develop the first data as sequence of outputs of photosensor element blocks, each of which is composed of at least one photosensor element;

(b) storing, in a second memory, second density reference voltage data V_2 obtained by scanning, with the photosensor array, a second density reference board to develop the second data as a sequence of outputs of photosensor ele-

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ment blocks each of which is composed of at least on photosensor element;

(c) scanning an original with said photosensor array; and

(d) correcting the gain value V_Y and the offset value V_X of said amplifier for each of the outputs of the photosensor element blocks in synchronization with the step of input scanning using the corresponding density reference voltages $\overline{V_1}$ and $\overline{V_2}$ stored respectively in the first and the second memories and ideal voltages V_1 and V_2 corresponding respectively to the density reference voltages V_1 and $\overline{V_2}$ according to the equations:

$$V_Y=(V_1-V_2)/(\overline{V_1}-\overline{V_2})$$

and

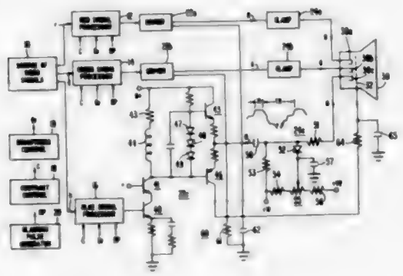
$$V_X=(V_1\cdot\overline{V_2}-V_2\cdot\overline{V_1})/(V_1-V_2).$$

4,660,083

VIDEO DISPLAY SYSTEM WITH STABILIZED BACKGROUND LEVEL

John K. Allen, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 29, 1985, Ser. No. 792,468
Int. Cl.⁴ H04N *5/18, 5/57*
U.S. Cl. 358—168 **7 Claims**



1. A video signal processing and display system comprising

an image display device including an intensity control assembly for receiving a conveyed video signal containing information to be displayed;

a video signal channel for conveying a video signal containing information to be displayed to said image display device;

video signal clamping means, included in said video channel, for clamping said conveyed video signal during given intervals;

control means coupled to said video channel for developing a control signal with a magnitude related to the magnitude of said conveyed video signal; and

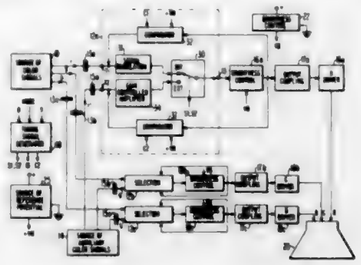
means for coupling said control signal to said intensity control assembly of said image display device with a polarity for increasing the current conduction of said intensity control assembly in accordance with increasing magnitude of said conveyed video signal.

4,660,084

TELEVISION RECEIVER WITH SELECTABLE VIDEO INPUT SIGNALS

Paul D. Filliman, Marion County, Ind.; Leopold A. Harwood, Somerset County, N.J.; Ronald T. Kees, Marion County, and Robert P. Parker, Hamilton County, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 25, 1985, Ser. No. 780,014
Int. Cl.⁴ H04N *5/16, 5/18*
U.S. Cl. 358—171 **8 Claims**



1. A video signal processing system including an image display device, comprising:

switching means having a first input for receiving a first video signal having image information occurring during periodic image intervals and a black reference component occurring during periodic blanking intervals, a second input for receiving an auxiliary second video signal having image information occurring during periodic image intervals and a black reference component occurring during periodic blanking intervals, a switching control input, and an output coupled to said display device;

first means for capacitively coupling said first video signal to said first input of said switching means;

second means for capacitively coupling said auxiliary second video signal to said second input of said switching means;

timing means coupled to said switching control input of said switching means for causing said switching means to exhibit a first position for coupling said first input of said switching means to said display device via a first signal path in a first operating mode, and for causing said switching means to exhibit a second position for coupling said second input of said switching means to said display device via a second signal path in a second operating mode;

means for providing a reference potential; and

control means responsive to said reference potential and coupled to said first and second signal paths for automatically providing signals conveyed by said first and second paths with a desired black reference level.

4,660,085

TELEVISION RECEIVER RESPONSIVE TO PLURAL VIDEO SIGNALS

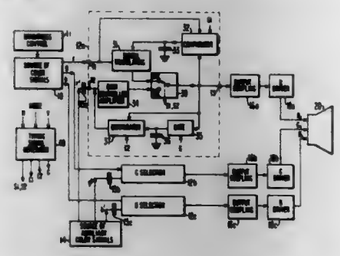
Leopold A. Harwood, Somerset County, N.J.; Paul D. Filliman, and Ronald T. Kees, both of Marion County, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 25, 1985, Ser. No. 780,015
Int. Cl.⁴ H04N *5/16*
U.S. Cl. 358—171 **13 Claims**

1. A video signal processing system including an image display device, said system comprising:

switching means having a first input for receiving a first video signal having image information occurring during periodic image intervals and a black reference component occurring during periodic blanking intervals, a second input for receiving an auxiliary second video signal having image information occurring during periodic image intervals and a black reference component occurring during periodic blanking intervals, a switching control input, and an output coupled to said display device;

timing means coupled to said control input of said switching means for causing said switching means to exhibit a first position for coupling said first input of said switching means to said display device via a first signal path in a first operating mode, and to exhibit a second position for coupling said second input of said switching means to said display device via a second signal path in a second operating mode;



means for providing said first video signal with a desired black reference level; and

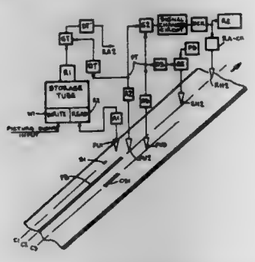
control means, responsive to said first video signal provided with said desired black reference level, having an output coupled to said second signal path for automatically providing said second video signal coupled via said second signal path with a black reference level derived from said first video signal provided with said desired black reference level.

4,660,086

SCANNING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08841

Continuation of Ser. No. 394,946, Jul. 2, 1982, Pat. No. 4,511,918, which is a division of Ser. No. 13,608, Feb. 16, 1979, Pat. No. 4,338,626, which is a continuation of Ser. No. 778,331, Mar. 16, 1977, Pat. No. 4,148,061, which is a continuation of Ser. No. 254,710, May 18, 1972, Pat. No. 4,118,730, which is a continuation-in-part of Ser. No. 267,377, Mar. 11, 1963, which is a continuation-in-part of Ser. No. 626,211, Dec. 4, 1956, Pat. No. 3,081,379, and a continuation-in-part of Ser. No. 477,467, Dec. 24, 1954, abandoned. This application Apr. 15, 1985, Ser. No. 723,183
Int. Cl.⁴ H04N *5/213*
U.S. Cl. 358—183 **1 Claim**



1. A system for processing video signal information comprising:

(a) signal input means and signal output means and means for generating frame defining video signals on said input means,

(b) switching means connecting said input means to said output means,

(c) detecting means for detecting a select inflection in a video signal applied to said input means which select inflection defines the border of a select area in an image field defined by the frame video signal applied to said input means and operable to develope a switching signal when such inflection occurs in said video signal,

(d) said detecting means connected to apply said switching signal to said switching means,

(e) delay means for receiving the video and for introducing a predetermined time delay therein,

(f) circuit means for blanking said video signal, and

(g) means for generating a blanking signal to activate said circuit means and to cause the blanking of a predetermined portion of said video signal which follows said inflection, and

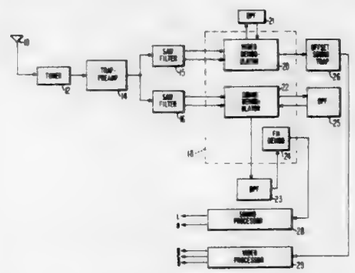
(h) means for inserting a select signal into the blanked portion of said video signal to effect a select modification thereof.

4,660,087

VIDEO SIGNAL PROCESSING SYSTEM WITH OFFSET SOUND TRAP

Mark F. Rumreich, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 28, 1986, Ser. No. 834,911
Int. Cl.⁴ H04N *5/62*
U.S. Cl. 358—197 **3 Claims**



1. In a video signal processing system having a video IF signal processing channel, means for demodulating a video IF output signal from said video IF signal processing channel to produce a baseband video signal, and a video signal path for coupling said baseband video signal to video signal utilization means, apparatus comprising:

a first filter in said video IF signal processing channel exhibiting a null response at a frequency offset from the frequency of an IF sound carrier signal; and

a second filter in said video signal path exhibiting a null response at a frequency offset from the frequency of an intercarrier sound signal.

4,660,088

QUASI-PARALLEL TELEVISION IF SUITABLE FOR STEREO SOUND RECEPTION

William A. Lagoni; Gregory G. Tamer; Max W. Muterspaugh, and Abraham E. Rindal, all of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 29, 1983, Ser. No. 556,127
Int. Cl.⁴ H04N *5/62, 5/60*
U.S. Cl. 358—198 **17 Claims**

1. In the section of a television system for processing an IF signal containing a frequency modulated sound carrier and an amplitude modulated video carrier, apparatus comprising:

separate sound and video channels for demodulating said video and sound carriers;

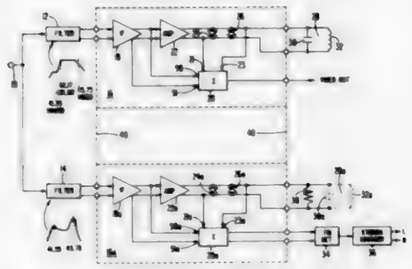
means for coupling said IF signal including said amplitude

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modulated video carrier and said frequency modulated sound carrier to said sound channel;

limiter means coupled to receive said IF signal in said sound channel having a non-linear impedance element coupled to the output of said limiter means for generating a limited IF signal corresponding to an amplitude limited version of said IF signal, said limited IF signal being susceptible to undesirable phase shifts varying in accordance with said modulated video carrier due to the repsonse of said non-linear impedance element to the amplitude of said modulated video carrier;

multiplier means in said sound channel having a first input



coupled to receive said IF signal, a second input, coupled to receive said limited IF signal, and an output, for providing at said output an intercarrier frequency modulated sound signal, said intercarrier frequency modulated sound signal being susceptible to containing undesired frequency modulation components due to said undesirable phase shifts; and

resistance means shunt coupled to said limiter means of said sound channel for reducing the extent of impedance variation of said non-linear impedance element in response to the amplitude of said amplitude modulated video carrier and thereby suppressing said undesired frequency modulation components of said intercarrier sound signal.

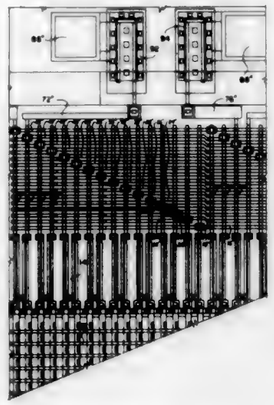
4,660,089

IMAGE SENSOR HAVING NORMALIZED AREAL CONDUCTIVE ELEMENTS TO EFFECT UNIFORM CAPACITATIVE LOADING

Alan Lee, Irvine, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1985, Ser. No. 757,702
Int. Cl.[4] H04N *3/14*; H03K *3/42*
U.S. Cl. 358—213 **8 Claims**

1. In a solid state area image sensor of the type having an integral block matrix of conductors disposed for block readout of said sensor, the improvement wherein said sensor further



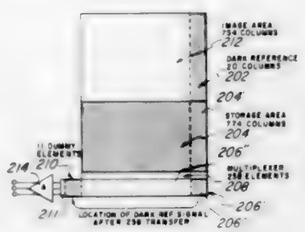
comprises means for normalizing the conductor-to-substrate capacitances of said block matrix of conductors.

4,660,090

CCD IMAGER WITH ON-CHIP PROCESSING

Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1985, Ser. No. 770,326
Int. Cl.[4] H04N *5/30*
U.S. Cl. 358—213 **6 Claims**



1. A CCD structure comprising:

a chain of CCD wells;

a first charge-sensing node coupled to one end of said chain of CCD wells;

clocking means for clocking charge packets from said end of said chain of CCD wells into said first charge-sensing node;

a bufier amplifier connected to sense the voltage on said first charge-sensing node;

a dummy charge-sensing node integrated in a common body of monocrystalline semiconductor material with said first charge-sensing node;

said first charge-sensing node and said dummy charge-sensing node being operatively connected to a common reference voltage;

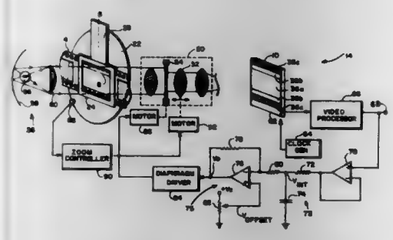
and means for sensing the voltage change on said first charge-sensing node after a charge packet has been transferred into said first charge-sensing node with reference to the voltage on said dummy node.

4,660,091

EXPOSURE LEVEL CORRECTION FOR FILM-TO-VIDEO CONVERSION

Thomas C. Nutting, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 16, 1985, Ser. No. 776,539
Int. Cl.[4] H04N *5/253*
U.S. Cl. 358—214 **6 Claims**



1. Apparatus for maintaining a predetermined video level for a video signal that is derived from an image sensor receiving image-wise illumination from an original only over a partial area of the sensor, a further area of the sensor being unexposed to image-wise illumination but nonetheless contributing to the output video signal, said apparatus comprising:

means for supporting the original in the path of the illumination directed toward the sensor such that the image-wise illumination reaches the partial area of the sensor; and

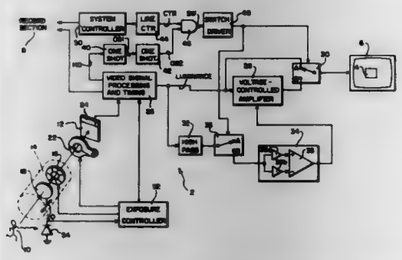
means for illuminating at least a part of the further area of the sensor with non-image illumination, the illuminated part of the further area being so selected that the further area generates a video signal that approximates the predetermined video level.

4,660,092

FOCUSING AID FOR A MANUALLY FOCUSED VIDEO CAMERA

Thomas C. Nutting, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 25, 1986, Ser. No. 843,536
Int. Cl.[4] H04N *5/232, 5/30*
U.S. Cl. 358—224 **10 Claims**



1. In video apparatus of the type that isolates a focus-related characteristic of a video signal and uses the isolated characteristic to modify a video display generated within an electronic viewfinder, the improvement wherein said video apparatus comprises:

means for generating a control signal from the focus-related characteristic of the video signal; and

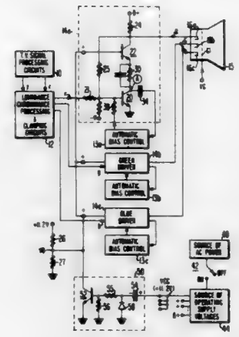
means responsive to the control signal for varying the gain applied to the video signal generating the video display in the viewfinder whereby the visual appearance of the display accentuates the focus-related characteristic.

4,660,093

TELEVISION RECEIVER WITH DELAYED DISPLAY

Randy W. Craig, and Thomas D. Gurley, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed May 9, 1986, Ser. No. 861,302
Int. Cl.[4] H04N *5/68, 5/63, 9/20*
U.S. Cl. 358—243 **8 Claims**



1. A video signal processing and display system comprising:

an image display device for displaying an image in response to an image representative video signal applied thereto;

means for applying said video signal to said display device;

means for supplying system operating voltages when said system is energized;

control means responsive to the energization of said system for generating a control signal for a prescribed interval upon energization of said system; and

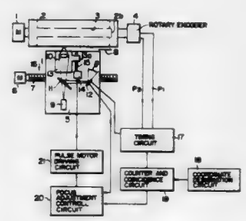
means for coupling said control signal to said applying means for preventing normal application of said video signal to said display device by said applying means to prevent said display device from displaying disturbing visual artifacts after a hot-start energization of said system.

4,660,094

METHOD FOR FOCUS ADJUSTMENT OF A PICTURE SCANNING AND RECORDING SYSTEM

Takeshi Yoshimoto; Masanari Tsuda, both of Kyoto; Yoshikazu Masuda, Osaka, and Masakatsu Yokoi, Kyoto, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 21, 1984, Ser. No. 582,071
Claims priority, application Japan, Mar. 8, 1983, 58-36744
Int. Cl.[4] H04N *1/04*
U.S. Cl. 358—285 **2 Claims**



1. A method for focus adjustment of a picture scanning and recording system during picture scanning and recording, the method characterized by comprising the steps of:

arranging in a row a plurality of luminous light beams generated from a light source;

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projecting said light beams onto a photosensitive material through a lens;

receiving reflected light beams from said photosensitive material, on an image sensor;

said image sensor including a plurality of photoelectric conversion elements, a predetermined region formed by a plurality of said photoelectric conversion elements on a part of said image sensor is placed at an optically equivalent position to said light source with respect to said lens, and optical-axial distances between said photosensitive material and each region corresponding to each of said light beams on said image sensor are different;

detecting variations in focus of the light beam on a surface of said photosensitive material from variations in intensity of said light beams received on said image sensor;

whereby automatic adjustment of focus at a desired point is obtained.

4,660,095

CONTACT-TYPE DOCUMENT SCANNER AND METHOD

Vincent D. Cannella, Birmingham; Zvi Yaniv, Southfield, and Robert R. Johnson, Franklin, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 4, 1984, Ser. No. 607,153

Int. Cl.⁴ H04N *1/024*

U.S. Cl. 358—294 **103 Claims**



1. An apparatus capable of providing electrical signals representative of an image on an image-bearing member, comprising:

a first plurality of address lines;

a second plurality of address lines electrically insulated from and arranged at angle to said first plurality of address lines;

a photosensitive array arranged to scan said image, said array including a plurality of light sensitive elements arranged in spaced apart relation adjacent to a common surface, each said element being adapted to effect a detectable electrical characteristic responsive to the intensity of incident light and being coupled to one address line of one of said plurality of address lines;

isolation means associated with each said light sensitive element for facilitating selective addressing of said light sensitive elements by the application of read potentials to respective pairs of said first and second pluralities of address lines; and

a transparent cover overlying said light sensitive elements, said cover including a surface opposite said light sensitive elements arranged for receiving said image-bearing member in juxtaposed relation to said light sensitive elements for proximity focusing said image onto said array.

4,660,096

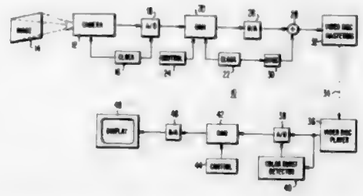
DIVIDING HIGH-RESOLUTION-CAMERA VIDEO SIGNAL RESPONSE INTO SUB-IMAGE BLOCKS INDIVIDUALLY RASTER SCANNED

Lionel Arlan, Lexington; Peter W. Westcott, Billerica, and Paul J. Mageau, Townsend, all of Mass., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 11, 1984, Ser. No. 680,569

Int. Cl.⁴ G11B *7/00*

U.S. Cl. 358—310 **21 Claims**



1. A system for storing information concerning a high-resolution optical image, said system comprising:

a video camera for acquiring an optical image and converting it to a raster-scanned video signal having p picture elements per line trace interval, p being an integer substantially greater than 750;

an analog-to-digital converter sampling said video signal at a sampling rate of p samples per line trace interval and digitizing the video signal samples;

a digital frame storage memory having a number of addressable storage locations at least p times the number of active scan lines in said video signal from said video camera;

means for writing the digitized video signal samples into respective storage locations of said digital frame storage memory while sequentially addressing its storage locations at said sampling rate in accordance with a first pattern;

means for subsequently reading from these storage locations of said digital frame storage memory while addressing them in accordance with a second pattern so related to the first as to permute the samples of said video signal in digitized sampled form so as to describe separate raster scannings of respective rectangular areas that are portions of said optical image, which portions are subimages that individually have no more than half the number of picture elements per scan line as the digitized video signal from said analog-to-digital converter and that collectively form the entire said optical image; and

means for recording said separate raster scannings on a recording medium.

4,660,097

COLOR VIDEO SYSTEM WITH DIGITAL AUDIO PULSE WIDTH MODULATION

Kornelis A. Schouhamer Immink; Ronaldus M. Aarts, and Josephus A. H. M. Kahlman, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 488,573, Apr. 25, 1983, abandoned.

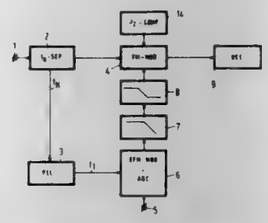
This application Dec. 2, 1985, Ser. No. 804,241

Claims priority, application Netherlands, Feb. 14, 1983, 8300541

Int. Cl.⁴ A04N *5/92, 9/80*

U.S. Cl. 358—310 **33 Claims**

1. A record carrier provided with an encoded recording signal, said encoded recording signal including a carrier wave signal frequency modulated by a composite color video signal, which modulated carrier wave signal is in turn pulse-width modulated by a digital signal, characterized in that said encoded recording signal comprises a track pattern of optically detectable areas which alternate with intermediate areas, which optically detectable areas have a mutual spacing in the track direction which is modulated in conformity with the instantaneous period of the frequency-modulated composite color video signal and a length relative to the adjacent intermediate areas which can assume substantially at least two distinct discrete values, the digital signal being encoded in the sequence of said distinct values.



4,660,098

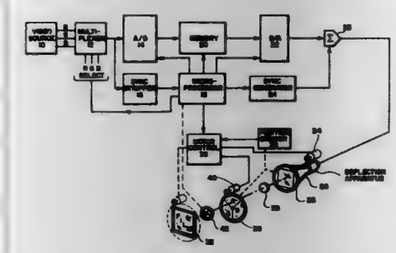
APPARATUS FOR PRODUCING COPIES OF A VIDEO IMAGE UTILIZING LINE PATTERN ROTATION

Dana W. Wolcott, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 17, 1985, Ser. No. 788,378

Int. Cl.⁴ H04N *5/84*

U.S. Cl. 358—332 **6 Claims**



1. Apparatus for producing a copy of a video image displayed on a CRT having a raster line pattern produced by a deflection apparatus, said apparatus comprising:

(a) circuit means for periodically displaying said video image on said CRT,

(b) means for selectively rotating said raster line pattern relative to said video image between each display of said video image, and

(c) means for repeatedly exposing a photosensitive material to said video image displayed on said CRT,

wherein said means for rotating comprises:

(i) means for physically rotating the deflection apparatus of said CRT, and

(ii) electronic processing means for electronically rotating said video image displayed on said CRT.

2. Apparatus for producing a color copy of a video image, said video image having separate color component images, said apparatus comprising:

(a) a CRT having a raster line pattern,

(b) means for selectively displaying said color component images on said CRT,

(c) means for rotating the raster line pattern of said CRT relative to said displayed color component images, and

(d) means for exposing a photosensitive film to each of said displayed color component images.

4,660,099

ROTARY RECORDING MEDIUM HAVING TRACK TURNS RECORDED WITH DIGITAL SIGNAL AND TRACK TURNS RECORDED WITH ANALOG SIGNAL

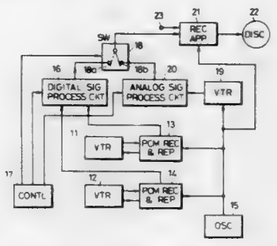
Hiroyuki Sugiyama, Isehara; Nobuaki Takahashi, Yamato; Takeshi Shibamoto, Sagamihara; Kazunori Nishikawa, Machida; Shoji Ueno, Zama; Makoto Komura, Tokyo, and Shunichi Shichijo, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 11, 1984, Ser. No. 609,193

Claims priority, application Japan, May 12, 1983, 58-83232; May 12, 1983, 58-83234

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—342 **8 Claims**



1. A rotary recording medium having information signals recorded on a spiral track or concentric tracks formed thereon, said spiral track or concentric tracks comprising digital track turns which are recorded with a first modulated signal and analog track turns which are recorded with a second modulated signal, said first modulated signal being a digital signal which comprises modulated time-sequentially multiplexed blocks of digital data, said blocks of digital data being transmitted at a transmission frequence of 44.1 kHz or the transmission frequency extremely close to 44.1 kHz, each of said blocks of digital data comprising a synchronizing signal, error correcting codes, an error detecting code, and digitally modulated information signals of a plurality of channels, said second modulated signal being an analog modulated analog information signal at least including a composite video signal, a number of blocks recorded in one track turn of said digital track turns being approximately equal to a product of said transmission frequency and a duration of one revolution of said rotary recording medium.

4,660,100

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS FOR REPRODUCING PRE-RECORDED SIGNALS FROM A ROTARY RECORDING MEDIUM HAVING TRACK TURNS RECORDED WITH DIGITAL SIGNAL AND TRACK TURNS RECORDED WITH ANALOG SIGNAL

Hiroyuki Sugiyama, Isehara; Nobuaki Takahashi, Yamato; Takeshi Shibamoto, Sagamihara; Kazunori Nishikawa, Machida, and Makoto Komura, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 11, 1984, Ser. No. 609,237

Claims priority, application Japan, May 12, 1983, 58-83233; May 12, 1983, 58-83235

Int. Cl.⁴ H04N *5/76*

U.S. Cl. 358—342 **8 Claims**

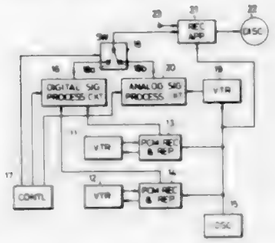
1. A rotary recording medium reproducing apparatus for reproducing pre-recorded signals from a rotary recording medium on which information signals are recorded on a spiral track or concentric tracks thereof, said reproducing apparatus comprising:

reproducing means for picking up and reproducing said pre-recorded signals from a rotary recording medium having digital track turns which are recorded with a first

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modulated signal and analog track turns which are recorded with a second modulated signal, said digital track turns and analog track turns constituting either a spiral track or concentric track turns, said first modulated signal being a digital signal which comprises modulated time-sequentially multiplexed blocks of digital data, said blocks of digital data being transmitted at a transmission frequency of 44.1 kHz or the transmission frequency extremely close to 44.1 kHz, each of said blocks of digital data comprising a synchronizing signal, error correcting codes, an error detecting code, and digitally modulated information signals of a plurality of channels, said second modulated signal being an analog modulated analog information signal at least including a composite video signal;

a first reproducing circuit for reproducing a composite video signal having a horizontal scanning frequency of a predetermined television system from signals which are reproduced from said analog track turns, among reproduced signals from said reproducing means;



a second reproducing circuit for demodulating and reproducing original information signals from signals which are reproduced from said digital track turns, among the reproduced signals from said reproducing means;

a first oscillator circuit for producing a signal having a frequency which is equal to a natural number times the horizontal scanning frequency of said predetermined television system;

a servo circuit supplied with an output signal of said first oscillator circuit as a motor rotation synchronizing signal, for rotating a motor in synchronism with said motor rotation synchronizing signal, said motor rotating said rotary recording medium; and

clock signal generating circuit for frequency-multiplying the output signal of said first oscillator circuit, and for supplying the frequency multiplied signal to said second reproducing circuit as a clock signal.

4,660,101

APPARATUS AND METHOD FOR EDITING ELECTRONICALLY-DISPLAYED PICTURES

William A. Martin, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1984, Ser. No. 644,098

Int. Cl.⁴ H04N *5/781*

U.S. Cl. 358—342 **4 Claims**

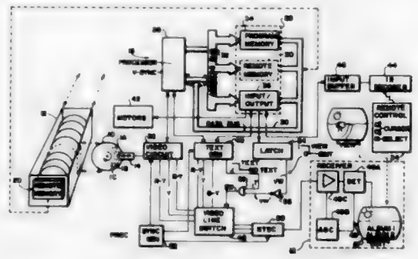
1. Video player apparatus for reproducing a picture from a recording medium and playing back the picture in combination with text relating to the content of the picture, said apparatus comprising:

means for generating a video picture signal corresponding to a picture prerecorded on the recording medium;

means for generating a video text signal corresponding to a message pertaining to the the picture and suggesting one or more decisions that may be made in relation to the picture;

an output section for providing a signal suitable for displaying the picture with or without text;

switching means having (A) a first state for applying said video picture signal and said video text signal to said output section thereby to display the picture including text and (B) a second state for applying only said video picture signal to said output section thereby to display the picture without text;



controller means for selectively generating a viewing signal signifying the desire to see the picture without text; and

means responsive to said viewing signal for placing said switching means in said second state.

4,660,102

ELECTRONIC STILL CAMERA CAPABLE OF EDITING PICTURE RECORDED ON DISK

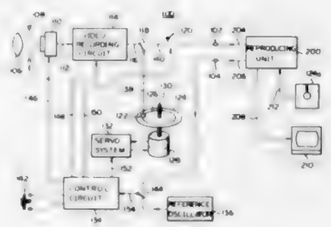
Chikuni Kawakami, and Katsuo Nakadai, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1984, Ser. No. 681,583

Claims priority, application Japan, Dec. 22, 1983, 58-241068

Int. Cl.⁴ H04N *5/781*

U.S. Cl. 360—14.1 **9 Claims**



1. An electronic still camera comprising:

imaging means for imaging an object to produce a unit of video signals representative of the object;

driving means for turning a first rotary magnetic recording medium which is detachably mounted thereon;

recording means for recording a unit of video signals on said first rotary magnetic recording medium while rotating;

a shutter release button for initiating the imaging of an object;

oscillator means for generating a first sync signal from said shutter release button;

control means, operative in response to operation of said shutter release button and the first sync signal, for controlling said imaging, driving and recording means so as to shoot an object and store a still picture of the object in said first rotary magnetic recording medium in the form of video signals;

first terminal means for receiving video signals representative of a still picture read out from a second rotary magnetic recording medium;

second terminal means for receiving a second sync signal in response to a reading operation of the video signals from said second rotary magnetic recording medium; and

selecting means for selectively conducting the first and second sync signals from said oscillator means and second terminal means, respectively, to said control means;

said control means also being responsive to the second sync signal received on said second terminal means and conducted by said selecting means to cause said first rotary magnetic recording medium to be turned so as to record a unit of video signals of a still picture received on said first terminal means onto said first magnetic recording medium.

4,660,103

RECORDING AND REPRODUCING DIGITAL AUDIO SIGNALS FORMED INTO GROUPS OF VARYING LENGTHS

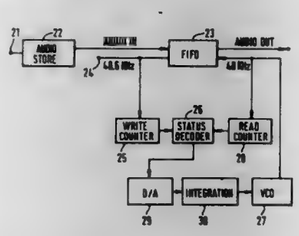
James H. Wilkinson, Basingstoke, United Kingdom, and Peter C. Boreland, Waterbury, Conn., assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 4, 1985, Ser. No. 772,451

Claims priority, application United Kingdom, Sep. 17, 1984, 8423452

Int. Cl.⁴ H04N *5/782;* **G11B** *20/12*

U.S. Cl. 360—18 **7 Claims**



1. A method of recording a digital audio signal in association with a digital video signal which is to be recorded in oblique tracks on a magnetic tape using a rotary head, the rotational frequency of which is locked to said digital video signal, the method comprising the steps of:

assembling incoming audio data words which correspond to successive samples of an audio signal in an audio channel into groups nominally of N said audio data words per group, where N is the number of audio samples corresponding to the digital video signal to be recorded in a said oblique track;

allowing the number of said audio data words in each said group to vary over the range N−n to N+n, where n is a positive integer, to maintain synchronism of said audio data words with said rotational frequency;

coding said audio data words into error-correction blocks for recording; associating with each said block a status code for use on reproduction and which indicates the number of said audio data words in the corresponding said group; and

recording said blocks with said digital video signal in a said oblique track.

4,660,104

METHOD FOR RECORDING AND/OR REPRODUCING VIDEO AND AUDIO SIGNALS ON A MAGNETIC TAPE AND A ROTARY CYLINDER ARRANGEMENT THEREFOR

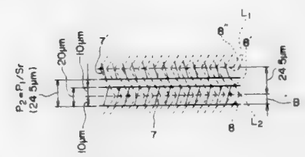
Seiji Higurashi, Chiba, Japan, assignor to Victor Company of Japan, Ltd., Japan

Continuation-in-part of Ser. No. 567,977, Jan. 4, 1984, Pat. No. 4,633,332. This application Aug. 23, 1984, Ser. No. 644,108

Claims priority, application Japan, Aug. 23, 1983, 58-153402

Int. Cl.⁴ A04N *5/782*

U.S. Cl. 360—19.1 **9 Claims**



1. A method of recording a video signal and an audio signal on a magnetic tape by way or rotary heads, comprising the steps of:

(a) forming two audio tracks on said tape such that there is no guard band between said audio tracks; and

(b) forming a video track after said audio tracks are formed upon said audio tracks such that a boundary between said audio tracks is covered by said video track.

4,660,105

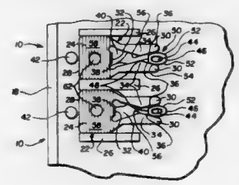
CASSETTE RECORDING OR NON-RECORDING INDICATING MECHANISM

Clark E. Harris, Fairport; Roger G. Covington, Rochester, and David E. Foeller, Batavia, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1985, Ser. No. 799,513

Int. Cl.⁴ G11B *15/04, 23/03*

U.S. Cl. 360—60 **6 Claims**



1. A cassette indicating mechanism for selectively placing a cassette of the type having top and bottom halves and an information recording medium mounted therebetween in a recording or non-recording condition, the combination comprising:

a pair of spaced apart walls on said bottom half facing said top half, an abutment means on said bottom half between said walls at one end thereof, and a post on said bottom half between said walls at the opposite end thereof, said post having a side surface defining front and rear cam surfaces merging at an apex;

an aperture in said top half in register with at least a part of the space between said walls adjacent said abutment means; and

a slidable insert interposed between said walls and said top and bottom halves for slidable movement to and from said abutment means, said insert having a body portion with a front surface and a rear surface adjacent said abutment means, said insert further having at least one flexible finger

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extending from said front surface thereof having a projection on a side thereof facing said post and adapted to flex over said apex of said side surface and to resiliently selectively engage said front and rear cam surfaces thereof, said insert being selectively slidably movable between a normal recording position in which said insert is captured between said abutment means and said rear cam surface of said post with said body portion thereof in register with and blocking said aperture, and a non-recording position in which said post is captured between said front surface of said body portion and said projection for releasably holding said body portion out of register with and unblocking said aperture.

4,660,106

DATA TRANSDUCER POSITION CONTROL SYSTEM FOR ROTATING DISK DATA STORAGE EQUIPMENT

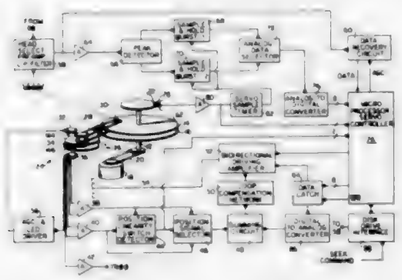
Joel N. Harrison, Campbell; Donald V. Daniels, Santa Cruz, and David A. Brown, Saratoga, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Continuation of Ser. No. 190,198, Sep. 24, 1980, Pat. No. 4,396,959. This application May 23, 1983, Ser. No. 496,924

The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.

Int. Cl.⁴ G11B *21/10, 21/08;* H02K *37/00*

U.S. Cl. 360—77 **17 Claims**



1. A servo system for use in a disk drive apparatus connectable to a host system which provides a first set of signals and monitors a second set of signals associated with the operation of a different disk drive, the disk drive apparatus including at least one data storage disk with a major surface having a multiplicity of data tracks, motor means for rotating the data storage disk at a predetermined proper angular velocity, index marker means for generating an index signal once per revolution of the data storage disk and a transducer for reading data from and writing data to the multiplicity of data tracks, said servo system comprising:

mover means for moving the transducer to a selected one of the multiplicity of data tracks and for holding the transducer within the boundaries of the selected data track;

a single servo sector disposed on the major surface of the data storage disk at a location which is determined in time by the index signals, aid single servo sector having prerecorded therein track centerline information for the selected data track readable by the transducer;

servo control means for marking said location of said single servo sector and for performing a servo operation in response thereto, said servo control means including a controller circuit means connected to the transducer, said mover means and the index marker means for receiving said track centerline information read from said single servo sector by the transducer once during each revolution of the data storage disk and for enabling the mover means to move the transducer into alignment with the centerline of the selected data track as a function of said track centerline information read by the transducer; and

emulation means capable of performing a disk drive emulation function, said emulation means including said controller circuit means configured for processing the first set of signals associated with the different disk drive and for generating the second set of signals associated with the different disk drive in order to enable the disk drive apparatus to emulate the different disk drive, said emulation means also including an interface means connected to said controller circuit means for receiving the first set of signals from and for sending the second set of signals to the host system.

4,660,107

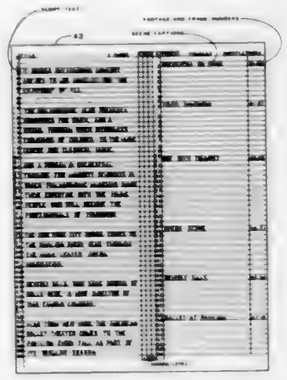
METHOD AND APPARATUS FOR CUEING AND PACING IN AUDIO AND AUDIO-VISUAL WORK

Arthur Chippendale, Jr., 1636 N. Verdugo Rd., Glendale, Calif. 91208

Filed Mar. 8, 1984, Ser. No. 587,616

Int. Cl.⁴ G11B *27/02;* H04N *5/24;* G08B *1/00*

U.S. Cl. 360—14.3 **3 Claims**



1. An apparatus for use in cueing and pacing audio and visual presentations comprising:

(a) electronic time code means selectively operable in a first and second mode, said means being adapted to be operated in a first mode to record a time code on a magnetic recording tape and adapted to be operated in a second mode for reading said time code from said magnetic recording tape;

(b) a first and second time display means operable by said time code means when said means is in said second mode for displaying elapsed time, said second display means comprising a row of sixty linearly aligned lights adapted to be consecutively energized at one second intervals;

(c) data display means for manually recording and displaying data, including a writing surface having a multiplicity of spaced apart lines inscribed thereon;

(d) alignment means for aligning said spaced apart lines inscribed on said writing surface with said lights of said second display means; and

(e) control means for selectively starting and stopping said time code means.

4,660,108

AUTOMATIC TRACKING APPARATUS

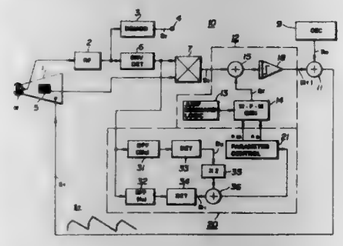
Hitoshi Sakamoto, and Takayuki Okafuji, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 25, 1985, Ser. No. 779,846

Claims priority, application Japan, Sep. 28, 1984, 59-203385

Int. Cl.⁴ G11B *5/58;* H04N *5/78*

U.S. Cl. 360—77 **12 Claims**



7. In an automatic tracking apparatus, for use in a video tape recorder including a magnetic head mounted on a piezo-electric element, a method for jumping the magnetic head between two tape tracks comprising the steps of:

generating a drive pulse signal which causes the piezo-electric element to deflect and thus drive the magnetic head and the waveform of which includes a jump portion causing the magnetic head to jump from one tape track to another, resulting in ringing vibrations in the piezo-electric element;

imposing an inflection point in the jump portion of the drive pulse;

detecting the amplitude of ringing vibrations in the piezo-electric element; and

specifying the position of the inflection point within the jump portion in accordance with the detected amplitude of the ringing vibrations.

4,660,109

MECHANISM FOR ACTUATING THE RECORDING SWITCH OF A MAGNETIC-TAPE APPARATUS

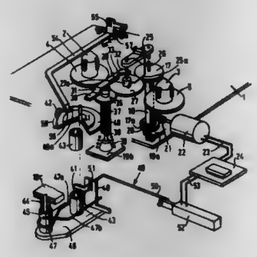
Ghislanus M. A. M. Aldenhoven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1984, Ser. No. 679,189

Claims priority, application Netherlands, Dec. 15, 1983, 8304313

Int. Cl.⁴ G11B *15/18*

U.S. Cl. 360—96.3 **11 Claims**



1. A magnetic-tape apparatus having a switch-actuating mechanism, comprising

a deck plate on which a head-mounting plate is mounted to be movable between at least a rest position and an operating position,

a magnetic head carried on said head-mounting plate,

two winding spindles, for transporting tape past said head, each spindle having a respective reel disc coaxially connected thereto,

drive means for selectively driving a selected one of said winding spindles, comprising an idler wheel pivotally supported between said reel discs so as to be displaceable into engagement with one of said discs when said head mounting plate is in the operating position,

two abutments carried on said head-mounting plate, arranged to limit displacement of the idler wheel when the head-mounting plate is in the rest position so as to keep the idler wheel disengaged from said reel discs,

a recording switch, and

actuating means for actuating said switch,

characterized in that the switching mechanism comprises a guideway on the head mounting plate,

an axially displaceable coupling wheel, displaceable between a first position in which the coupling wheel is coupled to the idler wheel when the head-mounting plate is in the rest position, and a second position in which the coupling wheel is disengaged from the idler wheel when the head-mounting plate is in the operating position,

a servo wheel arranged to be driven by said coupling wheel, and

a latching element arranged to engage said servo wheel to prevent rotation of the servo wheel in one direction; and

said actuating means comprises means engaging said servo wheel for operating said recording switch.

4,660,110

MAGNETIC DISK STORAGE DEVICE WITH SHROUD ENCLOSING DISK ASSEMBLY

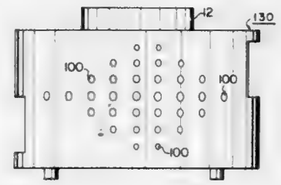
Muneo Iida; Jyosei Simiza, both of Odawara; Masami Suzuki, Yokohama; Nobuyuki Okamoto, Odawara; Toshinori Kazama, Hiratsuka; Masanobu Hoada, Odawara; Jiro Mochida, Yokohama; Seiji Tada, and Masayuki Fujii, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 3, 1983, Ser. No. 548,515

Claims priority, application Japan, Nov. 8, 1982, 57-194732

Int. Cl.⁴ G11B *5/012*

U.S. Cl. 360—98 **6 Claims**



1. A magnetic disk storage device wherein data is recorded on and reproduced from magnetic disks, driven for rotation, by means of magnetic heads, comprising:

a disk assembly composed of the magnetic disks stacked in superposed relation with cylindrical spacers interposed therebetween, said disk assembly being supported by a spindle;

at least one pair of access arms, each access arm supporting one of the magnetic heads for recording and reproducing the data on and from the magnetic disks;

at least one pair of actuators, each actuator driving one of the pair of access arms for moving the magnetic heads supported on the access arms on surfaces of the magnetic disks;

an inner shroud including a cylindrical outer peripheral wall enclosing the disk assembly with a predetermined distance between the outer circumferential surfaces of the magnetic disks and an inner surface of the outer peripheral

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wall, an upper cover providing a cover to a top surface of the cylindrical outer peripheral wall, a lower cover providing a cover to a bottom surface of the cylindrical outer peripheral wall, means delimiting first ports located at the outer peripheral wall in positions corresponding to the pair of actuators, and means delimiting second ports located at the upper cover and opening above the spindle, the inner shroud being formed at its outer peripheral wall with a multiplicity of small apertures maintaining the interior of the inner shroud in fluid communication with the outside of said inner shroud, the multiplicity of small apertures formed at the outer peripheral wall of the inner shroud extending periodically around the entire circumference of the inner shroud and at different elevations of the inner shroud corresponding to the respective disks of the disk assembly, the multiplicity of small apertures being located such that each small aperture has its central point directed against an outer edge of a respective disk of the disk assembly so as to permit air flow therethrough and to reduce turbulent air flow within the inner shroud, the multiplicity of small apertures being arranged such that the apertures which are located at an intermediate elevation have a larger open area than the apertures which are located at high and low elevations with respect to the axis of the spindle, whereby the large open area at the intermediate elevation enable a large amount of air flow therethrough so as to enable release of greater amounts of heat from the intermediate portion of the disk assembly than at the higher and lower portions thereof, thereby enabling thermal off-track to be minimized;

a filter located in the vicinity of the second port means at the upper cover of the inner shroud for removing dust from air flowing through the second port means; and

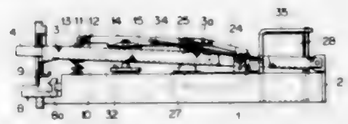
a dust cover enclosing the disk assembly, the access arm, the actuators, the inner shroud and the filter as a unit to avoid the entry of dust form outside.

4,660,111

PAD LIFTING MECHANISM OF A FLOPPY DISK DEVICE

Shuzo Morimoto, No. 690-6, Hodokubo, Hino-shi, Japan

Filed Jan. 6, 1984, Ser. No. 568,796
Claims priority, application Japan, Jun. 10, 1983, 58-186034
Int. Cl.⁴ G11B *5/012, 5/016, 5/54, 21/22*
U.S. Cl. 360—99 **5 Claims**



1. A lifting mechanism for a floppy disc drive device that includes a base having a fixed member, a disc carriage for supporting a cassette therein, the disc carriage having one end pivotally connected to the base and including means for containing a magnetic disc having a rotation center area, means for moving the disc carriage along a guide path between a set position adjacent to the base and a released position spaced away from the base, means for rotating the magnetic disc, means for engaging the rotation center area of the magnetic disc to the rotating means when the disc carriage is in the set position, a head carriage having a magnetic head mounted thereon, and means for moving the magnetic head radially across the magnetic disc supported in the disc carriage, the lifting mechanism comprising:

a first arm having one end pivotally connected to the disc carriage and an opposite free end and being movable toward and away from the disc carriage and spring-biased toward the disc carriage to provide a first spring action;

a collet mounted on said first arm and being movable along said guide path of said disc carriage by said first spring action of said first arm to press said rotation center area of said magnetic disc when said disc carriage is in said set position;

a second arm having one end pivotally connected to the head carriage and being movable toward and away from the head carriage and being spring-biased toward the head carriage to provide a second spring action and being engageable with said first arm by said second spring action of said second arm;

a pad mounted on said second arm and being movable along said guide path of said disc carriage to press the magnetic disc against the magnetic head when the disc carriage moves to the set position; and

a lifting lever having one end operatively connected to said first arm so as to be normally pressed against said disc carriage by said first spring action of said first arm and an opposite end connected to the fixed member of the base and engaged with said first arm so as to be movable toward and away from said base,

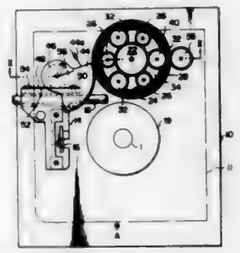
said lifting lever being movable in association with the disc carriage toward and away from said base so that in the release position of the disc carriage, said lifting lever is movable away from said base to move said first arm away from said disc carriage against said first spring action of said first arm to thereby move said collet out of said guide path of said disc carriage while said first arm moves said second arm away from said head carriage against said second spring action of said second arm to thereby move said pad away from said head carriage and out of said guide path of said disc carriage.

4,660,112

FEED DEVICE FOR MAGNETIC HEAD

Yukio Shibata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 21, 1984, Ser. No. 642,862
Claims priority, application Japan, Aug. 31, 1983, 58-159965
Int. Cl.⁴ G11B *21/08*
U.S. Cl. 360—106 **14 Claims**



1. A feed device for a magnetic head, wherein said magnetic head moves in the radial direction of a magnetic disc to perform the recording and/or reproducing into said magnetic disc or therefrom, comprising:

a rotary driving source;

a planetary gear reduction mechanism, having an input gear connected to said rotary driving source, an output gear and planetary gear means disposed in meshing engagement with said input and output gears;

a rotation-linear movement converting mechanism connected to said output gear for converting a rotary motion of said output gear into a linear movement; and

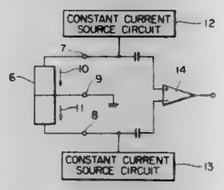
a head carriage provided with said magnetic head and connected to said rotation-linear movement mechanism for moving said head carriage and magnetic head in the radial direction of said magnetic disc.

4,660,113

MAGNETORESISTIVE THIN FILM HEAD

Noboru Nomura, Kyoto, and Yasuharu Shimeki, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 9, 1982, Ser. No. 448,058
Claims priority, application Japan, Dec. 9, 1981, 56-196910; Aug. 17, 1982, 57-142519
Int. Cl.⁴ G11B *5/30*
U.S. Cl. 360—113 **6 Claims**



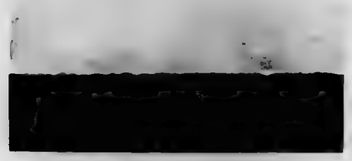
1. A thin film magnetic head having a magnetoresistive element in which a thin ferromagnetic film is deposited on a substrate, wherein said magnetoresistive element has three terminals comprising two end terminals connected to means for providing a current flowing through the magnetoresistive element in one direction and an intermediate terminal connected to grounding means and the magnetization of the magnetoresistive element is preset by magnetization presetting means to be substantially inclined in one direction against the longitudinal direction of the magnetoresistive element; a change in resistance of a first portion between one of said two end terminals and said intermediate terminal and a change in resistance of a second portion between the other of said two end terminals and said intermediate terminal which are obtained by applying a magnetic field of a signal recorded on and reproduced from a single track of a magnetic recording medium are respectively obtained as reproduction voltages by flowing a current through said first and second portions in the same direction; and the two end terminals are connected to a differential amplifier which differentially amplifies the reproduction voltages.

4,660,114

THIN FILM MAGNETIC HEADS AND SUBSTRATES THEREFORE

Akira Yamakawa, Itami; Yoshinobu Takeda, Osaka, and Eiji Kamijo, Itami, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 7, 1985, Ser. No. 699,396
Claims priority, application Japan, Feb. 15, 1984, 59-27719
Int. Cl.⁴ G11B *5/22, 5/14*
U.S. Cl. 360—122 **2 Claims**



1. A thin film magnetic head having a substrate consisting of a ceramic compact which comprises 4 to 45% by volume of Component A, 55 to 96% by volume of Component B and at most 3% by volume of unavoidable impurities:

Component A: at least one member selected from the group consisting of carbides, nitrides, carbonitrides, carboxides, oxynitrides and carboxynitrides of Group IVa, Va and VIa elements of the Periodic Table and mixtures or solid solutions thereof,

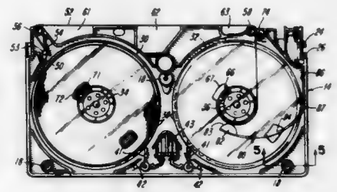
Component B: ZrO_2 consisting of at least 70% by weight of tetragonal and/or cubic system and the balance of monoclinic system, in which at least one member selected from the group consisting of oxides of Group IIIa elements of the Periodic Table, CaO and MgO, and mixtures thereof is dissolved to form a solid solution.

4,660,115

VIDEO TAPE CASSETTE WITH INTERNAL TAPE ERASING MEANS

Wade H. Westfall, and Roy Wheaton, both of P.O. Box 1485, Piqua, Ohio 45356

Filed Mar. 18, 1985, Ser. No. 713,300
Int. Cl.⁴ G11B *23/02*
U.S. Cl. 360—132 **13 Claims**



1. A video tape cassette for inserting into a video cassette recorder and for removing from the recorder, said cassette comprising a generally rectangular box-like housing formed by an upper case section and a mating lower case section disposed in opposing relation, means for securing said case sections together with said case sections defining a generally enclosed chamber, a supply reel and a take-up reel each having a hub portion and supported within said chamber between said case sections for rotation on parallel spaced axes, a flexible magnetic tape having prerecorded information thereon, said tape being wound on said hub portion of said supply reel and having a leading end portion connected to said hub portion of said take-up reel, means supported by said case sections for guiding said tape from said supply reel to said take-up reel and along a predetermined path, a magnetic element disposed within said chamber, means within said chamber for supporting said magnetic element adjacent said tape on said take-up reel, said supporting means being adapted to move in response to the build-up of said tape on said take-up reel, and said magnetic element on said supporting means progressively erasing the prerecorded information on said tape as said tape is wound on said take-up reel and after said tape is diverted from said path into the video cassette recorder thereby permitting one time viewing of the prerecorded information on said tape prior to erasing the prerecorded information.

4,660,116

VIDEO TAPE CASSETTE WITH INTERNAL TAPE ERASING MEANS

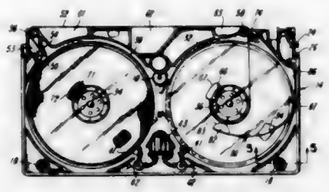
Wade H. Westfall; Roy Wheaton, both of P.O. Box 1485, Piqua, Ohio 45356, and Alan F. Meckstroth, 2310 Far Hills Ave., Dayton, Ohio 45419

Filed Apr. 22, 1985, Ser. No. 725,423
The portion of the term of this patent subsequent to Apr. 2, 2004, has been disclaimed.
Int. Cl.⁴ G11B *23/02*
U.S. Cl. 360—132 **15 Claims**

1. A video tape cassette adapted to be inserted into a video-cassette recorder and to be removed from the recorder, said cassette comprising a housing defining a generally enclosed chamber, a supply reel and a take-up reel each having a hub portion and supported within said chamber for rotation on parallel spaced axes, a flexible magnetic tape having prere-

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corded information thereon, said tape being wound on said hub portion of said supply reel and having a leading end portion connected to said hub portion of said take-up reel, means supported by said housing for guiding said tape from said supply reel to said take-up reel and along a predetermined path, tape erasing means supported within said chamber adjacent said take-up reel for progressively erasing said informa-



tion on said tape as said tape is wound on said take-up reel and after said tape is diverted from said path into the recorder to permit one time viewing of the prerecorded information on said tape prior to erasing the prerecorded information, and means movable from outside said housing for rendering said tape erasing means ineffective after said tape is erased to permit reusing said cassette as a blank cassette.

4,660,117

DISK CARTRIDGE HAVING A FLEXIBLE DISK STORAGE MEDIUM AND A DISK FILE INCLUDING SUCH A CARTRIDGE

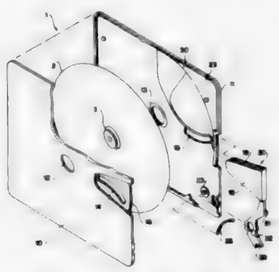
Paul D. Carey, Romsey; Stanley J. Cutts, Winchester; John S. Heath, Winchester; David E. White, Winchester, and David A. Evans, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1984, Ser. No. 676,358

Claims priority, application European Pat. Off., Dec. 21, 1983, 83307800.9

Int. Cl.[4] G11B *23/03, 15/64, 17/32*

U.S. Cl. 360—133 **14 Claims**



1. A disk cartridge for information storage having a flexible disk storage medium within a cartridge enclosure having a first wall and a second wall, said cartridge enclosure having a central aperture through one of said walls to permit external drive means to rotate said disk within said enclosure and to permit an ingress of air into said enclosure so that said disk develops an air bearing when rotated by said external drive means, said air bearing supporting said disk clear of said walls of said enclosure, said enclosure having an access slot in said first wall of said enclosure, said access slot spanning an information storage area of said disk and permitting an external air bearing transducer access to said disk for recording and/or detecting information on said disk, said first wall of said cartridge being planar over a major portion of its surface of said first wall and having an out-of-plane feature over a minor portion of the surface of said first wall, wherein said planar portion of said first wall includes part of the periphery of said access slot and a substantial portion of said first wall on a first side of said access slot, and said out-of-plane feature consists of a smoothly contoured raised element bordering on a second side of said slot.

4,660,118

DISC CASSETTE WITH SLIDABLE COVER

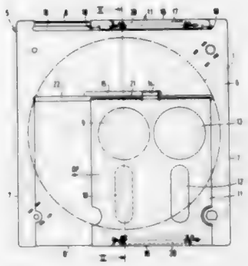
Johannes W. Faber, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1984, Ser. No. 666,025

Claims priority, application Netherlands, Aug. 27, 1984, 8402602

Int. Cl.[4] G11B *23/02*

U.S. Cl. 360—133 **4 Claims**



1. A disc cassette comprising

a readable information disc having a central hub for receiving a drive spindle of a drive apparatus,

an envelope in which the disc is encased, said envelope comprising a pair of opposed major walls paralleling the plane of the disc and interconnected by two pairs of opposed sidewalls, at least one of the major walls having a central opening aligned with the hub of the disc, for passage of the drive spindle, an access slot, for passage of the information recording and/or reproducing means, and a retention slot adjacent said central opening opposite said access slot, said retention slot being oriented substantially perpendicular to said access slot, said retention slot having an undercut edge,

first closing means movable over the outside of the envelope substantially parallel to said retention slot between a closing position and an operational position, said closing means having an opening corresponding to the central opening and an access slot corresponding to the access slot in the envelope, said opening being aligned with the central opening and said access slots likewise being aligned when said closing means is in the operational position, said closing means covering the central opening and access slot in the envelope when in the closing position, said closing means being formed with a lap offset from the plane of the major portion of the closing means, said lap being overlapped by the undercut edge of the retention slot in said envelope, whereby

said lap and said undercut edge locally retain said closing means against displacement away from the envelope, said lap and said undercut edge cooperating slidably with each other.

4,660,119

FLEXIBLE MAGNETIC DISK SHEET

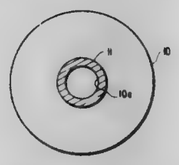
Mikihiko Kato; Shigeo Komine, and Kazuhiko Morita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 18, 1984, Ser. No. 683,294

Claims priority, application Japan, Dec. 19, 1983, 58-239287

Int. Cl.[4] G11B *23/02, 5/016*

U.S. Cl. 360—133 **12 Claims**



1. A flexible magnetic disk sheet having a central circular hole, (through which an apparatus for reading and writing is engaged,) and enclosed in a jacket having a larger central circular hole exposing the hole of the disk sheet within the hole of the jacket, wherein a reinforcing plastic ring containing a solid lubricating agent is provided on the region of the flexible magnetic disk sheet immediately surrounding the central circular hole thereof.

4,660,120

DISK DRIVE UNIT COMPRISING A HEAD POSITIONING DEVICE AND ELECTROMAGNETIC RELEASING/ARRESTING MEANS THEREFOR

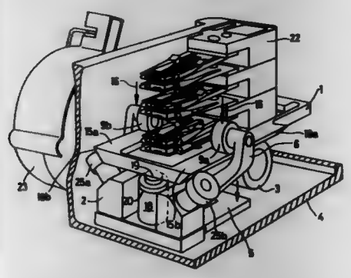
Klaus Maazke, Westheim; Hans-Joachim Weis, Mannheim, and Gerhard Soehring, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 27, 1984, Ser. No. 604,390

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 8312653[U]

Int. Cl.[4] G11B *5/54;* **H01F** *7/08, 3/00*

U.S. Cl. 360—137 **12 Claims**



1. An information storage apparatus having at least one information storage disk, a positioning device and a scanning head(s) carried thereby, said positioning device being supported for movement relatively to said information storage disk(s), and said apparatus having an electrically controllable locking means for the protection of the positioning device and the storage head(s),

said locking means having an electromagnetic device including an armature and, in a casing, an energizing coil and a restoring spring bearing against the armature,

wherein the armature comprises a plunger guided for longitudinal movement in the casing and an armature plate mounted on said plunger,

wherein said energizing coil is provided at one end of the casing and the armature plate is parallel to the front face of the energizing coil so that the effective working air gap extends substantially between the armature plate, which serves as the return path for the magnetic flux, and the front face of the energizing coil, and

wherein the armature, the energizing coil and the casing are dimensioned so that the electromagnetic device has a pull/volume ratio M/V of at least 300 mN/cm^3.

4,660,121

ELECTRONIC SAFETY BARRIER

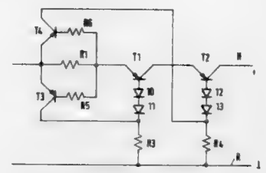
Karl Kapfer, Moeckmuehl, and Gerhad Schwarz, Allemuehl, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Mar. 4, 1985, Ser. No. 707,517

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 3407800

Int. Cl.[4] H02H *9/02*

U.S. Cl. 361—58 **10 Claims**



1. Intrinsically safe safety barrier, comprising an outgoing line, a return line, two switching transistors disposed serially connected in said outgoing line, at least two control transistors having base-emitter circuits for controlling said switching transistors in order to regulate current when current increases in said outgoing line, and a single sensing resistor connected in said outgoing line in said base-emitter circuits of each of said control transistors.

4,660,122

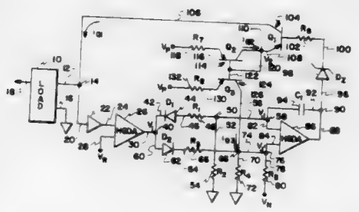
FOLDBACK CURRENT LIMITING CIRCUIT

Thomas E. Evans, Parker, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 28, 1984, Ser. No. 655,268

Int. Cl.[4] H02H *9/04*

U.S. Cl. 361—90 **2 Claims**



1. Electric current supply apparatus including a current limiting circuit for protecting interchangeable loads having different impedances, the current supply apparatus comprising:

a supply terminal adapted to be connected to any of a plurality of interchangeable loads;

first amplifier means having a first input terminal connected to said supply terminal, a second input terminal connected to a reference source of voltage and an output terminal

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upon which a first voltage indicative of the voltage difference between the first and second input terminals is produced;

second amplifier means having first and second input terminals and an output terminal upon which is produced a voltage indicative of the difference between the voltages at the first and second input terminals thereof;

means connecting the output terminal of said second amplifier means to said supply terminal; and

switching means having first and second current paths between the output terminal of said first amplifier means and the first and second input terminals of said second amplifier means respectively, said switching means being operable when the first voltage is within a first range of values to supply current only through the first current path, and operable when the first voltage is within a second range of values to supply current only through the second current path, said second amplifier means providing a current at its output terminal which varies directly with the first voltage when current is being supplied through the first current path, and providing a current which varies inversely with the first voltage when current is being supplied through the second current path, said second amplifier means operating to limit the current to said supply terminal to a value which protects any of the interchangeable loads.

4,660,123

APPLIANCE FOR RELEASABLE FASTENING OF A COOLING MEMBER TO AN INTEGRATED MODULE

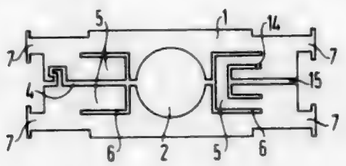
Adam Hermann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

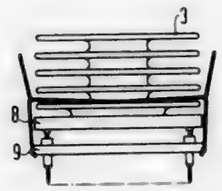
Filed Sep. 25, 1984, Ser. No. 654,154

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335365

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—386 **10 Claims**





1. An appliance releasably fastening a cooling member to an integrated circuit module mounted on a plug base, the cooling member having a core and cooling fins extending from the core, the appliance comprising:

an H-shaped spring clip including

a first leg section including first legs for releasably engaging the plug base,

a second leg section including second legs for releasably engaging the plug base,

an intermediate section connecting said first and second leg sections and including a central aperture for receiving the core of the cooling member, and intermediate section portions adjacent said central aperture for receipt between a pair of the cooling fins and a parting slot extending from the central aperture to one end of said spring clip to facilitate spreading of the spring clip over the cooling member, and

a plurality of spreader brackets extending from and in the opposite direction of said first and second legs effecting releasable engagement of said first and second legs upon movement of said spreader brackets towards one another.

4,660,124

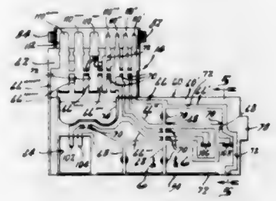
ELECTRICAL CIRCUIT WITH HIGH THERMAL DISSIPATION

Thaddeus W. Woy, Warren, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Apr. 22, 1985, Ser. No. 725,846

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—386 **4 Claims**



1. An air conditioning control assembly comprising: a base member of electrically insulative material and having generally flat surface means;

a circuit framing member of electrically insulative material and having flat surface means corresponding with the surface means of the base member permitting face-to-face surface engagement when in an assembled relationship together;

electrical circuit means captured between the base support member and the circuit framing member;

the electrical circuit means including several elongated circuit elements extending generally in side-by-side relation and initially joined together by severable interconnecting portions to form a one piece integral member readily mated to the circuit framing member before subsequent assembly to the base member;

the circuit framing member being of molded plastic material with several channels recessed in its flat surface means which are dimensioned and configured to receive the one piece circuit means, including the circuit elements and the interconnecting portions therebetween and with the channels sufficiently deep to allow the surface means of the framing member and circuit elements to be co-planar and closely engage the surface means of the base member;

the framing member and base member having aperture means therein in corresponding overlying relationship to the interconnecting portions between the circuit elements thereby providing access after mating of the base and frame members to sever the interconnects between the circuit elements;

means to mate the corresponding surface means of the base member and the framing member with the circuit elements therebetween so that the circuit elements engage the members in good heat transfer relationship.

4,660,125

RIBBON CABLE ASSEMBLY

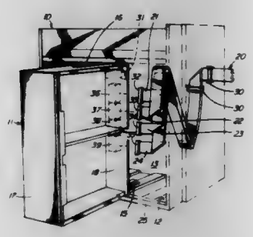
Michael L. Purdy, Stittsville, and James D. Pue-Gilchrist, Richmond, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 9, 1986, Ser. No. 849,648

Claims priority, application Canada, Feb. 24, 1986, 502554

Int. Cl.⁴ H02B *1/02*

U.S. Cl. 361—391 **2 Claims**



1. A ribbon cable assembly for electrically interconnecting a cabinet and a pull-out drawer disposed therein in which:

the cabinet and the pull-out drawer each has a front, a back, and a bottom, and the pull-out drawer is slideably mounted through the front of the cabinet for movement between an open and a closed position, so that the front and the back of the drawer are adjacent respectively the front and the back of the cabinet when the drawer is in the closed position;

the ribbon cable assembly is characterized by:

a plurality of ribbon cables for electrically interconnecting the cabinet and the pull-out drawer, each cable having broad opposed surfaces and narrow edges extending along its length;

a retaining bar disposed on the upper back of the drawer for supporting the plurality of ribbon cables thereon, and a clamping means disposed on the upper back of the cabinet for fixing the plurality of ribbon cables thereto, the cables overlying one another with their broad opposed surfaces substanially orthogonal to the direction of movement of the pull-out drawer;

each of the ribbon cables extending substanially coextensively downwards from the clamping means to a fold in each of the ribbon cables near the bottom of the cabinet, then upwards from each fold and over the retaining bar to a further fold in the cables contiguous said bar, and then downwards contiguous the back of the drawer, so both the folds and further folds unfold and refold when the drawer is opened and closed respectively;

each of the ribbon cables as it extends contiguously down the back of the drawer, is folded sharply over on itself to form a right-angled transition to horizontal projecting portions at non-overlapping elevations adjacent the back of the drawer; and

vertically stacked connecting means for connecting the horizontal projecting portions of the ribbon cables to the back of the drawer, so as to minimize their depth of space occupied in the cabinet, while allowing withdrawl and insertion of the drawer without kinking or tangling of the ribbon cables.

4,660,126

FIRE-PREVENTIVE HOUSING FOR LINE DELAY MEASURING APPARATUS

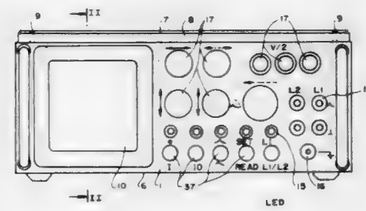
Hans Köster, Gelsenkirchen, and Horst Weller, Bamberg, both of Fed. Rep. of Germany, assignors to Seba-Dynatronic, Mess - und Ortungstechnik GmbH, Baunach, Fed. Rep. of Germany

Filed Dec. 6, 1984, Ser. No. 678,631

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1983, 3344311

Int. Cl.⁴ H05K *7/00, 5/00*

U.S. Cl. 361—392 **6 Claims**



1. A fire-preventive and flame-proof housing for line delay measuring apparatus having components comprising a high-tension voltage supply, a display tube, operating elements and indicator elements, said housing comprising:

means defining a first section within the housing wherein are positioned those of said components carrying relatively low voltages and presenting no significant hazard of fire,

means defining a second section within the housing adjacent to the first section, wherein are positioned those components carrying high voltages and such components as are otherwise intrinsically unsafe, said second section being hermetically sealed,

said second section being filled with an insulating material,

a front panel on the housing,

a partition separating the first and second sections, the second section being distal from the front panel,

a potentiometer spindle and rotary selector switch spindles extending to said front panel from the second section through the partition, said spindles being formed of non-conductive plastic material,

seal means between the partition and the spindles, said spindles extending into said second section and extending through said seal means to the front panel, and

seal means between said spindles and the front panel.

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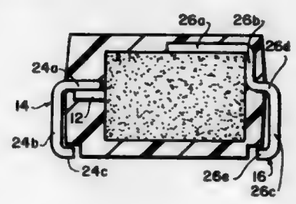
FAIL-SAFE LEAD CONFIGURATION FOR POLAR SMD COMPONENTS

Charles E. Gunter, Jupiter, Fla., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 17, 1985, Ser. No. 810,445

Int. Cl.⁴ H01G *9/05, 9/06*

U.S. Cl. 361—433 **7 Claims**



1. A fail-safe lead configuration for surface mounting a polar

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electronic component having positive and negative leads onto a printed circuit board having spaced apart contact pads for connection to said leads, comprising:

a first lead electrically connected to a termination of a first polarity on said component;

a second lead electrically connected to a termination of a second polarity on said component;

said second lead being bifurcated at a point above the connection point to said printed circuit board such that each branch of the bifurcated lead is adapted for mounting to one of two pads on said printed circuit board for connection of said second lead;

said first lead having a width which is less than the distance between said two pads for connection of said bifurcated lead; and

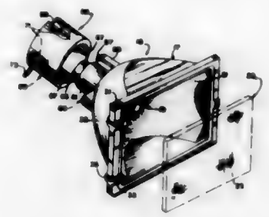
the distance between said lead of said first polarity and said leads of second polarity being greater than the distance between said two branches of said leads of second polarity.

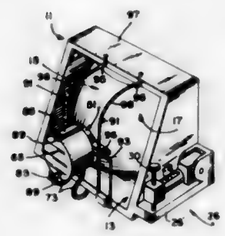
4,660,128

MOTOR VEHICLE LIGHTING ASSEMBLY

John A. Bergin, Hancock, N.H., and George J. English, Reading, Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Mar. 17, 1986, Ser. No. 840,268
Int. Cl.⁴ B60Q *1/00*
U.S. Cl. 362—61 **20 Claims**





1. A motor vehicle lighting assembly for providing forward illumination for said motor vehicle, said lighting assembly comprising:

a common holder member defining a plurality of individual, separate compartments therein, said holder member adapted for being positioned within and secured to said motor vehicle and for being oriented in predetermined alignment therewith;

a plurality of replaceable, sealed lighting modules each including a singular reflector, a lighting capsule sealed within said singular reflector in predetermined alignment with the reflecting surfaces thereof, and means for enclosing and sealing said module, each of said modules being positioned within a respective one of said individual compartments within said common holder member;

means for aligning each of said modules within said respective one of said singular compartments relative to said common holder member; and

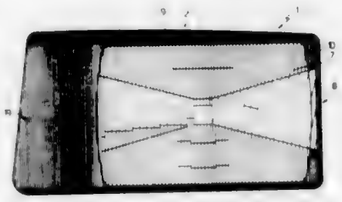
means for retaining each of said modules within said individual compartments in said aligned orientation relative to said common holder.

4,660,129

FRONT OPTICAL UNIT FOR MOTOR VEHICLES

Giorgio Manunta, Turin, Italy, assignor to Carello Industries S.P.A., Turin, Italy

Filed Dec. 18, 1985, Ser. No. 810,404
Claims priority, application Italy, Jan. 8, 1985, 52811/85[U]
Int. Cl.⁴ B60Q *1/00*; F21V *13/00*
U.S. Cl. 362—80 **11 Claims**



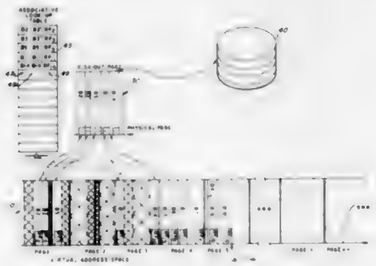
1. A front optical unit for vehicles comprising at least one headlamp, an indicator lamp adjacent said one headlamp, closure means for said headlamps, said closure means comprising a one piece frame made of plastics material, and a lens for said one headlamp, said lens being made of transparent glass and being rigidly connected to said frame, with said frame in surrounding relation to said lens, said frame of plastics material at least in part being transparent, said transparent part constituting a front cover for said indicator lamp.

4,660,130

METHOD FOR MANAGING VIRTUAL MEMORY TO SEPARATE ACTIVE AND STABLE MEMORY BLOCKS

David H. Bartley; Timothy J. McEntee, both of Dallas; Donald W. Oxley, Carrollton, and Satish M. Thatte, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 24, 1984, Ser. No. 634,334
Int. Cl.⁴ G06F *12/12*
U.S. Cl. 364—200 **11 Claims**



1. A method for compacting blocks of memory in a demand paged virtual address space including a plurality of virtual address pages, comprising the steps of:

(a) defining at least one pointer to indicate a page of said virtual memory space;

(b) advancing said pointer to continually indicate the page at the beginning of available virtual memory space;

(c) locating newly allocated blocks in the virtual address space beginning at a next available location on the page indicated by said advancing pointer;

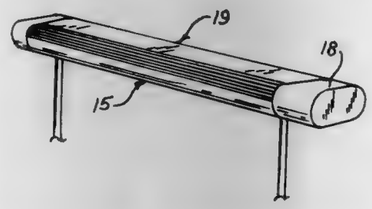
(d) moving previously allocated blocks to which a new reference is later made by the user to a next available location indicated by said advancing pointer.

4,660,131

METHOD FOR INDIRECT LIGHTING

Douglas J. Herst, Ross, and Peter Y. Y. Ngai, Lafayette, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.

Division of Ser. No. 742,591, Jun. 7, 1985, which is a continuation of Ser. No. 46,970, Jun. 8, 1979, abandoned. This application Mar. 17, 1986, Ser. No. 840,099
Int. Cl.⁴ F21S *3/00*
U.S. Cl. 362—223 **16 Claims**



1. A method of indirectly illuminating an interior space having a ceiling surface comprising the steps of

(1) positioning a source of indirect light at a distance below said ceiling surface,

(2) directing a portion of light from said source of indirect light upward to produce a luminance pattern on said ceiling surface directly overhead said source of indirect light, and

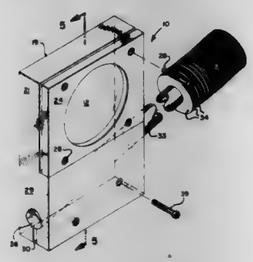
(3) refracting substantially all of another portion of said source of indirect light laterally of said indirect light source so as to spread same away from said directly overhead luminance pattern to provide a laterally extended overhead distribution of light.

4,660,132

COOLING DEVICE FOR MOUNTING AND PROTECTING AN OPTICAL ELEMENT

Bradley S. Basler, Redwood City, and Douglas H. Harrison, Los Altos, both of Calif., assignors to Pindar Development Corporation, Sunnyvale, Calif.

Filed Apr. 3, 1986, Ser. No. 847,692
Int. Cl.⁴ F21V *29/00, 9/14*
U.S. Cl. 362—294 **9 Claims**



1. A cooling device for protecting a light absorbing optical element of the type which becomes heated when subjected to a beam of light, the cooling device comprising:

(a) an optical unit which includes a transparent, thermally-conductive material disposed in heat conductive relation to the optical element to dissipate heat from the optical element;

(b) a mounting body for supporting the optical unit and disposed in heat conductive relation thereto for receiving heat energy from the thermally-conductive material; and

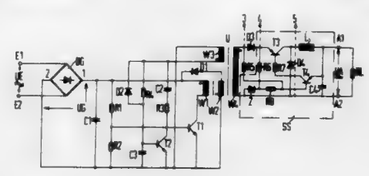
(c) heat dissipating means for removing heat from the mounting body including a first energy transfer portion disposed within the mounting body for receiving heat-energy therefrom and a second energy transfer portion disposed in thermal communication with the first energy transfer portion and outside the mounting body.

4,660,133

SWITCHED POWER PACK WITH FREE-WHEELING FLOW CONVERTER AND SWITCHED CONTROLLER AT A SECONDARY SIDE

Harald Stasch, Neuried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 5, 1985, Ser. No. 762,516
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1984, 3429100
Int. Cl.⁴ H02M *3/338*
U.S. Cl. 363—19 **7 Claims**



1. A switched power supply, comprising:

rectifier means for generating a DC voltage from an input AC voltage;

a free-wheeling flow converter connected to the DC voltage and having a switching transistor connected to a transformer having a primary winding, secondary winding, control winding, and demagnetization winding, the demagnetization winding being connected to the primary winding by a diode;

means connecting a portion of the DC voltage generated from the input AC voltage to a base of the switching transistor;

a turn-on means and turn-off means connected to the control winding for control of the switching transistor, the turn-on means switching conductive the switching transistor given a de-magnetized transformer and when the switching transistor is in a substantially current-free condition, and the turn-off means inhibiting the swithcing transistor after a prescribable on-duration by current induced in the control winding; and

a secondary side of the free-wheeling flow converter having a secondary switch controller means comprising a free-wheeling diode and associated storage inductance connected to the secondary winding for controlling an output DC voltage of the converter, resistor means being connected between the secondary winding and the switch controller means for synchronizing the switch controller means.

4,660,134

DC-DC CONVERTER WITH CHOPPING SWITCH AND TRANSFORMER

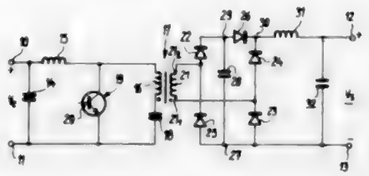
Jacques Geray, Maisons Laffitte, and Gérard Monroy, Beaumont Sur Oise, both of France, assignors to Auxilec, Colombes, France

Filed Nov. 20, 1985, Ser. No. 800,152

Claims priority, application France, Nov. 23, 1984, 84 17930

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—20 **8 Claims**



1. In a DC-DC converter, for example of the voltage booster type, comprising a single switch controlled for chopping the input signal, a single transformer whose primary winding receives the chopped signal and a means for rectifying the signal supplied by the secondary winding of the transformer, in order that all the input energy is transmitted to the secondary circuit of the transformer, the input signal is applied to the terminals of the series assembly formed by the primary winding of the transformer and a capacitor, the chopping switch being in parallel across the series assembly, and the rectifier means comprises a bridge for rectifying a current, supplied by the secondary winding of the transformer, flowing in one direction during one conducting phase of the switch and in another direction during the other conducting phase, wherein said rectifier bridge comprises a restoration capacitor which, at the beginning of the disabled period of said switch, is charged by the current supplied by the secondary winding and which is discharged during a second phase of the disabled period of the switch.

4,660,135

POWER SUPPLY CIRCUIT OF A TELEVISION RECEIVER USED IN A AUTOMOBILE

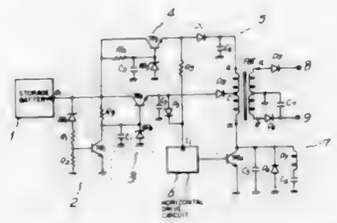
Yoon K. Lee, Kooni, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 5, 1985, Ser. No. 751,885

Claims priority, application Rep. of Korea, Jul. 5, 1984, 3870/1984

Int. Cl.⁴ H02M *3/335*

U.S. Cl. 363—21 **2 Claims**



1. A power supply circuit of a TV receiver in a car using a storage battery of 12 volts or of 24 volts as a power source, comprising:

switching circuit means switched on at 24 volts and switching off a first constant voltage circuit which is turned on at 12 volts to output a first constant voltage;

a second constant voltage circuit turned on at said 24 volts to output a second constant voltage;

a horizontal drive circuit driven by said first and second constant voltage circuits to apply a horizontal oscillatory signal to a horizontal output circuit; and

a booster circuit boosting the output voltage from said first constant voltage circuit up to a booster voltage and then applying it to the horizontal output circuit through the primary coil of a high voltage transformer and also applying the output voltage from said second constant voltage circuit to the horizontal output circuit directly through the primary coil of said high voltage transformer, thereby making it possible to use the storage batteries of 12 volts and 24 volts in common.

4,660,136

SINGLE REGULATION POWER SUPPLY WITH LOAD COMPENSATION OF AN AUXILIARY VOLTAGE OUTPUT

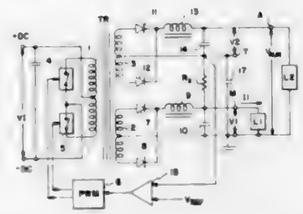
Gianpaolo Montorefano, Milan, Italy, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 21, 1986, Ser. No. 820,768

Claims priority, application European Pat. Off., Jan. 24, 1985, 85100687.4

Int. Cl.⁴ H02M *3/315*; **G05F** *1/44*

U.S. Cl. 363—26 **2 Claims**



1. A single regulation power supply providing load compensation of an auxiliary voltage output, wherein, power is transferred from a primary winding of a transformer to first and second secondary windings, the secondary windings being respectively connected to a first and a second rectifying and filter network respectively providing a first and a second DC voltage source, comprising:

a resistor connected to one terminal of each of said sources to connect said sources in series;

a main load connected across said first source;

an auxiliary load connected between the terminals of each source opposite the terminal of said source connected to said resistor; and

a control loop for sensing a voltage and responsive thereto to control current pulses supplied to said primary winding to maintain the voltage sensed thereby at a preestablished level, said control loop being connected across said resistor and said first source to sense the algebraic sum of the voltage of said source and the voltage drop across said resistor.

4,660,137

INVERTER SYSTEM

Nobuhiro Hotaka, Nagano, Japan, assignor to Shinaro Electric Co., Ltd., Japan

Filed Nov. 13, 1984, Ser. No. 670,609

Int. Cl.⁴ H02H *7/122*

U.S. Cl. 363—56 **3 Claims**

1. An inverter system comprising:

a DC power source input terminal, a converter circuit including plural semiconductor switches which convert the DC power source input to AC power by alternately switching the switches,

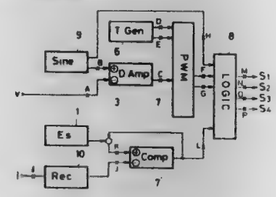
a transformer for transforming the output from said converter circuit,

a filter for extracting the fundamental frequency from the output of the transformer as the AC output of the system,

a fundamental freuqency generator means for generating a signal having said fundamnetal frequency,

a carrier wave generator for generating a signal having the on-off frequency of said switches,

an error amplifier for receiving as differential inputs, the output of said fundamental frequency generator means and said AC output, and



a pulse width modulation circuit for receiving as a modulation input, the output of said error amplifier and as a carrier wave input, the output from said carrier wave generator, said modulation circuit suppling a plurality of on-off pulse width modulated control signals to said pural switches of said converter circuit for each half cycle of said fundamental frequency signal,

a current sensor for detecting the current of the primary winding of said transformer,

a comparator means for detecting whether the output from said current sensor exceeds a given value, and

a means for inhibiting the output of said on-off control signals coupled to said switches during the period the sensed current exceeds a given valve.

4,660,138

MULTIPLE OUTPUT MULTIPLE STEP-UP RECTIFIER CIRCUIT

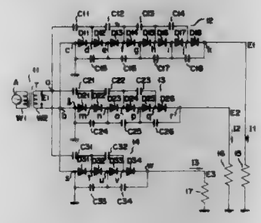
Yoshio Takamura, and Akira Nakajima, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 17, 1985, Ser. No. 776,802

Claims priority, application Japan, Sep. 28, 1984, 59-203578

Int. Cl.⁴ H02M *7/10*

U.S. Cl. 363—61 **9 Claims**



1. A multiple output multiple step-up rectifier circuit comprising:

a power source circuit for generating an AC voltage; and

a plurality of Cockroft-Walton multiple step-up rectifier circuits connected in parallel with each other to said power source circuit and each constituted by a combination of a plurality of diodes and capacitors of the number corresponding to an arbitrary number of multiplication stages, wherein

a capacitance ratio of capacitors constituting any two rectifier circuits of said plurality of rectifier circuits is set to be proportional to the ratio of the square of the number of stages of one rectifier circuit to the square of the number of stages of the other rectifier circuit.

4,660,139

GENERATOR FOR GENERATING A HIGH D.C. VOLTAGE

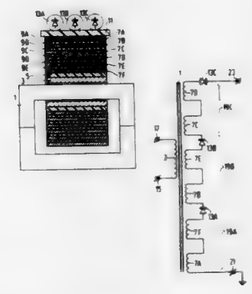
Johannes H. M. Nellen; Frans Slegers; Johannes H. B. Otten, and Johannus W. G. Kole, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1985, Ser. No. 795,800

Claims priority, application Netherlands, Dec. 6, 1984, 8403704

Int. Cl.⁴ H02M *7/06*

U.S. Cl. 363—68 **7 Claims**



1. A generator for generating from a supplied a.c. voltage a direct voltage at a high-voltage terminal of the generator, such generator comprising a transformer having a ferromagnetic core with a primary and a secondary winding thereon, the secondary winding comprising a plurality of concentric coils wound on the core in the same winding senses and having substantially the same number of turns, a layer of insulating material being between each pair of adjacent coils; such generator being characterized in that the secondary winding has a plurality of sections, each section including at least two of said coils connected in series with a rectifier, said sections being connected in series such that all the rectifiers are in the same forward direction, the last section in the series sequence being connected to the high-voltage terminal and the number of coils per section being equal for all sections; a majority of the pairs of adjacent coils on said core being in corresponding serial positions in respective ones of said sections and the remaining such pairs being in consecutive serial positions in respective ones of said sections, thereby limiting the maximum a.c. voltage between adjacent coils.

4,660,140

CONTROL ARRANGEMENT FOR A VEHICLE SEAT ADJUSTING MECHANISM HAVING A SELF CHECKING, REDUCED TERMINAL, MICROCOMPUTER

Thomas Illg, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 16, 1984, Ser. No. 672,114

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341472

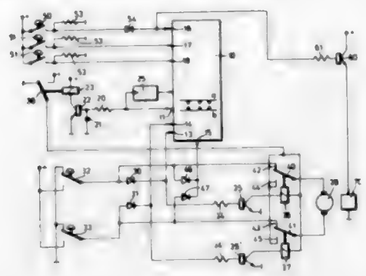
Int. Cl.⁴ G05B *9/02*

U.S. Cl. 364—184 **15 Claims**

1. A circuit arrangement for controlling a seat adjusting mechanism in a motor vehicle, said circuit arrangement com-

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prising: a microcomputer including a plurality of terminals selectively operable as either input or output terminals and a reset input; at least one switch for inputting data into the microcomputer; at least one load which is responsive to a continuous control signal provided at one of said terminals; said microcomputer including means for providing short-duration



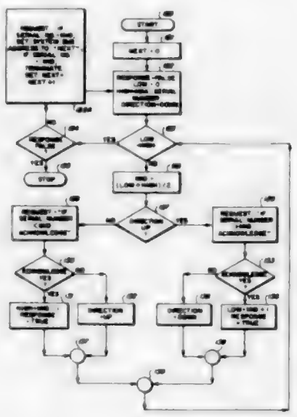
check pulses at said one terminal superimposed on said control signal during a program run of said microcomputer; a monostable multivibrator coupled to said one terminal for receiving said check pulses and having an output connected to said reset input of the microcomputer, said multivibrator resetting said microcomputer when said check pulses are aperiodic.

4,660,141

SELF CONFIGURING COMPUTER NETWORK WITH AUTOMATIC BUS EXCHANGE OF MODULE IDENTIFICATION NUMBERS AND PROCESSOR ASSIGNED MODULE NUMBERS

Claude R. Ceccon; Joseph N. Kovara, and Paul C. Miodunki, all of Tucson, Ariz., assignors to Tri Sigma Corporation, Scottsdale, Ariz.

Filed Dec. 6, 1983, Ser. No. 558,779
Int. Cl.[4] G06F *15/16, 13/00, 13/42*
U.S. Cl. 364—200 **47 Claims**



42. A computer system including a first processor, a plurality of interface circuits, and a first bus connected to said first processor and said plurality of interface circuits, said computer system comprising:

(a) means for causing said first processor to transmit a first enable signal to a first one of said interface circuits and means for causing each of the rest of said interface circuits to not respond to any transmitted predetermined initial address number on said first bus;

(b) means for causing said first processor to assign a first address number to said first interface circuit and means for causing said first processor to transmit said first address number via said first bus to said first interface circuit;

(c) address recognition circuitry in each of said interface circuits, and means for causing said first interface circuit to set its address recognition circuitry to recognize only said first address number on said first bus in response to said first enable signal; and

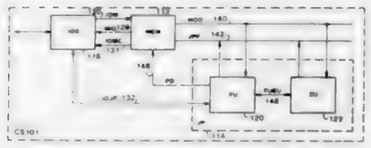
(d) means for causing said first interface circuit to transmit said first enable signal on to another of said interface circuits.

4,660,142

DIGITAL DATA PROCESSING SYSTEM EMPLOYING AN OBJECT-BASED ADDRESSING SYSTEM WITH A SINGLE OBJECT TABLE

Gerald F. Clancy, Saratoga, Calif.; Craig J. Mundie, Cary; Stephen I. Schleimer, Chapel Hill, both of N.C.; Steven J. Wallach, Saratoga, Calif.; Richard G. Bratt, Wayland, and Edward S. Gavrin, Lincoln, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 266,534, May 22, 1981, abandoned.
This application Oct. 11, 1984, Ser. No. 659,513
Int. Cl.[4] G06F *9/30*
U.S. Cl. 364—200 **13 Claims**



1. A digital data processing system comprising:

(1) memory means for storing items of data at physical addresses therein and for performing memory operations on data items including the providing of data items in response to memory operation specifiers containing logical addresses; and

(2) processor means connected to an having access to said memory means, said processor means including

means for receiving data items from said memory means,

means for processing said data items, and

means for producing memory operation specifiers in response to instructions;

and wherein said memory means is organized into objects containing data items and includes

memory organization means for specifying a correspondence between data items and objects and for permanently identifying said objects by unique object identifiers; and

further wherein a logical address includes an object number temporarily corresponding to a specified unique object identifier and an offset specifying a location in the object identified by the unique object identifier currently corresponding to said object number; and

further wherein said memory means includes

memory operation means responsive to memory operation specifiers for performing the memory operations specified by said memory operation specifiers on the data items at the locations specified by said logical addresses, said memory operation means including

object table means for specifying the temporary correspondence between said object numbers and said object identifiers; and

object identifier conversion means responsive to said memory organization means for defining the temporary correspondence between said object numbers and said object identifiers in a single object table of said object table means and for using said single object table to obtain object numbers corresponding to object identifiers for use in forming logical addresses; and

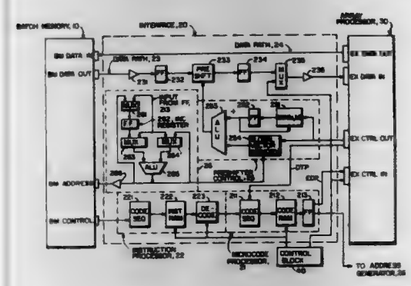
address conversion means responsive to said logical addresses for converting said logical addresses into physical addresses of data items in response thereto.

4,660,143

PROGRAMMABLE REALTIME INTERFACE BETWEEN A BLOCK FLOATING POINT PROCESSOR AND MEMORY

Thomas M. King, Mesa, and Sam M. Daniel, Tempe, both of Ariz., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 24, 1984, Ser. No. 653,641
Int. Cl.[4] G06F *13/12*
U.S. Cl. 364—200 **8 Claims**



1. In combination with a data processing system having a batch memory which receives data signals, and a data processor receiving and processing a group of control and address signals and said data signals, and a control system for giving instruction signals to said data processing system, an interface between said batch memory and said data processor, said interface comprising:

an instruction processor means performing a sequence of fetch and store operations by receiving a first control and address signal from said batch memory and said instruction signals from said control system and outputting a second control and address signal;

a microcode processor means receiving said second control and address signal from said instruction processor means and said instruction signals from said control system and outputting a third control and address signal to said data processor, said third control and address signal controlling fetch and store operations of said data processor as modified by said control system;

a pre-shifter control means receiving a fourth control and address signal from said processor and generating a pre-shifter control signal which controls all exponential normalization of said data signals;

a first amplifier receiving and amplifying said data signals from said batch memory and producing an output signal;

a first flip flop producing an output signal by processing said output signal from said first amplifier;

a pre-shifter means receiving said output signal from said first flip flop and said pre-shifter control signal from said pre-shifter control means and producing an exponentially normalized data signal;

a second flip flop producing an output signal by processing said exponentially normalized data signal from said pre-shifter means;

a first multiplexer producing an output signal by multiplexing said output signal from said second flip flop with said instruction signals from said control system;

a bus transmitter producing an output signal for said data processor by amplifying said output signal from said first multiplexer;

a data path relaying processed data signals from said data processor to said batch memory; and

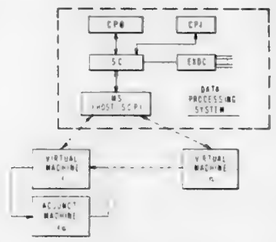
an address generator means outputting address signals to said batch memory and said pre-shifter control means, said address signals containing a first memory address for said data signals fetched from said batch memory on said first data path, said address signals containing a second memory address for said processed data signals transferred from said data processor to said batch memory by said second data path.

4,660,144

ADJUNCT MACHINE

James R. Walsh, Hyde Park, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed May 23, 1985, Ser. No. 737,355
Int. Cl.[4] G06F *15/16*
U.S. Cl. 364—200 **12 Claims**



1. In a data processing system including at least one real machine having a real CPU, main storage, I/O devices and a host operating system program running in said real CPU for controlling said I/O devices, and a base virtual machine having a base virtual CPU and a guest operating system running in said base virtual CPU, the system further comprising a plurality of adjunct virtual machines, having adjunct virtual CPUs coupled to said base virtual CPU for providing for a host operating system program to be executed in said real CPU with a guest operating system program executed in said base virtual machine and at least one program executed in each of said plurality of adjunct virtual machines.

4,660,145

SYSTEM FOR COMPRESSING AIRCRAFT FLIGHT DATA UTILIZING A MULTILEVEL TIME FORMAT

Steven D. Hansen, Seattle, Wash., assignor to Sundstrad Data Control, Inc., Redmond, Wash.

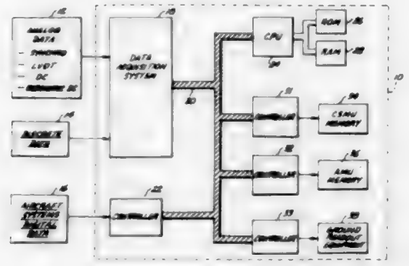
Filed Feb. 3, 1984, Ser. No. 576,537
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—424 **36 Claims**

1. In an aircraft flight data recorder system of the type wherein a plurality of input data signals that represent the status of corresponding aircraft parameters are periodically processed to provide a series of data frames with each data frame representing the status of selected ones of said aircraft parameters at particular points in time and with each data frame providing aircraft parameter status and associated time information that is stored in a memory device of the flight data recorder system for later retrieval therefrom, the improvement comprising:

(a) means for periodically producing within each data frame at least one reference time signal representative of elapsed time from a predetermined initial point in time;

(b) means for sequentially determining, in accordance with a predetermined program, whether a signal representative of an input datum signal of said plurality of input data signals is to be included in a data frame, said means for sequentially determining including:

(i) means for producing for each input datum signal to be represented in said data frames a label signal representative of the aircraft parameter corresponding to the input datum signal,



(ii) means for producing for each said datum signal to be represented in said data frame, a time tag signal that is referenced to said reference time signal and is representative of a time interval within which the datum signal was produced, and

(iii) means for producing for each said input datum signal to be represented in said data frame, a datum value signal representative of the input datum signal.

4,660,146

ANTI-LOCK BRAKE CONTROL SYSTEM INCLUDING A PROCEDURE OF SAMPLING OF INPUT TIME DATA OF WHEEL SPEED SENSOR SIGNALS AND METHOD THEREFOR

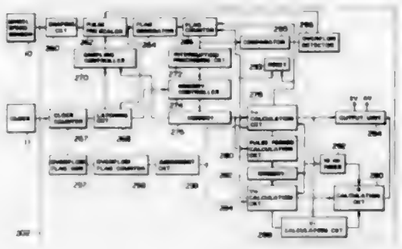
Jun Kubo, Hino, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 17, 1984, Ser. No. 601,294

Claims priority, application Japan, Apr. 23, 1983, 58-70895

Int. Cl.⁴ B60K *8/34*

U.S. Cl. 364—426 **23 Claims**



1. An anti-skid brake control system for an automotive hydraulic brake system comprising:

a hydraulic brake circuit including a wheel cylinder for applying braking force to a vehicle wheel;

a pressure control valve disposed within said hydraulic circuit and operative to increase fluid pressure in said wheel cylinder in a first position thereof, to decrease the fluid pressure in said wheel cylinder in a second position thereof and to hold the fluid pressure in said wheel cylinder constant in a third position thereof;

a wheel speed sensor means for producing sensor signal pulses separated by intervals representative of the detected wheel speed;

a timer means for producing timer signals;

a first means, responsive to said sensor signal, for sampling values of said timer signals and for storing the sampled timer signal values;

a second means for processing the stored timer signal values to derive a wheel speed value, a wheel acceleration value or a wheel deceleration value and for producing a control signal in accordance with the derived wheel speed and acceleration values, which control signal actuates said pressure cntrol valve to one of said first, second and third positions so as to adjust the wheel rotational speed toward an optimal relationship with vehicle speed;

a third means for selectively activating said first and second means, said third means being responsive to said sensor signal pulses to interrupt operation of said second means and activate said first means for sampling said timer signal values and storing the sampled timer signal values; and

a fourth means for detecting overflow of said timer means, counting the number of occurrences thereof, and replacing the wheel speed and acceleration values used by said third means with fixed values when the number of occurrences of overflow exceeds a predetermined number.

4,660,147

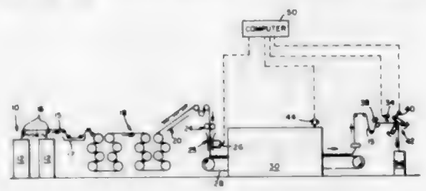
METHOD FOR DETERMINING LEVEL OF FINISH AND CONTROL THEREOF

John L. Allen, Jr., Charlotte, and Teddy H. Grandstaff, Kinston, both of N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 23, 1985, Ser. No. 768,699

Int. Cl.⁴ G06F *15/46;* **B05D** *1/00;* **B05C** *11/00*

U.S. Cl. 364—468 **7 Claims**



1. A method of controlling flow of finish to a moving fibrous material to maintain the percent finish on fiber within upper and lower limits with a computer, comprising:

(a) providing the computer with a data base for percent finish on fiber including at least,

calibration material speed (M),

calibration material temperature (Q),

slope (n) of the low slope portion of the percent finish on fiber v. absolute electrostatic voltage calibration curve

a slope (u) of the high slope portion of the percent finish on fiber vs. absolute electrostatic voltage calibration curve,

a percent finish on fiber axis intercept (D) of tangent to the low slope portion of the percent finish on fiber vs. absolute electrostatic voltage calibration curve,

a percent finish on fiber axis intercept (Y) of tangent to the high slope portion of the percent finish on fiber vs. absolute electrostatic voltage calibration curve,

absolute electrostatic voltage value (x) which represents a point at which said fiber axis intercept (d) intersects said fiber axis intercept (y),

an extrapolated value (H) for tow temperature corresponding to zero absolute electrostatic voltage at calibration material speed (M) and a preferred finish application rate,

(b) repetitively determining the material speed, temperature and absolute electrostatic voltage on said material as it moves past the respective sensor locations;

(c) repetitively providing the computer with the material speed, temperature and absolute electrostatic voltage signals for averaging to determine material speed, material temperature and absolute electrostatic voltage grand averages E, Z, S respectively;

(d) repetitively calculating in the computer at frequent intervals percent finish on fiber using the equations

IF W=X then $P=Y-(U)(W)$

IF $W=>X$ then $P=D-(N)(W)$

where:

$$W=\frac{(M)(H-Q)(S)}{(E)(H-Z)};$$

(e) repetitively comparing in the computer at said frequent intervals as said material moves past said sensor location percent finish on fiber (P) with said upper and lower limits; and

(f) controlling said flow of finish according to the value of P.

4,660,148

PART PROGRAM CREATION METHOD

Hajimu Kishi, and Masaki Seki, both of Tokyo, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

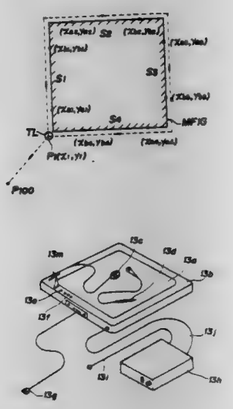
PCT No. PCT/JP83/00448, § 371 Date Aug. 14, 1984, § 102(e) Date Aug. 14, 1984, PCT Pub. No. WO84/02591, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 21, 1983, Ser. No. 642,685

Claims priority, application Japan, Dec. 29, 1982, 57-228511

Int. Cl.⁴ G05B *19/403*

U.S. Cl. 364—474 **5 Claims**



1. A part program creation method for creating an NC part program in an apparatus having a memory, a graphic input device and a display unit, the program comprising a graphic definition statement defining a graphic, a motion definition statement defining a tool path including auxiliary machining information including feed velocity and spindle rotational velocity, said method comprising the steps of:

(a) storing in the memory a plurality of motion definition statements, each statement associated with a corresponding shape;

(b) defining a graphic using a graphic input device to generate a defined graphic definition statement correpsonding to an associated motion statement among the plurality of motion definition statements, by performing at least two of:

(i) specifying a point of the graphic,

(ii) specifying two points defining a straight line of the graphic,

(iii) specifying three points on a circular arc of the graphic, wherein said three points have coordinates defining a location in an orthogonal coordinate system;

(c) creating a part program comprising the defined graphic definition statement and the associated motion statement;

(d) entering an identifier corresponding to the associated motion statement and to the defined graphic definition statement;

(e) storing in the memory image information for tool path patterns defined by the motion definition statements;

(f) displaying a selected tool path pattern, defined by the associated motion statement, on the display unit in dependence upon the image information for the selected tool path pattern; and

(g) displaying on the display unit a predetermined element from among a point, a straight line and a circular arc, to be entered next.

4,660,149

CONTROL PROCESS FOR A MONOCRYSTAL PULLING MACHINE

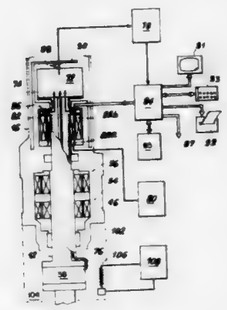
Francois Lissalde, Seyssins; Delageniere Bruno, Grenoble, and Ferrieu Bruno, Seyssinet, all of France, assignors to Societe Crismatec, France

Filed Oct. 10, 1984, Ser. No. 659,438

Claims priority, application France, Oct. 19, 1983, 83 16634

Int. Cl.⁴ G05B *11/00;* **B01J** *17/00*

U.S. Cl. 364—477 **12 Claims**



1. A process for the control of a monocrystal pulling machine, the machine comprising:

a crucible containing a bath of a molten product;

heating means for stabilizing temperature of the product to a temperature above the melting point of the product by heating the crucible;

temperature regulating means including measuring means for operating said heating means;

a vertically oriented pulling pin for pulling a monocrystal from the crucible with the aid of a monocrystalline nucleus of the product placed at the lower end of the pin;

a fixed frame;

a carriage which moves relative to the frame parallel to an axis of the pulling pin;

motion means for translating the carriage at at least two different speeds;

translation means for controlling a translation of the crucible parallel to the pin axis;

rotation means for rotating the pulling pin about the pin axis, the carriage supporting the pulling pin via said rotation

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means, the pulling pin comprising a weight transducer supplying signals representing the weight of the pin and the nucleus prior to pulling and evolution of said weight during pulling; and

an electronic processing circuit including a computer, said weight transducer signals being applied to said computer for checking regulation of the heating means and the carriage motion means and the crucible translation means and the pin rotation means; wherein the process comprises;

recording in a memory of said computer parameters relating to the geometry of the monocrystal and the growth thereof and a program which enables the computer to control the heating means for raising temperature of the crucible for bringing about a melting of the product;

sensing the weight communicated to the computer via said weight transducer signals;

comparing a later value of the weight with a previously stored value of the weight to provide a comparison of the two weights; and

activating said motion means in accordance with the comparison of weights to translate the pin along its axis for control of crystal growth; said activating including the steps of:

providing a fast automatic approach of the bath by the pin with the nucleus up to a predetermined distance from the surface of said bath; and providing a slower approach of the bath until the nucleus is in contact with the bath surface; and wherein, following said contact,

said process continues with the steps of providing an automatic regulation of the temperature of the heating means for a zero growth of the crystal, followed by an automatic pulling of the crystal, and a cooling of the heating means at the end of the pulling.

4,660,150

SPECTRUM ANALYZER WITH IMPROVED DATA ANALYSIS AND DISPLAY FEATURES

Gregory A. Anderson; Paul M. Eason, both of Santa Rosa; Michael S. Marzalek, Petaluma, and Lynn M. Wheelwright, Santa Rosa, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 16, 1984, Ser. No. 580,991
Int. Cl.⁴ G01R *23/16, 23/00*
U.S. Cl. 364—485 **2 Claims**



2. A method of making swept frequency measurements comprising the steps of:

inputting by a user a command string corresponding to a sequence of operations to be performed on a measured signal resulting from a swept frequency measurement;

storing the command string;

receiving an electrical signal to be measured;

generating a sweep signal and an end of sweep signal;

performing a swept frequency measurement on the received electrical signal to produce the measured signal in response to the sweep signal; and

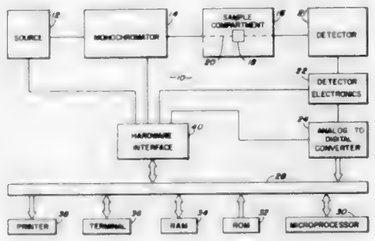
automatically executing the command string to perform the sequence of operations on the measured signal in response to the end of sweep signal.

4,660,151

MULTICOMPONENT QUANTITATIVE ANALYTICAL METHOD AND APPARATUS

Russell A. Chipman, Tucson, Ariz.; Robert J. Obremski, Yorba Linda, Calif., and Christopher W. Brown, Saunderstown, R.I., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Sep. 19, 1983, Ser. No. 533,833
Int. Cl.⁴ G06F *15/347;* **G01J** *3/12;* **G01N** *21/25*
U.S. Cl. 364—498 **11 Claims**



8. A multicomponent quantitative analytical apparatus comprising:

a first means for obtaining calibration values related to spectra for a select number of calibration samples containing predetermined concentrations of selected analytes such that information regarding spectra values proportional to the concentrations of the selected analytes is determined and;

for obtaining values of an unknown spectrum for a sample containing unknown concentrations of analytes;

a second means receiving information signals from said first means, for transforming the calibration values using a transform to obtain orthogonal basis vectors and

for performing a multivariate analysis to obtain a calibration value matrix relating known concentrations of analytes in the calibration sample to the transformed spectra calibration values and

for performing a transformation of the values of the unknown spectrum using said transform having the property of orthogonality and

for determining the concentrations of the analytes in the sample using the transformed values of the unknown spectrum and the calibration value matrix; and

a third means for displaying or storing information of the concentrations of the analytes.

4,660,152

SYSTEM AND METHOD FOR MONITORING AND MAINTAINING CONCENTRATE MATERIAL IN A FLUID CARRIER

Robert A. Downing, San Jose, and Lorin K. Hansen, Fremont, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

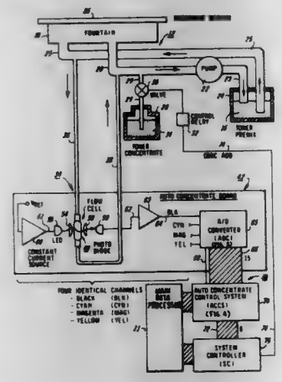
Filed Jun. 18, 1984, Ser. No. 621,965
Int. Cl.⁴ G06G *7/57;* **G03G** *15/00;* **B67D** *5/08*
U.S. Cl. 364—509 **13 Claims**

12. In a system for monitoring and maintaining a predetermined concentration of a material carried in a fluid medium comprising

means for measuring at a first sampling rate the transmissivity of said material carried in said fluid medium,

means to determine the amount of any disparity between the measured transmissivity of a presently measured sample and a previously measured sample,

means to increase the first sampling rate to a second sampling rate when said disparity is greater than a predetermined amount,



means to count a plurality of consecutively measured samples if said disparity therebetween is less than said predetermined amount and the measured transmissivity of each of said consecutively measured samples are below a predetermined concentration threshold, and

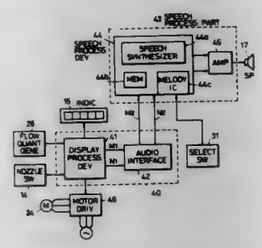
means to add said material to said fluid medium when a predetermined number of said consecutively measured samples have been accumulated.

4,660,153

FUEL SUPPLYING APPARATUS

Kazuhisa Yamashita; Yoshio Shibata, both of Kawasaki, and Shigemi Komukai, Yokohama, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Jun. 15, 1984, Ser. No. 621,048
Claims priority, application Japan, Jun. 17, 1983, 58-109025
Int. Cl.⁴ G10L *5/00*
U.S. Cl. 364—513.5 **6 Claims**



1. A fuel supplying apparatus comprising:

a fuel supplying nozzle having an opening and closing valve;

fuel supplying means for supplying a fuel to said fuel supplying nozzle;

a nozzle hook onto which said fuel supplying nozzle is hooked when said fuel supplying nozzle is not in use;

flow quantity signal generating means for generating a flow quantity signal responsive to a quantity of fuel which has been supplied from said fuel supplying means;

speech generating means for generating a speech which is in accordance with a completion of a fuel supplying operation, responsive to a hooking of said fuel supplying nozzle onto said nozzle hook after the fuel supplying operation is completed; and

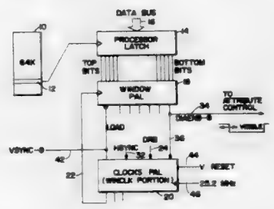
resetting means for stopping the generation of speech by said speech generating means and for resetting the fuel supplying apparatus to a state where a subsequent fuel supplying operation can be started, responsive to an unhooking of said fuel supplying nozzle from said nozzle hook before the generation of speech by said speech generating means is completed.

4,660,154

VARIABLE SIZE AND POSITION DIALOG AREA DISPLAY SYSTEM

Warren L. Dodge, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 6, 1984, Ser. No. 597,782
Int. Cl.⁴ G06F *3/14;* **G09G** *1/16*
U.S. Cl. 364—518 **11 Claims**



1. Apparatus for providing a variable size and position alphanumeric area for a display screen normally supplied with alphanumeric information in the form of a plurality of consecutive lines positioned at consecutive locations, wherein said alphanumeric area normally consists of a lesser number of lines than said plurality of consecutive lines and constituting a subset of said plurality of consecutive lines, said apparatus comprising:

first means for selectively providing numerical identification of the starting line and the stopping line of a group of lines comprising said subset to be displayed, said numerical indication being in the form of a line of data from an input data bus,

and a counter adapted to receive the numerical identification of the starting line for counting during the normal occurrence of said plurality of lines as said alphanumeric information is received until said starting line is reached to produce a display enabling signal to enable display of said alphanumeric information and adapted for counting until the stopping line is reached for discontinuing said enabling signal for disabling display of said alphanumeric information.

4,660,155

SINGLE CHIP VIDEO SYSTEM WITH SEPARATE CLOCKS FOR MEMORY CONTROLLER, CRT CONTROLLER

Robert C. Thaden, Houston, and Jeffrey C. Bond, Sugarland, both of Tex., assignors to Texas Instruments Incorported, Dallas, Tex.

Filed Jul. 23, 1984, Ser. No. 633,388
Int. Cl.⁴ G06F *3/14, 15/62*
U.S. Cl. 364—521 **9 Claims**

1. A video system comprising:

a system clock means for generating a system clock signal;

a video clock means for generating a video clock signal which is independent of and asynchronous with said system clock signal;

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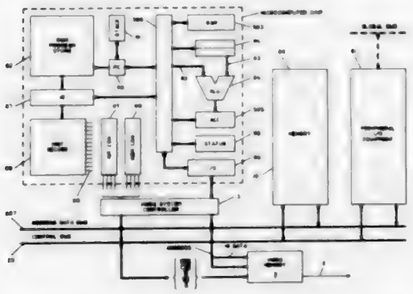
a data processor means connected to said system clock means thereby having timing controlled by said system clock signal, for manipulating data in accordance with program instructions, said data processor means having a data bus, a first address bus and a control bus, said control bus for issuing data processor memory access requests;

a memory means connected to said system clock means thereby having timing controlled by said system clock signal, to said data bus and having a second address bus, for storing and recalling data, including pixel image data corresponding to a visual image, in memory locations corresponding to addresses received from said second address bus;

a video system controller means constructed on a single semiconductor substrate connected to said system clock means, said video clock means, said data bus, said first address bus and said second address bus for controlling the address applied to said memory means via said second address bus, said video system controller means including

a data processor address latch connected to said system clock means thereby having timing controlled by said system clock signal, and to said first address bus for storing an address received from said data processor means via said first address bus,

a display update address latch connected to said system clock means thereby having timing controlled by said system clock signal, for storing an address of said memory means corresponding to said pixel image data,



a multiplexer connected to aid system clock means thereby having timing controlled by said system clock signal, to said second address bus, to said data processor address latch, and to said display address latch for connecting either said address stored in said data processor address latch or said address stored in said display update address latch to said second address bus,

a video memory cycle generator means connected to said video clock means thereby having timing controlled by said video clock signal, and to said display update address latch for sequentially generating display update memory access requests and updating the address stored in said display update address latch to correspond to said pixel image data next in the order of display of pixels,

an arbiter means connected to said system clock means thereby having timing controlled by said system clock signal, to said control bus and to said video memory cycle generator means for controlling said multiplexer means to perform only one of a data processor memory access cycle by connecting said address stored in said data processor address latch to said second address bus or a display update memory access cycle by connecting said address stored in said display update address latch to said second address bus in accordance with received data processor memory access requests and display update memory access requests, and

a display controller means connected to said video clock means for generating display control signals on a display control bus in synchronism with said video clock signal; and

a display means connected to said video clock means, said memory means and said display control bus for generating an operator perceivable visual display corresponding to said pixel image data recalled from said memory means via said display update register means as controlled by said display control signals on said display control bus in synchronism with said video clock signal.

4,660,156

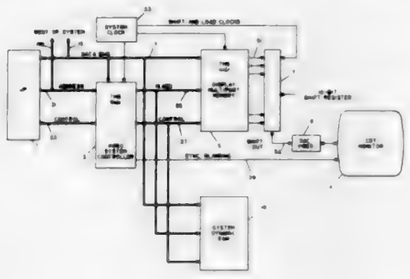
VIDEO SYSTEM WITH SINGLE MEMORY SPACE FOR INSTRUCTION, PROGRAM DATA AND DISPLAY DATA

Karl M. Guttag, Houston; Ray Pinkam, Missouri City, both of Tex., and Mark F. Novak, Colorado Springs, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 23, 1984, Ser. No. 633,383

Int. Cl.⁴ G06F *15/62;* **G09G** *1/02*

U.S. Cl. 364—521 **8 Claims**



1. A video system comprising:

a data processor means for manipulating processor data or pixel image data corresponding to a video image in accordance with program instructions, said data processor means having a data bus and a first address bus;

a memory means connected to said data bus and having a second address bus, for recalling data from memory locations of said memory means corresponding to the address received on said second address bus and applying said recalled data to said data bus and for writing data received from said data bus to memory locations within said memory means corresponding to the address on said second address bus, whereby said memory means includes a single memory space for program instructions, processor data and pixel image data;

a video system controller means connected to said data bus, said first address bus and said second address bus for controlling the transfer of data between said data processor means and said memory means by control of the address applied to said memory means via said second address bus, said video system controller means further including a display update means for recalling said pixel image data from said memory means by sequential application of addresses corresponding to said pixel image data in the order of display of pixels;

a display means connected to said memory means for generating an operator perceivable visual display corresponding to said video data recalled from said memory means via said display update means.

4,660,157

REAL TIME VIDEO PERSPECTIVE DIGITAL MAP DISPLAY METHOD

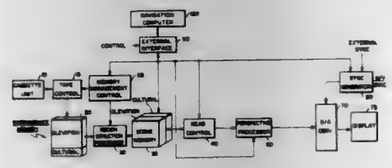
Paul B. Beckwith, Indialantic; Kent P. Bascle, and Jeffrey B. Pearce, both of Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 308,166, Oct. 2, 1981, Pat. No. 4,489,389. This application Nov. 13, 1984, Ser. No. 670,933

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.⁴ G06F *3/153, 15/66;* **H04N** *7/18*

U.S. Cl. 364—522 **42 Claims**



12. A method for generating a perspective display of terrain over which a vehicle is moving, comprising the steps of:

storing, in memory, digital data representing a two-dimensional elevation terrain pattern which is addressable in relation to the coordinate position of each elevation point with respect to a selected geographical orientation;

providing signals representing the heading angle of said vehicle with respect to said selected geographical orientation, the angle of the desired perspective display with respect to said two-dimensional elevation terrain pattern, and the elevation and current position of said vehicle with respect to said terrain;

reading-out of memory, in response to said provided signals, elevation data for respective ones of said elevation points through the generation of address signals and the application of said address signals to said memory;

in response to said provided signals, transforming the address of each point read out of said scene memory from the address of that point in memory to the address of a respective pixel position in said perspective display;

storing the elevation data read out of said memory in a matrix of memory positions in a display memory, which form storage locations corresponding to said transformed addresses; and

displaying the elevation data stored in said display memory to produce said perspective display.

4,660,158

ARRANGEMENT FOR DETERMINATION AND EVALUATION OF INK MEASURING STRIPS ON A PRINTED SHEET ON A MEASURING TABLE BY A DENSITOMETER

Oded Zingher, Alzenau, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 11, 1984, Ser. No. 629,638

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1983, 3324951

Int. Cl.⁴ G06F *15/626*

U.S. Cl. 364—523 **11 Claims**

8. A method for using an apparatus having

(a) an optical densitometer for evaluating ink measuring strips on a printed sheet,

(b) a digitizing board on which said printed sheet is laid and having a stylus to permit an operator to select predefined points on the sheet and means for sensing the coordinates of the selected points with respect to said digitizing board,

(c) a digitally-driven X-Y positioning mechanism mounted to the digitizing board and carrying said optical densitometer for positioning the optical densitometer to focus on the printed sheet at commanded coordinates with respect to said digitizing board, and

(d) a computer including a memory, said computer being programmed for

(1) receiving coordinates from said means for sensing,

(2) storing and retrieving coordinates from said memory,

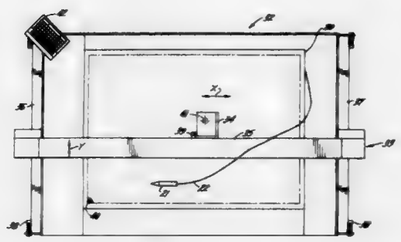
(3) performing coordinate transformations and inverse coordinate transformations between coordinates referenced to said sheet and coordinates referenced to said digitizing board, and

(4) commanding said X-Y positioning mechanism to move said optical densitometer to scan between predetermined coordinates,

said method comprising the steps of

(i) placing a first printed sheet on said digitizing board, manually selecting with said stylus sheet position marks printed at predetermined locations on said first printed sheet and ink measuring strips printed on said first printed sheet,

(ii) instructing said computer to receive the sensed coordinates of the points selected by said stylus to transform the received coordinates of the ink measuring strips to coordinates with respect to said first printed sheet in response to the received coordinates of the sheet position marks, and to store the transformed coordinates in memory,



(iii) removing the first sheet from the digitizing board, placing a second printed sheet similar to said first printed sheet on said digitizing board, manually selecting with said stylus sheet position marks printed at predetermined locations on said second sheet, and

(iv) instructing said computer to receive the sensed coordinates of the points on the second sheet selected by said stylus, to retrieve said transformed coordinates stored in memory, to inverse-transform said retrieved coordinates in response to the received coordinates of the points on the second sheet to obtain the coordinates of the ink measuring strips on the second sheet with respect to the digitizing board, and to command said X-Y positioning mechanism to move said optical densitometer in response to the inverse transformed coordinates so that the ink measuring strips are scanned regardless of the positions and orientations of the first and second sheets when the sheets are placed on the digitizing board and so that said second sheet need not be moved with respect to said digitizing board from the time that said sheet position marks on said second sheet are selected to the time that the ink measuring strips on the second sheet are scanned.

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4,660,159

PROCESS AND APPARATUS FOR THE REGULATION OF INK FEED CONTROLS IN AN OFFSET PRINTING MACHINE

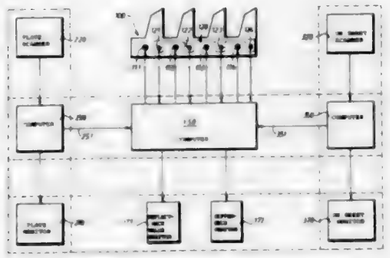
Hans Ott, Regensdorf, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Oct. 29, 1984, Ser. No. 665,975

Claims priority, application Switzerland, Nov. 4, 1983, 5965/83

Int. Cl.⁴ G01J *3/46*; **B41F** *33/00*

U.S. Cl. 364—526 **35 Claims**



1. A process for regulating ink feed controls in an offset printing machine which makes photoelectric measurements of printed products and determines setting values for ink feed elements for respective ink colors from said measurements, comprising the steps of: dividing a reference for the individual printing inks into a plurality of image elements and determining the surface coverage for each element, the reference being in the form of at least one of a printing plate, a photogrpahic master upon which said plate is based, and a printed product which has previously been determined to be satisfactory; determining a reference reflectance value R_s for each image element for each respective color of printing ink as a function of at least one of such parameters as a printing characteristic, and the effect of full tone density upon reflectance variation as a function of surface coverage; dividing printed products into image elements; determining, for each respective printing ink, an actual reflectance value R_i for each image element of said printed products; and determining setting values ST for the ink feed control elements by comparing the actual reflectance values R_i with the corresponding reference reflective values R_s.

31. An apparatus for the regulation of the ink feed controls in an offset printing machine, comprising: a photoelectric scanning device for measuring a reference; a densitometric scanning device for measuring the printed products; and computing means, connected to at least one of the two scanning devices, for processing the measured values into setting values ST for the ink feed control elements of the printing machine and for outputting said values; wherein the scanning devices divide the reference and the print product into image elements and determine the surface coverage and the reflectance, respectively, for each printing ink in each image element; and wherein the computing means determines, with respect to each printing ink for each image element of the reference, a reference reflectance value R_s from the measured surface coverages, taking into consideration at least one of such printing parameters as the print characteristic and the effect of full tone density, compares said reference value R_s with a respective measured actual reflectance value R_i of a corresponding image element of the printed product, and determines the setting values ST for the ink feed control elements from the results of said comparison.

4,660,160

ELECTRONIC WEIGHING DEVICE HAVING LABEL PRINTER WITH DATA STABILITY CHECK

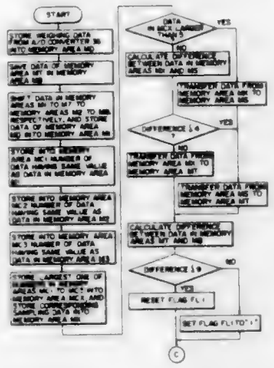
Noriyasu Tajima; Kanihiko Aoba, and Hidemi Mihara, all of Mishima, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1985, Ser. No. 724,651

Claims priority, application Japan, Apr. 26, 1984, 59-85905

Int. Cl.⁴ G01G *23/10, 23/38*; **G06F** *11/00*

U.S. Cl. 364—567 **10 Claims**



1. An electronic weighing device, comprising:

weighing means for generating weight data responsive to the weight of a load;

memory means including a true value memory area and N data memory areas for time sequentially storing the weight data from said weighing means in every one of a plurality of sampling. cycles, where N is more than to:

display means for displaying at least true value data stored in said true value memory area; and

control means including:

means for carrying out a displaying blinking prevention process on the data stored in said N data memory areas;

means for storing into said true value memory area, after at least two of said sampling cycles, the true value data calculated by processing the weight data stored in said data memory areas in accordance with a display blinking prevention process;

means for detecting that a difference between the weight data derived in two successive sampling cycles is larger than a first predetermined value; and

means for storing into said true value memory area the weight data stored in a preset one of said N data memory areas as the true value data without executing said displaying blinking prevention process when it is detected that a difference between the weight data derived in two successive sampling cycles is larger than a first predetermined value.

4,660,161

CORRECTION METHOD FOR VEHICLE-MOUNTED GEOMAGNETIC FIELD SENSORS

Yasushi Okada, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1984, Ser. No. 620,464

Claims priority, application Japan, Jun. 17, 1983, 58-109817

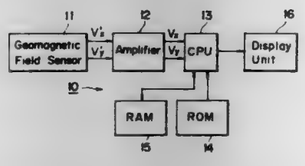
Int. Cl.⁴ G01C *17/38*; **G06F** *15/50*

U.S. Cl. 364—571 **5 Claims**

1. A correction method for a geomagnetic field sensor of a bearing indication system mounted on a vehicle, said bearing indication system including signal processing means for computing and outputting a bearing of said vehicle in accordance with an output signal of said geomagnetic field sensor, said signal processing means having storing means for storing data of said bearing of said vehicle, and display means for displaying said bearing of said vehicle in accordance with an output of said signal processing means, comprising:

a first step of storing said output signals of said geomagnetic field sensor as said data of said bearing of said vehicle with respect to all directions while said vehicle is traveling, said all directions being divided into at least three bearing ranges having an equal angle with each other;

a second step of computing and storing a first bearing correction vector on the basis of a first set of average points



each respectively determined from said data of said bearing as associated with one of all of said bearing ranges, and computing and storing a second bearing correction vector on the basis of a second set of average points each respectively determined from said data of said bearing as associated with one of at least three of said bearing ranges; and

a third step of determining from the magnitude of said first correction vector whether said vehicle has traveled a geomagnetically abnormal area, and based on said determination outputting a correction signal based on either of said first or said second bearing correction vector for correcting said output signals of said geomagnetic field sensor.

4,660,162

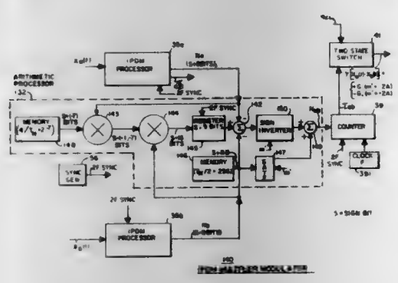
INTERPOLATION PULSE DURATION MODULATED MULTIPLIER

Allan M. Berlinsky, Randolph, N.J., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 31, 1984, Ser. No. 646,344

Int. Cl.⁴ G06F *7/38*; **H03K** *7/08, 9/08*

U.S. Cl. 364—723 **8 Claims**



1. A multiplier for providing an output pulse duration modulated waveform signal of the product of a first and second signals comprising:

a source of synchronizing pulses;

a source of clock pulses;

a first and second interpolation pulse duration processor having inputs of said first and second signals, respectively, and inputs connected to said synchronizing pulse source and said clock pulse source and providing a sequence of numerical quantities N_a and N_b, respectively;

N_a and N_b representing the time of intersection, measured in clock pulse counts measured from each synchronizing pulse from said synchronizing pulse source, of the linear interpolation of two successive samples of each of said signals, respectively, and a triangular wave having its successive peaks at the times of occurrence of said synchronizing pulses;

an arithmetic processor;

said first interpolation processor providing a signal to said arithmetic processor indicative of the sign of the slope m' of said triangular wave;

said arithmetic processor providing a number N_{ab} by executing the mathematical expression $-N_a-N_b+(4/T_N)-(N_a)(N_b)+(T_N/2)$ for m' positive, and the expression $N_a+N_b-(4/T_N)(N_a)(N_b)$ for m' negative, where T_N is a numerical value contained within the arithmetic processor representation of the period of said triangular wave;

a counter receiving the number N_{ab} provided by said arithmetic processor in response to each said synchronizing pulse;

said source of clock pulses providing clock pulses to said counter, said clock pulses being of a higher frequency than said synchronizing pulses;

said counter providing an output pulse when the number, N_{ab}, received by the counter from said arithmetic processor is counted by said clock pulses; and

a two-state switch responsive to the output pulse of said counter to provide a change in the output state of said switch at each occurrence of said output pulse.

4,660,163

ADAPTIVE DIGITAL FILTER

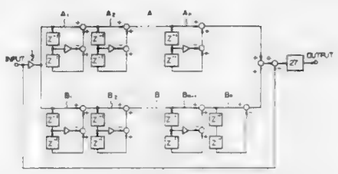
Atsushi Fukasawa; Kenichiro Hosoda; Ryoichi Miyamoto; Hiromi Ando, and Shinji Kawaguchi, all of Tokyo, Japan, assignors to OKI Electric Co. Ltd, Tokyo, Japan

Filed Jan. 13, 1984, Ser. No. 570,634

Claims priority, application Japan, Jan. 17, 1983, 58-4214; Jan. 17, 1983, 58-4215; Oct. 6, 1983, 58-185818

Int. Cl.⁴ G06F *7/38*

U.S. Cl. 364—724 **5 Claims**



1. An adaptive digital filter with a transfer function which includes at least one of a pole and a zero point in a denominator and a numerator in a transfer function which changes successively or at least in every predetermined period, comprising;

at least one of the denominator and numerator of a transfer function in the complex Z plane being a Chebyshev polynominal,

said filter having three branches (A,B,C),

first branch (A) and second branch (B) having a plurality of series connected non-recursive filter elements (A_1-A_n, B_1-B_n) in which said filter elements include delay circuits, a tap and an adder and have degree not larger than three,

third branch (C) being a merely conductive line of said second branch of non-recursive filter elements,

branch (C) being coupled with an input terminal of the filter to which said first branch of branches (A) and (B) are coupled through an attenuator with a multiplier $\frac{1}{2}$,

outputs of those three branches being coupled together with an output terminal of the filter, and

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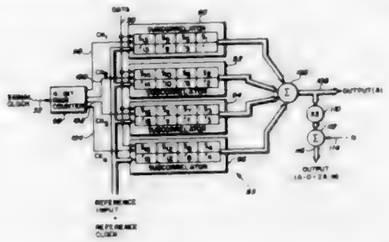
means for determining tap coefficients (c_1, c_2, ($B_1, B_2, \ldots$), and tap coefficients ($d_1, d_2, \ldots$) of said non-recursive filter elements ($A_1, A_2, \ldots$) according to each coefficient of said Chebyshev polynominal.

4,660,164

MULTIPLEXED DIGITAL CORRELATOR

Lawrence M. Leibowitz, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 5, 1983, Ser. No. 558,070
Int. Cl.⁴ G06F *15/336*
U.S. Cl. 364—728 **4 Claims**



1. A high speed digital correlator system for correlating input data bits in a serial input data stream comprising:

k digital correlators coupled to operate in parallel and to receive data bits from said serial input data stream;

multiplexing means coupled to said k correlators for directing each input data bit in said input data stream into one of said k correlators, each of said k correlators receiving every kth bit in said data stream said multiplexing means includes a k-bit ring counter with a clock input and k outputs, each of said k outputs being coupled to supply an input enabling signal to a respective one of said k correlators, said clock input being adapted to receive a clock signal synchronized with the flow of data bits in said serial input data stream, said ring counter supplying an input enabling signal to one of said k outputs in synchronism with each data bit in said serial input data stream coupled to each of said k correlators for enabling the input of each data bit from said serial input data stream to one of said k correlators, each of said k correlators being enabled to receive every kth data bit from said serial input data stream; and

combining means coupled to receive the outputs of said k correlators for combining said outputs into a measure of overall correlation;

wherein each of said k correlators operates at 1/kth of the data rate of said input data stream.

4,660,165

PYRAMID CARRY ADDER CIRCUIT

Rodney T. Masumoto, San Diego, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Apr. 3, 1984, Ser. No. 596,485
Int. Cl.⁴ G06F *7/50*
U.S. Cl. 364—787 **6 Claims**

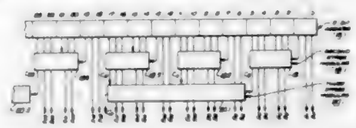
1. An adder circuit with high-speed carry assimilation capability, said circuit comprising:

a first adder stage, including means for processing two multi-bit numbers to be added together, and producing an intermediate multi-bit sum output and a multi-bit carry output;

at least one additional adder stage, including means for logically combining sum outputs and carry outputs from said first stage, to produce carry and sum output bits such that the number of carry bits is reduced by a factor of at least three;

means for coupling the intermediate carry output bits and the intermediate sum output bits from said first adder stage to said additional adder stage;

wherein said first adder stage includes a plurality of two-bit adder modules, each of which produces a two-bit intermediate sum output and a single carry output bit;



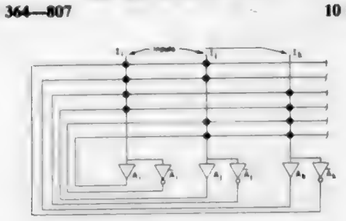
and wherein said additional adder stage is a second stage, and includes a plurality of second-stage adder modules, each of which receives the carry outputs of at least three of said two-bit adders in said first adder stage, and produces as outputs a set of intermediate sum bits and a single carry bit.

4,660,166

ELECTRONIC NETWORK FOR COLLECTIVE DECISION BASED ON LARGE NUMBER OF CONNECTIONS BETWEEN SIGNALS

John J. Hopfield, Pasadena, Calif., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J. and California Institute of Technology, Pasadena, Calif.

Filed Jan. 22, 1985, Ser. No. 693,479
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—807 **10 Claims**



1. A network of nonlinear devices having continuous input-output relations for parallel processing of input signals, having useful collective decisional properties to which all of the input signals make a contribution to some degree in the range from 0 to 100%, comprising a matrix of N input and N output conductors, where N is a positive integer greater than 1, and each of said N output conductors may be a pair of complementary positive and negative conductors, N amplifiers of high gain, each amplifier having at least a positive output terminal and optionally a complementary negative output terminal for the case of each output conductor being comprised of a pair, each input conductor of said array being connected to the input terminal of a separate one of said amplifiers, and each amplifier having its output terminal connected to a separate one of said output conductors, each amplifier of a series . . . i, j, k . . . having its output conductor connected to the input conductor of a separate selected amplifier, where each connection is implemented with a resistor R_{ij}, and the value of each resistor is selected for the nature of the decisional operation intended to satisfy the following circuit equation of motion:

$$C(du_i/dt) = u_i/\rho_i + \sum_j T_{ij}V_j + I_i,$$

$$\frac{1}{\rho_i} = \frac{1}{R_i} + \sum_j \frac{1}{R_{ij}}$$

where the subscript letters i and j designate representative ones of said series of amplifiers, the magnitude T_{ij} is a conductance

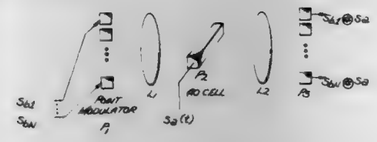
equal to $1/R_{ij}$ which defines the network decisional properties, u_i is the input to amplifier i at the starting time t_o, I_i is an input signal from a high impedance current source connected to amplifier i, and V_j is the output of amplifier j due to an input u_j thereto, thereby presenting on said output conductors a decision expressed as binary word of N bits after said network has reached a stable state to which the conductances between amplifiers force the network.

4,660,167

SPACE-MULTIPLEXED TIME-INTEGRATING ACOUSTO-OPTIC CORRELATORS

David Casasent, Pittsburgh, Pa., assignor to Teledyne Industries, Inc., Northridge, Calif.

Filed Mar. 15, 1985, Ser. No. 712,194
Int. Cl.⁴ G06G *9/00*
U.S. Cl. 364—822 **12 Claims**



1. A method of correlating a signal $S_a(t)$ with another signal $S_b(t)$ having a signal duration T_S comprising the steps of

(a) providing an acousto-optical cell having an input transducer for creating a sound field in said cell responsive to the electric signal $S_a(t)$ applied thereto, the acousto-optic cell having a predetermined aperture time T_A;

(b) substantially uniformly illuminating the cell with light from each of a plurality (N) of light sources substantially equal in number to the signal duration T_S divided by the cell aperture time T_A, or T_S/T_A, each emitting light having an intensity or amplitude responsive to the signal applied thereto, the first of the light sources having a signal applied thereto responsive to the signal $S_b(t)$, each successive light source in the plurality of light sources having a signal applied thereto corresponding to the signal applied to the next preceeding light source delayed in time by a time delay substantially equal to T_A,

(c) detecting the light passing through the cell from each of the light sources by a plurality (N) of light sensitive devices equal in number to the plurality (N) of light sources, each of the light sensitive devices being responsive to light from a respective one of said light sources, and

(d) integrating each light sensitive device output for a time T_I substantially equal to the signal duration T_S to provide a plurality of correlation outputs covering a time delay range of $T_D = NT_A$.

4,660,168

APPARATUS FOR COMPLETING A CUSTOMER INITIATED ATM TRANSACTION

Elwyn E. Grant, 1901 Forestwood Dr., Richardson, Tex. 75081; James O. Lafevers, 3211 Helmet, and Richard P. Tribble, 700 Irongate, both of Irving, Tex. 75060

Filed Mar. 14, 1984, Ser. No. 589,420
Int. Cl.⁴ G06F *15/00, 7/08, 9/40, 13/00*
U.S. Cl. 364—900 **13 Claims**

1. Apparatus connected to a host processing device for completing a customer initiated ATM transaction, said host device including means for generating transaction sequence table messages, comprising:

an automated teller machine (ATM) including a first peripheral device and a second peripheral device;

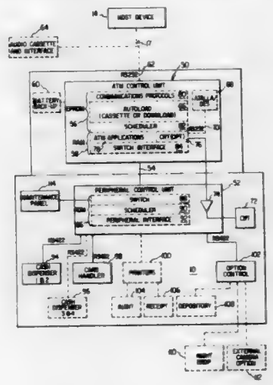
first control means connected to said first peripheral device and having a dedicated processor and memory for controlling the operation of said first peripheral device;

second control means connected to said second peripheral device and having a dedicated processor and memory for controlling the operation of said peripheral device;

said first and second control means including means for formatting transaction sequence event messages to initiate ATM transaction events identified in a transaction sequence table using said first and second peripheral devices;

ATM control means connected to said host processing device and including the transaction sequence table to schedule the ATM transaction events such that said first and second peripheral devices perform at least two ATM transaction events simultaneously in real-time;

said control means further including means responsive to



transaction sequence table messages, including messages from the host processing device, to establish or modify an order of ATM transaction events in the transaction sequence table so as to initiate the simultaneous real time performance of at least two of said ATM transaction events; and

interface means connected to said first and second control means and to said ATM control means for receiving said transaction sequence event messages and in response thereto concurrently processing said messages to initiate the simultaneous real-time performance of said ATM transaction events in accordance with an order as set by the transaction sequence table by said first and second peripheral devices.

4,660,169

ACCESS CONTROL TO A SHARED RESOURCE IN AN ASYNCHRONOUS SYSTEM

Kent S. Norgren, Longmont, and Robert E. Vogelsberg, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 5, 1983, Ser. No. 511,053
Int. Cl.⁴ G06F *3/04, 9/00*
U.S. Cl. 364—900 **7 Claims**

1. A system for resolving contention among a plurality of asynchronous bus master devices connected to a common bus, comprising:

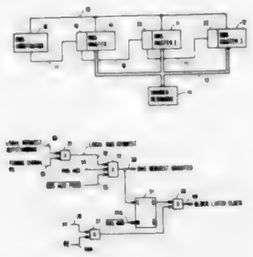
bus arbitrator means connected to receive a bus request signal from any one of said bus master devices and for issuing a bus acknowledge signal in response to said bus request signal to indicate that said bus is free;

means for serially connecting each said bus master device in order of priority with the highest priority bus master directly connected to said bus arbitrator device to serially transmit said bus acknowledge signal to said bus master devices in their order of priority; and

a first local line control means serving as an input section of

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said highest priority bus master device and connected to receive said bus acknowledge signal from said bus arbitrator device, said first local line control means for generating a local bus request granted signal to enable said highest priority bus master device to seize control of said bus without first synchronizing said bus acknowledge signal with control timings for said highest priority bus master.

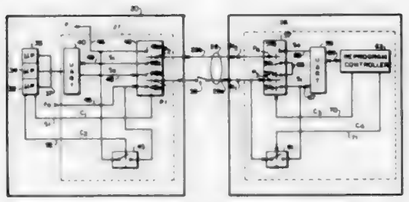


4,660,170

SYSTEM FOR PROVIDING REPROGRAMMING DATA TO AN EMBEDDED PROCESSOR

Kenneth H. Hui, Duarte; King C. Mak, Alhambra, and David G. Hardesty, San Dimas, all of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Apr. 29, 1985, Ser. No. 728,621
Int. Cl.⁴ G06F *1/00*
U.S. Cl. 364—900 **25 Claims**



1. A system for transferring reprogramming data to a self-programmable, command-producing processor that is contained in an electronic module having a plurality of signal paths for conducting signals between the interior and exterior of the electronic module, comprising:

terminal means in said electronic module and connected to one of a plurality of signal paths that conduct signals between the interior and exterior of said electronic module;

connecting means in said terminal means responsive to a self-programmable, command-producing processor contained in said electronic module for connecting said processor to said one of said signal paths;

a reprogramming data module positioned outside said electronic module adjacent an electronic module signal path to which said terminal means is connected;

an access means in said reprogramming data module for unidirectionally conducting signals from said electronic module signal path;

data transfer means in said reprogramming data module and connected to said access means for detecting reprogramming command signals on said electronic module signal path and for decoding said reprogramming command signals to provide plural reprogramming control signals;

switching means in said reprogramming data module responsive to a first one of said reprogramming control signals decoded from an inquiry reprogramming command signal for connecting said data transfer means to said electronic module signal path; and

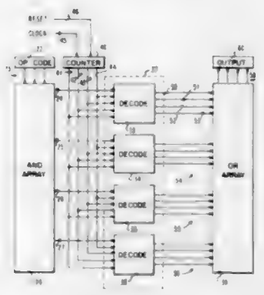
reprogramming data storage means in said data transfer means responsive to other reprogramming control signals for providing reprogramming data signals to said electronic module signal path.

4,660,171

APPARATUS AND METHOD USING A PROGRAMMABLE LOGIC ARRAY FOR DECODING AN OPERATION CODE AND PROVIDING A PLURALITY OF SEQUENTIAL OUTPUT STATES

Victor S. Moore, Pompano Beach; Wayne R. Kraft, Coral Springs, and Joseph C. Rhodes, Jr., Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,585
Int. Cl.⁴ H03K *19/20, 13/00*
U.S. Cl. 364—900 **3 Claims**



1. Apparatus for decoding a selectable computer operation code, said apparatus including clock means for generating sequential timing signals, and a programmable logic array comprising an AND array to which a selected operation code is provided as an input and an OR array from which decoded output signals appear as sequential output signals, characterized by:

the AND array providing for each selectable operation code a corresponding unique output;

a plurality of sequencer means, one sequencer means for each unique output from the AND array, at least one sequencer means being coupled to said clock means and being responsive to said sequential timing signals produced by said clock means and to its corresponding unique output from said AND array for generating for the corresponding operation code a plurality of sequential time state signals comprising the input to said OR array; and

said OR array being responsive to said sequential time state signals for generating a plurality of decoded sequential output signals representing a decoding of said corresponding operation code.

4,660,172

STORAGE MEDIUM FOR ELECTRONIC DATA PROCESSING

Walter Holzer, Drosteweg 21, 7758 Meersburg, Fed. Rep. of Germany

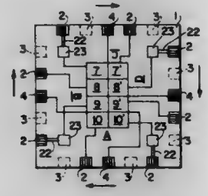
Continuation-in-part of Ser. No. 192,020, Sep. 29, 1980, abandoned. This application Nov. 23, 1983, Ser. No. 554,673
Int. Cl.⁴ G11C *19/08, 17/00*
U.S. Cl. 365—2 **12 Claims**

1. A storage medium for an electronic recording and readout apparatus which comprises:

a data recording medium comprising first and second surfaces having a plurality of edges, said medium containing therein a multitude of storage elements corresponding to each of said respective edges of said medium for storing memory content in said data recording medium for use in recording and read-out of digital information; and

a plurality of taps arranged at each respective edge of said data recording medium which input information for recording, at least one of said taps initiating read-out from said storage elements in a cyclic-series fashion, said recording medium being divided into a plurality of storage sections and comprising said storage elements corresponding to each edge of said recording medium for storing said memory content, each of said storage sections being separately accessible via said taps depending upon which edge of said storage medium is inserted into a holder fitting for said electronic record of read-out apparatus,

whereby said storage medium is insertable in at least four different directions and eight different positions into said record and read-out apparatus such that said storage sections associated with said respective edges of said data recording medium corresponding to said direction and position are recordable or readable.

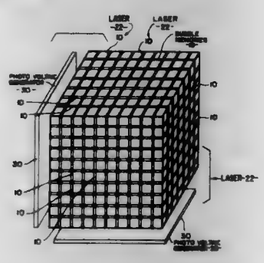


4,660,173

THREE-DIMENSIONAL MAGNETIC BUBBLE DATA STORAGE AND OPTICAL RETRIEVAL SYSTEM

Fariborz Mehdipour, 209 Montana Ave., Santa Monica, Calif. 90403

Filed Aug. 8, 1985, Ser. No. 763,683
Int. Cl.⁴ G11C *19/08*
U.S. Cl. 365—10 **7 Claims**



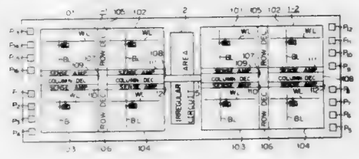
1. A three-dimensional magnetic bubble memory apparatus comprising: at least two arrays of sheets, with the sheets of each array being mounted in spaced and parallel relationship, and with the sheets of the two arrays being mounted perpendicular to one another, and with each sheet being formed of light-transparent magnetic material capable of producing magnetic bubble domains; bubble generator means mounted on a first edge of each of the sheets of each of said arrays and responsive to selected input signals for producing arrays of magnetic bubbles for movement along parallel channels on the corresponding sheet to selected positions in the parallel conducting channels representative of binary data to be stored in the memory; a light beam source positioned on one side of each of said arrays for causing a light beam to be incident on the corresponding array; light polarizing means mounted between the light source and the corresponding array for polarizing the light beam incident on the corresponding array; bubble annihilator means mounted on each of said sheets of each of said arrays for erasing previous bubbles each time bubbles representing new binary data are produced by said generator means; photo-voltaic generator means positioned on the other side of each of the arrays comprising a plurality of photocells respectively aligned with the locations in the parallel conducting channels on the sheets of the corresponding array on which the magnetic bubbles are selectively positioned; and further polarizing means positioned between each of said photo-voltaic generator means and the corresponding array, the amplitude of light reaching each of said photocells from the corresponding beam being determined by the presence or absence of magnetic bubbles at individual ones of said locations, and said photocells producing electrical signals having an amplitude determined by the amplitude of light reaching respective ones of said photocells as determined by the presence or absence of magnetic bubbles in the locations corresponding thereto.

4,660,174

SEMICONDUCTOR MEMORY DEVICE HAVING DIVIDED REGULAR CIRCUITS

Yoshihiro Takemae, Tokyo; Tomio Nakano, Kawasaki, and Kimiaki Sato, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1984, Ser. No. 625,682
Claims priority, application Japan, Jun. 29, 1983, 58-115878
Int. Cl.⁴ G11C *5/00*
U.S. Cl. 365—63 **17 Claims**



1. A semiconductor memory device having a periphery, comprising:

a plurality of word lines;

a plurality of bit lines;

at least two separated regular pattern circuit areas, each comprising first elements operatively connected to and arranged regularly in line with at least one of said word lines and said bit lines;

an irregular circuit area, arranged between said separated regular pattern circuit areas, said irregular circuit area comprising second elements operatively connected to said regular pattern circuit areas and irregularly arranged with respect to the one of said word lines and said bit lines; and

bonding pad areas, operatively connected to said irregular circuit area, arranged on the periphery of said device.

4,660,175

DATA STORAGE DEVICE HAVING NOVEL BARRIER LAYERS ENCAPSULATING THE DATA STORAGE MEDIUM

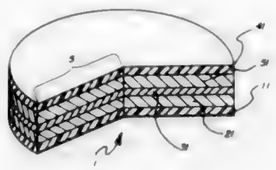
David Strand, West Bloomfield, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jul. 8, 1985, Ser. No. 752,741
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 365—113 **16 Claims**

1. A data storage device comprising a chalcogenide data storage medium, a substrate supporting said data storage medium, and a dielectric film encapsulating the data storage medium and in contact therewith at first interfaces, where the

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dielectric is compositionally graded in oxygen content with respect to distance from the chalcogenide data storage medium, being substantially stoichiometric oxide at the interface

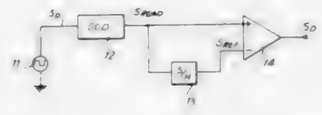


with the chalcogenide data storage medium and being a substantially non-stoichiometric suboxide at its opposite interfaces.

4,660,176
DIGITAL MEMORY MEANS WITH AN ACCURATE REFERENCE SIGNAL

Tadakuni Narabu, and Maki Sato, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1983, Ser. No. 482,765
Claims priority, application Japan, Apr. 13, 1982, 57-60301
Int. Cl.⁴ G11C *11/34*
U.S. Cl. 365—183 **10 Claims**



1. A digital memory comprising:

information storage means for storing digital information having a plurality of data levels and providing said digital information to a sensing means after storing it for a predetermined time; and

reference signal storage means for accepting an input reference signal and providing a reference level signal having a level between said data levels and being forwarded to the sensing means a predetermined time after accepting said input reference signal for use by the sensing means to distinguish between said data levels, said reference signal storage means being maintained at operating conditions relative to said information storage means such that said level of said reference level signal relative to said data levels remains substantially constant;

said information storage means comprising a charge coupled device having a plurality of channels for transferring said information;

said input reference signal having a level substantially the same as a higher data level; and

said reference signal storage means comprising a charge coupled device having at least one divider channel for dividing said input reference signal to provide said reference level signal at a level halfway between two of said data levels.

4,660,177
DUAL PORT COMPLEMENTARY MEMORY

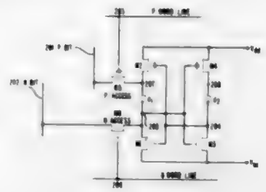
Kevin J. O'Connor, Center Valley, Pa., assignor to American Telephone and Telegraph Company and AT&T Bell Laboratories, both of Murray Hill, N.J.

Filed Jan. 14, 1985, Ser. No. 691,418
Int. Cl.⁴ G11C *13/00*
U.S. Cl. 365—189 **12 Claims**

1. An integrated circuit comprising at least one information memory cell adapted to being accessed from a first port and a second port,

and wherein said cell comprises a bistable circuit having a first node and a second node that are stable in opposite voltage levels, and switchable between said levels in response to an information signal,

characterized in that

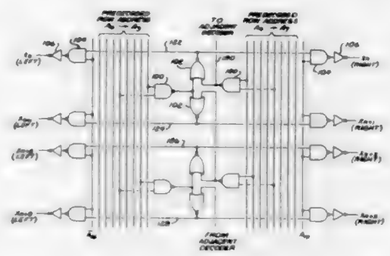


said first node is coupled to said first port through an access transistor of a first conductivity type when the votage on the control electrode thereof is at low level, and said first node is coupled to said second port through an access transistor of a second conductivity type when the voltage on the control electrode thereof is at a high level.

4,660,178
MULTISTAGE DECODING

Kim C. Hardee, and Mike J. Griffus, both of Colorado Springs, Colo., assignors to Inmos Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 534,510, Sep. 21, 1983. This application Sep. 20, 1984, Ser. No. 652,083
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—189 **7 Claims**



1. In a semiconductor memory device having inputs coupled for receiving coded column and row address data, an improved row decoder comprising:

a set of predecoding row address circuits having inputs coupled for receiving row address data and providing a set of predecoded row address data;

a pair of first stage row decoders each having two inputs coupled to receive two respective predetermined ones of said predecoded row address data and providing respective first logic signals at respective outputs of said first stage decoders;

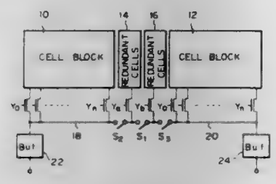
a second stage row decoder having two inputs coupled to receive said first logic signals and to provide a second logic signal at an output of said second stage decoder; and

a pair of third stage decoders each having two inputs and each having one of said inputs coupled to receive said second logic signal and each having its other input coupled to receive column address data.

4,660,179
SEMICONDUCTOR MEMORY DEVICE WITH SWITCHING FOR REDUNDANT CELLS

Keizo Aoyama, Yamato, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 17, 1984, Ser. No. 682,515
Claims priority, application Japan, Dec. 16, 1983, 58-238554
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—200 **4 Claims**



1. In an organization for multi-bit output which comprises a plurality of memory cell groups and a plurality of data buses, each of which belongs to each of said groups, wherein one of memory cells in each memory cell groups are selected at the same time, a semiconductor memory device comprising;

a plurality of groups of redundant cells one of which can replace a group of memory cells which comprise a defective memory cell;

switching circuits which selectively connect one of said groups of the redundant cells to the data bus belonging to one of said groups of memory cells, so that said switching circuit can connect said one of said groups of said redundant cells to one of said data buses belonging to any of said cell groups; and

wherein said switching circuits comprise a first switch which is connected between data buses corresponding to a first group of redundant cells and a second group of redundant cells, a second switch which is connected between data buses corresponding to a first cell block and said first group of redundant cells and a third switch which is connected between data buses corresponding to a second cell block and said second group of redundant cells.

4,660,180
SEMICONDUCTOR MEMORY DEVICE INCLUDING AN IMPROVED DATA REFRESHING ARRANGEMENT AND A SYSTEM EMPLOYING THE SAME

Nobuyoshi Tanimura, Musashino, and Hiroshi Kawamoto, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 9, 1984, Ser. No. 658,910
Claims priority, application Japan, Oct. 7, 1983, 58-186707
Int. Cl.⁴ G11C *7/00, 8/00*
U.S. Cl. 365—222 **16 Claims**

1. A semiconductor memory device comprising:

a plurality of memory cells each of which has a capacitor for storing data;

a select circuit for selecting a memory cell designated by first address signals out of said plurality of memory cells;

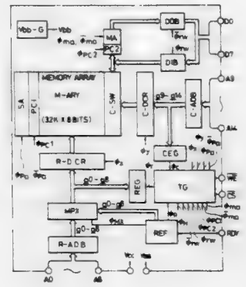
an amplifier circuit which receives data stored in the capacitor of the selected memory cell, which amplifies the data, and which sends the amplified data back to the capacitor of said selected memory cell for rewriting the data in said selected memory cell;

an external terminal;

timing signal generating means which forms a first starting signal;

refresh control means which receives said first starting signal and a second starting signal that is supplied via said external terminal, and which forms said first address signals and a busy signal that is to be supplied to said external terminal responsive to whichever of said first starting signal or said second starting signal is received first; and

inhibit means which inhibits the supply of the second starting signal from said external terminal to said refresh control means for a predetermined period of time responsive to said busy signal,

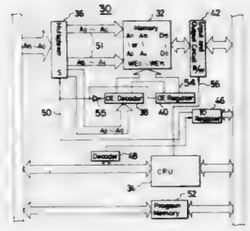


wherein the operation for rewriting the data into the memory cell is performed in accordance with either the first starting signal received by said refresh control means or a second starting signal supplied to said external terminal, and wherein the busy signal for indicating the rewriting operation is supplied to said external terminal in response to performing of the rewriting operation.

4,660,181
MEMORY SYSTEM

Mitsuo Saito, Arlington, Mass.; Takeshi Aikawa, Chofu, and Akio Mori, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 21, 1985, Ser. No. 714,396
Claims priority, application Japan, Mar. 24, 1984, 59-055273
Int. Cl.⁴ G11C *8/00*
U.S. Cl. 365—230 **6 Claims**



1. A memory system, comprising:

a memory consisting of a plurality of bit memory cells, each capable of being independently accessible and of storing bit data in at least a first and second different predetermined bit width access modes;

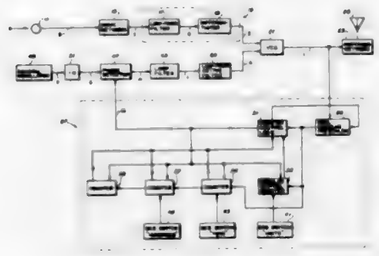
multiplexer means for receiving addresses corresponding to each access mode and for selectively producing at least first and second predetermined address bit portions out of each of the addresses for applying each of said first and second address bit portions to said memory in accordance respectively with said first and second predetermined bit width access modes;

address decoder means connected between said multiplexer means and said memory for receiving another predetermined address bit portion for at least said first access mode and for decoding said other predetermined address bit

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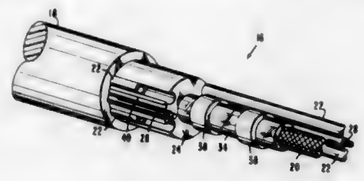
portion for producing a first write control signal for designating at least one particular bit to be accessed;
a bit width register for receiving a bit width designating signal in said second access mode and for producing a second write control signal when said second bit width access mode is to be performed; and
said memory connected for receiving said first and second write control signals in said first and second access modes respectively for writing therein data having respectively a first and a different second bit width.

4,660,182
PROGRAMMABLE MULTICHANNEL SONOBUOY TRANSMITTER
Albert M. Bates, Southampton; Wayne H. Sandford, Jr., Warrington, and Michael T. Junod, Southampton, all of Pa., assignors to The Unites States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 20, 1984, Ser. No. 622,369
Int. Cl.[4] H04B 7/00
U.S. Cl. 367—3 **3 Claims**



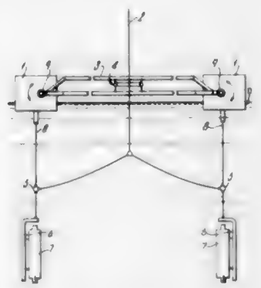
1. A programmable RF transmitter for transmitting data with frequencies from 10 to 20,000 hertz on any one of a plurality of channels comprising in combination:
compensating means for receiving and preemphasizing a data signal as a function of its frequency and producing a preemphasized signal;
first oscillator means for receiving a voltage signal, which voltage signal causes said oscillator means to oscillate at a carrier frequency, and for receiving the preemphasized signal, which preemphasized signal modulates the carrier frequency, said oscillator means producing an output signal indicative of the preemphasized signal;
second oscillator means for producing a reference signal of constant frequency;
detector means for receiving the reference signal for phase comparing with a second input signal thereto and producing the voltage signal to said first oscillator means;
programming means receiving the output signal of said first oscillator means for dividing the frequency thereof and producing the second input of said detector means; and
antenna means receiving the output of said first oscillator means;
whereby a constant modulation sensitivity is maintained over the entire range of modulating frequencies.

4,660,183
VIBRATION ISOLATION MODULE FOR SONAR TOWED ARRAYS
George A. McGowan, Westminster, Calif., and David B. MacCulloch, Panama City, Fla., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 774,506, Sep. 10, 1985, abandoned. This application Sep. 22, 1986, Ser. No. 910,359
Int. Cl.[4] G01V 1/38; H04R 1/44
U.S. Cl. 367—15 **25 Claims**



1. A vibration isolation module comprising:
a hose of flexible material;
a stretchable cable longitudinally disposed within the hose, formed of a material which decreases in cross section when stretched;
a spacer having two ends and being formed of a rigid material slidably mounted on the cable and in contact with the inner surface of the hose; and
means for holding the spacer in a particular position on the cable in a way such that movement of the spacer along the cable is restrained until the cable cross section decreases to a predetermined size and the spacer is subjected to a longitudinal force in excess of a predetermined magnitude whereupon the spacer may move along the cable.

4,660,184
DEVICE FOR USE IN BOREHOLE-SEISMIC MEASUREMENTS AT SEA
Marten Haukjem, and Olav Lindtjorn, both of Hovik, Norway, assignors to Geco Well Services A.S., Hovik, Norway
Filed Jul. 25, 1985, Ser. No. 758,740
Claims priority, application Netherlands, Jul. 25, 1984, 843010
Int. Cl.[4] G01V 1/38; B63B 35/38; B66C 13/02
U.S. Cl. 367—16 **10 Claims**



1. Apparatus for use in making borehole-seismic measurements at sea comprising:
a frame member;
a plurality of separate floats pivotally mounted on horizontal axes to said frame member in spaced relationship for supporting said frame member at sea;

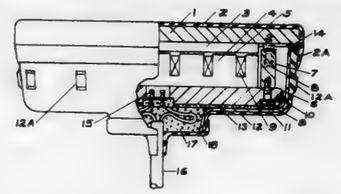
a separate seismic energy means suspension line connected to each float;
a separate seismic energy means connected to each suspension line in spaced relation to said floats;
guide means on said frame member in the central part thereof between said floats;
a handling line passing through said guide means and having an upper end and a lower end, said lower end having two separate parts each connected at one end to a common point on said handling line and at the other end to a respective one of said suspension lines between a respective float and seismic energy means; and
means connected to said handling line for raising and lowering said handling line, so that when said handling line is raised through said guide means from the position where said seismic energy means are substantially separated, said guide means draws said seismic energy means toward each other.

4,660,185
METHOD FOR DETERMINING THE ABSOLUTE LOCATION OF A STREAMER INCORPORATING A REFERENCE SIGNAL SYSTEM WHERE THE A PRIORI LOCATION OF THE REFERENCE SIGNAL SOURCE (OR ALTERNATIVELY THE DETECTOR) NEED NOT BE KNOWN
William S. French, Covington, La., assignor to Tensor Geophysical Service Corporation, Metairie, La.
Filed Jan. 23, 1985, Ser. No. 694,070
Int. Cl.[4] G01V 1/38
U.S. Cl. 367—19 **6 Claims**



1. A method for determining the geophysical location of a streamer which comprises:
(a) measuring the travel time of a reference signal between a signal source and at least two signal detectors, where the detectors occupy a known location with respect to the length of the streamer;
(b) obtaining additional travel time measurements, the measurements being related to each other in time;
(c) measuring the magnetic heading of a point having a known location with respect to the length of the streamer, such measurement being related in time to the travel time measurements;
(d) obtaining additional magnetic heading measurements;
(e) measuring the geophysical location of a reference point having a known location with respect to the length of the streamer, such measurement being related in time to the travel time measurements;
(f) approximating with a curve the relative configuration of the streamer based solely on the travel time measurements, the approximation not being dependent on independent knowledge of the location of the reference signal source;
(g) orienting the configured curve in a coordinate system related to magnetic north based on a plurality of magnetic heading measurements; and
(h) locating the curve in a geophysical coordinate system such that a point that corresponds, in relative location on the curve, to the location of the reference point on the streamer, corresponds in the geophysical coordinate system with the geophysical measurement for the reference point.

4,660,186
ELECTROMAGNETIC TRANSDUCERS FOR UNDERWATER LOW-FREQUENCY HIGH-POWER USE
Frank Massa, 280 Lincoln St., Hingham, Mass. 02043, assignor to Fred M. Dellorfano, Jr. and Donald P. Massa, both of Cohasset, Mass., Trustees of The Stoneleigh Trust u/d/t
Filed Feb. 24, 1986, Ser. No. 832,313
Int. Cl.[4] H04R 13/00
U.S. Cl. 367—142 **18 Claims**



1. In combination in an electromagnetic transducer assembly designed for efficient underwater generation of high power acoustic energy densities in excess of approximately 25 peak Watts per square inch of radiating surface when operating at a mid-audible frequency located within the approximate range 500 Hz to 2500 Hz under conditions of 100% rho-c loading, a vibratile plate having an outer surface adapted for transmitting oscillatory mechanical vibrations into the water when the transducer is immersed therdin, said vibratile plate also having a flat inner plane surface, a first magnetic flux conducting structure having a specified thickness defined by two parallel plane surfaces, means for rigidly attaching the first one of said two parallel surfaces of said first magnetic flux conducting structure to the said flat inner plane surface of said vibratile plate, a massive inertial base member characterized in that it has at least one flat plane surface, and also characterized in that the area of said flat plane surface is comparable to the area of said vibratile plate, a second magnetic flux conducting structure having a specified thickness defined by two parallel plane surfaces, means for rigidly attaching the first one of said two parallel surfaces of said second magnetic flux conducting structure to the said flat plane surface of said massive inertial base member, said second parallel surface of said second magnetic flux conducting structure characterized in that a plurality of pairs of slots are provided into the said second parallel plane surface of said second magnetic flux conducting structure, a plurality of coils wound with insulated electrical conductors and dimensioned to fit with adequate clearance within said plurality of pairs of slots provided into the said second parallel plane surface of said second magnetic flux conducting structure, rigid potting means filling said clearance space between said coils and said slots, a plurality of spring members characterized in that their overall length dimensions are precisely machined to a uniform specified height, first fastening means for attaching one end of said spring members to the peripheral area of said inner plane surface of said vibratile plate, second fastening means for attaching the opposite end of said spring members to the peripheral area of said flat plane surface of said massive inertial base member, the uniform specified height of said plurality of spring members and the precise location of the springs on the facing peripheral flat surfaces of said vibratile plate and said inertial base member establish a specified uniform air-gap dimension between said first and said second

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magnetic flux conducting structure, a waterproof housing structure for enclosing said electromagnetic transducer assembly, sealed insulated terminal means associated with said housing structure for establishing external electrical connection through the transducer housing to said enclosed electromagnetic transducer assembly, electrical connection means from said plurality of coils to said terminal means, and means for generating controlled electromagnetic forces in the magnetic air gap by supplying controlled electrical power to said electrical terminal means.

4,660,187

LIGHT SIGNAL READING METHOD AND APPARATUS USING INTERFERENCE BETWEEN TWO LIGHT BEAMS OF DIFFERENT FREQUENCY AND POLARIZATION

Toshihiko Yoshino, Urayasu, and Yasuo Tomita, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1985, Ser. No. 762,448
Claims priority, application Japan, Aug. 8, 1984, 59-166254
Int. Cl.⁴ G11B *11/03, 5/012*
U.S. Cl. 369—13 **19 Claims**



1. A light signal reading method comprising the steps of:
producing a first light beam having a first predetermined polarization and a first predetermined frequency;
producing a second light beam having a second predetermined polarization and a second predetermined frequency which is different from said first frequency;
interacting the first light beam with information magnetically recorded on a recording medium to cause the first light beam to include an information signal component which carries that information;
causing at least the information signal component of the first light beam to interfere with the second light beam;
and detecting the information as a variation in the intensity of the interference light.

4,660,188

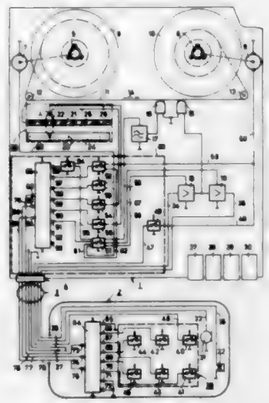
CONTROL CONNECTION FOR A DICTATING MACHINE

Hans Schranz, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,089
Claims priority, application Austria, May 29, 1980, 2869/80
Int. Cl.⁴ G11B *15/04*
U.S. Cl. 369—25 **5 Claims**

1. A recording and playback arrangement including a recording and playback apparatus operable for a plurality of functions including a RECORDING function and a playback function, a remote control device for the apparatus, and a multi-conductor cable connecting the device to the apparatus; said device comprising a plurality of switches including a RECORDING switch for selecting control signals, and an encoder having a plurality of inputs for connecting said plurality of switches to said multi-conductor cable to provide a respective parallel digital coding on conductors of the cable, corresponding to actuation of individual ones of said plurality of switches; said apparatus including a decoder having inputs connected to respective conductors of the cable, and a plurality of outputs corresponding to the encoder inputs, the encoder outputs being control signals for the control of apparatus functions,

characterized in that the encoder inputs have a priority order, each of said individual switches being connected to a respective encoder input and thereby defining priority of said switches;



the encoder output is a respective parallel digital code corresponding to the highest priority actuated switch whenever more than one of said plurality of switches is activated, and

the RECORDING switch is connected to the lowest priority input of said encoder,

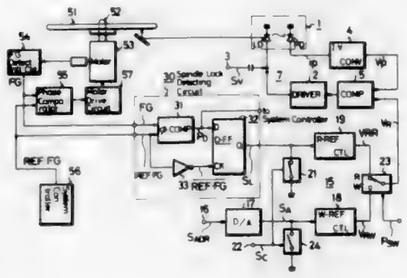
whereby inadvertent initiation of the RECORDING function is prevented while one of the other encoded functions is actuated.

4,660,189

OPTICAL DISK PLAYER HAVING REDUCED LASER OUTPUT DURING TRACK CHANGES

Yoshihiro Tsukamura; Toshiro Morimoto; Matayasu Kubo, and Masataka Mukai, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 22, 1985, Ser. No. 714,870
Claims priority, application Japan, Mar. 24, 1984, 59-56877; Feb. 22, 1985, 60-24368
Int. Cl.⁴ G11B *27/36, 7/00*
U.S. Cl. 369—32 **3 Claims**



1. An optical information reproducing apparatus for reproducing information recorded on a disk recording medium by the irradiation of a laser beam comprising:

(a) an optical pick up device having a laser beam source for emitting a laser beam to read said information recorded on said disk recording medium;

(b) motor control means for controlling a motor to rotate said disk recording medium such that a linear velocity of a track on said disk recording medium reproduced by said optical pick up device becomes a predetermined value;

(c) detecting means for detecting that when said optical pick up device performs a track change, a linear velocity of a changed track is not arrived up to said predetermined value; and

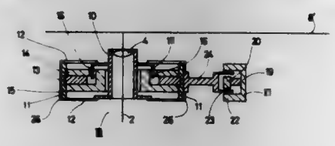
(d) laser output control means for controlling the laser beam from said laser beam source to be a low level on the basis of an output from said detecting means during a period until said linear velocity of said track on said disk recording medium reaches to said predetermined value, wherein when said optical pick up device carries out a track change, said laser beam from said laser beam source is controlled to be a low level until said linear velocity of said changed track on said disk recording medium reaches to said predetermined value by said motor control means to thereby prevent data from being written into said changed track.

4,660,190

OPTICAL FOCUS POSITION CONTROL IN OPTICAL DISC APPARATUS

Yoshikazu Fujii; Toshihisa Degachi; Tetsuya Inui, all of Nara, and Hideyoshi Yamaoka, Matsubara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 6, 1983, Ser. No. 529,849
Claims priority, application Japan, Jan. 25, 1983, 58-11037; Apr. 18, 1983, 58-68770; Apr. 18, 1983, 58-68771; Apr. 19, 1983, 58-69619
Int. Cl.⁴ G11B *7/00*
U.S. Cl. 369—44 **19 Claims**



1. An optical focus and positioning control device for controlling the optical focus and position of an optical beam such as a laser beam in an optical disc apparatus, the optical focus position control device comprising:

an objective lens;

lens support means for supporting said objective lens;

a stationary holder;

focus control means for shifting said lens support means in an axial direction along the optical axis of said optical beam, said focus control means including,

a movable intermediate holder,

focus parallel spring means for connecting said lens support means to said intermediate holder in a manner to allow said lens support means to move with respect to said intermediate holder in the axial direction of the optical disc, and

electromagnetic focus drive means, having a closed magnetic circuit mounted for movement with said intermediate holder, for shifting said lens support means in said axial direction within said intermediate holder, said closed magnetic circuit minimizing flux leakage therefrom; and

tracking control means for shifting said focus control means in the radial direction of the optical disc, said focus control means including,

tracking parallel spring means for connecting said intermediate holder to said stationary holder in a manner to allow said intermediate holder to move with respect to said stationary holder in said radial direction, and

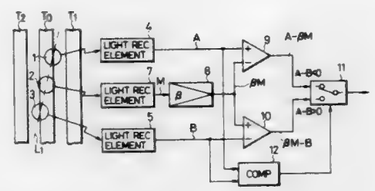
electromagnetic tracking drive means for shifting said intermediate holder in said radial direction within said stationary holder, said electromagnetic tracking drive means including a close magnetic circuit to minimize flux leakage therefrom.

4,660,191

TRACKING SIGNAL ERROR GENERATOR FOR OPTICAL INFORMATION DEVICES

Takanori Maeda, and Kenjiro Hamanaka, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 677,056
Claims priority, application Japan, Dec. 1, 1983, 58-227281
Int. Cl.⁴ G11B *7/08*
U.S. Cl. 369—46 **8 Claims**



1. A tracking error signal generator comprising:
means for producing first, second, and third light fluxes aligned along a line having a predetermined angle with respect to a recording track on an information recording medium, said second light flux being positioned between said first and third light fluxes on said line;
first, second, and third light reception elements for receiving said first, second, and third light fluxes, respectively, reflected from said information recording medium and for producing first, second, and third output signals, respectively, having values corresponding to the intensities of the reflected fluxes received by said light reception elements;
first difference means for producing a first difference signal corresponding to the difference between said first and second output signals;
second difference means for producing a second difference signal corresponding to the difference between said second and third output signals;
comparison means for determining the difference between said first and third output signals for producing a third difference signal; and
output signal selector means controlled by said comparison means for outputting a tracking error signal corresponding to said first difference signal at times when the difference between said first and third output signals is less than a predetermined value and corresponding to said third difference signal at times when the difference between said first and third output signals is greater than a predetermined value.

4,660,192

SIMULTANEOUS AM AND FM TRANSMITTER AND RECEIVER

Robert P. Pomatto, Sr., 4189 S. 300 West #76, Ogden, Utah 84405

Filed Apr. 11, 1985, Ser. No. 722,044
Int. Cl.⁴ H04J *9/00*
U.S. Cl. 370—11 **5 Claims**

1. A radio communication system having an AM/FM trans-

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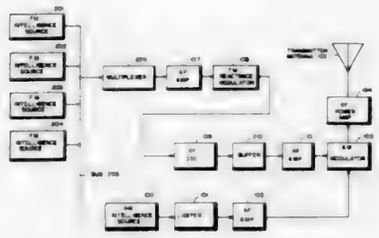
mitter capable of transmitting a first intelligence signal with a plurality of second intelligence signals simultaneously over a single radio frequency, said AM/FM transmitter comprising:

a plurality of electrical signal sources each producing one of said second intelligence signals to be transmitted over said radio communication system;

a multiplexer means producing an output signal by receiving and multiplexing said second intelligence signals from said plurality of electrical signal sources;

a bus conducting all signals from said plurality of electrical signal sources to said multiplexer means;

an AM intelligence source which outputs said first intelligence signal;



an amplitude-modulation means receiving said output signal from said multiplexer means, and first intelligence signal from said AM intelligence source, said amplitude-modulation means producing an AM/FM signal by receiving and using said first intelligence signal to amplitude-modulate said frequency-modulated carrier signal; and

a transmitter means transmitting said AM/FM signal from said amplitude-modulation means, said transmitter means thereby transmitting said first and said plurality of second intelligence signals simultaneously over a single radio frequency.

4,660,193

DIGITAL MODULATION METHOD FOR STANDARD BROADCAST FM SUBCARRIER

Jing J. Young, Indianapolis, Ind., and Richard L. Stuart, Columbia, Md., assignors to Regency Electronics, Inc., Indianapolis, Ind.

Filed Oct. 11, 1983, Ser. No. 540,518
Int. Cl.⁴ H04J *9/00*
U.S. Cl. 370—11 **16 Claims**



1. A receiver which comprises:

(a) an FM detecting means, tuned to a radio frequency signal of a standard FM broadcast station, for detecting frequency modulation of a received carrier in said radio frequency signal;

(b) an amplitude sensitive detecting means connected to the output of said FM detecting means, and tuned to a subcarrier frequency band above 60 kHz, for detecting amplitude modulation of a subcarrier, said amplitude sensitive detecting means including means for reconstructing from said detected amplitude modulation a composite signal having audio and digital components in adjacent portions of its baseband spectrum;

(c) a phase oriented detecting means connected to the output of said amplitude sensitive detecting means for detecting modulation at any one of at least four discrete phase angles and at least one amplitude and for producing digital bit groups therefrom;

(d) means for producing digital data from the digital bit groups from said phase oriented detector;

(e) a low pass filter connected to the output of said amplitude sensitive detecting means; and

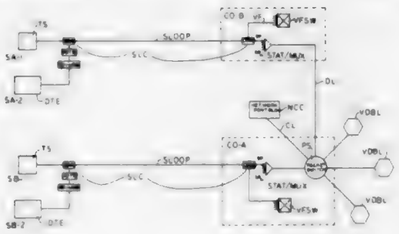
(f) means for producing an audio output signal from the output of said low pass filter.

4,660,194

METHOD AND APPARATUS FOR TESTING A SUBSCRIBER'S LINE CIRCUIT IN A PACKET SWITCHED MULTIPLEXED DATA/VOICE COMMUNICATION SYSTEM

Carl A. Larson, South Hempstead; Hamid Modarressi, Roslyn Heights, and John J. Moore, Islip, all of N.Y., assignors to New York Telephone Company, New York, N.Y.

Filed Apr. 5, 1984, Ser. No. 597,061
Int. Cl.⁴ H04J *3/14*
U.S. Cl. 370—15 **38 Claims**



13. A remote DATA-voice multiplexor which receives first DATA signals and first VF signals and which receives a second multiplexed VF DATA signal including second VF signals and a second DATA carrier, said multiplexor comprising:

means for modulating said first DATA signals onto a carrier to produce a first DATA carrier;

means for combining said first DATA carrier and said first VF signals to form a first VF DATA multiplexed signal;

means responsive to said second VF DATA multiplexed signal for separating said second VF signals from said second DATA carrier;

means for demodulating said second DATA carrier to recover second DATA signals;

means responsive to said separated second DATA carrier for detecting the loss of said second DATA carrier for a first preselected period of time and for a second preselected period of time greater than said first preselected period;

and means responsive to said detecting means for coupling said second DATA signals to and decoupling said first DATA signals from said modulating means to create a loopback for a preselected loopback interval upon detection of loss of said second DATA carrier for said second preselected period of time.

4,660,195

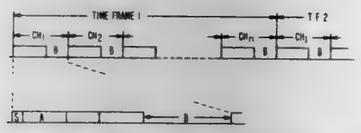
CHANNEL DETECTING CIRCUIT IN A RECEIVER IN A TIME-DIVISION MULTIPLEX TRANSMISSION SYSTEM

Michinori Hatabe, Kawasaki, Japan, assignor to Nitsuko Limited, Kawasaki, Japan

Filed Mar. 25, 1985, Ser. No. 715,509
Claims priority, application Japan, Mar. 23, 1984, 59-54477
Int. Cl.⁴ H04J *3/24, 3/06*
U.S. Cl. 370—92 **7 Claims**

1. In a channel detecting circuit in a receiver receiving a

time-division multiplex signal having a plurality of channels corresponding to a plurality of receivers, each channel signal comprising a start signal part corresponding to a start bit, an address signal part representing an address assigned to a corresponding receiver, an information signal part representing information to be transmitted to the corresponding receiver, and a blank interval which are arrayed in this order, said channel detecting circuit of the receiver comprising an address detecting circuit detecting the address signal part of the channel signal corresponding to the receiver in the multiplex signal, said address detecting circuit starting its address detecting operation by reception of the start signal part, the improvement wherein said channel detecting circuit further comprises means detecting said blank interval in the time-division multiplex signal received at the receiver, said blank interval detecting means generating a detection signal at a time when said blank interval is detected, said detection signal being maintained after a first detection of said blank interval, and gate means blocking transmission of the multiplex signal to said address detecting circuit in response to not receiving said detection signal from said blank interval detection means but permitting the multiplex signal to be transmitted to said address detecting circuit in response to said detection signal from said blank interval detecting means.

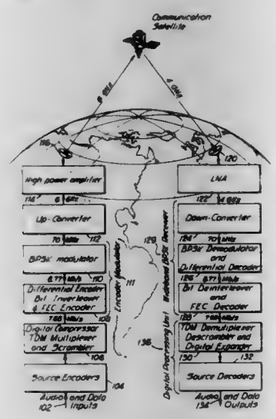


4,660,196

DIGITAL AUDIO SATELLITE TRANSMISSION SYSTEM

James S. Gray, Dunwoody; James W. Chamberlin; Alan L. McBride, both of Lawrenceville, and Peter G. Schreiner, III, Clarkston, all of Ga., assignors to Scientific Atlanta, Inc., Atlanta, Ga.

Continuation of Ser. No. 519,268, Aug. 8, 1983, Pat. No. 4,567,591. This application Jan. 27, 1986, Ser. No. 822,645
The portion of the term of this patent subsequent to Jan. 28, 2003, has been disclaimed.
Int. Cl.⁴ H04J *3/00*
U.S. Cl. 370—109 **15 Claims**



1. A system for demodulating and processing a modulated intermediate frequency signal containing coded, combined digital audio and digital data signals comprising:

(1) a binary phase shift key demodulator for demodulating the intermediate frequency signal into a data stream;

(2) a differential decoder for differentially decoding the data stream output by the demodulator;

(3) a bit deinterleaver for deinterleaving bits contained in the data stream output by the differential decoder;

(4) a forward error correction decoder for identifying partity bits in the data stream output by the bit deinterleaver;

(5) a demultiplexer for dividing into separate data streams the single data stream output by the forward error correction decoder;

(6) a digital expander for expanding the digitized audio signals output by the demultiplexer; and

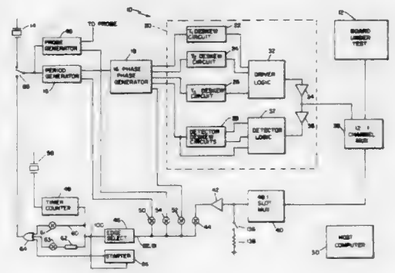
(7) a source decoder for converting the digitized analog audio portions of the signals output by the digital expander to analog form.

4,660,197

CIRCUITRY FOR SYNCHRONIZING A MULTIPLE CHANNEL CIRCUIT TESTER

Joseph F. Wrinn, North Quincy; Lawrence Heller, Wayland; Jiann-Neng Chen, Newton, and Jacqueline N. Brenner, Brookline, all of Mass., assignors to Teradyne, Inc., Boston, Mass.

Filed Nov. 1, 1985, Ser. No. 794,303
Int. Cl.⁴ G01R *31/28*
U.S. Cl. 371—1 **18 Claims**



1. Circuitry for synchronizing a multiple channel circuit tester comprising

a clock,

a plurality of drivers for providing output pulses to a device under test,

timing pulse circuitry having a plurality of different paths for transmitting said timing pulses to said drivers, said timing pulse circuitry comprising timing pulse means for generating timing pulses based upon a clock pulse from said clock or a trigger pulse and for providing an adjustable delay, trigger means for providing a trigger pulse to said timing pulse means based upon a timing pulse that has reached the end of a given path in said timing pulse circuitry to trigger the following timing pulse, thereby providing oscillating timing pulses having an associated frequency related to the propagation delay of a single timing pulse through said given path, and comparison means for comparing said associated frequency with a reference frequency of known magnitude and for providing adjustment signals to said timing pulse means for providing a delay to timing pulses passing through said given path, said adjustment signals causing said associated frequency to match a desired frequency.

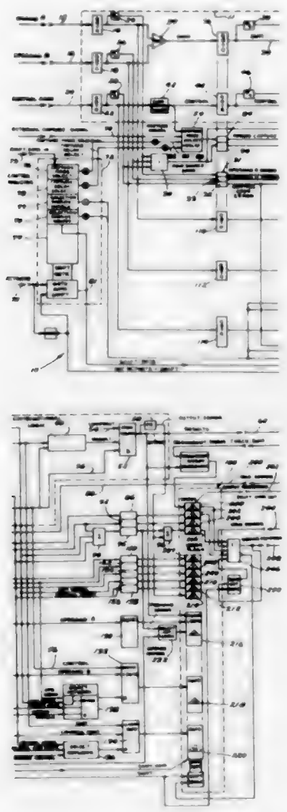
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4,660,198

DATA CAPTURE LOGIC FOR VLSI CHIPS

Terry L. Lyon, Roseville, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 15, 1985, Ser. No. 723,386
Int. Cl.⁴ G01R *31/28;* **G06F** *11/00*
U.S. Cl. 371—15 **18 Claims**



1. A data capture logic system to be associated with a VLSI logic array having a plurality of data registers comprising:

a control register means for holding various input data representing control functions for selecting the data capture mode,

a plurality of error detection means connected to receive and analyze the output of the data register associated with it and where said means detects errors in operands occurring in the VLSI logic array under test, and generates signals indicative of the type of error detected,

a plurality of data capture register means, each of which is connected to receive the output of a data register in said VLSI array so as to hold a selected operand from the logic array under test and provide that operand as its output, said data capture register means being of at least two types, type 1 always providing as output, its input, type 2 receiving a register output specified from a plurality of registers' output responsive to a control function provided either directly or indirectly from said control register means and said error detection means,

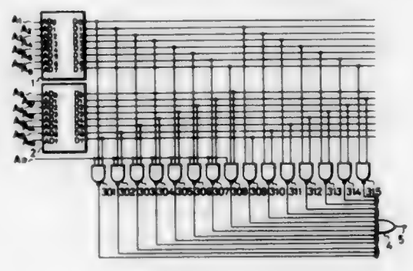
an output data capture register means connected to said data capture register means having a control portion means (connected to receive said indicative signals), and a data portion means (connected to receive output from said data capture register means) wherein said control portion means holds control signals representative of an indication of the type of data failure which has occurred and wherein said data operand portion means contains selected failed data received from said data capture registers.

4,660,199

MAJORITY LOGIC CIRCUIT FOR DIGITAL ERROR CORRECTION SYSTEM

Satoru Maeda, Yamato, and Yasushi Noguchi, Uraws, both of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP84/00280, § 371 Date Jan. 16, 1985, § 102(e) Date Jan. 16, 1985, PCT Pub. No. WO84/04984, PCT Pub. Date Dec. 20, 1984
PCT Filed Jun. 1, 1984, Ser. No. 697,579
Claims priority, application Japan, Jun. 3, 1983, 58-99020
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—36 **7 Claims**



1. A majority logic circuit for identifying whether incoming parity check bits include a plurality of true bits more numerous than a predetermined number comprising:

a plurality of memory means in which predetermined data are written;

means for grouping said incoming parity check bits into a plurality of groups greater than two;

means for supplying less than all of said plurality of groups of said parity check bits to addresses of respective ones of said plurality of memory means;

a plurality of first gate means each supplied with selected outputs of said memory means and selected ones of said plurality of first gate means supplied directly with remaining ones of said parity check bits not supplied to said memory means; and

second gate means supplied with all outputs of said first gate means for generating an identifying signal.

4,660,200

METHOD AND APPARATUS FOR PROCESSING AN ERROR FLAG OF A PCM SIGNAL

Hiroo Okamoto, and Masaharu Kobayashi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

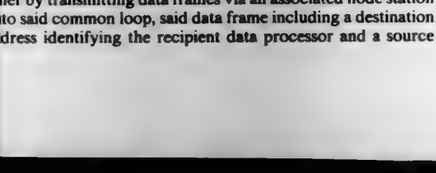
Filed Oct. 4, 1985, Ser. No. 784,593
Claims priority, application Japan, Oct. 5, 1984, 59-208192
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—37 **5 Claims**

4. A PCM signal reproduction apparatus for reproducing a PCM signal having words each comprising an upper symbol and a lower symbol, each block comprising a plurality of upper symbols and a plurality of lower symbols, a second error detection/correction code being added to each of a plurality of upper symbols included in different blocks and a plurality of lower symbols included in the same PCM signals as those in which said plurality of upper symbols are included, a first error detection/correction code being added to each of a plurality of upper symbols and lower symbols of a plurality of PCM signals included in different second error detection/correction code sequences (plural-block interleaved symbols) or a plurality of second error detection/correction codes;

comprising:

a demodulator for reproducing a digital signal from a reproduced signal;

a readable/writable memory for storing the digital signal reproduced by said demodulator, a corrected PCM signal and error flags;



an error correction circuit for effecting first and second error detections/corrections by error detection/correction code sequences for the reproduced digital signal stored in said memory and generating first and second error flags;

an error flag processor for selecting, as a second error flag, a maximum significant value of the error flags added to the second error detection/correction code sequence comprising only the upper symbols and the second error detection/correction code sequence comprising only the lower symbols, and

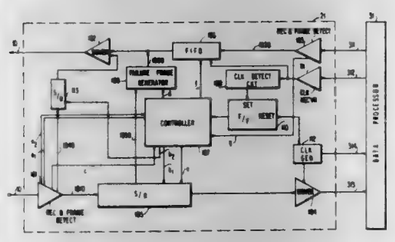
an error concealment circuit for determining if the PCM signal includes an incorrectable error or not based on said first and second error flags and concealing the error if the incorrectable error is included.

4,660,201

FAILURE NOTICE SYSTEM IN A DATA TRANSMISSION SYSTEM

Shigeki Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 13, 1985, Ser. No. 711,430
Claims priority, application Japan, Mar. 13, 1984, 59-46402
Int. Cl.⁴ G06F *11/00, 15/16*
U.S. Cl. 371—61 **2 Claims**



1. In a data transmission system comprising, a plurality of data processors interconnected via a common loop path, each said data processor connected to said loop via a respective node station, said data processors communicating with each other by transmitting data frames via an associated node station onto said common loop, said data frame including a destination address identifying the recipient data processor and a source address identifying the sending data processor; each said node station comprising,

means for receiving data frames from said common loop path and detecting whether or not said data frame includes a destination address corresponding to the data processor associated with said node station,

failure detection means for detecting a failure of said associated data processor and, in response thereto, generating a failure signal,

failure notification frame generator means responsive to said received and detected data frame having the destination address of said associated data processor for providing a failure notification data frame including a destination address and a source address corresponding to the source address and destination address, respectively, of said received and detected data frame, and

means responsive to said failure signal for sending onto said common loop path said failure notice data frame, the improvement wherein

said failure detection means comprises means for receiving clock pulses from said associated data processor and detecting the cessation of clock pulses from said associated data processor, and said means for receiving clock pulses comprises

a single shot multivibrator providing a TRUE output for a predetermined duration in response to input pulses applied thereto,

means for applying a train of clock pulses from said associated data processor as input pulses to said multivibrator, and

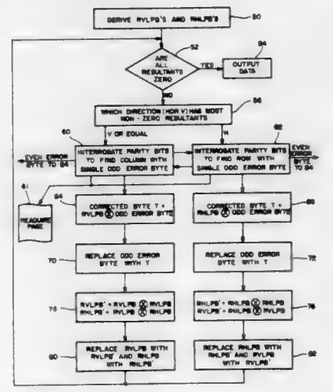
an inverter connected to the output of said multivibrator, whereby the output of said inverter becomes a TRUE signal when said associated data processor ceases providing clock pulses, said latter TRUE signal constituting said failure signal.

4,660,202

ERROR PROTECTION METHOD FOR PACKETED DATA

Gregory T. Woodsum, Mt. Prospect, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 29, 1985, Ser. No. 728,119
Int. Cl.⁴ G06F *11/10*
U.S. Cl. 371—50 **18 Claims**



1. A data error detection and correction method comprising:

providing a plurality of data bytes representing a page of data;

arranging said plurality of data bytes into a plurality of error protected square matrices;

sequentially transmitting a plurality of data packets each comprising one or more rows of said square matrices

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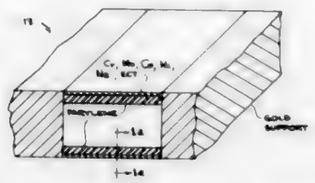
wherein no data packet includes corresponding portions of two or more rows of any one of said matrices;
receiving said data packets and sequentially reconstructing said plurality of square matrices in response thereto;
processing each of said sequentially reconstructed square matrices for detecting and correcting any errors therein.

4,660,203

SOFT X-RAY LASER USING PUMPING OF 3P AND 4P LEVELS OF HE-LIKE AND H-LIKE IONS

Peter L. Hagelstein, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 362,422, Mar. 22, 1982, abandoned. This application Jul. 5, 1985, Ser. No. 752,688
Int. Cl.⁴ H01S *3/30*
U.S. Cl. 372—5 **16 Claims**



1. An X-ray laser apparatus comprising:
a substantially rectangular parallelepiped hollow container containing a low density gas that, is multiply-ionized and undergoes at least one super-radiant laser transition between a pair of excited atomic levels with emission of coherent radiation of energy of at least 40 eV;
container having an interior length at least 4 mm and having transverse dimensions substantially 50 μm height ×120 μm width, with top and bottom walls being fabricated from thin parylene and having an overcoating of thickness of at least 400 Å of a material drawn from the class consisting of Cr, Mn, Co, Ni and Na, with side walls being fabricated from Au, Pt or similar high Z material, and with end walls being fabricated from a material that is substantially transparent to radiation of wavelengths λ=60–300 A; and
an irradiation source producing at least 10^{14} watts/cm² of radiation of a wavelength in the wavelength range λ=0.3–1.1 μm and positioned to irradiate the overcoating and the container gas along substantially the entire length of the container.

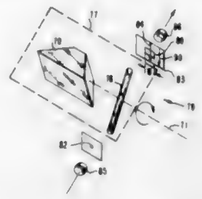
4,660,204

CO_2 TEA LASER UTILIZING AN INTRA-CAVITY PRISM Q-SWITCH

Donald R. Dewhirst, and Robert L. Duvall, III, both of Torrance, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 2, 1984, Ser. No. 637,097
Int. Cl.⁴ H01S *3/125*
U.S. Cl. 372—16 **15 Claims**

1. Apparatus for controlling the resonator gain of a pulse laser device comprising:
an envelope having a longitudinal axis and containing an active medium therein and resonator mirrors optically aligned with the longitudinal axis of said envelope, the resonator optical axis of said laser device being positioned to enable reflection of the laser pulse by a prism Q-switch interposed between said resonator mirrors, said Q-switch being rotatable about an axis and having retroreflective properties in axes orthogonal to the axis;
means for rotating said prism Q-switch to periodically angularly align the resonator mirrors of said laser by the rotating prism; and
a graded index optical imaging device, including means for converting optical to electrical energy, coupled to said rotating means for forming an image of a light source which is caused to sweep across a photodetector by rotation of said switch and for generating a timed electrical pulse for energizing the laser active medium, said optical



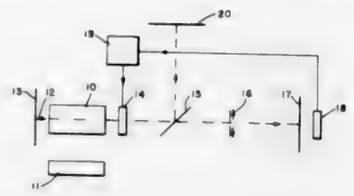
imaging device having an angular relationship with respect to the resonator optical axis to establish a lead angle, the timing of the electrical pulse to be so arranged as to cause the alignment of said switch to occur when said active medium has achieved peak gain.

4,660,205

MULTI-RESONATOR SWITCHING LASER

Donald J. Harter, Berkeley Heights, N.J., and Jen-Jye Yeh, Newbury Park, Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 13, 1985, Ser. No. 733,359
Int. Cl.⁴ H01S *3/098*
U.S. Cl. 372—18 **30 Claims**



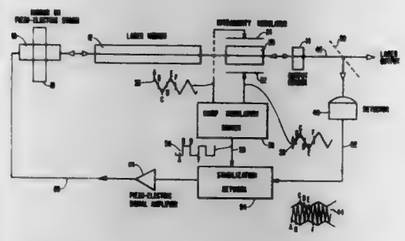
1. A self injection-locked laser that comprises:
(a) laser medium,
(b) means for exciting the laser medium to emit coherent radiation,
(c) first and second reflectors disposed on either side of the laser medium to reflect the coherent radiation along a first resonator path substantially perpendicular to each of the reflectors,
(d) resonator-switching means disposed between the laser medium and the first reflector either to transmit the coherent radiation or to reflect the coherent radiation from the laser medium to a second resonator path,
(e) means to control the resonator-switching means so that it is initially transmitting and subsequently reflecting,
(f) a third reflector to reflect back toward the resonator-switching means coherent radiation incident on it along the second resonator path, the third reflector or the second being partially transmitting, and
(g) loss means disposed between the resonator-switching means and first reflector sufficient to permit laser output in a single longitudinal mode from the partially-transmitting second or third reflector.

4,660,206

CHIRP LASER STABILIZATION SYSTEM

Maurice J. Halmos, Los Angeles, and David M. Henderson, Playa del Rey, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 2, 1984, Ser. No. 627,147
Int. Cl.⁴ H01S *3/10*
U.S. Cl. 372—28 **16 Claims**



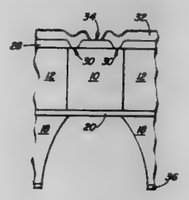
1. A chirp modulated laser transmitter system comprising:
a transmitter laser having an output with a nominal amplitude at a nominal center frequency of oscillation;
intracavity electro-optical crystal means for varying the output frequency of said transmitter laser from said nominal center frequency in response to a driving signal;
chirp modulation driver means for driving said electro-optical crystal at a relatively high frequency above 10 kilohertz to linearly shift the output of said laser above and below said center frequency;
means for detecting asymmetry in the amplitude of the output of said laser as it is shifted in frequency above and below the nominal center frequency thereof;
said transmitter laser including an adjustable mirror at one end thereof; and
means for varying the position of said adjustable mirror to shift the center frequency of said transmitter laser, in response to detected asymmetry in the amplitude of the output of said detecting means, to minimize said asymmetry and thereby stabilize the laser center frequency substantially at the frequency providing maximum output power.

4,660,207

SURFACE-EMITTING LIGHT EMITTING DEVICE

Mikelis N. Svilans, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 21, 1984, Ser. No. 673,644
Int. Cl.⁴ H01L *33/00*; H01S *3/19*
U.S. Cl. 372—45 **15 Claims**



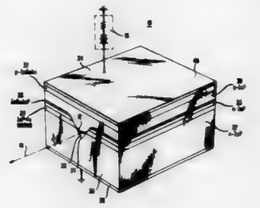
1. In a surface-emitting light emitting device, a heterojunction comprising a columnar active region of a first direct bandgap semiconductor material and a confining region of a second semiconductor material surrounding the active region, first and second contacts formed respectively on the active and confining regions, a window in general alignment with the columnar active region to permit light emission from the device, the second material being a higher bandgap material than the first material whereby to confine light and generated current carriers within the active region, the semiconductor materials doped to establish a pn junction within a carrier diffusion length of said heterojunction formed between the active and confining regions.

4,660,208

SEMICONDUCTOR DEVICES EMPLOYING FE-DOPED MOCVD INP-BASED LAYER FOR CURRENT CONFINEMENT

Wilbur D. Johnston, Jr., Mendham; Judith A. Long, Millburn, and Daniel P. Wilt, Scotch Plains, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, both of Murray Hill, N.J.

Filed Jun. 15, 1984, Ser. No. 621,071
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—46 **12 Claims**



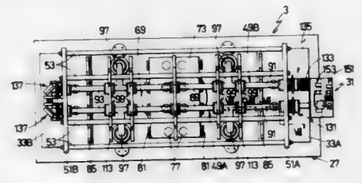
1. A semiconductor device comprising
an active region,
electrode means for applying current to said device, and
means for constraining said current to flow in a channel through said active region,
characterized in that
said constraining means comprises a high resistivity Fe-doped MOCVD InP-based layer having an opening through which said channel extends.

4,660,209

HIGH SPEED AXIAL FLOW TYPE GAS LASER OSCILLATOR

Hidenori Osada, Hacienda Heights, and Ryoji Koseki, Redondo Beach, both of Calif., assignors to Amada Engineering & Service Co., Inc., La Mirada, Calif.

Continuation of Ser. No. 566,793, Dec. 29, 1983. This application Aug. 1, 1986, Ser. No. 891,413
Int. Cl.⁴ H01S *3/22*
U.S. Cl. 372—58 **5 Claims**



1. A high-speed axial flow gas laser oscillator comprising:
a plurality of laser tubes arranged parallel to and interconnected with one another forming a plurality of parallel, straight length sections for resonating and amplifying a laser gas;
electrode means associated with said laser tubes for ionizing and thereby incidentally heating a laser gas circulated therethrough;

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means for circulating said laser gas through said laser oscillator;

heat exchanger means for cooling the laser gas circulated through said laser oscillator;

means operatively connected between said laser tubes and said heat exchanger means defining a plurality of gas recirculation paths, said plurality of gas recirculation paths being positioned on opposite sides of said laser gas circulating means and disposed symetrically with respect to said laser gas circulating means and said parallel, straight length sections formed by said laser tubes; and

means disposed in each of said recirculation paths between said laser tubes and said gas recirculating means so as to be symmetrical with respect to said laser tubes and said gas recirculation means for deionizing a laser gas so that said heated laser gas may be recirculated through said heat exchanger and into said laser tubes in an electrically neutral state whereby the flow rates of the laser gas flowing through the laser tubes and the length of the gas recirculation paths are substantially equal, thereby maintaining the temperature increase in each of said laser tubes substantially equal.

4,660,210

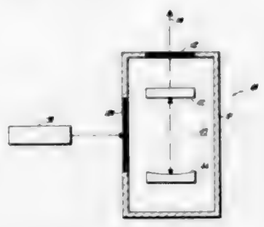
TWO-HALOGEN DONOR MIXTURE FOR XEF (C→A) LASER

William L. Nighan, Manchester, Conn.; Frank K. Tittel, and William L. Wilson, Jr., both of Houston, Tex., assignors to United Techaologies Corporation, Hartford, Conn.

Continuation of Ser. No. 557,722, Dec. 1, 1983. This application Mar. 14, 1986, Ser. No. 840,982

Int. Cl.⁴ H01S *3/22*

U.S. Cl. 372—60 **7 Claims**



1. An excimer laser comprising:

a gaseous gain medium within a bounded volume comprising a buffer gas, xenon and at least one fluorine donor gas;

means for exciting said gain medium to form a quantity of xenon fluoride in a predetermined excited state; and

means for extracting radiation from said bounded volume, wherein the improvement comprises;

said at least one fluorine donor gas comprises a mixture of NF_3 and F_2 molecular species, each containing a predetermined, in a predetermined proportion such that said mixture of NF_3 and F_2 forms a synthesized fluorine donor gas that tailors kinetically and gaseous gain medium in a predetermined manner.

4,660,211

MELTING FURNACE FOR VITRIFYING HIGHLY RADIOACTIVE WASTE

Detlef Stritzke, Mol, Belgium, assignor to Deutsche Gesellschaft, Fed. Rep. of Germany

Filed Dec. 20, 1983, Ser. No. 563,362

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247349

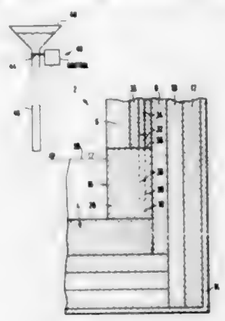
Int. Cl.⁴ C03B *5/02*

U.S. Cl. 373—36 **11 Claims**

1. A refractory melting furnace containing a melt of highly radioactive waste mixed with borosilicate glass, said furnace comprising

a melting tank and an upper insulated furnace section enclosed in a steel container,

said melting tank having walls comprising an electrically-conducting ceramic block electrode for direct heating of said melt and an overlying refractory layer, a joint be-



tween the top surface of said block electrode and said overlying refractory layer,

a power supply conductor vertically-disposed in said insulated furnace upper section and extending into said block electrode through said joint and said top surface, and

means for maintaining the melt line of said radioactive mixture below said top surface.

4,660,212

COLD CAGE FOR A MELTING CRUCIBLE BY HIGH FREQUENCY ELECTROMAGNETIC INDUCTION

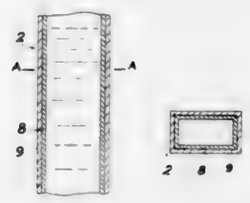
Roger Boen, Pont Saint Esprit; Antoine Jouan, Bagnols sur Ceze; Daniel Delage, Gieres, and Jean Reboux, Savigny/Orge, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 24, 1985, Ser. No. 747,718

Claims priority, application France, Jun. 29, 1984, 84 10364

Int. Cl.⁴ H05B *5/00*

U.S. Cl. 373—156 **4 Claims**



1. A cold cage for a crucible for melting products employing high frequency electromagnetic induction, said cold cage comprising:

a series of hollow segments cooled by cooling fluid and surrounded by an induction coil and in which the products being melted are confined;

at least part of the walls of each cage segment being formed of at least two layers of adjacent materials, one of the materials having a greater resistance to corrosion than the other, and the other of the materials having a higher electrical conductivity than the one;

the relative thicknesses of the layers and the supply frequency of the induction coil being chosen such that the eddy currents induced in the cage mainly develop in a layer of the material having a higher conductivity so that Joule losses are low.

4,660,213

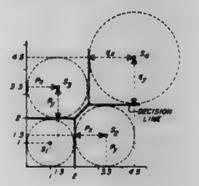
SIGNAL STRUCTURE FOR DATA COMMUNICATION

Jerry L. Holsinger, West Boxford; Charamporn Jotikasthira, North Andover, and Kaveh Pahlavan, Newton, all of Mass., assignors to Infinet, Inc., North Andover, Mass.

Filed Nov. 22, 1983, Ser. No. 554,261

Int. Cl.⁴ H04L *27/02, 27/18*

U.S. Cl. 375—39 **11 Claims**



10. Modem apparatus for data transmission and having a transmission encoder and a receiving decoder, said apparatus having the improvement wherein said encoder includes means for converting each of a set of M binary data digits to one of 2^M values of a quadrature amplitude-modulated signal, where M is a positive integer of at least three, and for providing each said signal to have substantially equal probability of transmission error due to a selected non-zero and finite level of multiplicative noise and a selected non-zero and finite level of additive noise and for providing said signals with one of at least two different power levels, and further for providing a structure of M said signals with minimal overall probability of said transmission error, and wherein said decoder includes means for converting each of said 2^M values of a quadrature amplitude-modulated signal to one of a set of M binary digits, so that detection of data transmitted with said encoding can account for multiplicative noise and additive noise.

4,660,214

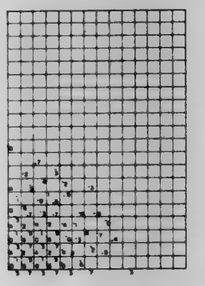
QANI TRELLIS-CODED SIGNAL STRUCTURE

Kaveh Pahlavan, Newton, and Jerry L. Holsinger, West Boxford, both of Mass., assignors to Infinet, Inc., Andover, Mass.

Filed Aug. 1, 1985, Ser. No. 761,606

Int. Cl.⁴ H04L *27/02*

U.S. Cl. 375—39 **6 Claims**



1. A method for determining a quadrature-amplitude modulated data transmission signal structure for Trellis coding and having a two-coordinate complex plane representation that has a plurality of points, said method having the improvement comprising the steps of

A. arranging a first subset of a plurality of said points in a substantially regular Trellis-coded pattern centered at the origin of said complex plane representation, with substantially uniform low probability of error for at least additive noise, and

B. arranging a second subset of a plurality of said points, consisting of the remainder of the points, in said complex plane representation outward from said first subset at locations further spaced apart than corresponding locations of said regular Trellis-coded pattern and with points thereof closest to the coordinate axes being further removed from such axes than corresponding locations in said regular Trellis-coded pattern, and with points thereof equidistant from the coordinate axes being further removed from the origin than corresponding locations in said regular Trellis-coded pattern, and further arranging said points of said second subset with substantially uniform low probability of error for multiplicative noise.

4,660,215

TRANSMITTER/RECEIVER SYSTEM

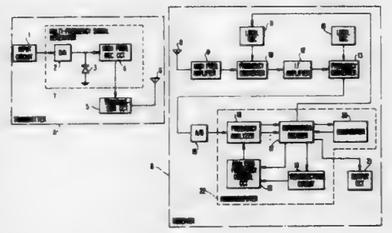
Yoshio Horiike, Katano; Yasuo Nagaishi, Hirakata, and Kiyotake Fukui, Settsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 4, 1984, Ser. No. 678,032

Claims priority, application Japan, Dec. 7, 1983, 58-230807; Apr. 26, 1984, 59-85422; May 22, 1984, 59-102920; Jun. 22, 1984, 59-129816

Int. Cl.⁴ H03M *7/00*

U.S. Cl. 375—48 **1 Claim**



1. A transmitter/receiver system comprising:

a transmitter which transmits a multi-frequency signal composed of a reference frequency signal having a reference frequency followed by at least an information signal having a frequency different from said reference frequency; and

a receiver which receives said multi-frequency signal and produces an information corresponding to a frequency difference between said information signal and said reference signal,

said receiver comprising:

a frequency conversion means having a local oscillator for converting frequencies of said multi-frequency signal to lower frequencies;

a frequency analyzing means for analyzing the lower-converted frequencies of said multi-frequency signal, which comprises a plurality of filters divided into groups each composed of at least three filters, each group being assigned to each of the lower-converted frequencies of said multi-frequency signal;

a decoding means for decoding the analyzed frequencies to produce said information corresponding to said frequency difference, said decoding means controlling a local oscillation frequency of said local oscillator so that a lower-converted frequency signal corresponding to said reference frequency signal is outputted from a filter in a group assigned to said reference frequency signal in said frequency analyzing means; and

a means for changing the grouping of said plurality of filters in said frequency analyzing means so that said lower-converted frequency signal corresponding to said reference

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frequency signal is outputted from a center filter among said at least three filters in said group assigned to said reference frequency signal.

4,660,216

TRANSMISSION SYSTEM FOR THE TRANSMISSION OF DATA SIGNALS IN A MODULATION BAND

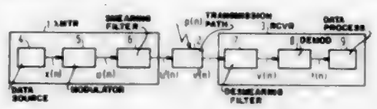
Theodoor A. C. M. Claasen; Gerardus F. M. Beenker; Petrus J. van Gerwen; Johannes M. Meijer, and Martinus L. N. Didden, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1985, Ser. No. 707,701

Claims priority, application Netherlands, Mar. 2, 1984, 8400677

Int. Cl.⁴ H04L *25/34*

U.S. Cl. 375—58 **5 Claims**



1. A transmission system for transmitting data signals in a modulation band comprising:

a transmitter comprising a modulator and transversal smearing filter;

a receiver comprising a demodulator and desmearing filter; said transversal filters each comprising:

a plurality of N−1 series connected delay elements, each element forming a tap with an adjacent element; and

a signal processing arrangement connected to said taps as well as to first and second ends of said series of connected delay elements, said signal processing arrangement multiplying during each symbol interval of said data signals by a plurality of real coefficients, said desmearing filter for a selected upper limit of intersymbol interference resulting from said transversal filters having a set of coefficients Cd(n), n=0, . . . N−1 some but not all being chosen from the set {+1, 0, −1}, and chosen for a given transmission system gain to have a maximum value first merit factor F_1 defined by

$$F_1 = \frac{\max_n |(\tilde{p} \quad g(n)|}{\max_n |(\tilde{p} \quad c_d \quad g(n)|} \qquad n = 0, 1, \qquad N-1$$

wherein $p(n)=p(n)e^{-jn\theta_c}$, $c_d(n)=c(n)e^{-jn\theta_c}$, where θ_c is given modulation angular frequency, p(n) the sampling values of any given noise pulse introduced into the transmission path and g(n) the impulse response reconverted to zero frequency, of the receiver without a desmearing filter.

4,660,217

SHIFT REGISTER

Tatsuo Yamada, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1985, Ser. No. 814,242

Claims priority, application Japan, Dec. 27, 1984, 59-276294

Int. Cl.⁴ G11C *19/00*

U.S. Cl. 377—66 **3 Claims**

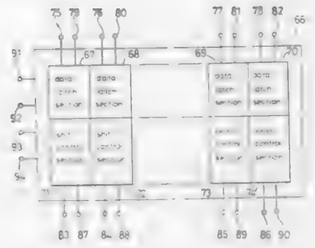
1. A shift register which, including a plurality of cells each comprising a data latch section and a shift control section, operates without external clocks, wherein the shift control section comprises:

a terminal for receiving a shift start control signal;

a terminal for receiving a shift inhibition control signal;

a shift allowance control circuit which receives signals indicating as to whether each of the particular cell and the cells adjacent thereto is in a shift operation and signals indicating as to whether each of the adjacent cells is in a state which allows the shift of the particular cell, and generates a shift allowance signal to be given to the particular cell and the adjacent cells on the basis of the states of these cells and the shift inhibition control signal;

a shift control circuit which receives the shift start control signal, the output of the shift allowance control circuit, the state signals of the particular cell and the adjacent cell,





and makes the data latch section to conduct a shift operation as well as outputs an in-shift-operation signal of the particular cell against the shift control circuit of the adjacent cell; and

a shift conclusion control circuit which receives the shift inhibition control signal and the state signals of the particular cell and the adjacent cell, and outputs a signal for ordering to conclude the shift operation to the shift control circuit of the particular cell and a signal indicating the conclusion of shift operation to that of the adjacent cell.

4,660,218

APPARATUS FOR SWITCHING TELEPHONE LINE A RESPONSE DEVICE, A DATA TERMINAL OR A TELEPHONE

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

Filed Mar. 14, 1985, Ser. No. 711,677

Claims priority, application Japan, Mar. 14, 1984, 59-48352

Int. Cl.⁴ H04M *11/00*

U.S. Cl. 379—93 **9 Claims**

1. A switching apparatus for automatically swtiching a connection between a telephone set and a telephone line or between said telephone line and a terminal device which forms a data loop circuit upon reception of a carrier signal sent through said telephone line and performs data communication, said telephone set being connected in parallel with said terminal device with respect to said telephone line, comprising:

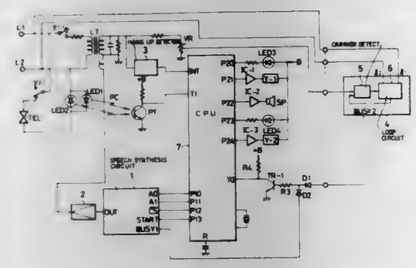
a connector for selectively connecting said telephone line to said telephone set;

incoming call signal detecting means for detecting an incoming call signal sent through said telephone line;

looping means for forming a response loop circuit in response to an incoming signal detection output from said incoming call signal detecting means and for supplying the carrier signal from said telephone line to said terminal device;

off-hook detecting means for detecting an off-hook state of said telephone set;

means responsive to formation of said response loop circuit



for sending out a repeating speech response message over said telephone line until said response loop circuit of said looping means is cancelled;

terminal device operation detecting means for detecting operation of said terminal device;

means for cancelling said response loop circuit of said looping means in response to a detection output from said off-hook detecting means; and

means for cancelling the response loop circuit of said looping means and triggering said connector to disconnect said telephone set from said telephone line in response to a detection output from said terminal device operation detecting means.

4,660,219

EXTENSION RINGING ARRANGEMENT KEY TELEPHONE SYSTEM

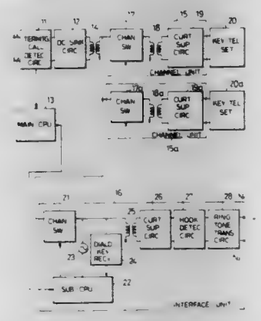
Kiazi Tanaka; Toru Tagawa, both of Kawasaki; Yoshiji Tanimoto, and Minoru Okumura, both of Tokyo, all of Japan, assignors to Nitsuko Limited, Kanagawa and Nippon Telegraph and Telephone Corporation, Tokyo, both of, Japan

Filed Feb. 18, 1986, Ser. No. 830,084

Claims priority, application Japan, Mar. 18, 1985, 60-53816

Int. Cl.⁴ H04M *3/02*

U.S. Cl. 379—164 **1 Claim**



1. An extension ringing arrangement for a key telephone system comprising main equipment including a main CPU, a plurality of key telephone sets interconnected in parallel to said main equipment respectively through an associated plurality of channel units, and an interface means including a sub-CPU interconnected to said main CPU and connected in parallel to said channel units, wherein said interface means comprises means for transmitting a ringing tone allowing a calling party to recognize a connection of said key telephone system with CO line in response to a terminating CO line call, and means for detecting an extension number of a selected one of said key telephone sets further dialed by said calling party to turn ON a corresponding one of said channel units connected to said selected key telephone set, said interface means further comprising a channel switch connected to said sub-CPU, and said ringing tone transmitting means comprising a tone source driven by said channel switch turned ON by said sub-CPU, said interface means further comprising a receiver which detects said extension number in response to said turning ON of said channel switch through said sub-CPU, a detection output of said receiver being provided, through said sub-CPU and main CPU to one of said channel untis which corresponds to said selected key telephone set so as to turn such telephone set on and connect it to said CO line.

4,660,220

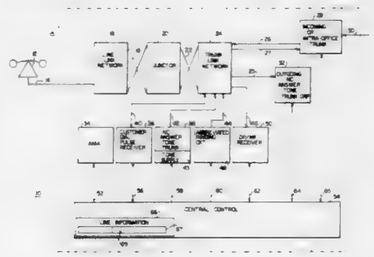
NO ANSWER MODE FOR TELEPHONE SYSTEMS

Constantine R. Kraus, 845 Mt. Moro Rd., Villanova, Pa. 19085

Filed Feb. 25, 1986, Ser. No. 833,880

Int. Cl.⁴ H04M *3/42*

U.S. Cl. 379—210 **9 Claims**



1. A method for signalling that a called telephone line in a telephone system will not be answered during an incoming telephone call from a calling line, the telephone system having a plurality of telephone lines coupled to telephone customer telephone sets and at least one central office within the telephone system remote from the telephone customer telephone sets, comprising the steps of:

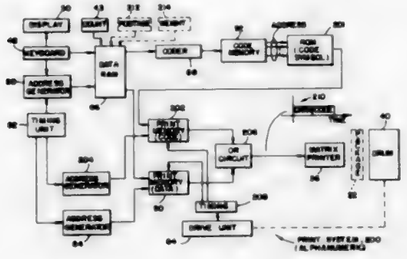
(a) providing a no answer mode for each of the telephone lines and activating the no answer mode for a telephone line in response to a no answer command code;

(b) first determining by the central office within the telephone system whether the no answer mode of the called telephone line is activated in response to the incoming call; and

(c) transmitting by the central office within the telephone a no answer signal to the calling line for indicating that the called line will not be answered in response to the first determination.

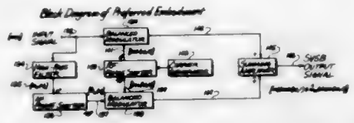
VOL 1077 ISS 3 AP 21 1987 UMI

4,660,221
SYSTEM FOR PRINTING ENCRYPTED MESSAGES WITH BAR-CODE REPRESENTATION
Daniel F. Dlugos, Huntington, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Jul. 18, 1983, Ser. No. 515,086
Int. Cl.[4] G06F 9/00
U.S. Cl. 380—23 24 Claims



1. A device for the metering of encrypted postage and similar indicia comprising:
(a) an entry means for the entry of data corresponding to alphanumeric characters;
(b) means coupled to said entry means for the storage of said data;
(c) an encryption circuit for developing a code word of a plurality of code characters from data in the storage means corresponding to a plurality of said alphanumeric characters;
(d) means for imprinting a bar-code representation of the data applied thereto; and
(e) selection means having an output coupled to said imprinting means and coupled to receive data from said storage means and said encryption circuit for alternately feeding data of said storage means and a code word of said encryption circuit to said imprinting means to control the imprinting means to imprint a bar-code indicia having intermixed portions corresponding to alphanumeric characters and said code characters respectively, the code word providing verification of the validity of the indicia.

4,660,222
SPECIAL VESTIGIAL SIDEBAND SIGNAL FOR USE IN COMMUNICATION SYSTEMS
Stephen F. Smith, Knoxville, Tenn., assignor to Alpha Omega Engineering, Inc., Knoxville, Tenn.
Filed Jan. 27, 1984, Ser. No. 574,388
Int. Cl.[4] H03C 1/52; H04B 1/68
U.S. Cl. 455—109 2 Claims

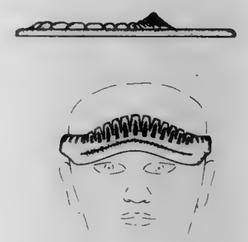


1. A circuit for generating a vestigial-sideband waveform having enhanced bandwidth and amplitude characteristics and comprising:
(a) a first signal source for generating a baseband signal which may include a d.c. component;
(b) a second signal source for generating a carrier signal;
(c) a signal modulating or multiplying device for receiving the baseband signal from the first source and the carrier signal from the second source and electronically multiplying the carrier signal by the baseband signal to produce a double-sideband AM signal with an appropriate carrier component or suppressed carrier, depending on the presence of a d.c. component in the baseband signal;
(d) signal converting means for accepting the double-sideband AM signal, with or without a carrier component, and processing it to produce a vestigial-sideband output signal, having an instantaneous bandwidth intermediate to that of a corresponding double-sideband signal which would be produced by said baseband signal and that of a corresponding single-sideband signal which would be produced by said baseband signal, which vestigial-sideband output signal can be detected without distortion by conventional double-sideband receiving equipment employing synchronous or "product" detectors as if the vestigial-sideband signal were a conventional double-sideband signal with an appropriate carrier component, and which possesses no amplitude peaks substantially in excess of those of the corresponding double-sideband signal regardless of the original baseband modulating signal.

DESIGNS

APRIL 21, 1987

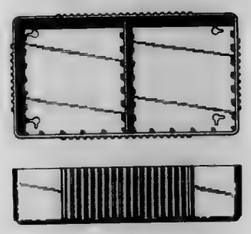
289,340
SUN VISOR
Robert S. Scheurer, and Stephen Scheurer, both of P.O. Box 539, Wichita Falls, Tex. 76307
Filed Dec. 20, 1984, Ser. No. 684,039
Term of patent 14 years
U.S. Cl. D2—247



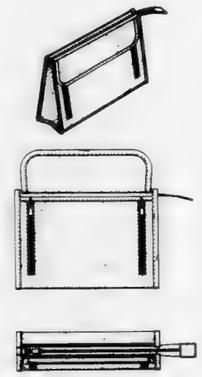
289,341
SHOE SOLE
Jerome A. Turner, Baltimore, Md., assignor to American Sporting Goods Corp., Irvine, Calif.
Filed Nov. 27, 1984, Ser. No. 674,604
Term of patent 14 years
U.S. Cl. D2—322



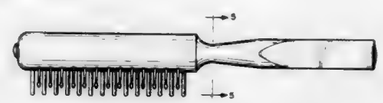
289,342
CASSETTE RACK
James R. Reichow, Brooklyn Park, Minn., assignor to Hartzell Manufacturing Inc., St. Paul, Minn.
Filed Aug. 20, 1984, Ser. No. 642,570
Term of patent 14 years
U.S. Cl. D3—35



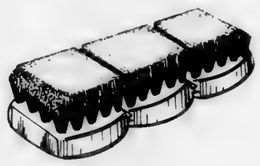
289,343
HANDBAG WITH TOILETRIES COMPARTMENT
Richard H. Finger, Hollywood, Fla., assignor to Cityside, Inc., Hollywood, Fla.
Filed Aug. 20, 1984, Ser. No. 642,154
Term of patent 14 years
U.S. Cl. D3—48



289,344
LIQUID DISPENSING BRUSH
Rodney J. O'Connor, College Station, and Munson R. Snedeker, Bryan, both of Tex., assignors to Texas Romec, Inc., College Station, Tex.
Filed Jan. 23, 1985, Ser. No. 693,964
Term of patent 14 years
U.S. Cl. D4—114

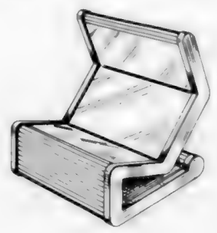


289,345
FINGERNAIL CLEANER BRUSH
Lewis Fine, 618 Boca Marina Ct., Boca Raton, Fla. 33432
Filed Jul. 6, 1984, Ser. No. 628,606
Term of patent 14 years
U.S. Cl. D4—119

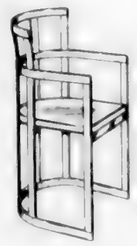


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289,346
TABLE TOP MIRROR
Paul T. Arsto, Don Mills, Canada, assignor to Colleen J. Klein, Guelph, Canada
Filed Aug. 24, 1984, Ser. No. 643,786
Term of patent 14 years
U.S. Cl. D6—310



289,347
CHAIR
Matti Halme, High Point, N.C., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Oct. 1, 1984, Ser. No. 656,651
Term of patent 14 years
U.S. Cl. D6—370



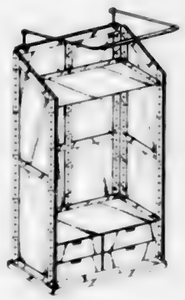
289,348
CHAIR
Warren H. Snodgrass, Kentfield, Calif., assignor to Steelcase Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 237,999, Feb. 25, 1981. This application Nov. 18, 1983, Ser. No. 553,359
The portion of the term of this patent subsequent to Nov. 22, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—373

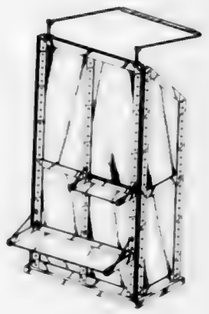


289,349
OUTDOOR ARM CHAIR
Robert D. Vandermindea, Granville, N.Y., assignor to Telescope Casual Furniture Company, Granville, N.Y.
Filed May 18, 1984, Ser. No. 611,634
Term of patent 14 years
U.S. Cl. D6—379

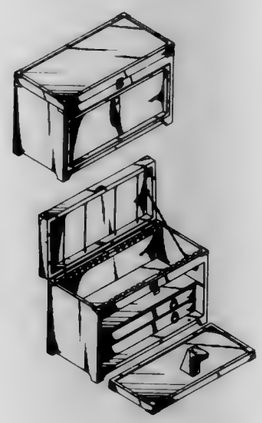


289,350
COMBINED CLOTHES STORAGE UNIT AND LAMP
Tony Cordero, Turin, Italy, assignor to Jungle Jap, Paris, France
Filed Mar. 12, 1984, Ser. No. 588,668
Claims priority, application France, Sep. 12, 1983, 83/3300
Term of patent 14 years
U.S. Cl. D6—399

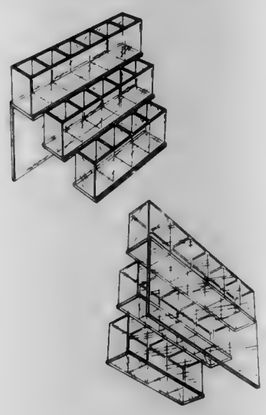




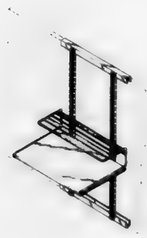
289,351
COMBINED HOBBY CABINET AND WORKBENCH
Jimmy R. Jenkins, 1814 Mayfield, Garland, Tex. 75041
Filed Sep. 6, 1984, Ser. No. 647,703
Term of patent 14 years
U.S. Cl. D6—400



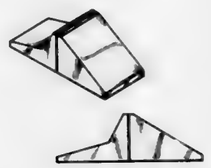
289,352
BOTTLE RACK
Nathan Sher, 11 Caldy Court, Willowdale, Ontario, Canada M2L 2J5
Filed Dec. 10, 1984, Ser. No. 680,100
Term of patent 14 years
U.S. Cl. D6—464



289,353
ADJUSTABLE COMPUTER WALL RACK
Ralph E. Davis, 5243 California St., San Francisco, Calif. 94118, and Tracy D. Wymer, San Francisco, Calif., assignors to Ralph E. Davis, San Francisco, Calif.
Filed Jun. 8, 1984, Ser. No. 618,645
Term of patent 14 years
U.S. Cl. D6—566



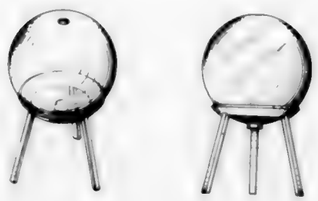
289,354
THERAPY CUSHION
Donald E. Willey, Santa Barbara, Calif., assignor to Rose L. Arnold and Ned M. Rafter, both of Santa Barbara, Calif., a part interest to each
Filed Jan. 22, 1985, Ser. No. 693,519
Term of patent 14 years
U.S. Cl. D6—601





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289,355
SPHERICAL DRINKING VESSEL
Elias A. Paulides, 260 E. Walnut St., Long Beach, N.Y. 11561
Filed Mar. 25, 1985, Ser. No. 715,690
Term of patent 14 years
U.S. Cl. D7—13



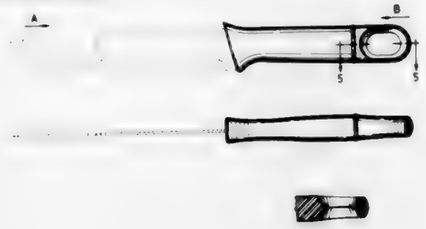
289,356
TUMBLER
Takayuki Tanaka, Ichikawa, Japan, assignor to Ishizuka Glass Kabushiki Kaisha, Aichi, Japan
Filed Nov. 8, 1984, Ser. No. 669,495
Term of patent 14 years
U.S. Cl. D7—14







289,357
KITCHEN KNIFE HANDLE
Nigel F. Bodfish, Solihull Midlands, England, assignor to Gill-Mentor Limited, West Midlands, Great Britain
Filed Oct. 31, 1984, Ser. No. 666,667
Term of patent 14 years
U.S. Cl. D7—152

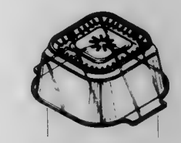


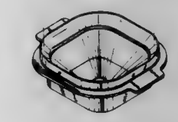
289,358
FLATWARE HANDLE OR SIMILAR ARTICLE
Jerker Westfeldt, Falsterbo, Sweden, assignor to Atelje Christian AB, Malmö, Sweden
Filed Apr. 16, 1984, Ser. No. 600,813
Claims priority, application Sweden, Oct. 17, 1983, 83-2663
Term of patent 14 years
U.S. Cl. D7—152

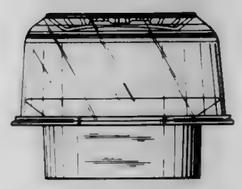




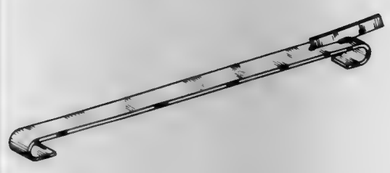
289,359
MICROWAVE OVEN RECEPTACLE FOR POPPING CORN
Howard J. Vaeth, Wooster, and Gregory M. Crook, Columbus, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed May 10, 1984, Ser. No. 608,797
Term of patent 14 years
U.S. Cl. D7—325



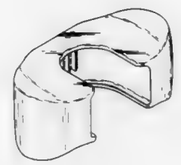




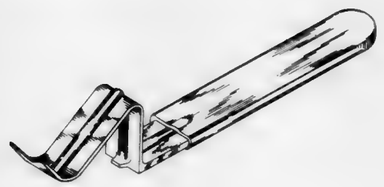
289,360
TRUCK TOOL
Orville H. Westcott, 2313 Royal Ct., Kingswood Estate 2, Sioux Falls, S. Dak. 57106
Filed Dec. 17, 1984, Ser. No. 682,342
Term of patent 14 years
U.S. Cl. D8—16



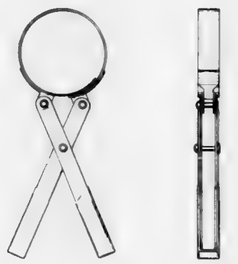
289,361
CHAMPAGNE STOPPER REMOVER
George S. Powis, Jr., P.O. Box 594, Hatfield, Pa. 19440
Filed Aug. 2, 1984, Ser. No. 637,029
Term of patent 14 years
U.S. Cl. D8—18



289,362
SAFETY CAP REMOVER
Eugene D. Sherman, Box 97, Brainard, N.Y. 12024
Filed Jun. 26, 1984, Ser. No. 624,622
Term of patent 14 years
U.S. Cl. D8—18

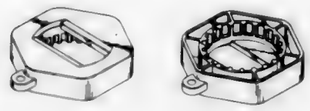


289,363
OIL FILTER GRIPPING TOOL
Merrel M. De Raad, Bloomington, Minn., assignor to Bridge Wheel Company, Inc., Minneapolis, Minn.
Filed Oct. 15, 1984, Ser. No. 661,214
Term of patent 14 years
U.S. Cl. D8—22

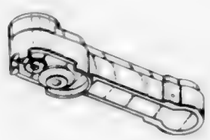


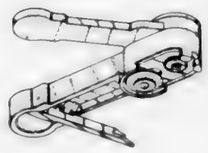
VOL 1077 ISS 3 APR 21 1987 UMI

289,364
COMBINED KEY CHAIN AND CONTAINER OPENER
Christopher J. Bass, 2941 Marykirk Place, N. Vancouver, BC, Canada V7H 2N1
Filed Sep. 10, 1984, Ser. No. 649,263
Term of patent 14 years
U.S. Cl. D8—34

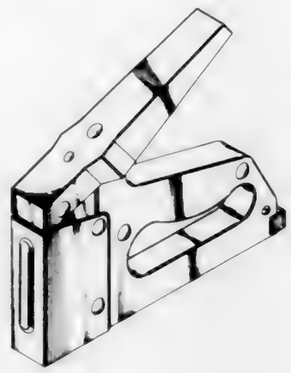


289,365
CAN OPENER
Sui C. Lee, Kowloon, Hong Kong, assignor to Sun Hei Metalware Manufactory Company Limited, Kowloon, Hong Kong
Filed Nov. 29, 1984, Ser. No. 676,237
Claims priority, application United Kingdom, May 29, 1984, 1019960
Term of patent 14 years
U.S. Cl. D8—41





289,366
STAPLER
Melvin Speizer, 395 Allwood Rd., Clifton, N.J. 07012
Filed Feb. 6, 1984, Ser. No. 577,078
Term of patent 14 years
U.S. Cl. D8—49



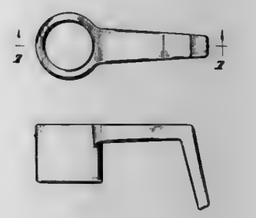
289,367
PANEL CARRIER
John P. Secor, Remsen, N.Y., assignor to Inducto Tek, Inc., Rome, N.Y.
Filed Jun. 11, 1984, Ser. No. 619,785
Term of patent 14 years
U.S. Cl. D8—71



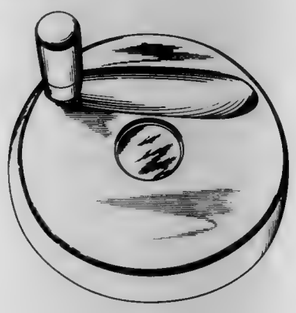
289,368
BUTTERFLY PEN KNIFE
Phillip E. Mann, Kingsport, Tenn., assignor to Taylor Cutlery Mfg. Co., Kingsport, Tenn.
Filed Dec. 5, 1984, Ser. No. 678,408
Term of patent 14 years
U.S. Cl. D8—99



289,369
LEVER HANDLE OR SIMILAR ARTICLE
William R. Foshee, Noblesville, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.
Filed Aug. 9, 1984, Ser. No. 639,220
Term of patent 14 years
U.S. Cl. D8—308



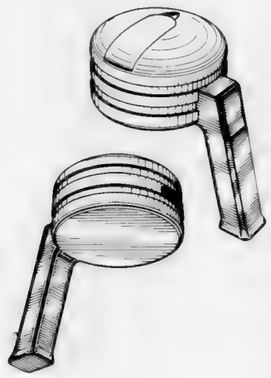
289,370
HANDWHEEL AND PIVOTING HANDLE THEREFOR
Alberto Bertani, Milan, Italy, assignor to Elesa S.P.A., Milan, Italy
Filed Sep. 13, 1984, Ser. No. 650,060
Claims priority, application Italy, Mar. 16, 1984, 21261/84[U]
Term of patent 14 years
U.S. Cl. D8—309



289,371
ANTI-STUFFING DEVICE ATTACHMENT FOR A PAYSTATION TELEPHONE OR THE LIKE
Darryol A. De Rego, Kaneohe; James N. Reinhardt, Honolulu, and Yoshinobu Miyahira, Mililani Town, all of Hi., assignors to Hawaiian Telephone Company, Honolulu, Hi.
Filed Jan. 22, 1985, Ser. No. 693,441
Term of patent 14 years
U.S. Cl. D8—349

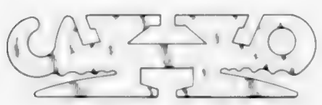


289,372
KITE RETRIEVER
Woodroe C. Nicholson, Lakefield, Canada, assignor to B-Woodie Limited, Peterborough, Canada
Filed Mar. 19, 1985, Ser. No. 686,423
Claims priority, application Canada, Sep. 24, 1984, 24-09-84-3
Term of patent 14 years
U.S. Cl. D8—359



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289,373
ROPE TIE DOWN DEVICE
James F. Kimball, 83617 Rattlesnake Rd., Dexter, Oreg. 97431
Filed Jan. 22, 1985, Ser. No. 693,359
Term of patent 14 years
U.S. Cl. D8—382



289,374
INSERT
Theodore Ziaylek, Jr., Yardley, Pa., assignor to Yardley Products Corp., Yardley, Pa.
Continuation-in-part of Ser. No. 504,352, Jun. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 213,140, Dec. 4, 1980, abandoned. This application Jul. 3, 1985, Ser. No. 751,759
Term of patent 14 years
U.S. Cl. D8—385



289,375
DISPENSING CONTAINER FOR SOFT-FROZEN COMESTIBLES OR THE LIKE
Andrew T. Kostanecki, Darien, Conn., assignor to General Foods Corporation, White Plains, N.Y.
Filed Jun. 8, 1984, Ser. No. 618,793
Term of patent 14 years
U.S. Cl. D9—302



289,376
BOTTLE OR SIMILAR ARTICLE
Frank T. Nemits, Kingwood, Tex., assignor to Pennzoil Company, Houston, Tex.
Filed Nov. 20, 1984, Ser. No. 673,428
Term of patent 14 years
U.S. Cl. D9—375



289,377
BOTTLE OR SIMILAR ARTICLE
Harold A. Ashby, Des Moines; J. Morris Binder, West Des Moines, both of Iowa, and Archie G. Drummond, Jr., Palatine, Ill., assignors to Tone Brothers, Inc.
Filed Oct. 12, 1984, Ser. No. 660,055
Term of patent 14 years
U.S. Cl. D9—378



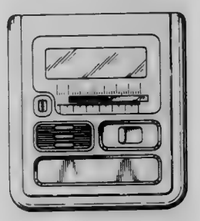
289,378
COMBINED REUSABLE EXTRACTOR-STOPPER FOR LABORATORY GLASSWARE
Robert J. Miskinis, 10020 Prospect Ave. #A18, Santee, Calif. 92071
Filed Nov. 23, 1984, Ser. No. 674,418
Term of patent 14 years
U.S. Cl. D9—439



289,379
CLOSURE CAP
Donald H. DeVaughn, San Francisco, Calif., assignor to Bio-Plas, Inc., San Francisco, Calif.
Filed Jun. 11, 1984, Ser. No. 619,347
Term of patent 14 years
U.S. Cl. D9—452



289,380
COMBINED DIGITAL CLOCK AND THERMOMETER WITH INTEGRAL STAND
Francis Y. Lee, Shatin, Hong Kong, assignor to Arteco Electronics Limited, Hong Kong, Hong Kong
Filed Sep. 7, 1984, Ser. No. 648,277
Claims priority, application United Kingdom, Mar. 19, 1984, 1018587
Term of patent 14 years
U.S. Cl. D10—4



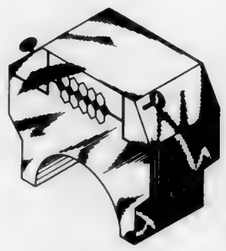
289,381
COMBINED WATCH AND WRISTLET
Ernest Schneider, Chemin de la Baune, 2533 Evilard, Switzerland
Filed Jan. 13, 1984, Ser. No. 570,377
Claims priority, application Switzerland, Jul. 13, 1983, 73349
Term of patent 14 years
U.S. Cl. D10—32



289,382
SAW GUIDE
Roy L. Porter, 1520 McCracken La., Mt. Carmel, Tenn. 37642
Filed Jul. 26, 1984, Ser. No. 634,533
Term of patent 14 years
U.S. Cl. D10—65



289,383
ELECTRIC METER MONITOR
Richard L. Gallop, Rte. 1, Box 130, Camden, N.C. 27921
Filed Sep. 6, 1984, Ser. No. 647,838
Term of patent 14 years
U.S. Cl. D10—75

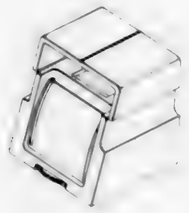


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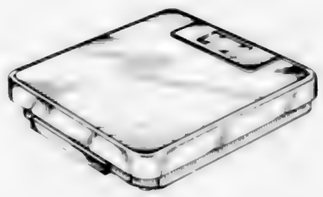
289,384
THREE INSTRUMENT DIVE CONSOLE
Mark Faulconer, Costa Mesa, Calif., assignor to U.S.D., Santa Ana, Calif.
Filed Jul. 24, 1984, Ser. No. 633,843
Term of patent 14 years
U.S. Cl. D10—85



289,385
POSTAL SCALE
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Nov. 14, 1984, Ser. No. 671,265
Term of patent 14 years
U.S. Cl. D10—91



289,386
WEIGHING SCALE
Rido Busse, Elchingen, Fed. Rep. of Germany, assignor to Soehnie-Waagen GmbH & Co., Murrhardt, Fed. Rep. of Germany
Filed Sep. 7, 1984, Ser. No. 648,860
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, GR11495/84
Term of patent 14 years
U.S. Cl. D10—92



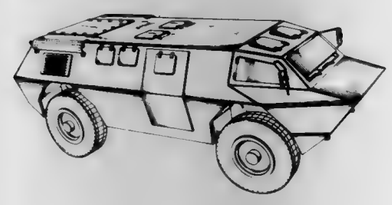
289,387
SIGNAL TO BE WORN ON A THUMB
Anthony Stavola, 2501 Hamilton Dr., Echelon, Voorhees Township, Camden County, N.J. 08043, and Patrick F. McKenna, Jr., 8 Stafford Way, Marlton, N.J. 08053
Filed Apr. 9, 1984, Ser. No. 598,447
Term of patent 14 years
U.S. Cl. D10—109



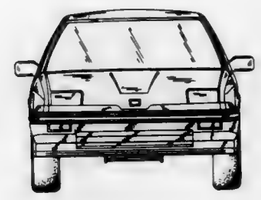
289,388
NECKLACE PENDANT CIRCLET
James L. Gatsos, 13057 SE. 208th St., Kent, Wash. 98031
Filed Aug. 18, 1983, Ser. No. 524,483
Term of patent 14 years
U.S. Cl. D11—86



289,389
ARMORED VEHICLE
Didier Picard, Paris, France, assignor to Soudure et Mecanique Appliquees du Val Notre-Dame, Argenteuil, France
Filed Mar. 19, 1984, Ser. No. 590,795
Claims priority, application France, Sep. 19, 1983, 833364
Term of patent 14 years
U.S. Cl. D12—12



289,390
MOTORCAR
Yutaka Ikeda, Tokyo, and Tsuyoshi Nishimura, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 24, 1984, Ser. No. 653,738
Claims priority, application Japan, Mar. 24, 1984, 59-11137
Term of patent 14 years
U.S. Cl. D12—91





289,391
AUTOMOBILE VENTILATION GRILL
Naoyuki Ishii, Machida, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Sep. 13, 1984, Ser. No. 650,214
Term of patent 14 years
U.S. Cl. D12—163

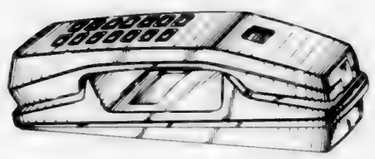


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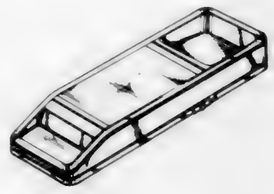
289,392
SAILBOAT
Harold L. Gary, and Douglas B. Gary, both of 887 Silverpines, Houston, Tex. 77062
Filed Jun. 11, 1984, Ser. No. 619,024
Term of patent 14 years
U.S. Cl. D12—304



289,393
TELEPHONE
Richard Lindahl, Malmoe, Sweden, assignor to Televerket, Farsta, Sweden
Filed Mar. 27, 1985, Ser. No. 716,740
Claims priority, application Sweden, Oct. 1, 1984, M84-2629
Term of patent 14 years
U.S. Cl. D14—56

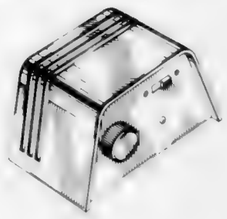


289,394
BASE FOR A TELEPHONE SET
Michael Brown, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Feb. 1, 1985, Ser. No. 697,538
Term of patent 14 years
U.S. Cl. D14—60

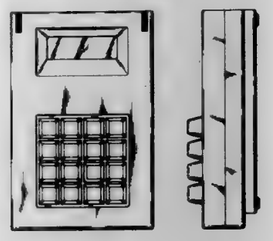




289,395
POWER SUPPLY FOR A MICROWAVE RECEIVER
Ty S. Bowers, Phoenix, Ariz., assignor to Yancey D. Sexton, Phoenix and Daystar, Inc., Glendale, both of, Ariz.
Filed Apr. 10, 1984, Ser. No. 598,702
Term of patent 14 years
U.S. Cl. D14—90



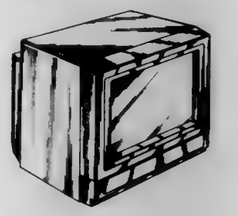
289,396
POINT OF SALE CUSTOMER CREDIT CARD ENCODER
Thomas C. Wilson, and James S. Carter, both of Denver, Colo., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 5, 1984, Ser. No. 658,249
Term of patent 14 years
U.S. Cl. D14—100



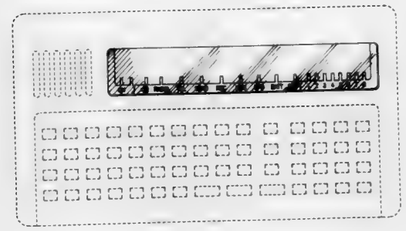
289,397
COMPUTER PERIPHERAL
Michael J. Nuttall, Palo Alto, Calif., and Karrie Finkel, Durham, N.C., assignors to Metaphor Computer Systems, Mountain View, Calif.
Filed Aug. 14, 1984, Ser. No. 640,727
Term of patent 14 years
U.S. Cl. D14—102



289,398
VIDEO MONITOR
David P. Chuboff, North Barrington, and Chester J. Wojtowicz, Prospect Heights, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Apr. 19, 1985, Ser. No. 725,040
Term of patent 14 years
U.S. Cl. D14—113



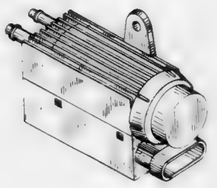
289,399
LIQUID CRYSTAL DISPLAY MASK FOR A PORTABLE TERMINAL OR SIMILAR ARTICLE
Clark Wang, Elmhurst, and Edward M. Zychowski, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 5, 1984, Ser. No. 596,886
Term of patent 14 years
U.S. Cl. D14—114



289,400
ELECTRONIC FUEL PUMP
David Frees, 5407 Amestoy Ave., Encino, Calif. 91316, and Edwin L. Schwartz, 16604 Park Lane Pl., Los Angeles, Calif. 90049
Filed Nov. 13, 1984, Ser. No. 670,310
Term of patent 14 years
U.S. Cl. D15—5



289,401
ELECTRIC VACUUM REGULATOR VALVE FOR USE WITH AUTOMATIC EMISSIONS CONTROL
Kwang Yew, and Hugh S. Carrothers, both of Chatham, Canada, assignors to Canadian Fram Limited, Chatham, Canada
Filed Aug. 30, 1984, Ser. No. 646,348
Term of patent 14 years
U.S. Cl. D15—5

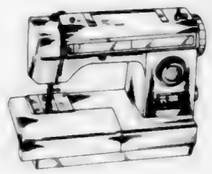


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289,402
POWER UNIT FOR FEEDING PAINT OR THE LIKE
Casey L. Carlson, St. Paul, and James B. Libby, Minneapolis, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Nov. 15, 1984, Ser. No. 671,744
Term of patent 14 years
U.S. Cl. D15—7



289,403
SEWING MACHINE
Yoshihide Yoneda, Osaka, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Osaka, Japan
Filed Jun. 28, 1984, Ser. No. 625,533
Claims priority, application Japan, Mar. 23, 1984, 59-11393; Apr. 6, 1984, 59-13787
Term of patent 14 years
U.S. Cl. D15—69



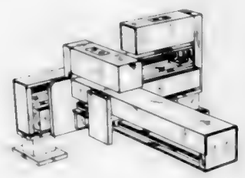
289,404
COMBINED REFRIGERATOR AND AIR CONDITIONER
Tien-Sung Lin, No. 264, Ho Ping 2nd Rd., Kaohsiung City, Taiwan (800)
Filed Mar. 29, 1984, Ser. No. 594,659
Term of patent 14 years
U.S. Cl. D15—81

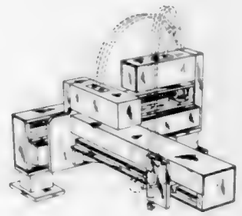


289,405
COUPLING FOR USE WITH BORING TOOL OR BIT
Rune Nyström, Mjälgavägen 53, S-781 32 Borlänge, Sweden
Filed Jun. 22, 1984, Ser. No. 623,382
Claims priority, application Sweden, Dec. 27, 1983, 83-3407
Term of patent 14 years
U.S. Cl. D15—140

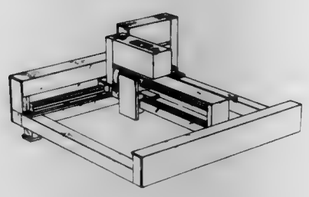


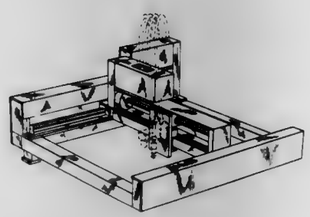
289,406
INDUSTRIAL ROBOT
Masato Shibayama, Sayama; Takeshi Abe, Tokyo; Atuyuki Gotoo, Mitaka; Takashi Kawakami, Shimizu, and Shintaro Masuda, Hujieda, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 23, 1984, Ser. No. 582,799
Claims priority, application Japan, Aug. 26, 1983, 58-36980
Term of patent 14 years
U.S. Cl. D15—199



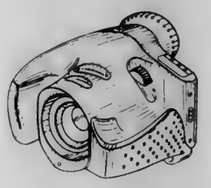


289,407
INDUSTRIAL ROBOT
Masato Shibayama, Sayama; Takeshi Abe, Tokyo; Takashi Kawakami, Shimizu, and Shintaro Masuda, Hujieda, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 23, 1984, Ser. No. 582,800
Claims priority, application Japan, Aug. 26, 1983, 58-36981
Term of patent 14 years
U.S. Cl. D15—199

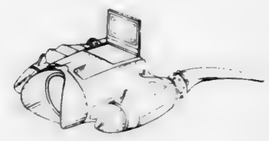




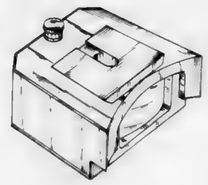
289,408
CAMERA
Luigi Colani, Sassenberg, Fed. Rep. of Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 5, 1985, Ser. No. 708,541
Claims priority, application Japan, Oct. 5, 1984, 59-41619
Term of patent 14 years
U.S. Cl. D16—1



289,409
CAMERA
Luigi Colani, Sassenberg, Fed. Rep. of Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 5, 1985, Ser. No. 708,419
Claims priority, application Japan, Oct. 5, 1984, 59-41620
Term of patent 14 years
U.S. Cl. D16—2



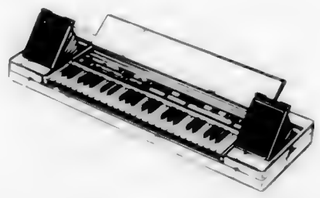
289,410
ILLUMINATION HOUSING FOR AN OPERATING ROOM MICROSCOPE
Richard E. Feinbloom; Melvin Levine, both of New York, and Lung T. Yee, Brooklyn, all of N.Y., assignors to Designs for Vision, Inc., Ronkonkomo, N.Y.
Filed Mar. 29, 1984, Ser. No. 594,563
Term of patent 14 years
U.S. Cl. D16—131





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289,411
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Mario Bellini, Milan, Italy, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan
Filed Jun. 11, 1984, Ser. No. 619,019
Claims priority, application Japan, Dec. 17, 1983, 58-54413
Term of patent 14 years
U.S. Cl. D17—1



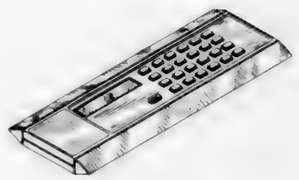
289,412
ELECTRONIC KEYBOARD MUSICAL INSTRUMENT
Mario Bellini, Milan, Italy, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan
Filed Jun. 18, 1984, Ser. No. 621,502
Claims priority, application Japan, May 2, 1984, 59-17998
Term of patent 14 years
U.S. Cl. D17—1



289,413
DESK-TOP ELECTRONIC CALCULATOR WITH PRINTER
Aiko Endo, and Hideo Fushimoto, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 2, 1985, Ser. No. 688,434
Claims priority, application Japan, Jul. 20, 1984, 59-30311
Term of patent 14 years
U.S. Cl. D18—7



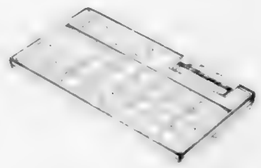
289,414
DUCT DESIGN CALCULATOR
David C. Peters, Liverpool; Derek P. Williams, Manlius, and William C. Chadwick, Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Jun. 19, 1985, Ser. No. 746,480
Term of patent 14 years
U.S. Cl. D18—7



289,415
DESK-TOP ELECTRONIC CALCULATOR
Nobuo Kikuchi, and Hideo Fushimoto, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 22, 1985, Ser. No. 725,549
Claims priority, application Japan, Oct. 30, 1984, 59-44816
Term of patent 14 years
U.S. Cl. D18—7



289,416
DESK-TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko, and Hideo Fushimoto, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 24, 1985, Ser. No. 737,662
Claims priority, application Japan, Nov. 26, 1984, 59-48532
Term of patent 14 years
U.S. Cl. D18—7



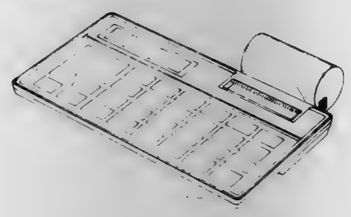
289,417
DESK-TOP ELECTRONIC CALCULATOR
Aiko Endo, and Hideo Fushimoto, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 20, 1985, Ser. No. 713,841
Claims priority, application Japan, Sep. 21, 1984, 59-39296
Term of patent 14 years
U.S. Cl. D18—7



289,418
DESK-TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko, and Osamu Murakami, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 24, 1985, Ser. No. 737,438
Claims priority, application Japan, Nov. 26, 1984, 59-48530
Term of patent 14 years
U.S. Cl. D18—7



289,419
DESK-TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko, and Hideo Fushimoto, Tokyo, both of Japan, assignors to Canon Kabushika Kaisha, Tokyo, Japan
Filed May 24, 1985, Ser. No. 737,439
Claims priority, application Japan, Nov. 26, 1984, 59-48533
Term of patent 14 years
U.S. Cl. D18—7



289,420
TYPEFACE
Charles A. Bigelow, and Kris A. Holmes, both of 15 Vandewater St., San Francisco, Calif. 94133
Filed Dec. 7, 1984, Ser. No. 679,370
Term of patent 14 years
U.S. Cl. D18—24

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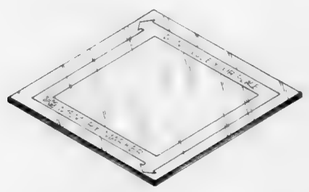
289,421
TYPEFACE DESIGN
Charles A. Bigelow, and Kris A. Holmes, both of 15 Vandewater St., San Francisco, Calif. 94133
Filed Oct. 15, 1984, Ser. No. 661,228
Term of patent 14 years
U.S. Cl. D18—24

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289,422
TYPEFACE
Charles A. Bigelow, and Kris A. Holmes, both of 15 Vandewater St., San Francisco, Calif. 94133
Filed Oct. 12, 1984, Ser. No. 660,303
Term of patent 14 years
U.S. Cl. D18—24

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289,423
BOOKMARK
Byron D. Lawrence, 41207 188th Ave., S.E., Enumclaw, Wash. 98022
Filed Dec. 21, 1984, Ser. No. 685,079
Term of patent 14 years
U.S. Cl. D19—34



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289,424
COMBINED PEN, WATCH, COMPASS, CALENDAR AND TIRE PRESSURE GAUGE OR SIMILAR ARTICLE
Tien T. Huang, Taipei, Taiwan, assignor to Precise Meters Co., Ltd., Taiwan
Filed Nov. 21, 1984, Ser. No. 673,613
Term of patent 14 years
U.S. Cl. D19—36



289,425
WRITING INSTRUMENT
Gilles Thévenot, Baden-Baden, Fed. Rep. of Germany, assignor to Montblanc-Simplo GmbH, Hamburg, Fed. Rep. of Germany
Filed Aug. 4, 1983, Ser. No. 520,166
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1983, 66 MR 11607
Term of patent 14 years
U.S. Cl. D19—49



289,426
RECONFIGURABLE TOY ROBOT
Sang-Kwon Lim, 236, Dongdaeshin-dong, Seo-Ku, Busan, Rep. of Korea
Filed Feb. 11, 1985, Ser. No. 700,289
Claims priority, application Rep. of Korea, Aug. 17, 1984, Des. 9716
Term of patent 14 years
U.S. Cl. D21—150





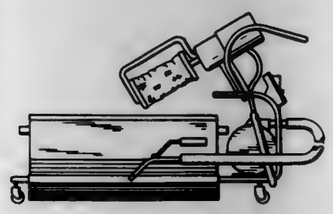
289,427
COMBINED DOLL AND BACK PACK
Betty J. Owens, 14 Robinson Cir., Midway, Ga. 31320
Filed Sep. 26, 1984, Ser. No. 654,542
Term of patent 14 years
U.S. Cl. D21—167



289,428
TENNIS TEACHING DEVICE
Mendel Sherman, 616 Downs Loop, Clemson, S.C. 29631
Filed Sep. 24, 1984, Ser. No. 653,572
Term of patent 14 years
U.S. Cl. D21—212



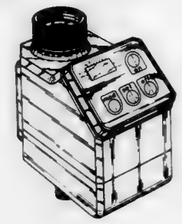
289,429
PORTABLE FILTRATION UNIT
Harold C. Thumberger, 1031 Belle Ave., Hamilton, Ohio 45015
Filed Jun. 15, 1984, Ser. No. 620,889
Term of patent 14 years
U.S. Cl. D23—4



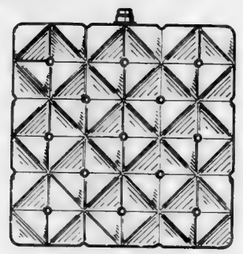
289,430
MOTOR DRIVEN EXPANSION VALVE
Kenji Yoshiga, Funabashi, Japan, assignor to Fuji Koki Manufacturing Co., Ltd., Japan
Filed Jun. 22, 1984, Ser. No. 623,513
Term of patent 14 years
U.S. Cl. D23—19



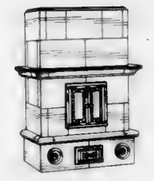
289,431
TIMED CONTROL VALVE FOR SPRINKLER SYSTEM
Franco Clivio, Zürich, Switzerland, and Dieter Raffler, Neu-Ulm, Fed. Rep. of Germany, assignors to Gardena Kress & Kastner GmbH, Fed. Rep. of Germany
Filed Oct. 3, 1984, Ser. No. 657,412
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1984, GRAIII747/8403
Term of patent 14 years
U.S. Cl. D23—38



289,432
HOLLOW TILE FOR SOLAR HEATING SYSTEM
Lewis G. Vardey, 33, Lower Rd., Leatherhead, Surrey, England
Filed Dec. 17, 1984, Ser. No. 682,412
Claims priority, application United Kingdom, Jul. 18, 1984, 1021007
Term of patent 14 years
U.S. Cl. D23—72

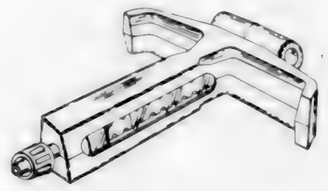


289,433
TILED STOVE
Hannu Hakonen, Joensuu, Finland, assignor to Suomen Vuolukivi Oy, Nunnanlahti, Finland
Filed Oct. 22, 1985, Ser. No. 790,165
Claims priority, application Finland, Apr. 25, 1985, 315/85
Term of patent 14 years
U.S. Cl. D23—93

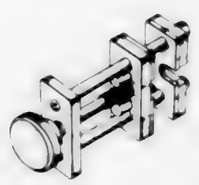


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289,434
INJECTOR FOR INTRODUCING CONTRAST AGENTS INTO BLOOD VESSELS
David W. Morrison, San Jose, and Wilfred J. Samson, Saratoga, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.
Filed Nov. 8, 1984, Ser. No. 670,406
Term of patent 14 years
U.S. Cl. D24—24



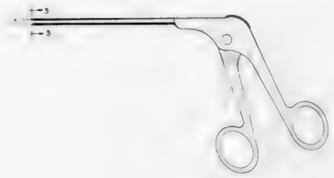
289,435
SYRINGE HOLDER
Eugene A. Fischione, 216 Red Oak Dr., Pittsburgh, Pa. 15239
Filed Aug. 1, 1984, Ser. No. 636,489
Term of patent 14 years
U.S. Cl. D24—25



289,436
SURGICAL DRILLING ROD GUIDE
Magnus G. Odensten, Hjulsbrovägen 104, S-582 69 Linköping, and Jan I. Gillquist, Stjärnorpsvägen Berg, S-590 61 Vreta Kloster, both of Sweden
Filed Sep. 13, 1984, Ser. No. 650,114
Claims priority, application Sweden, Mar. 14, 1984, 84-0874
Term of patent 14 years
U.S. Cl. D24—26



289,437
COMBINED HANDLE AND SHANK FOR SURGICAL INSTRUMENT
George P. Honkanen, North Scituate, Mass., assignor to Acufex Microsurgical, Inc., Norwood, Mass.
Filed Jun. 27, 1983, Ser. No. 508,233
Term of patent 14 years
U.S. Cl. D24—27



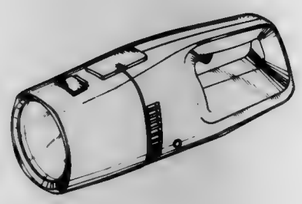
289,438
COMBINED CHAIR AND HYDROTHERAPY UNIT FOR LEGS
Torbjörn Löfgren, Broby, Sweden, assignor to Hydroterapi AB, Broby, Sweden
Filed Sep. 25, 1984, Ser. No. 654,368
Claims priority, application Sweden, Mar. 27, 1984, 84-1014
Term of patent 14 years
U.S. Cl. D24—38



289,439
CANDLE
Seishi Tanikawa, Kameyama, Japan, assignor to Kameyama Candle Company Limited, Mie, Japan
Filed Oct. 2, 1984, Ser. No. 656,886
Term of patent 14 years
U.S. Cl. D26—7



289,440
PORTABLE ELECTRIC LIGHT
Hiroshi Yajima, Shijonawate, and Toyomi Arita, Sumoto, both of Japan, assignors to Sanyo Electric Co., Ltd., Japan
Filed Nov. 16, 1984, Ser. No. 672,332
Claims priority, application Japan, May 22, 1984, 59-20617
Term of patent 14 years
U.S. Cl. D26—48



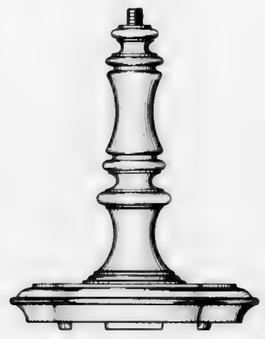
289,441
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,474
Term of patent 14 years
U.S. Cl. D26—110



289,442
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Feb. 7, 1985, Ser. No. 699,292
Term of patent 14 years
U.S. Cl. D26—110



289,443
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Feb. 7, 1985, Ser. No. 699,279
Term of patent 14 years
U.S. Cl. D26—110



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289,444
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,475
Term of patent 14 years
U.S. Cl. D26—110



289,446
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,208
Term of patent 14 years
U.S. Cl. D26—110



289,445
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Feb. 7, 1985, Ser. No. 699,519
Term of patent 14 years
U.S. Cl. D26—110



289,447
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,417
Term of patent 14 years
U.S. Cl. D26—110



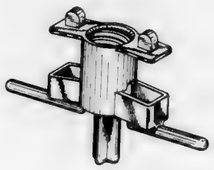
289,448
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,138
Term of patent 14 years
U.S. Cl. D26—110



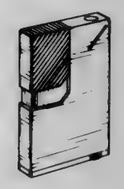
289,450
PET HOUSE
Robert B. Jennings, c/o Hill Restaurant Supply, 2800 N.E. Loop 410, San Antonio, Tex. 78218
Filed Dec. 30, 1985, Ser. No. 814,895
Term of patent 14 years
U.S. Cl. D30—1



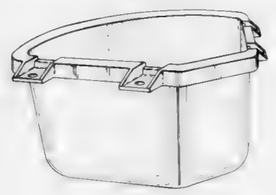
289,451
COMBINED ADAPTOR AND DISPENSER FOR BIRD FEED CONTAINER
Norman M. Earl, Canton, Conn., assignor to The Bird Chef Co., Inc., Canton, Conn.
Filed Oct. 3, 1984, Ser. No. 657,405
Term of patent 14 years
U.S. Cl. D30—13



289,449
GAS LIGHTER
Franz A. Stützer, Offenbach, Fed. Rep. of Germany, assignor to Rowenta-Werke GmbH, Fed. Rep. of Germany
Filed Mar. 29, 1985, Ser. No. 718,008
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1984, 5 MR 10 565
Term of patent 14 years
U.S. Cl. D27—36



289,452
CORNER BUCKET
John M. Fuller, Winchester, Va., assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed May 6, 1985, Ser. No. 731,191
Term of patent 14 years
U.S. Cl. D30—13



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289,453
POSITIONING BRACE FOR SADDLE STIRRUPS
Clady J. Royer, II, 2808 N. Meridian Ct., Oklahoma City, Okla. 73127
Filed May 7, 1984, Ser. No. 607,811
Term of patent 14 years
U.S. Cl. D30—19



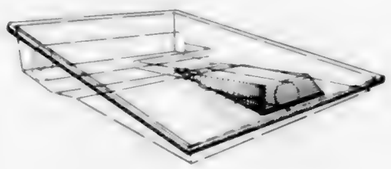
289,454
DOG COLLAR
Hal Taub, 561 Acorn St., Deer Park, N.Y. 11729
Filed Sep. 27, 1984, Ser. No. 654,723
Term of patent 14 years
U.S. Cl. D30—38



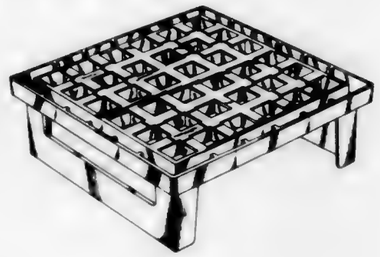
289,455
BUCKET AND LID THEREFOR
Wolfgang H. Freiler, Brampton, Canada, assignor to E. Hofmann Plastics Canada Inc., Brampton, Canada
Filed Nov. 27, 1985, Ser. No. 807,060
Term of patent 14 years
U.S. Cl. D32—53



289,456
PAINT TRAY COVER
Gregory Florentino, 130 Third Ave., Brentwood, N.Y. 11717
Filed May 21, 1984, Ser. No. 612,336
Term of patent 14 years
U.S. Cl. D32—53.1



289,457
PALLET
Kjell Andersson, Löddeköpinge, Sweden, assignor to Tetra Pak International Aktiebolag, Lund, Sweden
Filed Sep. 7, 1984, Ser. No. 648,049
Claims priority, application Sweden, Mar. 2, 1984, 84-0719
Term of patent 14 years
U.S. Cl. D34—38



289,458
TRASH RECEPTACLE
Jerome A. Zakrajsek, Fredonia, Wis., assignor to DCI Marketing, Milwaukee, Wis.
Filed Jan. 25, 1985, Ser. No. 694,787
Term of patent 14 years
U.S. Cl. D34—7



289,459
MEDIA TRANSPORT CART
Harley E. Luyk, Grand Rapids; Robert K. Boardman, Holland, both of Mich.; Jean E. Dahlgren, Dallas, and Christine J. Voigt, Arlington, both of Tex., assignors to The Worden Company, Holland, Mich.
Filed Jul. 2, 1984, Ser. No. 626,686
Term of patent 14 years
U.S. Cl. D34—21



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF APRIL, 1987

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A&A Manufacturing Co., Inc.: *See*—
Klein, Ernst, 4,658,577, Cl. 59-78.100.
A. T. Newell Co. Inc.: *See*—
Newell, Alfred T., III, 4,659,009, Cl. 236-44.00C.
A. W. Faber-Castell: *See*—
Katz, Otto, 4,659,242, Cl. 401-85.000.
Aarts, Ronaldus M.: *See*—
Schouhamer Immink, Kornelis A.; Aarts, Ronaldus M.; and Kahlman, Josephus A. H. M., 4,660,097, Cl. 358-310.000.
Abbott Laboratories: *See*—
Guth, Gordon T.; Morrow, James D.; and Sherry, Lois R., 4,658,957, Cl. 206-365.000.
Abe, Masao: *See*—
Watanabe, Hiroshi; Shimamura, Isao; Abe, Masao; and Mizusawa, Masashi, 4,659,439, Cl. 204-37.600.
Abe, Yuji: *See*—
Matsumoto, Seishi; Nakashimizu, Takeo; and Abe, Yuji, 4,658,920, Cl. 177-25.000.
Abila, Ernesto M.: *See*—
Bell, Ross A.; and Abila, Ernesto M., 4,658,646, Cl. 73-432.100.
Abramson, Harold C., Jr., to Dow Chemical Company, The. Process for the formation of large void-free thermoplastic articles. 4,659,533, Cl. 264-570.000.
Abenger, Erich; and Kochanowski, Hans A., to Motorenfabrik Hatz GmbH & Co. KG. Multi-cylinder fuel injected internal combustion engine. 4,658,791, Cl. 123-446.000.
Aburaki, Shimpei; Narita, Yukio; Okumura, Jun; Naito, Takayuki; and Walker, Donald G., to Bristol-Myers Company. Cephalosporin intermediates. 4,659,812, Cl. 540-222.000.
ACC Automation, Inc.: *See*—
Myers, Daniel O.; and Baskin, Mark E., 4,658,550, Cl. 51-165.720.
Accutrol Incorporated: *See*—
France, Rodney C., 4,659,274, Cl. 414-21.000.
Acorn Engineering Company: *See*—
Morris, Earl L.; Sally, Theodore J.; and Hahn, Ron T., 4,659,059, Cl. 251-54.000.
Acs, Tibor: *See*—
Szantay, Csaba; Honty, Katalin; Szabo, Lajos; Keve, Tibor; and Acs, Tibor, 4,659,816, Cl. 540-478.000.
Adachi, Eiichi: *See*—
Yoshioka, Nobuyuki; Okunishi, Yasuji; Miura, Yasuhisa; Mori, Yoshikazu; Kataoka, Yasuki; and Adachi, Eiichi, 4,659,739, Cl. 514-555.000.
Adaniya, Takeshi: *See*—
Hara, Tomihiro; Adaniya, Takeshi; Yamashita, Masaaki; and Enatsu, Akira, 4,659,394, Cl. 148-6.200.
Adell, Robert, to U.S. Product Development Company. Collectible. 4,658,523, Cl. 40-1.000.
Adrian, Willy; and Mehlert, Martin, to Otis Elevator Company. Escalator balustrade decking profile. 4,658,946, Cl. 198-337.000.
Advance Machine Company: *See*—
Wood, David W., 4,658,459, Cl. 15-49.00R.
Advanced Energy Concepts '81 Ltd.: *See*—
Murray, Richard E., 4,658,675, Cl. 74-805.000.
Aeras Water Resources, Inc.: *See*—
Arbisi, Dominic S.; and Rasmussen, Thomas A., 4,659,485, Cl. 210-758.000.
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Blaser, Peter: *See*—
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Blome, Victor S. Fluid dynamic exerciser. 4,659,078, Cl. 272-128.000.

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Boddie, Carl E., to Industrial Polymers, Inc. Method and composition for repairng cementitious surfaces. 4,659,748, Cl. 521-170.000.

Bodewein, Jakob, to Jagenberg Aktiengesellschaft. Device for longitudinally cutting web material, especially paper and cardboard webs. 4,658,685, Cl. 83-302.000.

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Pinson, George T., 4,658,588, Cl. 60-637.000.
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Wilhelm, Earl E.; and Zimmerschied, Alan B., 4,658,727, Cl. 102-494.000.

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Bond, Les. Method and apparatus for hydrocarbon recovery 4,658,916, Cl. 175-81.000.

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Boserb, Vincent C. Disposable flexible liner for material storage and handling bag, and method of releasably installing the same. 4,658,989, Cl. 222-105.000.

Bonin, Jean-Claude, to Lucas Industries public limited company. Fuel injection pumps for internal combustion engines. 4,658,793, Cl. 123-502.000.

Bonjoukhian, Rosanne; and Phillips, Michael L., to Eli Lilly and Company. 2-alkoxy-1-alkoxy phosphoryl dichlorides. 4,659,859, Cl. 558-188.000.

Bonnisu, Michel; and Schueller, Pierre, to Merlin Gerin. Polarized electromagnetic relay with magnetic latching for an electric circuit breaker trip release. 4,660,012, Cl. 335-234.000.

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Westbrook, Theodore E.; Kent, James V.; and Kuzemsky, David, 4,658,565, Cl. 53-308.000.

Figlia, Betty J.; and Spector, George. Surgical gloves. 4,658,444, Cl. 2-161.00R.

Figliola, Vincent N. Bath product and method for treating bath water. 4,659,495, Cl. 252-90.000.

Filliman, Paul D.; Harwood, Leopold A.; Keen, Ronald T.; and Parker, Robert P., to RCA Corporation. Television receiver with selectable video input signals. 4,660,084, Cl. 358-171.000.

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Filoseta, Miva A.: *See*—
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Finck, Albin; Gleixner, Ronald; Hoechamer, Horst; and Pieper, Wolfgang, to Siemens Aktiengesellschaft. Coil body and connections to an external line. 4,660,015, Cl. 336-192.000.

Findeisen, Kurt: *See*—
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Finger, David: *See*—
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Fink, Arthur C., Jr., to Husky Corporation. No pressure shut off for automatic fuel nozzle valve. 4,658,987, Cl. 222-52.000.

Fink, Garold K.: *See*—
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Finlayson, Steven E.: *See*—
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Finn, Patrick J.; Glover, Linda M.; Henry, Arnold W.; and Lux, Adalbert A., to Xerox Corporation. Release agent donor member and fusing assembly containing same. 4,659,621, Cl. 428-339.000.

Fischer & Porter Co.: *See*—
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Fischerwerke Artur Fischer GmbH & Co. KG: *See*—
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Fish, Richard H., to United States of America, Energy. Removal of arsenic, vanadium and/or nickel compounds from spent catecholated polymer. 4,659,684, Cl. 502-25.000.

Fisher, Michael H.: *See*—
Chabala, John C.; Fisher, Michael H.; and Patchett, Arthur A., 4,659,720, Cl. 514-313.000.

Fitness Quest, Inc.: *See*—
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Fitzgerald, Thomas W.: *See*—
Barry, Vincent J.; Boucher-Puputti, Brenda A.; Fitzgerald, Thomas W.; and Bawolek, Edward J., 4,659,427, Cl. 156-643.000.

Fitzgibbon, Jeremiah J., to Standard Oil Proppants Company, L.P. Use of uncalcined/partially calcined ingredients in the manufacture of sintered pellets useful for gas and oil well proppants. 4,658,899, Cl. 166-280.000.

Fives-Taylor, Paula; and Novotny, Charles P., to University of Vermont and State Agricultural College, The. Process for treating the oral cavity. 4,659,561, Cl. 424-48.000.

Flame Engineering, Inc.: *See*—
Schultz, William K., 4,658,802, Cl. 126-271.20A.

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Flatley, Doris W.; and Ipri, Alfred C., to RCA Corporation. Method of forming a semiconductor structure. 4,658,495, Cl. 29-571.000.

Fleissner, Gerold, to Vepa Aktiengesellschaft. Drying tower. 4,658,512, Cl. 34-155.000.

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Franz, John E., to Monsanto Company. Thioester of n-phosphonomethylglycine. 4,659,860, Cl. 558-231.000.

Freed, Edward E.; and Dowd, Kenneth D. Pressure-monitoring system. 4,658,986, Cl. 222-52.000.

Freeman, Amihay; and Tor, Ruth, to Ramot University Authority for Applied Research and Industrial Development Ltd. Enzyme membranes for electrodes. 4,659,665, Cl. 435-182.000.

Freer, Edgar P., to View Engineering, Inc. Apparatus and method for measuring properties of cylindrical objects. 4,658,633, Cl. 73-37.500.

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French, William S., to Tensor Geophysical Service Corporation. Method for determining the absolute location of a streamer incorporating a reference signal system where the a priori location of the reference signal source (or alternatively the detector) need not be known. 4,660,185, Cl. 367-19.000.

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Fujii, Yoshikazu; Deguchi, Toshihisa; Inui, Tetsuya; and Yamaoka, Hideyoshi, to Sharp Kabushiki Kaisha. Optical focus position control in optical disc apparatus. 4,660,190, Cl. 369-44.000.

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Fujita, Haruyasu; Honma, Kenji; and Ogawa, Masao, to Honda Giken Kogyo Kabushiki Kaisha. Suspension apparatus for vehicle. 4,659,106, Cl. 280-772.000.

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Hagelstein, Peter L., to United States of America, Energy. Soft X-ray laser using pumping of 3P and 4P levels of He-like and H-like ions. 4,660,203, Cl. 372-5.000.

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Haile, Ernest. Interlocking planters, for use in erecting decorative walls or the like. 4,658,541, Cl. 47-83.000.

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Halmos, Maurice J.; and Henderson, David M., to Hughes Aircraft Company. Chirp laser stabilization system. 4,660,206, Cl. 372-28.000.

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Hamada, Enchi; Nakashima, Atushi; and Kamo, Jun, to Mitsubishi Rayon Co., Ltd. Blood oxygenator using a hollow fiber membrane. 4,659,549, Cl. 422-48.000.

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Hamasaki, Masaharu, to Sony Corporation. Charge coupled device having a floating diffusion region and a precharge diffusion region which are aligned so as to increase the output gain. 4,660,064, Cl. 357-24.000.

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Harlow, Raymond P., to Centri-Spray Corporation. Conveyor for rollable articles. 4,658,954, Cl. 198-774.000.

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Hayashi, Kazuhiko; Iwata, Masayosi; Tada, Mikio; and Mizuno, Hirotoshi, to Toyota Jidosha Kabushiki Kaisha. Slide switch. 4,659,882, Cl. 200-16.00R.

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Hilty, Andreas, to Ing. A. Hilty. Ski carrier. 4,658,999, Cl. 224-202.000.

Hima nee Toth, Maria. *See*—
Lugosi, Gyorgy; Hima nee Toth, Maria; Bakonyi, Maria; and Szoke, Sandor, 4,659,515, Cl. 260-351.500.

Hirabayashi, Hirokazu, to Nissan Motor Co., Ltd. Exhaust tube for vehicle. 4,658,581, Cl. 60-322.000.

Hirai, Hiroyuki: *See*—
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Hirai, Shin-ichiro; Okada, Hiroaki; and Yashiki, Takatsuka, to Takeda Chemical Industries, Ltd. Pharmaceutical composition and its nasal or vaginal use. 4,659,696, Cl. 514-15.000.

Hiraiwa, Kazuyoshi, to Nissan Motor Co., Ltd. Synchromesh transmission suited for use as automotive automatic transmission. 4,658,663, Cl. 74-359.000.

Hirano, Yoshinori, to Nissan Motor Co., Ltd. Cooling system for automotive engine or the like. 4,658,766, Cl. 123-41.270.

Hirao, Sumio; and Maki, Kunio, to Nissan Motor Co., Ltd. Gas turbine. 4,659,245, Cl. 403-30.000.

Hiraoka, Saburo: *See*—
Nagai, Shoichi; Hiraoka, Saburo; Hama, Shinji; and Senga, Mitsuo, 4,659,386, Cl. 106-120.000.

Hirata, Makizo: *See*—
Fujikawa, Tetsuzo; Hirata, Makizo; and Tamba, Shinichi, 4,658,767, Cl. 123-52.0MV

Hirosawa, Yasunori; and Okudaira, Souichirou, to Toyota Jidosha Kabushiki Kaisha. Apparatus for opening and closing louver. 4,658,925, Cl. 180-68.100.

Hirose, Teruo: *See*—
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Hiroshi, Ito: *See*—
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Hirsch, Kenneth S.; Jones, Charles D.; and Taylor, Harold M., to Eli Lilly and Company. Aromatase inhibiting imidazole derivatives. 4,659,730, Cl. 514-396.000.

Hisaminato, Takahiro; and Watanabe, Haruo, to Honda Giken Kogyo Kabushiki Kaisha. Roof structure for vehicular sun-roof devices. 4,659,139, Cl. 296-210.000.

Hitachi Cable, Ltd. *See*—
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Hitachi Chemical Co., Ltd.: *See*—
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Okamoto, Hiroo; and Kobayashi, Masaharu, 4,660,200, Cl. 371-37.000.
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Tanimura, Nobuyoshi; and Kawamoto, Hiroshi, 4,660,180, Cl. 365-222.000.

Hitachi Maxell, Ltd.: *See*—
Goto, Shinichi; and Amaike, Toshiyuki, 4,658,981, Cl. 220-338.000.
Yamaguchi, Yoshitaka; and Sumiya, Kenji, 4,659,633, Cl. 428-695.000.

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Ohtani, Tamio; Kanaya, Yasuhiko; Aoyama, Hiroshi; and Nonaka, Nobuyasu, 4,658,494, Cl. 29-568.000.

Hitoshi, Yamazaki; Takao, Takeda; Shizuo, Nakano; Kouji, Yamamoto; Hiroshi, Ito; and Jun, Imai, to Mitsubishi Denki Kabushiki Kaisha. Low pressure discharge lamp. 4,659,962, Cl. 313-493.000.

Hiyama, Tamejiro: *See*—
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Hobbs, Michael L., to Tempmaster Corporation. Flush mounted temperature sensor. 4,659,236, Cl. 374-208.000.

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Hochberg, Howard M.; Schmalzbach, Edwin L.; and Ziedonis, Janis G., to International Biomedics, Inc. Spiral probe for simultaneous electrical and chemical monitoring of a fetus. 4,658,825, Cl. 128-634.000.

Hoechamer, Horst: *See*—
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Hoechst Aktiengesellschaft: *See*—
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Lerch, Ulrich, 4,659,838, Cl. 548-452.000.
May, Adolf; Bucking, Hans-Walter; and Schreiber, Manfred, 4,659,487, Cl. 252-8.800.
Segal, Marcos, 4,659,807, Cl. 534-642.000.
Springer, Hartmut; and Konig, Gerd, 4,659,856, Cl. 558-26.000.
Strutzel, Hans, 4,659,599, Cl. 428-36.000.
Thiem, Joachim; Deger, Hans-Matthias; Kolar, Cenek; and Kreuzer, Matthias, 4,659,810, Cl. 536-22.000.

Hoeppner, Hans-Jochen; Kraemer, Ulrich; and Soelter, Michael, to Messerschmitt-Boelkow-Blohm GmbH. Aircraft with deployable wing portions. 4,659,038, Cl. 244-49.000.

Hoffman, Gary R., to General Services Engineering, Inc. Remote monitoring system. 4,660,035, Cl. 340-870.020.

Hoffmann, Herwig: *See*—
Bott, Kaspar; Kaibel, Gerd; Hoffmann, Herwig; Irnich, Rudolf; and Kratzer, Otto, 4,659,866, Cl. 564-137.000.

Hoffmann-La Roche Inc.: *See*—
Frunzi, Archie M.; and Williams, Gregg R., 4,659,024, Cl. 241-99.000.
Horecker, Bernard L., 4,659,694, Cl. 514-12.000.
Klaus, Michael; Loeliger, Peter; and Weiser, Harald, 4,659,735, Cl. 514-443.000.
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, 4,659,818, Cl. 544-163.000.
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Hofstadt, Otto: *See*—
Biffar, Werner; Hofstadt, Otto; Kartte, Klaus; Thomas, Erwin; and Weiss, Franz-Josef, 4,659,683, Cl. 502-24.000.

Hoganas AB: *See*—
Svensson, Lars-Erik; and Thornblad, Ove, 4,659,547, Cl. 419-6.000.

Hohberg, Gerhard: *See*—
Muller, Gerhard; Hohberg, Gerhard; and Greve, Peter, 4,659,916, Cl. 250-201.000.

Holcomb, Kenneth L. Adapter plug for personal computers. 4,659,161, Cl. 339-113.00L.

Holdt, Bernd-Dieter: *See*—
Soldanski, Heinz-Dieter; Holdt, Bernd-Dieter; and Meier, Ursula, 4,659,494, Cl. 252-88.000.

Holland, Gordon A., to Dover Corporation. Digital selector system for elevators. 4,658,935, Cl. 187-122.000.

Holland Hitch Company: *See*—
Buckley, John T., 4,659,101, Cl. 280-434.000.

Holley, Edwin S.; and McBee, James A. Tiltable mount. 4,659,053, Cl. 248-663.000.

Holmberg, Douglas A. Portable growing system. 4,658,542, Cl. 47-86.000.

Holmgren, Hans G.: *See*—
Thern, Rolf A. B.; and Holmgren, Hans G., 4,660,023, Cl. 340-521.000.

Holsinger, Jerry L.; Jotikasthira, Charamporn; and Pahlavan, Kaveh, to Infinet, Inc. Signal structure for data communication. 4,660,213, Cl. 375-39.000.

Holsinger, Jerry L.: *See*—
Pahlavan, Kaveh; and Holsinger, Jerry L., 4,660,214, Cl. 375-39.000.

Holton, Lawrence C., to Krueger, Inc. Folding table. 4,658,735, Cl. 108-131.000.

Holy, Antonin; Rosenberg, Ivan; and Slama, Karel, to Ceskoslovenska akademie. Isomeric O-phosphonylmethyl derivatives of enantiomeric and racemic 9-(2,3-dihydroxypropyl)adenine. 4,659,825, Cl. 544-244.000.

Holzer, Walter. Storage medium for electronic data processing. 4,660,172, Cl. 365-2.000.

Holzhausen, Wieland; and Albecker, Kurt, to IWK Regler und Kompensatoren GmbH. Flexible coupling for pipes in exhaust systems of motor vehicles. 4,659,117, Cl. 285-49.000.

Homa Locks, Inc.: *See*—
Stolarz, Edward, 4,658,467, Cl. 16-126.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Hisaminato, Takahiro; and Watanabe, Haruo, 4,659,139, Cl. 296-210.000.
Miyamaru, Yukio; Hatanaka, Kaoru; Kawada, Shigeo; and Shibata, Yasuo, 4,660,020, Cl. 340-134.000.
Nakamura, Yukinobu, 4,660,037, Cl. 340-990.000.
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Okuyama, Takahiro; Toki, Susumu; and Tanabe, Keiji, 4,658,770, Cl. 123-90.410.
Watanabe, Teruoki; Nakamura, Yahiko; Hidaka, Akio; Kobayashi, Shunji; and Nozaki, Hiroyoshi, 4,659,628, Cl. 428-457.000.
Yamada, Hiroyasu; Shiraishi, Motoatsu; Tazou, Ken; Nakamura, Mitsuki; Kageyama, Ryoichi; Namiki, Akira; and Sasagawa, Masaru, 4,658,626, Cl. 72-405.000.

Honda, Haruyoshi: *See*—
Sato, Susumu; Honda, Haruyoshi; Koumoto, Teruo; Isomae, Kazuo; Kuraishi, Tadayuki; and Katori, Tatsuhiko, 4,659,710, Cl. 514-234.000.

Honda, Masanobu: *See*—
Iida, Muneo; Simizu, Jyosei; Suzuki, Masami; Okamoto, Nobuyuki; Kazama, Toshinori; Honda, Masanobu; Mochida, Jiro; Tada, Seiji; and Fujii, Masayuki, 4,660,110, Cl. 360-98.000.

Honda, Michiyasu: *See*—
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Honey Bee Manufacturing Ltd.: *See*—
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Honey, Glenn R.: *See*—
Honey, Gregory J.; and Honey, Glenn R., 4,658,572, Cl. 56-228.000.

Honey, Gregory J.; and Honey, Glenn R., to Honey Bee Manufacturing Ltd. Tractor mounted swather. 4,658,572, Cl. 56-228.000.

Honeywell Inc.: *See*—
Evans, Thomas E., 4,660,122, Cl. 361-90.000.
Johnson, Allan P.; and Shovan, Ronald W., 4,659,930, Cl. 250-336.100.
Montorefano, Gianpaolo, 4,660,136, Cl. 363-26.000.

Honma, Kenji: *See*—
Fujita, Haruyasu; Honma, Kenji; and Ogawa, Masao, 4,659,106, Cl. 280-772.000.

Honty, Katalin: *See*—
Szantay, Csaba; Honty, Katalin; Szabo, Lajos; Keve, Tibor; and Acs, Tibor, 4,659,816, Cl. 540-478.000.

Hopfield, John J., to Bell Telephone Laboratories, Incorporated; and California Institute of Technology. Electronic network for collective decision based on large number of connections between signals. 4,660,166, Cl. 364-807.000.

Hopkins, Delaney C.; and Thais, James W., to Caterpillar Inc. Conduit guarding and clamping device. 4,658,854, Cl. 137-377.000.

Hoppe, Lutz: *See*—
Luhmann, Erhard; and Hoppe, Lutz, 4,659,387, Cl. 106-195.000.

Hopper, Michael J.: *See*—
Rogers, John H.; Hopper, Michael J.; and Martin, Michael R., 4,659,523, Cl. 264-1.300.

Horecker, Bernard L., to Hoffmann-La Roche Inc. Prothymosin alpha. 4,659,694, Cl. 514-12.000.

Hori, Hiroshi: *See*—
Yasui, Yasuyoshi; and Hori, Hiroshi, 4,658,670, Cl. 74-710.000.

Hori, Makoto: *See*—
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Horiba, Ltd.: *See*—
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Horibe, Takashi: *See*—
Daigo, Yasuhito; Horibe, Takashi; Inage, Kengo; Naruse, Shigeyasu; Nara, Takashi; Okamoto, Yoshizo; and Yamamoto, Hironobu, 4,659,384, Cl. 106-35.000.

Horie, Shinji; and Kakizaki, Tetsuji, to Mitsubishi Petrochemical Co., Ltd. Amine-modified wax. 4,659,796, Cl. 526-310.000.

Horiike, Yoshio; Nagaishi, Yasuo; and Fukui, Kiyotake, to Matsushita Electric Industrial Co., Ltd. Transmitter/receiver system. 4,660,215, Cl. 375-48.000.

Horikawa, Kazuo: *See*—
Itakura, Toru; Ohara, Yuji; and Horikawa, Kazuo, 4,659,180, Cl. 350-320.000.

Horio, Kimihide; Kikuchi, Yasunobu; and Fujita, Hiroya, to Toyota Jidosha Kabushiki Kaisha. V-type internal combustion engine with

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centrally located drive gears coupling double overhead camshafts. 4,658,769, Cl. 123-90.310.

Hosaka, Masumi: *See*—
Metoki, Iku; Suzuki, Akio; Yoshida, Eiji; Sato, Kiyoshi; and Hosaka, Masumi, 4,659,654, Cl. 430-567.000.

Hoshina, Takayuki; Takahashi, Michihisa; Rimoto, Masanori; and Nagamoto, Masanaka, to Ricoh Company, Ltd. Diazo-type thermosensitive recording material with hydrazone coupler and chelating metal compound. 4,659,644, Cl. 430-182.000.

Hosiden Electronics Co., Ltd.: *See*—
Masuda, Toru, 4,659,167, Cl. 339-182.00R.

Hosoda, Kenichiro: *See*—
Fukasawa, Atsushi; Hosoda, Kenichiro; Miyamoto, Ryoichi; Ando, Hiromi; and Kawaguchi, Shinji, 4,660,163, Cl. 364-724.000.

Hosoi, Yukiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Four cycle internal combustion engine. 4,658,780, Cl. 123-315.000.

Hosotani, Makoto: *See*—
Kawakami, Michio; Araki, Yoshima; Murakami, Kenkichi; Oikawa, Hidetoshi; Nakanishi, Michio; and Hosotani, Makoto, 4,659,786, Cl. 525-415.000.

Hotaka, Nobuhiro, to Shinaro Electric Co., Ltd. Inverter system. 4,660,137, Cl. 363-56.000.

Houda, Pavel; Springer, Richard A.; and Belshee, Rodney B., to Tektronix, Inc. Method of providing raster information for a graphics display employing linked lists. 4,660,029, Cl. 340-744.000.

Hougard, Erling, to OS Plastic A/S. Hanging plant pot, especially for flowers. 4,658,540, Cl. 47-67.000.

Hough Manufacturing Corporation: *See*—
Williams, Charles E., 4,658,878, Cl. 160-84.00V.

Howell, Jerald A., to Phillips Petroleum. Multi-stage hydrofining process. 4,659,452, Cl. 208-89.000.

Howell, Jerald A.: *See*—
Kukes, Simon G.; and Howell, Jerald A., 4,659,453, Cl. 208-108.000.

Howett, Harry L., Granzow, Robert H., and Placke, Dale L., to NCR Corporation. Tampering-proof cassette used in a cash dispenser. 4,659,008, Cl. 232-43.300.

Hoy, Kenneth L.; and Taylor, Glenn A., to Union Carbide Corporation. Novel polymer/polyols and uses thereof. 4,659,772, Cl. 524-755.000.

Hradcovsky, Rudolf. Method of coating articles of aluminum and an electrolytic bath therefor. 4,659,440, Cl. 204-58.000.

Hruby, Gyula: *See*—
Szemler, Laszlo; Pechany, Eva C.; Langer, Maria; Hruby, Gyula; and Sike, Valeria, 4,659,661, Cl. 435-86.000.

Hsu, Chien-Pin S.: *See*—
Webb, Thomas R.; and Hsu, Chien-Pin S., 4,659,774, Cl. 525-54.200.

Hsu, Win-Pen, to J. E. Siebel Sons' Company, Inc. Batch fermentation process. 4,659,662, Cl. 435-161.000.

Huang, Fu-chin; Jones, Howard; and Chan, Wan-Kit, to USV Pharmaceutical Corporation. 1,2,3,4-Tetrahydrophthalazine and hexahydropyridazine compounds for treating hypertension. 4,659,711, Cl. 514-247.000.

Huang, Pao-Ter: *See*—
Brauch, Robert B.; and Huang, Pao-Ter, 4,658,743, Cl. 112-448.000.

Hubele, Adolf; Zondler, Helmut; Riebli, Peter; and Eckhardt, Wolfgang, to Ciba-Geigy Corporation. N-(2-nitrophenyl)-2-aminopyrimidine derivatives, the preparation and use thereof. 4,659,363, Cl. 71-92.000.

Huber, Wilhelm, to Siemens Aktiengesellschaft. Gas-discharge display apparatus with a spacer frame and method for fabricating this frame. 4,659,963, Cl. 313-493.000.

Huchital, Gerald S.: *See*—
Clark, Brian, and Huchital, Gerald S., 4,659,992, Cl. 324-338.000.

Huels Aktiengesellschaft: *See*—
Sielfeld, Gilbert, 4,659,794, Cl. 526-200.000.

Huemer, Franz X. Driving arrangement for a circular loom. 4,658,862, Cl. 139-13.00R.

Hugemann, Bernhard: *See*—
Coesfeld, Dieter; Hugemann, Bernhard; Scondo, Ludwig; Schuster, Wilhelm; Schwabe, Hans D.; Stahl, Jurgen; and Stosser, Klaus, 4,658,644, Cl. 73-146.800.

Hughes Aircraft Company. *See*—
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Halmos, Maurice J.; and Henderson, David M., 4,660,206, Cl. 372-28.000.
McGowan, George A.; and MacCulloch, David B., 4,660,183, Cl. 367-15.000.
Robinson, Morton, 4,659,352, Cl. 65-2.000.
Vasudev, Prahalad K., 4,659,392, Cl. 148-1.500.

Hughes Helicopters, Inc.: *See*—
Moore, Bill, 4,658,701, Cl. 89-332.000.

Hui, Kenneth H.; Mak, King C.; and Hardesty, David G., to General Dynamics, Pomona Division. System for providing reprogramming data to an embedded processor. 4,660,170, Cl. 364-900.000.

Huignard, Jean-Pierre; Arditty, Herve ; and Puech, Claude, to Thomson-Csf. Photorefractive crystal interferometric device for measuring an angular rotational speed. 4,659,223, Cl. 356-350.000.

Hulett, Richard H. *See*—
Midgley, John A.; and Hulett, Richard H., 4,659,913, Cl. 219-549.000.

Humphrey, Floyd B., to Sensormatic Electronics Corporation. Article surveillance magnetic marker having an hysteresis loop with large Barkhausen discontinuities. 4,660,025, Cl. 340-572.000.

Hung, William M.; and Black, Angelique M., to Hilton-Davis Chemical Co., The. Imaging systems containing 3-(indol-3-yl)-3-(4-substituted aminophenyl)phthalides. 4,660,060, Cl. 346-220.000.

Hunter Douglas International N.V.: *See*—
Brugman, Johannes A., 4,658,562, Cl. 52-665.000.

Hurlen, Jan: *See*—
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Hurt, Ronald L.: *See*—
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Husky Corporation: *See*—
Fink, Arthur C., Jr., 4,658,987, Cl. 222-52.000.

Hutchinson, Ronald, to Marconi Company Limited, The. High frequency electrical network. 4,660,005, Cl. 333-134.000.

Hydra-Tight Limited: *See*—
Simms, Graham A., 4,659,065, Cl. 254-29.00A.

Hydrowega Consulting BV: *See*—
Koot, Bastiaan C. M., 4,658,751, Cl. 114-270.000.

Hynecek, Jaroslav, to Texas Instruments Incorporated. CCD imager with on-chip processing. 4,660,090, Cl. 358-213.000.

Hyodo, Koji: *See*—
Oba, Hanji; Hyodo, Koji; Honda, Michiyasu; and Kameyama, Kazuhide, 4,658,882, Cl. 164-417.000.

I.C.M. S.p.A. Italiana Costruzioni Metal Meccaniche: *See*—
Massimo, Bucefari; and Rubechini, Roberto, 4,658,576, Cl. 59-34.000.

I. M. Electronics Co., Ltd.: *See*—
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Ichihara, Issey; and Muraoka, Toshio, to Kabushiki Kaisha Toshiba. Cleaning apparatus. 4,659,212, Cl. 355-15.000.

Ichikawa, Shinichi: *See*—
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ICI Australia Limited: *See*—
Watson, Keith G.; and Farquharson, Graeme J., 4,659,362, Cl. 71-92.000.

Ife, Robert J., to Smith Kline & French Laboratories Limited. 3-(2-pyridylaminoalkylamino)cyclobutenediones and pyridones useful as histamine H_1-antagonists. 4,659,725, Cl. 514-352.000.

Igawa, Tetsuo: *See*—
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Igi, Keishiro: *See*—
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IGR Enterprises: *See*—
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Ihara Chemical Industry Co., Ltd.: *See*—
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Iida, Muneo; Simizu, Jyosei; Suzuki, Masami; Okamoto, Nobuyuki; Kazama, Toshinori; Honda, Masanobu; Mochida, Jiro; Tada, Seiji; and Fuji, Masayuki, to Hitachi, Ltd. Magnetic disk storage device with shroud enclosing disk assembly. 4,660,110, Cl. 360-98.000.

Iijima, Kouta; and Tanemura, Takeshi, to Alps Electric Co., Ltd. High frequency oscillator using a diode for frequency switching and FM modulation. 4,660,002, Cl. 332-16.00T.

Iijima, Takashi: *See*—
Yamaura, Junichi; Toyoguchi, Yoshinori; Matsui, Tooru; and Iijima, Takashi, 4,658,498, Cl. 29-623.100.

Iimura, Izumi: *See*—
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Iino, Shuji: *See*—
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Iizuka, Yo: *See*—
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Ikeda, Kaoru: *See*—
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Ikeda, Sadao: *See*—
Tsutsumi, Teruo; Ikeda, Sadao; and Takagi, Toshio, 4,660,053, Cl. 346-76.0PH.

Ikeda, Shinji, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for detecting the ignition timing for a diesel engine. 4,658,642, Cl. 73-119.00A.

Ikegawa, Akihiko: *See*—
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Ikematsu, Morio; Wada, Tohru; Nakanishi, Tohru; and Ishigami, Nobuo, to Nippon Ball Valve Co., Ltd. Top entry ball valve and a clamp therefor. 4,658,978, Cl. 251-315.000.

Ilig, Thomas, to ITT Industries, Inc. Control arrangement for a vehicle seat adjusting mechanism having a self checking, reduced terminal, microcomputer. 4,660,140, Cl. 364-184.000.

Illinois Bell Telephone Company: *See*—
Breck, Steven E.; and Armbruster, George E., 4,659,126, Cl. 294-93.000.

Imanari, Makoto; Iwane, Hiroshi; Kuzira, Katsufumi; and Seto, Takatoshi, to Research Association for Utilization of Light Oil. Process for the preparation of indoles. 4,659,841, Cl. 548-508.000.

Imbach, Jean-Louis; Gosselin, Gilles; and De Rudder, Jean, to Synthelabo; and Imbach, Jean-Louis. Pharmaceutical compositions based on xylosides and lyxosides of purine and pyrimidine bases used in a method of treating viruses. 4,659,698, Cl. 514-49.000.

IMI Titanium Limited: *See*—
Kearns, Michael W., 4,659,546, Cl. 419-2.000.

Imperial Chemical Industries PLC: *See*—
Bowler, Jean; and Tait, Brian S., 4,659,516, Cl. 260-397.500.
Coffee, Ronald A., 4,659,012, Cl. 239-3.000.

Imre nee Virag, Ilona: *See*—
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Imura, Midori; Morijiri, Makoto; Hanazono, Masanobu; Kazui, Shinichi; Miura, Youzi; and Ogino, Hiroyuki, to Hitachi, Ltd. Electroless plating process and process for producing multilayer wiring board. 4,659,587, Cl. 427-35.000.

Inage, Kengo: *See*—
Daigo, Yasuhito; Horibe, Takashi; Inage, Kengo; Naruse, Shigeyasu; Nara, Takashi; Okamoto, Yoshizo; and Yamamoto, Hironobu, 4,659,384, Cl. 106-35.000.

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Indiana University Foundation: *See*—
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Industrial Polymers, Inc.: *See*—
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Industrial Vehicles International, Inc.: *See*—
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Infinet, Inc.: *See*—
Holsinger, Jerry L.; Jotikasthira, Charamporn; and Pahlavan, Kaveh, 4,660,213, Cl. 375-39.000.
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Ingham, Gary G.: *See*—
Ingham, Steven G.; and Ingham, Gary G., 4,658,545, Cl. 49-340.000.

Ingham, Steven G.; and Ingham, Gary G. Automatic door opener and closer. 4,658,545, Cl. 49-340.000.

Ingvason, Sigurdur. Seagoing vessel having a bulb. 4,658,746, Cl. 114-56.000.

Inmos Corporation: *See*—
Hardee, Kim C.; and Griffus, Mike J., 4,660,178, Cl. 365-189.000.

Innami, Satoshi; and Fukui, Yoshitaka, to Daicel Chemical Industries, Ltd. Additive composition for foods or drugs. 4,659,388, Cl. 106-163.100.

Innova Wiener Innovationsgesellschaft M.B.H.: *See*—
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Inomata, Yoshihisa: *See*—
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Inoue-Japax Research Incorporated: *See*—
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Inoue, Kazuyuki: *See*—
Yamaguchi, Kimiaki; Nitta, Masahiro; Inoue, Kazuyuki; Hirose, Teruo; and Toda, Yoshihiro, 4,659,891, Cl. 219-10.55D.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Capacitor-type HF power supply for electrical machining. 4,659,894, Cl. 219-69.00P.

Inoue, Noriyuki, to Fuji Photo Film Co., Ltd. Silver salt diffusion transfer photographic material. 4,659,646, Cl. 430-230.000.

Inoue, Shigehiro, to Sanyo Kagaku Kogyo Kabushiki Kaisha. Bias tape supply device. 4,658,959, Cl. 206-409.000.

Institut de Recherches Chimiques et Biologiques Appliquees (I.R.-C.E.B.A): *See*—
Lacolle, Jean-Yves; and Danree, Bernard, 4,659,741, Cl. 514-643.000.

Institut Francais du Petrol: *See*—
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Institut Francais du Petrole: *See*—
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Ecomard, Andre , 4,658,587, Cl. 60-602.000.
Saussine, Lucien; Robine, Alain; and Mimoun, Hubert, 4,659,829, Cl. 546-2.000.

Institutul de Cercetare Stintifica si Inginerie Tehnologica Pentru Industria Electrotehnica-ICPE: *See*—
Tanasescu, Florin T.; Gaitan, Laurentiu V.; and Stefanescu, Dumitru, 4,658,742, Cl. 112-275.000.

Insystems, Inc.: *See*—
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Integrated Laser Systems Limited: *See*—
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Intel Corporation: *See*—
Leonov, Mark, 4,659,094, Cl. 279-1.00L.

International Biomedics, Inc.: *See*—
Hochberg, Howard M.; Schmalzbach, Edwin L.; and Ziedonis, Janis G., 4,658,825, Cl. 128-634.000.

International Business Machines Corporation: *See*—
Bronte, Joseph J.; Herbert, Roland C.; and Khoury, Henri A., 4,659,220, Cl. 356-237.000.
Carey, Paul D.; Cutts, Stanley J.; Heath, John S.; White, David E.; and Evans, David A., 4,660,117, Cl. 360-133.000.
Eggers, Eugene A.; and Summa, William J., 4,659,425, Cl. 156-630.000.
Elias, Kenneth L.; Martin, Stuart R.; and Slattery, William J., 4,659,585, Cl. 427-5.000.
Kim, Kyong-Min; Smetana, Favel; and Westdorp, Wolfgang A., 4,659,423, Cl. 156-617.0SP.
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Moritz, Holger; and Pfeiffer, Gerd, 4,659,650, Cl. 430-313.000.
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International Minerals & Chemical Corp.: *See*—
Hass, D. Kendall, 4,659,713, Cl. 514-249.000.

International Positioning Systems, Ltd.: *See*—
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International Standard Electric Corporation: *See*—
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Internationale Octrooi Maatschappij "Octropa" B.V.: *See*—
May, Keith; Gani, Mohamed M.; and Senior, Stephanie J., 4,659,666, Cl. 435-188.000.

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Ipri, Alfred C.: *See*—
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Iqbal, Abul: *See*—
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Isa, Takayoshi: *See*—
Uno, Nobuyoshi; Isa, Takayoshi; Kurata, Eijiro; and Tamasaki, Hidetoshi, 4,659,267, Cl. 411-5.000.

Isaacson, Michael; and Lewis, Aaron, to Cornell Research Foundation, Inc. Method and apparatus for production and use of nanometer scale light beams. 4,659,429, Cl. 156-644.000.

Isao, Matsuura; Kobayashi, Masanori; and Wakatsuki, Akira, to Sumitomo Chemical Company, Limited. Polyvinyl chloride resin compositions for molding. 4,659,764, Cl. 524-399.000.

ISCO, Inc.: *See*—
Allington, Robert W., 4,659,934, Cl. 250-458.100.

Ishibashi, Masanori, deceased (by Ishibashi, Masayuki, legal representative), to Casio Computer Co., Ltd. Electronic musical instrument. 4,658,691, Cl. 84-1.190.

Ishibashi, Masayuki, legal representative: *See*—
Ishibashi, Masanori, deceased, 4,658,691, Cl. 84-1.190.

Ishida, Katsuhiko; Nojima, Masaharu; and Okamoto, Tosaku, to Kanzaki Paper Manufacturing Co. Ltd. Heat-sensitive recording diazo material with recording sensitizer. 4,659,643, Cl. 430-157.000.

Ishigami, Nobuo: *See*—
Ikematsu, Morio; Wada, Tohru; Nakanishi, Tohru; and Ishigami, Nobuo, 4,658,978, Cl. 251-315.000.

Ishiguro, Toshiaki: *See*—
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Ishii, Masao; and Igi, Keishiro, to Kuraray Company, Ltd. Copolyester film and a hot melt adhesive comprising said film. 4,659,615, Cl. 428-220.000.

Ishii, Takatoshi: *See*—
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Isosport Verbundbautiele Ges. m.b.H.: *See*—
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Isoyama, Toyoshiro: *See*—
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Isshiki, Tomiya; Kijima, Yasuhiko; Miyauchi, Yuh; and Yasunaga, Takayuki, to Mitsubishi Gas Chemical Co., Inc. Process for producing ethylidenediacetate. 4,659,865, Cl. 560-232.000.

Itakura, Toru; Ohara, Yuji; and Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Method of mounting galvanometer and means for mounting same. 4,659,180, Cl. 350-320.000.

Ito, Hirohito: *See*—
Shintani, Yasuo; Sakuma, Kazuhiro; Yabe, Hisashi; and Ito, Hirohito, 4,658,647, Cl. 73-517.00B.

Ito, Hiroshi; and Kimura, Tomohiro, to Canon Kabushiki Kaisha. Imaging holding member. 4,658,756, Cl. 118-652.000.

Ito, Keizo: *See*—
Yoshino, Koichiro; Seko, Norihiko; Yokota, Koichi; Ito, Keizo; and Tsukamoto, Goro, 4,659,726, Cl. 514-365.000.

Ito, Takaaki: *See*—
Uranishi, Koji; Ito, Takaaki; and Tanahashi, Toshio, 4,659,346, Cl. 55-182.000.

Ito, Yuuji; Shibata, Tadahiko; Sakai, Masahiko; Ota, Yukio; Kondo, Naohiko; and Matuyama, Harukazu, to Nippondenso Co., Ltd. Method for making axial-flow filters and apparatus therefor. 4,659,323, Cl. 493-457.000.

Itoh, Eiji: *See*—
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Itoh, Isao: *See*—
Yazaki, Takao; Hattori, Satoru; Hattori, Kazuhide; Matsuno, Takumi; Shibuya, Nobuhiro; Hayama, Kazuhide; and Itoh, Isao, 4,659,618, Cl. 428-317.700.

Itoh, Kenkichi; Matsui, Takao; and Murakami, Toshio, to Osaka Filter Co., Ltd.; and Needs Kiko Co., Ltd. Lift apparatus for lifting cigarette filter plugs. 4,658,950, Cl. 198-577.000.

Itoh, Yasuhiko: *See*—
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Iwasa, Nob T. Color coding cassette. 4,658,960, Cl. 206-459.000.

Iwasa, Yoshio, to Nissan Motor Co., Ltd. Device for controlling supercharging pressure of exhaust gas turbocharger. 4,658,586, Cl. 60-602.000.

Iwase, Nobuo; Anzai, Kazuo; Shinozaki, Kazuo; Tsuge, Akihiko; Saitoh, Kazutaka; Iyogi, Kiyoshi; Sato, Noboru; and Kasori, Mitsuo, to Kabushiki Kaisha Toshiba. Circuit substrate having high thermal conductivity. 4,659,611, Cl. 428-209.000.

Iwata, Kouichi; and Yamashita, Yukinori, to Sumitomo Electric Industries, Ltd. Method for producing carbon fiber reinforced carbon material. 4,659,444, Cl. 204-180.900.

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Jachowski, Ronald E., to Orion Industries, Inc. Duplexer including integral interdigital transmitter and receiver filters and three-quarter wavelength antenna transformer section. 4,660,004, Cl. 333-134.000.

Jackman, Dennis E.; Westphal, Dietmar B.; and Schmidt, Thomas, to Mobay Corporation; and Bayer Aktiengesellschaft. Production of S-substituted isothioureas. 4,659,819, Cl. 544-182.000.

Jackson, David S., to Johnson & Johnson Products, Inc. Chitosan-glycerol-water gel. 4,659,700, Cl. 514-55.000.

Jackson, Garth A.; and Ballard, A. Stevens, to Top Flite Industries, Inc. Storage and selectable display device for sheet media. 4,658,524, Cl. 40-449.000.

Jackson, Jerry L.; and Outen, Johnny B., to Harris Press and Shear, Inc. Oversize bale release mechanism for waste material baler 4,658,719, Cl. 100-218.000.

Jacob, Paravila O., to General Motors Corporation. Method and apparatus for detecting a shorted SCR. 4,659,983, Cl. 324-51.000.

Jacobs, Gary R.; and Haeck, Paul J., to Von Duprin, Inc. Rack and pinion assembly. 4,658,664, Cl. 74-422.000.

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Jacobson, Alan R. Deep water cable laying method using buoyancy materials. 4,659,253, Cl. 405-171.000.

Jacobson, Stephen A. Semi-recumbent bicycle. 4,659,098, Cl. 280-281.0LP.

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Jahnke, Richard W., to Lubrizol Corporation, The. Alkenyl-substituted carboxylic acylating agent/hydroxy terminated polyoxyalkylene reaction products and aqueous systems containing same. 4,659,492, Cl. 252-49.300.

Jalabert, Pierre: *See*—
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Janetzke, Helmut; Kauff, Helmut; and Stocker, Herbert, to Robert Bosch GmbH. System for regulating rotary speed of an internal combustion engine. 4,658,783, Cl. 123-339.000.

Janiaud, Andre M. C., to Tubauto. Articulation of the seat back of a seat for various vehicles. 4,659,146, Cl. 297-367.000.

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Japan Exlan Company, Ltd.: *See*—
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Japan Synthetic Rubber Co., Ltd.: *See*—
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Jarrow Products Inc.: *See*—
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Jarvis, Richard J.; and Jarvis, Stephen A. Apparatus for use in coding spliced film. 4,659,199, Cl. 352-92.000.

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Jenkins, Floyd J. Blocking system for stud buildings. 4,658,556, Cl. 52-317.000.

Jenkins, Jimmy R. Combined hobby cabinet and work bench. 4,659,154, Cl. 312-277.000.

Jenkins, Linda A., to Ciba-Geigy Corporation. Tris (substituted hydroxyphenylthio) trithioorthoester stabilizers for polymers. 4,659,762, Cl. 524-331.000.

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Jevanoff, Andre; and Kresge, Edward N., to Exxon Research & Engineering Co. Bitumenous compositions. 4,659,759, Cl. 524-68.000.

Jewett, David N., to Energy Materials Corporation. System for growth of single crystal materials with extreme uniformity in their structural and electrical properties. 4,659,421, Cl. 156-617.0SP.

Jidosha Kiki Co., Ltd.: *See*—
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Johnescu, Douglas M.; and Johnson, Erlon F., to AMP Incorporated. Coaxial connector with circuit board mounting features. 4,659,156, Cl. 339-17.00C.

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Johnson, Robert R.: *See*—
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Johnson, Roger L. Disaster mitigation gas shut-off device. 4,658,846, Cl. 137-39.000.

Johnson, Ronald F.; and Nicklas, Norman E. Apparatus for implanting implants in cattle. 4,659,326, Cl. 604-62.000.

Johnson, Roy R. Roll up tarp assembly. 4,659,134, Cl. 296-98.000.

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Johnstead, Park L. Drive-line puller. 4,658,488, Cl. 29-259.000.

Johnston, Harry R., to Mega Enterprises, Inc. Clip removing tool. 4,658,489, Cl. 29-268.000.

Johnston, Thomas E.; and Dorer, Casper J., Jr., to Lubrizol Corporation, The. Fuel compositions for lessening valve seat recession. 4,659,338, Cl. 44-68.000.

Johnston, Wilbur D., Jr.; Long, Judith A.; and Wilt, Daniel P., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Semiconductor devices employing Fe-doped MOCVD InP-based layer for current confinement. 4,660,208, Cl. 372-46.000.

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Jones, Conrad D., to Glynwed Consumer & Building Products Limited. Socket-less pipe joints. 4,659,870, Cl. 174-84.00S.

Jones, Hedwig E. Suction head holder for a tracheostomy tube. 4,658,813, Cl. 128-207.140.

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Juengel, Richard O., to GTE Valeron Corporation. Probe having low battery detection/transmission feature. 4,658,509, Cl. 33-558.000.

Juhuku, Hiroki, to Hakushin Kogyo Co., Ltd. Refuse compaction unit. 4,658,717, Cl. 100-126.000.

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Kai, Masami; Kurando, Shigeo; Katafuchi, Toshinobu; Amakawa, Katsumi; and Kajitani, Tetsuji, to Mita Industrial Co., Ltd. Photoconductive drum device for electrostatic copying machines or the like. 4,659,206, Cl. 355-3.0DR.

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Kaiya, Mitsuhiro; Denda, Masaki; Shimada, Masashi; Ohnuki, Hideki; and Ogura, Mineo. Heat-sensitive recording apparatus. 4,660,052, Cl. 346-76.0PH.

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Kalogeros, Robert R., to United Technologies Corporation. Turbine side plate assembly. 4,659,289, Cl. 416-198.00A.

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Kikuchi, Yasunobu: *See—*
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Kikuchi, Yoshiyuki: *See—*
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyosi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, 4,659,744, Cl. 521-32.000.

Killough, Ray B.; Higgins, Alan S.; and Broome, Thomas M., to Piedmont Natural Gas Company. Meter prover. 4,658,634, Cl. 73-3.000.

Kim, Chong Y.: *See—*
Brewer, Jack W.; and Kim, Chong Y., 4,659,667, Cl. 435-222.000.

Kim, Kyong-Min; Smetana, Pavel; and Westdorp, Wolfgang A., to International Business Machines Corporation. Semiconductor crystal growth via variable melt rotation. 4,659,423, Cl. 156-617.0SP.

Kimberly-Clark Corporation: *See—*
Lamers, Gregory C.; Endres, Dan D.; Win, Maung H.; and Kuenn, Cary K., 4,659,609, Cl. 428-194.000.

Kimbrell, James E.; Boyd, Charles H.; Altman, David A.; Sherwood, Donald G.; and Bost, Glenn E., to Westinghouse Electric Corp. Nuclear reactor. 4,659,539, Cl. 376-377.000.

Kimura, Hiroshi: *See—*
Satani, Eiji; Okamoto, Nagaoki; Fritz, James G.; and Kimura, Hiroshi, 4,659,581, Cl. 426-537.000.

Kimura, Kunji: *See—*
Fujii, Hiroshi; Sakamoto, Shunji; and Kimura, Kunji, 4,658,501, Cl. 29-787.000.

Kimura, Shinichi: *See—*
Shimozato, Yasuyuki; Tsuchikawa, Syuji; Kimura, Shinichi; and Noro, Masahiko, 4,659,790, Cl. 526-87.000.

Kimura, Tomohiro: *See—*
Ito, Hiroshi; and Kimura, Tomohiro, 4,658,756, Cl. 118-652.000.

Kinaga, Eiichi; and Shiraishi, Daiichi, to Toyota Jidosha Kabushiki Kaisha. Side door hinge mechanism in motor vehicle. 4,658,475, Cl. 16-367.000.

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Kircher, Dieter; von Gruenberg, Hubertus; Blum, Klaus D.; and Becker, Peter, to Alfred Teves GmbH. Process and apparatus for the control of a brake unit for automotive vehicles. 4,658,939, Cl. 188-156.000.

Kirschke, Ernest J.; and Rothgery, Eugene F., to Olin Corporation. Hydrazine stabilizers for nc propellants. 4,659,403, Cl. 149-36.000.

Kirsten, Rolf: *See—*
Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochim; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., 4,659,364, Cl. 71-92.000.

Kise, Masahiro: *See—*
Enomoto, Hiroshi; Kise, Masahiro; Ozaki, Masakuni; Kitano, Masahiko; and Morita, Iwao, 4,659,734, Cl. 514-255.000.

Kishi, Hajimu; and Tanaka, Kunio, to Fanuc Ltd. Tool radius compensation method for numerically controlled apparatus. 4,659,265, Cl. 409-84.000.

Kishi, Hajimu; and Seki, Masaki, to Fanuc Ltd. Part program creation method. 4,660,148, Cl. 364-474.000.

Kissel, William R.; Sway-Tin, Min; Merchant, Daniel P.; and Frantz, Douglas C., to Chrysler Motors Corporation. Microcomputer controlled electronic alternator for vehicles. 4,659,977, Cl. 320-64.000.

Kissick, Lloyd P. Balance of precision. 4,658,922, Cl. 177-127.000.

Kitagishi, Nozomu, to Canon Kabushiki Kaisha. Zoom lens of reduced total length. 4,659,189, Cl. 350-427.000.

Kitahara, Tsuyoshi, to Nissan Motor Co., Ltd. Air/fuel ratio detecting device and control system using same. 4,658,790, Cl. 123-440.000.

Kitakizaki, Kaoru: *See—*
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,659,885, Cl. 200-144.00B.

Kitamura Iron Works, Ltd.: *See—*
Nakanishi, Yoshiaki, 4,658,471, Cl. 16-224.000.

Kitano, Masahiko: *See—*
Enomoto, Hiroshi; Kise, Masahiro; Ozaki, Masakuni; Kitano, Masahiko; and Morita, Iwao, 4,659,734, Cl. 514-255.000.

Kitaura, Eiji: *See—*
Fukushima, Kiyoto; Takamatsu, Shigeru; and Kitaura, Eiji, 4,659,626, Cl. 428-425.900.

Kiyooka, Katsumi: *See—*
Gamoh, Akira; Miura, Takashi; Sawada, Toshiharu; and Kiyooka, Katsumi, 4,658,778, Cl. 123-195.00C.

Klapprott, Daniel H.; Ku, Hao; and Steichen, Dale S., to Clorox Company, The. Process for synthesizing alkyl monoperoxysuccinic acid bleaching compositions. 4,659,519, Cl. 260-502.00R.

Klaus, Michael; Loeliger, Peter; and Weiser, Harald, to Hoffmann-La Roche Inc. Benzofuranyl (thienyl) propenyl derivatives useful as rodenticides. 4,659,735, Cl. 514-443.000.

Klebovich, Imre: *See—*
Perjes, Istvan; Szporny, Laszlo ; Selmeczi, Andras; Vereczkey, Laszlo ; Klebovich, Imre; Toth, Edit; Hajos, Gyorgy; Torley, Jozsef; Simon, Ferenc; Sarkozy, Peter; and Misley, Attila, 4,659,712, Cl. 514-249.000.

Kleid, Dennis G.; Nayak, Debi P.; and Davis, Alan R., to Univ. of California, Regents of the; and Genentech, Inc. Microbial expression of human influenza hemagglutinin proteins. 4,659,669, Cl. 435-243.000.

Klein, Ernst, to A&A Manufacturing Co., Inc. Self-supporting cable carrier. 4,658,577, Cl. 59-78.100.

Klein, Hans-Christof, to Alfred Teves GmbH. Slip-controlled brake system. 4,659,153, Cl. 303-114.000.

Klein, Wolfgang; and Schneider, Klaus, to Akzo NV. Process for maintaining a charge of a microporous molded article. 4,659,473, Cl. 210-638.000.

Kleinberg, Leonard L., to United States of America, National Aeronautics and Space Administration. Low phase noise oscillator using two parallel connected amplifiers. 4,660,000, Cl. 331-56.000.

Kleinhans, Josef: *See—*
Drews, Ulrich; and Kleinhans, Josef, 4,658,641, Cl. 73-118.200.

Klemm, James R.: *See—*
Soth, J. Michael; and Klemm, James R., 4,659,014, Cl. 239-102.200.

Klemm, Steven R.; and Foote, Michael R., to Amway Corporation. Dispensing pouch containing premeasured laundering compositions. 4,659,496, Cl. 252-90.000.

Klibanov, Alexander M., to Massachusetts Institute of Technology. Enzymatic separation of racemic mixtures of hydroxy compounds. 4,659,671, Cl. 435-280.000.

Klicek, Michael S., to Valleylab, Inc. Electrosurgical generator with improved circuitry for generating RF drive pulse trains. 4,658,820, Cl. 128-303.140.
Kliethermes, Andrew J.: *See*—
Kieffer, Vernon E.; and Kliethermes, Andrew J., 4,658,492, Cl. 29-564.600.
Kliever, Leland B.: *See*—
Falk, John C., and Kliever, Leland B., 4,659,766, Cl. 524-504.000.
Klimetzek, Volker: *See*—
Grobe, Klaus; Klimetzek, Volker; Metzger, Karl G.; Stunkel, Klaus G., and Zeiler, Hans-Joachim, 4,659,603, Cl. 424-88.000.
Klimt, Ulrich: *See*—
Thiel, Rudolph; Klimt, Ulrich; and Bungert, Hans, 4,658,938, Cl. 188-73.380.
Kling, John P.: *See*—
Althouse, Rickie M.; Gurreri, Nicholas L., III; and Kling, John P., 4,659,163, Cl. 339-143.00R.
Klivans, Dean S.: *See*—
Del Mundo, Alfredo R.; and Klivans, Dean S., 4,659,268, Cl. 411-34.000.
Klok, Alexandr B.: *See*—
Yantsen, Ivan A.; Bekishev, Kenes K.; Savchak, Orest G.; Klok, Alexandr B.; Zhanabaev, Tolgat M.; Pakshtas, Mechislav-Valentinas K.; Glotov, Boris N.; Fink, Garold K.; Timkin, Alexei F.; Zorin, Nikolai I.; and Bobylev, Leonid M., 4,658,913, Cl. 173-134.000.
Kluth, Joachim: *See*—
Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochim; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., 4,659,364, Cl. 71-92.000.
KMW Aktiebolag: *See*—
Stenberg, Erik G., 4,659,432, Cl. 162-318.000.
Knapp, Alan G.; and Ellis, Harold W., to U.S. Philips Corporation. Color display apparatus including a CRT with internal switching valve. 4,660,076, Cl. 358-73.000.
Knorr, Andreas: *See*—
Kabbe, Hans-Joachim; Niewohner, Ulrich; Widdig, Arno; Knorr, Andreas; Garthoff, Bernward; and Kazda, Stanislav, 4,659,737, Cl. 514-456.000.
Knowles Chemical Corporation: *See*—
Cheek, Thomas L.; and Schoolcraft, Joe G., 4,658,933, Cl. 187-8.670.
Knud Simonsen Industries Limited: *See*—
Buller-Colthurst, Guy E.; and Jespersen, Knud, 4,658,718, Cl. 100-194.000.
Knutson, Arthur E. Kitchen range safety shutoff. 4,659,909, Cl. 219-452.000.
Kobashi, Toshiyuki; and Takao, Seiji, to Japan Exlan Company, Ltd., and Toyo Boseki Kabushiki Kaisha. Method for the production of high strength polyacrylonitrile fiber. 4,659,529, Cl. 264-182.000.
Kobashi, Toshiyuki; and Naka, Hideo, to Japan Exlan Company, Ltd. Chemically stable colloidal antimony oxide. 4,659,847, Cl. 556-5.000.
Kobayashi, Chiharu: *See*—
Miyazaki, Masayuki; Kudo, Yoshihiko; Takahashi, Seizi; Kobayashi, Chiharu; and Sawaki, Akira, 4,659,208, Cl. 355-8.000.
Kobayashi, Masaharu: *See*—
Okamoto, Hiroo; and Kobayashi, Masaharu, 4,660,200, Cl. 371-37.000.
Kobayashi, Masanori: *See*—
Isao, Matsuura; Kobayashi, Masanori; and Wakatsuki, Akira, 4,659,764, Cl. 524-399.000.
Kobayashi, Mineo; Yoshida, Takeshi; Aoki, Masahiro; Okubo, Masao; and Nagayama, Masaaki, to Nippon Stainless Steel Co. Ltd., and Sumitomo Chemical Co., Ltd. Manufacturing process for plate or forging of ferrite-austenite two-phase stainless steel. 4,659,397, Cl. 148-12.00E.
Kobayashi, Ryuichi: *See*—
Suzuki, Masayuki; Ohara, Tsunemasa; Tosaka, Yoichi; Kobayashi, Ryuichi; Harada, Yoshihito; and Kawamura, Masaharu, 4,659,201, Cl. 354-152.000.
Kobayashi, Shunji: *See*—
Watanabe, Teruoki; Nakamura, Yahiko; Hidaka, Akio; Kobayashi, Shunji; and Nozaki, Hiroyoshi, 4,659,628, Cl. 428-457.000.
Kobe Steel Ltd.: *See*—
Oliphant, Larry J., 4,658,970, Cl. 212-182.000.
Kobyra, Walter B.: *See*—
D'Amelio, Frank D.; Maxfield, Michelle d.; Esposito, Dominick G.; and Kobyra, Walter B., 4,659,195, Cl. 350-574.000.
Koch, Horst: *See*—
Elster, Werner; Koch, Horst; Ost, Gustav; Simon, Werner; Deckelmann, Karl, and Taitl, Ino, 4,659,986, Cl. 324-158.00F
Koch, Rudolf K.; and Affonso, Octavio F. Reversing valve construction and method of making the same. 4,658,851, Cl. 137-15.000.
Kochanowski, Hans A.: *See*—
Absenger, Erich; and Kochanowski, Hans A., 4,658,791, Cl. 123-446.000.
Kochanski, Ronald P.; and Schmidt, Detlef W., to Motorola, Inc. Device with captuvate chip capacitor devices and method of making the same. 4,660,069, Cl. 357-68.000.
Kochesky, Francis K.: *See*—
Bernard, Edward G.; and Kochesky, Francis K., 4,658,755, Cl. 118-610.000.
Kochs Adler, AG: *See*—
Keilmann, Werner; Scholl, Hans; and Raupach, Gunter, 4,658,752, Cl. 112-262.100.
Koeda, Kenji: *See*—
Yoshida, Shigeru; and Koeda, Kenji, 4,658,796, Cl. 123-519.000.
Kogure, Toshiharu; and Masubuchi, Noriaki, to Seiko Seiki Kabushiki Kaisha. Disc clutch mechanism for a magnetic disc apparatus of cartridge type. 4,658,944, Cl. 192-84.0PM.
Kohan, Stanford P.: *See*—
Davis, Cecil J.; Spencer, John E.; Johnson, Randall E.; Jucha, Rhett B.; Brown, Frederick W.; and Kohan, Stanford P., 4,659,413, Cl. 156-345.000.
Koike, Keiichi: *See*—
Shimaguchi, Takashi; Natori, Tatsuo; Watanabe, Akihide; and Koike, Keiichi, 4,659,526, Cl. 264-86.000.
Koike, Kengo: *See*—
Nakagawa, Tanzo; Tanaka, Eiichi; Koike, Kengo; Yoshida, Hiromi; and Yoshida, Hiroshi, 4,659,722, Cl. 514-332.000.
Koike, Kiichi: *See*—
Suzuki, Yoshie; Koike, Kiichi; Kadowaki, Minoru; and Yoshinaka, Minoru, 4,659,636, Cl. 429-54.000.
Koizumi, Yukio; and Miyazawa, Hiroshi, to Kabushiki Kaisha Kobe Seiko Sho. Method for stretching and folding extension jib in wheeled type crane. 4,658,972, Cl. 212-270.000.
Kolar, Cenek: *See*—
Thiem, Joachim; Deger, Hans-Matthias; Kolar, Cenek; and Kreuzer, Matthias, 4,659,810, Cl. 536-22.000.
Kolarik, Zdenek; and Schuler, Robert, to Kernforschungszentrum Karlsruhe GmbH. Process for separation of neptunium from an organic phase in the recovery of irradiated fuel and/or fertile materials. 4,659,551, Cl. 423-10.000.
Kolbenschmidt Aktiengesellschaft: *See*—
Sander, Wilfried; Mielke, Siegfried; and Eschenweck, Dieter, 4,658,706, Cl. 92-213.000.
Kole, Johannus W. G.: *See*—
Nellen, Johannes H. M., Siegers, Frans; Otten, Johannes H. B.; and Kole, Johannus W. G., 4,660,139, Cl. 363-68.000.
Koletar, Gabor I.: *See*—
Platzer, Stephan J. W.; Koletar, Gabor I.; and Shadrach, Richard L., 4,659,642, Cl. 430-143.000.
Kolk, Howard A.; and Kolk, Robert D., to Mechanical Transplanter. Machine for forming wire arches, and installing the ends of the arches in the ground. 4,658,538, Cl. 47-1.00R.
Kolk, Robert D.: *See*—
Kolk, Howard A.; and Kolk, Robert D., 4,658,538, Cl. 47-1.00R.
Komatsu Zenoah Co.: *See*—
Gamoh, Akira; Miura, Takashi; Sawada, Toshiharu; and Kiyooka, Katsumi, 4,658,778, Cl. 123-195.00C.
Komine, Shigeo: *See*—
Kato, Mikihiko; Komine, Shigeo; and Morita, Kazuhiko, 4,660,119, Cl. 360-133.000.
Kompanek, Harry W.; Ligman, James R.; and Plambeck, Eric D., to Piezo Sona-Tool Corporation. Downhole transducer systems. 4,658,897, Cl. 166-249.000.
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, to Hoffmann-La Roche Inc. Intermediates for benzylpyrimidines. 4,659,818, Cl. 544-163.000.
Komukai, Shigemi: *See*—
Yamashita, Kazuhisa; Shibata, Yoshio; and Komukai, Shigemi, 4,660,153, Cl. 364-513.500.
Komura, Makoto: *See*—
Sugiyama, Hiroyuki; Takahashi, Nobuaki; Shibamoto, Takeshi; Nishikawa, Kazunori; Ueno, Shoji; Komura, Makoto; and Shichijo, Shunichi, 4,660,099, Cl. 358-342.000.
Sugiyama, Hiroyuki; Takahashi, Nobuaki; Shibamoto, Takeshi; Nishikawa, Kazunori; and Komura, Makoto, 4,660,100, Cl. 358-342.000.
Kondo, Hiroatsu; and Yamamoto, Yasukiyo, to I. M. Electronics Co., Ltd. Magnetic card discriminator. 4,659,914, Cl. 235-380.000.
Kondo, Kiyosi: *See*—
Matsui, Kiyohide; Kikuchi, Yoshiyuki; Hiyama, Tamejiro; Tobita, Etsuko; Kondo, Kiyosi; Akimoto, Akira; Seita, Toru; and Watanabe, Hiroyuki, 4,659,744, Cl. 521-32.000.
Kondo, Naohiko: *See*—
Ito, Yuuji; Shibata, Tadahiko; Sakai, Masahiko; Ota, Yukio; Kondo, Naohiko; and Matuyama, Harukazu, 4,659,323, Cl. 493-457.000.
Kondo, Noriyuki: *See*—
Kikkawa, Atsushi; Kondo, Noriyuki; and Tamada, Atsushi, 4,659,936, Cl. 250-560.000.
Kondo, Shiro; and Sawada, Kenji, to Alps Electric Co., Ltd. Composite switch. 4,659,880, Cl. 200-5.00R.
Kondo, Shizuo: *See*—
Ogura, Setsuo; Kondo, Shizuo; Minamimura, Eiji; and Furihata, Makoto, 4,659,947, Cl. 307-466.000.
Konig, Gerd: *See*—
Springer, Hartmut; and Konig, Gerd, 4,659,856, Cl. 558-26.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Maekawa, Yoshikazu, 4,659,207, Cl. 355-8.000.
Metoki, Iku; Suzuki, Akio; Yoshida, Eiji; Sato, Kiyoshi; and Hosaka, Masumi, 4,659,654, Cl. 430-567.000.
Miyazaki, Masayuki; Kudo, Yoshihiko; Takahashi, Seizi; Kobayashi, Chiharu; and Sawaki, Akira, 4,659,208, Cl. 355-8.000.
Watanabe, Masato; Tanaka, Yasuhiko; and Murakami, Kiyotaka, 4,660,057, Cl. 346-140.00R.
Konnai, Makoto: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Shimizu, Kuniaki; Urushibata, Ikumi; and Kajiwara, Ikuo, 4,659,371, Cl. 71-103.000.

Koano, Kazuhiko; Araki, Koichi; Ikeda, Kaoru; Endo, Keiji; and Hikido, Mitsuru, to Mitsubishi Petrochemical Co., Ltd. Herbicidal 2-chloro-2'-fluoroalkoxyacetanilides. 4,659,365, Cl. 71-92.000.
Koot, Bastiaan C. M., to Hydrowega Consulting BV. Amphibian vehicle for shallow water. 4,658,751, Cl. 114-270.000.
Kopunek, Thomas V.: *See*—
Bennett, Douglas D.; Welsh, Richard E.; Hammesfahr, Paul D.; Francis, Earl C.; and Kopunek, Thomas V., 4,659,327, Cl. 604-135.000.
Koranek, David J., to Dow Chemical Company, The. Preparation of tetrachloropyridine. 4,659,835, Cl. 546-345.000.
Korenek, Albert H. Tree moving apparatus. 4,658,518, Cl. 37-2.00R.
Kornely, Michael, to Grumman Aerospace Corporation. Self balancing electric hoist. 4,658,971, Cl. 212-159.000.
Koseki, Ryoji: *See*—
Osada, Hidenori; and Koseki, Ryoji, 4,660,209, Cl. 372-58.000.
Kosonocky, Walter F.: *See*—
Savoye, Eugene D.; Kosonocky, Walter F.; and Wallace, Lloyd F., 4,658,497, Cl. 29-572.000.
Koster, Hans; and Weiler, Horst, to Sebs-Dynatronic, Mess - und Ortungstechnik GmbH. Fire-preventive housing for line delay measuring apparatus. 4,660,126, Cl. 361-392.000.
Kotraro, Reuven: *See*—
Perry, Mordechai; Kotraro, Reuven; Linder, Charles; and Aviv, Gershon, 4,659,474, Cl. 210-638.000.
Kottemann, William J. Orthodontic archwire. 4,659,310, Cl. 433-20.000.
Kotwica, Roland, to Societe Chimiques des Charbonnages. Concentrating and dehydrating apparatus for maleic anhydride. 4,659,433, Cl. 202-173.000.
Kouji, Yamamoto: *See*—
Hitoshi, Yamazaki; Takao, Takeda; Shizuo, Nakano; Kouji, Yamamoto; Hiroshi, Ito; and Jun, Imai, 4,659,962, Cl. 313-493.000.
Koumoto, Teruo: *See*—
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Kouyama, Toshitaka: *See*—
Katto, Takayuki; Tada, Masahito; Kouyama, Toshitaka; and Iizuka, Yo, 4,659,789, Cl. 525-537.000.
Kovara, Joseph N.: *See*—
Ceccon, Claude R.; Kovara, Joseph N.; and Mioduski, Paul C., 4,660,141, Cl. 364-200.000.
Koyama, Hiroyasu: *See*—
Takahashi, Toshihiro; Sueda, Noriyoshi; Tsuji, Masahiro; Tahara, Yoshiyuki; Koyama, Hiroyasu; Suzuki, Yoshikuni; Nagase, Masao; and Sugai, Toshiji, 4,659,833, Cl. 546-142.000.
Koyama, Katsuhide: *See*—
Fujiwara, Shigemi; Koyama, Katsuhide; and Kageyama, Hiroshi, 4,659,929, Cl. 250-327.200.
Koyama, Kenichi: *See*—
Onishi, Toshitada; Tateishi, Hiroshi; Koyama, Kenichi; Saito, Shigeo; and Nagata, Masayuki, 4,659,007, Cl. 228-156.000.
Koyama, Shigeo; and Sakamoto, Katsuyoshi, to Amada Company, Limited. Bending machine and a die changing system for such bending machine. 4,658,625, Cl. 72-322.000.
Koyama, Shunsaku: *See*—
Mitsuhashi, Masakazu; and Koyama, Shunsaku, 4,659,569, Cl. 424-49.000.
Kraatz, Udo: *See*—
Buchel, Karl H.; Kraatz, Udo; Stetter, Jorg; Reinecke, Paul; and Brandes, Wilhelm, 4,659,723, Cl. 514-341.000.
Kraemer, Ulrich: *See*—
Dellinger, Juergen; Kraemer, Ulrich; Schlieske, Rainer; and Wohlers, Heinz, 4,659,041, Cl. 224-139.000.
Hoeppner, Hans-Jochen; Kraemer, Ulrich; and Soelter, Michael, 4,659,038, Cl. 244-49.000.
Kraft, Wayne R.: *See*—
Moore, Victor S.; Kraft, Wayne R.; and Rhodes, Joseph C., Jr., 4,660,171, Cl. 364-900.000.
Kramer, Daniel E.: *See*—
Giberson, Wayne F.; Estep, Glenn T.; and Kramer, Daniel E., 4,658,602, Cl. 62-515.000.
Kramer, Karl C.: *See*—
Meinhold, James F.; Musto, Joseph A.; Kramer, Karl C.; and Gottesman, Martin, deceased, 4,659,577, Cl. 426-387.000.
Kramer, Monta L. Frame for tensioning and supporting textiles for needlework. 4,658,522, Cl. 38-102.910.
Kramer Trenton Co.: *See*—
Giberson, Wayne F.; Estep, Glenn T.; and Kramer, Daniel E. (said Giberson and Estep assors. to), 4,658,602, Cl. 62-515.000.
Krasicki, Eugene T., to Westinghouse Electric Corp. Method and apparatus for detecting a braze melt. 4,659,896, Cl. 219-85.0BM.
Krasnov, Igor: *See*—
Goris, Gregg A.; and Krasnov, Igor, 4,658,915, Cl. 175-57.000.
Kratzer, Otto: *See*—
Bott, Kaspar; Kaibel, Gerd; Hoffmann, Herwig; Irmich, Rudolf; and Kratzer, Otto, 4,659,866, Cl. 564-137.000.
Kraus, Charles E., to Excelermatic Inc. Traction roller transmission with fixed transmission ratio. 4,658,674, Cl. 74-798.000.
Kraus, Constantine R. No answer mode for telephone systems. 4,660,220, Cl. 379-210.000.
Krause, Lee; Szalanski, Scott; and Bechler, David J., to Rexnord Inc. Guard rings for vertical shaft impact crusher. 4,659,026, Cl. 241-275.000.
Kreitzer, Melvyn H., to Vivitar Corporation. Zoom lens. 4,659,188, Cl. 350-427.000.
Krepski, Larry R.: *See*—
Katritzky, Alan R.; Heilmann, Steven M.; Krepski, Larry R.; Rasmussen, Jerald K.; and Tarr, Richard D., 4,659,801, Cl. 528-226.000.
Kresge, Edward N.: *See*—
Jevanoff, Andre; and Kresge, Edward N., 4,659,759, Cl. 524-68.000.
Kretschmer, Sylvain: *See*—
Lacotte, Jean-Pierre; Kretschmer, Sylvain; Oprandi, Pierre; and Broussaud, Georges, 4,659,407, Cl. 156-196.000.
Kreuzer, Matthias: *See*—
Thiem, Joachim; Deger, Hans-Matthias; Kolar, Cenek; and Kreuzer, Matthias, 4,659,810, Cl. 536-22.000.
Krueger, Inc.: *See*—
Holton, Lawrence C., 4,658,735, Cl. 108-131.000.
Krupp Stahl Aktiengesellschaft: *See*—
Heller, Wilhelm; Weber, Lutz; Schweitzer, Reinhard; and Flugge, Jurgen, 4,659,398, Cl. 148-12.00R.
Kryscyk, Robert: *See*—
Stuhrmann, Heinz; and Kryscyk, Robert, 4,659,102, Cl. 280-481.000.
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Kalogeros, Robert R.; and Chaplin, Gary F., 4,659,285, Cl. 416-95.000.
Kalogeros, Robert R., 4,659,289, Cl. 416-198.00A.
Niessen, Frank R.; and Schneider, Roy W., 4,659,283, Cl. 416-34.000.
Nighan, William L.; Tittel, Frank K.; and Wilson, William L., Jr., 4,660,210, Cl. 372-60.000.

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Unitika Ltd.: *See*—
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Univ. of California, Regents of the: *See*—
Kleid, Dennis G.; Nayak, Debi P.; and Davis, Alan R., 4,659,669, Cl. 435-243.000.

University of California, The Regents of the: *See*—
Lehrer, Robert I.; and Selsted, Michael E., 4,659,692, Cl. 514-12.000.

University of Michigan, Regents of: *See*—
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University of Vermont and State Agricultural College, The: *See*—
Fives-Taylor, Paula; and Novotny, Charles P., 4,659,561, Cl. 424-48.000.

Unjo, Naoki; and Fuke, Takamichi, to Alps Electric Co., Ltd. Motor air gap bearing arrangement. 4,659,952, Cl. 310-90.000.

Uno, Nobuyoshi; Isa, Takayoshi; Kurata, Eijiro; and Tamasaki, Hidetoshi, to Nippon Steel Corporation; and Nippon Steel Bolten Co., Ltd. Prefastenable torque-shear bolt. 4,659,267, Cl. 411-5.000.

Unterborn, Ralph D.: *See*—
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Unterstein, Klaus, to Rheinmetall GmbH. Wing deploying system comprising an airbag. 4,659,037, Cl. 244-3.280.

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Uranishi, Koji; Ito, Takaaki; and Tanahashi, Toshio, to Toyota Jidosha Kabushiki Kaisha. Device for preventing fuel vapor from escaping to the outside air from a fuel tank. 4,659,346, Cl. 55-182.000.

Urbanic, John M.: *See*—
Brouwer, Nicholaas L.; Urbanic, John M.; and Anderson, Albert R., 4,659,234, Cl. 374-121.000.

Urbush, Richard L.: *See*—
Andis, Matthew L.; Urbush, Richard L.; and Maddocks, Thomas C., 4,659,907, Cl. 219-370.000.

Urquhart, John; and Theeuwes, Felix, to ALZA Corporation. Oral delivery system comprising a plurality of tiny pills for delivering drug in the stomach and intestine. 4,659,558, Cl. 424-470.000.

Urushibata, Ikumi: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Shimizu, Kuniaki; Urushibata, Ikumi; and Kajiwara, Ikuo, 4,659,371, Cl. 71-103.000.

Usher, Thomas C., to Polydex Pharmaceuticals Ltd. Cosmetic preparations comprising novel elastin derivatives. 4,659,740, Cl. 514-773.000.

USM Corporation: *See*—
Morse, Albert I.; and Martin, John F., 4,659,420, Cl. 156-556.000.

Ustin, George; and Soltis, Andrew P., to North American Philips Corporation. Dead front terminal block assembly. 4,659,169, Cl. 339-198.00R.

USV Pharmaceutical Corporation: *See*—
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Utah Medical Products, Inc.: *See*—
Wallace, William D., 4,658,829, Cl. 128-672.000.

Vacca, Alberto; and Vallarino, Angelo, to Minnesota Mining and Manufacturing Company. Photosensitive silver halide material for obtaining half-tone black-and-white images and method for half-tone high-contrast reproduction. 4,659,647, Cl. 430-264.000.

Vahlenkamp, Hans H.; and Calabrese, Frank A., to BASF Corporation. Phthalic anhydride process and product. 4,659,842, Cl. 549-247.000.

Valdes, Guillermo A. Landing gear drive system. 4,659,039, Cl. 244-103.500.

Valdes, Osvaldo J. Hydroelectric switch for controlling electric motor driven pump. 4,659,291, Cl. 417-44.000.

Valentine, Peter Z.; Vitaliano, Franco; and Smith, Ivor S., to Valentine, Peter Z. Construction of handbar for runners. 4,659,076, Cl. 272-93.000.

Vali, Enn, to Westinghouse Canada Inc. Pattern tracer with dual scan slowdown circuit. 4,659,918, Cl. 250-202.000.

Valkovich, Phillip B.; and Chou, Kechia J., to Texaco Inc. Lubricating oil containing a polymer having a functionalized backbone which contains an electron withdrawing group. 4,659,491, Cl. 252-47.500.

Vallarino, Angelo: *See*—
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Valleylab, Inc.: *See*—
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Klicek, Michael S., 4,658,820, Cl. 128-303.140.

Vallourec: *See*—
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Valmet Oy: *See*—
Hannukainen, Hannu, 4,658,908, Cl. 172-10.000.

van Aalst, Gerhardt, to Cyclonaire Bulk Cargo Systems, Inc. Mobile self contained pneumatic conveying system. 4,659,262, Cl. 406-29.000.

Van Bibber, Patrick: *See*—
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van den Brink, Hendrikus G. Device for conveying chickens to a slaughtering plant. 4,658,476, Cl. 17-11.000.

van der Meer, Roelof, to General Electric Company. Polymer mixture comprising a polyphenylene ether and a polyamide. 4,659,760, Cl. 524-141.000.

Vanderveer, Fred: *See*—
Straka, Robert; Ross, Robert E.; and Vanderveer, Fred, 4,659,303, Cl. 425-376.00R.

Van de Velde, Jean-Claude; Leroy, Yves; and Mamouni, Ahmed, to Centre National de la Recherches Scientifique. Microwave apparatus and method of operation to determine position and/or speed of a movable body or discontinuity or change in a material. 4,659,982, Cl. 324-77.00G.

Van Ee, Gary R.: *See*—
Ledebuhr, Richard L.; and Van Ee, Gary R., 4,659,013, Cl. 239-8.000.

van Gerwen, Petrus J.: *See*—
Claasen, Theodoor A. C. M.; Beenker, Gerardus F. M.; van Gerwen, Petrus J.; Meijer, Johannes M.; and Didden, Martinus L. N., 4,660,216, Cl. 375-58.000.

VanGinhoven, Robert M., to New Holland Inc. Signal device for bale forming machine. 4,658,573, Cl. 56-341.000.

Van Klompenburg, Mario, to Rolscreen Company. Field installable rolling screen assembly. 4,658,879, Cl. 160-271.000.

VanLierop, John G. M., to 554072 Ontario Inc. Scissor jack. 4,659,066, Cl. 254-122.000.

Vanover, Ron: *See*—
Clark, Jeffrey; Finger, David; Vanover, Ron; and Egan, Mike, 4,659,288, Cl. 416-186.00R.

van Roosmalen, Johannes H. T., to U.S. Philips Corporation. Display tube. 4,659,964, Cl. 315-3.000.

Varghese, Philip; and Whitehurst, Darrell D., to Mobil Oil Corporation. Hydrocracking of heavy feeds plus light fractions with dispersed dual function catalyst. 4,659,454, Cl. 208-111.000.

Vasta, Joseph A., to E.I. Du Pont de Nemours and Company. Coating composition of an amine polymer and a blocked polyisocyanate. 4,659,770, Cl. 524-553.000.

Vasudev, Prahalad K., to Hughes Aircraft Company. Selective area double epitaxial process for fabricating silicon-on-insulator structures

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for use with MOS devices and integrated circuits. 4,659,392, Cl. 148-1.500.

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Veber, Daniel F.; and Freidinger, Roger M., to Merck & Co., Inc. Novel cyclic Hexapeptide LHRH antagonists. 4,659,691, Cl. 514-11.000.

Veillette, Gaston; and Giroux, Claude. Automatic flood control valve. 4,659,063, Cl. 251-68.000.

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Vepa Aktiengesellschaft: *See*—
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Verble, Patrick R., to North American Roofing Company, Inc. Apparatus for attaching roofing membrane to a structure. 4,658,558, Cl. 52-410.000.

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Verstraeten, Alexander J., to Funderingstechnieken Verstraeten B.V. Method for making a hole in the ground, and hollow body open at the lower and upper sides and adapted for use in this method. 4,659,257, Cl. 405-248.000.

Vespoli, Nancy P.: *See*—
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Vetco Gray Inc.: *See*—
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Vignon, Louis, to Heberlein Hispano S.A. Apparatus for the production of wrapped yarn. 4,658,574, Cl. 57-5.000.

Villani, Frank J.; and Wong, Jesse K., to Schering Corporation. Antihistaminic 8-(halo)-substituted 6,11-dihydro-11-(4-pipendylidene)-5H-benzo[5,6]cyclohepta[1,2-b]pyridines. 4,659,716, Cl. 514-290.000.

Vincent, David, to Vent-Axia Limited. Remote speed controller for a motor. 4,659,975, Cl. 318-814.000.

Vinci, James N., to Lubrizol Corporation, The. Metal working using lubricants containing basic alkaline earth metal salts. 4,659,488, Cl. 252-33.000.

Vink, Walter: *See*—
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Vitale, Joseph, to Perfect Fit Industries. Ultrasonically bonded nonwoven fabric. 4,659,614, Cl. 428-218.000.

Vitaliano, Franco: *See*—
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Vlasich, Richard J., to Alcon Laboratories, Inc. Metering dispenser for viscous compositions. 4,658,993, Cl. 222-390.000.

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von Meyerinck, Wolfgang; and von Meyerinck, Dietz, 4,658,874, Cl. 141-387.000.

von Meyerinck, Wolfgang; and von Meyerinck, Dietz. Fueling system, in particular for aircraft fueling. 4,658,873, Cl. 141-387.000.

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Wall Patent S.A.: *See*—
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Wallace, Neil M.; and ten Houte de Lange, Jacobus A. M., to Flexibox Limited. Mechanical seals. 4,659,092, Cl. 277-5.000.

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Wallgren, Linus E.; Fridman, Robert; and Siegel, William J., to Pace, Incorporated. Apparatus for replacement of through-hole mounted PCB components. 4,659,002, Cl. 228-8.000.

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Walter, John, to Continental Can Company, Inc. Method and apparatus for making a sealing lip for lid on thermoformed container. 4,659,405, Cl. 156-69.000.

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Watanabe, Hiroshi: *See*—
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Watanabe, Hiroyuki: *See*—
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Watanabe, Masato; Tanaka, Yasuhiko; and Murakami, Kiyotaka, to Konishiroku Photo Industry Co., Ltd. Heater power controller for ink jet printer. 4,660,057, Cl. 346-140.00R.

Watanabe, Teruoki; Nakamura, Yahiko; Hidaka, Akio; Kobayashi, Shunji; and Nozaki, Hiroyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Method of presubstrate treatment for painting utilizing a gas soft nitriding. 4,659,628, Cl. 428-457.000.

Watanabe, Toru, to Kabushiki Kaisha Toshiba. Apparatus for carrying out dry etching. 4,659,449, Cl. 204-298.000.

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Watkins, Charles W., to Tuftco Corporation. Needle plate member for a staggered needle tufting machine. 4,658,739, Cl. 112-80.300.

Watson, Keith G.; and Farquharson, Graeme J., to ICI Australia Limited. Herbicidal 5-pyrimidylcyclohexan-1,3-dione derivatives. 4,659,362, Cl. 71-92.000.

Watson, Nigel S. Knock-down outdoor coaster. 4,659,049, Cl. 248-346.100.

Watt-Smith, Stephen R., to Dentsply, Ltd. Anesthetic methods for mammals. 4,659,714, Cl. 514-260.000.

Wean, Ellis. Training mouthpiece for brass instruments. 4,658,697, Cl. 84-465.000.

Weaver, David O., to D. O. Weaver and Company. Skin preparatory composition for use with electrocardiograph and electroencephalograph monitoring electrodes. 4,658,826, Cl. 128-640.000.

Weaver, Lloyd E. Pressurized downdraft gasifier. 4,659,340, Cl. 48-76.000.

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Wegner, Christian; and Waniczek, Helmut, to Bayer Aktiengesellschaft. Ignition improvers for fuel mixtures. 4,659,335, Cl. 44-53.000.

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Weinblatt, Lee S. Eyeglass-frame-mounted eye-movement-monitoring apparatus. 4,659,197, Cl. 351-210.000.

Weinblatt, Lee S. Survey technique for readership of publications. 4,659,314, Cl. 434-236.000.

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Yeager, Robert E.; Harder, Isaac E.; and Stone, Earl L., III, to LTV Aerospace & Defense Company. Hybrid and unidirectional carbon-

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carbon fiber reinforced laminate composites. 4,659,624, Cl. 428-408.000.

Yeh, Jen-Jye: *See*—
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Yeo, Clarence: *See*—
Shafer, Donald A.; Walker, Ronald; and Yeo, Clarence, 4,659,446, Cl. 204-212.000.

Yereance, Robert A.: *See*—
Barncks, Mary S.; and Yereance, Robert A., 4,660,039, Cl. 342-27.000.

Yilgor, Iskender: *See*—
Riffle, Judy S.; and Yilgor, Iskender, 4,659,777, Cl. 525-100.000.

Yogo, Kenji; and Nomura, Isshi, to Aisin Seiki Kabushiki Kaisha. Turbocharger control system. 4,658,798, Cl. 123-559.000.

Yokohama Rubber Co., Ltd.: *See*—
Yamamoto, Hideto, 4,659,417, Cl. 156-405.100.

Yokoi, Katsuyuki, to Canon Kabushiki Kaisha. Liquid jet recording head. 4,660,056, Cl. 346-140.00R.

Yokoi, Masakatsu: *See*—
Yoshimoto, Takeshi; Tsuda, Masanari; Masuda, Yoshikazu; and Yokoi, Masakatsu, 4,660,094, Cl. 358-285.000.

Yokoiwa, Sumiharu: *See*—
Yorinaga, Muneo; Yokoiwa, Sumiharu; and Yamaguchi, Hiroaki, 4,658,650, Cl. 73-654.000.

Yokoo, Akio: *See*—
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Yokota, Kazunori: *See*—
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Yokota, Koichi: *See*—
Yoshino, Koichiro; Seko, Norihiko; Yokota, Koichi; Ito, Keizo; and Tsukamoto, Goro, 4,659,726, Cl. 514-365.000.

Yokote, Yoshiharo, to NSK-Warner K.K. Automatic seat belt system. 4,659,107, Cl. 280-804.000.

Yokoyama, Shotaro; and Nishibe, Takashi, to Fuji Electric Corporate Research & Development Co. Ltd.; and Fuji Elec. Co. Ltd. Automatic focusing apparatus. 4,659,205, Cl. 354-408.000.

Yomoda, Minoru: *See*—
Sato, Mitsuya; and Yomoda, Minoru, 4,659,227, Cl. 356-401.000.

Yonetani, Yukio: *See*—
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Yorinaga, Muneo; Yokoiwa, Sumiharu; and Yamaguchi, Hiroaki, to Nippondenso Co., Ltd. Vibration and acoustic wave detecting device employing a piezoelectric element. 4,658,650, Cl. 73-654.000.

York, Billie M., Jr.: *See*—
DuPriest, Mark T.; and York, Billie M., Jr., 4,659,733, Cl. 514-436.000.

Yoshida, Eiji: *See*—
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Yoshida, Hiroshi, to Yoshida Kogyo K. K. Method of and apparatus for manufacturing molded slide fastener coupling elements. 4,659,301, Cl. 425-129.00R.

Yoshida, Hiroshi: *See*—
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Yoshida Kogyo K. K.: *See*—
Yoshida, Hiroshi, 4,659,301, Cl. 425-129.00R.

Yoshida Kogyo K.K.: *See*—
Morioka, Kottsu; and Kusayama, Masahiro, 4,658,480, Cl. 24-389.000.

Yoshida, Shigeru; and Koeda, Kenji, to Aisan Industry Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. System for preventing loss of fuel due to evaporation. 4,658,796, Cl. 123-519.000.

Yoshida, Takeshi: *See*—
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Yoshimoto, Takeshi; Tsuda, Masanari; Masuda, Yoshikazu; and Yokoi, Masakatsu, to Dainippon Screen Seizo Kabushiki Kaisha. Method for focus adjustment of a picture scanning and recording system. 4,660,094, Cl. 358-285.000.

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Yoshinari, Osamu, Kawakatsu, Yoshifumi; Takahashi, Hayashi; and Fukuizumi, Hideaki, to Toho Beslon Co., Ltd. Acrylic fibers for producing preoxidized fibers. 4,659,623, Cl. 428-395.000.

Yoshinari, Takashi: *See*—
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Yoshino, Koichiro; Seko, Norihiko; Yokota, Koichi; Ito, Keizo; and Tsukamoto, Goro, to Kanebo, Ltd. Novel 4,5-Bis (4-methoxyphenyl)-2-(pyrrol-2-yl) thiazoles and pharmaceutical composition containing the same. 4,659,726, Cl. 514-365.000.

Yoshino, Toshihiko; and Tomita, Yasuo, to Canon Kabushiki Kaisha. Light signal reading method and apparatus using interference between two light beams of different frequency and polarization. 4,660,187, Cl. 369-13.000.

Yoshioka, Nobuyuki; Okunishi, Yasuji; Miura, Yasuhisa; Mori, Yoshikazu; Kataoka, Yasuki; and Adachi, Eiichi, to Dainippon Ink and Chemicals, Inc. Agricultural and horticultural guanidine-type fungicide and process for production thereof. 4,659,739, Cl. 514-555.000.

Young, Jing J.; and Stuart, Richard L., to Regency Electronics, Inc. Digital modulation method for standard broadcast FM subcarrier. 4,660,193, Cl. 370-11.000.

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Yu, Oliver T., to Microtel Limited. Stroke-vector character generator. 4,660,028, Cl. 340-739.000.

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Zebuhr, William H., to American Thermal Corporation. Pressure transfer fluid heater. 4,658,760, Cl. 122-13.00R.

Zeeh, Bernd; Ammermann, Eberhard; Buschmann, Ernst; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Fungicidal alpha-azolylglycols. 4,659,705, Cl. 514-184.000.

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Zeller, Bary L.; McKay, Randal P.; and Saleeb, Fouad Z., to General Foods Corporation. Method and manufacture for moisture-stable, inorganic, microporous saccharide salts. 4,659,390, Cl. 127-29.000.

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Zetlmeisl, Michael J.: *See*—
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Zinylek, Theodore, Jr. Safety bar. 4,659,105, Cl. 280-748.000.

Ziedonis, Janis G.: *See*—
Hochberg, Howard M.; Schmalzbach, Edwin L.; and Ziedonis, Janis G., 4,658,825, Cl. 128-634.000.

Zielke, Klaus: *See*—
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Zilske, Wolfgang: *See*—
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Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmermann. Insulating jug or bottle having a closing member carrying a sealing member. 4,658,973, Cl. 215-13.00R.

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Zinck, Eugen. Apparatus and process for treating soil used for cultivation. 4,658,738, Cl. 111-7.200.

Zingher, Oded, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Arrangement for determination and evaluation of ink measuring strips on a printed sheet on a measuring table by a densitometer. 4,660,158, Cl. 364-523.000.

Zondler, Helmut: *See*—
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Zorin, Nikolai I.: *See*—
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Zotos International Inc.: *See*—
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Zwarts, Cornelis M. G., to Canadian Patents and Development Limited. Three-terminal negative admittance network. 4,660,001, Cl. 331-115.000.

554072 Ontario Inc.: *See*—
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF APRIL, 1987

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barato, Paolo, to Maschio S.p.A. Farming implement particularly for row cultivation. Re. 32,405, Cl. 172-5.000.

Bobier, Wilfred S., to Dana Corporation. Fluid device having interchangeable displacement control means. Re. 32,403, Cl. 92-12.200.

Cantrell Machine Co., Inc.: *See*—
Graham, Johnny R.; and Graham, Kenneth Z., Re. 32,402, Cl. 17-45.000.

Dana Corporation: *See*—
Bobier, Wilfred S., Re. 32,403, Cl. 92-12.200.

Ferris, Loren B. Elevator with power recovery. Re. 32,404, Cl. 187-100.000.

General Electric Company: *See*—
Molari, Richard Edgar, Jr., Re. 32,406, Cl. 428-412.000.

Graham, Johnny R.; and Graham, Kenneth Z., to Cantrell Machine Co., Inc. Rotary viscera harvester. Re. 32,402, Cl. 17-45.000.

Graham, Kenneth Z.: *See*—
Graham, Johnny R.; and Graham, Kenneth Z., Re. 32,402, Cl. 17-45.000.

Maschio S.p.A.: *See*—
Barato, Paolo, Re. 32,405, Cl. 172-5.000.

Molari, Richard Edgar, Jr., to General Electric Company. Impact resistant soft coated laminates and process for making the same. Re. 32,406, Cl. 428-412.000.

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Acufex Microsurgical, Inc.: *See*—
Honkanen, George P., 289,437, Cl. D24-27.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Morrison, David W.; and Samson, Wilfred J., 289,434, Cl. D24-24.000.

American Sporting Goods Corp.: *See*—
Turner, Jerome A., 289,341, Cl. D2-322.000.

Andersson, Kjell, to Tetra Pak International Aktiebolag. Pallet. 289,457, 4-21-87, Cl. D34-38.000.

Arato, Paul T., to Klein, Colleen J. Table top mirror. 289,346, 4-21-87, Cl. D6-310.000.

Arita, Toyomi: *See*—
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Arnold, Rose L.: *See*—
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Arteco Electronics Limited: *See*—
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Ashby, Harold A.; Binder, J. Morris; and Drummond, Archie G., Jr., to Tone Brothers, Inc. Bottle or similar article. 289,377, 4-21-87, Cl. D9-378.000.

Atelje Christian AB: *See*—
Wessfeldt, Jerker, 289,358, Cl. D7-152.000.

B-Woodie Limited: *See*—
Nicholson, Woodroe C., 289,372, Cl. D8-359.000.

Bass, Christopher J. Combined key chain and container opener. 289,364, 4-21-87, Cl. D8-34.000.

Bellini, Mario, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic keyboard musical instrument. 289,411, 4-21-87, Cl. D17-1.000.

Bellini, Mario, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic keyboard musical instrument. 289,412, 4-21-87, Cl. D17-1.000.

Bertani, Alberto, to Elesa S.P.A. Handwheel and pivoting handle therefor. 289,370, 4-21-87, Cl. D8-309.000.

Best Lock Corporation: *See*—
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Bigelow, Charles A.; and Holmes, Kris A. Typeface design. 289,421, 4-21-87, Cl. D18-24.000.

Bigelow, Charles A.; and Holmes, Kris A. Typeface. 289,422, 4-21-87, Cl. D18-24.000.

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Bio-Plas, Inc.: *See*—
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Bird Chef Co., Inc., The: *See*—
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Boardman, Robert K.: *See*—
Luyk, Harley E.; Boardman, Robert K.; Dahlgren, Jean E.; and Voigt, Christine J., 289,459, Cl. D34-21.000.

Bodfish, Nigel F., to Gill-Mentor Limited. Kitchen knife handle. 289,357, 4-21-87, Cl. D7-152.000.

Bowers, Ty S., to Sexton, Yancey D.; and Daystar, Inc. Power supply for a microwave receiver. 289,395, 4-21-87, Cl. D14-90.000.

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De Raad, Merrel M., 289,363, Cl. D8-22.000.

Brown, Michael, to Northern Telecom Limited. Base for a telephone set. 289,394, 4-21-87, Cl. D14-60.000.

Busse, Rido, to Soehnle-Waagen GmbH & Co. Weighing scale. 289,386, 4-21-87, Cl. D10-92.000.

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Kikuchi, Nobuo; and Fushimoto, Hideo, 289,415, Cl. D18-7.000.
Yoshioka, Eiichi; and Fushimoto, Hideo, 289,416, Cl. D18-7.000.
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Carlson, Casey L.; and Libby, James B., to Wagner Spray Tech Corporation. Power unit for feeding paint or the like. 289,402, 4-21-87, Cl. D15-7.000.

Carrier Corporation: *See*—
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Carter, James S.: *See*—
Wilson, Thomas C.; and Carter, James S., 289,396, Cl. D14-100.000.

Chadwick, William C.: *See*—
Peters, David C.; Williams, Derek P.; and Chadwick, William C., 289,414, Cl. D18-7.000.

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Colani, Luigi, to Canon Kabushiki Kaisha. Camera. 289,409, 4-21-87, Cl. D16-2.000.

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Davis, Ralph E.; and Wymer, Tracy D., to Davis, Ralph E. Adjustable computer wall rack. 289,353, 4-21-87, Cl. D6-566.000.

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E. Hofmann Plastics Canada Inc.: *See*—
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Earl, Norman M., to Bird Chef Co., Inc., The. Combined adaptor and dispenser for bird feed container. 289,451, 4-21-87, Cl. D30-13.000.

Elesa S.P.A.: *See*—
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Endo, Aiko; and Fushimoto, Hideo, to Canon Kabushiki Kaisha. Desk-top electronic calculator with printer. 289,413, 4-21-87, Cl. D18-7.000.

Endo, Aiko; and Fushimoto, Hideo, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 289,417, 4-21-87, Cl. D18-7.000.

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Feinbloom, Richard E.; Levine, Melvin; and Yee, Lung T., to Designs for Vision, Inc. Illumination housing for an operating room microscope. 289,410, 4-21-87, Cl. D16-131.000.

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XIII 4,658,565
410 4,658,568
432 4,658,566
472 4,658,567
550 4,658,569
556 4,658,570
576 4,658,571

CLASS 55
2 4,659,342
16 4,659,343
29 4,659,344
165 4,659,345
182 4,659,346
186 4,659,347
320 4,659,348
385 C 4,659,349
503 4,659,350

CLASS 56
228 4,658,572
341 4,658,573

CLASS 57
3 4,658,574
274 4,658,575

CLASS 59
34 4,658,576
78.1 4,658,577

CLASS 60
205 4,658,578
226.1 4,658,579
322 4,658,580
4,658,581
357 4,658,582
428 4,658,583
450 4,658,584
592 4,658,585
602 4,658,586
4,658,587
637 4,658,588
646 4,658,589
660 4,658,590
670 4,658,591
689 4,658,592

CLASS 62
18 4,659,351
126 4,658,593
176.5 4,658,594
179 4,658,595
197 4,658,596
235.1 4,658,597
239 4,658,598
4,658,599
311 4,658,600
514 R 4,658,601
515 4,658,602

CLASS 65
2 4,659,352
3.12 4,659,353
4,659,354
4,659,355
27 4,659,356
83 4,659,357
360 4,659,358

CLASS 66
126 R 4,658,603
192 4,658,604

CLASS 68
23.5 4,658,605

CLASS 70
38 A 4,658,606
164 4,658,607
179 4,658,608
183 4,658,609
252 4,658,610
360 4,658,611
402 4,658,612
427 4,658,613

CLASS 71
67 4,659,359
88 4,659,360
90 4,659,361
92 4,659,362
4,659,363
4,659,364
4,659,365
4,659,366
4,659,368
4,659,369
98 4,659,370
103 4,659,371
106 4,659,372

CLASS 72
8 4,658,614
16 4,658,615
19 4,658,616
44 4,658,617
63 4,658,618
88 4,658,619
234 4,658,620
243 4,658,621
249 4,658,622
268 4,658,623
316 4,658,624
322 4,658,625
405 4,658,626
447 4,658,627
450 4,658,628
453.02 4,658,629

CLASS 73
1 J 4,658,630
3 4,658,634
7 4,658,631
4,658,638
23 4,658,632
37.5 4,658,633
55 4,658,636
61.3 4,658,637
84 4,658,639
118.2 4,658,640
4,658,641
119 A 4,658,642
119 R 4,658,643
146.8 4,658,644
147 4,658,635
189 4,658,645
432.1 4,658,646
517 B 4,658,647
597 4,658,648
624 4,658,649
654 4,658,650
669 4,658,656
708 4,658,651
861.05 4,658,654
861.12 4,658,652
4,658,653
861.38 4,658,657
863.85 4,658,655

CLASS 74
5.46 4,658,659
5.6 E 4,658,658
102 4,658,660
331 4,658,661
4,658,662
359 4,658,663
422 4,658,664
467 4,658,665
471 XY 4,658,666
475 4,658,667
501.5 R 4,658,668
531 4,658,669
710 4,658,670
751 4,658,671
759 4,658,672
769 4,658,673
798 4,658,674
805 4,658,675
866 4,658,676

CLASS 75
0.5 A 4,659,373
3 4,659,374
29 4,659,375
84 4,659,376
96 4,659,377
234 4,659,379

CLASS 76
25 A 4,658,677

CLASS 81
3.29 4,658,678
23 4,658,679

CLASS 82
1 C 4,658,680
6 R 4,658,681

CLASS 83
13 4,658,682
53 4,658,683
289 4,658,684
302 4,658,685
425 4,658,686
438 4,658,687
552 4,658,688
801 4,658,689

CLASS 84
1.14 4,658,690
1.19 4,658,691
1.24 4,658,692
313 4,658,693
402 4,658,694
424 4,658,695
444 4,658,696
465 4,658,697

CLASS 89
1.55 4,658,698
8 4,658,699
33.02 4,658,700
139 4,658,702
332 4,658,701

CLASS 91
90 4,659,367
170 R 4,658,703
369 R 4,658,704
518 4,658,705

CLASS 92
12.2 Re.32,403
213 4,658,706

CLASS 98
2.11 4,658,707

CLASS 99
323.9 4,658,708
406 4,658,709
445 4,658,710
455 4,658,711
576 4,658,712
636 4,658,713
637 4,658,714

CLASS 100
2 4,658,715
38 4,658,716
126 4,658,717
194 4,658,718
218 4,658,719
226 4,658,720

CLASS 101
9 4,658,721
110 4,658,722
181 4,658,723
351 4,658,724

CLASS 102
229 4,658,725
416 4,658,726
494 4,658,727
501 4,658,728
520 4,658,729

CLASS 104
8 4,658,730
130 4,658,731
156 4,658,732
208 4,658,733

CLASS 105
169 4,658,734

CLASS 106
14.14 4,659,380
18.16 4,659,381
22 4,659,382
27 4,659,383
35 4,659,384
87 4,659,385
120 4,659,386
163.1 4,659,388
195 4,659,387
279 4,659,389

CLASS 108
131 4,658,735

CLASS 110
346 4,658,736

CLASS 111
2 4,658,737
7.2 4,658,738

CLASS 112
80.3 4,658,739
114 4,658,740
262.1 4,658,741
4,658,752
275 4,658,742
448 4,658,743
466 4,658,744

CLASS 114
54 4,658,745
56 4,658,746
85 4,658,747
217 4,658,748
222 4,658,749
244 4,658,750
270 4,658,751

CLASS 118
119 4,658,753
303 4,658,754
610 4,658,755
652 4,658,756

CLASS 119
3 4,658,757
32 4,658,758
61 4,658,759

CLASS 122
13 R 4,658,760
235 C 4,658,761
250 R 4,658,762

CLASS 123
41.12 4,658,764
41.21 4,658,765
41.27 4,658,766
41.82 R 4,658,763
52 MV 4,658,767
56 BC 4,658,768
90.31 4,658,769
90.41 4,658,770
142.5 R 4,658,771
145 A 4,658,772
146.5 A 4,658,773
169 E 4,658,774
185 B 4,658,775
190 BD 4,658,776
192 B 4,658,777
195 C 4,658,778
237 4,658,779
315 4,658,780
325 4,658,781
339 4,658,783
383 4,658,784
406 4,658,785
414 4,658,786
418 4,658,787
4,658,788
422 4,658,789
440 4,658,790
486 4,658,791
472 4,658,824
478 4,658,792
501 4,658,794
502 4,658,793
519 4,658,795
4,658,796
520 4,658,797
559 4,658,798
622 4,658,799

CLASS 125
11 CD 4,658,800

CLASS 126
77 4,658,801
271.2 A 4,658,802
355 4,658,803
391 4,658,804
425 4,658,805
450 4,658,806

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CLASS 127

29 4,659,390

CLASS 128

78 4,658,807
92 YM 4,658,809
130 4,658,810
163 4,658,811
207.14 4,658,812
4,658,813
207.17 4,658,814
303.1 4,658,816
4,658,817
4,658,818
303.13 4,658,819
303.14 4,658,815
4,658,820
314 4,658,821
325 4,658,822
396 4,658,823
634 4,658,825
640 4,658,826
660 4,658,827
4,658,828
672 4,658,829
696 4,658,830
697 4,658,831
719 4,658,832
771 4,658,833
4,658,834
785 4,658,835
804 4,658,836

CLASS 131

70 4,658,837
336 4,658,838

CLASS 132

7 4,658,839
4,658,840
53 4,658,841

CLASS 134

7 4,659,391
188 4,658,842

CLASS 135

19.5 4,658,843
25 A 4,658,844
36 RT 4,658,845

CLASS 136

251 4,659,867

CLASS 137

15 4,658,851
39 4,658,846
72 4,658,847
4,658,848
82 4,658,849
101 4,658,850
218 4,658,852
240 4,658,853
377 4,658,854
468 4,658,855
543.23 4,658,856
601 4,658,857
606 4,658,858
625.23 4,658,859

CLASS 138

89 4,658,860
90 4,658,861

CLASS 139

13 R 4,658,862
91 4,658,864
383 A 4,658,863
435 4,658,865
450 4,658,866

CLASS 140

112 4,658,867

CLASS 141

11 4,658,868
98 4,658,869
236 4,658,870
293 4,658,871
311 R 4,658,872
387 4,658,873
4,658,874

CLASS 144

230 4,658,875

CLASS 148

1.5 4,659,392
2 4,659,393
6.15 Z 4,659,395
6.2 4,659,394
11.5 A 4,659,396
12 E 4,659,397
12 R 4,659,398
24 4,659,399
175 4,659,400
4,659,401

CLASS 149

19.4 4,659,402
36 4,659,403

CLASS 152

394 4,658,876

CLASS 156

51 4,659,424
62.2 4,659,404
69 4,659,405
89 4,659,406
196 4,659,407
244.17 4,659,408
249 4,659,409
277 4,659,410
285 4,659,411
322 4,659,412
345 4,659,413
361 4,659,414
379.7 4,659,415
384 4,659,416
405.1 4,659,417
522 4,659,419
556 4,659,420
617 R 4,659,422
617 SP 4,659,421
4,659,423
630 4,659,425
643 4,659,426
4,659,427
644 4,659,429

CLASS 160

46 4,658,877
84 V 4,658,878
271 4,658,879

CLASS 162

135 4,659,430
168.2 4,659,431
318 4,659,432

CLASS 164

255 4,658,880
256 4,658,881
417 4,658,882
432 4,658,883
443 4,658,884
463 4,658,885
526 4,658,886

CLASS 165

8 4,658,887
22 4,658,888
48.1 4,658,889
92 4,658,890
4,658,891
133 4,658,892

CLASS 166

68 4,658,893
84 4,658,894
237 4,658,895
241 4,658,896
249 4,658,897
270 4,658,898
280 4,658,899
297 4,658,900
301 4,658,901
317 4,658,902
335 4,658,903
336 4,658,904
373 4,658,905

CLASS 169

45 4,658,906
75 4,658,907

CLASS 172

5 Re 32,405
10 4,658,908
22 4,658,909
123 4,658,910
776 4,658,911

CLASS 173

106 4,658,912
134 4,658,913

CLASS 174

23 R 4,659,868
35 GC 4,659,869
84 S 4,659,870
113 R 4,659,871
117 A 4,659,872

CLASS 175

40 4,658,914
57 4,658,915
81 4,658,916
297 4,658,917
423 4,658,918

CLASS 177

1 4,658,919
25 4,658,920
50 4,658,921
127 4,658,922
255 4,658,923

CLASS 178

18 4,659,873
19 4,659,874

CLASS 180

14.1 4,658,924
68.1 4,658,925
126 4,658,926
142 4,658,927
168 4,658,928
175 4,658,929

CLASS 181

113 4,658,930
129 4,658,931
175 4,658,932

CLASS 187

8.67 4,658,933
17 4,658,934
100 Re 32,404
122 4,658,935

CLASS 188

1.11 4,658,936
71.4 4,658,937
73.38 4,658,938
156 4,658,939
265 4,658,940
377 4,658,941

CLASS 192

0.073 4,658,943
13 A 4,658,942
84 PM 4,658,944
89 B 4,658,945

CLASS 198

337 4,658,946
346.2 4,658,947
364 4,658,948
497 4,658,949
577 4,658,950
718 4,658,951
735 4,658,952
757 4,658,953
774 4,658,954

CLASS 200

5 A 4,659,879
5 R 4,659,880
4,659,881
16 R 4,659,882
43.03 4,659,883
50 R 4,659,884
144 B 4,659,885
148 R 4,659,886
151 4,659,887
4,659,888
330 4,659,889

CLASS 202

173 4,659,433

CLASS 204

1 T 4,659,434
4,659,435
16 4,659,436
28 4,659,437
34 4,659,438
37.6 4,659,439
58 4,659,440
59 R 4,659,441
67 4,659,442
131 4,659,443
180.9 4,659,444
181.1 4,659,445
212 4,659,446
4,659,447
277 4,659,448
298 4,659,449
299 EC 4,659,450
435 4,659,451

CLASS 206

307 4,658,955
320 4,658,956
328 4,658,958
365 4,658,957
409 4,658,959
459 4,658,960
509 4,658,961
554 4,658,962
632 4,658,963

CLASS 208

89 4,659,452
108 4,659,453
111 4,659,454
152 4,659,455
407 4,659,456

CLASS 209

40 4,659,457
164 4,659,458
552 4,658,964
672 4,658,965

CLASS 210

87 4,659,459
93 4,659,460
104 4,659,461
202 4,659,462
4,659,463
14.1 4,659,464
221.1 4,659,465
225 4,659,466
238 4,659,467
282 4,659,468
352 4,659,469
500.21 4,659,470
603 4,659,471
609 4,659,472
638 4,659,473
4,659,474
654 4,659,475
675 4,659,476
679 4,659,477
690 4,659,478
695 4,659,479
697 4,659,480
4,659,481
699 4,659,482
709 4,659,483
755 4,659,484
758 4,659,485

CLASS 211

46 4,658,966
94 4,658,967
187 4,658,968
4,658,969

CLASS 212

159 4,658,971
182 4,658,970
270 4,658,972

CLASS 215

12 R 4,658,974
13 R 4,658,973
100 A 4,658,975
252 4,658,976
256 4,658,977

CLASS 219

10.55 D 4,659,891
10.55 M 4,659,890
10.57 4,659,892
69 M 4,659,893
69 P 4,659,894
79 4,659,895
85 BM 4,659,896
93 4,659,897
117.1 4,659,898
121 LC 4,659,901
121 LG 4,659,900
121 LU 4,659,902
121 PN 4,659,899
125.11 4,659,903
130.21 4,659,904
212 4,659,905
345 4,659,906
370 4,659,907
386 4,659,908
452 4,659,909
497 4,659,910
521 4,659,911
535 4,659,912
549 4,659,913

CLASS 220

209 4,658,979
214 4,658,980
338 4,658,981

CLASS 221

13 4,658,982
44 4,658,983
64 4,658,984

CLASS 222

1 4,658,985
52 4,658,986
4,658,987
105 4,658,989
106 4,658,990
129.1 4,658,988
146.5 4,658,991
199 4,658,992
390 4,658,993
607 4,658,994

CLASS 223

76 4,658,995
96 4,658,996
98 4,658,997

CLASS 224

39 4,658,998
139 4,659,041
202 4,658,999
252 4,659,000

CLASS 227

153 4,659,001

CLASS 228

6.2 4,659,004
8 4,659,002
4,659,003
112 4,659,005
123 4,659,006
156 4,659,007
263.15 4,658,537

CLASS 232

43.3 4,659,008

CLASS 235

380 4,659,914
441 4,659,915

CLASS 236

44 C 4,659,009
87 4,659,010

CLASS 239

3 4,659,011
4,659,012
8 4,659,013
102.2 4,659,014
116 4,659,015
135 4,659,016
151 4,659,017
264 4,659,018
692 4,659,019
752 4,659,020

CLASS 241

18 4,659,021
23 4,659,022
30 4,659,023
99 4,659,024
187 4,659,025
275 4,659,026

CLASS 242

7.21 4,659,033
18.1 4,659,027
55.53 4,659,028
56 R 4,659,029
58.6 4,659,030
96 4,659,031
118.4 4,659,032

CLASS 244

1 TD 4,659,034
3.21 4,659,035
3.22 4,659,036
3.28 4,659,037
49 4,659,038
103 S 4,659,040
103.5 4,659,039
142 4,659,042

CLASS 246

169 A 4,659,043

CLASS 248

99 4,659,045
218.4 4,659,044
231 4,659,046
274 4,659,047
285 4,659,048
346.1 4,659,049
349 4,659,050
546 4,659,051
575 4,659,052
663 4,659,053

CLASS 249

7 4,659,054
19 4,659,055
78 4,659,056
97 4,659,057
119 4,659,058

CLASS 250

201 4,659,916
4,659,917
202 4,659,918
209 4,659,919
211 J 4,659,920
213 VT 4,659,921
221 4,659,922
227 4,659,923
231 SE 4,659,924
260 4,659,925
305 4,659,926
318 4,659,927
327.2 4,659,929
332 4,659,928
336.1 4,659,930
338 4,659,931
347 4,659,932
372 4,659,933
458.1 4,659,934
505.1 4,659,935
560 4,659,936
566 4,659,938
4,659,939

CLASS 251

54 4,659,059
61.1 4,659,062
68 4,659,063
214 4,659,064
315 4,658,978
332 4,659,060
4,659,061

CLASS 252

8.5 4,659,486
8.8 4,659,487
33 4,659,488
40.5 4,659,489
47.5 4,659,490
4,659,491
49.3 4,659,492
54.6 4,659,493
88 4,659,494
90 4,659,495
4,659,496
135 4,659,497
153 4,659,498
299.1 4,659,499
299.5 4,659,500
4,659,501
299.61 4,659,502
4,659,503
315.3 4,659,504
364 4,659,505
399 4,659,506
500 4,659,507
516 4,659,508
522 R 4,659,509
4,659,510
628 4,659,511
629 4,659,512

CLASS 254

29 A 4,659,065
122 4,659,066

CLASS 257

189 4,659,144

CLASS 260

97 4,659,513
104 4,659,514
351.5 4,659,515
397.5 4,659,516
4,659,517
413 4,659,518
502 R 4,659,519

CLASS 261

25 4,659,520
123 4,659,521

CLASS 264

1.3 4,659,523
2.1 4,659,522
2.5 4,659,524
36 4,659,525
46.4 4,659,527
49 4,659,528
86 4,659,526
182 4,659,529
315 4,659,530
515 4,659,531
518 4,659,532
566 4,659,534
570 4,659,533

CLASS 266

55 4,659,068

CLASS 267

57.1 A 4,659,069
64.25 4,659,070
149 4,659,071

CLASS 269

17 4,659,072

CLASS 271

3 4,659,073

CLASS 272

69 4,659,074
70 4,659,075
93 4,659,076
97 4,659,077
128 4,659,078

CLASS 273

54 B 4,659,079
75 4,659,080
149 R 4,659,082
164 4,659,083
183 B 4,659,084
201 4,659,081
236 4,659,085
242 4,659,086

274 4,659,087
310 4,659,088
348.1 4,659,089
376 4,659,090

CLASS 277

1 4,659,091
5 4,659,092
139 4,659,093

CLASS 279

1 L 4,659,094

CLASS 280

11.27 4,659,095
39 4,659,096
281 LP 4,659,098
281 R 4,659,097
289 WC 4,659,099
414.1 4,659,100
434 4,659,101
481 4,659,102
615 4,659,103
707 4,659,104
748 4,659,105
772 4,659,106
804 4,659,107
807 4,659,108

CLASS 281

46 4,659,109

CLASS 283

36 4,659,110
81 4,659,111
90 4,659,112
94 4,659,113

CLASS 285

11 4,659,114
12 4,659,115
27 4,659,116
49 4,659,117
55 4,659,118
82 4,659,119
91 4,659,120

CLASS 289

55 4,659,940

CLASS 292

144 4,659,121
262 4,659,122

CLASS 294

9 4,659,123
19.1 4,659,124
19.2 4,659,125
50.7 4,659,127
93 4,659,126
99.2 4,659,128
147 4,659,129

CLASS 296

1 S 4,659,130
3 4,659,131
24 R 4,659,132
39 R 4,659,133
98 4,659,134
100 4,659,136
190 4,659,137
201 4,659,138
210 4,659,139
223 4,659,140
4,659,141
453 4,659,135

CLASS 297

118 4,659,142
182 4,659,143
330 4,659,145
367 4,659,146

CLASS 298

20 R 4,659,147

CLASS 301

37 P 4,659,148

CLASS 303

3 4,659,149
6 C 4,659,150
4,659,151
114 4,659,152
4,659,153

CLASS 307

11 4,659,941
19 4,659,942
39 4,659,943
350 4,659,944
353 4,659,945
4,659,946
466 4,659,947
469 4,659,948
511 4,659,949

CLASS 310

59 4,659,950
62 4,659,951
90 4,659,952
111 4,659,953
248 4,659,954
313 D 4,659,955
335 4,659,956

CLASS 312

277 4,659,154

CLASS 313

141 4,659,960
402 4,659,957
405 4,659,958
407 4,659,959
413 4,659,961
493 4,659,962
4,659,963

CLASS 313

3 4,659,964
60 4,659,965
73 4,659,966
307 4,659,967
398 4,659,968

CLASS 318

128 4,659,969
269 4,659,970
332 4,659,976
568 4,659,971
616 4,659,972
718 4,659,973
806 4,659,974
814 4,659,975

CLASS 320

64 4,659,977
71 4,659,978

CLASS 323

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356 4,659,981

CLASS 324

51 4,659,983
77 G 4,659,982
95 4,659,984
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158 F 4,659,986
158 P 4,659,987
207 4,659,988
233 4,659,989
238 4,659,990
241 4,659,991
338 4,659,992
375 4,659,993
426 4,659,994

CLASS 328

167 4,659,995
4,659,996

CLASS 330

257 4,659,997
260 4,659,998

CLASS 331

2 4,659,999
56 4,660,000
115 4,660,001

CLASS 332

16 T 4,660,002

CLASS 333

17 L 4,660,003
134 4,660,004
4,660,005
218 4,660,006
237 4,660,007
258 4,660,008

CLASS 335

6 4,660,009
228 4,660,010
230 4,660,011
234 4,660,012
299 4,660,013

CLASS 336

84 C 4,660,014
192 4,660,015

CLASS 337

372 4,660,016

CLASS 338

21 4,660,017
32 H 4,660,018
179 4,660,019

CLASS 339

14 R 4,659,155
17 C 4,659,156
18 R 4,659,157
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75 M 4,659,159
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113 L 4,659,161
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191 M 4,659,168
198 R 4,659,169

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134 4,660,020
347 P 4,660,021
407 4,660,022
521 4,660,023
522 4,660,024
572 4,660,025
604 4,660,026
636 4,660,027
739 4,660,028
744 4,660,029
784 4,660,030
792 4,660,031
825.44 4,660,032
825.72 4,660,033
825.79 4,660,034
870.02 4,660,035
870.29 4,660,036
990 4,660,037

CLASS 342

26 4,660,038
27 4,660,039
128 4,660,040
160 4,660,046
170 4,660,041
175 4,660,042
185 4,660,043
188 4,660,044
361 4,660,045

CLASS 343

700 MS 4,660,047
4,660,048
715 4,660,049
753 4,660,050

CLASS 346

76 PH 4,660,051
4,660,052
4,660,053
139 R 4,660,054
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157 4,660,059
220 4,660,060

CLASS 350

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1.2 4,659,171
3.83 4,659,172
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332 4,659,181
339 F 4,659,182
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358 4,659,184
394 4,659,185
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4,659,188
4,659,189
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486 4,659,192
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552 4,659,194
574 4,659,195

CLASS 351

57 4,659,196
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CLASS 352

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CLASS 354

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286 4,659,203
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8 4,659,207
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14 D 4,659,211
14 E 4,659,209
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38 4,659,213
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CLASS 356

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4,659,216
4,659,217
133 4,659,218
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237 4,659,220
241 4,659,221
244 4,659,222
350 4,659,223
352 4,659,224
358 4,659,225
401 4,659,226
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446 4,659,229

CLASS 357

5 4,660,061
23.3 4,660,062
24 4,660,064
25 4,660,063
27 4,660,065
30 4,660,066
42 4,660,067
49 4,660,068
68 4,660,069

CLASS 358

11 4,660,070
4,660,071
12 4,660,072
16 4,660,074
21 R 4,660,073
29 4,660,075
73 4,660,076
75 4,660,077
133 4,660,078
141 4,660,079
158 4,660,080
160 4,660,081
163 4,660,082
168 4,660,083
171 4,660,084
4,660,085
183 4,660,086
197 4,660,087
198 4,660,088
213 4,660,089
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214 4,660,091
224 4,660,092
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332 4,660,098
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14.3 4,660,107
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77 4,660,106
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98 4,660,110
99 4,660,111
106 4,660,112
113 4,660,113
122 4,660,114
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294 4,660,132

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200 4,660,130
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19 4,660,185
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CLASS 368

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223 4,659,232
260 4,659,233

CLASS 369

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32 4,660,189
44 4,660,190
46 4,660,191

CLASS 370

11 4,660,192
4,660,193
15 4,660,194
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92 4,660,195
109 4,660,196

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15 4,660,198
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37 4,660,200
50 4,660,202
61 4,660,201

CLASS 372

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28 4,660,206
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58 4,660,209
60 4,660,210

CLASS 373

36 4,660,211
156 4,660,212

CLASS 374

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66 4,660,217

CLASS 379

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23 4,660,221

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45 4,659,239
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543 4,659,276
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253 4,659,298

CLASS 419

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6 4,659,547
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63 4,659,562
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65 4,659,564
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70 4,659,565
71 4,659,566
85 4,659,567
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86 4,659,563
88 4,659,568
4,659,603
89 4,659,569
448 4,659,572
470 4,659,558

CLASS 425

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113 4,659,300
129 R 4,659,301
190 4,659,302
376 R 4,659,303
406 4,659,304

CLASS 426

68 4,659,574
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324 4,659,576
387 4,659,577
418 4,659,578
465 4,659,579
516 4,659,580
537 4,659,581
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629 4,659,583

CLASS 427

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5 4,659,585
27 4,659,586
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140 4,659,589
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253 4,659,591
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393 5 4,659,596

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35 4,659,598
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36 4,659,599
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99 4,659,604
141 4,659,606
143 4,659,607
171 4,659,608
194 4,659,609
198 4,659,610
209 4,659,611
213 4,659,612
215 4,659,613
218 4,659,614
220 4,659,615
221 4,659,617
281 4,659,616
317 7 4,659,618
321 5 4,659,619
328 4,659,620
339 4,659,621
379 4,659,622
395 4,659,623
408 4,659,624
412 Re. 32,896
4,659,625
425 9 4,659,626
447 4,659,627
457 4,659,628
469 4,659,629
473 4,659,630
624 4,659,631
679 4,659,632
695 4,659,633

CLASS 429

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41 4,659,635
46 4,659,559
54 4,659,636
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CLASS 430

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119 4,659,640
137 4,659,641
143 4,659,642
157 4,659,643
175 4,659,645
182 4,659,644
230 4,659,646
264 4,659,647
272 4,659,648
280 4,659,649
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542 4,659,651
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559 4,659,653
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CLASS 431

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362 4,659,308

CLASS 433

9 4,659,309
20 4,659,310
55 4,659,311
182 4,659,312

CLASS 434

45 4,659,313
236 4,659,314

CLASS 435

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21 4,659,657
34 4,659,658
71 4,659,660
86 4,659,661
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172 2 4,659,663
176 4,659,664
182 4,659,665
188 4,659,666
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240 4,659,668
243 4,659,669
262 4,659,670
280 4,659,671
287 4,659,672
293 4,659,673

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5 4,659,674
29 4,659,675
56 4,659,676
174 4,659,677
512 4,659,678

CLASS 440

61 4,659,315
83 4,659,316

CLASS 445

37 4,659,317
54 4,659,318

CLASS 446

87 4,659,319
435 4,659,320

CLASS 455

109 4,660,222

CLASS 476

28 4,659,321

CLASS 493

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457 4,659,323

CLASS 494

20 4,659,324
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CLASS 501

99 4,659,679
104 4,659,680

CLASS 502

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24 4,659,682
4,659,683
25 4,659,684
113 4,659,685
183 4,659,686
207 4,659,687
208 4,659,688
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439 4,659,690

CLASS 514

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12 4,659,692
4,659,693
4,659,694
15 4,659,695
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23 4,659,697
49 4,659,698
53 4,659,699
55 4,659,700
130 4,659,701
134 4,659,702
4,659,703
172 4,659,704
184 4,659,705
213 4,659,706
215 4,659,707
222 4,659,708
229 4,659,709
234 4,659,710
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332 4,659,722
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344 4,659,724
352 4,659,725
365 4,659,726
370 4,659,727
374 4,659,728
383 4,659,729
396 4,659,730
397 4,659,731
404 4,659,732
436 4,659,733
443 4,659,735
452 4,659,736
456 4,659,737
514 4,659,738
555 4,659,739
643 4,659,741
773 4,659,740

CLASS 518

713 4,659,742
715 4,659,743

CLASS 521

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59 4,659,745
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159 4,659,747
170 4,659,748

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92 4,659,775
141 4,659,760
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331 4,659,762
358 4,659,763
399 4,659,764
447 4,659,765
504 4,659,766
4,659,767
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529 4,659,769
553 4,659,770
700 4,659,771
755 4,659,772
817 4,659,773

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95 4,659,776
100 4,659,777
107 4,659,778
118 4,659,779
131 4,659,780
279 4,659,781
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294 4,659,784
324 4,659,785
415 4,659,786
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518 4,659,788
537 4,659,789

CLASS 526

62 4,659,791
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91 4,659,793
200 4,659,794
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28 4,659,797
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625 4,659,806
642 4,659,807

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18.5 4,659,808
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222 4,659,812
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467 4,659,815
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26 4,659,856
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98 4,659,854
188 4,659,859
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CLASS 560

20 4,659,862
75 4,659,863
124 4,659,864
232 4,659,865

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62 4,659,326
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CLASS 623

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23 4,659,067

CLASS 723

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	322	289,341		18	289,361		32	289,381			289,401
D3—	35	289,342			289,362		65	289,382		7	289,402
	48	289,343		22	289,363		75	289,383		69	289,403
D4—	114	289,344		34	289,364		85	289,384		81	289,404
	119	289,345		41	289,365		91	289,385		140	289,405
D6—	310	289,346		49	289,366		92	289,386		199	289,406
	370	289,347		71	289,367		109	289,387			289,407
	373	289,348		99	289,368	D11—	86	289,388	D16—	1	289,408
	379	289,349		308	289,369	D12—	12	289,389		2	289,409
	399	289,350		309	289,370		91	289,390		131	289,410
	400	289,351		349	289,371		163	289,391	D17—	1	289,411
	464	289,352		359	289,372		308	289,392			289,412
	566	289,353		382	289,373	D14—	56	289,393	D18—	7	289,413
	601	289,354		385	289,374		60	289,394			289,414
D7—	13	289,355	D9—	302	289,375		90	289,395			289,415
	14	289,356		375	289,376		100	289,396			289,416
	152	289,357		378	289,377		102	289,397			289,417
		289,358		439	289,378		113	289,398			289,418
	325	289,359		452	289,379		114	289,399			289,419

	24	289,420		48	289,440
		289,421		110	289,441
		289,422			289,442
D19—	34	289,423			289,443
	36	289,424			289,444
	49	289,425			289,445
D21—	150	289,426			289,446
	167	289,427			289,447
	212	289,428			289,448
D23—	4	289,429	D27—	36	289,449
	19	289,430	D30—	1	289,450
	38	289,431		13	289,451
	72	289,432			289,452
	93	289,433		19	289,453
D24—	24	289,434		38	289,454
	25	289,435	D32—	53	289,455
	26	289,436		53.1	289,456
	27	289,437	D34—	7	289,458
	38	289,438		21	289,459
D26—	7	289,439		38	289,457

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	50	5,948			5,950			5,952			
								5,953			
							71	5,954		77	5,955

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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01	4,658,448		4,658,813		4,659,519	08 : 4,660,209	4,659,782	4,658,689
	4,658,588		4,658,818		4,659,530	4,658,508	4,659,783	4,658,692
	4,658,806		4,658,823		4,659,540	4,658,675	4,659,823	4,658,694
	4,659,009		4,658,831		4,659,558	4,658,819	4,659,862	4,658,786
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Apr. 1, 1987 and was announced in the *Official Gazette* at 1077 O.G. 3 on Apr. 7, 1987.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

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Basic fee (first 30 pages):	430.00
Basic Supplemental fee (for each page over 30):	8.00
Designation fee for the first 10 national or regional offices:	105.00
Designation fee for 11th and subsequent designations:	No charge

DONALD J. QUIGG,
Mar. 23, 1987. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 24, 1984, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,443,891 through 4,445,230
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 8, 1987, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,371,984	06/258,411	2/8/83
4,371,993	06/229,763	2/8/83
4,371,995	06/241,479	2/8/83
4,372,000	06/232,471	2/8/83
4,372,001	06/243,087	2/8/83
4,372,009	06/227,140	2/8/83
4,372,011	06/228,738	2/8/83
4,372,013	06/287,310	2/8/83
4,372,018	06/306,654	2/8/83
4,372,039	06/220,914	2/8/83
4,372,056	06/222,725	2/8/83
4,372,064	06/230,665	2/8/83
4,372,072	06/236,737	2/8/83
4,372,073	06/288,064	2/8/83
4,372,082	06/235,593	2/8/83
4,372,086	06/251,329	2/8/83
4,372,090	06/313,323	2/8/83
4,372,099	06/227,142	2/8/83
4,372,113	06/225,170	2/8/83
4,372,114	06/242,243	2/8/83
4,372,115	06/270,974	2/8/83
4,372,116	06/228,457	2/8/83
4,372,121	06/244,076	2/8/83
4,372,123	06/298,599	2/8/83
4,372,129	06/265,183	2/8/83
4,372,130	06/303,279	2/8/83
4,372,145	06/248,855	2/8/83
4,372,152	06/226,301	2/8/83
4,372,156	06/235,214	2/8/83
4,372,168	06/271,396	2/8/83
4,372,175	06/221,152	2/8/83
4,372,182	06/225,685	2/8/83
4,372,190	06/304,846	2/8/83
4,372,192	06/219,046	2/8/83
4,372,198	06/253,618	2/8/83
4,372,213	06/249,046	2/8/83
4,372,227	06/233,064	2/8/83
4,372,230	06/228,512	2/8/83
4,372,236	06/309,356	2/8/83
4,372,238	06/224,275	2/8/83
4,372,243	06/284,342	2/8/83
4,372,245	06/243,517	2/8/83
4,372,252	06/294,558	2/8/83
4,372,263	06/249,147	2/8/83
4,372,266	06/276,001	2/8/83
4,372,277	06/254,991	2/8/83
4,372,280	06/255,267	2/8/83
4,372,285	06/248,976	2/8/83
4,372,299	06/299,972	2/8/83
4,372,306	06/228,632	2/8/83
4,372,331	06/268,479	2/8/83
4,372,351	06/289,661	2/8/83
4,372,352	06/241,899	2/8/83
4,372,362	06/237,175	2/8/83
4,372,363	06/260,244	2/8/83
4,372,364	06/319,207	2/8/83
4,372,386	06/236,447	2/8/83
4,372,394	06/218,696	2/8/83
4,372,396	06/259,091	2/8/83
4,372,399	06/357,066	2/8/83
4,372,405	06/233,525	2/8/83
4,372,440	06/218,707	2/8/83
4,372,443	06/232,697	2/8/83
4,372,454	06/237,081	2/8/83
4,372,465	06/221,702	2/8/83
4,372,468	06/261,911	2/8/83
4,372,472	06/250,885	2/8/83
4,372,473	06/229,022	2/8/83
4,372,492	06/235,983	2/8/83
4,372,493	06/219,932	2/8/83
4,372,508	06/244,420	2/8/83
4,372,512	06/263,359	2/8/83
4,372,522	06/232,964	2/8/83
4,372,528	06/280,827	2/8/83
4,372,555	06/310,062	2/8/83
4,372,557	06/222,094	2/8/83
4,372,565	06/244,606	2/8/83
4,372,566	06/303,362	2/8/83
4,372,574	06/251,038	2/8/83
4,372,585	06/231,216	2/8/83
4,372,593	06/274,483	2/8/83
4,372,596	06/223,021	2/8/83
4,372,601	06/268,101	2/8/83
4,372,614	06/263,187	2/8/83
4,372,618	06/238,700	2/8/83
4,372,625	06/301,372	2/8/83
4,372,626	06/301,373	2/8/83
4,372,632	06/230,580	2/8/83
4,372,638	06/233,977	2/8/83
4,372,659	06/285,276	2/8/83
4,372,661	06/298,041	2/8/83
4,372,667	06/254,207	2/8/83
4,372,677	06/323,791	2/8/83
4,372,679	06/240,201	2/8/83
4,372,688	06/351,326	2/8/83
4,372,692	06/270,618	2/8/83
4,372,698	06/241,537	2/8/83
4,372,707	06/226,521	2/8/83
4,372,721	06/264,224	2/8/83
4,372,732	06/221,108	2/8/83
4,372,765	06/238,206	2/8/83
4,372,769	06/285,198	2/8/83
4,372,774	06/285,447	2/8/83
4,372,775	06/271,895	2/8/83
4,372,778	06/268,196	2/8/83
4,372,785	06/354,210	2/8/83
4,372,806	06/335,851	2/8/83
4,372,816	06/242,724	2/8/83
4,372,826	06/260,936	2/8/83
4,372,848	06/268,524	2/8/83
4,372,851	06/286,712	2/8/83
4,372,855	06/258,670	2/8/83
4,372,861	06/260,529	2/8/83
4,372,866	06/269,812	2/8/83
4,372,867	06/153,746	2/8/83
4,372,878	06/239,438	2/8/83
4,372,881	06/306,827	2/8/83
4,372,897	06/254,605	2/8/83
4,372,904	06/248,562	2/8/83
4,372,907	06/226,351	2/8/83
4,372,951	06/285,590	2/8/83
4,372,969	06/235,937	2/8/83
4,372,976	06/291,015	2/8/83
4,372,980	06/269,550	2/8/83
4,372,993	06/219,525	2/8/83
4,372,994	06/228,477	2/8/83
4,373,058	06/244,811	2/8/83
4,373,078	06/294,383	2/8/83
4,373,122	06/311,915	2/8/83
4,373,148	06/235,287	2/8/83
4,373,154	06/263,904	2/8/83
4,373,190	06/227,323	2/8/83

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,505,087, Re. S.N. 024,364, Filed Mar. 9, 1987, Cl. 52/741, METHOD OF CONSTRUCTION OF CONCRETE DECKS WITH HAUNCHED SUPPORTING BEAMS, Nandy M. Sarda, Owner of Record: *U.S. Filigree Wideslab, Inc., Largo, Fla.*, Attorney or Agent: None, Ex. Gp.: 354

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4,508,109, Re. S.N. 023,220, Filed Mar. 9, 1987, Cl. 128/75, CERVICAL TRACTION DEVICE, Harold D. Saunders, Owner of Record: *Inventor*, Attorney or Agent: Charles B. Elderkin, Ex. Gp.: 331

4,550,069, Re. S.N. 023,601, Filed Mar. 9, 1987, Cl. 430/165, POSITIVE PHOTORESIST COMPOSITIONS WITH O-QUINONE DIAZIDE NOVLOAK, AND PROPYLENE GLYCOL ALKYL ETHER ACETATE, Thomas R. Pampalone, Owner of Record: *American Hoechst Corp., Somerville, N.J.*, Attorney or Agent: Richard S. Roberts, et al., Ex. Gp.: 156

4,589,630, Re. S.N. 022,655, Filed Mar. 6, 1987, Cl. 254/7B, DUAL AUTOMOBILE JACK FOR CONSUMER USE, Harry H. Arzouman, Owner of Record: *Safe-T-Jack, Inc., Irvine, Calif.*, Attorney or Agent: Gene W. Arant, et al., Ex. Gp.: 323

4,643,936, Re. S.N. 023,586, Filed Mar. 4, 1987, Cl. 428/214, BACKUP MATERIAL FOR SMALL BORE DRILLING, Russell C. Eidal, Owner of Record: *Control Data Corp., Lakeville, Minn.*, Attorney or Agent: Robert M. Angus, et al., Ex. Gp.: 154

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,141,973, Reexam. No. 90/001,205, Requested: Mar. 26, 1987, Cl. 424/180, ULTRAPURE HYALURONIC ACID AND THE USE THEREOF, Endre A. Balazs, Owner of Record: *Biotrics, Inc., Riverside, N.Y.*, Attorney or Agent: Kenyon & Kenyon, Ex. Gp.: 120, Requester: Chesapeake Bilogical Laboratories, Inc., Hunt Valley, Md.

4,445,944, Reexam. No. 90/001,202, Requested: Mar. 23, 1987, Cl. 148/12.300, HEAT TREATMENTS OF LOW EXPANSION ALLOYS, Darrell F. Smith, et al., Owner of Record: *Inco Alloys International, Inc., Huntington, W. Va.*, Attorney or Agent: R. J. Kenny, Ex. Gp.: 110, Requester: Owner

4,524,217, Reexam. No. 90/001,200, Requested: Mar. 20, 1987, Cl. 564/223, PROCESS FOR PRODUCING N-ACYL-HYDROXY AROMATIC AMINES, Kenneth Davenport, et al., Owner of Record: *Celanese Corp., New York, N.Y.*, Attorney or Agent: Donald Cassady, Ex. Gp.: 120, Requester: P. R. Shearer, Washington, D.C.

4,548,024, Reexam. No. 90/001,206, Requested: Mar. 25, 1987, Cl. 53/502, INTEGRATED STRETCH-WRAP PACKAGING SYSTEM, Harvey A. Fine, Owner of Record: *Weldotron Corp., Piscataway, N.J.*, Attorney or Agent: L. B. Goodwin, Ex. Gp.: 320, Requester: Hobart Corp., Troy, Ohio

4,555,048, Reexam. No. 90/001,201, Requested: Mar. 23, 1987, Cl. 222/478, VENTED NESTABLE POURING SPOUT, Martin Hamman, et al., Owner of Record: *Rieke Corp., Auburn, Ind.*, Attorney or Agent: James M. Durlacher, et al., Ex. Gp.: 310, Requester: Owner

4,557,958, Reexam. No. 90/001,204, Requested: Mar. 25, 1987, Cl. 428/36, NON-FRAYING BREATHABLE FABRIC SUITABLE FOR USE AS A COTTON BALE COVER AND BAG FABRIC APPARATUS AND METHOD FOR MAKING THE SAME, Edward D. Barkis, et al., Owner of Record: *Standard Oil Co., Chicago, Ill.*, Attorney or Agent: William Magidson, Ex. Gp.: 150, Requester: Synthetic Industries, Inc., Chickamauga, Ga.

4,617,052, Reexam. No. 90/001,207, Requested: Mar. 31, 1987, Cl. 420/117, PROCESS FOR PREPARING MOTHER ALLOY FOR MAKING AMORPHOUS METAL, Tomoo Takenouchi, et al., Owner of Record: *Inventors, Hokkaido, Japan*, Attorney or Agent: Sughrue, Mion, et al., Ex. Gp.: 110, Requester: Armco, Inc., Middletown, Ohio

4,618,078, Reexam. No. 90/001,203, Requested: Mar. 23, 1987, Cl. 222/478, VENTED NESTABLE POURING SPOUT, Martin E. Hamman, et al., Owner of Record: *Rieke Corp., Auburn, Ind.*, Attorney or Agent: James M. Durlacher, Ex. Gp.: 310, Requester: Owner

Status of PTO Services

The following is an update of the status of PTO services for March 1987:

Service Item	FY 1987 Goal (Calendar Days*)	Monthly Average (Calendar Days*)
Filing Receipts:		
Patents	22	46**
Trademarks	30	34**
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	14 Hours
Window Coupons	5	2
Mail Coupons	12	7
Letter Orders	16	23
Certified Copies:		
Trademark Registrations	21	30**
Applications-As-Filed	17	17***
File-Wrapper/Contents	N/A	31
Walk-up Certification	1	2
Trademark Search Library:		
Filing Pending Marks	21	37**
Filing Reg. Certificates	Issue Date	Issue Date
Assignments:		
Patents	20	31
Trademarks	20	30
Avg. Days from Issue Fee Payment to Issue Date	90–100	107****
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule
Patent Copies Available	95% on Issue Date	96% 3 Days Late
Trademark Copies Available	95% on Issue Date	99% on Issue Date

* Unless otherwise noted.
** Improvements now being made, overcoming the delays which had resulted from holiday leave, staffing shortages, computer outages, and leave due to adverse weather conditions.
*** The 5% of orders for which fiche are not on site are not included in calculations.
**** Decrease of 2 days since last month as we are printing the backlog created due to last year's budget cut.

IMPROVEMENTS TO SERVICES

- *Mail Room Goal Ahead of Schedule* — In last month's Service Statistics, we reported that the Correspondence and Mail Division (Mail Room) was experiencing a backlog for processing mail, and our "get well" plan called for the elimination of the backlog by May 1. We are pleased to report that through an extraordinary effort by the Correspondence and Mail Division we are now on goal — a full month ahead of schedule.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Apr. 3, 1987.

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PATENT NOTICES

Certificates of Correction for the Week of Apr. 28, 1987

PP. 05,809	4,610,944	4,623,320	4,632,117
4,392,200	4,612,069	4,623,525	4,632,247
4,426,952	4,612,264	4,623,620	4,632,815
4,447,090	4,612,453	4,623,915	4,632,816
4,460,984	4,613,954	4,623,970	4,632,817
4,501,178	4,614,473	4,624,537	4,633,677
4,511,077	4,614,943	4,624,889	4,633,917
4,518,664	4,615,095	4,624,986	4,634,090
4,518,799	4,615,133	4,625,000	4,634,539
4,536,409	4,615,305	4,625,074	4,634,560
4,554,155	4,615,904	4,625,289	4,634,696
4,558,226	4,615,987	4,625,299	4,634,895
4,558,377	4,616,087	4,625,849	4,635,085
4,563,975	4,617,189	4,626,501	4,635,122
4,566,189	4,617,676	4,626,901	4,635,156
4,569,701	4,617,770	4,627,097	4,635,185
4,578,140	4,617,814	4,627,522	4,635,444
4,579,704	4,617,852	4,627,541	4,635,550
4,585,721	4,617,961	4,627,709	4,635,989
4,591,557	4,618,189	4,627,735	4,636,336
4,593,049	4,618,817	4,627,967	4,636,417
4,594,981	4,618,860	4,628,056	4,636,453
4,595,158	4,619,079	4,628,082	4,636,719
4,595,263	4,619,199	4,628,645	4,636,747
4,595,392	4,619,404	4,629,104	4,636,991
4,600,671	4,619,866	4,629,700	4,637,917
4,601,699	4,619,940	4,629,784	4,638,405
4,602,494	4,619,970	4,629,796	4,638,944
4,602,847	4,620,645	4,629,965	4,639,089
4,605,665	4,620,747	4,630,731	4,639,240
4,605,890	4,621,198	4,630,843	4,639,467
4,606,714	4,622,239	4,630,962	4,640,527
4,607,737	4,622,355	4,631,472	4,640,585
4,608,058	4,622,396	4,631,554	4,641,103
4,609,309	4,622,537	4,631,726	4,645,153
4,609,434	4,622,812	4,631,869	
4,610,381	4,623,298	4,632,099	

Disclaimers

3,753,549.—*Phillip L. Rubright*, Berkley, Mich. FLOW CONTROL DEVICE AND METHOD AND APPARATUS FOR MAKING SAME. Patent dated Aug. 21, 1973. Disclaimer filed Nov. 3, 1986, by the assignee, *Arco Industries Corp.*

Hereby enters this disclaimer to claim 1 of said patent.

4,313,135.—*J. Carl Cooper*, Sunnyvale, Calif. METHOD AND APPARATUS FOR PRESERVING OR RESTORING AUDIO TO VIDEO SYNCHRONIZATION. Patent dated Jan. 26, 1982. Disclaimer filed Jan. 12, 1987, by the *inventor*.

Hereby enters this disclaimer to claims 7 and 8 of said patent.

4,517,378.—*Joseph A. Vasta*, Wilmington, Del. CURING AGENT FOR FLUOROCARBON POLYMER COATING COMPOSITIONS. Patent dated May 14, 1985. Disclaimer filed Feb. 6, 1987, by the assignee, *E. I. du Pont de Nemours and Co.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,618,908.—*Dennis A. Anttila*, Coconut Creek, Fla. INJECTOR DRIVER CONTROL UNIT WITH INTERNAL OVERVOLTAGE PROTECTION. Patent dated Oct. 21, 1986. Disclaimer filed Feb. 2, 1987, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

Disclaimers and Dedications

3,778,190.—*Joseph H. Ouellette*, Albany, N.Y. BUCKET COVER ATTACHMENT. Patent dated Dec. 11, 1973. Disclaimer and Dedication filed Dec. 15, 1986, by the assignee, *General Electric Co.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

4,091,812.—*Michael L. Helixon* and *Barry S. Ward*, Fort Worth, Tex. OPERATOR MEANS FOR SYRINGE CARTRIDGES. Patent dated May 30, 1978. Disclaimer and Dedication filed Dec. 30, 1986, by the assignee, *Alcon Laboratories, Inc.*

Hereby disclaims and dedicates to the Public that portion of the term of said patent subsequent to Dec. 29, 1986.

4,225,596.—*Hector F. DeLuca*, Madison, Wis. METHOD FOR TREATING CALCIUM IMBALANCE AND IMPROVING CALCIUM ABSORPTION IN MAMMALS. Patent dated Sept. 30, 1980. Disclaimer and Dedication filed Jan. 28, 1987, by the assignee, *Wisconsin Alumni Research Foundation.*

Hereby disclaims and dedicates to the People of the United States of America the remaining term of said patent.

4,391,949.—*David J. St. Clair*, Houston, Tex. ASYMMETRIC BLOCK COPOLYMERS AND CORRESPONDING ADHESIVE FORMULATIONS. Patent dated July 5, 1983. Disclaimer and Dedication filed Sept. 22, 1986, by the assignee, *Shell Oil Co.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext. 21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Irvine: University of California, Irvine Library	(714) 856-7234
	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 636-5060
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
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Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 28, 1987

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	11-25-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-26-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	1-06-86
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	10-25-85
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-19-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	11-4-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	3-06-85
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	3-28-85
DESIGN, GROUP 290—K. L. CAGE, Director	8-09-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-14-86
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	7-22-85
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	12-02-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during March 1987, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

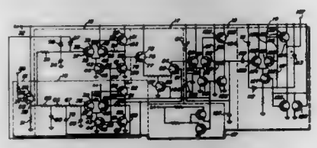
Patents ..... Numbers 3,497,872 to 3,504,376, inclusive
Plant Patents ..... None

REEXAMINATIONS

APRIL 28, 1987

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,846,710 (668th)
DC RESTORATION AMPLIFIER WITH AUTOMATIC ZERO OFFSET ADJUSTMENT
Ronald H. Chapman, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Reexamination Request No. 90/001,080, Sep. 8, 1986.
Reexamination Certificate for Patent No. 3,846,710, issued Nov. 5, 1974, Ser. No. 329,266, Feb. 2, 1973.
Int. Cl.[4] H03F *21/00*
U.S. Cl. 330—11



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

8. A DC restoration amplifier for restoring a DC reference bias to signals coupled thereto and wherein said amplifier operates from a source of potential, said amplifier including in combination, circuit means for receiving said signals and developing amplified signals, peak-to-peak amplitude detector means coupled to said circuit means and operative to develop a DC reference bias signal equal to one-half the peak-to-peak amplitude of said amplified signals, and DC level shifting means having a first input for receiving said amplified signals and a second input for receiving said DC reference bias signals, said DC level shifting means being operative in response thereto to develop a second signal corresponding to said input signals and having a DC reference bias of one-half the peak-to-peak amplitude of said amplified signals.

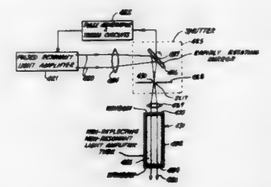
B1 4,042,890 (669th)
Patent Not Issued For This Number

B1 4,053,845 (670th)
OPTICALLY PUMPED LASER AMPLIFIERS
Gordon Gould, 329 E. 82 St., New York, N.Y. 10028
Reexamination Request Nos. 90/000,253, Sep. 9, 1982 and 90/000,254, Sep. 9, 1982 and 90/000,336, Mar. 4, 1983.
Reexamination Certificate for Patent No. 4,053,845, issued Oct. 11, 1977, Ser. No. 498,065, Aug. 16, 1974.
Continuation of Ser. No. 644,035, Mar. 6, 1967, abandoned, and Ser. No. 804,540, Apr. 6, 1959, abandoned, said Ser. No. 644,035, is a division of said Ser. No. 804,540, and a continuation-in-part of Ser. No. 804,539, Apr. 6, 1959.
Int. Cl.[4] H01S *3/091, 3/22*
U.S. Cl. 330—4.3

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

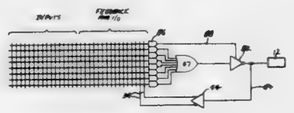
The patentability of claims **1–12** is confirmed.

1. Apparatus for light amplification comprising a bounded volume containing an excitable medium, the atoms, ions or molecules of said medium having well defined energy states including a lowest state, a lower state above said lowest state, and a higher state above said lower state, and a bright pumping light source composed of a radiative substance different from said medium which substance emits energy in a spectral range which can be absorbed by said medium, the major portion of the energy absorbed by said medium causing transitions of the atoms, ions, or molecules thereof to populate the higher state, said bright pumping light source being arranged to direct light into said medium to excite said atoms, ions, or molecules to



emit light photons in the bounded volume when stimulated to do so by the presence of stimulating light at a frequency substantially corresponding to the emitted light due to transitions from the higher state to the lower state, said emitted light having substantially the same phase, frequency, polarization and wavefront shape as the stimulating light, thus adding coherently to the amplitude of the stimulating light.

B1 4,124,899 (671st)
PROGRAMMABLE ARRAY LOGIC CIRCUIT
John M. Birkner, Santa Clara, and Hua-Thye Chua, Cupertino, both of Calif., assignors to Monolithic Memories, Inc., Sunnyvale, Calif.
Reexamination Request Nos. 90/000,774, May 2, 1985 and 90/000,934, Jan. 9, 1986.
Reexamination Certificate for Patent No. 4,124,899, issued Nov. 7, 1978, Ser. No. 799,509, May 23, 1977.
Int. Cl.[4] H03K *19/20*
U.S. Cl. 364—716



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

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The patentability of claims **4–6, 10–12 & 15–21** is confirmed.

Claims **1–3, 7–9 and 13–14** are cancelled.

16. A programmable integrated logic circuit array comprising:

(a) a plurality of logical AND gates, each AND gate having a plurality of inputs and an output;

(b) a matrix comprising the inputs to said logical AND gates and a plurality of input lines;

(c) means for selectively connecting desired input lines with desired logical AND gate inputs;

(d) a plurality of logical OR gates;

(e) means for connecting outputs from said logical AND gates to inputs to said OR gates;

(f) gating means connected to the output of at least one of said OR gates;

(g) feedback means for connecting the output of each of the gating means to selected ones of said input lines; and

(h) means for gating each of said gating means to either disable or enable said OR gate; said feedback means being operable as an input line when said OR gate is disabled.

B1 4,175,774 (672nd)
NON-COPYING PRINTED DOCUMENT AND METHOD OF PRINTING SAME
Gerald A. Tonges, Sycamore Township, Hamilton County, and Eugene L. Elmlinger, Springdale, both of Ohio, assignors to Bedinghaus Business Forms Inc., Cincinnati, Ohio
Reexamination Request No. 90/000,938, Jan. 14, 1986.
Reexamination Certificate for Patent No. 4,175,774, issued Nov. 27, 1979, Ser. No. 889,229, Mar. 23, 1978.
Int. Cl.⁴ B42D *15/00*
U.S. Cl. 283—94

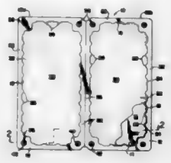


AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3** are cancelled.

[**1**. A document including a sheet and a background printed on the sheet, the background including a first portion formed of small dots and a second portion formed of larger dots, the dots being of a single color, the larger dots being of a size which is reproduced by a copying machine, the small dots being of a size which is not reproduced by the copying machine.]

B1 4,438,584 (673rd)
TRAP FOR RATS, MICE, AND OTHER VERMIN
Stanley Z. Baker, Mayfield Heights, and Benjamin H. Baker, Chesterland, both of Ohio, assignors to J. T. Eaton & Company, Inc., Twinsburg, Ohio
Reexamination Request No. 90/000,827, Jul. 25, 1985.
Reexamination Certificate for Patent No. 4,438,584, issued Mar. 27, 1984, Ser. No. 338,621, Jan. 11, 1982.
Continuation of Ser. No. 53,381, Jun. 29, 1979, abandoned.
Int. Cl.⁴ A01M *23/00*
U.S. Cl. 43—58



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–4**, dependent on an amended claim, are determined to be patentable.

1. A *commercial* trap *product* for [vermin]*catching mice or rats* comprised of a generally flat support formed of a non-porous, thin sheet material, said support having at least one positioning surface, at least one indented portion having a given depth below said positioning surface, and a relatively thick layer of pressure sensitive adhesive material contained within said indented portion having a thickness of at least 1/16 inch, a plastic flow temperature above 120° F. and an upper surface; said indented portion having a greater depth than the thickness of said layer of adhesive and said positioning surface being spaced above said adhesive layer upper surface.

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REISSUES

APRIL 28, 1987

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,407

COMBINED SEAT AND BACKREST UNIT FOR A CHAIR

Hans C. Mengsboel, Bygdöy Alle 12, Oslo 2, and Oddvin Rykken, 5610 Oystese, Oystese, both of Norway

Original No. D. 272,873, dated Mar. 6, 1984, Ser. No. 313,247, Oct. 21, 1981. Application for reissue Aug. 22, 1985, Ser. No. 768,427

Int. Cl. D6 *01*

U.S. Cl. D6—365 1 Claim



Re. 32,408

LIGNOSULFONATE-PHENOL-FORMALDEHYDE RESIN BINDER

Eugene R. Janiga, Roselle, Ill., assignor to Masonite Corporation, Chicago, Ill.

Original No. 4,423,173, dated Dec. 27, 1983, Ser. No. 427,841, Sep. 29, 1982. Application for reissue Nov. 26, 1985, Ser. No. 802,225

Int. Cl.[4] C08L *97/00, 97/02, 61/14;* C08H *5/02*

U.S. Cl. 524—14 20 Claims

12. An article of manufacture comprising a plurality of fibers adhered together under heat and pressure with a lignosulfonate-phenol-formaldehyde resin wherein said resin is formed by mixing a lignosulfonate, phenol, formaldehyde, and an alkali to form a reaction mixture and heating said mixture to polymerize said mixture, *said lignosulfonate consisting essentially of the lignosulfonates in a waste sulfite or sulfited cooking liquor as recovered from a pulping process,* said lignosulfonate being added to said reaction mixture before a substantial amount of reaction between said phenol and said formaldehyde.

18. A lignosulfonate-phenol-formaldehyde resin formed by

heating a mixture of phenol, formaldehyde, a lignosulfonate and alkali wherein said lignosulfonate comprises about 5 to about 80 percent of the total weight of phenol, formaldehyde and lignosulfonate, *said lignosulfonate consisting essentially of the lignosulfonates in a waste sulfite or sulfited cooking liquor as recovered from a pulping process,* and wherein said lignosulfonate is mixed with said phenol and formaldehyde under alkaline conditions before a substantial amount of reaction between said phenol and said formaldehyde; and

heating said mixture at a temperature of 60° C. to 100° C. to form a lignosulfonate-phenol-formaldehyde polymer;

cooling said reaction mixture when the viscosity reaches 10 to 200 centipoises to retard further polymerization.

Re. 32,409

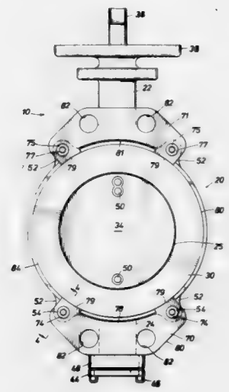
VALVE ASSEMBLY

Edward G. Holtgraver, Spring, Tex., assignor to Keystone International, Inc., Houston, Tex.

Original No. 4,399,833, dated Aug. 23, 1983, Ser. No. 345,660, Feb. 4, 1982. Application for reissue Aug. 19, 1985, Ser. No. 767,525

Int. Cl.[4] F16K *51/00*

U.S. Cl. 137—315 17 Claims



10. A wafer-type valve assembly for securing to a flange fitting having a flow passageway therethrough and comprising a flange extending radially from said flow passageway, wherein said vlave assembly comprises:

a valve body having a flowway therethrough;

connection formations integrally adjoining said valve body;

a valve element mounted in said flowway for movement between a first position closing said flowway and a second position opening said flowway;

an annular valve seat lining said flowway for sealing engagement with said valve element;

a seat retainer axially abutting said valve seat and one end of said valve body to locate said valve seat;

adapter means adjoining said valve body and extending outwardly therefrom, said adapter means axially overlapping said seat retainer;

first connector means cooperative between said connection formations of said valve body and said adapter means to connect said adapter means to said valve body and thereby mount said seat retainer to said valve body; and

second connector means [cooperative between said adapter means and said flange of said flange fitting to connect] *for connecting* said [adapter means] *valve assembly* to said flange fitting.

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PLANT PATENTS

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Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,956

ROSE PLANT—MEIPOQUE VARIETY

Marie-Louise Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Aug. 9, 1985, Ser. No. 763,997
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of shrub rose plant characterized by the following combination of characteristics:

(a) forms in abundance over an extended period of time attractive rose-carmine single flower blossoms of five petals having a white center,

(b) forms in the fall attractive red fruits,

(c) exhibits a vigorous growth habit,

(d) is hardy and relatively disease resistant, and

(e) is particularly well-suited for growing in the landscape; substantially as herein shown and described.

5,957

ROSE PLANT NAMED SAVADI

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Sep. 11, 1985, Ser. No. 775,023
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by good form and unusual orange red colored flowers of varying orange red tones but including some yellow-orange red blending toward point of petal attachment and pale pink blending on older outer petals.

5,958

ROSE PLANT—MEIPINJID VARIETY

Marie-Louise Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Aug. 9, 1985, Ser. No. 763,996
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of Miniature rose plant which originated as a bud mutation of the Meijidiro variety, substantially as shown and described, having flowers which are of deeper hue of pink and a more vigorous growth habit than the Meijidiro variety.

5,959

ASIATIC LILY NAMED ZEPHYR

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 11, 1985, Ser. No. 710,578
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant, substantially as herein shown and described, characterized by its unique clear medium pink color tone and the excellence of its flower form and substance, its versatility both as a garden plant and as a plant produced from precooled bulbs forced for cut-flower production, and its high resistance to disease and tolerance to virus.

5,960

ASIATIC LILY NAMED 'CORDELIA'

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 11, 1985, Ser. No. 710,577
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Asiatic hybrid lily, substantially as herein shown and described, characterized by its open flower form wherein the generally oblanceolate upper tepals extend midway between the lower tepals with very little overlapping of the tepal margins and with their nectary ends openly spaced apart at the base of the flower.

5,961

KALANCHOE PLANT NAMED TROPICANA

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ohio

Filed Oct. 1, 1985, Ser. No. 782,459
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Tropicana, as illustrated and described, and particularly characterized by its orange-red flowers; floriferous habit; superior self-branching; time to flowering of eleven weeks in summer to thirteen weeks in winter; requirement for growth regulation to control peduncle and pedicel elongation; relatively large, dark green foliage which maintains color after several months of flowering; excellent flower keeping qualities, and by its resistance to disease.

5,962

KALANCHOE PLANT NAMED AVANTI

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ohio

Filed Oct. 1, 1985, Ser. No. 782,457
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Avanti, as illustrated and described, and particularly characterized by its relatively large orange-red flowers and floriferous habit; small, dense foliage; compact growth habit with high degree of basal and side branching; early flowering, and its resistance to disease.

5,963

LILY PLANT NAMED DARLING

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Melridge Inc., Gresham, Oreg.

Filed Aug. 30, 1985, Ser. No. 771,578
Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Oriental hybrid lily, substantially as herein shown and described, characterized by its short stature, its short but broad leaves of dark green color, its outwardly facing, bowl-shaped flowers of very large size and of a magenta-rose coloration, and its reliable forcing performance as a pot plant cultivar.

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ASIATIC LILY NAMED GOLD MEDAL

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 11, 1985, Ser. No. 710,592
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of hybrid Asiatic lily, substantially as herein shown and described, characterized by its unique yellow and gold flower color pattern and the excellence of its flower form and substance, as well as its versatility both as a garden plant and as a plant produced from precooled bulbs forced for cut flower production.

5,965

CARNATION NAMED LONBULOG

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, Les Maures, France

Filed Nov. 8, 1984, Ser. No. 669,385
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—73 **1 Claim**

1. A new carnation cultivar, substantially as herein shown and described, characterized by its bright cardinal red blooms which are of medium size and are profusely produced during each of its recurrent blooming seasons.

5,966

CHRYSANTHEMUM NAMED 'SNOW REPIN'

Martinus van der Jagt, Ter Aar, Netherlands, assignor to Chrysanthemum Breeders Association N.V., Willemstad, Netherlands Antilles

Continuation of Ser. No. 623,095, Jun. 21, 1984, abandoned.
This application Sep. 3, 1985, Ser. No. 772,186
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinctive variety of Chrysanthemum, named 'Snow Repin' as described and illustrated in the foregoing specification and accompanying drawings.

PATENTS

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ERRATA

For CLASS	See PATENT NO.
604-256	4,661,110
376-123	4,661,304
376-209	4,661,306
376-232	4,661,307
376-245	4,661,308
376-248	4,661,309
376-259	4,661,310
376-266	4,661,311
376-283	4,661,312
376-295	4,661,313
558-277	4,661,609
558-344	4,661,610
380-021	4,661,657
380-023	4,661,658
379-061	4,661,659

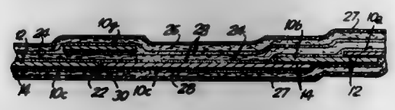
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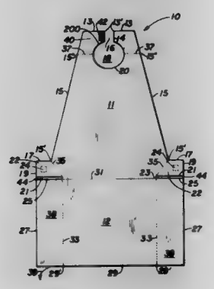
GENERAL AND MECHANICAL

4,660,223
PROTECTIVE BODY ARMOR
Donald P. Fritch, Baldwin, N.Y., assignor to Point Blank Body Armor, Inc., Freeport, N.Y.
Filed May 14, 1986, Ser. No. 863,085
Int. Cl.[4] F41H *1/02*
U.S. Cl. 2—2.5 **12 Claims**



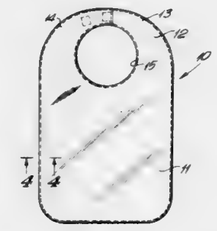
1. A body armor insert comprising:
an assemblage of substantially adjacent panels, each of said panels comprising a first ply of titanium metal and a second ply of ballistic cloth woven from aramid fibers, said first and second plies bonded to one another, said assemblage having a strike face and an inner face, said cloth ply constituting the strike side of each of said panels,
a first layer of felted material across said strike face of said assemblage of panels and a second layer of felted material across said inner face assemblage of panels, said first and second layers of felted material being bonded to said strike and interior faces respectively of said assemblage of panels to hold said assemblage of panels in substantially predetermined relationships.

4,660,224
UNISEX BIB-APRON
Jeanne Ashcraft, 3360 Pardi Dr., Placerville, Calif. 95667
Filed Sep. 15, 1986, Ser. No. 906,980
Int. Cl.[4] A41B *13/10*
U.S. Cl. 2—48 **11 Claims**



1. A throwaway bib-apron for use while dining in one's automobile which comprises a flexible member of paper, or the like adapted to fit around the neck of the wearer and to cover the chest and thighs of the wearer said member having a front surface and a back surface and comprising:
a pair of generally horizontal spaced upper top walls axially aligned, each having an inner end and an outer end, from the outer ends of each of which depend one of a pair of downwardly and outwardly depending elongated first side walls, each of which side walls has a lower end;
a pair of lower top walls, each of which extends outwardly parallel to said upper top walls, one from each of the lower ends of the first side walls;
a pair of second side walls, which depend generally vertically, one from each of the outer terminii of the lower top walls to;
a pair of first intermediate walls, each of which depends inwardly from the end of its respective second sidewall to an inner terminus;
a pair of second intermediate walls each of which depends downwardly from the inner terminus of its respective first intermediate wall to;
a pair of outwardly extending third intermediate walls each commencing at the lower end of its respective second intermediate wall to;
a pair of spaced elongated generally vertical third sidewalls each having a lower end and extending from the outer terminus of its respective third intermediate wall to;
a generally horizontal bottom wall connecting the lower ends of the third sidewalls;
a pair of horizontally spaced vertically extending inside walls each of which has a lower terminus, each inside wall depending from the inner end of one of the spaced upper top walls thereby defining a vertical slot;
a cut out portion defined by a continuous wall extending outwardly from the lower terminus of each of said inside walls, said cut out portion in communication with said vertical slot;
an adhesive pad disposed on the back surface of said member between each lower top wall and its respective first intermediate wall; and
an adhesive pad adjacent one of said inside walls.

4,660,225
ORNAMENTAL BIB
Beatrice Kahn, P.O. Box A, Tarzana, Calif. 91356
Filed Aug. 23, 1985, Ser. No. 768,731
Int. Cl.[4] A41B *13/10*
U.S. Cl. 2—49 R **6 Claims**



1. A protective bib comprising a garment protective body portion of flexible material, a yoke on said bib for attachment about the neck of the wearer, and a layer of a highly light reflecting Nylon fabric material carried upon the outer surface of the body portion and adapted to reflect light toward the face and head of the wearer.

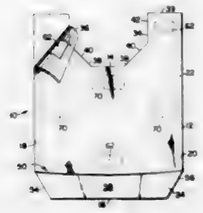
4,660,226
BIB
Marlys M. Quilling, 3428 Dale St., Eau Claire, Wis. 54703; Sherrie M. Edwards, Eau Claire, Wis., and Jeanette M. Mathews, 821 Lynn Ste., Chippewa Falls, Wis. 54729, assignors to Marlys M. Quilling, Eau Claire and Jeanette M. Mathews, Chippewa Falls, both of WI
Filed Apr. 11, 1986, Ser. No. 850,984
Int. Cl.[4] A41B *13/10*
U.S. Cl. 2—49 R **20 Claims**

1. A disposable bib, comprising:
a substantially rectangular pad having top and bottom ends,

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sides and a width, said pad having a first and a second layer bonded together, said first layer being absorbent and said second layer being waterproof, each layer having an inside and an outside surface; and

a means for snugly fitting said bib around any size neck, said means including two leg-like extensions configured to define a neckline adjacent said top end of said pad, said extensions each having a base of width less than one-half



of said pad width, a lower portion adjacent said top of said pad wherein said width narrows gradually, and an upper portion wherein the width is constant and equal to the narrowest width of said lower portion, said extensions having a first and a second layer bonded together, said first layer being absorbent and said second layer being waterproof, each layer having an inside and an outside surface.

4,660,227

WOMEN'S NURSING WEAR FASHIONS

Naomi K. Abramson, 7320 Cirrus Way, Canoga Park, Calif. 91307

Filed Oct. 11, 1983, Ser. No. 540,829
Int. Cl.⁴ A41D *1/20*
U.S. Cl. 2—104 **18 Claims**

and above the bottom of her breasts, is not permanently attached to the garment body;

(c) right-hand and left-hand front outer panels which:

extend vertically between, and are attached to or integral with the garment body along, the upper and lower lines of attachment,

are attached to the garment body along the side lines of attachment,

extend horizontally from the side lines of attachment toward one another, overlapping the under-panel on its two sides, and

at least below such woman's shoulders and above the bottom of her breasts, are not permanently attached to the garment body and not permanently attached to the under-panel;

said under-panel and outer-panels, where overlapped but not attached, defining right-hand and left-hand generally vertical slits that provide access to such woman's respective breasts and nipples; and

(d) a vertically extended additional panel that:

is attached to the garment body or to one or more of the outer-panels and under-panel, generally along the right-hand and left-hand upper lines of attachment,

hangs downwardly at least past the bottom of such woman's breasts, and

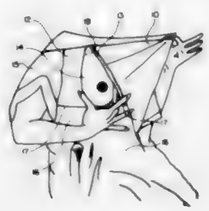
covers such woman's breast and nipple when they are exposed for nursing, therefore providing privacy to such woman during nursing.

4,660,228

GLOVE

Yasuhiro Ogawa, Suita, and Yasuo Muramoto, Osaka, both of Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers, Ltd., Osaka, both of, Japan

Filed Jul. 3, 1985, Ser. No. 752,224
Claims priority, application Japan, Jun. 8, 1985, 60-86814[U]; Jun. 10, 1985, 60-87777[U]; Jun. 12, 1985, 60-127824
Int. Cl.⁴ A41D *19/00*
U.S. Cl. 2—167 **14 Claims**



1. A garment for use by a woman who is nursing, including, in combination:

(a) a garment body which extends very generally across such woman's back, and in front of her body at or below her abdomen, to define:

right-hand and left-hand upper lines of attachment that are very generally along such woman's two shoulders respectively,

a lower line of attachment that is very generally across the front of her body, substantially below the breasts, and

right-hand and left-hand side lines of attachment that are very generally along such woman's sides vertically under her arms;

(b) a front under-panel which:

extends vertically between, and is attached to or integral with the garment body along, the upper and lower lines of attachment,

extends horizontally between very generally the centers of such woman's breasts, and

on its two sides, at least below such woman's shoulders



1. A glove comprised of two elastic polyurethane sheets, at least one of which consists essentially of an elastic polyurethane fiber, nonwoven, air-permeable fabric, said two sheets being heat sealed together along the periphery thereof to form a configuration corresponding to the contour of a hand, leaving the wrist portion unsealed.

4,660,229

WATER-TIGHT EAR ENCLOSURE

Paul W. Harris, 1130 Lowe Ave., Adrian, Mich. 49221

Filed Dec. 13, 1985, Ser. No. 808,794
Int. Cl.⁴ A42B *1/06*
U.S. Cl. 2—209 **14 Claims**

1. A water-tight ear enclosure for enclosing and sealing a person's ear, comprising:

(a) a water-impervious membrane gathered around an opening forming a bag-shaped enclosure defined by a continuous edge of said membrane;

(b) a flexible inelastic strip secured along a first portion of said impervious membrane edge;

(c) an elastic flexible element secured along a second portion of said impervious membrane edge connected at its opposed ends to said flexible inelastic strip, drawing said membrane tightly around the back of the ear lobe; and



(d) adhesive means on said flexible inelastic strip releasably attaching said strip to said person's head across the tragus of the ear.

4,660,230

BASEBALL BATTING HELMET

Rudolf M. Mayling, Wallkill, N.Y., assignor to Walter G. Weissenberger, Chappequa and William H. Dippert, Briarcliff Manor, both of, N.Y., a part interest to each

Continuation-in-part of Ser. No. 628,741, Jul. 9, 1984, abandoned. This application Jun. 17, 1986, Ser. No. 875,182
Int. Cl.⁴ A42B *3/00*
U.S. Cl. 2—413 **10 Claims**





1. In an improved baseball batting helmet comprising an outer shell which has front and rear portions and inner and outer surfaces, which projects over at least one of a batter's ears, and which has webbing and/or padding on the inner surface of the shell to cushion the helmet against the batter's head,

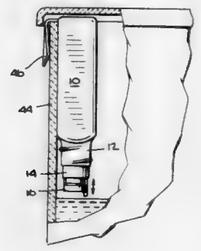
the improvement wherein the helmet has an outer member adjacent to at least one side of the outer shell, an impact-release member is position between the outer surface of the shell and the inner surface of the outer member, the impact-release member comprising a fluid-filled sac which has sufficient cross-sectional area to substantially cover the ear and/or temple area of the batter's head and which ruptures upon impact of a projectile upon the helmet, and the outer member is attached to the outer shell by attachment means at two or more points of attachment, each point of attachment being located sufficiently far from the center of the outer member that portions of the outer member not directly above the fluid-filled sac are flexible and act to deflect objects which may strike the helmet on one of said portions.

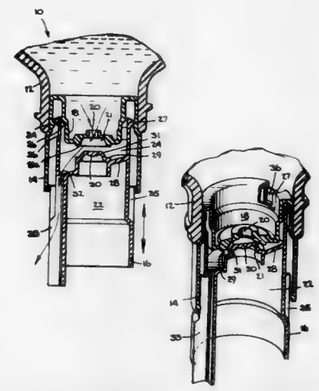
4,660,231

AUTOMATIC TOILET BOWL CLEANER DISPENSER

Mark W. McElfresh, Erlanger, Ky., and Martin E. Bellersen, Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Apr. 15, 1986, Ser. No. 852,057
Int. Cl.⁴ E03D *9/02, 9/03*
U.S. Cl. 4—228 **14 Claims**

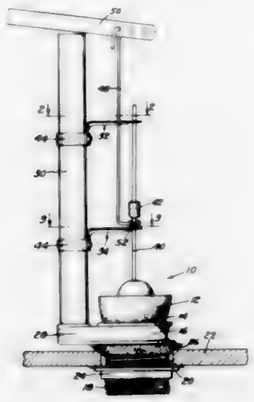




1. In a device for dispensing a measured amount of fluid into a toilet flush tank comprising a liquid container having a body, an open neck portion and closure means; a shroud fastened to and extending from said neck portion and having an inner restricting means defining a restricted opening in said neck portion; a float member slidable and concentrically mounted within said shroud and having upper and lower segments, the upper of which is adjacent to said container neck portion, an air bell constructed in said lower segment of said float member and having an inner and outer wall and a lower extremity having an open end, a chamber constructed in the upper segment of said float member in communication with the restricted opening of said neck portion, said chamber having a discharge opening and projection means for preventing the flow of fluid from said restricted opening of said neck portion at the uppermost position of said float member's sliding motion, and means for mounting said container on the wall of a fluid tank in an inverted position so that said float member rises and falls with the fluid level in the tank, the improvement which comprises a shroud having a lower, inner valve seat located at the lowermost portion of said inner restricting means and in communication with said restricted opening in said neck portion and a float member wherein the chamber of said float member has projection means forming a valve body having the surface of its outer wall adapted to engage the inner wall of said valve seat in a sealing relationship and a floor having a discharge opening located therein, said discharge opening in said floor communicating with a discharge channel extending longitudinally along the outer wall of said air bell

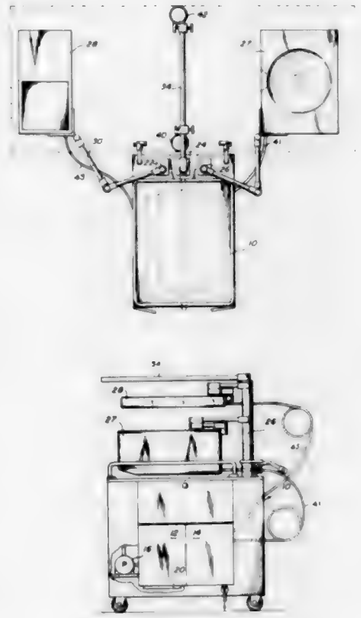
and said restricted opening being of such size as to allow a vacuum to form in the container as said measured amount of fluid has been dispensed.

4,660,232
TOILET FLUSH VALVE
Ejnar Sorensen, P.O. Box 1362, Santa Monica, Calif. 90406
Filed Mar. 24, 1986, Ser. No. 843,259
Int. Cl.[4] E03D 5/09
U.S. Cl. 4—413 2 Claims



1. A toilet flush valve for use with a toilet tank having an outlet valve seat, an overflow pipe, and a handle-operated lift arm, comprising:
- a buoyant tank ball that seats on the outlet valve seat;
- a rod attached to said tank ball and extending vertically upward therefrom;
- a pair of widely spaced guide arms fixed to the overflow pipe and extending horizontally therefrom over the outlet valve seat, said guide arms having guide holes in their outer ends through which said rod slides freely;
- the guide hole in the upper guide arm being only slightly larger in diameter than said rod, by an amount of the order of 25% greater than the rod's diameter, so that the rod slides freely therein without appreciable side play, and the guide hole in the lower guide arm being substantially larger in diameter than the rod, by an amount of the order of 2 to 2.5 times the diameter of the rod, so that the rod has appreciable side play to allow the tank ball to center itself on the valve seat in the event that the tank ball is slightly misaligned with respect to the valve seat;
- a knob attached to said rod closely adjacent the lower guide arm; and
- a lift rod depending from the lift arm and having a formation at its lower end slidably engaging said tank rod between the lower guide arm and said knob, said formation being operable to engage the bottom of the knob to lift said tank ball rod and raise said tank ball from its seat when the lift arm is raised.

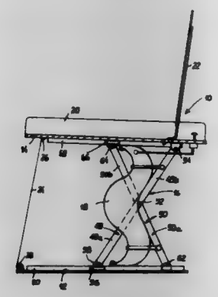
4,660,233
PORTABLE SHAMPOO, MANICURE, AND WASHING APPARATUS
Lucretta Beaver, Rte. 1, Box 812, Splendora, Tex. 77372
Filed Jan. 7, 1986, Ser. No. 816,828
Int. Cl.[4] A45D 19/04
U.S. Cl. 4—516 1 Claim



1. A portable, self contained, washing, shampooing, pedicuring and manicuring apparatus for use with bed-ridden persons comprising:
- a wheeled cabinet having fresh and waste water tanks therein;
- means in said cabinet for pressurizing and heating the water in said fresh water tank;
- a foot basin having a drain fitting connected by a flexible hose line to said waste water tank;
- a head basin having a drain fitting connected by a flexible hose line to said waste water tank;
- extensible spray nozzle means carried by said cabinet and connected to said pressurizing means;
- means separately supporting said basins on said cabinet for vertical and horizontal adjustment to operative position over an adjacently positioned bed and permitting pivoting said basins to overlie each other and said cabinet in inoperative position for storage and for moving purposes;
- a pair of open top receptacles for manicuring, adjustably supported in spaced relation on an elongated rigid bar member; and
- means pivotally supporting said bar on a vertically adjustable column carried by said cabinet between said basin support means so that said bar may be placed in operative position over an adjacent bed and pivoted to inoperative position aligned with said cabinet and said basins.

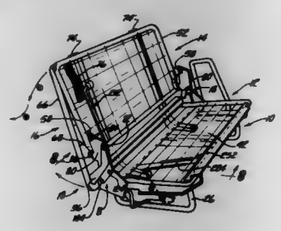
4,660,234
BATHTUB INSERT FOR HANDICAPPED PERSONS
Peter Schmidt, Wittumweg 38, D-7989 Eisenharz, Fed. Rep. of Germany
Filed Feb. 10, 1986, Ser. No. 827,593
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1985, 3508056
Int. Cl.[4] A47K 3/12
U.S. Cl. 4—566 10 Claims

1. A bathtub insert for handicapped persons comprising a bottom frame, a seat plate, a scissor-type quiding device arranged between said bottom frame and said seat plate and a lifting device consisting of a water-fillable hose closed at its ends, one end of the hose fastened at the bottom frame and the other end fastened at the seat plate, a pair of swinging plates pivotably connected at opposite side edges of the seat plate respectively and by spring means pre-stressed into the plane of the seat plate respectively, a blind provided at a front end of the bathtub insert and consisting of a cover sheet, upper and lower end of the cover sheet connected with the bottom frame



and the seat plate respectively, the cover sheet having a width substantially equal with that of the bottom frame, one end of the cover sheet fastened at a winding tube rotatably mounted at one of the bottom frame and the seat plate respectively, a spiral spring arranged within the winding tube and continuously exerting a rotatory force to the winding tube even in the lowermost position of the seat plate in order to hold the cover sheet tightly stretched in all positions of the seat plate.

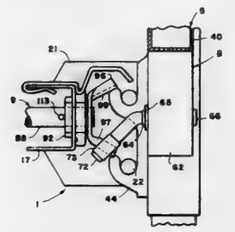
4,660,235
CONVERTIBLE SEAT-BED WITH IMPROVED ACTUATOR FOR THIRD PANEL
Robert W. Plume, P.O. Box 105, Washington, Mich. 48094
Filed Jul. 16, 1985, Ser. No. 755,937
Int. Cl.[4] A47C 17/16
U.S. Cl. 5—38 10 Claims



1. In a convertible seat-bed mechanism of the type comprising:
- a base,
- first and second panels pivotally coupled to each other and supported by the base and adapted, respectively, to form a seat bottom and seat back in a seat orientation and to form side-by-side bed panels in a bed orientation,
- a third panel pivotally coupled with said second panel and adapted to form a third bed panel in said bed orientation,
- latching means for securing said third panel relative to the base in said seat orientation,
- and manually actuable means for operating said latching means,
- a member adjacent the coupling of said second and third panels adapted to be manually moved for folding said panels from teh bed orientation to the seat orientation,

the improvement comprising:
- energy storage means,
- linkage means for imparting motion to said energy storage means by movement of one of said first and second panels from the bed orientation to the seat orientation whereby energy is stored in said energy storage means,
- and an actuating member coupled with said energy storage means for moving said third panel toward the bed orientation by release of energy from said storage means upon unlatching of said latching means.

4,660,236
FREE-ENGAGING DRIVE UNIT FOR ADJUSTABLE BEDS
Warren J. Peterson, Stevens Point, Wis., assignor to Joerns Healthcare, Inc., Stevens Point, Wis.
Filed Sep. 30, 1985, Ser. No. 782,225
Int. Cl.[4] A61G 7/06
U.S. Cl. 5—69 41 Claims

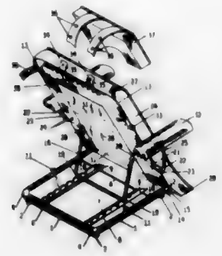


1. In an adjustable bed having a mattress support frame with opposite ends, detachable end panels connected with and supporting said mattress support frame, and a controller shaft that is rotated to manipulate an adjustable portion of said bed, the improvement of a free-engaging drive unit, comprising:
- a crank rotatably mounted on a conveniently accessible portion of one of said end panels;
- a drive coupling member, including:
  - a housing;
  - a first drive shaft mounted in said housing for axial rotation about a longitudinal axis of said first drive shaft;
  - a rigid drive arm connected with said first drive shaft for rotation therewith, and protruding radially outwardly from the longitudinal axis of said first drive shaft;
  - means for operably connecting said crank with said first drive shaft, whereby rotation of said crank rotates said drive arm;
- a driven coupling member, including:
  - a second drive shaft mounted in said mattress support frame for axial rotation about a longitudinal axis thereof;
  - means for operably connecting said second drive shaft with said controller shaft to transmit rotary motion therebetween;
  - means for positioning said second drive shaft adjacent to the end of said mattress support frame associated with said one end panel;
  - a rigid driven arm connected with said second drive shaft for rotation therewith, and protruding radially outwardly from the longitudnal axis of said second drive shaft;
- at least one of said drive arm and said driven arm protruding axially outwardly toward the other of said drive arm and said driven arm, such that when rotated, said drive arm abuts said driven arm at a location spaced radially outwardly from the longitudinal axis of said driven arm, and rotates said driven arm; and
- means for mounting said drive coupling member on said one bed end and said driven coupling member on said mattress support frame in a predetermined relative position wherein when said bed is assembled, said first and second

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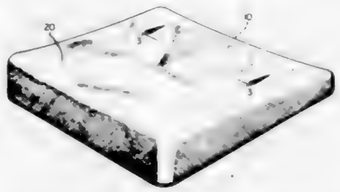
drive shafts are aligned substantially concentrically, such that connection of said one end panel with the associated end of said mattress support frame automatically meshes said drive arm with said driven arm to transmit rotary motion from said crank to said controller shaft and thereby effect bed adjustment.

4,660,237
PORTABLE RECLINER
William E. Brodeur, Alexandria, La., assignor to Robert P. Descant, Alexandria, La., a part interest
Filed Jan. 14, 1985, Ser. No. 691,295
Int. Cl.[4] A47C *20/00, 7/54*
U.S. Cl. 5—74 R **10 Claims**



1. A portable recliner comprising a base frame for resting on a supporting surface; retainer means secured to said base frame; a back frame pivotally attached to one edge of said base frame; a generally U-shaped adjustable brace having a bottom segment engaging said retainer means and upward standing segments extending through said back frame in spaced, pivotal relationship for varying the angle of repose of said back frame with respect to said base frame; arm rest means pivotally carried by said back frame; and a pair of handle segments projecting from said upward standing segments, and engaging said arm rest means, whereby adjustment of said handle segments exerts pressure on said adjustable brace and adjusts said adjustable brace in said retainer means to change said angle of repose.

4,660,238
HEMORRHOID SEAT CUSHION
Eric C. Jay, Boulder, Colo., assignor to Jay Medical, Ltd., Boulder, Colo.
Filed May 20, 1985, Ser. No. 736,291
Int. Cl.[4] A61F *5/34*; A47C *27/08*; A61G *7/04*
U.S. Cl. 5—431 **4 Claims**



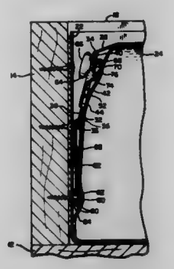
1. A hemorrhoid supporting cushion assembly comprising a supporting surface and a pad comprising:
an envelope comprising an upper layer and a lower layer, said upper layer comprising a flexible material, said envelope being partially filled with a flowable fluid;
said envelope being generally symmetrical about a longitudinal axis, and having lateral extensions which extend primarily under the ischia of a person seated on said pad without extending significantly outside of the ischia of the person, the width of said pad being approximately between 5 and 7 inches said pad being positioned on said supporting surface;
said cushion assembly being positioned under said seated person, whereby the weight of said seated person causes fluid within the lateral extensions of said envelope to move predominently inwardly toward the central longitudinal axis of said envelope and to cause said fluid to move upwardly along said longitudinal axis to provide upward supporting pressure of about 60 millimeters of mercury to the anal area of said person.

4,660,239
THERAPEUTIC PILLOW
Charles R. Thomas, 9696 Northlawn, Detroit, Mich. 48204
Filed Apr. 17, 1986, Ser. No. 853,261
The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.
Int. Cl.[4] A47C *20/02*
U.S. Cl. 5—434 **6 Claims**



1. A therapeutic pillow of rectangular shape having spaced ends and sides comprising a soft resilient bottom pillow section;
a top pillow section superimposed thereover and peripherally secured thereto;
the top section including a top fabric cover and an underlying first bottom fabric cover with said covers peripherally interconnected;
a pair of laterally spaced rows of continuous stitching spaced inwardly of said ends and the corresponding peripheral connections of said covers;
additional stitching extending between and transversely of said rows of stitching spaced inwardly of the corresponding connection of said covers upon one side thereof, defining with said rows of stitching a first tubular firm neck support of rectangular shape, exteriorly and transversely convex;
said rows of stitching defining with the adjacent end connection of said covers a pair of laterally spaced supplemental tubular firm neck supports of rectangular shape exteriorly and transversely convex, at opposite ends of said first neck support;
first compacted stuffing of resilient fibrous material confined and retained within said first neck support;
second compacted stuffing of resilient fibrous material confined and retained within said pair of supplemental neck supports;
said bottom section including a second bottom fabric cover generally spaced from and parallel to said first bottom cover and peripherally connected thereto defining a rectangular chamber underlying said top pillow section;
and a loosely confined stuffing of resilient fibrous material enclosed and retained within said chamber yieldably underlying said top pillow section.

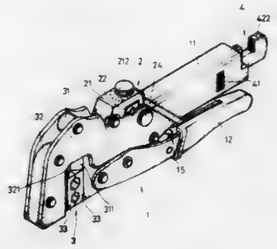
4,660,240
DEVICE FOR ATTACHING SHEETS TO A WATERBED
William B. Hutton, and Deanice B. Hutton, both of 34452 Bachelor Flat Rd., St. Helens, Oreg. 97051
Filed May 13, 1985, Ser. No. 733,701
Int. Cl.[4] A44B *21/00*; A47C *21/02*
U.S. Cl. 5—451 **5 Claims**



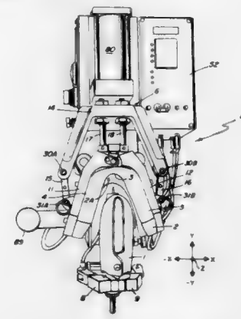
1. A bed sheet attachment device for use in combination with a waterbed of the type having a frame including upstanding walls surrounding at least a portion of a fluid-holding mattress, the bed sheet attachment device comprising:
(a) a plate-like member of plastic material having a first side, a second side, an upper end, and a lower end, said plate-like member defining an opening extending therethrough from said first side to said second side, said opening including a longitudinally-oriented slot having a width, and said opening further including a larger portion which is larger than said width and which communicates with said slot, at least a part of said slot extending from said larger portion toward said upper end, said plate-like member further defining a transverse slot extending therethrough from said first side to said second side and located adjacent said lower end;
(b) elastic connecting means attached to said lower end, for connecting said plate-like member to a portion of the frame of a waterbed, said elastic connecting means including an elastic tape having a pair of ends, said tape extending through said transverse slot and said ends being fastened together parallel with one another by a grommet defining a central opening for receiving a fastener therethrough; and
(c) a stud, having a base, a disk-shaped head which is larger than said base, and a relatively narrow neck portion located between and interconnecting said head and base, said neck being no thicker than said width of said slot, said head and base each being too large to pass through said slot, and at least one of said head and said base being small enough to pass through said larger portion of said opening.

4,660,241
MULTIPURPOSE PLIERS
Ching-Win Chen, and Ching-Jen Chen, both of No. 11, Lane 60, Mei-Ning St., Tai-Shan Hsiang, Taipei Hsien, Taiwan
Filed Oct. 10, 1985, Ser. No. 766,114
Int. Cl.[4] B25F *1/00*
U.S. Cl. 7—107 **5 Claims**

1. A multipurpose pliers for wire stripping, wire cutting and terminal crimping comprising:
a handle assembly including a fixed handle, a moveable handle, a linkage connected between said handles, a brake block mounted on said linkage and a rachet mounted on said fixed handle coacting with said brake block so that by pressing the moveable handle the brake block permits the linkage to pivot the moveable handle away from said fixed handle;
a stripping device on said fixed handle, including a stripping vise, an adjusting block and adjusting cams, which are connected so that said handle assembly opens and closes the stripping vise by pivoting of said moveable handle, said vise holding two knives of different heights in a position such that they strip the wire;
a cutting and crimping device composed of an upper jaw, a lower jaw, a crimping block mounted between said jaws, said crimping block having teeth, said jaws being connected to said handle assembly so that movement of the moveable and fixed handles of the handle assembly drives the upper jaw and the lower jaw to make a corresponding movement such that the jaws cut wire and the teeth of the crimping block crimp terminals onto wire; and
a wrench device mounted on said fixed handle including an adjusting knob and a screw rod shaped and connected to a vise block so that a gap between the said fixed handle and the vise block is set by rotating the screw rod using the adjusting knob.



4,660,242
ACTIVATOR
Walter Vornberger, Tewksbury, Mass., and Karl F. Vornberger, Amherst, N.H., assignors to International Shoe Machine Corporation, Nashua, N.H.
Filed Mar. 24, 1986, Ser. No. 842,967
Int. Cl.[4] A43D *11/00*
U.S. Cl. 12—54.3 **8 Claims**



7. An activator for shaping the heel portion of a footwear upper that comprises:
a mold or the like whose back portion is contoured to the required shape of the heel portion of the upper, to receive the upper;
a pad having a bight region and legs extending from the bight region, said pad having an inner contour that approximately matches the contour of the mold, which pad has an open position and a closed position;
pincers positioned to receive the upper at the forepart thereof and operable to grasp the upper; and
pincers drive means operable to move the pincers longitudi-

nally, in a straight line motion, to draw the upper about the mold or the like to stretch the heel portion thereof to the contour of the mold or the like, said pincers drive means being adjustable in that the direction of draw can be adjusted to effect control of the draw angle and hence control the integrity of the molded heel portion of the upper to the back portion of the mold or the like.

4,660,243

METHOD FOR ERECTING A BRIDGE SUPERSTRUCTURE OF PRESTRESSED CONCRETE AND LAUNCHING GIRDER FOR PERFORMING THE SAME

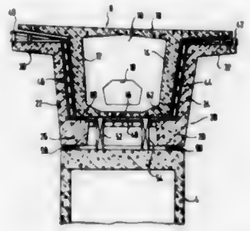
Horst Kinkel, Mozartweg 34, 6100 Darmstadt, Fed. Rep. of Germany

Filed Jul. 30, 1984, Ser. No. 635,798

Claims priority, application 08111983, Aug. 11, 1983, 83 10 7978.3

Int. Cl.⁴ E04C *3/02*; E01D *1/00*

U.S. Cl. 14—17 **7 Claims**



1. A launching girder for the segmented erection of a prestressed concrete bridge superstructure, said girder being formed of monolithic prestressed concrete and comprising a longitudinally extending trough-shaped member having opposing side walls each terminating at an upper edge thereof in a cantilever plate and terminating at a lower edge thereof in a longitudinally extending beam, and a plurality of transverse beams extending between said longitudinally extending beams.

2. A method for the segmental erection of a prestressed concrete superstructure of a bridge having a plurality of bridge supports comprising:

(a) positioning a formwork carrying launching girder between first and second bridge supports;

(b) concreting and stressing a superstructure segment by using said formwork; and

(c) supporting said superstructure through bearings contacting said launching girder while launching said girder to an adjacent position between said second bridge support and a third bridge support while supporting said launching girder through bearings contacting said second bridge support.

4,660,244

HYDRAULIC BRUSH FOR TEETH AND GUMS

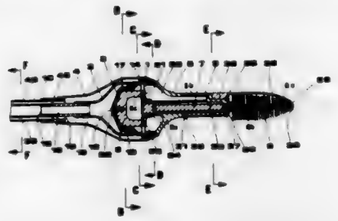
Mark Polyak, 10501 Cedar Lake Rd., Apt. 319, Minneapolis, Minn. 55343

Filed Jul. 3, 1985, Ser. No. 751,793

Int. Cl.⁴ A46B *13/02*

U.S. Cl. 15—24 **19 Claims**

1. Liquid operated apparatus adapted for connection to a source of liquid under pressure for cleaning teeth and gums, comprising a rotor rotatable by liquid flow, a main housing having a front end, a rear end, means defining a working chamber that has a working chamber interior with the rotor rotatably mounted therein, an internal cover and a handle cover connected to the means defining the working chamber to form an inlet passage opening to the chamber interior to supply liquid under pressure for rotating the rotor and an outlet passage opening to the working chamber interior for conducting liquid away from the working chamber interior, a shaft connected to the rotor for being rotated thereby, said shaft having a rear end adjacent to the rotor and a front end, a brush having an axis of rotation connected to the shaft, elongated means mounted by the housing to extend forwardly thereof to mount the shaft for rotation, extend forwardly at least the axial length of the brush and angularly partially around the brush to guard the lips and tongue of the user and discharge jets of liquid toward the teeth during use to aid in cleaning the teeth, the elongated means having a liquid jet discharge opening adjacent



to the brush for discharging liquid as a jet and a jet liquid passage opening to the working chamber interior for conducting fluid from the working chamber interior to the jet discharge opening, a coupling having a supply passage adapted to be connected to the source of liquid under pressure and means for fluidly connecting the coupling supply passage to the inlet passage and fluidly connected to the outlet passage for conducting liquid adjacent to the coupling to discharge liquid adjacent to the coupling at selectedly adjusted rates to thereby control the rate of discharge of liquid through said jet discharge opening and the speed of rotation of the rotor.

4,660,245

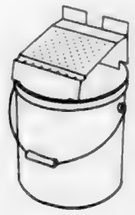
PAINT BRUSH CLEANING STAND

Paul D. Anderson, 434 Arroyo Ave., San Leandro, Calif. 94577

Filed May 6, 1985, Ser. No. 730,809

Int. Cl.⁴ A47L *13/54*

U.S. Cl. 15—268 **12 Claims**



1. A stand for holding a paintbrush above a pail to enable said paintbrush to be readily cleaned manually by a combing process with a wire brush or the like, said stand comprising:

a support shelf for supporting said paintbrush in a substantially horizontal position, the opposite ends of said support shelf having a pair of oppositely-facing edges,

said support shelf having a pair of legs depending down from said oppositely-facing edges thereof when said shelf is in a horizontal position, said legs being (a) substantially as wide as said oppositely-facing edges, and (b) substantially perpendicular to said support shelf so that said shelf interconnects said legs and so that said shelf and said legs form a substantially U-shaped structure,

the end of each of said legs distal from said support shelf having a free edge, said free edge having a pair of opposite ends, each end of said free edge having an indentation

such that the end of each leg has a projecting tongue and a pair of shoulders at opposite sides of the base of said tongue, said shoulders facing downwardly when said support shelf is positioned horizontally,

each leg and its tongue having a predetermined width and the tongues of said respective legs being spaced apart a predetermined distance such that when said stand is placed onto a circular pail having a circular top opening of a predetermined size, said tongues will extend into said opening and said shoulders will be supported on the edges of said opening,

whereby when said stand is placed onto said pail, said support shelf will be supported in a substantially horizontal position above said pail to facilitate easy cleaning of said paintbrush when placed onto said support shelf.

4,660,246

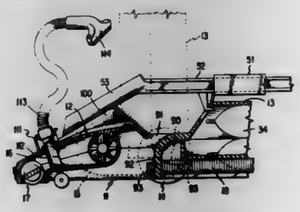
VERSATILE VACUUM CLEANING APPLIANCE

John L. Duncan; John E. Jones, both of Greenville; Martin E. Harbeck, Anderson, all of S.C., and Stephen R. Burns, Norcross, Ga., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 14, 1986, Ser. No. 851,190

Int. Cl.⁴ A47L *5/24*

U.S. Cl. 15—329 **4 Claims**



1. A vacuum cleaner having a body portion, a head portion having a vacuum nozzle, a pivotal connection between said body portion and said cleaner head, and stop means associated with said pivotal connection limiting pivotal movement of said parts to within a predetermined angular range;

a vacuum cleaner handle shiftably supported on said body portion for movement between an extended position for operation of said cleaner in an upright floor supported mode and a retracted position for operation of said cleaner in a hand carried mode;

first interlock means between said handle and said body portion for retaining said handle in said extended position;

second interlock means betwen said handle and said body portion for retaining said handle in said retracted position; and

cooperating surfaces formed on said handle and on said cleaner head, which surfaces in the retracted position of said handle are contiguous and constrain said cleaner head against pivotal movement relative to said body portion in one extreme limit of the angular range permitted by said stop means.

4,660,247

TEMPERATURE LIMITING SYSTEM FOR A SPRING LOADED TORQUE LIMITING CLUTCH

Edwin H. Frohbieter, and William J. Linstromberg, both of Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 31, 1985, Ser. No. 815,391

Int. Cl.⁴ A47L *9/04*

U.S. Cl. 15—339 **11 Claims**

9. In a vacuum cleaner a floor engaging brushing apparatus comprising:

a wheeled floor engaging housing for rolling over a floor surface to be cleaned;

an electric motor mounted in said housing and having an extending drive shaft with a sprocket-type driven pulley thereon;

a brush dowel rotatably mounted in said housing;

a sprocket member carried on said brush dowel;

a cog drive belt mounted on said sprocket-type drive pulley and said sprocket member to transmit a drive torque from said motor to said sprocket member;

a clutch mechanism positioned between said sprocket member and said brush dowel to transmit said drive torque from said sprocket member to said brush dowel;

said brush dowel having a removable end piece carried on a reduced diameter shaft portion of said brush dowel, said brush dowel having a beveled surface providing a transition to said reduced diameter shaft;

said clutch mechanism comprising

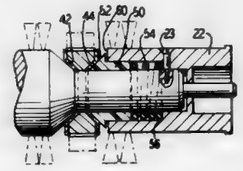
a first cone washer having a central opening for being received on said shaft portion and being engagable against said beveled surface;

a first friction facing member engagable against said first cone washer and said sprocket member;

said sprocket member having a central opening for being received on said shaft portion and defining a pair of beveled surfaces, a first of said surfaces engagable with said first friction facing material to urge said material against said cone washer;

a second friction facing material engagable with a second of said beveled surfaces;

a second cone washer having a central opening for being received on said shaft portion and being engagable with said second friction facing material;



a fuse spacer member fabricated of a material with a melting temperature in the range of 300° to 400° F. having a central opening for being received on said shaft portion and having a first beveled end for engaging said second cone washer to urge said cone washer against said second facing material;

a coil type load spring carried on said shaft portion having a first end engagable against said fuse spacer member;

said removable end piece of said brush dowel having an opening for being received on said shaft portion with an end wall for engaging and pressing against said spring to load said spring;

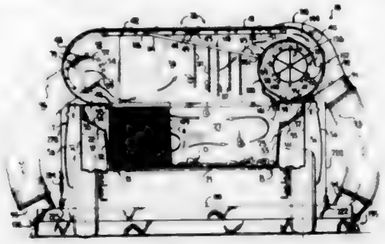
said removable end piece being removably retained on said shaft member by means of a locking fastener;

said friction facings, cone washers and sprocket having a sufficiently large friction therebetween when pressed into engagement by said load spring to transmit sufficient torque from said sprocket member to said brush dowel to cause said brush dowel to rotate against said floor surface, said friction facings, cone washers and sprockets having a sufficiently small friction therebetween to cause slippage therebetween when said dowel is held against rotation while said drive belt continues to rotate;

whereby, said fuse spacer will melt and release said load from said spring upon said slippage causing a rise in temperature of said clutch mechanism to a level above said melting temperature of said fuse to prevent a temperature rise in said clutch mechanism appreciably above said melting temperature.

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4,660,248
PICKUP TRUCK MOUNTED SWEEPER
Gary B. Young, Waco, Tex., assignor to Tymco, Inc., Waco, Tex.
Filed Sep. 12, 1984, Ser. No. 649,671
Int. Cl.⁴ E01H *1/08*
U.S. Cl. 15—340 **32 Claims**



1. A sweeper for roads, parking lots or like surfaces which is particularly adapted to be mounted upon a bed of a mobile vehicle comprising means for defining a hopper into which debris is adapted to be discharged, said hopper having spaced front and rear walls and a pair of spaced side walls each having upper and lower side wall portions, a fore-aft axis disposed generally in transverse relationship to said front and rear walls to thereby coincide with the direction of travel of said associated mobile vehicle, a pick-up head, means for supporting said pick-up head from said associated mobile vehicle in transverse relationship to the fore-aft axis of said hopper, said hopper and pick-up head each including an inlet and an outlet, first conduit means between said pick-up head outlet and said hopper inlet for conducting air-entrained debris from said pick-up head into said hopper, second conduit means between said hopper outlet and said pick-up head inlet for conducting air from said hopper to said pick-up head, means for generating a continuous recirculating stream of air along a closed path of travel including successively said pick-up head, said pick-up head outlet, said first conduit means, said hopper inlet, said hopper, said hopper outlet, said second conduit means, and said pick-up head inlet, means for centrifugally removing debris from the air stream during the travel thereof between said hopper inlet and said hopper outlet about an axis disposed generally parallel to said hopper fore-aft axis, said hopper including a longitudinal center line between said side walls and generally parallel to said fore-aft axis, said centrifugal removing means being disposed adjacent one of said side walls and more remote from the other of said side walls, the axis of said centrifugal removing means being in transversely spaced relationship to said hopper longitudinal center line, said hopper inlet and hopper outlet being on opposite sides of said hopper longitudinal centerline adjacent respective ones of said side walls, and said inlet being on the side of said centerline opposite said centrifugal removing means to enhance separation from the airstream of larger particles of debris.

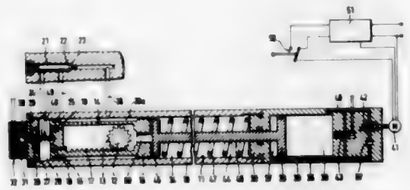
4,660,249
SUCTION DEVICE
Stojan Popovic, John Bergsplan 5/I, S-112 50 Stockholm, Sweden
PCT No. PCT/SE83/00277, § 371 Date Mar. 2, 1984, § 102(e) Date Mar. 2, 1984, PCT Pub. No. WO84/00315, PCT Pub. Date Feb. 2, 1984
PCT Filed Jul. 7, 1983, Ser. No. 590,586
Claims priority, application Sweden, Jul. 7, 1982, 8204204
Int. Cl.⁴ B23K *1/02*; A47L *5/02*
U.S. Cl. 15—341 **5 Claims**

1. A suction device, particularly intended for use as a soft-solder suction device in soldering operations including: a housing having a cylindrical chamber; a suction pipe connected to one end of the chamber; and a piston which is arranged for axial movement in said chamber and which is arranged to be moved from a starting position located adjacent the suction pipe rapidly through the chamber upon release of a force which acts automatically upon the piston, said movement of said piston creating a sub-pressure which gives rise to an effective suction effect at the tip of the suction pipe; said piston being arranged to be driven by an electromagnetic force initiated by means of a switch which is separate from the suction device; said piston being provided with a piston rod, and a restoring and dampening spring arranged around said piston rod, said piston rod being made of magnetic material, and



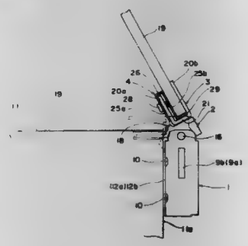
arranged to be drawn into at least one elongate, cylindrical coil when current is caused to flow through the windings of said coil; said piston rod having an inner end located nearest said coil in its unactuated state comprised of soft magnetic material, and an outer end comprised of hard magnetic material; said piston rod being so comprised that the electromagnetic force acting on said rod during the latter part of the stroke will be strengthened so as to draw said rod fully into the coil against the force of the restoring spring to provide a substantially continuous suction effect during the entire duration of piston movement in the cylindrical chamber.

4,660,250
DOOR CLOSER
Horst Tillman, Ennepetal, and Giselher Sieg, Ratingen, both of Fed. Rep. of Germany, assignors to Dorma-Baubeschlag GmbH & Co. KG., Ennepetal, Fed. Rep. of Germany
Filed Jun. 24, 1985, Ser. No. 747,983
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1984, 3423242
Int. Cl.⁴ E05F *3/10*
U.S. Cl. 16—58 **19 Claims**



1. An automatic door closer comprising a fluid-containing housing; a damper piston mounted in said housing for movement in a first direction during closing of the door and in a second direction during opening of the door; first energy storing means for urging said piston in said first direction with a first force; second energy storing means for permanently urging said piston in said first direction with a second force which is weaker than said first force; stressing means operable to prevent said first energy storing means from urging said piston in said first direction so that the piston is then movable in said second direction against the opposition of said second energy storing means but the piston need not overcome the resistance of said first energy storing means; motor means actuatable to operate said stressing means; and means for actuating said motor means.

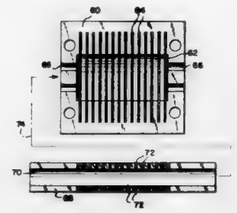
4,660,251
HINGE-TYPE LID MOUNTING DEVICE
Takaharu Watabe, Hirakata, Japan, assignor to Santo Industries Co., Ltd. and Western Trading Co., Ltd., both of Osaka, Japan
Filed Sep. 26, 1985, Ser. No. 780,380
Int. Cl.⁴ E05D *3/10*
U.S. Cl. 16—367 **2 Claims**



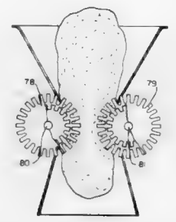
1. A hinge-type lid mounting device comprising:
a main body to be fixed to a case or the like, said main body having an internal space;
a cam body having a cam face and rotatably attached to one end of the main body through a first pin;
a first spring seat fixed to the other end of the main body;
a second spring seat disposed in the internal space for abutment with the came face of said cam body and movable toward and away from the first spring seat;
spring means interposed between the two spring seats;
a generally U-shaped lid supporting member adapted to receive one end of a lid, said supporting member having two side walls parallel to each other, a web connecting said side walls and connected to said cam body outside said main body through a second pin perpendicular to said first pin, one of said side walls having a threaded hole for receiving a fixing screw for pressing the lid against the other side wall; and
a lid anchoring member attached to said lid supporting member and adapted to cooperate with said fixing screw to anchor the lid.

4,660,252
KNIFE ROLL ASSEMBLY FOR A MEAT TENDERIZER
Donald H. Blackburn, Brookville, and Fritz F. Treiber, Centerville, both of Ohio, assignors to Hobart Corporation, Troy, Ohio
Filed Feb. 27, 1986, Ser. No. 833,694
Int. Cl.⁴ A22C *9/00*
U.S. Cl. 17—26 **57 Claims**

1. An integral circular knife module for a meat tenderizer or the like, for mounting on a rotary shaft for driving said module to perform a gang-cutting action on material passing between said module and a back-up member, including:
a plurality of disc-shaped, uniformly spaced knife blades on a common axis, each of said blades having working portions at its periphery and defining a central shaft-receiving blade opening;
the improvement comprising:
a blade support including a molded member for providing the axial spacing between adjacent ones of said blades;
means for providing gripping of said blades by said molded member;
said molded member further defining a central shaft-receiving molded opening and extending radially outward from said central molded opening and terminating not farther than said working portions, said molded member having material engaging said gripping means to provide a unitary molded member interconnecting said blades in integral fashion.



4,660,253
APPARATUS FOR MACERATION OF MEAT
Salvatore J. LoBiondo, West Caldwell, and Joseph V. LoBiondo, Bloomfield, both of N.J., assignors to Senza Gel Corporation, Newark, N.J.
Filed Mar. 19, 1984, Ser. No. 590,710
Int. Cl.⁴ A22C *7/00*
U.S. Cl. 17—26 **9 Claims**



1. A macerating assembly for macerating meat comprising:
a shaft,
a plurality of first discs mounted on said shaft,
a plurality of second discs with a diameter less than the diameter of said first discs mounted on said shaft and spaced between said first discs, said first and second discs having radial slots in their periphery presenting radial and peripheral blunt edges for simultaneously compressing and macerating meat at multiple muscle height levels, said second discs extending radially to a distance such that their peripheral edges are at the deepest point of said slots in said first discs, said second discs thereby serving to simultaneously compress and macerate said meat at a different muscle height level than said second discs.

4,660,254

APPARATUS FOR AUTOMATED MANUFACTURE OF LINK SAUSAGES HAVING CASINGS FORMED OF SYNTHETIC TUBULAR MATERIAL

Gunter Kollross, Dornbein, Fed. Rep. of Germany, assignor to Teepak Produktie N.V., Lommel, Belgium

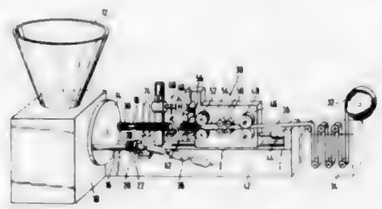
Continuation of Ser. No. 526,225, Aug. 25, 1983, Pat. No. 4,538,326, which is a continuation of Ser. No. 430,017, Sep. 30, 1982, abandoned, which is a division of Ser. No. 188,045, Sep. 17, 1980, Pat. No. 4,358,873. This application Aug. 30, 1985, Ser. No. 771,390

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938371; Oct. 16, 1979, 2941872

The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.

Int. Cl.[4] A22C *11/00*

U.S. Cl. 17—33 **21 Claims**



1. An apparatus for packaging food products in tubular casings, which comprises at least one stuffing horn, a shirring station and a filling station adjacent to the shirring station means for shirring a tubular film into a pleated strand at the shirring station and positioning said strand on the stuffing horn at the filling station, means for completing the shirring of the film at the shirring station before positioning the shirred film at the filling station, means for severing the strand, means for closing off the outermost terminal end of the strand to retain food product, means for stuffing said pleated strand with food product through the stuffing horn at the filling station, and means for closing off the filled casing to form a packaged food product.

4,660,255

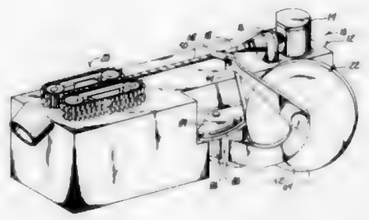
METHOD AND APPARATUS FOR ENCASING A PRODUCT

Ray T. Townsend, 3131 Fleur Dr., Des Moines, Iowa 50321; David W. Smith, 4307 Aspen Dr., West Des Moines, Iowa 50265, and Robert M. Dykes, 9717 Horton Ave., Urbandale, Iowa 50322

Filed May 8, 1985, Ser. No. 731,995

Int. Cl.[4] A22C *11/02, 13/00*

U.S. Cl. 17—49 **22 Claims**



13. A method for encasing a product comprising:

wrapping one end portion of an elongated casing strip around the outer cylindrical surface of an elongated stuffing tube, said stuffing tube having an inlet end and a discharge end, said casing strip having opposite side edges;

rotating said one end portion of said casing strip about the cylindrical axis of said stuffing tube whereby the remaining portion of said casing will be drawn toward and wrapped around said stuffing tube;

feeding said remaining portion of said casing strip toward said stuffing tube at an angle canted with respect to the cylindrical axis of said stuffing tube whereby said strip will be wrapped around said tube in a plurality of helical revolutions with said side edges of said strip of each revolution being in frictional overlapping engagement with said side edges in adjacent helical revolutions;

forcing said product through said tube from said inlet end to said discharge end and into said cylindrical casing.

4,660,256

POULTRY TRANSFER MACHINE

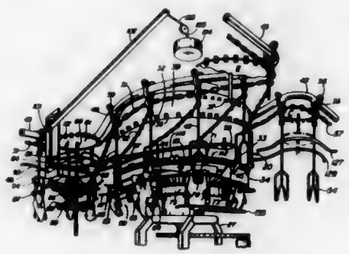
Robert S. Innes, and Stefan Pagowski, both of Hamilton, Canada, assignors to Canadian Bird Equipment Limited, Ontario, Canada

Filed Jun. 5, 1984, Ser. No. 617,550

Claims priority, application Canada, Dec. 19, 1983, 443616

Int. Cl.[4] A22C *21/00*

U.S. Cl. 17—52 **26 Claims**



26. A method for transferring a poultry carcass held by the lower part of its legs on a shackle on a first conveyor line to a shackle on a second conveyor line, the method comprising:

(a) moving the carcass on the one conveyor line until the carcass abuts against a corresponding holding element on the periphery of a rotary member positioned between the first and second conveyor lines, the shackle on the first conveyor line during such movement maintaining its hold on the lower part of the legs of the carcass, the first and second conveyor lines being configured such that each of their paths extend adjacent to a respective different portion of the path of the periphery of the rotary member;

(b) rotating the rotary member with the carcass abutting against the corresponding holding element on the periphery of the rotary member, such rotation bringing the holding element adjacent to a stationary retention means, the retention means acting to retain the carcass on the holding element, the retention means extending adjacent to the path of the periphery of the rotary member between the portion of that path adjacent to the first conveyor line and the portion of that path adjacent to the second conveyor line;

(c) severing the lower part of the legs of the carcass from the remainder of the carcass in the portion of the path of the periphery of the rotary member adjacent to the first conveyor line, the lower part of the legs being severed by means of a knife mechanism extending adjacent to and along that portion of the path, the knife mechanism being positioned relative to the rotary member between the path of the shackle on the first conveyor line and the path of the corresponding holding element; and

(d) dropping the remainder of the carcass from the rotary member onto the shackle on the second conveyor line in the portion of the path of the periphery of the rotary member adjacent to the second conveyor line, the retention means terminating its adjacency to that path immediately prior to the position at which the carcass is dropped.

4,660,257

METHOD OF AND A CONTROL ARRANGEMENT FOR A MACHINE FOR EXTRACTING FIBER FLOCKS FROM TEXTILE FIBER BALES

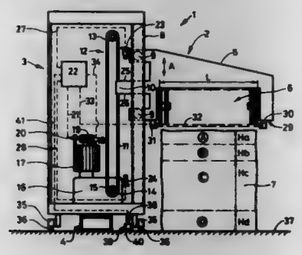
Rolf Binder, Schottikon, Fed. Rep. of Germany; Daniel Hanselmann, Winterthur, and Christoph Stalheli, Frauenfeld, both of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Jan. 31, 1986, Ser. No. 825,098

Claims priority, application Switzerland, Feb. 7, 1985, 00584/85

Int. Cl.[4] D01G *13/00*

U.S. Cl. 19—80 R **8 Claims**



1. A method of extracting fiber flocks from textile fiber bales by means of an extracting member movable in a plurality of passes over and lowerable onto the bales to extract the fiber flocks from the upper bale surfaces with a penetration depth into the bales that is variably dependent on the bale height and to deliver the extracted fiber flocks to a flock transportation means, comprising the steps of initially lowering the extracting member in discrete increments having magnitudes determined by gradually reducing the penetration depth of the extraction member from one of the passes to the next while operating in an upper bale region during a predetermined number of passes from a predetermined maximum value to a lesser penetration depth value predetermined for a middle bale region; subsequently lowering the extracting member in discrete increments having magnitudes determined by maintaining said penetration depth constant from one of the passes to the next at said lesser penetration depth value while operating in said middle bale region; and subsequently lowering the extracting member in discrete increments having magnitudes determined by gradually increasing said penetration depth from one of the passes to the next while operating in a lower bale region during a predetermined number of passes from said lesser penetration depth value to a maximum penetration depth which is predetermined for said lower bale region.

4,660,258

SEPARABLE SLIDE FASTENER

Yoshiyuki Horita, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jan. 4, 1985, Ser. No. 741,142

Claims priority, application Japan, Jan. 5, 1984, 59-83386

Int. Cl.[4] A44B *19/38*

U.S. Cl. 24—433 **3 Claims**

1. A separable slide fastener, comprising:

(a) a pair of fastener stringers each having a stringer tape carrying a row of fastener elements;

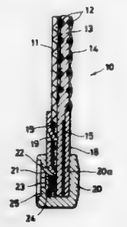
(b) a slider movable along said pair of stringers to open and close the slide fastener; and

(c) a separable bottom-end-stop assembly mounted on adjacent ends of said stringers and including

(1) a first pin member secured to one of said stringers and having a first rear wall normally obscured in use,

(2) a second pin member secured to the other of said stringers, and

(3) a socket member disposed on said first pin member and having a first bore receiving a portion of said first pin member and a second bore for removably receiving a portion of said second pin member, said socket member



having a single tooth projecting inwardly from a second rear wall normally obscured in use on said socket member through said first rear wall of said first pin member into said stringer tape of said one stringer, said socket member having near said tooth a first drawn protuberance projecting inwardly from said second rear wall into said first rear wall of said first pin member, said first pin member having, in underlying relation to said first drawn protuberance, a second drawn protuberance projecting inwardly from said first rear wall and squeezing said stringer tape of said one stringer.

4,660,259

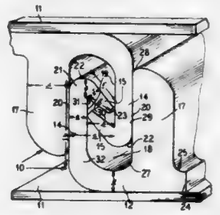
TWIST RESISTANT RECLOSABLE EXTRUDED PLASTIC FASTENER

Steven Ausnit, New York City, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Aug. 1, 1986, Ser. No. 891,945

Int. Cl.[4] A44B *19/00; B65D 33/24*

U.S. Cl. 24—587 **20 Claims**



1. An extruded plastic fastener strip adapted for reclosable cooperation with a complementary fastener strip, and comprising:

a base from which extends a stem and a resiliently flexible, foldable hook flange projecting in normal position obliquely from the distal end of the stem toward a stiff backup shoulder rib extending from the base in the same direction as and substantially spaced from said stem;

said hook flange being of greater length than the thickness of said stem and being resiliently flexible for folding substantially completely toward the stem; and

said rib being about the same length as the stem and the spacing between the rib and the stem providing a groove providing a socket of ample dimensions both in width and

depth relative to the foldable hook flange and the stem so that in a fastener closing maneuver a hook flange and stem of a complementary profile of a companion fastener strip can be received slidably between the rib and the foldable hook flange by said folding of the foldable hook flange toward the stem until the hook flanges pass one another and the foldable hook flange then snaps freely back toward the normal oblique position for interlocking with the profile hook flange of the companion fastener strip.

4,660,260

BUCKLE DEVICE

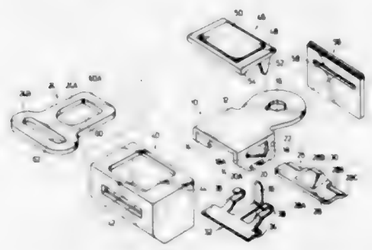
Kazuyoshi Ishiguro, Aichi, Japan, assignor to Kabushiki Kaisha Toka-rika-denki-seisakusho, Japan

Filed May 20, 1986, Ser. No. 865,101

Claims priority, application Japan, May 22, 1985, 60-76075[U]

Int. Cl.⁴ A44B *11/25*

U.S. Cl. 24—637 **4 Claims**



1. A buckle device used in combination with a tongue plate, which comprises:

(a) a buckle body having a pair of leg plate portions respectively provided with substantially sectorial through-holes which oppose each other, and a base plate portion which connects said pair of leg plate portions, wherein the distal end of said first leg portion is bent so as to have a substantially U-shaped configuration, said lock plate being clamped and thereby supported by said U-shaped bent portion, and said second leg portion is bent at its intermediate portion at substantially right angles in order to both abut against said tongue plate when inserted and to bias said tongue plate counter toward a direction in which said tongue plate is inserted into said buckle body, and wherein both of said leg plate portions have cut and projected portions provided at respective ends thereof which are closer to the distal end of said tongue plate inserted in said buckle body, said cut and projected portions extending toward each other, the distal end portion of said tongue plate inserted being supported by said cut and projected portions, and wherein each of said pair of leg plate portions further has a substantially T-shaped notch in the end thereof, the flate plate portion of said leaf spring member being fitted into said notch so as to be supported thereby;

(b) a lock plate having a tongue plate retaining portion which retains said tongue plate, said lock plate extending through said pair of through-holes so that said lock plate is pivotally disposed in said buckle body; and

(c) a leaf spring member retained by said buckle body to retain said lock plate in such a manner as to bias said lock plate toward the base plate portion of said buckle body and also bias said tongue plate counter to a direction in which said tongue plate is inserted into said buckle body, wherein said leaf spring member has a flat plate portion which is retained by said buckle body, a first leg portion for supporting said lock plate, and a second leg portion for biasing said tongue plate counter to a direction in which said tongue plate is inserted into said buckle body,

whereby, even when the size of said buckle device is reduced, it is readily assembled in manufacture, and it can be smoothly and effectively operated in actual use.

4,660,261

PROCESS FOR GIVING RELIEF IN SEVERAL DIRECTIONS TO A TEXTILE CLOTH

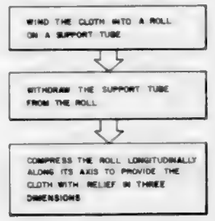
Claude Corbière, La Tour de Salvagny, France, assignor to Corbiere S.A., La Tour de Salvagny, France

Filed Mar. 7, 1985, Ser. No. 709,329

Claims priority, application France, Mar. 15, 1984, 84 04234

Int. Cl.⁴ D06C *23/04*

U.S. Cl. 28—155 **2 Claims**



1. A process for giving relief in several directions to a textile cloth, comprising the following steps:

winding the cloth into a roll on a support tube;

withdrawing said tube from the cloth roll;

locating the cloth roll freely and sinusoidally about a plurality of pairs of parallel bars such that the bars are enveloped alternately by the interior and then the exterior of the cloth roll;

compressing the cloth roll longitudinally along its axis thereby providing said cloth with three dimensional relief comprising raised patterns in several directions, both in warp and in weft; and

fixing the cloth roll thus compressed.

4,660,262

FORWARD AND REVERSE MILLING CUTTER

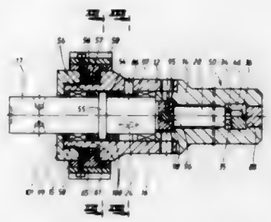
Heinrich Heule, Kristallstrasse 6, Au, Switzerland 9434

Filed Jun. 7, 1984, Ser. No. 617,962

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1983, 3321111

Int. Cl.⁴ B23B *11/00*

U.S. Cl. 29—57 **9 Claims**



1. A milling cutter having a bidirectional feeding motion used to machine a large diameter plane surface in an area around through holes, comprising:

(a) a housing;

(b) a jacket located within said housing;

(c) a shank mounted in said jacket;

(d) a cutter head rotatably driven by said shank and having at least one cutting part pointing radially outward from said milling cutter, said cutting part being at a farthest radial distance from a longitudinal center axis of said milling cutter in one direction of rotation of said cutter head and being at a closest radial distance from said longitudinal center axis of said milling cutter in another direction of rotation of said milling cutter;

(e) a rocker having one end adjacent to said shank of said milling cutter, said rocker rotating about said longitudinal axis of said milling cutter to shaft said cutting part from one position to another position;

(f) a tool head adjacent to a second end of said rocker having a seating slot used to mount said cutting part in a radially movable and lockable position;

(g) at least one steering bolt attached to a second end of said rocker and pointing in an axial direction, said steering bolt engaging at least one coordinated recess in said cutting part; and

(h) a twist break disposed between said shank and said jacket to hold a twist position of said shank until said shank reverses direction of its rotation.

4,660,263

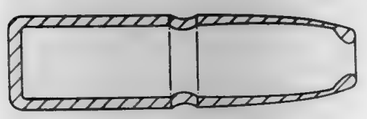
VAPOR BLASTED BULLET JACKET

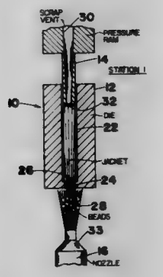
Gregory R. Kosteck, Godfrey, Ill., assignor to Olin Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 666,051, Oct. 29, 1984, abandoned. This application Sep. 20, 1985, Ser. No. 771,336

Int. Cl.⁴ B21K *21/06;* **B24B** *1/00*

U.S. Cl. 29—1.23 **2 Claims**





1. A method of manufacturing jacketed expanding bullets which comprises the steps of:

a. inserting a cuplike bullet jacket preform cup into a die cavity, the jacket having a base with a central passageway therethrough;

b. holding the jacket cup in the die cavity, and masking and supporting the exterior of the jacket cup while vapor blasting the interior of the jacket cup with blast media, the blast media entering through one end of the jacket and exiting the other end;

c. forcibly seating a lead bullet core into the vapor blasted jacket;

d. forming the blasted jacket cup with seated core into a final bullet configuration.

4,660,264

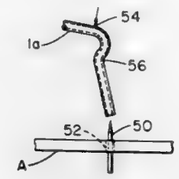
HEAT EXCHANGER MANUFACTURE PROCESS

Elmer H. Rogers, Jr., Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 665,188, Oct. 26, 1984, Pat. No. 4,593,755. This application Aug. 19, 1985, Ser. No. 766,808

Int. Cl.⁴ B21D *39/06*

U.S. Cl. 29—157.4 **1 Claim**



1. A method of assembling a tube with two non-parallel tube sheets, comprising running both end of the tube onto mandrels and moving the ends on the mandrels into holes in the sheets, the orientation of the holes requiring bending of the tube as the ends move into the holes, the orientation of the holes being perpendicular to the tube sheets, the tube being provided with curvature providing flexibility to aid the assembling, said curvature being a convex (**54**), concave (**56**) curvature.

4,660,265

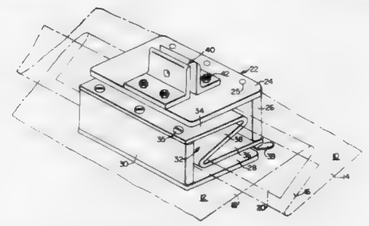
CONTINUOUS SEAM-FORMING DEVICE

Henry L. Pallmeyer, Dix Hills, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Nov. 12, 1985, Ser. No. 797,082

Int. Cl.⁴ B23P *11/00*

U.S. Cl. 29—243.5 **5 Claims**



1. A device for forming a continuous seamed plane from two separate sheets of material having preformed bends along confronting edge portions, the device comprising:

first means for receiving the preformed edge portion of a first sheet;

second means for receiving the preformed edge portion of a second sheet in spaced non-contacting relation to the first sheet; and

attachment means connected to the first and second receiving means for enabling movement thereof along the length of the preformed edge portions thereby causing contact between the edge portions and effecting their continuous interlocking relationship;

wherein the interlocking relationship at each point along the length of the edge portions remains after the device is moved past the point.

4,660,266

SPLIT-FLANGE CONNECTOR AND METHOD OF MAKING SAME

Joachim Horn, Broicherdorfstr. 81a, 4044 Karst 1, Fed. Rep. of Germany

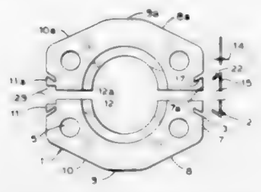
PCT No. PCT/DE82/00218, § 371 Date Jul. 14, 1983, § 102(e) Date Jul. 14, 1983, PCT Pub. No. WO83/01753, PCT Pub. Date May 26, 1983

Continuation of Ser. No. 522,306, Jul. 14, 1983, abandoned. This PCT application Nov. 15, 1982, Ser. No. 786,712

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145261

Int. Cl.⁴ F16L *23/02*

U.S. Cl. 29—417 **8 Claims**



1. A method of making a split-flange connector comprising the steps of:

(a) rolling a strand of steel into a substantially cylindrical elongated bar having a planar face formed centrally with a semicylindrical groove extending parallel to the face;

(b) cutting the bar perpendicularly to the face into at least two identical sections of a predetermined length;

(c) forming at least one bore offset from and parallel to the groove through each bar section; and

(d) securing the two sections together with the faces abutting flatly and the grooves forming a cylindrical passage, wherein the bar has a pair of side surfaces extending generally perpendicular to the face and parallel to the groove and meeting the face at respective corners, the strand further being rolled to have a notch at one of the corners extending parallel to the groove and the sections further being provided with laterally projecting formations at the side surfaces.

4,660,267

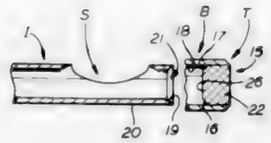
METHOD FOR FABRICATING AN ARTHROSCOPIC SHAVER

C. Ray Wheeler, St. Joseph, Mo., assignor to Richards Medical Company, Memphis, Tenn.

Division of Ser. No. 473,242, Mar. 8, 1983, Pat. No. 4,603,694. This application Nov. 18, 1985, Ser. No. 798,829

Int. Cl.⁴ B23P *11/00;* **B21D** *53/10*

U.S. Cl. 29—437 **5 Claims**



1. A method for manufacturing an improved surgical instrument for cutting tissue, the instrument being of the type which includes an outer tube sized and shaped for insertion through a puncture in the flesh of a body, the outer tube having a side-facing opening therein for the entrance of tissue to be cut, an inner tube fitted in the outer tube and adapted to rotate relative to the outer tube, the inner tube including a side-facing opening defining a blade adapted to coact in cutting action with a cooperating edge of the side-facing opening of the outer tube, the inner tube including a longitudinal opening on its proximal end adapted for connection to a vacuum for drawing fluid and cuttings into the openings and for drawing the fluid and cuttings through the instrument, and the inner and outer tubes being adapted for connection on their proximal ends to a drive motor for rotating the inner tube relative to the outer tube so that the blade on the inner tube is moved past the cooperating edge of the side-facing opening in the outer tube, the method comprising the steps of:

forming the inner and outer tubes with the inner tube having a relatively smooth outer side surface and the outer tube having a relatively smooth inner side surface;

assembling a bearing on the distal end of the outer tube to support and align the inner tube relative to the outer tube;

inserting the inner tube in the outer tube; and

swaging the outer tube until the inner side surface of the outer tube closely fits over the outer side surface of the inner tube.

4,660,268

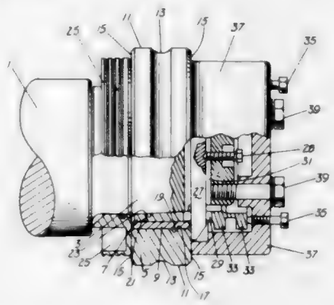
ROLLING MILL ROLL ASSEMBLY

Donald R. Evans, Pittsburgh, Pa., assignor to Kennametal, Inc., Latrobe, Pa.

Filed Nov. 24, 1980, Ser. No. 209,866

Int. Cl.⁴ B21B *27/02*

U.S. Cl. 29—523 **8 Claims**



1. A rolling mill roll assembly comprising: a tapered arbor; a hollow cylindrical wedge means having a tapered wall thickness; a split ring member having an external circumferential surface, an internal circumferential surface, an axial length and a split running the axial length of said member and communicating between said external and an internal surfaces; a cylindrical cemented carbide roll having a working surface and an internal bore; said wedge means wedged onto said tapered arbor and inside said split ring; said split ring expanded by said wedge means and in pressurized abutment with said internal bore of said roll so as to hold said roll substantially nonrotational; and means for holding said roll, split ring and wedge means fixed along the axis of said tapered arbor.

4,660,269

PROCESS FOR PRODUCING BUILT-UP CAMSHAFTS

Hideo Suzuki, Toyohashi, Japan, assignor to Musashi Seimitsu Kogyo Kabushiki Kaisha, Toyohashi, Japan

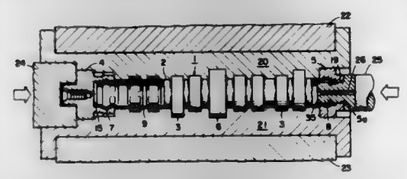
Filed May 12, 1986, Ser. No. 862,096

Claims priority, application Japan, May 21, 1985, 60-109086

Int. Cl.⁴ B21D *39/00, 22/10;* **B23P** *17/00;* **F16H** *53/00*

U.S. Cl. 29—523 **12 Claims**

1. A process for producing built-up camshafts, comprising the steps of fitting cam disks on a hollow shaft, fitting shaft end caps over the ends of the hollow shaft, placing the structure thus assembled in a die, and introducing a fluid under pressure into the hollow shaft thereby to subject the same to bulging and expansion of diameter at specific parts thereof and thereby to simultaneously join the cam disks and the shaft end caps integrally to the hollow shaft.



4,660,270

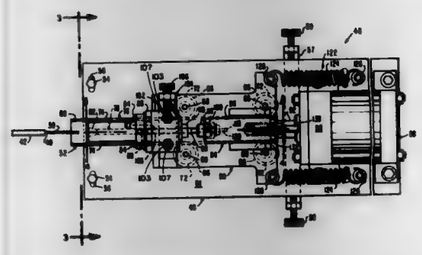
APPARATUS AND METHOD FOR APPLYING AN END PLUG TO A FUEL ROD TUBE END

Stuart L. Rieben, and Mark E. Wylie, both of Mt. Lebanon Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1985, Ser. No. 729,398

Int. Cl.⁴ B23P *19/02, 17/00;* **B23Q** *7/10*

U.S. Cl. 29—525 **18 Claims**



1. An apparatus for applying an end plug to a hollow end of a nuclear fuel rod tube, comprising:

(a) support means mounted for reciprocal movement between remote and adjacent positions relative to a nuclear fuel rod tube end to which an end plug is to be applied;

(b) guide means supported on said support means for movement therewith, said guide means having an elongated central bore with one end for receiving the end plug and an opposite end for receiving the nuclear fuel rod tube end, said bore being adapted to guide the tube end toward the end plug for application of said end plug into said tube end as said support means is moved from its remote position toward its adjacent position; and

(c) drive means coupled to said support means and being actuatable for movement between retracted and extended positions for reciprocally moving said support means between its respective remote and adjacent positions;

(d) said drive means including

(i) an actuator stationarily disposed adjacent to said support means and including a drive member being movable between retracted and extended positions along a generally linear path,

(ii) a return device for biasing said support means toward its remote position, and

(iii) a drive force aligning and transmitting assembly coupled to said drive member and disposed between said guide means and said drive member and in alignment with said central bore of said guide means for transferring the end plug to said one end of said bore of said guide means and for reciprocally moving said support means between its remote and adjacent positions as said drive member is moved between its respective retracted and extended positions to apply the end plug to the tube end.

18. A method for applying an end plug to a hollow end of a nuclear fuel rod tube, comprising the steps of:

(a) supporting a plugger guide for reciprocal movement between remote and adjacent positions relative to a stationarily-positioned nuclear fuel rod tube end to which an end plug is to be applied, said guide having an elongated central bore with one end for receiving the end plug and an opposite end for receiving the nuclear fuel rod tube end, said bore being adapted to guide the tube end toward the end plug for insertion of said end plug into said tube end as said plugger guide is moved from its remote position toward its adjacent position;

(b) delivering the end plug into alignment with said one end of said central bore of said plugger guide;

(c) transferring the end plug into said one end of said central bore of said plugger guide; and

(d) moving said plugger guide with the end plug retained at said one end of said central bore of said guide toward the fuel rod tube end so as to insert the tube end through said opposite end of said guide and insert the end plug into the tube end.

4,660,271

PROCESS OF MANUFACTURING SPACER FRAMES FOR GLASS PANES AND METHOD OF REMOVING DESSICANT FROM A CORNER PORTION

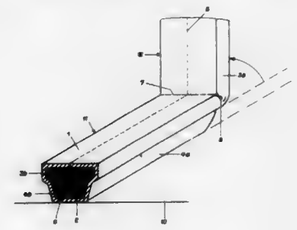
Karl Lenhardt, Industriestrasse 2-4, 7531 Neuhausen-Hamberg, Fed. Rep. of Germany

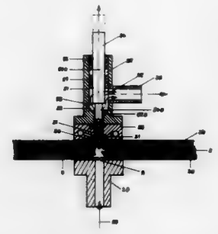
Filed Dec. 18, 1984, Ser. No. 682,904

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346671

Int. Cl.⁴ B23P *17/00;* **B65G** *53/46*

U.S. Cl. 29—527.4 **20 Claims**





1. In a process of manufacturing a spacer frame for a perimeter-bonded insulating glass pane, which process comprises:

filling with a granular desiccant a tubular metal bar comprising a plurality of corner-forming length portions and having two parallel cheeks on opposite sides,

forming an opening in said tubular bar in each of said corner-forming portions,

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removing granular desiccant from each of said corner-forming portions through said opening therein, and

bending each of said corner-forming portions about an axis which is at right angles to said cheeks to form a corner portion of said spacer frame,

the improvement comprising

drilling each of said corner-forming portions through said two cheeks at a location where the corner is to be formed to provide them with two opposite bores of which at least one is sufficiently large to permit said granular desiccant to escape from said corner-forming portions, and

removing a small quantity of desiccant previously filled into said tubular bar from each corner-forming portion through said at least one bore therein before said corner-forming portion is bent about said axis.

16. Apparatus for removing granular desiccant from a corner-forming portion of a metal tubular bar for use with means for receiving and bending said metal tubular bar, said tubular bar having two parallel cheeks, which are disposed on opposite sides of said corner-forming portion and formed with two opposite bores, one of which is sufficiently large to permit said granular desiccant to escape from said corner-forming portion through said bore,

said apparatus comprising

an air blast nozzle operatively associated with said two parallel cheeks for blowing compressed air into one of said bores,

a cylinder having an open end and containing a slidably mounted piston and being adapted to be so arranged that its open end faces the opposite bore, and

mounting means which are operatively associated with one of said two opposite bores and are carrying said air blast nozzle and said cylinder at a variable distance from each other.

4,660,272

LOCALIZED REMOVAL OF A PRECIOUS METAL INLAY FROM A METAL STRIP AND A BROACHING TOOL THEREFOR

Robert L. Barnhouse, Royal Palm Beach; James C. Elo, North Lauderdale; George F. Mattison, Jr., Pompano Beach, and Marshall Hart, Palm Beach Gardens, all of Fla., assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 27, 1986, Ser. No. 879,374

Int. Cl.[4] B23D *1/26;* **B23R** *13/04*

U.S. Cl. 29—558 **12 Claims**



1. A method of removing a portion of at least a partially inlayed stripe at spaced predetermined positions along a metal strip, comprising:

(a) moving a broaching tool having at least one cutting edge;

(b) inserting said cutting edge into the strip outside of and adjacent to one of two sides of the inlay stripe;

(c) traversing said tool across the strip, said cutting edge cutting the inlay stripe;

(d) moving said cutting edge upward while maintaining the transverse movement of said tool;

(e) exiting said cutting edge from the strip outside of and adjacent to the other side of the stripe, removing a localized portion of the stripe;

(f) returning said tool to its original position, said cutting edge clear of the strip.

4,660,273

CABLE STRIPPING DEVICE

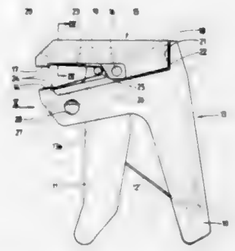
Paul S. Hepworth, Oadby, England, assignor to Plas Plugs Limited, Derby, England

Filed Nov. 21, 1985, Ser. No. 800,401

Claims priority, application United Kingdom, Jun. 14, 1985, 8515082

Int. Cl.[4] H02G *1/12*

U.S. Cl. 29—566.4 **7 Claims**



1. A device for stripping a sheathed cable, comprising:

a first lever having a first jaw at one end and a first handle at the other end;

a second lever pivotally connected at a stationary point of said first lever, and having a second jaw and a second handle slidably mounted on said second jaw, so that said second handle is capable of rotary and rectilinear movement relative to said first handle; and

a set of cutting blades mounted on said second handle adjacent said jaws;

wherein during a first rotary part of relative movement of said handles towards each other, said second jaw and second handle of said second lever pivot in unison relative to said first jaw and first handle of said first lever, thereby causing said jaws to grip said cable and said cutter blades to cut through the outer sheath of said cable, and during a second rectilinear part of relative movement of said handles, said jaws remain closed and said second handle slides rectilinearly towards said first handle, thereby causing said cutter blades to move away from said jaws to strip the outer sheath from said cable.

4,660,274

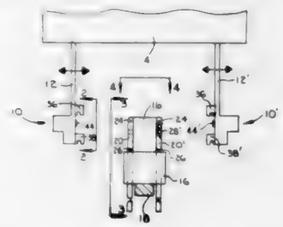
ROBOT TOOL CHANGING APPARATUS

Peter G. Goumas, 108 Carmichael Ct., Cary, N.C. 27511; Quentin J. Hendricks, 214 Lynnwood Dr., Knightdale, N.C. 27545, and Michael W. Trull, 102 Dundalk Way, Cary, N.C. 27511

Filed Nov. 29, 1985, Ser. No. 802,893

Int. Cl.[4] B23Q *3/155;* **B25J** *15/04*

U.S. Cl. 29—568 **10 Claims**



1. In a robotic tool changing apparatus including a tool holder, a movable robot hand, and a tool adapted to be selectively connected to said tool holder and to said hand, the improvement comprising:

bracket means connected to said hand for movement therewith;

engageable and disengageable connecting means upon said bracket means and upon said tool for, when engaged, connecting said tool to said bracket;

engageable and disengageable connecting means upon said tool holder and upon said tool for, when engaged, connecting said tool to said holder;

said first mentioned connecting means including a pin element upon said brakcet means, and said second mentioned connecting means including a pin element upon said tool holder, and each said connecting means including a pin receiving opening extending through said tool and having first and second opposite end portions for receiving respective ones of said pin elements.

4,660,275

METHOD OF MAKING CLEAVED-COUPLED-CAVITY (C^3) DIODE LASERS

Wayne Lo, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 645,249, Aug. 29, 1984, abandoned. This application Jan. 31, 1986, Ser. No. 824,459

Int. Cl.[4] H01L *21/304, 23/34*

U.S. Cl. 29—569 L **4 Claims**

2. In a method of making a cleaved-coupled-cavity semiconductor laser the improvement of:

forming a cleaved monocrystalline semiconductor diode bar having a length equal to two intended Fabry-Perot laser cavities, having crystalline planes perpendicular to bar side walls, and having a cold weldable soft metal coating on one side wall face;

placing the soft metal coated face of the bar on a metallurgically compatible soft metal surface of a supporting heat sink element for cold bonding thereto;

applying a pressure to, while controlling the movement of, a cleaving knife having its edge transversely disposed on the opposite face of the bar not only effective to cleave the bar along one of the crystal planes into two precisely aligned and closely spaced semiconductor diode laser bodies with substantially flat and parallel facing end walls, with each body having its intended Fabry-Perot cavity along its length and thus each body separately functionable as a semiconductor laser, but also effective to cold bond the bodies to the soft metal surface of the supporting heat sink element; and

applying an additional force pressure to the knife edge, while controlling its movement between the facing body end wall edges, to move the closely spaced diode laser bodies a precisely controlled distance further apart on the soft metal surface to which they are bonded, without breaking their bonds to that surface or significantly altering their precise alignment, effective to provide a predetermined constructive optical interference between the laser bodies when both function as lasers.

4,660,276

METHOD OF MAKING A MOS FIELD EFFECT TRANSISTOR IN AN INTEGRATED CIRCUIT

Sheng T. Hsu, West Windsor Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 12, 1985, Ser. No. 764,551

Int. Cl.[4] H01L *21/283*

U.S. Cl. 29—571 **5 Claims**

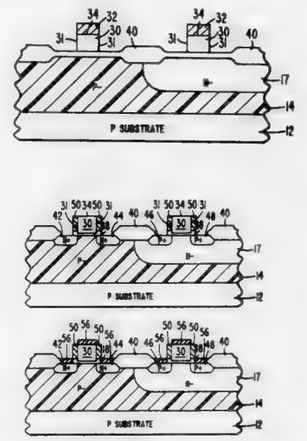
1. In a method of making an MOS field effect transistor of an integrated circuit in a semiconductor body, said body having a surface and a layer of gate oxide disposed on said surface, the steps comprising:

(a) forming an undoped silicon gate on said gate oxide having a top surface and a pair of sidewalls;

(b) forming a source region in said body adjacent one of said sidewalls and a drain region in said body adjacent the other of said side walls;

(c) forming a layer of silicon oxide on said silicon gate including said sidewalls thereof;

(d) removing a portion of said layer of silicon oxide leaving



said silicon oxide on only said sidewalls thereby leaving an exposed silicon surface on each of said source and drain regions and said undoped silicon gate;

(e) forming a layer of refractory metal on only said exposed surfaces;

(f) forming a layer of polysilicon on said layer of refractory metal; and

(g) heating said layer of refractory metal, said layer of polysilicon, and said body in an oxygen atmosphere thereby forming metal silicide at each of said exposed surfaces.

4,660,277

METHOD FOR FORMING LARGE AREA AMORPHOUS SEMICONDUCTOR LAYER AND CONTACT TYPE IMAGE SENSOR

Sadahiro Tei, Ebina, Japan, assignor to Fuji Xerox Co. Ltd., Japan

Filed Jun. 18, 1985, Ser. No. 745,879

Claims priority, application Japan, Jun. 22, 1984, 59-128924

Int. Cl.[4] H01L *31/18*

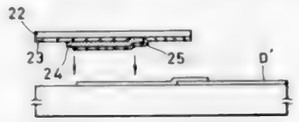
U.S. Cl. 29—572 **14 Claims**

1. A method for producing a contact type image sensor comprising: an array forming step of forming a photoelectric converting element array on a flexible substrate, said array forming step comprising the steps of forming continuously a plurality of lower electrodes on said flexible substrate by passing said substrate through a first depositing region, forming continuously an amorphous semiconductor layer on said substrate formed with said lower electrodes by passing said substrate through a second depositing region, and forming contin-

uously an upper electrode on said substrate formed with said lower electrodes and said amorphous semiconductor layer by passing said substrate through a third depositing region;

a cutting step of cutting said photoelectric converting element array thus formed into a plurality of photoelectric converting element array chips each having a desired size; and

a bonding step of bonding at least one said photoelectric conversion element array chip to a supporting member.

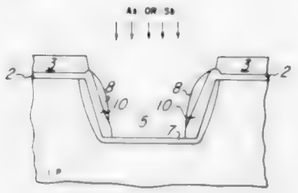


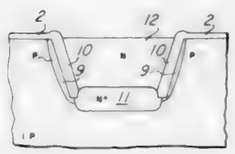
4,660,278

PROCESS OF MAKING IC ISOLATION STRUCTURE

Clarence W. Teng, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1985, Ser. No. 749,952
Int. Cl.[4] H01L *21/20, 21/302*
U.S. Cl. 29—576 W **12 Claims**





1. A process for fabricating isolation regions in integrated circuitry comprising the steps of:

(a) providing a substrate;

(b) forming a depression in said substrate;

(c) forming insulating material on the sidewalls of said depression;

(d) then forming a layer of polycrystalline silicon over said sidewalls; and

(e) forming crystalline semiconductor material in said depression.

4,660,279

APPARATUS FOR ELECTRICAL HARNESS MANUFACTURE

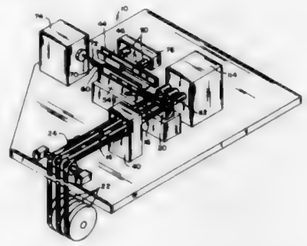
Anthony J. Szumierz, Addison, and Frank P. Chmela, Downers Grove, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed May 24, 1985, Ser. No. 737,848
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—747 **11 Claims**

1. An apparatus for preparing a plurality of individual electrical connectors for termination with electrical wires, including a push bar movable in a first direction to space said connectors in a predetermined spaced-apart relation, and having means for mounting a plurality of downwardly extending connector engaging members, wherein the improvement comprises:

said connectors each having an upper surface defining at least two spaced apart ends and an engagement means intermediate said ends;

said connector engaging members receivable in said engagement means to engage said connectors at a point intermediate said ends;



said push bar being rigid; and

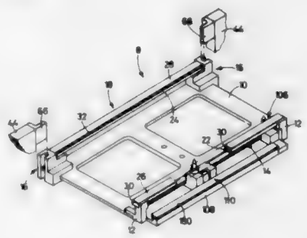
said mounting means mounting said conductor engaging members to said push bar and including displacing means for imparting a different amount of displacement to each of said engaging members relative to said push bar as said push bar is moved in said first direction, to thereby define said predetermined spaced-apart relation.

4,660,280

APPARATUS FOR CONVEYING AND POSITIONING CIRCUIT SUBSTRATES OF PRINTED-WIRING BOARDS

Koichi Asai, Nagoya; Mamoru Tsuda, Okazaki, and Jiro Kodama, Nagoya, all of Japan, assignors to Fuji Machine Mfg. Co., Ltd., Aichi, Japan

Filed Jan. 15, 1986, Ser. No. 819,022
Claims priority, application Japan, Jan. 21, 1985, 60-8808
Int. Cl.[4] H05K *3/30*
U.S. Cl. 29—759 **11 Claims**



1. An apparatus for conveying and positioning a circuit substrate of a printed-wiring board, comprising:

a conveyer system including a pair of parallel side frames extending along an X axis and spaced apart from each other along a Y axis perpendicular to said X axis, at least one of which is movable relative to the other along said Y axis, distance-changing means for changing a distance between said pair of side frames by moving said at least one movable side frame along said Y axis, and conveyer means for transferring said substrate along said side frames;

a substrate positioning device including a support member, a pair of parallel spaced-apart holder members which are disposed on said support member and at least one of which is movable relative to the other along said Y axis so that said holder members are engageable with opposite sides of said substrate parallel to said X axis to thereby position and hold the substrate in the Y-axis direction, and frst moving means for moving said support member in an X-Y plane including said X and Y axes, so as to position said substrate at desired positions within a predetermined substrate-positioning area in said X-Y plane;

second moving means for moving said support member between an aligned position thereof in which said holder members are aligned respectively with said side frames of said conveyer system in said Y-axis direction and an unaligned position in which said holder members are spaced from said side frames and in which said substrate is positioned in said substrate positioning area; and

a connecting device for connecting said at least one movable holder member and said at least one movable side frame when said support member is placed in said aligned position,

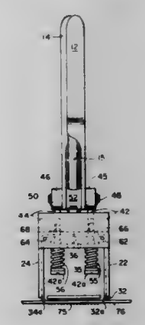
a distance between said holder members in said Y-axis direction being changed by said distance-changing means when said distance between said side frames is changed while said at least one holder member and at least one side frame are connected by said connecting device.

4,660,281

COMPONENT EXTRACTING TOOL

Richard C. Omand, Rte. 202A, Bow Lake, Strafford, N.H. 03884

Filed Jun. 17, 1985, Ser. No. 745,602
Int. Cl.[4] H05K *3/30*
U.S. Cl. 29—764 **19 Claims**



1. A component extracting tool for extracting a component from a board comprising:

compressable and releasable handle means, said handle means being compressable through first and second stages;

grasping means comprising opposing grasping elements operatively coupled to the handle means for movement of the opposing grasping elements toward each other for grasping a component to be extracted upon initially compressing the handle means through the first stage;

and bracing means for abutting against a board from which a component is to be extracted, said bracing means and grasping means being mounted on the handle means for extending and retracting movement relative to each other, said bracing means and grasping means being operatively coupled to the handle means for retracting movement of the grasping means relative to the bracing means upon further compressing the handle means through the second stage;

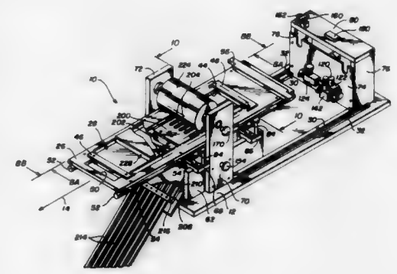
said bracing means comprising a yoke support operatively coupled to the handle means for extension and retraction of the yoke support upon compressing and releasing the handles and a pair of opposing flat fingers constructed and arranged with flat tips or ends for abutting against a board, said flat fingers being pivotally mounted to the yoke support on opposite sides and spaced apart to accommodate the width of components to be extracted, said flat fingers being formed with torque arms extending from the base of the fingers on opposite sides of the yoke support toward each other.

4,660,282

METHOD AND APPARATUS FOR UNLOADING ELECTRONIC CIRCUIT PACKAGES FROM ZERO INSERTION FORCE SOCKETS

Wayne K. Pfaff, 1316 Savannah, Irving, Tex. 75062

Filed Dec. 16, 1985, Ser. No. 809,263
Int. Cl.[4] H05K *3/00;* **B23P** *19/00*
U.S. Cl. 29—829 **27 Claims**



1. Apparatus for unloading an electronic circuit package from a zero insertion force socket comprising:

(a) a housing having a receptacle adapted for holding the socket containing the circuit package;

(b) means mounted on said housing for compressing the socket;

(c) means mounted in said housing for moving said receptacle and the socket with respect to said housing and into engagement with said compressing means so as to release the electronic circuit package from the socket; and

(d) means mounted on said housing for extracting the electronic circuit package from the socket after being released therefrom.

25. A method for unloading electronic circuit packages contained in a plurality of low insertion force sockets mounted on a burn-in board in a rectangular array of rows and columns comprising the steps of:

(a) supporting the array of sockets in an inverted position;

(b) moving the array of sockets past a fixed point;

(c) compressing the sockets in sequential rows as the sockets pass the fixed point to release the electronic circuit packages contained therein; and

(d) extracting the electronic circuit packages from the sockets.

4,660,283

DYNAMICALLY BALANCED APPARATUS HAVING RECIPROCATING MEMBER

Shinsaku Yasunaka, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 14, 1986, Ser. No. 896,377
Claims priority, application Japan, Sep. 20, 1985, 60-208428
Int. Cl.[4] B26B *19/28*
U.S. Cl. 30—43.92 **12 Claims**

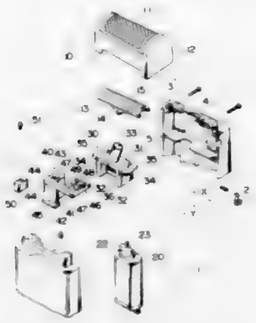
1. In a dynamically balanced apparatus having a reciprocating member including:

a motor having an output shaft;

an eccentric shaft operatively connected to the output shaft in eccentric relation thereto;

drive means operatively connecting the eccentric shaft to said reciprocating member for driving the reciprocating

member in a reciprocating path upon rotation of the eccentric shaft around the axis of the motor output shaft;
eccentric flyweight means mounted on the output shaft, to be rotatable therewith for canceling the vibration of the reciprocating member;
vibrator means operatively connected to the eccentric shaft to be driven thereby to vibrate in a direction perpendicular to the reciprocating path of the reciprocating member; and



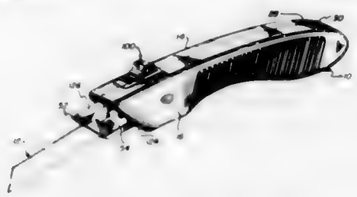
counterweight means carried on the vibrator means to be movable together therewith for canceling the inherent vibration of the eccentric flyweight means acting in the direction perpendicular to the reciprocating path;
the improvement comprising:
said counterweight means being disposed at a location spaced longitudinally outwardly from the drive means so as to be in substantially longitudinal alignment with the flyweight means and the drive means.

4,660,284

FOLDING POCKET SAW

Joseph P. Decarolis, Bristol, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Jul. 17, 1985, Ser. No. 755,916
Int. Cl.[4] B27B *71/00*; B26B *1/04*
U.S. Cl. 30—157 **20 Claims**



1. A handle assembly for a tool having an interchangeable, fold-away blade, comprising: an elongated body adapted to be hand held and providing a cavity therewithin, said body having an opening into said cavity extending longitudinally along its forward end and along the underside thereof; a tool-supporting head member mounted in said cavity adjacent said forward end of said body for pivotal movement about a transverse axis between an operative position in which a blade mounting portion thereof extends outwardly of said forward end of said body, and a storage position in which it is pivoted downwardly and rearwardly about its pivotal axis to locate a blade mounted thereon in said cavity portion thereof; and manipulatable locking means movably mounted on said body having a manipulatable portion extending outwardly thereof for releasably locking said head member in both of said pivoted positions thereof against pivoting about said transverse axis, said head member having means on said mounting portion for disengageably affixing a blade thereon for operation by said handle assembly, said opening into said cavity being dimensioned to permit pivoting thereinto of the mounted blade.

4,660,285

THINNING SCISSORS

Günther Pracht, Solingen, Fed. Rep. of Germany, assignor to Kurt Schmidt Fabrikation von Stahlwaren und chirurgischen Instrumenten (GmbH. & Co.), Solingen, Fed. Rep. of Germany

Filed Mar. 10, 1986, Ser. No. 837,638
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1985, 3521688
Int. Cl.[4] B26B *19/22*
U.S. Cl. 30—195 **6 Claims**



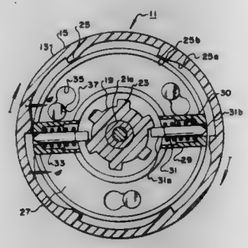
1. Hair thinning scissors adapted to cut selected strands of hair in differing lengths comprising:
(a) a pair of first and second elongated scissor blades each having an inner side, an outer side, a cutting edge, and manual gripping means, at least one of said cutting edges being serrated;
(b) means for pivotally securing said first and second scissor blades to each other with said inner sides facing towards each other such that said cutting edges cooperate with each other to cut hair when said first and second scissor blades are manually, pivotally moved towards each other from an open position to a closed position;
(c) elongated hair guide means extending along the outer side of said first scissor blade and having a leading edge projecting laterally beyond said cutting edge of said first scissor blade toward said second scissor blade when said scissor blades are in said open position, said leading edge of said guide means being configured to provide a plurality of hair retaining surfaces extending along the length of said guide means, the distances between adjacent of said plurality of hair retaining surfaces and said cutting edge of said first scissor blade being different;
(d) whereby, when a plurality of strands of hair are positioned between said scissor blades and along said leading edge of said guide means and said scissor blades are pivotally moved progressively toward said closed position to thin said plurality of strands of hair, at least selected of said strands of hair will first be contacted between said plurality of hair retaining surfaces and said cutting edge of said second scissor blade and then varying lengths of said at least selected strands of hair will pass between said inner side of said second blade and said guide means before said cutting edges of said first and second scissor blades contact each other and cut selected of said strands of hair at spaced locations to different lengths.

4,660,286

APPARATUS WITH AUTOMATIC LINE FEEDING

Filluppus T. Engelbrecht, Potchefstroom; Frederick D. Potgieter, Pretoria; Cecil R. Smith, Potchefstroom, all of South Africa, and Michael A. Helmig, Springtown, Tex., assignors to Nylon Line Cutters (Pty.) Ltd., Cape Town, South Africa

Filed Jul. 10, 1985, Ser. No. 753,649
Claims priority, application South Africa, Jul. 11, 1984, 84/5330; Feb. 8, 1985, 85/0992
Int. Cl.[4] B26B *7/00*; A01D *46/08*
U.S. Cl. 30—276 **15 Claims**



14. In an apparatus of the type having a head, drive means for rotating the head about an axis of rotation, the head including a housing having a depending wall with an aperture formed therein, a spool carried in the housing with a supply of flexible line coiled on the spool and having a free end extending from the aperture into a plane, means for feeding increments of the cutting line into the plane during rotation of the housing, comprising in combination;
a hub located in the housing for movement therewith;
a plurality of drive members located on the upper surface of the spool and spaced in a circular array about the axis of rotation;
a plurality of stop members located on the upper surface of the spool radially outward and rotationally staggered from the drive members;
at least one drive link slidably carried by the hub for rotation therewith, the drive link having a depending detent positioned for engaging the drive and stop members;
the drive link being radially movable due to increased centrifugal force between a drive position in contact with one of the drive members to lock the spool and the housing together for rotation in unison, to a disengaged position allowing the housing and spool to slip relative to each other to feed out additional line, until contacting one of the stop members;
spring means for urging the drive link inwardly for maintaining the drive link in contact with one of the drive members during normal speed operation, for allowing the drive link to move outwardly during above normal speed operation into contact with one of the stop members, and for moving the drive link back inwardly from the stop member into contact with one of the drive members as the speed slows again to normal.

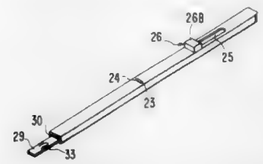
4,660,287

KNIFE WITH REPLACEABLE BLADE

John R. Decker, 5710 Harder St., San Jose, Calif. 95129

Filed Nov. 1, 1985, Ser. No. 794,202
Int. Cl.[4] B26B *5/00*
U.S. Cl. 30—339 **20 Claims**

1. A knife comprising:
an elongated, hollow handle having an open end;
a pair of elongated, reselient blade clamping members, at least one of said members being shorter in length than the other member, said members being within the handle, a first of said members being movable in the handle relative to the second member through a limited distance between a first position in which at least a major part of the first member is within the handle and a second position in which one end portion of the first member projects partially outwardly form the open end of the handle;
a blade having a shank; and
means on the first member for releasably coupling the shank of the blade to one side of the first member when the first



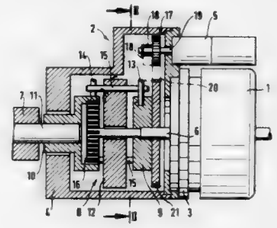
member is in said second position, said blade being movable into a location in which the blade shank is within said handle and between said members as the first member moves into said first position, whereby the blade shank will be clamped between the members and the blade will be coupled with the handle when the first member is in said second position.

4,660,288

COUPLING DEVICE

Holmer Dangschat, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jul. 22, 1986, Ser. No. 888,816
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1985, 3527546
Int. Cl.[4] G01B *11/00*
U.S. Cl. 33—1 L **8 Claims**



1. In a device for coupling a position measuring instrument with two objects movable relatively to one another, wherein the position measuring instrument comprises a measuring scale, at least one reference mark allocated to the measuring scale, and a scanning unit operative to scan the measuring scale and wherein a given relative position of the objects defines a start position of the measuring scale with respect to the scanning unit, the improvement comprising:
means for moving one of the measuring scale and scanning unit with respect to the other of the measuring scale and scanning unit in a first direction by direct mechanical force supplied through rigid mechanical communication with the objects;
means for biasing the one of the measuring scale and scanning unit in a second direction; and
drive means operative to move the one of the measuring scale and scanning unit against the force of the biasing means such that the reference mark is scanned by the scanning unit, the drive means further operative to allow the one of the measuring scale and scanning unit to return

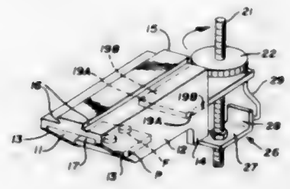
to the start position after the reference mark is scanned by the scanning unit.

4,660,289

ADJUSTABLE BOW SIGHT MOUNT

Robert A. Wilhide, 3763 Mahoning Ave., NW., Warren, Ohio 44483

Filed Jun. 13, 1986, Ser. No. 874,078
Int. Cl.[4] F41G *1/38, 1/46*
U.S. Cl. 33—247 4 Claims



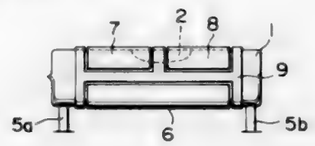
1. A bow sight mount for use on cross bows comprises a main frame member having oppositely disposed down turned arms, a mounting plate pivotally secured between said arms and permanently secured to a bow stock, an adjustment arm extending outwardly from and between said arms, means on said adjustment arm adjustably connecting with said bow stock, means on said main frame member for mounting a telescopic sight thereon and means on said down turned arms for vertical guiding of said bow sight mount.

4,660,290

INCLINATION MEASURING INSTRUMENT

Nobuo Hori, Tokyo; Takashi Yokokura, Hino, and Fumio Ohtomo, Kawagoe, all of Japan, assignors to Tokyo Kagaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1985, Ser. No. 808,044
Claims priority, application Japan, Dec. 21, 1984, 59-270462
Int. Cl.[4] G01C *9/06, 9/26*
U.S. Cl. 33—366 4 Claims



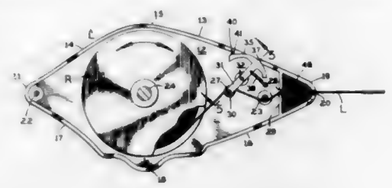
1. Inclination measuring instrument having a tube having a curved inside surface and filled with liquid so as to have a bubble, a first electrode provided on the outside surface of the tube opposite to the bubble, second and third electrodes provided on the outside surface of the tube opposite to the first electrode and located along the direction of shift of the bubble, a guard electrode provided on the outside surface of the tube to frame the first, second and third electrodes and to be supplied with a predetermined voltage, and processing means for connecting a first capacitor consisting of the first and second electrodes and second capacitor consisting of the first and third electrodes so as to calculate the inclination of the tube from the output of the first and second capacitors.

4,660,291

CHALK LINE APPARATUS

Frank A. Dehn, 16250 Saddle Club Rd., Fort Lauderdale, Fla. 33325

Filed May 30, 1986, Ser. No. 868,676
Int. Cl.[4] B44D *3/38*
U.S. Cl. 33—414 5 Claims



1. A chalk line apparatus comprising:
a holder providing a compartment for holding powdered chalk and having a small line exit opening at one end;
a reel rotatably mounted in said holder;
a flexible line wound on said reel and extending from said reel through said line exit opening to the outside of the holder, said line having surface discontinuities at predetermined intervals along its length which produce visible discontinuities in the chalk marking produced by said line outside the holder;
a line guide in said holder compartment engaging said flexible line between said reel and said line exit opening;
a support for said line guide movably mounted in said holder and positioning said line guide within a range of positions throughout which the line guide deflects the line from a straight path between said reel and said line exit opening;
and spring means acting between said holder and said support to bias the support to oppose the withdrawal of the line from the holder by positioning said line guide to deflect the line from a straight path between said reel and said line exit opening.

4,660,292

COMBINATION MEASURING DEVICE, LEVEL AND PLUMB

Anthony D. Richardson, 9900 S. Wilcrest, Houston, Tex. 77099

Filed Jun. 17, 1986, Ser. No. 875,288
Int. Cl.[4] B43L *7/00*; G01C *9/28*
U.S. Cl. 33—451 7 Claims



1. A combination rule and leveling device comprising:
a. an elongated substantially planar member having inner and outer surfaces;
b. an elongated support member substantially parallel to said planar member and affixed to said planar member along said inner surface by means of a perpendicular connecting wall such that an upper recess and a lower recess are formed between said planar member and said support member, said upper and lower recesses providing finger tip gripping areas for the user;
c. a first scale running the length of said planar member affixed to said outer surface measuring from zero to the overall length of said elongated planar member;
d. a second scale running the length of said elongated planar member affixed to said outer surface adjacent to said first scale reading in the reverse direction of said first scale;
e. a first target-type level affixed to said support member so that said combination rule and leveling device is usable as a horizontal level.

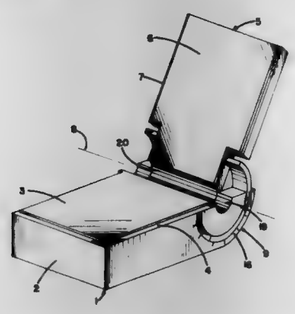
6. A combination rule and leveling device comprising:
a. an elongated substantially planar member having inner and outer surfaces;
b. an elongated support member substantially parallel to said planar member and affixed to said planar member along said inner surface by means of a perpendicular connecting wall such that an upper recess and a lower recess are formed between said planar member and said support member, said upper and lower recesses providing finger tip gripping areas for the user;
c. a first scale running the length of said planar member affixed to said outer surface measuring from zero to the overall length of said elongated planar member;
d. a second scale running the length of said elongated planar member affixed to said outer surface adjacent to said first scale reading in the reverse direction of said first scale said second scale reading at its initial point the dimension equal to the overall length of said elongated planar member and said second scale reading at its end point a dimension equal to two times the length of said elongated planar member.

4,660,293

MEASURING INSTRUMENT FOR ANGLED MATERIAL

George Kovacs, 68 Nod Brook Rd., Wallingford, Conn. 06492

Filed Oct. 10, 1985, Ser. No. 786,071
Int. Cl.[4] G01B *9/10*
U.S. Cl. 33—471 7 Claims



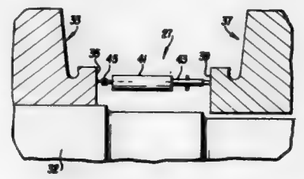
1. An instrument for determining length along the surface of a side of angled material, as measured from the virtual apex of the material's angle, radially and perpendicular to the angle's axis of rotation, said instrument comprising:
a first leg having a first end, a second end, a first side and a second side, and a locator surface which occupies a portion of the distance between the first and second end and the first and second side,
a second leg having a first end, a second end, a first side and a second side, and a locator surface which occupies a portion of the distance between its first and second end and its first and second side,
hinge means attached to the first end of each leg for rotation of the instrument's legs, each locator surface is coplanar with the instrument's legs' axis of rotation and oriented so that said locator surfaces are in the same plane when rotated to a straight angle,
said hinge means is so disposed that no portion of itself extends above the planes of said locator faces in a manner which would be in interference with a bend radius of angled material when said locator faces are in contact with with and parallel to both surfaces of the angled material for taking measurement,
the width of at least one locator surface, as measured parallel to the installment's leg's axis of rotation, is sufficient to orient and maintain that surface coplanar with the surface of the angled material it is placed in contact with for taking measurement,
at least one leg includes indicium representing a reference distance on the locator surface plane between said indicium and the legs' axis of rotation, in a direction normal to the axis of rotation.

4,660,294

SURFACE PARALLELISM MEASUREMENT SYSTEM

George S. Schmidt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1985, Ser. No. 797,532
Int. Cl.[4] G01B *3/38*
U.S. Cl. 33—533 2 Claims



1. A method for determining the degree of angularity between first and second substantially flat surfaces comprising the steps of
securing said first flat surface in a fixed position;
adjustably securing said second flat surface in a position opposed to said first flat surface;
zero-calibrating first, second and third displacement transducers placed between said flat surfaces at identical points;
locating said transducers in a triangular pattern between spaced predetermined points on said surfaces with the axes of said transducers being substantially perpendicular to said first flat surface;
generating a fixed, first CRT display indicating parallelism between said surfaces;
summing output signals from said first and second transducers to develop a first display signal and summing output signals from said first, second and third transducers to develop a second display signal;
generating a second CRT display from said first and second display signals in superimposed relation with said fixed, first CRT display; and
comparing said displays so as to determine the degree of angularity between said surfaces.

4,660,295

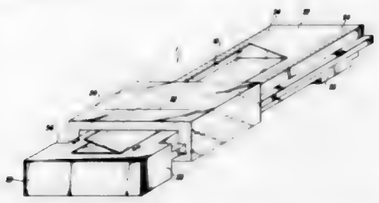
METRIC MEASURING DEVICE FOR POSTAGE STAMPS

Albert Emrich, 309 Alder Rd., Dover, Del. 19901

Filed May 13, 1985, Ser. No. 733,298
Int. Cl.[4] G01B *5/00*
U.S. Cl. 33—541 11 Claims

1. A metric measuring device for postage stamps, each having printed borders on a face thereof, comprising:

an elongated base having a longitudinal axis, an upper face, and marked parallel metric scales on said upper face having zero points at one end thereof;
a slider slidably mounted on said elongated base for movement along said axis and having a linear indicator means thereon perpendicular to said axis; and
an independent, transparent means for holding a stamp positionable on said base under said slider while said slider is being moved;



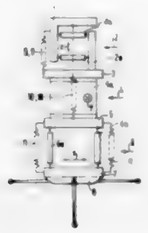
whereby a stamp can be placed in said means for holding, said slider can be moved along said base until said linear indicator means registers with said zero points, whereupon said means for holding can be positioned on said base such that a left hand edge of the printed border is aligned with said zero points on both said scales and said indicator means, whereafter said slider can be repositioned along said base while said means for holding remains stationary until said indicator means registers with an opposite side edge of the printed border on a right hand side of said stamp and the dimensions can be read on both said scales.

4,660,296

SENSING HEAD FOR A MEASURING MACHINE

Otto Klingler, Oberndorf-Boll, and Kurt Linder, Karlsruhe, both of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Mar. 21, 1985, Ser. No. 714,681
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412302
Int. Cl.⁴ G01B *7/28*
U.S. Cl. 33—559 **3 Claims**



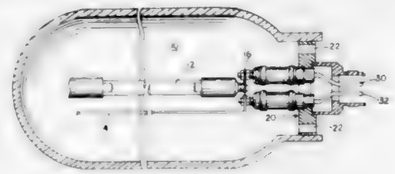
1. A multi-coordinate sensing head for a measuring machine, comprising:
a machine beam defining a fixed frame of reference for movements in x, y and z coordinate directions;
first straight line guiding means having a first beam suspended from said machine beam and mounted to said machine beam for movement vertically in said z direction;
second straight line guiding means having a second beam suspended from said first beam and mounted to said first beam for movement horizontally in said y direction;
third straight line guiding means having a third beam suspended from said second beam and mounted to said second beam for movement horizontally in said x direction;
a first pair of spring means connected between said machine beam and said first beam on opposite sides thereof in said direction and having a force-deflection characteristic curve which is selected to compensate for all weight suspended from said first beam;
a second pair of springs connected between said first and second beams on opposite sides thereof in one of said x and y directions and having a spring characteristic which is selected to compensate for all weight suspended from said second beam
a third pair of springs connected between said second and third beams on opposite sides thereof in one of said x and y directions and having a spring characteristic which is selected to compensate for all weight suspended from said third beam; and
a sensing member connected to said third beam for contacting a workpiece to be measured.

4,660,297

DESORPTION OF WATER MOLECULES IN A VACUUM SYSTEM USING ULTRAVIOLET RADIATION

Philip Danielson, 5620 Main St., Downers Grove, Ill. 60516

Filed Nov. 1, 1985, Ser. No. 793,984
Int. Cl.⁴ F26B *3/28*
U.S. Cl. 34—4 **16 Claims**



1. A method for desorbing water molecules from the inner surface of a vacuum chamber, comprising:
generating ultraviolet radiation within the closed vacuum chamber, such that the ultraviolet radiation impinges upon the inner surface area of the vacuum chamber;
insuring at least a partial vacuum within the vacuum chamber for at least a portion of the time that said step of generating an ultraviolet radiation is performed; and
pumping the desorbed water molecules released from the inner surfaces of the vacuum chamber to thereby remove the desorbed water molecules therefrom.

4,660,298

PROCESS FOR THE TEMPERATURE CONTROL OF A DRYING APPARATUS

Yutaka Nambu; Hitosi Sugawara, and Yasuo Saitoh, all of Hiratsuka, Japan, assignors to The Japan Tobacco & Salt Public Corporation, Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,640
Claims priority, application Japan, Dec. 2, 1983, 58-227024
Int. Cl.⁴ F26B *3/00*
U.S. Cl. 34—30 **2 Claims**



1. A process for controlling the temperature of a drying

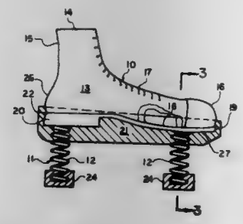
apparatus including a cylindrical rotor having a plurality of heating means which are independent of each other and arrayed in an advance direction of raw material, said process comprising controlling said heating means in response to the measurements of a flow rate and a moisture content of the raw material charged into said rotor and in response to measurements of the temperatures of respective sections of the rotor, each section corresponding to each heating means so that the temperature of each section is changed in accordance with a flow rate characteristics curve of each section and controlling the heating means so that a bias temperature for compensating for a lag in thermal response of each heating means is applied prior to arrival of said raw material at each said section, and thereafter the temperature of each section is changed in accordance with said flow rate characteristics curve when said raw material arrives at said each section by a feed back controlling at least a final heating means in response to the measurement of the moisture content of the dried raw material discharged from said rotor.

4,660,299

SPRING BOOT

Dale Omilusik, 4935 21 Ave., N.W., Calgary, Alberta, Canada T3B 0X1

Filed Jan. 13, 1986, Ser. No. 817,992
Int. Cl.⁴ A43B *13/18, 21/30*
U.S. Cl. 36—7.8 **1 Claim**



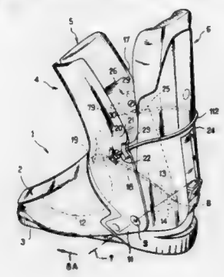
1. A footwear device comprising:
(a) a boot having a resilient upper member rising above ankle height, a forward portion, rear portion, lower periphery elongated along an axis exending between said forward and rear portions, a sole associated with said lower periphery and forming a shoulder which protrudes outwardly from the boot, a heel associated with said lower periphery, and lacing means for securing said upper member upon the foot of the user,
(b) a rigid monolithic anchoring base comprised of a plastic casting attached to said boot by way of engulfment of said shoulder and heel, and
(c) a spring assembly comprising four identical coil springs having upper and lower extremities, at least two of the uppermost coils of said upper extremities being embedded within said plastic casting, said lower extremities being provided with non-skid footings having lower faces that lie in coplanar disposition, said springs being vertically positioned beneath said anchoring base as a forward pair and rear pair disposed in a substantially rectangular pattern with each pair centered upon a line perpendicularly oriented to the boot axis, said springs having a compressional deformation of less than about 15% during normal use and having a length between about 2 and 5 inches.

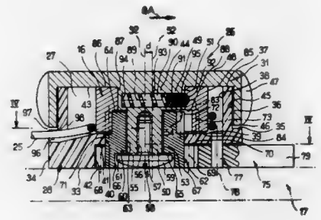
4,660,300

TRACTION DEVICE FOR SKI BOOT

Joseph Morell, Annecy; Louis Benoit, Frangy, and Maurice Bonnet, Rumilly, all of France, assignors to Salomon S.A., Annecy, France

Filed Sep. 13, 1985, Ser. No. 775,566
Claims priority, application France, Sep. 14, 1984, 84 14128
Int. Cl.⁴ A43C *11/00;* **A43B** *5/04*
U.S. Cl. 36—50 **7 Claims**





1. In an alpine ski boot comprising
(a) at least two rigid elements (2, 5, 6) defining a shell (2) receiving a foot and a rod (4) including a front collar (5) and a rear cap (6);
(b) means (8, 9) for the mutual assembly of said elements, defining a mutual articulation of said collar (5) and said cap (6) in a lower zone of said rod (4), about a relative pivoting axis (7) which is substantially horizontal and transversal with respect to a predetermined direction (8) of forward movement, such that said cap (6) and said collar (5) can move between the relative open position of said rod (4) and a relative, variable position of the pressing of said cap (6) and said collar (5) against a leg;
(c) a tarsal support casing (12), located inside said boot and movable with respect to said elements (2, 5, 6), between a retraction position in which it is adjacent to said collar (5), in a lower zone of said rod, and/or to said shell (2) in a front and upper zone thereof, and a position pressing downward towards the rear on a foot, said pressing position being variable and offset towards the rear and downward with respect to said retraction position;
(d) a flexible brace (112), substantially inextensible, having two ends (13, 15) a first (13) of which is solid with one of said elements (2, 5, 6) in immediate proximity to said axis (7), of a first side (10) of said boot and at its interior, said flexible brace (112) having, in addition, successively from said first end (13) to a second end (15), a first section (18) by-passing said tarsal support casing (12) through the front and above, at the interior of said boot, at a first level which is higher than that of said first end (13), a second section (22) passing through said collar (5) in a first lateral zone (21) of said rod (4), from a second side (11) of said boot opposite said first side (10) to a second level which is above that of said first section (18) and that of said relative

pivoting axis (7), a third section (24) by-passing said cap (5) through the rear, outside said boot, and a fourth section (25) extending along said collar (5) in a second lateral zone (17) of said rod (4), outside of said boot, from said first side (10) approximately to said second level;

(e) means (20, 23) for guiding said second section (22) of said flexible brace (112) through said collar (5) in said first lateral zone (21) of said rod (4), to said second level;

(f) traction means (26) carried by said collar (5) in said second lateral zone (17) of said rod (4), substantially to said second level, for applying to said fourth section (25) of said flexible brace (112) traction adapted to selectively bring and maintain said cap (6) and said collar (5) in leg pressing position and said tarsal support casing (12) in foot pressing position, and to release said fourth section (25) of said flexible brace (112) and to allow passage of said cap (6) and of said collar (5) into open position and passage of said tarsal support casing (12) into retraction position, the improvement comprising

(g) a winding reel (16) for said fourth section (25) of said flexible brace (112), said second end (15) of which is solid with a zone of said reel (16);

(h) means (40, 62, 31) carried by said collar (5), for defining an axis (32) of rotation of said reel (16) with respect to said collar (5), or first axis;

(i) a control knob (31) for said reel (16) on rotation about said first axis (32), with respect to said collar (5), in at least one predetermined direction (81) for the winding of said fourth section (25) of said flexible brace (112);

(j) means (40, 62) carried by said collar (5) for defining an axis of rotation (32) of said control knob (31) with respect to said collar (5), or second axis;

(k) first means (91) of kinematic connection between said control knob (31) and said reel (16) on rotation about said second and first axes (32), respectively, with respect to said collar (5), said first means (91) of kinematic connection introducing a first relationship of transmission of the rotation of said knob (31) to the rotation of said reel (16);

(l) second means (72, 82) of kinematic connection between said control knob (31) and said reel (16) on rotation about said second and first axs (32), respectively, with respect to said collar (5), said second (72, 82) means of kinematic connection introducing a second relationship of transmission of the rotation of said knob (31) to the rotation of said reel (16), reduced with respect to said first relationship;

(m) means (92, 93, 95) of automatic switching between said first and second means of kinematic connection (91, 72, 82), for automatically actuating said first means (91) of kinematic connection when said flexible brace (112) is subjected to traction stress below a predetermined threshold, and said second means (73, 82) of kinematic connection when said flexible brace (112) is subjected to traction stress above said threshold; and

(n) means (74, 62) for temporary immobilization of said reel (16) on rotation about said first axis (32), with respect to said collar (5), in a direction opposite to said predetermined winding direction (81).

4,660,301

HEEL PROTECTOR

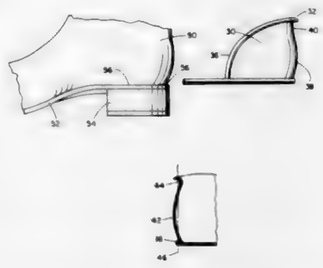
Steven C. Atwood, 9220 Clarewood, #1013, Houston, Tex. 77036

Filed May 15, 1986, Ser. No. 863,354
Int. Cl.[4] A43B *13/22*
U.S. Cl. 36—72 B **17 Claims**

13. A footwear guard of a type having a generally U-shaped configuration for protecting a rearward portion of footwear including a sole and an upper portion while remaining out of engagement with a walking surface while worn by the user, comprising:

a generally U-shaped rod member including a circular-shaped end portion for fitting engagement in a crease between the sole and the upper portion of the footwear for exerting a compressive force sufficient to removably secure the guard to the footwear; and

a metallic sheet material having a generally U-shaped cross-sectional configuration secured to the rod member for protecting a rearward portion of the upper portion of the footwear and including (a) a bevel along an upper surface



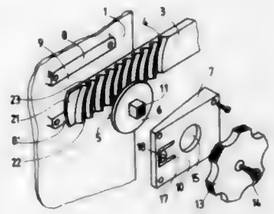
thereof having an outwardly protruding edge surface for preventing the upper surface from damaging the upper portion of the footwear, and (b) a first lower curvilinear portion extending outwardly from the rod member and a second upper curvilinear portion extending inwardly from the rod member with respect to a center of the circular-shaped rod portion.

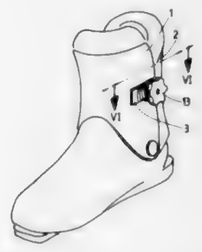
4,660,302

SKI BOOT

Simon Arieh, and Guy Courvoisier, both of Geneva, Switzerland, assignors to Lange International S.A., Fribourg, Switzerland

Filed Feb. 28, 1986, Ser. No. 835,056
Claims priority, application Switzerland, Mar. 7, 1985, 1037/85
Int. Cl.[4] A43B *5/04, 11/00*
U.S. Cl. 36—117 **5 Claims**





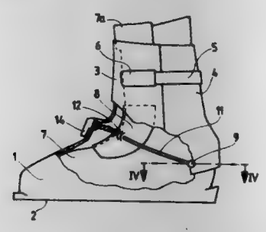
1. A ski boot comprising at least two portions having overlapping edges for surrounding the skier's foot or ankle, and at least one fastening and tension device for interconnecting said portions, said device comprising a cogged strap attached to one of said boot portions and adapted to cooperate with means for hooking and tensioning said one portion or the other portion, wherein said cogged strap comprises cycloidal teeth consisting of elongated cycloidal segments generated in the plane of said strap by points disposed at spaced angular intervals along a circumference externally of the rolling circumference, said fastening and tension means comprising a rotary disc provided with studs disposed at spaced angular intervals along a circumference concentric to the axis of rotation of said disc and of a diameter greater than the strap width, said circumference and said studs corresponding to said external circumference for generating said cycloidal teeth on said strap, whereby said disc is inclined with respect to said strap in the direction toward the strap end, and means for guiding said cogged strap under said disc and keeping said strap in meshing engagement with the disc studs, so that when said studs are driven for rotation they engage said teeth only on the disc half nearest to the strap.

4,660,303

REAR-ACCESS SKI BOOT

Guy Courvoisier, and Simon Arieh, both of Geneva, Switzerland, assignors to Lange International S.A., Fribourg, Switzerland

Filed Feb. 28, 1986, Ser. No. 835,049
Claims priority, application Switzerland, Mar. 7, 1985, 1036/85
Int. Cl.[4] A43B *5/04*
U.S. Cl. 36—119 **3 Claims**



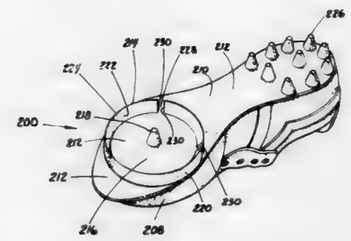
1. A rear-access ski-boot comprising a rigid shell rigidly coupled to the sole and adapted to surround the foot, the heel and the instep or lower front portion of the ankle, and an upper consisting on the one hand of a front quarter of substantially gutter configuration opening to the rear and rigidly coupled to the shell, and on the other hand of a rear quarter also of gutter configuration, pivotally connected to the shell or to said front quarter of the upper so as to fit in said front quarter while surrounding the ankle, means for holding the two interfitting quarters in their assembled condition, an inner shoe or slipper, a pressure member on the vamp of said inner slipper which corresponds to the instep, and means for exerting a pressure against said pressure member towards the heel, wherein said means for exerting a pressure against said pressure member consist on the one hand of a cable disposed between said shell and said slipper and attached to said shell in the heel area so as to surround said slipper and said pressure member with its two sides, and on the other hand of a rotary tension member reacting against the inner surface of said shell, in front of said pressure member, said cable being attached to said rotary tension member so as to rotate bodily therewith, whereby the rotation of said tension member is attended by the twisting of the two cable sides between said shell and said pressure member, this twisting causing a pressure to be exerted against said pressure member.

4,660,304

ATHLETIC SHOE WITH IMPROVED PIVOT CLEATING

Michael L. Tanel, Milwaukee, Wis., assignor to Tanel Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 565,746, Dec. 27, 1983, Pat. No. 4,577,422. This application Nov. 22, 1985, Ser. No. 800,740
The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.
Int. Cl.[4] A43B *5/00, 5/02*
U.S. Cl. 36—126 **13 Claims**



1. In an athletic shoe of the type having a sole with a main sole surface and cleats extending therefrom to provide traction, such sole having heel, arch, ball-of-the-foot and toe portions, the improvement comprising:

a substantially continuous annular cleat encompassing a major area of the ball-of-the-foot and toe portions, centered substantially on the juncture of the ball-of-the-foot and toe portions, extending substantially across the entire width of the sole, and terminating in a substantially circular distal edge;

said annular cleat being flexible to allow flexing of the sole;

said annular cleat having inner and outer annular surfaces angled with respect to the main sole surface and extending to intersection with said main sole surface;

said annular cleat enclosing a sole area substantially all non-cleat portions of which are coincident with said main sole surface; and

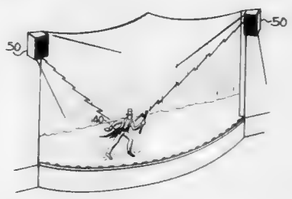
at least one break in said annular cleat along the distal edge, whereby both improved pivotability and traction are provided.

4,660,305

TAP DANCE SHOE INCLUDING INTEGRAL ELECTROMECHANICAL ENERGY CONVERSION MEANS

Charles E. Medler, Rte. 9, Box 432-B, Chapel Hill, N.C. 27514, and Terry C. McInturff, Rte. 2, Box 326, Timberlake, N.C. 27583

Filed Dec. 17, 1985, Ser. No. 809,942
Int. Cl.[4] A43B *23/00*
U.S. Cl. 36—139 **19 Claims**



1. A tap dancing shoe adapted for use in exhibition tap dancing of the type wherein sound in the form of mechanical vibrational energy (MVE) generated by a dancer using the shoe may be amplified, said shoe comprising:

a shoe upper;

a shoe sole connected to said upper and having a floor striking surface for contacting the dance floor and causing sound in the form of mechanical vibrational energy to be generated;

pickup means positioned in the shoe for receiving in substantially undistorted form said mechanical vibrational energy and for converting said energy into electrical signals which are representative thereof; and

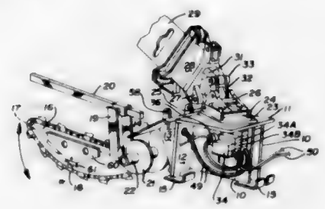
transmitter means electrically connected to said pickup means for receiving said electrical signals and transmitting the same to an amplifier for conversion into amplified sound which is representative of the sound generated by the shoe sole striking the dance floor.

4,660,306

TRENCHER ATTACHMENT FOR HYDRAULIC EXCAVATORS

Robert J. Bruce, and John K. Naypaver, both of New Castle, Pa., assignors to Bruce & Merrilees Electric Co., New Castle, Pa.

Filed Nov. 25, 1985, Ser. No. 801,220
Int. Cl.[4] E02F *5/06*
U.S. Cl. 37—86 10 Claims



1. A trencher attachment for a power driven excavator of the truck mounted type having a power supply system, a telescopic boom extending therefrom and manueverable with respect thereto, said trencher attachment comprising an attachment frame including vertically positioned horizontally spaced body members a rectangular top plate mounted on said body members, a transverse member mounted on said body members and a plurality of secondary frame members mounted on said transverse member, means on said top plate for connecting one end of said telescopic boom diagonally to said attachment frame rectangular top plate and rotating and tilting movement with respect to said telescoping boom, spaced drive and driven shafts journaled in said attachment frame body members and said attachment frame secondary members respectively, a drive chain connecting said drive and driven shafts, a trencher frame pivoted at one end to said driven shaft and an idler on the other end of said trencher frame, a drive sprocket on said driven, a a digging chain trained over said drive sprocket and said idler on said trencher frame, a motor on one of said vertically disposed body members of said attachment frame for moving said drive chain and means on said attachment frame for moving said trencher frame and digging chain in an arcuate path around said drive shaft in a vertical plane, said means comprising a pair of arms pivoted to and extending from said driven shaft, a lifting shaft on said arms engaging said trencher frame and a piston and cylinder assembly on said attachment frame connected to said pair of arms for moving said arms and said trencher frame in said arcuate path.

4,660,307

COVER FOR FILM IRONS

John W. Fay, 106 Ivy Home Rd., Hampton, Va. 23669

Filed Jun. 5, 1986, Ser. No. 870,928
Int. Cl.[4] D06F *83/00*
U.S. Cl. 38—94 5 Claims



1. A fabric cover for the bottom surface of an iron having a pointed front foot and an elongated rear handle, said cover comprising a fabric sheet-like member having a congruent configuration to and overlapping the bottom of the iron when placed thereon, a draw string passing through a channel seam extending around the periphery of the sheet-like member, said draw string having opposite free ends extending through an opening in the channel seam and of a length sufficient to be tied together to pull said seam over sides of said iron and connect the cover securely to the bottom and around the lower sides of the iron, said opening in the channel seam being underneath the handle and the ends of the draw string being of a sufficient length to be tied over the handle of the iron and the channel seam being squared at a rear end of the cover to be congruent with a squared rear end of the iron and said channel seam extending upwardly from the cover underneath the handle and closely adjacent thereto to provide ready access to the user of the free ends of the draw string and faciliate tying to the handle.

4,660,308

TENTERING FRAME FOR SHEET-LIKE MEMBERS

Hiep D. Dang; Roy L. Hicks, and Joel F. M. Leathers, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 29, 1985, Ser. No. 759,768
Int. Cl.[4] D06C *3/08*
U.S. Cl. 38—102.4 9 Claims



1. A tentering apparatus for tensioning a sheet-like member comprising:

(a) an outer frame member arranged in a picture frame type configuration with an inside and outside perimeter,

(b) at least four clamping assemblies adjacent to each other and arranged in a picture frame type configuration within the inside perimeter of the outer frame member and spaced apart from the outer frame member, each of the clamping assemblies adapted for clamping the edges of the sheet-like member to hold the sheet-like member generally flat, and each of the clamping assemblies comprising at least two elongated, generally planar members adjacent and parallel to each other, and held together with a first fastening means including at least one clamp screw, the edges of the sheet-like member disposed between the two elongated members and disposed generally planar to the plane of the sheet-like member, and

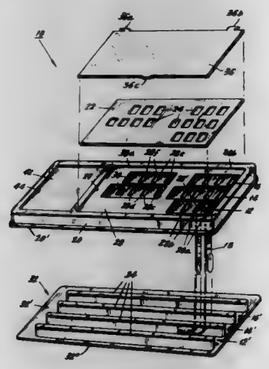
(c) an adjustable second fastening means including a plurality of wing nuts and bolts for fastening the clamping assemblies to the outer frame member, the second fastening means adapted for fixedly tensioning the sheet.

4,660,309

CHANGEABLE CHARACTER DISPLAY DEVICE

John LaRocca, Fairfield, N.J., assignor to Trans-World Manufacturing Corp., East Rutherford, N.J.

Filed Nov. 6, 1985, Ser. No. 795,622
Int. Cl.[4] G09F *3/20*
U.S. Cl. 40—5 13 Claims



1. A changeable character display device, comprising:

a plurality of flexible strips each having two longitudinal ends, each of said strips having a series of longitudinally-arranged display portions between its ends; and

guide means for directing a respective display portion of each of said flexible strips into a laterally spaced row that is viewable from a location in front of the display device, said guide means including a panel with a plurality of pairs of apertures arranged laterally in a row, each of said pairs of apertures being associated with a respective one of said flexible strips; and

each of said flexible strips being arranged to have a viewable display portion situated in front of and between the individual ones of said associated pair of apertures, while the non-displayed portions of said respective flexible strips are extended rearwardly through said associated pair of apertures;

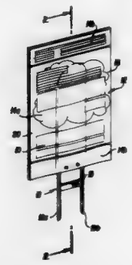
said guide means being additionally operative for clustering together the non-displayed portions of said strips in a generally lateral orientation and with the ends of the strips being generally parallel to said guide panel.

4,660,310

ADVERTISING COPY DISPLAY SIGN AND STAND COMBINATION

Kenneth R. Farmer, 891 Glenbrook Dr., N.W., Atlanta, Ga. 30318

Filed Oct. 14, 1980, Ser. No. 196,843
The portion of the term of this patent subsequent to Oct. 28, 2000, has been disclaimed.
Int. Cl.[4] G09F *15/00*
U.S. Cl. 40—607 14 Claims



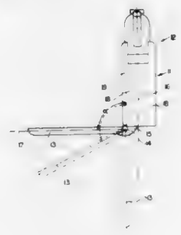
1. An advertising display sign and stand combination which comprises a double-sided display sign having printed thereon advertising copy and changeable copy display areas adapted to receive adhesive backed decals having advertising copy printed thereon and a stand member removably attached to said double-sided display sign adapted to facilitate installation of the sign and stand combination in the earth without the use of driving tools, said double-sided display sign comprising thermoplastic sheets fused in superposed coextensive relation to create an envelope-like arrangement adapted to receive said stand, said stand comprising an inverted U-shaped member adapted for insertion of the base of said U into said envelope like arrangement with the long sides of said U-shaped member being joined by a cross member at points whereby said sign may be implanted into the earth at the optimum height for display of advertising copy imprinted on said sign.

4,660,311

HANDGUN

Wolf Breitfeld, Achentalstrasse 10, 8211 Raiten, Fed. Rep. of Germany, and Peter Schütz, An der Ag 4, 8221 Siegsdorf, Fed. Rep. of Germany

Filed Jan. 22, 1985, Ser. No. 693,113
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1984, 3402481
Int. Cl.[4] F41C *23/00*
U.S. Cl. 42—72 13 Claims



1. A handgun provided with a first grip for handling the handgun, said first grip extending along a central aiming plane of the handgun and being adapted to be held by one hand of a user using the handgun, and having a second additional grip

connected to the handgun and being adapted for the other hand to support the handgun, characterized in that the second grip is located at a lower end of the first grip of the handgun, and projects outwardly from the first grip to one side of the central aiming plane at least while being used to support the handgun.

4,660,312

RIFLED GUN BARREL HAVING SMOOTH BORE SECTION

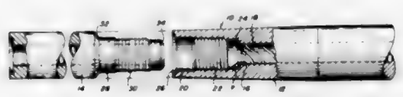
Anthony A'Costa, Box 5806, 710 W. 4th St., Suite E, Pueblo, Colo. 81002

Continuation-in-part of Ser. No. 516,230, Aug. 15, 1983, which is a continuation-in-part of Ser. No. 131,318, Apr. 27, 1982, and a continuation-in-part of Ser. No. 613,180, May 23, 1984. This application Oct. 4, 1985, Ser. No. 784,032

The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.

Int. Cl.[4] F41C *21/00, 21/08*

U.S. Cl. 42—76.01 4 Claims



1. A gun barrel having a rifled-bore section at the breech end thereof and a smooth-bore section at the muzzle end thereof, said sections having a gas tight connection therebetween, said rifled-bore section comprising a first generally tubular body having a longitudinal bore and at least one spiral groove formed in the wall of said bore to a depth of a predetermined dimension, said rifled-bore section having a length corresponding substantially to the peak pressure point for the gun barrel, said smooth-bore section comprisng a second generally tubular body having a longitudinal bore coaxial with the longitudinal bore of said rifled-bore section, and the longitudinal bore of said smooth-bore section having a diameter greater than the diameter of the bore of said rifled section and less tnan tne diameter or said at least one spiral groove.

4,660,313

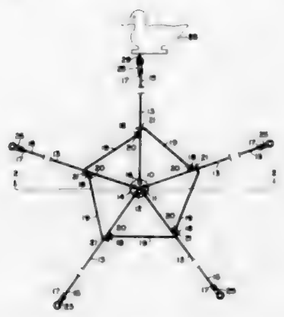
DUCK DECOY DEPLOYER

Robert A. Bauernfeind, 1416 Oak Haven Rd., Jacksonville, Fla. 32207, and C. Braley Carroll, 1840 Shelton Rd., Jacksonville, Fla. 32211

Filed Aug. 21, 1986, Ser. No. 898,628

Int. Cl.[4] A01M *31/06*

U.S. Cl. 43—3 6 Claims



1. A duck decoy deployer comprising a central plate, a plurality of enlongated radially spaced stiff connecting rods pivotally attached at one end to said central plate and adapted to extend radially outward to a free end where a swivel fastener is attached to said rod, a stiff spreader bar pivotally attached to each said rod adjacent said one end and slidably attached to an adjacent said connecting rod, a short central connector means affixed to the center of said plate and extending outwardly from both sides of said plate to a free end above said plate and a free end below said plate, fastening means for attaching a duck decoy to the free end above said plate, and means to suspend an anchor weight from the free end below said plate.

4,660,314

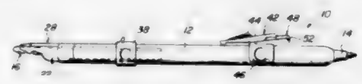
HOOK SNELLER AND LINE CUTTER

Owen R. Janssen, Rte. 1, Box 117, Yamhill, Oreg. 97148, and George Spector, 233 Broadway Rm 3615, New York, N.Y. 10007

Filed Jan. 27, 1986, Ser. No. 822,606

Int. Cl.[4] A01K *97/06*; D04G *5/00*

U.S. Cl. 43—4 4 Claims



1. A fish hook sneller and line cutter tool which comprises:
(a) an elongated housing;
(b) a hook holder extending forwardly from said housing and adapted to hold a shank of a fish hook therein;
(c) a line holder extending forwardly from said housing and adapted to hold a portion of a line after free end of said line is threaded through an eye of said fish hook;
(d) a line clamp slideably extending forwardly from said housing whereby said free end of said line is wrapped around said shank of said fish hook and said line clamp in coiled bights with said line clamp adapted to hold said free end of said line for passing said free end through said bights upon rearwardly sliding said line clamp thereby forming a knot upon forward removal of said fish hook from said tool;
(e) said line holder having a pair of flexible arms; and
(f) said hook holder having a slot therein, said hook holder placed within said line holder in which both extend forwardly from said housing so that said arms will apply pressure to said hook holder to squeeze said slot of said hook holder, each of said arms adapted to properly hold said line while said slot of said hook holder adapted to properly hold said shank of said fish hook therein.

4,660,315

SPEAR GUN HAVING AIR VALVE FORMED BY INNER AND OUTER BARREL

Daniel Ferro, 38 Ridgeway Dr., Warren, R.I. 02885

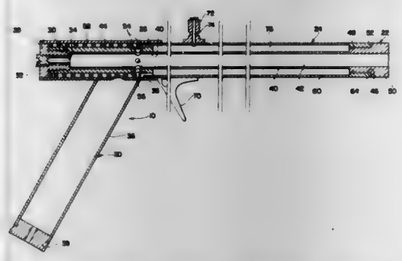
Filed Jun. 17, 1986, Ser. No. 875,188

Int. Cl.[4] A01K *81/04*

U.S. Cl. 43—6 10 Claims

1. A compressed gas-actuated spear gun for scuba divers and the like which carries a supply of compressed gas comprising, a handle assembly including an open face, a closed end receptor tube from which a handle downwardly projects, an inner barrel assembly including a longitudinal first hollow barrel having an interior chamber and an open front end for receipt of an arrow, spear or other projectile and a closed rear end in turn including means for fixedly attaching said first barrel to said receptor tube, an outer barrel assembly including a second longitudinal hollow barrel open at both the front and rear ends thereof through which at least a portion of said first barrel projects, said second barrel disposed between the front end of said first barrel and said receptor tube wherein the rear end thereof partially projects into the open forward end of said

receptor tube, valve means cooperatively formed by said inner and outer barrel assemblies for enabling compressed air to enter said inner chamber including a compressed gas inlet mounted on said second barrel, said second barrel further



retractable between a normal first forward position and a second rearward firing position wherein compressed gas is directed into said first barrel behind said projectile so as to force it out the open front end of said first barrel.

4,660,316

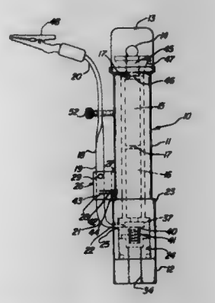
LIGHT SIGNALLING FISHING ACCESSORY

Bruce W. Gamelin, River St., Champlain, N.Y. 12919

Filed Jun. 23, 1986, Ser. No. 877,495

Int. Cl.[4] A01K *91/06, 97/12*

U.S. Cl. 43—17 9 Claims



1. A light signalling fishing accessory device comprising in combination
(a) a hollow cylindrical casing,
(b) one or more electrical batteries in said casing,
(c) a plug closure member threadedly engaged in one end of said hollow casing to contain said batteries therein,
(d) an electrical lamp on said casing and electrically connected to said batteries by an interrupted electrical circuit,
(e) an electrically conductive arm member pivotally attached to said casing, said arm member extending substantially parallel to the logitudinal axis of said casing,
(f) said arm member having a curved section at one end curving away from said casing and a finger contact on the other end of said arm member, said arm member being attached at a location intermediate said ends to a pivot,
(g) fishing line connecting means attached to said curved end and adapted to secure a fishing line,
(h) said casing having an aperture in its side wall adjacent said finger contact of said arm member so that upon rotation of said arm member about said pivot said finger contact projects into said aperture and into said casing,
(i) an electrical terminal in said casing biased into electrical contact with one of said batteries and adjacent said aperture so that a predetermined rotation of said arm member about said pivot causes said finger contact to enter the aperture in said casing and contact the said electrical terminal therein to complete said interrupted circuit and energize said lamp as a light signal.

4,660,317

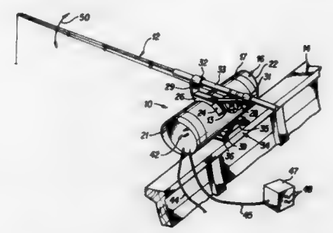
APPARATUS FOR SUPPORTING AND AGITATING A FISHING ROD

T. B. Keith Evans, 2070 Northbrook Drive, Sidney, British Columbia, Canada (V8L 4J5)

Filed Mar. 11, 1986, Ser. No. 838,462

Int. Cl.[4] A01K *87/00*

U.S. Cl. 43—19.2 20 Claims



1. An apparatus for supporting and agitating a fishing rod, the apparatus having:
(a) a housing having journalling means and an output shaft journalled for rotation in the journalling means,
(b) a rod holder cooperating with the output shaft and adapted to carry a fishing rod,
(c) a motor cooperating with the housing and the output shaft to rotate the shaft relative to the housing as required,
(d) a power and control means cooperating with the motor to control speed and direction of rotation of the motor and hence speed and direction of rotation of the output shaft defining stroke of the fishing rod,
(e) position sensing means responsive to relative position of the output shaft and the housing, thus reflecting relative position of the fishing rod, the sensing means cooperating with the power and control means to control direction of rotation of the shaft,
(f) load sensing means responsive to excess load on the output shaft and cooperating with the power and control means to disconnect power to the motor when torque on the shaft exceeds a predetermined value.

4,660,318

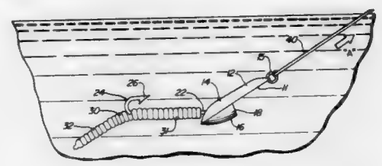
ANGLER'S LURE WITH KEEL

James Mieno, 1624 Mount Pleasant, Northfield, Ill. 60093

Filed Aug. 20, 1985, Ser. No. 767,530

Int. Cl.[4] A01K *85/00*

U.S. Cl. 43—42.39 3 Claims



1. For a spinner-blade having a small aperture toward the rear thereof and being a lure for attachment to an angler's line, the improvement comprising a metallic keel-and-hook assembly whereof
the keel

is integrally bonded with and depends from the rear portion of the spinner-blade,

presents a substantially planar front surface, and is by weight a substantial portion of the total weight of the lure; and,

the hook

is implanted in the keel and has a shank thereof disposed upwardly and rearwardly from the keel and said shank passes through the aperture;

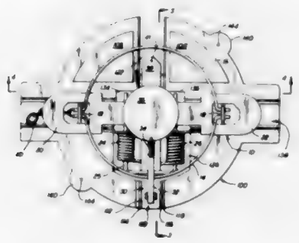
so that, when the lure is drawn on a line through the waters of a fishery, resultant forces tend to bias downwardly the rear portion of the spinner-blade and to impart oscillatory motion to the hook.

4,660,319

BEDDING DEVICE FOR AN ANIMAL LEG HOLD TRAP

Robert E. Ellwood, Box 148, Conesville, Ohio 43811

Filed Mar. 28, 1986, Ser. No. 845,635
Int. Cl.[4] A01M *23/26*
U.S. Cl. 43—96 **10 Claims**



1. A bedding device for use with an animal leg hold trap, said device including a platform having opposed top and bottom sides, retaining means including a pair of opposed, convergent upstanding wall members extending from the top side of said platform for flexibly receiving and retaining a first frame member of an animal leg hold trap against said top side and for flexibly releasing said first frame member upon triggering of the trap and a first channel disposed on the top side of said platform having a floor shaped to accommodate said first frame member of said trap, wherein said wall members are disposed on opposite sides of said first channel.

4,660,320

BAIT STATION FOR SMALL RODENTS

Stanley Z. Baker, Pepper Pike; Benjamin H. Baker, Chesterland, and Bart M. Baker, Richmond Hts., all of Ohio, assignors to J. T. Eaton & Company, Twinsburg, Ohio

Filed Oct. 14, 1986, Ser. No. 918,031
Int. Cl.[4] A01M *25/00*
U.S. Cl. 43—131 **18 Claims**

1. A rodent bait device comprising:

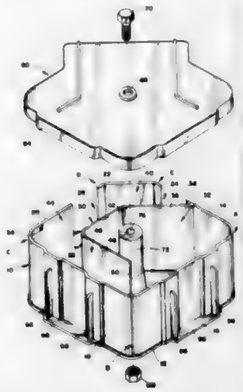
a generally pentagonal container including a floor;

four adjoining primary outer side walls comprising first, second, third and fourth walls extending vertically from said floor and forming first, second and third corners of roughly 90°;

a diagonal fifth outer side wall extending angularly between and interconnecting said first and fourth primary outer walls to form fourth and fifth corners therewith;

a three sided inner partition wall abutting endwise against said first and second primary walls and forming therewith a bait containment chamber, said partition wall extending in generally parallel spaced relationship to said third, fourth and fifth outer walls and defining therewith a rodent passageway extending partially around the inner periphery of said container and leading into said bait containment chamber through an ingress opening in said partition wall located adjacent the terminus thereof and adjacent said second outer wall;

a rodent access opening in each of said first and fourth walls at locations therein adjacent said diagonal fifth wall and leading into said rodent passageway; and,



a removable cover fastened to said container and abutting against the top edges of said outer side walls and partition wall to form a top closure wall for said bait containment chamber and said rodent passageway.

4,660,321

CLIMATE CONTROL IN BUILDING STRUCTURES

Carl-Göran Hedén, Solna Kyrkväg 11, 109 01 Stockholm, Sweden

Filed Mar. 10, 1981, Ser. No. 242,386
Claims priority, application Sweden, Mar. 11, 1980, 8001899
Int. Cl.[4] A01G *9/00*
U.S. Cl. 47—17 **4 Claims**

1. Water based greenhhouse consisting of one or more units, with each unit in the form of a geodesic dome, characterized in that it is arranged on a pontoon or barge, and with a heat storage chamber for accumulating excess heat, consisting of insulated ballast water in the pontoon or barge, and that a plastic film is arranged against the wall of the dome, held in place by underpressure in the intermediate space, to improve heat insulation.

4,660,322

REVOLVING DOOR

Dennis Lowe, Canada Post Corp., 4245 Sheppard Ave. E., Agincourt, Ont., Canada M1S 1T5

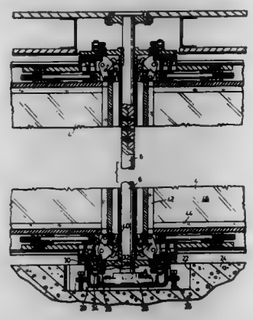
Filed Jul. 12, 1985, Ser. No. 754,813
Claims priority, application Canada, Jul. 27, 1984, 459846
Int. Cl.[4] E05D *15/02*
U.S. Cl. 49—44 **36 Claims**

1. A mechanism for mounting at one end of a door leaf of a collapsible revolving door including a plurality of door leaves which normally rotate together about a central axis, the mechanism comprising:

a support plate for rotation about said central axis of a revolving door, which support plate includes first and second spaced pivot means;

first and second pivot devices mountable on a door leaf for engaging simultaneously the first and second spaced pivot means respectfully, said pivot devices being spaced apart by the same amount as said spaced pivot means.

the arrangement being such that, in use, either one of the first and second pivot devices can become disengaged from its respective pivot means to enable the door leaf to rotate about a pivot axis of the other one of said first and second pivot means whereupon after commencement of such rotation, the other of the first and second pivot devices cannot disengage from its respective pivot means; and



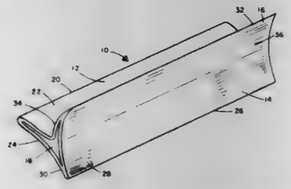
biasing means for normally maintaining the first and second devices in engagement with the first and second pivot means, to retain the door leaf in a normal extended position.

4,660,323

HOLLOW DOOR SEALING WEDGE

David E. Kanies, 532 Skiff Cir., Redwood City, Calif. 94065

Filed Mar. 7, 1986, Ser. No. 837,278
Int. Cl.[4] E06B *7/00*
U.S. Cl. 49—70 **17 Claims**



1. A hollow, resilient door sealing wedge comprising an elongated body member having a solid body portion and an empty inner portion and including a front, rear and top projection extending from central portion thereof, said front projection being adapted for insertion into space between a door and floor, said top projection being positioned remotely from vertical surface of said door when said wedge is inserted under said door, said body member having an arcuate bottom surface, said wedge preventing passage of floor stripping liquid through said space when inserted therein in operative position.

4,660,324

DOOR OPENER

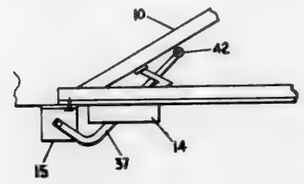
Willard H. Nyenbrink, 6549 Fillmore St., Allendale, Mich. 49401

Filed Aug. 30, 1985, Ser. No. 771,272
Int. Cl.[4] E05F *11/24*
U.S. Cl. 49—340 **7 Claims**

1. A selectively operable automatic door opener for opening an outwardly pivotable door that is mounted in a door jamb and has a header extending over the door, the door jamb having a vertical front face and having an inside surface facing across the door opening, the door opener comprising:

a bracket adapted to be secured to the door jamb, the bracket having a mounting surface that is secured to the vertical front face of the door jamb and a flange extending outwardly from the mounting surface that is secured to the inside surface of the door jamb, the mounting surface extending downwardly from the top of the door along the front face of the door jamb;

a door opener mounted on the mounting surface the bracket, the door opener comprising a motor driven radius arm



that pivots in a direction to engage and apply an opening force to the door;

transfer means for transferring force from the arm to the door so as to open the door; and

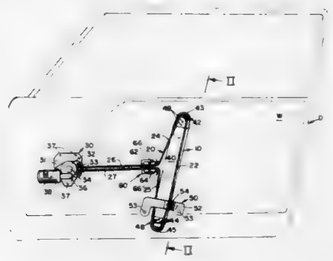
control means for actuating the motor to open the door.

4,660,325

FLEXIBLE WINDOW REGULATOR ASSEMBLY

Barney J. Bauer, Sylvania; William E. Buehler, Toledo, and Gregory A. Wingate, Bowling Green, all of Ohio, assignors to Dura Corporation, Toledo, Ohio

Filed Sep. 25, 1985, Ser. No. 779,942
Int. Cl.[4] E05F *11/48*
U.S. Cl. 49—352 **22 Claims**



1. A window regulator assembly for windows guided in walls along arcuate paths, said assembly comprising:

(a) a flexible tape having two ends and a substantially straight continuous reach,

(b) means for connecting said reach to a window,

(c) a flexible plastic strip along said reach having means at its ends for guiding and changing the direction of said tape,

(d) drum means attached to said ends of said tape so that rotation of said drum wraps one end of said tape while unwrapping the other end, and vice versa,

(e) means for reversibly rotating said drum for reciprocating said reach of tape to open and close said window in said wall,

(f) means apart from said reach for maintaining tension in said tape, and

(g) means for separately attaching said drum and the ends of said strip in said wall.

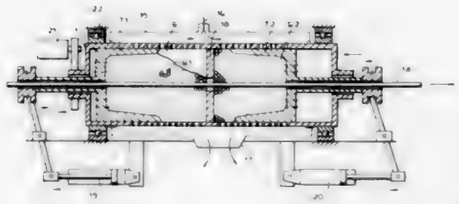
VOL 1077 ISS 4 APR 28 1987 UMI

4,660,326

APPARATUS FOR HYDROMECHANICAL CLEANING AND POLISHING

Georgi K. Petkov; Bencho P. Kyurkchiev; Valentin Y. Barzakov, and Stefan P. Minchev, all of Gabrovo, Bulgaria, assignors to N P S P PO Hydroplastichna Obrabotka na Metallite, Gabrovo, Bulgaria

Filed Jan. 31, 1986, Ser. No. 824,730
Claims priority, application Bulgaria, Jan. 31, 1985, 68621
Int. Cl.[4] B24B *19/00, 31/00*
U.S. Cl. 51—7 **2 Claims**



1. An apparatus for hydromechanical cleaning and polishing comprising
a movable casing connected to a drive mechanism
the said movable casing having
a chamber filled with
a working medium and furnished with
two diaphragms which are provided with
a mechanism for backward and forward movement wherein said movable casing is horizontal and the said diaphragms are mounted in the chamber of the said movable casing on a sliding coupling, whereby the said working medium is a mixture of
spheres and
working fluid, and further, wherein
said movable casing has
perforated walls and is arranged in
a housing which has
an inlet opening and
an outlet opening through which the said working fluid can enter and exit, wherein
a movable dividing wall is mounted in the center of the chamber of the said movable casing, forming left and right chambers, and
the two diaphragms, one left and one right, are mounted on movable longitudinal couplings in the movable casing, wherein each is driven independently.

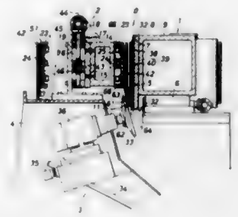
4,660,327

GLASS PLATE GRINDING APPARATUS

Shigeru Bando, Tokushima, Japan, assignor to Bando Kiko Co., Ltd., Tokushima, Japan

Filed Aug. 23, 1985, Ser. No. 769,165
Claims priority, application Japan, Oct. 13, 1984, 59-154962[U]
Int. Cl.[4] B24B *9/10*
U.S. Cl. 51—110 **3 Claims**

1. A glass plate grinding apparatus comprising:
a belt conveyor means for conveying said glass plate, having a belt, which is endless in a circulatorily moving direction, for supporting one surface of the glass plate to be grinded;
a plurality of strip-like base members disposed parallel to each other, one surface of each base member being arranged to face toward the other surface of the glass plate;
a support frame for slidably supporting said base members;
a plurality of thin plate-like members, each having a thickness less than that of a corresponding one of the base members, and being attached to said one surface of the corresponding base member to seize said glass plate in cooperation with said belt and to expose one end portion of said other surface of said glass plate, the end of each plate-like member which is situated at said one end portion of said glass plate protruding from one end of the corresponding base member;



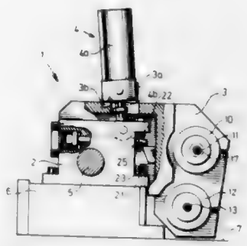
an endless chain disposed on the other surface of said base members for moving said base members in the moving direction of said glass plate;
a grinding wheel having a grinding face and arranged to grind said exposed one end portion of said glass plate; and
a position adjusting device connected to said support frame for adjusting a position of said one end of said thin plate-like members in a direction substantially perpendicular to the moving direction of said glass plate wherein said one end extends into the space between said grinding face of the wheel and said other surface of said glass plate.

4,660,328

ROTATABLE HOLDER FOR PLURAL GRINDING SPINDLES

Pertti J. Boman, Säter, Sweden, assignor to AB UVA, Bromma, Sweden

Filed Jul. 10, 1985, Ser. No. 753,498
Int. Cl.[4] B24B *41/00*
U.S. Cl. 51—166 T **5 Claims**



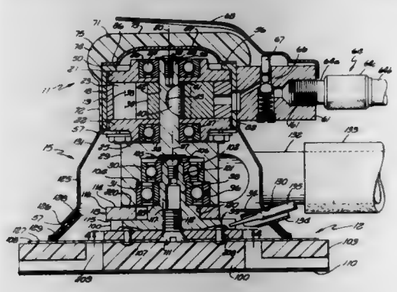
1. A mounting and positioning arrangement for two grinding spindles, comprising:
(a) a grinding machine bed including a work table (7),
(b) a feed slide (6) mounted on the work table for longitudinal and transverse movement relative thereto,
(c) a base member (2) fixedly mounted to and movable with the feed slide,
(d) a holder member (3) mounted to the base member for stepped rotation about a pivot shaft (5) disposed parallel to a direction of longitudinal movement of the feed slide, said holder member being configured as a U-shaped yoke having opposite legs flanking the base member, and said legs being individually journalled to opposite ends of the pivot shaft by prestressed conical bearings (14),
(e) two grinding spindles (10, 12) mounted on the holder member, spaced from each other, equidistant from the pivot shaft, and having axes of rotation parallel to each other and to the pivot shaft,
(f) two drive motors individually coupled to the spindles for rotatably driving them,
(g) a fluid piston and cylinder unit (4) operatively coupled between the base member and the holder member for rotatably stepping the holder member to place a selected one of the spindles in a grinding position relative to a workpiece (17) held at a predetermined chuck position,
(h) two stop members (21, 22) individually mounted on the base member and engageable with the holder member for defining respective raised and lowered rotational limit positions of the holder member, an upper one of said stop members being adjustable, and
(i) locking means (25) separate and distinct from the stop members for releasably locking the holder member in said raised position to prevent the fall thereof under the influence of gravity upon an interruption of fluid pressure to the piston and cylinder unit.

4,660,329

POWERED ABRADING TOOL

Alma A. Hutchins, Pasadena, Calif., assignor to Hutchins Manufacturing Company, Pasadena, Calif.

Filed Oct. 20, 1980, Ser. No. 198,789
Int. Cl.[4] B24B *23/00*
U.S. Cl. 51—170 MT **23 Claims**



1. A portable abrading or polishing tool comprising:
a body adapted to be held by a user and carrying a motor;
a carrier driven rotatably about a first axis by said motor;
a head connected to said carrier for rotary movement relative thereto about a second axis offset laterally from said first axis and adapted to carry a pad at an axially outer side of the head for abrading or polishing a work surface;
bearing means connecting said head to the carrier for said relative rotary movement about said second axis;
a part attached to said carrier for rotation therewith; and
threaded fastener means attaching said part to said carrier and including means engageable with said head for pulling it axially outwardly relative to the carrier by rotation of said fastener means.

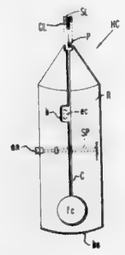
4,660,330

BEVEL TOOL

Otto Fuchs, Westlake Village, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 3, 1981, Ser. No. 299,098
Int. Cl.[4] B24B *9/00*
U.S. Cl. 51—216 R **9 Claims**

1. An improved lapping tool and holder device for receiving and firmly gripping a prescribed workpiece and then accommodating its presentation in prescribed constant relation with a certain lapping plane, the device comprising:
elongate rod means including a flexure cavity internally of its length and a workpiece-receiving pocket at a prescribed working-end, the rod means being slit between



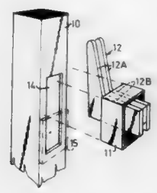
said cavity and said pocket and adapted to be spread-apart along this slit sufficient to receive a said workpiece by insertion of prescribed parting means at said slit; the working-end including one or more guide-faces oriented to indicate a prescribed orientation of the device against said lapping plane.

4,660,331

CONCRETE-FILLED STRUCTURAL TUBE WITH CANTILEVERS, PARTICULARLY FOR BALCONY FLOORS

Gustav L. Dahlen, Aerlestigen 1, S-70348 Oerebro, and Nils A. Ryberg, Rösvägen 20, S-730 40 Kolbäck, both of Sweden

Filed Nov. 28, 1984, Ser. No. 681,868
Claims priority, application Sweden, Apr. 8, 1983, 8301953
Int. Cl.[4] E04B *2/56, 1/38*
U.S. Cl. 52—73 **1 Claim**



1. A steel structural tube with a plurality of steel cantilevers, characterized in that the structural tube (10) has a pluralaity of vertically spaced openings (14) in a vertical side wall thereof corresponding to the number of cantilevers (11), in that each cantilever has at its fixing end an embedment means in the form of a plate-like member lying in a vertical plane with at least one embedment arm (12A) extending into the opening in the structural tube such as to lie inside it and substantially in its longitudinal direction, in that the structural tube is filled with injected concrete (6) in which the embedment arm is cast, thereby fixing the cantilever to the tube, in that the cantilever (11) comprises a tube closed off at its free end and with its fixing end sealing about the opening in the structural tube, the structural tube and cantilever tube having respective cavities that are in communication, in that the respective embedment arm is extended with a portion (12B) extending into the cantilever, and in that the cantilever is filled with injected concrete (16) which has been forced out into the cantilever on injecting concrete into the structural tube such that the extended portion (12B) of the arm will be cast into the concrete.

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PREFABRICATED FOLDING STRUCTURE

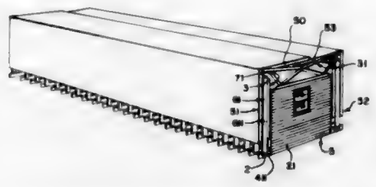
Harry Colvin, Jr., Barnegat, N.J., assignor to Shaani International, Inc., Howell, N.J.

Continuation-in-part of Ser. No. 491,815, May 5, 1983, Pat. No. 4,545,171. This application Feb. 7, 1985, Ser. No. 699,095

The portion of the term of this patent subsequent to Oct. 8, 2002, has been disclaimed.

Int. Cl.[4] E04B *1/344*

U.S. Cl. 52—79.5 **45 Claims**



1. A prefabricated folding structure comprising:

(a) at least one pre-erected central core comprising at least two oppositely arranged wall members and a floor extending between said at least two wall members;

(b) at least a first pivoting floor section;

(c) first pivoting means connecting said first pivoting floor section to said central core floor, said first pivoting means comprising means for transferring the load of said first pivoting floor section to said central core floor;

(d) at least three pivotable wall members;

(e) first means for pivotally connecting said third of said pivotable wall members to said pivoting floor section, said first pivotal connection means comprising an elongated member foldable along a predetermined crease line and capable of substantially maintaining its configuration when placed in either a folded or an unfolded condition about said crease line by a predetermined force;

(f) second means for pivotally connecting the remaining pivotal wall members to one of said central core wall members; and

(g) a plurality of beams located above said central core for stabilizing and strengthening said central core; the prefabricated folding structure capable of forming either

(i) a compact folded structure wherein said at least one pivoting floor section and said at least three pivotable wall members are pivotally positioned inwardly about said central core so as to rest in close proximity thereto and substantially parallel to said core wall member to which said two pivotal wall members are pivotally connected, or

(ii) a sturdy habitable structure wherein said at least one first pivoting floor section and said at least three pivotable wall members are pivotally positioned outwardly from said central core so as to define at least one room adjacent to said central core.

4,660,333

GUTTER SYSTEM

Theodore Romer, New York, N.Y., assignor to Aljo Products, Inc., Vauxhall, N.J.

Filed Jul. 3, 1985, Ser. No. 751,801

Int. Cl.[4] E04C *2/52*

U.S. Cl. 52—169.5 **36 Claims**

30. A gutter for collecting and channeling a fluid around a portion of the boundary of a confined area defined by the perimeter of a floor and an adjoining wall, said gutter comprising at least first and second longitudinally extending members each having a base and a side upwardly extending from said base at an angle thereby defining an open conduit for collecting and channeling said fluid therein, said members joined together in end-to-end relationship and arranged along a portion of the perimeter of said floor adjacent said upstanding wall and secured to said floor along their respective bases, said open conduit of said first and second members facing said wall for channeling fluid collected therein, at least one connecting member receivable within said open conduit of said first and second members for joining said members in end-to-end relationship, and a stop member arranged adjacent the ends of said



first and second members and projecting from the plane of the sides of said first and second members for abutting against the ends of said connecting member when said connecting member is received within said open conduit of said first and second members to limit the extent of longitudinal engagement therewith.

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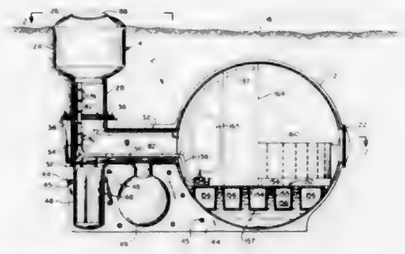
THETA BLAST CELL

Walton W. McCarthy, 44 Buttonwood Dr., Auburn, N.H. 03032

Filed Oct. 2, 1985, Ser. No. 783,088

Int. Cl.[4] E02D *27/00*

U.S. Cl. 52—169.6 **11 Claims**



1. An underground nuclear blast shelter comprising:

a. cell means below ground level containing living space for one or more occupants of said shelter;

b. underground command station means separated vertically and horizontally from said cell means having a dome at ground surface for providing access to said shelter, said dome being the only visible portion of said shelter;

c. means for providing communication between said command station means and said cell means including a vertical hollow shaft extending down from said command station means and a horizontal hollow shaft connecting said vertical shaft to said cell means;

d. said command station means including hatch means in said dome to provide said access and means for discharging waste products from said shelter; and

e. flexing means in said vertical shaft to absorb a downward blast force on said dome.

4,660,335

SPIRAL STAIRCASE ARRANGEMENT

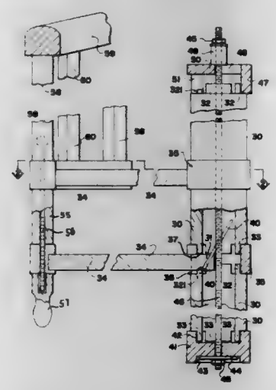
Siegfried Scholler, 1726-5th Avenue North, Regina, Saskatchewan, Canada S4R 0R5

Filed Feb. 18, 1986, Ser. No. 829,918

Claims priority, application United Kingdom, Feb. 28, 1985, 8505179

Int. Cl.[4] E04F *11/10, 11/18*

U.S. Cl. 52—187 **11 Claims**



1. A spiral staircase subassembly for erection into a spiral staircase comprising in assembled combination, a central post formed from a plurality of coiaxial, hollow, axially separated post portions, a plurality of treads supported on said post in axially aligned position, each tread being formed from wood and comprising a tread portion extending to one side of the post and a collar portion coaxial with and arranged end to end with a respective pair of adjacent post portions, each said collar portion and associated tread portion being arranged for free rotation of said collar portion relative to an adjacent post portion about the axis of the post so as to allow the treads to rotate from said axially aligned position to a position in which they are separated angularly to form the spiral staircase, a pair of end cap members each mounted at a respective end of the post, a rod extending longitudinally of said post inside said post portions and said collar portions and engaged with said end cap members to hold said post portions and collar portions in coaxial end to end relation forming said post, each of said tread portions having a first opening adjacent a front edge and a second opening adjacent a rear edge whereby each tread portion can be accurately located in said angularly separated position relative to an adjacent tread portion by a member extending from the first opening of said each tread portion to the second opening of said adjacent tread portion, and means for integrating the post portions and collar portions into an integral post supporting said treads, said integrating means including a hollow continuous channel extending longitudinally of said central post through each of said post portions and collar portions and opening means in an uppermost one of said end cap members arranged to receive a pourable, settable liquid material into and through said channel.

4,660,336

STORAGE TANK CONSTRUCTION

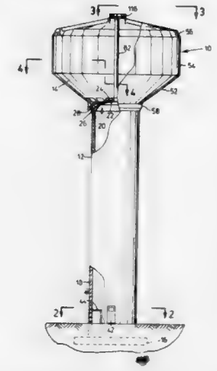
Laurence G. Cazaly, 19 Bryson Drive, Thornhill, Ontario, Canada L4C 6E2, and Douglas Lamon, 1089 North Service Road, Winona, Ontario, Canada L0R 2L0

Division of Ser. No. 698,519, Feb. 5, 1985, Pat. No. 4,578,921. This application Dec. 10, 1985, Ser. No. 807,376

Int. Cl.[4] E04H *7/00*

U.S. Cl. 52—192 **12 Claims**

1. An elevated liquid storage tank comprising: an upright, hollow cylindrical shaft adapted to be anchored to a supporting base foundation, the shaft having an upright wall and a closed upper end portion with a top surface forming a partial tank support floor; the upper end portion having an upper, outer ledge formed around the periphery of the shaft spaced below said top surface; a tank mounted at the top of the shaft,



the tank including a wall having a lower annular ring beam attached thereto and forming a lower tank opening; the ring beam having radially inwardly projecting support means, the ring beam and tower upper end portion forming an annular recess; and means filling said recess to connect the tank to the shaft and complete the tank support floor.

4,660,337

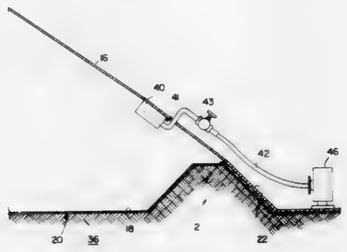
GRAIN STORAGE UNIT AND METHOD OF USE THEREOF

Lent A. Ross, III, and Thurman L. Boykin, both of Clarksdale, Miss., assignors to Advanced Storage, Inc., Clarksdale, Miss.

Filed Feb. 18, 1986, Ser. No. 830,372

Int. Cl.[4] E04H *7/00*

U.S. Cl. 52—192 **8 Claims**



1. A unit for storage of grain comprising:

an above-ground retaining wall structure, formed on a substantially flat surface, the wall structure enclosing an area within which the grain may be deposited;

a first liner member overlaying the area enclosed within the wall structure to form a floor therein, the edges of said first liner member extending out of the said area and over said wall structure;

a second liner member overlaying the grain deposited on said floor to form a cover thereover, the periphery of said second liner member being bonded to the periphery of said first liner to form an airtight grain storage compartment within which the grain is maintained;

a spout provided within the grain storage compartment between the grain and the cover liner, said spout being

designed to minimize grain removal and blockage of the air removal means;
a source of vacuum provided outside the grain storage compartment; and
hose connecting the vacuum source and the spout such that the removal of the air in combination with the natural respiration of the grain itself provides an oxygen-depleted atmosphere within the grain storage compartment wherein the retaining wall structure is comprised of a a first side wall, a second side wall spaced apart from and parellel to said first side wall and at least one end wall joining said first side wall said second side wall such that a generally rectangular structure have an open end is formed.

5. A unit for storage of grain comprising:
an above-ground retaining wall structure, formed on a substantially flat surface, the wall structure enclosing an area within which the grain may be deposited;
a first liner member overlaying the area enclosed within the wall structure to form a floor therein, the edges of said first liner member extending out of the said area and over said wall structure; and
a second liner member overlaying the grain deposited on said floor to form a cover thereover, the periphery of said second liner member being bonded to the periphery of said first liner to form an airtight grain storage compartment within which the grain is maintained;
a spout provided within the grain storage compartment between the grain and the cover liner, said spout being designed to minimize grain removal and blockage of the air removal means;
a source of vacuum provided outside the grain storage compartment; and
a hose connecting the vacuum source and the spout such that the removal of the air in combination with the natural respiration of the grain itself provides an oxygen-depleted atmosphere within the grain storage compartment.

4,660,338

SEALING ELEMENT FOR COMPONENTS OF BUILDINGS

Hugo Wagner, Kapuzinerstrasse 84, A-4020 Linz, Austria

Filed May 10, 1985, Ser. No. 733,126
Claims priority, application Austria, May 17, 1984, 1630/84
Int. Cl.[4] E04C *2/00*
U.S. Cl. 52—232 **4 Claims**



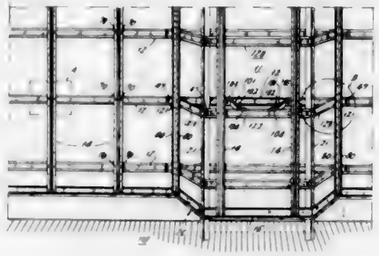
1. A sealing system such as for use between a door frame and a door, comprising, in combination,
said door frame having a side and said door having an edge defining a space therebetween when the door is closed,
said door frame being formed with a U-shaped channel having an opening parallel to said edge,
a resilient plastic sealing element including a base portion positioned in an at least partially enclosed by said U-shaped channel and a leg portion extending from said base portion in said space, said base portion including a sealing lip for engaging said door when said door is closed, said leg portion having a dovetail-shaped groove on at least one side,
a self-forming barrier strip,having opposite sealing surfaces,-positioned in said dovetail groove along said side and being foamable under the action of heat,said leg portion and said barrier strip being spaced away from said edge,
first retaining means for holding said base portion in said U-shaped channel, and
said dovetail groove being formed on one side of said leg portion, and said self-forming barrier strip is positioned in said dovetail groove adjacent said one side, said base portion, said leg portion and said sealing lip being integrally formed of a plastic which becomes soft to semi-solid under the action of heat so as to facilitate said sealing system, and whereby when heat causes said barrier strip to foam, the foaming barrier strip forces the leg portion into contact with said edge.

4,660,339

WALL SYSTEM

Felix Paz, 256 Greenway Rd., Lido Beach, N.Y. 11561

Filed Nov. 20, 1985, Ser. No. 799,920
Int. Cl.[4] E04H *1/00*
U.S. Cl. 52—238.1 **29 Claims**



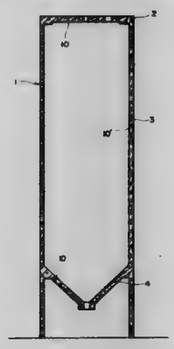
1. A wall system including a main grid and at least one panel supported on said grid at the front thereof;
said grid including a plurality of parallel main channel members and a plurality of parallel standards extending transverse to said channel members;
each of said channel members having a generally U-shaped transverse cross-section that includes a web, first and second arms each having a front end and a rear end, said arms at their said front ends being connected to said web and extending rearward from opposite ends thereof, and first and second ears projecting in opposite directions from the rear ends of the respective first and second arms;
said standards being secured to said webs and being disposed forward thereof;
means having cooperating sections on said standards and said at least one panel removably securing the latter to the standards;
said ears forming longitudinally extending coplanar mounting ledges adapted for securement to a wall;
said web being provided with a plurality of locating apertures disposed in a longitudinally extending row with a predetermined spacing therebetween;
each of said standards having first and second longitudinally extending rows of holes, said rows being spaced apart by a distance equal to said predetermined spacing between said apertures;
first and second securing elements for securing a first of said standards to a first of said channel members;
said first securing element extending through a first of said apertures and a hole in said first row, and said second securing element extending through a second of said apertures and a hole in said second row.

4,660,340

GRAIN SILO

Fumiharu Machi, Ichikawa, and Misoru Sawaide, Narashino, both of Japan, assignors to Shimizu Construction Co., Ltd., Japan

Filed Jun. 5, 1985, Ser. No. 741,444
Claims priority, application Japan, Jun. 9, 1984, 59-118592
Int. Cl.[4] E04B *1/32*
U.S. Cl. 52—249 **5 Claims**



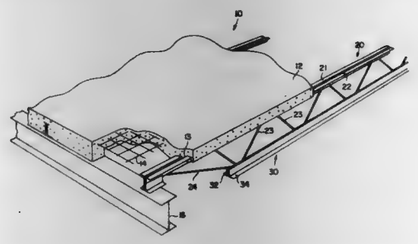
1. A grain silo comprising:
a concrete shell having an inner face and defining a space for storing particulate material therein; and
a means for preventing said inner face of said concrete shell from being charged due to friction of said inner face with material stored in said concrete shell, said preventing means comprising:
(a) an adhesive layer coated on said inner face of said concrete shell, said adhesive layer containing hydrophilic urethane resin of one-can type;
(b) a fluid-tight layer coated on the inner face of said adhesive layer; and
(c) another layer coated on the inner face of said fluid-tight layer, said layer containing hydrophilic urethane resin of one-can type.

4,660,341

COMPOSITE STRUCTURE

Neal Holtz, 1739 Church St., NW., Washington, D.C. 20036

Filed Feb. 18, 1986, Ser. No. 829,891
The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.
Int. Cl.[4] E04C *3/10*
U.S. Cl. 52—326 **4 Claims**



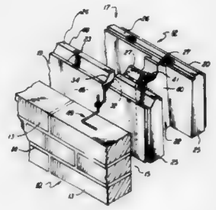
1. An open web joist system for a composite joist-concrete slab comprising:
a top chord;
a bottom chord;
a zig-zag web member comprising metal bar stock secured to said top and bottom chords and triangulating the space therebetween, said top chord comprising first and second metal angle bars, each of said angle bars having a substantially planar horizontal leg having inner and outer edges and a substantially planar vertical leg depending downwardly from the inner edge of said horizontal leg, said vertical legs of said first and second metal angle bars being held in spaced-apart relationship by the bar stock of said open web member;
bolt means for supporting at least one spanner bar, said bolt means being suspended from said top chord and having a threaded shank portion extending into the triangular space formed by said open web member; and,
a horizontally disposed closure member for blocking the flow of concrete downwardly between and past the vertical legs of said top chord, said closure member extending laterally between the vertical legs of the bars of the top chord at or near the lower edges thereof and extending longitudinally between two adjacent upwardly angled sections of the web member.

4,660,342

ANCHOR FOR MORTARLESS BLOCK WALL SYSTEM

Jeffery Salisbury, 301 Barrington Rd., Syracuse, N.Y. 13214

Filed Oct. 4, 1985, Ser. No. 784,792
Int. Cl.[4] E04F *13/04*
U.S. Cl. 52—358 **26 Claims**



1. In a mortarless block wall system, apparatus for attaching facing to the wall that includes
a structure formed of a plurality of interlocking blocks that are placed one on top of the other in linear courses,
each block in said structure being a hollow member having two spaced apart parallel sidewalls that are connected by at least one lateral connecting wall,
one sidewall of each block having a lateral groove passing downwardly through its top surface, said groove being positioned adjacent to one end face of the connecting wall,
said connecting wall further having a longitudinally disposed recess in the top thereof that extends between its two end faces,
a wire anchor that includes a linear rod seated in said groove; a U-shaped locking bracket section that straddles the connecting wall having a first side leg integral and coaxial with the back of said rod so that said leg parallels one end face of the connecting wall, a base leg that is seated in the recess of the connecting wall, and an opposing side arm that parallels the opposite end face of the connecting wall; a closure key integral with the front of said rod having a locking arm that is perpendicular to the rod and parallels the front face of said one sidewall, and
means to attach facing to said anchor.

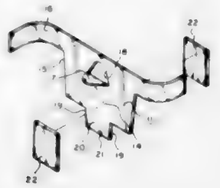
VOL 1077 ISS 4 AP 28 1987 UMI

4,660,343

STUD WELDABLE REFRACTORY ANCHOR

Robert J. Raycher; Charles C. Pease, both of Vincentown, N.J., and Kevin L. Bernd, Porrance, Calif., assignors to KSM Fastening Systems Inc., Moorestown, N.J.

Filed Sep. 4, 1985, Ser. No. 772,303
Int. Cl.[4] E04B *1/24*; **E04C** *2/04*
U.S. Cl. 52—378 **4 Claims**



1. In a metal anchor adapted for installation by welding to a metal surface to provide anchorage for a monolithic refractory applied to the surface, wherein the anchor is formed from a thin metal strip having its width substantially equal to the thickness of the refractory to be applied to the surface and its length at least equal to its width and having cut away portions at each end on the side to be welded to the surface forming an intermediate portion terminating in a weld end and arms extending from the intermediate portion opposite the weld end of the intermediate portion providing an erosion resistant barrier for the protection of the refractory and the cut away portions adjacent the arms providing room for the refractory to be deposited between the arms and the surface, the improvements permitting welding of the weld end of the intermediate portion by the stud end welding technique comprising:

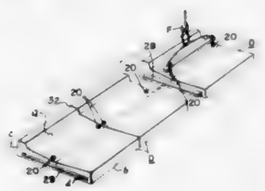
at least one additional cutout adjacent the weld end of the intermediate portion to provide a weld projection of reduced length and wherein there is further provided at least one additional metallic member secured to the intermediate member of length approximately that of the weld projection to provide a length to width ratio at the weld end of 6 to 1 or less.

4,660,344

APPARATUS AND PROCEDURE FOR FORMING PRE-SHAPED INTERLOCKING CEMENT SLABS

Edmond N. Gaudelli, 2438 Hayson Ave., Pittsburgh, Pa. 15220, and Edward E. Shepler, 1733 Potomac Ave., Dormont, Pa. 15216

Filed Nov. 2, 1983, Ser. No. 548,149
Int. Cl.[4] E04C *1/10*
U.S. Cl. 52—593 **5 Claims**



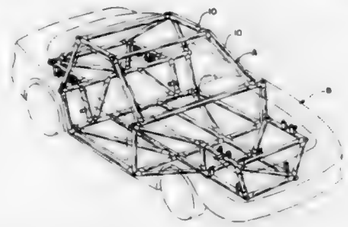
1. An improved pour and mold cast-formed concrete slab of simplified construction that is contoured for use as one of a plurality of endwise interfitting-latching and aligned longitudinal progression of substantially planar slabs to provide a substantially sealed-off joined longitudinally extending side edging for a street or roadway to finish the side paving thereof along its berm which comprises, a non-laminated unitary rectangular-shaped slab body of cast-molded solidified cementitious material having a rough pour-finished roadway mounting under surface face and a smoothly mold-finished and contoured upper surface face, said upper surface face being defined by a pair of longitudinally extending substantially planar front and back upper face portions that slope laterally towards each other to define a substantially centrally-positioned longitudinally-extending drainage concavity along the slab, said planar back face portion defining a raised curb portion along and with said back side wall, said body having a pair of longitudinally extending depthwise-defined vertical front an back substantially parallel opposed side walls and a pair of laterally extending depthwise-defined smoothly finished vertical and substantially parallel opposed end walls, said one end wall of said pair having an outwardly projecting, smoothly finished ledge-like tongue portion horizontally therealong and spaced laterally inwardly from said upper and upper surface faces as well as longitudinally inwardly from said pair of front and back opposed side walls of said slab body, the other end wall of said pair having a smoothly finished shelf-like groove portion extending horizontally therealong that is complementary with said tongue portion and spaced laterally inwardly from said under and upper surface faces as well as longitudinally inwardly from said pair of front and back opposed side walls; said under surface face being roughly pour-formed as an upwardly exposed surface within the mold, and said upper surface face and said pair of opposite end walls being cast-formed and contoured with smoothly finished surfaces by inner walls of the mold.

4,660,345

VEHICLE SPACE FRAME, CASTINGS THEREFOR AND METHOD FOR REMOTE CONSTRUCTION

James R. Browning, Berea, Ohio, assignor to Mr. Gasket Company, Cleveland, Ohio

Continuation of Ser. No. 659,267, Oct. 10, 1984, abandoned.
This application May 7, 1986, Ser. No. 861,122
Int. Cl.[4] B62D *21/00*
U.S. Cl. 52—648 **47 Claims**



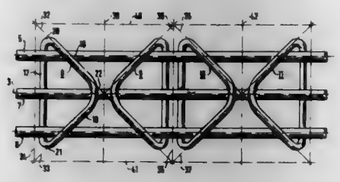
1. A remotely constructible, three dimensional space frame for a motor vehicle, said three dimensional space frame comprising: a plurality of elongated, metal structural members with outer surfaces and having axially uniform cross sections; a plurality of thin walled, interconnecting metal castings of at least first and second types, wherein said first and second types of metal castings each have a generally arcuate saddle portion with a contour matching a portion of the cross section of said structural members and laterally engageable with one of said structural members for axial movement of the casting therein and a receptacle with an elongated tubular portion having a cross section matching said cross sections and intersecting with said saddle portion at a given angle whereby said casting can be moved axially along one of said structural members and can receive another of said structural members movable axially into said tubular portion so that said one and another structural members are held with respect to each other at said given angle, said saddle portion and said tubular portion each having outer peripheral edges generally coplanar with the outer surfaces of said one and another of said structural members; and, a welded bead along said outer peripheral edges and between said edges and said structural members.

4,660,346

FRAME SYSTEM, ESPECIALLY FOR RACKS AND INTERIOR FIXTURES

Frank Burger, Keplerstrasse 22, D-8000 Munich 80, Fed. Rep. of Germany, and Thomas Herzog, Imbofstrasse 8, D-8000 Munich 40, Fed. Rep. of Germany

Filed Jul. 24, 1985, Ser. No. 758,418
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1984, 3427816; Oct. 8, 1984, 3436882
Int. Cl.[4] E04H *12/00*
U.S. Cl. 52—648 **19 Claims**



1. A frame system, in particular for racks and interior fixtures, comprising:

at least two elongate lattice girders, each having a longitudinal axis, each lattice girder having three elongate member not located in the same plane; said member being interconencted by closed triangles, said triangles encompassing said members on the outside, each said triangle of a said girder extending in a plane with the planes of adjacent triangles intersecting at approximately 45° relative to said longitudinal axis of said respective girder; each said triangle having base angles of approximately 54.74° and an apex angle of approximately 70.53°, said triangles being spaced along each said respective girder with adjacent triangles alternately having their apexes in juxtaposition and sequentially their bases in juxtaposition, each said triangle having corners with said corners being rounded and each said triangle having three legs with axis of said legs intersecting externally of said legs of said triangle, each said triangle having a base leg with said base legs of said triangles being spaced apart from one another along said respective girder, a said elongate member being disposed adjacent a corner of each said triangle with said elongate members adjacent said respective base angles being spaced slightly inwardly of said respective corners of said triangles,

said frame system including connecting means for permitting connection between said elongate lattice girders with said longitudinal axes of said girders extending at right angles to one another and with said connecting means cooperating with said triangles to permit one of said lattice girders to be disposed in one of three planes relative to the other said lattice girder.

4,660,347

NON-PENETRATING ROOFING MEMBRANE FASTENER

Stevan A. Resan, Carlisle, Pa., assignor to Carlisle Corporation, Cincinnati, Ohio

Filed Sep. 3, 1985, Ser. No. 772,146
Int. Cl.[4] E04D *5/14*
U.S. Cl. 52—713 **19 Claims**

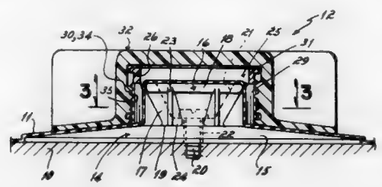
1. A fastener for holding a roof membrane to a roof without puncturing the roof membrane comprising:

an anchor, said anchor including a base portion and a central inverted frusto-conical button;

said button extended upwardly from said base portion and having an outwardly sloped external surface;

an externally threaded tined retainer adapted to snap onto said button with said membrane held therebetween;

an internally threaded cover adapted to screw over said externally threaded retainer to hold said retainer and said button engaged with said membrane gripped therebetween;



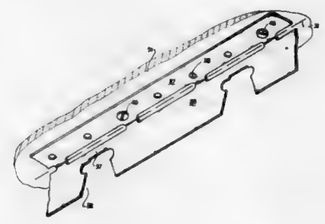
said anchor further including means to prevent rotation of said retainer relative to said button.

4,660,348

LINEAR METAL CEILING AND WALL SYSTEM

Paul D. LaLonde, Avon, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed May 21, 1984, Ser. No. 612,748
Int. Cl.[4] E04B *2/00*, *5/52*
U.S. Cl. 52—762 **5 Claims**



1. A linear system for linear walls and ceilings comprising an elongated metal carrier providing a plurality of longitudinally aligned spaced slots dividing said strip into a mounting portion and a support portion, said strip being laterally flat, the material of said strip between said slots providing hinge means, said hinge means operating to cause said strip to sharply bend along a predetermined hinge line extending lengthwise of said strip between said support portion and said mounting portion when lateral bending forces are applied between said mounting portion and said support portion to cause mounting portions and support portions to extend along planes angulated relative to each other and intersecting at said hinge means, said support portion providing a plurality of spaced laterally extending projections, and U-shaped linear pans connected to and supported by said projections, said projections being symmetrically positioned with respect to every other of said slots, the portions of said carrier between said projections being notched to a location spaced from said slots to provide said projections, said notches being substantially aligned with the remaining of said slots, said support portion providing an uninterrupted longitudinal part which cooperates with said mounting portion after said bending along said hinge line to maintain said carriers straight.

4,660,349

METHOD OF ERECTING A BUILDING USING PRECONSTRUCTED MODULAR UNITS

Rocco V. Tricarico, 10721 Greene Dr., Lorton, Va. 22079

Filed Jul. 23, 1984, Ser. No. 633,280
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—745 **7 Claims**

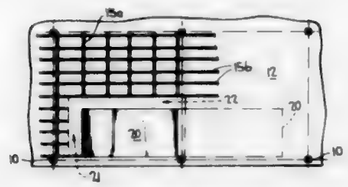
1. A method of constructing a building employing one or

more preconstructed modular units each of which constitutes a room of the building after the completion thereof, comprising

(a) providing a floor for one level of the building during construction;

(b) locating on said floor a preconstructed modular unit constructed of light-gauge framing materials unsuitable for permanent floor support capability, said unit having bottom and top walls positioned so that the top wall of said unit is generally at the designated level for the next upper floor of the building to be constructed;

(c) erecting a temporary shoring and forming system to support the weight of concrete to be poured in place to form said next upper floor, said system being erected in areas of said designated level remote from said top wall of said modular unit but being supported in part by said wall;



(d) at the same time pouring in place concrete over the top wall of said modular unit and over said system to form said next upper floor utilizing the top wall of said modular unit to support part of the weight of the poured-in-place concrete prior to the hardening thereof, with the shoring and forming system supporting said concrete at said remote locations;

(e) permitting said poured-in-place concrete to harden and thereby free said modular unit from the majority of its support function, and

(f) removing said temporary shoring and forming system to form a continuous slab of concrete floor over said modular unit and said floor areas remote therefrom.

4,660,350

DEVICE FOR SYNCHRONIZING A SERIES OF PACKAGING MACHINES POSITIONED ALONG A CHAIN CONVEYOR, ESPECIALLY IN THE CONFECTIONS INDUSTRY

Wilhelm Hogenkamp, Hanover, Fed. Rep. of Germany, assignor to Firma Otto Hänsel GmbH, Hanover, Fed. Rep. of Germany

PCT No. PCT/EP85/00191, § 371 Date Nov. 15, 1985, § 102(e) Date Nov. 15, 1985, PCT Pub. No. WO85/05089, PCT Pub. Date Nov. 21, 1985

PCT Filed Apr. 30, 1985, Ser. No. 805,472

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1984, 3416012

Int. Cl.⁴ B65B *57/00*

U.S. Cl. 53—52 **4 Claims**



1. An arrangement for synchronizing a series of packaging machines positioned along a chain conveyor, comprising: a first packaging machine for packaging articles individually; a second packaging machine positioned downstream from said first machine and receiving packaged articles from said first machine for packaging the articles as a set; a chain conveyor with a section between said first machine and said second machine; a chain-and-pusher buffer interposed in said section of said chain conveyor; pushers carried by said section of said chain conveyor for individually packaged articles; chain-drive means on each of said first machine and said second machine; both said chain-drive means being controllable for synchronizing said packaging machines.

4,660,351

METHOD AND APPARATUS FOR AFFIXING A RIBBON TO A BAG

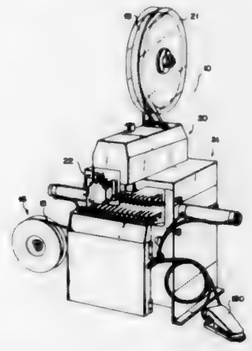
Takashi Saitoh, Tokyo, Japan, assignor to Technical Products Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 667,286, Nov. 1, 1984, abandoned. This application Aug. 13, 1986, Ser. No. 898,759

Claims priority, application Japan, Dec. 13, 1983, 58-234806

Int. Cl.⁴ B65B *51/04*

U.S. Cl. 53—417 **10 Claims**



5. An apparatus for affixing a ribbon to a bag comprising:

a pair of spaced apart pleating plates vertically separated from each other;

means for placing a bag at a predetermined position so as to position a portion of the bag near an open end thereof between said pleating plates;

means for feeding and locating a ribbon at the open end of the bag from a continuous supply including a feed roller and a pinch roller engaging said ribbon therebetween to feed said ribbon for a predetermined length when the feed roller is driven, a rockable tension arm at one end of which is mounted a tension roller pressed on the ribbon to cause a back tension in an initial position of the tension arm, a tension spring means for biasing the tension roller toward the initial position of the tension arm, and means for rocking the tension arm to pull out the ribbon for said predetermined length from the ribbon supply;

means for cutting the ribbon to said predetermined length to form a decorative tip and to form a pair of notches on the periphery of the ribbon to accommodate the tie piece therein;

means for actuating said pleating means to pleat and gather said portion of said bag along with said ribbon to form a neck;

means for placing a tie piece at said neck and lengthwise substantially perpendicular to said neck; and

means for wrapping the tie piece around said neck of the bag such that the tie piece engages said notches in said ribbon and means for twisting the two ends of the tie piece so as to close the open end of the bag and affix the ribbon to the bag.

4,660,352

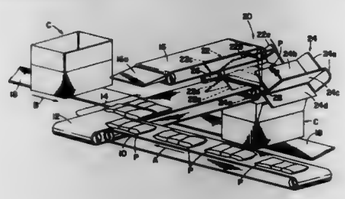
APPARATUS AND METHOD FOR PACKAGING COMPRESSIBLE POUCHES

Alvin J. Deines, and Donald E. Deines, both of Pasco, Wash., assignors to Package Machinery Company, East Longmeadow, Mass.

Filed Dec. 23, 1985, Ser. No. 812,199

Int. Cl.⁴ B65B *1/24, 5/10*

U.S. Cl. 53—438 **7 Claims**



1. Apparatus for packaging longitudinally compressible pouches in a packing case comprising:

(a) pouch infeed conveyor means for advancing at least two pouches into a load station where they are provided in side-by-side relationship as an array,

(b) means for supporting an upwardly open case below the load station,

(c) counter-rotating paddle assemblies at said load station, each assembly having at least one paddle shaft, means supporting said paddles for pivotal movement on paddle axes, and means for moving said paddles from a horizontal position wherein two such paddles in said respective assemblies support the side-by-side pouches to vertical positions such that the side-by-side pouches are compressed longitudinally between the spaced paddles as they drop downwardly into the packing case between said spaced paddles, said paddles in said vertical positions being spaced more closely relative one another than the spacing between said paddle axes.

4,660,353

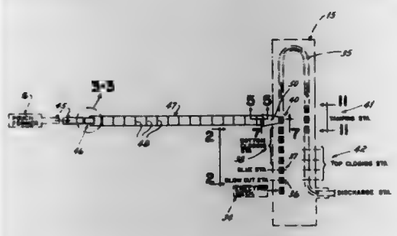
INTERMITTENT MOTION CARTONING APPARATUS FOR CARTONING LIQUID-FILLED POUCHES

Joseph D. Greenwell, Florence, Ky., assignor to R. A. Jones & Co. Inc., Covington, Ky.

Filed Jun. 17, 1985, Ser. No. 745,633

Int. Cl.⁴ B65B *43/13*

U.S. Cl. 53—449 **9 Claims**



1. Apparatus for cartoning liquid-filled pouches having sealed seams along left vertical, right vertical and top edges and a smooth bottom edge into cartons having at one end inner and outer opposed major flaps and opposed dust flaps, said carton having an end remote from said one end and adapted to receive a liquid-filled pouch therethrough, the apparatus comprising:

a cartoner having the following stations:

(a) means for blowing a die-cut disk out of a carton inner major flap to form a straw hole;

(b) means for applying glue in a circular pattern around the hole formed in the inner major flap;

(c) means for first folding said inner major flap across the end of the carton;

(d) means for folding the dust flaps over said inner major flap;

(e) means for applying a glue strips across said dust flaps and inner major flap;

(f) means for folding said outer major flap across the end of said carton into contact with said glue stripe;

(g) means for depositing a liquid-filled pouch bottom first into the carton through the remote end of the carton; and means for conveying cartons through said stations.

4,660,354

METHOD OF FILLING AND SEALING RF-SEALABLE PACKAGING CONTAINERS

Gerald M. Lancaster, Surfside, and David C. Kelley, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 645,990, Aug. 31, 1984, Pat. No. 4,601,948, which is a continuation-in-part of Ser. No. 531,110, Sep. 12, 1983, Pat. No. 4,600,614. This application May 28, 1985, Ser. No. 738,008

Int. Cl.⁴ B65B *7/02*

U.S. Cl. 53—469 **15 Claims**

1. A method for filling and sealing a container of multiwall construction, said container being closed except for a filling-opening, comprising

introducing product into the container through the filling-opening,

closing the filling-opening and sealing it closed by subjecting it to RF energy which is in the range of about 300 MHz to about 10,000 MHz.

wherein the material from which the filling-opening is made contains at least one RF-sealable polymer of the group consisting of carbon monoxide-containing ethylene polymers.

4,660,355

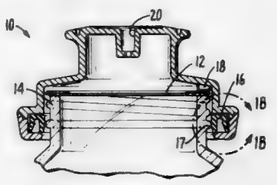
VACUUM ADAPTER FOR METAL-LID CANNING JARS

Hanns J. Kristen, 58 Indian Rock Rd., San Anselino, Calif. 94960

Filed Mar. 13, 1986, Ser. No. 817,471

Int. Cl.⁴ B65B *31/04*

U.S. Cl. 53—510 **3 Claims**



1. A vacuum adapter for evacuating a canning jar of the type having a disc-type lid which engages the mouth of the jar and a bulge on its exterior periphery, the vacuum adapter comprising:

(a) a generally concave body portion that defines an interior cavity such that the adapter may be placed over the mouth of the jar, the body portion including a flexible gasket which engages the bulge to form a seal therewith;

(b) a plurality of points formed on the interior surface of the body portion for forcing corresponding points of the lid into engagement with the mouth of the jar when the interior cavity is evacuated such that the lid bends upward elastically in the sectors between the points of engagement between the mouth of the jar and the lid; and

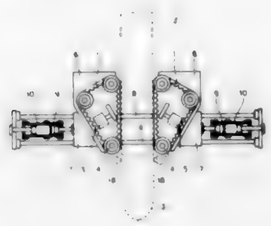
(c) means for extracting air from the interior cavity such that air is also evacuated from the interior of the jar through openings formed by the upwardly bent sectors of the lid.

4,660,356

STEP FEED DEVICE FOR BAG FILLING MACHINES

Paolo Simionato, Padua, Italy, assignor to Simionato S.r.l. Macchine Confezionatrici, Mestrino, Italy

Filed Oct. 2, 1985, Ser. No. 782,675
Claims priority, application Italy, Oct. 24, 1984, 30890/84[U]
Int. Cl.⁴ B65B *9/08, 41/12*
U.S. Cl. 53—551 **7 Claims**



1. A feeding device for feeding a flexible strip material in the form of tubing to form bags in a bag-filling machine which fills the bags with a loose material and cuts the bags, said feeding device comprising:

control means for controlling the fabrication and the filling of the bags;

a tubular element for delivering the loose material to be packaged in the bags;

feeding means, located to supply the strip material to said tubular element, said feeding means including at least two opposing feed elements operating continuously; and

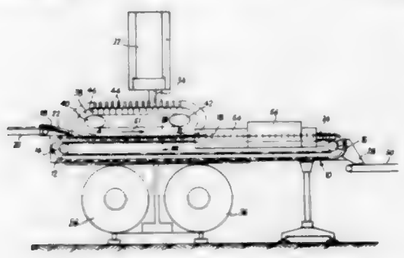
slide means for each of said feed elements, wherein each of said slide means is responsive to said control means for slidably carrying a feed element inwardly to an operative position in which the element frictionally engages the strip material to supply a predetermined length of material to said tubular element to form a bag, and outwardly to a retracted position in which the feed element disengages the strip material while the bag is filled and cut.

4,660,357

MACHINE FOR PLACING SLEEVE AROUND OBJECTS THAT ARE LAID FLAT

Jacques Fresnel, Paris, France, assignor to Sleever International, Morangis, France

Filed Dec. 24, 1985, Ser. No. 815,292
Claims priority, application France, Dec. 28, 1984, 84 19971
Int. Cl.⁴ B65B *5/08*
U.S. Cl. 53—585 **11 Claims**



1. An apparatus for placing sleeves or sections of sheathings over a plurality of objects of elongated shape to be sleeved comprising:

means for placing a plurality of sections of sheathings vertically over a plurality of vertical intermediate pins;

first endless conveying means made to drive the intermediate pins along a predetermined path and to bring them into strict alignment with said elongated objects, means for moving the pins from their vertical orientation to a horizontal orientation in a portion of said predetermined path;

second endless conveying means made to drive a plurality of said elongated objects to be sleeved in a horizontal orientation, so that the objects circulate parallel and in strict alignment with the intermediate pins during said portion of the predetermined path of these latter

transfer means associated with each intermediate pin, on which a section of sheathing was previously placed, for transferring said section of sheathing of the pin onto the object when the objects are in strict alignment with the pin with a movement approximatelly parallel to the pin, and

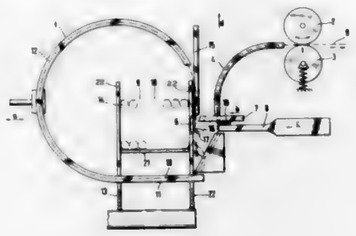
wherein said elongated objects are laid in a horizontal position in said second endless conveying means, and wherein said first endless conveying means are able to bring said intermediate pins from a vertical position, in which said sections of sheathings are placed, into a horizontal position.

4,660,358

TYING METHOD FOR TYING WINDING MATERIAL AND TYING APPARATUS FOR PERFORMING THE SAME

Anton Dreher, and Josef Gramer, both of Horb, Fed. Rep. of Germany, assignors to Hans Deissenberger, Horb am Neckar, Fed. Rep. of Germany

Filed Sep. 26, 1985, Ser. No. 780,168
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1984, 3438177
Int. Cl.⁴ B65B *13/06*
U.S. Cl. 53—589 **7 Claims**



1. A tying apparatus for tying winding material onto a winding head with an enveloping band, said winding head having a winding access for said winding material and a lateral slot for said enveloping band, said apparatus comprising:

an enveloping means comprising a continuous, one-piece ring with a substantially annular, displaceable, enveloping channel cross-sectionally open on one side facing the winding material and substantially surrounding the winding material when inserted into the winding head and having a lower straight portion and an upper curved portion;

means for moving the entire enveloping means, said moving means including means for inserting and maintaining the straight portion of the enveloping channel into the lateral slot of the winding head and for placing the curved portion substantially surrounding the winding material;

a conveying means for the supply and tensioning of the enveloping band adjacent to the enveloping means, holding means and connecting means arranged on the same side of the winding head as said conveying means for retaining and joining the enveloping band, while the enveloping channel is displaceably arranged on the side of the winding head opposed to said conveying means;

wherein the enveloping means has an open area between said curved and straight portions thereof and wherein the holding means and connecting means are positioned in the open area; and

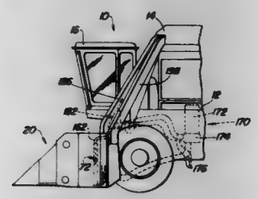
fixed guide channels between the conveying means and enveloping channel to guide the enveloping band to the enveloping channel and to the holding means.

4,660,359

AIR SYSTEM FOR A COTTON HARVESTER

Timothy A. Deutsch, Newton, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 23, 1984, Ser. No. 664,122
Int. Cl.⁴ A01D *46/08*
U.S. Cl. 56—13.3 **13 Claims**



1. In a cotton harvester adapted for forward movement over a field of cotton plants, said harvester having a cotton receptacle and a row-harvesting unit, said row unit having an upper framework, an upright cotton discharge compartment including upright panel structure, a cotton-receiving opening located adjacent the lower end of the panel structure, floor structure extending forwardly from the panel structure, spindle means for removing cotton from the row of cotton plants, and doffer means for doffing the cotton from the spindles and directing the cotton along a path towards the panel structure wherein the cotton drops along the panel structure towards the floor structure and opening, a conveying structure comprising: duct means extending from the cotton-receiving opening towards the cotton receptacle, said duct means including nozzle means located downstream from the opening for creating a vacuum at the opening and propelling the doffed cotton towards the receptacle, and air jet means located in the cotton path downstream of the doffer means and adjacent the forward end of the floor structure opposite the cotton-receiving opening for directing a jet of air over the floor structure and through the opening to maintain the kinetic energy of the cotton dropping along the panel and positively direct the cotton towards the opening.

4,660,360

FLEXIBLE CUTTERBAR ASSEMBLY

Richard A. Hardesty, Hinsdale; Dathan R. Kerber, Bollingbrook; Orlin W. Johnson, Lockport, and Richard E. Benson, East Moline, all of Ill., assignors to J. I. Case Company, Racine, Wis.

Filed Oct. 15, 1985, Ser. No. 788,047
Int. Cl.⁴ A01D *67/00*
U.S. Cl. 56—208 **3 Claims**

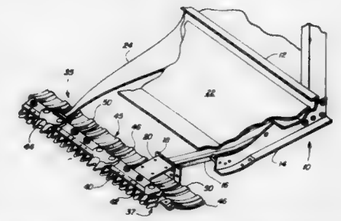
1. A cutterbar assembly for the header of an agricultural combine or the like comprising:

an elongated cutterbar;

an elongated knife reciprocably associated with said cutterbar and substantially coextensive therewith;

a plurality of individual knife guard segments secured to said cutterbar in side-by-side relationship forming a segmented knife guard substantially coextensive with said cutterbar; and

a plurality of individual skid segments secured to said cutterbar in side-by-side relationship forming a segmented skid substantially coextensive with said cutterbar,



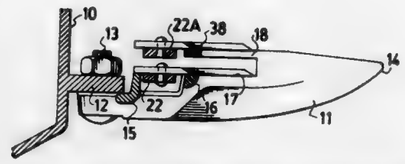
said knife guard segments and skid segments being of substantially the same width and being secured to said cutterbar so that the breaks between the skid segments are aligned with the breaks between knife guard segments whereby said cutterbar is adapted to flex at said aligned breaks.

4,660,361

MOWER WITH TWO SICKLE BARS

Rheal Remillard, St. Joseph, and Herbert W. Molzahn, Winnipeg, both of Canada, assignors to MacDon Industries Ltd., Winnipeg, Canada

Filed Dec. 9, 1985, Ser. No. 806,472
Int. Cl.⁴ A01D *55/02*
U.S. Cl. 56—297 **8 Claims**



1. A mowing device comprising a frame structure arranged for forward travel over ground having a standing crop thereon, a cutter support bar secured to an extending transversely across a front end of said frame structure, a plurality of knife guards mounted in spaced relation along said support bar and projecting forwardly therefrom in transverse alignment, each of said guards having an upwardly facing ledger surface with opposed side edges thereof sharpened to provide first and second shearing edges, a first and a second sickle bar, means mounting the sickle bars in transversely extending position for reciprocating movement relative to said knife guards in opposed phase, inboard ends of said bars terminating in generally end to end relationship adjacent a mid position of said cutter support bar such that the relative positions of said inboard ends vary during said reciprocating movement, a plurality of knife elements mounted on each of said sickle bars for movement therewith and having cutting edges arranged to cooperate with said shearing edges of said knife guards, said sickle bars and cooperating knife guards being arranged at said inboard ends thereof such that the first is higher than the second by distance greater than the vertical thickness of the sickled bar such that the first sickle bar can overlap the second sickle bar with at least one knife element of the first sickle bar passing over at least one knife element of said second sickle bar, at least one knife guard at said mid position having a lower ledger surface for cooperation with said at least one knife element of said second sickle bar and an upper ledger surface for cooperating with said at least one knife element of said first sickle bar.

4,660,362

CROP ENGAGING DEVICE

Wilfred E. Klinner, Milton Keynes, England, assignor to National Research Development Corporation, London, England

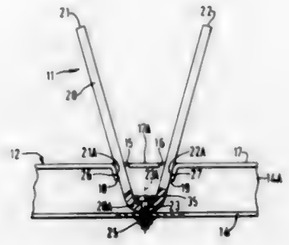
Continuation-in-part of Ser. No. 430,594, Sep. 30, 1982, Pat. No. 4,512,146, and Ser. No. 477,872, Mar. 23, 1983, Pat. No. 4,545,188. This application Feb. 12, 1985, Ser. No. 701,013

Claims priority, application United Kingdom, Oct. 5, 1981, 8129970; Dec. 4, 1981, 8136651; Mar. 26, 1982, 8209019; European Pat. Off., Mar. 11, 1983, 83301363.4; United Kingdom, Mar. 11, 1983, 8306762; Denmark, Mar. 17, 1983, 1235/83

The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.

Int. Cl.[4] A01D *43/02, 82/00*

U.S. Cl. 56—364 26 Claims



1. A crop engaging device comprising:

support means including a rotor and frame means for mounting said rotor for rotation and for movement of said frame means along the ground;

a plurality of outwardly extending crop engaging elements secured to the rotor for engaging crop in a crop flow during rotation;

each crop engaging element having a base portion adapted for securement to the rotor, and a crop engaging portion extending outwardly from the rotor into the crop flow and inclined relative to the rotor in a plane generally transverse to the direction of movement of the crop engaging portion, each said crop engaging portion being inclined at a selected predetermined angle,

said rotor comprising a plurality of support members each having a base portion and an upstanding shielding portion, said upstanding shielding portion being arranged in front of the base portion of the crop engaging element relative to the direction of movement of the crop engaging element,

each element base portion being secured to one of the said support members by an axial fastening means having a principal axis along which it extends through the support member to secure the element thereto,

the support members and each crop engaging element having cooperating abutment regions such as to at least inhibit rotation of the crop engaging element away from its required operating position under normal load conditions, but such as to allow the crop engaging element to be yielding under an abnormal load by movement of the crop engaging portion rearwardly in relation to the direction of movement of the element, the rear surface of the upstanding shielding portion of the support member being utilised to provide at least one of the said abutment regions for at least inhibiting rotation of the crop engaging element away from its required operating position, and the mounting of each element being such that the retaining force in the axial fastening means retaining the element during yielding is predominantly tension along the said axis of the fastening means.

4,660,363

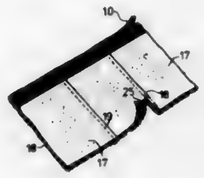
METHOD OF MAKING FUR BEARING STRANDS

Herman S. Krehm, Toronto; Jacob Leidner, 40, North York, and Malcolm E. Rode, Brantford, all of Canada, assignors to Herman S. Krehm, Toronto, Canada

Continuation-in-part of Ser. No. 646,746, Sep. 4, 1984, Pat. No. 4,606,182. This application Apr. 23, 1986, Ser. No. 854,868

Int. Cl.[4] A41H *41/00;* C14B *15/10;* D02G *3/06*

U.S. Cl. 57—31 8 Claims



1. A method of making fur bearing strands from hides of fur bearing animals, comprising:

joining side by side a plurality of hide portions with the fur grain in each portion running in the same direction; said hide portions being joined at seams by means of nonwoven material strips adhered longitudinally over the back of abutting edges of adjacent hide portions, said grain running parallel to the joining seams; and

cutting strands transversely of said joined hide portions.

4,660,364

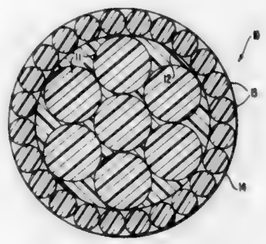
RACKET STRING CONSTRUCTION

Chinn-Chann Chiang, Austin, Tex., assignor to Alpha Sports, Inc., Austin, Tex.

Filed Jul. 22, 1985, Ser. No. 757,492

Int. Cl.[4] D02G *3/22, 3/40, 3/44*

U.S. Cl. 57—234 12 Claims



1. A racket string construction comprising seven contiguous strands of substantially the same diameter, synthetic material deposited around the strands to form a circular cross-section core, and a plurality of wrapping fibers evenly distributed around the circumference of the circular cross-section core, wherein the diameter of each of the wrapping fibers is approximately half the diameter of the strands.

4,660,365

METHOD AND APPARATUS FOR DETERMINING YARN NUMBER OR THICKNESS DEVIATIONS

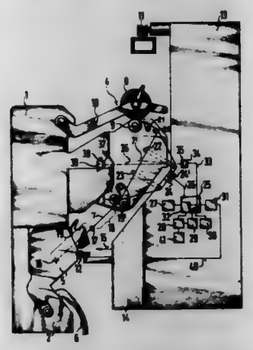
Hans Raasch, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 25, 1985, Ser. No. 759,476

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1984, 3427357

Int. Cl.[4] D01H *13/26, 15/02*

U.S. Cl. 57—263 11 Claims



2. Method of determining yarn number and thickness deviations for yarn connecting processes in automatic openend spinning machines, which comprises producing a yarn connection at a yarn connection point, subsequently automatically measuring one of the yarn number, yarn thickness and yarn mass per unit length in yarn sections of limited length upstream and downstream of the yarn connection point at a predetermined number of spinning units with the yarn running to produce measured values, comparing the measured value with each other, producing mean comparison values form the measured values, continuously correcting the comparison values by deleting the measured value of the first spinning unit when including the measured value of the last spinning unit in the average value production, so that the average value production always extends to a predetermined number of spinning units measured last, and inducing a signal with an indication regarding the spinning unit in the case of a deviation between the measured and comparison values with a predetermined magnitude.

4,660,366

FRICTION SPINNING APPARATUS

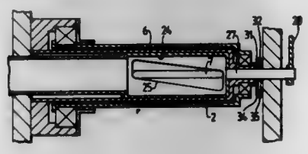
Michael Barrett, Rossendale; William A. Tattersall, Accrington, and Dennis O'Donnell, Oldham, all of England, assignors to Hollingsworth (UK) Limited, Accrington, England

Filed Oct. 2, 1985, Ser. No. 783,302

Claims priority, application United Kingdom, Oct. 3, 1984, 8424993

Int. Cl.[4] D01H *7/885, 15/02*

U.S. Cl. 57—263 8 Claims



8. A friction spinning machine having at least one friction spinning station comprising:

(a) cooperating first and second friction spinning rollers, at least said first friction spinning roller being perforated;

(b) means for applying suction internally of said perforated first friction spinning roller;

(c) winding means arranged to receive yarn spun in the nip between the first and second friction spinning rollers at said friction spinning station;

(d) means defining a suction slot within said at least one perforated friction spinning roller;

(e) means for opening and closing said suction slot;

(f) a fiber opening unit for opening fibers and delivering them to the nip between said friction spinning rollers, said fiber opening unit having a feed roller;

(g) means for controlling operation of said fiber opening unit; and

(h) manual control means for initiating spinning operation and piecing;

the improvement wherein:

(i) the manual control means comprise a single manual control operably openably connected to the suction slot opening and closing means, and means operably interconnecting the single manual control with the winding means and the fiber opening unit in a manner that manual operation of said single manual control to initiate operation of said suction slot opening and closing means additionally initiates operation of the fiber opening unit and the winding means in the desired sequence and with a required relative timing for satisfactory piecing.

4,660,367

BOBBIN TRANSPORTING APPARATUS

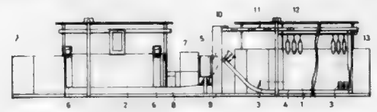
Tsukasa Kawarabashi, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 29, 1984, Ser. No. 584,820

Claims priority, application Japan, Mar. 3, 1983, 58-35416; Jul. 19, 1983, 58-131527

Int. Cl.[4] D01H *9/02, 9/18;* B65G *21/08*

U.S. Cl. 57—274 12 Claims



1. A bobbin transporting apparatus in which a spinning frame and a winder are interconnected directly to each other by means of a cop transporting path and a bobbin transporting path, comprising:

a transporting conveyor belt for conveying said bobbins in a substantially vertical direction along a first portion of said bobbin transporting path and in a substantially horizontal direction along a second portion of said bobbin transporting path;

a support member on which said conveyor belt is supported;

a cover which covers over said conveyor belt;

a support rod; and

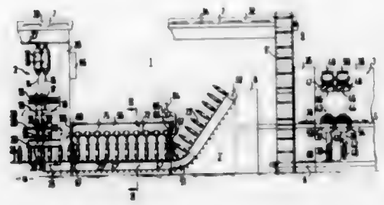
a mounting member for mounting said support member on said support rod, said support member having two guide sections for guiding said conveyor belt, and having recessed grooves formed in opposite sides thereof and adapted to be engaged by said mounting member to mount said support member on said mounting member.

4,660,368

INSTALLATION FORMED OF A SPINNING MACHINE AND A WINDING MACHINE

Wilhelm Küpper, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Mar. 13, 1986, Ser. No. 839,069
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1985, 3508942
Int. Cl.[4] D01H 9/18, 13/28; D06B 3/09
U.S. Cl. 57—281 7 Claims



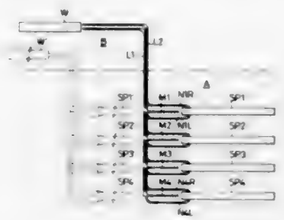
1. Installation, comprising a spinning machine, a winding machine, a bobbin transporting device transporting the bobbins from said spinning machine to said winding machine, and a tube or sleeve transporting device transporting tubes or sleeves from said winding machine to said spinning machine providing a circulation of wound and unwound tubes or sleeves, said bobbin transporting device including at least one automatic yarn steaming device, said yarn steaming device including a housing and a suction device disposed in said housing, part of said bobbin transporting device being disposed in said housing, and said housing including entrance and exit locations for said bobbin transporting device and sealing elements opening and closing automatically at said entrance and exit locations.

4,660,369

BOBBIN TRANSPORTING SYSTEM

Yuji Konishi, Oumihachiman, and Tetsuo Inoue, Kyoto, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jan. 15, 1985, Ser. No. 692,057
Claims priority, application Japan, Jan. 21, 1984, 59-8683; Jan. 24, 1984, 59-10698
Int. Cl.[4] D01H 9/18; B65H 67/06
U.S. Cl. 57—281 12 Claims



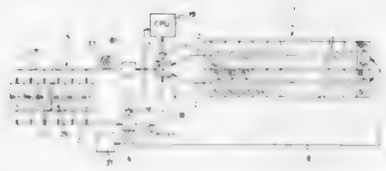
1. A bobbin transporting system for transporting empty bobbins and spinning bobbins comprising:
a winder;
a spinning frame;
transportion means located adjacent said spinning frame for transporting empty bobbins to and spinning bobbins from said spinning frame;
a spinning bobbin transporting path located between said transportation means and said winder for transporting spinning bobbins therebetween;
an empty bobbin transporting path located between said winder and said transportation means for transporting empty bobbins therebetween; and
drive means for driving said transportation means in a first direction of operation to receive empty bobbins from said empty bobbin transporting path and for driving said transportation means in a second direction of operation to deliver spinning bobbins to said spinning bobbin transporting path.

4,660,370

SPINNING FRAME CONTROL SYSTEM

Isamu Matsui; Shoichi Tone, both of Kyoto, and Yutaka Ueda, Nara, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Osaka, Japan

Filed Jan. 29, 1986, Ser. No. 823,954
Claims priority, application Japan, Jan. 31, 1985, 60-17574
Int. Cl.[4] D01H 9/18; B65H 67/06
U.S. Cl. 57—281 20 Claims



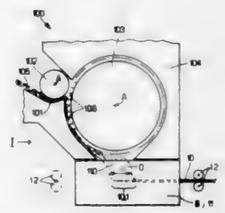
1. A system controlling a spinng frame comprising:
a plurality of spinning units;
a winder including a plurality of winding units and a bobbin conveyance path;
means for transporting spinning bobbins on the bobbin conveyance path, said means for transporting spinning bobbins having an identification mark affixed thereto;
a spinning bobbin feed station which is disposed along the bobbin conveyance path and is provided with a first sensor for reading the identification mark;
a bobbin draw-out station which is disposed along the bobbin conveyance path and is provided with a second sensor for reading the identification mark; and
a processing device for storing the identification signal read by said first and second sensors.

4,660,371

METHOD AND APPARATUS FOR PRODUCING A YARN

Herbert Stalder, Kollbrun, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed May 15, 1985, Ser. No. 734,845
Claims priority, application Switzerland, May 18, 1984, 2450/84
Int. Cl.[4] D01H 5/24, 5/26, 7/895
U.S. Cl. 57—401 22 Claims



1. A method for the production of a yarn or the like, comprising the steps of:
separating fibers from a body of fibers;

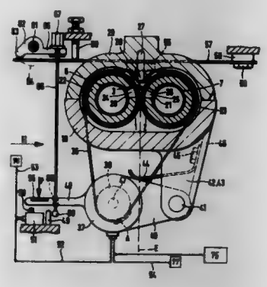
feeding the separated fibers along a predetermined path of travel in the direction of friction spinning means;
mechanically guiding the fibers throughout substantially said entire path of travel of the separated fibers from the body of fibers until reception by the friction spinning means;
directly receiving the fibers from the body of fibers at the friction spinning means in such a manner that a front end of the fibers, viewed in the direction of fiber travel, is already engaged by the friction spinning means during such time as a rear end of the fibers has not yet departed from the body of fibers;
transferring the mechanically guided and separated fibers to the friction spinning means;
forming a spun yarn at the friction spinning means;
withdrawing the spun yarn in a direction governed by the friction spinning means; and
transferring the fibers to the friction spinning means in a direction which is disposed substantially parallel to the direction of movement of the friction spinning means.

4,660,372

DRIVING ARRANGEMENT FOR OPEN-END FRICTION SPINNING MACHINES

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Ueberkingen, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 684,867
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3347087
Int. Cl.[4] D01H 7/882, 13/16; F16H 7/14
U.S. Cl. 57—401 6 Claims



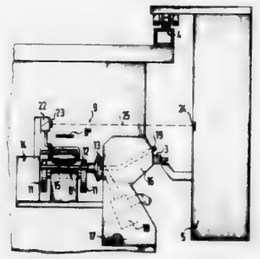
1. An open-end friction spinning apparatus comprising:
at least one spinning unit, said spinning unit comprising two friction rollers having cylindrical surfaces arranged adjacent one another forming a wedge-shaped yarn-forming gap therebetween,
pulley means arranged on power-driven shaft means, said shaft means extending substantially parallel to said roller means, and
joint driving belt means engaging said pulley means and said surfaces of said two friction rollers, said power-driven shaft means comprising a shaft mounted on an electric motor, said rollers and said power-driven shaft means being spatially arranged at the vertices of a triangle, said shaft means having an axis of rotation and said wedge-shaped gap being bisected by a bisecting plane substantially tangent to both said friction rollers, said axis of rotation being contained in a plane other than said bisecting plane, said power-driven shaft means being more closely disposed to a first roller of said two friction rollers receiving a belt directly from said pulley mounted on said shaft means than to a second roller receiving said belt directly from said first roller.

4,660,373

METHOD AND DEVICE FOR STARTING AN OPEN-END ROTOR SPINNING MACHINE

Josef Derichs, Mönchengladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Jun. 27, 1985, Ser. No. 749,499
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423645
Int. Cl.[4] D01H 7/882, 13/00
U.S. Cl. 57—404 12 Claims



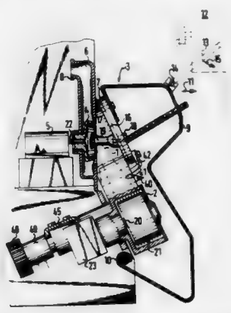
2. Device for starting an open-end rotor spinning machine having rotors with shafts disposed at spinning stations, comprising a tangential belt guided along the spinning machine for driving the shafts of the rotors, and at least one switchable coupling device including: means for unloading the tangential belt while removing the tangential belt from the shafts of all of the rotors, means for subsequently beginning to drive the tangential belt while maintaining all of the shafts of the rotors in a disengaged condition at the same time, means for subsequently accelerating the tangential belt to a speed conforming to that of a spinning operation while maintaining all of the shafts of the rotors in a disengaged condition at the same time, and means for progressively establishing functional connections between the shafts of the rotors in a decoupled condition and said tangential belt in a running condition, from spinning station to adjacent spinning station.

4,660,374

OPEN-END ROTOR SPINNING MACHINE

Heinz-Georg Wassenhoven, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 1, 1986, Ser. No. 892,820
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1985, 3527943
Int. Cl.[4] D01H 1/135, 7/882
U.S. Cl. 57—407 12 Claims



1. Open-end rotor spinning machine, comprising a machine

frame having spinning stations; a multiplicity of spinning boxes disposed side by side on said machine frame at said spinning stations; each of said spinning boxes including: a basic frame, a first shaft disposed on said basic frame, a spinning rotor having a rotor plate being disposed on said first shaft and having an opening formed in said rotor plate, a rotor housing surrounding said rotor plate and having a front surface with an opening formed therein, a second shaft disposed on said basic frame substantially perpendicular to said first shaft, a lid-like insert covering said opening formed in said rotor housing and being pivotal about said second shaft for opening said spinning box, a thread withdrawal channel disposed on said lid-like insert, a thread withdrawal nozzle disposed on said thread withdrawal channel in the vicinity of said opening in said rotor plate, said thread withdrawal nozzle being pivotal with said thread withdrawal channel and said lid-like insert on said second shaft out of the vicinity of said opening in said rotor plate in a given direction, a third shaft disposed on said basic frame, a bearing pivotally disposed on said third shaft, a fiber feeding and opening device disposed on said bearing below said rotor housing, and a one-piece fiber feeding channel disposed on said fiber feeding and opening device and having a discharge end in the vicinity of said opening in said rotor plate, said fiber feeding channel being pivotal with said fiber feeding and loosening device and said bearing on said third shaft out of the vicinity of said opening in said rotor plate in a direction different than said given direction.

4,660,375

POWER-GENERATION PLANT AND METHOD

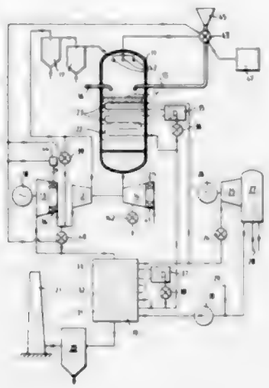
John A. C. Hyde, Leicestershire, and Jack Broughton, Derbyshire, both of England, assignors to The English Electric Company Limited, England

Continuation of Ser. No. 511,879, Jul. 8, 1983, abandoned. This application Jul. 10, 1985, Ser. No. 753,700

Claims priority, application United Kingdom, Sep. 27, 1982, 8227543

Int. Cl.[4] F02C *9/00, 3/10, 6/00*

U.S. Cl. 60—39.03 **14 Claims**



1. In a power plant of the type including:

(a) a pressurized fluidized bed combustor provided with a combustion gas outlet and a compressed air inlet,

(b) fuel supply means for delivering fuel to said pressurized fluidized bed combustor at a variable rate,

(c) control means for controlling the delivery of fuel from the fuel supply means to the combustor in dependence upon the temperature in the combustor and tending to maintain said temperature at a pre-set demand value,

(d) a high pressure gas turbine having an inlet which is connected to the combustion gas outlet of the combustor, said high pressure turbine having an outlet,

(e) a low pressure gas turbine having an inlet which is connected to the outlet of said high pressure gas turbine,

(f) means for varying the relative power outputs of said high and low pressure gas turbines,

(g) an air compressor driven by the high pressure turbine for feeding compressed air to said compressed air inlet of said combustor, and

(h) said plant generating an initial steady state power output in which an initial pressure and an initial temperature exist within said combustor,

a method of changing the initial steady state power output of said plant to a new steady state power output in response to sustained load demand, comprising the steps of:

(A) adjusting the initial pressure within said combustor in response to the sustained load demand by adjusting the relative power outputs of said high and low pressure gas turbines, said initial pressure adjusting step being performed by adjusting the fuel delivery rate to the combustor so as to keep the initial temperature in the combustor within predetermined safe limits, and

(B) when said initial pressure has reached a predetermined value, adjusting the fuel delivery rate to the combustor so as to maintain a new equilibrium temperature within said combustor which is substantially equal to said pre-set demand temperature, said fuel feed adjusting step being performed during adjusting of the relative power outputs of said high and low pressure turbines so as to maintain a new steady-state pressure within said combustor, said new equilibrium temperature and said new steady-state pressure within the combustor corresponding to said new steady-state power output, whereby sustained major temperature changes are avoided.

4,660,376

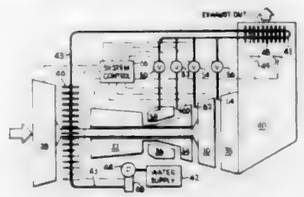
METHOD FOR OPERATING A FLUID INJECTION GAS TURBINE ENGINE

Kenneth O. Johnson, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 604,670, Apr. 27, 1984, Pat. No. 4,569,195. This application Oct. 21, 1985, Ser. No. 789,896

Int. Cl.[4] F02C *7/00, 9/16*

U.S. Cl. 60—39.05 **3 Claims**



1. In a method of operating a gas turbine engine system comprising a gas turbine engine which includes, in operating series, a compressor having a compressor inlet, a combustor generating a gaseous combustor effluent, and a turbine, the system including compressor sensing means, turbine sensing means, a system control, a supply of fluid based on at least one form of water and having a specific heat at constant pressure (Cp) greater than the combustor effluent, and fluid introductory means to introduce the fluid from the supply of fluid into the engine, the steps of:

designing and constructing the engine to operate as a gas turbine engine, without introduction of the fluid, at a preferred thermal efficiency range in a predetermined compressor flow pressure ratio range and a predetermined turbine flow pressure ratio range;

sensing, during engine operation, with the compressor sensing means, actual compressor operating parameters sufficient to identify the operating compressor flow pressure ratio;

sensing, during engine operation, with the turbine sensing means, actual turbine operating parameters sufficient to identify the operating turbine flow pressure ratio;

comparing the sensed actual operating compressor flow and turbine flow pressure ratios with the predetermined compressor flow and turbine flow pressure ratio ranges; and then

introducing and modulating the fluid into the engine through the fluid introduction means downstream of the compressor inlet as required to maintain the compressor and the turbine flow pressure ratios in their respective predetermined ranges.

4,660,377

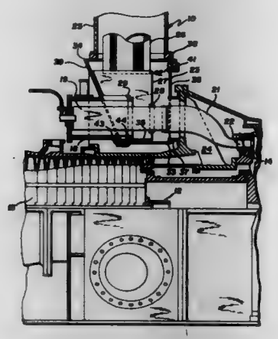
REGENERATIVE SYSTEM FOR A GAS TURBINE

Walter Wadsworth, East Sandwich, Mass., assignor to Fern Engineering, Inc., Bourne, Mass.

Filed Feb. 21, 1985, Ser. No. 703,823

Int. Cl.[4] F02C *7/10*

U.S. Cl. 60—39.511 **8 Claims**



1. Regenerative system for a gas turbine, wherein the turbine has a single shaft on which are mounted a compressor section and a work section, comprising:

(a) an air heater mounted adjacent the exit of the work section, the hot exit gas and pressurized air passing through passages formed in the air heater,

(b) a plurality of combustor housings surrounding the compressor section, each containing a combustor mounted within it and extending coaxially thereof, each combustor having a transition section extending to the entrance to the work section,

(c) an annular connector housing extending between the combustor housing and the exit of the compressor section to carry the compressed air radially,

(d) an outer duct leading from the connector housing to one end of the air heater,

(e) an inner duct attached to the other end of the air heater, and

(f) an annular inner housing lying within the connector housing, the inner duct being connected to the said inner housing to deliver heated compressed air to the combustor housing, wherein each combustor extends through the inner housing on its way to the entrance to the work section, a seal extends around the combustor where it emerges into the connector housing, and a seal extends between each combustor housing and the inner housing, the connector housing and the outer duct being formed of low temperature steel.

4,660,378

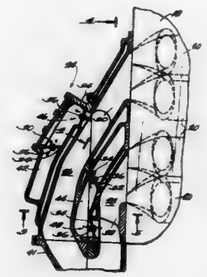
EXHAUST SYSTEM WITH SIDE BRANCH

Otto H. Scharpf, Brookfield, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 21, 1984, Ser. No. 685,238

Int. Cl.[4] F02B *27/02*

U.S. Cl. 60—313 **13 Claims**



1. An engine apparatus comprising an internal combustion engine including first and second cylinders with respective first and second exhaust ports, and an exhaust gas passageway means communicating with said exhaust ports for providing first compressive waves arriving at said exhaust ports prior to closure thereof, and second compressive waves arriving at said exhaust ports after said first compressive waves, said exhaust gas passageway means including first and second passageways communicating respectively with said first and second ports and with each other at a common distance from said first and second ports, and an exhaust gas side branch having a permanently closed end and an opposite entry end communicating with said exhaust gas passageways at a distance from said first and second ports at least as great as said common distance.

4,660,379

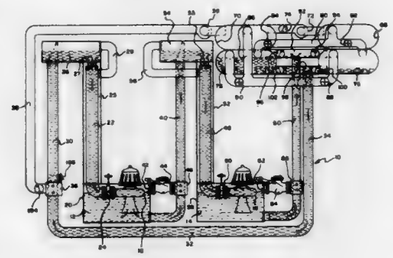
AIRTRAP POWER GENERATOR

James K. Lane, 116 E. Columbine Rd., Wildwood Crest, N.J. 08260

Filed Dec. 17, 1985, Ser. No. 809,973

Int. Cl.[4] F16D *31/02*

U.S. Cl. 60—398 **3 Claims**



1. A power generating device comprising:

an airtight housing;

a turbine located within said housing and including an inlet pipe extending upwardly out of said housing and forming a penstock, the output of said turbine opening into said housing;

an air trap means located at the top of said inlet pipe with the lower portion of the interior of said trap means being in communication with said inlet pipe;

an air pipe connected between the top of said air trap means and the top of said housing;

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a riser pipe having its upper end connected to said air trap means;
a liquid level control device connected to the lower end of said riser;
first and second liquid accumulator tanks;
a tank inlet pipe having its lower end connected to the bottom of said housing and its upper end connected to the top of each of said first and second tanks through a first pair of check valves;
a first compressor means for alternately evacuating the air from one of said first or second accumulator tanks while discharging compressed air into the other of said tanks;
a second compressor means for continuously supplying air to said liquid level control device;
a tank outlet pipe having its upper end connected to the bottoms of said accumulator tanks through a second pair of check valves, and having its lower end connected to the lower end of said riser;
liquid initially filling one of said tanks, said housing, said riser and said inlet and outlet pipes;
whereby when compressed air is discharged into the accumulator tank filled with liquid, the liquid is displaced out through the outlet pipe to the riser and into the air trap means where it falls through the turbine inlet pipe into the turbine and then to the housing, the liquid at the bottom of the housing flowing through the tank inlet pipe to the accumulator tank having the air evacuated therefrom.

4,660,380

HYDRAULIC CONTROL ARRANGEMENT

Friedrich-Wilhelm Höfer, Ditzingen, and Günther Schwerin, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 12, 1983, Ser. No. 560,426
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1982, 3248606; May 18, 1983, 3318052
Int. Cl.⁴ F16D *31/02*
U.S. Cl. 60—422 **13 Claims**



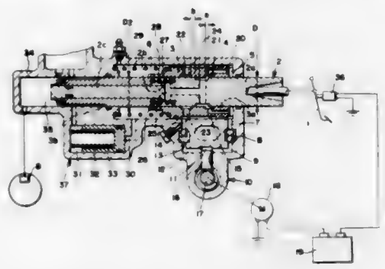
1. An hydraulic control arrangement for a working device, particularly mounted on an agricultural vehicle, comprising a first hydromotor arranged to drive the working device; a blocking unit including a non-return valve and a pushing piston with a pressure chamber at said pushing piston; a control valve with a control slider arranged to control said blocking unit and having a first control edge which influences a pressure medium stream to said first hydromotor during lifting, and a second control edge; means forming an inlet and an outlet of the arrangement, said outlet being connected to said first hydromotor; a throttling valve having a throttle slider, a spring chamber with a spring, and a pressure chamber located opposite to said spring chamber unloading in a lowering position; a working conduit extending from said inlet via said throttle slider, said control slider and said non-return valve to said outlet, said throttle slider being located in said working conduit between said control slider and said inlet and being acted upon by spring in direction controlling said working conduit and also by a pressure difference at said first control edge in the opposite direction; a control conduit branching from said working conduit upstream of said control slider, said control conduit being influenced by said control slider and leading to said pushing piston; a tank to which said pressure chamber is unloaded in a lifting position; a second hydromotor with an associated directional valve; a throttle point; and a pressure medium source connected with said inlet and supplying with pressure medium said directional valve associated with said second hydromotor, said pressure chamber at said pushing piston being constantly unloaded to said tank via said throttle point, said throttle slider in a lowering position of said control slider being connected as a pressure-reducing valve with an output side with which said control conduit leading to said pushing piston is connected for reduced pressure.

4,660,381

HYDRAULIC BOOSTER WITH ELECTRICALLY DRIVEN PLUNGER PUMP

Hiromu Kuromitu, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Mar. 28, 1985, Ser. No. 716,995
Claims priority, application Japan, Mar. 30, 1984, 59-62683
Int. Cl.⁴ B60T *13/12*; F16D *31/02*; F15B *7/00*; F04B *49/00*
U.S. Cl. 60—548 **8 Claims**



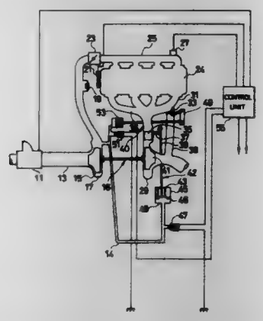
1. A hydraulic booster operatively connected to a brake master cylinder, said booster comprising:
a booster casing defining an internal cavity;
a power piston axially slidably received in said cavity, said power piston having first and second axially opposed ends and an axial bore, said power piston dividing said cavity into a power chamber proximate said first end and a reservoir chamber proximate said second end;
an input piston axially slidably received in said axial bore, one end of said input piston extending through the first end of said power piston and through said booster casing to project outwardly, said input piston being normally in a released position;
manually operable means operatively connected with the one end of said input piston for effecting selective axial inward movement of said input piston from said released position;
an electrically operated plunger pump having an outlet port in fluid communication with said power chamber and an inlet port;
an accumulator in fluid communication with said reservoir chamber;
first valve means provided between said input piston and said power piston for permitting fluid communication between said power chamber and said reservoir chamber and preventing fluid communication with said inlet port when said input piston is in said released position and for preventing fluid communication between said power chamber and said reservoir chamber when said input piston is axially displaced relative to said power piston a first predetermined distance;
means for actuating said pump upon axial displacement of said input piston; and
second valve means provided between said input piston and said power piston for permitting fluid communication between said inlet port and said reservoir chamber when said input piston is axially displaced relative to said power piston a second predetermined distance greater than said first predetermined distance to thereby pump fluid under pressure into said power chamber, and for discontinuing fluid communication between said inlet port and said reservoir chamber when pressure in said power chamber axially moves said power piston relative to said input piston to thereby remove the load on said pump while said input piston is held axially displaced said second predetermined distance.

4,660,382

DEVICE FOR CONTROLLING THE SUPERCHARGING PRESSURE OF A TURBOCHARGER

Takashi Ueno, Yokosuka; Toshimi Abo, and Akio Sumizawa, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 28, 1985, Ser. No. 706,626
Claims priority, application Japan, Feb. 29, 1984, 59-36107
Int. Cl.⁴ F02B *37/12*
U.S. Cl. 60—602 **11 Claims**



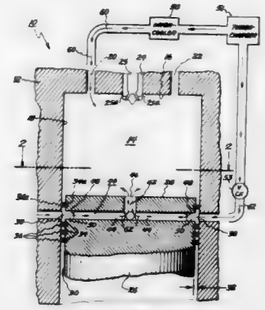
1. In turbocharger in which an exhaust gas turbine is driven in a rotating manner by the energy of the exhaust gases from an internal combustion engine through an exhaust gas channel and the intake air in the internal combustion engine is supercharged by a compressor which is driven in a rotating manner by the exhaust gas turbine, a supercharging pressure control device comprising:
drive means for driving a valve of a variable geometry mechanism which varies the flow area in the exhaust gas channel;
drive means for driving a valve provided in a bypass channel into which the exhaust gas is introduced to bypass the exhaust gas turbine;
detection means for detecting the supercharging pressure of the inlet air to the internal combustion engine;
control value obtaining means for obtaining a value for controlling said variable geometry mechanism drive means, said control value obtaining means calculating a value which represents load applied to the engine and, based on said calculated value and the RPM of the engine, obtaining said control value;
first control means for controlling said variable geometry mechanism drive means, using a control value obtained by compensating the control value from said control value obtaining means in accordance with a first target supercharging pressure set value and the detected value obtained by said detection means at the time when the engine is in a predetermined operating region;
second control means for controlling said bypass channel valve drive means, using a control value obtained by compensating the control value from said control value obtaining means in accordance with a second target supercharging pressure set value and the detected value obtained by said detection means at the time when the engine is in another operating region;
cutoff means for cutting off the compensating control by said first control means; and
recording control means for recording a compensated value from said second control means and for controlling said bypass channel valve drive means by activating said cutoff means when said recording control means judges that said supercharging pressure detection means malfunctions, said activation of the cutoff means being carried out according to a compensated value being stored in said recording control means at the time when said malfunction is recognized by said recording control means.

4,660,383

CLEAN AIR BLOW-BY SYSTEM FOR DIESEL ENGINE

Gary L. Leonard, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 9, 1985, Ser. No. 806,898
Int. Cl.⁴ F02B *37/00, 33/00, 3/00*
U.S. Cl. 60—605 **12 Claims**



1. In a diesel engine comprising a block; said block defining at least one cylinder including a head and a circumferential wall; means proximate said cylinder head for conducting fuel into said cylinder; a piston slidingly mounted in said cylinder including a crown adjacent said cylinder head and a sidewall spaced from said cylinder wall by a gap; first means surrounding said piston and spaced from said piston crown for establishing a compression seal between said piston sidewall and said cylinder wall; said piston adapted for reciprocating motion in said cylinder between a bottom-dead-center position whereat said piston crown and said cylinder head are at their furthest relative distance and a top-dead-center position whereat said piston crown and said cylinder head are at their closest relative distance; the combination of:
means for providing pressurized air;
said block further defining a clean air port communicating with said cylinder wall for conducting said pressurized air into said cylinder;
said piston defining a chamber including a first port communicating with said piston crown and at least one blow-by port communicating with said piston sidewall, said blow-by port disposed between said first means for establishing a seal and said piston crown;
second means surrounding said piston and situated between said blow-by port and said piston crown for establishing a compression seal between said piston sidewall and said

cylinder wall such that said blow-by port is situated between said first and second means for establishing a seal; and

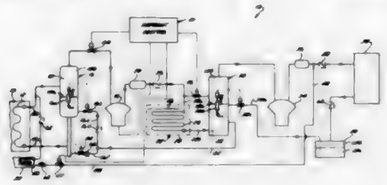
said clean air port spaced from said cylinder head such that when said piston is proximate said bottom-dead-center position said first and second means for establishing a compression seal bound said clean air port for conducting said pressurized air through said blow-by port to fill said piston chamber and subsequently through said first port into said cylinder.

4,660,384

DEFROST APPARATUS FOR REFRIGERATION SYSTEM AND METHOD OF OPERATING SAME

Francis T. Pallasch, St. Louis Park, Minn., assignor to VILTER Manufacturing, Inc., Milwaukee, Wis.

Filed Apr. 25, 1986, Ser. No. 855,741
Int. Cl.[4] F25B *41/00*; F25D *21/06*
U.S. Cl. 62—81 **10 Claims**



1. In a refrigeration system:

a cooling coil having an inlet line and an outlet line;

an accumulator for receiving refrigerant discharged from said cooling coil outlet line;

a desuperheater comprising a container of heat exchange liquid and a desuperheater coil disposed therein, which desuperheater coil has an inlet line and an outlet line;

a flash intercooler for receiving cooled refrigerant from said desuperheater coil outlet line;

a first stage compressor for receiving and compressing refrigerant from said accumulator and for supplying it to said desuperheater coil inlet line whereby said heat exchange liquid in said tank is heated;

a second stage compressor for receiving and compressing refrigerant from said intercooler;

a condenser for receiving compressed refrigerant from said second stage compressor, condensing it, and supplying it to said inlet line of said cooling coil to effect cooling of said cooling coil;

and means to defrost said cooling coil comprising:

means to shut off said first stage compressor;

means to divert refrigerant to flow from said intercooler in reverse direction through said desuperheater coil and back to said intercooler;

means to supply heated refrigerant from said second stage compressor to said cooling coil outlet line, and;

means to return condensed refrigerant from said cooling coil inlet line to said accumulator, and then back to said intercooler.

4,660,385

FROST CONTROL FOR SPACE CONDITIONING

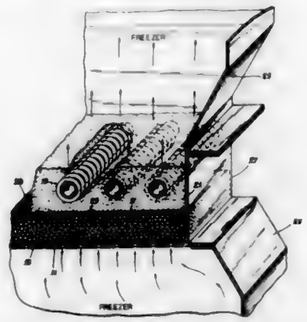
Robert A. Macrias, Deerfield; Jaroslav Wurm, N. Riverside, and Vincent M. Huang, Skokie, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 325,970, Nov. 30, 1981, Pat. No. 4,493,364. This application Dec. 28, 1984, Ser. No. 687,038
Int. Cl.[4] F25D *21/04*
U.S. Cl. 62—57 **37 Claims**

18. A method of frost control on a refrigerant evaporator exchanger inside a freezer closed space operating at ambient air temperatures below about 0° C. comprising:

passing said refrigerant of said freezer apparatus through said refrigerant evaporator exchanger having extended surface heat exchange means immersed in a shallow fluidizable bed supported by support means extending substantially across a substantially vertical duct; and

passing said ambient air through said substantially vertical duct in thermal exchange relation to said refrigerant evaporator heat exchange means at sufficient velocity to fluidize said shallow bed to a fluidized depth of about 0.25 to about 2 inches thereby enhancing heat exchange between said refrigerant and said ambient air and reducing tendency of frost formation by physical vibration and abrasive action.



31. A method of frost control on a refrigerant evaporator exchanger inside a freezer closed space operating at ambient air temperatures below about 0° C. comprising:

passing said refrigerant of said freezer apparatus through said refrigerant evaportor exchanger having extended surface heat exchange means immersed in a fluidized bed of desiccant particles; and

passing said ambient air in thermal exchange relation to said refrigerant evaporator heat exchange means at sufficient velocity to fluidize said bed thereby enhancing heat exchange between said refrigerant and said ambient air and reducing tendency of frost formation by physical vibration and abrasive action.

4,660,386

DIAGNOSTIC SYSTEM FOR DETECTING FAULTY SENSORS IN LIQUID CHILLER AIR CONDITIONING SYSTEM

John C. Hansen, R.D. 1 Stauffer Rd., Spring Grove, Pa. 17362; Harold B. Ginder, 835 Clare La., York, Pa. 17402, and Lloyd A. Johnson, P.O. Box 159, Liverpool, N.Y. 13088

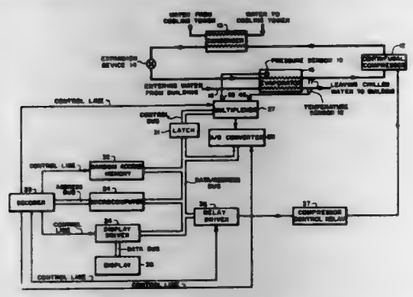
Filed Sep. 18, 1985, Ser. No. 777,383
Int. Cl.[4] F25B *49/00*
U.S. Cl. 62—126 **10 Claims**

1. In an air conditioning system having a liquid chiller wherein refrigerant flows through an evaporator to chill liquid circulating through a heat exchange coil in the evaporator, a pressure sensor sensing the pressure of the refrigerant in the evaporator while a temperature sensor senses the temperature of the chilled liquid leaving the evaporator, a diagnostic system for detecting when either one of the sensors is faulty, comprising:

means for developing, from the output of the pressure sensor, a refrigerant pressure signal representing the evaporator refrigerant pressure;

means for developing, from the output of the temperature sensor, a liquid temperature signal representing the leaving chilled liquid temperature;

computing means for determining, from the difference between the evaporator refrigerant temperature which is represented by said refrigerant pressure signal, and the leaving chilled liquid temperature which is represented by said liquid temperature signal, if the output of one or the



sensors is in error, thereby indicating that the sensor is faulty;

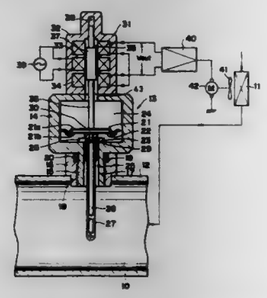
and warning means, controlled by said computing means, for providing a warning message to operating personnel when a faulty sensor is detected.

4,660,387

CONTROLS FOR REFRIGERATING OR AIR-CONDITIONING UNITS

Yutaka Usami, Guildford, Australia, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1986, Ser. No. 821,547
Claims priority, application Japan, Jan. 22, 1985, 60-7242
Int. Cl.[4] F25B *39/04, 41/00*
U.S. Cl. 62—184 **4 Claims**



1. A control device including a detector means for detecting the degree of superheating or supercooling of an air conditioning or refrigerating unit having a high pressure coolant line therein, said detector means comprising:

a body having one end attachable to said coolant line and having a closed end pressure responsive chamber therein open the one end;

a diaphragm means disposed in said pressure responsive chamber and having a wall toward the one end fixed in said chamber and a wall toward the other end which is movable;

a temperature sensitive cylinder having one extending out of said pressure responsive chamber through said one end of said body and having the other end opening into said temperature responsive chamber, and a temperature responsive medium filling said cylinder and said temperature responsive chamber;

a connecting rod coupled to said movable wall and extending out of the other end of said pressure responsive chamber; and

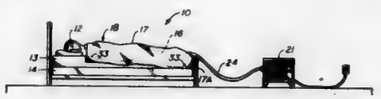
a sensor means to which said connecting rod is connected for sensing the position of said connecting rod and producing an output representative of the degree of superheating or supercooling in the unit.

4,660,388

COOLING COVER

George J. Greene, Jr., 616 N. Eldridge St., Houston, Tex. 77079

Continuation-in-part of Ser. No. 613,913, May 24, 1984, abandoned. This application Sep. 26, 1985, Ser. No. 780,280
Int. Cl.[4] A47K *13/00*
U.S. Cl. 62—261 **5 Claims**



1. A generally rectangular cooling cover adapted to be positioned over a human body in a prone position; said cooling cover comprising;

a coverlet having an outer sheet, an inner porous pouch attached to the outer sheet, and an inner pad within the porous pouch;

said inner pad including a pair of upper and lower sheets formed of an air impermeable material with the upper sheet adjacent the coverlet and the lower sheet adjacent the porous pouch, said sheets secured to each other along their outer edges to form an air distribution chamber therebetween, and secured to each other along a plurality of parallel intermediate portions extending lengthwise between the ends of the sheets for a major portion thereof to form a plurality of separate longitudinally extending air passages there-between having lower rounded surfaces, a plenum chamber extending transversely of the pad at each end thereof in fluid communication with said longitudinally extending air passages; and

a cool air inlet at one end of said inner pad, said coverlet having an opening therein in alignment with said inlet of said pad adapted to receive a source of cool air for connection to said inlet;

said lower rounded surfaces having a plurality of apertures along the length thereof at locations other than the lowermost portion of said rounded surfaces and in fluid communication with said longitudinally extending passages whereby cool air may be discharged as small jets through said apertures at an angular relation to a vertical plane for diffusing through the porous pouch to contact a large area of the body cooled.

4,660,389

CEILING-CONCEALMENT TYPE AIR CONDITIONING APPARATUS

Hitoshi Kido; Yoshinobu Igarashi, and Junji Okabe, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1985, Ser. No. 792,774
Claims priority, application Japan, Nov. 2, 1984, 59-167038[U]
Int. Cl.[4] F25D *19/00*
U.S. Cl. 62—298 **4 Claims**

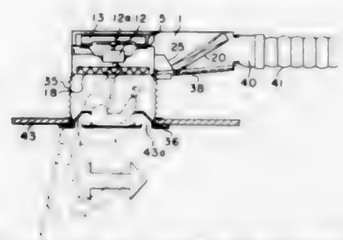
1. A ceiling-concealment type air conditioning apparatus which comprises:

an air conditioning apparatus main body having an air blower chamber which includes a partition plate provided with an air intake opening, an air blower mounted on said partition plate so as to be detachable from the same through said air intake opening, a box for auxiliary parts

and an air filter placed at an inlet opening of said main body;

a heat exchanging chamber containing a heat exchanger which performs heat-exchange between a heat transfer medium and air to be heat-exchanged fed from said air blower;

an air intake panel detachably fitted to an opening of a ceiling which is spaced apart from and below said inlet opening of the main body; and



an air intake chamber for connecting said inlet opening of said main body to said opening of the ceiling so as to form an air passage for feeding air to said air blower,

wherein said partition plate is placed in the horizontal direction in said air blower chamber to divide the same into upper and lower sections, wherein said air blower comprises a motor and blades, and wherein said motor is in said lower section and is supported by said partition plate by means of legs and said blades are placed in said upper section.

4,660,390

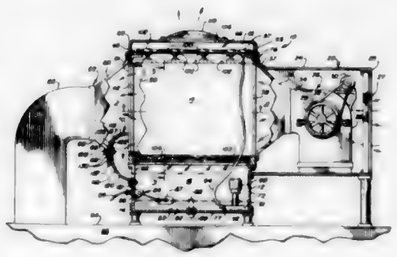
AIR CONDITIONER WITH THREE STAGES OF INDIRECT REGENERATION

Mark N. Worthington, 17404 N. 99th Ave., Apartment 309, Sun City, Ariz. 85373

Filed Mar. 25, 1986, Ser. No. 843,659

Int. Cl.[4] F25D *17/04*

U.S. Cl. 62—309 **22 Claims**



1. An air conditioner comprising:

(a) a cabinet defining an internal evaporation chamber and having an air inlet and an air outlet;

(b) a heat exchanger mounted in said cabinet and defining an air movement path between the air inlet and the air outlet thereof, said heat exchanger disposed to separate the evaporation chamber of said cabinet into an input portion and an output portion and having at least one chiller tube extending transversely of the air movement path and opening oppositely into the input portion and the output portion of the evaporation chamber of said cabinet;

(c) means for supplying air to be cooled to the air inlet of said cabinet of movement through the air movement path of said heat exchanger in a heat exchanger relationship about the chiller tube thereof for extracting heat from the air to be cooled;

(d) air diversion means for continuously diverting some of the air emerging from the air outlet of said cabinet which would otherwise be directed to a point of use and directing it into instead and without admixture into the input portion of the evaporation chamber of said cabinet to provide the sole source of air for movement through the chiller tube of said heat exchanger into the output portion of the evaporation chamber of said cabinet; and

(e) means in the evaporation chamber of said cabinet for recirculatingly spraying water into the chiller tube of said heat exchanger for interacting with the diverted air moving therethrough to evaporatively cool said heat exchanger.

4,660,391

NEEDLE SELECTION DEVICE FOR A FLAT KNITTING MACHINE

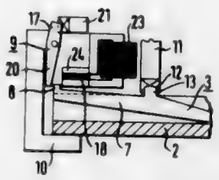
Reinhold Schimko, Aalen-Wasseralfingen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 3, 1986, Ser. No. 881,743

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1985, 3523997

Int. Cl.[4] D04B *7/00*

U.S. Cl. 66—75.1 **7 Claims**



1. A needle selection device for a flat knitting machine equipped with jacquard mechanism in which knitting needles are pivoted in controlled manner into various positions for needle displacement with the aid of cam means on the carriage, the selection device comprising double-armed pivotable check levers of magnetically conductive material associated with the respective needle channels and arranged spaced along the length of the needle bed substantially perpendicular to the needle bed, cam means displaceably mounted on the carriage for pivoting the check levers each into a first position, electromagnet means on the carriage for pivoting the check levers each into a second position at respective selection positions, wherein the setting of each check lever determines the pivot position of the associated knitting needle, and permanent magnet means arranged on the carriage in alignment with the two lever arms of the check levers, in which said permanent magnet means comprises four permanent magnets arranged in pairs each with two poles spaced in the direction of travel of the carriage with an intermediate space between the poles in the direction of travel of the carriage, in which the check levers are held by the permanent magnets in one of said first and second pivot positions, and in which the electromagnet means is constructed and arranged such that it has pole shoes arranged at least on one lever arm side of the check levers in said intermediate space between the poles of the corresponding permanent magnets.

4,660,392

DEVICE FOR CONTROLLING THE VERTICAL TENSION OF THE KNITTED FABRIC IN AUTOMATIC FLAT KNITTING MACHINES

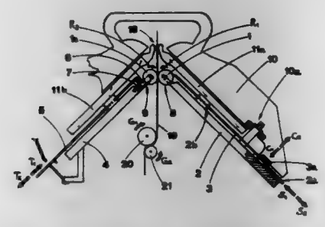
Benito Stoppazzini, Sala Bolognese, Italy, assignor to E.M.M. Emiliana Macchine Maglieria S.R.L., Bologna, Italy

Filed Aug. 12, 1986, Ser. No. 895,737

Claims priority, application Italy, Sep. 18, 1985, 3553 A/85

Int. Cl.[4] D04B *15/88*

U.S. Cl. 66—149 R **3 Claims**



1. A device for controlling the vertical tension of the knitted fabric in an automatic flat knitting machine, this latter including two flat longitudinal needle beds, mounted on two corresponding plane surfaces, respectively first and second, of a knitting machine frame to which a carriage is mounted that moves longitudinally and alternately above said needle beds; said device comprising: two parallel rows of co-axially mounted rollers respectively first and second, in which the rollers constituting the first row are mounted on the top longitudinal end of said first plane surface so that they are able to turn, and the rollers constituting the second row are mounted, so that they are able to turn, on corresponding moving means mounted on the higher edge of said second plane surface and acted upon by elastic means; said rows of rollers being located near to the needles' work zone, each one being situated beneath a corresponding needle bed and extending along the entire length of this latter, so as to create, together with the remaining counterposed row, a series of independent pairs of rollers, each one formed of two mutually touching rollers, turning in single and reciprocally opposite directions, also acting upon one another with a preset pressure resulting from the elastic reaction of said elastic means and between which is inserted the knitted fabric leaving said work zone; first means for rotating said pairs of rollers in preset steps as a result of the activation of second means, mounted on the above-mentioned carriage, and acting upon the same first means in phase with the movement of the carriage.

4,660,393

WASHING MACHINE

Masanobu Yanagihara, Gifu, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Sep. 12, 1985, Ser. No. 775,327

Claims priority, application Japan, Sep. 28, 1984, 59-204215

Int. Cl.[4] D06F *39/08*

U.S. Cl. 68—26 **16 Claims**

16. A washing machine capable of being provided with a water filter device of the type including a water inlet port, a water outlet port and an overflow port, said washing machine comprising:

an outer cabinet;

an operation control console including a rear wall which defines a water intake opening and an access opening;

a water supply control device provided within said operation control console to control a flow rate of water fed from a water supply;

a water intake port formed on the rear wall of said operation control console in correspondence to the water outlet port of the water filter device; and



an auxiliary intake port provided on the rear wall of said operation control console in correspondence to the overflow port of the water filter device.

4,660,394

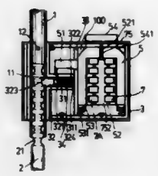
PUSH-BUTTON TYPE STEERING WHEEL LOCK

Jan Y. Wu, 572, Hai Tien Road, Sec. 2, Tainan City, Taiwan

Filed Feb. 22, 1985, Ser. No. 704,486

Int. Cl.[4] B60R *25/00*; **E05B** *37/22, 65/12*

U.S. Cl. 70—25 **4 Claims**



1. A push-button type steering wheel lock comprising

a lock case;

a lock panel covering one side of said lock case and having a plurality of openings therethrough;

a pair of J shaped lock stems, with one each extending from opposite ends of said lock case;

a slider having a portion extending through a seal from said lock case;

a plurality of card boards extending as pushkeys through said openings in said lock panel with identification ciphers on said pushkeys from which a code number can be produced by the permutation and combination of said ciphers; said pushkeys having individually shaped dents;

a keyway provided centrally in said slider with a plurality of projections, with notches between said projections, on both sides of said keyway;

said projections having one side extended as an L shaped detent symmetrically placed and interacting with said trapezoidal notches and aligned for free movement upon depression of said card boards in a predetermined code;

one of said lock stems having a tubular construction and the other of said lock stems of solid construction with notches therein;

a detent, spring biased to enter said notches in said lock stem through an opening in said tubular lock stem and allowing outstretching of said lock stems when compressing a spring of said spring biased detent whereupon the lock is brought to an opening condition;

said slider in a depressed condition against a spring bias,

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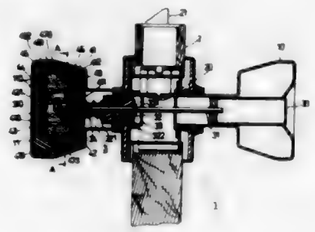
setting dents on both sides of said central keyway to a position with said card boards extending in said notches;
a reset lever having a prop connected to act with said card boards with said reset lever bringing said prop upwards until the prop causes said card boards to bear upon the projections on said slider preventing movement of said slider concurrent with an extended L shaped detent extending outwardly from said slider engaged in an annular groove of said spring biased detent extended into an annular notch on said J shaped lock stem of solid construction.

4,660,395

DOOR LOCK

Kang-Da Huang; Yin-Chiao Yang, both of No. 86, Chung Cheng S. Rd., Yung Kang Village, Tainan Hsien; Jung-Tang Huang, No. 39, Lane 33, Sec. 2, Chin Hua Rd., and Shen-Li Fu, 7F-5, No. 298, Sec. 2, Chung-Hua Rd., both of Tainan, all of Taiwan

Filed Jul. 9, 1986, Ser. No. 884,177
Int. Cl.[4] E05B *27/00*
U.S. Cl. 70—351 **7 Claims**



1. A door lock comprising:
a latch bolt assembly;
a first rotary knob connected to one side of said latch assembly and having a key-operated rotary lock body which includes a locking plate, said locking plate having an engaging opening;
a second rotary knob connected to an other, opposite side of said latch assembly;
an actuating member extending from said first rotary handle member to said second rotary handle member and having one end portion capable of extending through said engaging opening, said one end portion having a resilient engaging hook to engage with said engaging opening;
a clutch member connected to said latch bolt assembly and engaging releaseably with said actuating member;
a press key incorporated in said second rotary knob and connected to said actuating member, said press key, upon being depressed, disengaging said actuating member from said clutch member and causing said hook to be engaged with said engaging opening; and
a first spring means urging said actuating member to cause said actuating member to engage with said clutch member, whereby, when said lock body is operated by a key, said actuating member is released from said locking plate and then engages with the clutch member to actuate said latch bolt assembly.

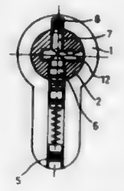
4,660,396

LOCK SYSTEM

Jose I. P. Garro, Escoriaza, Spain, assignor to Talleres de Escoriaza, S.A., Guipuzcoa, Spain

Filed Oct. 25, 1983, Ser. No. 545,084
Claims priority, application Spain, Oct. 25, 1982, 516806
Int. Cl.[4] E05B *27/06*
U.S. Cl. 70—358 **8 Claims**

1. A lock assembly for flat reversible keys comprising at least one key plug for a flat reversible key mounted for rotation in a lock cylinder, said key plug defining a key slot and a plurality of diametric passages extending through said key slot;
each of the key plug diametric passages having a first and second aligned radial passage;
a plurality of cylinder passages defined by said lock cylinder, said cylinder passages being aligned with said second radial passages, a plurality of holes having a closed end being defined by said cylinder, said holes being diametrically opposite the cylinder passages and being aligned with said first radial passages;
a first set of tumblers movably contained in said first key plug passages and having a cooperating spring means mounted in the cylinder holes, said first set of tumblers



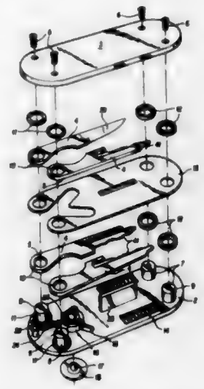
being sized to pass through the cylinder passages and said key plug passages;
a second set of tumblers movably located in said second key plug passages and said second key plug passages having stop means to prevent said tumblers from passing through said second key plug passages, cylinder passage spring means mounted in said cylinder passages and cooperating with said second tumblers, said cylinder passage spring means having a greater strength than the cylinder hole spring means and said first and second tumblers and their cooperating springs being sized such that the ends of the first and second tumblers will contact each other when the key slot is empty.

4,660,397

KEY HOLDER WITH KEY EJECTING MEANS

John V. Girimont, 6 Redstart Path, Hilton Head Island, S.C. 29928

Filed Oct. 24, 1985, Ser. No. 791,095
Int. Cl.[4] A44B *15/00*; A47G *29/10*
U.S. Cl. 70—456 R **17 Claims**



1. A key holder comprising a pair of spaced covers, a post located between and connected to said covers with said post being adapted to carry a pair of keys, an ejector assembly spaced from said post, movable means carried on an outer surface of one of said covers with said means being integrally

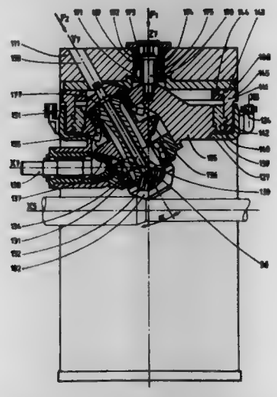
connected to said ejector assembly by a member extending through an elongated slot in said one cover, said ejector assembly comprising a pair of disc-like elements having different diameters and being concentrically stacked on said member, the keys being located between a side of said one cover and said ejector assembly when carried on the post and said slot being spaced from said post and being angled toward said side of the cover in a direction away from the post, whereby movement of said means will produce a corresponding movement of said discs with each disc thus engaging and pivoting an individual key about its post from a stored position within the holder to an ejected position so that an end of the key projects outwardly from the said side of the cover and whereby the larger disc will eject its key to a position farther from the holder than the smaller disc.

4,660,398

PROCESS FOR CONTROLLING A ROLLING MILL HAVING OBLIQUE ROLLS AND A ROLLING MILL FOR CARRYING OUT THIS PROCESS

Jean-Marc Jour, Auboye-Aymeries, and Pierre Peytavin, Neuilly/sur/Seine, both of France, assignors to Vallourec S.A., France

Filed Mar. 26, 1985, Ser. No. 716,345
Claims priority, application France, Mar. 28, 1984, 84 05424
Int. Cl.[4] B21B *31/16*
U.S. Cl. 72—100 **7 Claims**



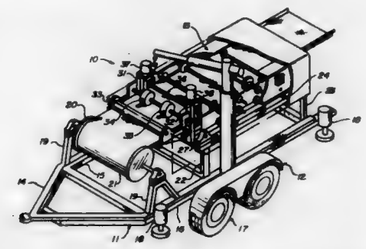
1. A rolling mill for generating metal rods or tubes by revolution to achieve a high rate of reduction in a single pass, the rolling mill comprising:
a frame surrounding the rolling axis of the article to be reduced;
a plurality of housing distributed regularly around the rolling axis, rotatably supported on the frame, each housing being mounted about a control axis of the housing, said control axis being perpendicular to and intersecting the rolling axis at a point common for all control axes, each housing having an annular zone with a screw thread;
a shaft rotatably mounted on each housing with shaft axis intersecting the corresponding control axis, the shaft axis defining a feed angle formed by its projection on the plane passing through the rolling axis perpendicular to the corresponding control axis;
an oblique roll attached to the end of each shaft, the control axis of the housing corresponding to each shaft intersecting the surface of the corresponding roll in the zone where said roll is in contact with the product being rolled;
a nut ring rotatably mounted on the frame, the nut ring having screw thread engaging the screw thread of the annular zone of the housing to effect movement of the housing along and/or around its control axis upon relative rotational movement of the housing and nut ring;
nut ring rotation means to rotate the nut ring about the housing;
housing pivot means to rotate the housing independently of the nut ring;
whereby the feed angle and the distance from the oblique roll to the rolling axis may be varied according to a predetermined relationship by utilization of the housing pivot means and the distance from the oblique roll to the rolling axis can be varied independently of the feed angle by movement of the nut ring.

4,660,399

MOBILE ROLL-FORMING MACHINE

Frank L. Suter, Rte. 1, Box 3, and Donald R. Showalter, Rte. 2, Box 340, both of Harrisonburg, Va. 22801

Filed Jun. 3, 1985, Ser. No. 740,883
Int. Cl.[4] B21D *5/14*
U.S. Cl. 72—181 **15 Claims**



1. A roll-forming machine for shaping metal, comprising:
a main frame having an inlet end and a discharge end and including a pair of side frame members extending longitudinally therebetween;
dereeler means supported on the inlet end of the main frame for supporting a roll of sheet metal on the main frame;
pivot means supported on said main frame near the dereeler;
infeed guide means attached to the pivot means for pivoting movement relative to the main frame about a pivot axis extending parallel to a plane of the main frame established by the side frame members and transverse to the longitudinal axis thereof, for receiving and guiding a sheet of metal supplied from the dereeler;
a detachable, pivoted head assembly for shaping metal supplied from the dereeler and having an inlet end and a discharge end and removably attached at its inlet end to the pivot means for pivoting movement about said pivot axis from a generally horizontal position parallel to and resting on the main frame to an elevated position with its discharge end spaced above the main frame for discharging shaped metal from the head assembly in a plane matching the angle of elevation of the head assembly, said head assembly and infeed guide means being connected for pivotal movement together, said head assembly discharge end located at said main frame discharge end, and there being only one head assembly mounted on said main frame through said pivot means;
a plurality of metal shaping roller couples carried as a unit by said head assembly and being spaced and configured to impart a predetermined configuration to a sheet of metal supplied thereto from the dereeler and infeed guide means;
drive means carried by said head assembly for feeding a sheet of metal through the head assembly to shape the metal;
power means carried by the main frame and connected through a quick-disconnect power take-off means with the drive means on the head assembly; and

quick-disconnect coupling means engaged between the inlet end of the head assembly and the pivot means for detaching the head assembly from the main frame and substituting a different head assembly therefor, said quick-disconnect coupling means and quick-disconnect power take-off means enabling different head assemblies to be quickly and easily substituted on the main frame without the necessity of aligning multiple drive means, metal shaping rollers and the like, whereby the roll-forming machine may be quickly and easily modified to impart selected different shapes to metal formed thereby.

4,660,400

PILGER MILL STAND

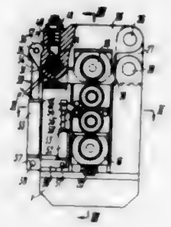
Ivan N. Potapov, Moscow; German D. Styrkin, Noginsk, Moskovskaya; Ivan P. Gremyakov, and Alexei D. Sheikh-Ali, both of Moscow, all of U.S.S.R., assignors to Moskovsky Institut Stali I Splavov, Moscow, U.S.S.R.

PCT No. PCT/SU83/00050, § 371 Date Jul. 15, 1985, § 102(e) Date Jul. 15, 1985, PCT Pub. No. WO85/02795, PCT Pub. Date Jul. 4, 1985

PCT Filed Dec. 21, 1983, Ser. No. 769,986

Int. Cl.⁴ B21B *21/00, 31/04, 31/14, 31/26*

U.S. Cl. 72—214 **2 Claims**



1. A pilger mill stand comprising a housing; carriers located pairwise on either side of an axis of rolling and oppositely to each other; vertical guides positioned in said housing; bearing chocks fitted onto said vertical guides; upper and lower work rolls supported in respective bearing chocks and disposed one above the other; upper and lower backup rolls supported in respective bearing chocks and said work rolls being disposed between said upper and lower back rolls; a cap positioned on aid housing and pivotally linked to said carriers; means for prestressing said stand pivotally linked to said carriers; and means of prestressing said work rolls separately interconnecting a first bearing chock of said upper work roll to a first bearing chock of said lower work roll and a second bearing chock of said upper work roll to a second bearing chock of said lower work roll.

4,660,401

APPARATUS FOR PRODUCING BEARINGS IN THE FORM OF PRESS WORKED BUSH

Masayuki Kohama, Moriyama; Tatsuro Wakabayashi, and Koichi Tsunoda, both of Shiga, all of Japan, assignors to Oiles Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 674,697, Nov. 26, 1984, abandoned. This application Apr. 7, 1986, Ser. No. 849,067

Claims priority, application Japan, Nov. 30, 1983, 58-226294

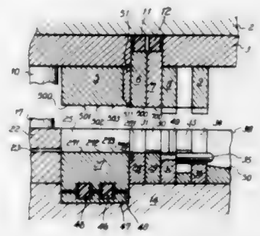
Int. Cl.⁴ B21D *53/10*

U.S. Cl. 72—331 **7 Claims**

1. A cutting die for producing a lot of blanks usable for bearings in the form of a press worked bush, the bush being formed by feeding a hoop strip along its longitudinal axis and into the cutting die, each of said blanks including four chamfered corner edges each of which is constituted by one half of a V-shaped notch and two flat end faces extending between the adjacent corner edges at a right angle relative to the outer surface of the blank essentially comprising:

an upper board,

an upper die section comprising an upper V-shaped notch forming die half having a lower surface with a plurality of projections having the triangular cross-sectional configuration formed on the lower surface thereon, said projections extending at a right angle relative to the direction of feeding of the hoop strip, an upper cutting tool having a side wall and attached to the upper notch forming die half, an upper depressing die half having an upper surface and disposed in slidable contact with the side wall of said upper cutting tool and spring means arranged between said upper board and the upper surface of said upper depressing die half, and



a lower die section comprising a lower V-shaped notch forming die half having a side wall and an upper surface, said V-shaped notch forming die half being provided with a plurality of projections having the triangular cross-sectional configuration formed on the upper surface thereof, said projections being located opposite to the projections on the upper die section, a supporting plate adapted to operatively support said lower V-shaped notch forming die half with spring means interposed therebetween and a lower depressing die half disposed in slidable contact with the side wall of said lower V-shaped notch forming die half to guide movement of the latter with a lower cutting tool fixedly secured thereto at the position located opposite to said upper cutting tool, said lower depressing die half being located opposite to said upper depressing die half and the lower end part of the lower depressing die half being fixedly secured to said supporting plate.

4,660,402

APPARATUS FOR ADJUSTING TOOL LENGTH OF BENDING MACHINE

Toshio Hoago, Ichikawa, Japan, assignor to Maru Kikai Kogyo Co., Ltd., Japan

Filed Dec. 26, 1985, Ser. No. 813,550

Claims priority, application Japan, Dec. 29, 1984, 59-281519

Int. Cl.⁴ B21D *5/02*

U.S. Cl. 72—389 **7 Claims**

1. An apparatus for adjusting the tool length of a bending machine comprising:

a support means,

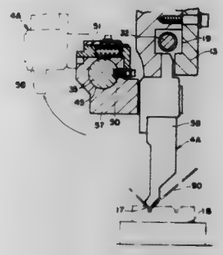
a ram mounted to said support means and having a lower end;

a top tool mounted on the lower end of said ram;

said top tool including a pair of central dies slidably mounted and longitudinally movably on the lower end of the ram and having a plurality of upper split dies located in an upper die row in spaced relation from alignment with said central dies, means mounting said upper split dies for selective positioning from said upper die row into alignment with said central dies, a plurality of thin upper dies located in said upper die row in spaced relation from alignment with said central dies and movable from said upper die row into alignment between said pair of central dies and being thinner than said upper split dies, and upper corner dies slidably mounted to said ram, said corner dies being located one each on the opposite ends of said central dies, a shaft mechanism secured to said ram and coupled to said central dies for sliding movement of said central dies along the lower portion of the ram;

a drive mechanism coupled to said upper corner dies for sliding the upper corner dies to longitudinally symmetrical positions to the opposite sides of said central dies;

shaft means pivotably mounted to the back of said central dies and upper corner dies;





a wedge means releasably securing a plurality of said upper split dies to the shaft means for pivoting by said shaft means and thereby selectively inserted between said central dies and upper corner dies;

a releasing means coupled to said wedge means for selectively releasing each of said upper split dies from said shaft means;

a means selectively coupling said thin upper dies to said shaft means for selecting the number of said thin upper dies secured to the shaft means and moved between said central dies.

4,660,403

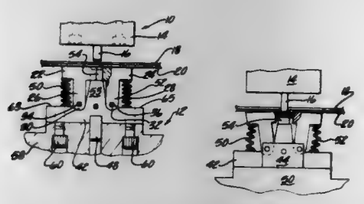
DIE ASSEMBLY

Arthur L. Slasinski, Harper Woods, Mich., assignor to Weldex, Inc., Warren, Mich.

Filed Dec. 19, 1985, Ser. No. 811,136

Int. Cl.⁴ B21D *5/01*

U.S. Cl. 72—389 **12 Claims**



1. A die assembly for use with a reciprocal punch for forming a stitch between two sheets of deformable material, said die assembly comprising:

an anvil body having a central anvil and a pair of arcuate depressions respectively on opposite sides of said central anvil; and

a pair of die portions having curved sections respectively and matingly received within said depressions, said die portions being pivotable between first and second positions upon reciprocal operation of said punch with said curved sections continually engaging said depressions between said first and second positions and transmitting force through said curved sections to said anvil body upon impact with said die portions by said punch; and

means for pivotally mounting said die portions on said anvil body for movement toward and away from each other.

4,660,404

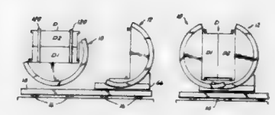
DIE MANIPULATOR

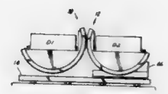
Clyde J. Rugh; John L. King, Jr.; Francis M. Tuttle, all of Owosso, and William E. Jones, Durand, all of Mich., assignors to MWA Company, Owosso, Mich.

Continuation-in-part of Ser. No. 763,540, Aug. 8, 1985, which is a continuation-in-part of Ser. No. 725,934, Apr. 22, 1985. This application Oct. 2, 1985, Ser. No. 783,078

Int. Cl.⁴ B21J *13/12*

U.S. Cl. 72—446 **12 Claims**





1. Manipulator apparatus for manipulating the upper and lower dies of a die set capable of being releasably secured together, comprising first and second fixtures, a first support supporting said first fixture, a second support supporting said second fixture, means mounting said first and second supports in laterally spaced relation for movement toward and away from each other, said first fixture having means providing a die-supporting surface and being in the form of a cradle rockably mounted on said first support for movement from a loading position to a transfer position, said second fixture having means providing a die-supporting surface, clamping means on said first fixture for clamping the lower die of the die set to the die-supporting surface of said first fixture when the upper and lower dies are secured together and said first fixture is in its loading position, said manipulator apparatus having power means for rocking said first fixture to its transfer position, said manipulator apparatus having second power means for relatively moving said supports toward one another when said first fixture is in its transfer position to correspondingly relatively move said fixtures toward one another for transfer of the upper die to the die-supporting surface of said second fixture, means on said second fixture for clamping the upper die to the die-supporting surface of said second fixture, said second power means being operative, when said dies are released from one another, to relatively move said supports away from each other to correspondingly relatively move said fixtures away

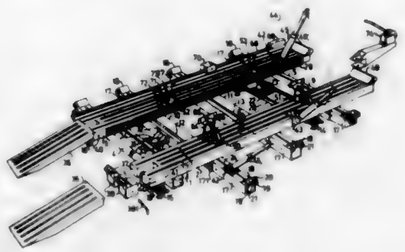
from each other to separate said dies so that said dies may be inspected and/or cleaned.

4,660,405

WORK RACK STRUCTURE

Tage K. Widegren, and Tommy T. Ericsson, both of Eskilstuna, Sweden, assignors to Nicator AB, Eskilstuna, Sweden

Filed Jul. 2, 1985, Ser. No. 751,224
Int. Cl.[4] B21D *1/12*
U.S. Cl. 72—447 **12 Claims**



1. A work rack structure for correcting and aligning misshapen vehicle frame and body portions, having a modular structure comprising several parts joinable to and detachable from each other in a variety of combinations, comprising:

a main rack structure frame part comprising a pair of parallel tread members connected to each other by means of at least two hollow cross bars underlying said tread members,

a carriage carrying lifting means disposed between said tread members and movable along and between said tread members and above said cross bars, wherein each bar and tread member in said rack structure frame part has at least one elongated through-hole extending along substantially the whole of the element for passage of bolted joints to fasten the parts included in the modular system at a desired location along the element, chassis clamps attachable to said frame part for rigidly connecting a vehicle to said frame part, and

support bars for pulling equipment connected to each of asid cross bars and telescopically slidable therein between a retracted storage position and an extended operative position.

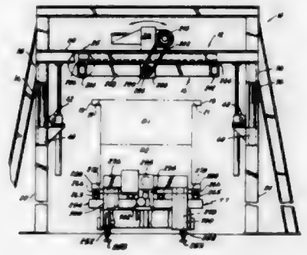
4,660,406

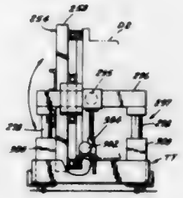
DIE MANIPULATOR

Clyde J. Rugh; John L. King, Jr.; Francis M. Tuttle, all of Owosso, and William E. Jones, Durand, all of Mich., assignors to MWA Company, Owosso, Mich.

Continuation-in-part of Ser. No. 725,934, Apr. 22, 1985. This application Aug. 8, 1985, Ser. No. 763,540
Int. Cl.[4] B21J *13/12*
U.S. Cl. 72—448 **17 Claims**

1. Apparatus for manipulating the upper and lower dies of a die set for maintenance procedures, comprising means providing a work-transfer station, a main frame adjacent said work-transfer station, a fixture, means mounting said fixture on said main frame for up and down movement away from and toward said work-transfer station, a sub-frame, means mounting said sub-frame on said fixture for rotation about a horizontal axis, clamping means on said sub-frame to clamp the upper die of a die set at said work-transfer station when said fixture is in a lower position, means for raising said fixture to pick up and elevate said upper die to an upper position and for rotating said sub-frame to turn said upper die, a cart for supporting and advancing the die set to said work-transfer station for pick up of the upper die and for withdrawal of the lower die after pick up of the upper die, and means for lowering said fixture back to said lower position to return said upper die to said work-transfer station in turned position, said sub-frame having a pair of laterally spaced frame members, said clamping means comprising a plurality of clamp bars extending between said frame





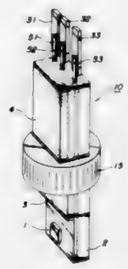
members and connected thereto for sliding movement lengthwise thereof, means for securing said clamp bars to said frame members in adjusted positions along the length thereof, and clamping elements on said clamp bars for engaging and clamping the upper die.

4,660,407

GAS SENSOR

Akio Takami; Toshitaka Matsuura; Akira Nakano, and Yoshiaki Kuroki, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Aug. 5, 1985, Ser. No. 762,385
Int. Cl.[4] G01N *27/12*
U.S. Cl. 73—23 **2 Claims**



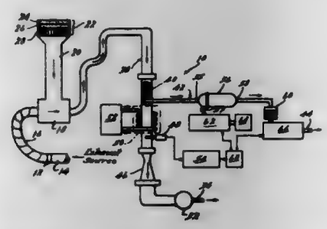
1. A gas sensor comprising a ceramic substrate, a first ceramic layer formed on the ceramic substrate, with a setback from one edge of the ceramic substrate, a second ceramic layer formed on the first ceramic layer with a setback from the setback portion of the first ceramic layer so as to form a staircase-like edge structure at said one edge of the substrate, and a gas-sensitive layer formed on the staircase-like portion of the substrate, height of said gas-sensitive layer above said substrate being smaller than thickness of said first ceramic layer.

4,660,408

PROPORTIONAL EXHAUST SAMPLER SYSTEM AND CONTROL MEANS

Gary W. Lewis, Fountain Valley, Calif., assignor to Horiba Instruments Incorporated, Irvine, Calif.

Division of Ser. No. 591,203, Mar. 19, 1984, Pat. No. 4,586,367. This application Oct. 24, 1985, Ser. No. 790,852
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—28 **4 Claims**



1. An apparatus for measuring the particulate content of a source for use in a system having sampling means for providing a particulate containing sample comprising:

a valve having an inlet for coupling to a pressurized source of substantially dry dilution air and having an outlet communicating with said sampling means for adding said dilution air to said sample;

a mass flow meter operably coupled between said outlet and said sampling means for producing a flow signal in response to the mass flow of said dilution air; and

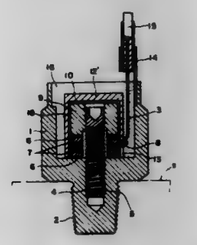
control means coupled to said valve and said mass flow meter for operating said valve in response to said flow signal to add a metered quantity of dilution air to said sample.

4,660,409

PIEZOELECTRIC PICK-UP DEVICE FOR INTERNAL COMBUSTION ENGINE

Hiroshi Miyata, and Shogo Kawajiri, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Japan

Filed Dec. 18, 1984, Ser. No. 682,788
Int. Cl.[4] G01L *23/22*
U.S. Cl. 73—35 **5 Claims**



1. A piezoelectric pick-up device for an internal combustion engine comprising:

a metal housing having a threaded bottom projection;

threaded metal mounting rod means projecting from the inner bottom surface of said metal housing into the interior thereof;

a piezoelectric element disposed in said housing interior and fitted on said mounting rod means, said piezoelectric element being electrically coupled to said metal housing;

weight means disposed in said housing interior and threaded on said mounting rod means over said piezoelectric element;

cap-like cover means fittedly covering said weight means; and

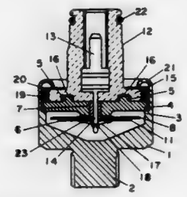
molding material disposed within the housing interior, between the walls of said housing interior and said cover means, whereby said cover means isolates said piezoelectric element and threaded weight means from the effects of distortion of said molding material.

4,660,410

KNOCK SENSOR

Shogo Asano, and Juhei Takahashi, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 25, 1984, Ser. No. 664,867
Claims priority, application Japan, Oct. 25, 1983, 58-165057[U]; Oct. 26, 1983, 58-165643[U]
Int. Cl.[4] G01L *23/22*
U.S. Cl. 73—35 **11 Claims**



1. A knock sensor comprising:

a substrate having a projection at the center of one surface thereof and a bore at the center thereof;

a vibrating plate having a bore at the center thereof and having a plate rigidifying projection means at the center portion of one surface thereof, said central portion being welded to said projection on said substrate;

a piezoelectric ceramic element having a bore in the center thereof and electrodes on opposite faces thereof and secured to the other surface of said vibrating plate; and

a terminal having a lead projection extending through said bore in said substrate, said bore in said vibrating plate and said bore in said piezoelectric ceramic element and connected to the electrode on the face of said piezoelectric ceramic element which faces away from said vibrating plate.

4,660,411

APPARATUS FOR MEASURING TRANSMISSION OF VOLATILE SUBSTANCES THROUGH FILMS

Philip L. Reid, Rte. 2, Box 422, Duncan, S.C. 29334

Filed May 31, 1985, Ser. No. 740,187
Int. Cl.[4] G01N *15/08*
U.S. Cl. 73—38 **1 Claim**

1. An apparatus for measuring gas transmission through membrane samples located at sample sites comprising:

a lower staging section,

said lower staging section defining a plurality of sample sites;

each sample site having perimeter defining means for hermetically sealing said sample within said sample site;

said perimeter defining means together with one surface of a sample defining a first gas containment volume;

said lower staging section defining conduit means in communication with each said first gas containment volume for providing a flow of gas into and out of said first gas containment volume;

means communicating with said conduit means for interrupting said flow of gas into and out of each said first containment volume so as to provide stagnation of gas within each said first gas containment volume when said means for interrupting is actuated;

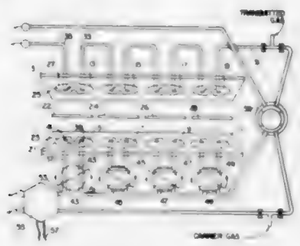
each said means for interrupting communicating with a source of gas for introduction into each of said first gas containment volume and having an exit port which receives gas from said gas containment volume when not interrupted;

detection means in communication with said exit port;

said lower staging section defining upwardly projecting alignment pins;

a removable upper staging section defining a plurality of sample sites for alignment with the sample sites of said lower staging section;

said sample sites of said upper staging section including means for placement of a volatile solid or liquid substance within said sample site;



said upper staging section having a plurality of perimeter defining means at each sample site for hermetically sealing a sample at said sample site;

said perimeter defining means of said upper staging section together with the other surface of a sample defining a second gas containment volume whereby a sample is contained at each sample site between the perimeter defining means of said lower staging section and the perimeter defining means of said upper staging section;

said upper staging section defining conduit means communicating with said second gas containment volume for providing a flow of gas therethrough;

said upper removable staging section defining alignment pin receipt means for positioning said upper removable staging section upon said lower staging section; and

wherein said alignment pins define means for communicating with said conduit means of said upper removable staging section whereby a gas flow path is established through said alignment pins of said lower staging section into the conduit means of said upper staging section and from said conduit means into another alignment pin of said lower staging section.

4,660,412

THREE FLUID METHOD FOR NON-MERCURY INTRUSION POROSIMETRY

Krishna Gupta, Ithaca, N.Y., assignor to Porous Materials Inc., Ithaca, N.Y.

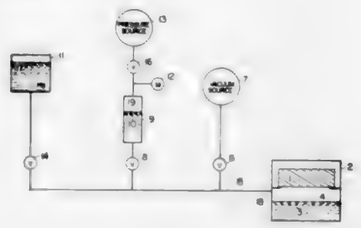
Filed Dec. 16, 1985, Ser. No. 809,117
Int. Cl.[4] G01N *15/08*
U.S. Cl. 73—38 **13 Claims**

1. The method of evaluating the porosity characteristics of a sample of material with respect to an intrusion liquid other than mercury, using a porosimeter of the type having a sealable sample-holding chamber; a reservoir of an intermediate pressurization liquid; means for measuring the quantity of intermediate pressurization liquid in the reservoir; a source of pressurizing fluid connected to the reservoir of intermediate pressurization liquid, whereby the reservoir may be pressurized by introduction of the pressurization fluid under pressure; means for measuring the pressure; means for evacuating the sample-holding chamber; and means for connecting the intermediate pressurization liquid reservoir to the sample chamber, whereby intermediate pressurization liquid under pressure may be introduced into the sample chamber; the improved method comprising the steps of:

a. putting a volume of the intrusion liquid having a specific gravity lower than the specific gravity of the intermediate pressurizing liquid at least equal to the expected pore volume of the sample in a sealable sample chamber;

b. placing the sample to be tested in the sample chamber above the intrusion liquid;

c. sealing the sample chamber;



d. evacuating the sample chamber;

e. introducing intermediate pressurization liquid into the sample chamber from the reservoir whereby the volume of the chamber is completely filled with the sample, intrusion liquid, and intermediate pressurization liquid;

f. introducing pressurizing fluid into the reservoir in an incremental and progressive manner, pressurizing the intermediate pressurization liquid in the reservoir, forcing additional intermediate pressurization liquid into the sample chamber under pressure, whereby the intrusion liquid is forced into pores of the sample;

g. measuring the quantity of intermediate pressurization liquid in the reservoir at each pressure, whereby the amount of intermediate pressurization liquid entering the sample chamber, and therefore the amount of intrusion liquid entering the pores of the sample, may be determined at each pressure applied.

4,660,413

APPARATUS AND METHOD FOR DETERMINING FLUID VISCOSITY AND DENSITY

Stanley C. Jones, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jun. 10, 1986, Ser. No. 872,739
Int. Cl.[4] G01N *11/00*
U.S. Cl. 73—54 **22 Claims**

1. An apparatus for measuring the viscosity and density of a fluid comprising:

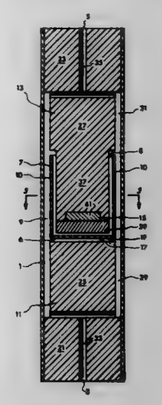
a vertically aligned tube having a substantially uniform inside diameter;

a suspendable cup, having a substantially flat closed bottom of a given thickness, a side wall defining an outside diameter less than the inside diameter of said tube, and an open top, said cup positioned within said tube to form an annular flow channel between said side wall and tube;

stationary upper and lower plugs positioned in said tube above and below the flat bottom of said cup to restrict vertical movement of said cup, said plugs spaced a distance apart greater than the thickness of said cup bottom to form a space in fluid communication with said annular flow channel;

a releasable weight affixable to said upper plug and able to fit within said cup;

fluid passageways across said upper and lower plugs in fluid communication with said annular flow channel to enable a continuous flow of the fluid through said tube; and



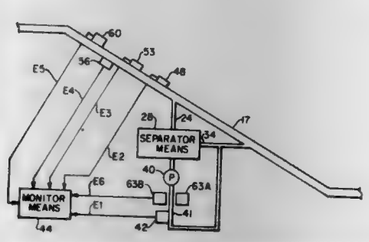
a pumping means for circulating the fluid through said tube at a given flow rate via said annular flow channels and fluid passageways.

4,660,414

PETROLEUM STREAM MONITORING MEANS AND METHOD

Gregory J. Hatton; David A. Helms, and Thomas M. Williams, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 12, 1985, Ser. No. 775,073
Int. Cl.[4] G01N *33/28*
U.S. Cl. 73—61.1 R **18 Claims**



1. Apparatus for monitoring a petroleum stream comprising:

means for stratifying the petroleum stream into substantially liquid and gas streams,

first means for sensing the parameters of the stratified petroleum stream and providing signals representative of the sensed parameters,

means for sampling the liquid stream of the stratified petroleum stream to provide a sample stream,

second means for sensing parameters of the sample stream and providing signals in accordance with the sensed parameters, and

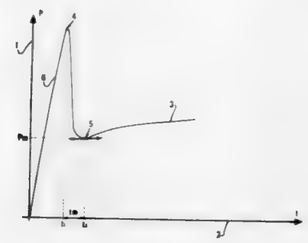
monitor means for providing signals representative of the water fraction, the gas fraction and the oil fraction of the petroleum stream in accordance with the signals from all the parameter sensing means.

4,660,415

METHOD FOR DETERMINING AT LEAST ONE MAGNITUDE CHARACTERISTIC OF A GEOLOGICAL FORMATION

Maurice Bouteca, Paris, France, assignor to Institut Francais du Petrole, Cedex, France

Filed Jul. 1, 1985, Ser. No. 750,785
Claims priority, application France, Jun. 29, 1984, 84 10305
Int. Cl.[4] E21B *47/00*; G01L *1/00*
U.S. Cl. 73—155 **2 Claims**



1. A method for determining at least one magnitude characteristic of a geological formation in a zone of the formation subjected to a fracturing operation chosen from a so-called characteristic set, formed of the following characteristic magnitudes, knowing at least one of these characteristic magnitudes, the stress intensity factor of the formation, the minimum in situ principle stress and the fracture height designated respectively by K_{1C}, σ_3 and H_F, the fracture height depending furthermore on operating conditions of the fracturing operation, wherein during said fracturing operation there is determined one at least of two magnitudes which are the minimum pressure P_m reached substantially in said zone and the volume V_m of fluid introduced into the fracture from the moment when the fracture begins up to the moment when said minimum pressure is reached and wherein there is determined said desired characteristic magnitude from at least one of the two following relationships:

$$\frac{H_F}{2} = \left(\frac{3V_m E}{8\sqrt{\pi}\,(1-\eta^2)K_{1C}} \right)^{\frac{2}{3}}$$

$$\sigma_3 = P_m - K_{1C}\left(\frac{\pi}{2H_F}\right)^{\frac{1}{2}}$$

in which P_m is said minimum pressure, V_m is said volume of fluid introduced into the fracture E and n being characteristics of the rock respectively Young's modulus and Poisson's coefficient, K_{1C}, σ_3 and H_F being the three characteristic magnitudes of said characteristic set.

4,660,416

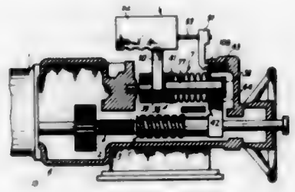
MOTOR OPERATED VALVE ANALYSIS AND TESTING SYSTEM WITH MONITORING OF SPRING PACK MOVEMENT THROUGH SIDE BY SIDE MONITORING DEVICE

Arthur G. Charbonneau; John A. McMennamy, both of Marietta, and Steven Nafziger, Chamblee, all of Ga., assignors to Charbonneau and Godfrey Associates, Marietta, Ga.

Continuation-in-part of Ser. No. 741,861, Jun. 6, 1985, which is a continuation of Ser. No. 515,358, Jul. 19, 1983, Pat. No. 4,542,649. This application Jan. 13, 1986, Ser. No. 818,331
Int. Cl.[4] G01M *19/00*; G01P *13/00*
U.S. Cl. 73—168 **3 Claims**

1. A spring pack movement monitoring device for monitor-

ing the movement of the spring pack found within a valve operator, wherein the valve operator includes a driven worm shaft, which in turn drives a worm, which in turn drives a worm gear, which in turn drives a valve stem to open and close a valve attached to the valve stem, a spring pack mounted in parallel with the worm shaft for compression in response to movement of the worm, and wherein the valve operator further includes a thrust shaft extending axially through the spring pack with the axial centerline of the thrust shaft lying approximately parallel to the worm shaft, the thrust shaft comprising a forward end and a rear end, a first thrust washer positioned along the thrust shaft to the rear end of the thrust shaft behind the spring pack, a second thrust washer positioned along the thrust shaft to the forward end of the thrust shaft in front of the spring pack, blocking means associated with the thrust shaft and the first and second thrust washers for selectively blocking rearward movement of the first thrust washer and blocking forward movement of the second thrust washer, a linking collar for communicating between the worm and the thrust shaft and second thrust washer to effect forward movement of the thrust shaft in response to a forward movement of the worm and to effect rearward movement of the second thrust washer in response to rearward movement of the worm, whereby forward movement of the thrust shaft causes forward movement of the first washer to compress the spring pack



against the second washer and whereby rearward movement of the second thrust washer compresses the spring pack against the first washer; said spring pack movement monitoring device comprising:

movement sensing means for sensing movement between first and second reference elements movable realtive to one another;

first stylus member in communication with both said first reference element of said movement sensing means and the first thrust washer of the valve operator, said first stylus member being movable in response to movement of said first thrust washer to effect a movement of said first reference element relative to said second reference element of said movement sensing means;

a second stylus member in communication with both said second refrence element of said movement sensing means and the second thrust washer of the valve operator, said second stylus member being moveable in response to movement of said second thrust washer to effect a movement of said second reference element relative to said first reference element of said movement sensing means;

means for detecting the relative movement between said first reference element and said second reference element of said movement sensing means;

means for recording the detected movement between said first and second reference elements.

4,660,417

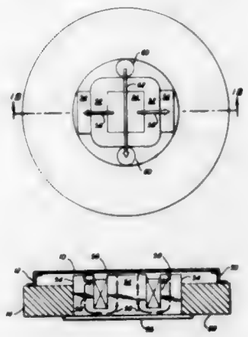
IMPULSE JET PUMP

E. Marston Moffatt, Glastonbury, and Richard E. Swarts, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 22, 1984, Ser. No. 663,518

Int. Cl.[4] G01P *3/28;* **F04B** *43/04*

U.S. Cl. 73—505 **9 Claims**



1. An impulse jet pump driven by a time-varying excitation voltage for use in an angular velocity sensor, comprising:

a metal anvil having a cavity;

a metal diaphragm mounted over said cavity;

a magnetic steel laminated core mounted in said anvil's cavity and having drive poles for providing a low reluctance path for magnetic drive flux in a magnetic drive circuit including said core, said diaphragm, and a gap between said core and said diaphragm;

a drive coil wound on said laminated core responsive to the excitation voltage for providing said drive flux;

a magnetic circuit including sensing poles, means for providing sensing flux, said diaphragm, and a gap between said sensing poles and said diaphragm, for providing a low reluctance path for magnetic sensing flux induced in said magnetic circuit by said means for providing sensing flux, said low reluctance path being disposed at right angles to said low reluctance path for magnetic drive flux; and

a sensing coil wound on said sensing poles, for having a sensing signal induced therein in response to said sensing flux.

4,660,418

FLEXIBLE HINGE DEVICE

John C. Greenwood, Harlow, and David Wilson, Bishops Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 17, 1984, Ser. No. 651,553

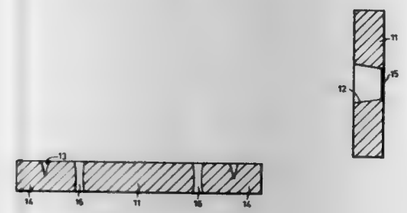
Claims priority, application United Kingdom, Sep. 17, 1983, 8324955

Int. Cl.[4] G01P *15/02*

U.S. Cl. 73—514 **1 Claim**

1. A unitary flexible hinge device comprising a laminar body of single crystal silicon having a hinge groove etched therein extending in an uninterrupted straight line manner across said body between a pair of opposite edges thereof, dividing said body into two rigid body portions on opposite sides of said hinge groove, said hinge groove having a depth forming a substantially thin flat hinge groove bottom connecting said two rigid body portions, said hinge groove bottom being flexible along the entire length of said groove, said body includes two additional grooves each extending transverse to said hinge groove in an interrupted straight line manner across a respective one of said pair of body portions between a second pair of opposite edges thereof forming a pair of support portions each

extending across said hinge groove rigidly connecting said two body portions together, each said support portion being re-



movable from said body portions at said two additional grooves.

4,660,419

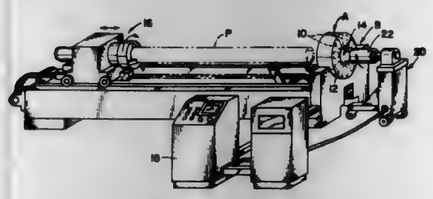
REFERENCE STANDARD FOR CALIBRATION OF ULTRASONIC ARRAYS

Thomas Derkacs, Mayfield Village, and John Touhalisky, Eastlake, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Oct. 3, 1983, Ser. No. 538,393

Int. Cl.[4] G01N *29/04*

U.S. Cl. 73—622 **13 Claims**



1. A method of calibrating individual ultrasonic transducers in an array of ultrasonic transducers, the method comprising:

(a) positioning the transducer array and a calibration structure adjacent each other, said calibration structure having a plurality of different depth calibration wells at a predetermined locations thereon;

(b) from a computer memory, retrieving a first spatial relationship indicative of a spatial relationship between one of the calibration wells and a first transducer of the array;

(c) bringing the one calibration well and the first transducer to the retrieved spatial relationship;

(d) pulsing the first transducer and converting ultrasonic echoes which are received into an echo signal;

(e) adjusting the spatial relationship between the calibration characteristic and the first transducer until a preselected component of the echo signal meets a preselected condition;

(f) in the computer memory, recording the spatial relationship at which the echo signal component meets the preselected condition;

(g) adjusting gain and distance amplitude corrections to the echo signal;

(h) cyclically repeating steps (b) through (g) for each of a plurality of the calibration wells, at least once for each transducer in the array and readjusting the gain and distance amplitude corrections each time, whereby the gain and distance amplitude corrections are calibrated toward optimal values with each cyclic positioning of one of the calibration wells in the preselected spatial relationship with each transducer.

4,660,420

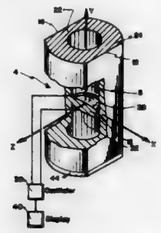
AT-CUT CRYSTAL RESONATOR PRESSURE TRANSDUCER

Errol P. Eer Nisse, Salt Lake City, Utah, assignor to Quartztronics, Inc.

Continuation-in-part of Ser. No. 555,822, Nov. 28, 1983, Pat. No. 4,550,610. This application Jul. 22, 1985, Ser. No. 757,262

Int. Cl.[4] G01L *9/08;* **H01V** *7/00*

U.S. Cl. 73—702 **4 Claims**



1. A resonator pressure transducer comprising:

a generally disc-shaped resonator section made of AT-cut crystalline quartz;

a housing surrounding the resonator section and joined to the perimeter thereof, said housing having sidewalls which extend generally normal to the plane of the resonator section, with two diametrically opposite portions of the sidewalls being thinner than the remaining portions of the sidewalls so that when the housing is immersed in a fluid, a non-uniform stress is produced in the resonator section;

means for causing said resonator section to vibrate, with the frequency of vibration varying with variation in pressure applied to the housing sidewalls; and

wherein the diametric alignment of the thinner wall portions lies at an angle of about −30 to +30 degrees from the crystallographic axis X os the quartz.

4,660,421

APPARATUS FOR MASS FLOW RATE AND DENSITY MEASUREMENT

Erik B. Dahlin; Sidney V. Kaiser, both of San Jose; Alan M. Young, Los Gatos, and Andrew K. Levien, Menlo Park, all of Calif., assignors to Exac Corporation, Campbell, Calif.

Continuation-in-part of Ser. No. 629,689, Jul. 11, 1984, abandoned. This application Sep. 13, 1985, Ser. No. 777,707

Int. Cl.[4] G01F *1/84*

U.S. Cl. 73—861.38 **19 Claims**

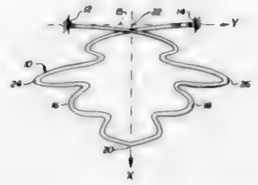
1. A flow meter for measuring the mass flow rate in a stream of flowing material, comprising:

tubular conduit means arranged to form at least one elongated loop having an elongated entrance portion, an elongated exit portion crossing said entrance portion in spaced apart generally parallel relationship, an actuated portion, a first detection portion coupling said entrance portion and said actuated portion, and a second detection portion coupling said actuated portion and said exit portion, said loop having a dimension L in the direction generally parallel to the direction of flow entering and exiting said conduit means and a loop dimension H transverse thereto such that the ratio L/H is greater than unity, said conduit

means being adapted to receive, conduit and then emit said stream of flowing material;

actuating means for causing said actuated portion to oscillate between positions on opposite sides of a rest position;

detection means for detecting motive differences occurring between said entrance portion and said exit portion caused



by Coriolis forces induced in said first detection portion and said second detection portion as said actuating means causes said actuated portion to oscillate; and

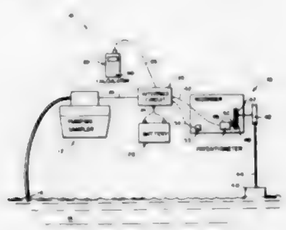
computing and indicator means responsive to said detection means and operative to indicate the mass flow rate of material flowing through said tubular conduit means.

4,660,422

MEANS AND METHOD OF SAMPLING FLOW RELATED VARIABLES FROM A WATERWAY IN AN ACCURATE MANNER USING A PROGRAMMABLE CALCULATOR

Rand E. Eads, Eureka; Mark R. Boolootian, Arcata, both of Calif., and Steven C. Hankin, Seattle, Wash., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 3, 1986, Ser. No. 825,109
Int. Cl.[4] G01N *1/44*
U.S. Cl. 73—863.02 **12 Claims**



1. A method of controlling the sampling of flow related variables from a waterway which has various stages including steps of:

obtaining a sample from the waterway with a pumping sampler;

sensing the stage of the waterway with a water stage sensor;

providing a programmable calculator;

providing an interface circuit board to electronically connect said programmable calculator to said pumping sampler and to said water stage sensor; and

using a SALT scheme to automatically control when a sample is taken from the waterway.

4,660,423

WATER SAMPLING APPARATUS

John M. Armstrong, 2480 Gale Rd., and Michael E. Ettenhofer, 3737 Northfield Church Rd., both of Ann Arbor, Mich.

Filed Apr. 18, 1986, Ser. No. 853,582
Int. Cl.[4] G01N *1/14*
U.S. Cl. 73—864.52 **4 Claims**

1. Water sampling apparatus comprising a carrier adapted to be lowered into water to be sampled, said carrier being hollow and having an internal load carrying cavity, an isolation vial positioned in said carrier and having a lower end closed by a septum and filled with distilled water, a sample collection vial in said isolation vial having a septum aligned with said septum on said isolation vial, and hollow needle means piercing said



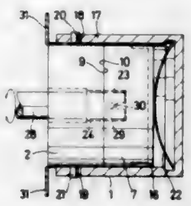
septum on said isolation vial and operable to pierce said septum on said sample vial, said needle means being movable in response to a force generated by said carrier to pierce said septum on said sample vial, said needle means communicating said sample vial with said water to be sampled.

4,660,424

METERING VALVE

Christer Permér, Huddinge, Sweden, assignor to Lars Ljungberg, Lab Trade AB, Stockholm, Sweden

Filed Nov. 1, 1985, Ser. No. 793,766
Claims priority, application Sweden, Nov. 6, 1984, 8405561
Int. Cl.[4] G01N *1/00*
U.S. Cl. 73—864.83 **9 Claims**



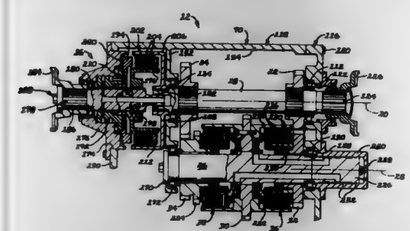
1. A metering valve for extracting a given volume of fluid from a first fluid flow and introducing the thus extracted fluid volume to a second fluid flow, comprising a stationary valve component provided with a first and a second supply channel and a first and a second discharge channel, and a metering component which is capable of being rotated in relation to the stationary component and which incorporates a metering channel of said given volume, and in which valve the valve component (2) has a planar surface (9) in which said supply channels (3,5) and said discharge channels (4,6) open out, and in which the metering component (7) incorporates a planar surface (10) which lies against the planar surface (9) of the valve component (2) and into which the two ends (11,12) of the metering channel (8) open out, said ends (11,12) being so located that in a first position of rotation of the metering component (7) relative to the valve component (2) said ends of the metering channel (8) connect the first supply channel (3) with the first discharge channel (4) of the valve component (2), and in a second position of rotation connect said second channels (5,6) of the valve component (2); said metering component and said valve component both having cylindrical bodies which are coextensive in assembly and have a common axis, and means are provided for rotating said metering component about said axis relative to said valve component; both said planar surfaces being normal to the common axis; means for removably maintaining said metering component and said valve component in coextensive assembly with said two planar surfaces in juxtaposition comprising: a sleeve with a first end and a second end and an internal surface having coextensive cylindrical portions, having a common axis, adapted to fit over both said coextensive cylindrical valve component and metering component, coupling means on said valve component and said first end of said sleeve enabling a quick disconnect coupling engagement between said sleeve and said valve component for releasably maintaining said sleeve in fixed axial relationship to said valve component, and biasing means provided within and abutting a portion of said second end of said sleeve and in engagement with and providing a bias force on said metering component maintaining said two components in assembly when said sleeve is coupled to said valve component.

4,660,425

COUNTERSHAFT TRANSMISSION AUXILIARY DRIVE MECHANISM

Karl A. Nerstad, Peoria, and Willis E. Windish, Pekin, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 660,353, Oct. 12, 1986, Pat. No. 4,614,133.
This application Jun. 2, 1986, Ser. No. 869,491
Int. Cl.[4] F16H *37/00*
U.S. Cl. 74—15.86 **4 Claims**



1. A countershaft transmission auxiliary drive mechanism comprising:

a countershaft transmission including a first shaft having a first gear affixed thereto, a second shaft having a second gear freely rotatably thereon and engaging the first gear, clutch assembly means for selectively connecting the second gear to the second shaft for conjoint rotation, a third gear affixed to the first shaft, a fourth gear freely rotatably mounted on the second shaft and engaging the third gear, and an idler gear engaging the fourth gear;

a pump drive shaft having opposite ends and being laterally offset from the first and second shafts;

first and second pumps connected to the opposite ends of the pump drive shaft;

drive means for rotating the pump drive shaft in response to rotation of the second gear;

a third pump; and

means for driving the third pump in response to rotation of the idler gear.

4,660,426

PUMPING UNIT FOR ACTUATING A DOWN HOLE PUMP WITH STATIC AND DYNAMIC COUNTERWEIGHTS

Bobbie L. Mosley, Gillette, Wyo., assignor to Infinity Pumping Systems, Riverton, Wyo.

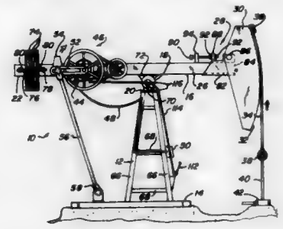
Filed May 20, 1985, Ser. No. 736,179
Int. Cl.[4] F04B *47/02*
U.S. Cl. 74—41 **16 Claims**

1. A pumping unit for actuating a down hole pump including a walking beam and a post pivotally connected to the walking beam, a base rigidly connected to said post, comprising in combination:

a prime mover fixedly connected to one of said post or said walking beam;

a first static counterweight fixedly connected to said walking beam near one end thereof;

a connection means for connecting pump rods to another end of said walking beam, said pump rods operatively connected to said down hole pump; and



a second dynamic counterweight rotatably connected to said walking beam for unidirectional rotational movement about an axis intermediate said first counterweight and the pivotal connection to said walking beam, said second counterweight rotatably driven in the unidirectional rotation and at a predetermined rate by said prime mover and said second counterweight operably connected to said base for reciprocating said walking beam about said pivotal connection.

4,660,427

CONTINUOUSLY VARIABLE TRANSMISSION

John W. Fenton, 26 Shoreland Dr., Key Largo, Fla. 33037

Filed Oct. 15, 1984, Ser. No. 661,135
Int. Cl.[4] F16H *21/12, 1/28*
U.S. Cl. 74—63 **17 Claims**



1. A continuously variable transmission, comprising: a case;

a driven ring mounted on the case for rotation about a driven ring axis coinciding with the circular axis of the driven ring;

a spoke shaft mounted on the case to pass through a central portion of the driven ring:

a plurality of spokes pivotally mounted on the spoke shaft and extending radially therefrom for circular movement about the spoke shaft, wherein the spoke shaft is positioned with respect to the driven ring axis such that the radially extensive end of each spoke will engage the driven ring at such times that the spoke extends in a selected direction from the spoke shaft;

a driving ring supported in the case to extend about the spoke shaft, the driving ring having a plurality of equally spaced apertures formed radially therethrough for passage of the spokes through the driving ring;

a driving ring support whereon the driving ring is rotatably supported for rotational movement about the spoke shaft, wherein the driving ring support is slidably mounted on the case for movement thereon along a line paralleling said selected direction from the spoke shaft;

an input shaft mounted on the driving ring support and

mechanically coupled to the driving ring for rotating the driving ring about the spoke shaft on the driving ring support; and

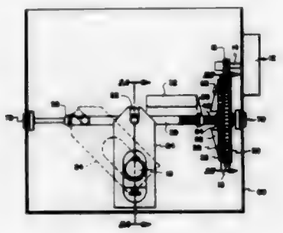
an output shaft mounted on the case and mechanically coupled to the driven ring for rotation of the output shaft by the driven ring.

4,660,428

DRIVE TRAIN SYSTEM

Peter Payne, Wheeling, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 13, 1986, Ser. No. 861,967
Int. Cl.⁴ F16H *21/54*
U.S. Cl. 74—104 **20 Claims**



1. A drive train system for rotating an axle connectable to the system, the axle being provided as part of a system external to the drive train system, the axle being rotatable in the external system about an axis which is located at a fixed distance from and which is perpendicular to a drive screw in the drive train system, the drive train system comprising:

a driven shaft comprising a drive screw rotatable about a fixed axis;

a drive nut on the drive screw, the drive nut moving along the length of the drive screw as the drive screw is rotated;

a crank arm having a first member and a second member slideably interconnected so that the first and second members slide longitudinally with respect to each other, the first member being connected to the drive nut so that the crank arm can pivot about the drive nut, the second member comprising means for connecting the second member to the axle so that, as the drive nut moves along the drive screw, the axle connected to the second member is rotated, the first member of the crank arm sliding along the second member of the crank arm as the drive nut moves and the axle turns;

a wheel-shaped driven member having a center hole, the hole being sized for a substantial slip fit over the driven shaft, the driven shaft passing through the center hole;

a friction plate on one side of the driven member, the friction plate rotating without slippage with the shaft;

means for preventing the driven member and the friction plate from sliding longitudinally on the shaft;

means for biasing the driven member and the friction plate together; and

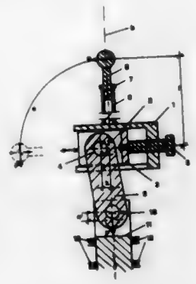
an annular-ring surface on at least one of the friction plate and the driven member, the annular-ring surface being substantially concentric with the driven shaft and forming an annular-ring interface between the friction plat and the driven member, the transmitted torque between the driven member and the shaft being limited by frictional force between the friction plate and the driven member at the annular-ring interface.

4,660,429

FORCE MULTIPLIER DEVICE AND METHOD OF OPERATION OF SAME

René Bregenzer, Waldparkstr. 45, CH-8212 Neuhausen/Rhf., Switzerland

PCT No. PCT/CH85/00073, § 371 Date Jan. 6, 1986, § 102(e) Date Jan. 6, 1986, PCT Pub. No. WO85/05320, PCT Pub. Date Dec. 5, 1985
PCT Filed May 7, 1985, Ser. No. 830,590
Claims priority, application Switzerland, May 14, 1984, 2359/84
Int. Cl.⁴ F16H *21/44*
U.S. Cl. 74—105 **3 Claims**



1. A force transmitting device comprising a hollow body defining a chamber, said hollow body being pivotably mounted about a first axis of rotation on a pair of opposed pins; a U-shaped part mounted within said chamber and selectively movable therein; an intermediate piece having one end pivotably mounted to said U-shaped part about a second axis of rotation and the other end pivotably mounted to a ram about a third axis of rotation; means for selectively positioning said U-shaped part within said chamber between a first position wherein said second axis of rotation is on one side of said first axis of rotation and a second position wherein said second axis of rotation is on the other side of said first axis of rotation; and means for rotating said hollow body about said first axis in one direction such that said ram moves in a first direction when said U-shaped part is in said first position and said ram moves in a second direction when said U-shaped part is in said second position.

4,660,430

COMBINATION GEAR-SELECTOR, SENSOR DEVICE

Harald Bortfeld, Hanover; Lutz Danne, Rosenberg; Joachim Lehrmann, Lehrte, and Alfred Klatt, Wathlingen, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 16, 1985, Ser. No. 776,250
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1984, 3434205
Int. Cl.⁴ G05G *9/12*; B60K *20/00*; H01H *9/06*
U.S. Cl. 74—335 **18 Claims**

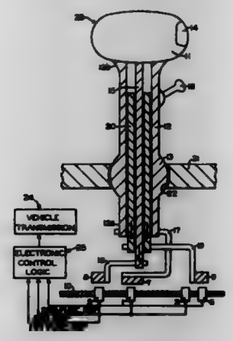
1. A combination gear-selector, sensor device for use with vehicle transmissions operable to a plurality of gear positions and at least one special gear function and controlled by an electronic control circuit, said gear-selector, sensor device comprising:

(a) a shift lever pivotably movable within a shift housing;

(b) a first magnet element connected to said shift lever and movable with said shift lever such that, a gear select indication is generated in response to operation of said shift lever to one of the plurality of gearshift positions;

(c) a plurality of gear select sensors disposed adjacent and in a spaced-apart relation to said first magnet element, said gear select sensors corresponding in number to the plurality of gear positions such that, each of said gear select sensors outputs a distinct position signal readable by the electronic control circuit;

(d) first function selecting means operably-connected to said shift lever for selecting a first one of the at least one special gear function upon actuation of a first function controller, said first function selecting means including a second magnet element disposed to one side of said first magnet



element and oriented in an opposing polarity relation to said first magnet element; and

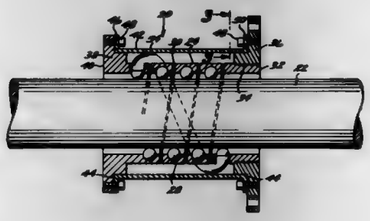
(e) a first gear function sensor disposed adjacent and in a spaced-apart relation to said first function selecting means, said first gear function sensor being disposed such that, as said second magnet element is brought within a predetermined proximity thereto, a first function signal is output therefrom which is readable by the electronic control circuit.

4,660,431

ROTARY MOTION LINEAR ACTUATOR

Otto R. Heine, Poway, Calif., assignor to R&H Technology, Inc., Minneapolis, Minn.

Filed Jul. 11, 1984, Ser. No. 630,310
Int. Cl.⁴ F16H *1/18, 1/20*
U.S. Cl. 74—424.8 R **15 Claims**



1. A linear actuator adapted for converting rotary motion of a rotatable shaft having a longitudinal axis into linear motion, the actuator comprising:

a ball nut body having an interior cavity and configured for mounting the ball nut body on the shaft in substantially concentric relationship with the shaft, the ball nut body having a longitudinal axis and including

a substantially helical ball screw thread formed in the interior of the ball nut body;

a plurality of balls disposed directly between the ball nut body and the shaft in the ball screw thread, each of the balls having respective rolling axes;

means for providing adjustment and maintaining a predetermined torsional and compressional deformation in the ball nut body about the longitudinal axis of the ball nut body and of the shaft whereby the plurality of balls disposed between the ball nut body and the shaft are urged against the shaft with their rolling axes at a predetermined inclined angle relative to the longitudinal axis of the shaft, the adjustment means for providing and maintaining including a helical slot formed and penetrating through the ball nut body itself, the helical slot being disposed parallel with the helical thread, and

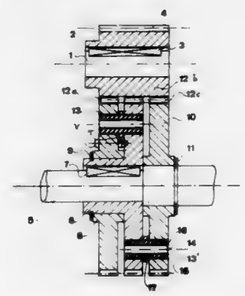
means for circulating the balls from substantially one end of the helical screw thread to substantially the other end of the helical screw thread for repeated rolling contact with the shaft.

4,660,432

DEVICE FOR AUTOMATICALLY TAKING UP BACKLASH IN GEAR TRANSMISSION SYSTEMS

James Damas, 13, La Lisierre du Golf, 92380 Garches, France

Filed Dec. 16, 1985, Ser. No. 809,690
Int. Cl.⁴ F16H *55/18, 3/58*
U.S. Cl. 74—440 **7 Claims**



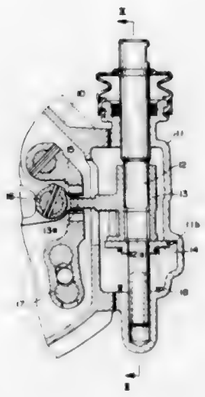
1. A device for automatically taking up backlash in a gear transmission including at least one drive shaft and at least one driven shaft which are interconnected by first and second meshing gear wheels, the device comprising first and second toothed wheels mounted on either side of said first meshing gear wheel, on the same shaft as said first meshing gear wheel, and having the same diameter and the same number of teeth as said first gear wheel in order to mesh with said second gear wheel, said first and second toothed wheels being free to rotate about said shaft and each toothed wheel being connected to said first gear wheel by respective resilient coupling means extending parallel to said shaft, and means for placing said resilient coupling means under a pre-stress such that when the teeth of said toothed wheels and said first gear wheel are substantially aligned for meshing with said second gear wheel, one of said toothed wheels is resiliently urged clockwise and the other of said toothed wheels is resiliently urged anti-clockwise about said shaft and relative to said first gear wheel, and when the teeth are not meshed and said resilient coupling means are allowed to relax, said means for placing said coupling means under pre-stress causes said toothed wheels to be angularly offset in opposite directions relative to said first gear wheel.

4,660,433

MECHANISM FOR PREVENTING ERRONEOUS REVERSE GEAR SHIFTING IN GEAR TRANSMISSIONS

Ichiro Horiuchi; Shoich Obashima, and Keiji Takeshita, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 534,981, Sep. 23, 1983, abandoned. This application Jun. 11, 1986, Ser. No. 873,124
Claims priority, application Japan, Sep. 30, 1982, 57-148168
Int. Cl.⁴ F16H *57/06*
U.S. Cl. 74—476 **1 Claim**



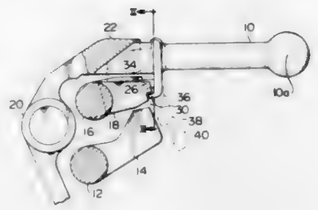
1. A gear transmission comprising:
(a) a shift lever movable between a forward-gear position and a reverse-gear position along a straight line with an intermediate position therebetween;
(b) a transmission case;
(c) a case cover attached to said transmission case;
(d) a shift lever shaft rotatably and axially movable on said case cover, said shift lever shaft being connected to said shift lever;
(e) a boss having a thick portion fixed to the inside surface of a wall of said case cover and a thinner portion extending inwardly towards said shift lever shaft; and
(f) an erroneous gear shifting prevention device including a sliding lever mounted on said shift lever shaft and rotatable in response to shifting movement of said shift lever and axially movable in response to selecting movement of said shift lever, said sliding lever having an integral projection including a slanted restriction surface, and a reverse restriction pin rotatably and axially movably disposed in said boss in confronting relation to said projection and having a recess, the arrangement being such that when said shift lever is shifted in error from said forward gear position toward said reverse-gear position across said intermediate position, said slanted restriction surface engages said recess to be prevented from undergoing further movement, and acts on said reverse restriction pin in an outward direction toward said thick portion of said boss.

4,660,434

APPARATUS FOR PREVENTING GEAR BUZZING IN SHIFTING TO REVERSE

Masaki Inui; Yusuke Horiuchi, and Shinji Ogawa, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 20, 1985, Ser. No. 778,312
Claims priority, application Japan, Dec. 28, 1984, 59-279534
Int. Cl.⁴ B60K *41/26*; **G05G** *5/10*
U.S. Cl. 74—477 **3 Claims**



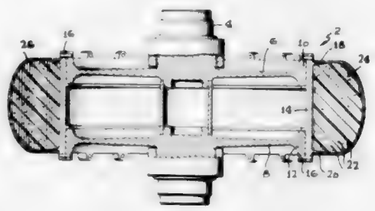
1. In a manual transmission having
a plurality of forward gear means provided with synchronous meshing mechanisms,
a reverse gear means driven through a reverse idler gear,
a shift-and-select lever capable of selectively meshing with shift heads of both said plurality of forward gear means and said reverse gear means, and
an interlocking mechanism capable of holding said shift heads which have not been selected in the selection movement of said shift-and-select lever in a standstill state;
an apparatus for preventing gear buzzing in shifting to reverse comprising:
an inclined guide surface provided on a projection formed integrally with one of the shift heads of said plurality of forward gear means;
a projection provided on said shift-and-select lever so as to come into contact with and slide on said inclined guide surface at the time of shifting to reverse; and
a clearance provided between said one shift head which is provided with said inclined guide surface and said interlocking mechanism so as to permit shifting movement of said one shift head at the time of shifting to reverse.

4,660,435

FIBER COMPOSITE FLYWHEEL RIM

Donald E. Davis, Thousand Oaks, and Kenneth T. Ingham, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 26, 1981, Ser. No. 267,323
Int. Cl.⁴ F16F *15/30*
U.S. Cl. 74—572 **4 Claims**



1. A flywheel comprising:
a hub having at least one radially projecting disc;

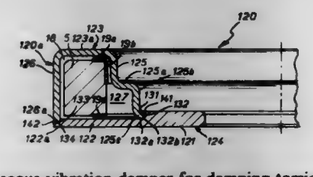
an annular rim secured to said disc and providing a surface circumferential to said hub;
a first plurality of bonding-agent-impregnated fibers wound circumferentially about said rim parallel to said surface; and
a shell enclosing said first plurality of fibers and formed by a second plurality of bonding-agent-impregnated fibers wound about the outside surface of said first plurality of fibers in a plurality of individual overlapping segments, the general direction of the fibers in each segment being tangential to said rim surface.

4,660,436

VISCOUS VIBRATION DAMPERS

Joël Davoust, Lyons, and Pascal Pelus, D'Ozon, both of France, assignors to Dampers S.A., Venissieux, France

Continuation of Ser. No. 526,061, Aug. 24, 1983, abandoned. This application Oct. 30, 1985, Ser. No. 793,093
Claims priority, application France, Aug. 24, 1982, 82 14534
Int. Cl.⁴ F16F *15/10*
U.S. Cl. 74—574 **4 Claims**



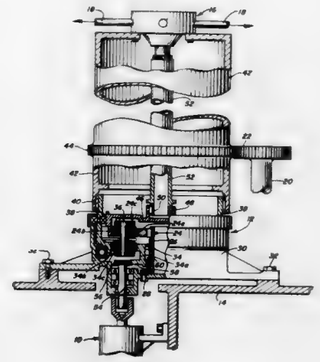
1. A viscous vibration damper for damping torsional vibrations of a rotary shaft, the vibration damper comprising an annular endplate including an inner annular hub portion adapted to be mounted on the rotary shaft, and an outer annular cover portion, an open-ended annular casing of stamped sheet metal having inner and outer peripheral walls, said cover portion closing off the open end of said casing and defining therewith a housing accommodating an inertia ring having low friction bushes or pads and containing a viscous fluid, the inner peripheral wall of said casing having a step for stiffening the same and forming a small diameter wall portion adjacent said endplate defining a viscous fluid reservoir for said viscous fluid, said step of said inner peripheral wall of said casing lying in a plane perpendicular to the axis of the vibration damper and separating the inner peripheral wall into said small diameter wall portion and a slightly larger diameter wall portion, a cylindrical shoulder being formed between said hub portion and said cover portion of said endplate, an abutment zone being formed on the free end of said inner peripheral wall for axial abutment with a portion of said endplate adjacent said cylindrical shoulder and a cylindrical bearing surface formed at the free end of said inner peripheral wall substantially equal in diameter to and cooperable with said cylindrical shoulder for radial alignment of said casing on said endplate, said free end of said inner peripheral wall comprising a radially inturned portion, said cylindrical bearing surface on said free end of said inner peripheral wall being formed on the transverse edge of said free end and said abutment zone on said free end of said peripheral wall, said radially inturned portion adjoining said transverse edge, said outer peripheral wall including a free end having an abutment zone for axial abutment against an outer peripheral zone of said cover portion, an inner annular weld being provided between said free end of said inner peripheral wall and said portion of said endplate adjacent said cylindrical shoulder and an outer annular weld being provided between said free end of said outer peripheral wall and said outer peripheral zone of said cover portion.

4,660,437

DIFFERENTIAL GEAR BOX

Craig H. Scott, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 7, 1985, Ser. No. 763,281
Int. Cl.⁴ F16H *37/06, 37/00*
U.S. Cl. 74—675 **6 Claims**



1. Apparatus for controlling pitch variations of the blades of a propeller, comprising:
a first planetary gearset including a sun gear, a ring gear and at least one planetary gear meshed with the sun and ring gears, the sun gear being statically grounded;
a second planetary gearset stacked in concentric juxtaposition with the first planetary gearset and including a sun gear, a ring gear and at least one planetary gear meshed with the sun and ring gears, the planetary gear being coupled for conjoint orbiting with the planetary gear of the first gearset;
main rotor drive input means including cylindrical input shaft means spaced entirely above and being of and concentric with the planetary gearsets, the input shaft means being meshed on the interior thereof with the ring gear of the second planetary gearset, and rotor drive gear means meshed with gear means on the outside of the cylindrical input shaft means;
blade actuator output means located entirely above the planetary gearsets and including output shaft means concentric with the planetary gearsets, the output shaft means being disposed within the cylindrical input shaft means and coupled to the ring gear of the first planetary gearset to be rotated thereby; and
selectively operable differential drive input means located entirely below the planetary gearsets and coupled to the sun gear of the second planetary gearset, whereby inoperation of the differential drive input means effectively grounds the sun gear and permits the main rotor drive input means and the blade actuator output means to rotate at the same speed, and selective operation of the differential drive input means to rotate the sun gear of the second planetary gearset effects a differential speed between the rotor drive input means and the blade actuator output means.

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4,660,438

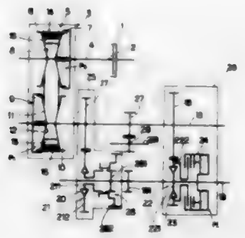
CONTINUOUSLY VARIABLE TRANSMISSION

Yasuki Tatara, Susono; Susumu Okawa, Numazu; Hideaki Matsui, Gotemba, and Yasunori Nakawaki, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Continuation-in-part of Ser. No. 563,210, Dec. 19, 1983, abandoned. This application Aug. 23, 1985, Ser. No. 768,827

Int. Cl.⁴ F16H *37/00*

U.S. Cl. 74—689 **12 Claims**



1. A continuously variable transmission means for motor vehicles including a driving pulley with a fixed member and a movable member, said movable member being actuated by a hydraulic cylinder to form a V-shaped opening therebetween, a driven pulley with another fixed member and another movable member, said another movable member being actuated by another hydraulic cylinder to form another V-shaped opening therebetween, and a flexible endless member spanning the driving and driven pulleys, said continuously variable transmission means comprising:

a first output shaft connected with the driven pulley;

a first gear secured on the first output shaft;

a second gear secured on the first output shaft;

a reverse gear secured on the first output shaft;

a second output shaft provided in a parallel relationship to the first output shaft;

a third gear mounted on the second output shaft, the third gear being in a constant meshing relationship with the first gear;

a jaw clutch mounted slidably between a first position and a second position on the second output shaft, the jaw clutch being in a meshing relationship with the third gear at said first position, the jaw clutch, the first gear and the third gear comprising a low gear train, the jaw clutch being in a meshing relationship with the reverse gear at said second position; the jaw clutch and said reverse gear comprising a reverse gear train;

a first one-way clutch provided between the third gear and the second output shaft, the first one-way clutch transmitting a torque from the first output shaft to the second output shaft through the jaw clutch when said first output shaft is driven faster than said second output shaft and the jaw clutch is in said first position;

a fourth gear mounted on said second output shaft, the fourth gear being in a constant meshing relationship with the second gear, the fourth gear and the second gear comprising a high gear train;

a hydraulic clutch means for engaging the fourth gear with said second output shaft when the motor vehicle is driven at a medium or a high velocity, said hydraulic clutch means disengaging said fourth gear from said second output shaft when the motor vehicle is driven at a low velocity; and

a second one-way clutch provided between the fourth gear and the second output shaft, the second one-way clutch transmitting a torque from the second output shaft to the first output shaft when said hydraulic clutch means disengages said fourth gear from the second output shaft and the second output shaft is rotated faster than the first output shaft.

4,660,439

PLANETARY GEAR TRAIN FOR AUTOMATIC TRANSMISSION

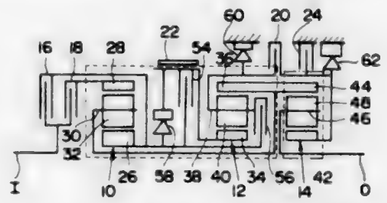
Kazuyoshi Hiraiwa, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 7, 1984, Ser. No. 648,370

Claims priority, application Japan, Sep. 8, 1983, 58-164209; Sep. 16, 1983, 58-169324; Sep. 20, 1983, 58-172219; Oct. 20, 1983, 58-196733; Oct. 20, 1983, 58-196735; Oct. 20, 1983, 58-196736

Int. Cl.⁴ F16H *57/10*

U.S. Cl. 74—763 **16 Claims**



1. A planetary gear train for an automatic transmission, said planetary gear train having a plurality of gear ratios including a first forward gear ratio and a reverse, said planetary gear train comprising:

an input shaft;

a basic planetary gearing including a first rotary element which is to be held stationary when the first gear ratio is established and also when the reverse is established, and a second rotary element which is to serve as an output member of said basic planetary gearing;

an output planetary gear set including a ring gear, a sun gear and a pinion carrier, one of said ring gear and said sun gear of said output planetary gear set being constantly connected to said second rotary element of said basic planetary gearing;

change speed means for establishing any desired one of the plurality of gear ratios, said change speed means including a clutch means for establishing a connection between the other one of said ring gear and said sun gear of said output planetary gear set and said first rotary element of said basic planetary gearing during operation with the first gear ratio and also during operation with the reverse, and a brake means for anchoring said the other one of said ring gear and said sun gear of said output planetary gear set during operation with the reverse; and

an output shaft connected to said pinion carrier of said output planetary gear set.

4,660,440

DEVICE FOR CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION

Toshio Matsumura, and Katsunori Oshiage, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 11, 1984, Ser. No. 619,479

Claims priority, application Japan, Jun. 16, 1983, 58-106639

Int. Cl.⁴ B60K *41/12*

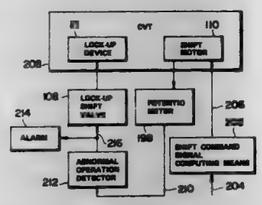
U.S. Cl. 74—866 **9 Claims**

1. A device for controlling a continuously variable transmission including a hydrodynamic transmission unit with a lock-up device shiftable between an engagement mode and a release mode, and a lock-up shift valve for shifting the lock-up device between the engagement mode and the release mode, comprising:

means for generating a shift command signal;

means for adjusting a reduction ratio in the continuously variable transmission in response to said shift command signal, said reduction ratio adjusting means including a shift actuator operatively coupled with said shift command generating means to be operative in response to said shift command signal;

means for monitoring operation of the shift actuator and generating a shift operation monitoring signal indicative of the operation of said shift actuator; and



means for detecting an abnormal operation of the shift actuator responsive to said shift operation monitoring signal and generating a lock-up release signal when said shift operation monitoring signal remains unchanged for a predetermined period after a predetermined condition has been satisfied, said lock-up release signal being fed to the lock-up shift valve so as to shift the lock-up device to the release mode.

4,660,441

TRANSMISSION CONTROL SYSTEM

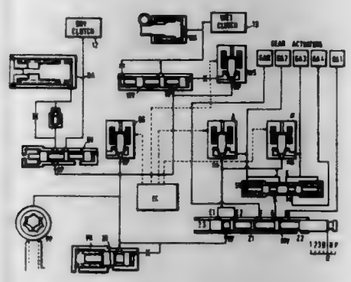
Alastair J. Young, Kenilworth, United Kingdom, assignor to Automotive Products plc, Warwickshire, England

Filed Apr. 23, 1985, Ser. No. 726,403

Claims priority, application United Kingdom, May 25, 1984, 8413541

Int. Cl.⁴ F16H *3/08, 3/26*; B60K *20/14*

U.S. Cl. 74—867 **1 Claim**



1. An automatic power transmission comprising an input; an output; first, second, third and fourth gear sets; first, second, third and fourth gear actuators each operatively connected to a respective gear set for selective engagement and disengagement thereof; a first clutch selectively engageable to establish a dirve path from said input to said output through an engaged one of said first and third gear sets; a second clutch selectively engageable for establishment of the driving connection from said input to said output through one of said second and fourth gear sets; said transmission being such that ratio changes are effected under power by releasing one of said clutches interconnecting the input and output through an engaged gear set simultaneously with engaging the other of said clutches interconnecting the input and output through another of said gear sets; a control system comprising first and second electro hydraulic valves, a first outlet from the first electro hydraulic valve leading directly to the second gear actuator, a second outlet from the second electro hydraulic valve leading directly to the third gear actuator, a pressure responsive valve having opposed first and second ports connected respectively to said first and second outlets, a first connection through said pressure responsive valve open only in response to pressure at said first control port but not said second control port providing communication between said first outlet and said first gear actuator and a second connection through said pressure responsive valve open only in response to pressure at said second control port but not said first control port providing communication between said second outlet and said fourth gear actuator, whereby one set of electro hydraulic valve states is arranged to engage first and second gear sets, a second set of electrol hydraulic valve states is arranged to engage second and third gear sets, a third set of electro hydraulic valve states is arranged to engage third and fourth gear sets and operation of the transmission in any of these gear ratios is effected by engaging two gear sets and holding one of the clutches disengaged while the other clutch is engaged whereby drive is established through only one of the engaged gear sets, said transmission further comprising a reverse gear set and associated reverse gear actuator operatively interconnectable between said input and output through said second clutch, the transmission further comprising a transmission mode selector, wherein the same set of electro hydraulic valve states as is employed for engagement of first and second gear sets is employed to engage the reverse gear set and wherein the hydraulic supply from the electro hydraulic valves to the actuators is routed selectively to first gear actuator and reverse gear actuator through said transmission mode selector in dependence on whether reverse transmission mode or a forward transmission mode is selected.

4,660,442

CREEP-INHIBITING DEVICE FOR AN AUTOMOTIVE VEHICLE EQUIPPED WITH AN AUTOMATIC TRANSMISSION

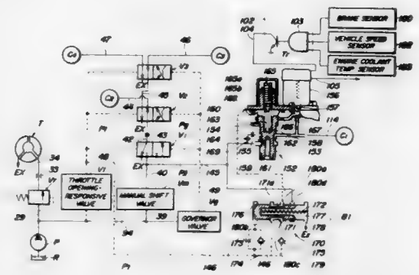
Masao Nishikawa, Tokyo; Takashi Aoki, Fujimi, and Yoichi Sato, Wako, all of Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed May 13, 1985, Ser. No. 733,517

Claims priority, application Japan, May 14, 1984, 59-97265; May 14, 1984, 59-97266

Int. Cl.⁴ B60K *41/22*

U.S. Cl. 74—869 **4 Claims**



1. In a creep-inhibiting device for use in an automotive vehicle equipped with an engine, a fluid coupling, a transmission mechanism coupled in series to said fluid coupling and having a frictionally engaging element, and an operating fluid source for supplying an operating fluid to said frictionally engaging element, said device including:

engine load sensor means for producing a signal fluid having a pressure proportionate to load applied on said engine; and

control means interposed between said frictionally engaging element and said operating fluid source,

wherein said control means is adapted to control the power transmission capacity of said frictionally engaging element within a range from substantially zero to a predetermined value in dependence on the pressure of said signal fluid supplied thereto, to inhibit creeping of said vehicle when said engine is in a no-load state,

the improvement wherein said control means comprises:

an input fluid line connected to said operating fluid source;

an output fluid line connected to said frictionally engaging element;

a valve body disposed to selectively connect and disconnect said input fluid line to and from asid output fluid line and having:

first and second end faces,

a first pressure chamber defined in part by said first end face of said valve body always connected to said output fluid line to be supplied with an operating fluid pressure in said output fluid line,

a second pressure chamber defined in part by said second end face of said valve body and disposed to be supplied with the pressure of said signal fluid;

a third fluid line having a restriction located between said operating fluid source and said valve body and disposed to always connect said input fluid line to said output fluid line;

resilient means arranged in said second pressure chamber and urging said valve body in a direction of connecting said input fluid line to said output fluid line counteracting the pressure in said first pressure chamber; and

a drain line disposed to be opened and closed by said valve body so that said input fluid line is connected to and disconnected from a zone under a lower pressure via said drain line, said drain line escaping said operating fluid pressure in said output fluid line to said zone under a lower pressure when said valve body is biased in a direction of disconnecting said input fluid line from said output fluid line, by an amount corresponding to the amount by which said valve body is biased in the last-mentioned direction;

said input fluid line. said output fluid line, and said drain line being so located relative to said valve body that said valve body connects said input fluid line to said output fluid line when said valve body is displaced toward said first pressure chamber, and said valve body disconnects said input fluid line from said output fluid line and at the same time connects said drain line to said zone under a lower pressure when said valve body is displaced toward said second pressure chamber;

said valve body being displaceable in response to a difference between the operating fluid pressure in said first pressure chamber and the pressure of said signal fluid in said second pressure chamber to assume an equilibrated position wherein the operating fluid pressure in said output fluid line is maintained at a pressure slightly lower than an engaging pressure at which said frictionally engaging element engages, when the engine is in said no-load state.

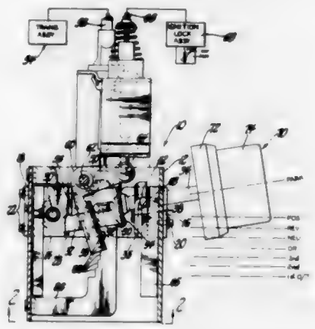
4,660,443

TRANSMISSION SELECTOR LEVER ASSEMBLY

Carl D. Simancik, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 31, 1986, Ser. No. 824,636
Int. Cl.[4] B60K *41/26*; **B60R** *25/06*; **G05G** *9/12*
U.S. Cl. 74—878 **3 Claims**

1. A shift tower for a vehicle having an automatic transmission shiftable to Park, Neutral, Reverse and Drive transmission positions, and an ignition key movable to Run, Off and Lock positions; said shift tower comprising: a base member; a support bracket; a pair of bushings secured to said bracket and slidably supporting said bracket in said base member, said bracket being linearly movable in said base member to said transmission positions; shift lever means pivotally mounted on said bracket and being linearly movable therewith to at least the Drive, Reverse and Neutral transmission positions; a lock-out lever pivotally connected to said bracket and including an abutment protuberance and a slot which is operatively connected with said shift lever means, said base member having a wall contacted by said abutment protuberance to position said lock-out lever to maintain said shift lever means and prevent pivoting of said shift lever means relative to said bracket during linear movement of said bracket between Drive and Reverse, said abutment being out of contact with said wall during movement of said bracket between Reverse and Park to permit pivoting of said shift lever means relative to said bracket and base member to attain said Park position; a park lock lever



pivotally mounted on said base member and being operatively engaged with said bracket when said bracket and shift lever means are moved between said Drive and Reverse and being disengaged therefrom during movement between said Reverse and Park positions to permit pivoting thereof on said base member; means for connecting said park lock to said ignition to prevent attainment of the Lock position prior to the transmission shift lever being placed in the Park position; means for connecting said shift lever means to the transmission for shifting thereof between the transmission positions; and means on said shift lever means cooperating with said park lock lever and said base member for preventing movement of said shift lever means from said Park position when said ignition key is in said Lock position.

4,660,444

HARDENING OF SELECTED AREAS OF AN EARTH BORING ROCKBIT

Robert K. Sorensen, Dallas, and Starling Seaton, Midlothian, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 9, 1986, Ser. No. 871,933
Int. Cl.[4] B21K *5/02*; **E21B** *10/50*; **C21D** *1/68*
U.S. Cl. 76—108 A **16 Claims**

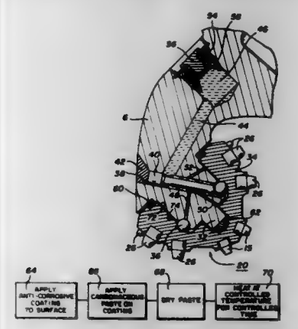
1. A method of surface-enriching a metal surface by application to said surface of a surface-enriching material and wherein said surface is susceptible to corrosion by said material in the as-applied condition comprising the steps of:

(a) applying a protective coatig onto the metal surface to be enriched, said coating being effective to prevent direct contact of said material with said surface as applied, but permitting such contact at an elevated surface-enriching temperature;

(b) applying over said coating a predetermined quantity of said material; and

(c) heating said surface and material for a controlled time period to a predetermined elevated temperature sufficient

to cause said material to become non-corrosive and expose said surface directly to said enriching material and to



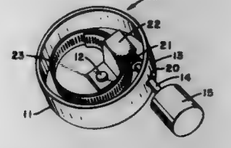
effect a desired case depth of enrichment on said surface from said material.

4,660,445

BOTTLE OPENER

Jeff J. Windom, Main Dr., Rte. 2, Box 187D, Tallapoosa, Ga. 30176

Filed Apr. 11, 1986, Ser. No. 850,490
Int. Cl.[4] B67B *7/18*
U.S. Cl. 81—3.43 **9 Claims**



1. A bottle opener for minimizing hand strength needed to open a twist cap bottle, comprising:

an enlarged, generally domed shaped housing;

an adjustable circular clamp secured within said housing; and

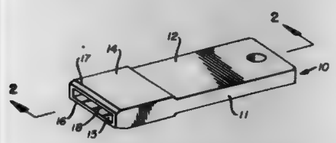
a remote adjustment handle extending through said housing substantially orthogonal to the predetermined longitudinal axis of said bottle for adjusting said clamp.

4,660,446

CAN TOP OPENER

Richard R. Soltis, 4291 New Rd., Austintown, Ohio 44515

Filed Sep. 22, 1982, Ser. No. 421,383
Int. Cl.[4] B67B *7/40*
U.S. Cl. 51—3.55 **6 Claims**



1. A tool for opening cans of the type having a top surface with a central zone and a generally radially extending zone bounded by a weakened connection with the top surface of the can and which radially extending zone is adapted to be forcibly broken from the top surface in response to downward pressure and to be hingedly swung into the interior of the can along a bendable hinge line adjacent the central zone and wherein the can includes a lever with a portion extending over the radially extending zone and a portion extending to a terminal end and radially away from the radially extending zone towards, but not to the can periphery with the lever extending in parallel closely spaced relation to the can top and with the lever being fixed between the terminal end and the extending portion so that when the terminal end is lifted, a downward force is applied to the extending radial zone of the can top to break it from the top and to bend it into the can, said tool comprising:

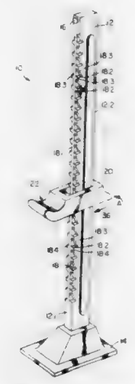
a generally rectangular body member having spaced parallel upper and lower surfaces and spaced parallel side surfaces, portions of one end of said body member formed in closely spaced upper and lower sections and relatively widely spaced side sections defining a hollow area inwardly of said one end of said body member, spaced parallel tapered ribs on at least one of the opposed inner surfaces of said upper and lower sections defining said hollow area, said ribs being progressively thicker inwardly of said hollow area, a pair of thin end edges extending transversely on said upper and lower sections defining a transverse opening into said hollow area, said transverse opening and said hollow area being of a size to receive the portion of the lever extending to the terminal end thereof beyond the section of the lever fixed to the can top whereby said tapered ribs progressively engage said lever inwardly of its terminal end so as to temporarily hold said lever in fixed postion in the tool when the tool is lifted and thereby force the portion of the lever over the radially extending zone of the can top to engage said radially extending zone to break the same away from the top and bend into the can.

4,660,447

WHEEL WRENCH SUPPORT

Walter G. Rossi, P.O. Box 13569, Sinoville. 0129. Pretoria. Transvaal Province, South Africa

Continuation of Ser. No. 492,596, May 9, 1983, abandoned. This application Jun. 25, 1985, Ser. No. 748,498
Claims priority, application South Africa, May 10, 1982, 82/3210
Int. Cl.[4] B25B *23/00*; **B66F** *3/00*
U.S. Cl. 81—462 **12 Claims**



1. A wheel wrench support comprising:

a stand having a ground engaging portion at one end and an elongate portion extending in upwardly from said ground engaging portion to define an axial direction,

said elongate portion having a plurality of step-like formations formed along its length,

a saddle member mounted on said elongate portion and

including a saddle portion adapted to receive a wheel wrench,
a passage in said saddle member of a size to permit said elongate portion to extend therethrough,
said saddle member having a step-engaging portion formed therein and adjacent said passage,
said saddle member being tiltable on said stand member between first and second angled orientations relative to said axial direction,
said step-engaging portion being engageable on one of the plurality of step-like formations when the saddle member is in its first orientation to support said saddle member against movement downwardly toward said ground engaging portion,
said step-engaging portion being moved out of engagement with said step-like formations when said saddle member is tilted upwardly to its second orientation to permit said saddle member to move in said axial direction, and
said passage entending at an acute angle to said axial direction when in its first orientation and is parallel to said axial direction when in its second orientation,
and biasing means urging said saddle member into its first orientation,
the force exerted by a wrench on the saddle portion during use of said wrench acting to urge said saddle member into its first orientation,
said biasing means including a spring disposed in an opening in said saddle member on the side of said passage opposite said step engaging portion and a ball disposed between said spring and said elongate portion.

4,660,448

SOUND REDUCING MEANS

David A. Bies, 4 Parslow Road, Marion, South Australia, Australia (5043)

Continuation of Ser. No. 488,001, May 2, 1983, abandoned, which is a continuation of Ser. No. 278,892, Jun. 29, 1981, abandoned, which is a continuation of Ser. No. 61,806, Jul. 30, 1979, abandoned. This application Jun. 30, 1986, Ser. No. 881,526
Claims priority, application Australia, Aug. 11, 1978, PD5467
Int. Cl.[4] B26D *1/14, 7/00*
U.S. Cl. 83—13 11 Claims



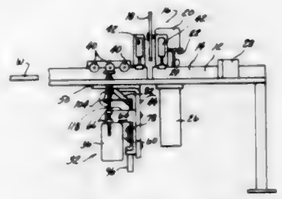
1. A method for suppressing a portion of the aerodynamic idling noise produced by the moving saw blade of a high-speed industrial saw, said portion lying in the band of audible frequencies bounded at its upper end by some selected frequency and deemed to be harmful to human hearing, said method comprising effectively exposing the saw blade, at idle, to a radiation impedance which is soley imaginary, thereby subjecting the audible noise below said selected frequency to cut-off.

4,660,449

STOCK FEEDING APPARATUS

Walter G. LeTarte, 2040 Emerson Rd., Goodells, Mich. 48027

Filed Jul. 11, 1986, Ser. No. 885,157
Int. Cl.[4] B27B *5/18, 27/04*
U.S. Cl. 83—261 4 Claims



1. In a saw apparatus for repetitively cutting parts of uniform length from an elongate workpiece, said apparatus comprising a saw table, a workpiece guiding fence mounted on said table, rotary saw means mounted on said table for reciprocatory movement along a fixed path wherein said saw means is operable to cut transversely through an elongate workpiece supported on said table and extending longitudinally along said fence, adjustable stop means mounted on said table at a preselected distance along said fence from said fixed path engageable with the end of an elongate workpiece to establish the length of the part to be cut from said workpiece, and feed means for feeding an elongate workpiece along said fence to advance the end of said workpiece along said fence into engagement with said stop means;
the improvement wherein said table has a feed means accommodating opening therethrough adjacent said fixed path at the side thereof remote from said stop, and said feed means comprises guide means fixedly mounted upon and projecting vertically downwardly from the underside of said table, bracket means slidably mounted upon said guide means for vertical movement relative to said table, positioning means engaged between said table and said bracket means for adjustably locating said bracket means vertically upon said guide means at a selected position below said table, carrier means mounted on said bracket means for vertical sliding movement relative to said bracket means, actuating means engaged between said bracket means and said carrier means for selectively locating said carrier means at either of a lowered position or an elevated position relative to said bracket means, feed wheel means mounted on said carrier means including a power-driven feed wheel located in vertical alignment with said feed means opening in said table and frictionally engageable with the underside of a workpiece when said carrier means is in said elevated position to advance the engaged workpiece toward said stop.

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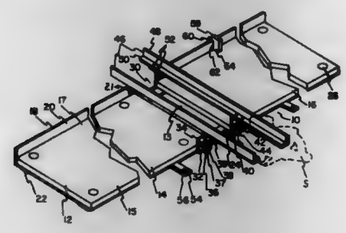
PORTABLE GUIDE FOR POWER SAW

Philip Rafalow, 4135 Sora Common, Fremont, Calif. 94536

Filed Oct. 15, 1985, Ser. No. 787,605
Int. Cl.[4] B27B *5/18, 9/04*
U.S. Cl. 83—467 R 16 Claims

1. A portable, self-sustaining, rigid guide for use with a circular power saw comprising, in combination:
(a) an elongated, flat, rectangular base plate having two sections separated by a transverse spacing therebetween;
(b) a single L-shaped bar disposed along rear side of said base plate, said bar having an upwardly extending vertical flange and an inwardly extending horizontal flange secured to said base plate;
(c) a U-shaped recess in midportion of said vertical flange;
(d) a flat, elongated strip secured to front side of said base plate underneath thereof;

(e) a pair of spaced apart L-shaped brackets secured under said base plate to the front side thereof; and
(f) a pair of horizontally disposed, spaced apart, opposing, parallel L-shaped cross rails affixed to said L-shaped



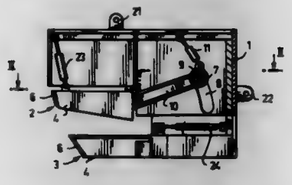
brackets and to said vertical flange, said cross rails being positioned above said base plate adjacent said recess for reciprocal slidable movement of a power saw thereon and extending outwardly beyond the width thereof.

4,660,451

SCRAP SHEARER

Pekka Björkheim, Uudenmaankatu 13 C 55, SF-21200 Turku, Finland

Filed Sep. 19, 1985, Ser. No. 777,949
Int. Cl.[4] B23D *15/06*
U.S. Cl. 83—527 7 Claims



1. A scrap shearer arrangement comprising a displaceable frame and a pair of blade units connected to said frame, said blade units shearing in a scissor-like manner, a first of the blade units being stationary, a second blade unit being pivotable about a pivot axle, each said blade unit including two longitudinal blades and a transverse blade connecting said longitudinal blades, the transverse blade of each said blade unit being parallel to the pivot axle of the pivotable blade unit, the width of said frame being dimensioned in a such manner that the width of said blade units exceeds the width of said frame at least at a point adjacent a shearing gap between said blade units to enable the scrap shearer to advance along a cut formed within a sheet-like object.

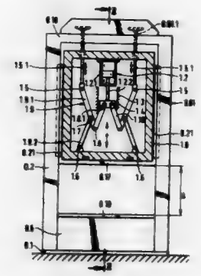
4,660,452

ELBOW LEVER SHEET METAL CUTTING PRESS CONSISTING OF A PRESS FRAME AND A PRESS RAM

Werner Leinhaas, Gelnhausen, Fed. Rep. of Germany, assignor to E. Bruderer Maschinenfabrik AG, Frasnacht/Arbon, Switzerland

Filed Oct. 29, 1985, Ser. No. 792,471
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1984, 3440332; May 15, 1985, 3517492
Int. Cl.[4] B26D *5/12*
U.S. Cl. 83—530 11 Claims

1. An elbow lever sheet metal cutting press comprising,
a press frame,
a press ram associated with said press frame,
a hydraulic drive system affixed to said press ram for driving said press ram, said hydraulic drive system including a piston and a piston rod,
connecting means connected to a free end of said piston rod, said connecting means moving in association with movement of said piston rod,
guide means for guiding the movement of said connecting means,
dual elbow lever systems operatively connected to said press ram, said hydraulic drive system being located between said dual elbow lever systems,



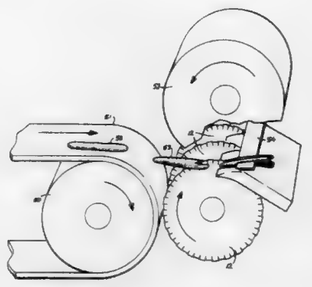
said dual elbow lever systems including guide rods connected to said connecting means, and
adjustable suspension means, connecting said press frame to said dual elbow lever systems, said press ram adapted for movement along said adjustable suspension means,
whereby upon actuation of said hydraulic drive system, said press ram is caused to move relative to said press frame via said dual elbow lever systems.

4,660,453

CIRCULAR KNIFE AND METHOD OF MAKING SAME

Robert R. Fischer, Michigan City, and W. James Fischer, Valparaiso, both of Ind., assignors to Urschel Laboratories, Inc., Valparaiso, Ind.

Filed May 28, 1985, Ser. No. 738,429
Int. Cl.[4] B26D *1/12*
U.S. Cl. 83—663 5 Claims



1. A circular knife having a peripheral area, said area being sheared therethrough to provide a plurality of equally spaced apart corresponding offsets and radial portions respectively arranged between adjacent offsets, and the outermost ends of said portions and offsets being bevelled in the same plane to provide sharpened edges.

4,660,454

PORTABLE BANDSAW MILL

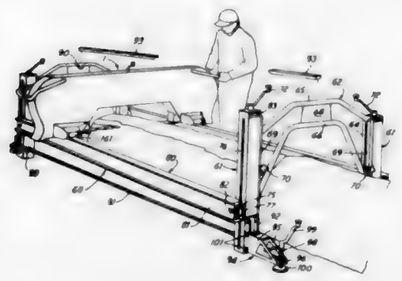
Paul Elsey, Breessands, Moon Hall Road, Pitch Hill, Ewhurst, Surrey, England

Continuation-in-part of Ser. No. 395,047, Jun. 25, 1982, abandoned. This application Apr. 5, 1984, Ser. No. 596,581

Claims priority, application United Kingdom, Nov. 6, 1980, 8035623; European Pat. Off., Nov. 6, 1981, 81305271.9; PCT Int'l Appl., Nov. 6, 1981, GB81/00236

Int. Cl.⁴ B27B *15/02*

U.S. Cl. 83—797 **18 Claims**



1. A portable bandsaw mill comprising a saw unit and a support unit for the saw unit; said support unit comprising: two end frame means, two guide beam members, means for supporting the ends of said two guide beam members in said end frame means, said supporting means permitting selective independent adjustment in the vertical direction of each end of each of said guide beam members, so that the said guide beam members, can be made to extend substantially parallel to each other at a selected level along opposed sides of a piece of timber to be sawn; said saw unit comprising a manually advanced rolling saw head having: a saw frame, first and second bandsaw pulleys, means journalling said bandsaw pulleys on said saw frame about spaced substantially parallel axes adjacent respective ends of said saw frame with said pulleys substantially in a common plane, a bandsaw blade entrained on said bandsaw pulleys, drive means for rotatably driving said first pulley, manually engageable handle means adjacent each said end of said saw frame, and roller means located at each end of said saw frame for supporting said saw unit on said guide beam members to span across said guide beam members with said saw unit engaging said support unit only by way of said rollers.

4,660,455

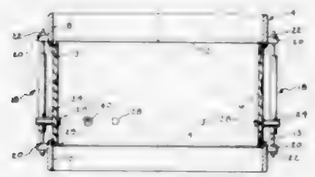
MUSICAL PERCUSSION INSTRUMENT CONSTRUCTION

Jonathan R. Jones, Granville, Mass., and Robert A. Gatzen, Newington, Conn., assignors to Noble & Cooley Co., Granville, Mass.

Filed Oct. 1, 1986, Ser. No. 913,970

Int. Cl.⁴ G10D *13/02*

U.S. Cl. 84—413 **7 Claims**



1. Musical percussion instrument comprising a cylindrical shell, a batter head disposed across one end of said shell and tensioned by means including metallic rims fitted onto the outer edges of said shell, axially extending tensioning rods disposed in circumferentially spaced relation about said shell and connected adjacent their opposite ends to each of said rims, each tensioning rod being braced by a radially extending post member affixed to said shell at a point corresponding to the vibratory nodal point of said shell located adjacent the end of said shell opposite said batter head.

4,660,456

AIRBORNE MISSILE LAUNCHER OF MODULAR CONSTRUCTION

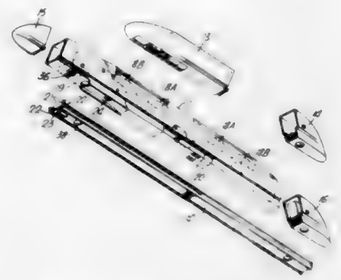
Dennis Griffin, Guildford, and Charles A. Field, Kingston-upon-Thames, both of England, assignors to Frazer-Nash Limited, Great Britain

Filed Oct. 2, 1984, Ser. No. 656,935

Claims priority, application United Kingdom, Oct. 3, 1983, 8326438

Int. Cl.⁴ F41F *7/00*

U.S. Cl. 89—1.819 **15 Claims**



1. An airborne missile launcher of modular construction comprising:

(i) a main module, comprising an intermediate main body section having first and second oppositely disposed surfaces and first and second oppositely disposed ends said intermediate main body section usable with all the types of missile to be carried and of a length less than full body length, said main body being adapted for fixing to an aircraft along its first surface, said main body section having a first member of a first cooperating attachment element located proximate to said first end, a first member of a second cooperating attachment element located proximate to said second end and a first member of a third cooperating attachment element proximate to said second surface said main body further adapted to receive a nose section and a tail section to complete the body length;

(ii) a forward module, comprising a nose section and a second member of the first attachment element which cooperates with the first member to connect the nose section to the main body section in a manner where the nose section is releasably affixed to the first end of the main body section;

(iii) an aft module, comprising a tail section and a second member of the second attachment element which cooperates with the first member to connect the tail section to the main body section in a manner where the tail section is releasably affixed to the second end of the main body section; and

(iv) a sub-rail adapted to carry a missile and a second member of the third attachment element which cooperates with the first member to connect the sub-rail to the main body section in a manner where the sub-rail is releasably attached to said main body section

thereby upon release of the first attachment element, the nose section is removable from the main module, upon release of the second attachment element the tail section is removable from the main module and upon release of the third attachment element the sub-rail is removable from the main module where the appropriate sub-rail and nose and tail sections corresponding to a selected missile may be assembled to the main module by attaching the second members to the first members of the first, second and third attachment elements, respectively, whereby a selected missile corresponding to said nose and tail sections and said rail is releasably mountable on the launcher.

4,660,457

HOLDING APPARATUS FOR WEAPON BARRELS OF A MULTI-BARREL WEAPON

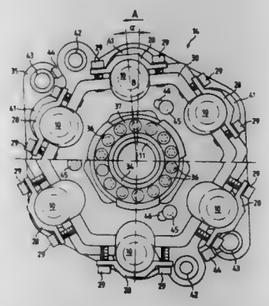
Ludwig Bühler, Dietikon; Bohler Erwin, and Werner Bruderer, both of Zurich, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Jan. 13, 1986, Ser. No. 818,490

Claims priority, application Switzerland, Jan. 17, 1985, 206/85

Int. Cl.⁴ F41D *7/04*

U.S. Cl. 89—12 **4 Claims**



1. A holding apparatus for weapon barrels of a multi-barrel weapon having a central shaft, comprising:

at least one adjusting element for displacing said weapon barrels with respect to said central shaft; and

said at least one adjusting element comprising a first adjusting element for radially displacing all of said weapon barrels conjointly relative to said central shaft and a second adjusting element for tangentially displacing all of said weapon barrels conjointly relative to said central shaft.

4,660,458

PIVOTING PROJECTILE LOADING CHAMBER FOR HIGH ANGLE-FIRING WEAPONS

Klaus von Laar, Lauf/Pegn.; Werner Heberlein, Nuremberg, and Cavit Winter, Schnaittach, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

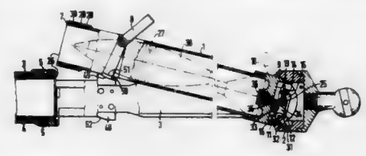
Filed Jun. 10, 1985, Ser. No. 742,738

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1984, 3424215

Int. Cl.⁴ F41F *11/00, 13/02*

U.S. Cl. 89—25 **9 Claims**

1. A pivoting projectile loading chamber for high angle-firing weapons possessing firing tubes, said loading chamber being roller-shaped at a lower end thereof; a base member of said weapon supporting said loading chamber for pivoting movement about said lower end, said loading chamber having an upper end pivotable from a position extending coaxially with the firing tube of said weapon to an outwardly displaced position; a gas pressure-controlled sealing ring for sealing an upper separating plane between the firing tube and the projectile loading chamber; locking lever means arranged in the upper region of the pivoting projectile loading chamber; locking means on the framework of the weapon and trigger means for the weapon being in operative connection with said locking lever; stop means for limiting the opening angle of the pivoting projectile loading chamber; an axial annular groove being formed in the separating plane of the pivoting projectile loading chamber, said sealing ring being inserted in said groove; bores in the wall of said pivoting projectile loading chamber communicating said sealing ring with the interior of said loading chamber and, in the locked position of said loading chamber, standing under the pressure of propellant gases during the firing of a projectile; said locking lever means comprises a double lever pivotably mounted on the pivoting projectile loading chamber; an angled end on said locking lever extending towards the loading chamber, an exterior portion of said locking lever, upon said projectile loading chamber being opened, extending along an inner curve of the locking means which is fastened to the framework, and an inner portion of said locking lever, upon said projectile loading chamber being closed, being in contact with an outer curve of the locking means which is fastened to said framework.



4,660,459

ROTARY HYDRAULIC DISTRIBUTOR, MORE PARTICULARLY FOR A POWER STEERING SYSTEM

Juan S. Bacardit, and Fermin P. Planas, both of Barcelona, Spain, assignors to Bendiberica S.A., Barcelona, Spain

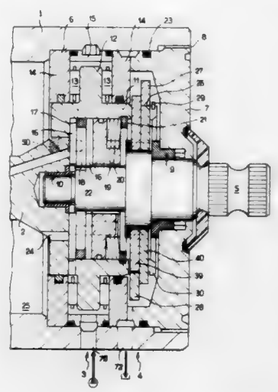
Continuation of Ser. No. 698,735, Feb. 4, 1985, abandoned, which is a continuation of Ser. No. 426,403, Sep. 29, 1982, abandoned. This application Feb. 27, 1986, Ser. No. 834,158

Claims priority, application Spain, Oct. 14, 1981, 506.793

The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.

Int. Cl.⁴ F15B *9/10*

U.S. Cl. 91—375 R **30 Claims**



1. A hydraulic rotary distributor, comprising a primary rotary member to be connected to a driving device and connected for rotation with a valve rotor, a secondary rotary

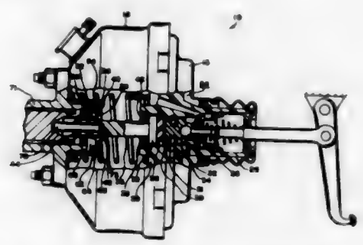
member to be connected to a driven unit and connected for rotation to a valve stator, said valve stator and valve rotor cooperating mutually to control a double acting motor assisting said driven unit, said secondary member having a portion surrounding at least a portion of said primary member, said primary and secondary members being coupled by a lost motion coupling which permits a limited relative angular movement of said members, at least a C-shaped spring having separated facing ends surrounding at least said primary member, and connecting means associating said separated ends of said C-shaped spring with said primary member to maintain the primary member in a centered rest position, characterized in that said connecting means comprises a driving protrusion secured to said primary member and extending radially through an aperture formed within said portion of said secondary member surrounding said primary member and inserted radially between said facing ends of said C-shaped spring which is disposed around said portion of said secondary member, said spring having end portions formed with radially inwardly extending teeth normally bearing in abutment against adjacent sides of openings formed in said portion of said secondary member on both peripheral sides of said aperture, said connecting means forming part of said lost motion coupling.

4,660,460

MAGNETIC FRONT SEAL FOR VACUUM BRAKE BOOSTER

Keith H. Fulmer, Mishawaka, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Jul. 29, 1985, Ser. No. 759,986
Int. Cl.[4] F15B *9/10*
U.S. Cl. 91—376 R **4 Claims**



1. In a brake booster having a front shell joined to a rear shell to define a sealed cavity, a wall dividing the cavity into a front chamber and a rear chamber, a control valve connected to the wall, an output member connected to said wall and extending through an opening in said front shell, and an input member extending through the rear chamber, said input member responding to an actuation signal by operating said valve to allow air to enter said rear chamber and create a pressure differential across said wall with vacuum present in said front chamber, said pressure differential acting on and moving said wall to produce an output force that is transmitted through said output member, the improvement comprising:

a seal surrounding said opening in said front shell, said seal having a flexible lip that surrounds an opening therein, said lip being made of a magnetic material;

a plunger having a head on a first end connected to said wall and a second end, said plunger being made of a non-metallic material, said plunger having a bore that extends from said second end to a position between said first and second ends, said second end extending through an opening in said seal, said flexible lip engaging said non-metallic plunger to seal said front chamber from said surrounding environment; and

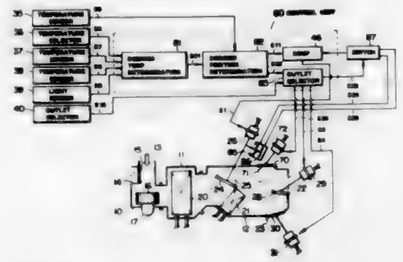
a metal push rod located in said bore of said plunger for transmitting said output force from said plunger into another member on movement of said wall, said magnetic material in said flexible lip retaining said metal push rod in said non-metallic plunger in the absence of said another member being connected to said metal push rod.

4,660,461

AIR CONDITIONER

Toshio Ohashi, Atsugi; Yoshiro Ichimaru, Yokohama; Junpei Ishimaru, and Hirofumi Hagikura, both of Sano, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 8, 1985, Ser. No. 752,716
Claims priority, application Japan, Jul. 10, 1984, 59-141496
Int. Cl.[4] B60H *1/00*
U.S. Cl. 98—2.01 **13 Claims**



1. An air conditioner for a vehicle, comprising:

(a) first and second outlets through which conditioned air is discharged into an interior of the vehicle;

(b) means for blocking an arbitrary one of the outlets and unblocking the other;

(c) a movable air mix door having different positional relationships with the first and second outlets respectively, temperature of the discharged air depending on the position of the air mix door;

(d) means for generating a signal representing a desired position of the air mix door;

(e) means for generating a signal representing a first fictitious position of the air mix door which depends on but deviates from the actual position of the air mix door;

(f) means for generating a signal representing a second fictitious position of the air mix door which depends on but deviates from the actual position of the air mix door, the second fictitious position differing from the first fictitious position; and

(g) means for controlling the position of the air mix door in accordance with the desired position signal and the first fictitious position signal when the first outlet is unblocked, and for controlling the position of the air mix door in accordance with the desired position signal and the second fictitious position signal when the second outlet is unblocked.

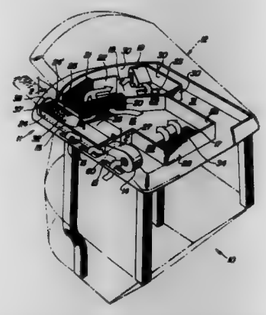
4,660,462

VENTILATION SYSTEM AND FILTER

James E. Thompson, Cedar Falls, and Nicholas S. Novick, Denver, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 12, 1985, Ser. No. 764,362
Int. Cl.[4] B60H *3/06*
U.S. Cl. 98—2.11 **11 Claims**

1. A ventilation system for a vehicle cab or the like having, an air inlet exterior to the cab, and an air outlet inside said cab for delivering air to the interior of said cab, said system comprising an air flow passageway connecting said air inlet to said air outlet, said passageway having a first contact surface about the inside of said passageway; means for moving air through said passageway from said air inlet to said air outlet; a tubular air filter for collecting and confining airborne particulates located within said passageway and having a hollow interior for collecting and confining airborne particulates, said filter having an axial length greater than at least one inner diameter dimension, a filter inlet at one end in communication with said hollow interior, a second contact surface surrounding said filter inlet, and at least one side containing a filter material impermeable to airborne particulates; means, external to the



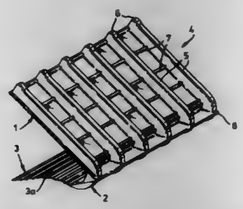
interior of said filter, for pressing said contact surfaces together in a sealing relationship and securing said filter in said passageway with its longitudinal axis in a horizontal plane and a diameter dimension less than the axial length of the filter in a vertical plane when said cab is level; and means for removing said filter from said passageway such that a side of said filter remains under collected particulates during filter removal.

4,660,463

ROOF SPACE VENTILATOR

David Bottomore, Meltham, and Paul Bottomore, South Normanton, both of England, assignors to Glidevale Building and Products, Ltd., England

Filed May 17, 1985, Ser. No. 735,364
Int. Cl.[4] F24F *7/00, 13/00*
U.S. Cl. 98—37 **8 Claims**



1. A ventilator for use in a roof structure comprising:

a base member;

a plurality of ribs affixed to said base member and extending above said base member forming a plurality of ventilation channels;

a plurality of strengthening ribs positioned at an angle to said ribs on said base member;

support means affixed to said base member for supporting said base member at an acute angle;

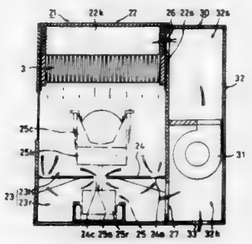
a flexible member extending from said support means for adjusting the orientation of said base member and said support means.

4,660,464

CLEAN AIR SUPPLY MEANS IN A CLEAN TUNNEL

Hirokuni Tanaka, Kourai Ooiso, Japan, assignor to Sanki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1985, Ser. No. 771,223
Claims priority, application Japan, Sep. 3, 1984, 59-182735
Int. Cl.[4] F24F *7/10*
U.S. Cl. 98—115.3 **5 Claims**



1. In a clean tunnel having an upper tunnel zone including a conveying assembly and a filter disposed above the conveying assembly and a lower tunnel zone indicating a drive assembly for the conveying assembly, said upper and lower tunnels being partitioned by separator means, a clean air supply assembly comprising:

a plurality of blowers disposed along said clean tunnel;

an air duct in fluid communication with a discharge side of each of said plurality of blowers and with said upper tunnel zone above said filter disposed therein; and

an air duct in fluid communication with a suction side of each of said plurality of blowers and with said lower tunnel zone thereby to provide a circulation of clean air within said clean tunnel.

4,660,465

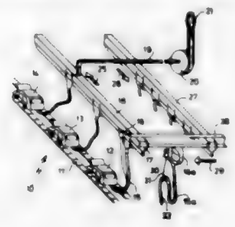
SYSTEM FOR EXHAUSTING AND COLLECTING GASES, IN PARTICULAR MOTOR VEHICLE EXHAUST GASES IN ASSEMBLY OR FACTORY HALLS

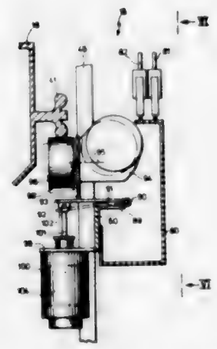
Horst Jentzsch, Waldenbucher Strasse 9, D 7447 Aichtal, and Berthold Schuppler, Haldenweg 37, D 7314 Wernau, both of Fed. Rep. of Germany

Filed Aug. 13, 1985, Ser. No. 765,190
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1984, 3430525; Sep. 13, 1984, 3433602
Int. Cl.[4] F23J *15/00*
U.S. Cl. 98—115.4 **26 Claims**

1. System for exhausting and collecting gases, in particular motor vehicle exhaust gases in assembly or factory halls, comprising a slotted exhaust conduit (**18**) fixed in position and provided on one face with an elastic, axial lip seal (**42, 43**) for guiding in sealed relationship a suction nozzle (**55**) of at least one carriage (**16**) which can be moved in the axial direction along guide sections (**40, 41**), wherein the suction nozzle (**55**) is connected to a hose (**15**) and a vacuum is generated in the slotted exhaust conduit (**18**) through an exhauster (**20**), characterized in that the carriage (**16**) is provided with a drive motor (**94**) whose power take-off shaft (**95**) is provided with a wheel

arranged for engaging the guide section (41) and that the flux of force between the drive motor (94) and the guide section





(41) can be closed and interrupted, respectively, by a coupling element switchable by electric means.

4,660,466

ESPRESSO COFFEE MACHINE

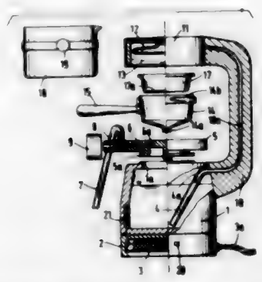
Robert Fries, Wülfrath, and Kurt Michels, Düsseldorf, both of Fed. Rep. of Germany, assignors to Poccino-Expresso Import- und Export GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 19, 1985, Ser. No. 725,320

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1984, 3415204

Int. Cl.[4] A47J *31/30*

U.S. Cl. 99—294 **3 Claims**



1. An espresso coffee machine with an electrically heatable vessel having a removable tight-closing lid and intended for receiving water, and with a rising pipe, one end of which opens out in the vicinity of the bottom of the vessel and the other end of which leads to a container which is arranged at a distance directly above the vessel and is intended for receiving ground coffee and the water flow of which is controlled as a function of a specific steam pressure, wherein there is arranged on the lid a pipe which leads outside the vessel and which is connected to the interior of the vessel via a valve which can be actuated outside the vessel, and a space provided vertically above the lid but beneath the ground coffee container capable of accommodating a finished-coffee receiving vessel, the rising pipe having or forming a cooling device outside the vessel and the pipe being unconnected to the lid.

4,660,467

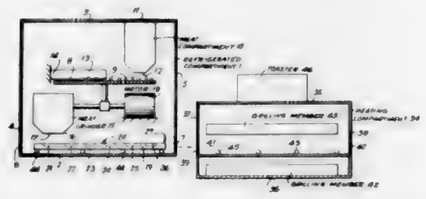
FOOD PROCESSING APPARATUS

Edna Waks, 1501 Ocean Pkwy., Brooklyn, N.Y. 11230

Filed Feb. 10, 1986, Ser. No. 827,510

Int. Cl.[4] A47J *37/04*

U.S. Cl. 99—339 **6 Claims**



1. Food processing apparatus for preparing hamburgers from meat, said apparatus comprising

a refrigerated compartment having a bottom, a top with a top opening formed therethrough and spaced opposite sides with side openings formed therethrough at said bottom;

a rotatable platform rotatably mounted in said refrigerated compartment, said platform being adapted to support a plurality of chunks of meat thereon;

an arm in said refrigerated compartment in operative proximity with said platform and mounted to sweep chunks of meat off said platform, as said platform rotates;

a meat grinder in said refrigerated compartment below said platform for catching and grinding chunks of meat swept off said platform by said arm, said meat grinder having a bottom with an output opening formed therethrough whereby meat ground by said meat grinder is provided at said output opening;

drive means in said refrigerated compartment coupled to said platform and said meat grinder for rotating said platform and operating said meat grinder to grind meat supplied to it;

a patty member placed in said refrigerated compartment beneath said output opening of said meat grinder whereby ground meat at said output opening is dropped onto said patty member, said patty member having an upper surface and a plurality of depressions formed therein;

leveling means in operative proximity with said upper surface of said patty member for moving ground meat on said upper surface into said depressions and leveling the surfaces of the meat in said depressions substantially coplanarly with said upper surface;

a heating compartment having a top, a bottom and spaced opposite sides with side openings formed therethrough;

grilling means in said heating compartment for grilling said meat in said depressions of said patty member;

transport means in said refrigerated compartment for transporting said patty member through said refrigerated compartment from one of the side openings of said refrigerated compartment to the other and out said other of said side openings of said refrigerated compartment into one of the side openings of said heating compartment; and

transport means in said heating compartment for transporting said patty member through said grilling means in said heating compartment from said one of the side openings of said heating compartment and out the other of said side openings of said heating compartment whereby grilled meat patties are provided at said other of said side openings of said heating compartment.

4,660,468

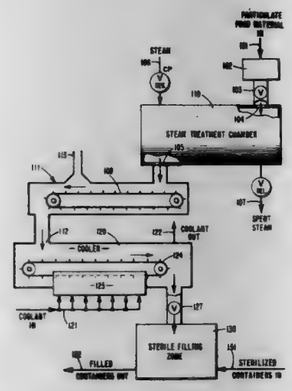
HEATING AND COOLING FOODS AT HIGH PRESSURE IN A CONTINUOUS STERILIZATION SYSTEM

Stephen L. Goldhahn, Stratford, N.J., assignor to Campbell Soup Company, Camden, N.J.

Division of Ser. No. 501,820, Jun. 7, 1983, Pat. No. 4,543,263. This application May 7, 1985, Ser. No. 731,354

Int. Cl.[4] A23L *3/16*

U.S. Cl. 99—470 **5 Claims**



1. Apparatus for continuously heating and cooling particulate food material comprising:

(a) a super-atmospheric pressure steam treatment chamber capable of maintaining a super-atmospheric pressure in the range of about 10 to about 55 psig having a pressure-tight inlet opening for maintaining said super-atmospheric pressure in the range of about 10 to about 55 psig in said chamber and through which food material is fed into the treatment chamber, an unrestricted outlet opening through which said particulate food material is discharged from said treatment chamber and means for moving said particulate food material through said treatment chamber from inlet opening to outlet opening;

(b) a substantially pressure-tight, gas-filled connecting chamber having an unrestricted inlet opening in unrestricted communication with the unrestricted outlet opening of said steam treatment chamber, having means for conveying said food material from said inlet opening to an unrestricted outlet opening and having an exhaust intermediate said unrestricted inlet opening and said unrestricted outlet opening for controllably venting hot steam and cool fluid passing into said connecting chamber;

(c) a super-atmospheric pressure cooler capable of maintaining substantially the same super-atmospheric pressure as maintained in said steam treatment chamber having an unrestricted inlet opening connected to the unrestricted outlet opening of the connecting chamber and through which said food material is fed into the cooler, a pressure-tight outlet opening for maintainig said cooler at substantially the same super-atmospheric pressure as said steam treatment chamber and through which said food material is discharged from the cooler, and means for moving the particulate food material through the cooler from inlet opening to outlet opening; and

(d) means for introducing coolant fluid into said cooler for flow in direct contact with said food material in said cooler and means for discharging spent coolant fluid from said cooler.

4,660,469

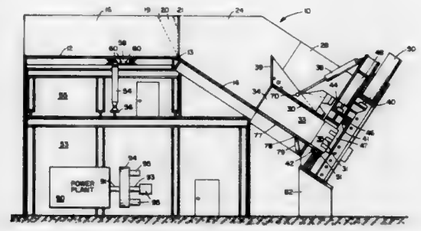
SHEAR SYSTEM

R. Paul Smith, Fairfax County, Va.; Thomas R. Betsinger, La-Crosse County, Wis., and Kathy T. Smith, Fairfax County, Va., assignors to T.W. & Judson Shear Company, Inc., Beaver Heights, Md.

Filed Apr. 28, 1986, Ser. No. 856,180

Int. Cl.[4] B30B *9/32*

U.S. Cl. 100—95 **14 Claims**



1. A shear system for processing scrap comprising:

shearing means for shearing the scrap;

crushing means for crushing the scrap prior to shearing; and

feeding means for supplying scrap to said crushing means and said shearing means, said feeding means including catching and guiding surface means for guiding the scrap during loading towards crushing and shearing areas of the system, said feeding means further including an inclined chute and tiltable hopper means for staging scrap and for providing an extension of such chute and having one end positioned to feed scrap to said chute.

4,660,470

INKING UNIT PRE-ADJUSTMENT METHOD

Jurgen Kramp, Offenbach am Main; Peter Schramm, Frankfurt; Gerhard Augsberg, Obertshausen, and Gerd Steiner, Heusenstamm, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1984, Ser. No. 663,227

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1983, 3338143

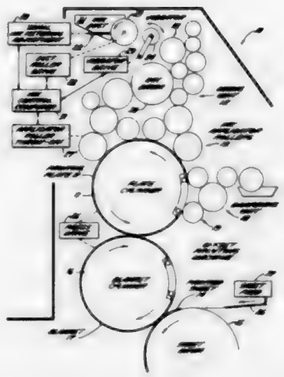
Int. Cl.[4] B41F *31/04, 31/10*

U.S. Cl. 101—426 **18 Claims**

1. For a printing machine having a series of inking unit rollers in an inking unit conveying ink from a source of ink to a printing plate, the source of ink having a plurality of adjustable ink metering elements across the width of the printing machine for regulating respective amounts of ink fed to individual respective printing zones across the width of the printing plate and means for selectively turning on and off the flow of ink from the source of ink to said inking unit rollers,

a method of pre-adjusting said inking unit before printing starts prior to continuous printing for which said ink metering elements are adjusted to obtain a desired zonal ink profile based upon the ratio of printing area to total area in each of the zones comprising the steps of adjusting the ink metering elements to regulate approximately the same predetermined amounts of ink, activating said means for selectively turning on and off to turn on the flow of ink form the source of ink to the inking unit rollers, waiting a first predetermined amount of time so that an accurately

defined quantity of ink is fed to the inking unit rollers to obtain approximately the same ink thickness on the inking



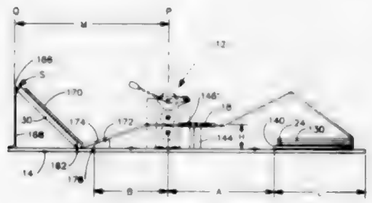
unit rollers that occurs during continuous printing, and then starting continuous printing.

4,660,471

PRINTING APPARATUS

James L. Wright, Jr., 2020 N. Weber, Colorado Springs, Colo. 80907, and Hakon Christiansen, Colorado Springs, Colo., assignors to James L. Wright, Jr., Colorado Springs, Colo.

Filed Dec. 7, 1983, Ser. No. 558,929
Int. Cl.[4] B41F 5/04
U.S. Cl. 101—219 18 Claims



1. A printing apparatus adapted to print information on an accordian array of print cards wherein each card has a length L with each card being hingedly connected to each adjacent card to define a stream of cards to be advanced through the printing apparatus, comprising

a pair of vertical plate-like support members mounted to a support surface in generally spaced-apart, parallel planes;

a print roller rotatably journaled between said support members on a first axis and mounting printing elements thereon;

an ink roller rotatably journaled between a pair of ink roller supports on a second axis parallel to said first axis, said ink roller movable into an abutting relation with said printing elements;

a platen roller rotatably journaled between said support members on a floating axle parallel to said first axis, said support members permitting movement of said floating axle whereby said platen roller may be moved into and out of abutment with said print roller;

bias means on said support members for biasing said platen roller into direct radial abutment with said print roller;

a feed stop located upstream of said print and platen rollers a distance greater than the length of a card to be printed and operative to abut an edge of said accordian array of cards facing said vertical supports;

a take-up member mounted to said support surface downstream of said print roller and having a take-up stop located a distance from said print roller that is greater than the length of said cards by a factor of betwen 1.9 and 2.2; and

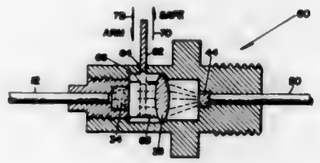
drive means connected to said print roller for rotatably driving said print roller so that said cards are advanced between said print and platen rollers, said cards in said array being consecutively drawn against said feed stop to be unfolded from said accordian array, advanced between said print and platen rollers and then refolded against said take-up stop onto said take-up member.

4,660,472

OPTICAL THROUGH BULKHEAD INITIATOR AND SAFE-ARM DEVICE

George L. Stevens, North Ogden, Utah, assignor to Morton Thiokol Inc., Chicago, Ill.

Filed Oct. 7, 1985, Ser. No. 785,187
Int. Cl.[4] F42B 3/18; C06C 5/04
U.S. Cl. 102—202.1 20 Claims



1. A pyrotechnic system for transferring an initiation stimulus through a bulkhead comprising, in combination:

an initiator body having an input side adapted to be positioned on the upstream side of the bulkhead, an output side adapted to be positioned on the downstream side of the bulkhead, and having a cavity formed therein in optical communication with said input and output sides,

an input ordnance transfer line having ends with one end thereof connected to the input side of said initiator body,

output ordnance means associated with the output side of said initiator body,

an illuminating charge positioned in said cavity in operative relation to said one end of said input ordnance transfer line,

a booster target charge positioned in said cavity in operative relation with said output ordnance means, and

radiation energy transmitting means positioned in said cavity intermediate said illuminating charge and said booster charge,

said input ordnance transfer line, said illuminating charge, said booster target charge, and said output ordnance means all being of the deflagrating type.

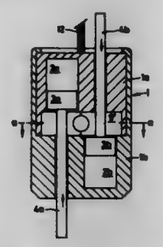
4,660,473

COMPRESSED GAS-ACTUATED MECHANICAL POWER ELEMENT

Richard Bender, Lauf; Hellmut Bendler, Nuremberg; Gerrit Scheiderer, and Hans Winkler, both of Fürth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Dec. 19, 1984, Ser. No. 683,681
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1983, 3347553; Apr. 27, 1984, 3415680
Int. Cl.[4] F42C 15/32
U.S. Cl. 102—223 16 Claims

1. A compressed gas-actuated mechanical power element comprising a housing containing a first cylinder chamber with a piston, displaceable in the first cylinder chamber, carrying a pin projecting from the housing and a compressed gas cartridge in communication with the first cylinder chamber; said housing further containing at least one second cylinder chamber, with a second piston displaceable therein and with a pin projecting from the housing; and both cylinder chambers being in communication with each other and in communication with the compressed gas cartridge.



4,660,474

PERCUSSION OR IMPACT WAVE CONDUCTOR UNIT

Danilo A. Dias dos Santos, Curitiba, Brazil, assignor to Britanite Industrias Quimicas Ltda., Parana, Brazil

Filed Jan. 14, 1985, Ser. No. 690,879
Claims priority, application Brazil, Jan. 13, 1984, 8400206
Int. Cl.[4] C06C 5/04
U.S. Cl. 102—275.8 1 Claim

1. A non-electric fuse device for initiating explosives comprising:

an elongated hollow duct having entrace and exit ends and an inner annulus having a dimension of from about 0.5 mm to about 10 mm, and containing on the interior surface thereof;

a coating, comprising a pyrotechnic mixture made up of at least three members selected from the group consisting of potassium bichromate, vanadium pentoxide potassium permanganate, sugar, lead oxide, aluminum, silicon and amorphous boron and combination thereof which when present in said coating are bonded to the said inner surface of said hollow duct;

said coating mixture having a coverage of from between about 1×10^{-2} to about 4×10^{-5} gm/cm^2 and a burn rate when fired at said entrance end of from between about 500 meters per second to about 1200 meters per second along the interior of said duct whereby explosives placed at said exit end of said duct can be initiated by the products of said pyrotechnic combustion leaving said exit end.

4,660,475

SPOOLED PROPELLANT CHARGE AND METHOD OF MANUFACTURE THEREOF

Gerald W. Rogowski, Hyrum, and Frank H. Bell, Logan, both of Utah, assignors to Morton Thiokol, Inc., Chicago, Ill.

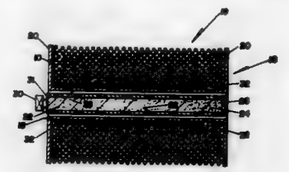
Filed Jul. 31, 1985, Ser. No. 761,130
Int. Cl.[4] C06D 5/06
U.S. Cl. 102—284 18 Claims

1. A method of manufacturing a propellant charge comprises the steps of:

a. preparing a strand of propellant;

b. preparing a form member to include an elongated member and a ridge member at each end of the elongated member which ridge member extends radially outwardly from the elongated member such that the form member has the shape of a spool upon which the propellant strand may be spooled; and

c. spooling the propellant strand on the form member between the ridge members whereby the ridge members



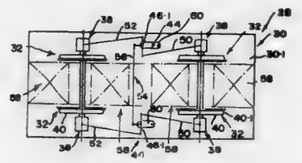
serve to maintain the integrity of the spooled propellant on the elongated member.

4,660,476

SELF-STEERING RAIL TRUCK

Philip M. Franz, P.O. Box 47340, Parklands, Johannesburg, Transvaal Province, South Africa

Filed Mar. 22, 1985, Ser. No. 714,877
Claims priority, application South Africa, Mar. 29, 1984, 84/2361; Aug. 2, 1984, 84/5998; Oct. 31, 1984, 84/8508
Int. Cl.[4] B61F 5/38, 5/26
U.S. Cl. 105—168 7 Claims



1. A self-steering rail truck comprising:

a load-bearing means having support means for supporting a rail vehicle body thereon;

a pair of longitudinally spaced live axle wheel sets arranged to run longitudinally along a rail track, each wheel set including a transverse axle having two transversely spaced axle boxes and wheels which have tapered treads for generating steering forces on rail track curves;

resilient suspension means acting between the axle boxes and the load-bearing means for resiliently supporting the load-bearing means;

a side link lever system on each side of the truck interconnecting the two axle boxes of the two wheel sets on that side, and including a transversely disposed side lever having an intermediate effort arm and having pivotal support on the load-bearing means about a pivotal axis directed upwardly at a region intermediate the axle boxes on that side, and links interconnecting opposite ends of the side lever with the axle boxes on that side in such a way that in use, as a result of the steering forces, a yawing movement in one wheel set axle is transferred into an opposite yawing movement of the other wheel set axle; and

a transverse member within the wheel base of the wheel sets interconnecting the intermediate effort arms of the side levers on the opposite sides of the truck in such a way that, in use, as a result of the co-operation between the transverse member and the side link lever systems, the average wheel base between the wheel sets remains substantially constant, the transverse member and the said side link lever systems being free from contact with any rail vehicle body which may be mounted on the load bearing means.

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4,660,477
SLIDABLE WORK SURFACE

Randall L. Kortering, Zeeland, and Paul S. Gartland, Twin Lake, both of Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Aug. 17, 1984, Ser. No. 641,884
Int. Cl.[4] A47B *9/00*
U.S. Cl. 108—108 **4 Claims**



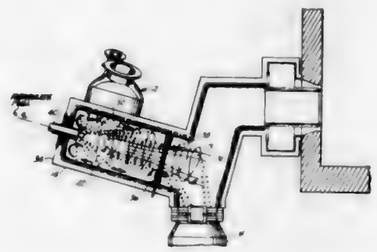
1. In combination, an upright wall structure defining a pair of horizontally spaced urpights each having a wall with a vertically extending row of elongated slots therein, a bracket structure adapted for releasable securement to each said upright, said bracket structure including forwardly and downwardly projecting hook means positioned for engagement with the slotted wall of the respective upright, and a shelflike structure positioned on and releasably attached to said bracket structures in a normal use position whereby the shelflike structure has a front edge positioned closely adjacent said wall, said shelflike structure projecting substantially horizontally outwardly from said wall in cantilevered relationship thereto, the shelflike structure also having a rear edge which extends substantially parallel to said front edge and remotely located from said wall, the improvement comprising manually releasable latch means coating between shelflike structure and said bracket sturctures for (1) maintaining said shelflike structure in said use position when latched and (2) permitting said shelflike structure to be horizontally slidably moved relative to said bracket sturctures rearwardly away from said wall through a selected extent into a service position when unlatched, said latching means including a manually releasable latching member movably supported on one of said shelflike and bracket structures and being normally biased toward a condition of latching engagement with the other of said shelflike and bracket structures, said latching member having a part thereof which is manually accessible from a location disposed in the vicinity of said rear edge, said latching member comprising a horizontally elongated latching lever pivotally mounted on said shelflike structure adjacent each end edge thereof and disposed for latching engagement with the respectively adjacent bracket structure, said latching lever being hingedly mounted adjacent its forward end on said shelflike structure, said latching lever having adjacent its rearward end a finger-engaging part which is disposed in the vicinity of the rear edge of said shelflike structure so as to be manually releasable, said shelflike structure inlcuding an end rail extending along each and edge thereof between said front and rear edges, said end rail having a substantially hollow channel-like cross section, said latching lever being positioned within and extending along each said end rail, a sleevelike guide grommet fixed within said end rail adjacent the rear edge of said shelflike structure, said sleevelike guide grommet being aligned with an access opening formed in the underside of said end rail, said grommet having a vertical guide slot formed therein, said latching lever adjacent the rear free end thereof having a part thereof vertically slidably guided within said guide slot, said finger-engaging part of said latching lever being positioned within said sleevelike guide grommet, said latching lever having a downwardly projecting latching part protruding downwardly therefrom, slots means formed in and opening downwardly of said bracket structure of receiving therein said latching part when said shelflike structure is in said use position, spring means normally biasing said latching lever in a direction causing said latching part to project into said slot means, and means for slidably guiding the movement of said shelflike structure on said bracket structures as the shelflike sturcture moves between said use and service positions.

4,660,478
SLAGGING COMBUSTOR WITH EXTERNALLY-HOT FUEL INJECTOR

Douglas B. Sheppard, Torrance; Albert Solbes, Rancho Palos Verdes, and Gabriel D. Roy, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 13, 1984, Ser. No. 670,416
Int. Cl.[4] F23D *1/02*
U.S. Cl. 110—264 **36 Claims**





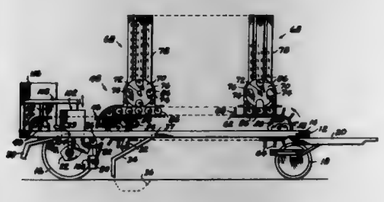
1. In an apparatus for the combustion of pulverized-coal fuel in a combustion zone and separation of the noncombustible-minerals content of the fuel from the gaseous products of combustion as slag, wherein the combustion zone is enclosed within a substantially cylindrical, water-cooled combustion chamber having its walls at temperatures such that a layer of slag is maintained on the inside surfaces of the walls, and wherein oxidant is injected substantially tangentially into said chamber adjacent said inside surfaces in a manner to establish high velocity swirling flow of oxidant, slag droplets, fuel particles and products of combustion within said combustion zone, and wherein a fuel injector for introducing pulverized coal entrained in a flow of carrier fluid extends a substantial distance into said combustion zone substantially along the center line of said chamber and is there immersed in a mixture of oxidant, slag droplets, fuel, and products of combustion, and wherein the fuel input rate relative to the oxidant input rate is regulated in a manner to provide flow velocities and combustion temperatures of about 2000° F. or higher, so that the carbon contained in the fuel is oxidized before the fuel particles reach the walls of the chamber and substantially all of the noncombustible minerals present in the fuel are fused and deposited as liquid slag, and wherein it is desirable to maintain said fuel injector at lower temperatures in order to avoid agglutination of fuel particles and clogging of the injector and wherein substantial cooling of the gaseous mixture immediately adjacent the fuel injector would tend to inhibit combustion of the fuel closely adjacent the fuel injector, the improvement comprising:

(a) a thermal-impedance sleeve peripherally enclosing at least a major portion of said fuel injector and extending within said combustion zone, for impeding the transfer of heat to the injector from the adjacent mixture of oxidant, fuel and products of combustion, said sleeve comprising first and second cylinders positioned coaxially with the second cylinder inside the first cylinder for defining an annular plenum therebetween;
(b) means including at least one water-inflow conduit and at least one water-outflow conduit connected to flow water through said plenum for keeping the temperature of said injector substantially below the ash-fusion temperature of slag produced in said combustion zone; and
(c) a coating of relatively high thermal-impedance material formed on and supported by the outermost one of said cylinders and serving to impede the transfer of heat to said sleeve from the gaseous mixture peripherally adjacent thereto, so that the gaseous mixture closely adjacent said sleeve may be maintained substantially at a temperature of about 2000° F. or higher for promoting rapid and stable coal combustion closely adjacent the injector.

4,660,479
TREE PLANTING MACHINE

Raymond A. Crisio, Jr., 18 S. 13 St., Belleville, Ill. 62220, and Jerry R. Black, 753 Memoir La., Manchester, Mo. 63021

Filed Jan. 28, 1986, Ser. No. 823,238
Int. Cl.[4] A01C *11/02*
U.S. Cl. 111—2 **6 Claims**

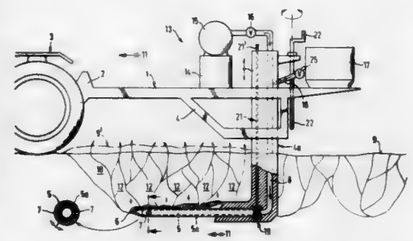


1. A tree seedling planting apparatus, comprising:
trailer means including wheels journalled at respective ends of an axle for horizontally supporting a trailer frame and supplying driving power for frame supported components by forward movement of the trailer means;
transmission means supported by said frame; a differential on said axle drivably connected with said transmission means;
elongated plow blade means pivotally supported at one end portion by said frame for vertical pivoting movement of its other end portion;
a transmission driven first crankshaft transversely journalled by said frame and operatively connected with said blade for vertically reciprocating said other end portion of the latter during forward movement of the trailer means and forming a furrow in the surface of the earth;
tree seedling conveyor and transfer means for sequentially depositing a tree seedling in the plow blade formed furrow;
an elongated furrow backfill blade pivotally supported at one end portion in spaced relation rearwardly of said plow blade means by said frame for vertical pivoting movement of its other end portion;
a second driven crankshaft transversely journalled by said frame and operatively connected with said backfill blade for backfilling the furrow and covering the root portion of a tree seedling within the furrow in sequence with frame forward movement; and,
belt and pulley means drivably connecting said first crankshaft with said second crankshaft.

4,660,480
PROCESS AND DEVICE FOR LOOSENING AGRICULTURALLY USED SOIL

Eugen Zinck, Hueffelsheimer Str. 2, 6550 Bad Kreuznach, Fed. Rep. of Germany

Continuation of Ser. No. 541,642, Oct. 13, 1983, abandoned. This application Sep. 30, 1985, Ser. No. 782,195
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3238003
Int. Cl.[4] A01B *37/00*
U.S. Cl. 111—7 **16 Claims**



1. A process for loosening packed soil for agricultural use comprising the steps of
(a) supporting and positioning a probe member underneath and substantially parallel to and at a predetermined depth below the surface of the soil,
(b) moving said probe in a direction generally parallel to a longitudinal axis of the probe, said probe having a configuration and location relative to its support so that the soil is not loosened but remains tightly packed along substantially the entire surface of the probe during such movement,
(c) periodically releasing bursts of compressed air laterally from the probe in a direction substantially parallel to the surface of the soil, each burst being at sufficient pressure at such predetermined depth to pneumatically lift and erupt the soil, including the soil surface, and form air passages in the form of fissures and cracks extending laterally and upwardly to the surface of the soil,
(d) controlling the frequency of said bursts, and
(e) injecting a solid filling agent into said cracks and fissures immediately following each said burst, said agent lodging in said fissures and cracks and maintaining the soil loose and permeable.

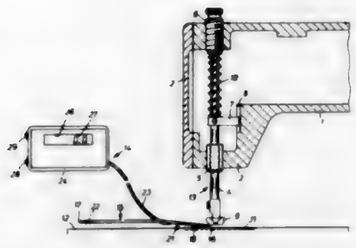
4,660,481
SEWING MACHINE HAVING PRESSER FOOT PRESSURE FORCE MEASURING DEVICE

Rainer Spickermann, Thaleischweiler, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed May 6, 1986, Ser. No. 860,056
Claims priority, application Fed. Rep. of Germany, May 7, 1985, 3516366
Int. Cl.[4] D05B *29/00*
U.S. Cl. 112—235 **3 Claims**

1. In a sewing machine having a presser foot which is reciprocated upwardly and downwardly above a sewing station, over which materials are passed, the improvement comprising a force absorption element positioned between the presser foot and the sewing station, said force absorption element including an element movable in response to pressure thereon by the presser foot, and a sensor circuit connected to said movable element and responsive to movement thereof due to force applied by said presser foot to indicate the pressure force acting, said sensor circuit element including a lever having one end pivotally mounted on the sewing station at a location

intermediate the length of said lever and having one end extending below the presser foot at a height substantially equal to



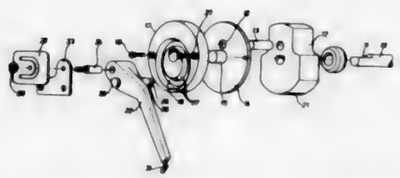
the average thickness of the material to be worked and having an opposite end which is loadable with a counterforce.

4,660,482

SEWING MACHINE THREAD TAKE-UP LEVER

Kenneth O. E. Skogward, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Sweden

Filed Jan. 17, 1986, Ser. No. 819,639
Claims priority, application Sweden, Jan. 29, 1985, 8500404
Int. Cl.[4] D05B *49/02*
U.S. Cl. 112—241 **4 Claims**



1. In a sewing machine having a thread take-up lever mounted for swinging movement about a fixed pivot, the lever having hook means at one end for receiving a thread, a shaft for driving a needle bar, and a cam disk mounted for rotation with said shaft, said cam disk having a face normal to said shaft with a cam groove therein, said take-up lever having a cam follower engage in said groove to impart a swinging motion to said take-up lever, said groove having side walls and a bottom wall; the improvement wherein said side walls are sloped with respect to said shaft whereby said groove has a trapezoidal cross section with the short side thereof along said bottom wall, said cam follower being tapered to fit in said groove to engage the side walls of said groove without contacting said bottom wall and being mounted to said take-up lever between said fixed pivot and said hook means, and further comprising spring means mounted to urge said cam follower into said grooves.

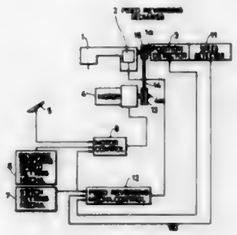
4,660,483

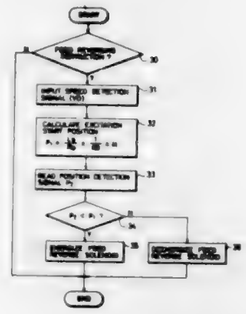
SEWING MACHINE CONTROL DEVICE

Satomi Yamauchi, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1985, Ser. No. 739,594
Claims priority, application Japan, May 31, 1984, 59-109344
Int. Cl.[4] D05B *69/18, 69/20*
U.S. Cl. 112—317 **3 Claims**

1. A sewing machine including a control device, comprising:
a sewing machine head having a feed reversing mechanism;
reverse stitch setting means for instructing a number of stitches for which said feed reversing mechanism is to be operated;
position detecting means for detecting a position of said sewing machine head;
reverse stitching control means for comparing said position detection output of said position detector with a number of stitches instructed by said stitch setting means, and applying, when said position detection output coincides with said number of stitches thus instructed, a predetermined driving instruction to said feed reversing mechanism; and





speed detecting means for applying a signal, corresponding to a speed of said sewing machine, to said reverse stitching control means, said control means comprising means for varying the timing of the application of the driving instruction to said feed reversing mechanism so that, according to the operating speed of said sewing machine supplied from said speed detecting means, a time instant when operation of said feed reversing mechanism is initiated is made to coincide with the time instant said number of stitches instructed by said stitch setting means is detected by said position detecting means.

4,660,484

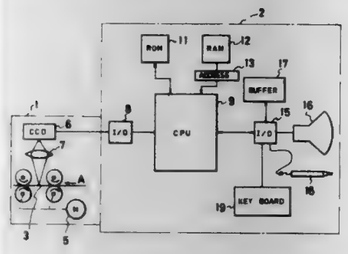
STITCH PATTERN INPUT DEVICE FOR SEWING MACHINES

Hideo Yasui, Chofu, Japan, assignor to Tokyo Juki Industrial Co., Ltd., Chofu, Japan

Filed Feb. 28, 1986, Ser. No. 834,951
Claims priority, application Japan, Feb. 28, 1985, 60-39504
Int. Cl.[4] D05B *3/02, 19/00*
U.S. Cl. 112—457 **4 Claims**

1. A stitch pattern input device, comprising pattern reading means for converting a printed stitch pattern into coordinate data; storage means for storing said coordinate data obtained by said pattern reading means as pattern data; indicating means for displaying the stitch pattern and input means for indicating

stitch points and stitching order of the stitch pattern on the indication means and operational means for adding stitch point



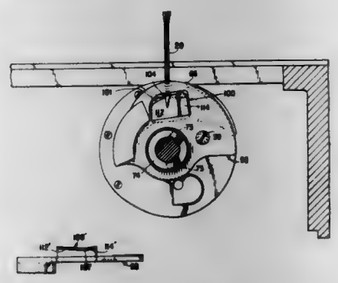
data and stitching order data obtained by said input means to said pattern data.

4,660,485

ROTATING NEEDLE GUARD

Francis Morgan, Bridgewater, N.J., assignor to SSMC Inc., Stamford, Conn.

Filed Nov. 6, 1980, Ser. No. 204,425
Int. Cl.[4] D05B *3/02, 55/06*
U.S. Cl. 112—467 **1 Claim**



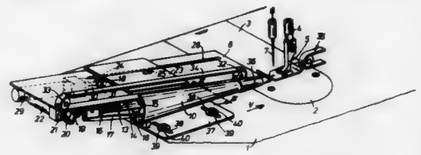
1. A zigzag sewing machine comprising a frame including an arm and work supporting bed, a needle bar supported in said arm for endwise reciprocation and lateral oscillation, a sewing needle carried on one end of said needle bar, said sewing needle having a cone shaped end merging from full thickness adjacent a thread carrying eyelet to a point, means for reciprocating and laterally oscillating said needle bar in the formation of zigzag stitches extending between a maximum left needle position and a maximum right needle position, a looptaker supported in said bed for rotation on a horizontal axis substantially perpendicular to the lateral oscillations of said needle bar, said rotating looptaker having a loop seizing beak passing in one position along one side of said sewing needle for cooperation therewith in the formation of stitches, said rotating looptaker further including means thereon for guiding said sewing needle into cooperative engagement with the loop seizing beak and for supporting said sewing needle against deflection into the path of motion of said loop seizing beak in all lateral positions of said sewing needle, said guiding means being implemented by a lead in surface of said rotating looptaker extending from before and beyond said loop seizing beak on said one side of said sewing needle to said loop seizing beak at the one of said maximum, needle positions last arrived at by said loop seizing beak, said supporting means being implemented by a supported surface extending from said one of said maximum needle positions to the other of said maximum needle positions, said supporting surface being contoured with an apex at said one of said maximum needle positions for contacting said cone shaped end of said needle for support thereof, said supporting surface extending after said apex to a plane the extension of which crosses the path of motion of said loop seizing beak for support of said full thickness of said sewing needle adjacent the eyelet thereof in the other of said maximum needle positions.

4,660,486

DEVICE FOR FORMING A DOUBLY TURNED HEM

Conrad Arbter, Saal/Saale, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Feb. 12, 1986, Ser. No. 828,768
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1985, 3505170
Int. Cl.[4] D05B *35/04*
U.S. Cl. 112—143 **9 Claims**



1. A hem folding device for forming a double hem in a double turned edge of a workpiece for use with a sewing machine having a movable thread guiding needle operable in a stitch forming area, comprising a spirally extending and longitudinally converging sleeve having a longitudinally extending workpiece entrance at its one end and having a converging end oriented toward the stitch forming area, means for feeding a workpiece material longitudinally and through said entrance toward the converging end of said sleeve, said sleeve defining a deflecting surface on its interior for deflecting the workpiece material into a double hem, and an auxiliary folding device within said sleeve including a flexible portion which is movable parallel to the direction of advance of the material to be sewn within said sleeve and which follows the cross-sectional shape of the workpiece in order to press the edge region of the workpiece against said deflecting surface.

4,660,487

LOOP TAKER FOR SEWING MACHINES

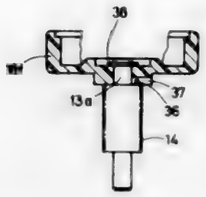
Yoshio Mikuni, Osaka, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Continuation of Ser. No. 615,739, May 31, 1984, abandoned.
This application Oct. 16, 1985, Ser. No. 788,102
Claims priority, application Japan, Mar. 14, 1984, 59-37111[U]
Int. Cl.[4] D05B *57/08*
U.S. Cl. 112—230 **16 Claims**

1. A loop taker for sewing machines, having a hook for arresting a needle loop and adapted to be rotated or oscillated around a predetermined axis, said loop taker comprising a loop taker body substantially entirely molded of resin and having a base portion and a side wall projecting upward from the base portion, said hook being formed of metal so as to have wear resistance and separately from said loop taker body, said hook being formed on a hooked attachment having a generally L-shaped vertical cross-section defined by an upright side wall portion and a radially projecting portion having a downward facing surface extending inwardly from the upright side wall portion, said upright side wall extending continuously between a pair of generally vertical edges thereof with the hook projecting from one of said edges with the other of said edges adapted to generally abut against a generally vertical edge of the loop taker body when the hooked attachment is fixed thereto, said upright side wall extending substantially continuously from the radially projecting portion along substantially the entire height of the hooked attachment, said downward facing surface being in flush contact with a support surface formed on the loop taker body, said support surface and down-

ward facing surface being generally parallel to a raceway formed on the loop taker body, and means for fixing said hook to the looptaker body, wherein said upright side wall portion is





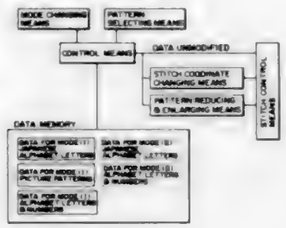
an attaching portion through which said hook is attached to the loop taker body, said attaching portion having a radial thickness less than the thickness of the side wall of the loop taker body.

4,660,488

COMPUTER SEWING MACHINE

Susumu Hanyu, and Kenji Kato, both of Hachioji, Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Jul. 18, 1985, Ser. No. 756,116
Claims priority, application Japan, Jul. 20, 1984, 59-149396
Int. Cl.[4] D05B *3/02*
U.S. Cl. 112—454 **4 Claims**





1. A computer sewing machine having an upper drive shaft rotated to vertically reciprocate a needle to penetrate a fabric to be sewn and to operate a feed dog to feed said fabric with respect to said needle, stitch control means for controlling the movement of said needle laterally of said fabric feeding direction and for controlling the amount of fabric being fed and the direction thereof, said sewing machine comprising:

a memory storing stitch control data which may be selectively and sequentially read out to control said stitch control means, said stitch control data including data for the patterns of specific letters which may be oriented in a first mode to be readable in the lateral direction or in a second mode to be readable in the vertical direction, said memory storing said letter data in a condition corresponding to one of said first and second modes;

pattern selecting means including a plurality of pattern selecting keys selectively operated to normally select the patterns stored in said memory, said pattern selecting keys including the keys for selecting said patterns of specific letters;

control means responsive to the operation of said pattern selecting keys to read out the data for said selected patterns from said memory;

a function key operated to memorize in said control means the data for a plurality of patterns including the patterns of said specific letters selected in a predetermined order by operation of said pattern selecting keys;

mode changing means including a mode changing key operated to change said selected patterns of specific letters from one of said first and second modes to the other thereof; and

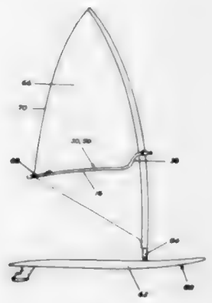
stitch coordinate changing means storing stitch coordinate mode changing data activated to modify said pattern data for said specific letters selected in a predetermined sequence by operation of said pattern selecting keys, said mode changing data responsive to the operation of said mode changing key to modify said pattern data for said specific letters per stitch of said specific letters to change the stitch coordinates of said selected specific letters to thereby orient said letters in the other of said first and second modes.

4,660,489

SAILBOARD BOOMS

Graeme S. Attey, 61 Thelma St., Como, Western Australia, Australia 6152

Continuation of Ser. No. 615,797, May 31, 1984, abandoned. This application Mar. 10, 1986, Ser. No. 838,419
Claims priority, application Australia, May 30, 1983, PF9605
Int. Cl.[4] B63B *35/72*
U.S. Cl. 114—39 **2 Claims**



1. A sailboard boom having a leading end for attachment to the mast of a sailboard and a trailing end for attachment to a clew of a sailboard sail, said boom comprising first and second elongated members each extending between said leading and trailing ends, said members being symmetrical and oppositely bowed between said leading and trailing ends to define open space devoid of obstructions between said members from leading end to trailing end for accommodating a sail therebetween, each of said members including goose-neck portions adjacent said leading ends thereof to define a short leading portion extending into a slanted portion extending downwardly and rearwardly to a long portion which is substantially longer than said short portion and generally parallel to said short leading portion for allowing an operator to grasp the slanted portion with the forward hand and the long portion at different positions therealong with the other hand.

4,660,490

RECREATIONAL SEMI-DISPLACEMENT HULL WATERCRAFT

Daniel J. S. Broadhurst, Mastic Beach, N.Y., assignor to Olympia Sports Products, Inc., Plainview, N.Y.

Filed Jan. 30, 1986, Ser. No. 824,073
Int. Cl.[4] B63B *1/16, 35/71*
U.S. Cl. 114—56 **9 Claims**



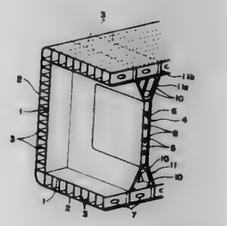
1. A watercraft comprising a smooth surfaced semi-displacement hull having a bow section, a middle section and a stern section, the hull having an outwardly projecting flange longitudinally positioned along the periphery of the hull substantially about the water line and dividing the hull into a bottom part and a top part, the flange being progressively inclined downward from the bow to the middle section and from the stern to the middle section, whereby the flange is positioned configured and dimensioned to increase the directional stability and maneuverability of the watercraft and to keep the wetted surface area of the hull to a minimum, the transverse profile of the hull in the middle section having a substantially flat bottom with convexity up to the top portion.

4,660,491

DOUBLE HULL SHIP WITHOUT REINFORCING TRANSVERSE MEMBERS BETWEEN THE INNER AND OUTER HULL PLATINGS

Seiichiro Murata; Masaru Tateishi, both of Sakai; Toshio Yoshioka, Kawachi-nagano; Sakito Kamei, Sakai; Hiroshi Nakazono, Arao, and Yoshiro Yamawaki, Innoshima, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 630,205, Jul. 12, 1984, abandoned. This application Jan. 23, 1986, Ser. No. 824,557
Claims priority, application Japan, Jul. 22, 1983, 58-114506
Int. Cl.[4] B63B *3/20, 3/62*
U.S. Cl. 114—65 R **1 Claim**



1. A steel ship having at least its side portions and bottom portion comprised of an inner hull plating and an outer hull plating connected together by transverse bulkheads and a plurality of connecting longitudinal members fixed to said transverse bulkheads, said inner hull plating extending through said bulkheads, characterized in that

(a) said longitudinal members are disposed perpendicularly both to the inner and outer hull platings, and

(b) there are no other transverse members besides said transverse bulkheads intersecting said connecting longitudinal members, and

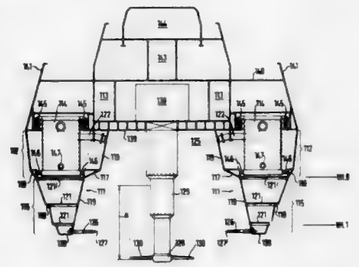
(c) each transverse bulkhead comprises a substantially rectangular central portion comprising two vertical plates connected together by connecting members arranged therebetween and a substantially rectangular ring form box surrounding said central portion to define a closed space, said box having a flaring part adjoining said central portion and a peripheral part of a substantially constant thickness disposed around said flaring part and partitioned from said flaring part by said inner hull plating, said flaring part of the bulkhead being internally provided with generally triangular ribs spaced apart along the periphery of the bulkhead, part of said connecting longitudinal members being arranged within said peripheral part of the bulkhead.

4,660,492

CATAMARAN AIR CUSHION WATER VEHICLE

Norbert Schlichthorst, Osterberg 7, D-2151 Beckdorf, and Wolfgang Mangelsdorf, Helvetierweg 7a, D-2000 Hamburg 61, both of Fed. Rep. of Germany

Filed Nov. 15, 1985, Ser. No. 798,372
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1984, 3442044
Int. Cl.[4] B63B *1/38*
U.S. Cl. 114—67 A **31 Claims**



1. Catamaran air cushion water vehicle comprising:

two spaced apart floats each having a bottom and a top and which extend parallel to one another in the longitudinal direction of the water vehicle and which have a float region (**115**) therebetween which is submerged during travel in a first displacement mode and defines a first displacement travel waterline (WL0), wherein the cross-sectional widths of the floats increase from the bottom thereof to the top thereof and a deck structure having a top and a bottom rigidly connecting said floats together at the tops thereof;

resilient skirts which are arranged at a stem and at a stern between the floats, said skirts extending at least approximately to the water surface and, together with the floats, bound an air space between a base of the deck structure and the water surface;

main propulsion units and drive propulsion means arranged in the stern region of the floats and which are driven by said main propulsion units; and

fans which blow air sucked in from outside the bounded air space into the bounded air space beneath the bottom of the deck structure in order to lift the water vehicle from travel in the first displacement mode to travel in a second air cushion mode on a second air cushion travel waterline (WL1);

the floats (**111**) each having above said first displacement travel waterline (WL0) a hull section (**112**) having an

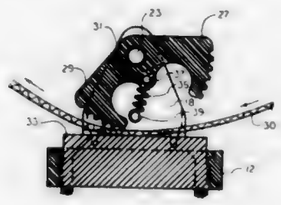
upper end region and which has a width increasing inwardly of the vehicle in a step-like manner, at least along a substantial portion of the total length of said floats (111) with said hull sections (112) having accommodated therein the main propulsion units (114) and the deck structure (113) being attached to upper end regions of the hull sections (112).

4,660,493

DUAL DIRECTIONAL CAM CLEAT

John A. Lowry, III, 124 Arden, Columbus, Ohio 43214

Filed Aug. 9, 1985, Ser. No. 764,119
Int. Cl.[4] B63B *21/08*
U.S. Cl. 114—199 4 Claims



1. A dual directional cam cleat for maintaining a line taut on a sailing craft, comprising:
- a base,
- a pair of upright arms positioned on said base,
- a dual cam cleat support structure positioned between said upright arms including a gripping jaw positioned on each end thereof,
- said upright arms and said dual cam cleat support structure including an aperture at the uppermost part thereof for retaining a support pin for said dual cam cleat support structure and for permitting pivotal vertical movement of said gripping jaws thereon,
- the longitudinal axis between each of the ends of said dual support structure having said gripping jaws and said support pin being less than 180° relative to one another,
- a resilient member connected to said dual cam cleat support structure below said support pin and to a lower position on said arms to maintain a single one of said gripping jaws in a lowermost toggling position,
- said gripping jaws have a portion serrated for gripping said line and for maintaining the line taut,
- said base comprising a rotational platform, and means for securing said upright arms to said rotational platform to thereby permit the primary direction of each of said pair of jaws when engaging said line to be rotated 180°.

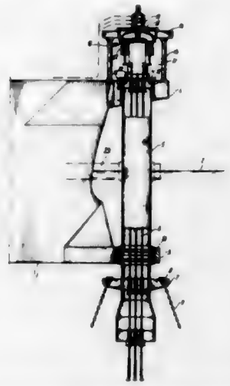
4,660,494

MOORING DEVICE

Bernard-Frederic Doré, Roquebrune, and Daniel J. Gastowt, Nice, both of France, assignors to Single Buoy Moorings Inc., Marly, Switzerland

Continuation of Ser. No. 654,093, Sep. 24, 1984, abandoned. This application Mar. 19, 1986, Ser. No. 841,664
Claims priority, application Netherlands, Sep. 23, 1983, 8303279
Int. Cl.[4] B63B *21/52*
U.S. Cl. 114—230 3 Claims

1. Mooring device consisting of a ship which at one end is provided with arms projecting in the same direction and spaced apart one above the other, of which one is situated under water and the other above water, these arms carrying a vertical casing which is rotatable about a vertical axis and is supported in the lower arm by means of a bearing which bears substantially only a radial load, this casing projecting under the lower arm and being provided there with means for fastening anchor lines; a pipe coupling having a stationary part mounted on a top end of the casing, pipes extend downwardly from the pipe coupling through the casing, the casing being supported in the upper arm by a bearing that bears not only a radial load but also substantially all the axial load of the casing, the last-named bearing comprising a roller bearing having an outer ring that is



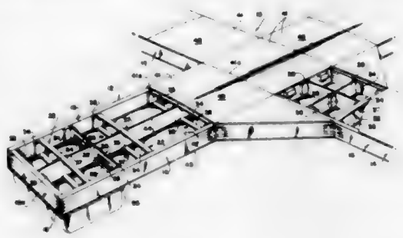
secured on a top face of said upper arm and an inner ring that is secured on a top face of the casing, said upper arm surrounding the upper end of the casing, said inner ring and said outer ring being disposed outside and above all the space which is surrounded by said upper arm.

4,660,495

FLOATING DOCK/MARINA SYSTEM

Thomas L. Thompson, 1515 E. Ocean Blvd., Balboa, Calif. 92661

Filed Sep. 9, 1985, Ser. No. 774,232
Int. Cl.[4] B63B *35/72*
U.S. Cl. 114—263 18 Claims



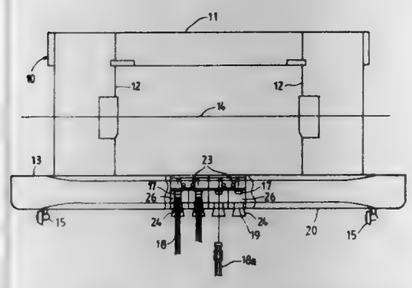
11. A monocoque-structured floating dock having a plurality of dock sections including a main walkway section and a plurality of extended finger sections, each of the sections having a frame structure, comprising:
- a pair of outer longitudinal side beam members spaced apart in a parallel relationship to each other and defining the outer sides of a dock section and the sides of the monocoque structure;
- a central longitudinal beam member positioned between the outer side beam members;
- a plurality of transverse beam members selectively spaced apart and connected to the outer side beam members and the central beam member;
- a plurality of transverse strut members selectively spaced apart and interposed between the transverse beam members;
- an upper deck fixedly secured to the outer side beam members and the strut members to resist torsion and compression stresses and to comprise the upper portion of the monocoque structure;
- a solid bottom cover member fixedly secured to the outer side beam members and the transverse strut members to resist torsion and compression stresses and to comprise the lower portion of the monocoque structure, the monocoque structure defining a substantially closed and permanently fixed rectangular structure;
- floatational means for supporting the monocoque structure; and
- means for connecting the floatational means beneath the bottom cover member.

4,660,496

REMOTELY RELEASABLE CONNECTIONS AT A FLOATING PROCESSING PLANT

Rickard Helmersson, Göteborg, Sweden, assignor to Gotaverken Arendal AB, Gothenburg, Sweden

Filed Jul. 30, 1985, Ser. No. 760,552
Claims priority, application Sweden, Aug. 8, 1984, 8404011
Int. Cl.[4] B63B *35/00*
U.S. Cl. 114—264 4 Claims



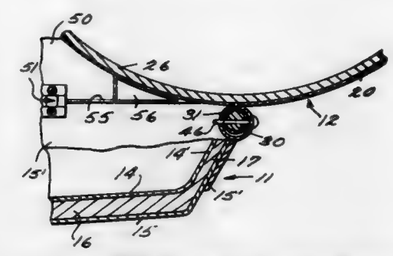
1. In a floating plant for processing crude oil and/or gas which is supplied to the plant from the sea floor by at least one riser conduit,
- a chamber within said plant defined by a deck and a floor and located below the level of the surrounding water, said chamber having a downwardly directed opening in said floor communicating with the ambient water,
- at least one transport pipe extending from inside said plant into said chamber,
- at least one winch supported by said deck and operating a wire,
- a sealing lock in said deck permitting the passage of said wire for optional connection to said at least one riser conduit for introducing the latter from the outside into said chamber,
- remotely releasable locking members connnecting said at least one riser conduit when introduced through said opening to said at least one transport pipe,
- an air lock making said chamber accessible from inside said plant, and
- means for supplying compressed air to said chamber to control the water level within said chamber.

4,660,497

BOLTROPE ATTACHMENT OF FLEXIBLE HULL PORTION TO A RIGID HULL PORTION OF AN RIB

William H. Cochran, P.O. Box 32, 72 Water St., Stonington, Conn. 06378-0032

Continuation of Ser. No. 618,147, Jun. 7, 1984, abandoned. This application Feb. 14, 1986, Ser. No. 829,480
Int. Cl.[4] B63B *7/00*
U.S. Cl. 114—345 12 Claims



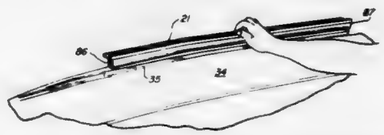
1. A boat having a hull and comprising: a rigid hull portion disposed generally at, and below, the water level of the hull;
- a flexible hull portion, said flexible hull portion including an enclosure of flexible material, said enclosure completely circumferentially surrounding a plurality of inflatable bladders; said flexible hull portion being positioned generally at, and above, the water level of the hull; and
- connecting means for connecting said flexible hull portion to said rigid hull portion, said connecting means comprising a boltrope connected to said flexible hull portion along its length, said rigid hull portion having anchor means for engaging and holding said boltrope substantially along the entire length of said boltrope, said anchor means comprising a substantially C-shaped channel, said channel having and said boltrope having interconnecting restraining means to prevent relative displacement between said channel and said boltrope regardless of the condition of said inflatable bladders, said enclosure comprising a fabric, and further comprising a rub strake formed around at least a portion of the side of said flexible hull portion, said rub strake being formed by a boltrope secured to said enclosure at said side of said flexible hull portion, and a grooved lug of resilient material receiving said boltrope and disposed outwardly of said enclosure.

4,660,498

METHOD OF REINFORCING FLEXIBLE PLASTIC

George B. Madison, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

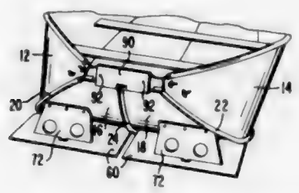
Filed May 22, 1984, Ser. No. 613,051
Int. Cl.[4] B63B *5/24*; B29C *51/10, 51/12*
U.S. Cl. 114—347 1 Claim



1. A method of reinforcing a molded plastic canoe comprising the steps of:
- (a) placing an elongated relatively rigid reinforcing member on a vacuum mold for the canoe, the reinforcing member providing a pair of undercuts between the top of the reinforcing member and the portion of the mold which supports the reinforcing member,

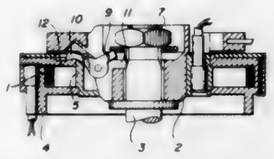
(b) placing a heated plastic sheet over the reinforcing member and the mold,
(c) drawing a vacuum between the plastic sheet and the mold and molding the plastic sheet about the reinforcing member and the mold so that a portion of the plastic sheet extends into the undercuts and the remainder of the plastic sheet is molded in the shape of a canoe, and
(d) inserting an elongated keel member into a slot which is provided in the canoe by the portion of the plastic sheet which extends into the undercuts of the reinforcing member.

4,660,499
BOAT WITH STABILIZING FLAPS
Alex R. Kaye, 5 Patricia Pl., Menlo Park, Calif. 94025
Continuation of Ser. No. 718,329, May 14, 1985, abandoned, which is a division of Ser. No. 677,331, Dec. 3, 1984, Pat. No. 4,556,009, which is a continuation of Ser. No. 462,811, Feb. 1, 1983, abandoned. This application Jun. 13, 1986, Ser. No. 874,794
Int. Cl.[4] B63B *7/00*
U.S. Cl. 114—354 **5 Claims**



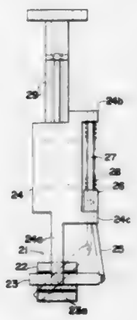
1. A boat comprising: a collapsible hull having a bow and a stern and having a pair of hingedly interconnected bottom panels extending between the bow and stern, there being a pair of side panels hingedly connected to respective bottom panels and extending longitudinally thereof, said hull being movable from a collapsed condition in which the panels are in substantial face-to-face relationship and coupled together to an expanded condition in which adjacent panels extend outwardly from and longitudinally of each other, each of said panels having an end marginal edge at one end of the hull, each of the bottom panels having a curved segment extending upwardly and rearwardly to the respective end marginal edge thereof, each of the side panels having a curved segment extending inwardly and rearwardly to the respective end marginal edge thereof; and a rigid bracket removably coupled to the hull near one end thereof to attach an outboard motor thereto when the hull is in said expanded condition, said bracket including a lower flange and an upper flange integral with the lower flange, there being first fastening means for releasably securing the lower flange to the curved segments of the bottom panels at locations spaced from and in proximity to respective end marginal edges thereof, there being second fastening means for releasably securing the upper flange to the curved segments of the side panels at locations spaced from and in proximity to said end marginal edges thereof, the upper flange being adapted to mount an outboard motor thereon.

4,660,500
STEERING WHEEL INSTALLATION ALIGNMENT DEVICE
Gregor Zeller, Aschaffenburg, and Helmut Bonn, Haibach, both of Fed. Rep. of Germany, assignors to Petri AG, Fed. Rep. of Germany
Filed Mar. 24, 1986, Ser. No. 842,833
Claims priority, application European Pat. Off., Mar. 23, 1985, 85103485.0
Int. Cl.[4] H01R *35/00;* **B60R** *21/08*
U.S. Cl. 116—31 **6 Claims**



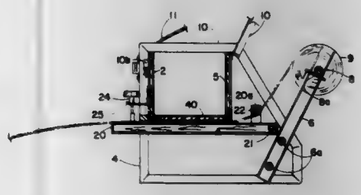
1. A steering wheel assembly comprising:
a fixed housing member;
a rotating unit arranged within said fixed housing including a steering hub and a centrally arranged steering spindle;
a rocker arm mounted on said rotating unit with a first arm and a second arm;
said first arm projects into a path of a steering spindle nut;
said second arm is arranged to engage a first recess in said fixed housing when said steering hub is in a predetermined installation alignment;
wherein said rotating unit exhibits second and third recesses for receiving said first and second arms when pivoted to a disengaged position.

4,660,501
COATING DEVICE
Tsuyoshi Nagata, Ibaraki, and Katsuto Fujita, Osaka, both of Japan, assignors to Sunstar Giken Kabushiki Kaisha, Osaka, Japan
Filed May 21, 1985, Ser. No. 736,304
Int. Cl.[4] B05C *1/02*
U.S. Cl. 118—203 **6 Claims**



1. A coating device comprising a liquid composition supply unit for continuously supplying a liquid composition at a fixed rate and a coating unit for applying the liquid composition to a surface of an article to be coated,
said coating unit comprising a coating head, on which is pivotally mounted a supporting frame which has a coating member mounted thereon, said coating head being connected to said liquid composition supply unit, and a driving unit for moving the coating head along the surface of the article to be coated; and
further comprising an anti-curing unit for preventing curing of the liquid composition on a surface of the coating member, comprising an anti-curing tank provided with an opening through which the coating unit may come in and out of the anti-curing tank and a shutter which is adapted to open and close the opening.

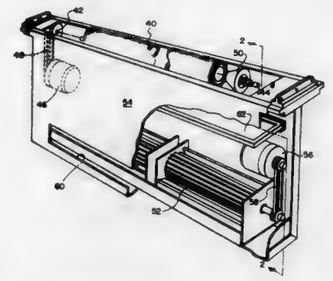
4,660,502
PASTE APPLICATING APPARATUS FOR WALL COVERING SHEET
Thomas J. Scott, 16615 Wolfridge, San Antonio, Tex. 78247
Filed Jul. 23, 1986, Ser. No. 888,658
Int. Cl.[4] B05C *3/18*
U.S. Cl. 118—415 **10 Claims**



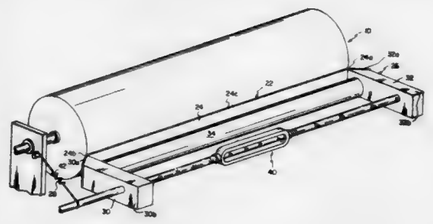
1. Apparatus for applying a controlled thickness layer of flowable adhesive paste to the back of a sheet of wall covering, comprising, in combination: a generally rectangular box having elongated back and front walls rigidly interconnected by opposed side walls; an elongated, deformable bottom wall underlying said back, front and side walls, means for mounting said bottom wall for pivotal movement about a horizontal axis adjacent to the bottom edge of said rear wall to provide a substantially constant width opening between the bottom edge of said rear wall and the top surface of said bottom wall; thereby permitting a sheet of wall covering to be drawn through said box from the back to the front with its back surface uppermost and disposed in overlying relation to said bottom wall, whereby paste introduced into said box contacts the back surface of the wall covering as it is pulled through said box; gasket means depending from said back wall to engage the top surface of said wall covering sheet and prevent leakage of paste; wiper means depending from the bottom edge of said front wall to overly the front portions of said bottom wall; means for adjusting the vertical position of said front portions of said bottom wall relative to said wiper means; and means for controlling the vertical sag of the front edge of said deformable bottom wall to maintain a preselected spacing between the bottom edge of said wiper means and said front portions of said bottom wall to permit the passage of said wall covering sheet out of said box with a preselected thickness distribution of paste thereon.

4,660,503
METHOD AND APPARATUS FOR IMPROVING A MULTI-COLOR ELECTROPHOTOGRAPHIC IMAGE
Robert S. Jones, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 10, 1986, Ser. No. 837,973
Int. Cl.[4] G03G *15/01, 15/10*
U.S. Cl. 118—645 **23 Claims**

1. In a method for producing a multi-stage electrophotographic image comprising the steps of providing an electrophotographic medium on a carrier therefor at a first position, translating the carrier and medium together over a predetermined path, charging the medium at a second position, exposing the medium to a first light-borne image at a third position, providing a first toning element arranged to engage the medium at a fourth position and toning the unexposed portions of the image bearing charged region of the medium to produce a first visible image, and returning the carrier to the first position to repeat the foregoing steps of charging said medium, exposing it to a second light-borne image and toning said second image with a second toning element to produce a second visible image, the improvement comprising the step of brushing the surface of the first toned image with a soft fibrous brush member after said first toning step and prior to the second charging step to remove material from the untoned portion of the medium without significantly altering the toned image.



4,660,504
TENSIONABLE SKIVE FOR MAGNETIC BRUSH APPLICATION
Richard A. Weitzel, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 735,514, May 20, 1985, abandoned. This application Feb. 24, 1986, Ser. No. 833,432
Int. Cl.[4] G03G *15/09*
U.S. Cl. 118—657 **9 Claims**



1. In an electrographic magnetic brush applicator system of the type including a cylindrical outer sleeve to which developer is attractible by a magnetic core piece positioned within the sleeve, and means for producing relative movement between the sleeve and core piece to transport such developer between a development zone and a supply, a device for skiving developer from such sleeve comprising a flexible, elongated skive blade, means for tensioning said blade to produce a straight skiving edge, and means for supporting said skiving edge proximate the sleeve periphery.

4,660,505
DEVELOPING APPARATUS
Ryuji Goto; Hiromi Kashiwagi, both of Fukaya, and Keitaro Yamashita, Kamisato all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Filed Dec. 24, 1985, Ser. No. 812,983
Claims priority, application Japan, Dec. 25, 1984, 59-278497
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—689 **6 Claims**

1. An apparatus for developing electrostatic latent images

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with a two-component developer consisting of carrier and toner, comprising:

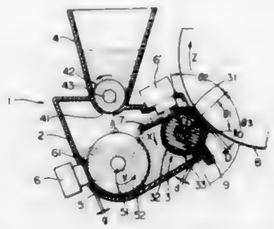
(a) a developer container having walls;

(b) a magnetic roll provided in said container, comprising a permanent magnet and a non-magnetic sleeve;

(c) a hopper mounted on said container for replenishing toner to said container;

(d) a roller made from a non-magnetic, insulating material provided in said container near the wall most distant said magnetic roll for mixing said developer with the toner replenished from said hopper and stirring them; and

(e) a device having a detection surface for detecting the concentration of said toner in said developer, said detection device being mounted on the most distant wall of said container such that said detection surface is located at a



distance of 5 mm or less from said mixing roller to ensure said developer to flow smoothly and stably between said mixing roller and said detection surface, said mixing roll and said detection surface also being configured to provide a constant flow of developer across said detection surface, and wherein said detection device comprises first and second magnetic cores each having primary and secondary coils, said first magnetic core facing the developer through said detection surface, said second magnetic core having a magnetic member for adjusting a coupling coefficient of a magnetic circuit thereof so that it serves as a reference core, and the difference in outputs from said two secondary coils being used to detect the toner concentration of said developer which depends on the permeability of said developer.

4,660,506

PET TOILET

Eric F. Nalven, 330 Monroe Ave., Wyckoff, N.J. 07481

Filed Sep. 26, 1985, Ser. No. 780,413

Int. Cl.[4] A01K *29/00*

U.S. Cl. 119—1 **7 Claims**



1. An animal toilet comprising:

(a) platform means comprising a flexible foraminous material capable of supporting an animal,

(b) floor means below said platform means and including a drain opening,

(c) reservoir means for containing wastes and cleansing liquids extending from said floor means to above said platform means when said floor means drain opening is closed,

(d) a sensor positioned for detection of deflection of the flexible platform resulting from an animal stepping onto or off of the flexible platform, and

(e) ultrasonic transducer means for generating ultrasonic waves for cleaning objects in contact with liquid contained within said reservoir.

4,660,507

SANITARY WINDOW BIRD PERCH

Robert R. Ley, 1511 Bushard St., Apt. #79, Westminster, Calif. 92683

Filed Oct. 31, 1985, Ser. No. 793,308

Int. Cl.[4] A01K *31/12*

U.S. Cl. 119—2.6 **1 Claim**



1. A window bird perch comprising:

a. a perch rod;

b. a drop pan longer than the perch rod;

c. a suspension means that positions the drop pan below the perch rod;

d. a surface attachment means that is parallel to a vertical surface and comprising a plurality of suspension cups and a plurality of wires formed in the shape of an L and each having an attachment means to the perch rod at one end and an attachment means to the plurality of suction cups at the other end with the end of the L shaped wire that attaches to the perch rod having a small upward projection sufficient to engage the perch rod and where the perch rod has a plurality of holes on the downward side of a size sufficient to accept the upward projection of the L shaped wire and the L shaped wire is of a size sufficiently narrow to deter the bird from sitting on the wire and the surface attachment means positions the perch rod at a distance sufficient to prevent the bird from making contact with the vertical surface with its beak.

4,660,508

COMBINATION WET AND DRY FEEDER FOR ANIMALS

Jonathan R. Kleinsasser, and Dan Kleinsasser, both of General Delivery, Ste. Agathe, Manitoba, Canada R0G 1Y0

Filed Feb. 14, 1986, Ser. No. 829,301

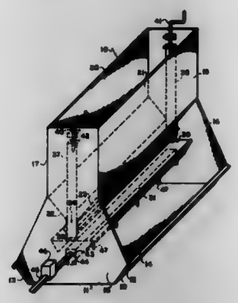
Claims priority, application Canada, Jun. 10, 1985, 483602

Int. Cl.[4] A01K *5/02, 7/06*

U.S. Cl. 119—51.5 **12 Claims**

1. A feeder unit for animals comprising an elongate trough having a base and a sidewall for receiving and containing feed and water and arranged such that the head of the animal an reach over an upper front edge of the sidewall to the base for eating the feed and water, an elongate shelf extending substantially along a full length of the trough and providing a substantially horizontal surface for receiving feed, said horizontal surface of said shelf being arranged at a height above and rearwardly of said front edge so as to allow access by the head of the animal to said shelf for direct feeding therefrom, and between said shelf and said front edge to said base, hopper means for directly and continuously depositing feed onto said

shelf, said hopper means including an elongate lowermost edge, means mounting said lowermost edge and said shelf such that the lowermost edge extends substantially wholly along, adjacent to and spaced from said horizontal surface by a vertical distance and spaced from a front edge of the shelf by a horizontal distance such that the angle of repose of the feed from the lowermost edge to said shelf prevents feed from falling over the front edge of the shelf and thus automatically controls deposit of further feed onto said shelf, said mounting



means including means for manually adjusting the vertical distance from the lowermost edge to the surface and being arranged to maintain said lowermost edge fixed against animal actuated movement, whereby deposited feed on the shelf remains on said shelf but can be removed to the trough by the animal, and means for dispensing water into the trough arranged such that it avoids dispensing water onto the shelf and including means actuable by the animal for controlling the dispensing.

4,660,509

NIPPLE FOR FEEDING LIQUIDS TO FOWL AND/OR SMALL ANIMALS

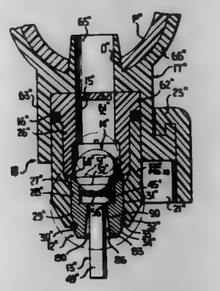
Frederick W. Steudler, Jr., New Providence, Pa., assignor to Val Products, Inc., Bird-in-Hand, Pa.

Division of Ser. No. 728,090, Apr. 29, 1985, Pat. No. 4,606,301, which is a continuation-in-part of Ser. No. 595,577, Apr. 2, 1984, Pat. No. 4,524,724. This application Jun. 16, 1986, Ser. No. 874,675

The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.

Int. Cl.[4] A01K *7/06*

U.S. Cl. 119—72.5 **1 Claim**



1. A nipple particularly adapted for feeding liquid to fowl and/or small animals comprising a housing including means for defining a passage through which liquid is adapted to pass from an upstream passage portion to a downstream passage portion, valve means in said passage for controlling the flow of liquid therethrough, said valve means including a movable valve and a valve seat within said passage, said valve being seated under the influence of gravity/liquid pressure upon said valve seat in a closed position of said valve means, a stem defined by a head and a pin, the pin having a cylindrical outer surface housed within the downstream passage portion, the downstream passage portion including a frusto-conical outlet surface defined in part by an axial outermost major diameter and an axially innermost minor diameter, an annular seat upon which the head normally rests, a cylindrical flow-control surface between the annular seat and the minor diameter of the frusto-conical outlet surface, the flow-control surface defining with the pin cylindrical outer surface a generally annular flow-control channel through which liquid passes when the frusto-conical outlet surface is of a predetermined maximum angle to the axis thereof, and the flow-control surface having an angle to its axis ranging above 0° and up to but not including the predetermined maximum angle of the frusto-conical outlet surface and said predetermined maximum angle is generally 7°.

4,660,510

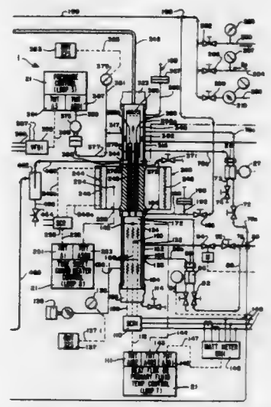
MODEL STEAM GENERATOR HAVING A THERMOSYPHON HEATING MEANS

Robert Draper, Churchill Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1984, Ser. No. 636,438

Int. Cl.[4] F22B *1/02*

U.S. Cl. 122—31 R **26 Claims**



1. A model steam generator for simulating the environment inside a full-scale steam generator in order to monitor the condition of heat exchange tubes within the full-scale steam generator, comprising:

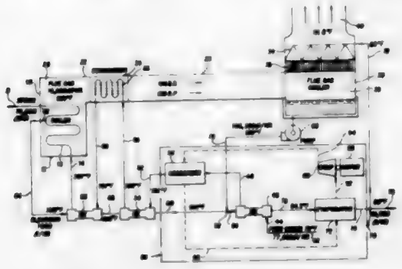
(a) a boiler vessel fluidly connected to a source of feedwater which is substantially identical in composition to feedwater used in the full-scale steam generator;

(b) at least one sample heat exchange tube that is removable from within said boiler vessel, wherein said tube has a closed end disposed within the boiler vessel for transferring heat to the feedwater inside the vessel, and an open end for receiving a heated fluid, and

(c) a heating means for providing a circulating flow of vapor and condensate through the open end of the sample heat exchange tube, wherein said heating means includes an open ended conduit disposed inside the sample tube along a substantial portion of the longitudinal axis thereof for directing a stream of vapor to the closed tube end and for insulating the resulting flow of condensing vapor on the inside walls of the sample tube from the stream of vapor.

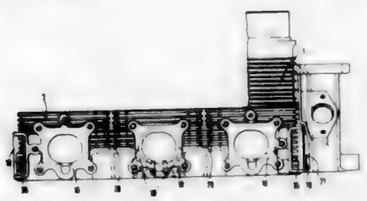
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4,660,511
FLUE GAS HEAT RECOVERY SYSTEM
J. Hilbert Anderson, 1615 Hillock La., York, Pa. 17403
Filed Apr. 1, 1986, Ser. No. 846,748
Int. Cl.[4] F22D *1/02*
U.S. Cl. 122—420 39 Claims



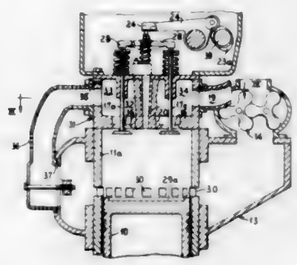
1. A method for recovery of heat from the flue gas discharged from a combustion furnace comprising:
passing said flue gas in thermal contact with a first stream of cooling water;
passing said flue gas into direct contact with a second stream of cooling water, wherein the temperature of the second stream of water exiting from direct contact with the flue gas is lower than the temperature of the first stream of water entering into thermal contact with the flue gas;
pumping said second stream and said first stream through a heat pump to thereby transfer heat from said second stream to said first stream.

4,660,512
AIR-COOLED MULTI-CYLINDER INTERNAL COMBUSTION ENGINE
Robert Binder, Schwieberdingen, and Michael Beer, Wimsheim, both of Fed. Rep. of Germany, assignors to Raychem Corporation, Menlo Park, Calif.
Filed Sep. 20, 1985, Ser. No. 778,189
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435386
Int. Cl.[4] F01P *1/02*
U.S. Cl. 123—41.6 12 Claims



1. An air-cooled multi-cylinder internal combustion engine, comprising a cylinder head with two longitudinal sides forming an inlet side and an exhaust side, the cylinder head of a cylinder row forming a structural part, inlet channels leading to its inlet valves and exhaust channels leading away from the exhaust valves being cast-on at the inlet and exhaust side of the structural part, cooling air flowing into the cylinder head through inlet channel means at the inlet side, being deflected inside of the cylinder head in the longitudinal direction of the internal combustion engine by connecting channel means and, after a further deflection, flowing out through outlet channel means at the outlet side of the cylinder head,
in which each cylinder row includes three cast-together cylinder heads, the cooling air being conducted into the two outercylinder heads in two air streams at the two narrow sides of the three cast-together cylinder heads, the two air streams being deflected oppositely to one another in the direction toward the center cylinder head, being conducted between the valves and being guided into the atmosphere through two outlet channel means each at the exhaust side of the cylinder heads.

4,660,513
TIMING ADJUSTED ENGINE AND CONVERSION KIT THEREFOR
Vincent D. Figliuzzi, Elmhurst, Ill., assignor to Vindof Incorporated, Elmhurst, Ill.
Filed Nov. 26, 1985, Ser. No. 801,880
Int. Cl.[4] F02B *33/38*; F02D *39/04*
U.S. Cl. 123—65 A 4 Claims

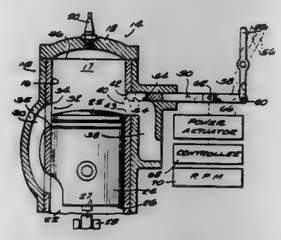


1. A conversion package for modifying a two cycle internal combustion piston engine construction having a piston reciprocable in a cylinder, said cylinder having a cylinder head opposed from said piston to define a chamber therebetween and sidewalls formed with open ports controlled by said piston, a plurality of exhaust valve means for said chamber supported in said cylinder head controlled by cams on a rotating cam shaft, a fuel injection means in said cylinder head, and an air intake manifold in fluid communication with said open ports, comprising:
a replacement cylinder head for supporting said exhaust valve means having a partition isolating at least one of said exhaust valve means in a first space and the remainder of said exhaust valve means in a separate second space,
a replacement cam for controlling said at least one exhaust valve means in said first space, and
an extension duct for fluidly connecting said intake manifold to said first space of said replacement cylinder head.

4,660,514
TWO-CYCLE INTERNAL COMBUSTION ENGINE INCLUDING MEANS FOR VARYING CYLINDER PORT TIMING
James S. Nerstrom, Gurnee, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Division of Ser. No. 376,705, May 10, 1982, Pat. No. 4,516,540, which is a division of Ser. No. 141,906, Apr. 21, 1980, Pat. No. 4,341,188. This application Mar. 25, 1985, Ser. No. 715,479
Int. Cl.[4] F02B *75/02*
U.S. Cl. 123—65 PE 4 Claims

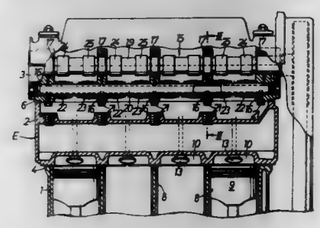
1. A two-cycle internal combustion engine comprising an engine block including a cylindrical wall defining a cylinder having a head end, a crankcase extending from said cylinder from the end remote from said cylinder head end, a piston having a lower edge and mounted for reciprocative movement in said cylinder relative to said cylinder and to said crankcase so as to cyclically produce in said crankcase a low pressure condition as said piston approaches top dead center and a high pressure condition as said piston approaches bottom dead

center, a passage in said engine block comprising a fuel intake passage through which fuel is introduced into said crankcase and terminating at said cylindrical wall in a port having upper and lower edges at given distances from said cylinder head end, said port comprising a fuel intake port having a lower edge located a predetermined maximum distance from said cylinder head end such that, during movement of said piston toward top dead center, said intake port is opened to admit the fuel mixture into said crankcase as the lower edge of said piston passes the lower edge of said intake port and such that, during movement of said piston toward bottom dead center, said intake port is closed as the lower edge of said piston passes the lower edge of said intake port, and valve means mounted in said passage for varying the effective distance of one of the port edges from said cylinder head end, said valve means



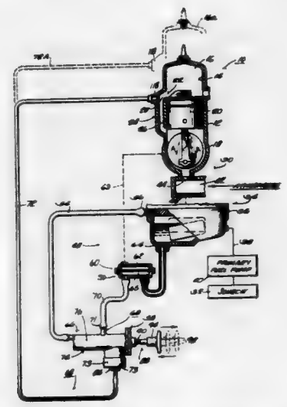
comprising a valve member including an inner end portion having an edge portion and mounted for radially reciprocative movement relative to said cylindrical wall and to said port between a first position wherein said valve member edge portion is spaced radially outwardly from said wall and does not substantially affect the effective distance of said one port edge from said cylinder head end and a second position wherein said valve member edge portion is located adjacent said wall and said edge portion acts as said one port edge to effectively change the distance thereof from said cylinder head end, said valve member being located relative to said intake port such that, when said valve member is in the second position, said edge portion effectively acts as and raises the lower edge of said intake port to a minimum predetermined distance from said cylinder head end, and means for moving said valve member between the first and second positions.

4,660,515
HEAD STRUCTURE FOR OHC TYPE INTERNAL COMBUSTION ENGINE
Tetsuo Arakawa; Masaaki Kato, and Kazunori Watanabe, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 23, 1985, Ser. No. 758,152
Claims priority, application Japan, Jul. 25, 1984, 59-112626[U]
Int. Cl.[4] F01L *1/02*
U.S. Cl. 123—90.27 7 Claims



1. A head structure for an OHC type internal combustion

4,660,516
FUEL PRIMER AND ENRICHMENT SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Gene F. Baltz, Lake Villa, and Paul W. Breckenfeld, Winthrop Harbor, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Continuation of Ser. No. 134,696, Mar. 27, 1980, Pat. No. 4,375,206. This application Aug. 9, 1982, Ser. No. 406,575
The portion of the term of this patent subsequent to Mar. 1, 2000, has been disclaimed.
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—187.5 R 6 Claims

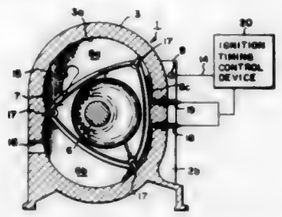


1. An engine comprising a combustion chamber having a fuel port, primary fuel delivery means adapted for connection to a source of fuel and communicating with said combustion chamber for introducing fuel from the fuel source into said combustion chamber to sustain normal running operation of said engine, and a secondary fuel delivery means for supplying priming fuel through said fuel port to said combustion chamber, said secondary fuel delivery means including a fuel pump adapted to be connected to a source of fuel and operative in response to engine rotation to deliver fuel at a positive pressure, a fuel return line adapted for communication with the source of fuel, and means for selectively communicating the output of said fuel pump with said fuel return line or with said fuel port independently of said primary fuel delivery means to enrich the air/fuel ratio in said combustion chamber during engine warm-up.

4,660,517
VIBRATION DETECTING APPARATUS FOR MULTI-ROTOR ROTARY PISTON ENGINES
Yoriaki Fujimoto; Hiroshi Sasaki, and Yukihiro Karimata, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Dec. 23, 1985, Ser. No. 812,640
Claims priority, application Japan, Dec. 28, 1984, 59-201274[U]
Int. Cl.[4] F02B *53/12*
U.S. Cl. 123—210 9 Claims

1. A multi-rotor rotary piston engine comprising a plurality of rotor housings each having an inner wall surface of a two-lobe trochoidal form, an intermediate housing having opposite

side surfaces and located between two adjacent ones of the rotor housings, a pair of side housings attached to outer surfaces of outermost rotor housings, a plurality of rotors which are disposed in respective ones of the rotor housings and carried by an eccentric shaft, adjacent rotors each having a side



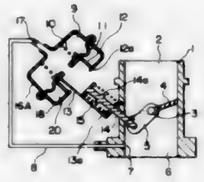
surface adapted for sliding engagement with said side surfaces of said intermediate housing, vibration detecting means mounted on said intermediate housing for detecting engine vibrations, said vibration detecting means being orientated so that it has a sensitivity in the direction substantially perpendicular to said side surface of said intermediate housing.

4,660,518

IDLING RETURN DEVICE FOR INTERNAL COMBUSTION ENGINES

Sigeo Tanaki, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1986, Ser. No. 823,019
Claims priority, application Japan, Jan. 25, 1985, 60-13018
Int. Cl.[4] F02M *3/05*
U.S. Cl. 123—328 **3 Claims**



1. For use with an internal combustion engine having a throttle valve for controlling the flow rate of air or gaseous mixture of air and fuel to the engine, the throttle valve being coupled with a return spring, for returning the throttle valve to an engine idle position, so that, in response to the depression of an accelerator pedal, the throttle valve is opened against the force of the return spring, an idling return device comprising:

first means for detecting a deceleration condition of said engine comprising a casing having a vacuum chamber and an atmospheric chamber communicating with the atmosphere and being separated from said vacuum chamber by a diaphragm therebetween, a vacuum passageway coupled between said vacuum chamber and a portion of a suction passage containing said throttle valve downstream of the throttle valve, and a diaphragm spring urging said diaphragm in a direction of said atmospheric chamber and thereby effectively increasing the volume of said vacuum chamber; and

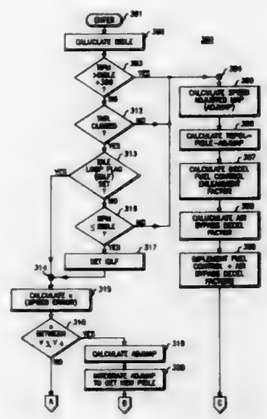
second means coupled to said first means, for automatically displacing said throttle valve to a position slightly ahead of the idle position thereof in response to said first means detecting the deceleration condition of said engine comprising an operating member coupled at one end thereof to said diaphragm and being coupled at the other end thereof to an operating spring which extends therefrom in a direction towards said diaphragm, an operating rod, one end of which is coupled to an end of said operating spring opposite the end thereof extending from the other end of said operating member, so that said operating rod is urged by said spring member toward said diaphragm, a lever affixed at one end thereof to said throttle valve and being rotationally coupled at a second end thereof to said operating rod, and wherein said operating rod contains a locking portion that is adapted to be engaged by a stopper portion of said other end of said operating member such that in response to the opening of said throttle valve, said operating rod is displaced in a direction away from said diaphragm, compressing said operating spring thereby urging said operating member and said diaphragm coupled thereto in a direction to increase the volume of said vacuum chamber.

4,660,519

ENGINE CONTROL SYSTEM

Herbert B. Stocker, Seeheim, Fed. Rep. of Germany, and Robert W. Deutsch, Sugar Grove, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 13, 1984, Ser. No. 630,479
Int. Cl.[4] F02D *41/12, 41/16*
U.S. Cl. 123—339 **27 Claims**



1. An engine control system, comprising:

means for sensing actual engine speed and providing a corresponding engine speed magnitude;

means for providing a desired engine idle speed level;

means for sensing a parameter related to engine fuel consumption and providing a corresponding magnitude in response thereto;

means coupled to said engine speed sensing means, said idle speed level providing means and said fuel consumption sensing means for providing an idle speed fuel consumption reference level magnitude by effectively continuously sampling said sensed fuel consumption parameter magnitude only when said sensed engine speed is within a predetermined range of said desired engine idle speed level and effectively storing a magnitude, determined by said sampled fuel consumption parameter magnitude, as said idle speed fuel consumption level magnitude;

means coupled to said idle speed fuel consumption reference level providing means for generating at least one engine control signal representative of torque polarity for the engine in response to at least both said sensed fuel consumption parameter magnitude and said idle speed fuel consumption reference level magnitude; and

means coupled to said torque polarity engine control signal generating means for implementing at least one engine control function in response to said engine control signal;

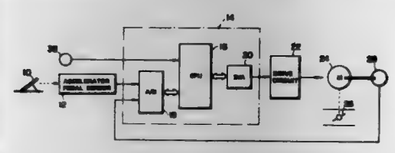
wherein the improvement comprises at least one of said idle speed fuel consumption sensing means and said torque polarity signal generating means including speed compensation means for adjusting at least one of said fuel consumption and idle speed fuel consumption level magnitudes as a function of said engine speed magnitude, said speed adjusted magnitude determining said torque polarity engine control signal.

4,660,520

APPARATUS FOR THROTTLE VALVE CONTROL

Hideaki Inoue, Yokosuka; Shinji Katayose, Tokyo; Akira Takei, Yokosuka, and Takashi Oka, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 21, 1986, Ser. No. 853,873
Claims priority, application Japan, Jun. 4, 1985, 60-120800
Int. Cl.[4] F02D *41/04*
U.S. Cl. 123—399 **12 Claims**



1. An apparatus for use with an internal combustion engine having an accelerator, a throttle value situated within an induction passage, and a brake pedal for controlling movement of said throttle valve in response to a change in the position of said accelerator, comprising:

a first signal source (12) for generating a first electrical signal indicative of the position of said accelerator (10);

a second signal source (38) for generating a second electrical signal indicative of said accelerator being released;

a control circuit (14) including means responsive to said first signal for determining an existing value for accelerator position and a minimum value for accelerator position, means for determining a demand value corresponding to a setting of the position of said throttle valve as a function of a difference between said existing and minimum values, and means responsive to said first and second signals for substituting said existing value for said minimum value when the accelerator remains released and placed at the same position for a predetermined time;

a throttle actuator (22, 24) connected to said control circuit for moving said throttle valve to said determined setting.

4,660,521

APPARATUS FOR CHANGING THE FREQUENCY OF A DYNAMO ENGINE

Masaaki Higuchi, Ohmiya, and Masaru Atsumi, Saitama, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1986, Ser. No. 842,322
Claims priority, application Japan, Apr. 2, 1985, 60-49593
Int. Cl.[4] F02D *31/00*
U.S. Cl. 123—376 **4 Claims**

1. An apparatus for changing the frequency of an engine for driving a generator, the engine having a carburetor with a throttle valve and a governer lever operatively connected to a governer and to the throttle valve so as to rotate the throttle valve, the apparatus comprising:

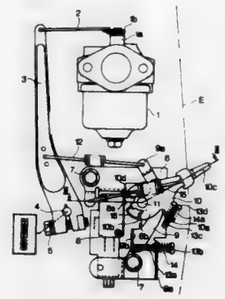
a speed control lever rotatably provided on a supporting member;

first means for positioning the speed control lever at a first position;

a governer spring connected to the governer lever and the speed control lever so as to urge the speed control lever to the first position;

an operating lever rotatably provided on the supporting member;

a spring provided between the operating lever and the supporting member so as to urge the operating lever in opposite rotational directions with respect to a neutral position;



second means for positioning the operating lever at a second position in one of rotational directions;

third means for positioning the operating lever at a third position in the other rotational direction;

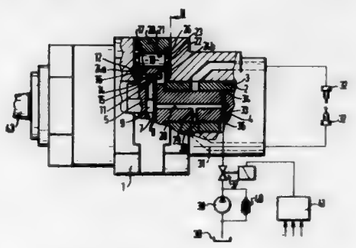
fourth means for engaging the operating lever and the speed control lever with each other during the rotation of the operating lever in the other rotational direction.

4,660,522

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Rudolf Babitzka, Kirchberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 8, 1985, Ser. No. 763,593
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1984, 3437973
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—450 **18 Claims**



1. A fuel injection pump for internal combustion engines comprising a housing, at least one reciprocable pump piston in a pump cylinder driven via a cam drive in said housing arranged to enclose a pump work chamber, said pump work chamber adapted to communicate via a pressure conduit with at least a distributor opening which connects said pump work chamber with a respective one of a plurality of fuel injection lines disposed in proximity to said distributor openings, said pump work chamber being arranged to receive fuel via a controlled fuel line connected to a fuel supply said fuel injection pump further including a radial piston injection pump provided with said pump piston, said pump piston further disposed in a radially aligned pump cylinder in a rotatingly driven distributor provided with at least one distributor open-

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ing and connected to a roller tappet, said roller tappet being arranged to be guided simultaneously between a first cam ring and a second cam ring, said cam rings being disposed in opposed relation, and said first cam ring has a cam track extending radially inward and said second cam ring has a cam track extending radially outward.

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PIEZOELECTRIC CONTROL BLOCK

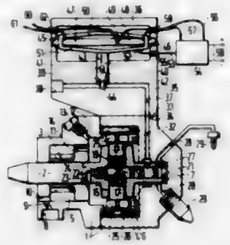
Ilaa Brauer; Gerhard Brüggen, both of Stuttgart, and Dieter Karr, Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 3, 1985, Ser. No. 783,753

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1984, 3440942

Int. Cl.⁴ F02M *39/00*

U.S. Cl. 123—458 **10 Claims**



1. A piezoelectric control block, particularly for controlling a fuel injecting device for a combustion engine, advantageously diesel engine, with a distributor injecting pump, the piezoelectric control block comprising a feed quantity adjusting member; and a longitudinally extending mechanical movement converter which is formed so that under a longitudinal load it deforms transversely to its longitudinal expansion, said movement converter having a part which performs an overproportional movement in response to the transverse deformation of said movement converter under the action of the longitudinal load, said part being connected with said feed quantity displacing member, said movement converter being formed as a piezoelectric driver apparatus which includes said part and a second part arranged at an angle relative to one another and articulately connected with one another, said parts having fixed ends and being articulately connected at said fixed ends.

4,660,524

FUEL SUPPLY LINE

Richard Bertsch, Asperg; Dieter Günther, Murr; Heinrich Knapp, Leonberg, and Gunther Plapp, Filderstadtl, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

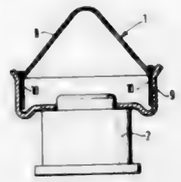
Filed Mar. 15, 1985, Ser. No. 712,052

Claims priority, application Fed. Rep. of Germany, May 10, 1984, 3417306; Sep. 6, 1984, 3432727

Int. Cl.⁴ F02M *30/00*

U.S. Cl. 123—468 **8 Claims**

1. In a fuel supply of a fuel injection device for internal combustion engines having support means for fuel injection valves, the improvement comprising said fuel supply line having at least one thinly-walled section which is formed of an elastic material so pliable that pressure pulsations of the fuel in said fuel supply line are damped, said fuel supply line further having an elastic wall section arranged to extend in a longitudinal direction and a further rigid wall section connected therewith, said support means for said fuel injection valves being fastened to said rigid wall section, said elastic wall section and said rigid wall section forming a rectangle, and said fuel supply line further has a longitudinal direction, a predetermined



width, and a height, said width being at least three times said height.

4,660,525

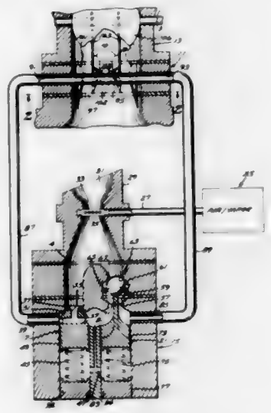
CARBURETOR MIXTURE CONTROLLER APPARATUS

Alexander H. Mesman, 13058 Hedda La., Cerritos, Calif. 90701

Continuation-in-part of Ser. No. 575,073, Jan. 30, 1984, abandoned. This application Jun. 20, 1985, Ser. No. 746,936

Int. Cl.⁴ F02M *23/08, 25/08*

U.S. Cl. 123—525 **12 Claims**



1. Carburetor air/fuel vapor control apparatus for controlling flow of air and fuel vapor from an air and vapor supply to the intake manifold of an engine and comprising:

an adaptor configured to be mounted under the mounting flange of the carburetor, said adaptor being formed with a flow passage and including an air and fuel vapor inlet port means and a perforated injection tube leading from said port and disposed in spanning relationship across said passage; and

a controller including an air inlet passage formed with a reduced cross section induction passage, an air and fuel vapor inlet port for connection with said air and fuel vapor supply, vacuum port means for connection with said inlet port to said adaptor, said controller further including first and second control passages leading from said induction passage to said vacuum port means, first and second control valves for controlling flow in said first and second control passages, first and second control means for controlling said first and second valves, said first control means being operative in response to a predetermined partial vacuum at said vacuum port means to open said first valve to communicate flow of air and fuel vapor from said induction passage through said first control passage to said flow passage, said second control means being responsive to a selected partial vacuum at said vacuum port means, lower than said predetermined vacuum, to open said second valve to communicate flow of air and fuel vapor from said induction passage through said second control passage to said flow passage to combine with the flow through said first control passage whereby said controller will respond to said partial vacuum to open said first valve when said engine is decelerating and to open said second valve when said engine is subjected to high acceleration or cruising under a load.

4,660,526

CONTROL DEVICE FOR CONTROLLING THE OPERATION OF A SUPERCHARGER IN AN INTERNAL COMBUSTION ENGINE

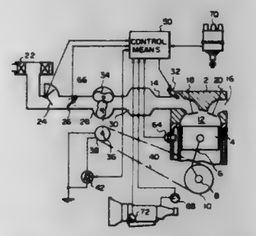
Kingo Horii, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 13, 1986, Ser. No. 829,064

Claims priority, application Japan, Feb. 15, 1985, 60-26480

Int. Cl.⁴ F02B *33/38*

U.S. Cl. 123—559 **7 Claims**



1. In an internal combustion engine having a crankshaft and a supercharger mechanically driven by and connected to said crankshaft via an electromagnetic clutch, a control device for controlling the operation of said supercharger in response to engine operating conditions, comprising, a first sensor means for detecting a temperature of the engine, a second sensor means for detecting racing of the engine, and a control means responsive to outputs from said first and second sensors for causing said electromagnetic clutch to be disengaged, thereby disconnecting the supercharger from the crankshaft when the temperature of the engine is below a predetermined value and the engine is racing.

4,660,527

CYLINDER HEAD FOR COMBUSTION ENGINE

Fusatoshi Tanaka, Higashihiroshima; Shuichi Nakatani, Hiroshima; Hideo Nakayama, Hiroshima, and Hiroyuki Hanafusa, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 9, 1986, Ser. No. 871,778

Claims priority, application Japan, Jun. 12, 1985, 60-89310[U]

Int. Cl.⁴ F01P *3/02*

U.S. Cl. 123—41.82 R **8 Claims**

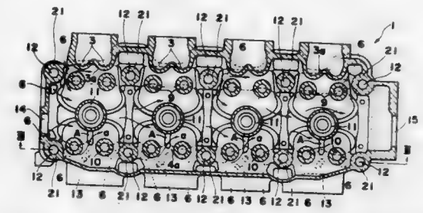
1. A cylinder head construction for a combustion engine, which comprises:

a wall structure defining a cylinder head lower surface adapted to contact a mating surface of a cylinder block, said wall structure having a combustion chamber wall defining a combustion chamber;

an exhaust port defining wall connected at one end to said wall structure and at the opposite end to a cylinder head side wall, and defining an exhaust passage within a cylinder head, said exhaust passage opening into said combustion chamber through two exhaust openings provided within said wall structure, and having two discrete passages corresponding each said exhaust opening near the wall structure;

a first coolant passage means defined between the wall structure and the exhaust port defining wall;

a second coolant passage means defined within a cylinder head at the opposite side of the first coolant passage means to said exhaust port defining wall;



a channel passage means defined within said exhaust port defining wall between said discrete passages, and communicating said first coolant passage and said second coolant passage together; and

a wall member positioned below the exhaust port defining wall and extending between the exhaust port defining wall and the wall structure for deflecting a coolant, flowing in the first coolant passage means, so as to flow into said channel passage means.

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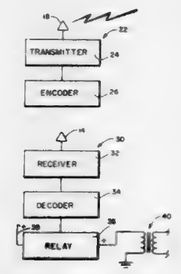
APPARATUS FOR REMOTE TERMINATION OF THE OPERATION OF A SELECTED MOTOR VEHICLE

Gene Buck, P.O. Box 421, Spring Valley, Calif. 92077

Filed Mar. 17, 1986, Ser. No. 840,010

Int. Cl.⁴ F02D *11/04, 41/22*

U.S. Cl. 123—333 **7 Claims**



1. An apparatus for selective termination of the normal operations of a selected one of a plurality of adjacent motor vehicles having internal combustion engines comprising:

a plurality of first motor vehicles, each having at least visual registration plates on the rear thereof with different and distinct registration indica thereon;

RF carrier receiver means associated with each of said plurality of first motor vehicles, said receiver capable of receiving only a specific RF carrier frequency and a specific number and type of EIA tone signals directly related to their registration indica and producing an output voltage signal when received;

internal combustion engine interruption means associated with each of signal RF carrier receiver means and said internal combustion engine for interrupting the normal operation of said internal combustion engine of a selected motor vehicle when an output voltage signal is produced by that motor vehicle RF carrier receiver; and

a second motor vehicle having a RF carrier and EIA tone

generator transmitter readiably programmable to a specific RF carrier frequency and specific number and type of EIA tones related to the registration indica of a selected one of said plurality of first motor vehicles, whereby the normal operations of the internal combustion engine of said selected one of said plurality of motor vehicles is terminated when said RF carrier and EIA tone generating transmitter is activated.

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FOUR-CYCLE ENGINE

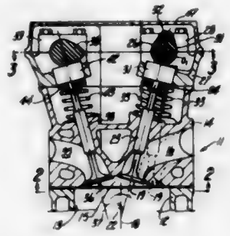
Masaaki Yoshikawa, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 19, 1982, Ser. No. 369,665

Claims priority, application Japan, Apr. 22, 1981, 56-61843; Dec. 28, 1981, 56-214218

Int. Cl.⁴ F02M *35/10*

U.S. Cl. 123—432 **33 Claims**



1. A valve train for an internal combustion engine having a generally concave combustion chamber disposed at one end of a cylinder bore having an axis comprising an overhead cam shaft, a plurality of poppet valves having head portions and stem portions and operated by said cam shaft, at least two of said valves communicating with said combustion chamber of the engine, the improvement comprising said two valves being reciprocal about respective axes that are not parallel to each other and each of which is inclined at an acute angle to said axis of the associated cylinder bore and which intersects a plane containing said cylinder bore axis on the head side of the respective of said valves, the tips of the stems of said valves being disposed radially inwardly toward said cylinder bore axis from an axial extension of said cylinder bore, the axis of reciprocation of said valves intersecting at a common line, said common line intersects the axis of rotation of said cam shaft.

4,660,530

INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINE

Keiichi Sugiyama, Shizuoka, and Takahiro Nagura, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

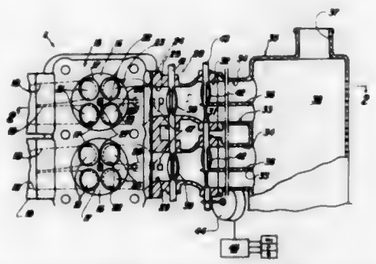
Filed Mar. 3, 1986, Ser. No. 835,530

Claims priority, application Japan, Mar. 4, 1985, 60/42331; Mar. 4, 1985, 60-42332

Int. Cl.⁴ F02B *15/00*

U.S. Cl. 123—432 **19 Claims**

1. An induction system for an internal combustion engine having a variable volume chamber comprising a first intake port serving said chamber, a second intake port serving said chamber, a first intake passage serving said first intake port, a second intake passage serving said second intake port, a common intake passage portion communicating at its downstream end with said first and said second intake passages, a throttle valve for controlling the flow through said common intake passage portion, a first inlet passage communicating at its downstream end with said common intake passage portion, a second inlet passage communicating at its downstream end



with said common inlet passage portion, and a second throttle valve for controlling the flow through said first inlet passage.

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FUEL INJECTION SYSTEM

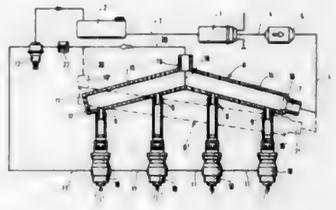
Heinz Lauterbach, Esslingen; Wolfgang Kienzle, Schwieberdingen, and Ewald Ziegler, Heimsheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1982, Ser. No. 395,877

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132432

Int. Cl.⁴ F02M *55/02*

U.S. Cl. 123—456 **3 Claims**



1. A fuel injection system for internal combustion engines with multiple injection valves, comprising a common dimensionally stable fuel manifold distributor, said fuel manifold distributor being positioned above said injection valves and fitted with a return line connection, said return flow line redirecting fuel admitted to said manifold distributor through an input connection from a fuel pump connected to a fuel tank through a pressure regulator back to said fuel tank, said input connection of the fuel manifold distributor is disposed on the pressure side of the fuel pump and at the lowest point of said fuel manifold distributor, in which said fuel manifold distributor which distributes fuel to each of said multiple injection valves is on an angle with respect to the horizontal and connected to each of said injection valves via a nipple, said fuel manifold distributor has two sections joined at a central junction at an angle with respect to each other with the central junction of said sections disposed at a higher point than the ends of said fuel manifold distributor, and the connection to which said return flow line is connected is at said central junction which is the highest point of said fuel manifold distributor relative to horizontal.

4,660,532

SUPERCHARGED INTERNAL COMBUSTION ENGINE WITH HEAT EXCHANGER FOR THE COMBUSTION AIR

Paul Tholen, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

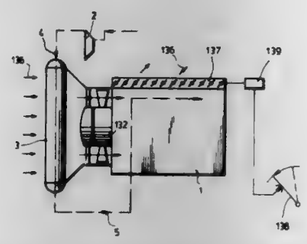
PCT No. PCT/EP83/00004, § 371 Date Jan. 11, 1984, § 102(e) Date Jan. 11, 1984, PCT Pub. No. WO83/02481, PCT Pub. Date Jul. 21, 1983

PCT Filed Jan. 11, 1983, Ser. No. 584,255

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1982, 3200683; Jan. 13, 1982, 3200691; Jan. 13, 1982, 3200689; Jan. 13, 1982, 3200685

Int. Cl.⁴ F02B *29/04;* **F28D** *15/00*

U.S. Cl. 123—563 **5 Claims**



1. A supercharged internal combustion engine including a turbocharger driven by exhaust gas and a compressor therewith, comprising:

a heat exchanger arranged between the compressor and the internal combustion engine for cooling and/or preheating combustion air suctioned for said engine; said heat exchanger being a self-contained system which includes heat accumulating elements provided with a heat accumulating active medium filled therein which is in a heat exchange relationship with said combustion air; said heat accumulating elements being connected such that the active medium in each heat accumulating element is in flow communication with the active medium in the other heat accumulating elements, said heat accumulating elements having an overall total volume for equalization of pressure differences which occur during heating.

4,660,533

AIR INTAKE SIDE SECONDARY AIR SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Akira Watabe, Fujimi; Norio Tomobe, Asaka, and Hideo Kobayashi, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1986, Ser. No. 865,481

Claims priority, application Japan, May 24, 1985, 60-111756

Int. Cl.⁴ F02M *23/10*

U.S. Cl. 123—588 **5 Claims**

1. An air intake side secondary air supply system for an internal combustion engine having an intake air passage with a carburettor and a throttle valve, comprising:

a first secondary air supply passage leading to the intake air passage downstream of the throttle valve;

a second secondary air supply passage leading to the intake air passage downstream of the throttle valve;

air/fuel ratio detection means for detecting an air/fuel ratio of a mixture supplied to the engine from a composition of an exhaust gas of the engine;

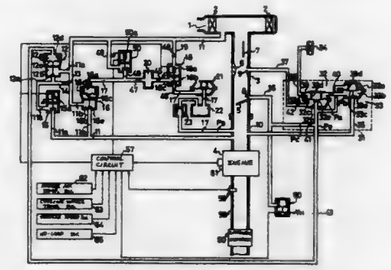
an open/close valve disposed in said first secondary air supply passage which is operated to open only when said detection means detect a rich air/fuel ratio;

an air control valve having a pressure chamber and disposed in said second secondary air supply passage, for varying a sectional area of a flow through said second secondary air supply passage in response to a magnitude of a pressure applied in said pressure chamber;

a first control pressure source for generating a first control pressure for opening said air control valve;

a second control pressure source for generating a second control pressure for closing said air control valve;

engine operation detection means for detecting a state of engine operation in which an engine temperature, is lower than a predetermined temperature and no load is applied to the engine, and for generating an engine operation detection signal upon detection of said state of engine operation; and



pressure control means for gradually supplying said first control pressure to said pressure chamber so as to gradually increase said sectional area when said air/fuel ratio detection means detect the rich air/fuel ratio, and supplying gradually said second control pressure to said pressure chamber so as to gradually decrease said sectional area when said air/fuel ratio detection means detect a lean air/fuel ratio and said engine operation detection signal is not produced, and rapidly supplying said second control pressure to said pressure chamber so as to rapidly close said air control valve when said engine operation detection signal is produced by said engine operation detection means.

4,660,534

ELECTRONIC IGNITION SYSTEM WITH STATIC DISTRIBUTION FOR A CARBURETTOR ENGINE

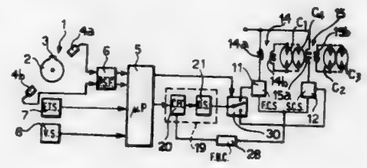
Giuseppe Cotignoli, Collegno, Italy, assignor to Marelli Autronica S.p.A., Pavia, Italy

Filed Jun. 28, 1985, Ser. No. 749,891

Claims priority, application Italy, Jun. 29, 1984, 67668 A/84

Int. Cl.⁴ F02P *3/04, 7/00*

U.S. Cl. 123—643 **5 Claims**



1. An electronic ignition system with static distribution for a carburetor engine, in particular for a four-stroke, four-cylinder engine, said electronic ignition system comprising:

(a) sensor means (1,7,8) for providing data signals indicative of the running conditions of the engine,

(b) a first ignition transformer (14), said first transformer having an input winding (14*a*) and an output winding

(14*b*), said output winding being connected to a first pair of spark plugs (C_1,C_4) of a first pair of engine cylinders, respectively,

(c) a second ignition transformer (**15**), said second transformer having an input winding (**15***a*) and an output winding (**15***b*), said output winding being connected to a second pair of spark plugs (C_2,C_3) of a second pair of engine cylinders, respectively.

(d) a micro-processor unit (**5**) for providing command signals in response to said data signals from said sensor means,

(e) first and second electronically controlled switch devices (**11,12**), said first and second switch devices being respectively connected in series with the input winding of said first and second transformers, and said first and second switch devices being connected together in a current path in parallel,

(f) monitoring means, having a single feedback circuit (**28**) connected to said current path, for providing an output indicative of current flow in the input windings of said first and second transformers, respectively,

(g) integrated circuit means for controlling the angle of "dwell" at each ignition in response to said command signals provided by said microprocessor unit and said output at the preceding ignition provided by said monitoring means, wherein said integrated circuit control means includes an integrated circuit (**19**) for providing a control signal for controlling the angle of "dwell", said control signal being of a type capable of controlling the ignition transformer of a pair of cylinders, and

(h) a third electronically controlled switch device (**3**) for selectively and alternately connecting said control signal of said single integrated circuit to said first and second controlled switch devices in response to said command signals provided by said microprocessor unit.

4,660,535

SYSTEM AND METHOD FOR CONTROLLING IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE

Masaharu Asano, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jun. 27, 1985, Ser. No. 749,441
Claims priority, application Japan, Jun. 30, 1984, 59-136702
Int. Cl.⁴ F02P *5/14*
U.S. Cl. 123—425 **16 Claims**

1. A method for controlling an engine ignition timing, comprising the steps of:

(a) detecting an engine crankshaft rotational angle at which pressure in a combustion chamber has reached its maximum whenever the corresponding engine cylinder is in a combustion stroke;

(b) calculating a deviation between the crankshaft rotational angle detected in said step a) and a predetermined target value thereof;

(c) calculating an error amount based on an accumulation of the deviation calculated in said step (b);

(d) determining whether the error amount exceeds a predetermined allowable limit; and

(e) correcting the current ignition advance angle value based on the engine operating condition by an engine crankshaft rotational angle value so that the engine crankshaft rotational angle value at which the combustion pressure has reached its maximum accords with the predetermined target value whenever the error amount exceeds the predetermined allowable limit in said step (d).

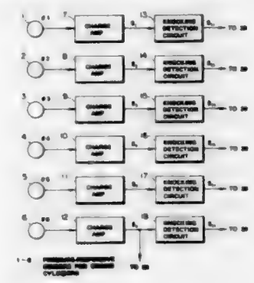
6. A system for controlling an engine ignition timing, comprising:

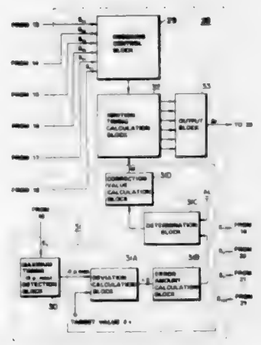
(a) first means for detecting an engine crankshaft rotational angle at which pressure in a combustion chamber has reached its maximum;

(b) second means for calculating a deviation between the detected value of the crankshaft rotational angle and a predetermined target value thereof;

(c) third means for calculating an error amount based on an accumulated value of the deviation whenever said second means calculates the deviation;

(d) fourth means for determining whether the error amount exceeds a predetermined allowable limit whenever said third means accumulates the deviation; and





(e) fifth means for correcting the ignition timing by an angle value so that the engine crankshaft rotational angle value at which pressure in the combustion chamber has reached its maximum accords with the predetermined target value whenever said fourth means determines that the error amount exceeds the predetermined allowable limit.

4,660,536

COMPOUND ARCHERY BOW SYSTEM

Mathew A. McPherson, 1110 24th Ave. Southwest, Austin, Minn. 55912

Filed Jun. 7, 1985, Ser. No. 742,404
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—24 R **6 Claims**

1. A compound archery bow assembly having a predetermined progressive draw strength and final full draw drop off, said assembly comprising a bow unit including,

a pair of flexible resilient limb elements,

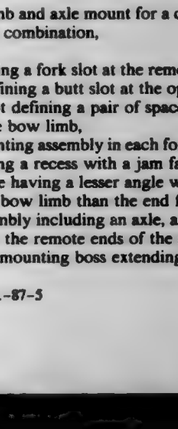
a handle connecting the inner ends of said limbs,

a pair of pulley wheels rotatably mounted on the outer end portions of the limbs,

a bow string,

a pair of bow cables having an intermediate portion respectively trained about said pulleys with one end of each cable being anchored to the bow unit and the other end connected to one end of the bow string to produce rotation of the wheels through a predetermined arc, during the operation of the bow,

each of said pulley wheels including an interior cam slot having inner and outer portions respectively positioned eccentrically within the wheel, with the outer slot portion disposed substantially adjacent to the circumference of the sheel, and the inner slot portion disposed in radially inwardly spaced relation to the outer slot portion,



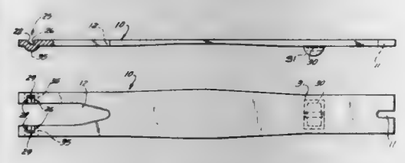
a cam follower smaller in diameter than the inside dimensions of the slot and mounted on the outer ends of each of the bow limb elements and positioned in said cam slot for traveling movement within the slot from an initial draw position disposed in substantially spaced relation to the outer periphery of the wheel and traversing the cam surface to the full draw position with the cam follower disposed in close association to the outer periphery of the pulley wheel.

4,660,537

BOW LIMB AND AXLE MOUNT

Richard Johnston, Tucson, Ariz., assignor to Precision Shooting Equipment Co., Tucson, Ariz.

Filed Jun. 7, 1985, Ser. No. 742,421
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—86 **5 Claims**



1. A bow limb and axle mount for a compound archery bow comprising, in combination,

a limb,

means defining a fork slot at the remote end of the limb, and means defining a butt slot at the opposite end of the limb,

said fork slot defining a pair of spaced fork members at the end of the bow limb,

an axle mounting assembly in each fork at the end of the bow limb having a recess with a jam face and an end face,

said jam face having a lesser angle with an axis perpendicular to the bow limb than the end face,

an axle assembly including an axle, and a pair of axle covers located at the remote ends of the axle,

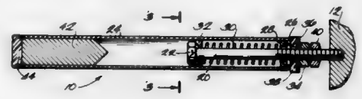
and an axle mounting boss extending from each cover having a jam face and an end face and containing an end of the axle, and proportioned to nestingly fit within the axle assembly mount with the respective boss jam faces and end faces abutting the opposite recess jam faces and end faces.

4,660,538

INERTIAL STABILIZER FOR ARCHERY BOW

Francis A. Burgard, 12800 W. Cleveland Ave., New Berlin, Wis. 53151

Filed Dec. 13, 1985, Ser. No. 808,647
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—89 **7 Claims**



1. A stabilizer for an archery bow, comprising, a tube having an inturned end forming a shoulder around a central opening,

a bolt having its head inside said tube and its threaded end projecting through said central opening,

a spring compressed between said shoulder and said bolt head,

an adjusting nut threaded on said bolt outside said tube to adjust the compression of said spring, and

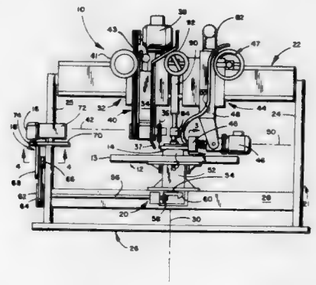
a weight mounted in the other end of said tube.

4,660,539

METHOD AND APPARATUS FOR CUTTING AND POLISHING MARBLE SLABS

Gino C. Battaglia, 20522 Vermont Ave., Harbor City, Calif. 90710

Continuation-in-part of Ser. No. 741,254, Jun. 4, 1985, abandoned. This application Mar. 19, 1986, Ser. No. 841,153
Int. Cl.⁴ B28D *1/16*
U.S. Cl. 125—10 **18 Claims**



1. A machine for cutting and polishing slabs of marble comprising:

a turntable comprising a flat, rigid, disk shaped support having a center pedestal thereon, and a plurality of locator apertures through said support which are arranged in concentric circular rings about said center pedestal, and a plurality of peripheral spacers having bodies the same height as said center pedestal and locator pins adapted to fit into any selected locator aperture, whereby said center pedestal supports the center and said peripheral supports support the periphery of a marble slab positioned thereatop to be cut and polished,

track means located in spaced separation from said turntable and extending longitudinally parallel to said slab,

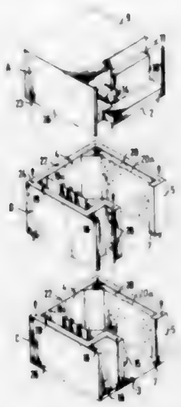
a first carriage which rides upon said track means,
a saw motor mounted upon said first carriage,
a saw blade driven in rotation by said saw motor and, carried in a plane which intersects said marble slab,
first power operated vertical drive means for atuomatically raising and lowering said saw blade relative to said turntable,
a second carriage which rides upon said track means,
a polisher motor mounted upon said second carriage,
a polisher driven by said polisher motor and carried to bear against transverse edges of said marble slab, and including compressible spring biasing means interposed, between said polisher and said polisher motor to urge said polisher toward said marble slab,
second power operated vertical drive means for automatically raising and lowering said polisher and polisher motor relative to said turntable,
slab rotating means for rotating said marble slab about an axis perpendicular to said track means.

4,660,540

BAKING OVEN WITH HOT-AIR CIRCULATION HEATING

Helmüt Schröder, Bietigheim-Bissingen, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Sep. 13, 1985, Ser. No. 778,253
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1984, 3434000
Int. Cl.[4] A21B *1/28*
U.S. Cl. 126—21 A **14 Claims**



1. A baking oven comprising a housing defining a baking chamber and including a plurality of stacked segments placed one on top of the other and comprising an upper segment, an intermediate segment and a lower segment, said segments being self-contained and when stacked on one another collectively forming the housing and providing the oven in substantially ready condition for operation, said upper segment including heating and circulating means for hot air and a cover for the baking chamber disposed beneath said heating and circulating means, said lower segment including a floor on which a rack containing the goods to be baked can rest, at least two of said segments including vertical walls which collectively form vertical walls of said baking chamber when the segments are stacked on one another, said segments resting on one another via horizontal stacking surfaces thereof, said baking chamber extending between said cover and said floor and being bounded by said vertical walls of the stacked segments, the weight of the stacked segments being such to maintain the segments stably supported on one another, the intermediate segment being formed substantially only by said vertical walls whereby the height of the oven can be varied according to the height of the intermediate segment while the upper and lower segments are retained.

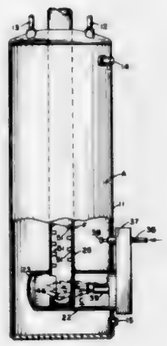
13. A baking oven comprising a housing defining a baking chamber and including a plurality of stacked segments placed one on top of the other and comprising an upper segment, an intermediate segment and a lower segment, said segments being self-contained and when stacked on one another collectively forming the housing and providing the oven in substantially ready condition for operation, said upper segment including heating and circulating means for hot air and a cover for the baking chamber disposed beneath said heating and circulating means, said lower segment including a floor on which a rack containing the goods to be baked can rest, at least two of said segments including vertical walls which collectively form vertical walls of said baking chamber when the segments are stacked on one another, and cassettes with insulation means on the outside of said vertical walls.

4,660,541

WATER HEATER WITH SUBMERGED COMBUSTION CHAMBER

Henry J. Moore, Los Angeles, Calif., assignor to Mor-Flo Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 711,734, Mar. 14, 1985, abandoned. This application Sep. 5, 1986, Ser. No. 904,795
Int. Cl.[4] F24H *1/20*
U.S. Cl. 126—360 R **3 Claims**



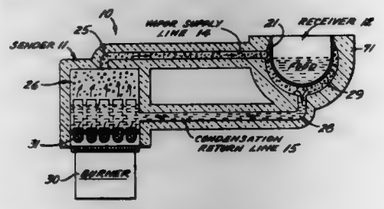
1. A fluid heater comprising:
(a) an elongated combustion chamber having a generally uniform cross section over its length and being horizontally disposed; (b) a vertical flue tube extending downwardly into said combustion chamber wherein a bottom of said flue tube is closely spaced from a bottom of said chamber to thereby divide said chamber into first and second portions, said flue having a closed bottom; (c) a flue opening in said flue tube located in a side of said flue tube facing said first portion and disposed a given distance above said closed bottom so as to retain exhaust condensate for evaporation; and (d) a burner disposed in said combustion chamber second portion projecting a flame to impinge upon said flue tube to reduce the formation of oxides of nitrogen of combustion.

4,660,542

COOKING SYSTEM WITH CLOSED LOOP HEAT TRANSFER MEANS

Richard M. Scherer, Niles, Mich., assignor to South Bend Escan Corporation, South Bend, Ind.

Filed Apr. 30, 1984, Ser. No. 605,239
Int. Cl.[4] A47J *27/06*
U.S. Cl. 126—378 **34 Claims**



1. A cooking system comprising
a cooking element for receiving food to be cooked;
heat generating means,
a sealed closed loop circuit within which a working fluid is circulated for transferring heat from said heat generating means to said cooking element and the food received therein;
said closed loop circuit including a heating and vaporization zone within which said working fluid is heated and vaporized by said heat generating means and a condensation zone within which at least a portion of said vapor is condensed during transfer of heat to food in said cooking element,
said heat generating means comprising a gaseous fuel fired radiant burner, said closed loop circuit having a plurality of working fluid transfer tubes disposed in close, substantially parallel, heat transfer relation to said radiant burner, means for directing controlled quantities of gaseous fuel uniformly through said burner for burning with a high intensity flame on a surface thereof,
said heating and vaporization zone including a chamber, said working fluid transfer tubes communicating with said chamber for receiving a continuous supply of said working fluid and for directing vapor into said chamber, first conduit means communicating between said chamber and said condensation zone for directing vapor to said condensation zone, and second conduit means communicating between said condensation zone and said chamber for directing condensate from said condensation zone to said chamber.

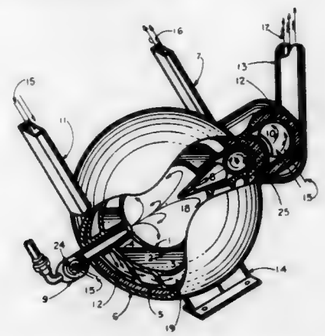
4,660,543

APPARATUS FOR HEATING, STORING AND TRANSFERRING OF HEAT

Rudolph Talamantez, 9 Oldham Rd., Silver Spring, Md. 20901

Filed Apr. 25, 1983, Ser. No. 488,349
Int. Cl.[4] F24H *7/00*
U.S. Cl. 126—400 **8 Claims**

1. A heat accumulating and heat transferring apparatus comprising:
a hollowed vessel spherically arranged, having an internally arranged along the innermost spherically surface a heat conducting inner liner,
said hollowed vessel which is spherically arranged, having ports disposed opposite each other, one port to receive fuel injection/firing means and the other to receive a pressure regulator control valve,
said hollowed vessel which is spherically arranged where said fuel injection may be combusted in a systematic manner based on the demand of the said pressure regulator valve, releasing in the combustion process heat energy,
said hollowed vessel which is spherically arranged where said pressure control valve is permitted to allow the evacuation of excess pressure, in terms of build up heat into a secondary heat exchanger,
said hollowed vessel which is spherically arranged where said heat energy is allowed to be absorbed through the said inner liner, into a heat storage chamber,
said hollowed vessel which is spherically arranged where said heat storage chamber contains materials such as silica gel, which when heated becomes liquified, allowing in the process more and more heat to be collected becoming a reservoir of stored heat energy,



said hollowed vessel which is spherically arranged where said reservoir of stored heat energy is protected from heat loss by an outer jacket housing and insulating materials,
said hollowed vessel which is spherically arranged having a primary heat exchanger comprised of built in air passage ways
said hollowed vessel which is spherically arranged where said outer jacket housing and insulation materials are further surrounded by an outermost housing arrangement to provide mounting for the apparatus.

4,660,544

SOLAR COLLECTOR SYSTEM WITH RADIATION CONCENTRATED ON HEAT ABSORBER VANES

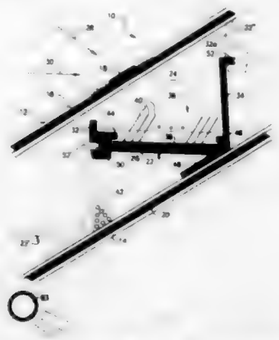
Frank D. Husson, Jr., 10414 Woodchuck Point, San Diego, Calif. 92131

Continuation-in-part of Ser. No. 559,753, Dec. 9, 1983, abandoned, which is a division of Ser. No. 297,228, Aug. 28, 1981, Pat. No. 4,420,375. This application Jul. 1, 1985, Ser. No. 750,297
The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.
Int. Cl.[4] B01D *1/00;* F24J *3/02*
U.S. Cl. 126—440 **11 Claims**

1. A solar collector system, comprising:
a frame;
a plurality of elongate trays mounted within the frame, each tray opening in an upward direction for holding a quantity of a liquid therein;
an elongate heat absorber element mounted in each tray including spaced apart, upwardly extending parallel vanes;
lens means mounted to the frame for concentrating incident

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solar radiation on the vanes for evaporating the liquid in each tray; and



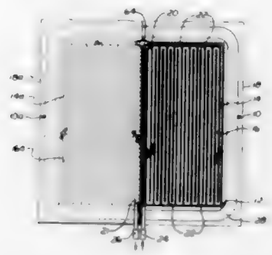
means for collecting liquid which condenses in the housing after evaporation from the trays.

4,660,545

SOLAR CONDUCTIVE SPA WATER HEATER AND SAFETY COVER

Glen W. Ely, P.O. Box 5176, Gulfport, Fla. 33737-5176

Filed Aug. 15, 1985, Ser. No. 766,159
Int. Cl.[4] F24J *3/02*
U.S. Cl. 126—452 **5 Claims**



1. A solar conductive portable cover for a spa having an opening for access thereto comprising a rigid plastic member vacuum formed in a series of interconnected parallel U-shaped channels each channel separated from an adjacent channel by a wall, a shape conforming plastic top solvent or heat welded to a top surface of the walls to form a cover wider in diameter than the opening of the spa such that the cover rests on coping at the top of the spa, each alternate wall having an opening at the same end of the channel and walls intermediate the alternate walls having an opening at the opposite end of the channels so that water can move freely from channel to channel in a maze like pattern from an inlet fitting attached to a first channel to an outlet fitting attached to the channel furthest away in the water flow pattern from the first channel, the inlet fitting and outlet fitting being capable of attachment to tubing leading to a spa water reservoir.

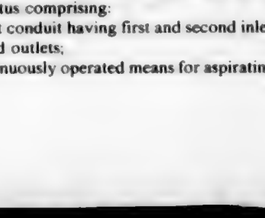
4. Method for heating water for a spa comprising covering the top of the spa with a portable rigid thin plastic member forming a cover wider than the opening of the spa such that the cover rests on coping at the top of the spa and having a series of parallel U-shaped channels therein, each channel separated from an adjacent channel by a wall, a shape conforming plastic top adhered to a top surface of the walls, each alternate wall having an opening at the same end of the channel and walls intermediate the alternate walls having an opening at the opposite end of the channel, then pumping water from the spa reservoir into an inlet fitting connected to a first channel and moving the water throughout the channels of the cover in a maze-like fashion from the first channel to a channel furthest away in the water flow pattern from the first channel and then through an outlet fitting to the water feed system to the spa reservoir.

4,660,546

METHOD FOR TREATING FOR DEFICIENCY OF TEARS

Robert S. Herrick, 4134 N. Rosemead Blvd., Rosemead, Calif. 90004, and William F. Sardi, Pasadena, Calif., assignors to Robert S. Herrick, South Pasadena, Calif.

Filed Nov. 7, 1984, Ser. No. 669,252
Int. Cl.[4] A61M *31/00*
U.S. Cl. 128—1 R **17 Claims**



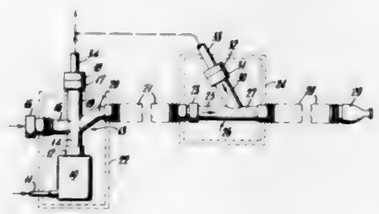
1. A method of treating external human eye conditions due to a deficiency of tears, including the steps of temporarily blockading the canaliculus of a patient with an absorbable implant placed totally within the canaliculus, observing the blockage after a preselected period to note any improvements in the eye condition, and if an improvement in the eye condition is noted, placing a nonabsorbable implant totally within the horizontal portion of at least one of the canaliculi of the patient.

4,660,547

METHOD AND APPARATUS FOR THE DIAGNOSIS OF RESPIRATORY DISEASES AND ALLERGIES

Carl P. Kremer, Jr., Darien, Conn., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Continuation of Ser. No. 736,519, May 20, 1985, abandoned, which is a continuation of Ser. No. 608,563, May 9, 1984, abandoned, which is a continuation of Ser. No. 361,767, Mar. 25, 1982, abandoned. This application Mar. 7, 1986, Ser. No. 838,197
Int. Cl.[4] A61B *6/00*
U.S. Cl. 128—1.1 **1 Claim**



1. Apparatus for providing a radioactive mist to be inhaled by a patient, the radioactive mist having gaseous properties to facilitate pervasion of the entire lung of the patient with substantially uniform disposition throughout all airways therein, the apparatus comprising:

(a) a first conduit having first and second inlets, and first and second outlets;

(b) continuously operated means for aspirating a liquid utilizing gas under pressure to continuously produce flow of a radioactive mist through a mist outlet connected to the first inlet of the first conduit, the gas under pressure being applied to the aspirating means at a rate in the range of about 6 to 10 liters per minute to produce radioactive mist having particles within the range of 0.56 microns to 1.2 microns with a major portion of the particles being less than one micron;

(c) a first unidirectional flow valve connected to the second inlet of the first conduit for admission of a gas containing oxygen into the first conduit through the second inlet;

(d) a second unidirectional flow valve connected to the first outlet of the first conduit to permit unidirectional flow from inside the first conduit to outside the first conduit through said first outlet, the first outlet of the first conduit including a filter for removal of radioactive mist from gas passing through said first outlet to outside the first conduit;

(e) a large particle trap within the first conduit and located between the mist outlet of the aspirating means and the second outlet of the first conduit, the trap including a plurality of inclined baffles providing a circuitous path for the mist to remove particles colliding with the baffles by converting particles that collide with the baffles to liquid and draining the thus formed liquid into the aspirating means;

(f) an undulating bellows forming at least a portion of said conduit, the bellows extending between said large particle trap and the second outlet of the first conduit;

(g) a second conduit having an inlet, an outlet, and a bidirectional flow port for communicating with a patient's airways, said port allowing flow into and out of the second conduit;

(h) a third unidirectional flow valve connecting the second outlet of the first conduit to the inlet of the second conduit to permit unidirectional fow from the first conduit to the second conduit; and

(i) a fourth unidirectional flow valve connected to the outlet of the second conduit to permit unidirectional flow from inside the second conduit to outside the second conduit through the outlet of the second conduit, said outlet of the second conduit including a filter for removal of radioactive mist from gas passing through the outlet of the second conduit to outside the second conduit;

wherein a patient upon inhaling through the inhalation passageway will draw mist through the first and second conduits from the mist-generating means and upon exhaling, exhaled mist and gas are discharged through the fourth flow valve of the second conduit.

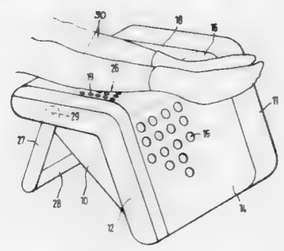
4,660,548

MASSAGE APPARATUS

Heinz Bucher, Rothwell, Fed. Rep. of Germany, assignor to Metronic Electronic GmbH, Fed. Rep. of Germany

Filed Apr. 30, 1985, Ser. No. 728,830
Claims priority, application Fed. Rep. of Germany, May 5, 1984, 3416641
Int. Cl.[4] A61H *1/00*
U.S. Cl. 128—33 **20 Claims**

1. Massage apparatus comprising a massage plate unit (13) driven by an electrical drive means generating motion components (32) directed in a single plane, wherein said massage plate unit (13) comprises a first and a second component plate (14, 18) provided on their outer surfaces with rounded raised protuberances (15,19), said component plates (14,18) forming with their inner surfaces an angle of about 90° with respect to each other and rigidly joined to each other by a convex rounded intermediate section (16), said first component plate (14) is operatively engaged with said drive means to move said first component plate (14) according to said motion components (32) directed in said single plane approximately parallel to the plane of said first component plate (14) and said second component plate (18) is caused to move due to said movement of said first component plate (14) according to said motion components (32) directed in said single plane approximately perpendicular to the plane of said second component plate (18), and said massage plate unit (13) is mounted between two side housings, (11,12) with a triangular housing (10) closing the space between said side housings and undersides of said component plates (14, 18), and said drive means operatively engaged with said first component plate (14) is mounted in said triangular housing (10), and adjustable support legs (27) are



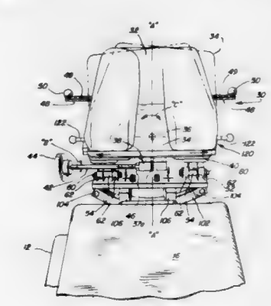
provided for positioning the component plates with respect to a support surface whereby said first component plate (14) provides an oscillatory massage due to said motion components (32) being directed substantially parallel to said first component plate (14), and said second component plate (18) simultaneously provides percussion massage due to said motion components (32) being directed substantially perependicular to said second component plate (18).

4,660,549

ADJUSTABLE HEAD SUPPORT FOR CHIROPRACTIC TABLE

Frank P. Kowalski, Des Plaines, and Donald J. Westphal, Elgin, both of Ill., assignors to Standex International, Salem, N.H.

Filed Sep. 12, 1985, Ser. No. 775,226
Int. Cl.[4] A61F *5/00*
U.S. Cl. 128—69 **16 Claims**



1. Adjustable support apparatus for a chiropractic table cushion, comprising:

a lower base;

a platen spaced above said base for supporting said cushion;

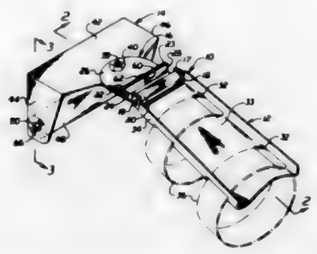
interconnecting means between said base and said platen supporting said platen for angular displacement relative to said base about an axis extending longitudinally thereof and spaced above said platen; and

adjustment control means for selectively controlling the amount of angular displacement between said platen and said base, said control means being operable to angularly displace said platen in opposite directions from a neutral position generally parallel of said base and including threaded shaft means supported for rotational movement and restricted against longitudinal movement on one of

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said platen and said base, and traveler means threadedly engaged with said shaft means for relative longitudinal movement therein in response to selected rotation of said shaft means and connected to move the other of said base and platen.

4,660,550
ARTICULATED HAND SPLINT WITH MULTIPLE PIVOT POINTS
Rudolph H. Bodine, 6074 107th Ave., Pinellas Park, Fla. 33565
Filed Jul. 26, 1985, Ser. No. 759,566
Int. Cl.⁴ A61F *5/04, 5/10*
U.S. Cl. 128—77 **9 Claims**

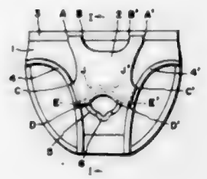


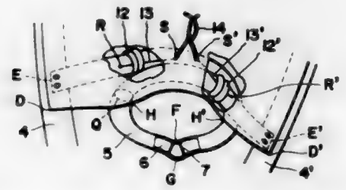
1. An articulated hand splint comprising an arm support frame having a first and second end and a hand grip housing connected together with a transition bracket having a first and second end and the bracket containing at least two pivot points for positioning a hand with respect to its forearm strapped to the arm support frame, the first end of the support frame connected to the first end of the transition bracket, the hand grip housing containing a top portion and two downwardly extending side walls with the two side walls connected together by a hand grip around which the fingers of a patient's hand are placed, the top portion of the hand grip housing being in parallel planes with and attached to but movable with respect to the second end of the transition bracket, the transition bracket having at the first end an elongated member with an extending arm at each end, the first end of the support frame attached to and pivoting on each extending arm, the support frame being strapped over the dorsal surface of a patient's forearm.

4,660,551
MEN'S BRIEFS
Atsumi Nishimura, 313, Hiharu, Minami-ku, Fukuoka-shi, Fukuoka-ken, Japan
Filed Mar. 28, 1985, Ser. No. 716,957
Claims priority, application Japan, Apr. 4, 1984, 59-068073; Oct. 13, 1984, 59-154925[U]; Feb. 2, 1985, 60-019097; Feb. 2, 1985, 60-019098
Int. Cl.⁴ A61F *5/00;* **A41B** *9/02*
U.S. Cl. 128—79 **7 Claims**

1. Men's briefs comprising a main body having a front part and a rear part, said front part and said rear part each having an upper end formed as an elastic waistband, leg openings in at least portions of each of said front and rear parts, an inner piece superimposed over an inside of said front part, securing means securing said inner piece to said body, said inner piece along with said front part defining a penis-receiving part, a penis-holding tube made of an elastic material, said tube being disposed as a loop to form a compressing tube for surrounding a penis root at a lower part of said inner piece, said compressing tube being provided with a size adjusting member comprising pull string means connected at one end to the compressing tube and extended along the back of said body through holes formed in the central portion of said inner piece, said pull string means being adjustable for loosening the compressing tube in emergencies when pain is caused by sudden fastening of the loop.

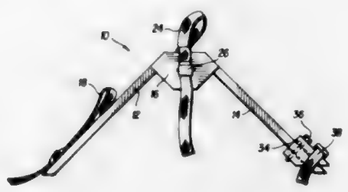
2. Men's briefs comprising a main body having a front piece and a rear piece, said front piece and rear piece each having a top connected to a waistband and two lower parts each connected to a legband, said front piece having an inner surface and an outer surface, an inner piece superimposed over the inner surface of said front piece and attached to the waistband and two leg bands for accommodating a penis between said front piece and said inner piece, said inner piece having a lower part and said front piece having a lower central part, a





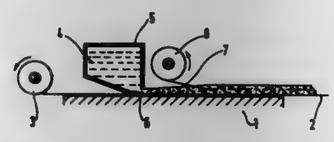
loop-shaped penis-holding rubber tube having ends attached to the legbands, a bottom of center part of said tube being attached to the lower central part of said front piece and said tube having an adjustable middle part, the lower part of said inner piece being folded up and secured to itself to form a passage accommodating the adjustable middle part of the loop-shaped penis-holding rubber tube therein, and means connected to the adjustable middle part of the loop-shaped penis-holding rubber tube for manually adjusting the adjustable middle part to vary the size of a loop formed by the loop-shaped penis-holding rubber tube to any penis size.

4,660,552
RESTRAINING DEVICE FOR SPINAL TAPS
Philip B. Latham, 384 Oldham Ave., Lexington, Ky. 40502
Filed Sep. 14, 1984, Ser. No. 650,535
Int. Cl.⁴ A61F *13/00*
U.S. Cl. 128—134 **6 Claims**



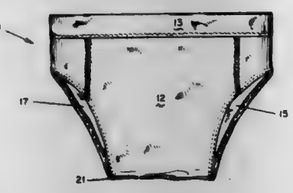
1. A restraining device for a patient undergoing medical treatment comprising:
a frame having the shape of an inverted V including a front planar surface piece and a rear planar surface piece joined together along one edge of each planar surface piece to form an apex of the inverted V;
a waist belt attached to said front planar surface piece;
a bar extending across the width of said rear planar surface piece and being adjustable along the height of said rear planar surface piece;
a wrist and ankle belt mounted on said bar;
wherein the waist of said patient is held by said waist belt and the wrists and ankles of said patient are held by said wrist and ankle belt so that said patient may not move during said medical treatment.

4,660,553
MEDICAL-SURGICAL DRESSING AND A PROCESS FOR THE PRODUCTION THEREOF
Clifford Naylor, Dinas Powis, and David Pocknell, Rhoose, both of Wales, assignors to Dow Corning Ltd., Barry, Wales
Division of Ser. No. 509,496, Jun. 30, 1983, Pat. No. 4,572,814. This application Jun. 21, 1985, Ser. No. 735,246
Int. Cl.⁴ A61L *15/00*
U.S. Cl. 128—156 **2 Claims**



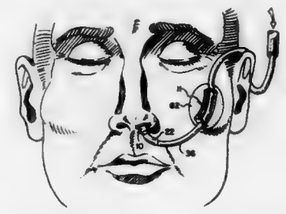
1. A medical-surgical dressing comprising a reinforced sheet of silicone elastomeric foam having a thickness not greater than 10 millimeters, one surface of the said sheet having a surface layer of open cell foam and the opposite surface being a substantially non-cellular surface skin formed of the foam itself.

4,660,554
DUAL PURPOSE ATHLETIC BRIEF AND CUP SUPPORTER
Timothy D. Wright, 10316 Eagan, Whittier, Calif. 90604
Filed Oct. 21, 1985, Ser. No. 789,498
Int. Cl.⁴ A61F *5/40*
U.S. Cl. 128—158 **8 Claims**



1. An improved athletic brief and cup supporter combination, comprising:
(a) a brief formed of a combination Nylon-Spandex or Nylon-Lycra, comprising approximately 87 percent Nylon and 13 percent Spandex or Lycra, varying from 3 to 5 percent in such compositional mix, the brief having:
a waistband portion adapted to encircle the waist of the brief wearer, said waistband including an elastic band of material sewn therein to provide a means for intimately gripping the waist of the brief wearer;
a first leg opening in the brief with an elastic band sewn therein for encircling one of the legs of the brief wearer;
a second leg opening in the brief with an elastic band sewn therein for encircling the other of the legs of the brief wearer;
(b) a cup supporter, comprising:
a front panel of material formed of a combination Nylon-Spandex or Nylon-Lycra, comprising approximately 87 percent Nylon and 13 percent Spandex or Lycra, varying from 3 to 5 percent in such compositional mix, said front panel having a pair of oppositely-disposed arcuate portions thereon adapted to be alignably sewn to the leg portions and the elastic bands contained thereabout, a bottom portion adapted to be sewn to the bottom of the brief, a pair of oppositely-disposed, vertically-arranged edges sewn to the front portion of the brief, and a top portion having an elastic band sewn therein with a pair of looped portions at the opposite extremities thereof which are sewn to the waistband of the brief.

4,660,555
OXYGEN DELIVERY AND ADMINISTRATION SYSTEM
Hugh W. Payton, 36 S. Main St., Jeffersonville, Ohio 43128
Continuation-in-part of Ser. No. 653,820, Sep. 21, 1984, which is a continuation-in-part of Ser. No. 586,455, Mar. 5, 1984, abandoned. This application Nov. 15, 1985, Ser. No. 798,519
Int. Cl.⁴ A61M *16/00*
U.S. Cl. 128—207.18 **5 Claims**

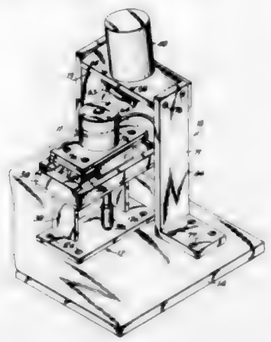


1. In an oxygen applicator system for the delivery of supplemental oxygen to a nostril of a patient, the improvement comprising:
a cone-shaped nosepiece formed of soft elastomer having a truncated inner end and a depending surrounding outwardly-tapered skirt, said nosepiece at the truncated end thereof formed with a reverse conical surface,
the dimension of said skirt at the base thereof being proportioned to be received comfortably in the nasal cavity, said skirt having a wall thickness which permits it to readily conform to surrounding nasal membrane surfaces,
means in said nosepiece defining a central oxygen inlet at the base thereof and extending axially therethrough and opening at said truncated end forming an axial oxygen passageway, and
said nosepiece further having a plurality of auxiliary air passages leading to said axial passageway.

4,660,556
METHOD AND APPARATUS FOR MODIFYING CORNEAL BUTTONS
Casimir Swinger, New York, N.Y., and Daniel Cassiday, Jersey City, N.J., assignors to Techno Opthalmics International, Inc., Irvine, Calif.
Filed Feb. 14, 1985, Ser. No. 701,558
Int. Cl.⁴ A61B *17/32*
U.S. Cl. 128—305 **18 Claims**

17. Apparatus for altering the refractive power of a corneal button comprising means for distorting a corneal button, said means including a preformed die constructed and arranged to distort a corneal button held firmly in contact with the surface of said die, and a ring located on the side of said corneal button opposite said die and constructed and arranged to press a circumferential portion of said corneal button against said die to firmly retain said portion in firm contact therewith, cutting

means and reciprocating means moving one of said cutting means and said die with its associate ring transversely of each other and in spaced relation to perform a transverse planar cut on a corneal button held on said die by said ring.



4,660,557

SURGICAL INSTRUMENT

John S. Collis, Jr., c/o 29001 Cedar Rd., Cleveland, Ohio 44124

Continuation-in-part of Ser. No. 621,606, Jun. 18, 1984. This application Apr. 11, 1985, Ser. No. 722,168

Int. Cl.[4] A61F *17/32*

U.S. Cl. 128—305 **14 Claims**



1. A surgical instrument comprising:

a handle; and

a body extending from the handle, the body having:

top and bottom surfaces, each substantially flat, each of the top and bottom surfaces having a forward edge at the end opposite the handle, each of the top and bottom surfaces also having a side edge along each side, the intersection of each forward edge and each side edge forming a forward end corner;

side surfaces each connecting the adjacent side edges of the top and bottom surfaces; and

a forward end surface connecting the forward edges of the top and bottom surfaces, a portion of each of the forward edges adjoining each of the forward end corners sharpened to provide cutting edges, the remaining portions of the forward edges dulled.

4,660,558

ANEURYSM CLIP AND METHOD OF MANUFACTURE

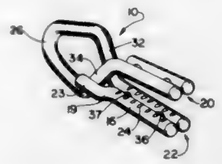
George Kees, Jr., 104 North St., Wilder, Ky. 41071

Filed Dec. 31, 1985, Ser. No. 815,231

Int. Cl.[4] A61B *17/12*

U.S. Cl. 128—325 **3 Claims**

1. An aneurysm clip which comprises an elongated main section of spring metal and a pair of short length jaw addition sections attached to end portions of the main section on opposite sides of the main section, the main section being formed to a central spring portion, diverging first connecting portions extending from the central spring portion, converging second connecting portions extending from the first connecting portions, and jaw end portions extending from the converging second connecting portions, the second connecting portions crossing, one of the jaw addition sections including a guide bar extension section extending in overlying relation to one of the second connecting portions associated with an opposed jaw, said one of the second connecting portions being guided between an opposed second connecting portion and the guide bar extension section, the jaw end portions being arranged so that each of the jaw end portions is opposed to one of the short length jaw addition sections, the central spring section urging the jaw end portions toward engaged position with the jaw addition sections.



4,660,559

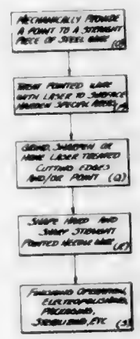
STERILE SURGICAL NEEDLES WITH A HARD SHARP CUTTING EDGE AND METHOD FOR PRODUCING THE SAME

Walter McGregor, Flemington, and Lee Bendel, Lebanon, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Sep. 19, 1983, Ser. No. 533,471

Int. Cl.[4] A61B *17/06*

U.S. Cl. 128—339 **6 Claims**



1. A process for producting a sterile surgical needle having a very sharp cutting edge having a surface hardness of at least 45 measured on the Rockwell C Hardness Scale and a body portion which is malleable and resistant to breaking comprising:

forming a cutting edge at one end of a piece of steel wire;

treating said cutting edge with a laser beam having a power output, between 10 watts and 150 watts and a wave length of 8 to 12 microns to harden said edge to a depth of from about 0.0001 inch to 0.010 inch and to a hardness of at least 45 measured on a Rockwell C Hardness Scale;

sharpening said edge; and

sterilizing said sharpened steel wire to produce a sterile surgical needle.

4,660,560

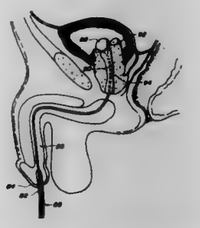
METHOD FOR TREATING OBSTRUCTIVE PROSTATISM

Lester A. Klein, Boston, Mass., assignor to The Beth Israel Hospital Association, Boston, Mass.

Filed May 30, 1985, Ser. No. 739,128

Int. Cl.[4] A61M *29/02*

U.S. Cl. 128—344 **9 Claims**



1. A method of dilating a prostatic urethra, which comprises:

introducing a multichannel cystoscope into and along the length of the prostatic urethra;

passing a urethral catheter through a lumen in the cystoscope into the prostatic urethra and along thereto;

positioning a remote section of the urethral catheter between and adjacent to the bladder neck and the veru montanum; and,

expanding the remote section annularly in order to dilate the prostatic urethra and thereby relieve the prostatic encroachment thereto.

4,660,561

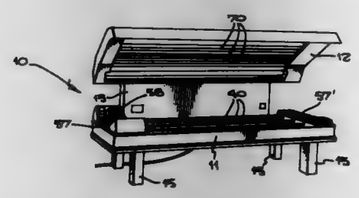
FIXTURE FOR SKIN TANNING BY SELECTIVE LIGHT SOURCE

Robert Nielsen, Sierra Madre, Calif., assignor to Solana, Inc., Irwindale, Calif.

Filed Oct. 26, 1984, Ser. No. 665,113

Int. Cl.[4] A61N *5/06*

U.S. Cl. 128—376 **14 Claims**



1. A fixture for skin tanning of a user by a selective light source of substantially optimum energy density comprising a supporting structure for engagement with a supporting surface, a frame for containment of said light source, an adjustable connection between said supporting structure and said frame comprising means enabling simultaneous adjustment of vertical location and tilt of said frame relative to the skin surface of a user, said light source comprising a multiple number of light emitting tubes forming a bank of tubes, said bank having when energized a light emitting capability of about 99% UVA and from about 0.7% to 1% UVB, said frame comprising a tube housing having opposite ends spaced from each other at a distance in excess of the length of a tube and a rear wall, a set of tube holders at each end in substantially contiguous relationship for reception of said tubes in relatively snug juxtaposition, reflecting means facing inwardly relative to said rear wall and a transparent sheet of synthetic plastic resin material extending over the forward side of said bank of tubes, there being a space between said tubes and said rear wall and vent means in communication between said space and the exterior, a second bank of tubes, the second bank of tubes including a substantially flat sheet member in substantially horizontal position for supporting the body of the user and adapted to engage one side of said body, the other of said banks including a corresponding sheet member adapted to be moved into a substantially horizontal position at selected levels for tanning the other side of the body, there being a greater number of tube mountings and tubes in said other of said banks, said other of said banks having a substantially flat intermediate section, a set of tube mountings and tubes adjacent opposite side edges of said other of said banks having a width less than the width of said intermediate section and being in planes obliquely disposed relative to the plane of said intermediate section for tanning side portions of the user's body.

4,660,562

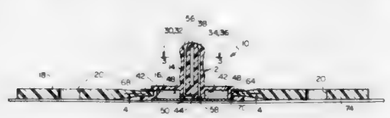
MULTI-EVENT BIOMEDICAL ELECTRODE ASSEMBLY

Hugh A. House, Sr., P.O. Box 938, Rockwell, N.C. 28138

Filed Mar. 7, 1985, Ser. No. 709,294

Int. Cl.[4] A61B *5/04*

U.S. Cl. 128—640 **11 Claims**



1. A multi-event biomedical electrode assembly for simultaneously sensing more than one physiological parameter of a patient comprising, in combination:

(a) housing means having;

(i) an upwardly extending portion including means for receiving a mating connector thereon, and

(ii) a plurality of electrically conductive paths disposed in said receiving means, said conductive paths being positioned to coincide with electrically conductive paths provided in a mating connector; and

(b) a base portion having;

(i) a plurality of compartments, at least one of of said compartments circumferentially surrounding said upwardly extending portion and open in the opposite direction therefrom, the remaining compartments being disposed beneath said upwardly extending portion and open in the opposite direction therefrom, each of said remaining compartments including means receiving a transducer having at least one conductive terminal, said transducer conductive terminal being connected to one of said receiving means conductive paths;

(c) adhesive means having a centrally disposed aperture for receiving said base portion;

(d) retaining means for retaining said base portion within said adhesive means aperture;

(e) electrolyte means disposed in at least said circumferentially disposed compartment; and

(f) membrane means for receiving said base portion covering all of said compartment openings.

4,660,563

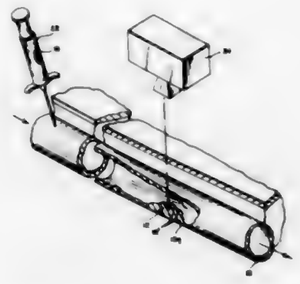
METHOD AND MEANS FOR DETECTION OF ARTERIAL LESIONS

Robert S. Lees, Brookline, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 686,633, Dec. 31, 1984, abandoned, which is a continuation of Ser. No. 425,187, Sep. 28, 1982, abandoned. This application Sep. 11, 1985, Ser. No. 775,093

Int. Cl.⁴ A61B *6/00*

U.S. Cl. 128—654 **8 Claims**



1. The method for the early detection of arterial disease including atherosclerosis comprising the steps of

A. preparing an infusate composed of

1. low density lipoproteins, and

2. tracer means linked to said proteins and capable of being viewed extracorporeally,

B. injecting the infusate into the vascular system of a patient;

C. subsequently viewing the patient's vascular system with extracorporeally-located detecting means capable of detecting the tracer means;

D. determining from said detecting means the locations of tracer means in the patient's vascular system; and

E. quantifying concentrations of the tracer means by said detecting means at one or more of said locations.

4,660,564

APPARATUS FOR MEASURING PULSETILE PART-STRUCTURES WITHIN A LIVING BODY

Morten Benthin; Philip I. Dahl, both of Lund; Gerhard M. Gessner, Malmo, and Kjell O. T. Lindström, Hollviksnas, all of Sweden, assignors to Teltec Electronic Equipment AB, Lund, Sweden

Filed Apr. 1, 1985, Ser. No. 718,429

Claims priority, application Sweden, Apr. 2, 1984, 8401789; Mar. 14, 1985, 8500608

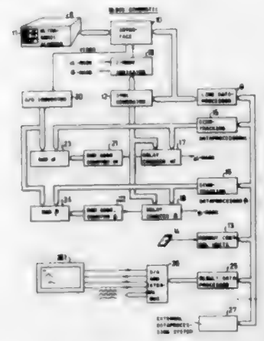
Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—660 **15 Claims**

1. Apparatus for measuring movable part structures within a living body, said apparatus being intended to co-operate with an ultrasonic scanner having an ultrasonic head provided with a plurality of ultrasonic transmitter units, and being arranged to generate pulsation diagrams representing movements of the movable part structures in a pulsatile vessel in the living body, comprising:

control means, operative to sequentially activate the ultrasonic transmitter units in an ordered sequence for, between each activation of one of the ultrasonic transmitter units, defining at least two selected measuring lines, each of which is associated with a respective associated ultrasonic transmitter unit and for scanning each said measuring line in a sequence using said associated transmitter unit and producing a signal indicative thereof;

vessel wall indicating means, arranged to receive the indicative signal obtained in response to the scanning using the selected ultrasonic transmitter units for scanning two vessel boundaries with each scan of each said measuring line to generate information used to calculate a change in condition of such boundaries in relation to a preceding indication of said measuring lines;



computing means for calculating a pulsation diagram for each said measuring line for the pulsatile vessel from the information obtained from the vessel wall indicating means; and

presentation means for presenting the pulsation diagrams.

4,660,565

ULTRASONIC IMAGING APPARATUS USING PULSED DOPPLER SIGNAL

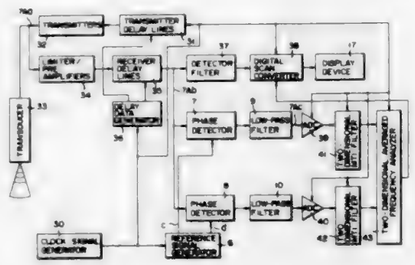
Toshio Shirasaka, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 7, 1984, Ser. No. 679,265

Claims priority, application Japan, Dec. 8, 1983, 58-230668

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—660 **14 Claims**



9. An apparatus for producing images of blood-flow patterns and tomograms of an body comprising;

an array of ultrasonic transducer elements for directing ultrasonic pulses along a beam towards said body, for receiving echoes of said ultrasonic pulses reflected from different depths of said body along said beam, and for producing electrical echo signals representing said received echoes;

scanning means, coupled to said array of transducer elements, for steering said beam by exciting said ultrasonic elements at different times;

a display memory and driver;

first processing means, coupled to said transducers and to said display memory and driver, for processing said electrical echo signals for transmission to said display memory and driver;

reference signal generating means for generating reference signals having amplitudes which periodically increase with time in accordance with the time required to receive said echoes from different depths in said body;

detecting means, coupled to said reference signal generating means, for mixing said electrical echo signals and said reference signals to obtain Doppler shift signals;

second processing means, coupled to said detecting means, for producing blood-flow signals from said Doppler shift signals and for transmitting said blood-flow signals to said display memory and driver, said blood-flow signals representing different velocities of blood in said body; and

displaying means for reading said echo signals and blood-flow signals from said display memory and driver for displaying said tomogram and said blood-flow pattern of said body.

4,660,566

METHOD AND APPARATUS FOR THE NON-INVASIVE MONITORING OF ARTERIAL BLOOD PRESSURE WAVES

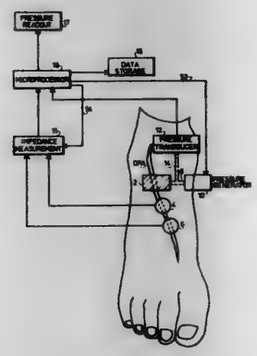
Yoram Palti, Haifa, Israel, assignor to Fidelity Medical, Inc., Millburn, N.J.

Continuation-in-part of Ser. No. 592,253, Mar. 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 429,679, Sep. 30, 1982, abandoned. This application Nov. 25, 1985, Ser. No. 802,024

Claims priority, application Israel, May 13, 1983, 68685; Nov. 15, 1983, 70243

Int. Cl.⁴ A61B *5/02*

U.S. Cl. 128—677 **31 Claims**



1. A method for the non-invasive monitoring of the arterial blood pressure of a subject, comprising the steps:

applying a plurality of discretely spaced single-polarity pressure pulses, each having a duration which is a fraction of the duration of the subject's blood pressure pulse, to a local, discrete, external point of the subject overlying an artery to effect either a blocking or unblocking condition of the artery;

detecting when said condition in the artery occurs;

and measuring the instant value of each applied pressure pulse when said condition is detected to thereby provide a measurement of the subject's blood pressure.

4,660,567

METHOD OF AUTOMATICALLY MEASURING BLOOD PRESSURE, AND APPARATUS THEREFOR

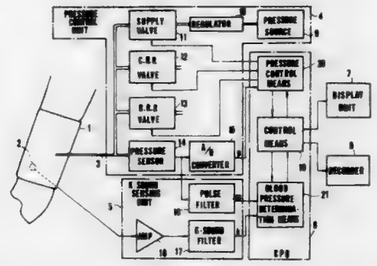
Yoshihiro Kaneko; Osamu Tochikubo, both of Yokohama, and Hiroyuki Yokoi, Sakado, all of Japan, assignors to Takeda Medical Company Limited, Tokyo, Japan

Filed Apr. 24, 1985, Ser. No. 726,764

Claims priority, application Japan, Sep. 27, 1984, 59-200503; Sep. 27, 1984, 59-200504; Sep. 27, 1984, 59-200505

Int. Cl.⁴ A61B *5/02*

U.S. Cl. 128—682 **10 Claims**



1. An apparatus for automatically measuring blood pressure, comprising:

a cuff adapted to be affixed to a limb of a patient;

pressurizing means for rapidly pressurizing said cuff;

depressurizing means for sensing cuff pressure and for producing a cuff pressure signal indicative of the cuff pressure;

K-sound sensing means for sensing K-sounds from the limb of the patient and for producing a K-sound signal indicative of the K-sounds;

timer means for measuring a period of each K-sound signal produced during initial pressurization of said cuff by said pressurizing means;

holding means for holding a predicted period of the K-sound signal;

updating means for diciding a new predicted period based on a measured period and successively updating the predicted period held in said holding means by the new predicted period;

sensing means for generating a timing signal in response to failure of a next K-sound signal to appear within the predicted period held in said holding means; and

control means for immediately halting the initial pressurization in response to the timing signal, and for thereafter causing said depressurizing means to start depressurization in order to measure blood pressure.

4,660,568

TELEMETRIC DIFFERENTIAL PRESSURE SENSING SYSTEM AND METHOD THEREFORE

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Continuation of Ser. No. 945,365, Sep. 25, 1978, abandoned, which is a continuation of Ser. No. 697,948, Jun. 21, 1976, abandoned. This application Jan. 23, 1981, Ser. No. 227,898

The portion of the term of this patent subsequent to Mar. 31, 2004, has been disclaimed.

Int. Cl.⁴ A61B *5/00*

U.S. Cl. 128—748 **92 Claims**

1. A differential pressure sensor adapted for implantation beneath the skin in the living body and for in vivo calibration after implantation, said sensor comprising:

a. a housing having means defining an opening, extending therethrough;

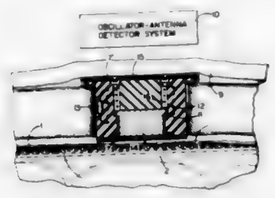
b. a first flexible diaphragm extending across the housing opening and being secured with respect to said housing, at least a portion of said first flexible diaphragm defining a

portion of the exterior surface of said sensor and being positioned so that after implantation beneath the skin said portion of said first flexible diaphragm is in mechanical pressure communication with the skin and whereby pressures external to the body can be communicated mechanically across the intact skin to said first flexible diaphragm;

c. a second flexible diaphragm extending across the housing opening and being secured with respect to said housing, said diaphragms and opening defining means defining a chamber within said sensor and the side of said second flexible diaphragm that is external to said chamber being positioned to be in contact with and in mechanical pressure communication with a bodily medium, the pressure of which is to be sensed when said sensor is implanted in the living body;

d. solid coupling means located within said chamber and secured to both of said flexible diaphragms for coupling the motion of one of said flexible diaphragms to the other of said flexible diaphragms so that, when said sensor is implanted in the living body, changes in the difference in pressures in said bodily medium and on said exterior portion of said first flexible diaphragm will cause motion of said flexible diaphragms and said solid coupling means;

e. contact means connected to said housing for contacting (i) at least one of said diaphragms or (ii) said solid coupling means thereby defining a mechanical contact reference position with respect to said housing of (i) at least one of said diaphragms or (ii) of said solid coupling means for a



predetermined pressure relationship between said pressures on said two flexible diaphragms when said sensor is implanted in the living body; and,

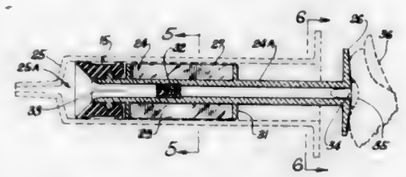
f. means having a preselected, detectable, variable parameter that is detectable by detection means located outside the living body, said means having a preselected, detectable variable parameter being at least in part cooperatively connected to and movable with at (i) least one of said flexible diaphragms or (ii) said solid coupling means so that said preselected, detectable, variable parameter will change as a known function of the displacement from said mechanical contact reference position of (i) at least one of said diaphragms or (ii) of said solid coupling means, said displacement being a known function of the difference of the external pressures on said diaphragms; whereby, when said sensor is implanted beneath the skin, (i) at least one of said flexible diaphragms or (ii) said solid coupling means can be driven to said mechanical contact reference position by a pressure external to the living body applied to the skin adjacent to said sensor and thereby the value of said preselected, detectable, variable parameter at said mechanical contact reference position corresponding to said predetermined pressure relationship can be determined in vivo after implantation; and whereby the difference in the value of said preselected, detectable, variable parameter from said value determined at said mechanical contact reference position is a measure of the pressure in said bodily medium.

4,660,569

VENTING, AUTOMATIC-STOPPING, ASPIRATING PLUNGERS FOR SYRINGES

Roger F. Etherington, Newport Beach, Calif., assignor to Sealsyringe Corporation, San Diego, Calif.

Filed Feb. 10, 1986, Ser. No. 827,516
Int. Cl.⁴ A61B *5/00*
U.S. Cl. 128—765 **15 Claims**



1. A venting, automatic-stopping, aspirating plunger for syringes used in collection of blood, comprising:

an elongated hollow plunger barrel stem with band-like sealing means on its interior end within the syringe body forming a chamber communicating with said hollow stem and a fingergrip means on the exterior end and being slidably insertable into the body of a syringe to variate the volume capacity of the said chamber of said syringe while maintaining a sealing relationship between said sealing means of the plunger and internal surfaces of the syringe body;

a hollow capillary action view-tube formed within the said hollow plunger barrel stem, said capillary action view-tube positioned in constant sealing contact with the said band-like sealing means and extending co-axially with the longitudinal axis of said stem towards said fingergrip end of said plunger, and;

an air-permeable porous material positioned in the said hollow capillary action view-tube nearest said fingergrip end of the plunger, said porous material characterized as having microscopic pores within for permitting air to permeate therethrough but which will not permit the passage of blood.

4,660,570

FETAL BLOOD SAMPLING INSTRUMENT

Mitchell P. Dombrowski, 103 Mapleton, Grosse Point Farms, Mich. 48236

Continuation of Ser. No. 679,233, Dec. 7, 1984, abandoned, which is a continuation-in-part of Ser. No. 625,738, Jun. 28, 1984, abandoned. This application Sep. 8, 1986, Ser. No. 906,561
Int. Cl.⁴ A61B *5/00*
U.S. Cl. 128—765 **27 Claims**



1. An instrument (10) for obtaining a fetal blood sample comprising: an elongated member (12) having an open end portion (14), said open end portion (14) being hollow; tissue thin membrane means (16) disposed in sheet-like fashion over said open end portion (14) for perfecting a seal about said open end portion (14) to close said open end portion (14) to outside contaminants; lancing means (18) slidably supported within said elongated member (12) for piercing said membrane means (16) and making an incision in the skin (20); and suction means for creating a suction within said open end portion (14) while maintaining the open end portion (14) and pierced membrane means (16) thereunder sealed against the skin and from outside contaminants to draw blood from the incision in the skin through said pierced membrane means (16) and into said hollow open end portion (14), gripping means (28,30,32) for holding the open end portion (14) and pierced membrane means (16) sealed against the skin while moving said lancing means (18) outward to pierce said membrane means (16) and adjacent skin and while withdrawing said lancing means (18) back out of the incision and said membrane means (16) and into said open end portion (14) and while actuating said suction means to draw blood into said open end portion (14).

4,660,571

PERCUTANEOUS LEAD HAVING RADIALLY ADJUSTABLE ELECTRODE

Stanley R. Hess, and Terri Kovacs, both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Jul. 18, 1985, Ser. No. 756,756
Int. Cl.⁴ A61N *1/04*
U.S. Cl. 128—784 **10 Claims**



1. A percutaneous endocardial lead comprising:

an elongated body member having an elongated hollow core therewithin, a proximal end portion, and a distal end portion;

an elongated shaft member slidingly mounted within said elongated hollow core of the body member, said elongated shaft member having a proximal end portion and a distal end portion, and said shaft member distal end portion being operatively connected to said distal end portion of the elongated body member;

a tip electrode at said distal end portion of the elongated shaft member and in electrical communication with said proximal end portion of the elongated body member;

a plurality of elongated peripheral segments at the distal end portion of the elongated body member;

a plurality of elongated conductors, each extending between each of said elongated peripheral segments and said proximal end portion of the elongated body member, said elongated conductors being insulated from each other;

mapping electrode means including a plurality of electrodes, each said electrode being on each said elongated peripheral segment, each said electrode being in electrical communication with one of said elongated conductors, and said electrodes of the mapping electrode means provide an electrode array generally around the tip electrode;

means for adjusting said electrode array between a closed configuration that is substantially isodiametric with said elongated body member and open configurations at which each elongated peripheral segment folds on itself and moves each electrode to an outwardly directed location including to a location generally coplanar with said tip electrode;

said means for adjusting said electrode array including said elongated body member and said elongated shaft member slidingly mounted therewithin, whereby said elongated body member and said elongated shaft slidingly move relative to each other in order to adjust said electrode array between said closed configuration and said open configurations; and

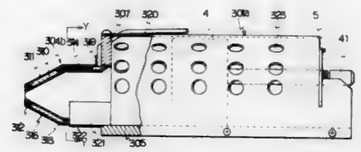
ablation means having an ablation surface generally at said tip electrode, said ablation surface being generally circumscribed by said electrode array at said open configurations thereof.

4,660,572

CONTAINER, FOR FIXING AN ANIMAL TO BE TESTED IN A BIOCHEMICAL TEST

Yuji Maruyama, 1565-59, Notsuke-machi, Takasaki-shi, Gumma-ken; Kohei Otake, Kawagoe, and Hisao Kizaki, Kamifukuoka, all of Japan, assignors to Yuji Maruyama, Notsuke and New Japan Radio Co., Ltd., Tokyo, both of, Japan

Filed Mar. 18, 1985, Ser. No. 712,502
Claims priority, application Japan, Mar. 22, 1984, 59-55078
Int. Cl.⁴ A61N *5/02*
U.S. Cl. 128—804 **5 Claims**



1. In a container for fixing an animal to be tested in a biochemical test comprising a hollow tubular portion for covering a head of the animal, and connected thereto at one end thereof a hollow body portion for covering a body of the animal, wherein a microwave is applied to said tubular portion projected into an applicator, the improvement wherein the tubular portion is made of a material having a high dielectric constant and a high dielectric loss, and a part of the tubular portion facing to a microwave to where the microwave approaches is partially removed or replaced by a material having a low dielectric constant and a low dielectric loss.

4,660,573

ULTRASONIC LITHOTRIPTOR PROBE

Joseph F. Brumbach, Niles, Ill., assignor to Fibra-Sonics, Inc., Chicago, Ill.

Filed May 8, 1985, Ser. No. 731,772
Int. Cl.⁴ A61B *17/00*
U.S. Cl. 128—303 R **6 Claims**



1. An ultrasonic lithotriptor probe for disintegrating calculi comprising an ultrasonic generator, a handpiece with an ultrasonic motor which is formed with a central opening and connected to said ultrasonic generator, an operating hollow needle connected to said ultrasonic motor at a connection point intermediate its ends such that a first end can be inserted into a body cavity and engage a calculi to disintegrate it, said operating needle having a second end which extends in the opposite direction from said first direction from said connection point between said operating needle and said ultrasonic motor and said first end has a length falling between $\lambda/8$ and 15 inches, where λ is the wavelength at the operating frequency of the ultrasonic motor and the length of said second end of said operating needle from the connection point is $m\lambda/4$ where m is an integer.

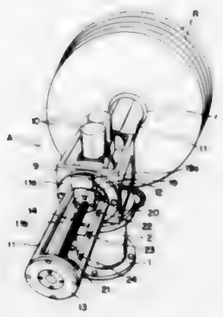
VOL 1077 ISS 4 APR 28 1987 UMI

4,660,574

REEL ATTACHING AND DETACHING DEVICE

Hideki Kobayashi, Tokyo; Yutaka Okumoto, Musashino, and Mikio Komori, Matsudo, all of Japan, assignors to Japan Tobacco, Inc., Tokyo, Japan

Filed Feb. 13, 1985, Ser. No. 701,358
Claims priority, application Japan, Feb. 15, 1984, 59-25153
Int. Cl.[4] A24C *5/14*
U.S. Cl. 131—105 6 Claims



1. A reel attaching and detaching device for detaching an empty reel from a first bobbin of a cigarette rolling machine to discard the same, taking up a loaded reel from a stocker, attaching the loaded reel to said first bobbin, detaching another empty reel from a second bobbin of the cigarette rolling machine to discard the same, taking up another loaded reel from the stocker, and attaching said another loaded reel to said second bobbin, said reel attaching and detaching device comprising

a travelling carrier adapted to travel on a track;

a pair of revolvable threaded shafts provided on said travelling carrier, said pair of threaded shafts extending substantially in a vertical plane along said track in a straight line;

a pair of clamps screwed on said threaded shafts and adapted to hold a reel having a core cylinder by clamping said core cylinder;

drive means for driving said pair of threaded shafts such that said pair of clamps move toward and away from each other;

support means provided on said carrier for supporting and moving said pair of revolvable threaded shafts by said drive means transversely said track; and

a pusher mounted on said travelling carrier and moving perpendicularly across said plane between said pair of clamps to and fro.

4,660,575

CIGARETTE EXTINGUISHER

Chris N. Andreason, 5398 South 1410 East, Salt Lake City, Utah 84117, and Michael C. Bingham, 1617 E. 9400 So., Sandy, Utah 84092

Filed Mar. 18, 1985, Ser. No. 712,428
Int. Cl.[4] A24F *13/18, 13/16*
U.S. Cl. 131—256 7 Claims

1. An extinguisher for extinguishing cigarettes, cigars, and other cylindrical smoking materials comprising:

a hollow cylinder with an open first end and a closed second end of sufficient length to store therein a cigarette, the open first end sized to be sealed by the unlit end of an inserted cigarette to prevent ashes from escaping, and having an internal cylindrical chamber defined by the interior of the cylinder wall proximate the first end; and

a cylindrical keeper having two opposed open ends, said keeper having means to removably hold a cigarette and being longitudinally slideably mounted within the cylindrical chamber in the extinguisher, said keeper having a longitudinal cylindrical bore extending between said two opposed open ends and being suffiently sized to accommodate the cross-sectional diameter of the inserted cigarette, and means extending radially into the bore opening to partially restrict said opening to form a friction hold on an inserted cigarette; said cylinder further comprising means for limiting the longitudinal movement of said keeper so as to retain said keeper entirely within said hollow cylinder



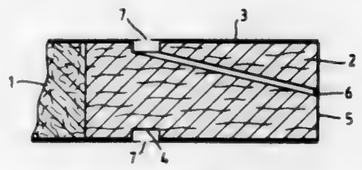
cylindrical chamber, said limiting means further defining the longitudinal boundaries of said cylindrical chamber; said keeper in one mode capable of sliding within the groove to hold and carry an inserted cigarette toward the second end of the cylinder for storage; and in another mode capable of sliding back toward the first end of the cylinder to carry and extend the unlighted ends of the cigarette beyond the first end sufficiently so that the cigarette may be retrieved by a user.

4,660,576

SMOKING ARTICLES

Henry G. Horsewell, Totton, and Martin G. Duke, Southampton, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Mar. 18, 1985, Ser. No. 713,183
Claims priority, application United Kingdom, Mar. 23, 1984, 8407671
Int. Cl.[4] A24D *3/04*
U.S. Cl. 131—336 13 Claims



1. A mouthpiece element comprising:

a smoke passage defined by a downstream end and an upstream end, a peripheral wall extending between said ends, a continuous ventilation duct extending from a region of said peripheral wall open to ambient air, to said downstream end, said duct being substantially gas imperivous and opening at said downstream end at a location spaced from said peripheral wall to permit smoke flowing through said passage to exit through said downstream end outwardly of air exiting from said duct, said duct and said smoke passage having cross-sectional dimensions selected to provide a ratio between an air velocity of air exiting from the duct and a smoke velocity of smoke exiting from the smoke passage, which ratio exceeds ten when the element is smoked under standard smoke machine conditions.

4,660,577

DRY PRE-MIX FOR MOIST SNUFF

Andrew J. Sensabaugh; Ronald L. Parks; and William P. Mangan, Winston-Salem; Arval C. Marsh, Rural Hall, all of N.C., assignor to R.J. Reynolds Tobacco Company, Forsyth, N.C.

Continuation of Ser. No. 410,091, Aug. 20, 1982, abandoned.
This application Jun. 3, 1985, Ser. No. 741,028
Int. Cl.[4] A24B *3/12, 3/18, 15/20*
U.S. Cl. 131—352 10 Claims

8. A dry pre-mix for making moist snuff, said pre-mix comprising:

a comminuted tobacco blend of aged tobacco cut to a degree of fineness within a range of from 40 to 120 cuts per inch and containing casing material and snuff flavor precursors, a major portion of said blend including snuff-type tobacco characterized chemically by a high level of nitrogenous constituents; and

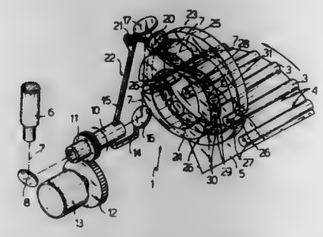
moisture in an amount of between 6% to 16%.

4,660,578

PIERCING DEVICE FOR PIERCING VENTILATING HOLES IN CIGARETTES OR SIMILAR SMOKING COMMODITIES

Riccardo Mattei; Armando Neri, both of Bologna; Santo R. Gobbi, Pavia, and Maichi Cantello, Agliè, all of Italy, assignors to G.D. Societa Per Azioni, Bologna, Italy

Filed Sep. 10, 1984, Ser. No. 649,277
Claims priority, application Italy, Sep. 12, 1983, 3557 A/83
Int. Cl.[4] A24C *5/60*
U.S. Cl. 131—281 4 Claims



1. A piercing device for piercing ventilating holes in the surface of cigarettes, the device comprising:

a feeding device for supporting a roll of equally spaced cigarettes arranged parallel to each other in a side-by-side relationship;

means for advancing said feeding device thus advancing said cigarettes transversely of their axis along a predetermined arc;

a laser source for emitting a laser beam in a continuous manner along a fixed axis coinciding, in succession during use, with the axis of each cigarette as it reaches a predetermined position along said arc; and

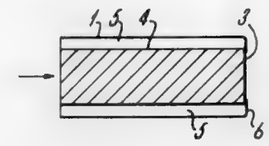
an optical reflecting and focusing system to divert and focus said beam in succession on predetermined points of the surface of each cigarette being advanced, in use, along said arc by said feeding device, said optical system comprising a mobile focusing unit mounted for rotation about said fixed axis to focus said beam on a fixed point of said axis, and a fixed reflecting member mounted between said focusing unit and said fixed point and comprising a number of reflectng elements designed to be swept in succession by said focus beam.

4,660,579

TOBACCO SMOKE FILTERS

Henry G. Horsewell, Totton; Martin G. Duke, and James W. Phelpstead, both of Southampton, all of England, assignors to British-American Tobacco Company Limited, London, England

Filed Oct. 24, 1985, Ser. No. 790,723
Claims priority, application United Kingdom, Nov. 17, 1984, 8429104
Int. Cl.[4] A24D *3/04*
U.S. Cl. 131—339 7 Claims



1. A tobacco smoke filter comprising a body of smoke filtration material, said body of smoke filtration material being enclosed by substantially smoke impervious casing means, a smoke flowing downstream end of said body being open for smoke flow therethrough, smoke flow passage means of smoke flow impedance less than that of said body, and a smoke blockable surface bounding said body and said passage means, said passage means being located within said casing means, the downstream end of said passage means being at least substantially closed to smoke flow and said passage means being in smoke flow communication with said body through said smoke blockable surface at least at a region of said passage means extending from the downstream end thereof.

4,660,580

PROCESS FOR THE PERMANENT SHAPING OF THE REGROWTH OF HAIR AND COMPOSITION THEREFORE

Dietrich Hoch, Pfungstadt; Theodor Wajaroff, and Eugen Konrad, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP83/00350, § 371 Date Aug. 10, 1984, § 102(e) Date Aug. 10, 1984, PCT Pub. No. WO84/02842, PCT Pub. Date Aug. 2, 1984
PCT Filed Dec. 29, 1983, Ser. No. 642,670
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301515
Int. Cl.[4] A45D *7/00*
U.S. Cl. 132—7 23 Claims

1. Process for a selective permanent shaping of the regrowth of hair, whereby the hair is at first treated with a liquid aqueous pretreatment composition, rolled onto rollers, treated with an aqueous reducing permanent shaping composition, rinsed and neutralized oxidatively, characterized in that the pretreatment composition and the permanent shaping composition form a separating layer at their contact face during contact, thus making an admixture of the pretreatment composition with the permanent shaping composition more difficult or preventing the same.

4,660,581
METHOD OF FORMING PERMANENT WAVES ON HAIR

Hisahiro Yamamoto, 504, Sannoudai Manshon, 7-3-22, Sannou, Akita-shi, Akita, Japan

PCT No. PCT/JP83/00381, § 371 Date Jul. 17, 1984, § 102(e) Date Jul. 17, 1984, PCT Pub. No. WO84/01699, PCT Pub. Date May 10, 1984
PCT Filed Oct. 26, 1983, Ser. No. 627,569
Claims priority, application Japan, Oct. 27, 1982, 57-189678
Int. Cl.⁴ A45D *7/04*
U.S. Cl. 132—7 2 Claims



1. A method of forming permanent waves on hair, comprising the steps of:

placing a bundle of hair between a pair of corrugated curling members each having a selected area and alternate ridges and grooves at a predetermined pitch with a predetermined curvature, at least one of said corrugated curling members having a plurality of holes defined therethrough;

placing rods in alternate ones of said grooves on an inside of said pair of corrugated curling members with ends of said rods extending laterally beyond said alternate grooves;

looping rubber bands around the exposed ends of said rods and over an outer side of said pair of corrugated curling members for clamping the bundle of hair therebetween;

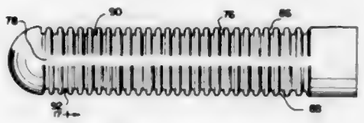
treating said bundle of hair clamped between said corrugated curling members with a permanent waving solution, thereby forming successive permanent waves on said bundle of hair; and

immersing the treated bundle of hair into a hair container containing neutralizing solution.

4,660,582
MOLDED MASCARA APPLICATION

Charles H. Taylor, West Springfield, Mass., assignor to Super Brush Co., Inc., Chicopee, Mass.

Division of Ser. No. 476,473, Mar. 18, 1983, Pat. No. 4,565,205. This application Jan. 17, 1986, Ser. No. 820,181
Int. Cl.⁴ A45D *40/26*
U.S. Cl. 132—88.7 6 Claims



1. A mascara applicator comprising:

an elonagted plastic base having a longitudinal axis, a rearward end and a forward end,

the base comprising a plurality of longitudinally spaced, arcuate slots to receive mascara within the slots; and a plurality of filament-like, plastic brush elements extending from the base,

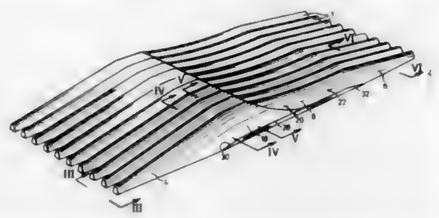
the brush elements being integrally formed with the base and being integrally fabricated of the same plastic material as the material of the base to form a unitary structure,

the brush elements being between about 0.010 and 0.018 inches in their largest cross sectional dimension.

4,660,583
INTERDENTAL STIMULATOR

Frank P. Brown, Toronto, Canada, assignor to Kleen-Piks Inc., Downsview, Canada

Filed Jul. 12, 1984, Ser. No. 630,146
Claims priority, application Canada, Jul. 11, 1984, 458,686
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—89 29 Claims

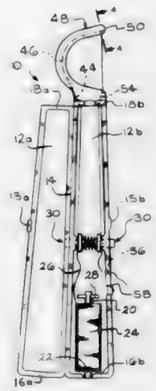


1. An interdental stimulator comprising an elongate member for insertion between adjacent teeth, the elongate member having a generally triangular profile and having first and second end portiosn, which taper down to respective first and second ends of small cross-section, with the first end portion in cross-section having a height to width ratio greater than the height to width ratio of the cross-section of the second end portion, and with the cross-section of each of the first and second end portions being of uniform shape along the length thereof.

4,660,584
DENTAL FLOSSING DEVICE

Barry Wofford, 1102 Parkside Blvd., Toledo, Ohio 43607

Continuation-in-part of Ser. No. 771,036, Aug. 30, 1985, abandoned, which is a continuation-in-part of Ser. No. 737,290, May 23, 1985, abandoned. This application Nov. 6, 1985, Ser. No. 795,486
Int. Cl.⁴ A61C *15/00*
U.S. Cl. 132—92 A 21 Claims



1. A dental flossing device comprising:

a hollow body portion having an interior and further having a first aperture and a second aperture formed in the hollow body portion and being adapted to receive a spool of dental floss thread in the interior of said hollow body portion thereof;

an end portion disposed at one end of said body portion and extending to a tip, said end portion including a gap exposing a thread of dental floss from said spool thereaccross;

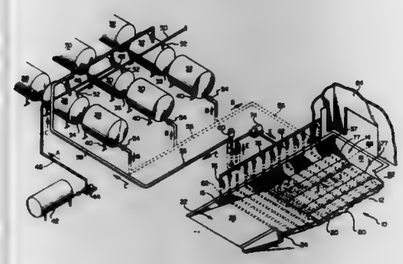
aperture means formed between said body portion interior and said end portion for receiving said thread of dental floss therethrough; and

locking means disposed within said body portion for selectively frictionally engaging said thread of said dental floss of a pair of spaced apart locations, said locking means including a first locking pin disposed in said first aperture formed in said body portion and having a first transverse passageway formed therethrough adapted to receive said thread of dental floss, said first locking pin being movable between a first position, wherein said first transverse passageway is recessed within said first aperture such that said thread of dental floss is frictionally engaged between said first locking pin and said body portion, and a secod position of said first locking pin, wherein said first transverse passageway is extended out of said first aperture and into said interior of said body portion so as to release said thread of dental floss, said locking means further including a second locking pin disposed in second aperture formed in said body portion and having a second transverse passageway formed therethrough adapted to receive said thread of dental floss, said second locking pin being moveable independently of said first locking pin between a first position of said second locking pin, wherein said second transverse passageway is recessed within said second aperture such that said thread of dental floss is frictionally engaged between said second locking pin and said body portion, and a second position of said second locking pin, wherein said second transverse passageway is extended out of said second aperture and into said body portion interior so as to release said thread of dental floss.

4,660,585
APPARATUS FOR TREATMENT OF POLYMERIC MATERIAL

James D. Schoenhard, Morrison, Ill., assignor to International Technology Services, Inc., Morrison, Ill.

Division of Ser. No. 680,665, Dec. 12, 1984, Pat. No. 4,590,261. This application Oct. 16, 1985, Ser. No. 771,817
Int. Cl.⁴ B08B *3/08*
U.S. Cl. 134—96 17 Claims



1. An apparatus for the detoxification of cyanide containing polymeric film chip material, said apparatus comprising:

a container for the cyanide containing polymeric film chip material having walls and bottom which are substantially impervious to cyanide migration therethrough, said container having a loading ramp at one end thereof comprising a sloping surface for accommodating loading of a substantial quantity of cyanide containing polymeric film chip material;

at least one treatment solution storage tank means for storing a hypochlorite ion containing treatment solution prior to uses thereof and for returning the hypochlorite ion containing treatment solution thereto until it is exhausted;

conduit means connecting said treatment solution storage tank means and said container for flow of the treatment solution therethrough to and from said container;

a plurality of treatment solution influent mixing headers disposed substantially beneath the polymeric film chip material being treated, at a bottom portion of said container in spaced array, and in a sufficient number and density to provide inflow through influent apertures therein of the hypochlorite ion containing treatment solution substantially across the width and length of said container to flow upwardly to contact and percolate through the polymeric chip material;

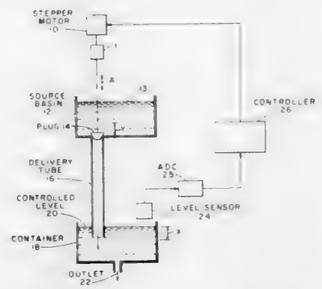
a plurality of treatment solution effluent draw off pipes having effluent apertures therein for drawing treatment solution thereinto, said draw off pipes disposed substantially beneath the polymeric film chip material being detoxified, and in spaced array substantially across the width and length of said container to provide draw off of the hypochlorite ion containing treatment solution within said container; and

pump means operatively connected to said treatment solution influent mixing headers and to said treatment solution effluent draw off pipes for providing controlled influent and effluent flow to provide inflow, mixing and outflow of the treatment solution within said container.

4,660,586
LIQUID LEVEL CONTROL

David J. Knapp, Monroeville; Marion D. Waltz, Fawn Township, Allegheny County, both of Pa., and David W. Clarke, Headington, England, assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 21, 1984, Ser. No. 684,619
Int. Cl.⁴ F16K *31/04*
U.S. Cl. 137—2 4 Claims



1. An apparatus for controlling liquid level, comprising containment means for containing and dispensing liquid, flow varying means operable for varying flow of liquid into the containment means, stepper motor means for operating the flow varying means, sensor means for sensing level of liquid in the containment means, and PDD controller means connected between the sensor means and the stepper motor means for controlling liquid level.

4,660,587
SYSTEM FOR PRODUCING UNIFORM VELOCITY DISTRIBUTION OF FLUIDS IN CONDUITS

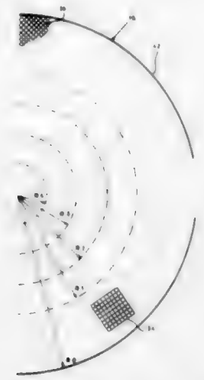
Joseph W. Rizzie, 7704 Beaver Ridge Rd., Knoxville, Tenn. 37931

Filed Jul. 28, 1986, Ser. No. 889,867
Int. Cl.⁴ F15D *1/02*
U.S. Cl. 137—8 21 Claims

1. A non-homogeneous resistance element for use in a con-

duit to produce a uniform velocity distribution of a fluid flowing through such conduit, which comprises:

a core element defining an upstream and a downstream surface, said core element provided with a plurality of cells having cell walls defining passageways of a selected size and configuration extending between said upstream and downstream surfaces; and



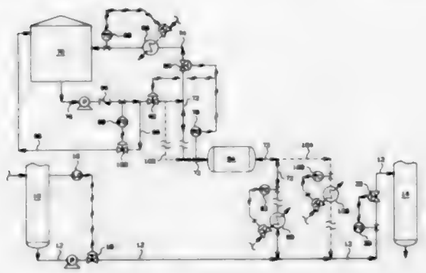
replaceable resistance units inserted into selected of said passageways, said resistance units having a selected resistance to flow of such fluid, said selected resistance varying between said passageways and being of a value to achieve such uniform velocity distribution of such fluid at said downstream surface of said core element.

4,660,588

METHOD FOR TEMPORARILY STORING FLUIDS

Frank W. Skraba, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1985, Ser. No. 799,709
Int. Cl.[4] F16K *11/00*
U.S. Cl. 137—8 **11 Claims**



1. A method for temporarily storing a producer unit effluent, having a temperature substantially above atmospheric temperature, during the transmission of said producer unit effluent to a user unit, as a user unit feed, at a predetermined user unit temperature, substantially above atmospheric temperature, and a predetermined user unit feed rate, comprising:

(a) transmitting all of said producer unit effluent directly to said user unit, at times when the producer unit effluent flow rate is essentially equal to said predetermined, user unit feed rate;

(b) transmitting a portion of said producer unit effluent to a temporary storage unit, at times when said producer unit effluent flow rate is significantly greater than said predetermined, user unit feed rate, in an amount such that the producer unit effluent flow rate of the remainder of said producer unit effluent is essentially equal to said predetermined, user unit feed rate, and transmitting said remainder of said producer unit effluent directly to said user unit;

(c) transmitting all of said producer unit effluent directly to said user unit, at times when said producer unit effluent flow rate is significantly less than said predetermined, user unit feed rate, and transmitting thus stored producer unit effluent from said storage unit to said user unit, in an amount such that the amount of the producer unit effluent, thus transmitted directly to said user unit, plus the amount of the producer unit effluent, thus transmitted from said storage unit to said user unit, is essentially equal to said predetermined, user unit flow rate;

(d) cooling the producer unit effluent thus transmitted from the producer unit to the storage unit by passing said producer unit effluent through a heat adsorbent material, and heating the producer unit effluent thus transmitted from said storage unit to said user unit by passing said producer unit effluent through said heat adsorbent material; and

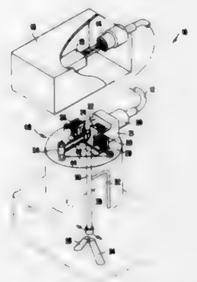
(e) measuring the temperature of said producer unit effluent, thus transmitted from said producer unit to said storage unit, between said absorbent material and said storage unit and maintaining a predetermined storage unit temperature by further cooling said producer unit effluent, at times when the thus measured temperature is significantly above said predetermined storage unit temperature, to thus maintain said storage unit temperature at essentially said predetermined storage unit temperature.

4,660,589

OPTICAL FEEDBACK LOOP SYSTEM FOR A HYDRAULIC SERVOVALVE

Richard D. Bartholomew, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 3, 1986, Ser. No. 835,163
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—83 **5 Claims**



1. An optical feedback loop system for a hydraulic servovalve assembly, the loop system comprising:

a fiber optic bundle having a first end portion adapted for connection to an electro-optic source for receiving an optical signal therefrom;

a beam-directing mirror disposed in front of a second end portion of the optic bundle for receiving the optical signal therefrom;

a pair of bellows disposed on opposite sides of the mirror for receiving the optical signal from the mirror;

a jet pipe attached to the bellows, the jet pipe moved by an expanding gas in the bellows; and

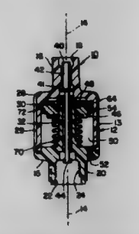
a servo fluid inlet and first and second servo fluid outlets connected to the jet pipe for directing the fluid from the inlet to the first or second fluid outlet.

4,660,590

INFLATION PRESSURE REGULATOR

George Sanchez, Northridge, Calif., assignor to Kenneth E. Berger, Azusa, Calif.

Filed Aug. 8, 1986, Ser. No. 895,039
Int. Cl.[4] F16K *15/20*
U.S. Cl. 137—226 **20 Claims**



1. An improved tire inflation regulator comprsing:

a generally tubular housing for placing a source of pressurized air in fluid communication with the interior of a vehicular tire, the housing having a first terminus for connecting to the source of air and defining a first fluid path, a second terminus for connecting to the vehicular tire and defining a second fluid path, and an exhaust aperture;

means in the first terminus and responsive to being connected to the air source for placing the tire interior in communication with the source through the housing;

sealing means for dividing the housing interior into first and second chambers, the first chamber being in fluid communication with the first and second fluid paths, the second chamber being in fluid communication with the exhaust aperture;

said sealing means comprising a flexure member within the housing having a first portion supported in a stationary position and having a second portion constructed and arranged for flexing movement in response to fluid pressure within the first chamber;

said sealing means also comprising biasing means for prohibiting said pressure-responsive flexing movement of the second portion of the flexure member when said pressure is less than a preselected value;

the sealing means being responsive to said flexing movement to place the first and second chambers in fluid communication with one another.

4,660,591

BALL VALVE AND SEAT ASSEMBLY

Cal R. Brown, Euclid; Michael T. Gallagher, Mayfield Heights; Richard F. Wozniak, Euclid, and Peter C. Williams, Cleveland Heights, all of Ohio, assignors to Whitey Co., Highland Hts., Ohio

Filed Jun. 26, 1986, Ser. No. 876,513
Int. Cl.[4] F16K *23/00*
U.S. Cl. 137—312 **21 Claims**

1. A ball valve comprising:

a body having a central passageway;

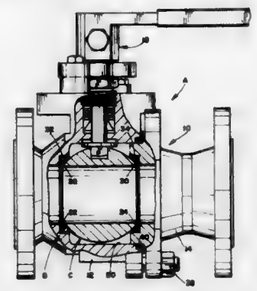
a ball member including a fluid flow opening therethrough, said ball member being positioned in said passageway and mounted for selective rotation between valve open and closed positions to control fluid flow through said valve;

a pair of radially inward extending shoulders in said passageway oppositely disposed of said ball member; and,

a pair of composite seat member assemblies positioned axially in said passageway oppositely disposed of said ball member for fluid sealing engagement with said ball member, each of said pair comprising:

a seat ring adapted for elastic flexure generally toward and away from said ball member and including a central opening, a shoulder facing surface generally facing an associated one of said shoulders, a ball engaging surface contoured for fluid sealing engagement with said ball member, and an outer peripheral wall having an annular channel;

a disc spring having a central opening and a generally frustoconical configuration in an unstressed condition interposed between said seat ring and said associated one of



said shoulders for continuously urging said ball engaging surface toward engagement with said ball member; and,

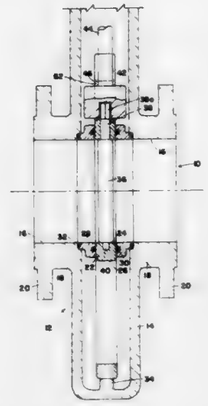
a reinforcing ring means received in said annular channel whereby said reinforcing ring reinforces the seat ring against collapse under pressure.

4,660,592

BUTTERFLY VALVE

Mack H. Williams, 285 Colgate Ave., Kensington, Calif. 94708

Filed Mar. 21, 1986, Ser. No. 842,656
Int. Cl.[4] F16K *29/00, 1/22*
U.S. Cl. 137—330 **3 Claims**



1. A valve structure comprising:

a gate valve type body including a pair of opposing end walls having aligned circular flow passages therethrough;

a gate-like carrier plate movable between and parallel to said end walls;

a through opening in said carrier plate of substantially the size of said flow passageways;

a butterfly disc received coaxially in said through opening and rotatably mounted on said carrier about a vertical axis;

a valve stem;

interengaging means on said stem and said carrier plate for raising and lowering said carrier plate with said stem;

means coupling said butterfly disc to said stem for rotation therewith;

means for rotating said stem partially;

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means for raising and lowering said stem to move said carrier plate between a first position wherein said through opening is in alignment with said flow passages and a second position displaced therefrom; and

a lower through bore in said carrier plate disposed to be in alignment with said flow passages when said carrier plate is in said second position.

4,660,593

HOT-BLAST GATE VALVE

Heli De Langhe, Evergem, Belgium, assignor to Sidmar S/A, Ghent, Belgium

Filed Aug. 19, 1985, Ser. No. 767,357

Claims priority, application Luxembourg, Aug. 17, 1984, 85513

Int. Cl.⁴ F16K *49/00*

U.S. Cl. 137—340 **10 Claims**



1. A hot-blast valve for use on a flow between a regenerative heating stove and a blast furnace downstream therefrom in a direction of the flow from the stove to the furnace, the flow having an upstream and a downstream pressure with respect to the valve, the valve comprising:

a valve housing made of metal plate;

a lateral gate pocket located outside of and connected to said housing in a connection region;

annular upstream and downstream seats within said housing and defining a flow passage, said upstream seat being made of metal and said downstream seat being made of solid refractory material;

a gate dispalceable between a closed position in which said gate blocks said passage by being between said seats and engages only said upstream seat because of said downstream pressure is greater than said upstream pressure, and an open position in which said gate opens said passage by being within said pocket and clearing said seats; and

means for circulating a coolant through the upstream seat only in said open and closed positions of said gate.

4,660,594

PORTABLE COLLAPSIBLE TANK FOR STORING LIQUID

Thomas E. Gocze, 360 Center St., Bangor, Me. 04401

Filed Aug. 5, 1985, Ser. No. 762,916

Int. Cl.⁴ F16L *7/00*

U.S. Cl. 137—375 **7 Claims**

1. A portable, collapsible tank for storing liquid comprising:

an elongate flexible and foldable frameless outer sleeve open at each end and comprising woven fabric material, said outer sleeve defining the outer containment side wall perimeter of the tank, said sleeve being formed with sufficient tensile strength to support the tank and stored liquid without a rigid frame and without outer bands;

a side wall layer of insulating material contained within said sleeve extending around the inside circumference of the sleeve and from the top to the bottom of the sleeve, said side wall layer of insulating material also imparting vertical stability to the tank;

a base floor of insulating material, said sleeve and side wall layer overlapping and frictionally engaging the edge of said base floor;

an inner liner of impervious flexible material seated within



the side wall layer and base floor, said inner liner extending over the side wall layer at the top of the tank;

a cover of insulating material for engaging the inner liner and side wall layer at the top of the tank; and

inlet and outlet opening means at the top of the tank for circulating liquid into and out of the inner liner of said tank;

said tank being assembled without a rigid frame and without outer bands.

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PRESSURE-LIMITING VALVE

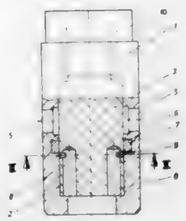
Willi Käster; Karl Krieger, both of Wuppertal, and Werner Reinelt, Bochum, all of Fed. Rep. of Germany, assignors to Hermann Hemscheidt Maschinenfabrik GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Aug. 13, 1985, Ser. No. 765,233

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3432007

Int. Cl.⁴ F16K *15/06*

U.S. Cl. 137—494 **1 Claim**



1. A hydraulic pressure-limiting valve for an hydraulic longwall mine roof support system comprising: a valve housing with a longitudinal bore therein, a fluid entry opening and a fluid discharge opening in the valve housing, a cylindrical actuator piston arranged for guided axial displacement within

said bore, a spring within said bore serving to urge said piston towards one end of the bore, a plurality of blind bores in said piston disposed in a circle concentrically of the longitudinal axis of the piston and leading from that end of the piston remote from the spring, the said piston end being subjected to the direct pressure of hydraulic fluid entering the valve housing through said fluid entry opening therein, an annular groove extending around in the circumferential surface of the actuator piston and breaking into the blind end regions of said blind bores, an annular fluid-sealing gasket located in an annular groove in the bore of the valve housing and disposed between said entry and discharge openings, said gasket surrounding the actuator piston and sealing off the annular groove therein from the fluid discharge opening in the valve housing when the piston is in a first position nearer the said one end of the housing bore under the pressure of the spring, said piston annular groove being narrower axially of the piston than the width of the gasket axially of the housing bore, said gasket being uniformly pressed into the annular groove in the bore of the valve housing by the pressure of fluid in said piston annular groove when said piston moves into a second position away from said one end of the housing bore.

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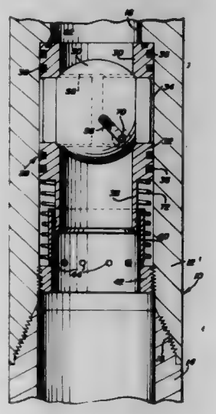
INSIDE B.O.P. VALVE

Ronald A. Ashford, 117 Avondale Dr., Lafayette, La. 70506

Filed Aug. 19, 1986, Ser. No. 898,039

Int. Cl.⁴ F16K *5/06*

U.S. Cl. 137—496 **11 Claims**



1. A safety valve mechanism for use in a drill string, said mechanism including an elongated housing incorporating first and second ends and defining a longitudinal bore extending therethrough, one end of said bore including a diametrically enlarged counterbore opening endwise outwardly of said first end, said housing including means defining abutment shoulder means at the inner end portion of said counterbore, elongated, tubular valve body means defining a central bore extending longitudinally therethrough sealingly and slidingly telescoped into said counterbore and including a first end portion sealingly abuttingly engageable with said abutment shoulder means and a second end portion facing outwardly of said first end, said first and second end portions defining annular seats spaced apart axially of said bore and opposing each other, a partial spherical valve member disposed in said bore between and slidably seated against said seats and including a generally diametric bore extending therethrough, abutment means in said counterbore on the side of said valve body means remote from said abutment shoulder means, spring means disposed in said counterbore operatively connected between said abutment means and valve body means second end portion yieldingly biasing said valve body means toward abutting engagement with said abutment shoulder means, said valve body means being shiftable in said counterbore between a first limit position defined by said abutment shoulder means and a second limit position displaced axially along said counterbore from said abutment shoulder means, and coacting valve position shifting means carried by said valve member and housing operative to automatically shift said valve member between open and closed positions upon shifting of said valve body means to said second and first positions, respectively, said diametric bore extending longitudinally of said valve body means and being registered with said central bore when said valve member is in said open position and being disposed generally normal to said central bore when said valve member is in said closed position, said valve body means central bore being smaller in diameter than said longitudinal bore.

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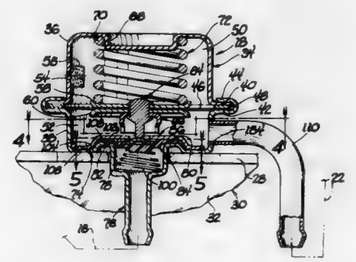
FUEL PRESSURE REGULATOR

Warren H. Cowles, Farmington Hills, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Filed Jun. 26, 1985, Ser. No. 748,914

Int. Cl.⁴ F16K *31/12*

U.S. Cl. 137—505.42 **11 Claims**



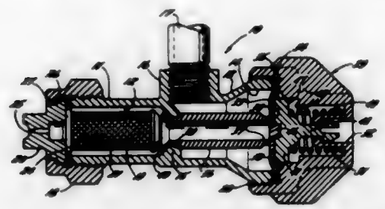
1. A pressure regulator for a fluid, comprising two distinct and variable chamber means separated by wall means therebetween, said wall means comprising pressure responsive movable wall means, variably positionable valve actuator means, inlet valve means movable to and from opened and closed positions for controlling the flow of said fluid into a first of said two chamber means, passage means for communicating a reference pressure to a second of said two chamber means, resilient means operatively connected to said pressure responsive movable wall means, said resilient means and said pressure responsive movable wall means at times being effective to cause said valve actuator means to in turn cause said inlet valve means to become opened, said inlet valve means comprising an elastomeric valving portion partially separated from and partially joined to an associated elastomeric supporting body structure, said valving portion being joined to said supporting body structure by an integrally formed elastomeric section, whereby when said valving portion is moved to and from said opened and closed positions said valving portion undergoes a hinged-like motion generally about said integrally formed elastomeric section, a valve seat member, and a fluid inlet passage formed through said valve seat member, said valve seat member comprising a generally flat valve seating surface generally circumscribing said fluid inlet passage, and wherein when said valving portion is in said closed position said valving portion is in fluid sealing relationship with said valve seating surface as to thereby terminate the flow of said fluid through said inlet pasage and into said first chamber means.

4,660,598

DIAPHRAGM-TYPE ANTIDRIP VALVE

Ted Butterfield, and Stephen C. Rolf, both of Naperville, Ill., assignors to Spraying Systems Co., Wheaton, Ill.

Filed Jan. 13, 1986, Ser. No. 818,210
Int. Cl.[4] F16K *31/12*
U.S. Cl. 137—510 7 Claims



1. An improved diaphragm-type antidrip valve comprising in combination, a valve body defining an annular valve chamber having a fluid inlet and an axial fluid outlet defined by a centrally located valve tube, a diaphragm having its peripheral portion held in sealing engagement against the outer end of the valve chamber by an end cap and its front face disposed for sealing engagement with the open end of said valve tube, said diaphragm formed with a substantially centrally located button projecting axially from its rear face and a peripheral web portion of substantially uniform thickness extending radially outwardly from said button, said end cap formed with an annular internal shoulder for engaging the peripheral web portion of said diaphragm element and said internal cap shoulder and said outer end of said valve chamber being tapered outwardly away from one another to insure tight clamping and sealing contact against the opposite faces of the peripheral web portion of said diaphragm element, a valve follower slidably received in an annular recess in said end cap and formed with a substantially flat face engaging the rear face of said diaphragm and a central socket for receiving and radially supporting said button, means including a compression spring seated in said cap and engaging said valve follower for urging said diaphragm into sealing engagement with the open end of said valve tube, said end cap also being formed radially inwardly of said shoulder with an annular contoured ramp presenting a concave seat adjacent the effective outer periphery of said diaphragm for radially and axially supporting said diaphragm when moved by pressurized fluid away from the open end of said valve tube and such that the contour of the inner face of said diaphragm element when urged against said concave seat partially defines a substantially torroidal-shaped entrance chamber adjacent the open end of said valve tube.

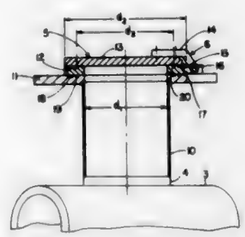
4,660,599

RELIEF DEVICE FOR A VACUUM VESSEL

Ronald W. Fast, Batavia, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 19, 1986, Ser. No. 830,811
Int. Cl.[4] F16K *15/03*
U.S. Cl. 137—512.2 18 Claims

1. A pressure relief device for use in a vessel, providing redundant pressure relief capabilities comprising:
(a) a surface having an aperature to said vessel; and
(b) an annular plate of predetermined weight having a bottom end and a top end, said annular plate having an inner diameter equal to the size of said aperature, the bottom end of said annular plate superposed over said aperature on said surface such that a seal is formed between said surface and said annular plate; and
(c) a solid plate, of predetermined weight, superposed over the aperature on said annular plate such that a seal is formed between said solid plate and said annular plate, whereby said pressure relief device will open at a first predetermined pressure by lifting said solid plate and, with failure of said solid plate to lift at said first predetermined



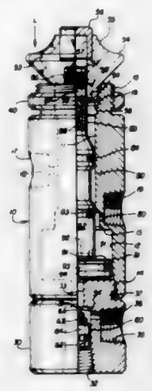
pressure, at a second, slightly higher, predetermined pressure by lifting both the solid plate and the annular plate.

4,660,600

FIRST OUT INDICATOR

Ned A. Bergeron, Houma, La., assignor to B.W.B. Controls, Inc., Houma, La.

Filed May 1, 1981, Ser. No. 259,594
Int. Cl.[4] F16K *37/00, 31/383*
U.S. Cl. 137—552 9 Claims



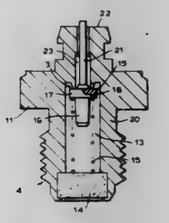
1. First out indicator, comprising:
a. a housing having first and second fluid inlets, first fluid exhaust means, and a valve receiving passageway;
b. first valve means reciprocatable in said passageway from a first to a second position;
c. means for establishing fluid communication between said first fluid inlet and said exhaust means when said first valve means is in said first position and blocking such communication when said first valve means is in said second position;
d. means for permitting fluid from said first fluid inlet to cause said first valve means to move from said first to said second position when said second fluid inlet is pressurized; and
e. means for preventing said first valve means from moving from said first to said second position comprising;
i. second fluid exhaust means in said housing; and
ii. means for removably blocking communication between said first fluid inlet and second fluid exhaust when second inlet is pressurized.

4,660,601

VALVE ARRANGEMENT

Ulrich Dirksmeier, Menden; Franz Kamp, Schwerte, and Wilhelm Fringes, Menden, all of Fed. Rep. of Germany, assignors to R. & G. Schmoele Metallwerke GmbH & Co. KG, Menden, Fed. Rep. of Germany

Filed Nov. 13, 1985, Ser. No. 797,681
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1984, 3441348
Int. Cl.[4] F16K *21/00*
U.S. Cl. 137—613 5 Claims



1. A valve arrangement for carrying over gas at reduced pressure from a pressure container filled with high pressure gas to a consumer device, comprising a pressure-reducing valve including a closing member, a spring biasing said member, and an opening plunger connected to said closing member; a pressure-regulating valve formed as a piston regulator and including a casing, a piston positioned in said casing, a pressure-regulating spring and an opening projection rigidly connected to said piston; and a pressure container attachment, said pressure-reducing valve being formed as an interchangeable valve cartridge insertable into and removable from said attachment and including an annular sealing seat extended in the direction of the pressure container, said cartridge having a housing formed with said seat and supporting said closing member, said closing member being disc-shaped and being radially spaced in said housing, said housing having a stepped bore with a smaller portion extending in the direction of said pressure-regulating valve, said plunger being radially spaced in said housing and projecting through said portion outwardly from an end face of said housing a predetermined distance whereby when said cartridge is inserted in said attachment said opening projection cooperates with said opening plunger, said pressure-reducing valve further including a sintered plug connected to said housing, said spring of said pressure-reducing valve being supported at one end thereof immediately against said plug, said pressure-regulating valve further including a friction and wear resistant piston seal for sealing said piston against said housing, the ratio of the outer diameter of said piston seal to the outer diameter of said pressure-regulating spring being 1:0.9.

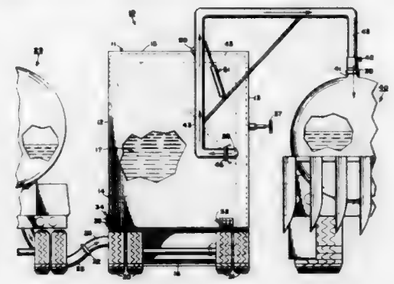
4,660,602

MOBILE SLUDGE TRANSFER AND STORAGE TANK

Dennis J. Draman, Box 845, Clemmons, N.C. 27012

Filed Mar. 22, 1985, Ser. No. 714,934
Int. Cl.[4] A01G *25/09*
U.S. Cl. 137—899.4 8 Claims

1. An improved mobile transfer and sludge storage tank which is placed on site and moved by a tractor as needed having a frame, a housing joined to said frame in which said housing forms a reservoir for holding sludge, a pair of wheels joined to said frame, the improvement comprising:
(a) said frame forming a flat bottom for contacting the ground to maintain the storage tank in a stable position when disconnected from the tractor,
(b) pumping apparatus having suction and discharge ports, said pumping apparatus for pumping sludge into said reservoir from a transport vehicle and out of said reservoir into an applicator vehicle, said pumping apparatus mounted on said frame,
(c) piping means joined to said pumping apparatus for circulating sludge through said reservoir to maintain a homogeneous mixture of the sludge and for pumping to the applicator vehicle, and
(d) a telescoping control panel, said control panel positioned on said housing.

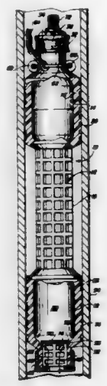


4,660,603

DRAIN PIPE PLUG DEVICE

George Tash, 18658 Chase St., Northridge, Calif. 91324

Filed Apr. 25, 1986, Ser. No. 855,717
Int. Cl.[4] F16L *55/12*
U.S. Cl. 138—92 17 Claims



12. An improved drain pipe plug device comprising:
(a) an elongated, flexible, expandible tubular member having a rear inlet member, a front outlet portion and a middle portion,
(b) said front outlet portion having a unitary sidewall of a pre-determined thickness for containing said air and water pressure but which allows radial expansion of the external diameter of said front outlet portion at a first rate of expansion,
(c) said rear inlet portion having a unitary sidewall for containing said air and water pressure said sidewall of said rear inlet portion having a thickness which is significantly different from said pre-determined thickness of the sidewall of said front outlet portion, said sidewall of said rear inlet portion expansion of the external diameter of said rear inlet portion at a rate of expansion which is significantly different from said first rate of expansion,
(d) said inlet portion having a connector means adapted to

connect each of the portions of said tubular member to a common source of fluid under pressure.

4,660,604

HANDLOOM PROVIDED WITH A MECHANISM FOR VARIATION OF THE DISTANCE BETWEEN BREASTBEAM AND BACK BEAM

Jan J. J. L. Feisser, Laren, Netherlands, assignor to Louet Beheer b.v., Lochem, Netherlands

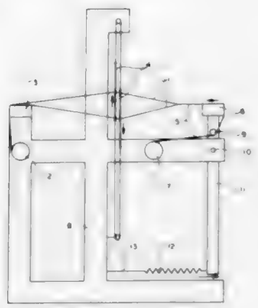
Division of Ser. No. 690,518, Jan. 11, 1985, Pat. No. 4,582,096. This application Dec. 4, 1985, Ser. No. 804,535

Claims priority, application Netherlands, Jan. 17, 1984, 8400142

The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.

Int. Cl.⁴ D03D *29/00*

U.S. Cl. 139—29 **2 Claims**



1. A handloom provided with a warp beam for the supply of warp threads, a back beam for guiding the warp to the weaving plane, a breastbeam for guiding the fabric from the weaving plane and a cloth beam for advancing the fabric, the breastbeam being movable substantially in a direction towards the back beam, the handloom comprising spring means exerting a force on the breastbeam pushing it away from the back beam, the tensioning of the spring means being adjustable.

4,660,605

BELT WITH FLEXIBLE WEFT MATERIAL

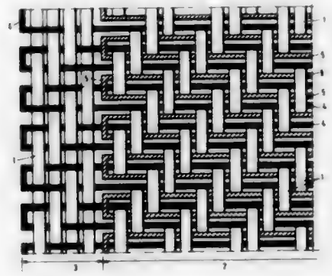
Gerhard Koch, Ophain, Belgium, assignor to Ieperband N.V., Ieper, Belgium

Filed Dec. 5, 1984, Ser. No. 678,232

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345508

Int. Cl.⁴ D03D *15/00*

U.S. Cl. 139—420 R **11 Claims**



1. A single-layer woven belt having a monofilament (5) and a multifilament weft thread (4), a central portion (2) and a marginal portion (3), wherein the multifilament weft thread (4) is introduced into the fabric with the monofilament weft thread (5), the monofilament weft thread (5) in the marginal portion (3) of the belt is covered by outward warp threads (1), and all warp threads (1) have a load-carrying function in the fabric.

4,660,606

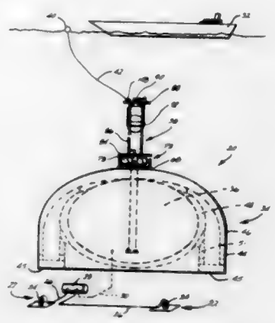
OFFSHORE OIL STORAGE AND TRANSFER FACILITY AND METHOD

Maxwell C. Cheung, 8 Sycamore Creek, Irvine, Calif. 92715

Division of Ser. No. 579,157, Feb. 10, 1984, Pat. No. 4,556,343. This application Sep. 30, 1985, Ser. No. 781,887

Int. Cl.⁴ B65B *3/04*

U.S. Cl. 141—1 **10 Claims**



10. A method for mooring a floating tanker to a submerged fluid supply structure and for operating the structure to deploy to a water surface on which a tanker floats and to retrieve from the water surface to a submerged location a fluid supplying duct, the method including the steps of:

(a) engaging at the water surface a buoy line from a surface buoy to the supply structure;

(b) engaging with the buoy line a mooring device which is slidable by gravity along the buoy and which is releasably matable with the supply structure and connecting to the mooring device a mooring line for the tanker;

(c) directing the mooring device along the buoy line into mating engagement with the supply structure which is responsive to such engagement to release the fluid supply duct from a latched submerged state in the supply structure and to deploy the duct to the water surface, deployment of the duct producing movement of the buoy line toward the supply structure;

(d) drawing the buoy line toward the tanker through the engaged mooring device to retrieve the supply duct from the water surface to its latched submerged state in the structure;

(e) releasing the mooring device from the supply structure and thereby securing the duct in its latched state in the structure; and

(f) recovering the mooring device along the buoy line to the tanker.

4,660,607

SENSOR CONTROLLED SAMPLING APPARATUS AND METHOD

Carl D. Griffith, Middleport, and Ray P. McGranor, Niagara Fall, both of N.Y., assignors to American Sigma, Inc., Middleport, N.Y.

Filed Jun. 11, 1986, Ser. No. 872,874

Int. Cl.⁴ B65B *3/04*

U.S. Cl. 141—1 **17 Claims**

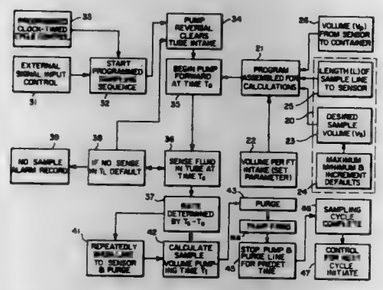
1. A method of improving the quantitative accuracy of liquid sampling apparatus, comprising

connecting the inlet of a reversible, positive displacement pump to a supply of liquid by a first conduit having a known internal volume from its inlet end to a point axially spaced a predetermined distance along said first conduit from said inlet end thereof,

connecting the outlet of the pump by a second conduit to a collector disposed to receive as a sample a predetermined volume of said liquid,

determining a first volume (V_p) of liquid required to fill the pump and those portions of the conduits between said collector and said point in said first conduit,

operating said pump in a reverse direction to purge said pump and conduits of liquid,



operating said pump in a forward direction to commence pumping liquid from the supply thereof to said collector,

detecting a first interval of time (T_s-T_o) required for the liquid from said supply to appear at said point in said first conduit,

based on said first time interval, calculating the rate of flow of said liquid to said point, and the total pumping time (T_t) required to convey said predetermined volume of liquid from said supply to said collector, and

operating said pump in a forward direction for said total time (T_t).

4,660,608

METHOD AND APPARATUS FOR LOADING COSMETIC MATERIAL INTO A CONTAINER AND SOLIDIFYING SAID COSMETIC MATERIAL

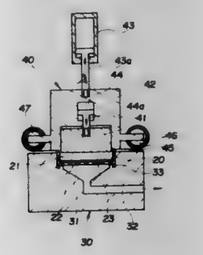
Yasuo Arai, Tokyo, Japan, assignor to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1985, Ser. No. 786,309

Claims priority, application Japan, Nov. 21, 1984, 59-244525

Int. Cl.⁴ B65B *1/26, 1/24*

U.S. Cl. 141—12 **11 Claims**



1. A method for loading a cosmetic material into a container and solidifying said cosmetic material, comprising the steps of:

preparing a viscous cosmetic material by mixing a powder cosmetic material with a solvent;

dripping a predetermined amount of said viscous cosmetic material into a container, said container having an upper open end and a filter forming a bottom thereof;

interposing a liquid absorbent membrance between said container and a presser, said presser having a dimension to fit into said container;

compressing said cosmetic material by said presser with said membrance therebetween; and

squeezing said solvent from said cosmetic material through said filter during said compressing step.

4,660,609

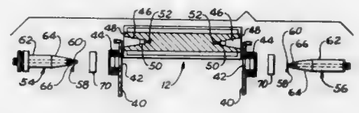
PLANER HAVING REMOVABLE HEAD

John E. Miller, Jr., Kansas City, Mo., assignor to Woodmaster Tools, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 799,305, Nov. 18, 1985, abandoned. This application Aug. 11, 1986, Ser. No. 895,243

Int. Cl.⁴ B27C *1/02*

U.S. Cl. 144—117 R **7 Claims**



1. In a woodworking machine,

an elongated, driven woodworking head;

a pair of spaced apart, fixed bearings rotatably supporting the head;

a pair of Morse taper plugs coupling the head with said bearings, said plugs being received by corresponding sockets formed in the head.

4,660,610

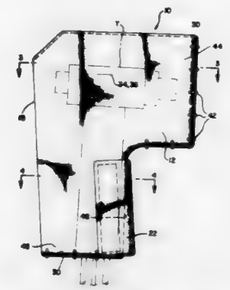
INSULATING DEVICE FOR HEATED WORKING TOOLS SUCH AS WELDING TORCHES AND THE LIKE

Dana L. McIntire, III, Brunswick, Mass., assignor to Bath Iron Works Corporation, Bath, Me.

Filed Jul. 22, 1985, Ser. No. 757,287

Int. Cl.⁴ A45C *11/00*; B65D *81/18*

U.S. Cl. 150—52 R **13 Claims**



1. A protective cutting or welding torch glove or the like for covering the head and a shank portion of a torch comprising:

(a) a sleeve having a closed end and an open end,

(b) said closed end covering the head of said torch,

(c) a slot in said sleeve extending upwardly from said open end a substantial distance toward said closed end and positionable in the area of said shank portion of said torch,

(d) said glove having inner and outer insulation panels having secured mating peripheral portions,

(e) said glove having releasable securing means for maintaining said slot closed when said torch is confined in said glove,

(f) insulation cushioning material disposed between and confined by said panels, and

(g) heat radiating means on at least some of said peripheral mating portions for radiating heat from said torch head through said glove and to the ambient atmosphere.

4,660,611

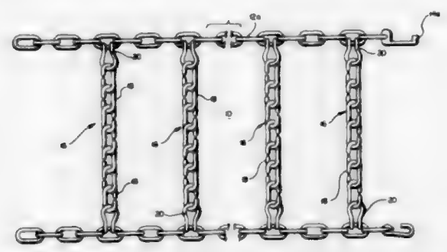
TIRE CHAIN

Glenn E. Gockley, and Michael D. Shaffer, both of York, Pa., assignors to Cooper Industries, Houston, Tex.

Filed Jul. 31, 1985, Ser. No. 761,212

Int. Cl.⁴ B60C *27/06*; **B21L** *3/00*; **F16G** *13/00*

U.S. Cl. 152—243 **3 Claims**



1. An improved tire chain including a pair of side members, each side member having a first and second end in releasable securement to each other by fastening means, and a plurality of cross chains each cross chain having a plurality of links and being secured at a first end to one of said side members and being secured at a second end to the other of said side members, said cross chains extending between said side members at preselected intervals to abut a circumferential surface of a tire upon which tire chain is to be mounted, wherein the improvement comprises:

employing a medium carbon steel wire to fabricate cross chain links which abut the circumferential tire surface, the cross chain link steel comprising of about 0.22–0.28 percent by weight of C, about 0.60–0.90 percent by weight of Mn, up to about 0.04 percent by weight of P, up to about 0.05 percent by weight of S and the balance substantially iron, each cross chain link having a carburized surface layer of a depth of about 1/7 to about 1/18 of the diameter of said link, so that said carburized layer has a surface hardness of Rockwell C49 to about Rockwell C57, but said link having a link core hardness of about Rockwell C32 to 40;

said cross chain links being fromed in a process including:

preparing a generally tapered first end on a length of wire stock;

bending the wire stock into a twisted generally oval link interlaced with a last earlier formed open link;

severing the oval link from the wire stock to form a generally tapered second end abutting the first tapered end of the oval link; and

welding the abutting tapered ends of the open link to permanently close the link.

4,660,612

CORDLOCK STRUCTURE FOR A BLIND ASSEMBLY HAVING IMPROVED LOCKING MEANS

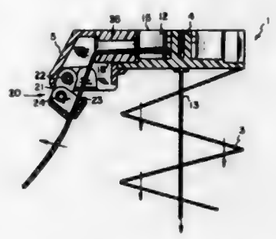
Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas, Inc., Totowa, N.J.

Continuation-in-part of Ser. No. 706,432, Feb. 27, 1985. This application Apr. 11, 1985, Ser. No. 722,243

Int. Cl.⁴ E06B *9/324*

U.S. Cl. 160—173 **10 Claims**

1. A cordlock structure for a blind assembly where said cordlock structure is adapted to be mounted on an end of a headrail of the blind assembly, said structure including a base member having connecting means for fixing said structure to one end of the headrail and a cap member having cord locking means for locking blind operating cords from movement, said structure in mounted position adapted to guide said operating cords in a path through the cap member, said locking means comprising a locking dog assembly having a long first arm pivotally connected to said cap member and a short second arm pivotally connected to said first arm, each said arm adapted to be mounted for rotational movement about an axis extending transversely to the path of the operating cords



through the cap member, said arms each having a locking portion on the distal end thereof, said locking portions being adapted to lockingly engage operating cords movably guided therebetween, whereby said arms when pivoted to an upper position will lock said operating cords against movement in one direction and whereby when arms are moved to a lower position will unlock to allow said operating cords to move in two directions, characterized in that the pivot axes of the first arm and second arm are positioned outside of the path of the operating cords through the cap member with respect to the blind assembly.

4,660,613

FOLDING CLOSURE ASSEMBLY

Robert Dagenais, 86 Grandcote, St-Eustache, Quebec, Canada J7P 1A6

Filed Dec. 26, 1985, Ser. No. 813,634

Int. Cl.⁴ E05D *3/00*

U.S. Cl. 160—199 **6 Claims**



1. A foldable closure assembly comprising:

a plurality of panels with adjacent panels joined by a one piece vertical hinge member, and top roller supports positioned at the center of every second panel for supporting the foldable closure assembly in a top support track,

the one piece vertical hinge member extending from top to bottom of the panels and having a cross section with two semi-circular grooves with a single opening for each groove, the opening for each groove being on opposing sides of the hinge member, each of the semi-circular grooves in the hinge member having a vertical axial aperture at top and bottom for locking means (at top and bottom of the hinge member), the panels having portions, positioned at least at top and bottom of each of the panels, (the strips) with curved vertical sides to rotate in the semi-circular grooves of the hinge member through the openings, the curved vertical sides having stops to restrict rotation of each panel in the semi-circular grooves of the hinge member to about 90°.

4,660,614

DIE CASTING METHOD

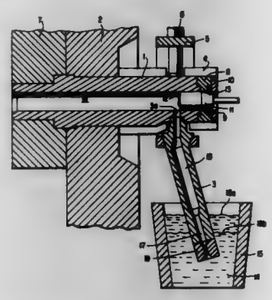
Jochen Spriestersbach, Bonn-Alfter, and Herbert Wolthe, Bonn, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Müller-Weingarten AG, Weingarten/Württ. and Vereinigte Aluminium-Werke AG, Bonn, both of, Fed. Rep. of Germany

Filed Jan. 22, 1985, Ser. No. 693,333

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1984, 3401715

Int. Cl.⁴ B22D *17/00*

U.S. Cl. 164—113 **3 Claims**



1. In a method of die casting including the cyclical steps of charging a casting chamber with a dosage of molten metal by vacuum; advancing a casting piston in the casting chamber from a starting position for ejecting the molten metal dosage from the casting chamber; and withdrawing the casting piston into said starting position; the improvement wherein the withdrawing step includes the step of passing over metal residues adhering to walls of the casting chamber; further comprising the steps of advancing the casting piston, subsequent to the withdrawing step and prior to a successive charging step, in the casting chamber void of molten metal dosage for ejecting the metal residues by a sharp peripheral edge of the casting piston from the charging chamber and returning the casting piston into its starting position.

4,660,615

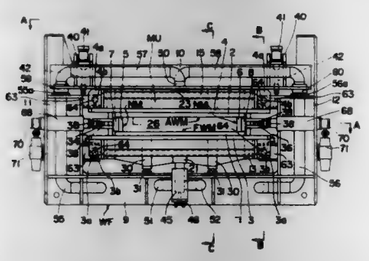
CONTINUOUS CASTING MOLD ASSEMBLY

Herbert Lemper, McMurray, Pa., assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 14, 1986, Ser. No. 839,720

Int. Cl.⁴ B22D *11/04*, *11/124*

U.S. Cl. 164—418 **9 Claims**



1. A continuous casting mold assembly, comprising in combination:

a mold unit including first and second wide mold walls each having a wide copper plate supported on a back-up frame, and a pair of narrow mold walls each having a narrow copper plate supported on a back-up frame and opposingly gripped between said wide mold walls;

a water supply frame including a datum-side water supply frame adapted to support and determine the position of said first wide mold wall on the back side thereof, and an adjustable-side water supply frame adapted to support said second wide mold wall for movement between clamping and unclamping positions parallel relative to said first wide mold wall;

clamp means mounted on said water supply frame for clamping said second wide mold wall toward said first wide mold wall to grip said narrow mold walls securely therebetween; and

narrow wall shift means mounted on said water supply frame for adjusting a spacing between said narrow mold walls.

4,660,616

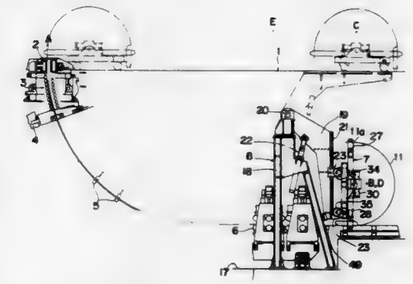
STARTER BAR APPARATUS IN A CONTINUOUS CASTING ASSEMBLY

Herbert Lemper, McMurray, Pa., assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 26, 1986, Ser. No. 833,109

Int. Cl.⁴ B22D *11/08*

U.S. Cl. 164—426 **2 Claims**



1. A starter bar apparatus in a continuous casting assembly, comprising:

a plate type starter bar with a starter bar head attached to a rear end portion thereof, said plate type starter bar being formed of a relatively thin plate; and

a starter bar handling device, said starter bar handling device having first arm means for clamping a fore end portion of the plate type starter bar when withdrawn from a roll unit and for swinging said starter bar upward at a predetermined radius of curvature in synchronism with a withdrawing speed and second arm means for clamping a rear end portion of the plate type starter bar as swung by the first arm means.

4,660,617

METHOD OF CHANGING WIDTH OF SLAB IN CONTINUOUS CASTING

Kazuhiko Tsutsumi; Wataru Ohashi; Takeyoshi Ninomiya, and Masami Temma, all of Sakai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 3, 1985, Ser. No. 783,589

Claims priority, application Japan, Nov. 9, 1984, 59-236474; Dec. 10, 1984, 59-260381; Dec. 17, 1984, 59-265905; May 21, 1985, 60-109508; May 21, 1985, 60-109509

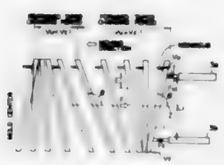
Int. Cl.⁴ B22D *11/16*

U.S. Cl. 164—451 **8 Claims**

1. A width changing method under continuous casting by moving narrow faces of a continuous casting mold, said method including at least one forward taper changing period in which each narrow face is progressively inclined towards the

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center of said casting mold and at least one rearward taper changing period in which each narrow face is progressively inclined away from the mold center, comprising: determining an acceleration α of horizontal moving velocity of the upper and lower ends of said narrow face by using an allowable shell deformation resistance as a parameter; determining a velocity difference ΔV between the upper and lower ends of each narrow face in accordance with the following formula 1; and maintaining said acceleration and said velocity difference constant in each of said periods:



$$\Delta V = \alpha \cdot L / Uc \quad (1)$$

where,

ΔV: velocity difference between upper and lower ends of narrow face (mm/min),

α: acceleration of upper and lower ends of narrow face (mm/min^2),

L: length of narrow face (mm), and

Uc: casting speed (mm/min).

4,660,618

FLOW STOP CONTROL METHOD AND APPARATUS FOR CASTING WITHDRAWAL CONTROL OF HORIZONTAL CONTINUOUS CASTING MACHINE

Kazuo Mitani, Kawasaki; Yoshiharu Hirota; Shinobu Kumagai, both of Yokohama; Shigeki Komori, Kawasaki, and Masahiro Tsuru, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1985, Ser. No. 764,131

Claims priority, application Japan, Aug. 9, 1984, 59-165600

Int. Cl.[4] B22D *11/20*

U.S. Cl. 164—454 **8 Claims**

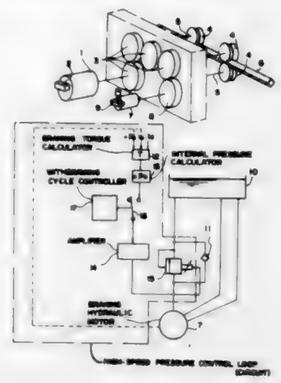
1. A horizontal continuous casting method of controlling the stop of the flow of a casting process which includes a withdrawing cycle for withdrawing a casting including casting withdrawing, stopping and push-back periods, the stop of flow occurring during said stopping period of said withdrawing cycle comprising the steps of: calculating a braking torque based upon inertial loads varying with a casting condition during said casting process; and applying braking torque to said casting thereby accomplishing the stop of the flow of said casting during said stopping period within a predetermined time.

3. An apparatus for controlling the withdrawing of a casting for a horizontal continuous casting machine including:

(a) a plurality of pinch rolls for withdrawing a casting during the withdrawing period of a withdrawing cycle and pushing it back during a push-back period of said withdrawing cycle;

(b) a driving hydraulic motor for driving said pinch rolls which is connected to the shafts of pinch rolls

(c) calculating means for calculating brake torque;



(d) means for inputting values of inertial loads to said calculating means; and period of said withdrawing cycle shall take place within a preset period of time.

4,660,619

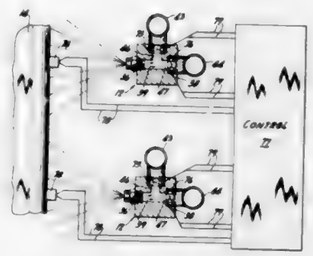
MOLD COOLING APPARATUS AND METHOD FOR CONTINUOUS CASTING MACHINES

Klaus Nettelbeck, Pittsburgh; James D. McVay, Youngwood, and Hermann Take, Pittsburgh, all of Pa., assignors to Continuous Casting Systems Inc., Pittsburgh, Pa.

Filed Jul. 23, 1985, Ser. No. 758,144

Int. Cl.[4] B22D *11/22*

U.S. Cl. 164—455 **6 Claims**



5. A method of controlling the cooling of a metal strand being cast in an elongate, open ended continuous casting mold, the steps of separately measuring the temperature at a plurality of discrete spaced apart locations around and along the length of said mold, directing a separate cooling water spray at each of said locations, and individually adjusting the flow rate of water directed at each location in response to the temperature being measured at a plurality of said mold locations.

4,660,620

ARRANGEMENT FOR CONTROLLING AN INJECTION PROCESS OF A DIE CASTING MACHINE

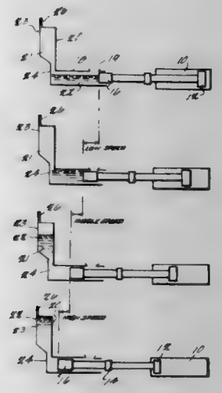
Mamoru Ozeki, Zama, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 507,034, Jun. 23, 1983, abandoned. This application Aug. 8, 1985, Ser. No. 763,769

Claims priority, application Japan, Jun. 25, 1982, 57-108343

Int. Cl.[4] B22D *17/32*

U.S. Cl. 164—457 **9 Claims**



9. A method for operating an injection molding machine including a sleeve into which melted metal is poured through an opening, a pair of dies forming a cavity in which an article is molded, said dies having an air vent through which the air remaining in said cavity escapes as the melted metal is charged into said cavity during the injection process, a gate through which said melted metal standing in said sleeve flows into said cavity, a plunger tip slidably mounted inside of said sleeve, the plunger tip being securely connected to a piston rod of a hydraulic cylinder, a hydraulic circuit arrangement which supplies pressurized hydraulic oil from a pressurized hydraulic source to said cylinder and a control unit for producing a signal applied said hydraulic arrangement when said plunger tip reaches a position at which moving speed of said plunger tip is changed during one injection process, said method comprising the steps of:

pouring the melted metal in the sleeve through the opening;

moving the plunger tip at a plurality of speeds consisting of a first speed, a second speed, and a third speed, said moving step including the steps of (a) moving the plunger tip at said first speed to a position at which the level of said melted standing in said sleeve reaches up to a portion near said gate, (b) then further moving said plunger tip at said second speed so as to mold said melted metal into said cavity, said plunger moving at said second speed until melted metal has transited said gate into said cavity but before said melted metal fills said cavity, and (c) moving said plunger tip at said third speed faster than said second speed so as to mold said melted metal into the whole of said cavity.

4,660,621

CONTINUOUS CASTING OF LAMINATE PRODUCTS

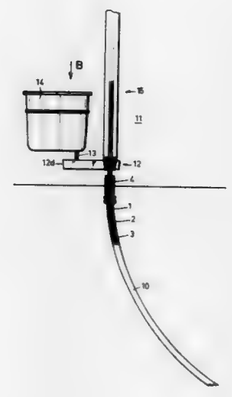
Klaus-Peter Ehlert, Moers, and Achim Kubon, Neukirchen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 684,596

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346391

Int. Cl.[4] B22D *19/02, 11/10*

U.S. Cl. 164—461 **13 Claims**



1. Method of continuously casting multilayer compound parts under utilization of a relatively wide mold for continuous casting comprising the steps of

introducing on a continuous basis sheet stock into a central portion of the mold at a particular weight and quantity per unit time by attaching a leading edge of a subsequent sheet to the trailing edge of the previous sheet;

feeding molten metal into the mold in a portion of the mold laterally offset from the central portion into which the sheet stock is introduced; and

severing end portions of the casting corresponding to sheet stock free zones in said casting.

7. A machine for continuous casting of metal comprising:

a mold with a rectangular cross section for continuous casting;

means for feeding sheet stock into said mold including drive means disposed above said mold for relatively slowly lowering a sheet into the mold,

the means for feeding further including transport means disposed above said drive means and said mold for positioning individual sheets sequentially in vertical alignment with the sheet being lowered and lowering said sheet as aligned at a rate faster than the sheet that is being lowered into the mold to permit coupling of the two sheets and to thereby establish continuous feeding of the sheet stock into the mold; and

means for feeding molten metal into said mold laterally offset from the area of feeding said sheet stock.

4,660,622

METHOD FOR THE MAKING OF MICROCRYSTALLINE METALLIC MATERIALS

Harald Reutler, Freital; Wolfgang Löser, Dresden; Heinz Mühlbach, Dresden; Gerhard Richter, Dresden, and Günter Stephani, Dresden, all of German Democratic Rep., assignors to VEB Rohrkombinat, Stahl und Walzwerk, Riesa, Riesa, German Democratic Rep.

Filed Feb. 14, 1985, Ser. No. 701,848

Claims priority, application German Democratic Rep., Jan. 26, 1984, 259617-1

Int. Cl.[4] B22D *11/06*

U.S. Cl. 164—463 6 Claims

1. In a method for the manufacturing of microcrystalline metallic materials in band form by rapid solidification of a melt in a spinning melt process, comprising contacting the melt with a cooling roller of a material the chemical composition of which lies within an admissible limit of analysis error of the chemical composition of the melt, wherein said chemical composition of the individual alloy elements is matching the chemical composition of the melt within the following limits:

for the base metal of the alloy: ±5 weight %;

for alloy elements with contents of 35 5 weight %: ±10%;

for alloy elements with contents of 1–5 weight %: ±20%.

4,660,623

CERAMIC SHELL MOULDS, MANUFACTURE AND USE

Michael C. Ashton, 195A Twentywell Lane, Sheffield S17 4QB, England

Filed Jan. 16, 1984, Ser. No. 571,241

Claims priority, application United Kingdom, Jan. 21, 1983, 8301616

Int. Cl.[4] B22C *1/02*

U.S. Cl. 164—518 16 Claims

1. A method of making a ceramic shell mould for use in casting a metal article, the method comprising forming a combustible pattern of cellular plastic material corresponding in shape and size to the article to be cast, applying only a thin layer of coating of refractory material and removing the pattern and hardening the layer of coating by the step of rapidly heating the cellular plastic material and coating to a temperature of about 800° C. to 1100° C. for a period of about 5 to 15 minutes to thereby form a readily handleable hardened shell mould.

4,660,624

MOTORCYCLE RADIATOR

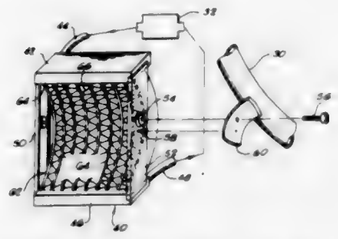
Ken Yamaguchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,450

Claims priority, application Japan, Oct. 13, 1982, 57-154941[U]

Int. Cl.[4] F28F *1/00*

U.S. Cl. 165—41 8 Claims



2. A motorcycle comprising a frame, a front fork mounted on said frame for supporting a front wheel, an engine positioned on said frame behind said front fork, and a radiator mounted to said frame between said front fork and said engine, said radiator having a concave front surface oriented towards said front fork, said radiator having an inlet tank, an outlet tank and a radiator core extending between said inlet tank and said outlet tank, said inlet and said outlet tanks of said radiator being generally rectangular in cross section, the sides of said tanks being mutually parallel.

4,660,625

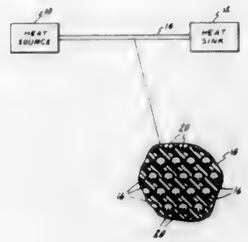
HEAT TRANSPORT SYSTEM, METHOD AND MATERIAL

Donald L. Musinski, Saline, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Dec. 30, 1983, Ser. No. 568,216

Int. Cl.[4] F28D *15/00*

U.S. Cl. 165—47 20 Claims



1. A heat transport system for conducting thermal energy between a heat source and a heat sink comprising bulk material means extending between said heat source and said heat sink, a multiplicity of hollow spherical shells having an outside diameter of less than or equal to 500 microns contained within said bulk material means, with said bulk material means being in heat transfer contact with outer surfaces of said shells, and a volatile working fluid captured within each of said shells, diameter of said shells being coordinated with surface tension of said fluid such that thermal energy is transported across each said shell evaporation at one internal surface of said shell proximate to said heat source, migration of fluid vapor across the internal cavity of said shell, condensation at the opposing shell surface proximate to said heat sink and flow of said fluid along the internal shell wall surface back to said first surface portion.

4,660,626

HEAT EXCHANGER IN PARTICULAR A RADIATOR FOR A MOTOR VEHICLE COOLING CIRCUIT

Marco Valier, Turin, Italy, assignor to Valeo, Paris, France

Filed Aug. 22, 1985, Ser. No. 768,450

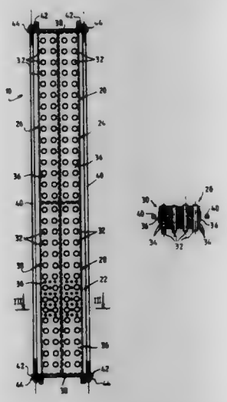
Claims priority, application France, Aug. 22, 1984, 84 13081

Int. Cl.[4] F28F *7/00*

U.S. Cl. 165—76 15 Claims

1. A heat exchanger, in particular a radiator for the cooling circuit for the engine of a motor vehicle, the heat exchanger comprising a bundle of finned tubes including multiple parallel tubes and fins extending perpendicular to the tubes and defining major and minor faces, and at least one water box mounted at one end of the bundle, said bundle being built up from at least two independent juxtaposed sets of finned tubes, the heat exchanger improvement including a pair of spaced parallel cross-members extending along selected minor faces of the bundles parallel to the tubes and interconnected to each other in the middle by two draw bars, said draw bars urging the sets of finned tubes towards one another in a plane perpendicular to the tubes of said sets, each set of finned tubes is provided with plate means for bearing against corresponding plate means in the other sets of tubes in a plane perpendicular to the tubes

upon an urging of the sets of finned tubes toward one another by said draw bars and said cross-members being interconnected at their ends by said plate and water box assemblies of the heat exchanger.



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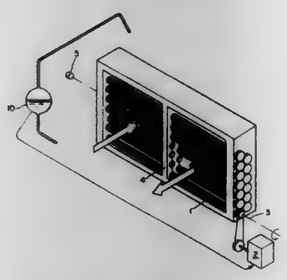
HEAT EXCHANGING WITH SLOWLY ROTATING FINNED ELEMENTS

Brent D. Deck, 24 Hopedale St., Hopedale, Mass. 01747

Continuation-in-part of Ser. No. 631,097, Jul. 16, 1984, abandoned. This application Feb. 25, 1986, Ser. No. 833,210

Int. Cl.[4] F28D *11/04;* F28F *5/00*

U.S. Cl. 165—86 22 Claims



1. Heat exchanging apparatus comprising,

a plurality of substantially parallel heat transfer elements each having a longitudinal axis in a plane perpendicular to the normal direction of fluid flow therethrough,

a source of a fluid having lint particles and moving in a flow direction,

means for supporting said heat transfer elements for intercepting said moving fluid for heat exchange therewith in said flow direction having a major component substantially perpendicular to said plane,

said fluid having lint particles which if allowed to accumulate would clog said heat exchanging apparatus and obstruct the flow of said fluid therethrough,

each heat transfer element having a plurality of fin means extending radially outward from an element longitudinal axis for increasing the heat transfer between said fluid and each heat transfer element,

means for rotatably supporting each of said heat transfer elements for rotation about the longitudinal axis of each for allowing rotation of each heat transfer element about its longitudinal axis to change points on said fin means between a range of positions between downstream and upstream points,

means for producing fluid flow in said flow direction to exchange heat with said heat exchange elements, lodge lint particles on said upstream points and clean particles from said downstream points by the action of said fluid flowing through said fin means in said flow direction,

and means for slowly continuously rotating said heat transfer elements at a rate of the order of one revolution per minute about the longitudinal axis of each while said fluid flows in said flow direction through said fin means and exchanges heat with said heat exchanging apparatus,

said lint particles being attached to said upstream points from said fluid when said fluid enters said fin means and cleaned from said downstream points by said fluid flow to prevent said lint particles from accumulating in said heat exchanging apparatus.

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HEAT EXCHANGER

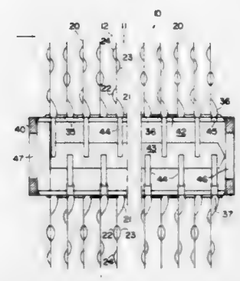
Per Solberg, Radalen, and Jan Grønhaug, Ulset, both of Norway, assignors to Stord Bartz A/S, Bergen, Norway

PCT No. PCT/NO85/00045, § 371 Date Mar. 20, 1986, § 102(e) Date Mar. 20, 1986, PCT Pub. No. WO86/01284, PCT Pub. Date Feb. 27, 1986

PCT Filed Jul. 29, 1985, Ser. No. 852,948

Int. Cl.[4] F28F *5/04*

U.S. Cl. 165—92 18 Claims



1. A heat exchanger comprising a hollow rotor having an inlet of heating and cooling medium and an outlet of the medium or its condensate, a casing mounted on the hollow rotor,

a plurality of disc-shaped base boards, a plurality of annular ducts projected from both side surfaces of the base boards,

said duct forming a passage communicating with the inlet and the outlet, arranged so as to be partly superposed sequentially on both front and back surfaces of the base board from the inner peripheral edges to the outer peripheral edges of the base boards in such a manner that partition plates for shielding the ducts being provided in the superposed positions in the ducts and inserting holes communicating between the front side and back side ducts being perforated at the base boards through the partition plates.

4,660,629

CONTINUOUSLY ACTING ADSORPTION DEVICES AND PROCESS FOR THEIR OPERATION

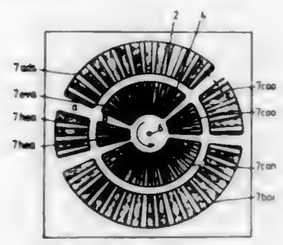
Peter Maier-Laxhuber, Saumweberstrasse 14, 8000 Munchen 60, and Fritz Kaubek, Gasparistrasse 5 A, 8000 Munchen 71, both of Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,028

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1983, 3342985

Int. Cl.[4] F25B *15/00;* **B60H** *1/06, 1/32*

U.S. Cl. 165—104.12 **16 Claims**



1. An adsorption system comprising; at least two gas tight closed adsorption containers consisting of heater adsorber zones which are filled with adsorption material capable of adsorbing and deadsorbing an operating substance and condenser evaporator zones which condense the operating substance or readsorb it in a further adsorption substance, the adsorption containers being rotatable together about a rotational axis so that all heater adsorber zones are located within a first rotational element and all condenser evaporator zones are located within a second rotational element which is radially spaced from said first rotational element and which is not penetrated by the first rotation element, the rotational elements being separated in stationary flow segments which are traversed by separated heat carrier flows, the zones capable of being rotated so as to alternately exchange heat with heat emitting and heat adsorbing heat carrier flows, and adjacent adsorption containers being adapted to exchange heat with the same heat carrier flows.

4,660,630

HEAT TRANSFER TUBE HAVING INTERNAL RIDGES, AND METHOD OF MAKING SAME

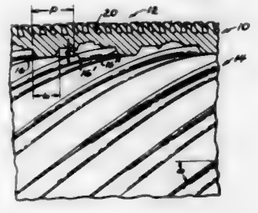
James L. Cunningham, and Bonnie J. Campbell, both of Decatur, Ala., assignors to Wolverine Tube, Inc., Decatur, Ala.

Filed Jun. 12, 1985, Ser. No. 744,076

Int. Cl.[4] F28F *13/02*

U.S. Cl. 165—133 **6 Claims**

1. In a metallic heat transfer tube having an integral, external superstructure which includes a first plurality of adjacent, generally circumferential channels formed in said superstructure and a second plurality of channels formed in said superstructure which interconnect adjacent pairs of said generally circumferential channels and are positioned transversely to said first plurality of generally circumferential channels; the improvement wherein the inner surface of the tube is characterized by a plurality of helical ridges which have a pitch of less than 0.124 inch, a ridge height of at least 0.015 inch, a ratio of ridge base width to pitch, as measured along the tube axis, which is greater than 0.45 and less than 0.90 and a helix lead angle which is between about 29 and 42 degrees, as measured from the tube axis, said first plurality of generally circumferential channels being spaced at a pitch which is less than 50% of the pitch of said helical ridges.





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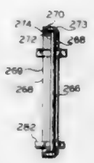
BAFFLE

William M. Small, Bartlesville, Okla., assignor to Phillips Petroleum Company, Del.

Continuation of Ser. No. 144,086, Apr. 28, 1980, abandoned. This application May 28, 1985, Ser. No. 737,838

Int. Cl.[4] F28D *7/00*

U.S. Cl. 165—159 **32 Claims**



21. Apparatus comprising:

(a) a plurality of baffles centered about a common axis and arranged in a plurality of parallel planes, said planes to be positioned perpendicular to the axis of a heat exchanger having a tube bundle and shell, each baffle comprising an at least partially closed ring affixed thereto having a first surface to be positioned contiguous to the inside surface of a heat exchange shell and at least one of (1) a frustoconical beveled surface facing the tube bundle which intersects with the first surface at an angle wherein an acute angle is formed with said first surface and (2) a second beveled surface facing toward the interior surface of said heat exchanger shell which intersects with said first surface at an angle wherein an obtuse angle is formed between said first surface and said second beveled surface and a multiplicity of rods affixed to said ring as a multiplicity of parallel cords and

(b) at least one longitudinal member affixed to and traversing at least a portion of each of the plurality of rings, said longitudinal member running in parallel to the common axis about which the baffles are centered.

4,660,632

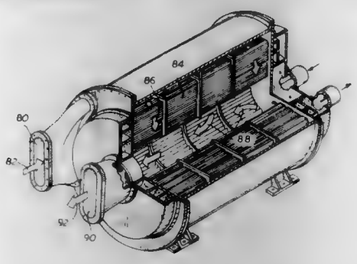
HEAT EXCHANGER

Jack S. Yampolsky, and David P. E. Carosella, Jr., both of San Diego, Calif., assignors to GA Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 645,999, Aug. 30, 1984, Pat. No. 4,577,682. This application Mar. 24, 1986, Ser. No. 843,154

Int. Cl.[4] F28F *9/22*

U.S. Cl. 165—160 **6 Claims**



1. Heat exchange apparatus comprising:

a generally cylindrical tank defining a longitudinal axis and having a first port and a second port for entry and exit of a first fluid;

an annular tube bundle disposed within said tank, said annular tube bundle comprising a plurality of elongated metal tubes, said annular tube bundle defining a longitudinal axis substantially parallel to that of said tank and offset therefrom, and having a generally cylindrical interior communicating with said first port so as to define an axial inside plenum for said first fluid;

said second port being located on said tank substantially diametrically opposite said axis of said annular tube bundle whereby an eccentric outsid.e plenum is defined within said tank outside of said annular tube bundle and communicating with said second port;

means for effecting flow of said first fluid into one of said plenums and thence over said tube bundle into the other plenum; and

means for effecting flow of a second fluid through the interiors of said tubes to effect heat transfer between said first fluid and said second fluid.

4,660,633

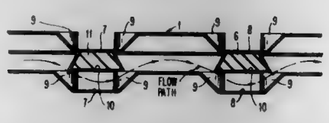
PLATE HEAT EXCHANGER

Helmut Fischer, Kunigbergggasse 5, A-1130 Wien, Austria

Filed May 20, 1985, Ser. No. 735,573

Int. Cl.[4] F28F *3/10*

U.S. Cl. 165—167 **4 Claims**



1. A plate heat exchanger where a number of heat exchange plates of two different types are clamped between two massive pressure plates, said heat exchanger plates being provided with a first flow zone surrounded by an edge seal having first passage openings for a first fluid medium, said heat exchanger plates being further provided with a second flow zone having second passage openings surrounded by an annular seal for a second fluid medium outside of said first flow zone, said annular seal being embedded in a first reinforcing seam having a bottom wall and upwardly and outwardly tapering side walls, said heat exchanger plates further including a bottom plate adjoining said annular seal and which is provided with a second reinforcing seam disposed parallel and below said first reinforcing seam and which broadens in an upward direction, said second reinforcing seam being provided with a plurality of supporting bulges extending into and narrowing said second reinforcing seam, said supporting bulges being in contact with said bottom wall of said first reinforcing seam, said first flow zone being in part defined by said bottom plate and said bottom wall of said first reinforcing seam, said first fluid medium flowing under said annular seal and simultaneously between said supporting bulges.

4,660,634

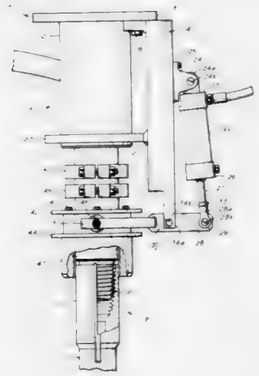
AUTOMATIC DRILL PIPE BREAKOUT

George P. Johnson, Jr., Tomball, Tex., assignor to North Houston Machine, Inc., Tomball, Tex.

Filed Jun. 19, 1985, Ser. No. 746,349

Int. Cl.[4] E21B *19/16;* **B25B** *13/50*

U.S. Cl. 166—77.5 **5 Claims**



1. A drill pipe breakout apparatus which is employed with a power sub during breakout operations which comprises:

(a) a sliding barrel concentric with the drive pin of the power sub to releasably connect drill pipe segments to the drive pin through the contact of dogs with said barrel with longitudinal ridges on said drill pipe;

(b) a shift arm connected to said sliding barrel; and

(c) hydraulic cylinder means connected to said shift arm and to the body of the power sub for selectively moving said barrel from a drill pipe connecting position to a drill pipe of released position.

4,660,635

EQUIPMENT FOR A PIPE STRING SUCH AS A DRILL-PIPE STRING, COMPRISING A SIDE ENTRY CONNECTION FOR PASSING A CABLE

Christian Wittrisch, Rueil Malmaison, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 13, 1986, Ser. No. 862,633

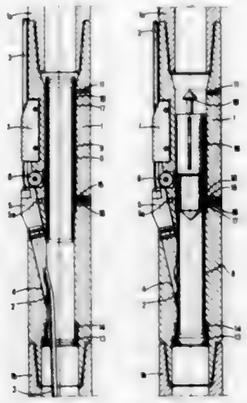
Claims priority, application France, May 13, 1985, 85 07341

Int. Cl.[4] E21B *29/04*

U.S. Cl. 166—54.5 **2 Claims**

1. Equipment for drill-pipe string comprising a side entry connection adapted for incorporation in the pipe string, this entry allowing the passage of a cable, comprising a sleeve slidable inside said connection between a top position situated above said entry and low position in which said sleeve closes

said entry, said sleeve being provided with members for retaining it in each of said positions and comprising means for severing the cable when said sleeve passes from a top position to its low position.

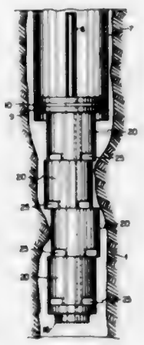


4,660,636

PROTECTIVE DEVICE FOR RF APPLICATOR IN IN-SITU OIL SHALE RETORTING

Herbert A. Rundell; Richard H. Vinton, and Kerry D. Savage, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 20, 1981, Ser. No. 265,263
Int. Cl.⁴ E21B *36/04*
U.S. Cl. 166—60 **7 Claims**



1. In the in-situ radio frequency retorting of oil shale in which an applicator is placed in a borehole traversing an oil shale formation and electrically energized at a radio frequency, a protective device comprising

an end plate attached to the end of said applicator, and

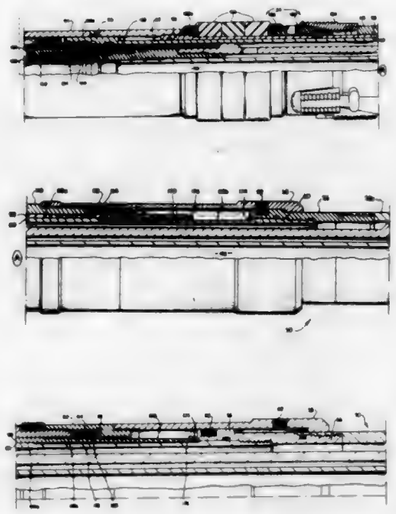
a plurality of means surrounding said applicator and resting one against another until one means if in contact against said end plate and each means being able to move laterally to the longitudinal axis of the applicator for protecting said applicator from expansion of the oil shale formation.

4,660,637

PACKER AND SERVICE TOOL ASSEMBLY

Howard L. McGill, Lufkin, Tex., and Joseph D. Scranton, Tulsa, Okla., assignors to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Sep. 11, 1985, Ser. No. 774,979
Int. Cl.⁴ E21B *23/06, 33/128, 33/129*
U.S. Cl. 166—120 **6 Claims**



1. A packer assembly for use in oil and gas wells with a well casing, the packer assembly being removeable by pulling upwardly on a housing, comprising:

a plurality of hydraulically actuated seal and slip rings for setting the packer assembly in the well casing;

sliding means for compressing the seal and slip means against an element secured to the housing and stationary with respect to said sliding means, said sliding means moving relative to the housing under force of hydraulic pressure;

a releasable ratchet mechanism including a ratchet sleeve and a ratchet ring, the sleeve and ring having cooperating trapping teeth meshable in a ratcheting manner;

the ratchet sleeve being adapted for sliding movement with the sliding means axially through the ratchet ring which is stationarily held in the packer assembly, the ratchet sleeve being collet-shaped and including a plurality of slotted fingers which are radially moveable;

means for abutting and radially moving the slotted fingers when the housing is pulled upwardly with sufficient force to disengage the housing from its previous position;

said means for abutting and radially moving including a lower section which engages the slotted fingers, the lower section being operatively attached to the housing; and

means for holding the ratchet ring substantially stationary as the slotted fingers move radially so that the cooperating trapping teeth become separated.

4,660,638

DOWNHOLE RECORDER FOR USE IN WELLS

Donald N. Yates, Jr., Katy, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 4, 1985, Ser. No. 741,074
Int. Cl.⁴ E21B *47/00*
U.S. Cl. 166—250 **28 Claims**

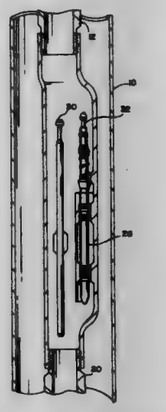
11. A method of detecting the firing of an explosive device downhole in a borehole, comprising:

lowering a recorder means into the borehole;

transmitting a stimulus downhole for firing the explosive device;

retrieving the recorder means from the borehole; and

analyzing data recorded by the recorder means downhole to detect evidence of the firing of the explosive device.



19. A system for testing an oil or gas well, comprising:

a perforating gun;

downhole recorder means for storing test data; and

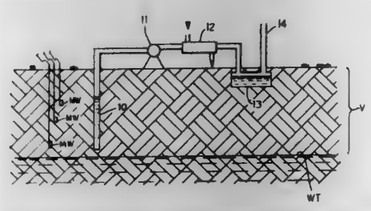
means for actuating the downhole recorder means to commence storing test data therein in response to a signal indicating the firing of the perforating gun.

4,660,639

REMOVAL OF VOLATILE CONTAMINANTS FROM THE VADOSE ZONE OF CONTAMINATED GROUND

Melvin J. Visser, Portage, Mich., and James J. Malot, Dorado, P.R., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 567,972, Jan. 4, 1984, Pat. No. 4,593,760. This application Feb. 6, 1986, Ser. No. 826,713
The portion of the term of this patent subsequent to Jun. 10, 2003, has been disclaimed.
Int. Cl.⁴ E21B *43/00*
U.S. Cl. 166—267 **8 Claims**



1. A process for removing a not-naturally-occurring, volatile liquid contaminant from a contaminated area of the earth, wherein the contaminated area of the earth has a subsurface water table and a subsurface vadose zone above the water table, the contaminant being present in the vadose zone, which comprises the steps of:

establishing a borehole extending downwardly from the surface of the ground within the contaminated area;

placing a first conduit within said borehole so that a ring-shaped zone is formed between the wall of said borehole and said conduit, said conduit having a perforate lower portion located in the vadose zone and spaced vertically above the water table so that fluids can flow from the vadose zone into the interior of said conduit, said perforate lower portion having an upper end and a lower end, said conduit having an imperforate upper portion above the upper end of said perforate lower portion,

filling fluid-permeable first fill material into a lower portion of said ring-shaped zone around said perforate lower portion of said conduit and which extends to the upper end of said perforate lower portion so that said first fill material will permit fluid readily to flow into said perforate lower portion of said conduit;

filling a second fill material of low fluid permeability into an upper portion of said ring-shaped zone around said imperforate upper portion of said conduit, said second fill material being effective to impede flow of air from the surface of the ground to the lower portion of the borehole;

applying a vacuum to the upper end of said conduit effective to induce flow of air and a gas containing vapor of said contaminant present in said vadose zone into the lower portion of said conduit and thence to the upper end of said conduit, the vacuum being effective to cause vaporization of a substantial quantity of said contaminant within the vadose zone around the borehole so that said contaminant is removed from the ground in vapor form.

4,660,640

POLYSILICATE ESTERS FOR OIL RESERVOIR PERMEABILITY CONTROL

Dennis H. Hoskin, Lawrenceville, and Louis D. Rollmann, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,098
Int. Cl.⁴ E21B *33/138*
U.S. Cl. 166—270 **20 Claims**

12. A method of recovering hydrocarbon oil from a subterranean oil-bearing formation comprising:

(a) injecting into the high permeability region or regions of the subterranean formation a permeability control agent comprising a liquid polysilicate ester, produced by the reaction of a hydroxyl group-containing organic compound with the product obtained by acidifying an alkali metal silicate, to plug the high permeability region or regions,

(b) subsequently injecting into the formation a flooding liquid, and

(c) recovering the oil from the formation.

4,660,641

BUFFERED STEAM DRIVE OIL RECOVERY PROCESS

Chin W. Shen, Houston, Tex., assignor to Texaco Inc., White Plaines, N.Y.

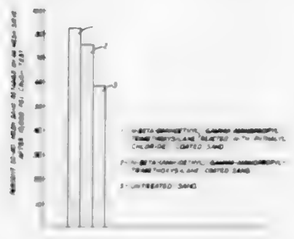
Filed Sep. 3, 1985, Ser. No. 772,115
Int. Cl.⁴ E21B *43/24*
U.S. Cl. 166—272 **7 Claims**

1. A method for recovering petroleum from a subterranean, petroleum containing formation penetrated by an injection well in fluid communication with at least a portion of the oil formation and by a spaced-apart production well in fluid communication with at least a portion of the formation comprising injecting steam into the formation via said injection well, said steam comprising a vapor phase and a liquid phase, said phases separating with the vapor phase moving to the upper portion of the petroleum formation and the liquid phase moving to the lower portion of the petroleum formation, wherein the improvement for increasing the oil displacement effectiveness of the liquid phase component of the injected steam comprises

contacting at least a portion of siad lower portion of formation with an aqueous fluid containing from 0.005 to 2.0 percent by weight sodium hydroxide and from 0.01 to 5.0 percent by weight sodium carbonate prior to the injection of steam.

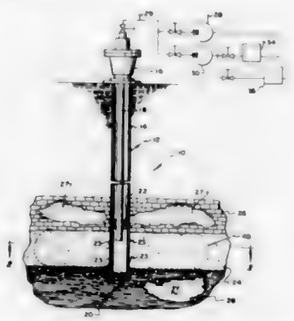
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4,660,642
HIGH STRENGTH, CHEMICAL RESISTANT PARTICULATE SOLIDS AND METHODS OF FORMING AND USING THE SAME
Bill M. Young, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Oct. 28, 1985, Ser. No. 792,096
Int. Cl.[4] E21B *43/04, 43/267;* **B05D** *7/00*
U.S. Cl. 166—280 **6 Claims**



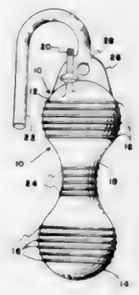
1. In a method of treating a subterranean zone penetrated by a well bore wherein a particulate solid is placed in the zone and thereby subjected to structural and chemical deterioration, which comprises increasing the structural strength and chemical resistance of said particulate solid prior to placement by coating said particulate solid with the reaction product produced by the reaction of an organofunctional silane comprising at least one member selected from the group consisting of aminofunctional silanes, ureidofunctional silanes and epoxyfunctional silanes, present in an amount of from about 0.0005 to about 0.002 gallon per pound of said solids, and an aryl acid halide, present in an amount of from about 0.00015 to about 0.002 gallon per gallon of said silane.

4,660,643
COLD FLUID HYDRAULIC FRACTURING PROCESS FOR MINERAL BEARING FORMATIONS
Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Feb. 13, 1986, Ser. No. 829,374
Int. Cl.[4] E21B *36/00, 43/26, 43/267*
U.S. Cl. 166—283 **7 Claims**



1. A method for hydraulically fracturing a subterranean formation region to stimulate the production of recoverable fluids therefrom comprising the steps of:
providing a wellbore extending into said formation region and means for conducting fluid between said wellbore and said formation region;
injecting a relatively cold liquid into said formation region through said wellbore at a rate which will result in substantial cooling of the formation region below the nominal preinjection temperature of said formation region so as to lower the stresses exerted within the formation region;
increasing the pressure of said cold liquid being injected at a predetermined time after commencing injection of said cold liquid to a value which will initiate a fracture in the cooled portion of said formation region;
injecting a leakoff control agent with said cold liquid in sufficient amounts to provide further flooding of said formation region but to control the shape of the flood front progressing outward from said fracture; and
injecting liquid into said fracture containing a quantity of proppant material for maintaining said fracture in a propped open condition upon release of pressure in said wellbore and said formation region due to said injected liquid.

4,660,644
INFLATABLE RUBBER BLASTING HOLE PLUG
Richard Egnor, Box 305, Man, W. Va. 25635
Filed Jan. 31, 1986, Ser. No. 824,644
Int. Cl.[4] E21B *33/13;* **F42B** *3/20*
U.S. Cl. 166—285 **3 Claims**



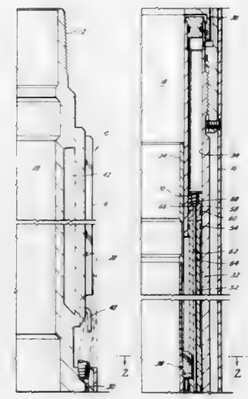
1. An elongated inflatable and deflatable device designed for closing a blasting hole or the like which device has a maximum diameter in the uninflated state that is smaller than the hole so as to fit freely into the hole, wherein the improvement comprises:
The device having ends generally shaped spherically and joined by a conduit having a smaller diameter than the ends and forming a recessed portion, capable of expanding to prevent bursting in the event that it is exposed to excessive external pressure or used on haulage roads where heavy trucks may collapse an upper end of the blasting hole and the upper end of said device,
O rings positioned in the recessed portions as ridges around the circumference to add strength to the stress area of the device, and
the device having walls consisting essentially of a single integral piece of elastomeric material,
at least one groove in the circumferential portion of the ends about the wall,
O ring in each of the grooves for augmenting the closing of the blasting hole or the like,
valve means mounted in the upper end of the device for inflating and deflating the device,
tab attached to an upper end of the device and containing a finger receiving portion used for easy insertion and removal of the device from the blasting hole, and
a rubber strap attached to the tab to aid in the location of the device in the plug hole.

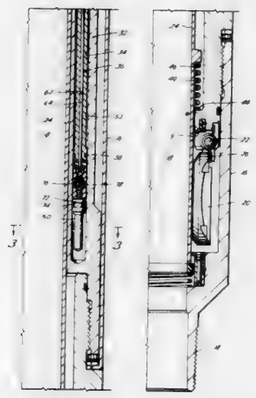
4,660,645
METHOD FOR CONTROLLED INTRODUCTION OF REAGENT INTO A LIQUID
John C. Newlove, Kingwood, and Lee A. McDougall, Houston, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.
PCT No. PCT/US84/01872, § 371 Date Jul. 11, 1985, § 102(e) Date Jul. 11, 1985, PCT Pub. No. WO85/02408, PCT Pub. Date Jun. 6, 1985
PCT Filed Nov. 20, 1984, Ser. No. 776,174
Int. Cl.[4] E21B *43/25*
U.S. Cl. 166—304 **18 Claims**

1. A method for releasing a treating reagent in a liquid hydrocarbon stream which comprises:
(a) placing in said stream a plurality of porous, substantially wax free, plastic particles having a softening point above 60° C. and being chemical resistant to said hydrocarbon stream, said particles containing a treating reagent in the pores thereof, said reagent being insoluble in water and in said particles and being leachable on contact with the hydrocarbon stream; and
(b) flowing hydrocarbon stream past said particles whereby said reagent is leached from the pores thereof, and whereby said particles retain their structural integrity.

4,660,646
FAILSAFE GAS CLOSED SAFETY VALVE
William A. Blizzard, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.
Filed Nov. 27, 1985, Ser. No. 802,656
Int. Cl.[4] E21B *34/10*
U.S. Cl. 166—321 **12 Claims**

1. A subsurface well safety valve for controlling the fluid flow through a well conduit comprising,
a housing having a bore,
a valve closure member moving between open and closed positions for controlling the fluid flow through the bore,
a flow tube telescopically moving in the housing for controlling the movement of the valve closure member,
a piston and cylinder assembly positioned in the housing and one of the piston and cylinder engages the flow tube, a first side of the assembly adapted to be in communication with a fluid control passageway to the well surface,
a gas chamnber in the housing in communication with the second side of the assembly acting on the assembly in a direction to close said valve,
spring means between the housing and the flow tube acting on the flow tube in a direction to close said valve,
seal means between the piston and cylinder, and openable and closable equalizing means for equalizing fluid pressure on opposite sides of the piston and cylinder assembly in the event of a failure in the seal means thereby allowing the spring means to close the valve.





4,660,647
FLUID CONTROL LINE SWITCHING METHODS AND APPARATUS
Jene A. Richart, Sugar Land, Tex., assignor to Exxon Production Research Co., Houston, Tex.
Filed Aug. 23, 1985, Ser. No. 768,762
Int. Cl.[4] E21B *34/06, 43/12*
U.S. Cl. 166—386 **9 Claims**

1. A system for use in controlling the flow of downhole fluids in oil and/or gas wells, comprising:
first and second fluid pressure actuated control devices, each said device being disposed in series in a tubing string in said well and having a respective inflow port;
a side pocket mandrel disposed in said tubing string and including an inflow port and first and second outflow ports;
a surface fluid pressure supply;
a supply conduit interconnecting said inflow port of said mandrel and said surface fluid pressure supply;

a first receiving conduit interconnecting said first outflow port of said mandrel and said inflow port of said first control device;

a second receiving conduit interconnecting said second outflow port of said mandrel and said inflow port of said second control device;



a first plug assembly insertable into and retrievable from said mandrel for establishing fluid communication between said supply conduit and said first receiving conduit; and

a second plug assembly insertable into and retrievable from said mandrel for establishing fluid communication between said supply conduit and said second receiving conduit.

4,660,648

FLUSH TYPE SPRINKLER HEAD

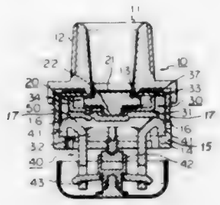
Mitsuo Zen, Soka, Japan, assignor to Senju Metal Industry Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1985, Ser. No. 741,356

Claims priority, application Japan, Jun. 7, 1984, 59-83643[U]

Int. Cl.⁴ A62C *37/08*

U.S. Cl. 169—38 **4 Claims**



1. A flush type sprinkler head comprising:

a vertical cylindrical main body having in an upper portion thereof external threads for threadable engagement with a piping in the ceiling of a building, in a lower portion thereof internal threads and in a central portion thereof an axially extending nozzle provided with a valve seat at the lower end of said nozzle;

a cylindrical frame engaging said valve seat and having at the lower end a radially inwardly extending flange and in an upper portion external threads for threadable engagement with said internal threads of said main body;

a valve member normally abutting against said valve seat to close said nozzle;

a deflector assembly slidably received within said frame surrounding said valve member for downward movement relative to the frame by a first predetermined distance and including a guide ring, a plurality of slide bars extending downwardly from said guide ring and a circular deflector fitted on said valve member for downward movement together with the valve member and relative to the frame along said slide bars by a second predetermined distance which is greater than said first predetermined distance;

a compressed conical coil spring interposed between the undersurface of said main body and the upper surface of said guide ring and adapted to bias said valve member and slidable deflector assembly downwardly upon the operation of said sprinkler head; and

a break-up assembly positioned below said slidable deflector assembly and adapted to explode into pieces upon the operation of said sprinkler head.

4,660,649

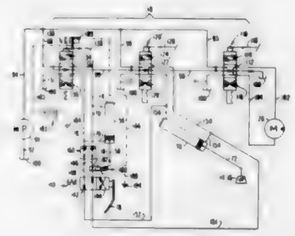
ROTARY TILLER TOOL APPARATUS WITH VERTICAL LIFT FORCE VARIABLE IN DIRECT PROPORTION TO PRESSURE TO ROTATE TILLER TOOL

Jack F. Anderson, Marion, N. Dak. 58466, and Clayton Melrose, Oaks, N. Dak. 58474

Division of Ser. No. 240,137, Mar. 3, 1981, Pat. No. 4,491,183. This application Dec. 21, 1984, Ser. No. 684,843

Int. Cl.⁴ A01B *63/111*

U.S. Cl. 172—2 **3 Claims**



1. In tiller apparatus including a tool bar, a rotary tiller tool mounted on said tool bar, and a hydraulic motor for rotating said tiller tool, the improvement comprising:

a double-acting hydraulic cylinder with a piston and rod slideably positioned therein attached to said tool bar to applying forces upwardly and downwardly on the tool bar by hydraulic fluid pressures selectively applied an opposite sides of the piston in the cylinder;

a main circulating hydrauLic fluid circuit for providing circulating hydraulic fluid under pressure to said hydraulic motor and to said hydraulic cylinder, said main circuit including a pressure pump, a reservoir, a suction line for conducting hydraulic fluid from the reservoir to the pump, a pressure line for delivering hydraulic fluid under pressure to the hydraulic motor and to the double-acting cylinder, and a return line for carrying fluid from the motor and the cylinder back to the reservoir, said hydraulic motor and said double-acting cylinder being connected into said main circuit in parallel to each other such that both the motor and the cylinder are adapted to have approximately the same pressure applied thereto in the lines of the main circuit, whereby the forces upwardly and downwardly applied by the cylinder to the tool bar are adapted to vary in direct proportion to the pressure necessary to rotate the tiller tool;

a first branch circuit having two lines connected to said hydraulic motor and to said pressure and return lines, respectively, of the main circuit and first valve means in said first branch circuit for selectively connecting said two lines in the first branch circuit to selected ones of the pressure and return lines in the main circuit, said first valve means including first position means for connecting

one of said first branch circuit lines to the pressure line in the main circuit to supply a flow of fluid under pressure to the motor and for connecting the other of said first branch circuit lines the return line of the main circuit to return fluid from the motor to the reservoir, and alternate second position means for isolating the motor from the main circuit pressure line and connecting together the two lines from the motor to the main circuit return line to allow the motor shaft to coast; and

a second branch circuit having two lines connected to the pressure and return lines, respectively, of the main circuit and to said hydraulic cylinder, one of which second branch lines is directed to the rod side of the piston and the other of which second branch lines is directed to the opposite side of the piston, and second valve means in said second branch circuit for selectively connecting said two lines in the second branch circuit to selected ones of the pressure and return lines in the main circuit, said second valve means including first position means for connecting one of said lines in the second branch circuit from the cylinder to the main circuit pressure line and for connecting the other of said lines in the second branch circuit to the main circuit return line, and alternate second position means for isolating the double-acting cylinder from the main circuit pressure line and connecting together the two lines from the cylinder to the main circuit return line for a working float condition of the tool with the piston in the double-acting cylinder exposed only to the main circuit return line.

4,660,650

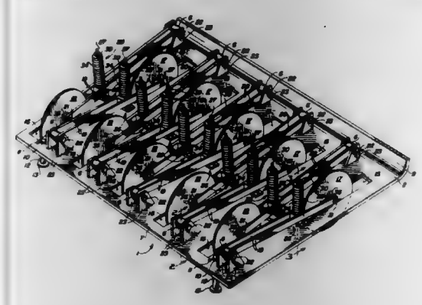
SOD CUTTING APPARATUS

Ross D. Moak, Rt. 1, Box 33, Athens, La. 71003

Continuation-in-part of Ser. No. 591,025, Mar. 19, 1984, Pat. No. 4,577,697. This application Aug. 22, 1985, Ser. No. 767,748

Int. Cl.⁴ A01B *45/02*

U.S. Cl. 172—21 **17 Claims**



1. A sod cutting apparatus comprising:

(a) a slide member;

(b) at least one slot provided in longitudinal orientation in said slide member;

(c) at least one fulcrum secured to said slide member in substantial alignment with said slot;

(d) at least one hinge arm having one end pivotally attached to said fulcrum and the opposite end of said hinge arm extending to said slot;

(e) at least one blade means rotatably secured to said opposite end of said hinge arm and positioned in registration with said slot; and

(f) a spring bolt access provided in said hinge arm; a spring rod pivotally attached to said slide member and extending upwardly through said spring bolt access; bias means provided in association with said spring rod and said hinge arm; and a nut threadibly secured on one end of said spring rod for adjusting the tension in said bias means and adjusting the depth of penetration of said blade means into the soil beneath said slide member when said slide member is caused to traverse the soil.

4,660,651

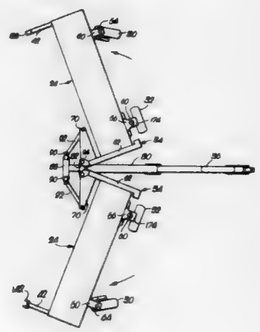
HIGHLY FLEXIBLE, FOLDABLE DRILL FOR UNIFORM DEPTH SEED DEPOSIT

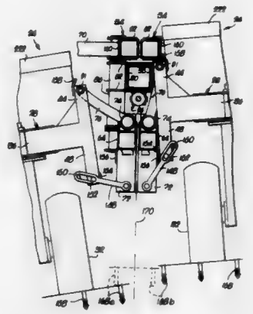
Billy J. Pfenninger, Hutchinson; David R. Smith, Hesston, and David H. Weast, Hutchinson, all of Kans., assignors to Krause Plow Corporation, Hutchinson, Kans.

Filed Jun. 28, 1985, Ser. No. 749,827

Int. Cl.⁴ A01B *49/06, 63/114;* A01C *5/00*

U.S. Cl. 172—311 **14 Claims**





1. In a farm implement, the combination of:

a pair of elongated, upstanding pivot frames normally parallel with the path of travel of the implement,

each frame being swingable about an upright axis;

releasable means latching the frames together in side-by-side relationship;

an assembly having structure for swinging the frames, when unlatched, to a position disposed in end-to-end relationship;

an elongated, normally horizontal, wheeled wing frame coupled with each pivot frame respectively,

the wing frames being normally in end-to-end relationship and disposed in a folded position trailing the pivot frames when the latter are in said end-to-end relationship;

means coupling the wing frames with the pivot frames for up and down swinging movement when the wing frames are end-to-end and when the same are folded; and

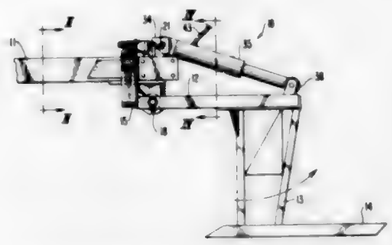
resilient means interposed between each wing frame and its pivot frame yieldably biasing the wing frames inwardly toward the pivot frames, maintaining the pivot frames side-by-side, and yieldably holding the wing frames in alignment when in end-to-end relationship.

4,660,652

HYDRAULIC TRIP MECHANISM

Niklaus J. Moos, Burgdorf, Switzerland, and Richard C. Papworth, Lethbridge, Canada, assignors to Versatile Corporation, Vancouver, Canada

Filed Mar. 22, 1984, Ser. No. 593,248
Claims priority, application Canada, Aug. 30, 1983, 435626
Int. Cl.⁴ A01B *61/04*
U.S. Cl. 172—260.5 **6 Claims**



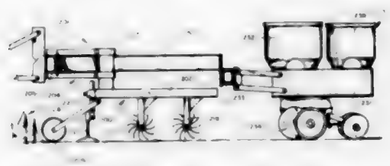
1. A trip mechanism for a ground working tool having a shank connected to said tool, said trip mechanism comprising a forwardly extending carriage rigidly connected to said shank, three point support means between the forward end of said carriage and the frame of an implement, one of said three point support means being a universal pivot connection pivotally connecting the carriage to the frame and two of said three point support means being pin and recess type connection members positioned symmetrically on opposite sides of said universal pivot connection and hydraulic cylinder restraining means having one end universally pivotally connected to said frame vertically spaced from said pivot connection and a second end universally connected to said carriage acting between said carriage and said frame and being operable to allow movement of said ground working tool between an operating untripped position and laterally or upwardly disposed tripped positions.

4,660,653

ROTARY DISK TOOL ASSEMBLY AND IMPLEMENTS

Bruce H. Mayeda, Longmont, and Robert R. Owen, Evergreen, both of Colo., assignors to The Eversman Mfg. Company, Denver, Colo.

Division of Ser. No. 643,879, Aug. 24, 1984, Pat. No. 4,585,073. This application Nov. 21, 1985, Ser. No. 800,280
Int. Cl.⁴ A01B *39/08, 39/14*
U.S. Cl. 172—522 **6 Claims**



1. In agricultural apparatus suitable for use as an attachment to a planter having means for depositing seed into the ground along a crop row and means for attaching to a tool bar or the like for movement along the ground, the combination comprising:

support means;

means to fasten the support means to a tool bar or the like for movement over the soil at a position forwardly of said planter;

a clamp at a forward position on said support means having a vertical slot and shank locking means extending into said slot;

a disk tool assembly adjustably and removably carried by said clamp, said assembly including a disk having a peripheral cutting edge mounted to an end of a rotary spindle; and

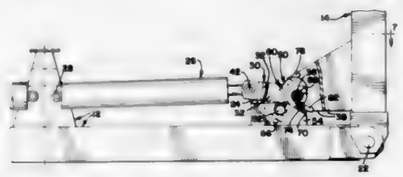
offset mounting means for said spindle including an elongated shank and a sleeve connected to and offset from said shank, said shank being adapted to be slidably received in an upright slot of a clamp on a support movable along the ground and set at a selected elevation by a locking means, said sleeve rotatably supporting said spindle, said connection between said shank and sleeve including pivot means for connecting said sleeve to a lower end portion of said shank to enable said sleeve to pivot in relation to said shank about a substantially horizontal axis and sleeve locking means to set said sleeve at a fixed position relative to said shank whereby to position said cutting edge in a substantially horizontal plane as it is moved along the ground to cut an old crop in a crop row prior to having the planter deposit the seed in the crop row.

4,660,654

IMPLEMENT WING FRAME FOLDING APPARATUS WITH AUTOMATICALLY PIVOTED BIASED LATCH

Kenneth J. Wiebe, Dundas, and Eugen J. Bexten, Ancaster, both of Canada, assignors to J. I. Case Company, Racine, Wis.

Filed Jan. 21, 1986, Ser. No. 820,088
Int. Cl.⁴ A01B *73/04*
U.S. Cl. 172—776 **9 Claims**



1. In a mobile machine, an implement wing frame folding apparatus with automatic lock-up and float capability comprising:

a main frame;

a wing frame pivotally connected to said main frame and movable about a pivot axis thereof between a raised position and a lowered ground engaging position, said wing frame having a striker pin offset from the pivot axis of said wing frame;

latch means pivotally mounted directly to said main frame engaging said striker pin in an engaging position to latch said striker pin when said wing frame is in said raised position;

biasing means on said main frame biasing said latch means toward said engaging position;

said latch means comprising a cam follower surface engageable by said striker pin to pivot said latch means away from said engaging position when said wing frame is moved toward said raised position whereby further movement of said wing frame to said raised position effects disengagement between said cam follower surface and said striker pin and automatic movement of said latch means to said engaging position under the influence of said biasing means;

a float bar having first and second ends with said first end pivotally connected to said wing frame;

actuating means pivotally connected to and between said main frame and said float bar second end for selectively moving said float bar to pivot said wing frame between said lowered and raised positions; and

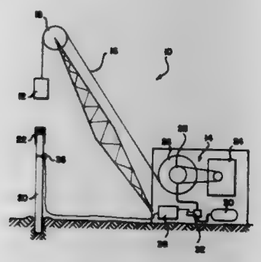
a first engaging member on said float bar automatically pivoting said latch means to release said striker pin responsive to operation of said actuating means to lower said wing frame from said raised position.

4,660,655

PILE-DRIVING APPARATUS AND METHOD OF OPERATING SUCH APPARATUS

Pieter Wilner, 4 Emily Hobhouse St., Parow North, South Africa

Filed Dec. 28, 1984, Ser. No. 687,175
Claims priority, application South Africa, Dec. 29, 1983, 83/9709
Int. Cl.⁴ E21B *1/04*
U.S. Cl. 173—82 **1 Claim**



1. Pile-driving apparatus comprising a drop hammer for imparting blows; hoisting means for lifting the hammer between successive blows, the hoisting means comprising a rope or cable connected to the drop hammer, take-up means for taking up the rope or cable, drive means, and disengageable drive engagement means for disengageably engaging the drive means with the take-up means; impact-sensitive means for sensing the delivery of a blow by the drop hammer, the drive engagemet means being operative in response to the sensing means to engage the drive means with the take-up means in response to said sensing; a first timer operative in response to the sensing means to be triggered in response to said sensing, the drive engagement means being operative in response to the timer to disengage the drive means from the take-up means a predetermined time interval after the timer is triggered, a second timer for providing a predetermined time delay, less than said predetermined time interval, between the time of said sensing and engagement of the drive engagement means, said second timer being adjustable, so as to permit adjustment of said predetermined time delay.

4,660,656

METHOD AND APPARATUS FOR CONTROLLING THE ROTATIONAL TORQUE OF A DRILL BIT

Tommy M. Warren, Coweta; Warren J. Winters, and J. Ford Brett, both of Tulsa, all of Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 22, 1985, Ser. No. 801,163
Int. Cl.⁴ E21C *5/00*
U.S. Cl. 175—26 **29 Claims**

6. An apparatus to be disposed within a wellbore for controlling the rotational torque of a drill bit in the wellbore of the type which can be powered by a hydraulic motor suspended from the lower end of a string of drill pipe through which drilling fluid is pumped, said apparatus in operative condition comprising:

a body adapted for interconnection with the drill pipe at an upper end theeof and to the hydraulic motor at a lower end thereof, the body including:

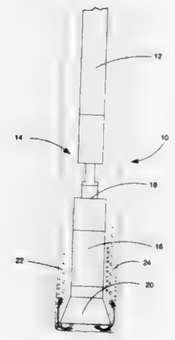
means for sensing the torque applied to said drill bit at a location within the wellbore adjacent said drill bit;

a chamber;

means for generating fluid pressure in said chamber responsive to the sensed torque level; and

means for varying the weight applied to said drill bit responsive to said generated fluid pressure.

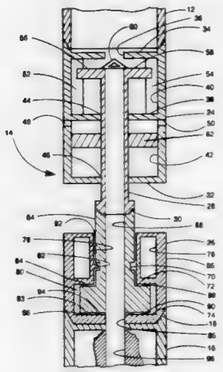
11. A method for controlling the rotational torque of a drill bit in a wellbore powered by a hydraulic motor suspended from the lower end of a string of drill pipe, said hydraulic motor being powered by high pressure drilling fluid supplied thereto through said drill pipe, said drilling fluid exiting said hydraulic motor at a relatively low pressure, said method comprising:



sensing the torque applied tot he drill bit at a location within the wellbore adjacent said drill bit;

diverting within the wellbore a portion of said high and low pressure drilling fluids from and to locations within the wellbore; and

directing said diverted drilling fluid to means within the wellbore for varying the weight applied to said drill bit in response to the sensed torque level.



4,660,657

UNDERREAMER

John H. Furse; Praful C. Desai, both of Kingwood, and Charles H. Dewey, Houston, all of Tex., assignors to Smith International, Inc., Newport Beach, Calif.

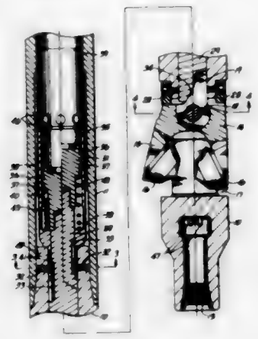
Filed Oct. 21, 1985, Ser. No. 789,388
Int. Cl.⁴ E21B *10/34*
U.S. Cl. 175—269 **14 Claims**

1. An underreamer comprising:

a lower body;

a plurality of cutter arms mounted in the lower body for

pivoting between a retracted position and an extended underreaming position;
a tubular upper body connected above the lower body;
a sleeve within the upper body and fixed to the lower body, at least a portion of the sleeve having an outside diameter sufficiently smaller than the inside diameter of the upper body to leave a fluid flow annulus between the sleeve and upper body;



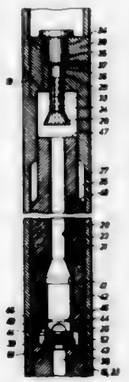
a solid piston in the sleeve axially shiftable from an upper position to a lower position in response to application of fluid pressure;
means connected to the piston for pivoting the cutter arms from the retracted position toward the extended position when the piston shifts toward the lower position; and
passage means through the lower body for conveying fluid through at least a portion of the lower body from the annulus between the upper body and the sleeve.

4,660,658

HYDRAULIC DOWN-THE-HOLE ROCK DRILL

Per S. G. Gustafsson, Lidingö, Sweden, assignor to Atlas Copco Aktiebolag, Nacka,

Filed Jun. 18, 1985, Ser. No. 746,244
Claims priority, application Sweden, Jun. 25, 1984, 8403370
Int. Cl.⁴ E21B *4/14*
U.S. Cl. 175—296 **4 Claims**



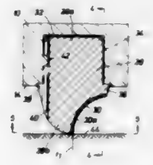
1. Hydraulic down-the-hole rock drill comprising a housing forming a cylinder, a drill bit slidably received and retained by the front end of said housing and having a flushing passage leading to its front end, a piston hammer reciprocable in said cylinder for repeatedly delivering impacts to said drill bit, said piston hammer having a through central channel and having a front drive surface in a front cylinder chamber for forcing the piston hammer rearwardly in its return stroke and a rear drive surface in a rear cylinder chamber for forcing the piston hammer forwardly in its work stroke, said rear drive surface being smaller than said front drive surface, a valve means responsive to the position of the piston hammer for controlling the supply of pressure liquid to the channel of the piston hammer, an outlet valve means for controlling the outlet from said front cylinder chamber to said flushing passage, and means to cause a pressure differential between the front end of the channel in the piston hammer and the front cylinder chamber and to apply said pressure differential to said outlet valve means which is arranged to be controlled by said pressure differential.

4,660,659

DRAG TYPE DRILL BIT

Lot W. Short, Jr., Dallas, Tex., and John D. Barr, Cheltenham, England, assignors to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 468,668, Feb. 22, 1983, Pat. No. 4,538,690. This application Aug. 6, 1985, Ser. No. 763,031
The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.
Int. Cl.⁴ E21B *10/46*
U.S. Cl. 175—329 **23 Claims**





1. A drag-type drill bit comprising:
a bit body having an operating end face;
and a multiplicity of superhard cutting elements interlocked to said bit body, said cutting elements defining a multiplicity of cutting areas dispersed over said operating end face of said bit body in a pattern adapted to cause said cutting areas to cut an earth formation to a desired three-dimensional profile as said bit body is rotated, said cutting areas having back rake angles which become more negative with distance from said profile.

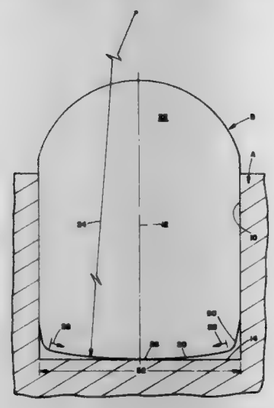
4,660,660

ROUND/FLAT CARBIDE SEAT

Ching-Fen Yuh, Houston, Tex., assignor to TRW Inc., Cleveland, Ohio

Filed May 17, 1985, Ser. No. 735,038
Int. Cl.⁴ E21B *10/52*
U.S. Cl. 175—410 **8 Claims**

1. A drill bit construction comprising: a drill bit body having a blind cavity with a central axis and a bottom wall surface lying generally transversely of said axis and an insert closely received in said cavity with an inner end surface of said insert adapted to abut against said bottom wall surface over a limited area of said bottom wall to define an interface engagement area, one of said insert inner end surface and said cavity bottom wall surface being rounded and having an instantaneous slope at all points in said interface engagement area greater than the full manufacturing tolerance slope of the abutting points in said other surface the resultant curve compensating for any angular deviation between said insert inner end surface and said bottom wall surface.

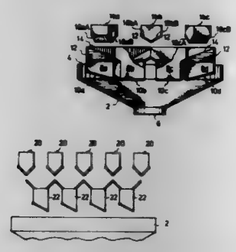


4,660,661

COMBINATION WEIGHING MACHINE

Shoji Yamano, Akashi, Japan, assignor to Yamato Scale Company, Japan

Filed Feb. 22, 1985, Ser. No. 704,619
Claims priority, application Japan, Feb. 24, 1984, 59-34900
Int. Cl.⁴ G01G *19/22*
U.S. Cl. 177—25 **8 Claims**



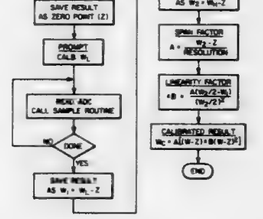
1. A combination weighing machine, comprising a plurality of weighing units, each having a weighing hopper attached thereto, arranged at suitable intervals for weighing the contents of said weighing hoppers to produce signals indicative of the weights of product in the hoppers, a plurality of auxiliary hoppers for receiving and holding the weighed contents of said weighing hoppers, means for combining the weight values of product in weighing hoppers and auxiliary hoppers to select a combination weight satisfying a predetermined condition, each auxiliary hopper having outlet means adapted to open for discharging product held in the hopper, and a collection chute for receiving and collecting the contents of said weighing hoppers and auxiliary hoppers;
characterized in that each auxiliary hopper is disposed between a pair of adjacent weighing units and is adapted to receive product discharged from either weighing unit of said pair of adjacent weighing units, and each weighing unit is provided with means for selectively transferring its content into either of said auxiliary hoppers at respective sides of said weighing unit, said weighing machine further comprising control means for effecting unloading of a combination of said weighing hoppers and/or auxiliary hoppers corresponding to said selected combination weight, said control means being operable to effect unloading of a weighing hopper of said combination if at least one of its associated auxiliary hoppers is also included in said combination by causing said outlet means of said one auxiliary hopper to open to discharge the content of the hopper to said collection chute and by causing said weighing hopper to open to discharge its content to said collection chute via the open outlet means of said one auxiliary hopper.

4,660,662

DIGITAL ELECTRONIC SCALE WITH STABILIZED DISPLAY

Gene I. Katz, Santa Rosa, Calif., assignor to National Controls, Inc., Santa Rosa, Calif.

Filed Sep. 11, 1985, Ser. No. 774,755
Int. Cl.⁴ G01G *19/52, 23/10*; G01L *25/00*
U.S. Cl. 177—50 **5 Claims**



1. In a method of determining the weight of a moving load on the load receiving member of a scale, the steps of: providing an input signal corresponding to the weight of the load; periodically sampling the input signal; checking each sample to determine whether the input signal is varying by more than a predetermined amount; if the input signal is varying by less than the predetermined amount, averaging the current sample with a predetermined number of previous samples to provide a running average of the input signal, and displaying the running average; if the input signal is varying by more than the predetermined amount, averaging the current sample with all previous samples for which the input signal varied by more than the predetermined amount to provide a historical average of the input signal, displaying the historical average, placing two loads of known weight on the load receiving member, combining the input signals produced by a zero load and the two loads of known weight to determine span and linearity factors for the scale, and combining the span and linearity factors with the input signal produced by a load to be weighted to provide a calibrated weight signal.

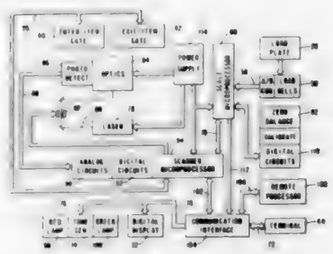
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METHOD OF CALIBRATING A WEIGHING APPARATUS WITHIN AN ENCLOSURE

Gene L. Amacher, Cambridge; Gene R. Mathes, Zanesville, and John F. Pangstat, Salesville, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed May 27, 1986, Ser. No. 867,852
Int. Cl.[4] G01G *19/52, 23/14;* **G01L** *25/00*
U.S. Cl. 177—50 **10 Claims**



1. In a weighing system which includes a processor, a display connected to the processor, a calibrated scale mounted within an enclosure and outputting digital signals having a value representing the weight of an object placed on the scale and a plurality of first and second settable switches set to a position representing the first and second digital values outputted by the scale when a corresponding first and second weight is placed on the scale, a method for recalibrating the scale when mounted within the enclosure comprising the steps of:
placing an object having a first weight on the scale to put the scale in a first weighted condition;
applying power to the system;
performing a first sampling operation of the output of the scale in response to the application of power to the system to generate a third digital value representing the output of the scale for said first weight;
comparing the third digital value with the first digital value;
displaying the first weight on the display when the third digital value is within a first predetermined value of the first digital value;
performing a second sampling operation of the output of the scale to establish a first average digital value outputted by the scale when the first weight is placed on the scale;
comparing the first average digital value with the third digital value;
removing the scale from the enclosure when the first average digital value is within the first predetermined value of the third digital value;
comparing the digital value represented by the setting of the first settable switches with the first average digital value;
displaying on the display the setting of the first settable switches to represent the first average digital value; and
setting the first settable switches in accordance with the setting displayed on the display.

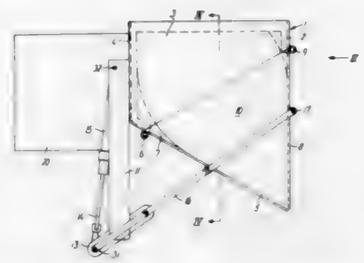
4,660,664

WEIGHING PAN AND A COMBINATION WEIGHING MACHINE EQUIPPED WITH SUCH PANS

Gunnar C. Petersen, No. 14, Rodkildevaenget, 5230 Odense M, Denmark

Filed Oct. 8, 1985, Ser. No. 785,611
Claims priority, application Denmark, Oct. 16, 1984, 4945/84
Int. Cl.[4] G01G *13/16, 13/14;* **B65D** *47/00*
U.S. Cl. 177—108 **6 Claims**

1. A weighing pan for weighing-out articles to be packaged batchwise, especially but not exclusively for use in combination weighing of irregularly shaped articles; comprising
a frame including front and rear walls, a pair of opposed sidewalls defining between them an article discharge opening, at least one of said sidewalls being moveable relative to both of said front and rear walls, at least one pivotable closure flap for controlling said article discharge opening,



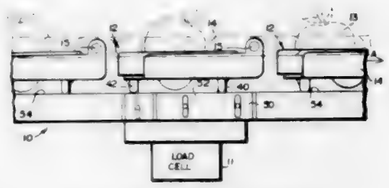
means for pivoting said at least one closure flap between an open and a closed position,
and an actuating mechanism for cyclically displacing the opposed sidewalls relative to one another in timed relationship with the pivoting movement of the closure flap from closed to open position and back.

4,660,665

ACCURATE WEIGHT SIZING

Harry Powell, Jr., c/o Rt. 6, Faber, Va. 22938

Filed Mar. 7, 1986, Ser. No. 837,255
Int. Cl.[4] G01G *19/00, 11/00;* **B07C** *5/28*
U.S. Cl. 177—145 **13 Claims**



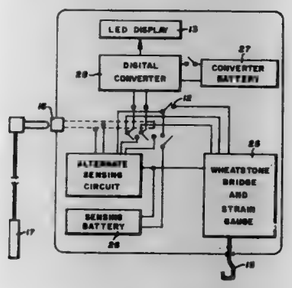
1. Product weight sorting apparatus comprising:
a weighing mechanism;
product containing means for containing a product to be weighed by said weighing mechanism;
conveyance means for conveying said product containing means in a first direction;
track means connected to said weighing mechanism for supporting said product containing means during simultaneous weighing and conveyance; said product containing means, when containing a product, having a center of gravity, said center of gravity being along a first line approximately bisecting said product containing means in said first direction;
support means associated with said product containing means for engaging said track means;
said support means and said track means being provided in operative engagement with each other only on a first side of said first line; and
connecting means for connecting said product containing means to said conveyance means so that when said support means engage said track means during weighing said product containing means is supported on a second side of said line, opposite said first line, by said conveyance means although said conveyance means does not interfere with accurate weighing of product contained within said product containing means.

4,660,666

STRAIN GAUGE SCALE FOR WEIGHING FISH

Lawrence H. Reder, St. Louis Park, Minn., and Robert W. Junghans, 4860 W. 39th St., #217, St. Louis Park, Minn. 55416, assignors to Robert W. Junghans

Filed Aug. 31, 1984, Ser. No. 646,238
Int. Cl.[4] G01G *3/14, 19/00, 19/56, 21/00*
U.S. Cl. 177—148 **2 Claims**



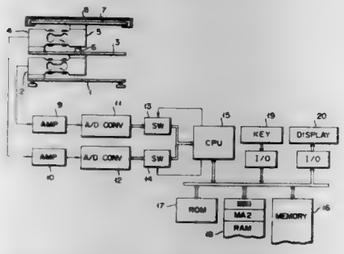
1. A portable scale including:
a. a housing arranged for retaining the active elements for weighing an article;
b. article attachment means having one end thereof secured in said housing and extending through said housing for connection of the article to be weighed;
c. electrical transducer means cooperatively associated with said article attachment means and acting in response to the weight of an article connected to said attachment means;
d. electrical circuit means including said electrical transducer means arranged and constructed to develop a signal in response to the input of said electrical transducer means to said circuit;
e. a source of electrical power within said housing and included in said circuit;
f. readout means receiving said developed signal and providing the same for visual readout; and,
g. said circuit means including connector means for the receipt of additional signal inputs including temperature introduction means.

4,660,667

MULTI-RANGE LOAD CELL SCALES

Mitsuo Uchimura, and Tsutomu Masuyama, both of Numazu, Japan, assignors to Tokyo Electric Co. Ltd., Tokyo, Japan

Filed Apr. 30, 1986, Ser. No. 858,066
Claims priority, application Japan, May 15, 1985, 60-103529
Int. Cl.[4] G01G *23/14, 3/14*
U.S. Cl. 177—164 **7 Claims**



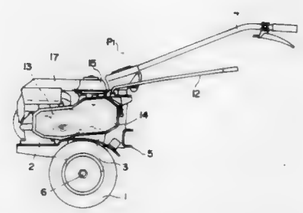
1. A multi-range load cell scale comprising:
light- and heavy-range load cells for producing output signals according to load weight;
weight data generating means for converting the output signals output from said light- and heavy-range load cells into weight data;
display means; and
data processing means for receiving the weight data from said weight data generating means and for selectively displaying on said display means the weight data based on one of the output signals from said light- and heavy-range load cells according to the weight data based on the output signal from one of said light- and heavy-range load cells being above or below a predetermined value, and for displaying the weight data equal to a predetermined value when the weight data based on the output signal from the one of said light- and heavy-range load cells is not less than said predetermined value and the weight data based on the output signal from said heavy-range weighing load cell is not greater than said predetermined value.

4,660,668

SELF-PROPELLED AGRICULTURAL MACHINE

Tokio Horikawa, Sakai; Mitsuaki Sawai, Habikino; Hisatake Fujioka, Kawachinagano; Nobumasa Kawashima, Kishiwada, and Nobuhide Yanagawa, Osaka, all of Japan, assignors to Kubota Ltd., Osaki, Japan

Filed Oct. 21, 1985, Ser. No. 789,766
Claims priority, application Japan, Jan. 11, 1985, 60-3647
Int. Cl.[4] B62D *51/06*
U.S. Cl. 180—19.1 **7 Claims**



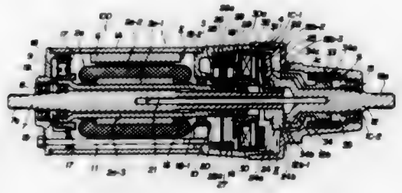
1. A self-propelled agricultural machine comprising:
a transmission case housing a transmission mechanism;
transmission means disposed laterally of said transmission case to transmit engine output to said transmission mechanism;
cover means having an outer lateral face and covering said transmission means;
control means for controlling said transmission mechanism, said control means including motion transmitting means disposed laterally of said transmission case and operatively connected to a manually operable control lever; and
a fuel tank including a bottom face;
wherein said motion transmitting means is disposed between said cover means and said transmission case and has an outer lateral side thereof covered by said outer lateral face of said cover means, and wherein said tank is mounted on top of said transmission case such that said bottom face of said tank overhangs in at least one laterally outward direction from said transmission case, the overhanging portion thereof covering an upper region of said motion transmitting means.

4,660,669

ELECTROMAGNETIC SERVO UNIT

Yasuo Shimizu, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1985, Ser. No. 755,024
Claims priority, application Japan, Jul. 20, 1984, 59-150986
Int. Cl.[4] B62D 5/04
U.S. Cl. 180—79.1 17 Claims



1. An electromagnetic servo unit comprising:
a first shaft and a second shaft;
torque detecting means for detecting a torque exerted on said first shaft so as to generate an output signal responsive to the detected torque, said torque detecting means including an elastic member for elastically connnecting said first shaft and said second shaft with each other;
electric power assist means for generating an assistant torque in accordance with said output signal from said torque detecting means; and
selective coupling means for selectively coupling said second shaft directly with said first shaft for direct torque transmission therebetween or with said electric power assist means for transmission of assistant torque therefrom to said second shaft.

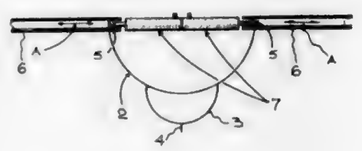
4,660,670

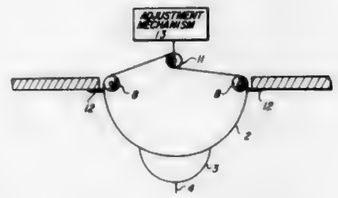
WING-IN-GROUND EFFECT AIR CUSHION VEHICLE

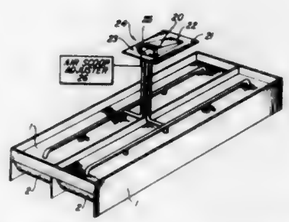
Darryl F. Mattox, Lot 14, Tomago Road, Tomago, N.S.W. 2322, Australia

Continuation of Ser. No. 526,805, Aug. 26, 1983, abandoned. This application May 2, 1986, Ser. No. 859,213
Claims priority, application Australia, Sep. 7, 1982, PF5732
Int. Cl.[4] B63B 1/38
U.S. Cl. 180—117 5 Claims

1. In an air-cushion vehicle of the kind having a flat, rigid platform; a plurality of flat, rigid longitudinal walls attached substantially at right-angles thereto and depending therefrom substantially parallel with the major axis of said platform, an outermost two of said rigid walls being disposed as sidewalls along the respective outer edges of said platform; a plurality of longitudinally-spaced, laterally-aligned arrays of flexible trough-shaped skirts respectively looped with a space therein and fastened via each longitudinal edge thereof with respect to the underside of said platform; a source of pressurized air, said air being admissable, via apertures of fixed size at a relatively high pressure, to said skirts and also being admissable at a relatively lower pressure, via variable-sized openings, to at least four open-bottomed air-cushion chambers each bounded by an adjacent pair of said skirts and by an adjacent pair of said walls;
a remotely-controllable adjustment mechanism capable of varying the vertical dimension of each said flexible trough-shaped skirt, said vertical dimension adjustment mechanism comprising a skirt bar attached to each longitudinal edge of said skirt and adapted to be slid sideways, in a skirt bar guide, in a direction parallel with the major







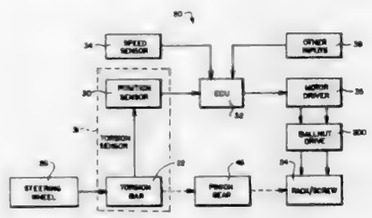
axis of said vehicle so as to vary the fore-and-aft dimension of said skirt and thus the skirt's vertical dimension.

4,660,671

ELECTRIC STEERING GEAR

Michael E. Behr, Brighton; Kenneth P. Wozniak, Farmington Hills; Philip A. Gaubis, Walled Lake; Philip Q. Guest, Jr., Berkley; James L. Graves, Royal Oak, and Thomas J. Wand, Canton, all of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Oct. 23, 1985, Ser. No. 790,376
Int. Cl.[4] B62D 5/04
U.S. Cl. 180—142 24 Claims



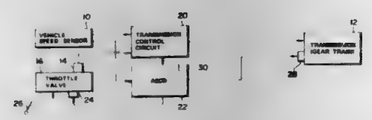
1. A steering assembly for turning the steerable wheels of a vehicle upon rotation of the vehicle steering wheel, said assembly comprising:
means for mechanically coupling the vehicle steering wheel with the steerable wheels of the vehicle;
torsion sensing means for generating a first electric torsion signal and a second electric torsion signal, each said first electric torsion signal and said second electric torsion signal varying as a function of the amount of input torque applied to said steering wheel, said first and second electric torsion signals (i) being at a substantially equal value when no torque is applied to the vehicle steering wheel and (ii) varying oppositely from said substantially equal value upon application of input torque to the steering wheel;
electronic control means connected to said torsion sensing means including means for generating a control signal dependent upon one of said two generated electric torsion signals and means for verifying said control signal with the other of said generated electric torsion signals; and
power assist means for providing steering assist to aid a vehicle operator in a steering maneuver, the amount of assist being responsive to said control signal.

4,660,672

METHOD AND APPARATUS FOR AUTOMATIC TRANSMISSION CRUISE CONTROL

Yuuji Katou, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 15, 1984, Ser. No. 660,962
Claims priority, application Japan, Oct. 15, 1983, 58-193010
Int. Cl.[4] B60K 31/00
U.S. Cl. 180—175 7 Claims



1. A method of automatically controlling the speed of an automotive vehicle having an engine and a transmission, at a preselected target value comprising the steps of:
actuating a vehicle speed control device to control an actuator operatively connected with a throttle valve of said engine in a manner to vary the opening degree of said throttle valve in place of a manually produced signal in a manner to maintain said preselected target speed;
rendering a transmission control circuit which is discrete from said vehicle speed control device and which controls the shifting of said transmission between a plurality of forward speed ratios in accordance with a predetermined shift schedule, incapable of downshifting said transmission from a preselected gear ratio to the next lower one once said transmission control circuit has upshifted said transmission to said predetermined gear ratio irrespective of the changes in vehicle speed and engine load at all times when said speed control device is actuated;
using said vehicle speed control device to induce a downshift from said predetermined gear ratio to the next lower one, if the load on said engine increases to a level whereat the vehicle speed falls a predetermined amount below said target level; and
maintaining said downshift until a predetermined phenomenon occurs.

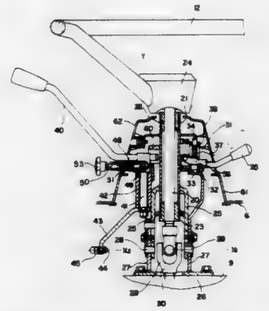
4,660,673

CONTROL APPARATUS FOR VEHICLE

Takashi Yoshii, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Mar. 25, 1985, Ser. No. 716,788
Claims priority, application Japan, May 16, 1984, 59-72484[U]
Int. Cl.[4] B62D 1/16
U.S. Cl. 180—334 10 Claims

1. A control apparatus for a vehicle including a floor, said apparatus comprising;
a steering box (9) projecting upwardly from said floor,
support means (26, 27) mounted on the steering box,
a steering column (21) attached to the support means and tiltable on a first horizontal axis (X1),
a steering wheel stem (20) extending through the steering column,
a steering wheel (12) mounted on an upper end of the steering wheel stem,
a universal joint (29) attached to a lower end of the steering wheel stem and having a point of flexion thereof substantially on the first horizontal axis,
a control shaft (41) disposed adjacent and parallel with the



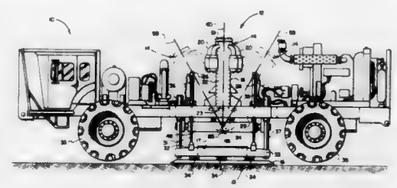
steering column, said control shaft being rotatable to a plurality of positions including neutral,
a hand lever (40) connected to an upper end of the control shaft,
an arm (43) connected to a lower end of the control shaft, and
link means (45) connected at an end thereof to the arm (43) and pivotable on a second horizontal axis (X2) and connected at the other end thereof to a lever 47 of a vehicle control valve (13), the second horizontal axis being substantially coaxial with the first horizontal axis when the steering wheel shaft is in neutral.

4,660,674

MOUNTING AND CONTROL MEANS FOR FULL WAVEFORM SEISMIC SOURCE

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 30, 1984, Ser. No. 676,762
Int. Cl.[4] G01V 1/02
U.S. Cl. 181—113 7 Claims



1. Apparatus for generating combined shear and compressional waves in the earth comprising in combination:
(a) a rigid target plate positionable on the earth,
(b) an upstanding cylindrical housing having an open bottom,
(c) means for supporting said cylindrical housing above said target plate for rotation about two mutually perpendicular horizontal axes,
(d) an impact mass slideably interfitted with said housing for movement axially thereof,

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(e) means for rotatin of said housing about said axes such that the longitudinal axis of said housing lies along a selected path, and

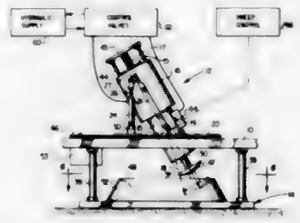
(f) means for accelerating said impact mass downwardly to impact said target plate along said slant path.

4,660,675

VIBRATORY SEISMIC SOURCE FOR GENERATING COMBINED COMPRESSIONAL AND SHEAR WAVES

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 6, 1986, Ser. No. 826,753
Int. Cl.⁴ G01V *1/02*
U.S. Cl. 181—113 **8 Claims**



1. Apparatus for imparting combined compressional and shear wave seismic vibratory signals to the earth comprising:

(a) an earth-contacting base plate for coupling vibrational energy into the earth;

(b) vibrator means for producing reciprocal vibrations along a vibratory axis oriented in a predetermined direction, said vibrator means being supported above and independently of said base plate, in spaced relation thereto;

(c) means for bringing said vibrator means into a position of contact with said base plate; and

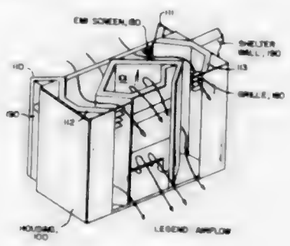
(d) control means for activation of said vibrator means in said position of contact with said base plate, whereby vibrations in said predetermined direction are transferred to said base plate for injection into the earth.

4,660,676

DUCTLESS ACOUSTICAL NOISE ATTENUATOR

Robert H. Eustace, Winter Springs, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 12, 1986, Ser. No. 838,850
Int. Cl.⁴ E04F *17/04*
U.S. Cl. 181—224 **4 Claims**



1. A ductless noise attenuator comprising:

a housing which is mounted between an air conditioning unit and a recipient, said housing conducting an air flow from said air conditioning unit to said recipient and having an inlet with inlet edges which protrude into the housing's interior, said housing also having an outlet with outlet edges which protrude into the housing's interior; and

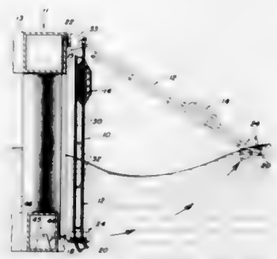
a diamond-shaped core mounted in said housing which blocks line-of-sight soundwaves from the air conditioning unit while allowing the air flow to pass to the recipient, said diamond-shaped core including first and second leading edge sides, first and second trailing edges, and a deflector, said first and second leading edge sides fitting together to form a point which faces the inlet of the housing, said first and second leading edges having an aperture in the point to allow the airflow to enter the diamond-shaped core; said first and second trailing edges being respectively connected to the first and second leading edges at positions between the inlet and outlet edges on the sides of the housing, said first and second leading and trailing edges thereby blocking line-of-sight soundwaves from the air conditioning unit; and said deflector being fixed between said first and second leading and trailing edges at a position aligned with the aperture in the point to block line-of-sight soundwaves from the air conditioning unit.

4,660,677

PERSONNEL EVACUATION APPARATUS FOR AN OFFSHORE PLATFORM

Andrew F. Hunter, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Jul. 28, 1986, Ser. No. 891,510
Int. Cl.⁴ A62B *37/00, 1/20*
U.S. Cl. 182—10 **13 Claims**



1. Apparatus for evacuating personnel from an offshore platform in all weather conditions to a position on the ocean surface a safe distance from said platform said apparatus comprising:

a boat launching ramp having an entry end pivotally attached to said platform in the general vicinity of a deck thereof;

flotation means secured to an opposite exit end of said ramp;

latching means to secure said exit end of said ramp in a stowed position wherein said ramp is disposed generally vertically and said flotation means is located beneath the surface of the ocean;

boat means adapted to be supported and launched by said ramp;

means for releasably securing said boat means within said ramp means adjacent said entry end;

means for releasing said latch means to permit said flotation means to move said launching ramp from its stowed position to a deployed position;

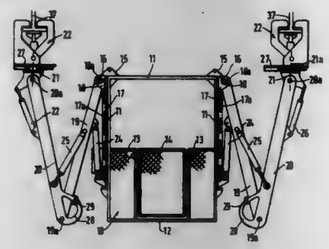
means for releasing said boat securing means, thereby permitting said boat means to slide down said ramp and be launched from the exit end of said ramp onto the surface of the ocean a safe distance from said platform.

4,660,678

SERVICE SUSPENSION BASKET ARRANGEMENT

Gustav Krag, Stavanger, Norway, assignor to Spider A/S, Stavanger, Norway

PCT No. PCT/NO84/00040, § 371 Date May 19, 1986, § 102(e) Date May 19, 1986, PCT Pub. No. WO86/02121, PCT Pub. Date Apr. 10, 1986
PCT Filed Sep. 27, 1984, Ser. No. 871,412
Int. Cl.⁴ E04G *3/16*; B66F *11/04*; B62D *57/02*
U.S. Cl. 182—14 **7 Claims**



1. Service suspension basket arrangement (10) which is adapted to move on rails or on similar mounting means (71, 72) which are secured on a support ramp (70) on an upwardly facing foundation and/or on rails (37) or on similar mounting means which are secured on the under side of a platform deck (79) or on a similar, downwardly facing foundation, characterized in that the service basket (10) is supported, via a number of joint arm-formed, hydraulically pivotable support means (75–78) with associated separate hydraulically operated catch claws (22), on the said rails (37) or similar mounting means (71, 72), a feeler means or a pair of feeler means (64, 65) in each catch claw (22) controlling the operation of the remaining catch claws and/or the support means of the remaining catch claws, so that when the one catch claw assumes an open or released position there is provision for the associated feeler means to block the operation of the remaining catch claws and/or support means of the remaining catch claws.

4,660,679

SAFETY ALARM TRIPOD

Meyer Ostrobrod, 11990 Lockart Rd., Philadelphia, Pa. 19116

Filed Feb. 10, 1986, Ser. No. 827,708
Int. Cl.⁴ A62B *33/00, 35/00*
U.S. Cl. 182—18 **19 Claims**

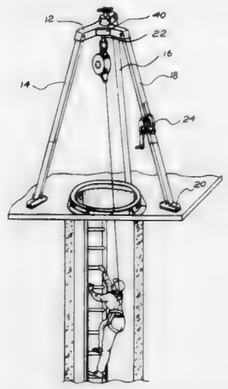
1. A safety alarm tripod comprising:

a substantially horizontally disposed housing;

three legs substantially equally spaced around the perimeter of said housing and extending downwardly and outwardly therefrom;

a support member carried by said housing and extending downwardly from substantially the center thereof between said legs, said support member being adapted to support a weight suspended therefrom;

alarm means within said housing and being connected to said support member, said alarm means being activated to emit



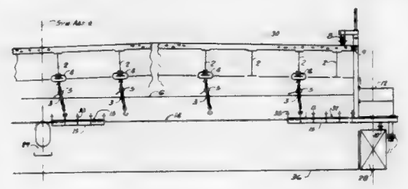
a signal whenever the weight suspended from said support member exceeds a predetermined level.

4,660,680

MEANS AND METHODS FOR ERECTING A WORK PLATFORM UNDER THE DECK OF A STRUCTURE

Prosper L. Potin, 5801 Sylvia Dr., New Orleans, La. 70124

Filed Jan. 23, 1985, Ser. No. 693,965
Int. Cl.⁴ E04G *3/14*
U.S. Cl. 182—36 **14 Claims**



1. A means for erecting a work platform beneath the deck of a structure, comprising:

a. a first working platform traveler, positionable against a structure deck and superstructure so as to resist tilting movement of said first traveler toward the underside of said deck;

b. A second working platform traveler, positionable against said structure deck and said superstructure so as to resist tilting movement of said second traveler toward the underside of said deck, said second traveler being positionable on the opposite side of said deck from said first traveler;

c. a working platform, capable of being readily dismantled, connected between said travelers comprising a plurality of support cables, attachable between said travelers beneath said deck structure, means on said travelers to tautly tension said cables between said travelers; and

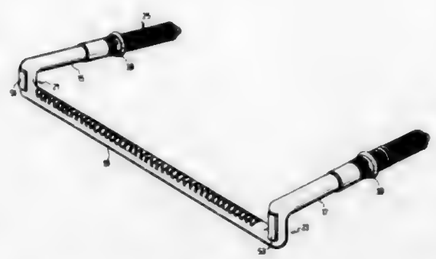
d. at least one plank, attachable to and supported said support cables.

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ANCHOR AND CLIMBING RUNG

Heinrich Zenhausern, Birmensdorferstrasse 134A, CH-8902, Urdorf/Zurich, Switzerland

Filed Sep. 20, 1985, Ser. No. 778,239
Int. Cl.[4] E06C 7/08
U.S. Cl. 182—90 **3 Claims**



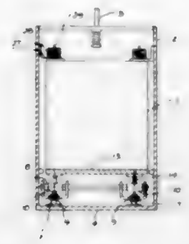
1. A u-shaped climbing rung to be anchored in a bore hole in a wall, the climbing rung comprising two parallel legs each leg having two ends, one end of each leg being connected to a transverse central element or tread spaced a predetrmined distance below the parallel legs and having the other end for anchoring in a wall, the legs and tread being completely encapsulated in a synthetic protective coat having an outer configuration adapted to present each end of the legs remote the tread for anchoring the climbing rung in the wall, each encapsulated end having means for anchoring the end of each leg in a wall comprising an end portion, and a raised annular configuration remote each end of an outside diameter slightly greater than the outside diameter of each encapsulated end proximate the end portion and two soft elastic and tightly fitting sealing collars located on the legs spaced from the end of the legs securely anchored in the wall to frictionally slide along the legs to present a sealing face to an abutting wall deforming when abutting the surface of the wall to accommodate the surface configuration of the wall surrounding the bore hole whereby the combination of the means for securely anchoring the end of each leg in a wall and the sealing collar thereby preclude water and corrosive material from penetrating the bore hole.

4,660,682

LIFT CAR SUPPORT

Mark F. Luinstra, Miranda, and Stephen McGloin, Yarrawarrah, both of Australia, assignors to Elevators Pty. Limited, Waterloo, Australia

Continuation of Ser. No. 549,447, Nov. 4, 1983, abandoned. This application Feb. 19, 1986, Ser. No. 831,076
Claims priority, application Australia, Nov. 10, 1982, PF6740
Int. Cl.[4] B66B 9/00
U.S. Cl. 187—1 R **7 Claims**



1. A support structure for a lift car, comprisinga frame adapted to be connected to a lift hoisting mechanism to support the lift car, first and second pairs of parallel rails arranged substantially horizontally in a parallelogram configuration between the lift car and the frame, and first and second sets of followers arranged to roll or slide on said first and second pairs of rails respectively, said lift car being supported from said frame by way of said rails and followers in a manner such that one pair of rails is supported from the other pair of rails by way of at least one said set of followers and can traverse along the line of the other pair of rails, allowing the lift car to move in any horizontal direction relative to the frame,

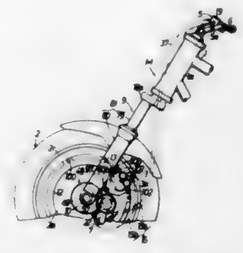
said first pair of rails being mounted on said frame, said second pair of rails being mounted on said first set of followers, and said lift car being mounted on said second set of followers.

4,660,683

BRAKE DEVICE FOR VEHICLES

Tsutomu Hayashi, Tokyo; Takeshi Kawaguchi, and Tetsuo Tsuchida, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1985, Ser. No. 737,032
Claims priority, application Japan, May 22, 1984, 59-103179; May 26, 1984, 59-106917
Int. Cl.[4] B60T 1/06, 8/02
U.S. Cl. 188—18 A **5 Claims**



1. A brake device for vehicles comprising a master cylinder, a wheel brake adapted to be operated by an output hydraulic pressure from said master cylinder to apply a braking force to a wheel, and an antilock control unit provided therewith an inertia type wheel angular deceleration sensor driven by said wheel through a transmission device and adapted for controlling the output hydraulic pressure from said master cylinder in accordance with an output generated from said sensor, said antilock control unit being carried on a support system for said wheel, wherein on one side of said wheel is defined a recess which is concave toward the other side of said wheel from a central rotational plane of a rim of the wheel, and wherein said antilock control unit and transmission device are disposed in said recess.

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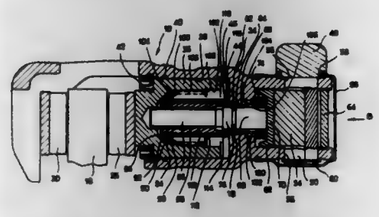
DISC BRAKE WITH AUTOMATIC ADJUSTMENT

Jean-Jacques Carré, Le Raincy, and Pierre Pressaco, La Courneuve, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Continuation of Ser. No. 787,698, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 556,813, Dec. 1, 1983, abandoned. This application Sep. 15, 1986, Ser. No. 908,877
Claims priority, application France, Dec. 23, 1982, 82 21683
Int. Cl.[4] F16D 65/56
U.S. Cl. 188—71.9 **9 Claims**

1. A disc brake with automatic adjustment, of the type comprising a caliper slidingly mounted on a fixed support and supporting a brake motor acting directly on a first friction element and, as a result of reaction via the caliper, on a second friction element, said brake motor comprising a control piston

acting on said first friction element and slideable in a bore of a housing having a stationary bottom wall, the control piston actuatable by hydraulic pressure in a pressure chamber in said bore and by an outer mechanical control device via an automatic adjustment device formed by a screw-and-nut system of reversible pitch having an axis, the adjustment device capable of being actuated as a result of displacement of said control piston by said hydraulic pressure and beyond a predetermined stroke thereof, said screw extending through said bottom wall and having one end opposite said control piston coupled to said mechanical control device, said screw kept immobilized axially in a rest position and in coupling engagement with said mechanical control device by means of a return spring when the mechanical control device is not actuated, and hydraulic pressure actuatable neutralizing means for preventing rotation of said nut relative to said screw of said automatic adjustment device when hydraulic pressure actuating said control piston exceeds a predetermined pressure, the neutralizing means enabling an accurate determination of said predetermined pressure, said neutralizing means comprising a sleeve member connected to said nut for rotation therewith and capable of axial displacement in relation thereto, said sleeve member selectively cooperating with a spring-biased reciprocable annular monitoring piston sealingly mounted coaxial to said screw and having an active end of predetermined effective surface area exposed to the hydraulic pressure in said pressure chamber and independently actuatable relative to the screw to immobilize said sleeve member both in rotation and axial displacement when said predetermined pressure is exceeded.

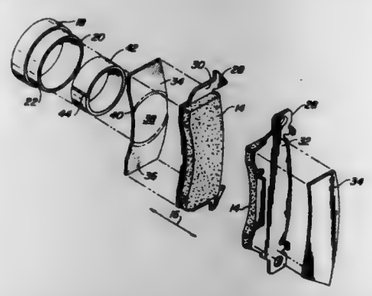


4,660,685

DISC PAD BRAKE SYSTEM

Lloyd M. Thacker, 3 Scottsdale Ct., Lutherville, Md. 21093, and Richard D. Stevenson, 826 Lucky Rd., Severn, Md. 21144

Filed Nov. 25, 1985, Ser. No. 801,585
Int. Cl.[4] F16D 65/02
U.S. Cl. 188—73.37 **17 Claims**



1. A disc pad brake system for longitudinally displacing at least one friction pad into force contact with a rotatively displaceable rotor member, comprising:

(a) at least one piston member having a bore, said piston member being reversibly longitudinally displaceable for displacing said friction pad into contact with said rotating rotor member;

(b) at least one carrier plate member having opposing first and second surfaces, said first surface of said carrier plate member being coupled to said friction pad; and,

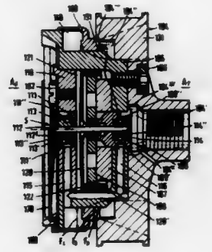
(c) at least one resilient pad member formed of a substantially fluorine substituted alkyl polymer, displaceably secured to said surface of said carrier plate member, said resilient pad member haivng a dome shaped portion defining an apex section which at least partially extends into said bore of said piston member, said piston member for contacting said resilient pad member when said piston member is actuated in said longitudinal direction.

4,660,686

ADJUSTABLE SHOCK ABSORBER, ESPECIALLY FOR MOTOR VEHICLES

Hans Münning; Jürgen Bock; Bernd Oldach; Josef Ladic, all of Cologne; Max-Otto Rasert, Ennepetal; Hugo Emde, Hagen; Dietrich Petzsch, and Johannes J. de Baan, both of Ennepetal, all of Fed. Rep. of Germany, assignors to August Bilstein GmbH & Co KG, Ennepetal, Fed. Rep. of Germany

Filed Sep. 6, 1984, Ser. No. 648,291
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 3334704; Aug. 1, 1984, 3428306
Int. Cl.[4] F16F 9/46, 9/48; B60G 17/08
U.S. Cl. 188—280 **8 Claims**



1. An adjustable shock absorber, particularly for motor vehicles, comprising a cylinder containing a damping fluid, especially a damping liquid, an axially displaceable piston rod extending in sealed manner into the cylinder, and a damping piston which divides said cylinder into two working chamber compartments and is provided with fluid flow passages which produce damping forces, the effective cross section of said passages being controllable by a throttling member and by electromagnetic drive means comprising magnetic circuit means and coil winding means effective on the throttling member, said electromagnetic drive means being mounted in the damping piston immediately adjacent to the fluid flow passages and said throttling member, wherein the throttling member is provided with suitably positioned fluid pressure reaction surfaces to cause displacement thereof in dependence upon the fluid pressure difference between said two working chamber compartments, and wherein the electromagnetic drive means exerts on the throttling member and adjustable restoring force acting in opposition to said displacement, said shock absorber including a pressure reaction chamber on one side of the throttling member, in which the throttling member on its side opposite that facing the reaction chamber, in addition to a first reaction surface which closes off the fluid flow passages, comprises a second reaction surface of substantially the same area which is subjected to the fluid pressure in one of said working chamber compartments which surrounds the throttling member, in which control throttles are incorporated in both of respective fluid connecting conduits leading from the reaction chamber to the two working chamber compartments, said control throttles being reciprocally controllable by a control

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valve which is displaceable in dependance upon the pressure difference between the two working chamber compartments in such a manner that the reaction chamber is connected to the working chamber compartment which is at the then lower fluid pressure to a less throttled degree, and is connected to the working chamber compartment which is at the then higher fluid pressure to a greater throttled degree.

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ENERGY ABSORBERS

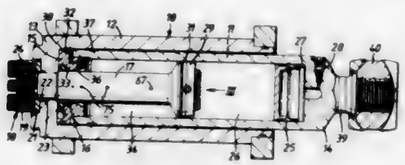
Derrick G. Williams, and John J. Bushnell, both of Warwickshire, United Kingdom, assignors to Oleo International Holding Limited, United Kingdom

Filed Jan. 13, 1986, Ser. No. 818,135

Claims priority, application United Kingdom, Jan. 11, 1985, 8500693

Int. Cl.⁴ F16B *37/08*; F16F *9/48*

U.S. Cl. 188—287 **6 Claims**



1. Railroad vehicle end-of-car cushioning means comprising an energy absorber including a cylinder which is open at one end and closed at the other end; a hollow plunger which is located slidably within the cylinder, said hollow plunger having end walls and an aperture in the end wall that is nearer to the closed end of the cylinder and said hollow plunger being closed at its other end wall; the aperture being at one end of a liquid containing chamber within the plunger; resilient means operable to oppose movement of the plunger into the cylinder and thereby to provide a recoil force; an annular piston head slidable in the liquid containing chamber and mounted at one end of a tube which projects from the closed end of the cylinder through a surrounding cylinder space and the aperture within which it is a sliding fit, the annular piston head having a central aperture in communication with a longitudinally extending passage formed by the interior of the tube, there being a plurality of radially extending apertures formed at axially spaced intervals along the tube, each aperture placing the interior of the tube in communication with one of the surrounding cylinder space and the chamber; and including a plurality of normally-closed valves operable to open to permit flow through them from the annular portion of the chamber that is formed between the annular piston head and the end wall of the hollow plunger in which the aperture is formed to the remainder of that chamber when a predetermined pressure is established in that annular chamber portion, each said normally-closed valve being mounted in a structure which comprises said annular piston head and tube, and having an inlet which communicates via respective conduit means in said structure with a respective one of a plurality of ports which are formed in the outer surface of the tube at axially-spaced intervals along the tube such that they are progressively cut-off from communication with the annular chamber portion during extension of the energy absorber.

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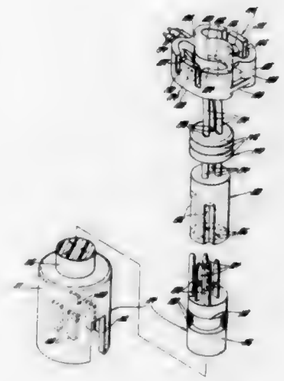
ADAPTIVE RIDE HYDRAULIC DAMPER WITH PISTON ROD DRESS CAP

Andrew M. Spisak, Youngstown, and Robert L. Adduci, Girard, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 24, 1984, Ser. No. 685,460

Int. Cl.⁴ F16F *9/46*

U.S. Cl. 188—299 **3 Claims**



1. A hydraulic damper for connection between sprung and unsprung portions of a wheeled vehicle and operative to dampen the ride motions of the vehicle comprising: an outer support tube operatively connected to one of said portions, a cylinder tube supported within said outer tubular member having a hydraulic fluid therein, a piston operatively mounted in said cylinder tube and having means movable to varying positions to selectively vary and control the flow of fluid therethrough when stroking within said cylinder tube to thereby control the damping characteristics of said damper, a hollow cylindrical piston rod operatively connected to said piston and extending upwardly through the end of said damper for connection with the other of said portions of said vehicle, electrically energizeable actuator means operative mounted within said hollow piston rod for varying said valve means, control means for operating said actuator means, cable means operatively connecting a source of electrical energy to said actuator means, the improvement comprising a cable dress cap adapted to be affixed to the top of said piston rod, said cable dress cap having a central top portion, a pair of arcuate retainer portions extending downwardly from said central portion for insertion into said piston rod, a pair of grooves formed in the walls of said piston rod at the top end thereof, a pair of cable hold down bars extending radially outwardly from said central portion for locking into said grooves for guiding said cables to said actuator, and a skirt carried by said the ends of said bars radially outwardly of said retainer portions and said piston rod, said skirt having a pair of locking tabs to snap lock into said piston rod to inhibit rotation of said dress cap relative to said rod and the axial removal of said dress cap from said rod.

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HYDRAULIC BUFFER

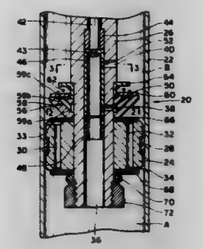
Makoto Hayashi, and Yuji Yokoya, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 21, 1986, Ser. No. 842,447

Claims priority, application Japan, Mar. 22, 1985, 60-39818[U]

Int. Cl.⁴ F16F *9/34*

U.S. Cl. 188—319 **16 Claims**



1. A hydraulic buffer comprising:

a cylinder;

a piston disposed slidably in the cylinder to partition the interior of the cylinder into first and second liquid chambers;

a piston rod connected with the piston and having a first path communicating to the first liquid chamber and extending axially and a second path extending inward from an outer peripheral surface thereof;

a control rod disposed in the piston rod;

a regulating valve operated by the control rod, disposed in a position in the first path facing the second path of the piston rod and having a third path capable of affording communication between the first and the second paths;

a case fixed to a position in the second liquid chamber on an outer peripheral surface of said piston rod and having a fourth path affording communication between the second path of the piston rod and the second liquid chamber; and

a check valve provided in association to the fourth path of said case for blocking liquid flow from the second liquid chamber to the first liquic chamber when the piston rod extends and allowing the liquid to flow from the first liquid chamber to the second liquid chamber when the piston rod contracts.

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DIRECT-COUPLING CONTROL DEVICE FOR TORQUE CONVERTER FOR AUTOMATIC VEHICULAR TRANSMISSION

Masao Nishikawa, Tokyo; Yoshimi Sakurai, Tanashi, and Takashi Aoki, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1984, Ser. No. 661,836

Claims priority, application Japan, Oct. 17, 1983, 58-193903

Int. Cl.⁴ F16H *45/02*; F16D *33/16*

U.S. Cl. 192—3.31 **6 Claims**

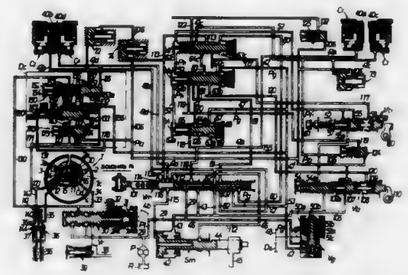
1. A direct-coupling control device for a torque converter in an automatic vehicular transmission having a fluid torque converter provided with an input member and an output member and a direct-coupling mechanism capable of mechanically coupling said input and output members of the torque converter together, said direct-coupling control device comprising:

a valve means disposed in a line connecting between said direct-coupling mechanism and a pressure supply source to control a supply of fluid pressure to said direct-coupling mechanism;

a first fluid pressure output means for outputting a first fluid pressure proportionate to a vehicle speed; and

a second fluid pressure output means for outputting a second fluid pressure proportionate to an engine output; and

wherein said valve means includes a spool valve body having opposite ends and being movable in a casing between an open position at which fluid pressure from said pressure source is allowed to pass to the direct-coupling mechanism for coupling thereof and a closed position at which passage of fluid pressure from said pressure source to said direct-coupling mechanism is cut off, and a plunger slidable in said casing and placed in separable contact with one end of said spool valve body, said first fluid pressure



being applied to said one end of said spool valve body so as to urge said spool valve body towards its open position and said second fluid pressure being applied to said one end via said plunger, whereby when said first fluid pressure becomes higher than the second fluid pressure, said plunger is separated from said spool valve body and said first fluid pressure additionally acts on a working area of the spool valve body on which said second fluid pressure acts when the plunger abuts the spool valve body, thereby increasing the fluid pressure supplied to the direct-coupling mechanism.

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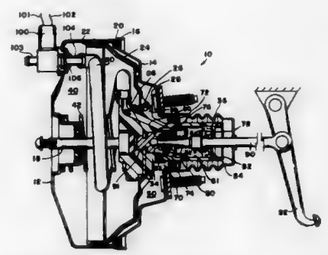
VEHICULAR HILL HOLDER SYSTEM HAVING A CONTROL CIRCUIT RESPONSIVE TO VEHICULAR ATTITUDE, CLUTCH POSITION, AND GEAR POSITION

William K. Messersmith, South Bend, and Keith H. Fulmer, Mishawaka, both of Ind., assignors to Allied Corporation, Morristown, N.J.

Filed May 1, 1985, Ser. No. 729,392

Int. Cl.⁴ B60K *41/24*

U.S. Cl. 192—3 H **12 Claims**



1. A brake booster-assisted braking system operable on an incline to maintain braking of a vehicle when a brake pedal released by the vehicle operator, comprising a casing having a valve disposed within the casing adjacent one end of the casing and actuated by an operatively connected brake pedal, actuating rod means engaging the valve and extending through the other end of the casing to operatively engage brake actuator

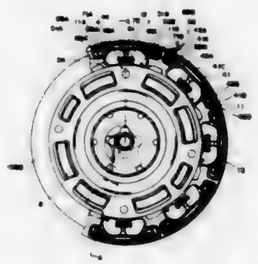
means, a movable wall dividing the casing into a first chamber and a second chamber and acting on said actuating rod means, control valve means for communicating a fluid pressure to the interior of said casing, connection means for connecting said control valve means with said valve, and control circuit means for sensing vehicular parameters and connected to said control valve means, displacement of the operatively connected brake pedal causing actuation of said valve to terminate the communication of a first fluid pressure from said control valve means to said second chamber via the connection means and valve and providing a second fluid pressure to the second chamber to effect a pressure differential between the chambers which causes displacement of said movable wall and actuating rod means to operate the brake actuator means and effect braking of the vehicle, the control circuit means sensing the parameters of vehicular attitude and clutch position and responsively thereto actuating the control valve means which closes to maintain the second fluid pressure in the second chamber via the connection means and valve and maintain the braking of the vehicle upon release of the brake pedal which deactivates the valve, and said control valve means comprising the combination of a check valve and two-way solenoid valve means operating responsively to signals from said control circuit means, operation of the two-way solenoid valve means effecting a continuous supply of the first fluid pressure to the first chamber and closing to contain said second fluid pressure in the second chamber via the connection means and valve.

4,660,692

CENTRIFUGAL AND TORQUE RESPONSIVE CLUTCH

Shiro Sakakibara, and Shigeo Tsuzuki, both of Anjo, Japan, assignors to Aisin-Warner Limited, Anjo, Japan

Filed Mar. 13, 1985, Ser. No. 711,148
Claims priority, application Japan, Apr. 27, 1984, 59-87047
Int. Cl.⁴ F16D *43/22*
U.S. Cl. 192—3.31 **7 Claims**



1. A coupling mechanism including a fluid coupling device with input and otuput elements, and a centrifugal type lock-up clutch for releasably engaging said input and output elements, chartacterized in that said lock-up clutch comprises:
- a cylindrical inner surface formed on said input element;
- a drive plate provided with friction elements displaceable in a radially outward direction for engagement with said cylindrical inner surface,

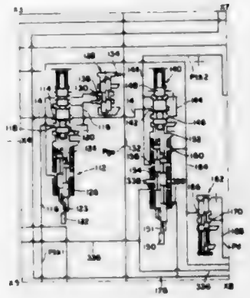
said friction elements having:
- a friction shoe including an arcuate portion with a frictional engaging surface on the outer periphery thereof,
- a resilient retractor means located between said friction shoe and said drive plate to press said friction shoe in a radially inward direction,
- a pair of cam weights pivotally supported on said drive plate, including a curved cam surface, and
- resilient load means located between said curved cam surface and said friction shoe for pressing said friction shoe in a radially outward direction by the engagement of the curved cam surfaces with the resilient load means when said cam weights rotate,
- a driven plate coupled with said output element;
- a damper of a resilient material provided between said drive and driven plates; and
- a biasing means provided on said driven plate for urging said cam weights to press said friction shoe in a radially outward direction between said drive and driven plates.

4,660,693

HYDRAULIC PRESSURE CONTROL APPARATUS FOR USE IN AUTOMATIC TRANSMISSION

Yutaka Taga, Aichi, and Kunio Morisawa, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 25, 1985, Ser. No. 715,821
Claims priority, application Japan, Apr. 4, 1984, 59-65820; Jul. 13, 1984, 59-144381
Int. Cl.⁴ B60K *41/02*
U.S. Cl. 192—0.075 **4 Claims**



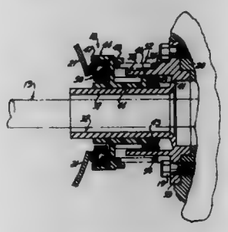
1. A hydraulic pressure control apparatus for use in an automobile transmission, comprising:
- a throttle pressure valve (**140**) having a first port (**142**) to be supplied with a line pressure, a second port (**146**) to provide a throttle pressure, a spool (**148**) for controlling magnitude of connection between said first and said second ports, a first spring for biasing said spool in a first direction to decrease said magnitude of connection between said first and said second ports, a third port for receiving said throttle pressure to apply said throttle pressure to said spool so as to drive said spool in said first direction, a plug (**154**) disposed in axial alignment with said spool to be selectively driven by an external control force from a stop end position thereof toward said spool in a second direction opposite to said first direction when said throttle pressure is to be increased, a second spring (**152**) mounted between said spool and said plug for biasing said spool and said plug away from one another, a fourth port (**339**) to be supplied with a control source pressure, and a fifth port (**338**) to provide a control signal pressure, said plug controlling connection between said fourth and said fifth ports so as to connect said fourth port to said fifth port to provide said control signal pressure when and only when said plug is at said stop end position; and
- a relay valve (**422**) having a sixth port (**428**) to be supplied with said control signal pressure and adapted to control supply of a lock-up clutch actuating hydraulic pressure to a lock-up clutch (**400**) so as to disengage the lock-up clutch when said control signal pressure is supplied to said sixth port.

4,660,694

PREFILLED HYDRAULIC CONTROL APPARATUS FOR MOTOR VEHICLE MECHANICAL CLUTCH

Richard A. Nix; Charles A. Kassin, both of Utica, and Keith V. Leigh-Monstevens, Troy, all of Mich., assignors to Automotive Products plc, Warwickshire, England

Filed Mar. 7, 1985, Ser. No. 709,088
Int. Cl.⁴ F16D *23/14, 25/08*
U.S. Cl. 192—85 CA **6 Claims**



1. A two-part pre-filled hydraulic actuator assembly comprising first and second subassemblies, said first subassembly comprising a cylinder having a closed end and an open end having an edge, a sealing member disposed in said cylinder and facing the closed end of said cylinder with a chamber defined between said sealing member and the closed end of said cylinder, means for introducing fluid into said chamber and for withdrawing fluid from said chamber, and a dummy piston disposed in said cylinder behind said sealing member, said dummy piston forming an interference fit in said cylinder, said dummy piston having a first end portion projecting through the open end of said cylinder and a second end portion in engagement with said sealing member for maintaining said sealing member in said cylinder during filling of said chamber with fluid, said first portion of said dummy piston projecting from said cylinder and comprising graspable means for pulling said dummy piston from said cylinder prior to interconnecting said first and second subassemblies; said second subassembly comprising a working piston reciprocal in said cylinder in response to introduction of fluid into said chamber,

whereby said first and second subassemblies may be supplied to the user with said dummy piston disposed in said cylinder behind said sealing member whereafter, following installation of said first subassembly, said dummy piston may be grasped and removed from said cylinder with said annular seal functioning to preclude leakage of fluid from said chamber whereafter said working piston may be introduced into said cylinder through the open end of said cylinder.

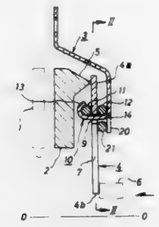
4,660,695

DIAPHRAGM SPRING HOLDING STRUCTURE FOR CLUTCH COVER ASSEMBLY

Yasunobu Fukatani, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Jan. 9, 1985, Ser. No. 690,019
Claims priority, application Japan, Jan. 19, 1984, 59-5891[U]
Int. Cl.⁴ F16D *13/71, 13/50*
U.S. Cl. 192—89 B **4 Claims**

1. A clutch cover assembly comprising a clutch cover having an inside, an outside and an inner periphery, a plurality of circumferentially spaced tabs around its inner periphery, a diaphragm spring disposed on the inside of said clutch cover and having a plurality of slits spaced around said diaphragm spring and aligned with said tabs, each of said tabs passing through a respective one of said slits, a pair of wire rings on on said tabs, said tabs passing through said slits in said diaphragm spring and engaging the inner periphery of each wire ring of said pair of wire rings and engaging a first wire ring of said pair of wire rings between the inside surface of said clutch cover and one surface of said diaphragm spring and engaging the second wire ring of said pair of wire rings with the other surface of said diaphragm spring, said clutch cover having projections intermediate said tabs and projecting radially inwardly at the inner periphery of said cover, a removable spacer ring between said projections and said diaphragm



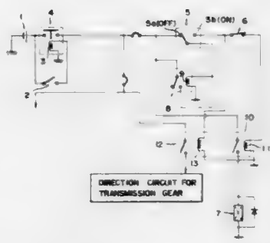
spring and extending around the inner periphery of said clutch cover between said cover projections and said diaphragm spring, said removable spacer ring, said tabs and said wire rings compressing said diaphragm spring and holding said diaphragm spring in compressed position on said clutch cover.

4,660,696

BRAKE SYSTEM FOR USE IN A CONSTRUCTION VEHICLE

Kohei Kusaka, Sayama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 10, 1985, Ser. No. 732,766
Claims priority, application Japan, May 14, 1984, 59-094515
Int. Cl.⁴ B60K *41/26*
U.S. Cl. 192—4 A **4 Claims**



1. A brake system for a construction vehicle, comprising:
- (a) a main switch;
- (b) an emergency brake switch and a solenoid valve for a parking brake which are connected in series to a power source via said main switch one after the other;
- (c) a parking brake switch connected in series between said main switch and said emergency brake switch for energizing said solenoid valve to deactuate said parking brake when it has been turned on;
- (d) a holding relay having a solenoid which is energized if said parking brake switch is turned off, and thereby sets said holding relay in operation to hold said holding relay in a position in which an electric current can flow therethrough and to allow an electric current to flow through said parking brake switch if said parking brake switch is subsequently turned on;
- (e) a parking brake relay connected between a battery relay and said solenoid valve and having a solenoid which is energized if said emergency brake swtich is turned on when said parking brake switch is in said position; and
- (f) a neutralizer relay connected between said battery relay and a direction circuit for a transmission gear in said

vehicle and having a solenoid which is energized when said parking brake switch is in said position.

4,660,697

SLIP CLUTCH DEVICE CONTROL METHOD

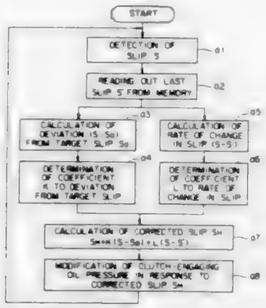
Haruaki Yoneda, Kyoto, and Takeo Hiramatsu, Nagaokakyo, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Nippon Jidosha Eng. Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 12, 1985, Ser. No. 764,649

Claims priority, application Japan, Aug. 17, 1984, 59-171703

Int. Cl.[4] B60K *41/28*

U.S. Cl. 192—0.033 **4 Claims**



1. A slip clutch device control method for controlling the slip in a clutch for joining and separating an input shaft and an output shaft, comprising the steps of:

detecting a slip in the clutch;

calculating a time change in the said slip;

calculating a slip deviation between a predetermined target slip and the said slip; and

feedback-controlling the engaging force of the clutch in proportion to the calculated quantity of the time change in the said slip and the calculated slip deviation so that the slip in the clutch is caused to get near to the target slip.

4,660,698

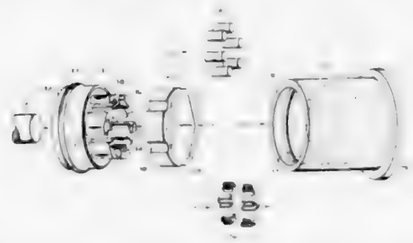
ONE WAY CLUTCH

Osamu Miura, Shiraoka, Japan, assignor to Tok Bearing Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 488,125, Apr. 25, 1983, abandoned. This application Apr. 25, 1985, Ser. No. 727,123

Int. Cl.[4] F16D *41/06*

U.S. Cl. 192—45 **20 Claims**



1. A one way clutch comprising an outer member integrally formed of a polymeric resin composition rotatable about a longitudinal axis and having formed therein a longitudinal cavity open at an end thereof, a sleeve of a relatively hard material located in said cavity and interlocked and rotatable with said outer member and having on its inside peripheral face a plurality of circumferentially spaced similarly directed circumferentially radially inclined wedge surfaces, an integrally formed cage member projecting into said cavity and including an outer base section and a plurality of circumferentially spaced inwardly directed longitudinal columns delineating retainer spaces registering with respective wedge surfaces, said cage and outer members having integrally formed therewith radially relatively resiliently separable complementary fastening means interlocking said members in assembled condition against relative longitudinal movement, a roller element disposed and circumferentially movable in each of said retainer spaces and a shaft coaxially registering with said cage member, the opposite faces of said roller elements confronting the surface of said shaft and respective sleeve wedge surfaces.

4,660,699

SYSTEM FOR CONTROLLING THE CLUTCH TORQUE OF AN ELECTROMAGNETIC CLUTCH FOR VEHICLES

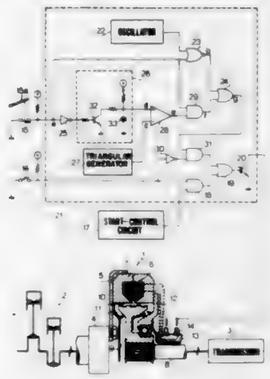
Ryuzo Sakakiyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1984, Ser. No. 685,283

Claims priority, application Japan, Dec. 27, 1983, 58-251024

Int. Cl.[4] F16D *27/16, 37/02*; B60K *41/02*

U.S. Cl. 192—0.075 **6 Claims**



1. A system for controlling clutch torque for an electromagnetic clutch for a vehicle having an accelerator pedal for accelerating an engine to drive the vehicle, comprising

accelerator switch means for producing a first signal of one logic level when the acelerator pedal is released and for producing a second signal of another logic level when the accelerator pedal is depressed,

switching means for controlling clutch current passing through a coil of the electromagnetic clutch so as to control clutch torque thereof,

first means responsive to the first signal of the accelerator switch means for producing a first control signal for controlling the switching means so as to decrease the clutch torque to a first low value greater than zero,

second means responsive to the second signal for producing a second control signal which controls the switching means so as to decrease the clutch torque to a second low value lower than the first low value, and thereafter to gradually increase the clutch torque to a rated value.

4,660,700

FRICTION CLUTCH AND METHOD OF ASSEMBLING THE SAME

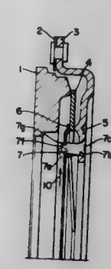
Paul Maucher, Sasbach, and Lothar Huber, Bühl/Baden, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Continuation of Ser. No. 81,924, Oct. 4, 1979, abandoned. This application Jan. 27, 1982, Ser. No. 343,209

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 28432895

Int. Cl.[4] F16D *13/50*

U.S. Cl. 192—89 B **22 Claims**



1. A friction clutch, comprising a clutch cover; a diaphragm spring having cutouts and first and second sides respectively facing toward and away from said cover; and a device for tiltably coupling said spring to said cover, including a first support at said first side and a circular second support at said second side of said spring, and holding means consisting of the material of said cover and projecting through said cutouts, said holding means including chordally or circumferentially cut-out sections of said cover disposed in planes extending at least substantially radially of said cover and at right angles to the plane of rotation thereof as a result of bending of each section along a line which extends substantially radially of the spring, at least a portion of each of said sections being bent with reference to said cover along a second line which is inclined with reference to the respective first line so as to hold said second support and such portions of said sections extending axially beyond and engaging that side of said second support which faces away from said cover, the thickness of each of said holding means, as considered in the respective radially extending plane, exceeding its width, as considered in the circumferential direction of the spring.

4,660,701

ASSEMBLY OF A CLUTCH RELEASE BEARING, ESPECIALLY FOR A MOTOR VEHICLE

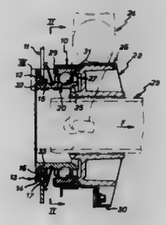
Philippe Lassiaz, Boulogne, and Bernard Mallet, Wittelsheim, both of France, assignors to Valeo, Paris, France

Filed Apr. 10, 1987, Ser. No. 598,819

Claims priority, application France, Apr. 11, 1983, 83 05848

Int. Cl.[4] F16D *23/14*

U.S. Cl. 192—98 **13 Claims**



1. A coupling device for coupling a pull-type clutch release bearing to a pull-operated clutch disengagement device having an inner surface, said coupling device comprising a gripping member for operative engagement with the inner surface of the disengaging device, an engagement member forming part of the clutch release bearing and having a rigid portion, a radially deformable annular fixing ring for defining an axial connecting between said gripping member and said engagement member, a radially opening annular retaining groove being defined by the rigid portion of said engagement member, said fixing ring being normally partially received in said retaining groove and retractable into said retaining groove for assembly of the coupling device, said gripping member having a transverse driving bearing surface defining an axial abutment for said fixing ring during clutch operation, said retaining groove having an oblique flank extending radially and axially away from an opposite flank of said retaining groove in the direction of the inner side of said disengaging device, said oblique flank being disposed axially opposite said driving bearing surface in relation to said fixing ring, said fixing ring being axially abuttable against said opposite flank for assembly of the coupling device and axially wedged between said driving bearing surface and said oblique flank during clutch operation.

4,660,702

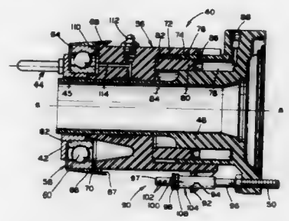
CLUTCH RELEASE BEARING

Richard A. Flotow, Butler, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Apr. 24, 1985, Ser. No. 726,573

Int. Cl.[4] F16D *25/08, 13/58*

U.S. Cl. 192—98 **8 Claims**



2. In a friction clutch including a tubular support fixed at one end, a bearing carrier defining an axis and being axially movable along said support, a constant running clutch release bearing member fixed to one end of said carrier and spaced from said fixed end of said support; an improvement comprising means for providing a limit in axial travel of said bearing member in a direction away from said end of said fixed support, said means comprising an elongated shaft threaded at one end and fixed to said tubular support and having a radially projecting structure fixed to an opposing unthreaded end, a sleeve positioned over said shaft, said sleeve including a radially extending member and being axially slidable over said shaft, a radially projecting flange fixed to said carrier, said flange containing an opening through which said shaft and sleeve extend, whereby said radially projecting structure is disposed for making abutting contact with said flange through said radially extending member to limit said axial travel at a predetermined limit of clutch stroke, and wherein said radially extending member of said sleeve is disposed for making abutting contact with said radially projecting flange of said carrier, said sleeve further comprising visually identifiable markings thereon to indicate amount of clutch wear.

4,660,703

METHOD AND APPARATUS FOR MACHINE SAFETY

Nevio Filcich, 33 Fyfe Road, Kellyville, New South Wales 2153, and Robert A. T. Owen, Cabramatta, both of Australia, assignors to Nevio Filcich, Kellyville, Australia

Filed Nov. 6, 1984, Ser. No. 668,819
Claims priority, application Australia, Nov. 7, 1983, PG2240
Int. Cl.[4] F16D *13/14*
U.S. Cl. 192—130 13 Claims



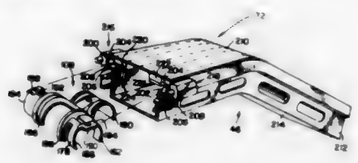
1. A method of providing safety protection for machines having a pressing tool reciprocally movable along a path towards and away from a workpiece, said method comprising the steps of locating at least one first stationary beam of electromagnetic radiation adjacent to said path and across the access to said path, locating a second stationary beam of electromagnetic radiation in said path a predetermined distance from said workpiece, interrupting the movement of said tool towards said workpiece if said at least one first beam is interrupted prior to the interruption of any other beam, and permitting the completion of the movement of said tool towards said workpiece only if said second beam is interrupted prior to the interruption of any other beam.

4,660,704

WEAPON SYSTEM

Richard S. LeBlanc, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 680,799, Dec. 13, 1984, Pat. No. 4,574,683, which is a continuation of Ser. No. 437,853, Oct. 29, 1982, abandoned. This application Aug. 2, 1985, Ser. No. 761,479
Int. Cl.[4] B65G *11/10, 11/00*
U.S. Cl. 193—38 1 Claim



1. A guide chute for guiding ammunition links after the ammunition rounds have been fired and the brass ejected therefrom, each link having a generally cylindrical shape, including an outer cylinder surface and two opposing ends, opposing guide tab members protruding longitudinally from the ends and having raised portions raised from the cylindrical surface, and a connecting means for removably connecting adjacent links positioned so that their longitudinal axis are generally parallel, said guide chute having a generally rectangular passageway for said links defined by an upper skin, a lower skin and a pair of laterally spaced side panels,

a pair of spaced opposed elongated U-shaped channels formed in said pair of side panels in which the tab members slide,

said pair of elongated U-shaped channels defining an elongated arc shape having a center of curvature, each of said pair of U-shaped channels being defined by a vertical end surface and upper and lower inner surfaces,

guide strip means associated with said pair of U-shaped channels and having a contact surface engaging the raised portions of the guide tab members when the tab members are positioned in said channels and guiding the tab members toward said center of curvature,

said guide strip means comprising a pair of arcuate shaped members depending from and attached to said upper skin so that the contact surface of each of said guide strip contacting the raised portions of the links is positioned below the plane of upper skin and closer to the center of the guide chute than is the upper inner surface of said associated U-shaped channel.

4,660,705

COIN DISCRIMINATION APPARATUS

Osamu Kai, Tokyo; Takashi Oyamada, Kanagawa, and Shin Iwabuchi, Tokyo, all of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed May 24, 1985, Ser. No. 738,124
Claims priority, application Japan, Jun. 8, 1984, 59-116624
Int. Cl.[4] G07D *5/08*
U.S. Cl. 194—318 16 Claims



1. A coin discrimination apparatus comprising: detecting means for detecting as an electrical signal a physical characteristic of a coin; an analog-to-digital converter for converting an output of said detecting means to a digital address signal; a memory device for receiving said address signal from said analog-to-digital converter and for storing a multi-bit binary signal for discriminating said physical characteristic in bit positions corresponding to a denomination of the coin at each address for each of the physical characteristics; and discriminating means for determining the authenticity of the coin from the bit position values of the multi-bit signal read from said memory device by said address signal, wherein said memory device is accessed by the digital address signal from said analog-to-digital converter as a read signal and allows readout of the accessed content as a signal representing authenticity of the coin.

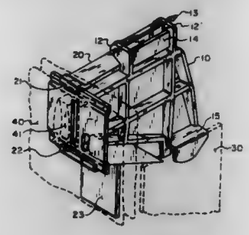
4,660,706

COIN RECEIVING MECHANISM HAVING A SLIDEABLE DOOR TO PREVENT COIN INSERTION AFTER STUFFING

William M. Wollet, Huntsville, Ala., assignor to GTE Communication Systems Corporation, Northlake, Ill.

Filed Oct. 21, 1985, Ser. No. 789,693
Int. Cl.[4] G07F *1/02*
U.S. Cl. 194—351 5 Claims

1. Apparatus for preventing the deposit of coins through a coin receiving opening into a coin receiving mechanism of a coin operated device, after said mechanism has been stuffed with foreign matter, said apparatus comprising: a slideable door positioned between said coin receiving opening and said coin receiving mechanism, and including an opening therethrough normally aligned with said coin receiving opening; coupling means connecting said coin receiving mechanism to said door, operated in response to the stuffing of foreign matter into said coin receiving mechanism through said coin receiving opening, to slide said door in a direction so as to misalign said openings whereby the deposit of coins into said coin receiving mechanism is prevented; said coin receiving mechanism including a wall portion; and a door portion pivotly fastened to said wall portion and operated in response to stuffing of foreign matter into said coin receiving mechanism to cause said door portion to move away from said wall portion in an arcuate manner about said pivot.

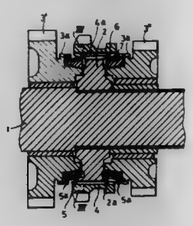


4,660,707

INERTIA LOCK TYPE SYNCHRONOUS CLUTCH MECHANISM

Nishimura Sadanori, Saitama, and Kudo Satoru, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1985, Ser. No. 745,005
Claims priority, application Japan, Jan. 14, 1984, 59-120741; Jun. 14, 1984, 59-120743
Int. Cl.[4] F16D *23/06*
U.S. Cl. 192—53 F 3 Claims



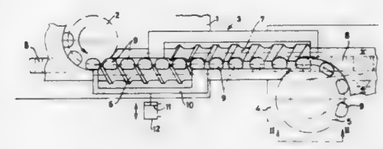
1. An inertia lock type synchronous clutch mechanism in which elastic ring members on blocking rings are engaged by a plurality of sloped circumferential cam portions protruding from the inner circumference of a shift sleeve splined to a clutch hub so that said blocking rings are moved axially into frictional engagement with tapered cone portions of synchronized gears by force applied through said elastic ring members by the axial shifting action of said sleeve, the improvement comprising, each of said elastic ring members is formed at a plurality of circumferential portions corresponding to the respective said cam portions with outwardly extending elastic elements which can be elastically deformed in the radial direction to constrict each of said elastic ring members.

4,660,708

BOTTLE FEEDING MACHINERY

Jozsef Willerding, Driebergen, Netherlands, assignor to Stork Bepak B.V., Utrecht, Netherlands

Filed Apr. 20, 1984, Ser. No. 602,387
Claims priority, application Netherlands, Apr. 22, 1983, 8301427
Int. Cl.[4] B65G *33/06, 43/08, 47/30*
U.S. Cl. 198—341 5 Claims



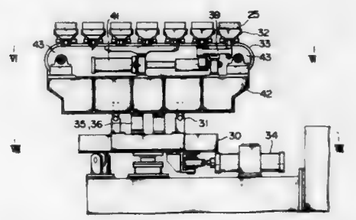
1. A device for connecting the outlet of a first handling machine, having a delivery star wheel, and in which a series of objects are adapted to be delivered to an inlet star wheel of a second handling machine, said device comprising first and second parallel classifying worms disposed at some distance from one another and partially overlapping one another, one of said worms adjoining said outlet of the first machine and the other of said worms adjoining said inlet of the second machine, and a conveyor belt provided between said classifying worms for supporting and advancing said series of objects, a disengageable synchronous coupling disposed between said machines and said classifying worms, said second machine with the inlet coupled thereto having a separate creep-speed drive, means for positively displacing said first classifying worm transversely to its longitudinal direction so that said first classifying worm is positively displaced to an inoperative position away from contact with said objects so as to permit the accumulation of said series of objects should a disturbance, such as an interruption, occur at said second handling machine, and in the area of said first classifying worm, a guide rail is disposed along said conveyor belt for guiding said series of objects and preventing said series of objects from being pushed off said conveyor belt.

4,660,709

ENTIRELY AUTOMATIC, COLD BOX TYPE MACHINE FOR MOLDING AN INTEGRAL CONNECTING CORE

Kazuo Kawai, Toyonaka; Sumikazu Kawai, and Seiji Katashima, both of Amagasaki, all of Japan, assignors to Naniwa Products Co., Ltd., Japan

Division of Ser. No. 486,938, Apr. 20, 1983, Pat. No. 4,559,989. This application Feb. 26, 1985, Ser. No. 705,791
Int. Cl.[4] B65G *47/00*
U.S. Cl. 198—339.1 1 Claim



1. A connecting core feeding apparatus for an entirely automatic, cold box type machine for molding an integral connecting core, comprising:

an underframe;

two feeding means mounted in parallel on said underframe for longitudinally feeding a plurality of connecting core

holders to a pickup position with each said connecting core holder holding a plurality of cores laterally arranged thereon, each said feeding means including (a) endless traverse chain mounting means for mounting the plurality of connecting core holders disengagably thereto, (b) a hook cylinder for selectively engaging one of said connecting core holders, and (c) a chain traverse cylinder to which said hook cylinder is attached which reciprocally moves said hook cylinder parallel to the direction of movement of the respective said feeding means whereby said connecting core holders are successively advanced along said respective feeding means to the pickup position;

rail mounting means for mounting said underframe for lateral movement of the connecting core holders of both said feeding means;

a rail traverse cylinder means for moving said underframe along said rail mounting means such that cores on the core holder located at the pickup position are successively moved laterally to a pickup point;

a rotary table on which said rail mounting means is located, said rotary table being mounted for rotation about a plane parallel to the plane of movement of both said feeding means; and

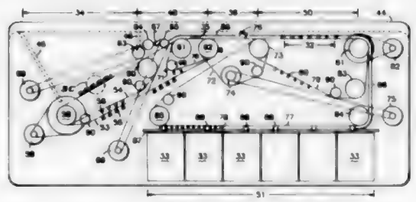
a rotary means for rotating said rotary table 180° whereby each said feeding means exchanges places with the other said feeding means.

4,660,710

INTEGRATED CIRCUIT SLEEVE HANDLER

Mavin C. Swapp, and Milo W. Frisbie, both of Mesa, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jan. 3, 1986, Ser. No. 815,840
Int. Cl.⁴ B65G *47/24*
U.S. Cl. 198—397 **15 Claims**



1. An integrated circuit sleeve handler comprising:

an input hopper for receiving a plurality of integrated circuit sleeves;

first conveyor means for sequentially removing individual sleeves from said input hopper and for moving said sleeves to and past a sleeve unloading station;

orientation means for uniformly orienting said individual sleeves while said sleeves are carried by said first conveyor means;

second conveyor means for cooperatively engaging said individual, uniformly oriented sleeves with said first conveyor means so as to precisely align each said sleeve with said sleeve unloading station;

buffer means for receiving empty sleeves from said first and second conveyor means and for holding said empty sleeves;

third conveyor means for sequentially receiving individual empty sleeves from said buffer means, for carrying said empty sleeves to and past at least one sleeve loading station and for carrying filled sleeves from said at least one loading station to at least one output station;

fourth conveyor means for cooperatively engaging said empty sleeves with said third conveyor means so as to precisely align said empty sleeves with said at least one sleeve loading station; and

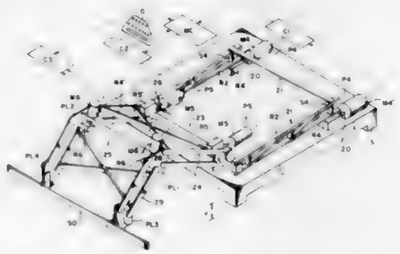
output means for removing filled sleeves from said third conveyor means and for placing said filled sleeves into at least one output bin.

4,660,711

ARTICLE TRANSFERENCE SYSTEM AND APPARATUS

Antonio C. Alonso; Luis L. Alvarez-Icaza, and Roberto R. Canales, all of Monterrey, Mexico, assignors to Vitro Tec Fideicomiso, Monterrey, Mexico

Continuation of Ser. No. 305,683, Sep. 25, 1981, abandoned. This application Jul. 18, 1984, Ser. No. 631,523
Claims priority, application Mexico, Sep. 26, 1980, 184116
Int. Cl.⁴ B65G *25/00*
U.S. Cl. 198—430 **5 Claims**



1. Apparatus for transferring rows of articles from a cross conveyor, across dead plates, to a linear conveyor of a peripheral unit such as a lehr, comprising:

a base of adjustable height adjacent to the cross conveyor;

a first parallelogram frame having first and second ends articulated at its corners and pivotally supported by the two corners of its first end on said base for bilateral movement of its second end parallel to said base;

first drive means mounted on said base and connected to said first end of said frame for imparting bilateral movement to the second end of said frame;

second and third parallelogram frames parallel to each other, articulated at their corners and having first and second ends, coupled at their first ends to the second end of said first frame for bilateral movement of their second ends vertically with respect to said base;

second drive means coupled to the first end of at least one of said second and third frames for imparting vertical bilateral movement of the second end of said frames;

fourth and fifth parallelogram frames parallel to each other, articulated at their corners, having first and second ends and coupled at their first ends to the second ends of said third and fourth frames for bilateral movement of their second ends vertically with respect to said base;

third drive means coupled to the first end of at least one of said fourth and fifth frames for imparting bilateral movement of the second ends thereof vertically with respect to said base;

an article pusher bar coupled to the second end of said fourth and fifth frames; and

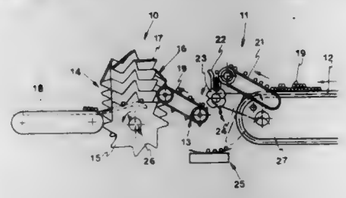
control means controlling said first, second and third drive means in order to provide the desired transfer path of the pusher bar while maintaining a desired vertical orientation of said pusher bar with respect to said base.

4,660,712

SEPARATOR DEVICE FOR BARS

Archimede Braidotti, Buttrio; Reazo Mini, Pozzuolo Del Friuli, and Giancarlo Roseano, Buttrio, all of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Jun. 13, 1985, Ser. No. 744,327
Claims priority, application Italy, Jun. 13, 1984, 83368 A/84
Int. Cl.⁴ B65G *47/14, 47/31, 47/84;* G06M *7/00*
U.S. Cl. 198—434 **9 Claims**



1. Apparatus for separating individual elongated elements from a group of elongated elements carried along a conveyor and disposed generally transversely to the carrying direction, comprising:

a separator means comprising an axis having upper and lower ends, inclined with respect to the plane of the conveyor and disposed transversely to the carrying direction, and first and second element accepting means on the axis, said first element accepting means being lower than said second element accepting means;

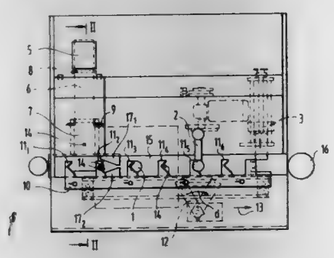
elevator means for delivering one end of an elongated element to the first element accepting means, said first element accepting means engaging the one end of the element before the second element accepting means engages the element.

4,660,713

TRANSPOT UNIT FOR TABLETS

Reiner Kaminski, Rodgau, Fed. Rep. of Germany, assignor to Erweka Apparatebau GmbH, Heusenstamm, Fed. Rep. of Germany

PCT No. PCT/EP85/00025, § 371 Date Sep. 9, 1985, § 102(e) Date Sep. 9, 1985, PCT Pub. No. WO85/03278, PCT Pub. Date Aug. 1, 1985
PCT Filed Jan. 29, 1985, Ser. No. 774,587
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1984, 8402581[U]
Int. Cl.⁴ B65G *47/12*
U.S. Cl. 198—443 **3 Claims**



1. A transport unit for transporting tablets fed to said transport unit by a filling unit, said transport unit comprising

a horizontal guiding track along which the tablets are to be transported to tablet testing stations, packing units, etc.,

a rake having a plurality of V-shaped forks, each of said forks having a tablet transporting point,

an operating means for operating said rake to transport the tablets on said horizontal guide track,

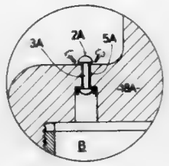
two openings in said horizontal guiding track which openings are situated on either side of the area of said horizontal guiding track swept by said points of said V-shaped forks, the minimum distance between said openings being dimensioned in a way that tablets disposed at said points of said V-shaped forks during transport are transported on said horizontal guiding track between said openings whereas tablets not disposed at said points of said V-shaped forks during transport fall through said openings.

4,660,714

SAFETY GAS CONTAINER

Kenji Suzuki, Izumishi, and Yoshinori Ito, Iwatsukishi, both of Japan, assignors to Kabushiki Kaisha Asahi Seisakusho, Saitamaken, Japan

Filed Mar. 10, 1986, Ser. No. 837,761
Claims priority, application Japan, May 14, 1985, 60-102300
Int. Cl.⁴ F17C *1/14*
U.S. Cl. 206—0.6 **8 Claims**



1. A safety gas container permitting the content to escape at an abnormally elevated temperature, the container comprising:

a valve member made of a shape memory alloy, the valve member having a top head and a bottom head with a stem portion having a relatively small diameter therebetween;

wherein the valve member is fitted in a gas passage way of the container;

wherein the shape memory alloy is previously made to remember a smaller shape at a specific temperature; and

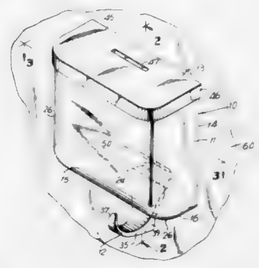
whereby the valve member is diminished in size in response to a rise in the ambient temperature above the specific temperature so that gaps occur between the valve member and the inside wall of the gas passageway.

4,660,715

MULTIPLE FUNCTION MAGNETIC UTILITY CUP

Arleen R. Anastos, Yorktown Heights, N.Y., assignor to Arjon Mfg. Corporation, Hillside, N.J.

Filed Nov. 4, 1985, Ser. No. 796,210
Int. Cl.⁴ A07F *5/08*
U.S. Cl. 206—0.8 **8 Claims**



1. A utility cup comprising: a cup having a rear wall, a forward wall and a bottom wall, and wherein the rear wall is

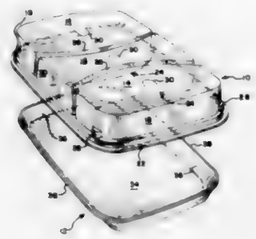
formed with a flat portion, a magnet, and means for retaining said magnet in said rear wall flat portion, so that the cup is magnetically secured to a ferro-metal surface, and a hook, said cup including means for disconnectably connecting said hook, and said hook including means for disconnectably connecting said hook to said cup, said hook means for connecting said hook comprising a flange extending upwardly from the hook, said flange comprising a rear wall flat portion, and with said hook connected to said cup said flange is disposed between the cup and the ferro-metal surface with the hook rear wall flat portion flush with the cup rear wall flat portion, so that the hook is adjacent to and extends downwardly from the bottom wall and forwardly of said rear wall flat portions.

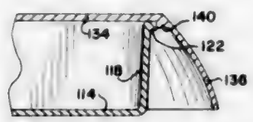
4,660,716

PACKAGING ARRANGEMENT FOR PREPARING AND SERVING FOOD PRODUCTS

Michael J. McMahon, Palatine, and Leonard E. Johnson, Buffalo Grove, both of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Sep. 26, 1985, Ser. No. 780,424
Int. Cl.⁴ B65D *25/04*
U.S. Cl. 206—216 **7 Claims**





1. An invertible packaging arrangement for preparing and serving a plurality of food products, comprising:

a partitioned tray including substantially planar base means, and sidewall means integral with said base means and extending upwardly therefrom, said partitioned tray further including at least one upstanding, integral partition member extending upwardly from said base means, said partition member being integral with said sidewall means, and extending upwardly from said base means beyond said upstanding sidewall means, said partition member together with said sidewall means and said base means defining a plurality of cavities for respectively receiving food products therein;

a combination covering and serving member sized to be coextensive with said tray and having a central substantially planar portion, and an annular rim portion extending away from said central portion, said central planar portion being substantially planar throughout the extent thereof defined by said annular rim portion; and

means for releasably securing said covering and serving member in superposed relationship to said partitioned tray, said partition member extending into said covering and serving member when said covering and serving member is secured to said partitioned tray, said partition member having an uninterrupted upper free edge portion complemental to the interior configuration of said combination covering and serving member defined by said central planar portion and said annular rim portion, said partition member cooperating with said combination covering and serving member to retain said food products in the respective ones of said plural cavities;

whereby the food products in the plural cavities defined by said partitioned tray can be transferred from said cavities onto said covering and serving member by inversion of said packaging arrangement and without separation of said partitioned tray from said covering and serving member.

7. An invertible packaging arrangement for substantially simultaneous preparing and serving of a plurality of food products, comprising:

a combination covering and serving member having a substantially planar central portion, and an annular rim portion extending away and depending from said central portion; and

a partitioned tray sized to substantially nest within said combination covering and serving member and including substantially planar base means comprising a plurality of base panels, and sidewall means integral with said base means, extending upwardly therefrom and terminating in a peripheral lip, said partitioned tray further including at least one integral, upstanding partition member extending upwardly from said base means, said partition member being integral with said sidewall means whereby said partitioned tray defines a plurality of cavities for respectively receiving the food products therein, the lower extend of each said cavity being defined by a respective one of said base panels, each said partition member comprising a pair of adjacent partition walls joined at their upper edges to each other and respectively joined at their lower edges to the base panels defining adjacent ones of said cavities;

including means for releasably securing said covering and serving member in superposed relation to said partitioned tray comprising a recess defined by said covering and serving member for releasably receiving said lip, said recess being spaced inwardly from the periphery of said covering and serving member and extending to the junction between said planar central portion and said annular rim portion of said combination covering and serving member, the vertical extent of said annular rim being substantially equal to the vertical extent of said sidewall means of said partitioned tray, so that partitioned tray fits and nests generally completely within said covering and serving member and the annular rim portion thereof substantially overlies and surrounds said partitioned tray, whereby said food products can be placed in the plurality of cavities defined by said partitioned tray and said covering and serving member fitted thereto, said packaging arrangement being thereafter invertible so that the food products can transfer from said cavities onto said covering and serving member and said partitioned tray can be removed for serving the food products.

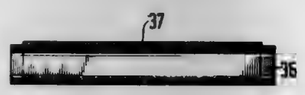
4,660,717

TRAVELER CARRIER FOR REFILLING THE TRAVELER MAGAZINE OF A TRAVELER INSERTION DEVICE

Herbert Hofer, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Reiners & Fürst, Monchen-Gladbach, Fed. Rep. of Germany

Filed Jan. 24, 1985, Ser. No. 694,421
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1984, 3402402
Int. Cl.⁴ B65D *73/02*
U.S. Cl. 206—338 **4 Claims**

1. Traveler carrier for refilling a traveler magazine of a traveler insertion device with travelers disposed in a row defining a lateral surface of the row, the traveler carrier comprising a clip formed of springy flexible material having an open longitudinal slot formed therein having a given length and being large enough to allow lateral insertion and removal of the entire row of travelers through said slot throughout said given length of said slot, said clip including means for gripping



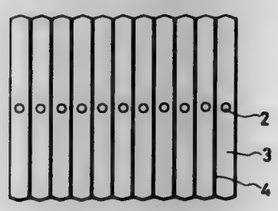
said row of travelers by pressing against the lateral surface thereof and for holding the travelers together in the row by spring action from outside the travelers.

4,660,718

FASTENER ASSEMBLY

Masami Kato, Nagoya, and Hideyuki Ueno, Yokohama, both of Japan, assignors to Toska Co., Ltd., Chiyoda, Japan

Filed Apr. 24, 1985, Ser. No. 726,478
Claims priority, application Japan, May 4, 1984, 59-88431
Int. Cl.⁴ B65D *85/24*; G09F *3/12*
U.S. Cl. 206—343 **13 Claims**



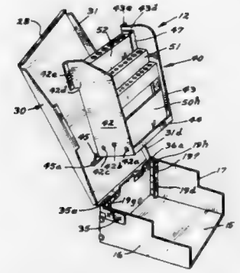
1. A fastener assembly wherein a plurality of closely adjacent fasteners individually comprise a head, a crossbar and a filament connecting said head and said crossbar together and altogether integrally molded from a synthetic resin in a manner such that while said head, said crossbar and said filament of each fastener is arranged in a same plane, said filament extends perpendicularly to said crossbar, the fasteners in use being loaded, assembly by assembly thereof, in a fastener dispensing machine having a hollow needle and each fastener individually successively appled through the hollow needle of the machine to attach for example tags or the like to merchandise, and wherein crossbars of adjacent fasteners are arranged in closely spaced and substantially directly contacting relation to each other, the invention characterized by crossbars of adjacent fasteners being connected together only by a connecting element integral with the crossbars and extending through the close space between adjacent crossbars and also extending in the longitudinal direction of the crossbar a distance to a point spaced from each side of a longitudinal center of said crossbar, said distance being sufficient to maintain constant the relative position of the adjacent crossbars, said connecting element extending perpendicularly to said filament and being on a line defining the shortest distance between the adjacent crossbars, said connecting element further being of a limited strength to be readily cut when the fasteners are dispensed by the fastener dispensing machine.

4,660,719

DRILL HOLDING CASE STRUCTURE

Seymour A. Peterson, Minneapolis, and Peter G. Huot, St. Paul, both of Minn., assignors to Huot Mfg. Co., St. Paul, Minn.

Filed Nov. 20, 1985, Ser. No. 800,039
Int. Cl.⁴ B65D *85/28*
U.S. Cl. 206—379 **6 Claims**



5. A drill holding case structure, having in combination

a housing having a chamber therein,

a substantially U-shaped member disposed at one end of said chamber, said member having spaced side walls and a bottom wall,

a plurality of drill holding trays disposed into said U-shaped member to tilt forwardly thereof,

a pair of opposed vertical channels having open facing sides formed in said chamber at one end thereof rearwardly of said U-shaped member,

rearward projections extending from the rear of the bottom wall of said U-shaped member disposed into said channels,

a cover for said housing, said cover having depending side walls,

an inwardly turned flange formed at each of said side walls of said cover,

an outwardly turned flange formed at each of said side walls of said U-shaped member,

said rearward projections are arranged and constructed to move upwardly within said channels upon the forward bottom edge of said U-shaped member engaging the underlying surface of said chamber whereby said U-shaped member is tilted forwardly horizontally,

said first and second mentioned flanges respectively interengaging,

whereby when said cover is raised, said trays are tilted to an upward accessible position and when said cover is lowered, said trays are tilted to a downward storage position in said housing.

4,660,720

MODULAR DISPLAY PACKAGE

Richard E. Pugh, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation of Ser. No. 747,703, Jun. 24, 1985, which is a division of Ser. No. 639,902, Aug. 13, 1984. This application Apr. 11, 1986, Ser. No. 850,825
Int. Cl.⁴ B65D *85/44*
U.S. Cl. 206—426 **1 Claim**

1. A modular display package for discrete articles comprising:

a. end wall panels including top and bottom wall panels, at least a portion of the top wall panel being shorter than the bottom wall panel to partially expose the upper portion of an article;

b. a pair of side wall panels;

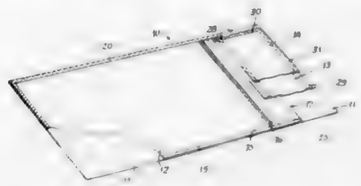
c. a rear wall panel assembly;

d. means operatively associated with said top wall panel and said bottom wall panel to retain an article;
e. the retaining means associated with bottom wall panel comprising an upstanding step mechanism;
f. said step mechanism extending from one side wall panel to the other;
g. said side wall panels having indentations extending inwardly toward said rear wall panel assembly to permit an article to be gripped;
h. retaining means in said top panel and a bottom retaining wall panel operatively associated with said bottom panel;
i. said bottom retaining wall panel having an article engaging aperture cut therein, a spacer panel hingedly connection



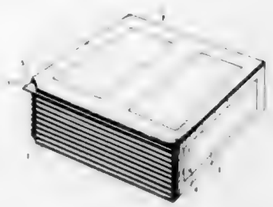
to the rear of said bottom retaining wall panel, said bottom retaining wall panel having side flap panels extending therefrom and flaps foldable relative thereto, said side flap panels being wedge-shaped with the wider part thereof adjacent the spacer panel,
j. at least the said side wall panels being in operative contact with an article so that an article is held snugly within said package between said top, bottom, side and rear wall panels, and
k. said side flap panels striking the bottom wall panel to cause the bottom retaining wall panel to slant downwardly from the said step mechanism rearwardly toward the rear wall panel assembly.

4,660,721
STERILIZATION PACKAGE
Laurie G. Mykleby, Palos Park, Ill., assignor to CVP Systems, Inc., Downers Grove, Ill.
Filed Apr. 7, 1986, Ser. No. 848,570
Int. Cl.[4] B65D *65/40, 81/20*
U.S. Cl. 206—439 **8 Claims**



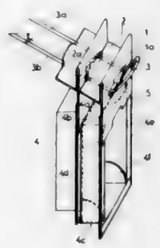
1. A multi-layer sterilization package comprising:
a first flexible, sealable, gas impermeable layer;
a second flexible, sealable, gas impermeable layer smaller than said first layer and hermetically sealed to said first layer along a substantial portion of its perimeter to form an accessible interior space between said first and second layers, one end of said second layer remaining unsealed;
a third flexible, sealable, gas permeable, organism impervious layer hermetically sealed at least to said unsealed end of said second layer to retain said accessible interior space, at least one end of said third layer remaining unsealed;
a fourth flexible, sealable, gas impermeable layer hermetically sealed to and overlaying said third layer, at least one end of said fourth layer remaining unsealed.

4,660,722
SHEET FILM CASSETTE
Hermann Poehler, Ober-Morlen, Fed. Rep. of Germany, assignor to Map Mikrofilm Apparatebau, Fed. Rep. of Germany
Filed Jan. 19, 1984, Ser. No. 572,077
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306410
Int. Cl.[4] B65D *25/04, 81/00*
U.S. Cl. 206—454 **10 Claims**



1. A sheet film cassette comprising a plurality of compartments for receiving sheets of film; a small plate disposed on one side of the sheet film cassette; an electronic data memory containing information about the sheet films and information for cassette identification disposed on said plate; and external contact points operatively connected to said electronic data memory and extending through said plate for data transfer.

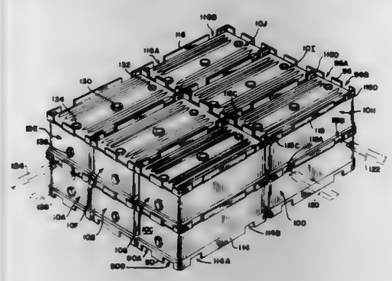
4,660,723
DEVICE FOR HANGING AND SPACING PACKAGES WHICH ARE PRESENTED ON PEGS, AND PACKAGING BOX EQUIPPED WITH THIS DEVICE
Jean-Pierre Dechirot, Balan, France, assignor to Societe Vynex SA, France
PCT No. PCT/FR85/00242, § 371 Date May 6, 1986, § 102(e) Date May 6, 1986, PCT Pub. No. WO86/01785, PCT Pub. Date Mar. 27, 1986
PCT Filed Sep. 9, 1985, Ser. No. 871,401
Claims priority, application France, Sep. 12, 1984, 84 14015
Int. Cl.[4] B65D *81/02*
U.S. Cl. 206—493 **8 Claims**



1. A device for suspending and spacing packages upon pegs comprising a box-shaped case, tab means extending from said box-shaped case, said tab means including an aperture for said peg upon which said package can be suspended, a spacing flange extending from said tab means at a location above said aperture, and heat-sealable plastic film means defining the edge

areas of said box-shaped case and attaching said tab means to said box-shaped case.

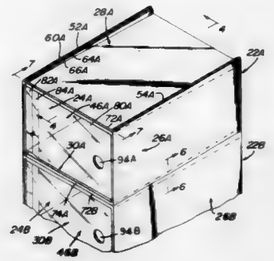
4,660,724
MODULAR CONTAINER
Chester Gaynes, 1642-52 W. Fulton St., Chicago, Ill. 60612
Filed Jan. 23, 1986, Ser. No. 821,710
Int. Cl.[4] B65D *21/02, 21/04*
U.S. Cl. 206—509 **11 Claims**



1. A container for transporting and storing liquids and solids that can be carried by the tines of a fork lift truck, said container comprising:
A. a horizontally elongated rectangular box having a horizontal top wall, a horizontal bottom wall, a pair of opposed vertical end walls and a pair of opposed vertical side walls joined together to enclose a storage chamber therein, the horizontal length of said box being at least about twice the height thereof to present a relatively low center of gravity, relative to a vertically elongated container;
B. a peripheral lip upstanding from said top wall around at least a portion of the circumference thereof, said upstanding lip including notch means along each of the ends and sides of said top wall adapted to receive therethrough said tines of said lift truck for lifting said container; and
C. a peripheral lip depending from said bottom wall around at least a portion of the circumference thereof, said depending lip including notch means along each of the ends and sides of said bottom wall in registration with said notch means in said upstanding lip and adapted to receive therethrough said tines of said lift truck for lifting said container;
D. said upstanding lip and depending lip being constructed and arranged so that when one container is stacked on another container, said depending lip of said one container can mate with the upstanding lip of said other container to prevent lateral movement therebetween with said one container being carried by one of said depending lip and said upstanding lip to space apart the juxtaposed top and bottom walls of said stacked containers.

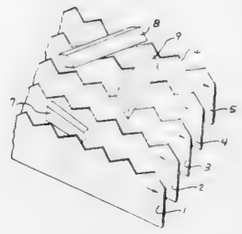
4,660,725
STACKABLE INTEGRALLY MOLDED RECEPTACLE
Aaron H. Fishman, Hewlett Harbor, N.Y., and Joseph Bottitta, Belleville, N.J., assignors to APL Corporation, Miami Beach, Fla.
Filed Aug. 12, 1985, Ser. No. 764,906
Int. Cl.[4] B65D *21/02*
U.S. Cl. 206—509 **10 Claims**

1. A unitary, molded receptacle arranged to be stacked on a second and similarly constructed receptacle, said receptacle comprising a cavity having a longitudinal axis and an opening, said cavity being defined between a pair of vertical side walls, a top wall and a bottom wall, said walls being joined at their marginal edges, each of said walls having a front portion and a rear portion, said receptacle opening being located adjacent said front portion of said side walls, the height of said side walls contiguous with said cavity tapering from front to rear at an acute angle to said axis so that the cavity portion contiguous with the rear portion of said top and bottom walls is of lesser height than the cavity portion contiguous with the front portion of the top and bottom walls, and upper and lower pairs of support ribs, each rib of said upper pair projecting up from said receptacle contiguous with a respective on of said and with a portion of said top wall, each rib of said lower pair projecting down from said receptacle contiguous with a respective one of said side walls and with a portion of said bottom wall, each of



said ribs including at least one surface compensating for said tapered side walls, with the compensating surface of each of said ribs being parallel to one another, the compensating surface of each of the lower pair of ribs of said receptacle being arranged to engage and mate with the compensating surface of each of the upper pair of ribs of said second receptacle, thereby enabling said receptacle to be stacked on said second receptacle so that the sidewalls of said first and second receptacle are in vertical alignment and said first and second receptacles being resistant to lateral displacement therebetween.

4,660,726
BAR SCREEN
Rudolf Woode, Tennisgrand 8, S-170 10 Ekero, Sweden
Filed Jun. 8, 1984, Ser. No. 618,637
Claims priority, application Sweden, Jun. 15, 1983, 8303411
Int. Cl.[4] B07B *1/16*
U.S. Cl. 209—674 **7 Claims**



1. A bar screen for separation by size of lump goods such as chips according to thickness, comprising parallel bars implemented such that adjacent bars are movable relative to each other, said bars being spaced from each other to permit the passage therebetween of goods of acceptable thickness while restricting the passage therebetween of over-thick goods and goods improperly oriented for sizing the thickness thereof, flights disposed on the upper edges of at least one-third of the bars for engaging over-thick goods and goods improperly oriented for separation, and drive means connected to first and second sets of said bars for effecting oscillating linear motion of said sets of bars such that said sets move in opposite directions

in the plane of the screening surface, and said bars and flights engage against the goods for turning the goods when the bars are in motion to properly orient the goods for sizing the thickness dimension thereof.

4,660,727

MODULAR WINE RACK

Steven K. Levine, 130 E. 18th St., New York, N.Y. 10003

Continuation of Ser. No. 568,455, Jan. 5, 1984, abandoned. This application Jul. 14, 1986, Ser. No. 885,316
Int. Cl.[4] A47B 73/00
U.S. Cl. 211—74 23 Claims



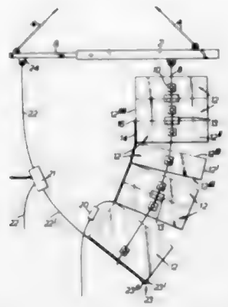
1. A modular wine rack comprising at least two frame members, each frame member being formed of an essentially rigid, undulated, unitary member, said undulations being shaped to define peaks in each frame member, the two frames having engaged peaks and spaced peaks, the distance between the spaced peaks being dimensioned to receive a wine bottle; and coupling means for securing said frames together at respective engaged peaks thereof, said coupling means including readily removable clip means securing said frames together at respective engaged peaks, said clip means having a shape in the lateral direction corresponding to the undulations of said coupled frames proximate said engaged peaks.

4,660,728

FLYING SOUND SYSTEMS

David N. H. Martin, London, England, assignor to Martin Audio Ltd., Buckinghamshire, England

Filed Oct. 4, 1984, Ser. No. 657,779
Claims priority, application United Kingdom, Oct. 4, 1983, 8326524
Int. Cl.[4] A47F 5/08
U.S. Cl. 211—118 9 Claims



1. Apparatus for flying a sound system including a plurality of loudspeaker cabinets, said apparatus comprising

coupling means for connecting said loudspeaker cabinets one above the other in the form of a stack,

a suspension frame or other support structure beneath which the stack of loudspeaker cabinets is suspended,

means for adjusting the orientation of the cabinets relative to one another within the stack, and

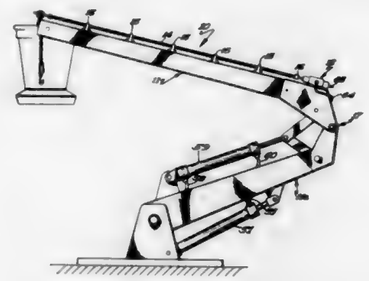
means for securing the stack of suspended cabinets in the adjusted positions, said adjustment securing means also depending from the suspension frame or other support structure.

4,660,729

METHOD AND APPARATUS FOR PREVENTING BOOM OVERLOAD

Ralph E. Carbert, Minneapolis, Minn., assignor to Hugh E. Carbert, Maple Plain, Minn.

Filed Sep. 16, 1985, Ser. No. 776,789
Int. Cl.[4] B66C 13/18
U.S. Cl. 212—149 19 Claims



1. Apparatus for sensing and relieving overstress conditions on a load transport boom in hydraulically powered load-moving equipment, comprising:

(a) a means for sensing both tensional and compressive forces longitudinally of the boom as a result of the boom being stressed to such a point as to flex beyond a predetermined degree of flex; and

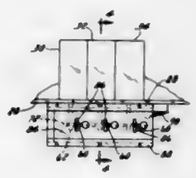
(b) an overstress relief means for the hydraulic power of such equipment constructed and arranged in controlled and actuated relation to said sensing means under both excess tensional and compressive forces whereby said sensing means actuates said overstress relief means when the boom flexes beyond a predetermined degree of flex, thereby prohibiting overstressed operation of the boom by either excess tensional or excess compressive forces.

4,660,730

APPARATUS FOR CONTROLLING MOVEMENT OF VALVE OVERRIDE CONTROL HANDLES

William K. Holmes, Delafield, Wis., assignor to Hi-Ranger, Inc., Waukesha, Wis.

Filed May 22, 1986, Ser. No. 865,778
Int. Cl.[4] F15B 13/08
U.S. Cl. 212—163 18 Claims



1. Apparatus for use in controlling operation of a plurality of

hydraulic control valves wherein said hydraulic control valves are positioned in parallel adjacent relation, said hydraulic control valves each including reciprocably movable valve spools and control handles for selectively causing controlled reciprocal movement of the valve spools to control operation of the hydraulic control valves, the control handles each being supported for movement in a first direction between a disengaged position and a valve spool engaging position and for movement in a second direction when the control handle is in the valve spool engaging position to cause controlled movement of the valve spool, the apparatus for controlling operation of a plurality of control valves comprising:

means for causing simultaneous movement of the control handles in the first direction between the valve spool engaging position and the disengaged position, said means for causing simultaneous movement including

a plate, said plate including a plurality of spaced apart slots, said control handles extending through said slots, said slots extending in the direction of linear reciprocal movement of the valve spools, and said slots permitting movement of said control handles in the direction of linear reciprocal movement of the valve spools, and

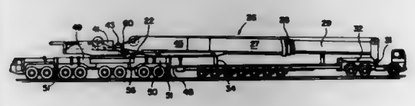
means for supporting said plate for movement in said first direction whereby movement of one of said control handles in said first direction causes movement of said plate and said other of said control handles in said first direction with said one of said control handles.

4,660,731

TELESCOPIC CRANE FOR HEAVY LOADS

Rudolf Becker, Ehingen/Donau, Fed. Rep. of Germany, assignor to Liebherr-Werk Ehingen GmbH, Ehingen/Donau, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 429,320, Sep. 30, 1982, abandoned. This application Aug. 3, 1984, Ser. No. 637,209
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1981, 3139596
Int. Cl.[4] B66C 23/26, 23/44, 23/78
U.S. Cl. 212—175 5 Claims



1. A mobile crane having load hoisting means, said mobile crane comprising:

a wheeled crane chassis;

a superstructure rotatably mounted on said crane chassis;

a telescopic boom having a first end and a second end, said boom being adapted to be pivotably coupled to said superstructure and to be detached from said superstructure;

longitudinal extending tracks located on said superstructure for engaging said second end of said boom;

a boom vehicle for supporting and transporting said telescopic boom;

positioning means located at a forward end of said boom vehicle for receiving and retaining said first end of said telescopic boom in a stationary position relative to said boom vehicle;

a lifting structure located at a rear end of said boom vehicle for lifting and supporting said boom when mounted on said boom vehicle;

a coupling yoke located at said second end of said telescopic boom;

extending and retracting means located on said boom for displacing a part of said telescopic boom towards said crane chassis while said first end of said boom is held stationary on said boom vehicle;

said coupling yoke including bearing eyes;

said superstructure including alignment bores so that when said first end of said telescopic boom is held stationary on said boom vehicle by said positioning means and said second end of said telescopic boom is displaced by said extending and retracting means to engage said second end of said boom with said tracks, said bearing eyes are longitudinally aligned with said alignment bores; and

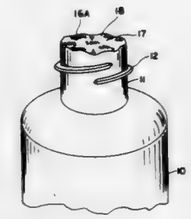
means for connecting said telescopic boom to said superstructure when said bearing eyes and said bearing bores are aligned.

4,660,732

TAMPER EVIDENT SEAL

Gerald L. Moore, 1120 Corvallis Dr., San Jose, Calif. 95120

Filed May 23, 1986, Ser. No. 866,468
Int. Cl.[4] B65D 41/02
U.S. Cl. 215—232 4 Claims



3. A tamper evident container comprising:

a container body forming an internal cavity,

an opening through said body surrounded by a lip,

a plurality of undulations formed in the surface of said lip, and

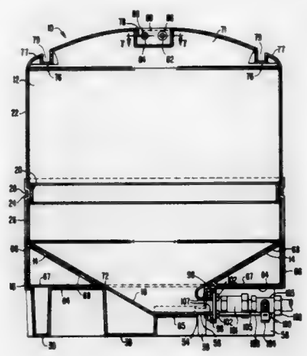
a seal glued to said lip in a manner to conform to said undulations so as to make removal of said seal from said lip without destruction of said seal more difficult.

4,660,733

CONE BOTTOM TANK AND LIFTABLE TANK SUPPORT

Larry L. Snyder; Lavelle H. Hansen, and Richard Florer, all of Lincoln, Nebr., assignors to Snyder Industries, Inc., Lincoln, Nebr.

Continuation of Ser. No. 271,410, Jun. 8, 1981, abandoned. This application Jun. 29, 1984, Ser. No. 626,464
Int. Cl.[4] B65D 6/34
U.S. Cl. 220—69 17 Claims



1. A molded plastic tank assembly comprising:

a removable molded plastic tank having an upstanding sidewall, a downwardly sloped and inwardly converging

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bottom wall joined to said sidewall, and an outlet adjacent the lowest portion of said bottom wall;

a molded plastic support base having a lower ground engaging surface, an upper portion for supporting said tank, and an upstanding base wall;

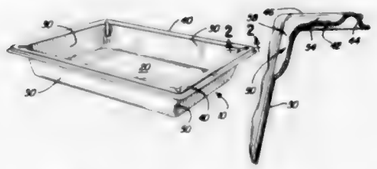
a removable molded plastic support insert having a bottom portion supported on the upper portion of said base, a sloped upper surface which mates with said bottom wall of said tank to removably support said tank on said support base, and an upstanding sidewall;

said base wall of said support base extending upwardly and overlapping both the sidewall of said tank and the sidewall of said support insert.

4,660,734
STEAM TABLE PAN

Dennis J. Heaney, Sheboygan Falls, and Wm. Bruce Reiter, Sheboygan, both of Wis., assignors to The Vollrath Company, Sheboygan, Wis.

Filed Apr. 4, 1986, Ser. No. 848,736
Int. Cl.[4] B65D *1/44, 1/46, 6/34, 21/12*
U.S. Cl. 220—74 **9 Claims**



1. A reusable, long-lived, multi-sided, sanitary open top, metal steam table pan comprising, a generally rectangular planar bottom panel,

four sidewalls extending upwardly from said bottom panel and defining a top opening which is generally rectangular in plan view, but which has rounded corners, said sidewalls each merging in each adjacent sidewall in a curved corner, and

a top flange formed with said sidewalls and extending outwardly from the upper edges of said sidewalls, the intersection of said flange and said upper edges being curved,

each corner of the flange defining a flange corner segment,

said flange and said sidewalls at each corner defining a reinforcing and denesting gusset to rigidify the flange corner segment and to facilitate denesting of nested pans,

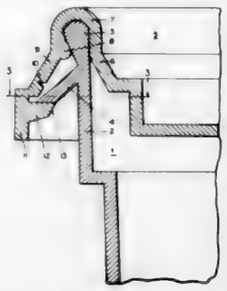
said gusset comprising a first component in the flange corner segment and merging with a second component in said curved corner of said sidewalls, said components being of similar size and shape and intersecting at an angle of from about 90 degrees to about 135 degrees and each component being longer than it is wide, said first component being greater in length than one-half the length of a line bisecting said flange corner segment, said gussets being relatively wide throughout substantially their entire lengths.

4,660,735
RE-CLOSABLE CONTAINER HAVING FRANGIBLE PORTION

Preben Peschardt, and Jorgen Poulsen, both of Thisted, Denmark, assignors to Thy Plast I/S, Thisted, Denmark

Filed Mar. 28, 1986, Ser. No. 845,699
Claims priority, application Denmark, Apr. 22, 1985, 1780/85
Int. Cl.[4] B65D *17/40*
U.S. Cl. 220—276 **2 Claims**

1. A re-closable container of the sort having a bead-like thickening (3) along its brim, said brim being enclosed by the bent-down skirt (7,9,11) of an inwardly pressed-in cap (5), characterized in that said container (1) has an obliquely projecting collar (4) placed beneath the thickened brim (3), and said collar co-operates with an inner flange (12) on the part (11) of the cap (5) being outside the container wall (2) after the

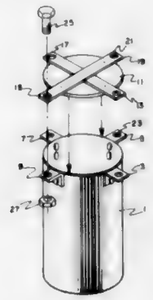


pressing-in, and that the cap besides has weakening lines (10,15) for tearing-off the part (11) of the cap which has the flange (12).

4,660,736
RESEALABLE SHIPPING CONTAINER

Terrell L. Mays, Ridgefield, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 14, 1986, Ser. No. 851,627
Int. Cl.[4] B65D *45/00*
U.S. Cl. 220—327 **12 Claims**



1. A container having provision for positive reclosure which comprises as essential elements:

(a) a container body circumscribing a storage volume and having an opening;

(b) a container resealing cover having dimensions sufficient to at least cover the opening of the container body;

(c) a plurality of external, right angle, radially outward extending flanges attached to the container body, said flanges each having a coupling hole, the coupling hole being on the portion of the flange planar with the container opening;

(d) a plurality of substantially flat, radially outward extending flanges attached to the container resealing cover, said flat flanges extending beyond the cover perimeter and each having a coupling hole in the perimeter extending portion;

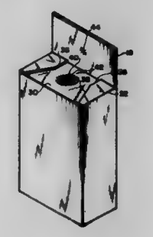
(e) a plurality of coupling pins each capable of placement into the container and cover flange coupling holes, each pin further having retaining means for securing its placement in a flange hole;

wherein, the container flanges and the cover flanges are cooperatively positioned so that placement of the cover on the container juxtaposes a cover flange and a container body flange to form a flange pair with aligned coupling holes in each flange pair wherein a coupling pin with retaining means resides in the aligned holes.

4,660,737
CARTON AND POUCH SYSTEM

Timothy Green, East Windsor; Harry Kaufman, Princeton, and Charles Jalovec, Manalapan, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 2, 1986, Ser. No. 847,359
Int. Cl.[4] B65D *9/04*
U.S. Cl. 220—410 **5 Claims**



1. A packaging container for the dispensing of a liquid product, comprising:

(a) an outer, relatively rigid casing of carton material including encompassing side wall structure, and top and bottom closure flaps extending from the opposite ends of said wall structure, said closure flaps being inwardly foldable to form end closures and providing a sealed casing structure;

(b) a through aperture formed in the inner folding flap of one set of end closures, and a plurality of intersecting slits on the outer flap of the same set of end closures, the slits being generally superimposed on the aperture, and adhesive means on the interior surface of the inner folding flap of the end closure, encompassing said aperture;

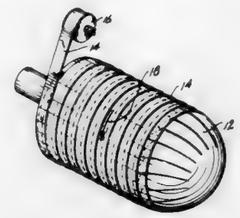
(c) a flexible, liquid impervious, thin-walled sealed pouch containing a liquid product, being arranged within said casing, said pouch being dimensioned to have a full volume substantially conforming with the interior volume of said casing, said pouch being adhesively fastened to the inner surface of said casing end provided with the through aperture, said pouch in contact with said adhesive means so as to form a liquid-tight seal about said aperture, between the casing and the pouch, whereby puncturing of the pouch at the location of said aperture facilitates dispensing of liquid from said pouch through said aperture, while concurrently preventing leakage of liquid into the space between said casing and said pouch formed during the emptying of said pouch.

4,660,738
LEAK-RESISTANT FIBERGLASS TANK AND METHOD OF MAKING THE SAME

Frank E. Ives, 26601 Dover Ct., Kent, Wash. 98031

Continuation-in-part of Ser. No. 715,953, Mar. 25, 1985, Pat. No. 4,602,722. This application Jan. 27, 1986, Ser. No. 822,865
Int. Cl.[4] B65D *6/00*
U.S. Cl. 220—414 **5 Claims**

1. A tank for the underground storage of petroleum distillate products having a fiberglass wall and an inner lining substantially completely covering the interior of said tank, said inner lining including a plurality of adjacent partially overlapping strips of corrosion-resistant film having resin between the overlapping portions of adjacent film strips and having the ends of the tank lining comprised of end caps constructed and arranged to accommodate the curvature of the ends of the tank, wherein the end caps are constructed and arranged with



pleats, said pleats being foldable to conform to the shape of the end of the tank.

4,660,739
LABEL DISPENSER

Edward J. Dooley, Holland, and Robert A. Bredeweg, Zeeland, both of Mich., assignors to Batts, Inc., Zeeland, Mich.

Filed Mar. 7, 1985, Ser. No. 709,334
Int. Cl.[4] G07F *11/68*
U.S. Cl. 221—70 **1 Claim**



1. A label dispenser adapted to be held in one hand comprising a thin rectangular body having a central panel characterized by flat top and bottom surfaces and a pair of upstanding sides forming a central recessed channel, said channel being open at both ends and of a width to receive and guide a ribbon-like label bearing web as it is moved lengthwise of said channel; between said sides the upper surface of said panel forming the bottom of said channel being smooth and flat whereby a web may slide over it with minimal friction; a slot adjacent one end of said channel extending from one side of the channel to the other; a bar extending between said sides defining the outer wall of said slot and having its upper surface co-planar with the bottom of said channel; a pair of ears, one projecting inwardly from each of said sides into said channel adjacent said slot and spaced from the plane of the upper surface of said panel a distance sufficient to permit a label transport web and the labels thereon to pass between them and said panel surface without interference, said ears collectively extending a minor portion of the width of the channel whereby a passage is provided between them of a width to permit an operator's thumb to pass the entire length of the body without obstruction, the wall of said slot intersecting the surface of the bottom of said channel at a major angle whereby said web is caused to make an abrupt change in direction and the labels on the web caused to separate from the web as the web initiates its directional change on passing into the slot and to be deposited on the top surface of said bar and extend outwardly generally parallel with the surface of said channel; the bottom surface of said panel having the same surface characteristics as the upper surface thereof forming the bottom of said channel; the width of said body being such that it can be seated in the palm of the operator's hand with the operator's thumb in a position to

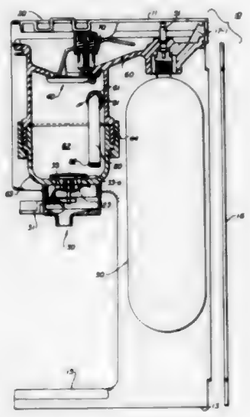
engage the web before it reaches the slot and the end of an operator's index finger can engage the central portion of the web and press and manipulate it against the panel's bottom surface whereby by simultaneous manipulation of the operator's thumb and index finger the web can be caused to move lengthwise of the dispenser to discharge its labels at said other end of the channel.

4,660,740

GASIFICATION OF FLUIDS

Howard R. Brandon, Jr., Atlanta; Dean M. Ball, Gainesville, and Jonnathan D. Guest, Decatur, all of Ga., assignors to The SodaMaster Company of America, Decatur, Ga.

Filed Feb. 18, 1986, Ser. No. 831,138
Int. Cl.⁴ B67B *7/00*; B67D *5/56*; B01D *47/02*; A23L *2/26*
U.S. Cl. 222—1 **15 Claims**



1. Apparatus for gasifying a fluid comprising
a housing for a source of pressurization;
a pressure chamber within said housing in controllable communication with said source;
an inlet into said pressure chamber for the fluid to be pressurized;
and an outlet from said pressure chamber for pressurized fluid;
said pressure chamber having a relief valve that operates independently of the level of fluid therein whenever the pressure exceeds a prescribed level;
wherein said pressure chamber has a valve at said inlet in the form of a trap door hinged within said chamber and connected to a lever extending outwardly through said inlet and contactable from the exterior of said apparatus.

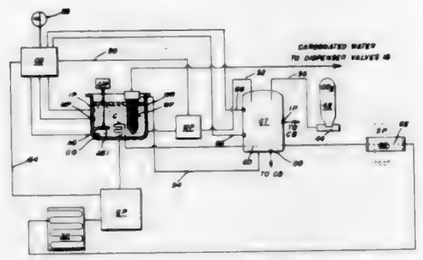
12. The method of gasifying a fluid which comprises the steps of:
a. pouring fluid into a pressure chamber thru an inlet;
b. closing said inlet to said pressure chamber by a valve pivotally positioned within said chamber using a lever extending through said inlet and outwardly into contact with a closing means;
c. pressurizing the fluid in said pressure chamber from a charging source;
d. relieving the pressure within said chamber whenever the pressure therein exceeds a prescribed level; and outwardly into contact with a closing source.

4,660,741

WATER PURIFICATION SYSTEM AND METHOD FOR A POST-MIX BEVERAGE DISPENSER

Jonathan Kirschner, Marietta, and Kathryn M. Chase, Atlanta, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed May 24, 1985, Ser. No. 737,413
Int. Cl.⁴ B67D *1/08, 5/58*
U.S. Cl. 222—1 **5 Claims**



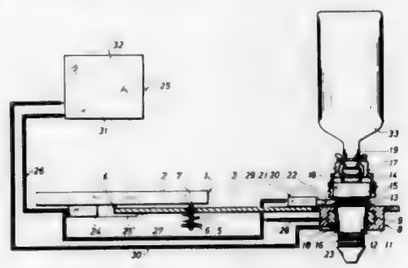
4. A method of purifying water in a post-mix beverage dispenser including a supply of flavor concentrate, a carbonator for making carbonated water, a water reservoir for supplying water to said carbonator tank, means for refrigerating water in said water reservoir and means for mixing said flavor concentrate with carbonated water output from said carbonator, comprising the steps of:
(a) immersing a water filter in the water of said water reservoir; and
(b) passing the carbonated water output from said carbonator through said water filter before mixing the carbonated water with flavor concentrate.

4,660,742

SYSTEM FOR ACTIVATING A DOSING APPARATUS FOR DISPENSING PREDETERMINED QUANTITIES OF A BEVERAGE FROM A BOTTLE

Nazmi Ozdemir, 25 belogade, 3 tv, 2100 Copenhagen O, Denmark

PCT No. PCT/DK83/00104, § 371 Date Jul. 10, 1984, § 102(e) Date Jul. 10, 1984, PCT Pub. No. WO84/01936, PCT Pub. Date May 24, 1984
PCT Filed Nov. 4, 1983, Ser. No. 629,538
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 325018; Aug. 3, 1983, 333541
Int. Cl.⁴ B67D *3/00*
U.S. Cl. 222—36 **16 Claims**



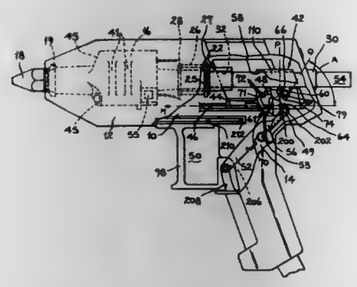
12. A system for activating a dosing apparatus to dispense predetermined quantities of a beverage from a bottle comprising a substantially annular electromagnet through which a dosing apparatus is disposed, said annular electromagnet being capable of opening and closing a valve within said dosing apparatus, and wherein said annular electromagnet is associated with a means for locking said dosing apparatus within said annular electromagnet while liquid is dispensed, and wherein said locking means and said annular electromagnet are activated by a control device such that both are activated while said beverage is being dispensed, wherein said control device comprises a reader capable of reading a code located on said dosing apparatus during the movement of said dosing apparatus into said annular electromagnet, thereby activating said locking means and said electromagnet, and wherein said annular electromagnet and locking means are mounted on a pivotally mounted and spring-biased lever arm and are activated in response to pivotal movement of the lever arm by the control device which is connected to said annular electromagnet and locking means.

4,660,743

MELT DISPENSERS

Joachim Speisebecher, Oberursel, and Christian Wooge, Bad Homburg, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Filed Jul. 17, 1985, Ser. No. 755,808
Claims priority, application United Kingdom, Jul. 28, 1984, 8419302
Int. Cl.⁴ B05C *5/04*
U.S. Cl. 222—146.5 **9 Claims**



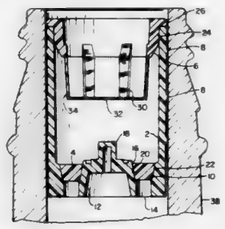
1. A hot melt gun comprising a melt body having a melt chamber and feeding means for feeding a rod of hot melt material in solid form, the feeding means comprising clamping means comprising a carriage mounted for sliding movement forwardly towards and rearwardly away from the melt body and having a shaped portion shaped to accept a rod to be fed to the melt body, a clamp member pivotally mounted on the carriage and having a clamping arm portion disposed along the direction in which the carriage is arranged to move and a crank arm portion depending from the pivotal mounting of the clamp member to the carriage, the crank arm portion having an operating portion with a rearwardly facing convex surface, connecting means pivotally mounted in the gun about a fixed axis and having a pressure means bearing against the convex surface of the operating portion, a trigger mounted in the gun and coupled to the connecting means whereby upon operation of the trigger the connecting means will cause the clamp member to pivot into engagement with a rod in the carriage to grip the rod against said shaped portion and on continued operation of the trigger the clamp member will move with the carriage to feed the rod towards the melt chamber, the operating portion of the crank arm and its convex surface being so disposed that a line of contact between the convex surface of the operating portion and the pressure means shifts upwardly along the convex surface from a downwardly facing portion thereof to an upwardly facing portion thereof as the clamp member is pivoted to grip the rod whereby to increase a component of force applied in the direction in which the carriage is arranged to move.

4,660,744

NON-REFILLABLE FITMENT

Ernest J. Csaszar, Mountainside, N.J., assignor to General Kap (P.R.) Corp., P.R.

Filed Jun. 28, 1985, Ser. No. 750,031
Int. Cl.⁴ B65D *47/02, 49/02*
U.S. Cl. 222—147 **8 Claims**



1. A non-refillable fitment comprising:
a hollow cylindrical housing configured to be inserted into the neck of a bottle;
an insert member disposed within said hollow cylindrical housing, said insert member having an inner circumferential surface and an outer circumferential surface defining an annular valve seat providing a flow path through said housing;
retainer means disposed within said hollow cylindrical housing longitudinally displaced predetermined distance from said insert member, said retainer means including vent means for permitting a fluid to flow through said retainer means; and
valve means comprising a freely movable annular ring having an inner circumferential surface defining an open central region and an outer circumferential surface, said valve means being retained within said hollow cylindrical housing between said insert member and said retainer means, said valve means having a configuration adapted to enter said annular valve seat when said hollow cylindrical housing is vertically disposed, whereby said inner circumferential surface of said valve means sealingly engages said inner circumferential surface of said insert member and said outer circumferential surface of said valve means sealingly engages said outer circumferential surface of said insert member to thereby prevent fluid from flowing through said fitment into said bottle, said predetermined distance between said retainer means and said insert member being less than the diameter of said outer circumferential surface of said valve means whereby when said hollow cylindrical housing is aslantly disposed in a pouring position, said valve means can drop out of said valve seat and be disposed angularly between said retainer means and said insert member without inverting so as to permit said fluid to flow out of said bottle through said open central region of said valve means and said fitment.

4,660,745

SPRAY ACTUATOR

Lawrence Hess, Jr., 11922 Lower Colfax Rd., Grass Valley, Calif. 95945

Filed Oct. 28, 1985, Ser. No. 792,324
Int. Cl.⁴ B67D *5/64*
U.S. Cl. 222—174 **3 Claims**

1. A remote actuator for an aerosol can comprising an elongate rod, a jaw structure at one end of the rod for releasable clamping around the neck of an aerosol can, a pivoted finger on the rod above the jaw structure for depressing a spray-

release button of the can, an operating handle for the pivoted finger adjacent the other end of the rod, linkage means extending along the rod connecting the finger and handle, said rod being of tubular form, the jaw structure comprising a fixed jaw member and a movable jaw member, each of said jaw members having a tail portion and a jaw portion, the respective tail portions being received in respective elongate slits formed in said one end of the rod, the respective jaw portions projecting



from said one end of the rod and being interconnected by a pivot assembly, the jaw structure further including a spring means connected between the respective tail portions internally of the rod for urging the jaw portions toward one another, and at least the movable jaw member having an outer edge protruding from one side of the rod for applying finger pressure to the movable jaw for opening the jaw portions against the force of the spring means.

4,660,746

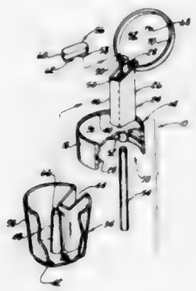
MOUTHWASH DISPENSER

David M. Wright, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Dec. 27, 1985, Ser. No. 814,050

Int. Cl.[4] B65D *37/00*

U.S. Cl. 222—207 **8 Claims**



1. A liquid dispensing closure having a removable dosage cup and means for attachment to a flexible wall container comprising, in combination:

a base cap having a top and a depending cylindrical skirt for attachment to said container;

a pedestal extending upwardly from said cap top;

a dosage cup removably seated on said cap top and having a side wall, said side wall being configured to receive said pedestal to provide a contiguous contact therewith;

a closure lid hingingly connected to said pedestal for closure of said dosage cup; and

a delivery tube extending downwardly from said cap top adapted to extend to the bottom of said container and extending upwardly from said cap top through and enclosed by said pedestal for delivery of liquid from said container to said dosage cup when said lid is in an open position and sealed from delivery when said lid is closed.

4,660,747

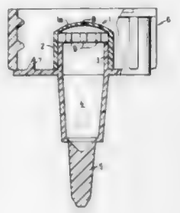
VALVE ELEMENT

Bo I. B. Borg, Tumba, Sweden, and Peter P. Dudek, Ballerup, Denmark, assignors to ACO Lakemedel AB, Sweden

Continuation of Ser. No. 669,006, Nov. 7, 1984, abandoned. This application Jun. 12, 1986, Ser. No. 873,586

Int. Cl.[4] B65D *37/00, 25/40*

U.S. Cl. 222—213 **14 Claims**



1. A lid arrangement for a container for liquid products, which lid arrangement has an outlet opening through which the liquid product may be dispensed, said opening defined in part by a flange forming an enclosed boundary around said opening, said flange having a first truncated portion oriented inwardly of the container; the lid arrangement including a valve element including a domed resilient yieldable section with the top of the dome oriented inwardly of the container and a sleeve depending from said domed section in a direction outwardly of the container, said sleeve adapted to engage with said flange, said domed resilient yieldable section having at least one central slit, such that the valve element prevents leakage through the slit when a moderate pressure, corresponding to the sum of the atmospheric pressure and the static pressure from the product inside the container, is exerted on the domed section of the element and permits said liquid product to be dispensed from the container when the pressure in the container is increased, the increased pressure acting upon the yieldable section to expand the central slit.

4,660,748

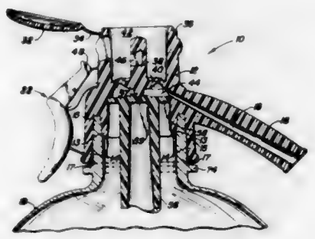
INTEGRAL SYPHON PACKAGE HEAD

Richard J. Hagan, San Carlos, Calif., assignor to McKesson Corporation, Los Angeles, Calif.

Filed Dec. 28, 1984, Ser. No. 687,296

Int. Cl.[4] B22D *37/00;* **B65D** *47/10;* **F16K** *31/00;* **B67C** *3/00*

U.S. Cl. 222—509 **36 Claims**



1. A container closure comprising a head having a body configured to fit over a necked opening of a container in sealing relationship, a valve actuating means in said body, and a lever for operative engagement of said valve actuating means,

said lever having a first end and a second end and being integrally formed with said body, said lever being attached to an exterior surface of said body by at least one break away member, said body having a first opening for insertion of the first lever end operatively to engage said valve actuating means after rupture of said at least one break away member, said lever being configured so that the second lever end extends through the first opening in said body for application of actuating force in a given direction by a user when the first lever end operatively engages said valve actuating means.

4,660,749

SLIDING NOZZLE APPARATUS

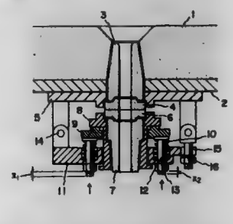
Nobuyuki Yokoi; Toshimitsu Taira, and Koji Tsuyuguchi, all of Kitakyushu, Japan, assignors to Kurosaki Refractories Co., Ltd., Fukuoka, Japan

Filed Sep. 9, 1985, Ser. No. 774,198

Claims priority, application Japan, Sep. 11, 1984, 59-138491[U]

Int. Cl.[4] B22D *41/08;* **C21C** *5/48*

U.S. Cl. 222—600 **2 Claims**



1. In a sliding nozzle apparatus for a molten metal holding vessel comprising an upper nozzle member, a fixed plate secured to said upper nozzle member, an upper bracket secured to the outer surface of said vessel and cooperating with said vessel to support said nozzle member and said fixed plate, a lower bracket having one edge connected pivotably to said upper bracket and an opposite edge which is detachably connectable to said upper bracket, a slidable supporting member supported horizontally slidably in said lower bracket, a lower nozzle member supported by said slidable supporting member, a sliding plate attached to said lower nozzle member, first coil springs provided in said lower bracket adjacent to said one edge thereof, second coil springs provided in said lower bracket and located adjacent to the opposite side of said lower bracket, a holder for said springs disposed between said slidable supporting member and said springs such that said first springs are disposed between said one edge of said lower bracket and a first edge of said holder and said second springs are disposed between said opposite edge of said lower bracket and an opposite second edge of said holder, said lower bracket being pivotable to an operable position in which said opposite edge is connected to said upper bracket and said springs urge said sliding plate into contact with said fixed plate, said lower bracket being pivotable to an inoperable position in which said opposite edge is disconnected from said upper bracket and said sliding plate is out of contact with said fixed plate, the spatial relationship between said lower bracket and said holder when said lower bracket is in said inoperable position being such that the distance of said one edge of said lower bracket from said first edge of said holder is less than the distance of said opposite edge of said lower bracket from said second edge of said holder, said spatial relationship between said lower bracket and said holder providing for even contact between said fixed plate and said sliding plate when said lower bracket is pivoted to said operable position to dispose said sliding plate into contact relationship with said fixed nozzle, whereby said even contact prevents damage to said sliding and fixed plates.

4,660,750

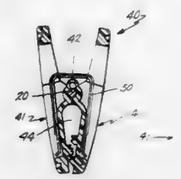
GARMENT HANGER WITH IMPROVED WIRE SUPPORT

Russell O. Blanchard, Zeeland, Mich., assignor to Batts, Inc., Zeeland, Mich.

Division of Ser. No. 790,492, Oct. 23, 1985. This application Aug. 5, 1986, Ser. No. 893,184

Int. Cl.[4] A41D *27/22*

U.S. Cl. 223—91 **5 Claims**



1. A hanger for articles, said hanger having a rigid elongated body, the ends of said body extending downwardly to form a pair of depending legs; a rod of circular cross-section extending between the lower ends of said legs; means securing said rod to each of said legs, a clamp for mounting on said rod, said clamp having a pair of wings integral with and connected by a flexible web intermediate the ends of said wings; a first pair of inwardly extending ribs; a second pair of inwardly extending ribs; said pairs of ribs being spaced and between them defining a rod receiving opening of lesser diameter than said rod; said wings between said second pair of ribs and one end thereof defining an article receiving pocket; a spring urging said wings to close said pocket and said ribs of said second pair into contact with each other; said wings, when said article receiving pocket is opened, pivoting about the rod to bring the ribs of said first pair into contact with each other; said connecting web being formed into a loop extending away from the article receiving pocket.

4,660,751

DEVICE TO SECURE SHOULDER STRAPS OF A RUCKSACK

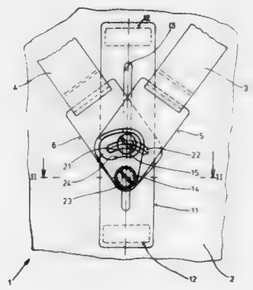
Albrecht von Dewitz, Obereisenbach 85, D 7992 Tettnang, Fed. Rep. of Germany

Filed Aug. 25, 1985, Ser. No. 769,007

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1984, 8425406[U]

Int. Cl.[4] A45F *3/08*

U.S. Cl. 224—210 **4 Claims**



1. A device for securing a rucksack to a person's shoulders, comprising a retaining piece adapted to be secured to the rucksack having a vertically extending retaining piece slot, a pair of shoulder straps positionable on respective sides of said

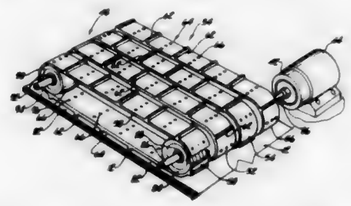
retaining piece each having a fitting with a lower portion having aligned pivot bores, a pivot bolt engaged through the aligned pivot bores and being confined from movement in the retaining piece slot, each of said fittings also having an arcuate slot spaced from and centered around the pivot bores and a tensioning screw engaged through said arcuate slots and being tightenable to secure the respective fittings in an adjusted angular relationship relative to each other and to said retaining piece.

4,660,752

VACUUM FEEDER FOR CONTINUOUS WEB

Luther O. Rikard, Linden, and Mark A. Blackburn, Durand, both of Mich., assignors to Compak/Webcor Manufacturing Packaging Co., Durand, Mich.

Filed Aug. 29, 1985, Ser. No. 770,783
Int. Cl.[4] B65H *5/02, 20/08, 29/24*
U.S. Cl. 226—95 **12 Claims**



1. Apparatus for precision advancement of a continuous web comprising, in combination:

a longitudinally extending endless belt means having upper and lower runs disposed in a horizontal path, said belt means having a plurality of adjacent uninterrupted, outwardly facing, planar surfaces, spaced along the circumference of said belt means the longitudinal extend of each of said planar surface terminating in an outwardly extending cleat extending transversely across the width of said belt means defining with said web separate unobstructed air flow paths, each said cleat extending entirely transversely across said belt means,

aperture means in each of said planar surfaces passing through said belt means for the passage of air therethrough;

a vacuum plenum located between the upper and lower runs of said belt means, said plenum including wall means having openings arranged in registration with said aperture means;

evacuating means for creating a suction in said vacuum plenum inducing air flow from the edges of said belt means through said air paths, said belt apertures and plenum openings into said vacuum plenum to draw said web into contact with said cleats;

means for advancing said belt means to move said web and wherein the area of contact between each cleat and the web is substantially less than the area of each outwardly facing planar surface.

4,660,753

AUTOMATIC WELDING APPARATUS

Norihige Kushibe, and Kaoru Shinozaka, both of c/o Takase Factory of Kabushiki Kaisha Kushibe Tekkosho, 1574-1, Oaza Kamitakase, Takase-cho, Mitoyo-gun, Kagawa, Japan

Continuation of Ser. No. 555,578, Nov. 28, 1983, abandoned. This application Mar. 10, 1986, Ser. No. 837,193
Claims priority, application Japan, Nov. 29, 1982, 57-209750
Int. Cl.[4] B23K *37/04*
U.S. Cl. 228—48 **10 Claims**

1. An automatic welding apparatus for forming a circular bead along a circumference of a first work-piece at its junction with a second workpiece in order to weld the first workpiece to the second workpiece, comprising

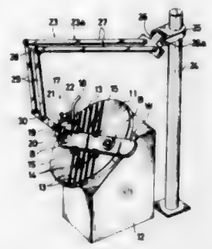
a turntable, having a center and an outer surface, supported by a machine frame so as to rotate on its own axis,

said second workpiece having a center which is not coincident with the center of said turntable,

a clamp means for clamping said second workpiece to said outer surface of said turntable for co-rotation therewith,

a torch holder for adjustably holding a welding torch,

a torch positioner having a freely rotatable end member which is engageable with said first workpiece provision-



ally fixed to said second workpiece so as to revolve around said center of said turntable when the latter rotates on its own axis, said torch holder being supported by said torch positioner, with said welding torch maintained in a preset orientation, and

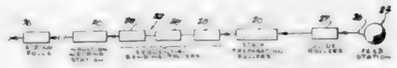
a positioner guide mechanism for supporting said torch positioner so as to permit free movement of said torch positioner in a plane extending in parallel relationship with respect to a surface plane of said turntable to keep engagement of said end member with said first workpiece before and during rotation of said turntable.

4,660,754

PROCESS OF FORMING WELDED TUBING

Lucid L. Byrd, Palos Park, Ill., assignor to Allied Tube & Conduit Corporation, Harvey, Ill.

Division of Ser. No. 755,499, Jul. 15, 1985, Pat. No. 4,593,550. This application Mar. 14, 1986, Ser. No. 839,900
Int. Cl.[4] B23K *31/06;* **B21C** *37/08;* **B21D** *39/03*
U.S. Cl. 228—151 **4 Claims**



1. A method of forming tubing from a flat strip of steel of substantially uniform thickness and which has been longitudinally severed from a steel sheet resulting in irregularities extending from the lateral edges of the strip, said method comprising the following steps:

(a) orienting said strip so that the irregularities extend from the top surface of said strip at said lateral edges;

(b) bevelling said top surface at said edges so that said sheet decreases in thickness adjacent said edges while preventing any substantial increase of said uniform thickness between the bevelling at said edges;

(c) transversely bending said strip so that said lateral edges are brought together to form a tube with the bevelling forming a V-shaped groove on the inside surface of said tubing; and

(d) induction welding said lateral edges together so that the resulting welding bead is received in said V-shaped groove,

steps (b), (c) and (d) being performed in a continuous rolling mill production line including a strip preparation station for

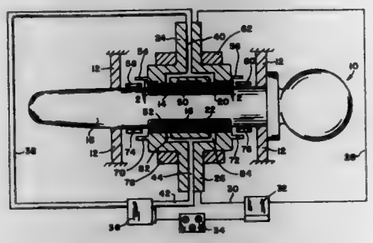
performing step (b), said station including an upper composite roller means and a lower composite roller means spaced from said upper composite roller means, said strip having said irregularities prior to association with said production line.

4,660,755

METHOD FOR CONSTRUCTING A SURGICAL IMPLANT

Gene M. Farling, Warsaw; Jack E. Parr, North Webster, and Arden R. Zolman, Warsaw, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Sep. 9, 1985, Ser. No. 773,909
Int. Cl.[4] A61F *1/24*
U.S. Cl. 228—178 **1 Claim**



1. A method for constructing a surgical implant wherein a biologically compatible substrate is adapted for transmitting loads imparted to a skeletal structure of an animal or human and a porous layer is coupled to the substrate to enhance biological fixation of the implant relative to the skeletal structure, the method comprising the steps of disposing the porous layer adjacent to the substrate and subjecting the porous layer and the substrate to metallurgical bonding by transmitting a current through the porous layer and the substrate so that all of the porous layer is metallurgically bonded together at points of contact therebetween to form a porous surface and the porous layer is metallurgically bonded to the substrate at the points of contact therebetween, the metallurgical bonding takes place in the absence of a furnace to substantially avoid heat build up throughout the substrate and substantially confine heat build up at the points of contact, and the metallurgical bonding occurs via an electrode engageable with the porous layer and the electrode is moved toward the porous layer while current is transmitted to the porous layer and the substrate, and movement of the electrode is limited independently of the porous layer to a predetermined distance.

4,660,756

METHOD AND APPARATUS FOR PRODUCING A SUBSTANTIALLY CYLINDRICAL HOLLOW ARTICLE

Max Geisseler, Ettenhausen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 12, 1985, Ser. No. 808,446
Claims priority, application Switzerland, Dec. 14, 1984, 5948/84
Int. Cl.[4] B23K *31/00*
U.S. Cl. 228—184 **6 Claims**

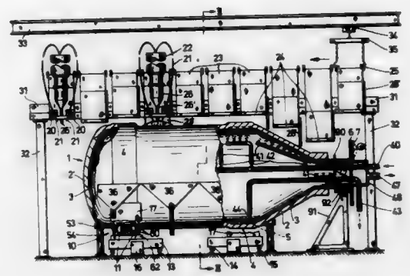
1. An apparatus for producing a cylindrical hollow member comprising

at least one pair of rollers for rotatably supporting a hollow parent member thereon for rotation about a horizontal axis thereof;

a plurality of clevises, each said clevis rotatably mounting a respective one of said rollers thereon;

a block slidably receiving each clevis thereon and defining a pressure chamber with each clevis;

a control means connected to at least one roller pair to alternatively maintain one roller of said roller pair in bearing engagement with the hollow member while relieving the other roller of said roller pair from bearing engagement with the hollow member; said control means including a tank for a liquid pressure medium, a pair of lines extending from said tank, each said line being connected to a respective pressure chamber in said block, a pair of valves, each said valve being disposed in a respective line to control a flow of pressure medium therethrough, a pump for pumping liquid pressure medium into



said tank while maintaining an air cushion above the pressure medium and a third control valve connected to said tank to exhaust air from the air cushion;

means for applying build-up welding to the hollow member during rotation of the hollow member to form a built-up member; and

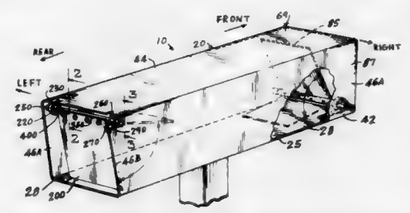
drive means connected to at least one of said roller pairs for driving said one roller pair to rotate the hollow parent member.

4,660,757

DUAL ACCESS NEWSPAPER RECEPTACLE

Robert R. Hicks, Wauseon, Ohio, assignor to James E. Barber, Wauseon, Ohio

Filed Apr. 3, 1985, Ser. No. 719,571
Int. Cl.[4] A47G *29/12*
U.S. Cl. 232—1 C **1 Claim**



1. A receptacle for newspapers with a frontal end and a back end for receiving and holding newspaper materials for storage and withdrawal of such materials from said receptacle comprising:

(a) a hollow housing member having a hollow inner chamber having a frontal end and a back end, said receptacle having a front doorway on the frontal end of said housing, and a back doorway on the back end of said housing member, said housing member having an inner upper surface and a lower inner surface in the hollow inner chamber, with laterally disposed first and second vertical sidewalls, said housing member having a circular opening in the first vertical sidewall and said housing having an L-shaped opening in the second vertical sidewall, said L-shaped opening being open to the back edge of said second vertical sidewall and partially enclosed relative to said back vertical edge by a leg projecting vertically

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downwardly into the rear portion of said L-shaped opening.

(b) first pivot means disposed on the back end of the inner upper surface of said housing member, said pivot means comprising a longitudinally extending bar member rotatably mounted in the back portions of each of the first and second vertical sidewalls;

(c) doorway means having an upper portion and lower portion, which upper portion is affixed to said first pivot means on the upper portion of the back doorway;

(d) second pivot means on the front end of the lower inner surface of said housing, said second pivot means comprising a longitudinally extending bar member, having a first end and a second end, rotatably mounted to the front portion of each of the laterally disposed first and second vertical sidewalls with the first end of said bar member being fitted through the circular opening in the first vertical sidewall and the second end of said bar member being fitted through a portion of said L-shaped opening in said second vertical sidewall, said second pivot means being affixed to the lower portion of the front doorway;

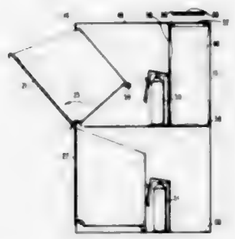
(e) spring means mounted to said pivot means to restrain movement of said doorway means.

4,660,758

WASTE SEPARATOR-RECEPTACLE FOR RECYCLING OF MATERIALS WITH ENVIRONMENTAL CONTROL DISPENSER AND HOLDER

Goldie K. Tavel, 250 South Ocean Blvd., Boca Raton, Fla. 33432, and J. Henry Schildmeier, 6030 Crows Nest Dr., Indianapolis, Ind. 46208

Filed Jun. 17, 1985, Ser. No. 744,954
Int. Cl.⁴ A47G *29/00*
U.S. Cl. 232—43.2 **7 Claims**



1. A waste separator-receptacle for recycling of materials comprising:

a frame having at least four internal waste receiving cavities each opening outwardly thereof;

first closure means on said frame at least partially enclosing one of said cavities;

second closure means on said frame at least partially enclosing one of said cavities;

third closure means on said frame at least partially enclosing one of said cavities;

fourth closure means on said frame at least partially enclosing one of said cavities;

four separate disposable means removably mountable each within a separate cavity and being visually distinguishable apart to separately hold paper, metal, glass and miscellaneous waste products and being operable to individually hold said waste products within said cavities for eventual removal and discarding;

basket means on said frame and associated with each of said closure means to removably hold said separate disposable means;

coordinating means associated with said disposable means and said first closure means, said second closure means, said third closure means and said fourth closure means operable to predetermine the particular waste product to be inserted into a cavity associated with a particular closure means and disposable means; and

fluid dispensing means mounted with said frame operable to dispense a fluid therein; and,

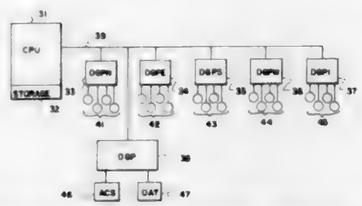
holding means mounted to said frame to hold said fluid dispensing means and including a hingedly mounted member extending atop said fluid dispensing means and adjacent said basket means and operable when said hingedly mounted member is contacted by said basket means upon opening and closing of one of said closure means to pivot against said fluid dispensing means for the controlled release of said fluid.

4,660,759

OPTIMUM START/STOP DEPENDENT UPON BOTH SPACE TEMPERATURE AND OUTDOOR AIR TEMPERATURE

William B. Barnard, Arlington Heights; Gideon Shavit, Highland Park, and Richard A. Wruck, Mount Prospect, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 13, 1984, Ser. No. 670,513
Int. Cl.⁴ F23N *5/20*
U.S. Cl. 236—46 R **22 Claims**



1. A system for determining the optimum stop time of an temperature control system within a building so that energy can be conserved by shutting down the temperature control system an amount of lead time prior to end of occupancy of said building wherein said amount of lead time is arranged to confine space temperature within a comfort range as said space temperature drifts during said amount of lead time, said system comprising:

space temperature sensing means for sensing space temperature within said building;

outdoor air temperature sensing means for sensing outdoor air temperature external to the building; and,

controller means connected to said space temperature sensing means, said outdoor air temperature sensing means, and said temperature control system for determining temperature drift rate within said building and for turning off said temperature control system before the end of occupancy of the building by said amount of lead time dependent upon said space temperature drift rate and said outdoor air temperature.

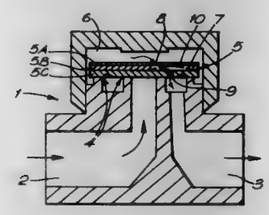
4,660,760

THERMODYNAMIC STEAM TRAP VALVE DISCS

Alan F. Bennett, Cossington, and Roy J. Gooderham, Cheltenham, both of England, assignors to Spirax Sarco Limited, Cheltenham, England

Filed Aug. 21, 1985, Ser. No. 768,088
Claims priority, application United Kingdom, Aug. 29, 1984, 8421856
Int. Cl.⁴ F16T *1/04*
U.S. Cl. 236—59 **6 Claims**

1. In a thermodynamic steam trap having an inlet, an outlet, a chamber between the inlet and the outlet, an inner and outer seat arrangement through which the inlet can communicate with the outlet via the chamber, and a disc valve member disposed in the chamber and cooperating with the seat arrangement to control communication between the inlet and the outlet, the improvement comprising, the disc valve member having an internal chamber and perforated portions through which fluid flow can take place from one side of the disc valve



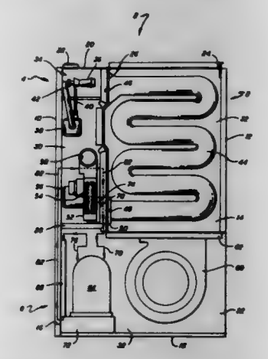
member to the other via the internal chamber, there being entirely, within the internal chamber a temperature-responsive member which can adopt a condition in which it co-operates with one of the perforated portions to prevent such fluid flow.

4,660,761

FLUE GAS HEAT PUMP

Rudy C. Bussjager, Chittenango, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 7, 1986, Ser. No. 848,868
Int. Cl.⁴ G05D *23/00*
U.S. Cl. 237—2 B **10 Claims**



1. A heating system, comprising:

a cabinet having an inlet, an outlet, and an air passage extending therebetween,

a gas combustion means in said cabinet for providing a heating fluid,

a heat exchanger means in said air passage for delivering a flow of the heating fluid therethrough, and including an intake opening connected to said gas combustion means and an exhaust opening,

an inducer means in said cabinet and connected to said exhaust opening for drawing the flow of heating fluid through said heat exchanger means,

a blower means in said air passage for circulating a flow of air to be conditioned through said inlet and said air passage across said heat exchanger means and through said outlet, and

a heat pump means in said cabinet for transferring heat therein,

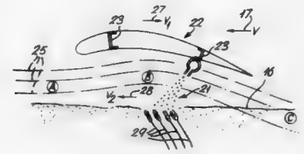
said heat pump means including a first heat exchanger in said air passage and adjacent said inlet for transferring heat with the flow of air to be conditioned, and a second heat exchanger in said cabinet and at said exhaust opening of said heat exchanger means for transferring heat with the flow of heating fluid.

4,660,762

METHOD AND APPARATUS FOR SPRAYING A TARGET SURFACE

John J. Spillman, Bedford, England, assignor to National Research Development Corporation, London, England

Filed Jul. 23, 1985, Ser. No. 758,090
Claims priority, application United Kingdom, Jul. 23, 1984, 8418722
Int. Cl.⁴ B05B *15/04*
U.S. Cl. 239—1 **8 Claims**



1. A method of spraying a target surface comprising:

locating a spray boom, formed with a plurality of spray-discharge nozzles, on a ground-supported vehicle so that said boom is mounted in air close to said target surface, and directing said nozzles towards that surface;

creating relative motion between said boom and said target surface in a direction parallel to said target surface;

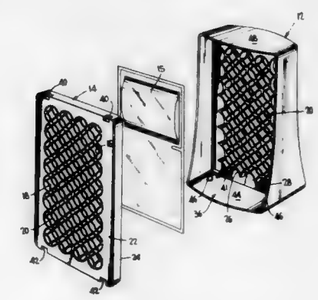
and securing in fixed relationship to said boom, and on the side of said boom that is remote from said target surface, a guiding surface which interacts with said air so that as said boom traverses said target surface said air following said nozzles and lying between them and said target surface is caused to move towards said target surface, so enhancing the incidence upon said target surface of said spray discharged from said nozzles.

4,660,763

VAPOR-DISPENSING DEVICE

Ronald R. Gutkowski, and Edward J. Martens, both of Racine County, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Sep. 11, 1985, Ser. No. 774,686
Int. Cl.⁴ A61L *9/12*
U.S. Cl. 239—43 **16 Claims**



1. A grill assembly device for dispensing air treating vapors, said grill assembly comprising:

(a) at least 2 grill assemblies, at least one of which is comprised of an outer frame incluing a generally planar facing panel, a peripheral flange extending from one face of the outer periphery of said facing panel, said grill unit also extending from said one face, and said grill unit having an

outer border sealingly connected to said facing panel in spaced relation to said peripheral flange;

whereby said grill unit outer border, said peripheral flange and said facing panel and a portion of said other grill assembly combine to define a reservoir for receiving vaporizable air-treating composition when in mating engagement with said other grill assembly.

4,660,764

DEVICE FOR PERMITTING CONTROLLED EMISSION OF VOLATILE SUBSTANCES

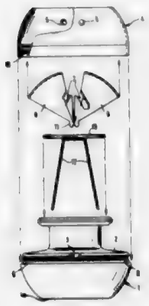
Yves Joyaux, Vouille, and Jean-Pierre Mandon, Montamise Tronc, both of France, assignors to Reckitt and Colman AG, Basel, Switzerland

Filed Apr. 18, 1986, Ser. No. 853,779

Claims priority, application Switzerland, Apr. 26, 1985, 01777/85

Int. Cl.⁴ A24F *25/00*

U.S. Cl. 239—44 **5 Claims**



1. A device for permitting controlled emission of a volatile substance from a fluid, which device comprises:

a container adapted to hold a volatile liquid and having an annular ledge provided with recesses at opposite sides of the ledge,

a circular evaporation surface in an upper region of the container,

one or more wicks extending downwardly from the circular evaporation surface into the interior of the container,

a frustro-dome shaped hood mounted on the container, said hood having two studs on opposite sides of its inner wall, and

emission control means within the hood, said means comprising two shutters movable with respect to each other and having slots in which the studs are located,

whereby, on rotation of the hood relative to the container, the studs move at angle to the center lines of the slots, causing the shutters to vary the size of the opening in the hood.

4,660,765

WATER SPRINKLER

Peretz Rosenberg, Moshav Beit Shearim, Israel

Filed Jul. 5, 1985, Ser. No. 752,069

Claims priority, application Israel, Jul. 20, 1984, 72463

Int. Cl.⁴ B05B *3/04, 1/34, 1/26*; A62C *31/02*

U.S. Cl. 239—222.17 **11 Claims**

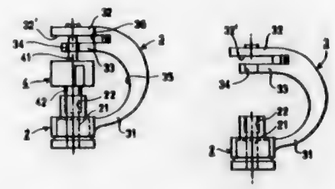
1. A liquid sprinkler, comprising:

a nozzle formed with an axial outlet bore through which the liquid issues in the form of an axial jet;

a bridge including an inner section secured to the nozzle and extending laterally thereof, and an outer section overlying and spaced from the nozzle bore;

and a rotor rotatably received on the nozzle in alignment with its outlet bore so as to be impinged by the water jet issuing therefrom and to be rotated thereby for producing a rotating jet laterally of the sprinkler, said rotor including a spindle engageable with said outer bridge section during the operation of the sprinkler for retaining the rotor in the space between said outer bridge section and the nozzle;

said bridge further including an intermediate section underlying said outer bridge section and formed with an opening there-through aligned with said nozzle bore for receiving the spindle of the rotor, said opening being of larger cross-sectional area than that of said axial jet so as not to be impinged by the axial jet when flowing therethrough upon removal of said rotor;



said outer bridge section including a deflector surface aligned with said axial bore and said opening through said intermediate section, and having an enlarged area substantially larger than that of said axial jet such that when said deflector surface is impinged by said axial jet, it produces an annular spray laterally of the sprinkler, whereby the sprinkler may be converted from a rotary sprinkler producing a rotating jet, to a static sprinkler producing an annular spray by merely removing said rotor from the nozzle and permitting the axial jet to impinge on said deflector surface area of the outer bridge section.

4,660,766

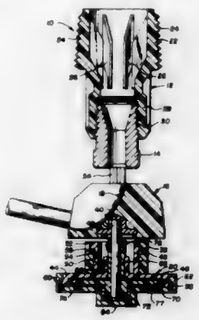
ROTARY SPRINKLER HEAD

Barton R. Nelson; Larry P. Meyer, and George L. Sesser, all of Walla Walla, Wash., assignors to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Sep. 18, 1985, Ser. No. 777,411

Int. Cl.⁴ B05B *3/04*

U.S. Cl. 239—222.17 **39 Claims**



1. A rotary sprinkler head comprising

a sprinkler body having an outlet and means devoid of any operative dynamic seals for communicating a source of water under pressure with said outlet,

said outlet being defined by surface means for directing water under pressure communicated therewith into an atmospheric condition in a primary stream having a generally vertically extending axis,

a rotary distributor mounted for rotational movement about a rotational axis with respect to said sprinkler body in engaging relation with respect to the primary stream directed from said outlet,

said rotary distributor having surface means for engaging the primary stream (1) to establish a reactionary force component acting on said distributor in a direction tangential to the rotational axis thereof so as to effect rotational movement thereof about said axis of rotation and (2) to direct the primary stream engaged thereby in the form of pattern forming stream means including at least one stream moving away from said distributor in a direction having a substantial component extending radially outwardly from the generally vertical axis of said primary stream,

speed reducing means operatively associated with said distributor for reducing the rotational speed of the distributor resulting from said reactionary force component from a relatively high whirling speed which would occur without said speed reducing means to a relatively slow speed so related to the distributor surface means forming the pattern forming stream means as to permit (1) said one stream to leave said distributor surface means with sufficient stream integrity to flow outwardly a distance substantially as great as the same said one stream would flow if the distributor were held stationary and (2) all of the pattern forming stream means including said one stream to be distributed within a generally circular pattern with a desired droplet size and with a desired water distribution within said generally circular pattern, the radius of said generally circular pattern being defined by the maximum extent of flow of said one stream.

4,660,767

VECTORABLE EXHAUST NOZZLE FOR GAS TURBINE ENGINES

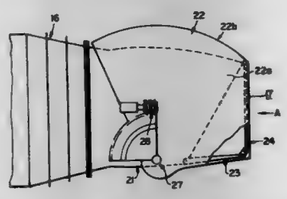
Harold A. Scrace, Bristol, England, assignor to Rolls-Royce, London, England

Filed Aug. 9, 1985, Ser. No. 764,012

Claims priority, application United Kingdom, Aug. 16, 1984, 8420798

Int. Cl.⁴ F02K *1/78*

U.S. Cl. 239—265.35 **8 Claims**



1. A vectorable exhaust nozzle for an exhaust gas stream in a gas turbine engine having an exhaust orifice, said nozzle comprising:

a fixed structure including a fixed duct defining a longitudinal axis and having an upstream end and a downstream edge;

a cowl pivotally attached to the fixed structure for rotation about an axis located upstream of said downstream edge and transverse to said longitudinal axis, said cowl comprising two sidewalls and a deflector wall extending therebetween;

a flap pivotally attached to the downstream edge of the fixed duct and extending between the sidewalls of the cowl, said flap and said sidewalls of said cowl defining an area for the exhaust orifice;

at least one link member pivotally attached at one end to said cowl and at an opposite end to said flap; and

actuation means for pivoting one of said cowl and said flap and thereby simultaneously pivoting the other of said cowl and said flap through said at least one link member, said actuation means simultaneously pivoting said cowl and flap between a first upstream position and a second downstream deployed position to increasingly deflect the exhaust gas stream and maintain the area of said exhaust orifice substantially constant.

4,660,768

NOZZLE FOR INJECTING SOLIDS PNEUMATICALLY

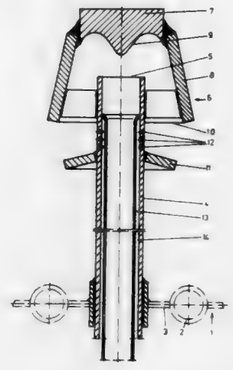
Dirk Bunthoff, and Rainer Hildebrandt, both of Essen, Fed. Rep. of Germany, assignors to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Apr. 15, 1986, Ser. No. 852,353

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1985, 3513764

Int. Cl.⁴ F23D *1/00*; B05B *1/26*

U.S. Cl. 239—423 **3 Claims**



1. A nozzle for injecting solids pneumatically into a reaction space of a fluidized-bed combustion chamber, comprising: an outer pipe for conveying a mixture of solids and air and having an open end in said combustion chamber; a hood surrounding said open end at a spaced distance therefrom and having an outlet area; said hood having a deflection surface facing said outlet area; said pipe having exit bores in the wall thereof and spaced from said outlet area of said hood; an inner pipe positioned concentrically within said outer pipe and leaving an annular space between said inner pipe and said outer pipe for passage of air through said annular space, said inner pipe being connected seal-tight to said outer pipe at a distance downstream from said exit bores.

4,660,769

DRIP IRRIGATOR HAVING FLOAT CONTROL VALVE

Avner Rosenberg, Moshav Beit Shearim, Israel

Filed Aug. 19, 1983, Ser. No. 524,610

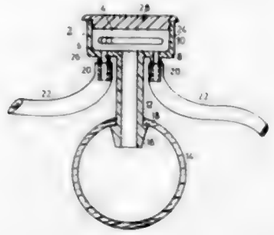
Claims priority, application Israel, Aug. 23, 1982, 66607

Int. Cl.⁴ B05B *15/00*

U.S. Cl. 239—542 **12 Claims**

1. A fluid flow control device particularly useful as a multiple-emitter for drip-irrigation, comprising: a housing defining an internal chamber; a freely movable control disc disposed within said chamber but unattached to the housing so as to be freely movable within the chamber; said housing including a wall defining one side of said chamber and formed with an inlet opening at the center of said wall and a plurality of outlet openings arranged in a circular array around said inlet opening; all of said openings facing the same side of said freely movable control disc; the side of said control disc facing said wall of the housing being flat such that the outer periphery of the control disc effectively regulates the flow through all the outlet openings individually to maintain a substantially constant division of flow between them; an inlet tube for connect-

ing said inlet opening to a source of pressurized fluid; and a plurality of outlet tubes, one connected to each of said outlet



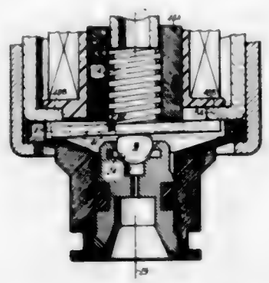
openings, for conducting the fluid exiting from the respective opening to the point of use of the fluid.

4,660,770

ELECTROMAGNETIC FUEL INJECTOR

John H. Gieseking, Detroit, Mich., assignor to United Technologies Diesel Systems, Inc., Springfield, Mass.

Filed Sep. 25, 1985, Ser. No. 780,109
Int. Cl.⁴ B05B *1/30;* **F02M** *61/20;* **F16K** *31/02;* **F16F** *1/06*
U.S. Cl. 239—585 **6 Claims**



1. In an electromagnetic fuel injector for an internal combustion engine having a valve axis and including a housing, a flat armature connected to a movable valve element arranged to cooperate with a valve seat, spring means for exerting a force in an axial direction on said armature, and electromagnetic means for exerting a force in an opposite direction on said armature when electrically energized, the improvement comprising:

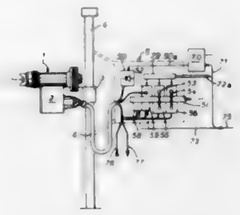
said spring means being a helical coil spring disposed in substantially coaxial alignment with the valve axis and having an end in compressive engagement with said armature, the final coil which includes said end of said coil spring being inclined axially outward at an angle relative to a plane normal to the axis of the spring so as to apply to said armature a greater axial spring force to one side of the valve axis than the other thereby to effect pivoting of said armature about a pivot, said pivot being determined by the location of said end of said coil spring.

4,660,771

ELECTROSTATIC PAINTING APPARATUS

Pierre Chabert, Grenoble, and Roger Tholome, La Tronche, both of France, assignors to Sames S.A., Meylan, France

Filed Sep. 20, 1984, Ser. No. 652,463
Claims priority, application France, Sep. 27, 1983, 83 15328
Int. Cl.⁴ B05B *5/02*
U.S. Cl. 239—694 **10 Claims**



10. Painting apparatus comprising:

(a) a drive means;

(b) a support which is mounted for movement at high speed by said drive means;

(c) a sprayer which is carried by said support, said sprayer having a longitudinal axis and comprising a paint sprayer nozzle, two distributors adapted to be supplied with pressurized gas, a first distributor being substantially coaxial with said longitudinal axis of the sprayer and a second distributor being oblique relative to said axis of the sprayer, and said two distributors cooperating with one another to form a shaped paint jet and said sprayer further comprising pneumatic valve means for controlling the fluids supplied to said paint sprayer nozzle;

(d) a paint feed assembly which is mounted on said sprayer and which comprises a pneumatically controlled paint pressure regulator and a valve for discharging said pneumatically controlled regulator;

(e) three electrically controlled gas pressure regulators, one for each of said two distributors and one for said paint pressure regulator;

(f) two electrically controlled pneumatic on/off valves respectively connected to said pneumatic valve means and said discharge valve;

(g) programmable logic means adapted to distribute electrical control signals to said electrically controlled gas pressure regulators and said two electrically controlled pneumatic on/off valves in sequences which correspond to predetermined operating sequences;

(h) a chassis which is fixedly disposed on said drive means at a position immediately adjacent a center of the extent of travel of said support on said drive means and which carries said three gas pressure regulators and said two electrically controlled pneumatic valves; and

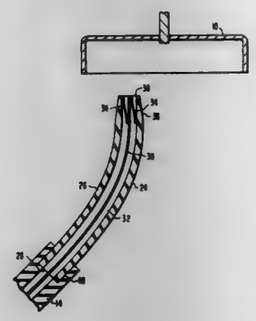
(i) a harness connecting the three gas pressure regulators and the two electrically controlled pneumatic valves disposed on said chassis to the sprayer and the feed assembly disposed on said support, said harness having a length which is substantially equal to the minimum length necessary for movement of said support relative to said chassis for a given horizontal spacing between said chassis and said support.

4,660,772

ELECTROSTATIC POWDER SPRAY GUN NOZZLE

Kenneth T. Rice, Lima, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Sep. 26, 1984, Ser. No. 654,710
Int. Cl.⁴ B05B *5/02*
U.S. Cl. 239—704 **3 Claims**



1. An electrostatic spray gun for spraying particulate powder material comprising:

an elongated arcuate tube nozzle having an inlet orifice and an elongated outlet orifice, said tube having a curved portion adjacent to said elongated outlet orifice to define a continuously turning flow path adjacent and into said outlet orifice, said outlet orifice having a length substantially less than said curved portion of said nozzle;

means for injecting a mixture of powder particles and a gas into said inlet orifice and establishing flow through said tube nozzle with a smooth turning of said flow into said outlet orifice, said curvature of said curved portion forcing said powder particles passing through said curved portion to one side of said tube nozzle as a result of centrifugal forces;

means to impart a charge to said powder particles passing through said outlet orifice; and

a plurality of circumferentially spaced helical grooves in the inside wall of said tube, each of said grooves extending substantially throughout said outlet orifice for imparting a small circumferential swirling motion to said mixture to prevent streaming of said powder particles, said grooves extending along a portion of the inside wall of said tube adjacent to and substantially throughout said outlet orifice.

4,660,773

LEAKPROOF HIGH PRESSURE NOZZLE ASSEMBLY

Thomas A. O'Hanlon, Tacoma, Wash., assignor to Flow Industries, Inc., Kent, Wash.

Continuation of Ser. No. 550,232, Nov. 8, 1983, abandoned. This application Oct. 8, 1985, Ser. No. 786,155
Int. Cl.⁴ E21B *7/18*
U.S. Cl. 239—596 **15 Claims**

1. A fluid cutting jet nozzle assembly for a housing means defining a nozzle supply passageway, wherein said fuid cutting jet nozzle assembly comprises:

(a) a jet forming means for forming a fluid cutting jet;

(b) nozzle body means, defining: a bore through which said cutting jet is adapted to pass; a first snout means adapted to be snugly received in and extend upstream in said fluid supply passageway; a second snout means extending upstream from said first snout means and at least partly of smaller diameter than said first snout means; said second snout means having a surface adapted to seat said jet forming means; and a shoulder means defined by the upstream end of said first snout means;

(c) sealing means at least substantially encircling said second snout means upstream from said shoulder means;

(d) mounting means for mounting said nozzle body means in said nozzle supply passageway;

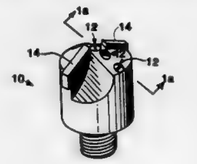
wherein said sealing means are sized to make a snug seal between said passageway and said nozzle body means when said nozzle body means are mounted in said passageway means, and wherein said sealing means tends to flow downstream towards said shoulder means under working pressure and expand radially inwardly and outwardly under working pressure to increase the firmness of said seal as said working pressure increases,

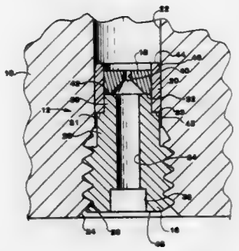
wherein said assembly is mounted to said housing means from the exterior of said housing means, and

wherein said passageway defines a corner and said first snout defines a chamfer which is sized to firmly contact said corner when said nozzle assembly and housing means are assembled, to prevent downstream flow of said sealing means between said corner and said chamfer under pressure.

14. A cutting head, comprising:

(A) means defining an axially extending nozzle supply passageway including a downstream-most threaded section and an upstream smooth walled section; and





(B) a fluid jet cutting assembly seated within said passageway and defining its own axially extending bore in fluid communication with said passageway, said assembly including

(a) an integrally formed set screw defining a downstream segment of said bore, said set screw having

(i) a downstream-most axially extending and externally threaded shaft thread connected into the threaded section of said passageway, said shaft defining a drive recess at its downstream end for receiving a drive means such as a screw driver or the like

(ii) an upstream axially extending section extending at least partially into the smooth walled section of said passageway so as to define an annular void between the latter and an axially extending segment of the upstream set screw section,

(b) an axially extending nozzle located directly against and upstream of the upstream end of said set screw and defining an upstream segment of said bore, and

(c) a tubular sealing sleeve located within the smooth walled section of said passageway around all of that portion of the upstream section of said set screw located upstream of said annular void and around the axially extending outer surface of said nozzle, said sleeve being formed of a material which will flow in a plastic manner

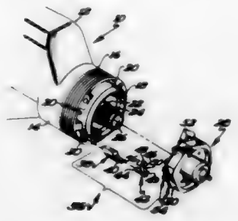
into said annular void when subjected to the operating pressures of said cutting head.

4,660,774

FLUID NOZZLE LOCKING MECHANISM

Kui-Chiu Kwok, Ardea Hills, and Robert J. Lind, Robbinsdale, both of Minn., assignors to GRACO INC., Minneapolis, Minn.

Filed May 23, 1985, Ser. No. 737,823
Int. Cl.[4] B05B *5/02*
U.S. Cl. 239—708 **3 Claims**



1. A fluid nozzle locking mechanism for spray guns comprising a fluid nozzle rotatably and threadedly mounted on a gun body, and an air cap rotatably mounted on said body and clampingly retained thereto by a retaining ring rotatably and threadedly mounted to said body over said nozzle, said locking mechanism comprising:

a latch on said body intermediate said retaining ring and said nozzle and movable between first and second positions, said latch comprising a latch member rotatably located in said gun body, said latch member comprising a pivot shaft rotatably located in gun body, a first projection adjacent said shaft, and a second projection circumferentially spaced around said nozzle from said first projection, said projections engaging said nozzle in said first position; and

latch engaging means on said nozzle said latch being located between said nozzzle and said retaining ring wherein said latch interacts with said latching engaging means in said first position to prevent rotation of said nozzle relative to said body, said latch being rotatable to said second position wherein said nozzle is free to rotate, relative to said body and wherein said latch is retained in said first position by said retaining ring when said retaining ring is on said body and requiring removal of said retaining ring to rotate said latch to said second position.

4,660,775

MEANS FOR SEEDING THROUGH A CENTER PIVOT IRRIGATION SYSTEM

Carl R. Ostrom, Omaha, and John A. Chapman, Wahoo, both of Nebr., assignors to Valmont Industries, Inc., Valley, Nebr.

Filed Jun. 17, 1985, Ser. No. 745,183
Int. Cl.[4] B05B *3/18*
U.S. Cl. 239—727 **4 Claims**

1. In combination,

a self-propelled irrigation system comprising a primary water supply pipe supported by a plurality of spaced-apart drive tower adapted to move said primary water supply pipe over a predetermined area,

said primary water supply pipe being in operative communication with a source of water,

said primary water supply pipe having a plurality of spaced-apart sprinklers provided thereon for sprinkling water on said predetermined area,

a pump means for pumping water through said primary water supply pipe to said sprinklers,

an auxiliary water line means supported on said irrigation system and being in operative communication with a source of water under pressure,

a plurality of spaced-apart sprinklers provided on said auxiliary water line means,

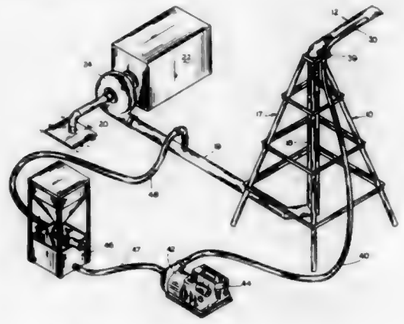
a seed supply means adapted to supply seeds to be planted,

metering means for metering seeds from said seed supply means into said auxiliary water line means,

and means for controlling the operation of said sprinklers on said auxiliary water line means whereby seeds will be substantially uniformly broadcast onto said predetermined area, through said sprinklers on said auxiliary water line means, as said primary water supply pipe is moved thereover,

said metering means including a water tank means adapted to receive seeds from said seed supply means,

said water tank means comprising a bottom wall with upstanding side walls,



a vertically disposed hollow tube means positioned in said water tank means and having an open upper end which is in communication with said metering means so that the seeds are delivered to the interior of said tube means,

said water tank means having a water inlet means in communication with a source of water under pressure whereby water will be supplied to the interior of said tank means, means for controlling the level of water in said water tank means,

said tube means being in fluid communication with the water in said tank means,

said tube means also being in fluid communication with said auxiliary water line means whereby said seeds delivered to said tube means will be supplied to said sprinklers on said auxiliary water line means,

said tube means having openings formed thereon below its upper end in communication with the water in said water tank means so that water in said water tank means may enter said tube means.

4,660,776

VERTICAL GRINDING MILL

Iwao Ikebuchi, Hirakata; Kazuo Fuse, Nara, and Akira Ganse, Tokyo, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Oct. 11, 1985, Ser. No. 786,547
Int. Cl.[4] B02C *17/16*
U.S. Cl. 241—53 **1 Claim**

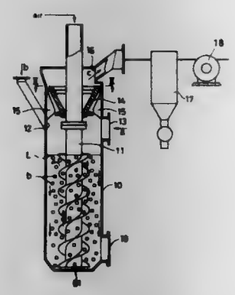
1. A dry vertical grinding mill comprising:

a shell for containing material to be pulverized and grinding medium;

a vertical helically bladed hollow shaft rotatably mounted in said shell and extending through the top wall of said shell and having the bottom end open to the bottom portion of the interior of said shell and the upper part in communication with a source of gas;

means connected to said shaft for driving said shaft in a direction for moving the material and the grinding medium upwardly in the shell to agitate the material and pulverize the material to fine particles whereby a portion of the mixture of grinding medium and material to be pulverized is left under a reduced pressure of the mixture at the bottom of said shell;

collector means at the top of said shell for collecting the fine particles, said shell being otherwise substantially gas tight; and



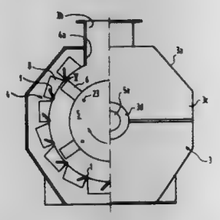
means for forming a gas current having a suction side connected through said collector means to the top of said shell for drawing gas from the source of gas downwardly through said shaft and laterally from the open bottom end of said shaft into said reduced pressure portion of the mixture at the bottom of said shell and then upwardly in said shell to said collector means for taking the fine particles out of the shell and passing them through said collector means.

4,660,777

APPARATUS FOR MANUFACTURING FLAKES

Karl Schaefer, Lechbruck am See, and Heinz Stein, Unna-Hemmerde, both of Fed. Rep. of Germany, assignors to Inter-wood Maschinen GmbH & Co. KG, Lechbruck am See, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 590,081
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309517
The portion of the term of this patent subsequent to Jun. 10, 2003, has been disclaimed.
Int. Cl.[4] B02C *13/09*
U.S. Cl. 241—88 **7 Claims**



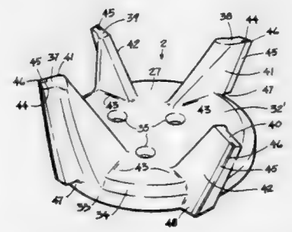
1. A disintegrator apparatus, comprising a stationary cylindrical knife-ring carrying knives with inward directed blades, a rotating conveying mechanism within said knife-ring and having striking elements which throw material to be particularted against the blades of the knives, said conveying mechanism being rotatable about a rotational axis, knife-clamping devices arranged at symmetrical distances on the inner periphery of the knife-ring for circumferentially positioning of the knives in the knife-ring, and at least one magazine located outside one axial end of said knife-ring for storing knives therein, and means associated with said magazine for moving a knife in parallel with said rotational axis through said knife-ring and therewith for replacing a worn knife with a sharp one during operation of the apparatus.

4,660,778

IMPELLER FOR COMMINUTING EQUIPMENT

Robert R. Fischer, Michigan City, and Joe R. Urschel, Valparaiso, both of Ind., assignors to Urschel Laboratories, Inc., Valparaiso, Ind.

Continuation of Ser. No. 733,536, May 13, 1985, abandoned, which is a division of Ser. No. 546,182, Oct. 27, 1983, Pat. No. 4,610,397. This application Jul. 22, 1986, Ser. No. 885,751
Int. Cl.[4] B02C *18/16*
U.S. Cl. 241—292.1 **4 Claims**



1. An impeller for comminuting a product in an apparatus defined by a bottom support and having an interior wall provided with a plurality of transverse passages and a plurality of corresponding cutting edges disposed adjacent the passages, which impeller comprises:

(a) an annular-shaped base having a periphery and an upper planar surface;

(b) an even number of blades, each blade including a top end and a bottom end, the botton end of each blade being supported on the periphery of the base and extending inwardly partially across the upper planar surface so as to position a majority of each blade in an upwardly extending disposition, with the top end of each blade being positioned above the upper planar surface of the base;

(c) half of the total number of blades sloping forwardly from the base towards the direction of rotation and the remaining half of the total number of blades sloping rearwardly from the base away from the direction of rotation with respect to an impeller axis of rotation, each forwardly sloping blade being positioned between two rearwardly sloping blades;

(d) the top end of each forwardly sloping blade extending beyond the top end of each rearwardly sloping blade, and the bottom end of each rearwardly sloping blade extending beyond the bottom end of each forwardly sloping blade;

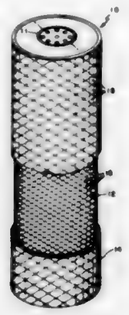
(e) each blade including a product engaging surface facing towards the direction of rotation; and

(f) the product engaging surfaces, to ends and bottom ends of the blades being configured to define an undulating path along which a product is caused to flow during rotation of the impeller, which path continues from the top end and down the product engaging surface and around the bottom end of each forwardly sloping blade, and up the product engaging surface and around the top end of each rearwardly sloping blade.

4,660,779
MULTILAYER PRECISION WOUND FILTER CARTRIDGE

Stephen A. Nemesi, Carmel, and James R. Schmitz, Indianapolis, both of Ind., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 599,041, Apr. 11, 1984, abandoned. This application Apr. 22, 1986, Ser. No. 855,021
Int. Cl.⁴ B01D *29/48;* **B65H** *81/00*
U.S. Cl. 242—7.02 **8 Claims**



1. A method of making a precision helically wound filter cartridge of yarn or roving having a micron rating in the range of 1 to 30 comprising

(a) helically winding by a precision winder a base wind of diamond shaped passages of filter yarn material onto a rotating cylindrically shaped foraminous core in a crisscross path using a wind number in the range of about 17 to about 39;

(b) helically winding by the precision winder a second wind of diamond shaped passage of filter yarn material over said base wind in a crisscross path having a different wind number than said base wind number selected in the range of 7 to 21 to form an outer wind wherein the diamond shaped flow passages in said outer wind are lesser in number than said base wind;

(c) switching the ratio of the core rotation speed to the winder speed in a coasting zone at one end of the core prior to commencing the laying of said outer wind and prior to completion of said base wind, and

(d) reversing the direction of the yarn in a predetermined transition zone at said core end to align said flow passages at the interface of said winds one with the other to provide unrestricted flow paths between said base and outer winds.

4,660,780
YARN END FINDING DEVICE

Hiroo Otoshima, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Osaka, Japan

Filed Apr. 3, 1985, Ser. No. 719,377
Claims priority, application Japan, Apr. 5, 1984, 59-68672
Int. Cl.⁴ B65H *67/08, 54/22*
U.S. Cl. 242—35.6 E **13 Claims**

1. A yarn end finding device for a spinning bobbin comprising:

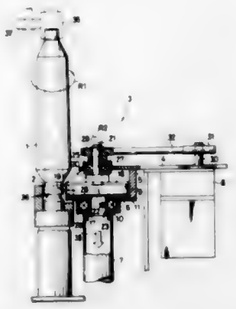
a partition located adjacent a spinning bobbin, said partition having an aperture therethrough;

suction means located on a side of said partition for drawing a yarn end of said spinning bobbin located on an opposite side of said partition through said aperture in said partition;

a rotary member having a periphery and disposed on the same side of said partition as said suction means;

means for rotating said rotary member;

grasping means located on said rotary member for grasping said drawn yarn end to draw the yarn end into contact with the rotary member and cause the yarn end to be wrapped around the periphery of the rotary member as said rotary member rotates; and

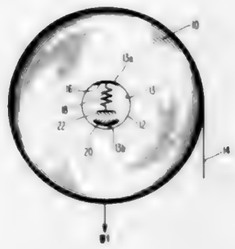


cutter means located adjacent said rotary member for cutting said drawn yarn end as said rotary member rotates.

4,660,781
ROLL TISSUE DISPENSER

James E. Hazard, Swarthmore, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Dec. 20, 1984, Ser. No. 683,893
Int. Cl.⁴ B65H *16/00, 23/06*
U.S. Cl. 242—55.2 **4 Claims**



1. A dispenser for a roll of sanitary paper having a hollw core, the roll being supported in the dispenser with its core axis oriented horizontally, the dispenser comprising:

(a) a fixed horizontal support member mounted in the dispenser for extension within the core;

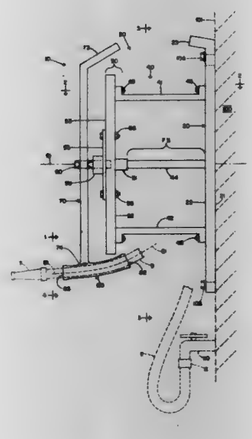
(b) a compliant member secured to an upper surface of the support member for contacting an upper inner surface of the core; and

(c) a lower surface of the support member providing a braking surface within the core having a higher coefficient of friction with respect to the core than the compliant member, said compliant member being responsive to the weight of the roll so as to urge a lower inner surface of the core into contact with the braking surface whereby the frictional force developed between the braking surface and the core increases as the weight of the roll decreases.

4,660,782
PORTABLE REEL FOR FLEXIBLE CONDUITS

Kenneth J. Hegemann, R.R. 1, Box 69, Newman Grove, Nebr. 68758

Filed Feb. 18, 1986, Ser. No. 830,273
Int. Cl.⁴ B65H *75/38, 49/02;* **A62C** *35/00*
U.S. Cl. 242—86 **12 Claims**



1. Portable reel for flexible conduits and comprising:

(A) a rearwardly positioned upright mount having directionally laterally separated ends including a top-end and a bottom-end;

(B) non-rotatable spool means attached to said mount and including a hub portion surrounding a horizontally extending longitudinal-axis, said spool means also incuding a frontal-rim extending radially from said longitudinal-axis and said hub and having an upright frontal-face, said frontal-rim being attached to said hub and being located a horizontally longitudinally extending finite-spacing forwardly of said mount, said radial frontal-rim extending both uprightly laterally and horizontally transversely from said longitudinal-axis;

(C) substantially colinear with and rotatable about said longitudinal-axis, a spindle attached to at least said spool means frontal-rim and including a spindle fore-length positioned forwardly of said frontal-rim;

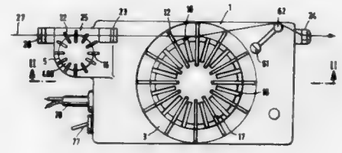
(D) an elongate radial arm that is located substantially parallel to and frontally of said frontal-rim, said elongate arm being co-rotatably attached to said spindle fore-length, and said elongate arm including first-end located radially remote from said spindle fore-length and beyond the frontal-rim; and

(E) a manually graspable tubular guide having a length-wise spine that is rigidly attached to said arm first-end, said tubular guide being provide with a curved-axis bore terminating as an outlet-opening located forwardly of said elongate arm and as an inlet-opening located rearwardly and radially inwardly of said frontal-rim, and said inlet-opening being transversely offset from said outlet-opening whereby when said radial arm first-end is stictly vertically below the spindle, the plan view angular relationship betweent he tubular guide curved-axis and said longitudinal-axis is withinthe range of 5° to 20°.

4,660,783
YARN BRAKE, PARTICULARLY FOR TEXTILE MACHINES

Erich Roser, Bermatingen, and Gustav Memminger, Heideweg 65, D-7290 Freudenstadt, both of Fed. Rep. of Germany, assignors to Gustav Memminger, Freudenstadt, Fed. Rep. of Germany

Filed Oct. 8, 1985, Ser. No. 785,527
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1984, 3437251
Int. Cl.⁴ B65H *59/16*
U.S. Cl. 242—155 R **14 Claims**



1. Yarn brake, particularly for textile machines, having

a rotatable yarn drum receiving yarn wrapped several times in a slip-free manner about a yarn contact section,

and an electromagnetically operating braking device fixed against relative rotation to the yarn drum for application of braking torque applied upon the yarn drum,

comprising, in accordance with the invention,

an electric motor (**50**) having a low-inertia armature (**51**) coupled to the yarn drum,

the electric motor being driven by the moving yarn (**27**) against its impressed sense of rotation;

an actuator element (**75**) coupled to the electric motor (**50**) to alter the torque of the motor;

wherein the yarn drum is a low-inertia yarn drum (**400**);

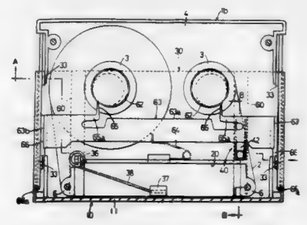
a yarn tension sensor (**62**; **60**) is provided for scanning the yarn (**27**) unwinding from the low-inertia drum (**400**) and for permitting a signal indicating the yarn tension or its deviation from a predetermined control value; and

wherein said signal is coupled to influence the actuator element (**75**) to alter the torque of the electric motor (**50**) in the sense of an appropriate adjustment of a predetermined torque.

4,660,784
TAP CARTRIDGE

Takashi Sumida, Takatsuki; Sigeo Sasaki, Kyoto; Takao Ketori, Osaka; Kazuhiro Fujita, Nagaokakyo, and Kenji Ogiro, Yokohama, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka and Hitachi, Ltd., Tokyo, both of, Japan

Filed May 30, 1985, Ser. No. 739,297
Claims priority, application Japan, May 30, 1984, 59-110274
Int. Cl.⁴ G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—198 **8 Claims**



1. A tape cartridge comprising a cartridge case having a bottom portion, a pocket formed in a front portion of said cartridge case in the form of an opened space for enabling tape

loading, a shutter means mounted to said bottom portion of said cartridge case so as to move in a frontward and backward direction of the cartridge case along a bottom face of said cartridge case for opening and closing a lower opening of said pocket, rib means formed on an inner face of said shutter means facing toward said cartridge case so as to slidably partially contact said cartridge case and a guide slot formed on an outer face of said shutter means at a position opposite to said rib means for guiding a lock releasing member of a tape player when the latter is introduced into the inside of said cartridge case.

4,660,785

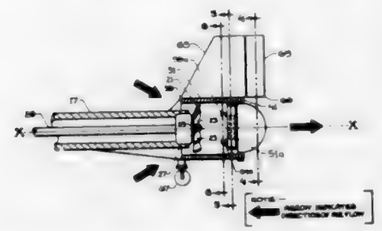
HELICOPTER ANTITORQUE AUXILIARY PROPULSION SYSTEM

Michael S. Munski, 44052 Pine St., Lancaster, Calif. 93536

Filed Dec. 16, 1985, Ser. No. 809,295

Int. Cl.[4] B64C *27/82*

U.S. Cl. 244—17.19 **13 Claims**



1. An antitorque auxiliary propulsion system for helicopters of the type having a tail boom extending axially therefrom comprising:

(a) a propeller for attachment to said tail boom adapted for powered rotation to create a directed air flow to impart reactionary motion to said helicopter;

(b) a duct encircling said propeller in its plane of rotation and comprising integrally connected top, bottom and first and second side portions thereof to concentrate said air flow into a finite air stream;

(c) a pair of vertically oriented stabaron doors hingedly mounted in said ducted air stream adapted to move from a position that fully closes off said duct and the air stream therethrough to a position that fully opens said duct;

(d) a first pair of yaw apertures formed in said duct and extending generally horizontally outward through said first and second sides thereof; and,

(e) means to control the position of said stabaron doors to

(i) close off said duct and the air stream therethrough and selectively divert the air stream sideways through one of said yaw apertures to impart directional and antitorque control to said helicopter under low speed and hovering flight conditions, and

(ii) open said duct and, thereafter in unison, divert said air stream from its normal rearward course to impart directional control to said helicopter under high speed flight conditions.

4,660,786

PIVOT BEARING ARRANGEMENT FOR THE CONTROL SURFACE OF A MISSILE

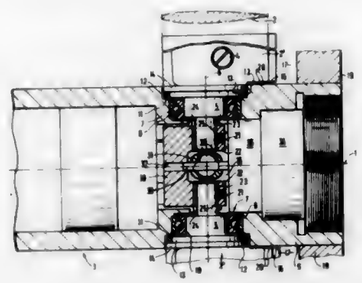
Bernd Brieseck, Henfenfeld, and Josef Nagler, Rothenbach, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Oct. 29, 1985, Ser. No. 792,459

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1984, 3441534

Int. Cl.[4] F42B *13/32, 15/053, 15/027;* **F16J** *15/16*

U.S. Cl. 244—324 **5 Claims**



1. In a pivot bearing arrangement for pivotable control surfaces of a guidable missile, which is fireable through the intermediary of the gas pressure of a propellant charge; the improvement comprising: a cylindrical support for each said control surface extending into a tail end structure of said projectile, a radial ball bearing guiding said support in said tail end structure, a sealing ring constituted of a resiliently deformable material being axially contacted by a circular shoulder on said support, said sealing ring bearing against a shoulder in said tail end structure; an axially extending recess is formed in the cylindrical surface of the support said recess having a bottom surface inclined relative to of the longitudinal axis of said support so that said recess deepens in a radially outward direction; a coupling element for each said control surface support in said tail end structure; a threaded pin in said coupling element, said threaded pin engaging into said recess into contact with the bottom surface thereof at a location remote from the deepest point of the recess, said sealing ring being axially deformed upon radial displacement, relative to the longitudinal axis of the projectile, of the support for each said control surface in response to the gas pressure of said propellant charge.

4,660,787

FOOD SUPPLY SYSTEM FOR AN AIRCRAFT

Wilfried Sprenger, Issendorf, and Safa Kirma, Hamburg-Wedel, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit Beschraenkter Haftung, Munich, Fed. Rep. of Germany

Division of Ser. No. 803,501, Nov. 27, 1985, abandoned, which is a continuation of Ser. No. 555,685, Nov. 28, 1983, abandoned. This application Jul. 14, 1986, Ser. No. 885,380

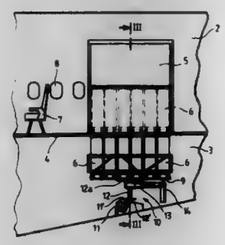
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245986

Int. Cl.[4] B64D *11/04*

U.S. Cl. 244—118.5 **10 Claims**

1. A food supply system for an aircraft having an upper deck and a lower deck, comprising pantry means on said upper deck, said pantry means comprising counter top means (39) at a given work level above said upper deck, and on said lower deck a fully automatic storage area without any personnel, a passage opening in said upper deck directly below said counter top means, said passage opening connecting said pantry means on said upper deck with said storage area on said lower deck,

cart carrying platform means operatively installed in said automatic storage area on said lower deck substantially vertically below said pantry means, more than two supply carts carried by said platform means in said automatic storage are, said supply carts having a height less than said given work level for individually fitting under said counter top means when any supply cart is lifted into said passage opening, first automatic power drive means and lifting means automatically operable by said power drive means provided for selectively lifting any supply cart from said storage area into a space below said counter top means in said pantry means, or for automatically and individually lowering any one of said supply



carts from said space below said counter top means (39) in said pantry means to said lower deck through said opening, second drive means for providing relative rotation between said cart carrying platform means and said lifting means to bring a cart and said lifting means into a cooperating relationship with each other to perform said lifting said lifting or lowering, and control panel means including operating means for said lifting means, located in said pantry means for individually controlling said lifting means and said platform means in said pantry means whereby the presence of a flight attendant in said automatic storage area is obviated and whereby said counter top means protect a flight attendant in said pantry means from accidental injury by said lifting means.

4,660,788

SUPERCRITICAL WING

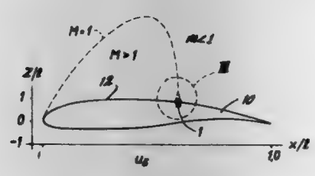
Peter Thiede, Ganderkesee, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,864

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949133

Int. Cl.[4] B64C *21/06*

U.S. Cl. 244—209 **8 Claims**



1. Supercritical airfoil having a contour which stabilizes the zone of compression shock production to a limited chord range on the upper surface, the improvement comprising:

means disposed exclusively in the limited chord range for sucking up a portion of the turbulent boundary layer.

4,660,789

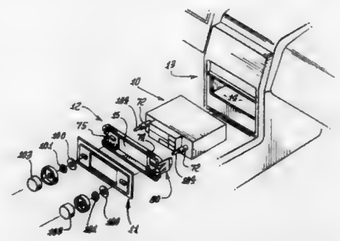
CONVERSION KIT FOR MOUNTING A RADIO SUBSTITUTED FOR ORIGINAL RADIOS IN AUTOMOTIVE VEHICLES

Rob R. Putnam, Simi Valley, Calif., assignor to Scosche Industries, Inc., Simi Valley, Calif.

Filed Jun. 10, 1985, Ser. No. 743,309

Int. Cl.[4] G12B *9/00*

U.S. Cl. 248—27.3 **10 Claims**



1. In a conversion kit for use with radio structure including a vehicle radio housing and a front trim panel, and adapting to the panel and radio as well as to an instrument panel that receives the radio, the kit comprising

(a) a unitary mounting panel unit hving an opening therethrough to receive a frontwardly projecting portion of the radio structure, the mounting panel being rectangular and having flange means, and defining four corners, longitudinally elongated opposite edges and laterally elongated opposite edges,

(b) the panel unit forming four pairs of slots extending in said flange means, respectively located proximate said four corners, the slots of each pair being longitudinally spaced apart and being alike to selectively receive and retain one locking clip in one slot of each pair, the slots oriented so that the four clips are selectively receivable in the slots to unidirectionally slide parallel to the plane of the panel unit into retaining engagement with edge portions of the instrument panel, while also adjustably attaching to the panel unit to block reverse sliding thereof,

(c) the panel unit having longitudinally spaced, longitudinally elongated openings that extend forwardly therethrough to receive forwardly elongated fasteners defined by the radio structure, each of said openings located generally between two pairs of said slots that are laterally spaced apart,

(d) and including said four locking clips received and retained in said selected slots, the clips having rachet shoulders engageable against panel unit shoulders as the clips are caused to slide unidirectonally in said slots, thereby to block reverse sliding of the clips.

4,660,790

CABLE SUPPORT WITH TINES

Edwin Muz, Reutlingen, Fed. Rep. of Germany, assignor to Nicolay GmbH, Krichheim, Fed. Rep. of Germany

Filed Nov. 25, 1985, Ser. No. 802,023

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1984, 3444271

Int. Cl.[4] F16L *3/22*

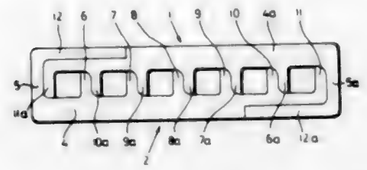
U.S. Cl. 248—68.1 **16 Claims**

1. A cable support, comprising:

a first part having a first longitudinal base with first tines extending therefrom defining first open chambers between said first tines for holding cables;

a second part having a second longitudinal base with second tines extending therefrom defining second open chambers between said second tines for holding cables, said first and second tines being similarly distributed, said first and

second parts being engaged such that each of said first tines is positioned in one of said second open chambers laterally between a respective pair of second tines and each of said second tines is positioned in one of said first open chambers laterally between a respective pair of said



second tines such that all of said tines are laterally offset and such that said chambers are laterally closed and axially open to surround the cables extending perpendicular to said tines and axially through said chambers; and

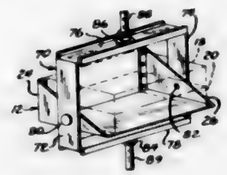
catch means, on said parts, for detachably connecting said parts and for forming a two-way connection.

4,660,791

ELECTRONIC MODULE SUPPORT STAND

Robert B. Lisak, 6751 S. Karlov, Chicago, Ill. 60629

Filed Feb. 11, 1985, Ser. No. 700,283
Int. Cl.⁴ F16L *3/00*
U.S. Cl. 248—122 **9 Claims**



1. Apparatus for supporting a microphone or the like and an electronic module having attachment means on a forward portion thereof, said apparatus comprising:

a variable width base;

a generally vertically oriented support member of variable length coupled to said base;

an open support rack having a generally flat bottom panel and first and second lateral panels coupled to said bottom panel, said first and second lateral panels including mounting means on respective forward portions thereof for engaging the attachment means of the electronic module for mounting the electronic module on said support rack;

adjustable coupling means for securing said support member to said bottom panel whereby the tilt angle of the electronic module may be varied as desired, said adjustable coupling means including an in-line support frame to which said support rack is pivotally mounted, said in-line support frame including a first lower and a second upper panel, wherein said first lower panel is pivotally coupled to an upper end portion of said support member; and

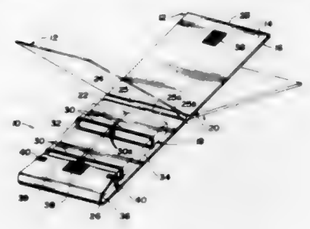
mounting means pivotally coupled to the second upper panel of said in-line support frame for pivotally mounting a microphone or the like to said in-line support frame.

4,660,792

HOLDER FOR VCR AND TV REMOTE CONTROLS

Lawrence D. Rogalski, 33440 Trafalgar La., Apt. No. 8, Westland, Mich. 48185

Filed Nov. 20, 1985, Ser. No. 799,788
Int. Cl.⁴ A45D *19/04*
U.S. Cl. 248—174 **6 Claims**



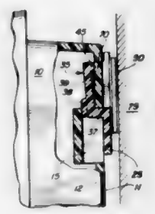
1. A holder for VCR and TV remote controls comprising: an elongated panel of a cushioned sheet-like construction having front and back sides; said panel having holder and cover portions including first ends connected to each other and second ends spaced from the first ends thereof and defining opposite ends of the panel; the front side of the holder portion of the panel including retainers for detachably securing VCR and TV remote controls in a side-by-side relationship with respect to each other; the second end of the holder portion of the panel including a flap folded over the front side thereof; means for securing the flap to the holder portion to define a pocket for receiving the VCR and TV remote controls to cooperate with the retainers in providing detachable securement thereof; and fasteners for securing the cover portion to the front side of the holder portion over the controls for storage or to the back side thereof to permit access to the controls for use.

4,660,793

APPLIANCE MOUNTING APPARATUS

Andrew Mark, Stamford, Conn., assignor to Salton, Inc., Deerfield, Ill.

Filed Jun. 10, 1985, Ser. No. 742,758
Int. Cl.⁴ A47B *96/06*
U.S. Cl. 248—231.8 **4 Claims**



1. Mounting apparatus for removably mounting an article to an associated generally planar supporting surface, said apparatus comprising:

a mounting bracket having a main wall adapted to be fixedly secured in parallel relationship to the associated support surface;

said mounting bracket having at least one arm integral therewith and extending therefrom, said arm including a projecting lateral portion and an offset elongated and resilient finger portion integral with said lateral portion, said finger portion being generally parallel to said bracket main wall;

the distal end of said finger portion being provided with a

reversely directed latch member extending toward said main wall and terminating at a spaced distance therefrom;

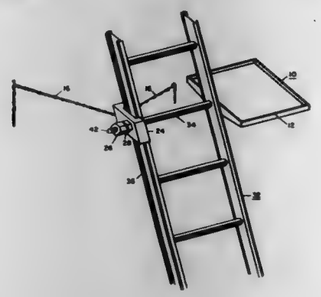
an article to be removably mounted on the associated surface, said article including a rear wall having an inner surface and an outer surface intended to be generally co-planar to the associated supporting surface, said rear wall having at least one mounting site formed therein, said mounting site including an aperture formed in said wall and defining a socket therein adapted to receive said finger portion of said mounting member in complementary fashion, and a knurl formed on the inner side of said rear wall and spaced from said socket, whereby upon insertion of said finger portion through said aperture and into said socket said latch member will overly and engage said knurl thereby to detachably secure said article to said mounting bracket, and means on said finger portion for forcibly engaging a portion of said socket so as to assure that said latch member and said knurl do not accidentally disengage.

4,660,794

LADDER TRAY

William B. Given, R.F.D. #1, Box 417, Kenduskeag, Me. 04450

Filed Apr. 11, 1986, Ser. No. 850,968
Int. Cl.⁴ E06C *7/14*
U.S. Cl. 248—238 **1 Claim**



1. A work tray for hollow rung ladders comprising:

a. shaft having a longitudinally fluted portion,

b. a tray attached to the shaft,

c. a stabilizer block shaped to engage one of the side rails of a ladder,

d. a fluted hole in the stabilizer block to slidably engage the fluted portion of the shaft to prevent rotation of the shaft and attached tray.

4,660,795

SEAT SLIDE DEVICE FOR AUTOMOTIVE SEAT

Isao Ikegaya, and Hatsuo Kawashima, both of Kosai, Japan, assignors to Fuji Kiko Company, Limited, Tokyo, Japan

Filed Jul. 31, 1985, Ser. No. 760,906
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—430 **9 Claims**

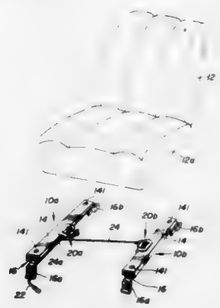
1. A seat slide device for an automotive seat comprising:

a stationary rail fixed to a vehicle floor and having first and second horizontal flanges extending transversely from a major section of the rail;

a sliding rail fixed to the vehicular seat for movement therewith and having third and fourth flanges extending transversely from a major section of the sliding rail, said third flange slidingly mating with said first flange and said fourth flange vertically opposing said second flange so as to define a first space therebetween, and said major section of said sliding rail and said stationary rail defining a second space therebetween;

a first bearing disposed within said first space; and

a second bearing disposed within said second, space and a common retainer for holding both said first bearing and said second bearing;



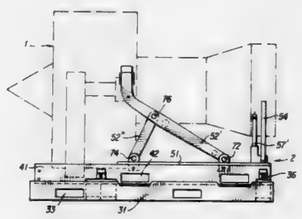
a locking mechanism for locking said sliding rail to said stationary rail, said locking mechanism being disposed on the transverse side of said stationary rail opposite the side to which said first bearing is arranged.

4,660,796

TURBO-MACHINE TRANSPORT FRAME

Jean Garrec, Evry, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs D'Aviation "S.N.E.C.-M.A.", Paris, France

Filed Apr. 20, 1984, Ser. No. 602,368
Claims priority, application France, Dec. 29, 1983, 83 20988
Int. Cl.⁴ F16M *13/00*
U.S. Cl. 248—544 **9 Claims**



1. In a transportation framework for a turbo machine,

a mobile platform,

three support members for supporting the turbo machine at three points and on which the turbo machine rests during transportation and handling operations, and means for adjusting the location of the said support members with respect to the said platform so as to enable said support members to assume at least two locations, one location being an active support location for the turbo machine and the other location being an inactive location where the support members are folded onto the platform.

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4,660,797

MOUNT FOR AN EXHAUST SYSTEM OF A MOTOR VEHICLE

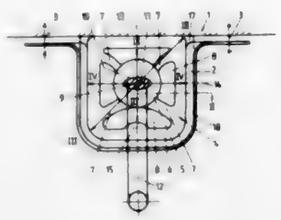
Herbert Tönnies, Reinhardshagen, Fed. Rep. of Germany, assignor to WEGU Gummi- und Kunststoffwerke Walter Drabing, Fed. Rep. of Germany

Filed Dec. 5, 1985, Ser. No. 805,981

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1984, 3445491

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—610 8 Claims



1. A mount for an exhaust system of a motor vehicle, having a U-shaped stirrup (2) to be fixed to the vehicle base (1) and a sound-insulating and vibration-isolating spring element (4) positioned in said U-shaped stirrup for receiving and supporting a metal hanger stirrup (12) connected to the exhaust system of the vehicle, said spring element being made of an elastomer material wherein the spring element (4) has an annular inner mount part (5) and at a distance therefrom an approximately annular outer mount part (6) and web-like spring struts (7) connecting the two mount parts (5,6), wherein the inner mount part (5) is provided with an aperture (10) for accommodating the hanger stirrup (12), wherein the space defined by said U-shaped stirrup (2) is initially of a size smaller than said spring element such that said U-shaped stirrup at least partially compresses the outer mount part (6) of said spring element (4) and compresses said spring element against the vehicle base (1), wherein the inner mount part (5) with its aperture (10) is provided on the spring element (4) symmetrically to the vertical longitudinal center plane (13) in the installed condition of the mount and asymetrically to the longitudinal center plane (14) horizontal thereto, and wherein the spring struts (7) arranged beneath the horizontal longitudinal center plane (14) have overall a greater cross-section than the spring struts arranged above.

4,660,798

HANDPIECE SUPPORT ARRANGEMENT

Tsuyoshi Kinoshita, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1985, Ser. No. 759,675

Claims priority, application Japan, Jul. 30, 1984, 59-115051[U]

Int. Cl.[4] F16M *3/00*

U.S. Cl. 248—648 7 Claims

1. A support arrangement for movably supporting a handpiece comprising:

a main body;

a support post mounted at one end to said main body, said support post extending axially upwardly obliquely from the vertical so that the horizontal projection of the length of said support post extends toward the handpiece;

a movable arm pivotally mounted on the other end of said support post for movement about a horizontal first axis for supporting the handpiece; and

a counterweight disposed on said movable arm for maintaining said movable arm in a substantially horizontal position, said counterweight being mounted adjacent said support post at the intersection of the axes of said support post and said movable arm with an axis of said counterweight intersecting said horizontal first axis and parallel to the



axis of the support post when said movable arm is in a substantially horizontal position.

4,660,799

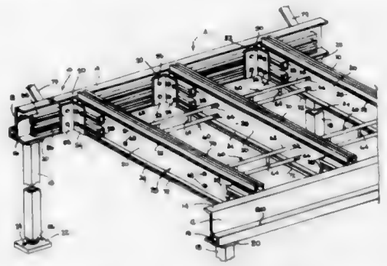
LOAD SUPPORT STRUCTURE

Edward H. Butland, 11746 Thunderbird Ave., Northridge, Calif. 91326

Filed Jan. 29, 1986, Ser. No. 823,958

Int. Cl.[4] F16M *3/00*

U.S. Cl. 248—676 20 Claims



1. A free standing X-ray apparatus support structure for movably supporting an X-ray apparatus, said support structure comprising:

(a) a pair of first beams extending generally parallel in a first direction,

(b) a plurality of second beams extending between the pair of first beams and being supported thereby, said second beams being generally parallel to one another in a second direction,

(c) a plurality of columns disposed in generally upright positions and supporting said first and second beams in generally horizontally disposed positions, said columns being disposed on and supported by a floor or similar horizontally disposed supporting surface,

(d) a first frame member secured to each of said first beams,

(e) a second frame member secured to each of said second beams said beams located at substantially the same horizontal location as said first frame members cooperating with said frame members to enable said second beams to be movable with respect to said first beams, and

(f) means for locking said second beams in a desired position with respect to said first beams when a desired spacing has been achieved between said second beams.

4,660,800

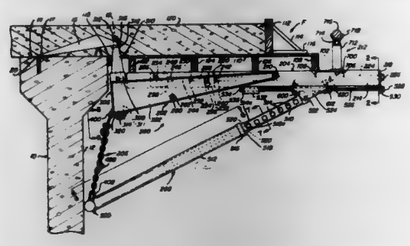
BRIDGE OVERHANG BRACKET AND HANGER

Eugene A. Horstketter, 400 Regentview Dr., Houston, Tex. 77079

Filed Oct. 31, 1985, Ser. No. 793,175

Int. Cl.[4] E04G *13/04*

U.S. Cl. 249—24 21 Claims



1. A bracket for supporting a deck outside a beam, attached to the beam by a hanger means, said bracket comprising:

a horizontal section composed of:

a first horizontal member rigidly attached to said hanger means by a substantially vertical connector means;

a second horizontal member pivotally connected to, and disposed in adjustable angular relation with, said first horizontal member;

means for adjusting the angle of said second horizontal member with respect to said first horizontal member; and

bearing means in bearing engagement with the wall of said beam below said first member and said second member and interconnected with said first member and said second member for supporting part of the load on said bearing deck.

4,660,801

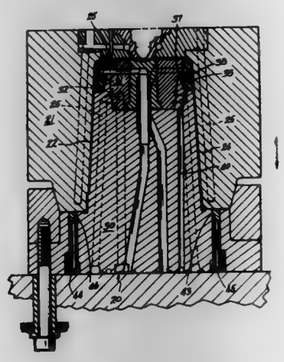
MOLD CORE INCLUDING EJECTION SLEEVE

Robert D. Schad, Toronto, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Dec. 19, 1985, Ser. No. 811,114

Int. Cl.[4] B29C *39/26, 39/36, 45/26*

U.S. Cl. 249—66 A 10 Claims



1. A mold core for ejecting a cup-shaped workpiece which comprises: a core base; a core cap fixedly engaged with said core base; a core sleeve seated on said core base and engageable with said core cap, said core cap, core base and core sleeve forming a peripheral surface for molding a cup-shaped workpiece thereon, said sleeve being moveable between a forward position and a rearward position relative to said cap; a fluid ejection channel formed at the interface of said core base and core sleeve for ejecting gaseous fluid to said peripheral surface having an open position defined by forward movement of said core sleeve and a closed position defined by rearward movement of said core sleeve; a fluid channel means communicating with said fluid ejection channel; and means for limiting the forward movement of said core sleeve.

4,660,802

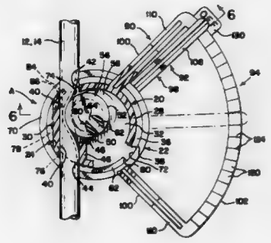
LIQUID FLOW CONTROL DEVICE

Rolf A. Oscarsson, Hudson, Ohio, assignor to RAO Medical Devices, Inc., Hudson, Ohio

Filed Nov. 8, 1985, Ser. No. 796,316

Int. Cl.[4] F16L *55/14*

U.S. Cl. 251—9 28 Claims



1. A device for controlling the flow of a liquid passed therethrough, said device comprising a cup-shaped body member having a bottom end wall and a surrounding side wall together defining a chamber open at one end, a stem member rotatably mounted on said body member for rotative movement relative thereto about an axis of rotation, said stem member including a flow control element rotatable within said chamber about the said axis, and a projecting journal end portion on said flow control element extending through and journaled in a bore opening in the said bottom end wall of said body member and snap-locked therein to rotatively mount the stem member in place, said journal end portion being diametrically slotted to permit spring contraction thereof at its outward end to a smaller diametrical dimension across one of its diameters, and said journal end portion being provided around its outermost end with laterally outward projecting locking lip means of cam-shaped section for snap-locking behind the said bottom end wall of the body member, on insertion and passage of said journal end portion into and through the said bore opening in said bottom end wall, to thereby lock the said members together in assembled rotative relation.

4,660,803

QUICK COUPLING CONNECTOR FOR CONNECTING FLEXIBLE LIQUID CONDUITS

Damon A. Johnston, Aurora, and George L. Garcia, Naperville, both of Ill., assignors to Suncast Corporation, Batavia, Ill.

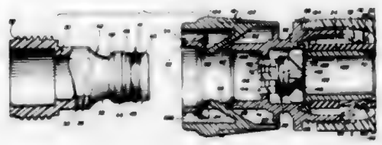
Filed Feb. 26, 1986, Ser. No. 833,143

Int. Cl.[4] F16L *37/28*

U.S. Cl. 251—149.1 14 Claims

1. A quick coupling connector for use in connecting and disconnecting hoses adapted for conducting liquids comprising: a unitary molded plastic male connector body having a flow through passage through its length, said male connector body having a guide cylinder forming a portion of the body and a lock recess adjacent to the guide cylinder, and a seating cylinder adjacent to one end of the body with a seal groove formed in the seating cylinder; an inner body O-ring positioned in the seal groove; a unitary molded plastic female connector body having a flow through passage extending through its length, said female body having a guide tube on one end for mateably receiving the guide cylinder of the male connector

body, a lock tube connected to the guide tube, said lock tube having a pair of opposed lock finger apertures, and a seating tube formed integral with the lock tube for receiving the seating cylinder of the male connector body and for selective sealing engagement with the inner body O-ring; and a lock ring movably mounted on the female connector body and having a portion releasably engageable with the male connector body for releasably locking the male connector body in engagement with the female connector body, said lock ring being a unitary molded plastic part including a pair of integral lock fingers, each of the lock fingers including a resilient arm having one end extending toward the male connector body when said male connector body is positioned adjacent to the guide tube, and each of the resilient arms having a lock dog formed integral with the free end of the respective resilient arm, each lock dog being positionable in the lock finger aperture of the female connector body for engagement with the male connector body to prevent removal of the male connector body from the female connector body, wherein said female body has a valve seat adjacent to the seating tube, said valve seat defining a valve aperture; a valve movably mounted in the valve aperture, said valve having a valve body, an annular valve O-ring groove formed in the valve body, and a plurality of legs formed integral with the valve body and being positioned in the valve aperture, said legs being engageable with the male connector body to displace the valve in the valve aperture; and a valve O-ring in the valve O-ring groove for selective sealing engagement with the valve seat.



4,660,804

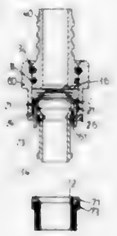
QUICK-CONNECTOR ASSEMBLY FOR WATER SUPPLY

Ching-Song Liu, No. 6-3, Lane 365, Shui Yuan Road, Feng Yuan, Taichung, Taiwan

Filed Nov. 15, 1985, Ser. No. 798,638

Int. Cl.⁴ F16L *37/28*

U.S. Cl. 251—149.6 **1 Claim**



1. A quick-connector assembly for connecting a moulding tool to a water supply hose, comprising:

(a) a water inlet socket having a hollow center and a substantially cylindrical shape with external threads for threadedly securing the socket to embed same into a moulding tool;

(b) a body portion attachable to said socket and having a hollow, generally cylindrical shaped compartment defining a flow passage;

(c) an extendable structure having a stopper wherein one end of said stopper includes a spring, and two metallic rods mounted generally perpendicular to said structure and extending in a direction opposite said spring, said structure being seated by said rods within the compartment of said body portion and movable within the compartment by virtue of sliding movement of the rods to open and close the passage; and

(d) a hose holder having annular grooves for securing a flexible rubber hose to the assembly, said hose holder further including a recess for receiving one end of the spring of said extendable structure, said hose holder defining an inlet to said passage, said spring normally urging the stopper against a seat in the compartment of the body portion to prevent a flow of water from the hose to the water inlet socket through said compartment and passage when the assembly is disengaged from the moulding tool.

4,660,805

DEVICE FOR SHUTTING OFF A PIPE

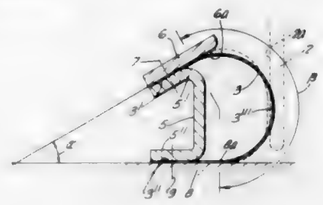
Franz D. Hahn, Beckum; Otto Heinemann, Ennigerloh, and Heinz-Herbert Schmits, Rheda-Wiedenbrück, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Jul. 18, 1985, Ser. No. 756,444

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1984, 3433346

Int. Cl.⁴ F16K *3/30*

U.S. Cl. 251—328 **8 Claims**



1. In a pipe closure device having a valve housing member adapted for installation in such pipe, a valve member movably positioned within said housing member for movements between opened and closed positions; a sealing element interposed between said members and comprising a generally U-shaped springy strip having a pair of arms and a deformable arcuate web joining corresponding ends of said arms, and means clamping said arms to one of said members in such position that said web may engage and be deformed by the other of said members, the improvement wherein said clamping means comprises a retainer interposed between said arms adjacent their other ends; a clamping element outboard of each of said arms; and means securing said clamping elements to said retainer with the arms gripped between said retainer and the respective clamping elements, said arms converging toward one another at an acute angle in a direction away from said web, each of said clamping elements having a surface tangential to said web.

4,660,806

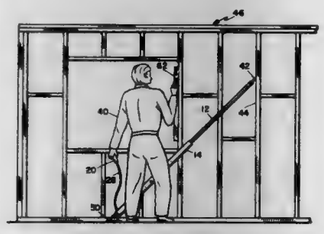
PUSH STICK FOR PLUMB AND LINE ADJUSTMENT OF STUD WALLS

Scott A. Masters, P.O. Box 141, Solana Beach, Calif. 92075

Filed Sep. 12, 1985, Ser. No. 775,224

Int. Cl.⁴ B66F *3/24*

U.S. Cl. 254—11 **14 Claims**



1. An apparatus for applying a force for the alignment of a framed stud wall, comprising:

a first elongated tubular member;

a second elongated tubular member;

a rear portion of the first member being telescopically received in and connected to a forward portion of the second member for permitting relative movement between the members along a common longitudinal axis;

pin and hole means in said second tubular member for establishing a reference position of the first tubular member relative to the second tubular member;

manually operable hydraulic jack means including a hydraulic piston and cylinder assembly forming the rearward end of the first tubular member for longitudinally moving of the first member from the reference position in successive small increments;

means connected to a forward end of the first member for engaging a portion of the stud wall; and

means connected to a lower end of the second member for engaging a floor level support surface.

4,660,807

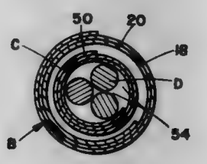
WRAPPED THERMAL TORCH AND METHOD

Patsie C. Campana, 255 W. Park Dr., Lorain, Ohio 44053

Filed Jan. 31, 1986, Ser. No. 824,789

Int. Cl.⁴ B23K *9/24*

U.S. Cl. 266—75 **12 Claims**



1. A consumable thermal torch comprising:

an elongated open-ended hollow outer casing having an inlet end, a discharge end, and a generally smooth inner wall, said outer casing including an effective amount of an exothermic adjuvant;

an elongated open-ended hollow inner casing having an inlet end, a discharge end, and a generally smooth outer wall;

an outside cross sectional dimension of said inner casing being less than the inside cross sectional dimension of said outer casing, said inner casing being received in said outer casing such that respective inlet and discharge ends of said casings are generally coextensive and defining a first gas flow passage substantially surrounding said inner casing in a continuous manner; and,

a rod closely received in said inner casing extending between said inlet and discharge ends thereof, said rod having an outer cross sectional dimension less than an inner cross sectional dimension of said inner casing defining a second gas flow passage therebetween.

4,660,808

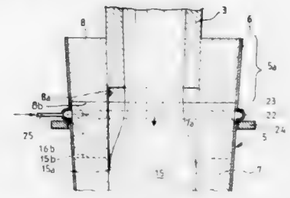
HEAT-INSULATING CASTING TUBE FOR A METALLURGICAL VESSEL

Jean-Charles Daussan; Gérard Daussan, and André Daussan, all of Metz, France, assignors to Daussan et Compagnie, Woippy, France

Continuation-in-part of Ser. No. 403,583, Nov. 26, 1980. This application May 22, 1985, Ser. No. 737,052

Int. Cl.⁴ C21C *5/42*

U.S. Cl. 266—236 **22 Claims**



1. In a combination comprising a heat-insulating casting tube (**5**) disposed between the outlet orifice of a first metallugical vessel (**1**) and a second metallurgical vessel (**4**), one end (**5***a*) of the casting tube having a removable and substantially leaktight engagement about a casting nozzle (**3**) or about an adapter (**18**) forming an extension of a nozzle (**19**) of said first vessel (**1**) so as to restrict the flow of air between the casting tube and the nozzle or adpter, said casting tube being formed of material (**7**) comprising inorganic particles which are embedded in an organic binder, said inorganic particles being sinterable under the action of the heat of the liquid metal as it flows within said tube; the improvement comprising a ring (**8, 9, 11, 12, 13, 14, 30**) of refractory material on said tube end (**5***a*) engaged on and surrounding the lateral surface of the casting nozzle (**3**) or adapter (**18**), the internal surface of the said ring being shaped as the lateral surface of said casting nozzle (**3**) or adapter (**18**) and having a substantially leaktight engagement with said lateral surface, the height of said ring being such that its bottom edge (**8***b*) is located above the zone in which the liquid metal (**15**) which is poured into the tube would be liable to come into contact with the internal surface of said tube, and another refractory ring on the end of the tube which is opposite the first-mentioned ring.

4,660,809

TILTABLE VESSEL

Karlheinz Langlitz, Muelheim, and Guenter Schmitz, Duisburg, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 14, 1984, Ser. No. 671,184

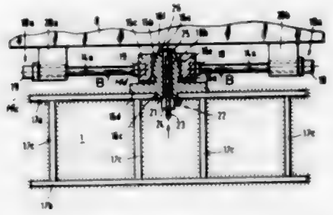
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1983, 3341824

Int. Cl.⁴ C21C *5/50*

U.S. Cl. 266—246 **9 Claims**

1. Tilt mount for a metallurgical vessel there being a carrier ring for the vessel having tilt pins mounted and journaled in stationary bearings for tilting the vessel about a horizontal axis, there being means effective in direction of a longitudinal axis of the vessel for mounting the vessel in the carrier ring, further comprising a fastening construction to be effective predominantly when the vessel is tilted to a horizontal position, comprising:

a pair of oppositely positioned hollow bearings;
means for mounting each of these bearings to the carrier ring in locations opposite to each other and including a pair of tension elements for each of the hollow bearings and arranged coaxially to each other and transversely to the longitudinal axis of the vessel, the elements of each pair of tension elements carrying respectively on one end the respective hollow bearing and being with the respective other ends connected to the carrier ring;



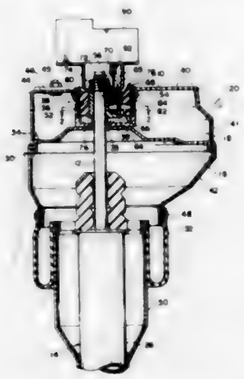
a pair of short pins of barrel shaped configuration connected to the vessel and being inserted respectively in the hollow bearings for pivoting on, axes through the pins, these axes and respectively axes through the hollow bearings being horizontally oriented at least when the vessel is tilted into a horizontal position but permitting angular displacement to each other, these axes not coinciding with a tilt axis as defined by said tilt pins.

4,660,810

CHANGE-OVER VALVE FOR AIR SUSPENSION

Shunichi Buma, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 2, 1985, Ser. No. 751,268
Claims priority, application Japan, Oct. 15, 1984, 59-214300
Int. Cl.⁴ F16F *9/34*
U.S. Cl. 267—64.25 **8 Claims**



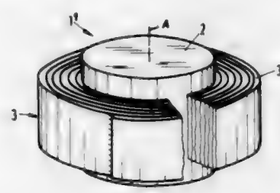
1. A change-over valve for an air suspension interposed between a main air chamber formed to surround a shock absorber provided with a piston rod and an auxiliary air chamber, comprising:
a valve base having a first hole through which said piston rod extends and a second hole into which a valve body is inserted;
the valve body disposed in said second hole;
a holder disposed in said second hole; and
means removably fixed to the piston rod extending through said first hole to connect the piston rod with said valve base while preventing said holder from falling out.

4,660,811

SYNTHETIC-RESIN COMPRESSION SPRING

Dieter Mühlhahn, Langenfeld; Gino Marsella, Neuss; Friedhelm Detzner, Duisburg; Dieter Simons, Krefeld; Horst-Dieter Schäfer, Willich, and Hermann Haarkötter, Krefeld, all of Fed. Rep. of Germany, assignors to Ringfeder GmbH, Krefeld, Fed. Rep. of Germany

Filed Aug. 7, 1985, Ser. No. 763,357
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430122
Int. Cl.⁴ F16F *3/08*
U.S. Cl. 267—141.1 **20 Claims**



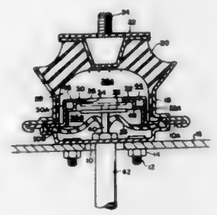
1. A compression spring comprising:
a core of an elastically deformable but substantially incompressible material and having two axially spaced end surfaces operatively engageable with objects to be relatively resiliently mounted, whereby when the two bodies engaging the end surfaces move toward each other the core swells radially; and
an annular belt snugly circumferentially surrounding the core between its end surfaces and formed of an elastic and circuferentially oriented synthetic resin, the end surfaces projecting mainly axially past the belt such that on radial swelling of the core the belt is tensioned substantially only circumferentially.

4,660,812

VIBRATION ISOLATING APPARATUS

Takuya Dan; Michihiro Orikawa, and Hiroshi Kojima, all of Yokohama, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Aug. 20, 1985, Ser. No. 787,436
Claims priority, application Japan, Aug. 27, 1984, 59-178004
Int. Cl.⁴ F16F *9/10*
U.S. Cl. 267—140.1 **7 Claims**



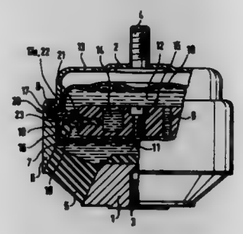
1. A vibration isolating apparatus interposed between a vibration generating portion and a vibration receiving portion so as to absorb vibrations from said vibration generating portion, comprising:
(a) a base plate secured to said vibration receiving portion;
(b) a resilient member supported on said base plate to define a hollow chamber between said resilient member and said base plate;
(c) a top plate secured to said resilient member to be applied for mounting said vibration generating portion thereon;
(d) a diaphragm disposed in the hollow chamber to define a liquid chamber between said diaphragm and said resilient member;
(e) a partition plate disposed in said liquid chamber to divide said liquid chamber into two small liquid chambers;
(f) a large orifice formed on said partition plate to provide communication between said small liquid chambers;
(g) a small orifice provided on said partition plate around said large orifice for providing communication between said small liquid chambers, the opening area of the small orifice being smaller than that of said large orifice;
(h) a valve body disposed in the liquid chamber, for opening and closing said large orifice; and
(i) a cylinder fixed to said base plate and having a driving shaft fixed to said valve body through said diaphragm, said cylinder driving said driving shaft to open said large orifice when a vibration equal to or greater than a predetermined frequency is generated from said vibration generating portion;
whereby vibrations below said predetermined frequency are absorbed by means of a viscous resistance caused by liquid flowing through said small orifice between said small liquid chambers; and
further whereby vibrations equal to or greater than said predetermined frequency are absorbed by means of liquid-mass resonance caused by liquid flowing through said large orifice between said small liquid chambers.

4,660,813

RUBBER MOUNTING WITH HYDRAULIC DAMPING, PARTICULARLY FOR MOUNTING VEHICLE ENGINES

Horst Reuter, Wachtberg-Oberbachem, Fed. Rep. of Germany, assignor to Boge GmbH, Eitorf, Fed. Rep. of Germany

Continuation of Ser. No. 561,173, Dec. 14, 1983, abandoned. This application Feb. 27, 1986, Ser. No. 833,962
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1982, 3246205
Int. Cl.⁴ F16F *1/36*
U.S. Cl. 267—140.1 **9 Claims**



1. A resilient engine mounting device having hydraulic damping for vibrationally damping a motor vehicle engine, said mounting device having at least a longitudinal axis along which damping is prevalent, said mounting device having a body with opposite end portions having mounting means thereat, said end portions being aligned with said longitudinal axis and at either end of said device;
said device being of the type including an elastomeric structure being attached to said opposite end portions;
a first chamber (11) and a second chamber (12);
said two chambers for containing damping fluid, said first chamber being defined, at least in part, by said elastomeric structure and a first of said end portions, said two chambers being disposed one adjacent another along said longitudinal axis;
said two chambers being separated by partition means, said partition means having a resilient outer, circumferential, peripheral portion and a movable, rigid inner portion, said inner portion being disposed and suspended within said outer, peripheral portion of said partition means, said outer, peripheral portion having a flexible portion;
said outer, peripheral portion having a portion disposed to separate said body into said two chambers;
said second chamber (12) having means (10) for relieving pressure therein;
said first chamber (11) having means, including said elastomeric structure and said first end portion and said partition means, for creating a pressure substantially below ambient pressure around said mounting device by movement of said first end portion away from said second end portion during operation and for tending to cavitate said damping fluid in said first chamber;
at least one throttle means being disposed in said rigid inner portion for providing fluid communication between said chambers;
said outer peripheral portion comprising a spring;
said spring comprising:
(a) an axially, pre-stressed region (18) pre-stressed along said longitudinal axis;
(b) said pre-stressed region (18) having a sealing surface (17*a*); and
(c) a radial region (21) extending radially from and being connected to said rigid inner portion (15);
holding means (7) disposed on said body (20);
annular means (23) disposed adjacent said holding means (7);
said pre-stressed region (18) being in contact with and held by said holding means (7);
said radial region (21) and said pre-stressed region (18) sealing off said second chamber (12) from said annular means (23) and said first chamber (11), said pre-stressed region being pre-stressed for exerting a force against said radial region;
permanent fluid communication means (24) for permanently connecting said first chamber (11) and the said annular means (23) with one another;
said pre-stressed region and said radial region being closed to flow of fluid between said two chambers, at least when said pressure difference between said first chamber and said second chamber is substantially zero;
said pre-stressed region and said radial region opening to permit fluid flow therethrough unidirectionally from said second chamber to said first chamber, only in a first predetermined pressure differential range that begins to relieve pressure between said two chambers to minimize cavitation of damping fluid in said first chamber;
said first predetermined range being defined by a first pressure in said first chamber below ambient pressure about said device and any pressure being yet lower below said ambient pressure than said first pressure;
said pre-stressed region and said radial region being substantially closed to fluid flow at pressures in said first chamber being different from said first predetermined range and when a pressure difference between said first chamber and said second chamber is substantially zero.

4,660,814

NEEDLECRAFT STAND

William C. Shader, and Doris L. Shader, Box 125, R.D.-1, Avella, Pa. 15312

Continuation of Ser. No. 239,649, Mar. 2, 1981, abandoned. This application May 23, 1983, Ser. No. 495,926
Int. Cl.⁴ D05C *1/02*
U.S. Cl. 269—16 **6 Claims**

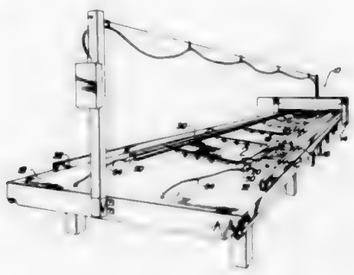
1. A needlecraft stand comprising:
a generally flat base for disposition on a floor to support the stand, said base being symmetrical about a longitudinal axis;
a post connected to the base on the longitudinal axis of the

base adjacent one edge of the base so a major portion of the base can fit under a seat, bed or the like;
a friction-type pivot connection in the post at its bottom end and having its pivot axis transverse to the longitudinal axis of said base so the post can be manually rotated up and down in a vertical plane through the longitudinal axis of the base;
a clamp having two parallel jaws for securing a needlecraft frame therebetween;
a bracket near the top of said post for securing said clamp to the post and connected to the post through a friction-type pivot connection having an axis parallel to the axis of the pivot connection in the post so the height and position of



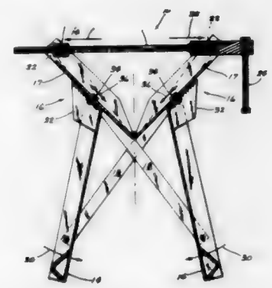
the clamp can be quickly and easily adjusted over the lap of a seated user, regardless of the position of the user;
a hinge connection between said bracket and said clamp with said hinge having a hinge pivot axis parallel to the pivot axes of said two friction-type connections; and
said base being shaped and sized to provide stable support for the stand and said two pivot connections being located with respect to said base, post and clamp to permit the stand to be folded substantially flat for storage or transport thereof and adapted to be pivoted for adjustment of the position of a workpiece over the lap of a user and to hold such position without adjustment of the friction in the connections.

4,660,815
PRESSURE ACTUATED CLAMP FOR TRUSS MANUFACTURING EQUIPMENT
Michael C. Rosser, Roanoke, Tex., assignor to Production Equipment & Engineering Co., Fort Worth, Tex.
Continuation-in-part of Ser. No. 570,024, Jan. 11, 1984, Pat. No. 4,570,913. This application Oct. 1, 1984, Ser. No. 656,513
Int. Cl.⁴ B30B *15/00*
U.S. Cl. 269—22 **6 Claims**



1. A clamping apparatus operable by a controlled pneumatic source for use on a table in fabricating wood trusses having chords and web components joined together by metal plates comprising:
a first bracket means, means for releasably fixing said first bracket means to the surface of the table,
a second elongated bracket means positioned on each of two opposite sides of said first bracket means for engaging a chord of said wood truss, means for movably supporting said second bracket means from the surface of said table,
a first elongated inflatable conduit positioned between said first and second bracket means, said first conduit being inflatable between a constricted and inflated position whereby said first conduit when inflated, forces said second bracket means to move in a direction away from said first bracket means to engage the chord of said wood truss and a second elongated inflatable conduit positioned between said first and second bracket means opposite of said first conduit, said second conduit being inflatable between a constricted and inflated position whereby said second conduit when inflated, forces said second bracket means in a direction away from said truss.

4,660,816
CLAMPING DEVICE
Robert E. Taylor, R.R. #1, Minburn, Iowa 50167
Filed Nov. 18, 1985, Ser. No. 799,304
Int. Cl.⁴ B25B *1/04*
U.S. Cl. 269—238 **1 Claim**

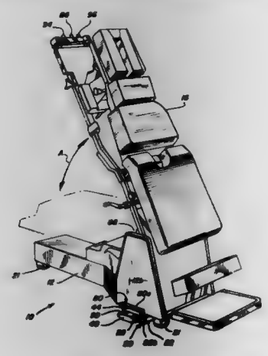


1. A clamping device, comprising,
a pair of spaced elongated upright beam members having upper and lower ends,
a stub beam member having upper and lower ends with the lower end thereof adjustably slidably connected to the upper ends of said elongated upright beam members, said stub beam members extending upwardly and outwardly from the upper ends of said upright beam members,
elongated overlapping connecting straps pivotally connecting the upper end of one stub beam member to the lower end of the opposite elongated upright beam member,
a screw member movably secured to the upper ends of said stub beam members, and being adapted to move the upper ends of said stub beam members towards or away from each other upon being rotated in opposite directions, whereupon the lower ends of said upright beam members will correspondingly move away or towards each other.

4,660,817
MULTI-STEP CONTROL APPARATUS FOR PATIENT TREATMENT TABLE
Frank P. Kowalski, Des Plaines, Ill., assignor to Standex International, Salem, N.H.
Filed Mar. 21, 1985, Ser. No. 714,486
Int. Cl.⁴ A61G *13/00*
U.S. Cl. 269—323 **13 Claims**

1. In a patient treatment table having a base structure and an elongated patient table pivotally mounted thereon for movement between an up position and a down position, multi-step

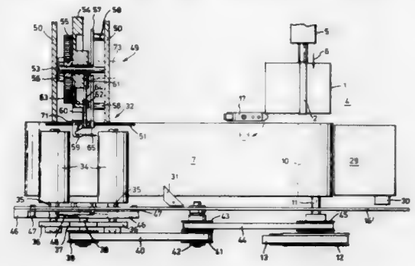
control apparatus for enabling a human operator standing adjacent said table to control the raising and lowering of said table in response to predetermined successive motions of said operator's foot, said apparatus comprising:
an operating element including a foot pedal positioned to be actuated by the foot of said operator, said table having a longitudinal axis and said element being movable along an axis generally transverse to said longitudinal axis of said patient table and also rotatable about said transverse axis;
means responsive to movement of said operating element along said transverse axis for initiating a timing cycle of predetermined duration;
means responsive to rotation of said operating element about said transverse axis during said timing cycle for raising and lowering said patient treatment table;
said operating element including a rod mounted for movement along said transverse axis and rotatable thereabout, first switch means positioned to be actuated in response to



movement of said rod along said transverse axis, means responsive to actuation of said first switch means for initiating said timing cycle;
said means for raising and lowering said table including second switch means actuated in response to said rotation of said rod about said transverse axis;
said foot operated pedal being mounted on the end of said rod and bias means urging said rod toward a central position and opposing said movement of said rod along said transverse axis;
said foot pedal including a first control surface generally normal to said rod and adapted for movement by the toe of the operator to displace said rod longitudinally from said central position against said first bias means; and
at least one second control surface generally normal to said first control surface and extending laterally with respect to said axis for engagement by the sole of the foot to rotate said rod about said transverse axis.

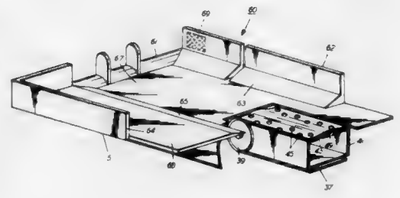
4,660,818
UNSTRAPPING APPARATUS
Trevor J. Conner, Cowplain, and Michael G. Jackson, Warsash, both of United Kingdom, assignors to De La Rue Systems Limited, London, England
Filed Dec. 18, 1984, Ser. No. 682,845
Claims priority, application United Kingdom, Dec. 20, 1983, 8333856
Int. Cl.⁴ B65H *39/00;* **B23P** *19/00;* **B07C** *5/00*
U.S. Cl. 270—1.1 **12 Claims**

1. Unstrapping apparatus for removing a strap from a pack of sheets initially contained in said strap comprising an input station and an association station,
said input station including separation means for separating said strap from said sheets; means for sorting said sheets into acceptable and unacceptable sheets; feed means for passing unstrapped sheets to said sorting means; first transport means for transporting said unacceptable sheets, as determined by said sorting means, to said association station; and second transport means having at least one hook for engaging said strap, and rotatable to carry said strap from said input station to said association station; and



said association station including means for associating said unacceptable sheets with said strap at said association station.

4,660,819
AUTOMATIC RESTACKING REGISTRATION IN A RECIRCULATING DOCUMENT HANDLER
Carmen Allocco, Jr., Pittsford, and William R. Burger, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 27, 1984, Ser. No. 654,702
Int. Cl.⁴ B65H *1/06*
U.S. Cl. 271—3.1 **7 Claims**



1. In a recirculating document handling apparatus for repeatedly recirculating a set of document sheets for precollation copying, wherein the document sheets are repeatedly individually fed seriatim from the bottom of a stack thereof for copying in a precise registration position on two axis of a copier platen, in the direction of document movement and laterally thereof, and returned to the top of the stack supported by a support surface, and restacked between two elongated side guides and abut a rear guide connected to said support surface, said side guides and said rear guide including cutaway portions to allow the escape of air from an air knife during said restacking of said document sheets, said side guides being laterally spaced by a greater distance than the lateral dimension of said document sheets to allow unrestricted restacking therebetween with variations in document dimensions, and one of side guides being stationarily aligned with said lateral registration position on said platen but spaced therefrom, the improvement of automatic edge registration of said document sheets on said support surface comprising:
ramp means attached to at least one of said elongated side guides and said support surface, said ramp means including an inclined straight surface portion such that it forms an acute angle with respect to said at least one of said elongated side guides and said support surface and adapted to allow said document sheets being returned to

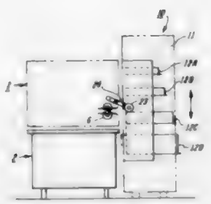
said support surface to lie flat against said inclined straight surface portion so as to provide a positive registration position along the junction between said ramp means and said rear guide thereby reducing the possibility of misregistration due to bending of the documents during feeding and recirculation.

4,660,820

PAPER FEEDING APPARATUS FOR A COPYING MACHINE/PRINTER

Satoshi Shiso; Akira Sasahara; Kiyoshi Ishikawa; Shigeru Shibasaki, and Shinki Takashina, all of Kanagawa, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 4, 1984, Ser. No. 647,305
Int. Cl.⁴ B65H *3/44*
U.S. Cl. 271—9 **1 Claim**



1. A modular sheet feeding unit adapted to feed sheets to a printer for processing, comprising:

sheet feeding unit frame means adapted for connection or disconnection in relation to sheet transport means located within said printer at one edge thereof to feed sheets through an opening in one end of the enclosure of said printer to said sheet transport means;

a plurality of tables moveably supported at arbitrary positions within said sheet feeding unit frame means;

sensor means adapted to control the positioning of said tables;

a plurality of cassettes adapted for positioning on said tables; and

dual positioning feed means mounted within said printer at said one edge thereof for feeding sheets from said cassettes to said transport means, said dual positioning feed means being adapted when in a first position to extend outside said printer and act as the sole means for feeding sheets from said plurality of cassettes as they are individually positioned adjacent said sheet transport means by said sensor means and when in a second position to be withdrawn from said first position to a location inside said printer.

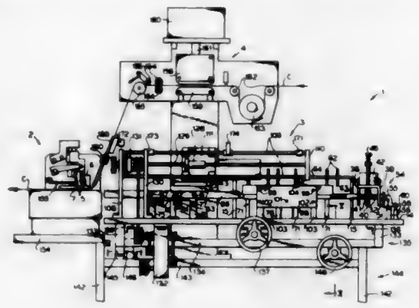
4,660,821

METHOD OF AND APPARATUS FOR ATTACHING FLY STRIPS TO A SLIDE FASTENER CHAIN

Ronald J. Boser, Dix Hills, N.Y., and Michael T. Martin, Gainsville, Ga., assignors to Yoshida Kogyo K.K., Tokyo, Japan

Division of Ser. No. 502,310, Jun. 28, 1983, Pat. No. 4,541,352.
This application Jul. 31, 1985, Ser. No. 760,968
Int. Cl.⁴ B65H *5/00*; **D05B** *19/00, 3/16*
U.S. Cl. 271—10 **8 Claims**

1. Apparatus to feed from a stack individual fly strips to a sewing machine for attaching said fly strips to continuous slide fastener chain, comprising a stacker means in which a series of fly strips are disposed one behind the other in a stack, a picker means for grasping the foremost fly strip in said stack intermediately of its face surface and rotating said foremost fly strip outward from said stack, a feed table means leading to said sewing machine, a feed finger means for retrieving each fly strip grasped and rotated by said picker means and releasing it onto said feed table means, and a pusher means for advancing each fly strip along said feed table means, wherein said picker means comprises a claw arm disposed for pivotable rotation adjacent the foremost end of said stack to frictionally hold a



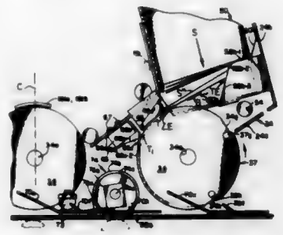
portion of said fly strip face surface and a wheel positioned on said claw arm and driven for rotation for grasping a portion of said fly strip face surface relative to said claw arm, causing said foremost fly strip to fold over itself.

4,660,822

COMPACT APPARATUS FOR DISPENSING A PRESELECTED MIX OF PAPER CURRENCY OR THE LIKE

Theodore Winkler, Levittown, Pa., and Fredric W. Burger, Cherry Hill, N.J., assignors to Brandt, Inc., Bensalem, Pa.

Filed Feb. 7, 1985, Ser. No. 699,044
Int. Cl.⁴ B65H *3/06, 3/52*
U.S. Cl. 271—10 **12 Claims**



1. Sheet handling and counting apparatus comprising:

an infeed hopper for receiving a stack of single ply sheets;

a feed roller having a pair of flanges of substantially uniform radius;

a stripper shoe forming a feed nip with said feed roller;

the upstream end of said stripper shoe and the feed roller forming a tapering throat portion for guiding sheets into said feed nip;

an output location and transfer means receiving sheets advanced from said feed nip to the output location;

said feed roller extending through a slot in said infeed hopper and the flanges of said feed roller having a high friction surface portion for advancing the bottom sheet in the infeed hopper towards said feed nip and cooperating with said stripper shoe to advance sheets only one sheet at a time beyond said feed nip;

the end of said high friction surface portion first passing the stripper shoe being the leading edge;

the leading edge of the sheets in the stack being that edge of the sheet adjacent to said tapering throat portion;

a notch arranged in said flariges adjacent to the leading edge

of the high friction surface portion of said flanges and being sufficient to receive and thereby move the leading edge of a sheet engaging the high friction surface portion of the flanges into said nip in advance of the leading edge of the high friction surface portion;

the annular periphery of said feed roller, including said high friction surface portion, being provided with an annular recess between said flanges;

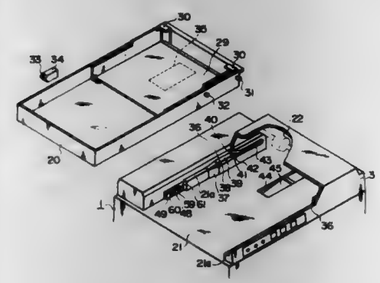
the width of said stripper shoe being less than the width of said annular recess and being positioned sufficiently close to said recess to urge sheets passing through said feed nip into a curved configuration to facilitate the feeding and stripping oepration to feed single sheets towards said transfer means.

4,660,823

SHEET FEEDING DEVICE FOR BUSINESS MACHINE

Akira Sato, Tagata, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1985, Ser. No. 795,876
Claims priority, application Japan, Nov. 13, 1984, 59-238877
Int. Cl.⁴ B65H *3/30*
U.S. Cl. 271—22 **5 Claims**



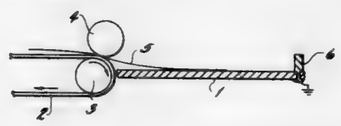
1. A sheet feeding device for a business machine, comprising: a cassette having a pressure plate placed therein for supporting a pile of sheets, and holding fingers for holding down the opposite front corners of the sheets supported on the pressure plate, and adapted to be inserted in a cassette receiving section of a cabinet; first projections formed in the opposite side walls of the cassette so as to project sideways outside the cassette, respectively; second projections formed behind the first projections in the opposite side walls of the cassette so as to project sideways outside the cassette and having a length shorter than that of the first projections, respectively; guide grooves formed in the opposite side walls of the cassette receiving section so as to receive the first and second projections therein with the upper and lower surfaces thereof in contact with the first and second projections, respectively; an inlet opening opening upward, a slope declining from the inlet opening to the guide groove so as to guide only the first projection to the guide groove, and a stopping surface formed directly below the inlet opening so as to restrict the backward movement of the second projection; said inlet opening, said slope and said stopping surfaces being formed in the rear end portion of each said guide groove; a pressure arm pivotally supported in the cassette receiving section so as to press the pressure plate; an operating arm pivotally supported on one side surface of the cassette receiving section so as to engage a part of the cassette and urged in one direction by a returning spring; and an extension spring interconnecting the operating arm and the pressure arm and applying a resilient force lower than that of the returning spring to the operating arm.

4,660,824

DEVICE FOR COLLATING SHEETS

Gerardus A. J. Hermkens, EW Hertes, and Augustinus W. M. Lambregts, JL Venlo, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Sep. 26, 1985, Ser. No. 780,327
Claims priority, application Netherlands, Sep. 27, 1984, 8402941
Int. Cl.⁴ B65H *31/02*
U.S. Cl. 271—208 **2 Claims**



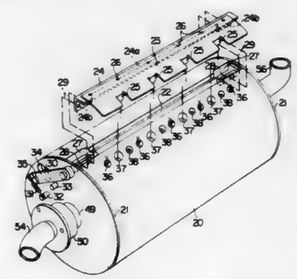
1. In a device for collating sheets of paper, having at least one receiving surface made from electrically insulating material, a means to feed a sheet from one side of the receiving surface and deposit it thereon, and a means for removing electrical charges from the deposited sheet, the improvement comprising at least one conductor connected to earth potential and being disposed on the side of the insulated receiving surface remote from the side where the sheet enters to form an abutment with which the leading edge of the sheet containing concentrated electrical charges comes into contact when it is being deposited on the insulated receiving surface, thereby removing the electrical charges from the entire sheet.

4,660,825

SHEET CLAMPING DEVICE

Michio Umezawa, Kawasaki, Japan, assignor to Ricoh Company Ltd., Tokyo, Japan

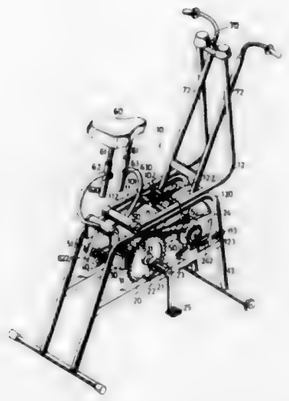
Filed Jul. 25, 1980, Ser. No. 173,189
Claims priority, application Japan, Jul. 26, 1979, 54-095318; Jul. 30, 1979, 54-097096; Jul. 30, 1979, 54-097097; Jul. 30, 1979, 54-097099; Jan. 30, 1980, 55-009748; Mar. 18, 1980, 55-034605
Int. Cl.⁴ B65H *39/10*
U.S. Cl. 271—276 **58 Claims**



1. A sheet clamping device for holding a sheet around a drum, comprising a plurality of rows of sheet suction holes formed in the peripheral surface of a drum to provide communication between the interior and the exterior of the drum, the rows being spaced apart circumferentially of the drum, suction means including only one vacuum pump communicating with the suction holes of the respective rows for applying suction to said holes to withdraw air into the interior of the drum, and means for controlling the timing of application of suction to the respective rows of sheet suction holes, thereby beginning the attraction of different parts of the sheet to the drum from inside the drum at different times.

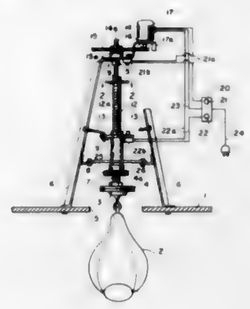
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4,660,826
FOLDING EXERCISE BIKE
Wen-Kuei Lee, P.O. Box 1-79, Taipei, Taiwan
Filed Sep. 16, 1985, Ser. No. 776,768
Int. Cl.[4] A63B *23/04*
U.S. Cl. 272—73 3 Claims



1. A folding exercise bike comprising
a bike frame including a main frame, a handle supporter and a saddle supporter;
a handle including two handle bars rotatably inserted into said handle supporter, a lower end of said two handle bars being fixed with a joint means;
a saddle provided at a top portion of said saddle supporter;
a transmission box fixed on a lower part of said bike frame, a main driving shaft extending through said transmission box, each end of said driving shaft being provided with a pedal for pedalling;
a rotating bush means provided on an output shaft of said transmission box;
a universal joint means, one end of said universal joint means being rotatably fixed to said rotating bush means on said output shaft of said transmission box and another end of said universal joint means being pivotally connected to a lower portion of said saddle supporter;
a driving wheel fixed on said driving shaft of said transmission box;
a driven wheel means including a driven wheel, a shaft and a gear, said driven wheel means being rotatably fixed on said lower part of said bike frame and operatively connected with said driving wheel by means of a chain and said gear;
connecting rods having one end connected with said lower portion of said saddle supporter and having another end rotatably connected to said lower end of said handle bars by said joint means;
so that when pedaling, said main driving shaft drives said driven wheel, said driving wheel, and output shaft of said transmission box, said rotating bush means in turn drives said universal joint means to enable said saddle supporter to move forward and backward gradually, and said connecting rods simultaneously rotating said two handle bars inward and outward gradually.

4,660,827
PUNCHING BAG REBOUND ADJUSTER
Robert Servadio, Pittsburgh, Pa.
Filed Jan. 21, 1986, Ser. No. 819,997
The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.
Int. Cl.[4] A63B *69/22*
U.S. Cl. 272—78 1 Claim



1. In combination with a rebound board, having a central hole, and a punching bag, mounting means for suspending said punching bag from said rebound board through said central hole, including adjusting means comprising a vertically mounted elevator threaded shaft, from the lower end of which said punching bag is suspended coaxially with said shaft, a vertical stationarily mounted sleeve internally threaded to an outwardly threaded sleeve surrounding said shaft and which is keyed to said shaft, a knurled locking nut screwed to said threaded shaft and engageable with the bottom of said sleeve to adjustably limit the height of said bag, driving motor means for driving a pinion gear which directly drives a gear rigidly secured to the top end of said vertical shaft to effect selective lifting or lowering of said sleeve in response to rotation of said driving motor means in one direction or in an opposite direction to adjust the distance between the rebound board and punching bag, said mounting means including a vertical stationary frame which rigidly supports said vertical stationarily mounted sleeve and supports said driving motor means on top thereof, said driving motor means including an electrical control circuit, including a pair of vertically spaced switches directly mounted on said electrical control means including said frame, switch operating means mounted on said outwardly threaded sleeve for interrupting said circuit upon predetermined vertical upward and downward movement of said outwardly threaded sleeve.

4,660,828
REACTIVE CONTROL APPARATUS
John Weiss, Amityville, N.Y., assignor to Allen Schwab; Richard Schwab, both of Manhasset; Michael Jacoabs, Wantagh and William R. Woodward, Bronx, all of, N.Y.
Continuation-in-part of Ser. No. 504,615, Jun. 15, 1983, abandoned. This application Dec. 14, 1983, Ser. No. 561,989
Int. Cl.[4] A63B *21/04*
U.S. Cl. 272—138 15 Claims

1. A mechanically reactive control for affecting an electronic display in response to physically exertive manipulation by a person standing on a floor or platform and enabling the person to develop bodily coordination as well as physical strength by actuating said reactive control, against opposing force presented by said control, in a manner interacting with programmed variations of the display, said mechanically reactive control comprising:
an elastically restrained universal mount having first and second members elastically coupled to each other, said first member being firmly fixed in position relative to the floor or platform, said second member being held to said first member by its elastic coupling thereto and having, in the rest position of said universal mount, a first face directed toward said first member and a second face directed away from the first member;
a hand-grippable rod structure mounted on said second face of said second universal mount member and extending, in said rest position of said mount, away from said mount to a location convenient for manipulation thereof by the person standing on the floor or platform;
a resilient elastic coupling in said mount for holding said second member thereof on said first member thereof in such a way as to require substantial force application to said rod structure by the person for displacing said rod structure and said second mount member from their rest positions in any direction of angular displacement about said coupling of said universal mount, while permitting said angular displacement to take place against a restoring force of said mount coupling, with restoring forces substantially uniform at least for swinging by the person of



said rod structure in any direction, said coupling being capable of reacting to said angular displacement by elastic compression on one side thereof and elastic extension on the side thereof opposite to the elastically compressed side, whereby a center of rotation for said angular displacement is confined to a mid-region of said elastic coupling;
an angular position sensor held in said universal mount for providing an electrical output indicative of the relative angular position of said second mount member with respect to said first mount member and thereby indicative of the angular position of said rod structure about said mount coupling, said sensor having an angularly displaceable element having a center of angular rotation in said mid-region of said elastic coupling and disposed so as to follow, in a substantially proportional manner, relative angular displacement of said second mount member with respect to said first mount member and means for resolving an angular displacement of said element with respect to the rest position of said mount into rotations about mutually perpendicular axes and producing electrical signals representative of said rotations about said respective axes.

first member so that the second end extends in substantially fixed alignment with the first member to a position along the second member corresponding to a specified relative position of the first and second body portions, and sensor means for sensing the position of the second end;
said sensor means including light generating means for generating light along a series of spaced apart light paths along the second member corresponding to a series of relative member positions, blocking means for causing the

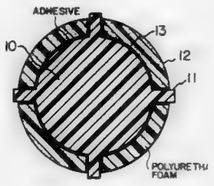


second end of the extension element to block a light path corresponding to a specified one of the series of relative member positions when the first and second rembers are in the specified relative member position, and light detector means responsive to a light path being blocked for generating a corresponding electrical signal; and
circuit means responsive to the electrical signal for generating a corresponding output signal to enable a user to correct positionally the relative positioning of the first and second body portions.

4,660,829
BODY JOINT POSITION MONITORING SYSTEM
Paul J. Whiteneir, 2060 Chase, Apt. 2B, Chicago, Ill. 60645
Filed Jul. 8, 1985, Ser. No. 753,018
Int. Cl.[4] A63B *69/38*
U.S. Cl. 273—29 A 14 Claims

1. A system for monitoring joint position, comprising:
a pair of first and second members, each one of the members being adapted to be attached to the body in a spaced-apart manner;
position sensing means for generating an electrical signal indicative of a deviation in first member position relative to the second member from a desired relative position;
said position sensing means including a rigid extension element having a first end and a second end, attaching means for attaching the first end of the extension element to the

4,660,830
BASEBALL OR SOFTBALL
Julius Tomar, Port-au-Prince, Haiti, assignor to Home of Champions, S.A., Port-au-Prince, Haiti
Filed Feb. 4, 1985, Ser. No. 698,176
Claims priority, application Haiti, Jan. 24, 1985, 1-J
Int. Cl.[4] A63B *37/00*
U.S. Cl. 273—60 B 15 Claims



1. In a baseball or softball, the combination comprising:
an inner core defining the innermost component of said game ball and formed of a first material characterized by at least high durability;
at least one locator pin of the first material extending radially outwardly from and affixed to the inner core; and
a spherical outer core of a foamed polyurethane material, characterized by at least high durability and conventional rebound, surrounding and tightly adhered to the inner core and the locator pin and having a thickness equal to the length of said pin.

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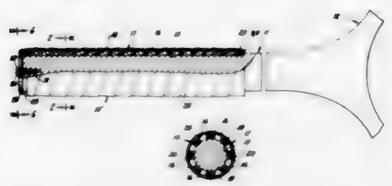
4,660,831
INFLATABLE PADDED GAME BALL
Douglas R. Kralik, Rolla, Mo., assignor to Figgie International Inc., Wilmington, Del.
Filed Sep. 16, 1985, Ser. No. 776,222
Int. Cl.[4] A63B *41/08*
U.S. Cl. 273—65 E 9 Claims





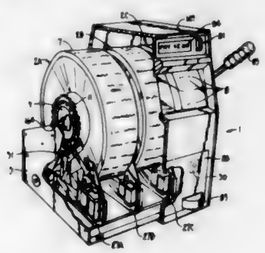
1. An inflatable padded game ball, comprising:
an outer carcass of relatively tough durable material;
padding disposed within the carcass and engaging the carcass over substantially its entire inner surface;
a liner assembly contained within the carcass on the inside of the padding and engaging the padding over substantially its entire inner surface; and
an air impervious multi-layer bladder inside the liner assembly engaging the liner assembly over substantially its entire inner surface and comprising at least an inner and an outer simultaneously expandable layer;
the liner assembly comprising at least two layers, including a layer of plastic sheet material having a shape, under normal ball inflation pressures, substantially conforming to the final inflated shape of the game ball and being substantially dimensionally stable to hold said shape under said normal ball inflation pressures, and an outer layer adjacent the padding.

4,660,832
SHOCK AND VIBRATION ABSORBENT HANDLE
Robert D. Shomo, 22303 Fairfax, Taylor, Mich. 48180
Filed Mar. 25, 1985, Ser. No. 715,975
Int. Cl.[4] A63B *49/08*
U.S. Cl. 273—73 J 7 Claims



1. A shock and vibration handle for application to the hand gripping portion of a normal handle on an impacted, vibration sensitive item, characterized in that it comprises:
(a) a tubular inner isolation shell of shock and vibration absorbent material adapted to be mounted on the hand gripping portion of a normal handle;
(b) a tubular outer rigid shell having an outer periphery and being mounted around said tubular inner isolation shell of shock and vibration absorbent material and comprising two elongated equal shell portions which do not touch each other;
(c) means for holding said tubular inner and outer shells in mating position on the hand gripping portion of a normal handle; and,
(d) a handle covering material operatively mounted around the outer periphery of said tubular outer shell.

4,660,833
REEL MONITORING AND DIAGNOSTIC DEVICE FOR AN AMUSEMENT MACHINE
Peter D. Dickinson, and William Bertram, both of Reno, Nev., assignors to IGT, Reno, Nev.
Continuation-in-part of Ser. No. 688,295, Jan. 2, 1985. This application Apr. 24, 1985, Ser. No. 726,547
Int. Cl.[4] A63F *5/04*
U.S. Cl. 273—143 R 14 Claims



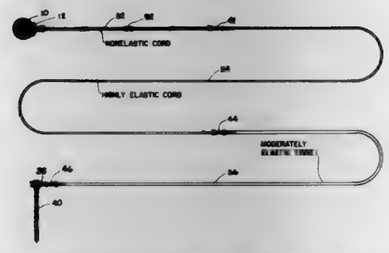
3. Apparatus for testing an amusement device having first and second members configured for movement relative to each other and for contacting each other at a selected contact location and a transducer operative to cause the members to contact each other at the selected contact location in response to a predetermined electrical signal during normal operation of the machine, comprising:
means for modifying said predetermined electrical signal, and
means responsive to said modifying means for sensing whether said members have contacted each other at said selected contact location.

4,660,834
SHORT GOLF COURSE AND GOLF BALL
Andrew J. Carrigan, 19022 SE. 62nd Pl., Issaquah, Wash. 98027
Filed Jan. 13, 1986, Ser. No. 817,895
Int. Cl.[4] A63B *69/36, 41/00*
U.S. Cl. 273—176 AB 5 Claims



4. An oversize hollow inflated golf ball for use in a game of golf, said golf ball comprising:
(a) a durable spherical plastic ball having an inflated diameter of 3.0 to 4.0 inches, a wall thickness of 0.170 to 0.220 inch, a weight of 90 to 100 grams, and an air pressurization of 8 to 10 pounds per square inch;
(b) said ball having 8 to 10 dimples per square inch in its exterior surface, each of said dimples having a depth of 0.018 to 0.022 inch and a diameter of 0.250 to 0.310 inch;
(c) said ball wall being constructed of plasticized vinyl polymer or vinyl copolymer, said ball wall having a hardness of about Shore A 70 Durometer; and
(d) said ball wall having an aperture for receiving air under pressure, said aperture being closed by a resilient plug inserted therein, whereby said air pressurization is maintained within said inflated ball.

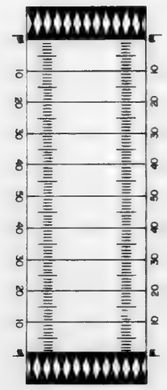
4,660,835
TETHERED BALL GOLF PRACTICE DEVICE
Anthony F. Locurto, 1143 Doralee Way, San Jose, Calif. 95125
Continuation-in-part of Ser. No. 649,990, Sep. 13, 1984, abandoned. This application Oct. 28, 1985, Ser. No. 792,508
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—200 R 8 Claims



2. A ball for use in a tethered ball golf training device comprising,
a first regulation golf ball having a uniform polymer core and a tough, spherical shell cover, said cover surrounding said core,
a dome-shaped wall comprising a circular sector of a spherical shell cover of a second golf ball in gripping contact with said spherical shell cover of the first ball and spanning at least 5% of the surface of the cover of said first ball, said shell cover of the second golf ball being constructed of a material and having a contour substantially identical to that of the shell cover of said first golf ball, and
means for attaching a tethering cord to said wall.

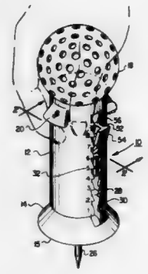
4,660,836
QUARTERBACK GAME
Jerry Rhome, 12673 Still Pond La., Herndon, Va. 22071
Filed Jun. 14, 1985, Ser. No. 744,721
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—247 12 Claims

1. A football game apparatus, comprising:
(a) a playing board representing a football field;
(b) at least moveable pieces for the board to indicate a line of scrimmage and a ten yard line;
(c) first and second sets of playing cards, wherein a majority of the cards in said first set contain indicia identical to indicia contained in the cards of said second set, said indicia representing offensive plays, whereby one of said sets is used by an offensive team and another of said sets is used by a defensive team for attempting matching said cards;



(d) a first chart indicating offensive plays and results of various card matchings.

4,660,837
SETTER APPARATUS FOR GOLF TEES
Joe L. Bressie, 2648 Leta Mae, Farmers Branch, Tex. 75234
Filed May 9, 1986, Ser. No. 861,318
Int. Cl.[4] A63B *57/00*
U.S. Cl. 273—32.5 13 Claims



1. A tee setting apparatus for ground inserting and height setting of a golf tee on which a golf ball is to be supported for participation in the sport of golf, said tee setting apparatus comprising:
(a) an elongated tubular sleeve-like body extending from a base plane for a predetermined longitudinal length and including at least one longitudinal slot defined in a surface of said body;
(b) a plurality of separate apertures formed in communication with and arranged progressively positioned longitudinally along said slot, each of said apertures having a selected geometric perimeter capable of longitudinally interlocking an appropriately shaped protrusion received therein;
(c) a plunger slidably contained in said body and including a tee gripping recess in which to releasably support the head of a golf tee positioned axially therein; and
(d) adjustment means connected to said plunger and including a geometric protrusion adapted to cooperate with said slot and apertures in order to be received and displaced from an interlock relation with a selected one of said

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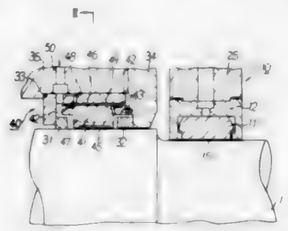
apertures, said protrusion when displaced from said aperture enabling longitudinal displacement of said plunger relative to the base plane of said body and when received in a selected of said apertures effecting a longitudinal interlock therewith for setting a correlated height of a tee to be inserted from said recess into the ground by means of a ground directed force imposed on said body.

4,660,838

VIBRATION SUPPRESSING SEALING DEVICE FOR A ROTARY MACHINE

Kazuo Katayama; Yasushi Mori; Hiroshi Kanki, all of Takasago; Shigeki Morii, Hiroshima; Koji Takeshita, Takasago; Yutaka Ozawa, Takasago, and Zenichi Yoshida, Takasago, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1986, Ser. No. 839,177
Claims priority, application Japan, Feb. 27, 1986, 61-40378
Int. Cl.⁴ F16J *15/16, 15/40*
U.S. Cl. 277—97 **1 Claim**



1. A sealing device for a rotary machine of the type that an annular groove is provided in an inner circumferential surface of a through-hole of a stationary member through which a rotary body supported rotatably by a bearing device extends, gap spaces between said rotary body and the both side portions of the stationary member on the opposite sides of said annular groove are sealed by seal rings, and a seal fluid feed hole for feeding a sealing fluid into said annular groove is provided in said stationary member; characterized in that a vibration-suppressing movable ring is accommodated within said annular groove, said movable ring is mounted to said stationary member so as to be movable only in a radial direction so that an outside annular gap clearance may be formed between an outer circumferential surface of said movable ring and an inner circumferential surface of said annular groove and also an inside annular gap clearance may be formed between an inner circumferential surface of an inner hole of said movable ring and an outer circumferential surface of said rotary body which extends through said inner hole, said inside annular gap clearance is divided into a plurality of arcuate gap clearance sections, and said respective arcuate gap clearance sections are formed in a wedge-like shape that is gradually narrowed towards the downstream side in the direction of rotation of said rotary body.

4,660,839

ENDLESS BACKUP RING FOR HYDRAULIC APPARATUS SEAL

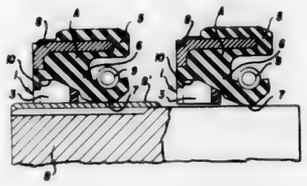
Mititoshi Mitumaru, Osaka, Japan, assignor to Koyo Seiko, Co. Ltd., Osaka, Japan

Filed Dec. 9, 1985, Ser. No. 806,415
Int. Cl.⁴ F16J *15/32*
U.S. Cl. 277—153 **8 Claims**

1. A hydraulic seal for sealing a space between a shaft and a corresponding shaft housing, comprising:

an endless elastomeric seal member having a base portion for fitting to a wall of the housing, said base portion having a reinforcing ring therein, and having a lip portion including a lip edge for making resilient sliding contact with the shaft surface and also including an inner peripheral surface spaced from the shaft surface;

an endless backup ring in contact with said inner peripheral surface of said seal member and disposed between said inner peripheral surface and said shaft surface, said backup ring having a ring-like body having at least two notches; and



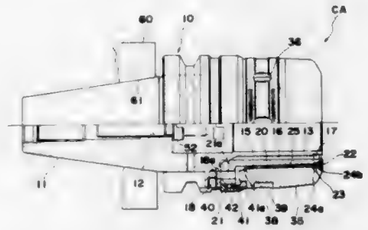
a first notch formed in a circumferential surface of said ring-like body and a second notch formed in another circumferential surface opposite to said first notch, said first and second notches forming a staggered relationship in the circumferential direction between each other and extending radially through a portion of said ring-like body to enable said ring-like body to expand circumferentially.

4,660,840

NEEDLE-ROLLER TYPE CHUCK

Mizoguchi, Haruki, Ikoma, Japan, assignor to Mizoguchi Iron Works & Co., Ltd., Nara, Japan

Filed Apr. 29, 1985, Ser. No. 728,805
Claims priority, application Japan, Dec. 28, 1984, 59-200463[U]; Dec. 28, 1984, 59-200464[U]; Dec. 28, 1984, 59-200465[U]
Int. Cl.⁴ B23B *31/04*
U.S. Cl. 279—1 N **4 Claims**



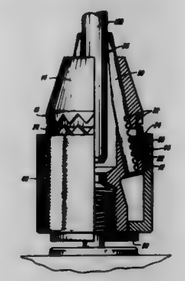
1. In a needle-roller type chuck which comprises a chuck main body, a cylindrical portion having a convergently tapered outer peripheral surface and extending away from the chuck main body in an axial direction, and a clamping nut having an inner peripheral surface slightly larger in diameter than the other peripheral surface of said cylindrical portion and formed with a tapered portion parallel to said outer peripheral surface of said cylindrical portion, with said clamping nut being mounted on the outer peripheral surface of said cylindrical portion with a large number of needle rollers positioned in a retainer rotatably supported therebetween in a needle-roller attaching space, wherein the improvement comprises said cylindrical portion including an inner cylinder and an outer cylinder, said inner cylinder integrally formed with said chuck main body at one end thereof and having a tapered outer peripheral surface which terminates in a continuous unbroken axial end surface at the other end thereof, said outer cylinder being fixedly held on said outer peripheral surface of said inner cylinder, said inner cylinder having a plurality of groove portions formed on the outer peripheral surface of said inner cylinder, said groove portions extending in said axial direction short of said axial end surface of said inner cylinder and said groove portions extending at least along said needle roller attaching space.

4,660,841

HAND TIGHTENABLE DEVICE FOR HOLDING A CUTTING IMPLEMENT

Michael J. Chouinard, 88 Milton St., Milton, Mass. 02186

Filed Jan. 14, 1985, Ser. No. 691,443
Int. Cl.⁴ B23B *31/00, 5/22*
U.S. Cl. 279—61 **9 Claims**



1. A nonprecision apparatus for holding a cutting implement in a fixed position relative to a drive means, said apparatus comprising:

A. a clamping member adapted to engage said cutting implement and hold it in a fixed position upon tightening, said clamping member having

i. a plurality of engaging members each having a first surface adapted to engage said cutting implement upon pinching of said clamping member and a second surface having a first set of substantially coarse threads thereon,

ii. a two-piece yoke having interior and exterior surfaces, said yoke having a second set of substantially coarse threads located on its interior surface and a first set of substantially fine threads located on its exterior surface, and

iii. an enclosing member exterior to said yoke and having interior and exterior surfaces, said enclosing member having a second set of substantially fine threads on its interior surface;

B. a first threaded screw means which pinches said clamping member about said cutting implement; and

C. a second threaded screw means which clamps said clamping member about said cutting implement; whereby turning said enclosing member imparts two separate, sequential actions; the pinching of said engaging members about said cutting implement by the action of said first threaded screw means automatically followed by the clamping of said engaging members about said cutting implement by the action of said second threaded screw means as the turning of said enclosing member continues until completion.

4,660,842

AGRICULTURAL IMPLEMENT WITH ELEVATION CONTROL MECHANISM

Dwayne B. Watt, Woodridge, and Brad K. Eversole, Bollingbrook, both of Ill., assignors to J. I. Case Company, Racine, Wis.

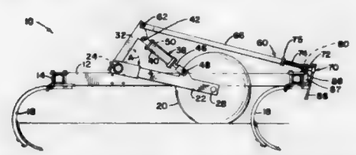
Filed Apr. 24, 1986, Ser. No. 855,800
Int. Cl.⁴ A01B *63/22*
U.S. Cl. 280—43.23 **4 Claims**

1. An agricultural implement having a frame and at least one ground engaging wheel for supporting said frame above the ground and an elevation control mechanism therefor, said mechanism comprising:

a first lever pivotally mounted to said frame about a pivot axis for oscillation relative to said frame with said wheel carried on the forward end of said first lever for rotation about a rotational axis parallel to, and spaced from, said pivot axis;

a second lever pivotally mounted to said frame about a pivot axis at the rearward end of said first lever for oscillation relative to said frame;

an extendable and retractable pressure fluid actuator pivotally connected between said first and second levers for effecting relative movement between said levers for raising and lowering said frame relative to the ground;



an adjusting member that has a threaded portion and that is carried on said frame forwardly of said first lever and said second lever for accommodating rotation about the thread axis as well as pivoting movement relative to said frame; and

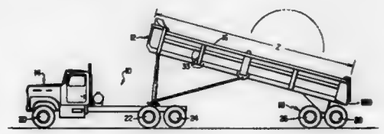
an elongated link that is pivotally connected to said second lever and that extends forwardly therefrom and is threadingly engaged with said adjusting member threaded portion whereby rotation of said adjusting member moves said link to pivot said second lever to a selected orientation relative to said frame so as to locate said actuator at a selected position relative to said frame, said elongated link being subjected to tensile loading attendant to support of said frame of said implement by said ground engaging wheel.

4,660,843

METHOD AND APPARATUS FOR VARYING A VEHICLE WHEELBASE

W. Glen Hicks, 809 Kennon St., Minden, La. 71055

Continuation-in-part of Ser. No. 549,235, Nov. 4, 1983, Pat. No. 4,531,753. This application Jun. 10, 1985, Ser. No. 743,141
Int. Cl.⁴ B60P *1/04;* **B62D** *53/06*
U.S. Cl. 280—80 B **14 Claims**



1. A vehicle for use with a support device, comprising:

a rigid frame having a forward end and a dumping end, the forward end being supported by the support device;

a trailer body;

means for supporting said trailer body on said rigid frame proximate said dumping end for pivotal motion relative said rigid frame between a horizontal traveling position and a tilted dumping position;

means positioned between said rigid frame and said trailer body spaced from the dumping end to move the trailer body between the traveling and dumping positions;

a pedestal for supporting at least one axle;

means for supporting said pedestal on said rigid frame for

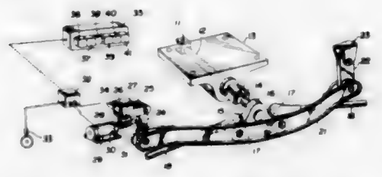
slidable motion of said pedestal along said rigid frame between a forward position and a rearward position;
pedestal mounted wedge stucture;
rigid frame mounted wedge structure, the pedestal mounted wedge structure and frame mounted wedge structure moving into a wedging postion when the pedestal is in the forward and rearward positions to wedge the pedestal to the frame in the forward and rearward position for vehicle operation;
locking means for urging the pedestal mounted wedging structure and frame mounted wedging structure into the wedging position when the pedestal is in the forward and rearward positions; and
the forward position of the pedestal permitting dumping of the trailer body payload while the rearward position of the pedestal is employed for trailering, at least one of said axles being positioned rearward of the frame when the pedestal is in the rearward position.

4,660,844

STEERING SYSTEM FOR VEHICLES

Osamu Yamamoto, Tochigi; Shoichi Sano, Tokyo, and Yoshimi Furukawa, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1984, Ser. No. 684,057
Claims priority, application Japan, Dec. 23, 1983, 58-243352; Dec. 23, 1983, 58-243353
Int. Cl.⁴ B62D *5/10*
U.S. Cl. 280—91 **5 Claims**



1. A steering system for a vehicle with a front wheel and a rear wheel, including:
a steering wheel;
front wheel steering means for steering said front wheel;
rear wheel steering means for steering said rear wheel;
ratio changing means for changing a steered angle ratio of said rear wheel to said front wheel;
control means for controlling said ratio changing means;
ratio detecting means for detecting said steered angle ratio;
said ratio detecting means cooperating with said control means;
speed detecting means for detecting a vehicle speed of said vehicle; and
said speed detecting means cooperating with said control means;
in which a ratio control of said steered angle ratio is effected to be variable in accordance with said vehicle speed,
wherein:
mode selecting means adapted to be manually operable and operatively connected to said control means is provided for exclusively selecting an arbitrary one of a plurality of control modes of said ratio control.

4,660,845

ADJUSTABLE STEERING STOP

Herbert W. Herr, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 7, 1986, Ser. No. 848,532
Int. Cl.⁴ B62D *5/06*
U.S. Cl. 280—95 R **18 Claims**

1. A pivot stop for adjustably limiting pivotal movement between first and second pivotally connected members of a pivot assembly, said stop comprising a first abutment fixed relative to said first pivot member; a second abutment fixed relative to said second pivot member and having a relative line of travel intersecting said first abutment as said abutments are moved together by relative pivotal movement of said pivot members; two or more movable stop tabs secured to said pivot



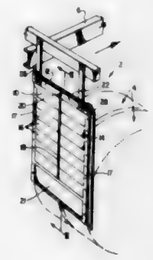
assembly, each tab being movable between, a storage position wherein said finger is outside the line of travel of said second abutment, and a stop position wherein said stop tab intersects said line of travel of said second abutment; and means for selectively maintaining said tabs in said storage and stops positions.

4,660,846

SPRAY SHIELD FOR AUTOMOTIVE VEHICLES

Albert Z. Morin, Apt. 801, 2200 Regent St. South, Sudbury, Ontario, Canada P3E 5S2

Filed Nov. 18, 1985, Ser. No. 799,344
Int. Cl.⁴ B62D *25/16*
U.S. Cl. 280—154.5 R **9 Claims**



1. A spray shield for a wheel of an automotive vehicle for controlling the spray generated thereby when travelling on a roadway surface, the shield being in sheet form and having front and rear surfaces and top and side borders, and adapted to be disposed above the roadway surface vertically depending from the vehicle and spaced rearwardly from the vehicle wheel in a plane extending transversely to the vehicle, a plurality of vertically aligned, downwardly depending, contiguous flaps, each flap extending horizontally between the side borders when the shield is in position on the vehicle, the flaps to permit flow of air and spray through the shield and cause downward deflection thereof, and a pair of air deflection surfaces to be vertically oriented during operation, one extending outwardly along each of the borders and each angled with respect to the front surface of the spray shield to deflect air and spray laterally, from the side of the spray shield normally positioned adjacent the center of the roadway towards the side of the spray shield opposite thereto, wherein the air deflection surface along the border of the shield adjacent the center of the roadway is angled forwardly and outwardly with respect to the front surface of the shield and the other air deflection

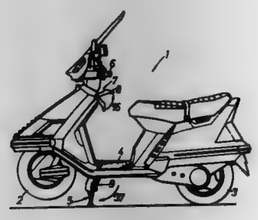
surface is angled outwardly and rearwardly with respect thereto.

4,660,847

MAIN STAND DEVICE FOR TWO-WHEELED MOTORCYCLE

Akio Yagasaki, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1985, Ser. No. 762,062
Claims priority, application Japan, Aug. 8, 1984, 59-121540[U]
Int. Cl.⁴ B62H *1/02*
U.S. Cl. 280—298 **11 Claims**



1. A main stand device for a two-wheeled motorcycle having a body frame, comprising:
a main stand rotatably secured to the body frame for rotation between a stored state and a standing state,
an actuator operatively coupled with said main stand and pivotally mounted on the body frame, said actuator being manually operable to pivot said main stand,
said main stand including a stand body rotatably supported on the body frame and operatively coupled with said actuator and a leg telescopically mounted to said stand body and capable of extending to the ground, said stand body having a power unit provided thereon for telescopically driving the leg, and a switch means for operating the power unit being arranged so as to vary a switching mode in response to operation of said actuator, said switch means actuating the power unit when said actuator is pivoted a predetermined angle in a stand-erecting direction.

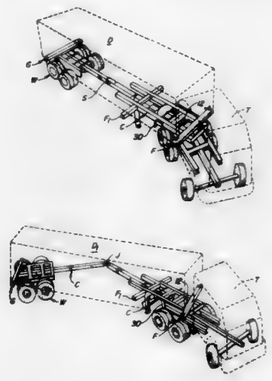
4,660,848

CHASSIS WITH TELESCOPING ARTICULATED STINGER

Nicklas R. DeWitt, Portola Valley, Calif., assignor to X-Ten Corporation, San Francisco, Calif.

Filed Jun. 24, 1985, Ser. No. 748,085
Int. Cl.⁴ B62D *53/06*
U.S. Cl. 280—404 **5 Claims**

1. A chassis having a telescoping articulating stinger for hauling a container comprising in combination:
a fifth wheel for mounting the forward portion of said chassis to a towing tractor;
a forward bolster pivotally mounted overlying said fifth wheel for receiving the forward end of said container;
a rear tandem wheel set;
a rear bolster pivotally mounted overlying said rear tandem wheel set;
a telescoping stinger having at least an outer receiving telescoping member and an inner received telescoping member;
said telescoping stinger attached to said fifth wheel at a forward end and to said rear tandem wheel set at a rear end to tow and steer said tandem wheel set;
an articulating joint mounted to said inner received telescoping member for telescoping into and out of said outer receiving telescoping member whereby said inner received telescoping member can articulate relative to said outer receiving telescoping member to permit articulated movement of said inner member when said articulated joint is free of said outer receiving member and to prevent articulation when said articulated portion of said inner member is within said outer receiving telescoping member;



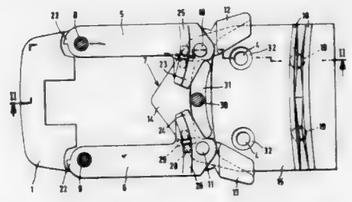
means for locking a towing tractor to said forward portion of said chassis whereby when said chassis is loaded with a container at said pivotal bolsters and encounters a turn, said stinger telescopes and articulates to steer said rear wheel set responsive to the angle of the tractor and locked forward portion of the chassis relative to the rear portion of the chassis and tandem wheel set.

4,660,849

TOE PIECE FOR A SAFETY SKI-BINDING

Gerhard Sedlmair, Farchant, and Walter Knabel, Murnau, both of Fed. Rep. of Germany, assignors to Marker International Company, Salt Lake City, Utah

PCT No. PCT/EP85/00020, § 371 Date Oct. 1, 1985, § 102(e) Date Oct. 1, 1985, PCT Pub. No. WO85/03451, PCT Pub. Date Aug. 15, 1985
PCT Filed Jan. 23, 1985, Ser. No. 783,926
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1984, 3403472
Int. Cl.⁴ A63C *9/08*
U.S. Cl. 280—625 **15 Claims**



1. A toe piece for a safety ski binding, said toe piece having a rearward portion, a longitudinal axis and longitudinally extending side portions, and comprising:
base means;
soleholder means pivotally mounted in fixed relation with said base means and biassed to a central, rearwardly facing direction for engaging and retaining a ski boot sole in the binding, said soleholder means pivoting to release a re-

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tained ski boot when a sidwise force applied to the ski boot exceeds a predetermined value;

lower support means mounted on said base means;

pedal means for engaging the sole portion of a ski boot in said toe piece, said pedal means being pivotally mounted for movement with said soleholder means in response to the movement of the ski boot retained in the toe piece; said pedal means being disposed over said lower support means and having first ramp means including a series of resilient ramps joined by juncture means; said juncture means extending in directions generally parallel to said side portions and located for engagement by said lower support means when a downward force is exerted on said pedal means in the absence of sidewise forces, said first ramp means including ramps inclined from said juncture means towards opposite sides of said toe piece for engagement by said lower support means when said pedal means is subjected to downward and sidewise forces, the ramps configured for engagement by said lower support means for establishing forces offsetting the sidewise forces resulting from friction between the ski boot and the binding.

4,660,850

BABY STROLLER

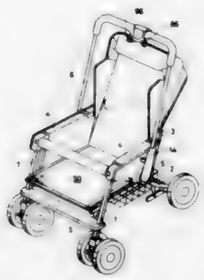
Shinroku Nakao, Kasagawa; Hideo Saito, and Yoshiyuki Suzuki, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1985, Ser. No. 786,478

Claims priority, application Japan, Oct. 12, 1984, 59-153808[U]; Feb. 22, 1985, 60-24429[U]; Jan. 20, 1985, 60-93385[U]

Int. Cl.[4] **B62B** *7/08*

U.S. Cl. 280—642 **7 Claims**



1. A foldable baby stroller comprising:

a seat;

a back-rest connected to said seat;

a substantially U-shaped push handle pivotably connected at a first pivot means to said back-rest;

ground engaging means for supporting said seat and said back-rest, said ground engaging means including a rear leg rod having a first locking pin thereon;

a first hook plate rotatably mounted on said push handle, said first hook plate being selectively engageable with said first locking pin for locking said rear leg rod in a predetermined position relative to said push handle when the stroller is in the operational position;

a second locking pin on said back-rest means;

a second hook plate rotatably mounted on said push handle, said second hook plate being selectively engageable with said second locking pin for locking said back-rest in a predetermined position relative to said push handle when the stroller is in the operational position;

operating lever means including first and second operating levers adapted to be mounted on said push handle;

first wire means connecting said first operating lever to said first hook plate, movement of said first operating lever selectively engaging or disengaging said first hook plate with said first locking pin; and

second wire means connecting said second operating lever to said second hook plate, movement of said second operating lever selectively engaging or disengaging said second hook plate with said second locking pin.

4,660,851

ANCHORING SYSTEM FOR VEHICLE AXLES

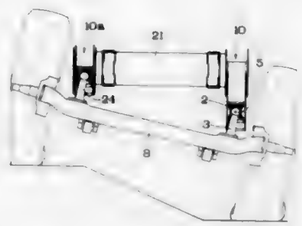
Roberto Perlini, 37047 San Bonifacio, Locara (Verona), Italy

Filed Oct. 17, 1985, Ser. No. 788,488

Claims priority, application Italy, Nov. 5, 1984, 68100 A/84

Int. Cl.[4] **B60G** *17/04*

U.S. Cl. 280—673 **9 Claims**



1. An anchoring system for vehicle axles having vertically movable suspensions rigidly secured to a chassis of the vehcile, comprising

connection elements arranged between a rigid axle and the chassis of the vehicle, to react to longitudinal thrust and braking torque;

at least one vertically movable suspension connected to said rigid axle and said chassis;

joint means inserted between said vertically movable suspension and said rigid axle for connection therebetween, said joint means comprising a hollow cylindrical casing secured to a lower end of said suspension and provided with at least one aperture, a rotary translating sleeve in said aperture and accommodated in said cylindrical casing for rotary translating movements, and a pin seucred to said axle and having a head rotatably accommodated in said sleeve.

4,660,852

CRASH ENERGY ABSORBER FOR A VEHICLE STEERING WHEEL

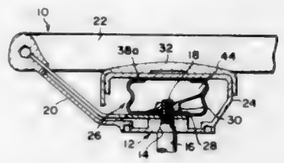
Kazuo Katayama, Kure; Katumi Ooishi, Hiroshima; Toshiake Ogawa, Hiroshima; Masaru Batai, Hiroshima, and Mitsuru Katsoka, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 3, 1985, Ser. No. 771,729

Claims priority, application Japan, Sep. 3, 1984, 59-184171; Sep. 3, 1984, 59-184172; Sep. 3, 1984, 59-133632[U]

Int. Cl.[4] **B60R** *21/02*

U.S. Cl. 280—750 **12 Claims**



1. A crash energy absorber for a steering wheel mechanism having a steering shaft formed with a boss portion at a tip end and a cover means so that the crash energy absorber is disposed between the boss portion and the cover means, said crash energy absorber comprising:

a plate structure including at least a substantially rectangular top plate, a side plate extending from each of two opposite ends of said top plate, substantially perpendicular to said top plate and a bottom plate connected with the side plates in parallel with said top plate so as to define a substantially rectangular space and at least one reinforcement extending diagonally between said bottom plate and an upper corner portion located between said top plate and one side plate, said at least one reinforcement being secured adjacent said upper corner portion at an upper end and secured to said bottom plate at a lower end and said top plate and said bottom plate defining openings through which said plate structure engages with the boss portion so that the crash absorber is mounted on the steering wheel mechanism to absorb the impact of a force in a direction perpendicular to said top plate which is the axial direction of the steering shaft, a force in a direction perpendicular to the axial direction of the steering shaft and parallel with said side plates, a force in a direction perpendicular to both said top plate and said side plates, and a diagonal crash force applied at corner portions located between said top plate and said side plates.

4,660,853

VEHICLE BODY TILTING MECHANISM

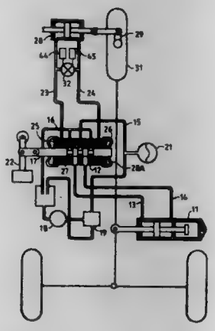
Edmund F. N. Jephcott, Fern Hill, Fairwarp, Uckfield, Sussex TN 22 3BU, United Kingdom

PCT No. PCT/GB84/00051, § 371 Date Dec. 12, 1985, § 102(e) Date Dec. 12, 1985, PCT Pub. No. WO85/03678, PCT Pub. Date Aug. 29, 1985

PCT Filed Feb. 12, 1984, Ser. No. 795,492

Int. Cl.[4] **B62D** *9/02;* **B60G** *17/00*

U.S. Cl. 280—772 **5 Claims**



1. A vehicle steering system for a vehicle having a tiltable body with a normally upright axis and a vehicle steering mechanism, the system including tilt actuator means for controlling the direction and magnitude of the vehicle body tilt during vehicle cornering;

tilt control means responsive to centripetal acceleration of the vehicle; means operatively connecting the tilt control means to the actuator means whereby the tilt actuator means and the tilt control means are operative to tilt the vehicle body so that the normally upright axis of the vehicle body remains substantially in line with the resultant vector of gravity and the centrifugal force;

electronic means operatively connecting the tilt control means to the steering mechanism of the vehicle including means for providing that the tilt actuator means gives a response to a change in the steering angle in the same sense as the response due to the change in the centripetal acceleration resulting from the change in the steering angle.

4,660,854

FRAME CONSTRUCTION FOR MOTORCYCLES

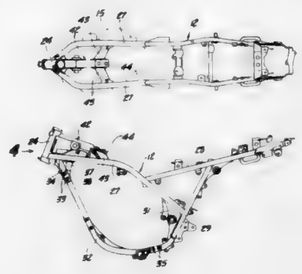
Toshiyuki Suzuki, Simada, and Yuro Yoshida, Hamamatsu, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 18, 1985, Ser. No. 810,498

Claims priority, application Japan, Dec. 18, 1984, 59-265257; Dec. 18, 1984, 59-265258

Int. Cl.[4] **B62D** *21/00*

U.S. Cl. 280—782 **15 Claims**



1. In a frame construction for a vehicle having at least one front wheel dirigibly supported by said frame and at least one rear wheel carried by said frame, a head pipe providing a steering journal for said dirigible wheel, a pair of main tubes connected at their forward ends to said head pipe at the lower end thereof and extending rearwardly therefrom, and reinforcing means connected between said head pipe and said main tube for resisting twisting forces on the joint between said main tube and said head pipe, said reinforcing means comprising an upper brace comprising a first piece extending between said main tubes rearwardly of their connection to said head pipe and a second piece affixed to said first piece at its rearward end and to said head pipe at its forward end.

4,660,855

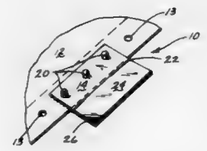
COMPUTER PAPER INDEX TAB

Joseph A. Pagliaccio, 207 Bayville Ave., Bayville, N.Y. 11709

Filed Nov. 13, 1985, Ser. No. 797,647

Int. Cl.[4] **B42D** *1/00;* **B42F** *13/00, 21/00*

U.S. Cl. 281—2 **4 Claims**



1. An index tab in combination with sheet material having regularly spaced perforations along its margin, the perforations being spaced apart a predetermined distance, said index tab comprising

a female jaw including regularly spaced apertures said apertures being spaced apart by said predetermined distance and being registrable with said perforations in the margin of said sheet material;

a male jaw including regularly spaced projections registra-

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ble with said apertures, said male jaw being pivotally attached to said female jaw along a common edge, said male and female jaws being selectively movable between an open position and a closed position wherein said projections extend through and frictionally engage said apertures and said jaws also being movable from the closed position to the open position whereby said index tab maybe removably affixed to the sheet material with the sheet material between said jaws at selected ones of the sheet perforations; and

a tab section attached to said male and female jaws at said common edge and extending outwardly therefrom and having a slot formed therein disposed to receive a label.

4,660,856

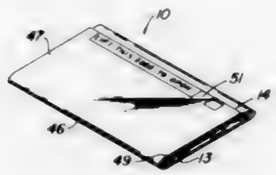
INFORMATION FOLDER CONSTRUCTION

James H. Shacklett, Jr., 2025 Joshua Rd., Lafayette Hill, Pa. 19444

Continuation-in-part of Ser. No. 650,516, Sep. 14, 1984, Pat. No. 4,583,763, and Ser. No. 103,593, Dec. 14, 1979, abandoned, and Ser. No. 940,073, Aug. 25, 1978, abandoned, and Ser. No. 752,446, Dec. 20, 1976, abandoned. This application Nov. 25, 1985, Ser. No. 801,621

Int. Cl.⁴ B42D *3/18, 19/00;* **B65D** *27/00;* **B31B** *1/26*

U.S. Cl. 281—5 **6 Claims**



1. A folder construction comprising an elongate strip of thin flexible paper folded assymetrically about a transverse line to form a crease along said line and a pair of overlying leaves of different lengths extending from said crease and terminating at strip ends spaced different distances from said crease, said strip being wound from said crease outwardly to form a spiral having many ovaloid convolutions with each convolution having its entire outer surface in facing engagement with the inner surface of the next outer convolution, said convolutions each having arcuate end portions and side portions extending between said end portions, said convolution end portions each being in reinforcing abutting engagement with the convolution end portions of the next outer convolution for cumulative stiffening of the outward convolution end portions, said strip ends being detachably secured to the nether convolutions, detachment of the strip ends enabling unwinding of said spiral convolutions, said strip being wound with the longer leaf outwardly to overlie the shorter leaf and its strip end, and releasable adhesive detachably securing the strip end of said outwardly wound longer leaf to the nether convolution, said strip ends both terminating in the outermost convolutions in adjacent relation with respect to each other and overlying the same convolution side portion, whereby detachment of the outer strip end presents immediately therebeneath the inner strip end.

4,660,857

PROTECTOR FOR PUBLICATION AND METHOD FOR GUARDING A SELECTED PORTION THEREOF

Constant V. David, 4952 Field St., San Diego, Calif. 92110

Continuation-in-part of Ser. No. 711,288, Mar. 13, 1985, abandoned. This application Sep. 12, 1986, Ser. No. 907,151

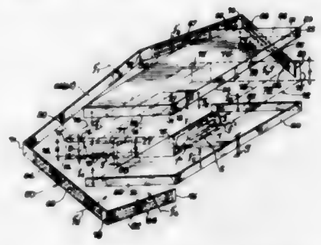
Int. Cl.⁴ B42D *5/00;* **B65B** *51/04, 5/00*

U.S. Cl. 281—20 **6 Claims**

1. A protector for a rectangular publication having a front cover, a back cover, a plurality of pages between the covers, a spine connecting the rearward edges of the covers and pages, a front edge surface opposing the spine and made up of the front edges of the pages, a top edge surface made up of the top edges of the pages and a bottom edge surface made up of the bottom edges of the pages, comprising:

a front face and a back face, the faces each having an area sufficient so that they can overlap a corresponding page of the publication to thereby conceal printed or other information thereon;

a band dimensioned for extending along substantially the entire lengths of the spine, top edge surface, front edge



surface and bottom edge surface in overlying relationship therewith; and

means for attaching the band to the front and back faces after they have been inserted into the publication in overlapping relationship with a pair of corresponding ones of the pages and with the band positioned in overlying relationship with the spine and the top, front and bottom edge surfaces of the publication to thereby provide a sealed portion of the publication which cannot be examined without leaving an indication that the band has been broken or otherwise tampered with.

4,660,858

HOT MELT ADHESIVE COMPOSITION FOR BOOK LINING

Thomas P. Flanagan, Green Brook, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 20, 1986, Ser. No. 831,760

Int. Cl.⁴ B32B *27/10*

U.S. Cl. 281—21 R **12 Claims**

1. A process for lining hard bound book blocks comprising the steps of applying a molten film of a hot melt pressure sensitive adhesive to the bound edges of the book block; applying thereto a scrim; applying a second molten film of a hot melt pressure sensitive adhesive and affixing thereto a strip of kraft paper in registered relation to the book spine; wherein the pressure sensitive hot melt adhesive composition comprises:

(a) 20 to 35% by weight of an A-B-A block or A-B-A-B-A-B multi-block copolymer where the A component is styrene and the B component is butadiene or hydrogenated butadiene and the copolymer contains at least 28 parts styrene per 100 parts copolymer;

(b) 45 to 70% by weight of a compatible tackifying resin;

(c) 5 to 30% by weight of a plasticizing oil;

(d) 0 to 5% by weight of a petroleum derived wax; and

(e) 0.1 to 2% by weight of a stabilizer.

4,660,859

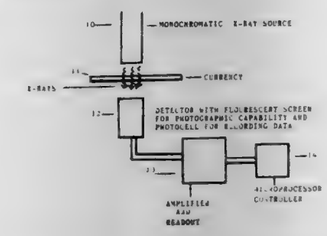
PROCESS FOR INCORPORATING A NOVEL NUCLEAR SIGNATURE ON CURRENCY WHICH PERMITS EASY AUTHENTICATION AT A LATER DATE

Ram Natesh, Centerville, Utah, assignor to Materials Research, Inc., Centerville, Utah

Filed Jun. 17, 1985, Ser. No. 745,445

Int. Cl.⁴ B42D *15/00;* **G09F** *3/02;* **C08J** *1/02*

U.S. Cl. 283—70 **12 Claims**



1. A process for marking currency to permit easy authentication at a later date which comprises irradiating a region of the currency by exposing the said region to bombardment by high energy neutrons to effect a high state of excitation in the atoms of the exposed region, and treating the exposed region with a chemical reagent which reacts with the excited atoms and leaves tiny holes in the said exposed region which can later be authenticated.

10. A process for authenticating markings on currency which has been treated by irradiating a region of the currency by exposing the said region to bombardment by high energy neutrons to effect a high state of excitation in the atoms of the exposed region, and treating the exposed region with a chemical reagent which reacts with the excited atoms and leaves tiny holes in the said exposed region, the process of authenticating comprising exposing the treated currency to a monochromatic X-ray source, allowing the transmitted beam to impinge upon a flourescent screen which will shown shiny dots where the beam has reached the screen, said dots corresponding to the tiny holes in the marked currency.

4,660,860

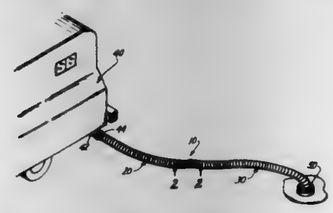
FLEXIBLE PIPE COUPLER

Harry V. Todd, El Cajon, Calif., assignor to Toddco, El Cajon, Calif.

Filed Nov. 14, 1985, Ser. No. 800,171

Int. Cl.⁴ F16L *47/00*

U.S. Cl. 285—12 **16 Claims**



1. A coupler for coupleing recreational vehicle spirally corrugated drainpipe, which comprises:

a tubular member of unitary one-piece construction and thermoplastic composition for insertion between two sections of drainpipe to be coupled, the tubular member having a first end portion and a second end portion;

said tubular member having an enlarged annular flange portion extending radially therefrom intermediate the first and second end portions, said annular flange portion defining a pair of first and second outwardly-extending stop means facing respective ones of the first and second end portions;

a first thread portion of the first end portion defining an integral raised helical thread adapted for threaded engagement of a first one of the two sections of drainpipe, the first thread portion extending from a distal end of the first end portion toward and slightly spaced apart from the first abutment surface;

a second thread portion of the second end portion defining an integral raised helical thread adapted for threaded engagement of a second one of the two sections of drainpipe, the second thread portion extending from a distal end of the second end portion toward and slightly spaced apart from the second abutment surface; and

said tubular member having means defining a pair of spaced disposed between respective ones of said stop means and the respective thread portions for enabling the ends of the first and second sections of drainpipe to extend into said spaces and to engage respective ones of said stop means.

4,660,861

HEAT INSULATING MEANS FOR PIPING SUBJECTED TO THERMAL, HYDROSTATIC AND MECHANICAL STRESSES, POSITIONING THEREOF AND PROCESSES FOR FORMING SAID INSULATING MEANS

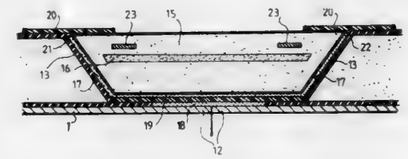
Gilles Argy, La Queue En Yvelines; Michel M. Grapin, Le Chesnay, and Philippe Marchal, Lagny S/Marne, all of France, assignors to Hutchinson S.A., Paris, France

Filed Dec. 28, 1984, Ser. No. 687,138

Claims priority, application France, Dec. 28, 1983, 83 20911

Int. Cl.⁴ F16L *59/16*

U.S. Cl. 285—45 **13 Claims**



1. A heat insulating device for undersea ducts subjected to thermal, hydrostatic and mechanical stresses, comprising, in combination:

a first elastomer layer, which surrounds a duct to be insulated and comprising a plurality of metallic and rigid tubes intended to be assembled end to end, thus providing anti-corrosion protection therefor;

heat insulating means made from a foam insulating material enclosing air and withstanding high hydrostatic pressures, which are superimposed continuously on said first layer;

a second sea-water tight elastomer layer, resistant to abrasion, which surrounds said heat insulating means;

a plurality of radially projecting elastomer layers regularly disposed around the periphery of said duct and interconnecting said first and second elastomer layers, in order that said insulating device comprises a plurality of sectors filled with said heat insulating means which are bonded together by said radially projecting elastomer layers,

wherein said device protects each tube of said duct to the exclusion of the ends of said tube which are left without protection so that adjacent tubes may be welded together end to end;

a rapid jointing and sealing means for the insulating devices of two adjacent tubes, after welding of the metal tubes in the corresponding end zones of said tubes free of insulating devices, wherein rapid jointing and sealing means comprise a prefabricated elastomer ring which incorporates heat insulating and hydrostatic pressure resisting material elements, and is fixed to the adjacent insulating

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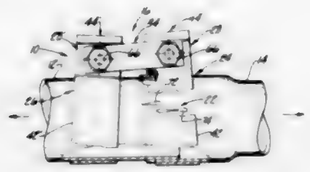
devices of said tubes by means of a member selected from the group consisting of sealing elastomer, a self curing elastomer, and of a thermal retractable sheath, so as to constitute between adjacent devices a zone for continuing the insulation.

4,660,862

PIPE LAP JOINT WITH IMPROVED PULL-APART STRENGTH

Thomas R. Cassel, and Scott T. Cassel, both of Birmingham, Mich., assignors to BKS Company, Birmingham, Mich.

Filed Apr. 2, 1985, Ser. No. 719,268
Int. Cl.[4] F16L *21/06*
U.S. Cl. 285—114 **7 Claims**



1. A coupling having improved pull-apart strength of pipe lap joints of the type comprising:
an inside pipe and an outside pipe in telescoping relationship with a lap portion at the end of the inside pipe disposed inside a lap portion at the end of the outside pipe to form an overlap region,
a clamping band disposed around said outside pipe at said overlap region,
tightening means for clamping the clamping band around the outside pipe to clamp the pipes together,
attachment means on the inside pipe beyond the overlap region of the pipes,
and linking means connected between said clamping band and said attachment means, the improvement wherein:
said clamping band has a cross-section including a roundish sector and a radially projecting channel-shaped sector,
said channel-shaped sector comprises a pair of sidewalls extending outwardly from the roundish sector and being separated from each other at the outer ends to form an opening in the clamping band,
a spline disposed between the sidewalls and having a pair of surfaces which are respectively opposite said pair of sidewalls, one of said surfaces of said spline being concave,
a bar disposed against one sidewall opposite said concave surface of the spline,
said tightening means including at least one bolt and nut with the bolt extending laterally through the said bar, sidewalls and spline and being adapted to force the sidewalls against the respective surfaces of the spline, whereby the clamping band is stretched around said overlap region,
whereby said linking means causes binding action to resist pull-apart motion of the pipes.

4,660,863

CASING PATCH SEAL

Thomas F. Bailey, and Nehal M. Shah, both of Houston, Tex., assignors to A-Z International Tool Company, Houston, Tex.

Filed Jul. 24, 1985, Ser. No. 758,370
Int. Cl.[4] F16L *25/00*
U.S. Cl. 285—145 **15 Claims**

13. A casing patch adapted to be run in a well bore for connecting a first casing section attached to the casing patch to a second casing section in the well and providing a tight seal of the connection upon the application of tension by the first casing section in an upward direction, comprising:
body means having an inner surface adapted to fit over the outer surface of said second casing section;
slip means within the body means adapted to fit over said outer surface of the second casing section for tightly connecting the first and second casing sections upon application of tension on the first casing section;
said slip means comprising an annular slip and an annular slip bowl, said slip telescoping within said slip bowl upon relative movement between said slip and said slip bowl, and means for radially contracting the end of said slip to tightly grip said outer surface of the second casing section upon relative movement between said slip and said slip bowl;
resilient seal means within said body means adapted to fit



over said outer surface of the second casing section actuated by said tension on said first casing section for sealing the connection between said first and second casing sections;
said seal means comprising a lead ring and a compressible ring means formed of a first annular wire mesh ring, a second annular wire mesh ring and a ring of deformable material between said first and second wire mesh rings, said seal means being arranged within said body means so that upon application of said tension by the first casing section said body means compresses said first and second wire mesh rings to form a metal seal between said body means and the second casing section; and
means for preventing separation of said slip bowl relative to said seal means to maintain tension of said seal means.

4,660,864

SEALING ADAPTER FOR PIPE FOR DIFFERING MATERIAL

A. Herbert Ershig, Bellingham, Wash., assignor to Ershigs, Inc., Bellingham, Wash.

Filed Dec. 30, 1985, Ser. No. 815,354
Int. Cl.[4] F16L *55/00*
U.S. Cl. 285—173 **1 Claim**



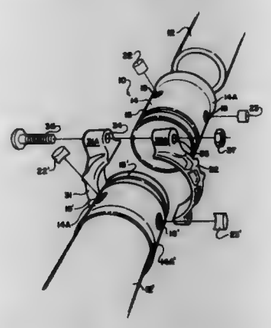
1. A pipe coupling element fabricated of fiberglass reinforced plastic and being capable of absorbing the differential expansion of abutting pipe sections of differing material, which are free to move relative to and within said coupling element said coupling comprising:
an annular sleeve having a first end of a predetermined thickness and including an inwardly facing annular groove capturing a unitary, resilient sealing element to be sealingly compressed against the exterior surface of the first pipe to be coupled, and a second end of lesser thickness than said predetermined thickness and having a substantially smooth interior surface to sealingly engage a resilient sealing element captured by the second pipe to be coupled.

4,660,865

METHOD AND APPARATUS FOR COUPLING A CONNECTOR TO THERMOPLASTIC PIPE

Jack L. Workman, No. 7 Spring Run, Alum Creek, W. Va. 25003

Filed Apr. 21, 1986, Ser. No. 853,919
Int. Cl.[4] F16L *47/00*
U.S. Cl. 285—174 **12 Claims**



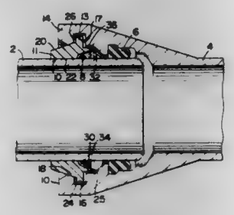
1. A coupling connector for thermoplastic pipe, comprising:
(a) a tubular connector sleeve having means for use in connection to another sleeve, said tubular connector sleeve being concentrically positioned in press-fit relation on an end portion of a length of thermoplastic pipe and having at least one access hole through the walls thereof for permitting access to the wall of the plastic pipe directly therebeneath; and
(b) a thermoplastic plug positioned in and protruding outwardly from said at least one access hole, said plug heat fused to the wall of the thermoplastic pipe to bond with and form an integral, unitary, fixedly secured part thereof for locking said connector sleeve on said thermoplastic pipe against both longitudinal and rotational movement relative thereto.

4,660,866

RESTRAINED PIPE JOINT

Lawrence S. Jones, Hueytown, and Billy J. Battle, Birmingham, both of Ala., assignors to United States Pipe and Foundry Company, Birmingham, Ala.

Filed May 12, 1986, Ser. No. 861,816
Int. Cl.[4] F16L *21/02*
U.S. Cl. 285—231 **5 Claims**



1. An improved pipe connection including in combination a first pipe in locking, overlapping engagement with a second pipe and means to lock the two pipes together, said means comprising:
a. said first pipe having a bell portion, said bell portion having a radially inwardly, circumferentially extending projection integrally mounted to said bell portion at one end of said first pipe, said projection forming one end of a circumferential groove, said projection having a first surface remote from said bell portion facing toward the interior of said first pipe and forming a first contacting surface, said projection further having a second contacting surface connected to said first surface and extending radially of said bell portion to form one wall of said elongated circumferential groove, said projection having an arcuate, circumferentially shaped recess, said recess providing an opening into a portion of said elongated circumferential groove,
b. a plurality of arcuate shaped locking segments corresponding in shape to said arcuate shaped recess in said projection and conforming to the outer circumference of said second pipe, each of said segments having a leg portion and a body portion; said leg portion having a contacting surface, and said body portion having a contacting surface,
c. said second pipe having a plain end and a circumferential weldment protruding from its outside surface near said plain end,
d. said locking segments being installed through said recess and into slidable engagement with the outside surface of said plain end of said second pipe between said weldment and said projection, and thereafter moved out of alignment with said recess, after said contacting surface of said leg portions abut with said first contact surface of said projection,
e. said body portion of said locking segments extending into said elongated circumferential groove in the bell portion of said first pipe, and
f. the improvement which comprises a radial protrusion integral with said body portion of each of said locking segments, said radial protrusion extending axially away from said leg portion, said radial protrusion further having an upper shelf face portion, and said bell portion of said first pipe having a circumferential wall inwardly adjacent said circumferential groove whereby said contacting surface of said leg portion of each of said locking segments abuts with said first contacting surface of said projection and said contacting surface of said body portion of each of said locking elements is adapted to abut with said second contacting surface of said projection and said upper shelf face portion of said protrusion is adapted to abut said circumferential wall of said bell portion of said first pipe to limit the amount of rotation of the locking segments relative to said bell portion.

4,660,867

COUPLED HOSE ASSEMBLY

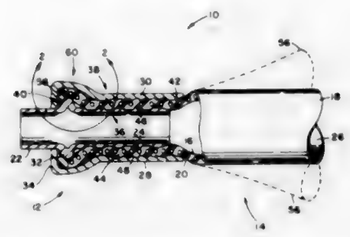
Dennis C. Kemper, and Douglas D. Schelhaas, both of Aurora, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Apr. 22, 1986, Ser. No. 855,057
Int. Cl.[4] F16L *33/20*
U.S. Cl. 285—256 **5 Claims**

1. In a coupled hose assembly of the type including a coupling with a stem portion and a ferrule portion that together form walls, a bottom portion and an opening of an annular cavity; and a pre-cured polymeric hose with part of an end portion located in the annular cavity and pinched between parts of said walls, the pinched part of the hose having a rate of thermal contraction that is greater than that of the coupling walls at a hose assembly environment temperature falling at least within the range of about 135° C. to about −40°, wherein the improvement comprises:
a pliable adhesive disposed in the bottom portion of the

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annular cavity and adhering the precured hose to the bottom portion of the coupling while also forming a substantially leakproof seal between the hose and coupling at the environment temperature.



4,660,868

FLUID COUPLING HAVING HIGH SEALABILITY

Tatuo Totani, Yokohama, Japan, assignor to Toyoko Kagaku Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 654,953, Sep. 27, 1984, abandoned. This application Dec. 3, 1985, Ser. No. 804,162

Claims priority, application Japan, May 7, 1984, 59-89502; May 26, 1984, 59-105681

Int. Cl.⁴ F16L *19/02*

U.S. Cl. 285—354 **5 Claims**



1. A high sealability cap-nut fluid coupling for an apparatus for manufacturing a semiconductor, the coupling comprising a tublar body having a threaded portion on the outer periphery of one end, a tubular sleeve having a short ring-shaped groove portion on the outer periphery of one end which communicates with a through hole of the body at the threaded portion of the body, a gasket between the body and the sleeve, a cap nut engaged with the sleeve for engaging with the threaded portion of the body to rigidly clamp the body and the sleeve, and a ring-shaped groove formed on the contacting surface of the sleeve with the cap nut of the short ring-shaped portion and with a number of small spheres rotatably held in the groove, the upper end of the outer peripheral wall of the ring-shaped groove being formed substantially longer than the radius of the small spheres, and once the small spheres are engaged within the groove, the upper end of the outer peripheral wall being formed inwardly to rotatably maintain the small spheres in the sleeve.

4,660,869

CONNECTION FOR PIPES

Charles Gabus, 1290 Versoix, Geneva, Switzerland

PCT No. PCT/EP85/00164, § 371 Date Nov. 26, 1985, § 102(e) Date Nov. 26, 1985, PCT Pub. No. WO85/04940, PCT Pub. Date Nov. 7, 1985

PCT Filed Apr. 15, 1985, Ser. No. 807,652

Claims priority, application Switzerland, Apr. 19, 1984, 1974/84

Int. Cl.⁴ F16L *23/04*

U.S. Cl. 285—365 **6 Claims**



1. Pipe connection, comprising two tubular pieces each intended to be provided on the end of a pipe and each providing a flange, each flange having a conical slope on the side of the respective pipe, the connection comprising a clamp collar having a generally V-shaped groove and intended to cover the flanges and to hold them tightly against each other by engagement on their conical slopes, a first one of said flanges having on its side facing a second one of said flanges, an annular groove for lodging a gasket characterised in that said first flange has an annular support area which is contained in a plane perpendicular to the axis of the respective tubular piece and the average radius of which is smaller than that of the groove, and said second flange has an annular support area, the support area of said first flange being adapted to fit against said support area of said second flange so as to ensure perfect sealing.

4,660,870

CLAMP

Nick J. Donley, P.O. Box 477, Lovington, Ill. 61937

Filed Aug. 23, 1985, Ser. No. 768,846

Int. Cl.⁴ F16L *21/08*

U.S. Cl. 285—419 **5 Claims**



1. A clamp comprising,
a band of flexible material including a pair of parts having inner and outer ends respectively,
hinge means hingedly securing the parts together at their inner ends, and the outer ends forming end elements of the band,
the band having inner and outer surfaces,
the hinge means positioned on the outer surface of the band and one of the parts having an inner end circumferential extension extending beyond the hinge means and providing a continuous inner surface over the hinge means,
the parts being relatively movable into and out of a closed position in which they form a circumferentially continuous band,
the clamp including toggle locking means having components mounted respectively on the outer ends of the band parts and operable when manipulated for drawing the band parts together,
one of the band parts having an outer end circumferential extension positioned inwardly of and in engagement with the inner surface of the outer end of the other band part when the band parts are in closed position.

4,660,871

CAM GROOVE LATCH DEVICE

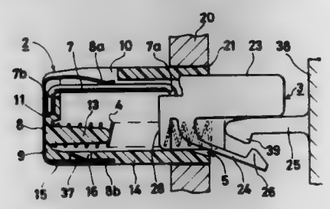
Masaru Arakawa, and Yoshio Kaneko, both of Chigasaki, Japan, assignors to Nifco, Inc., Yokohama, Japan

Filed Mar. 24, 1986, Ser. No. 843,106

Claims priority, application Japan, Apr. 1, 1985, 60-46834[U]

Int. Cl.⁴ E05C *19/02*

U.S. Cl. 292—81 **3 Claims**



1. A latch device comprising: a casing secured to a body with a door hinged thereto; a slide, spring means bearing on said slide and urging said slide outwardly of said casing; a strike projecting from the back side of the door and pushing said slide into said casing against the spring force of said spring means when the door is closed so that the door is held closed with the strike retained in said slide, said slide having a heart-shaped cam groove; a substantially U-shaped latch pin having a bight and a pair of parallel legs extending therefrom in the same direction, said latch pin having one leg received in said cam groove and the other leg rotatably fitted in said casing, said latch pin being caused to trace said cam groove with the movement of said slide in said casing; and a retainer spring bearing against said bight of said substantially U-shaped pin for urging said latch pin against the bottom of said cam groove, said retainer spring being a sheet metal substantially channel-shaped spring having a web and a pair of flanges extending from opposite ends of said web in substantially the same direction, said retainer spring substantially embracing an end of said casing, one of said flanges being at an acute angle to said web and bearing against said bight of said pin.

4,660,872

LATCH

Ernest A. Carson, San Pedro, and Gordon K. Anderson, Tustin, both of Calif., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 9, 1985, Ser. No. 806,987

Int. Cl.⁴ E05C *9/08*

U.S. Cl. 292—242 **5 Claims**

1. A latch comprising:
first and second striker means;
a door having a top and a bottom and pivotably mounted with respect to said first and second striker means so as to be able to have said top and said bottom move towards and away from said first and second striker means, respectively;
a slot formed in said door;
rod means having a first and a second end;
mounting means for supporting said first and second ends of said rod means on said door;
first cam means having a pair of arcuate sections separated by a cusp for coacting with said first striker means and having a handle integral therewith which extends through said slot;
second cam means having a pair of arcuate sections separated by a cusp for coacting with said second striker means; and
means for spacedly locating said first and second cam means on said rod means such that movement of said handle in said slot causes said rod means and said first and second cam means to move therewith as a unit, such that said first one of said pairs of arcuate sections of said first and second cam means respectively engage said first and second striker means to hold said door in place and upon flexure of said door said cusps of said first and second cam means are able to move past said first and second striker means such that said first and second striker means are respectively in engagement with a second one of said pairs of arcuate sections of said first and second cam means to securely hold said door in place.



4,660,873

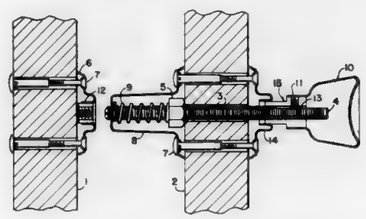
DOOR SECURING DEVICE

Richard J. Sholund, 12 First Ave., South Homecroft, Duluth, Minn. 55803

Continuation of Ser. No. 505,700, Jun. 20, 1983, abandoned. This application Sep. 19, 1985, Ser. No. 778,174

Int. Cl.⁴ E05C *5/04*

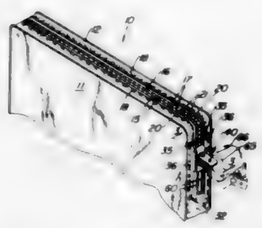
U.S. Cl. 292—251 **4 Claims**



1. In combination:
an outside auxiliary door for a building and an inside main door for a building, said doors being substantially parallel to each other and spaced apart a distance sufficient to accommodate normal door hardware, each door being hinged at one side to open and close independently, said outside auxiliary door opening outwardly and said inside main door opening inwardly, wherein said doors are lo-

cated proximately to permit or prevent passage into a dwelling place or the like;
a rotatable slidable threaded spindle located at right angles to the faces of the doors, the spindle having a portion extending through the inside door and into the space between the doors;
a handle, means securing the handle to the inner end of the spindle inside of the inner door in such a manner that the handle can rotate the spindle;
means on the interior surface of the inside door for slidably supporting and centering the spindle in the opening in the inside door and restraining outward axial motion of the spindle by contact with a portion of the handle;
spring means surrounding the spindle outside of the inner door to bias said spindle inwardly;
a housing secured to the outer surface of the inner door between the two doors to cover the spring means on the spindle and prevent access to the spindle;
means within the housing to adjustably limit the inward travel of the spindle along the spindle axis; and
spindle engaging means mounted in line with the spindle on the inside of the outside door and secured to the inner surface of the outer door by a plurality of threaded fastening means which extend through the door and which have unslotted heads on the outer ends thereof to make it difficult to remove the bolts from the outside, said spindle engaging means having a threaded female portion projecting inwardly towards the inner door from the inside of the outer door only substantially to the extent of the length of the threaded female portion and adapted to threadedly engage the threaded spindle, the spindle being effective upon said handle being pressed toward the inner door to extend said spindle outwardly into threaded engagement with the threaded portion of the spindle engaging means and upon rotation of the handle to move said spindle engaging means inwardly to draw said doors together tightly.

4,660,874
GUSSET TYPE SLIDE FASTENER SEAL
Arnold S. Rifkin, 1400 Sans Souci Pkwy., P.O. Box 878, Wilkes-Barre, Pa. 18703-0878
Filed Feb. 28, 1986, Ser. No. 834,540
Int. Cl.[4] B65D *33/34*
U.S. Cl. 292—307 R **8 Claims**



1. The combination with a slide fastener mounted to a gusset sheet or the like having a generally flat intermediate portion, said flat portion having an elongate opening between generally parallel sheet edges, a pair of longitudinally extending runner tapes along said edges of said sheet and generally coplanar with each other in facing engagement with said flat sheet portion, coextensive releasably interengageable grippers on said tapes terminating at one pair of adjacent gripper ends short of the adjacent pair of tape ends and in flat sheet portion, a slider moveable along said grippers toward said one ends thereof for interengaging the grippers and away from said one gripper ends to release the grippers, and a slider pull connected to the slider and adapted to stand out from said flat sheet portion; of a seal comprising a cover configured to conformably cover said slider pull when the latter is at said one gripper ends outstanding from said flat sheet portion, mounting means mounting said cover to said flat sheet portion for movement along said flat sheet portion into and out of position over said one gripper ends for respectively covering and uncovering said slider pull, said cover and pull respectively having openings registering with each other when said cover is in covering relation with said slider pull, for receiving a seal shackle through said registering openings.

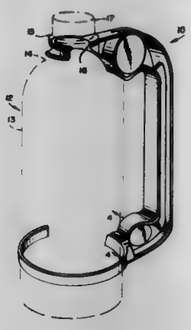
4,660,875
HOOK CONSTRUCTION
Ferdinand Ziegler, Attleboro, Mass., assignor to Azon Corporation, North Attleboro, Mass.
Filed Mar. 14, 1986, Ser. No. 840,965
Int. Cl.[4] B65G *7/12*
U.S. Cl. 294—26 **3 Claims**



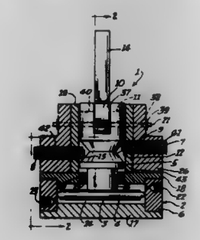
1. A hook construction comprising a frame, a hook element attached to said frame and extending forwardly therefrom, a handle element attached to said frame, and strap means attached to said frame, said frame including a front wall and a pair of spaced sidewalls which extend rearwardly from said front wall, said handle element extending between said sidewalls, said strap means extending between said sidewalls in rearwardly spaced relation to said handle element and being positioned and constructed so that when said handle element is grasped in a hand of an operator, said strap means is engageable with the back side of the adjacent wrist for preventing rearward rotation of said handle element in said hand without restricting the downward pivotal movement of said hand with respect to said wrist.

4,660,876
REUSABLE BOTTLE HANDLE
William B. Weldin, Marietta, Ga., and Raymond C. Lehman, Canton, Ohio, assignors to Beverage Mate Corp., Akron, Ohio
Filed Jan. 15, 1986, Ser. No. 819,596
Int. Cl.[4] B65D *23/10*
U.S. Cl. 294—33 **32 Claims**

1. A reusable bottle holder for use with a bottle having an annular neck flange at an upper portion and a lower enlarged annular sidewall portion, said holder comprising:
neck locking means for locking immediately adjacent and below said neck flange, said locking means forming a partial annulus greater than 180° but less than 360° which has an internal bore, flared outwardly and downwardly away from the terminus of said neck, said neck locking means being flexible so as to snap on by temporary radial expansion and sequential release to securely hold the neck portion of the bottle;
side securing means forming a partial annulus greater than 180° but less than 360° for partially encircling said lower annular sidewall portion of said bottle, said side securing means being expandable to accommodate fluctuation in diameter of said annular sidewall;
said partial annulus of the neck locking means having its opening disposed opposite in direction to that of said partial annulus of the side securing means, and
handle means having first and second ends rigidly connecting said neck locking means to said side securing means.

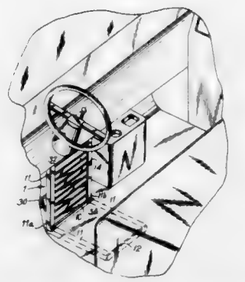


4,660,877
POWER OPERATED GRIPPER
Alfred W. Schmidt, Keystone Heights, and Douglas G. Reed, Archer, both of Fla., assignors to Fabco-Air, Inc., Gainesville, Fla.
Filed Oct. 28, 1985, Ser. No. 792,290
Int. Cl.[4] B25B *15/08;* **B25J** *15/00*
U.S. Cl. 294—88 **7 Claims**



1. A power actuated gripper comprising a housing which remains stationary during operation of the gripper, a thrust member constructed and arranged for linear reciprocating motion in said housing, a pair of gripping arms arranged for swinging motion controlled by said thrust member, power means having a stationary member connected to said housing and a movable member connected to said thrust member, cooperating adjusting means on said housing and said thrust member constructed and arranged to limit linear movement of said thrust member in at least one direction, said cooperating adjusting means including adjustable means on said housing, said adjustable means being adjustable while the gripper is operating by virtue of being on said housing which remains stationary, whereby adjustment of the motion of said gripping arms may be made under actual working conditions.

4,660,878
MOTOR VEHICLE SECURITY DEVICE
Thomas L. Neverson, 647 New St., Uniondale, N.Y. 11553
Filed Nov. 25, 1985, Ser. No. 801,283
Int. Cl.[4] B62D *25/00*
U.S. Cl. 296—1 R **21 Claims**

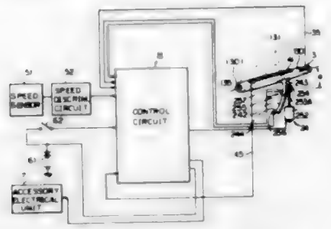


1. A security device for a motor vehicle, comprising:
a movable protective curtain made of a material of sufficient area and strength so that said curtain is capable of concealing and preventing the unauthorized use of control pedals of the motor vehicle, said curtain also being of sufficient flexibility so that it is adjustable between a first position, wherein it conceals the control pedals, and a second position, wherein it allows access to the control pedals and operation of the vehicle;
a generally L-shaped frame, having a pair of parallel side frame members forming guide tracks for said curtain, an upper cross-bar member interconnecting the upper end portions of said side frame members adjacent the dashboard of the motor vehicle, and a lower cross-bar member interconnecting the lower end portions of said side frame members adjacent a front seat of the motor vehicle, to contain said protective curtain, said frame being fixed to the interior of the motor vehicle proximate the control pedals and being constructed and arranged to position said guide tracks to guide said curtain when moving the same between said first position and said second position;
means for moving said curtain between said first position and said second position; and,
means for locking and securing said curtain in said first position when the motor vehicle is not in use.

4,660,879
AIR SPOILER APPARATUS WITH SOLAR CELLS FOR VEHICLE
Toshiki Kobayashi; Akira Fukami, both of Okazaki; Junzi Mizuno, Nishio, and Hideaki Sasaya, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed May 2, 1985, Ser. No. 729,856
Claims priority, application Japan, May 4, 1984, 59-89899
Int. Cl.[4] B62D *35/00*
U.S. Cl. 296—1 S **6 Claims**

1. An air spoiler apparatus with solar cells for a vehicle, comprising:
air spoiler means, having a wing-shaped cross-section, for improving aerodynamic characteristics of said vehicle, mounted on an outer surface of a vehicle body;
at least one solar cell mounted on an upper surface of said air spoiler means to generate power upon reception of sunlight;
running detection means for detecting a predetermined running state of the vehicle and providing a signal indicative thereof; and
elevation angle adjusting means for changing an elevation

angle of said air spoiler means in directions that will optimize power generation efficiency of said solar cells within



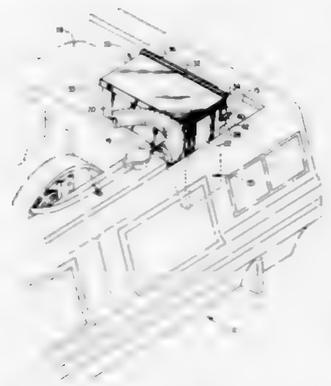
select angular ranges, said ranges determined by the running state of the vehicle.

4,660,880

UNDERHOOD TOOL BOX

Bensch, Walter D., 5050 Lindale Dr., Wichita Falls, Tex. 76310

Filed Dec. 16, 1985, Ser. No. 809,236
Int. Cl.[4] B62D *33/04*
U.S. Cl. 296—37.1 **9 Claims**



1. A tool apparatus for automobile engine compartment installation adjacent the interior side of a front quarter panel and over the curved surface of a fender well comprising:
- a base arcuately formed to fit contiguous with the curved surface of said fender well;
- a front panel and a rear panel each having an arcuate lower margin to conform to the shape of said base;
- a front sidewall;
- a rear sidewall;
- a storage bin defined by said base, said front panel, said rear panel, said front sidewall and said rear sidewall.

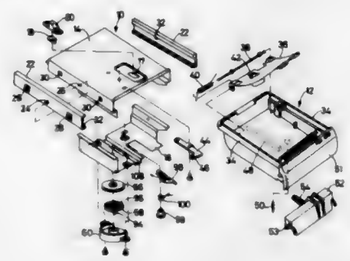
4,660,881

ACTUATOR FOR MOVABLY SUPPORTED OBJECT

Seiji Komeya; Takahiro Yamana, both of Toyota, and Eiji Inoue, Aichi, all of Japan, assignors to Kojima Press Industry Co., Ltd., Aichen, Japan

Filed Feb. 22, 1985, Ser. No. 704,487
Claims priority, application Japan, Sep. 27, 1984, 59-202225
Int. Cl.[4] B60N *3/12*; F03G *1/00*; F16D *57/02*
U.S. Cl. 296—37.9 **15 Claims**

1. An actuator for an object, supported movably along a predetermined plane by a stationary member, comprising:
- a rack member extending along a line of movement of said object over a predetermined length;
- a pinion member supported rotatably about an axis thereof and engaging said rack member, said axis of said pinion member being perpendicular to said predetermined plane;
- damper means for damping the rotation of said pinion member in one of opposite directions, said damper means including portions defining a fluid chamber which contains a viscous fluid and which is formed around the axis of said pinion member, and further including a rotary member which is rotated with said pinion member and which has at least one damper vane disposed in said fluid chamber, said viscous fluid providing a resistance to the rotation of



said at least one damper vane, and to the rotation of said pinion member in said one direction; and
- biasing means disposed around the axis of said pinion member and encircling said fluid chamber, said biasing means being connected to said pinion member at one end thereof and to said stationary member at the other end thereof, said biasing means storing a biasing force while said pinion member is rotated in the other of said opposite directions by a movement of said rack member in a first direction, said biasing means biasing said pinion member in said one direction with said biasing force, and thereby biasing said rack member in a second direction opposite to said first direction.

4,660,882

ROOF BOW

Benjamin E. Hensiek, Warrenton, Mo., assignor to The Binkley Company, Warrenton, Mo.

Filed Dec. 18, 1985, Ser. No. 810,236
Int. Cl.[4] B62D *25/06*; E04C *3/07*
U.S. Cl. 296—104 **4 Claims**



1. A roof bow comprising an elongate member formed of sheet metal having an elongate intermediate reach and integral end reaches, said member being formed to have in transverse cross-section a central web, side flanges integral with the web and lips integral with the side flanges at edges of the side flanges opposite to the central web, the flanges, in the intermediate reach of said member, extending upwardly from the web, and the lips, in the intermediate reach, extending inwardly toward one another from the flanges and being generally coplanar so that the intermediate reach of the member is generally box-like in transverse cross-section, portions of the flanges in eahc said end reach of the roof bow being deformed with respect to portions thereof in the intermediate reach to have a

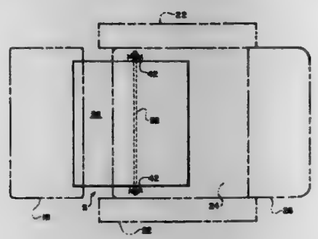
gradual transition from their upwardly extending disposition with respect to the web to a laterally outwardly extending position generally coplanar with the web and extending in said generally coplanar position from a point spaced inwardly from the respective outer end of said member, said lips, in each said end reach of the roof bow, retaining their generally coplanar relationship out to a respective outer end of said member with portions of said lips from said point to said outer end of said member lying generally flat against respective outer surfaces of the flanges, said member being bent downwardly adjacent said point to have a downwardly extending generally flat end portion for attachment to a side member of a vehicle.

4,660,883

SAFETY PLATFORM ARRANGEMENT FOR RECLINER

Jerome R. Kowalski, Hickory, N.C., assignor to Hickory Springs Manufacturing Company, Inc., Hickory, N.C.

Filed Oct. 16, 1985, Ser. No. 787,659
Int. Cl.[4] A47C *1/02*
U.S. Cl. 297—85 **20 Claims**



1. In a chair of the type having a seat structure, a footrest and means for selectively moving said footrest between a retracted position in a generally upright disposition with one side of said footrest facing upwardly adjacent said seat structure and an extended position at an outward spacing from said seat structure in a generally horizontal disposition with said one side facing rearwardly toward said seat structure, the improvement comprising safety platform means including a platform member pivotably affixed at said one side of said footrest for movement therewith and support means for constraining said platofrm member to move with said footrest in a generally horizontal path in close proximity to said seat structure between an inoprative position withdrawn within said seat structure in generally an angular relation with said footrest when said footrest is in its said retracted position and an operative position in general alignment with said footrest for spanning and substantially closing said spacing between said seat structure and said footrest when said footrest is in its said extended position, said safety platform means preventing objects from estending through said spacing to prevent accidental entrapment of objects in said spacing during movement of said footrest from its said extended position to its said retracted position.

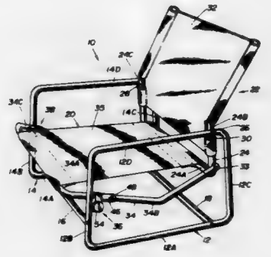
4,660,884

RECLINING CHAIR

Mituru Terui; Masaaki Obata, and Noriji Morooka, all of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Jan. 28, 1986, Ser. No. 823,455
Claims priority, application Japan, Jan. 30, 1985, 60-11437[U]; Feb. 26, 1985, 60-26970[U]; Feb. 26, 1985, 60-26971[U]
Int. Cl.[4] A47C *1/02*
U.S. Cl. 297—317 **6 Claims**

1. A reclining chair comprising:
- a pair of supporting frames which are spaced from each other;
- cross members each extending between the supporting frames to assure tight connection of the same;
- a first generally U-shaped frame including a base section and two side sections, said first frame movably disposed between said supporting frames with said base section oriented to extend across front portions of said supporting frames and with said side sections oriented to extend from the front portions toward rear portions on the supporting frames;
- a second generally U-shaped frame including a base section and two side sections, said second frame pivotally connected at the side sections thereof to the rear portions of said supporting frames with the base section thereof downwardly projected between said supporting frames;
- pivot means providing a pivot connection between the rearwardly leading end of each side section of said first frame and the downwardly projected portion of said second frame;



- a position adjuster mounted to each of the supporting frames to permit, under inoperative condition, axial movement of the side sections of the first frame relative to the supporting frames and to fix, under operative condition, the side sections of the first frame to the supporting frames;
- a first sheet spread between the respective base sections of the first and second frames; and
- a second sheet spread between the side sections of the second frame;
- wherein each of the side sections of said first frame has at a generally middle portion thereof a bent portion forming an obtuse angle and projecting downwardly in a direction away from said first sheet, and
- wherein the arrangement of said first and second frames is such that a distance between the base sections of said first and second frames is kept constant even when they change their angular positions relative to said supporting frames.

4,660,885

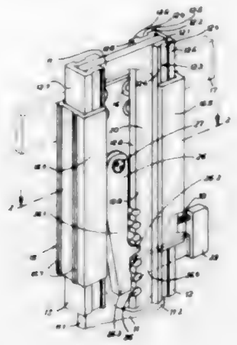
ADJUSTING MECHANISM FOR THE STEP-WISE LOCKING HEIGHT ADJUSTMENT OF BACKREST OF WORK CHAIR

Heinz-Peter Suhr, Grossbottwar, and Bernd Weinberger, Steinheim, both of Fed. Rep. of Germany, assignors to Firma August Froscher GmbH & Co. K.G., Steinheim, Fed. Rep. of Germany

Filed Jul. 25, 1986, Ser. No. 890,767
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1985, 3527783
Int. Cl.[4] A47C *7/46*
U.S. Cl. 297—353 **10 Claims**

1. Adjusting mechanism for lockable step-wise height adjustment of the backrest of a work chair having an approximately vertical support arm on which the backrest is mounted, said mechanism comprising a pair of elongate guide bars extending along and affixed to said support arm, one of said guide bars

having therein a series of locking recesses, a slide embracing said support arm and guide bars and providing a support for said backrest, said slide being slidable along and guided by said guide bars in a direction lengthwise of said support arm, a locking lever pivotally mounted on said slide and having a nose engageable in said locking recesses of said one guide bar, said



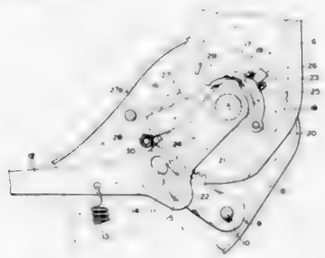
locking lever being movable between a locked position in which said nose of said locking lever is engaged in one of said recesses to thereby prevent movement of said slide and an unlocked position in which said nose is free of said recesses, means biasing said locking lever to locked position and manually operable releasing means external of said slide for moving said locking lever against said bias to unlocked position.

4,660,886

RECLINING SEAT MECHANISM

Takami Terada, Toyota, and Saburo Suzuki, Tokoname, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Jun. 17, 1985, Ser. No. 745,221
Claims priority, application Japan, Jun. 18, 1984, 59-124677
Int. Cl.⁴ B60N *1/02*
U.S. Cl. 297—367 **5 Claims**



1. A tilting mechanism including a stationary member, a movable member mounted on said stationary member for swinging movement about a first axis on said stationary member, a first series of teeth provided on said movable member, a second series of teeth provided on said movable member and arranged in parallel with said first series of teeth, a swingable member mounted on said stationary member for swinging movement about a second axis on said stationary member and having at least one pawl which is adapted to be engaged in the first series of teeth on the movable member, an actuating lever mounted on said stationary member for rotational movement about said first axis, said actuating lever having means for moving upon rotational movements of the lever said swinging member into and out of an engaged position wherein said pawl is engaged with said first series of teeth on said movable member, a slidable member supported by said stationary having at least one pawl normally disengaged from said second series of teeth on said movable member, resilient means for yieldably forcing said slidable member to a position where said pawl on the slidable member is disengaged from the second series of teeth, memory means responsive to movement of the actuating lever for moving the slidable member against said resilient means so that the pawl on the slidable member becomes engaged with the second series of teeth when the actuating lever forces the swingable member out of said engaged position, a locking member mounted on said stationary member for swinging movement about said first axis, said locking member movable between a first position where it is engaged with said swinging member to hold the swinging member out of said engaged position and a second position where it is disengaged from said swinging member, said slidable member engageable with said locking member to force the locking member into said second position when said movable member is returned to an original tilted position after it has been moved from the original tilted position to another position so as to disengage the locking member from the swinging member to make the swinging member free to have its pawl engage the first series of teeth, and means for normally maintaining the slidable member in a position wherein said pawl on the slidable member is engageable with a portion of the second series of teeth corresponding to an actual tilted position of the movable member.

4,660,887

ERGONOMIC SUPPORT

Philip S. Fleming, Montclair, N.J., and Richard M. Neagle, New York, N.Y., assignors to The Shaw-Walker Company, Muskegeon, Mich.

Filed Sep. 11, 1985, Ser. No. 774,900
Int. Cl.⁴ A47C *1/12*
U.S. Cl. 297—445 **65 Claims**



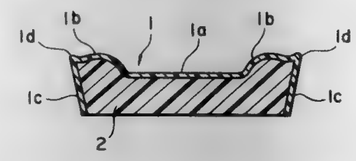
1. An ergonomic support comprising a posterior supporting portion, and a lumbar supporting portion, said lumbar supporting portion including a plurality of first support members joined together to individually and cooperatively provide flexible support for the lumbar region of a person, said posterior supporting portion including a plurality of second support members arranged to individually and cooperatively provide flexible support for the posterior portion of a person, said second support members formed by providing concentric C-shaped openings within said posterior supporting portion, each of said first support members having a portion separated from an adjacent one of said first support members by an elongated opening, a ratio of the width of said opening to the width of an adjacent one of said first support members being in the range of about 1:4 to 1:11, whereby said first support members conform to the lumbar region of a person for different body positions.

4,660,888

SEAT COVER

Muneharu Urai, Tokyo, Japan, assignor to Tachikawa Spring Co., Tokyo, Japan

Filed Oct. 17, 1985, Ser. No. 788,490
Int. Cl.⁴ A47C *7/02*
U.S. Cl. 297—452 **11 Claims**



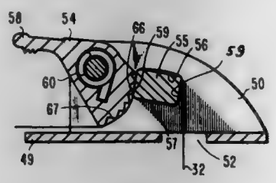
1. A seat cover comprising a knitting of a three-dimensional structure conforming in its shape to the external shape of a cushion member and including at least main portions, side portions and welt portions integrally knit into a one-piece form without sewing, said structure further including integrally knit portions covering overhang portions and corner portions of the seat.

4,660,889

HARNESS WEB ADJUSTER WITH CHILD RESTRAINT SEAT

James R. Anthony, and Allan R. Lortz, both of Carmel, Ind., assignors to Indiana Mills & Manufacturing, Inc., Carmel, Ind.

Filed Dec. 17, 1985, Ser. No. 810,340
Int. Cl.⁴ A47D *15/00*; B60R *21/00*
U.S. Cl. 297—467 **15 Claims**



1. A device for adjusting a belt, comprising:
a frame including a pair of upstanding brackets and a wall extending orthogonally between said brackets, said wall having a plane and a slot extending between said brackets;
a bar mounted to and extending between said brackets and having a flat surface defining an area of contact, said bar being parallel to said wall;
a belt extending along said wall, then diverging away from the plane of said wall toward said bar and then against said bar at said area of contact and around said bar through a maximum angle of one hundred and eighty degrees with said belt then extending through said slot and away from said frame;
a mounting pin mounted to and extending between said brackets and being spaced from said wall;
a cam member having a pivot axis and being pivotally mounted by said pin to said frame and including an outwardly projecting rigid handle and an inwardly projecting belt engaging rough surface; and,
a helical spring extending spiraling around said pin and located between said pin and said cam member, said spring including one end engaged with said pin and an opposite end engaged with said cam member normally urging said cam member to pivotally move said rough surface against said belt holding said belt against said area of contact and immovable between said rough surface and said bar but being yieldable allowing said handle to be pivoted moving said rough surface away from said bar to allow said belt to be moved.

4,660,890

ROTATABLE CUTTING BIT SHIELD

Ronald D. Mills, 960 S. Jay Cir., Anaheim, Calif. 92807

Filed Aug. 6, 1985, Ser. No. 762,928
Int. Cl.⁴ E21C *25/12, 35/18*
U.S. Cl. 299—79 **5 Claims**



1. A shield adapted to fit coaxially and rotatably over the shank of a cylindrical cutting bit of the type having adjacent annular flanges and an annular groove therebetween, said shield comprising a disk-shaped circular disc made of a hard malleable metal of relatively uniform thickness, said disc having a convex upper surface, a concave lower surface, and having a central coaxialy hole disposed perpendicularly to the upper and lower surface of said disc through the thickness dimension of said disc, thereby producing an annular ring having the shape of an inverted dish, the diameter of said central hole in said ring being sufficiently larger than said shank of said cutting bit to permit free axial movement of said annular ring on said shank.

4,660,891

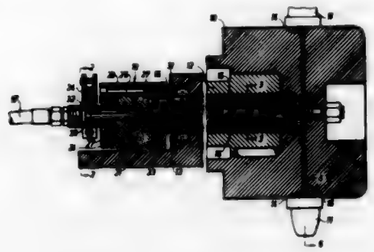
HIGH PRESSURE WATER VALVE

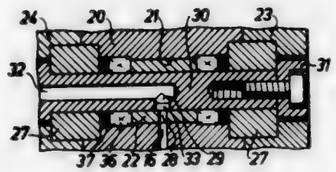
Thomas Krämer-Wasserka, Werne, Fed. Rep. of Germany, assignor to Institut CERAC S.A., Ecublens, Switzerland

Filed Jul. 2, 1985, Ser. No. 751,614
Claims priority, application Sweden, Jul. 9, 1984, 8403628
Int. Cl.⁴ F21C *25/60*
U.S. Cl. 299—81 **26 Claims**

1. A high pressure water valve for controlling the supply of high pressure water to a plurality of jet cutting nozzles on a cutting head applied to cutting rock, concrete and similar hard materials, comprising:
a housing adapted to be coupled to a source of high pressure water;
a valve plug;
a valve bushing;
a flow path adapted to communicate said source with said nozzles and including passages in said housing, said valve plug and said valve housing;
said valve plug being rotatingly received within said valve bushing, one of said valve plug and valve bushing having a plurality of radial first valve openings therein extending laterally of its axis with the other of said valve plug and valve bushing having a pressure opening alignable with at least one of said valve openings in response to rotation of said cutting head; and
securing means for retaining therein two slide bearings of high strength material, said slide bearings rotatingly ac-

commodating therein said valve plug and fixedly receiving said valve bushing therebetween, said valve opening





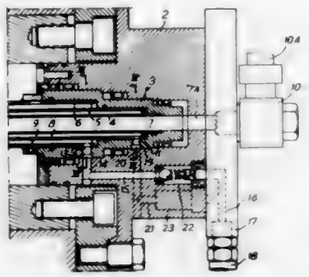
and pressure opening being positioned between said bearings.

4,660,892

SECTORIAL SPRINKLING DEVICE FOR COAL MINING

Jean J. Demoulin, Ippling, France, assignor to Charbonnages de France, Paris, France

Filed Nov. 20, 1985, Ser. No. 799,862
Claims priority, application France, Nov. 20, 1984, 84 17654
Int. Cl.[4] E21C *35/22*; E21F *5/02*
U.S. Cl. 299—81 **6 Claims**



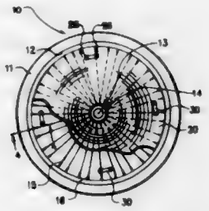
1. A sectorial sprinkling device for the picks of a cutting drum in a cutting machine, the cutting drum having an end face which is provided with picks and a cylindrical surface which is provided with picks, the drum having two cylindrical sectors each of which is active during the cutting operation when the drum is moved at a high cutting position or a low cutting position in a respective one of two opposed directions, the device comprising in a central zone of the drum, three concentric piping systems each of which is connected at one end thereof to at least one respective water delivery pipe, one of the concentric piping systems leading to a pipe which leads to the picks of the end face and the other two of the concentric piping systems each leading to a respective fixed part-annular sectorial chamber, each sectorial chamber being associated with respective ducts which can move in rotation and are distributed circumferentially around the respective sectorial chamber and are joined to the picks of the cylindrical lateral surface of the cutting drum, the sectorial chambers having relative positions and circumferential extends corresponding to those of the said cylindrical sectors of the drum.

4,660,893

SPOKED WHEEL COVER

Mark H. Huntzinger, 3598 Mira Pacific Dr., Oceanside, Calif. 92056

Filed Sep. 3, 1985, Ser. No. 771,841
Int. Cl.[4] B60B *7/06*
U.S. Cl. 301—37 SA **15 Claims**



1. A device for attaching a flexible wheel cover to a spoked wheel comprising:

a one piece body;

a slot in the body for receiving a wheel spoke;

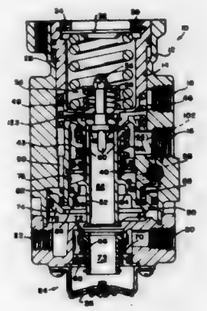
attachment means on said body for engaging the spoke in said slot to attach said body to the wheel spoke and for moving said body longitudinally along said spoke; and a fastening portion for attaching a flexible wheel cover to said body.

4,660,894

PROPORTIONING BRAKE VALVE WITH DUAL AREA SECONDARY PISTON

Roy E. Bartholomew, Elyria, and Milan J. Sebo, Lorain, both of Ohio, assignors to Allied Corporation, Morristown, N.J.

Filed Apr. 3, 1986, Ser. No. 848,015
Int. Cl.[4] B60T *15/12*
U.S. Cl. 303—54 **15 Claims**



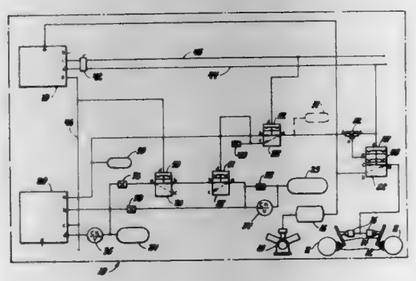
1. Dual circuit brake valve comprising a housing having a pair of inlets, pair of outlets, and an exhaust, said housing defining a bore therewithin, a first set of cooperating valve members in said bore and adapted to control communication between said exhaust, one of said inlets, and a corresponding one of said outlets, a second set of cooperating valve members mounted in said bore and adapted to control communication between said exhaust, the other inlet, and the other outlet, an operator-actuated plunger slidable in said bore for operating said first set of valve members, a relay piston slidably mounted in said bore for operating said second set of valve members, said relay piston having a primary area and a secondary area, means communicating said primary area to said one outlet, and control means shiftable from a first condition communicating said secondary area with said one outlet regardless of the pressure level at said one outlet, said control means being shiftable to a second condition venting said secondary area regardless of the pressure level at said one outlet.

4,660,895

RAILWAY LOCOMOTIVE BRAKE CONTROL SYSTEM

Wayne E. Chlumecky, Downers Grove; John H. Cryder, Plainfield; Robert A. Colombo, Joliet, and Robert E. Spenk, Chicago, all of Ill., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 609,785, May 14, 1984, abandoned. This application Apr. 11, 1986, Ser. No. 851,883
Int. Cl.[4] B60T *15/28*
U.S. Cl. 303—75 **7 Claims**



1. An air brake system for railway locomotives, said brake system comprising

a brake valve having an automatic brake portion connected with a trainlined brake pipe and an independent brake portion connected with an independent brake pipe and a brake actuating pipe for controlling pressures in said pipes in response to operator action,

a brake control valve connected with the brake pipe and with auxiliary and emergency reservoirs and a pilot of a relay valve,

said control valve being responsive to reductions in pressure in the brake pipe below that of the auxiliary reservoir to transmit controlled pressure to the relay valve pilot from the auxiliary reservoir

said relay valve pilot also being connected with the independent brake pipe to receive pilot pressure therefrom,

said relay valve being connectable between a main reservoir and brake cylinders of a locomotive unit to control brake actuation and release in response to the presence or absence respectively of actuating pilot pressure

first and second pilot valves between the emergency reservoir and the auxiliary reservoir and control valve

said first pilot valve being responsive to a predetermined reduction in brake pipe pressure to connect the emergency reservoir to the control valve to transmit emergency reservoir pressure for brake application,

said second pilot valve being normally open to air flow but responsive to pilot pressure to cut off flow from the emergency reservoir and bleed off auxiliary reservoir pressure, and

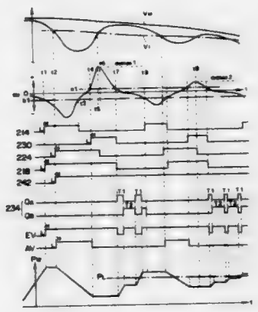
a third pilot valve connected between the control valve and the relay valve pilot and normally open to flow therebetween but responsive to pilot pressure from the actuating pipe to cut off connection of the relay valve pilot with the control valve and connect the relay pilot pressure to the pilot of said second pilot valve and to a choke to directly release the brakes and to reduce auxiliary reservoir pressure to return the control valve to the brake released position, thus holding off the locomotive brakes during automatic brake application to a train.

4,660,896

ANTI-SKID BRAKE CONTROL SYSTEM WITH VARIABLE PRESSURE INCREASING RATE

Toshiro Matsuda, Sagamihara, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 11, 1984, Ser. No. 680,765
Claims priority, application Japan, Dec. 13, 1983, 58-233627
Int. Cl.[4] B60T *8/70*
U.S. Cl. 303—106 **16 Claims**



1. An anti-skid brake control system for an automotive brake system comprising:

a hydraulic brake system including a wheel cylinder for applying braking pressure to a vehicle wheel, and a pressure control valve associated with said wheel cylinder for adjusting fluid pressure in the wheel cylinder, said pressure control valve being operative to increase fluid pressure in said wheel cylinder in a first position, to decrease fluid pressure in said wheel cylinder in a second position and to hold fluid pressure in said wheel cylinder constant in a third position;

a wheel speed sensor detecting rotational speed of the wheel and producing a wheel speed indicative signal having a value indicative of the detected wheel speed;

a controller operative in a first mode in which said pressure control value is alternatively operated in said first and third positions, a second mode in which said pressure control valve is operated in said second position and a third mode in which said pressure control valve is operated in said third position, said controller selecting one of said first, second and third mode so as to control the wheel speed at a given optimal relationship to vehicle speed based on predetermined brake control parameters including a wheel acceleration and deceleration derived from variations of said wheel speed indicative signal values, and deriving a control signal indicative of one of said first, second and third modes selected for controlling operation of said pressure control valve to actuate the latter of one of said first, second and third positions, said controller being responsive to wheel acceleration increasing above a predetermined value for operation in said first mode to alternatively switch said pressure control valve positions between said first and third positions and varying a first period of time for maintaining said pressure control valve in said first position depending upon a peak value of said wheel acceleration, thereby adjusting the average increasing rate of fluid pressure in said wheel cylinder depending upon said peak value of said wheel acceleration.

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BRAKE SYSTEM WITH BRAKE BOOSTER

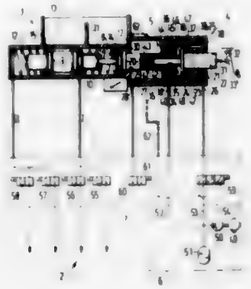
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 22, 1985, Ser. No. 790,006

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1984, 3446824

Int. Cl.[4] B60T *8/10*

U.S. Cl. 303—114 **20 Claims**



1. A brake system of anti-driven wheel slip type having a master cylinder for generating brake pressures in at least one closed brake circuit and having a brake booster combined therewith said brake booster further having a booster cylinder, a booster piston displaceable therein connected to a piston rod oriented counter to the master cylinder, an auxiliary chamber disposed within the booster cylinder surrounding the piston rod, a booster chamber further disposed within the booster cylinder and in oppositely disposed relation to the auxiliary chamber, a tappet oriented counter to the booster piston, and being arranged to plunge into the booster chamber, which tappet is displaceable by means of a brake pedal, and said system further having a brake valve connected to a pressure supply source, said brake valve being arranged for actuation by relative movement of the tappet with respect to the booster piston, said relative movement serving to feed boosting pressure into the booster chamber and to relieve boosting pressure via a return line, said brake system further having an electrically controllable valve assembly for feeding pressure into the booster chamber and for subsequently relieving said pressure therefrom, said valve assembly being disposed between the pressure supply source and the booster chamber, means at least for decreasing outflow of a pressure medium through the brake valve during pressure feed into the booster chamber, and a brake pressure maintenance valve built into said at least one closed brake circuit.

4,660,898

HYDRAULIC BRAKE SYSTEM WITH SLIP CONTROL

Helmut Steffes, Eschborn, Fed. Rep. of Germany, assignor to ITT Industries Inc., New York, N.Y.

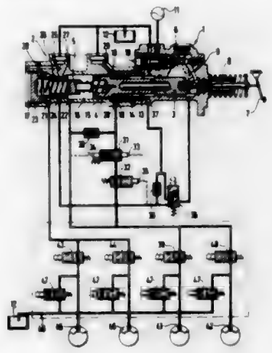
Filed Oct. 12, 1984, Ser. No. 660,469

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338250

Int. Cl.[4] B60T *8/44*

U.S. Cl. 303—114 **3 Claims**

1. A hydraulic brake system with slip control for automotive vehicles having wheel brakes, comprising a master cylinder pressurizable by a hydraulic power booster having a pressure chamber connected to the wheel brakes, in which system valve means are inserted between the master cylinder and the wheel brakes connected to the master cylinder which serve to remove pressure fluid from the wheel brakes, means for replenishing the pressure fluid taken from the wheel brakes out of the pressure chamber of the hydraulic power booster, and means for providing a stroke limitation of the brake pedal during slip control including a stepped piston employed as master cylinder piston (4), wherein a piston step (15) of larger diameter confines a working chamber (16) of the master cylinder (2) and wherein an annular surface (18) between the piston steps (14, 15) confines an annular housing chamber (19) which latter is connectable to the working chamber (16) by way of a normally closed supply valve (31) connected therebetween and having a control port (34) connected to the working chamber (16) and which is responsive to the pressure in the working chamber (16) to open said supply valve;



wherein a check valve (30) which is adapted to open towards the working chamber (16) is arranged in parallel to the supply valve (31); and

wherein a normally open shut-off valve (32) is serially connected with said supply valve (31) between the housing chamber (19) and the working chamber (16) and which includes a control port (35) which is actuatable in response to valve means (36) controlled by slip control electronics to assume a closed position.

4,660,899

HYDRAULIC ANTI-SKID APPARATUS FOR AUTOMOTIVE VEHICLES

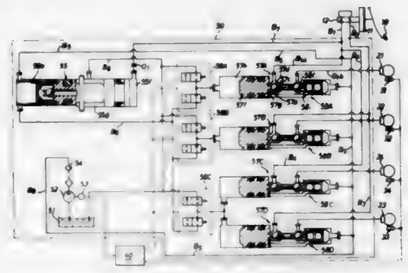
Masamoto Ando; Hiroaki Takeuchi, both of Toyota; Toyohisa Yamada, Anjo, and Toshihiko Yamanaka, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 30, 1985, Ser. No. 781,889

Claims priority, application Japan, Sep. 28, 1984, 59-148183[U]

Int. Cl.[4] B60T *8/02*

U.S. Cl. 303—115 **2 Claims**



1. A hydraulic anti-skid apparatus for installation in a vehicle braking system between a master cylinder and a wheel brake cylinder, comprising:

a fluid reservoir arranged to store an amount of hydraulic fluid;

a fluid pump connected to said reservoir to produce a hydraulic power pressure;

a cut-off valve disposed within a braking circuit connecting said master cylinder to said wheel brake cylinder;

a bypass valve disposed within a bypass passage of the braking circuit;

first and second pistons respectively arranged to control opening and closing operations of said cut-off valve and said bypass valve, said first and second pistons each being arranged to be applied at one end thereof with a hydraulic braking pressure from said master cylinder and at the other end thereof with the hydraulic power pressure from said fluid pump wherein said first and second pistons are maintained, in an initial stage of braking operation, in initial positions;

a changeover valve arranged to be activated when a road wheel of the vehicle tends to be locked in braking operation, said changeover valve being adapted to apply the hydraulic power pressure to said first piston in its deactivated condition and to connect said first piston to said fluid reservoir in its activated condition; and

a regulator valve arranged to control the hydraulic power pressure applied to said first and second pistons in accordance with the hydraulic braking pressure applied thereto from said master cylinder; and

a check valve arranged to permit the flow of pressurized fluid supplied from said fluid pump to said regulator valve and to block the flow of pressurized fluid from said regulator valve to said fluid pump; and

restriction means disposed within a hydraulic circuit connecting said master cylinder to said regulator valve to throttle the flow of pressurized fluid supplied from said master cylinder to said regulator valve.

4,660,900

SUPPORT FOR CAR RADIOS, CASSETTE PLAYERS, TUNERS AND SIMILAR EQUIPMENT

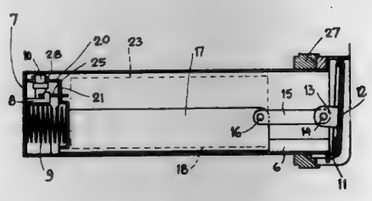
Elio Paterlini, Reggio Emilia, Italy, assignor to Autosonil S.p.A., Reggio Emilia, Italy

Filed May 21, 1985, Ser. No. 736,646

Claims priority, application Italy, Jun. 1, 1984, 34868/84[U]

Int. Cl.[4] A47B *81/03*

U.S. Cl. 312—7.1 **5 Claims**



1. A support for equipment of the type of car radios, cassette players, tuners and the like suitable for mounting firmly on the dashboard of a vehicle and the like, which comprises:

a box having a front wall, a bottom, a top, a rear wall and side walls, and being open at the front wall, means for anchoring said box to the dashboard of said vehicle, channels on said bottom and a hook protruding into the interior of said box from the rear wall,

a mobile structure slidable in said box through said open front wall, said mobile structure carrying said equipment and consisting of a frame having a rear wall, side walls, a bottom and sliding ledges on said bottom, said ledges adapted to engage with said channels when the mobile structure is mounted within said box and when the rear wall of the mobile structure is aligned with the rear wall of the box, said mobile structure having a trip hitch, said trip hitch having a recess and a tab, said trip hitch extending from the rear wall of said mobile structure, for coupling with said hook which extends from said box when said hook engages with said recess and for uncoupling with said hook upon application of pressure whereby said hook slides on the surface of said tab,

a front cover releasably hinged to the front wall of said box, said front cover having a pair of lugs pivoted on said ledges,

a spring positioned between the rear wall of said box and the rear wall of said mobile structure, said spring being compressed therebetween when the mobile structure is mounted within the box and expanding and pushing the mobile structure outwardly when pressure is applied on the front cover and the mobile structure is released from the box,

a pair of lever members pivoted on said lugs at one end and pivoted on said ledges of the mobile structure at the opposite end.

4,660,901

PREFABRICATED FURNITURE

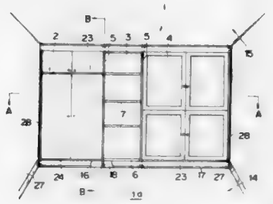
Yoshikatsu Shimada, Kiyose, Japan, assignor to Nihon Shuno System Kabushiki Kaisha, Tokyo, Japan

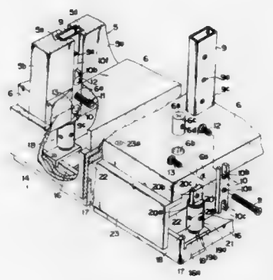
Filed Dec. 20, 1984, Ser. No. 684,075

Claims priority, application Japan, Dec. 27, 1983, 58-244836; Apr. 20, 1984, 59-78618; Apr. 20, 1984, 59-78619; Apr. 25, 1984, 59-82074; May 21, 1984, 59-100701; May 21, 1984, 59-100702; May 28, 1984, 59-106668

Int. Cl.[4] F16B *12/00*

U.S. Cl. 312—111 **13 Claims**





1. A prefabricated furniture for use in a room having a floor and a ceiling, comprising:

a plurality of vertical panel assemblies being vertically arranged in parallel to each other at predetermined intervals between the floor and the ceiling;

each vertical panel assembly comprising first and second joint tubes having upper and lower ends, a central panel, and first and second side panels, wherein the first joint tube connects said central panel to the first side panel and

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the second joint tube connects said central panel to the second side panel;

each joint tube having opposed edge portions cooperating with said side panels and a plurality of female screws in the edge portion at predetermined intervals;

said central panel having two grooves, oppositely situated along the edges of said central panel, cooperating with said joint tubes, and said side panels each having a groove cooperating with said joint tubes;

a plurality of horizontal panel assemblies each having a horizontal board;

a plurality of attachments, each having first and second ends, secured to opposite ends of said horizontal boards for attaching the horizontal panel assemblies in a fixed condition between adjacent vertical panel assemblies, wherein

each of said attachments having a U-shaped opening at each end of the attachment, one of which is open in a downward direction and the other of which is open in an upward direction, and a hole,

whereby a first male screw passes through said hole to fix said attachment to said horizontal boards, and a plurality of second male screws, one of said second male screws passing through said upwardly open U-shaped opening and another of said second male screws passing through said downwardly open U-shaped opening to engage selected female screws of said joint tube to fix said attachment to said joint tube; and,

a plurality of adjustors attached to both the upper and lower ends of each of said joint tubes for vertically adjusting the vertical panel assemblies so as to fix the vertical panel assemblies in a desired position between the floor and the ceiling,

each adjustor having a first member having a male screw, a second member having a male screw, and an enlongate third member having a coaxial pair of female screws,

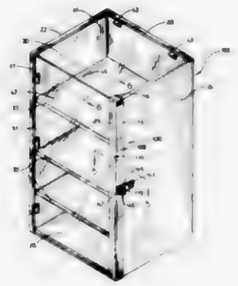
said pair of female screws having a first thread in clockwise thread direction, the second of said screws having a thread in a counter-clockwise direction such that said first thread engages said male screw of said first member and said male screw of said second member so that the third member can be turned to adjust the distance between the first member and the second member.

4,660,902

LOCKING DEVICE

Henry N. Resendez, Jr., 2318 N. West Ave., Apartment 103, Fresno, Calif. 93705

Filed Jun. 17, 1985, Ser. No. 745,718
Int. Cl.[4] A47B *81/06*
U.S. Cl. 312—114 **15 Claims**



1. In combination with a cabinet of the type providing a substantially flat predetermined rear panel; a first substantially flat side panel secured on the rear panel in forwardly extending substantially perpendicular relation thereto; a second substantially flat side panel spaced from the first side panel and secured on the rear panel in forwardly extending substantially perpendicular relation thereto and having a forward edge portion spaced therefrom; a bottom panel interconnecting the rear panel and first and second side panels, the bottom panel, side panels and rear panel collectively defining an internal chamber of predetermined volume bounded thereby and having a predetermined upwardly disposed opening and a predetermined forwardly disposed opening; a top door hingedly mounted on the rear panel for movement about an axis between a closed attitude wherein the top door is disposed in substantially occluding relation to the upwardly disposed opening and an opened attitude wherein the top door is disposed in substantially non-occluding relation to the upwardly disposed opening; and a front door having a first edge portion hingedly mounted on the first side panel for movement of the front door about an axis in spaced, substantially perpendicular relation to the axis of movement of the top door, and a second edge portion remote from the first edge portion, the front door being movable between a closed attitude wherein the front door is disposed in substantially occluding relation to the forwardly disposed opening and an opened attitude wherein the front door is disposed in substantially non-occluding relation to said opening, a device comprising:

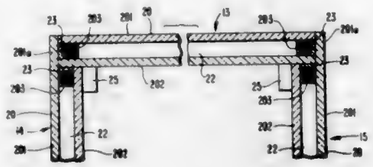
a body portion removably mounted on a first one of the doors of the cabinet and providing a first retaining element mounting a locking member and a second retaining element dimensioned to be disposed in impeding relation to the other door when both doors are disposed in a closed attitude to limit movement of said other door toward an opened attitude; and an engagement member removably secured on a side panel of the cabinet and operable to be releasably lockably engaged by the locking member when the first one of the doors is disposed in a closed attitude to limit movement of said first one of the doors toward an opened attitude.

4,660,903

TEMPERATURE CONTROLLED DISPLAY CASE

Katsumi Shinagawa, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jul. 1, 1985, Ser. No. 750,268
Claims priority, application Japan, Jun. 29, 1984, 59-97908[U]; Jun. 29, 1984, 59-97909[U]; Aug. 20, 1984, 59-126086[U]
Int. Cl.[4] A47F *3/04*
U.S. Cl. 312—116 **7 Claims**



1. In a refrigerated display case including a mechanical chamber in which a refrigeration unit is disposed and a refrigerated chamber for the display and storage of merchandise, said refrigerated chamber cooled by said refrigeration unit and being defined by a front window, right and left side windows, and a top window, said front, left and right side windows and said top windows attached together along their contiguous edges, the improvement comprising:

said front, left and right windows of multi-windowpane construction, said construction including

inner and outer glass panels;

a transparent spacer, positioned between said inner and outer glass panels for holding said panels in spaced parallel relation, said spacer positioned along the outer peripheral edge portion of said inner and outer glass panels to form an air gap therebetween, said outer glass panel of said side windows having an extended portion for engaging the edge surfaces of an adjacent window,; and

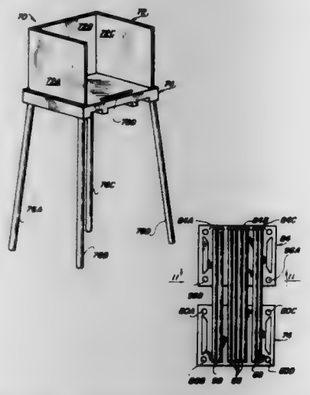
fastening means for fixing said extended portion on said edge surface.

4,660,904

PORTABLE VOTING BOOTH/LECTERN

Richard J. Stephens, 6 N. 430 Burr Rd., St. Charles, Ill. 60174

Continuation-in-part of Ser. No. 372,977, Apr. 29, 1982, Pat. No. 4,451,728. This application Jun. 7, 1984, Ser. No. 618,035
Int. Cl.[4] A47B *96/18, 3/00*
U.S. Cl. 312—140.2 **9 Claims**



1. In combination, a portable voting booth/speaker's lectern and means for the storage and transport thereof, said combination comprising:

a foldable, multi-section partition;

a plurality of elongated support legs;

a generally flat, rectangular panel having a plurality of coupled grooves on a first, upper surface adjacent the periphery thereof for receiving in tight fitting relation a respective lower edge of a section of said partition in providing for the stable mounting of said multi-section partition on said first upper surface of said panel, said panel further including on a second, lower surface thereof:

a plurality of apertures adapted to receive in tight fitting relation a respective support leg in providing for the stable support of said panel; and

an elongated recessed portion extending substantially the length of said panel and adapted to receive said support legs lengthwise when removed from the apertures of said panel; and

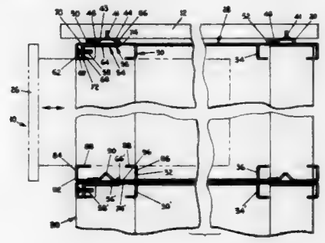
an elongated container including upper, lower and facing lateral flat walls and having an open end portion and adapted to receive at least a pair of said panels therethrough, wherein, with the respective recessed portions of said panels in facing and aligned arrangement and said support legs positioned in the facing, aligned recessed portions of said panels, the panels, legs and all components associated therewith of at least a pair of said voting booths/speaker's lecterns are securely stored in said container for storage or transport.

4,660,905

MODULAR STORAGE UNITS

John P. Conner, Grandville; Terry Mitchell; Craig Miller, both of Jenison; David L. Vander Kooi, and Donald Herringa, both of Holland, all of Mich., assignors to Trendway Corporation, Holland, Mich.

Filed Jun. 13, 1984, Ser. No. 620,129
Int. Cl.[4] A47B *17/00*
U.S. Cl. 312—195 **9 Claims**



1. A mounting mechanism for movably and releasably mounting a drawer unit on the underside of a work surface, wherein the drawer unit comprises a drawer movably mounted in a drawer casing that has upper and lower sides, the mounting mechanism comprising:

an elongated mounting bracket that is affixed transversely to the underside of a work surface, the mounting bracket having a mounting bracket flange extending outwardly from one side and spaced away from the work surface so another flange can fit over the mounting flange;

a mating upper drawer casing flange on the upper side of the drawer casing and facing the mounting bracket flange, the upper drawer casing flange fitting over the mounting bracket flange by sliding the drawer casing flange sideways toward the mounting bracket flange with the drawer casing lifted upwardly to a position adjacent the side of the mounting bracket with the flanges facing each other; and

releasable retainer means for releasably holding the flanges in overlapping engagement with each other, said retainer means engaging the drawer casing and one of the mounting bracket and underside of the work surface and preventing the drawer casing flange from sliding away from overlapping engagement with the mounting bracket flange in a direction perpendicular to the side of the mounting bracket, the retainer means comprising an adjustable position clamp slidably mounted in the drawer casing on the opposite side of the mounting flange from the drawer casing flange, the clamp position being adjustable in one direction to draw the drawer casing flange toward the mounting bracket flange so as to lock the drawer casing on the mounting bracket flange, the clamp being adjustable in the opposite direction to permit the drawer casing to be slipped transversely along the mounting bracket or removed from the mounting bracket.

4,660,906

LAMP HOLDER ASSEMBLY HAVING ROTATABLE BASE SHELL

Thomas Haraden, Ipswich, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Continuation of Ser. No. 722,922, Apr. 12, 1985, abandoned. This application Sep. 22, 1986, Ser. No. 910,805
Int. Cl.[4] H01R *39/00*
U.S. Cl. 339—2 L **7 Claims**

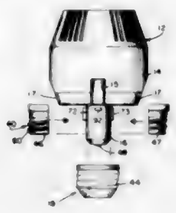
1. A lamp holder assembly comprising:

a first housing having a central body portion and a protruding portion located at one end of said first housing;

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a first electrical contact means coaxially disposed at one end of said protruding portion of said first housing;

a base shell defined a cavity extending longitudinally therethrough and including an insulative second housing having an electrically conductive shell attached to and surrounding said insulative second housing, said protruding portion of said first housing extending through said cavity of said base shell;



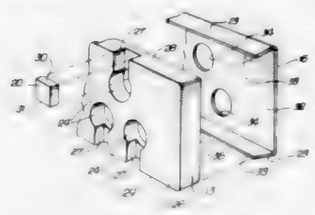
a second electrical contact means secured to said protruding portion of said first housing and contacting said electrically conductive shell of said base shell; and

means for permitting a limited amount of rotational movement of said base shell relative to said protruding portion of said first housing to a stopping position.

4,660,907
EMI FILTER CONNECTOR BLOCK

Robert E. Belter, Carlsbad, Calif., assignor to Kyocera International, Inc., San Diego, Calif.

Filed Jun. 20, 1985, Ser. No. 746,744
Int. Cl.[4] H01R 13/66
U.S. Cl. 339—14 R **9 Claims**



1. An electrical connector assembly comprising:

a plurality of pins,

a ground plane, said ground plane provided with a plurality of cavities corresponding in number to said plurality of pins, each of said cavities circumferentially surrounding a corresponding one of said pins,

a plurality of filter elements, each of said filter elements being in non-circumferential relationship with an associated pin, each of said filter elements having a first electrical terminal and a second electrical terminal,

said first electrical terminal of each one of said filter elements being in electrical contact with an associated pin, and

said second electrical terminal of each one of said filter elements being in electrical contact with a common surface of said ground plane.

4,660,908
GROUNDING SADDLE

Hector G. Ballester, Anaheim Hills, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Aug. 5, 1985, Ser. No. 762,636
Int. Cl.[4] H01R 4/66
U.S. Cl. 339—14 R **5 Claims**



1. A device for grounding a non-metallic conduit comprising:

a rigid non-conductive saddle having an arcuate inner surface to mate with a segment of the circumferential, cylindrical exterior of the conduit;

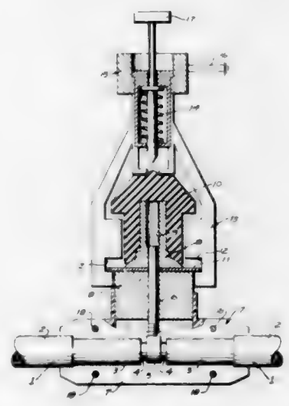
a grounded, conductive line fixed along the inner surface; and

means for attaching the saddle inner surface and line to the conduit segment including a conductive adhesive, the conduit grounded through the adhesive and line.

4,660,909
REMOTE GROUNDING DEVICE FOR SUBTERRANEAN POWER SYSTEMS

Daniel P. Wilson, 4846 E. Mountain View Dr., San Diego, Calif. 92116

Filed Dec. 16, 1985, Ser. No. 809,422
Int. Cl.[4] H01R 4/66
U.S. Cl. 339—14 L **1 Claim**



1. A remote grounding device for subterranean power cable of an insulated conducting cable which comprises

a grounding module and a grounding mechanism,

said grounding module is an assembly of a power buss, an insulation sheath, a reducing tap plug and an insulating receptacle cap, said power buss being intimately connected to the conducting cable by a means of an attachment, said reducing tap plug fitting concentrically over said power buss and having a tubular probe path void contiguous and in-line to said power buss and a lip around the outer periphery of said reducing tap plug, said insulating receptacle cap covering the tubular void, said insulating sheath covering and holding said reducing tap plug and power cable by a multiplicity of locking means,

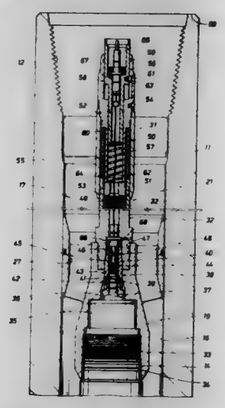
and a grounding mechanism assembly of a frame, a probe, a power drive means, a grounding means, a handle means, said frame having a groove and being open on one side, said probe being geometrically located on said frame at a central point, so that when said groove engages said lip said probe is directly in line with said probe path void, said probe being of smaller diameter than said probe path void, said power drive means coupled to said probe on said frame, grounding means attached to said probe at one extremity, and said handle means attached to said frame,

so that the handle directs the frame onto the reducing tap plug by the lip and groove so the probe is above the center of the probe path void, when the power drive means is excited and the other extremity of the grounding means is grounded, the probe penetrates the insulating receptacle cap and contacts the power buss, resulting in a grounded power cable.

4,660,910
APPARATUS FOR ELECTRICALLY INTERCONNECTING MULTI-SECTIONAL WELL TOOLS

Stanley O. Sharp, Missouri City, and John M. Dieken, Houston, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 686,571, Dec. 27, 1984. This application Feb. 18, 1986, Ser. No. 808,788
Int. Cl.[4] H01R 4/64
U.S. Cl. 339—16 R **16 Claims**



1. A well tool comprising:

a first tubular body having an end portion with internal tapered threads;

a second tubular body having an end portion with external tapered threads adapted to be coengaged within said internally-threaded end portion of said first tool body for drawing said tool bodies together and into axial alignment along a common longitudinal axis as said tool bodies are rotated relative to one another to threadedly couple said tool bodies together;

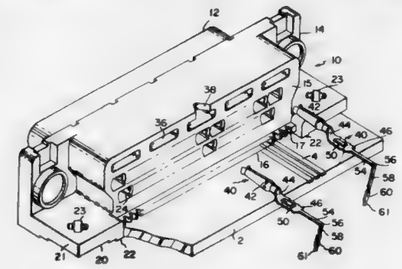
first and second electrical connector means coaxially arranged within said first and second bodies respectively and adapted to be interconnected with one another as said tool bodies are threadedly coupled together; and

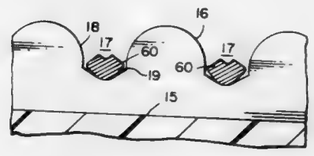
first and second mounting means respectively arranged within said first and second bodies and adapted to be selectively adjusted for axially positioning said first and second connector means therein before said tool bodies are threadedly coupled together so that said externally-threaded end portion of said second tool body will not contact said first connector means as said threaded end portions are being initially coengaged and said first and second electrical connector means will be interconnected as said tool bodies are being subsequently drawn into axial alignment.

4,660,911
SURFACE MOUNT CONNECTOR

Charles E. Reynolds, Mechanicsburg, and Robert N. Whiteman, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 6, 1985, Ser. No. 806,141
Int. Cl.[4] H01R 9/09
U.S. Cl. 339—17 LC **10 Claims**





1. A connector for mounting to a printed circuit board, comprising:

a housing having a mating face, an opposed rear face, a mounting fsce perpendicular to the mating face and the rear face, and a plurality of contact receiving passages between the mating face and the rear face;

a like plurality of electrical contacts, each having a mating portion, a solder tail substantially perpendicular thereto, and a bend therebetween, the mating portion being received in a respective passage from the rear face, the solder tails being received proximate the rear face and generally parallel thereto, the solder tails having distal ends proximate the mounting face for disposition against the circuit board;

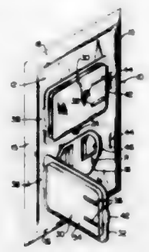
a rib extending across the rear face of the housing having parallel channels with generally V-shaped configuration, a portion of each solder tail having an arcuate surface being disposed resiliently against a respective channel, the channels having a larger width than the solder tails, whereby the arcuate surfaces of the portions of the solder tails cooperate with the V-shaped channels to enable the solder tails to be self-centering in the channels, while still permitting lateral movement as required, thus saving the solder joints from stress levels which could break a joint.

4,660,912

PROTECTIVE COVER FOR ELECTRICAL OUTLET

Lawrence S. Tomek, 1305 Kirkwood #107, Fort Collins, Colo. 80525

Filed Feb. 18, 1986, Ser. No. 830,218
Int. Cl.[4] H01R *13/44*
U.S. Cl. 339—44 R 12 Claims



1. A protective cover for electrical receptacles of the type having at least one electrical outlet for insertion of the prongs of an electrical plug, said cover comprising:

an adapter plate including an exterior surface, an interior surface with an opening in said plate alignable over said outlet, and means for releasably connecting said adapter plate to said receptacle such that the opening therein is aligned with said outlet for exposing same;

a catch member on the exterior surface of said plate alongside each opening;

a generally convex cap member including means securing said cap member to said plate on one side of each opening opposite to said catch member for movement between an open position and a closed position, said cap member sized to substantially cover the opening when in the closed position and having latching means movable into releasable engagement with said catch member when said cap member is in the closed position; and

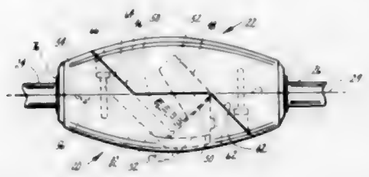
release means extending from one end of said cap and member adjacent to said latching means across the interior of said cap and beneath an opening in said cap member, and a tool insertable through an opening in said cap member to depress said release means in a direction to exert an upward pressure on said latching means to release said latching means from engagement with said catch member.

4,660,913

ELECTRICAL PLUG AND SOCKET ASSEMBLIES

Philip R. Turner, 10660 Bobwhite Beach, Whitmore Lake, Mich. 48189

Filed Feb. 11, 1985, Ser. No. 700,270
Int. Cl.[4] H01R *25/00*
U.S. Cl. 339—49 R 27 Claims



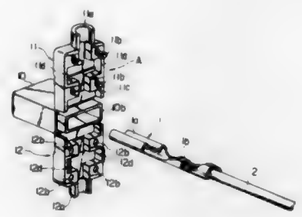
1. Mutually engageable plug and socket constructions each comprising a body, a prong cavity and a contact extension formed in the body, said contact extension located between the prong cavity and one end of the body, said prong cavity extending into the body beneath the contact extension and generally opening toward the end of the body opposite the contact extension, and said prong cavity and contact extension substantially complementary in form to provide engagement of the prong cavities of plugs with the contact extensions of sockets, a pair of spaced surfaces on each body, at least a portion of each spaced surface extending the full width of the body, said surfaces at least partially overlapped whereby one surface forms a portion of the contact extension above the prong cavity and the other surface forms a wall of the prong cavity descending beneath the contact extension, and said surfaces being substantially complementary to each other to provide for said mutual engagement of plug prong cavities with socket contact extensions.

4,660,914

INSULATING COVER FOR TERMINAL

Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 689,310, Jan. 7, 1985, abandoned. This application Jun. 26, 1986, Ser. No. 880,354
Claims priority, application Japan, Jan. 13, 1984, 59-3293[U]
Int. Cl.[4] H01R *11/00*
U.S. Cl. 339—59 R 2 Claims



1. In an electrical insulating cover for an electrical terminal and a connection of said terminal to a pre-attached wire, said terminal being generally rigid for purposes of mounting in said cover and having a head portion and a remaining portion, with said remaining portion being connected to said wire, and said cover having a cover body formed of synthetic resin with two fitting portions integrally hinged to said body, said two fitting portions having engaging portions internal of each fitting portion and providing a snapfit latch upon manual closing of said fitting portions about said terminal and pre-attached wire and means for restricting movement of and retaining said terminal when said fitting portions are closed, the improvement comprising:

a tubular sleeve means for receiving said head portion of said terminal during insertion of said head portion thereinto along an insertion path generally coaxial with said sleeve, said sleeve means extending generally one half of a length of said cover body; and

said cover body, upon closing of said fitting portions about said remaining portion and pre-attached wire, covering substantially all of said terminal and pre-attached wire;

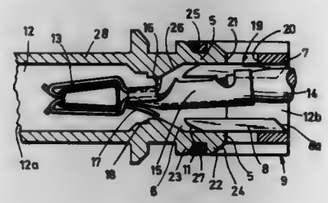
whereby said remaining portion is graspable by a person attaching said cover to said terminal during inserting of said head portion into said sleeve means, said sleeve means aiding in support of said terminal during subsequent closing of said fitting portions, so that a flexibility of said wire does not detract from said inserting and mounting.

4,660,915

LOCKING ARRANGEMENT FOR ELECTRICAL CONTACT ELEMENT INSERTABLE INTO HOUSING CHAMBER

Konrad Mantlik, Wuppertal, Fed. Rep. of Germany, assignor to Grote & Hartmann GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Continuation of Ser. No. 547,052, Oct. 28, 1982, Pat. No. 4,583,805. This application Oct. 3, 1985, Ser. No. 783,795
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3247022
Int. Cl.[4] H01R *11/22*
U.S. Cl. 339—61 R 15 Claims



1. A locking arrangement for an electrical connector insertable into a housing chamber having walls and a predetermined contour, the locking arrangement comprising a plurality of first arresting elements arranged outwardly on the walls of the housing chamber; and a locking mount fittable onto the walls of the housing chamber and provided with a plurality of locking elements arranged for locking the electrical connector and with a plurality of second arresting elements cooperating with the first arresting elements of the walls of the housing chamber, said locking mount having a contour corresponding to the contour of said housing chamber and including a peripherally closed frame with a plurality of interconnected frame walls which carry said locking elements and said second arrresting elements, said frame walls including at least one frame wall, said second arresting elements including at least one arresting bracket provided on said one frame wall and including two bracket arms which are spaced at a lateral distance from one another and extend normally downwardly, and a transverse web connecting said bracket arms with one another, said walls of said housing chamber including at least one housing chamber wall, said first arresting elements including at least two arresting webs provided on said one housing chamber wall and arranged at a distance from one another.

4,660,916

LAMPHOLDER GASKET

Howard M. Williams, Jr., Emmaus, Pa., assignor to Hubbell-Bell Inc., Orange, Conn.

Filed Aug. 9, 1985, Ser. No. 765,012
Int. Cl.[4] H01R *4/00*
U.S. Cl. 339—94 L 2 Claims



1. A gasket for forming a seal between a lamp having an electrical connection end portion and an outwardly diverging envelope, and a lampholder having a shell with a circular end opening to receive the lamp, a radially outwardly extending lip surrounding the end opening and socket means within the shell electrically and mechanically engaging the end portion of the lamp, the gasket comprising,

an annular ring of resilient elastomeric material having an inner surface and an outer surface;

means defining an annular groove in said inner surface adjacent one axial end of said ring, said means including, in cross section, first and second leg portions and an intermediate portion joining said leg portions, said groove being dimensioned to snugly receive the lip on said shell with said first leg portion abutting an end face of said circular end opening; and

a seal member unitarily formed on said first leg portion and extending axially away from said circular end opening on said shell and radially inwardly toward the envelope of said lamp, said seal member having generally conical inner and outer surfaces, and

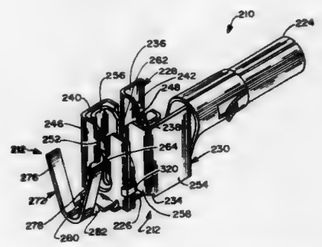
an annular, V-shaped recess formed in said inner surface intermediate the ends of said seal member forming an annular region of increased flexibility relative to the remainder of said seal member to permit the distal portion of said seal member to bend readily when contacted by the lamp envelope whereby a seal is formed with each lamp envelope as lamps are removed from and replaced into said lamp holder.

4,660,917

MULTI-WIRE INSULATION DISPLACEMENT TERMINAL

Robert DeRoss, Naperville, and Joseph J. Gierut, Tinley Park, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 23, 1985, Ser. No. 811,977
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—97 R 3 Claims



1. A terminal for making electrical connections to insulation clad wires, said terminal comprising a unitary body of uniform thickness sheet metal stock, said terminal having an elongate wire engaging portion extending parallel to said wires and a generally flat, coextensive planar base portion with opposed elongate edges, a pair of sidewalls generally parallel to one another and extending upwardly above said base portion at least one elongate edge thereof, a pair of end portions extending from each sidewall toward the opposite elongate edge, each sidewall with its pair of end portions defining a generally U-shaped element, and insulation displacement slot means defined between said sidewalls, said terminal being characterized by:

each end portion extending more than half the distance between the base portion elongate edges;

said U-shaped elements being internested with at least one end portion of one element being located between the end portions of the opposite element;

said pair of sidewalls being immediately adjacent each other at one elongate edge of said base portion, and one of said elements includes a third end portion joined to one of said two end portions through a second, opposing sidewall, whereby said U-shaped element is extended to form a generally S-shaped element; and a generally co-linear

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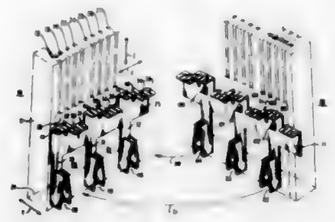
array of insulation displacement slots, each being defined in one of said end portions.

4,660,918

HIGH DENSITY COAXIAL CABLE CONNECTOR

Charles I. Tighe, Jr., Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 12, 1985, Ser. No. 797,110
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—97 P **9 Claims**



1. A strip having serially spaced apart electrical terminals along the length of the strip and projecting transversely of the length of the strip, and further comprising,
- wire terminating means having first sets of wire terminating slots aligned along a first axis along the length of the strip, and having second sets of wire terminating slots aligned along a second axis along the length of the strip and offset from the first axis,
- an offset mirror image segment of said strip offset along the length of said strip,
- first spaces between adjacent said first sets of wire terminating slots of said strip,
- respective first sets of wire terminating slots of said offset mirror image segment of said strip fitting into corresponding said first spaces,
- second spaces between adjacent said second sets of wire terminating slots of said strip,
- respective second sets of wire terminating slots of said offset mirror image segment of said strip fitting into corresponding said second spaces,
- third spaces between adjacent terminals of said strip,
- and terminals projecting alternately from said strip and from said offset mirror image segment of said strip are provided by respective said terminals of said offset mirror image segment of said strip in alignment with said third spaces.

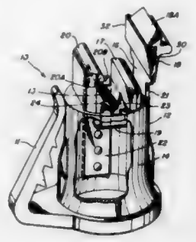
4,660,919

LAMP SOCKET

George D. Levy, Wellesley, Mass., assignor to Beacon Electric, Inc., Boston, Mass.

Filed Oct. 7, 1985, Ser. No. 785,256
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—99 L **8 Claims**

1. A lamp socket assembly for holding a bulb and for attachment to a pair of current-carrying wires having insulation thereon comprising a one-piece housing member including a hollowed part having means engageable with the base of said light bulb when the latter is advanced into the member from one end thereof, said housing member having wall portions at the other end thereof defining a recess for receiving a section of current carrying wires, said member further including a cap portion having a wire contacting portion moveable into engaging relationship with wire in said recess and a hinge part integrally formed with said cap portion and hollowed part for pivoting said cap portion and hollowed part to and away from one another and a pair of electrical contacts, each held within the member and protruding into the recess defined by the wall portions thereof, each contact having ends thereon adapted for piercing the insulation of a respective current-carrying wire and for making electrical contact with the conductor portion of the wire, said contacts also having means thereon adapted for making electrical contact with respective conductor portions of the light bulb, one of the wall portions and the cap portion each having complementary mateable faces that are adapted to interlock when in a closed position causing said wire contacting portion to extend into said recess forcing said wires against said contacts piercing the insulation of said wires and thereby causing an electrical contact from the wires to the bulb, said wire contacting portion including a flat member for engagement with the wires including oppositely disposed ears extending in the direction of said wires and extending out-



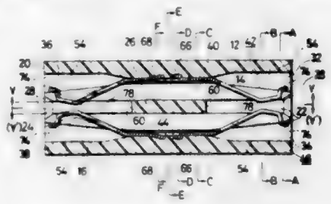
wardly of said cap portion, said ears being disposed outside of said contacts to provide secure holding of the wires adjacent the contacts, said housing member hollowed part defined at least in part by a cylindrical wall having a substantially flat end wall against which the wires rest and a substantially circular outer edge, said ears being integral with the wire contacting flat portion of the flat member and each having a wire contacting surface that is contiguous with the contacting surface of the flat portion of the flat member, each ear having its inner side disposed substantially overlying the inner diameter of the cylindrical wall and its outer side disposed substantially overlying the outer diameter of the cylindrical wall at said circular outer edge.

4,660,920

PRINTED CIRCUIT BOARD CONNECTOR

Yasuji Shibano, Izumisano, Japan, assignor to Hosiden Electronics Co., Ltd., Japan

Filed Mar. 18, 1986, Ser. No. 840,848
Claims priority, application Japan, Sep. 2, 1985, 60-134919[U]
Int. Cl.[4] H01R *23/68*
U.S. Cl. 339—176 MP **20 Claims**



1. An edge board connector for connecting at least a first and a second printed circuit board, comprising a housing of electrically insulating material having a front face and a rear face, a first elongated aperture in the front face adapted to receive therein one edge of a first printed circuit board, a second elongated aperture in the rear face adapted to receive therein one edge of a second printed circuit board, a plurality of channels in the housing extending between the front and rear faces thereof, the channels opening in the front and rear faces on opposite sides of the first and second elongated apertures, respectively, and being in communication therewith, and

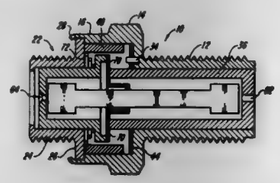
a plurality of contacts each being positioned within at least one of the channels, each contact having circuit engaging means adjacent to the opposite ends thereof for engaging circuitry on the first and second printed circuit boards, each channel being configured to permit an easy assembly of a corresponding contact into the channel from one of the first and second faces in a manner to result in a proper preloading of the contact, the circuit engaging means for each contact extending into the first and second elongated apertures so as to make electrical contact with circuitry on the first and second printed circuit boards when inserted into place within the first and second elongated apertures, respectively, wherein:
- the plurality of channels are arranged in parallel spaced relation on opposite sides of the first and second elongated apertures with a partition wall being formed between each two adjacent channels;
- each contact has flanges in the opposite ends thereof and each partition wall between two adjacent channels has an enlarged portion in its inner end and a constricted portion extending between the enlarged portion and the outer walls of the two adjacent channels, each enlarged portion forming shoulder means on both sides of the partition wall together with the constricted portion thereof; and
- each contact may be assembled into a corresponding channel by sliding the flanges on the shoulder means in the channel.

4,660,921

SELF-TERMINATING COAXIAL CONNECTOR

Bruce C. Hauver, Elmira, N.Y., assignor to LRC Electronics, Inc., Horseheads, N.Y.

Filed Nov. 21, 1985, Ser. No. 800,539
Int. Cl.[4] H01R *17/18*
U.S. Cl. 339—177 R **7 Claims**



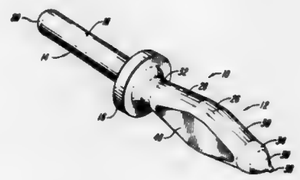
1. A coaxial connector comprising:
- a body of conductive material having a first end portion to which a coaxial plug is connectable, and a second end portion to which a coaxial plug is connectable;
- a sleeve of electrically insulative material slidably disposed in the second end of the body and movable between an outer position and an inner position;
- an electrical contact element disposed within the body and having contact ends confronting respective ends of the body for electrical connection to the center conductor of respective coaxial plugs;
- a second contact element supported by and electrically connected to the first contact element;
- the first contact element being disposed in the sleeve and movable therewith;
- the second contact element having a finger portion which outwardly extends therefrom;
- the body including a recess containing a resistor having one electrode in electrical contact with the body and a second electrode confronting the interior of the body, the finger portion of the second contact element confronting the second electrode of the resistor and selectively engagable therewith;
- means within the body for biasing the sleeve into an outward position with an end of the sleeve extending axially outward of the second end of the body, the finger portion of the second contact element being in engagement with the second electrode of the resistor in this extended position to electrically terminate the first contact element;
- the sleeve being slidably inward in the presence of a plug connected to the second end to cause movement of the finger portion out of contact with the second electrode of the resistor.

4,660,922

TERMINAL PLUG BODY AND CONNECTOR

James S. Cooney, Attleboro, and Stephen T. Sicard, Norton, both of Mass., assignors to Pylon Company, Inc., Attleboro Falls, Mass.

Continuation of Ser. No. 626,062, Jun. 29, 1984, abandoned. This application Mar. 27, 1986, Ser. No. 846,501
Int. Cl.[4] H01R *13/00*
U.S. Cl. 339—278 T **14 Claims**



1. A terminal plug for electrical and mechanical connection into a thin-walled annular end of an interconnection component, said thin-walled annular end having a predetermined inside dimension, comprising:
- a tail portion; and
- a head portion integrated with said tail portion in an axial direction, said head portion having variable transverse dimensions in said axial direction inducing tensile stresses in said thin-walled annular end when said head portion is inserted into said thin-walled annular member, said head portion further comprising,
- a tapered end portion axially distal of said tail portion,
- a first tapering portion integrated with said tapered end portion, said first tapering portion having increasing transverse dimensions in said axial direction towards said tail portion such that insertion of said terminal plug into said thin-walled annular end causes an increasing tensile stress to be induced in corresponding segments of said thin-walled annular end by said first tapering portion,
- a central portion integral with said first tapering portion, said central portion having a constant transverse dimension slightly greater than said predetermined inside dimension of said thin-walled annular end such that insertion of said terminal plug into said thin-walled annular end induces a maximum tensile stress in corresponding segments of said thin-walled annular end by said central portion,
- a second tapering portion integral with said central portion and integrated with said tail portion, said second tapering portion having decreasing transverse dimensions in said axial direction towards said tail portion such that insertion of said terminal plug into said thin-walled annular end causes a decreasing tensile stress in corresponding segments of said thin-walled annular end causing elastic collapse thereof onto said second tapering portion, and
- at least one beveled surface extending in said axial direction and formed through said first tapering portion, said central portion, and said second tapering portion such that when said terminal plug is inserted into said thin-walled annular end said at least one beveled surface cooperates with a segment of said thin-walled annular end to provide clearance to accommodate elastic collapse of that segment,
- whereby when said terminal plug is inserted into said thin-walled annular end said first tapering portion, said central portion and said second tapering portion of said head

portion are maintained in physical contact with said thin-walled annular end due to tensile stresses induced therein, and the probability of fatigue failure of said thin-walled annular end due to repeated connection of said terminal plug is significantly reduced by the uneven tensile stress distribution induced in said thin-walled annular end by said body portion of said terminal plug.

4,660,923

OPTICAL FIBER

Akira Ohmori, Ibaraki, Japan, assignor to Daikin Kogyo Co., Ltd., Japan

Continuation of Ser. No. 711,091, Mar. 13, 1985, abandoned. This application Mar. 27, 1986, Ser. No. 843,810
Claims priority, application Japan, Mar. 22, 1984, 59-55722
Int. Cl.⁴ G02B *6/16*
U.S. Cl. 350—96.34 **3 Claims**

1. In an optical fiber comprising a cladding and a core, the improvement wherein said core comprises a polymer having at least 70% by weight of structural unit represented by the formula

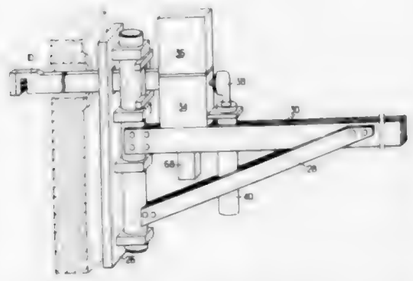
wherein X^1 and X^2 are the same or different and are each hydrogen or fluorine, and R is hydrogen, alkyl having 1 to 6 carbon atoms or fluoroalkyl having 1 to 6 carbon atoms.

4,660,924

DEVICE FOR OBSERVING THE TUBE PLATE OF A STEAM GENERATOR

Jean Denis, Maisons Laffitte, and Poirier Pierre, Stains, both of France, assignors to Electricite de France, France

Filed May 2, 1984, Ser. No. 606,253
Claims priority, application France, May 4, 1983, 83 07459
Int. Cl.⁴ G02B *6/12*
U.S. Cl. 350—96.10 **5 Claims**



1. A device for optically inspecting a tubular plate of a steam generator having an enclosure formed with an access hole confronting an interval between two parallel banks of vertical tubes and formed above the tubular plate, the device comprising:

a hollow member elongated in a horizontal direction, having a horizontal lateral dimension whose size is less than the interval and an overall cross-section smaller than that of the access hole, said hollow member having a main part and a distal end part in mutual alignment along the direction of elongation;

light guide means located inside said main part for directing light along the direction of elongation;

an endoscope located inside said main part substantially parallel to and under said light guide means;

first light deflection means carried by said distal end part in alignment with said light guide means and mounted for angular adjustment about an axis parallel to the direction of elongation for deflecting and directing a light beam from said light guide means in a controllable direction about the direction of elongation, said first light detection means having a small lateral dimension whereby during rotation about the direction of elongation said first light detection means is maintained within the overall cross-section of said hollow member;

second light deflection means carried by said distal end part in alignment with said endoscope and arranged for deflecting and directing the line of sight of said endoscope in a controllable direction about said direction of elongation, said second light detection means having a small lateral dimension whereby during rotation about the direction of elongation said second light detection means is maintained within the overall cross-section of said hollow member;

control means for simultaneous angular control of said first and second light deflection means about said direction of elongation while both said light deflection means are maintained within a volume defined by the overall cross-section of said hollow member; and

fixed lighting means carried by said main part and arranged for illuminating a zone under said second light deflection means where the light beam from the first deflection means is interrupted by the second deflection means, whereby inspection of said tubular plate is possible throughout a continuous angular range extending from one side to the other of said device.

4,660,925

APPARATUS FOR PRODUCING A CYLINDRICAL PATTERN OF LIGHT AND METHOD OF MANUFACTURE

James S. McCaughan, Jr., Galena, Ohio, assignor to Laser Therapeutics, Inc., Worthington, Ohio

Filed Apr. 29, 1985, Ser. No. 728,689
Int. Cl.⁴ G02B *6/02*
U.S. Cl. 350—96.15 **4 Claims**



1. A process for manufacturing an apparatus for radiating light in an approximately uniform cylindrical pattern comprising the steps of:

(a) from an optical fiber comprising a central core region surrounded radially by a cladding region of lower refractive index than said core, both said cladding and core regions surrounded radially by a region of protective sheathing, removing said cladding and sheathing from a region at one end of said optical fiber, exposing said core region;

(b) polishing the exposed terminus of said core of said optical fiber exposed by said removal of said cladding and sheathing, making a reasonably smooth, flat surface thereon;

(c) coating said exposed core, and said cladding and sheathing adjacent thereto, with a light-scattering medium, said medium having increasing optical scattering power in a first direction parallel to the central axis of said exposed core extending from said adjacent cladding towards said poslished terminus, and uniform scattering power circumferentially around the circumference of said exposed core;

(d) tightly inserting said light-scattering medium into a tubing, forming the outer coating of said light-scattering medium;

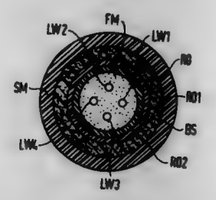
(e) uniformly filling the interstices between said light-scattering medium and said tubing, excluding all entrapped air and foreign matter.

4,660,926

OPTICAL CABLE

Ernst Mayr, Starnberg, and Ulrich Oestreich, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,241
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337863
Int. Cl.⁴ G02B *6/44*
U.S. Cl. 350—96.23 **15 Claims**



1. In an optical cable having a central core including a tube containing optical waveguides and a concentric outer supporting member, said tube being a high transverse pressure-resistant tube, the improvements comprising said tube having a double wall with an inner layer and an outer layer, said inner layer being constructed of an extruded aromatic polyamide and the outer layer being constructed of an extruded polyester, said tube being filled with a soft filling compound and said optical waveguides being disposed in said filling compound.

4,660,927

QUARTZ GLASS-MADE OPTICAL FIBERS COATED WITH A SILICONE COMPOSITION

Kiyohiro Kondow; Nobuo Takasaka, and Yoshinori Hida, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed Aug. 17, 1983, Ser. No. 524,089
Claims priority, application Japan, Aug. 18, 1982, 57-143065
Int. Cl.⁴ B05D *5/06*; G02B *5/172*
U.S. Cl. 350—96.34 **10 Claims**

1. A quartz glass-made optical fiber coated with a silicone composition which comprises an elongated quartz glass-made fiber and a coating layer thereon formed of a cured silicone composition comprising:

(A) at least one kind of orgnosilicon compound selected from the class consisting of:

(A-a) an organopolysiloxane or organosilane represented by the formula

$$R^1_aR^2_bSiO_{\frac{4-a-b}{2}},$$

in which R^1 is a monovalent organic group having aliphatic unsaturation, R^2 is a substituted or unsubstituted monovalent hydrocarbon group having no aliphatic unsaturation, a is a number from 0.0004 to 4.0 inclusive and b is zero or a positive number not exceeding 2.5 with the proviso that a+b is in the range from 1.1 to 4.0 inclusive, and

(A-b) an organopolysiloxane or organosilane represented by the formula

$$R^3_cR^4_dSiO_{\frac{4-c-d}{2}},$$

in which R^3 is a mercaptoalkyl group, R^4 is a substituted or unsubstituted monovalent hydrocarbon group having no aliphatic unsaturation, c is a number from 0.0004 to 4.0 inclusive and d is zero or a positive number not exceeding 2.5 with the proviso that c+d is in the range from 1.1 to 4.0 inclusive, wherein at least 8% by moles of the total organic groups bonded to the silicon atoms are phenyl groups; and

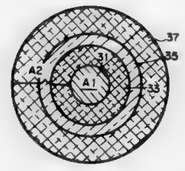
(B) a curing accelerator, the coating layer having been cured by irradiation with actinic rays.

4,660,928

HIGH TENSILE STRENGTH OPTICAL FIBER

Raymond E. Jaeger, and Mohd Aslami, both of Sturbridge, Mass., assignors to SpecTran Corporation, Sturbridge, Mass.

Filed Sep. 21, 1984, Ser. No. 653,113
Int. Cl.⁴ G02B *6/22, 6/16, 6/44*
U.S. Cl. 350—96.33 **15 Claims**



1. A high tensile strength optical fiber comprising:

an inorganic crystalline core, and

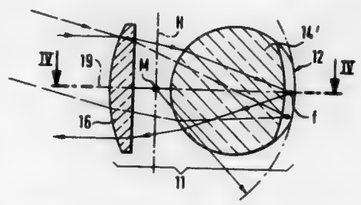
a plurality of separate glass cladding layers, each having a respective index of refraction, concentrically clad around the crystalline core, and forming a light-transmissive optical waveguide having an optical ring core surrounded by separate inner- and outer-glass cladding layers wherein the index of refraction of the ring core is higher than the respective index of refraction of the inner- and outer-glass cladding layers.

4,660,929

RETROREFLECTOR

Erwin Sick, Icking, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Nov. 29, 1984, Ser. No. 676,330
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344478
Int. Cl.⁴ G02B *5/126, 3/04, 17/00*
U.S. Cl. 350—104 **8 Claims**



1. An elongate retroreflector comprising:

a cylindrical lens arrangement having a lens axis, a focal line, and an optical axis;

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the cylindrical lens arrangement including a cylindrical light conducting rod and a first lens element physically separate from the light conducting rod; and

the light conducting rod comprising a second lens element and a cylindrical stepped mirror arrangement having a mirror axis parallel to the lens axis, the stepped mirror arrangement including a plurality of grooved mirror surfaces, the focal line being arranged on the stepped mirror arrangement.

4,660,930

TRANSMISSION PROJECTION SCREEN AND METHOD OF MANUFACTURING SAME

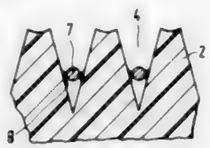
Gustaaf H. A. van der Hoorn; Caspert G. I. van der Staak; Joseph J. M. Lamberts, and Johannes H. A. Schmitz, all of Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1986, Ser. No. 844,052

Claims priority, application Netherlands, Jan. 10, 1986, 8600042

Int. Cl.⁴ G03B *21/60*

U.S. Cl. 350—126 **5 Claims**



1. A transmission projection screen comprising a transparent substrate having a front surface which is provided with mutually parallel ribs from which light issues during operation of the screen, grooves being present between the successive ribs, in which grooves an amount of light-absorbing particles is disposed, characterized in that the average particle size is 20 to 75% of the width of the grooves measured halfway the depth of these grooves.

4,660,931

FOLDABLE STEREO VIEWER

Louis Chevalier, Nice, France, assignor to Stereoscopes Lestrade & Cie, S.A., Vic-En-Bigorre, France

Filed Jun. 6, 1984, Ser. No. 617,678

Claims priority, application France, Jan. 24, 1984, 84 01055

Int. Cl.⁴ G02B *27/22*

U.S. Cl. 350—140 **10 Claims**



1. A foldable stereo viewer card comprising rectangular front and rear sides of sheet material joined at one end by a common transverse hinge, each of said front and rear sides being divided into two rectangular zones by a transverse intermediate hinge, each of said sides having another hinge remote from said common hinge at the junction with a transverse margin, the transerve margins being disposed in spaced overlying relation, a first of said zones of said front side mounting a pair of spaced apart lenses and a first of said zones of said rear side having windows for receiving a stereopair aligned with said windows, said stereopair having substantially the same spacing as said pair of lenses, a second of said zones of one of said sides being a connecting zone between its other hinge and said one side, and a second of said zones of said other side being a connecting zone between said first zone of said other side and said common hinge, a positioning member having a transverse margin sandwiched between the terminal margins of front and rear sides, means securing said transverse margins together, said positioning member extending between the front and rear sides and having a free end adapted to abut the common hinge, said stereo viewer card having an operative position in which the free end of said positioning member abuts against the common hinge and the lenses are in optical alignment with the stereopair, and a storage position for insertion into an envelope in which the entire front and back sides and said positioning member lie in substantitally flat, overlying relation.

4,660,932

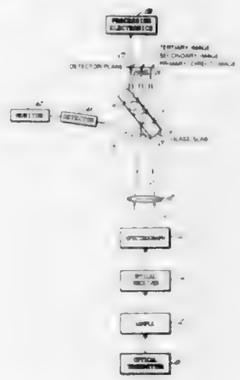
OPTICAL SPLITTER FOR DYNAMIC RANGE ENHANCEMENT OF OPTICAL MULTICHANNEL DETECTORS

Alan C. Eckbreth, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 13, 1984, Ser. No. 630,545

Int. Cl.⁴ G02B *27/14*

U.S. Cl. 350—171 **5 Claims**



1. An optical system including a device for splitting an input beam of optical radiation, traveling along an input axis, into at least two output beams traveling along at least two substantially parallel axes:

a slab of material, optically transmissive in a predetermined wavelength region, disposed along said input axis, and having an entrance surface through which said input beam may enter said slab and an exit surface, through which said at least two output beams may exit said slab;

in which said entrance surface has a first area coated with a substantially totally reflective coating and a second area adapted for the entrance of said input beam; and

in which said exit surface is partially transmissive, whereby a first fraction of said input beam is transmitted out of said slab as a first beam of said at least two output beams and a second fraction of said input beam is reflected from said exit suface and from said substantially reflective coating, traveling through said slab as an intermediate beam a second fraction of which intermediate beam exits said exit surface as a secondary beam of said at least two output beams, after traveling a slab distance through said material; characterized in that:

said input beam and said at least two output beams are converging;

said entrance and exit surfaces are parallel and said at least two output beams define an output plane

said first fraction of said input beam converges to a first focus at a focal plane perpendicular to said input axis and perpendicular to said output plane;

said secondary beam converges to a secondary focus at a point displaced perpendicular to said focal plane by an offset distance that depends on an entrance angle between said input axis and a normal to said slab, said thickness of said slab, said index of refraction, and an input half angle characteristic of said input beam; and

said slab is disposed such that said entrance angle has a predetermined value such that said offset distance is substantially zero.

4,660,933

LENS DRIVING DEVICE

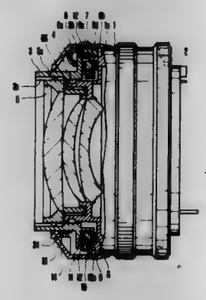
Hidefumi Notagashira; Akiyasu Sumi; Hiroyoshi Inaba; Makoto Katsuma, all of Kanagawa; Hiroyasu Murakami, Tokyo, and Akira Hiramatsu, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 561,550, Dec. 14, 1983, abandoned. This application Apr. 29, 1986, Ser. No. 857,143

Claims priority, application Japan, Dec. 17, 1982, 57-222755

Int. Cl.⁴ G02B *7/04*

U.S. Cl. 350—255 **11 Claims**



1. A lens driving device, comprising:

an oscillation ring operating as a stator having electrostriction elements attached thereto;

a rotation ring operating as a rotor which is pressure contacted with said oscillation ring operating as the stator and receives oscillations of the oscillation ring, thus rotating around an optical axis;

a lens holding frame moving parallel to the optical axis following the rotation of said rotating ring; and

clutch means for effecting pressure contact and separation between said oscillation ring and said rotation ring, said clutch means applying a load to said rotation ring during separation of said oscillation ring and said rotation ring which is independent of the load applied during pressure contact, said independent load applied during separation being weaker than the load applied on said rotation ring during pressure contact between the rings effected by said clutch means.

4,660,934

METHOD FOR MANUFACTURING DIFFRACTION GRATING

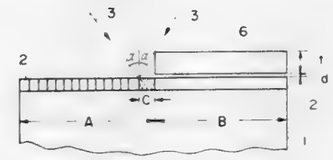
Shigeyuki Akiba, Tokyo; Katsuyuki Utaka, Musashino; Kazuo Sakai, Tokyo, and Yuichi Matsushima, Tanashi, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1985, Ser. No. 710,984

Claims priority, application Japan, Mar. 21, 1984, 59-52100; Dec. 11, 1984, 59-529980

Int. Cl.⁴ G02B *5/18*

U.S. Cl. 350—320 **9 Claims**



8. A diffraction grating manufacturing method including a first step of forming, on a substrate, a structure in which a negative type photoresist film is formed in a first region and a positive type photoresist film is formed on a negative type photoresist film in a second region adjacent to the first region; a second step of subjecting the first region and the second region of the substrate to two-beam interference exposure; and a third step of forming, through utilization of the negative type characteristic and the positive type characteristic of the photoresist films, a diffraction grating in which corrugations in the first region and the second region are reverse in phase to each other.

4,660,935

LIQUID CRYSTAL DISPLAY DEVICE HAVING ELECTRODES SHAPED TO COMPENSATE FOR POSITIONING ERROR

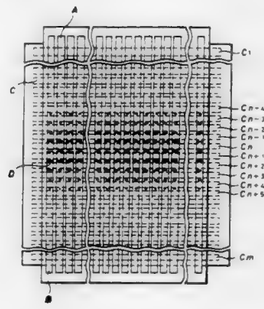
Yukihiro Iwashita, and Kotaro Ueno, both of Shiojiri, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 21, 1985, Ser. No. 704,106

Claims priority, application Japan, Feb. 21, 1984, 59-31032; Feb. 28, 1984, 59-36781

Int. Cl.⁴ G02F *1/13*

U.S. Cl. 350—336 **26 Claims**



1. A matrix-type liquid crystal display device having an area for the display of images, the device comprising:

a first substrate carrying a set of spaced-apart electrodes;

a second substrate carrying a set of spaced-apart electrodes, the second substrate being nominally positioned relative to the first substrate so that ends of the electrodes of the

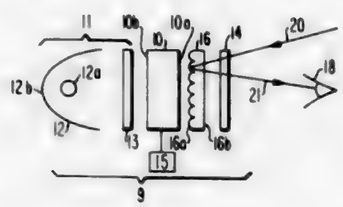
second substrate extend into a region between two adjacent electrodes on the first substrate in the display area;
a layer of liquid crystal placed between the substrates so as to constitute picture forming elements at the facing intersections of the electrodes of the first substrate and the electrodes of the second substrate; and
means for changing the areas of the picture forming elements adjacent to at least one side of the region between two adjacent electrodes of the first substrate into which the ends of the electrodes of the second substrate extend, whereby errors in the display are reduced when the substrates, as assembled, are displaced from the nominal position.

4,660,936

ARRANGEMENT TO MINIMIZE REFLECTED AMBIENT LIGHT IN A DISPLAY

Richard W. Nosker, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 20, 1986, Ser. No. 898,112
Claims priority, application United Kingdom, Jan. 2, 1986, 8600022
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—339 D **15 Claims**



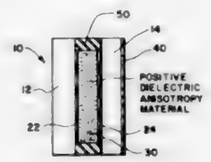
1. A display comprising
means for changing the polarization of light having first and second opposing sides;
first means for analyzing light disposed adjacent to said first side; and
means for diffusing light disposed between said first side and said analyzing means.

4,660,937

DICHROIC DYE-NEMATIC LIQUID CRYSTAL MIRROR

Kenneth J. Richardson, Hudson, Ohio, assignor to Crystaloid Electronics Company, Hudson, Ohio

Filed Jun. 25, 1984, Ser. No. 623,976
Int. Cl.⁴ G02F *1/13*
U.S. Cl. 350—349 **20 Claims**



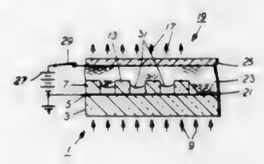
1. An electro-optic, light changeable mirror, comprising:
a transparent front member and a transparent back member;
said front member having a conductive coating thereon and said back member having a conductive coating thereon;
a nematic liquid crystal located between said front transparent member and said back transparent member, said liquid crystal having a negative dielectric anisotropy;
a dichroic dye, said dichroic dye admixed in said liquid crystal;
a reflective surface, said reflective surface located in back of said nematic liquid crystal; and
a light sensitive photocell, said photocell connected to said front transparent conductive coating and to said back conductive coating.

4,660,938

OPTICAL DISPLAY DEVICE

Benjamin Kazan, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 11, 1985, Ser. No. 710,734
Int. Cl.⁴ G02F *1/01, 1/00*; G02B *26/00, 27/00*
U.S. Cl. 350—355 **4 Claims**



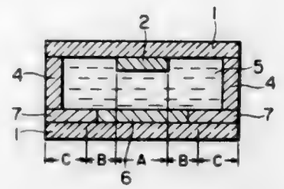
1. A light-modulating cell comprising an electrically insulating transparent layer with a light-interference-producing grating surface, a non-wetting fluid in contact with said grating surface, and at least two electrodes positioned to apply a potential difference across said grating surface and said liquid so as to alter said cell, for a given wavelength of light, from being light-blocking to being light-transmissive or from being non-reflective to being reflective.

4,660,939

ELECTROCHROMIC DISPLAY DEVICE

Sohji Tsuchiya, Kanagawa; Wataru Fujikawa, Kawasaki; Toshikuni Kojima, Kawasaki; Sadashi Higuchi, Kawasaki, and Akio Yamashita, Kanagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 5, 1984, Ser. No. 647,490
Claims priority, application Japan, Sep. 8, 1983, 58-165506; Dec. 23, 1983, 58-246068; Jun. 8, 1984, 59-118466
Int. Cl.⁴ G02F *1/01*
U.S. Cl. 350—357 **15 Claims**



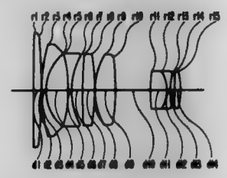
1. An electrochromic display device comprising
first and second substrates arranged opposite each other, at least one of said substrates being transparent;
a display electrode provided on said first substrate; and
a counter electrode having at least first and second electrically conductive films provided on said second substrate, said first film of said counter electrode facing and being directly opposite said display electrode and said second film of said counter electrode being adjacent said first film, the electrical conductivity of said first film being lower than the electrical conductivity of said second film, said first electrically conductive film having an electrical resistance of $10^6\Omega/\square$ or less, the difference in electrical resistance between said first electrically conductive film and said second electrically conductive film being moe then ten times.

4,660,940

SMALL-SIZED WIDE-ANGLE LENS

Ryota Ogawa, Saitama, and Shigetada Sato, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha-Nai, Tokyo, Japan

Filed Jun. 5, 1985, Ser. No. 741,434
Claims priority, application Japan, Jun. 5, 1984, 59-115755
Int. Cl.⁴ G02B *13/04*
U.S. Cl. 350—458 **14 Claims**



1. A high-performance small-sized wide-angle lens comprising five sets of lens elements including eight lens elements, these sets of lenses being numbered from the object side, the first set of convergent lens comprising a positive lens, the first set of divergent lenses comprising two separate negative lenses, the second set of convergent lenses comprising two separate positive lenses, the second set of divergent lens comprising a cemented negative lens, the third set of convergent lens comprising a positive lens, these sets of lenses satisfying the following conditions:

$$35 < \left| \frac{\phi_{1N,2P}}{\Sigma(\phi/\nu)} \right| \quad (1)$$

$$0.45 < \frac{\phi_{2P}}{|\phi_{1N}|} < 0.85 \quad (2)$$

$$0.15 < \frac{\phi_{2Pb}}{\phi_{1P,1N,2P}} < 0.95 \quad (3)$$

$$0.75 < \frac{\phi_{3P}}{|\phi_{2N}|} < 1.60 \quad (4)$$

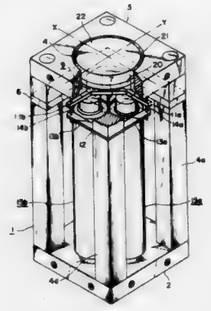
where $\phi_{1N,2P}$ is the composite refracting power of the first set of divergent lenses and the second set of convergent lenses; $\Sigma(\phi/\nu)$ is the sum of ϕ/ν of each lens of the first set of divergent lenses and the second set of convergent lenses, where ϕ is the refracting power of each lens, ν is the Abbe number of each lens; ϕ_{2P} is the composite refracting power of the second set of convergent lenses; ϕ_{1N} is the composite refracting power of the first set of convergent lenses; ϕ_{2Pb} is the refracting power of the surface of the second set of convergent lenses which is located closest to the image side; $\phi_{1P,1N,2P}$ is the composite refracting power of the first set of convergent lens, the first set of divergent lenses, and the second set of convergent lenses; ϕ_{3P} is the composite refracting power of the third set of convergent lens; and ϕ_{2N} is the composite refracting power of the second set of divergent lens.

4,660,941

LIGHT DEFLECTION APPARATUS

Shuzo Hattori, No. 42-1, Aza Musashizuka, Oaza Nagakute, Nagakute-cho, Aichi-gun, Aichi-ken; Naomasa Wakita, and Makoto Okuda, both of No. 14-18, Takatsuji-cho, Mizuho-ku, Nagoya-shi, Aichi-ken, all of Japan

Filed Feb. 25, 1985, Ser. No. 704,741
Claims priority, application Japan, Feb. 24, 1984, 59-34786
Int. Cl.⁴ G02B *7/18*
U.S. Cl. 350—487 **6 Claims**



1. A light deflection apparatus, which comprises:
a tiltable member having a reflective mirror surface supported thereon;
means for supporting the tiltable member, the supporting means supporting the tiltable member at a support point thereon;
first and second piezoelectric stacks, the first and second piezoelectric stacks being situated relative to the support point at positions spaced apart from the support point and respectively along perpendicular X and Y axes intersecting at the support point, each of the first and second piezoelectric stacks having displaceable ends, the displaceable ends being coupled to the tiltable member to effect the tilting of the member and the reflective mirror surface.

4,660,942

MICROSCOPE ADJUSTMENT APPARATUS

Arthur T. Hill, Williamsville, N.Y., assignor to Warner-Lambert Technologies Inc., Morris Plains, N.J.

Division of Ser. No. 627,318, Jul. 2, 1984, Pat. No. 4,573,771. This application Sep. 3, 1985, Ser. No. 771,732
Int. Cl.⁴ G02B *21/00*; G05G *11/00*; F16H *37/06*
U.S. Cl. 350—521 **13 Claims**

1. A microscope having a frame comprising a base and an arm assembly extending upwardly therefrom, a nosepiece, and an adjustment system for moving said nosepiece relative to said arm assembly, said adjustment system including:
a nosepiece support mounted on said arm assembly for movement relative thereto, said arm assembly including opposed walls, a quill shaft traversing said arm assembly between said opposed walls and including a first end portion extending beyond a first of said walls,
a cam shaft rotatably mounted on said frame, a cam fixed to said cam shaft for rotation therewith, said cam being operatively engaged with said nosepiece support for movement thereof to effect adjustment of said nosepiece, said cam shaft having a free drive end remote from said cam and including a cam shaft pinion, said cam shaft extending transversely within said arm assembly with the free drive end and cam shaft pinion positioned outwardly of the arm assembly and said cam shaft encircling a portion of the length of said quill shaft at said first end portion, and permitted to rotate relative to the quill shaft, said

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quill shaft including a second end portion extending beyond the second of said walls,

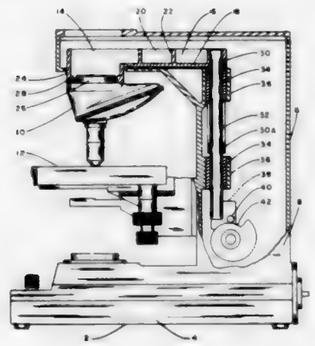
a reduction gear train system releasably engaged with the free drive end of said cam shaft for rotation thereof and selective direct removal therefrom, said gear train system comprising multiple drivingly engaged gears,

a gear box mounting said reduction train system,

a coarse adjustment handwheel mounted to said gear box whereby rotation of said gear box, gear train system, cam shaft and cam as a unit, said coarse adjustment handwheel, gear box and gear train system being removable as a unit from the drive end of said cam shaft,

an auxiliary coarse adjustment handwheel fixed to the second end or said quill shaft for rotation thereof and the cam shaft therewith,

a gear train drive shaft operatively engaged with the gears of said gear train system and slidably engaging said cam shaft pinion, and



a vernier handwheel mounted to said gear train drive shaft whereby rotation of said vernier handwheel is effective to rotate the gears of said gear train system with a resultant rotation of the cam shaft and cam, said drive shaft being removably received through said quill shaft, said drive shaft having a first end portion projecting beyond the first end portion of said quill shaft and including a drive pinion thereon, said drive pinion engaging said gear train system, said vernier handwheel removably mounted on said drive shaft first end portion outward of the drive pinion, said nosepiece support comprising a carriage overlying said base in spaced relation thereabove, a vertical rod rigid with and depending from said carriage, bearing means mounting said rod to said arm assembly for vertical reciprocation relative thereto to effect a corresponding vertical adjustment of said carriage relative to said base, means on said carriage remote from said rod for mounting said nosepiece, and follower means engaged between said rod and said cam for vertical adjustment of said rod and said carriage in response to rotation of said cam.

4,660,943

NIGHT VISION SYSTEMS

Stafford M. Ellis, West Sussex, England, assignor to GEC Avionics Limited, England

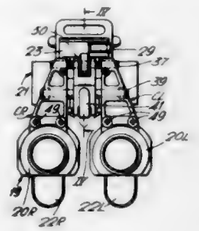
Filed Dec. 6, 1985, Ser. No. 806,105

Claims priority, application United Kingdom, Dec. 17, 1984, 8431820

Int. Cl.⁴ G02B *23/12, 23/18*

U.S. Cl. 350—538 **18 Claims**

1. A night vision system comprising: a helmet; a transparent visor which in use is positioned before two eye positions within the helmet at which the eyes of a wearer of the helmet are respectively positioned in use of the system, a night vision device having two eye pieces one for each eye of said wearer; and means for supporting said night vision device on the helmet so as to present the eye pieces to the helmet wearer at respective positions before said eye positions and said visor, said means supporting said night vision device comprising a four-bar linkage arrangement which constrains the night vision device for movement along a path of movement between a first operative position and a second operative position giving a viewing direction tilted with respect to the viewing direction



in the first operative position, said path of movement being such that, in respect of each eye piece, the fore and aft axis of that eye piece when said device is in said first operative position intercepts the fore and aft axis of that eye piece when said device is in said second operative position substantially at the eye position corresponding to that eye piece, and such that the eye pieces do not make contact with said visor.

4,660,944

MIRROR ANGLE ADJUSTING ARRANGEMENT

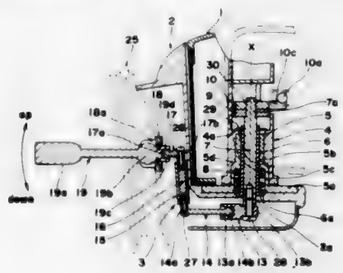
Masaru Suzuki, Chiryu; Yoshio Tsujiuchi, Kuwana; Akira Ogawa, Aichi, and Tadashi Usami, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichiken, Japan

Filed Nov. 8, 1985, Ser. No. 796,295

Claims priority, application Japan, Nov. 8, 1984, 59-236258

Int. Cl.⁴ B60R *1/06;* **G02B** *7/18*

U.S. Cl. 350—635 **7 Claims**



1. A mirror angle adjusting device for use with a foldable type mirror assembly comprising a mirror stay, rotary members vertically arranged on said mirror stay, a mirror case rotatable around said rotary members, a mirror holder accommodated in said mirror case, a mirror rigidly mounted on said mirror holder and a ball joint member integrally formed with said mirror holder substantially at a central portion thereof, wherein said mirror together with said mirror holder is tiltable around said ball joint member either in a vertical or horizontal direction,

said mirror angle adjusting device comprising:

a penetrating shaft vertically movably and rotatably mounted within the rotary members;

a clutch member having its rotational axis spaced from the ball joint member of the mirror holder, for connecting one end of the penetrating shaft with a connecting portion between the clutch member and the mirror holder, whereby the connecting portion can be moved in one unit with the penetrating shaft in a vertical direction for tilting the mirror together with the mirror holder in a vertical direction and can be rotated around the penetrating shaft not only in one unit therewith for tilting the mirror together with the mirror holder in a horizontal direction, but also independently, said connecting portion between the clutch member and the mirror holder being disposed at a position offset from said ball joint member of the mirror holder in a horizontal direction and away from said mirror therebehind;

a first connecting member secured on the other end of the penetrating shaft, said first connecting member rotating around the penetrating shaft and moving vertically in one unit therewith;

second connecting members provided with a connecting shaft approximately parallel to the axial direction of the penetrating shaft and a bent portion which extends in a direction approximately perpendicular to the connecting shaft and has one end connected to the lower end of the connecting shaft and the other end for engagement with the first connecting member so that the bent portion and the first connecting member are capable of rotating in opposite directions to each other and moving vertically in one unit;

a third connecting member secured on an upper end of the connecting shaft of the second connecting members and capable of moving vertically and rotating around the connecting shaft in one unit therewith; and

an operating lever having one end provided with a knob which is manually operated and the other end extending through the mirror stay outwardly for connecting the other end thereof with one end of the third connecting member so that the lever and the third connecting member are capable of moving vertically in one unit and rotating in opposite directions to each other, with the both ends of the lever being rotated around a ball element thereof, said ball element being integrally formed with said operating lever.

4,660,945

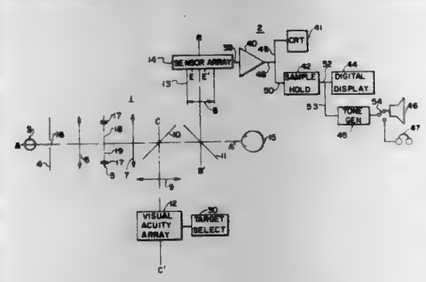
METHODS AND APPARATUS FOR ACCOMMODATION TRAINING

Joseph N. Trachtman, 57 Hicks St., Brooklyn, N.Y. 11201

Continuation of Ser. No. 716,025, Mar. 26, 1985, abandoned, which is a continuation of Ser. No. 460,850, Jan. 25, 1983, Pat. No. 4,533,221. This application Feb. 13, 1986, Ser. No. 829,555

Int. Cl.⁴ A61B *3/00, 3/10*

U.S. Cl. 351—203 **12 Claims**



1. Accommodation training apparatus comprising:

optometer means for imaging radiation onto the plane of the pupil of an eye to form a retinal image and directly measuring the refraction of said eye as a function of said retinal image, said optometer means providing outputs representing said refraction of said eye on a periodic basis and at a rate corresponding to a plurality of measurements each second;

means for selectively introducing a visible alignment image to said optometer means at a location where radiation associated with said alignment image is coaxial with imaging radiation imaged by said optometer means onto the plane of the pupil of an eye, said alignment image for aligning an eye to be measured with said optometer means being introduced while said optometer means is imaging radiation onto the plane of the pupil of an eye to be measured, said alignment image being introduced into said optometer means in a manner to be imaged upon the iris of said eye at the plane of said pupil and form a visible alignment image thereon; and

audio means responsive to each output of said optometer means for producing a tone having a frequency value representative of said refraction of said eye being measured.

4,660,946

CORNEA SHAPE MEASURING METHOD AND APPARATUS

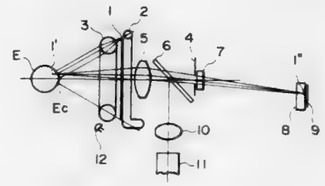
Yukitugu Nakamura, Sagamihara; Takashi Masuda, Kawasaki, and Kyoji Sekiguchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 416,355, Sep. 8, 1982, abandoned. This application May 14, 1985, Ser. No. 734,234

Claims priority, application Japan, Sep. 21, 1981, 56-149058; Sep. 25, 1981, 56-151662

Int. Cl.⁴ A61B *3/10*

U.S. Cl. 351—212 **20 Claims**



1. A method for measuring the shape of the cornea of an eye, comprising the steps of:

projecting a ring-like index onto the cornea of the eye by converting rays emitted from said index to parallel rays;

detecting the position coordinates of at least five points of the image of said index reflected by the cornea;

calculating a general formula of the elliptical shape of the image reflected by the cornea from the result of said detection; and

obtaining the shape of the cornea from said calculation.

4,660,947

METHODS AND APPARATUS FOR USE IN OCULAR SURGERY

Selig P. Amoils, 90 Protea Avenue, Athol, Johannesburg, South Africa

Filed Aug. 13, 1984, Ser. No. 639,993

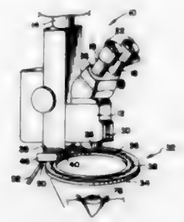
Claims priority, application South Africa, Aug. 11, 1983, 83/5888; Oct. 28, 1983, 83/8042

Int. Cl.⁴ A61B *3/10*

U.S. Cl. 351—212 **5 Claims**

1. A method of monitoring the deviation of the curvature of the anterior surface of a cornea from substantially spherical shape as for the purpose of measuring corneal astigmatism or controlling corneal stretching and the like, that comprises producing a light reflected ring from the cornea anterior surface or diameter less than that of the cornea and viewing the same, the viewed ring varying from substantially circular shape for a spherical anterior surface cornea to successive degrees of elliptical eccentricity for successive degrees of

astigmatism or deviation from spherical shape; viewing in the same field of view as the viewed reflected ring of light a substantially circular comparison ring disposed in a plane; effectively rotating the plane of the comparison ring about a transverse axis of the comparison ring to present the comparison



ring to said viewing as successive ellipses of successively varying eccentricity; and controlling the effective rotation to achieve superposition or concentricity with the particular elliptical ring of light reflected from the cornea, the amount of effective rotation being a measure of the degree of corneal astigmatism.

4,660,948

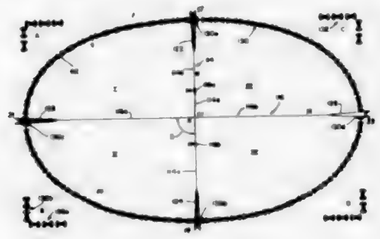
EYE CHART

Philip Retz, 1783 Lanier Pl. NW., Washington, D.C. 20009

Continuation of Ser. No. 580,211, Feb. 15, 1984, abandoned. This application Sep. 5, 1985, Ser. No. 773,512

Int. Cl.[4] A61B *3/04*

U.S. Cl. 351—239 **20 Claims**



1. An eye exercise chart, comprising:

(a) a background of opaque material;

(b) a peripheral line formed on the background, wherein

(i) the peripheral line defines a nonsymmetric, substantially elliptical shape;

(ii) the lack of symmetry is visually detectable; and

(iii) a plurality of target images are superimposed on and along the peripheral line;

(c) a pair of intersecting lines approximately perpendicular to each other formed on the background within the area defined by the peripheral line, at least one of the intersecting lines including an intermediate, wavy portion;

wherein said intersecting lines abut said peripheral line and divide said area into four sections;

wherein markers are superimposed over said intersecting lines where said intersecting lines abut said peripheral line; and

wherein a plurality of spool-shaped images are superimposed and are substantially evenly spaced along said peripheral line, one of said spool-shaped images is shorter than the others, another one of said spool-shaped images is longer than the others, and the other spool-shaped images are substantially the same size.

4,660,949

AUTOMATIC FILM SENSITIVITY SETTING DEVICE FOR CAMERAS

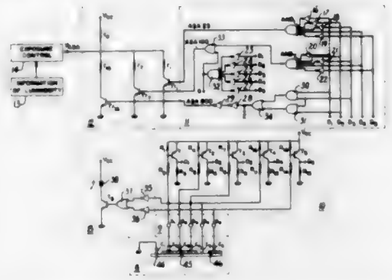
Takeo Saito, and Shinji Nagaoka, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Chiba, Japan

Continuation of Ser. No. 648,016, Sep. 6, 1984, abandoned. This application Jun. 13, 1986, Ser. No. 874,809

Claims priority, application Japan, Sep. 7, 1983, 58-164547

Int. Cl.[4] G03B *7/24*

U.S. Cl. 354—21 **13 Claims**



1. An automatic film sensitivity setting device for cameras in which film sensitivity indicated in coded form on a loaded film package is automatically read in by electric signal terminals and introduced to an exposure control circuit as a parameter for the calculation and control of exposure, said device comprising: means for detecting whether the film package contains coded information of film sensitivity; and means responsive to detection of the absence of coded information of film sensitivity on the film package at all of the signal terminals for automatically always selecting the same predetermined specific film sensitivity.

4,660,950

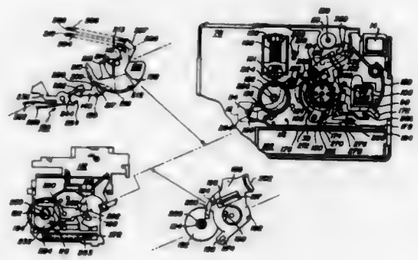
MOTOR-DRIVEN CAMERA CONTROL MECHANISM

Andrew T. Cooper, Rochester; Robert P. Cloutier, Spencerport, and Richard A. Gates, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1985, Ser. No. 748,534

Int. Cl.[4] G03B *17/38*

U.S. Cl. 354—173.1 **13 Claims**



1. In a motorized camera having a cockable and releasable shutter means, film advancing means, motor means, driving means coupling said motor means to said film advancing means, a power source, and a manually actuated shutter button, the improvement comprising:

control means for releasing said shutter means and actuating said motor means, said control means comprising a first means arranged to be engaged by said shutter button when

said shutter button is depressed to release said control means, said control means being arranged to move from an initial position to a second position to release said shutter means and being held in said second position by said depressed shutter button, said control means arranged to move to a third position when said shutter button is released whereby said control means energizes said motor by connecting it to said power source to start a film advancing cycle, means including said driving means for returning said first means to said initial position at the end of the film advancing cycle to de-energize said motor.

4,660,951

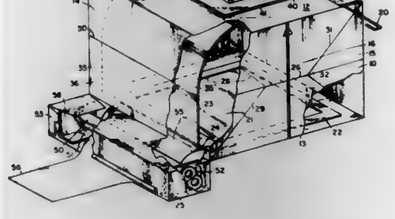
COLLAPSIBLE DISPOSABLE CAMERA WITH EXTERNAL FILM DEVELOPMENT MEANS

Richard K. Reed, Pendleton; James R. Reed, Indianapolis, both of Ind., and James D. Sorg, 1709 Queensbridge Dr., Indianapolis, Ind. 46219, assignors to James D. Sorg, Indianapolis, Ind.

Continuation of Ser. No. 713,200, Mar. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 577,491, Feb. 6, 1984, Pat. No. 4,518,235. This application Aug. 25, 1986, Ser. No. 900,190

Int. Cl.[4] G03B *17/04, 17/52*

U.S. Cl. 354—187 **18 Claims**



1. A disposable camera comprising:

a camera box having an aperture and being moveable between a collapsed position and an erected position;

a lens mounted over said aperture;

shutter means mounted to said box adjacent said aperture and operable to open and close said aperture allowing light therethrough;

a single film packet slidably mounted in said camera box and including a sleeve and a single film slidably mounted within said sleeve with said packet further having photographic paper and development material positioned within said sleeve;

a guide mounted within said camera box and slidably receiving said film packet and opening exteriorly of said camera box allowing said sleeve to be moved therethrough;

stop means on said sleeve limiting outward movement of said sleeve as said sleeve is moved through said guide uncovering said film and allowing an unobstructed view from said aperture to said film; and,

holding means attaching said film to said camera box and limiting movement of said film as first said sleeve is pulled outwardly uncovering said film and then pushed back into said camera covering said film allowing said film packet to be removed from said camera box for subsequent development.

4,660,952

BLADE TYPE SHUTTER

Yasuhiro Toyoda, Kanagawa; Fumio Shimada, and Katsumi Yoshida, both of Saitama, all of Japan, assignors to Canon Kabuashiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1985, Ser. No. 707,837

Claims priority, application Japan, Mar. 5, 1984, 59-31557[U]; Mar. 6, 1984, 59-32392[U]

Int. Cl.[4] G03B *9/40*

U.S. Cl. 354—246 **6 Claims**



1. In a focal plane shutter having a shutter base plate which is provided with a shutter aperture and two groups of shutter blades which are arranged to open and close the aperture, the improvement comprising each of said shutter blade groups including driving arms pivotally carried by said base plate and arranged to be turnable thereon and a plurality of divided blades which are respectively connected to said arms through connecting studs and arranged to be turnable on the studs in such a manner that the divided blades overlap each other and that a slit forming divided blade which is separated farthest from a turning center of the arms among said divided blades is provided with an embossed protrusion which extends in the longitudinal direction of said blade and is protruding on one side thereof not coming into contact with other blades.

4,660,953

COUPLING DEVICE FOR PHOTOGRAPHING APPARATUS

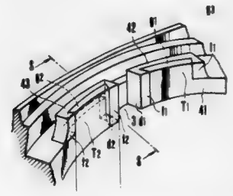
Ikuo Fuchi, Kanagawa; Takashi Arai, Tokyo, and Yoshio Amaya, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1985, Ser. No. 749,402

Claims priority, application Japan, Jul. 2, 1984, 59-136716

Int. Cl.[4] G03B *17/12*

U.S. Cl. 354—286 **5 Claims**



1. A coupling device for a photographing apparatus, comprising:

a mount member having a base part secured to said photographing apparatus, a cylindrical part which extends from said base part and a projecting part which extends outward from the fore end of the cylindrical part radially relative to an optical axis; and

a bayonet mount member including a ceramic engaging member which is made of a ceramic material and is placed on said projecting part, a claw part being formed jointly by said projecting part of the mount member and said ceramic engaging member, said claw part being arranged

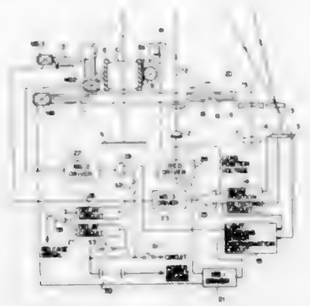
to engage the bayonet member of an accessory to be mounted on said photographing apparatus.

4,660,954

AUTOMATIC FOCUSING DEVICE EQUIPPED WITH CLOSE-UP RANGE FOCAL CONTROL

Susumu Fujita, and Masahiko Konagaya, both of Nishinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 4, 1985, Ser. No. 784,520
Claims priority, application Japan, Dec. 22, 1984, 59-271549
Int. Cl.[4] G03B *3/00*
U.S. Cl. 354—403 **2 Claims**



1. An automatic focusing device equipped with close-up focal control function, comprising:

a measuring means having a detection unit for detecting if the subject is beyond the short range shooting limit of a camera lens;

camera lens distance setting means for setting the distance for the camera lens by means of the signal of the measured distance from the measuring means;

optical correction means for respective optical systems, the optical correction means inserting a correction lens to the camera lens according to the detected signal signalling the object being in the short range shooting limit, said correction means also inserting at least an optical wedge to a range finding optical system; and

distance measuring means for measuring the distance by an optical system corrected by said shooting limit exceeding detection signal, said automatic focusing device inserting the correction lens in line with the camera lens in accordance with the detection signal when a subject for shooting comes closer than the short range shooting limit of the lens and remeasuring the distance by at least correcting the incident light path of the range measuring optical system in order to set the shooting distance of the lens.

4,660,955

FOCUS CONDITION DETECTING DEVICE FOR USE IN A CAMERA

Tokuji Ishida, Osaka, and Toshio Norita, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 669,107, Nov. 7, 1984. This application Aug. 6, 1985, Ser. No. 763,338
Claims priority, application Japan, Nov. 8, 1983, 58-210664; Nov. 17, 1983, 58-217391; Dec. 5, 1983, 58-230372; Dec. 12, 1983, 58-234551; May 15, 1984, 59-98367
Int. Cl.[4] G03B *3/00*
U.S. Cl. 354—408 **22 Claims**

1. A focus condition detecting device for a camera having an objective lens, said device comprising:

an optical system arranged to receive light from an object through said objective lens and to form object images whose intensity distributions vary with the focus condition of said objective lens;

a self scanning type image sensor having a shift register and a plurality of photosensitive elements arranged to receive said object images, each of said photosensitive elements being capable of storing electric charges at a speed dependent upon the intensity of light impinging thereon;

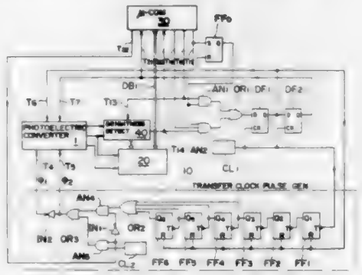
means for generating a clear pulse which causes said image sensor to clear the electric charges stored in said photosensitive elements, said photosensitive elements starting the storage of the electric charges in response in disappearance of said clear pulse;

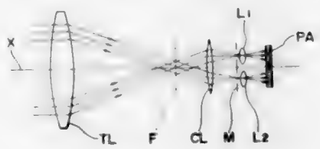
means for generating a shift pulse which shifts the stored electrical charges to said shift register;

means for generating transfer pulses which cause said shift register to transfer the shifted electrical charges therein and to generate them as outputs in a serial manner;

means for converting the outputs of said shift register into picture element signals which constitute a video signal representative of said intensity distributions each time said shift register generates its output;

means for processing said video signal in accordance with a predetermined program to generate a signal representative of the focus condition of said objective lens;





means for detecting the brightness of said object;

a monitor circuit having an input terminal connected to said directing means, said monitor circuit including first charge storing means connected to said input terminal and a first buffer circuit connected to said first charge storing means and having high input impedence and low output impedence, and said first charge storing means storing electrical charge at a speed dependent on the brightness of said object detected by said detecting means in response to the disappearance of said clear pulse so that said first buffer circuit generates a time varying output which varies with the advance of the storage of the charge by said first charge storing means while said first charge storing means is cleared in response to said clear pulse so that the output of said first buffer circuit is restored to a given initial voltage level;

a reference output generating circuit having an open output terminal, said reference output generating circuit including second charge storing means connected to said open input terminal and having the same characteristics as said first charge storing means and a second buffer circuit connected to said second charge storing means and having the same characteristics as said first buffer circuit, and said second charge storing means being cleared in response to said clear pulse and maintaining the cleared state even after the disappearance of said clear pulse so that said second buffer circuit constantly generates a reference output which is at said given initial voltage level;

a first comparator comparing said time varying output of said first buffer circuit with said reference output of said second buffer circuit to invert its output when the former output represents a given relationship with respect to the latter output; and

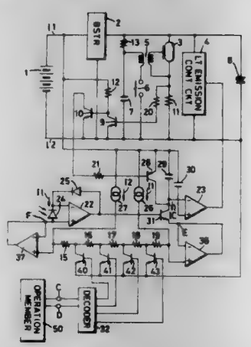
shift pulse generation control means for causing said shift pulse generating means to generate said shift pulse in response to the inversion of the output of said first comparator.

4,660,956

ELECTRONIC FLASH DEVICE

Norikazu Yokonuma, Tokyo, and Nobuyoshi Hagiuda, Kawasaki, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Mar. 3, 1986, Ser. No. 835,296
Claims priority, application Japan, Mar. 11, 1985, 50-47803
Int. Cl.[4] G03B *15/05;* **H05B** *41/36*
U.S. Cl. 354—416 **11 Claims**



1. An electronic flash device for a camera comprising:

(a) photo-electric conversion means for generating an output representative of a light from an object;

(b) flash light means for emitting a flash light to the object;

(c) capacitor means;

(d) first control means for controlling charging of said capacitor means in accordance with the output of said photo-electric conversion means;

(e) second control means for controlling said flash light means in accordance with a charge stored in said capacitor means;

(f) a resistor;

g) clamp means for clamping a point on said resistor to a predetermined potential;

(h) first constant current means connected to one end of said resistor for supplying a first current;

(i) second constant current means connected to the other end of said resistor for supplying a second current;

(j) said one point clamped by said clamp means being located between said one end and said other end of said resistor; and

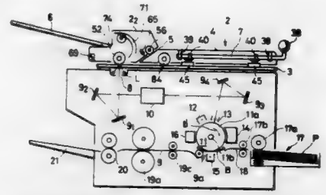
(k) said first control means controlling charging of said capacitor means in accordance with potentials at said one end and said other end of said resistor.

4,660,957

IMAGE FORMING APPARATUS WITH TWO MODE ORIGINAL HANDLING SYSTEM

Noriyoshi Ueda, and Tadayuki Kitajima, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1984, Ser. No. 672,389
Claims priority, application Japan, Nov. 25, 1983, 58-221898; Nov. 25, 1983, 58-221899; Nov. 25, 1983, 58-221900; May 1, 1984, 59-86236; May 1, 1984, 59-86237; May 1, 1984, 59-86238; May 1, 1984, 59-86239; May 1, 1984, 59-86240; May 1, 1984, 59-86241; May 1, 1984, 59-86242; Jun. 1, 1984, 59-112760
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 SH **21 Claims**



1. An image forming apparatus comprising:

an original carriage reciprocally movable with respect to a main body of said image forming apparatus to guide an original to an optical processing station;

a frame member having conveying means capable of conveying the original in synchronism with movement of said original carriage, said frame member being openable and closable relative to said original carriage;

mode change-over means for causing said frame member to engage the main body of said apparatus so as to keep the frame member stationary when a first mode is selected, and causing said frame member to be movable with said original carriage while associated with the movement of said original carriage when a second mode is selected,

said original being guided to the optical processing station in the first mode by moving said conveying means by the movement of said original carriage and in the second mode by mounting the original on said original carriage, covering the mounted original by said frame member and thereafter moving said frame member together with said original carriage; and image forming means for forming on a sheet an image corresponding to the image of the original subjected to an optical process at said optical processing station.

4,660,958

DEVELOPING APPARATUS

Hidemi Egami, Zama; Fumitaka Kan, Yokohama; Atsushi Hosoi, Tokyo; Hatsuo Tajima, Matsudo; Shunji Nakamura, and Kimio Nakahata, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1984, Ser. No. 607,659
Claims priority, application 09161983, Sep. 16, 1983, 58-169300; Japan, May 10, 1983, 58-80101; May 10, 1983, 58-80103; Jun. 14, 1983, 58-104984; Jun. 14, 1983, 58-104988; Jun. 14, 1983, 58-104989; Jun. 14, 1983, 58-104990; Aug. 18, 1983, 58-149667
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—3 DD **18 Claims**

1. A developing apparatus, comprising:

a developer supply container, having an opening, for containing a non-magnetic developer and magnetic particles;

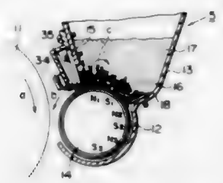
an endlessly movable developer carrying member formed of a non-magnetic material for carrying the developer, which is transferred from the inside of said developer supply container to the outside of said developer supply container through the opening, said developer carrying member passing by a developing station which is outside

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of said developer supply container where said developer carrying member is positioned to be in opposition to a latent image bearing member;

a magnetic particle confining member, spaced by a predetermined gap from an outer surface of said developer carrying member;

means for generating a fixed magnetic field, having magnetic pole means, disposed inside of said carrying member and upstream of said confining member with respect to the movement of said developer carrying member, wherein said confining member and said magnetic pole means



cooperate to confine the magnetic particles within said developer supply container and to form a developer layer of the non-magnetic developer on the outer surface of said developer carrying member;

a magnet, disposed outside of said carrying member and downstream of said confining member and upstream of said developing station with respect to the movement of said developer carrying member, for forming a line of magnetic force extending therefrom to said confining member, the magnetic force of the magnet being effective to confine the magnetic particles which have escaped from said container.

4,660,959

DEVICE FOR THE ELECTROPHOTOGRAPHIC MANUFACTURE OF PRINTING FORMS

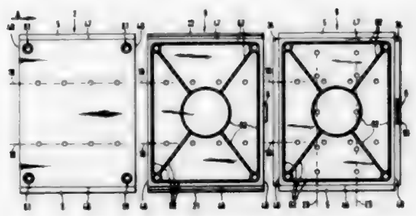
Klaus-Peter Schoen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 14, 1985, Ser. No. 798,118

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1984, 3442755

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R **15 Claims**



1. A device for the electrophotographic manufacture of printing forms which are stacked in the form of printing plates in non-exposed condition in a magazine, individually removed from the magazine, and transported to a loading station and subsequently to further processing stations, comprising:

a plurality of tables sequentially aligned in the direction of transport of the printing plate; and

a first set of at least two rows of air nozzles angularly positioned in each of said plurality of tables, said air nozzles being charged with compressed air, wherein said first set of at least two rows of air nozzles is aligned parallel to the transport direction of the printing plate, and wherein the projections of said air nozzles in a base plane parallel to the surfaces of the tables extend laterally at an angle of about 40° to 50° from the transport direction of the printing plate in the direction of the narrow sides of the particular table.

4,660,960

IMAGING AGENT SUPPLY AND RECOVERY TANK OF ELECTRONIC IMAGING DEVICE

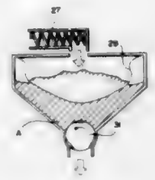
Takahiro Fukunaga, Nara, and Shoichiro Yoshiura, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 20, 1985, Ser. No. 746,763

Claims priority, application Japan, Jun. 22, 1984, 59-129868

Int. Cl.[4] G03G *15/06*

U.S. Cl. 355—3 DD **7 Claims**



1. An electronic imaging apparatus comprising:

image forming means for forming an image corresponding to the image of an original;

means for supplying an imaging agent to said image forming means;

developing means, responsive to said means for supplying, for developing the image formed by said image forming means;

means for recycling the imaging agent which has not been used by said image forming means; and

separating means having two sections, one of which is provided for containing a new imaging agent and the other of which is provided for receiving the recycled imaging agent.

4,660,961

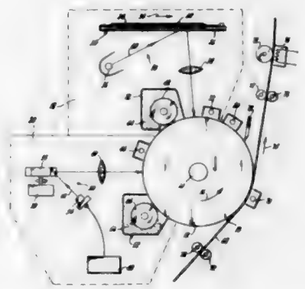
COPYING APPARATUS FOR SYNTHESIZING IMAGES

Yukimasa Kuramoto, Hyogo; Hajimu Ooaishi, Osaka; Yukio Sakai, Osaka; Yoshiki Hayashi, Osaka, all of Japan, and Robert C. Wells, Arlington, Mass., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 7, 1984, Ser. No. 617,969

Int. Cl.[4] G03G *15/01*

U.S. Cl. 355—4 **16 Claims**



1. A copying apparatus for creating images from at least two

positive image sources onto a single piece of copying paper, comprising:

a photosensitive body having a photosensitive surface;

means for creating a first electric potential on said photosensitive surface;

means responsive to the information contained in a first positive image source for creating on a first portion of the photosensitive surface a first latent image corresponding to the information in the first positive image source, the electric potential of the first portion of the photosensitive surface remaining at said first electric potential, and the electric potential of a second portion of the photosensitive surface other than said first portion thereof being changed to a second electric potential;

means for providing an additional electric potential to said photosensitive surface, thereby the electric potential of said first portion of the photosensitive surface being changed to a third electric potential, and the electric potential of said second portion of the photosensitive surface being changed to substantially said first electric potential;

means responsive to the information contained in a second positive image source to create in at least a part of the second portion of the photosensitive surface a second latent image corresponding to the information in the second positive image source, the electric potential of the first portion of the photosensitive surface being changed to substantially said first electric potential and the electric potential of the part of the photosensitive surface in the second portion thereof corresponding to the second latent image remaining at the first electric potential and the electric potential of the remainder of the photosensitive surface being changed to the second electric potential; and

means for transferring the first and second latent images onto a single piece of copying paper wherein the first and second latent images are rendered visible.

4,660,962

CLEANING DEVICE

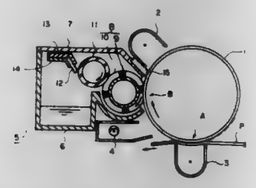
Nobuaki Mackawa; Shigeru Shimizu; Masaaki Dohi, and Yoji Kuriyama, all of Higashiyamatoshi, Japan, assignors to Casio Computer Co., Ltd. and Casio Electronics Manufacturing Co., Ltd., both of Tokyo, Japan

Filed Apr. 25, 1985, Ser. No. 726,980

Claims priority, application Japan, Apr. 28, 1984, 59-87153; Sep. 20, 1984, 59-195663

Int. Cl.[4] G03G *21/00*

U.S. Cl. 355—15 **6 Claims**



1. A cleaning device comprising a conductive fur brush for removing toner left on an image carrier, a conductive collecting roller, means for applying a predetermined bias voltage to said conductive collecting roller in order to collect toner removed by said conductive fur brush, means for scraping toner collected on said conductive collecting roller from said roller, said device further comprising means for applying a bias voltage to said conductive fur brush having a polarity reverse to the charged polarity of said toner and having an absolute value smaller than 200 V wherein said means for applying a bias voltage to said conductive collecting roller apply a bias voltage which is the same in polarity as the polarity of the bias voltage applied to the conductive fur brush and which is larger by between 200 V–500 V, in absolute value, than the bias voltage applied to the conductive fur brush in order to prevent toner collected from said conductive fur brush from re-adhering to said image carrier.

4,660,963

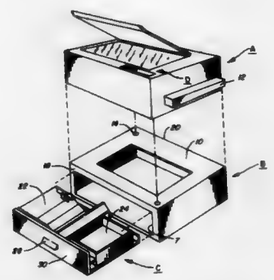
AUTO DUPLEX REPRODUCTION MACHINE

Denis J. Stemmle, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1985, Ser. No. 814,827

Int. Cl.[4] G03B *27/32, 27/52*

U.S. Cl. 355—24 **56 Claims**



1. A reproduction machine for copying documents in both duplex and simplex fashion, said reproduction machine comprising:

reproduction means for producing a copy of a document on a predetermined side of a copysheet;

means for passing said copysheet from said reproduction means to an exit means;

said exit means selectably drivable for either of forward, reverse and stop motion of said copy sheet, said forward driving motion of said exit means driving said copysheets therethrough to an output, said reverse driving motion of said exit means carrying said copysheets from said exit means to a duplex copysheet path for repassing said copysheet to said reproduction means and said stop motion holding without releasing said sheets at said exit means.

4,660,964

IMAGE RECORDING APPARATUS

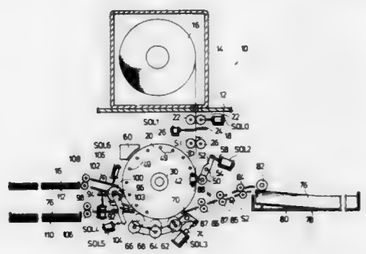
Sumio Yoshikawa, and Atsushi Shiraishi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 11, 1986, Ser. No. 884,342

Claims priority, application Japan, Jul. 12, 1985, 60-153622

Int. Cl.[4] G03B *29/00*

U.S. Cl. 355—28 **23 Claims**



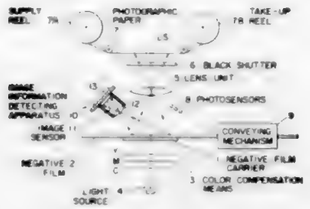
1. An image recording apparatus which comprises:

(a) an exposing drum retaining a thermal developing photosensitive material wound on the outer periphery thereof;

(b) an exposing head disposed so as to face the outer periphery of said exposing drum and adapted to form an image on said thermal developing photosensitive material on the outer peripheray of said exposing drum by means of light exposure;
(c) thermal developing means for thermally developing said exposed photosensitive material which is still wound on the outer periphery of said exposing drum;
(d) image-receiving paper feed means for feeding an image-receiving paper onto said thermal developing photosensitive material wound on the outer periphery of said exposing drum; and
(e) transfer means adapted to press both said thermal developing photosensitive material and said image-receiving paper against the outer periphery of said exposing drum, thereby transferring the image formed on said thermal developing photosensitive material to said image-receiving paper,
whereby it is possible to effect exposing, developing and transfer operations while keeping said thermal developing photosensitive material wound on the outer periphery of said exposing drum.

4,660,965
PICTURE FRAME DETECTING AND STOPPING METHOD

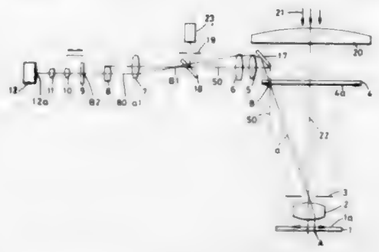
Fumio Matsumoto, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 709,121, Mar. 6, 1985, abandoned. This application Jun. 26, 1986, Ser. No. 879,828
Claims priority, application Japan, Mar. 21, 1984, 59-54018
Int. Cl.⁴ G03B *27/52*
U.S. Cl. 355—41 **5 Claims**



1. A method for detecting and stopping picture frames of an original film in a photographic printer of the type which essentially comprises a film carrier on which the original film is to be mounted and a two-dimensional image sensor for receiving light irradiated from a light source and passing said film carrier, comprising the steps of microscopically detecting picture information regarding divided picture elements respectively of the whole area of the original film on said film carrier which is located at a printing position light-received by said two-dimensional image sensor, said area being divided into a large plurality of very small picture elements, setting a distance that the original film is to be moved in accordance with a size discrimination information of the original film, detecting respective picture frames of said original film by receiving a transmitted or reflected light from said original film by said two-dimensional image sensor, conveying said original film by the distance set in the previous step, and positioning and stopping the respective picture frames at said printing position of said film carrier.

4,660,966
OPTICAL ALIGNMENT APPARATUS

Kinya Kato, Tokyo, and Kazumasa Endo, Kawasaki, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan
Filed Mar. 28, 1986, Ser. No. 845,637
Claims priority, application Japan, Apr. 4, 1985, 60-71657
Int. Cl.⁴ G03B *27/52, 27/70*
U.S. Cl. 355—43 **8 Claims**

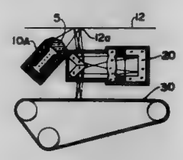


1. An alignment apparatus for use in an exposure apparatus of the type in which a substrate is exposed to a pattern of a reticle through an exposure optical system, said reticle having a first mark formed thereon whereas said substrate has a second mark disposed substantially conjugate with the first mark relative to the exposure optical system, said alignment apparatus comprising:
an image-forming optical system for forming an image of said second mark by a first beam of light coming from said second mark through said exposure optical system and having its principal ray intersecting the optical axis of said exposure optical system, and for forming an image of said first mark by a second beam of light coming from said first mark and having its principal ray intersecting the optical axis of said image-forming optical system;
detection means for detecting the positions of images of said first and second marks formed by said image-forming optical system on a plane intersecting the optical axis of said image-forming optical system at right angles; and
said image-forming optical system comprising a first lens component for converting said first and second beams and a second lens component for transmitting said first and second beams from said first lens component to said detection means,
said first and second beam being converted by said first lens component into those beams in which at least principal rays run substantially parallel with the optical axis of said image-forming optical system, and
said second lens component being disposed in such a manner that its optical axis substantially correspond to the principal rays of said first and second beams transmitted through the first lens component.

4,660,967
HOT CATHODE FLUORESCENT TUBE ILLUMINATION SYSTEM

Toshiyuki Inokuchi, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 22, 1984, Ser. No. 592,119
Claims priority, application Japan, Mar. 30, 1983, 58-52479
Int. Cl.⁴ H01J *63/02;* **G03B** *27/54*
U.S. Cl. 355—67 **19 Claims**

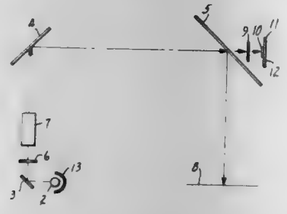
1. A slit light emitting type hot cathode fluorescent tube illumination system comprising a substrate having at least one surface, at least one elongated strip anode on said substrate, at least one fluorescent substance layer on said at least one strip anode, and at least one hot cathode filament adjacent said at least one fluorescent substance layer, said at least one hot cathode filament emitting thermoelectrons and applying same to the at least one strip anode to excite the at least one fluorescent substance layer to emit light for illuminating an original by slit illumination, a cylindrical lens which is located in a path of the light emitted by said at least one fluorescent substance layer and has a generating line extending parallel to the length of the at least one fluorescent substance layer, and an enclosure



defining a sealed cavity for the fluorescent substrate layer and the at least one hot cathode filament, wherein said lens forms a part of the enclosure and has a surface which defines a wall of the cavity, and wherein the light reflected from the original does not pass through said fluorescent tube illuminating system.

4,660,968
AUTOMATIC EXPOSURE CONTROL

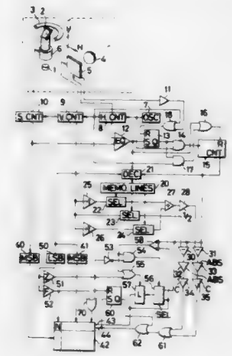
Arnold J. Alderman, Coon Rapids, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 9, 1985, Ser. No. 721,375
Int. Cl.⁴ G03B *27/74*
U.S. Cl. 355—68 **3 Claims**



1. An imaging apparatus having an exposure control; a light image producing and utilization portion having an image member receiving portion; an electrically energizable light source arranged so its light output is directed to the image member receiving portion for providing a light image of an image member when presented at such receiving portion; a light responsive member; and an optical means, including a lens system, arranged for receiving the light image and directing it along a path for presentment as a focused light image at the light responsive member; wherein:
the optical means includes a mirror receiving the light image that is of the type that causes light presented to it to be reflected in part over its full spectral range with a portion of the light over its full spectral range transmitted through it, said mirror positioned closer to the light responsive member than to the lens system; and
the exposure control includes:
a photocell positioned for receiving light transmitted through said mirror;
a condensing lens positioned between said photocell and said mirror for intercepting a portion of the light transmitted through said mirror and directing it to said photocell; and
circuit means connected to said photocell for providing a signal for a duration of time which varies according to the response of said photocell to light received via said condensing lens, said circuit means having a portion connected for responding to said signal for controlling the operation of the light image producing and utilization portion of the imaging apparatus so the exposure of the light responsive member to the light image is determined by said signal.

4,660,969
DEVICE FOR SEARCHING OBJECTS WITHIN WIDE VISUAL FIELD

Kanehiro Sorimachi, and Takashi Kawabata, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 5, 1985, Ser. No. 762,557
Claims priority, application Japan, Aug. 8, 1984, 59-166255
Int. Cl.⁴ G01C *3/00*
U.S. Cl. 356—1 **10 Claims**



1. A visual field searching device comprising:
detecting means for detecting distance data indicative of distances to objects located within each of constituent unit domains of a visual field;
dividing means for dividing the visual field into intermediate domains each of which is larger than each of said constituent unit domains;
selecting means for selecting representative distance data from said distance data included in each of said divided intermediate domains;
discriminating means for discriminating whether other distance data within each of said intermediate domains are in a predetermined relation to said representative distance data of the same domain; and
storing means for storing said representative distance data and the result of said discrimination for each of said intermediate domains.

4,660,970
METHOD AND APPARATUS FOR THE CONTACT-LESS MEASURING OF OBJECTS

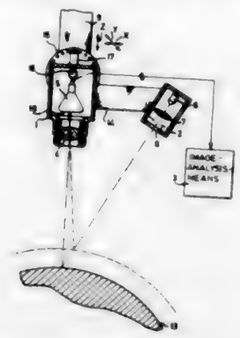
Gert Ferrano, Aalen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany
Filed Oct. 15, 1984, Ser. No. 661,297
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1983, 3342675
Int. Cl.⁴ G01C *3/08*
U.S. Cl. 356—1 **10 Claims**

1. Apparatus for contactless measurement of distance to the surface of an object, said apparatus comprising:
(a) a light projector for producing a collimated bundle of light along a projection axis to a surface portion of the object, whereby to produce a single light spot on the surface of the object;
(b) an imaging optical system on an imaging optical axis which is inclined to the projection axis, for imaging the single light spot in an image plane;

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(c) a position-sensitive detector at the image plane of said imaging optical system; and

(d) image-analysis means connected to process output signals of said detector for determining the lateral offset of



the light-spot image with respect to a predetermined reference position of the imaged spot, said image-analysis means including means for area-evaluation of the imaged spot, whereby to determine local inclination of the object surface.

4,660,971

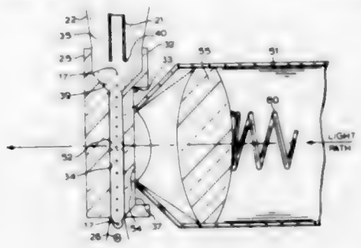
OPTICAL FEATURES OF FLOW CYTOMETRY APPARATUS

Burton H. Sage, Raleigh; Robert F. Adrion, and Michael W. Malpass, both of Cary, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 3, 1984, Ser. No. 606,802

Int. Cl.⁴ G01N *21/05, 21/64*

U.S. Cl. 356—39 **12 Claims**



1. In a flow cytometry apparatus of the type including a transparent liquid flow chamber with a passageway therethrough, means for providing a stream of particles to be analyzed through the passageway of said flow chamber, an excitation light source, lens means for focusing light from said source at a region within the passageway of said flow chamber through which said particles pass and for collecting light associated with said particles, and means for determining one or more characteristics of said particles related to said light which strikes said particles, wherein the improvement comprises:

means for providing and maintaining relative stability between said lens means and said flow chamber to stabilize the relative axial position of said flow chamber and said lens means, said lens means being in contact with said flow chamber; and

means for focusing the light in order to optimize its intensity in said focal region, said focusing means further including means for adjusting the relative position of the stream of particles with respect to the flow chamber.

4,660,972

ARRANGEMENT FOR VISUALIZING THE CORES OF OPTICAL WAVEGUIDES

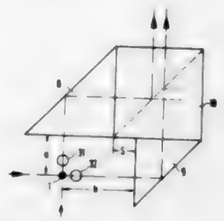
Rolf Rossberg, Schwieberdingen, and Peter Schmid, Tamm, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 12, 1985, Ser. No. 710,832

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1984, 3409043

Int. Cl.⁴ G01B *11/27;* **G01N** *21/01*

U.S. Cl. 356—73.1 **19 Claims**



1. An optical fiber apparatus comprising:

an optical waveguide having a core therein;

an irradiation source mounted adjacent said waveguide to provide light rays to said waveguide along mutually perpendicular light paths which pass through said waveguide;

two optical elements, each positioned in a respective light path between said irradiation source and said waveguide, each of said elements receiving light rays from said respective source and transmitting the rays in a parallel bundle to said waveguide;

two rod lenses, each being positioned in a respective light ray path emerging from said waveguide; and

means for deflecting the light rays emerging from said rod lenses so that the lengths of the light paths of both rays are substantially the same and produce two adjacent images in order to determine the spatial position of the waveguide and the core.

4,660,973

ARRANGEMENT FOR LOCATING FAULTS IN AN OPTICAL INFORMATION TRANSMISSION SYSTEM

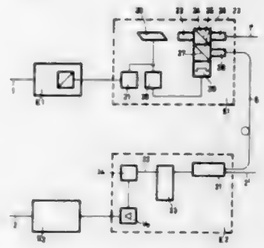
Lothar Mannochke, Eckental-Eckenhaid, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,841

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224998

Int. Cl.⁴ G01N *21/88;* **H04B** *9/00*

U.S. Cl. 356—73.1 **5 Claims**



1. In an arrangement for locating faults in an optical transmission system having forward and return transmission paths, such arrangement comprising: a fault-locating line terminal device (LE1), a repeater (3), and an optical waveguide loop (5) connected betwen the output of the repeater in the forward transmission direction and the input of the repeater in the return transmission direction, so that optical signals coming from the fault-locating terminal device in the forward direction can also be sent in the return direction; the improvement characterized in that: first optical beam splitting means (24) is coupled to said forward transmission path for diverting a small proportion of said optical signals from that path; second optical beam splitting means (26) is coupled in series with said first optical beam splitting means to receive therefrom the diverted optical signals and to further divert a small proportion of the already diverted signals; and said waveguide loop (5) is coupled between said second optical beam splitting means and the input of said repeater (3), whereby only the twice diverted proportion of the optical signals coming from the fault-locating terminal device are branched-off to said loop; and means (33) for selectively connecting the return direction input of the repeater to said loop instead of to the return transmission path.

4,660,974

ARRANGEMENT FOR DETERMINING THE SPECTRAL CHARACTERISTIC OF THE REFRACTIVE INDEX OF A FLUID

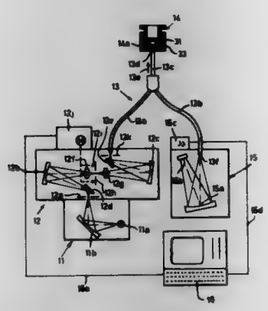
Meinrad Mächler, Ellwangen; Richard Sachse, Königsbronn, and Harry Schlemmer, Aalen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Apr. 11, 1985, Ser. No. 722,111

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414261

Int. Cl.⁴ G01N *21/41*

U.S. Cl. 356—128 **17 Claims**



1. An arrangement for determining the spectral characteristic of the refractive index of a fluid comprising:

a boundary part having a first surface which is at least partially reflective;

a light transmitting window having a second surface substantially parallel to said first surface and being mounted at a spacing of 1 to 50 μm in front of said boundary part for accommodating the fluid therebetween;

illuminating means for illuminating the fluid with white light;

said first and second surfaces defining respective boundary surfaces to said fluid for causing a plurality of interfering component beams of light; and,

measuring means for measuring the wavelength-dependent intensity characteristic of said interfering component beams of light.

4,660,975

CONTROLLING LIGHT BEAM SPECTRUM

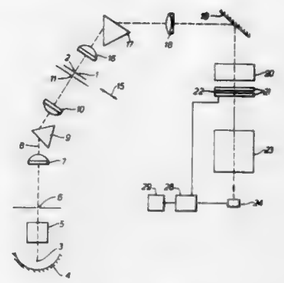
John E. Aughton, London, England, assignor to Crosfield Electronics Limited, London, England

Filed Jul. 13, 1984, Ser. No. 630,605

Claims priority, application United Kingdom, Jul. 22, 1983, 8319798

Int. Cl.⁴ G01J *3/06, 3/32*

U.S. Cl. 356—308 **9 Claims**



1. A method of controlling the spectral components of a light beam, the method comprising generating a collimated light beam; dispersing said collimated beam; providing a mask defining an aperture in the path of said light beam, the size of said aperture being such that only a portion of said dispersed beam passes through said aperture, whereby relative transverse movement between said mask and said dispersed beam controls the spectral components of said light beam transmitted through said aperture; predetermining a profile of said relative transverse movement between said light beam and said mask required to obtain a desired spectral response in said transmitted light beam by,

(a) simulating in a suitably programmed computer said dispersed light beam and said aperture during relative transverse movement therebetween in accordance with a test profile;

(b) simulating the spectral content of said transmitted light beam;

(c) displaying the spectral response of said simulated transmitted light beam corresponding to said test profile;

(d) modifying said test profile; and

(e) repeating steps (a)–(d) until a desired spectral response is obtained and thereupon storing the final profile;

and regularly causing relative transverse movement between said light beam and said mask in accordance with said predetermined profile.

4,660,976

METHOD AND DEVICE FOR ELECTROTHERMAL ATOMIZATION OF A SAMPLE MATERIAL

Heinz Falk, Berlin, German Democratic Rep., assignor to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Filed May 1, 1984, Ser. No. 605,931

Int. Cl.⁴ G01N *21/74*

U.S. Cl. 356—312 **6 Claims**

3. A device for electrothermal atomization of a sample material comprising

a tripartite longitudinal atomization hollow body having

a longitudinal axis of symmetry X—X,

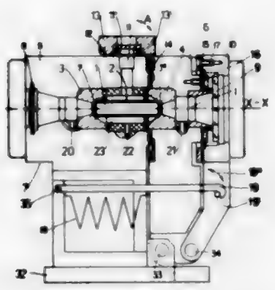
said hollow body being subsequently composed of a first part, a second part, and a third part,

a channel extending through said first part,

said second part and said third part symmetrically about said axis X—X,

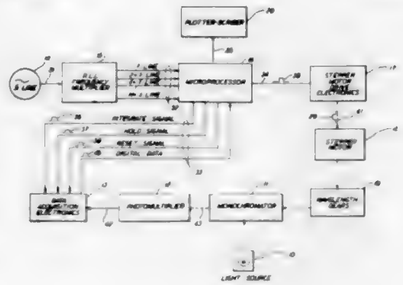
said channel end portions being sealed to the exterior by a first window and a second window, respectively,

an open ended atomizer tube,
a first electrode having a central bore,
a second electrode having a central bore,
said atomizer tube being arranged in a central bulged out portion of said channel, concentrically to said axis X—X,
said first electrode being in close electrical contact to the one end portion of said atomizer tube in said first part,
said second electrode being in close electrical contact to another end portion of said atomizer tube in said second part,
said atomizer tube, the central bores through said first and said second electrode being concentrically to said axis X—X,
said bulged out portion forming a cavity limited by the outer wall of said atomizer tube and the channel wall,
a first radial bore extending from the exterior to said cavity,
a second radial bore being provided in the mid-portion of the wall of said atomizer tube,
said first and said second radial bore being in alignment,
means for airtight sealing said first radial bore to the outside, said first and said second radial bore being for introducing said sample material,
first connection means for airtight connection of said first part to said second part,



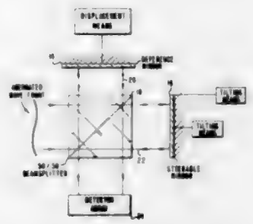
second means for airtight connection of said second part to said third part,
a third radial bore and a fourth radial bore extending from the exterior to said channel in the neighborhood of said first and said second electrode, respectively,
a fifth radial bore extending from said exterior to said cavity in alignment and opposition to said first radial bore,
a carrier gas and pressure gas system having a first,
a second, and a third connection piece in a piping,
said first and said third connection piece being connected to said third and to said fourth radial bore, respectively,
said second connection piece being connected to said fifth bore, a carrier gas source,
a pressure gas source, both being provided in said gas system, first control means for controlled variation of the gas flow from said carrier gas source to said channel, said first control means being provided in said piping,
second control means for a controlled variation of pressure gas flow from said pressure gas source to said channel,
said second control means being provided in said piping,
a gas pressure and temperature control means being connected to said second control means for a controlled variation of the pressure gas flow from said pressure gas source to said channel and said cavity, respectively, via said piping and said third fourth and fifth bore, respectively.

4,660,977
SYNCHRONOUS WAVELENGTH DRIVE AND DATA ACQUISITION CONVERSION FOR A SEQUENTIAL SPECTROPHOTOMETER
Charles M. Wittmer, Trumbull, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Feb. 22, 1985, Ser. No. 704,344
Int. Cl.[4] G01J *3/42*
U.S. Cl. 356—319 **12 Claims**



1. A sequential spectrophotometer system having a light source, a scanning monochromator device having a movable prism, a stepper motor coupled to the monochromator for periodically changing the monochromator device wavelength, a photomultiplier for detecting the intensity of the output light from the monochromator device and providing an electrical signal corresponding thereto, data acquisition means responsive to the electrical signal from the photomultiplier for measuring same, and a recording device for providing indicia representative of the measured electrical signal, the improvement comprising:
means for effecting a data acquisition during a prism displacement.

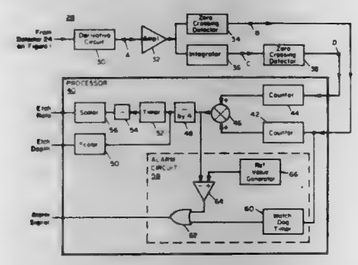
4,660,978
DIRECT SLOPE MEASUREMENT SHEARING INTERFEROMETER
Ning Wu, Rancho Palos Verdes, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 19, 1984, Ser. No. 683,783
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—353 **7 Claims**



1. An interferometer for measuring the aberrated wave slope of an optical beam incident on said interferometer comprising:
a plane reference mirror,
displacement means for moving said reference mirror generally perpendicular to the plane of said reference mirror,
a steerable mirror pivotally mounted generally perpendicular to said reference mirror,
tilting means for rotating said steerable mirror a first preselected fixed amount about a first pivot axis generally perpendicular to a propagation axis of said incident beam,

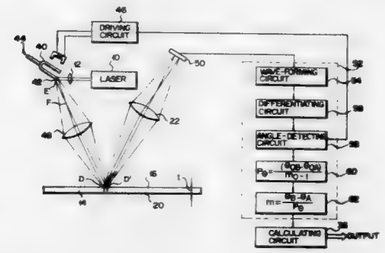
detector means for sensing an optical beam, and
a partially reflecting mirror mounted with respect to said reference mirror and said steerable mirror so as to reflect a first portion of the incident beam to said reference mirror and transmit a second portion of the incident beam to said steerable mirror and further transmit a portion of a beam reflected off said reference mirror to said sensing means and reflect a portion of a beam reflected off said steerable mirror to said sensing means, wherein said beams reflected off said reference mirror and said steerable mirror form a first shearing interference pattern on said sensing means when said steerable mirror is partially rotated about said first pivot axis and wherein signal output from said detector means provides aberrated wave slope values with respect to a coordinate axis perpendicular to the first pivot axis.

4,660,979
METHOD AND APPARATUS FOR AUTOMATICALLY MEASURING SEMICONDUCTOR ETCHING PROCESS PARAMETERS
Kevin A. Muething, Hillsborough Township, Somerset County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Aug. 17, 1984, Ser. No. 641,620
Int. Cl.[4] G01B *9/02, 11/02*
U.S. Cl. 356—357 **14 Claims**



1. A method for automatically measuring the depth and rate of etching of an article, comprising the steps of:
(a) directing light towards the article, formed of a substrate having an overlying light transmissive layer, to cause a first beam of light to be reflected from the substrate and a second, conincident beam to be reflected from the light transmidsive layer, the coincident, reflected beams interfering because of a path length difference therebetween, causing the composite intensity of the beams to exhibit periodic maxima and minima as the path length difference changes during etching of said light transmissive layer;
(b) detecting the composite intensity of the beams during etching;
(c) generating a first electrical signal, which changes in state in response to a minima or maxima of the composite intensity, and generating a second electrical signal which is phase shifted from the first electrical signal by 90°;
(d) processing said first and second electrical signals to obtain a count of the number of maxima or minima of the composite intensity;
(e) timing the period between successive changes in the count of minima or maxima and inverting the value of the period to establish the frequency of the maxima or minima; and
(f) computing the etch depth and the etch rate in accordance with the number of maxima or minima, and the frequency, respectively, of the composite intensity.

4,660,980
APPARATUS FOR MEASURING THICKNESS OF OBJECT TRANSPARENT TO LIGHT UTILIZING INTERFEROMETRIC METHOD
Hitoshi Takabayashi, Hachioji, and Takahiro Nakamura, Atsugi, both of Japan, assignors to Anritsu Electric Company Limited, Tokyo, Japan
Filed Dec. 10, 1984, Ser. No. 679,899
Claims priority, application Japan, Dec. 13, 1983, 58-233728
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—357 **11 Claims**

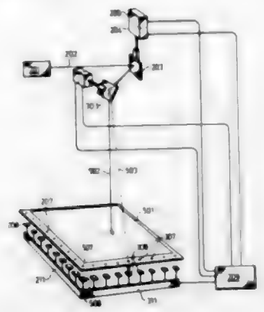


1. An apparatus for measuring the thickness of an object transparent to light utilizing an interferometric method, comprising:
light-emitting means for generating a coherent light beam to which the object to be measured is transparent;
deflecting means for scanning the light beam in a predetermined angle range and generating a deflected light beam;
illuminating means for irradiating on the object to be measured the deflected light beam which is substantially parallel and which scans continuously a range of incident angle from θ_A to θ_B;
light-receiving means for detecting light intensity changes caused by scanning of the incident angle and changing of the optical path difference between two light beams reflected from upper and lower surfaces of the object;
counting means for receiving an output signal from said light-receiving means and counting a difference in an order of interference fringes obtained for one scanning cycle of said deflecting means, said incident angles θ_A and θ_B being determined such that the difference in the order of interference fringes obtained for one scanning cycle of said deflecting means is at least two; and
calculating means for converting an output from said counting means into a value corresponding to the thickness of the object.

4,660,981
METHOD AND APPARATUS FOR CALIBRATING A POSITIONING SYSTEM
Gustaf L. Stridsberg, Enskede, Sweden, assignor to Mydata AB, Stockholm and UIC Nordic AB, Vallingby, both of, Sweden
Filed Nov. 15, 1984, Ser. No. 671,685
Claims priority, application Sweden, Nov. 17, 1983, 8306347
Int. Cl.[4] G01B *11/14*
U.S. Cl. 356—375 **8 Claims**

1. Method of calibrating a positioning system, said system including a control means, wherefrom command signals are sent to a positioning means intended, during a working state, to locate an object in relation to an operating area having a portion thereof being defined as a working surface, the operational situation of the positioning means being sensed and converted to an actual value signal which is fed back to the control means, characterized in that detectors are placed within the operating area in given positions but outside the working surface, and that the working state of the positioning apparatus is interrupted by a calibrating state at given intervals, the

positioning means being accurately put in register with at least one of the detectors during such a state, the output signal of the detector being allowed to activate the control means, whereafter the actual value signal is determined and the positioning apparatus calibrated in response to the determined actual value signal.



4,660,982

ADAPTOR FOR MEASURING LENGTH OPTICALLY FOR ENDOSCOPE

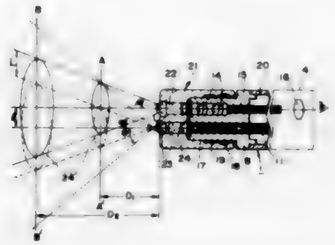
Minoru Okada, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 7, 1985, Ser. No. 731,644

Claims priority, application Japan, May 9, 1984, 59-93798

Int. Cl.⁴ G01B *11/02*

U.S. Cl. 356—383 **7 Claims**



1. An optical adaptor for measuring length of an object viewed to be attached to an endoscope, the endoscope comprising: an elongated insert member capable of being inserted through a body cavity; a handle member connected to a trailing end of said insert member; an illuminating optical system arranged at a tip portion of said insert member; an objective optical member arranged at the tip portion of said insert member adjacently to said illuminating optical system, said objective optical member for imaging the object illuminated by said illuminating optical system; and observation means for observing the object from the handle member side by transmitting the image from said objective optical system to said handle member side; the adaptor comprising

a body,

attaching means including a bore in said body for receiving detachably a tip portion of said insert member,

a projecting optical system arranged in said adaptor so that when said adaptor is attached to said tip portion said projecting optical system is attached to said illuminating optical system in a confronting relation with said illuminating optical system,

a view field-changing optical system arranged in said adaptor so that when said adaptor is attached to said tip portion said view field-changing optical system is attached to said objective optical system in a confronting relation with said objective optical system, and

at least one index attached to said projecting optical system to be projected on the object through said projecting optical system for providing a datum length.

4,660,983

APPARATUS FOR MEASURING REFLECTIVITIES OF RESONATOR FACETS OF SEMICONDUCTOR LASER

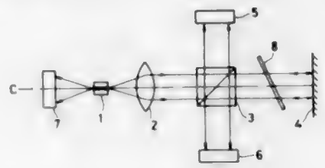
Osamu Yamamoto, Nara; Haruhisa Takiguchi, Osaka, and Sadayoshi Matsui, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 18, 1985, Ser. No. 777,247

Claims priority, application Japan, Sep. 21, 1984, 59-199007

Int. Cl.⁴ G01N *21/47*

U.S. Cl. 356—445 **8 Claims**



1. An apparatus for measuring the reflectivities of the resonator facets of a semiconductor laser comprising:

photodetector means for individually measuring the laser light powers from both facets of the resonator;

reflector means for reflecting the laser light from one of the facets back to the laser;

shutter means selectively openable for allowing the laser light reflected from the reflector means to pass towards the laser or selectively closable for blocking the laser light reflected from the reflector means; and

photodetector means for measuring the power of the reflected laser light.

4,660,984

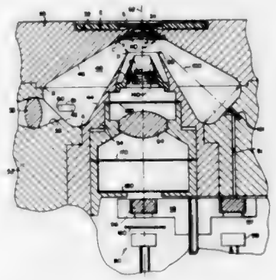
REFLECTOMETER FEATURING AN INTEGRATED CAVITY OF ENHANCED EFFICIENCY

Stuart G. MacDonald, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 646,405, Sep. 4, 1984, abandoned. This application Apr. 30, 1986, Ser. No. 858,549

Int. Cl.⁴ G01N *21/47*

U.S. Cl. 356—446 **11 Claims**



1. In a reflectometer comprising

means for supporting a generally planar test element in a predetermined location, said means including a transparent member or aperture permitting illumination of such a test element,

a light source,

integrating means optically disposed between said source and said predetermined location,

and detector means for detecting radiation diffusely reflected from a test element supported in said location, said detector means having an axis of detection extending to said predetermined location;

the improvement wherein said integrating means comprises

a diffusely reflecting surface positioned about said axis so that at least one ray of light reflected from a portion of said surface passes optically unimpeded to the approximate middle of said transparent member or aperture, thereby defining a path of aligned illumination for said surface portion,

and mirrored surfaces connected to opposite edges of said diffusely-reflecting surface and configured to reflect back to said diffusely-reflecting surface, at least the majority of the non-aligned light that is diffusely reflected from said surface portion,

whereby the efficiency of said reflectometer is increased.

4,660,985

METHODS FOR PRODUCING AERATED CEMENTITIOUS COMPOSITIONS

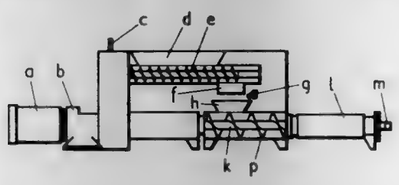
Peter S. Mills, Barton-on-Treat, and Ivor K. Daly, Melbourne, both of England, assignors to Coal Industry (Patents) Limited, London, England

Division of Ser. No. 607,805, May 4, 1984. This application Oct. 11, 1985, Ser. No. 786,627

Claims priority, application United Kingdom, May 5, 1983, 8312136

Int. Cl.⁴ B28C *5/00, 5/06*

U.S. Cl. 366—5 **8 Claims**



1. A method of producing an aerated cementitious composition, comprising the simultaneous steps of

(a) feeding ingredients comprising cement, foaming agent and liquid to a mixing chamber open to the atmosphere,

(b) mixing the said ingredients with mixing means to produce a wetted mixture, and

(c) feeding the wetted mixture with feeding means to pump means, wherein the feeding means comprises the mixing means,

(d) pumping said wetted mixture with pump means to a desired site at a pump rate in excess of the feed rate of ingredients into the mixing chamber whereby air is drawn into said wetted mixture,

wherein the cement is selected from the group consisting of Portland-type cement, high alumina cement, gypsum cement and blends of two or more thereof.

4,660,986

METHOD FOR PRODUCING A GAS-SOLID TWO PHASE FLOW JET HAVING A CONSTANT MASS OR VOLUME FLOW RATE AND PREDETERMINED VELOCITY

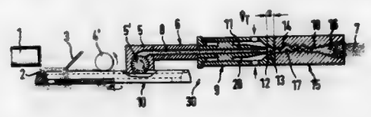
Kurt Leschonski, Am Dammgraben 20, and Stephan Röthele, Am Rollberg 5, both of 3392 Clausthal-Zellerfeld, Fed. Rep. of Germany

Division of Ser. No. 583,675, Feb. 27, 1985, Pat. No. 4,573,801. This application Oct. 4, 1985, Ser. No. 784,346

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307406

Int. Cl.⁴ B01F *15/02*

U.S. Cl. 366—154 **4 Claims**



1. A method of producing a gas-solid two phase flow jet having a constant flow rate and predetermined velocity with the solids therein being fully and uniformly dispersed, comprising:

(a) creating a consolidated solid particle mass flow of constant cross section;

(b) subsequently totally sucking, accelerating and dispersing said particle mass flow into a closed flow channel of constant flow cross section to form a gas-solid particle mixture;

(c) directing said gas-solid particle mixture repeatedly against impact surfaces within said flow channel of constant flow cross section; and

(d) discharging said gas-solid particle mixture as a free jet out of said flow channel.

4,660,987

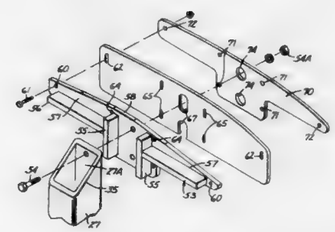
BLENDER ROTOR IMPROVEMENTS

Jon L. Robinson, Belgrade, Minn., assignor to TCI, Inc., Benson, Minn.

Filed Feb. 12, 1986, Ser. No. 828,705

Int. Cl.⁴ B28C *5/14*; B01F *7/04*

U.S. Cl. 366—67 **1 Claim**



1. In combination with a particulate material blender having an outer housing defined by a part cylindrical wall, and a rotor having a center shaft and a plurality of arms extending outwardly from the center shaft, each of said arms having an outer end, each of said arms also being of rectilinear cross section to provide a first wall that is generally planar, the improvement comprising a paddle assembly mounted at the outer end of each arm, each paddle assembly comprising a backing plate, means to removably attach the backing plate to a respective arm against its first wall, first bolt means to removably fasten the backing plate to the first wall in proximity to a portion of the part cylindrical wall as the center shaft is rotated, said backing plate being clamped against the first wall of its respec-

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tive rectilinear cross section arm, and having guide members which are spaced apart to receive the arm and fit against walls of the arm that extend 90° to the first wall of the arm, said backing plate having radially extending wing portions extending outwardly from opposite sides of the arm on which it is attached to provide a substantial paddle width, a flexible wiper blade of size to extend beyond the periphery of the backing plate supported against said backing plate, and a clamp plate of substantially the same size as the backing plate fitting against a surface of the flexible wiper blade to clamp said flexible wiper blade against said backing plate, an outer edge of said flexible wiper blade being positioned outwardly of the backing plate and clamp plate and fitting closely adjacent the part cylindrical wall, said flexible wiper blade having a plurality of slots extending in radial direction with respect to the center shaft, and a plurality of sets of aligning bolt holes provided on each of the backing plates and clamp plates, the aligning bolt holes of each set on the plates aligning with a slot in the flexible wiper blade, and clamp bolt means passing through aligning bolt holes on the plates and a slot in the flexible wiper blade at a plurality of locations spaced across the flexible wiper blade surface to clamp the flexible wiper blade surface tightly against the backing plate, said clamp bolt means being separate from the means to attach the backing plate to its respective arm, said clamp bolt means being loosenable to permit the flexible wiper blade to be adjusted in radial direction and reclamped in position.

4,660,988

STIRRING DEVICE FOR LIQUID MATERIAL

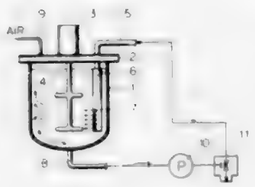
Noboru Hara, Ichinomiya, and Syogo Sugiyama, Gifu, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 2, 1985, Ser. No. 783,074

Claims priority, application Japan, Oct. 2, 1984, 59-149440[U]

Int. Cl.⁴ B01F *15/02*

U.S. Cl. 366—137 **3 Claims**



1. A device for stirring a liquid, comprising:

a stirring tank adapted to contain a liquid while that liquid is being stirred;

a circulation loop comprising a feeding pipe having inlet means in said tank, a return pipe having an outlet means in said tank, and conduit means connecting said feeding pipe with said return pipe and incorporating pumping means for circulating liquid around said circulation loop so that the liquid being stirred is introduced into said tank by said return pipe through said outlet means thereof, is withdrawn from said tank by said feeding pipe through said inlet means, and passed to said feeding pipe to said return pipe via said conduit means;

said stirring tank having a bottom and an upstanding peripheral sidewall of generally circular horizontal transverse cross-sectional shape, said inlet means of said feeding pipe being disposed in said tank near said bottom,

said outlet means of said return pipe being a vertically elongated, tubular member stationarily disposed in said tank near said peripheral sidewall;

said outlet means having two columns of outlet openings respectively aimed in clockwise and counterclockwise tangential directions relative to said peripheral sidewall and said outlet means being substantially free of outlet openings aimed in other directions than said clockwise and counterclockwise tangential directions;

said outlet means being larger in diameter than is said return pipe upstream of said outlet means; and

said outlet openings, in sum, being larger in total transverse cross-sectional area than said return pipe upstream of said outlet means.

4,660,989

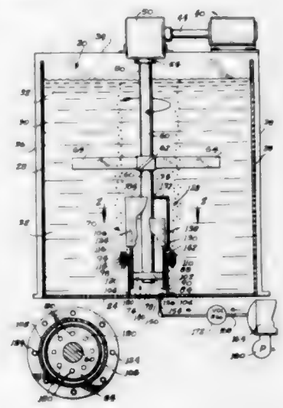
AGITATOR SHAFT BOTTOM BEARING ASSEMBLY

Charles E. Davis, Mulberry, Fla., assignor to CF Industries, Inc., Long Grove, Ill.

Filed Dec. 16, 1985, Ser. No. 809,392

Int. Cl.⁴ B01F *7/18*

U.S. Cl. 366—331 **4 Claims**



1. The combination with a vessel having a bottom wall and a circumscribing sidewall extending upwardly therefrom to define a mixing chamber, and including a mixer assembly for agitating fluids contained in said mixing chamber of said vessel, a rotatable shaft of said mixer assembly extending into said mixing chamber of said vessel, means for supporting said rotatable shaft for projecting into said chamber, agitator blade means carried by said shaft and secured thereto for rotation therewith within said vessel to agitate fluid contained in said mixing chamber, drive means and means coupling said drive means to said shaft for effecting rotation thereof and of said agitator blade means carried thereby,

bearing means engaging said shaft and means securing said bearing means within said vessel for stabilizing said shaft at a rotatable end section thereof remote from said drive means and below a liquid level in said vessel and for preventing objectionable vibration of said shaft correlated with excessive radial displacement of said shaft during rotation thereof within said vessel,

baffle means for preventing liquid in said vessel from contacting said bearing means,

said baffle means including a casing open at a top end thereof and having a base abutting and sealed to said bottom wall of said vessel in fluid-tight securement thereto,

a cylindrical bearing holder sleeved within said casing and projecting downwardly therewithin and generally coaxially therewith,

a tube open at each of opposed ends and projecting upwardly of said bearing holder and coaxial therewith,

said casing including radially outwardly directed collar means extending therearound at an upper end thereof for attachment of said bearing holder and said tube thereto,

radially outwardly extending first flange means carried by said bearing holder at an upper end thereof and overlying said collar means,

second flange means carried by said tube at a lower end thereof and overlying said first flange means,

fastener means for bolting said first and said second flange means to said collar means for support thereby,

pipe means coaxial with said tube and sleeved therearound at an upper open end thereof,

wall means extending radially between said agitator shaft and said pipe means and constituting a fluid-tight seal between said shaft and said pipe means at an upper end thereof,

an interior transverse dimension of said pipe means being greater than an outer transverse dimension of said casing to provide a restricted annular channel therebetween,

conduit means and means connecting said conduit means in fluid-flow communication with said vessel for delivering a regulated flow of pressurized gas into said casing for pressurizing said casing to prevent invasive entry of liquid from said vessel into said casing and to protect said bearing means from contact with liquid contained in said vessel.

4,660,990

METHOD AND APPARATUS FOR WEIGHING AND MIXING POWDER AND LIQUID

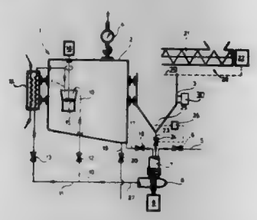
Sven H. Svensson, Lund, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Continuation of Ser. No. 222,547, Jan. 5, 1981, abandoned. This application Aug. 8, 1985, Ser. No. 763,616

Claims priority, application Sweden, Jan. 15, 1980, 8000308

Int. Cl.⁴ B01F *13/00*

U.S. Cl. 366—348 **9 Claims**



1. A method of producing a mixture of predetermined amounts of powder and liquid, respectively, with the use of a unit including a first receptacle, a second receptacle, a suction conduit, a return conduit and a pump, said method comprising weighing said unit on a weighing machine while performing the steps of supplying the liquid to said first receptacle, discontinuing said supplying of liquid when the weighing machine indicates the predetermiend amount of liquid, circulating the liquid from the first receptacle through said suction conduit, pump and return conduit back to the first receptacle, feeding power to said second receptacle, terminating said feeding of powder to the second receptacle when the weighing machine indicates the predetermined amount of powder, and withdrawing all of the predetermined amount of powder from the second receptacle into said suction conduit with the assistance of gravity and while liquid is circulating from the first receptacle through said conduits and pump, thereby mixing the powder into the circulating liquid.

4,660,991

DEVICE FOR STORING AND SIGNALLING THE TIME FOR TAKING DRUGS

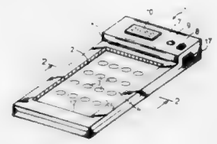
Udo Simon, Ziegelsteinstrasse 212, D-8500 Nurnberg 10, Fed. Rep. of Germany

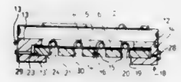
Filed Feb. 6, 1986, Ser. No. 826,553

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1985, 8503564[U]

Int. Cl.⁴ G04B *7/00*

U.S. Cl. 368—10 **46 Claims**





1. In a device for storing and periodically signalling the time for taking drug doses, consisting of

a drug container having a marginal zone and which is in the form of a blister pack in which the drug doses are individually sealed between a first foil provided with molded pockets for receiving the individual doses and a second rupturable foil, and

a signal emitter activatable in selectable time intervals, said signal emitter being in the form of an electric timer with a signal indicator and having an electrically activatable starting input means which receives an electric starting pulse when a drug dose is removed for the first time, said starting pulse being provided by means of sensors which respond to the removal of the drug doses, the improvement comprising:

a supporting frame having at least a partially open bottom which at least partially encloses the marginal zone of the drug container inserted therein, said frame permitting the drug doses to be dispensed from the drug container through said at least partially open bottom of said frame, said frame supporting the signal emitter and at least part of the electrical leads to the sensors, the arrangement of said sensors being adapted to conform to the arrangement of drug doses in said drug container and said sensors being disposed on said supporting frame.

4,660,992

WATCH WITH REMOVABLE FACE

Gary Paul, 36 Gilbert Ave., Paramus, N.J. 07652, and Bert Paul, Paramus, N.J., assignors to Gary Paul, Paramus, N.J.

Filed Jul. 2, 1986, Ser. No. 881,098

Int. Cl.⁴ G04B *19/00*

U.S. Cl. 368—223 **17 Claims**

1. A watch comprising a watch body formed with a platform, a stem extending from said platform and including watch hands, a stop extending from said platform, a rim extending along the periphery of the watch body, a transparent covering secured to said rim and extending above said platform, a watch face adapted to be received on said platform, said watch face formed with a slot through which said stem extends, said slot

cooperating with said stop to prevent movement of said watch face on said platform, at least said rim of said watch formed



with a removable portion which may be removed to permit insertion and removal of said watch face on said platform.

4,660,993

CALIBRATION WARNING DEVICE

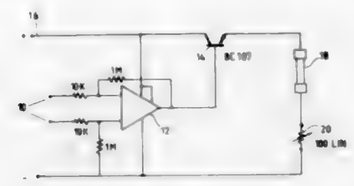
Robin A. Benedek, London, England, assignor to Johnson Matthey Public Limited Co., London, England

Filed Aug. 23, 1985, Ser. No. 768,836

Claims priority, application United Kingdom, Aug. 23, 1984, 8421451

Int. Cl.⁴ G01K *19/00*

U.S. Cl. 374—1 **9 Claims**



1. Apparatus adapted for indicating when a thermocouple requires calibration, comprising:

current supply means adapted for supplying a current to said apparatus;

coulometer means having an indicator, for indicating that said thermocouple requires calibration;

amplifier means, adapted to be coupled to said thermocouple, for outputting a signal when said thermocouple exceeds a predetermined temperature;

transistor means, coupled to said amplifier means and said current supply means, for passing current from said current supply means to said coulometer means in response to said signal from said amplifier means to move said coulometer indicator, whereby said coloumeter means indicates that said thermocouple requires calibration when said coloumeter indicator has been moved to a predetermined position.

4,660,994

ANTI-FRICTION ELEMENT

Camillo Maciarelli, 415 Berlin Rd., Marlboro, Mass. 01752

Filed Apr. 23, 1986, Ser. No. 855,495

Int. Cl.⁴ F16C *29/04*; B60B *33/08*; B65G *13/00*

U.S. Cl. 384—49 **7 Claims**

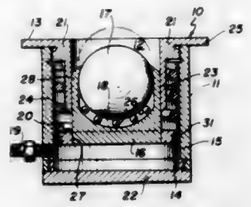
1. Anti-friction element, comprising:

(a) a main body having a first bore entering one friction surface and a second bore concentric with the first bore,

(b) a piston slidable in the second bore,

(c) a stem extending from one side of the piston and slidable in the first bore, the stem carrying a ball which is rotatable in a cavity in the stem, the piston and stem being movable from a first position in which the ball lies substantially entirely within the first bore below the said friction surface to a second position in which the ball protrudes from the first bore above the said friction surface,

(d) means for introducing fluid under pressure to the second bore to move the piston and carry the ball to the said second position, and



(e) means located in the second bore to bias the piston to normally maintain the piston and the ball in the said first position.

4,660,995

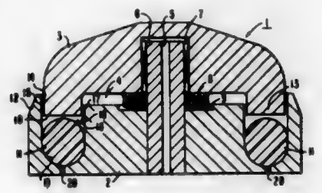
HYDROSTATIC AXIAL THRUST BEARING STRUCTURE

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Aug. 28, 1986, Ser. No. 901,408

Int. Cl.⁴ F16C *32/06, 33/74*; F16H *15/08*; F16J *15/00*

U.S. Cl. 384—121 **7 Claims**



1. A hydrostatic axial thrust bearing structure comprising two bearing members disposed so as to be movable relative to one another and having formed therebetween a bearing fluid cavity, means for supplying a fluid under pressure to said bearing cavity and a limited leakage seal structure formed between the two bearing members around said bearing fluid cavity, said limited leakage seal structure having an annular axial recess formed in one of said bearing members and including an axially projecting outer portion defining a cylindrical inner wall around said axial recess, a ring structure of an elastomeric material disposed in said recess, said ring structure having a raised axially projecting center portion, and the other of said bearing members having an outer cylindrical surface of a diameter slightly smaller than the inner diameter of the axially projecting outer portion of said one bearing member and being received piston-like within said axially projecting portion of said one bearing member, said other member having an annular seal face area disposed opposite the elastomeric ring structure of said one bearing member.

4,660,996

BEARING AND SEALING MEMBER FOR MOVEABLE SHAFT

Charles R. Marshall, Warwick, R.I., assignor to Dixon Industries Corporation, Bristol, R.I.

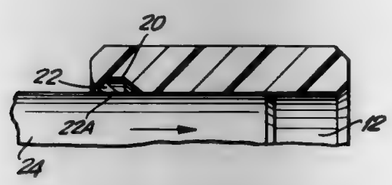
Filed Jan. 13, 1986, Ser. No. 818,348

Int. Cl.⁴ F16C *33/74*

U.S. Cl. 384—138 **16 Claims**

1. A one-piece, self-lubricating, thermoplastic bearing and sealing member suitable for sealing a moveable shaft, said

bearing and sealing member comprised of an annular shaped body having an inner annular conduit extending axially therethrough, the conduit having a cross-sectional area adapted to receive the shaft, the walls of said conduit having a radially inwardly extending annular recess and a resilient flange radially extending from said walls into said conduit, the recess being located in the vicinity of one axial end of the conduit and the flange being located adjacent to and axially outward of said recess the flange being capable of being bent to a preselected angle below about 20° relative to a transverse axis of the conduit and having a memory which urges it to return to its initial prebent position, the flange being integrally formed with the



body and projecting radially inwardly into said conduit to an extent that when the shaft is inserted in the conduit at one end thereof nearest said flange and recess, the flange is bent into said recess by the axial disposition of the shaft within the conduit to said preselected angle, and when the shaft is inserted in the conduit at the opposite end thereof farthest from said flange and recess, the flange is bent by the axial disposition of the shaft within the conduit to said preselected angle away from said recess, peripheral portions of said flange being placed in continuous contact under tension with the outer circumference of the shaft providing a sealing engagement therebetween when said shaft is inserted within the conduit.

4,660,997

ROTATION-DAMPING ROLLING BEARING

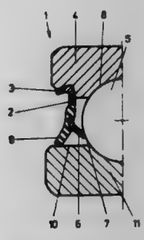
Manfred Brandenstein, Essenheim, and Rudiger Hans, Niederwerra, both of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 8, 1985, Ser. No. 763,804

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 8423565[U]

Int. Cl.⁴ F16C *27/06, 33/78*

U.S. Cl. 384—490 **21 Claims**



1. In a cageless rotation-damping rolling bearing comprising an inner ring defining an inner race, an outer ring defining an outer race, and a row of rolling bodies arranged in said races between said rings; the improvement wherein said races are annular and circumferentially uninterrupted and further comprising an annular disk secured to one of said rings and axially spaced from said races, said annular disk comprising an annular damping element extending therefrom between said disk and said rolling bodies and contacting said rolling bodies with a substantially axial prestress.

4,660,998

DOT-MATRIX PRINTER WITH FONT CARTRIDGE UNIT

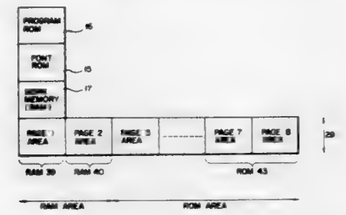
Yukio Tsuneki, Hanno, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 30, 1985, Ser. No. 770,994

Claims priority, application Japan, Aug. 31, 1984, 59-181872

Int. Cl.⁴ B41J *5/48*

U.S. Cl. 400—61 **5 Claims**



1. A dot-matrix printer with a font cartridge unit comprising:

a font cartridge unit having a character pattern memory for storing character pattern data corresponding to a given type of characters in units of pages, an address register for storing page address data for designating a page address used when the character pattern data is read out from said character pattern memory, and input/output menas for inputting/outputting the page address data stored in said address register and the character pattern data read out from said character pattern memory;

print control means, having a print memory accessed with a direct address corresponding to the page address, for setting the page address data in said page address register and for storing the character pattern data read out from said character pattern memory in said print memory so as to form print data when said character pattern memory of said font cartridge unit is accessed;

connector means having a detachable mechanism for selectively connecting and disconnecting said input/output means of said font cartridge unit and said print control means, for enabling the transfer of the page address data and the character pattern data between said input/output means and said print control means when said connector means connects said input-output means to said print control means; and

print means for executing a dot-print operation in accordance with the print data formed by said print control means.

4,660,999

DOT-MATRIX PRINTER WITH FONT CARTRIDGE UNIT

Yukio Tsuneki, Hanno, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 30, 1985, Ser. No. 770,995

Claims priority, application Japan, Aug. 31, 1984, 59-181871

Int. Cl.⁴ B41J *5/30*

U.S. Cl. 400—61 **12 Claims**

1. A dot-matrix printer with a font cartridge unit comprising:

a font cartridge unit comprising a plurality of memory means, each of said memory means having a memory area divided into a plurality of page areas, for storing different character pattern data in the respective page areas, and a data transfer bus for bidirectionally transferring character pattern data to and from said memory means;

detecting means for accessing a predetermined address of each page area of each of said memory means of said font cartridge unit through said data transfer bus to access specific data to detect whether said memory means corresponding to the respective page areas are mounted in said font cartridge unit;

print control means for forming print data in accordance

with character pattern data read out from said memory means detected by said detecting means to be mounted in said font cartridge unit;

connector means having a detachable structure for connecting and disconnecting said data transfer bus to each of said font cartridge unit, said detecting means, and said print control means, such that when said data transfer bus is connected to said print control means and said font cartridge unit by said connector means, character pattern data stored in said memory means is transferable between said data transfer bus and said print control means and said specific read data stored in said memory means is transferable between said data transfer bus and said detecting means; and

print means for executing a dot-print operation in accordance with said print data formed by said print control means.

4,661,000

LAYOUT DISPLAY DEVICE OF ELECTRONIC PRINTER

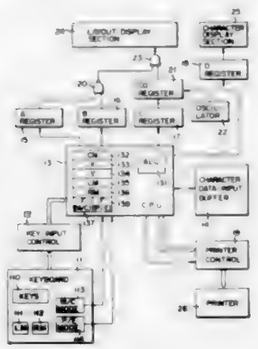
Yoshiaki Shinbori, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1985, Ser. No. 756,946

Claims priority, application Japan, Jul. 26, 1984, 59-155791

Int. Cl.[4] B41J *3/46*

U.S. Cl. 400—83 **4 Claims**



1. A layout display device of an electronic printer, comprising:

keyboard means having at least character keys;

layout display means having a plurality of fixed display segments arranged in a given manner;

means for setting one of a maximum character number and a maximum line number;

first memory means coupled to the setting means for storing maximum number data representing said one of said maximum character number and maximum line number;

means coupled to the keyboard means for determining positions of characters printed on the recording sheet by depression of the character keys;

second memory means coupled to the character position determining means for storing character position data representing the determined character positons;

arithmetic means coupled to the first and second memory means for calculating display segment position data such that the ratio of said display segment position data to the total number of said display segments of the layout display means is equal to the ratio of said character position data to said maximum number data; and

layout display control means coupled between the arithmetic means and the layout display means for displaying the display segments at that position on the layout display section which corresponds to the data of display segment position.

4,661,001

LABEL PRINTER WITH TEST PATTERN FOR PRICE AND BAR CODES

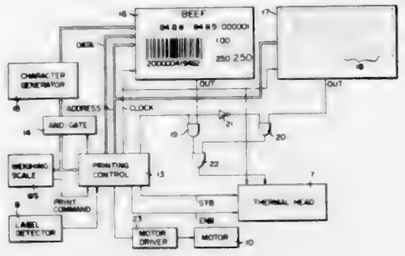
Yoshihiro Takai, Shizuoka; Katsumi Uematsu, Numazu, and Michio Suzuki, Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 760,317, Jul. 29, 1985, abandoned. This application Feb. 3, 1986, Ser. No. 825,944

Claims priority, application Japan, Aug. 8, 1984, 59-166774

Int. Cl.[4] B41J *5/00*

U.S. Cl. 400—103 **26 Claims**



1. A label printer comprising:

printing means for printing data on a label which is fed thereto; and

data generating means coupled to said printing means and being selectively operable in an ordinary printing mode and a test mode, said data generating means including means for supplying, in an ordinary printing mode, a plurality of article data, including a bar code and a price, to said printing means for printing of same on a label; and means for supplying, in a test mode, test pattern data indicative of a plurality of predetermined test patterns to said printing means for printing of said test pattern data on a label, each of said test patterns having a given height and width and being printed by said printing means in substantially the same position as the printing position of a corresponding one of said article data, and each of said test patterns having a height and width substantially the same as the height and width of the largest one of the print areas occupied by the article data to be printed in a corresponding printing position on said label, so as to check alignment of said label relative to said printing means to enable proper positioning of the article data including said bar code and price to be printed on labels fed thereto.

4,661,002

DOT MATRIX PRINTER

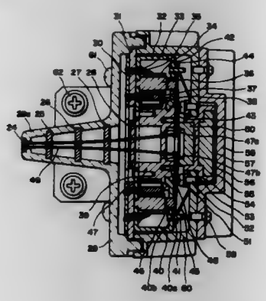
Yoji Ara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 640,336, Aug. 13, 1984, abandoned. This application Jul. 3, 1986, Ser. No. 882,205

Claims priority, application Japan, Aug. 19, 1984, 58-150212; Aug. 19, 1984, 58-150215; Aug. 19, 1984, 58-150216; Aug. 19, 1984, 58-150217

Int. Cl.[4] B41J *3/12*

U.S. Cl. 400—124 **5 Claims**



1. A dot matrix printer comprising:

a plurality of pivotal means each having striking means for striking in dot forms and an attraction portion comprising a magnetic material, said pivotal means being arranged in a circle:

attracting means for generating a magnetic force to attract said attraction portion;

a yoke for conveying the magnetic force generated by said attracting means to said attraction portion, said yoke having a center, and having a plurality of first holes arranged in a circle for receiving said attraction portions to be fitted therein and a second hole at the yoke center;

frame means comprising an elastic member fitting said second hole of said yoke integrally therewith for abutting against said pivotal means upon pivotal movement thereof to regulate a stop position of said pivotal means, said frame means having a plurality of first guide holes for guiding said striking means through said second hole;

first cover means having a plurality of second guide holes for guiding the distal end portion of said striking means guided by said first guide holes to a print position; and

second cover means cooperating with said first cover means for covering said pivotal means, said attracting means, said yoke, and said frame means.

4,661,003

BIDIRECTIONAL COLOR PRINTING APPARATUS

Shuhei Okamori, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 24, 1985, Ser. No. 758,323

Claims priority, application Japan, Jul. 27, 1984, 59-158114

Int. Cl.[4] B41J *3/44, 35/14, 35/16*

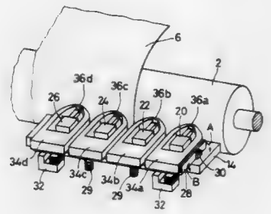
U.S. Cl. 400—216.1 **7 Claims**

1. A wire dot matrix impact color printer for effecting impression of images on a recording medium selectively in opposite directions along a print line, comprising:

at least three print head units of wire dot matrix type spaced from each other along said print line, and disposed in opposed relation with said recording medium;

at least three bi-color ribbons disposed to be fed between the corresponding print head units and said recording medium, each of said at least three bi-color ribbons having two transversely-spaced parallel longitudinal color stripes, said two color stripes of said at least three bi-color ribbons forming first and second arrays of at least three different colors which are equal in number to said at least three print head units and which have different values of lightness, said at least three different colors in said first array being arranged along said print line so that the lightness increases in one of said opposite printing directions, said at least three different colors in said second array being arranged along said print line so that the lightness increases in the other printing direction;

support and feed means for supporting said recording medium, said at least three bi-color ribbons and said at least three print head units, and for effecting a relative movement between an assembly of the bi-color ribbons and



print head units and said recording medium in each of the opposite printing directions along the surface of the recording medium; and

ribbon shift means for selectively positioning the color stripes of said first array into alignment with corresponding print head units when said one printing direction is selected, and for selectively positioning the color stripes of said second array into alignment with corresponding print head units when the other printing direction is selected;

whereby ink is deposited on the recording medium in an order extending from lightest to darkest in both printing directions.

4,661,004

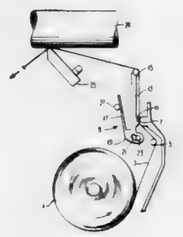
RIBBON FEED TENSION MECHANISM

Steven L. Applegate, and James A. Craft, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1985, Ser. No. 728,980

Int. Cl.[4] B41J *33/52*

U.S. Cl. 400—234 **24 Claims**



1. A member for controlling feed tension of a flexible ribbon, said member having a tension arm for contacting said ribbon and for applying tension along the length of said ribbon, said tension arm having a brake surface to brake said ribbon by said brake surface and a second surface closing on said ribbon, a base member integral with said tension arm and having an elongated slot, a biasing arm integral with said base member generally opposite and spaced from said tension arm and having resiliency for flexing said biasing arm toward said tension

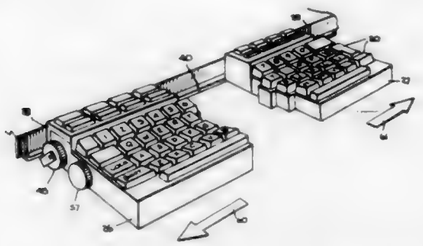
arm to bias said brake surface toward said second surface while tending to move said base member generally away from said second surface.

4,661,005

SPITTABLE KEYBOARD FOR WORD PROCESSING, TYPING AND OTHER INFORMATION INPUT SYSTEMS

Roy J. Lahr, Los Angeles, Calif., assignor to Creative Associates, Los Angeles, Calif.

Filed Jan. 16, 1984, Ser. No. 570,747
Int. Cl.⁴ B41J *5/10*
U.S. Cl. 400—489 **44 Claims**



1. An arrangement reducing stresses and tensions experienced by a human operator during communication between the human operator and an information processing machine, the arrangement being of the type wherein the human operator enters information to the information processing machine by manipulation of a plurality of actuators disposed on a keyboard in a predetermined continuous arrangement corresponding to at least one row of adjacent actuators, and receives processed information by viewing a display responsively controlled by the information processing machine, the arrangement further comprising:

first and second separable keyboard sections holding respective ones of the plurality of actuators in respective keyboard section arrangements, said respective keyboard section arrangements corresponding to predetermined portions of the predetermined arrangement of the plurality of actuators whereby said respective keyboard section arrangements, when disposed adjacent to one another, form said predetermined continuous arrangement of actuators; and

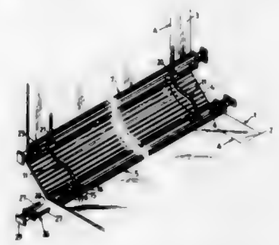
adjustable support means for holding said first and second keyboard sections in respective orientations and locations selectable by the human operator, said first and second keyboard sections being adjacently arrangeable in a first arrangement having a longitudinal direction so that said keyboard sections form a continuous uninterrupted conventional keyboard arrangement when so arranged together such that the spacing between adjacent actuators on different keyboard sections is substantially the same as the spacing between actuators on the same keyboard sections, said keyboard sections being displaceable so that the operator can move the keyboard sections to any of said selectable orientations and locations, thereby allowing the operator to select an optimum location and orientation, said adjustable support means comprising means for allowing said first and second keyboard sections to be displaceable at least in part in the longitudinal direction in a first plane in which the first and second keyboard sections are disposed when arranged adjacent one another, to a position in a second plane disposed at an angle from said first plane measured with respect to said longitudinal direction of said keyboard sections, and to a position in a third plane disposed at an angle from said first plane measured with respect to a direction perpendicular to said longitudinal direction in said first plane, whereby the operator over time can gradually adjust said first and second keyboard sections from said first arrangement toward said optimum location and orientation thereby gradually to become accustomed to said optimum location and orientation.

4,661,006

FILE

Arthur W. Stevens, 30 Danehurst, Rowena Road, Westgate-on-Sea, Kent, CT8 8QQ, England

Filed Jan. 15, 1986, Ser. No. 818,953
Claims priority, application United Kingdom, Jan. 16, 1985, 8501119; Aug. 8, 1985, 8519695
Int. Cl.⁴ B42F *13/00, 3/02;* **F16B** *13/00, 27/00*
U.S. Cl. 402—18 **9 Claims**



1. Filing apparatus comprising a support surface, elongate flexible prongs attached at a first end to the support surface for releasably retaining paper or the like by passage of a second end of the prongs through holes in the paper, means for securing a second portion of the prongs on the side of the retained paper opposite to the first ends, a channel member on the support surface and means retaining the first end of at least one prong in the channel member for slidable movement of the prong along the channel, a second surface and blocks carried by said second surface, at least one of said blocks being mounted for slidable movement one said second surface corresponding to the slidable movement of said at least one prong on said support surface, said blocks being adapted to secure said second portions of said prongs with slidable movement of said portions relative to said blocks.

4,661,007

CORNER GUIDE ASSEMBLY

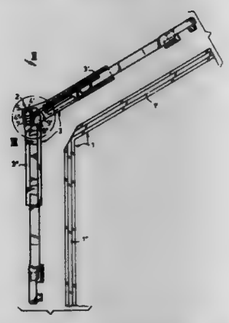
Alfred Schneider, Kreuztal, Fed. Rep. of Germany, assignor to Siegenia-Frank KG, Siegen, Fed. Rep. of Germany

Filed Jul. 22, 1983, Ser. No. 517,082
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 8221037; Feb. 23, 1983, 8305078
Int. Cl.⁴ F16D *1/00*
U.S. Cl. 403—24 **8 Claims**

1. Corner guide assembly for the corner which is formed between two adjoining sides of a closure member, said corner guide assembly comprising:

(a) a first housing arm having a first straight longitudinal guide groove and a first curved longitudinal guide groove which extends from one end of said first straight guide groove to a first opening at one end of said first housing arm, said first curved guide groove having a first outer curved surface and a first inner curved surface, said first outer curved surface being defined at least in part by a first outer projection at said one end of the first housing arm, and said first inner curved surface being defined at least in part by a first inner projection at said one end of the first housing arm,

(b) a second housing arm having a second straight longitudinal guide groove and a second curved longitudinal guide groove which extends from one end of said second straight guide groove to a second opening at one end of said second housing arm, said second curved guide groove having a second outer curved surface and a second inner curved surface, said second outer curved surface being defined at least in part by a second outer projection at said one end of the second housing arm, and said second inner curved surface being defined at least in part by a second inner projection at said one end of the second housing arm, said first outer projection overlapping said second outer projection within the plane of said closure member and pivotally connected to said second outer projection for movement to a predetermined range of angular positions relative to said first housing arm with the plane of said closure member, said first and second outer projection at least partially overlapping within the plane of said



closure member for said predetermined range of angular positions, said first and second openings being opposed within said plane,

(c) a first straight elongated drive rod which is located within said first straight guide groove for longitudinal sliding movement within said first straight guide groove,

(d) a second straight elongated drive rod which is located within said second straight guide groove for longitudinal sliding movement within said second straight guide groove, and

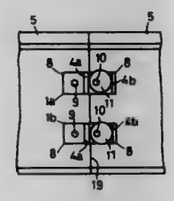
(e) a flexible resilient connector which is connected to one end of the said first drive rod and to one end of said second drive rod so that said connector is located within said first and second curved longitudinal guide grooves for longitudinal sliding movement within said curved guide grooves.

4,661,008

JOINT STRUCTURE FOR CHANNELS

Umezawa Norihiro, 6-3, Aza-Uramachi, Kakuda, Kakuda-shi, Miyagi 981-15, Japan

Continuation of Ser. No. 427,589, Sep. 29, 1982, abandoned, which is a continuation of Ser. No. 169,113, filed as PCT JP79/00077, Mar. 29, 1979, published as WO79/000848, Nov. 1, 1979, abandoned. This application Oct. 15, 1985, Ser. No. 787,697
Claims priority, application PCT Int'l Appl., Mar. 29, 1978, PCT/JP79/00077
Int. Cl.⁴ F16B *7/00*
U.S. Cl. 403—294 **12 Claims**



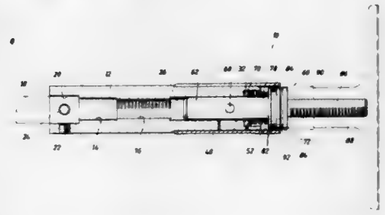
1. A joint structure for connecting channel units, comprising: at least one connector plate formed to have two stop flanges and two fastener holes with one of the fastener holes being of a slot type, one of the stop flanges being disposed between the fastener holes, and the other stop flange being disposed at the lateral outside of the slot type fastener hole; a fastener passing through each fastener hole for fastening the connector plate to abutted ends of the adjoining channel units; and an eccentric washer plate being fitted on the fastener passing through the slot type fastener hole and disposed between said stop flanges, so that the periphery of said washer plate is urged against at least one of the stop flanges.

4,661,009

QUICK CHANGE COUPLING FOR MACHINE TOOL ARBORS AND THE LIKE

Fred D. Tripp, Austin, Tex., assignor to Grentek, Inc., Austin, Tex.

Filed Mar. 12, 1986, Ser. No. 838,684
Int. Cl.⁴ F16B *21/04;* **F16D** *1/00*
U.S. Cl. 403—349 **20 Claims**



1. A quick-release locking coupling mechanism comprising:

(a) a coupling shaft forming first and second ends and adapted at said second end for nonrotatable connection with a powered drive shaft;

(b) a driven shaft;

(c) one of said coupling shaft and driven shaft forming a bayonet receptacle;

(d) the other of said coupling shaft and driven shaft forming a bayonet connector receivable by said bayonet receptacle;

(e) protective skirt means extending axially beyond one of said coupling shaft and driven shaft and enclosing at least a portion of the other of said coupling shaft and driven shaft when the same are in coupled assembly, said protective skirt means forming an inner periphery; and

(f) resilient means establishing a seal between said inner periphery of said protective shirt means and said other of said coupling shaft and driven shaft for sealing said bayonet receptacle and said bayonet connector against contamination, damping vibration therebetween and urging said coupling shaft and said driven shaft toward concentric relation.

4,661,010

CONCRETE BLOCK

Bengt O. Almér, Saltholmsgatan 55, Västra Frölunda S-421 06, Sweden, and Karl G. Gidlöf, Mühlegasse 9B, Baar CH-6340, Switzerland

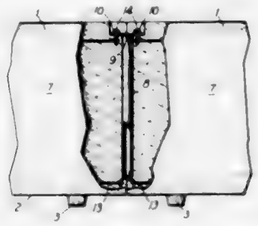
PCT No. PCT/SE82/00195, § 371 Date Jan. 28, 1983, § 102(e) Date Jan. 28, 1983, PCT Pub. No. WO82/04272, PCT Pub. Date Dec. 9, 1982
Continuation of Ser. No. 464,506, Jan. 28, 1983, abandoned. This PCT application Jun. 1, 1982, Ser. No. 690,373
Claims priority, application Sweden, Jun. 1, 1981, 8103419
Int. Cl.⁴ E01F *13/00*
U.S. Cl. 404—6 **5 Claims**

2. In a non-anchored barrier to be used on the ground sur-

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face along a roadway adjacent a lane thereof for partially consuming momentum of a vehicle driven against it while deflecting the vehicle back into the lane and causing it thereafter to be confined within a path generally parallel to the barrier and generally within the lane, the combination of:

a pair of concrete blocks disposed in end-to-end relation and having substantially contiguous end surfaces, said end surfaces being vertically grooved from adjacent a bottom portion of an associated block to adjacent a top portion of an associated block so that said end surfaces define a cylindrical channel of substantially circular cross-section, each block being of generally triangular configuration in cross-section so as to form a portion of said barrier;



tube means received in said channel for preventing lateral and rotational relative movement between said blocks while effecting transmission of lateral and rotational forces from one block to the other;

pin means received in a bottom end of said tube means for resisting longitudinal separation between said bottom portions of the blocks, and

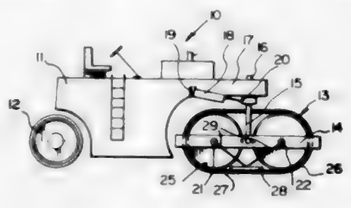
means joining said blocks at the top portions thereof for resisting longitudinal separation between said top portions of the blocks and for blocking an upper end of said channel to retain said tube means longitudinally within said channel.

4,661,011

ASPHALT COMPACTION MACHINE

El H. O. A. Halim, 110 Theresa Private, Ottawa, Ontario, Canada K1V OE7

Filed Jun. 25, 1985, Ser. No. 748,634
Int. Cl.⁴ E01C *19/26*
U.S. Cl. 404—124 **9 Claims**



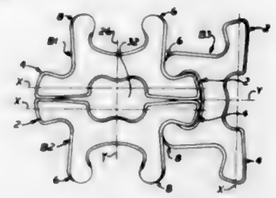
1. An asphalt compaction machine comprising a chassis, a drive roller, and a steerable, rolling compaction mechanism, said rolling compaction mechanism comprising: two longitudinally-spaced-apart, tandem rigid drums, each of said rigid drums extending across the entire lateral width of said chassis, said rigid drums entraining an elastomeric asphalt-compaction belt therearound, and a lower means operatively associated with said rolling compaction mechanism and disposed between said rigid drums and engaging substantially the entire bottom inner area of said belt between said two rigid drums to urge substantially the entire outer bottom surface of said belt between said rigid drums downwardly into pressure contact with the asphalt being compacted, thereby to provide a flat, pressure applying surface.

4,661,012

SOIL RETAINING APPARATUS AND BLOCKS THEREFOR

Antone J. McCloskey, Longwood, Fla., assignor to Gator Culvert Company, Lantana, Fla.

Filed Jul. 22, 1985, Ser. No. 757,374
Int. Cl.⁴ E02B *3/12*
U.S. Cl. 405—16 **17 Claims**



1. A block for use in soil retaining apparatus, said block comprising

a pair of first arms extending generally opposite one another and generally parallel to a first axis extending through said first arms;

a pair of second arms extending generally parallel to a second axis, said second axis being normal to said first axis and intermediate said oppositely extending first arms, said second arms extending away from said first axis and being spaced from one another and configured such that a first distance, measured normal to said second axis, between the mutually facing portions of said pair of second arms taken at first point on said arms proximal the outermost portion thereof is less than a second distance so measured and taken at second points intermediate said first points and said first axis;

each of said first arms being configured such that the portion thereof extending away from said first axis in the direction towards said second arms extends farther from said first axis at a first point on said arm proximal the outermost portion thereof than at a second point intermediate said first point and said second axis and the width of each said first arm measured normal to said first axis and parallel to said second axis at said first point on said first arm is greater than half of said first distance measured between said second arms.

4,661,013

APPARATUS FOR IMPEDING FINE SEDIMENT DEPOSITION IN HARBORS AND NAVIGATIONAL CHANNELS

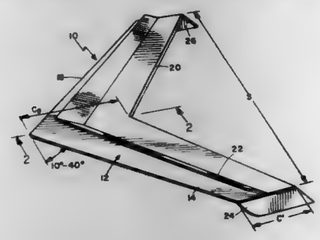
Scott A. Jenkins, San Diego, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 2, 1985, Ser. No. 751,332
Int. Cl.⁴ E02B *8/02*
U.S. Cl. 405—74 **25 Claims**

1. An apparatus for mounting adjacent the bottom of a waterway having a current so as to impede the deposition of suspended sediments upon the bottom of the waterway, comprising:

a wing member having substantially planar top and bottom surfaces, leading and trailing edges extending along the span of said wing member and ends extending between said leading and trailing edges, said wing member for mounting substantially horizontally and spaced above the bottom of a waterway; and

a flap member mounted spanwise along at least one of said top and bottom surfaces adjacent said leading edge and



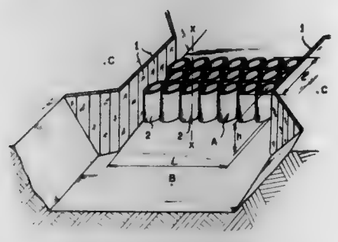
extending at a predetermined angle away from said one of said top and bottom surfaces towards said leading edge.

4,661,014

PREFABRICATED CIVIL ENGINEERING MODULE, METHOD FOR THE CONSTRUCTION OF A STRUCTURE INCLUDING SAID MODULE AND RESULTING STRUCTURE

Jean Aubert, Paris, France, assignor to Groupement d'Interet Economique, Puteaux, France

Filed Dec. 4, 1984, Ser. No. 678,571
Claims priority, application France, Dec. 23, 1983, 83 20666
Int. Cl.⁴ E02B *7/08, 7/14, 3/06*
U.S. Cl. 405—111 **11 Claims**



1. A device for constructing a civil engineering structure across a water flow, said device comprising a series of modules joined to each other and disposed across said water flow, each module being constituted by several rigid tubular elements joined to each other along their lateral faces and being substantially vertical, each tubular element being open on both ends, wherein each module comprises floating means to temporarily ensure a buoyancy of said module, each floating means being in module-supporting relation with the module, and means to eliminate simultaneously the buoyancy of the floating means to ensure a simultaneous sinking of all the modules in the water.

4,661,015

RISING AND FALLING WEIR OF FLEXIBLE MEMBRANE

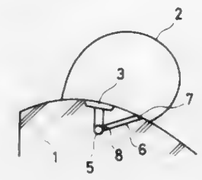
Yoshiomi Tsuji, and Hajime Naitoh, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd, Osaka, Japan

Filed Mar. 1, 1985, Ser. No. 707,373
Claims priority, application Japan, Mar. 6, 1984, 59-43146
Int. Cl.⁴ E02B *7/02*
U.S. Cl. 405—115 **3 Claims**

1. A rising and falling weir of the flexible membrane type for mounting on a curved top surface of a dam, comprising:

a flexible envelope formed so that it can be anchored at a curved crest of a concrete structure on a body of water;

a fluid charging/discharging pipe having an opening at one end to provide fluid communication with the interior of said flexible envelope for operating it in either an inflated or a deflated position; and



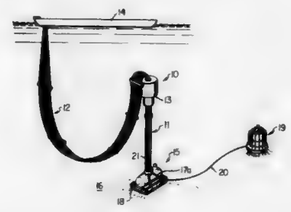
at least one drain discharge pipe having an opening at a first end thereof positioned at the lowest portion of the interior of said flexible envelope.

4,661,016

SUBSEA FLOWLINE CONNECTOR

Benton F. Baugh, Houston, and Narayana N. Panicker, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 11, 1985, Ser. No. 722,087
Int. Cl.⁴ F16L *1/04;* E21B *41/04*
U.S. Cl. 405—169 **28 Claims**



1. A subsea flowline connector for remotely connecting a first flowline to a complementary second flowline at a submerged location, said connector comprising:

a box member adapted to be affixed to the lower end of said first flowline, said box member comprising:

a housing having a bore therethrough;

a manipulator nut threaded into the lower end of said bore;

a metal seal carried by the upper surface of said manipulator nut;

a seal load ring slidably mounted in said bore above said soft metal seal;

a lockdown ring in said bore positioned above said seal load ring; said lockdown ring being inherently biased to an expanded position;

an actuator sleeve slidably mounted in said bore above said lockdown ring;

means on said actuator sleeve adapted to cooperate with said lockdown ring for moving said lockdown ring to a locked position upon downward movement of said actuator ring;

and means for releasably securing said actuator sleeve in its uppermost position within said bore;

means on said actuator sleeve adapted to be engaged by a setting tool for releasing and moving said actuator sleeve downward upon application of fluid pressure in said bore to move said lockdown ring to a locked position and to compress said metal seal;

means for locking said actuator sleeve in its downmost position within said bore when said actuator sleeve is moved downward within said sleeve; and

a pin member adapted to be affixed to one end of said second

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flowline, said pin member adapted to receive said box member; and

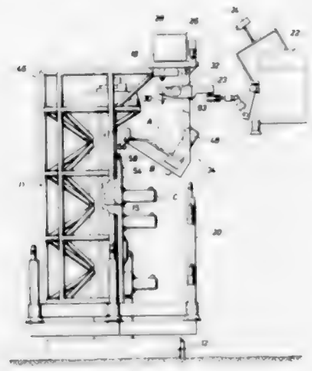
means on said pin member adapted to cooperate with said lockdown ring when said lockdown ring is in a locked position for securing said box member to said pin member.

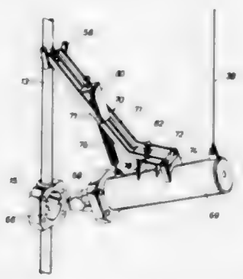
4,661,017

METHOD AND APPARATUS FOR ALIGNING UNDERWATER COMPONENTS

Norman H. Wood, Berlin, Md.; Walter E. Gray, Santa Barbara, Calif.; Charles R. Yemington, and Bill G. Louis, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Mar. 29, 1985, Ser. No. 718,041
Int. Cl.⁴ F16L 1/04
U.S. Cl. 405—169 **4 Claims**





1. An apparatus for remotely aligning a first component with a second component attached to a submerged base, comprising:

a substantially horizontal pivot member secured in fixed relation to said second component at a position above said second component;

a swing arm having opposed first and second ends, said first component being secured to said first end of said swing arm;

a hook secured to said swing arm second end, said hook being adapted for pivotal engagement with said pivot member, said swing arm and first component being configured such that they may be lowered from above said pivot member to cause said swing arm to contact said pivot member intermediate said first and second ends of said swing arm, whereupon further lowering causes said hook to pivotably engage said pivot member and said first component to thereafter move in an arcuate path into alignment with said second component as said swing arm and first component are further lowered; and

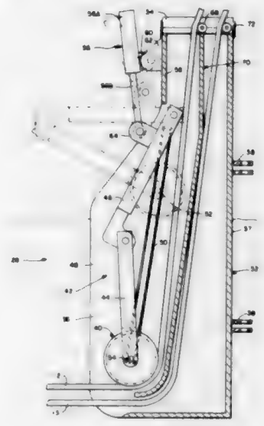
means secured to said swing arm for adjusting the orientation of said first component relative to said swing arm.

4,661,018

APPARATUS FOR AND METHOD OF INSTALLING UNDERGROUND CABLE HAVING ABOVE GROUND TERMINALS

Frank R. Kinnan, Douglas County, Oreg., assignor to Electric Power Research Institute, Inc., Santa Clara County, Calif.

Continuation-in-part of Ser. No. 269,954, Jun. 3, 1981, abandoned. This application May 13, 1986, Ser. No. 862,847
Int. Cl.⁴ E02F 5/10; H02G 9/00
U.S. Cl. 405—178 **16 Claims**



1. An apparatus for installing cable underground, comprising:

a power driven land vehicle; a cable laying plow blade;

means supporting said blade for movement with said vehicle in a way which places a bottom end portion of the blade in the ground so as to plow through the soil;

means including a supply of cable supported on and movable with said vehicle; and

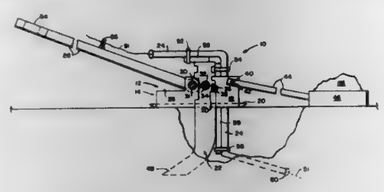
means for feeding said cable from its supply to a point adjacent the bottom end portion of said blade and from said point into the ground a fixed depth relative to and along the path of said blade, said feeding means including a feed shoe mounted on said blade at said adjacent point for movement therewith, said feed shoe including cable guide means operating in a first position above said cable for receiving said cable from said supply and for guiding it in the ground at said fixed depth as said vehicle and blade move and means supporting said guide means for movement between said first position and a second higher position above said cable which makes a section of said cable directly under said guide means accessible from ground level, said guide means comprising a sheave slidable between first and second positions along a track mounted on said feed shoe whereby said cable section can be manually pulled up to ground level and maintained there without pulling said blade out of the ground.

4,661,019

WIRE LAYING/BURYING APPARATUS

Christopher M. McLaughlin, 4063 A Hancock Ct. Hill AFB, Utah 84056

Filed Nov. 29, 1984, Ser. No. 676,049
Int. Cl.⁴ E02F 5/10
U.S. Cl. 405—183 **2 Claims**



1. A wire laying/burying apparatus, comprising:

a cutter unit, said cutter unit including:

means for guiding said unit across the ground, said guiding means including a pair of elements, each of said elements having a ski-like flat surfaced runner substantially parallel to said ground attached thereto; means interconnected with said guiding means for cutting a slit in said ground as said unit moves across said ground, said cutting means being interposed between said pair of elements of said guiding means and including a straight sided, unsharpened blade, said blade extending a predetermined distance beneath said guiding means; and means in the form of a conduit secured to and surrounding the upper portion of said cutting means for receiving said wire from a wire reel and directing said wire around said cutting means into said slit in said ground as said cutter unit moves over said ground;

means pivotally secured to one end of said cutter unit for interconnecting said cutter unit to a vehicle for pulling said cutter unit across said ground, said cutter unit interconnecting means including a tow bar pivotally connected to one end thereof to said guiding means, and means connected to said tow bar for receiving and unravelling any snags in said wire prior to said wire being received by said wire receiving and directing means; and

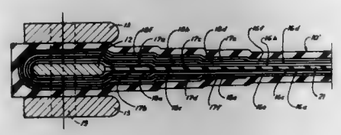
means pivotally secured to the other end of said cutter unit for packing earth displaced by said cutting means back over said slit after said wire has been layed in said slit, said earth packing means including means for containing a weighted substance therein and means for interconnecting said containing means to said guiding means.

4,661,020

LEG CLOSURE—IMPROVED FABRIC LAYUP

Robert B. Nickles, Jr., Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 23, 1986, Ser. No. 889,133
Int. Cl.⁴ E02D 5/52
U.S. Cl. 405—227 **11 Claims**



1. A closure element for use in combination with a closure retaining means for closing the bore of a tubular support member of a marine platform or other similar structure located in a body of water or other fluid environment, said closing comprising:

circular flexible member means having a peripheral portion and an inner portion;

annular reinforcing member means located in the peripheral portion of the circular flexible member means; and

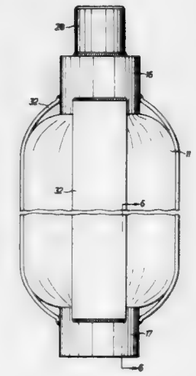
reinforcing means contained within said flexible member means and having an inner portion and a peripheral portion, the reinforcing means comprising at least two layers, each layer comprised of fabric means and including an inner load carrying portion and an outer overlap end portion, the overlap end portion of each of said layers being wrapped about said annular reinforcing member means in the opposite direction from any adjacent layer overlap end portion, each wrapped overlap end portion extending inwardly of said annular reinforcing member means in overlaying relationship to an inner load carrying portion of at least one other layer.

4,661,021

EXPANSION BODY

Bengt P. O. Granström, Bromma, and Bo T. Skogberg, Handen, both of Sweden, assignors to Atlas Copco Actiebolag, Nacka, Sweden

Continuation of Ser. No. 560,124, Dec. 12, 1983, Pat. No. 4,571,126. This application Feb. 5, 1986, Ser. No. 826,279
Claims priority, application Sweden, Dec. 21, 1982, 8207291
The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.
Int. Cl.⁴ E02D 5/28, 5/76
U.S. Cl. 405—244 **7 Claims**



1. An expansion body for constructions located in soil, comprising:

a longitudinally folded open-ended casing (**11**) having a plurality of folds surrounding an interior space thereof;

sockets (**16,17**) slideably connected to the ends of the casing;

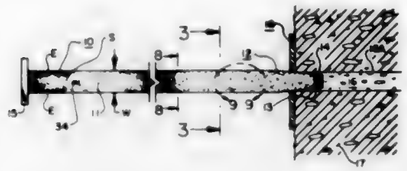
connecting means (**32**) coupled between said sockets and extending along the outside of the casing for axially retaining said sockets on said casing;

said casing (**11**) and said sockets (**16,17**) forming a closed chamber interior of said casing;

an inlet (**28**) connectable to a source of pressure fluid for pressurizing said closed chamber to expand and develop said folds of said casing between said sockets; and

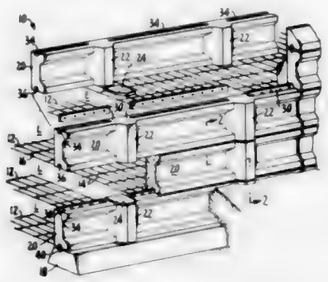
a sealing agent (**31**) in said sockets for preventing fluid leakage between said casing and said sockets.

4,661,022
ROCK BOLT STRUCTURE AND INSTALLATION
Ben L. Seegmiller, 3500 Loren Von Dr., Salt Lake, Utah 84124
Filed Nov. 14, 1985, Ser. No. 797,937
Int. Cl.[4] E21D *20/02*
U.S. Cl. 405—260 **12 Claims**



1. In combination, a rock formation having a pre-drilled hole of round transverse cross-section; a rock bolt having a headed end and a flat, essentially rectangular non-apertured blade-like shank of thin rectangular cross-section integral with, indented with respect to, and extending from said headed end to a remote end, said shank being shorter than and being disposed in said hole, said shank having closely spaced opposite sides and opposite elongate edges spanning said sides and frictionally engaging said hole at its wall, said edges being tapered inwardly solely proximate and approaching said remote end; and grout means disposed in said hole on opposite sides of said shank and about said remote end.

4,661,023
RIVETED PLATE CONNECTOR FOR RETAINING WALL FACE PANELS
William K. Hilfiker, Eureka, Calif., assignor to Hilfiker Pipe Co., Eureka, Calif.
Filed Dec. 30, 1985, Ser. No. 814,926
Int. Cl.[4] E02D *29/00*
U.S. Cl. 405—262 **11 Claims**



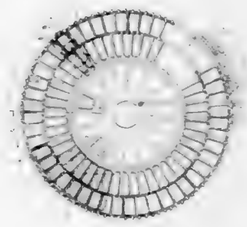
10. An improved retaining system for an earthen formation which includes a plurality of elongated face panels stacked above one another to define a wall and a plurality of anchor members disposd within the earthen formation behind the stacked face panels, said members being arranged in a spaced-apart array extending away from said face panels, with the improvement comprising:

elongated support bars secured to at least certain of said anchor members, said support bars being captured between said face panels and having arrays of holes through which ends of said certain anchor members extend; and

upset heads on said ends to provide a riveted connection between said ends and bars.

4,661,024
METHOD AND APPARATUS FOR CONTINUOUS GRAVIMETRIC METERING AND FEEDING OF POURABLE MATERIAL
Hans W. Häfner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Fed. Rep. of Germany
Filed May 28, 1985, Ser. No. 738,312
Int. Cl.[4] B65G *53/46*
U.S. Cl. 406—63 **19 Claims**





1. An apparatus for continuous gravimetric metering and feeding of pourable material conveyed by a conveyor means through a metering path, said conveyor means comprising:

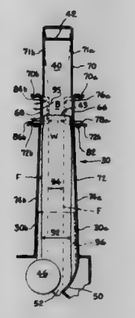
a housing means including a side wall having an essentially cylindrical inner surface and an upper and lower face wall provided with charging and discharging ports, respectively;

a rotor means mounted in said housing means and sealed by upper and lower sealing plates within said housing, said rotor means being rotatable about a vertical axis, said rotor means having a plurality of first and second laterally closed conveying pockets, said first and second conveying pockets arranged in two concentric rings, said first concentric ring of conveying pockets being offset from said second concentric ring of conveying pockets, said conveying pockets being supplied with said pourable material by said charging port;

a plurality of spaces including at least a first space radially outside said conveying pockets, a second space radially inside said conveying pockets and a third space radially inside both said second space and said conveying pockets, said plurality of spaces being within said housing means and said rotor means and therebetween, wherein dust from said pourable material may settle; and

means for supplying a pressurized gaseous medium to said plurality of spaces and to said conveying pockets, wherein dust from said pourable material cannot settle into said plurality of spaces and wherein said pourable material is discharged from said conveying pockets.

4,661,025
APPARATUS FOR FORMING A FIBER COLUMN IN A CHUTE FEED
Akiva Pinto, Gastonia, N.C., and Guenther Lucassen, Haltern, Fed. Rep. of Germany, assignors to Hergeth Hollingsworth GmbH, Duelmen, Fed. Rep. of Germany
Filed Jul. 24, 1985, Ser. No. 758,369
Int. Cl.[4] B65G *53/48*
U.S. Cl. 406—70 **17 Claims**



8. Apparatus for uniformly supplying fibers to a chute feed system of the type wherein fibers are transported by air from a fiber opening machine to a chute feed for discharge in the form of a fiber batt; said chute feed comprising an upper reserve section and a lower formation section each having a vertical chute, a feed roll extending along the length of said chute below said reserve section chute for feeding fibers to said formation section; a pair of bottom delivery rolls carried at the bottom of said formation section for discharging said fiber batt; an oscillating compaction plate carried adjacent said bottom delivery rolls for compressing and compacting said fibers prior to delivery from said chute feed; said reserve section including a front wall, a back wall spaced from said front wall, and integral side walls adjoining said front and back walls, and an entrance opening adjacent an upper portion of said reserve section formed in one of said side walls; wherein said apparatus further comprises:

an adjustable width throat means formed below said entrance opening in said chute of said reserve section carried by said front and back walls along generally the entire length of said chute extending generally in the same direction as said feed roll in a manner that a width between said front and back walls may be constricted causing said fibers to be compacted and shaped to form a fiber column of a prescribed width and shape in said reserve chute above said feed roll.

4,661,026
PNEUMATIC SEND/RECEIVE TERMINAL
Claude Carlier, Montreuil, France, assignor to Lamson Corporation, Syracuse, N.Y.
Filed Feb. 14, 1986, Ser. No. 829,629
Int. Cl.[4] B65G *51/26*
U.S. Cl. 406—74 **11 Claims**

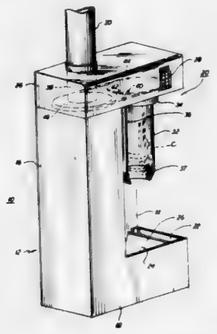
1. A send and receive terminal for a pneumatic tube system in which generally cylindrical carriers are transferred under air pressure through a carrier tube to or from another terminal in the system, the terminal comprising a housing having an end member with a tubular guide member that opens to an end of said carrier tube, a receive bin for holding received carriers, and a frame supporting said end member and receive bin; said frame having an access opening at one side and a closed wall at an opposite side;

a dispatch holder having an open side for insertion of one of said carriers and an open end for communicating with said tubular guide member;

closure means for closing said tubular guide member while allowing inward air flow, preventing outward airflow and openable to release a received carrier or to insert a carrier to be transmitted;

carriage means carrying said dispatch holder and said closure means between a first position in which said closure means is aligned with said tubular guide member and said dispatch holder is offset from the guide member, and a second position in which said closure means is offset from said tubular guide member and said dispatch holder is aligned with said tubular guide member;

drive means coupled with said closure means, said dispatch



holder, and said carriage means for displacing the latter, for opening said closure means, and for rotating said dispatch holder such that when said carriage is in said first position said drive means rotates said dispatch holder to orient said open side thereof away from said access opening and opens said closure means, and then displaces said carriage means with the opened closure means and the rotated dispatch holder, to said second position, and thereafter returns said carraige to said first position, closes said closure means and rotates said dispatch holder to orient its open side towards said access opening; and

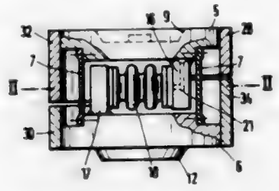
controller means for selectively controlling said drive means and said pneumatic tube system for effecting the transfer of one of said carriers placed in said dispatch holder to another terminal in said system.

4,661,027
TOOL CARRIERS AND UNBALANCE COMPENSATING MEANS
Wilfried Gerk, Amselstr. 10, 6074 Rödermark, and Gerhard Klee, Fuchshohl 102, 6000 Frankfurt-Ginnheim, both of Fed. Rep. of Germany
Filed Dec. 19, 1985, Ser. No. 810,579
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1984, 3446275
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—151 **6 Claims**

1. A revolving drill head or the like with finely adjustable tool carriers at right angles to its longitudinal axis having high rigidity material-elastic intermediate members operable by a hydraulic pressure medium supplied coaxially to the shaft of the drill head in a feed mechanism, which is positioned in fixed manner between the shaft and the tool carrier and having two flange-like connecting parts to the shaft or tool carrier connected by two axially parallel, resilient parts at right angles to the shaft axis as a parallel guide and with counter-directed, diametrically facing shaft axis parallel extensions which are symmetrical to and spaced from the shaft axis and between which is provided an expansion member comprising an elastic

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material intermediate member in a plane at right angles to the shaft axis, each of the flange-like connecting parts has a compensating device diametrically facing with respect to the shaft axis the extension fixed thereto for compensating its unbalance in at least one relative position of the one flange-like connecting part with respect to the other flange-like connecting part and the flange-like connecting parts are jointly surrounded by



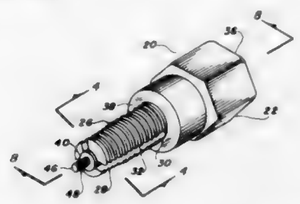
a split cylindrical sleeve, characterized in that the sleeve for forming the compensating means comprises two pipe parts (28), (30) with each pipe part having an eccentric center of gravity with respect to the shaft axis and wherein each is fixed to different ones of the flange-like connecting parts (5), (6) and wherein said pipe parts are movable in radially opposite directions to the extent of the relative movement of said flanges effected upon operation of the feed mechanism.

4,661,028

REVERSE CUTTING EXPANSION TAP

Leon A. Sanger, 85 S. Cambridge Dr., Lemoore, Calif. 93245

Filed Feb. 20, 1986, Ser. No. 831,317
Int. Cl.⁴ B23G *5/14*
U.S. Cl. 408—165 **6 Claims**



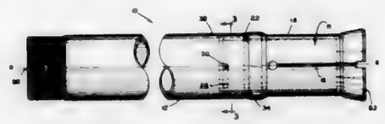
1. A reverse thread cutting expansion tap comprising:
(a) a body having a head on one end and a bore therethrough;
(b) a plurality of angularly tapered threads formed into the body on the end opposite the head, the threads are located on resilient fingers which extend forward from the body having outer surfaces forming a relatively small angle with the axis of rotation of the tap, said fingers having a plurality of parallel flutes therebetween, further, said threads interface with existing threads in a workpiece cutting damaged threads therewith;
(c) wrenching means on said head providing a gripping surface for hand tools to rotate said tap within a threaded hole in a workpiece;
(d) a shoulder stop disposed between said head and said tapered threads for limiting the allowable penetration of the threads into a workpiece by creating an obstruction therewith;
(e) an expansion forcing cone, having a threaded hole in the center thereof, contiguously engaging said bore in the body on the tapered threaded end; and,
(f) a tensioning capscrew having threads on one end and a head on the other, inserted into said bore in the body threadably engaging said forcing cone in such a manner as to expandably urge said tapered threads from an angular taper to a parallel thread relationship by the rotation of said capscrew into the forcing cone, moving the intersection of the cone with the bore end outwardly forcing the threads into parallel alignment, for cutting threads when the tap is inserted into a workpiece, expanded, and removed in reverse rotation.

4,661,029

QUICK DISCONNECT COLLET ASSEMBLY

Charles L. Miller, Antwerp, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 23, 1985, Ser. No. 812,589
Int. Cl.⁴ B23B *31/26*
U.S. Cl. 409—233 **10 Claims**



1. In an apparatus for coupling first and second coaxial elongated members, said first member comprising a tube, said apparatus disposed for selectively axially securing said tube to said second member and rotationlly securing said members for loaded coupled movement of said members in one rotational direction, said first and second members having radially disposed mating surfaces for limiting axial movement of said tube relative to said second member, said second member having circumferentially spaced externally threaded portions separated by uniformly spaced unthreaded portions, said tube having mating circumferentially spaced internally threaded portions intermediately spaced by mating unthreaded portions, whereby said tube may be slipped over said second member and located thereover to a predetermined axial position relative thereto, and wherein said tube may then be rotated in said one direction of rotation to cause said mating threads to engage; an improvement comprising: positive rotational stop means separate and apart from said axial mating surfaces for independently limiting axial movement of said members relative to one another beyond a preset limit, said stop means providing a circumferentially directed arresting force against movement of said tube relative to said second member, wherein said positive rotational stop means comprises a radially inwardly extending projection fixed to one end of said tube, and an arcuate circumferentially extending slotted portion in an extremity of a mating end of said second member disposed for receiving said projection, said slotted portion extending orthogonally with respect to said axes of said first and second members and including a stop limit disposed for imparting said circumferentially directed arresting force against said projection upon contact of said projection with said stop limit, whereby said projection and said stop limit become engaged at said preset limit upon relative rotation of first and second members.

4,661,030

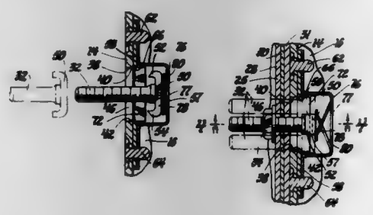
ADJUSTABLE FASTENER FOR BUMPER BAR

John A. Delmastro, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 555,495, Nov. 28, 1983, abandoned. This application Mar. 18, 1986, Ser. No. 842,354
Int. Cl.⁴ F16B *39/10*
U.S. Cl. 411—85 **1 Claim**

1. A fastener system for adjustably mounting a closed box section bumper bar or the like on a structural member comprising:
an elongated opening in the bumper bar, said elongated opening having a major dimension defining the limit of lateral adjusting movement of the bumper bar relative to the structural member and a minor dimension;

a bolt having a bolt head smaller than the elongated opening to permit axial insertion of the bolt head through the elongated opening and having a major dimension greater than the minor dimension of the elongated opening so that quarter-turn rotation of the bolt subsequent to insertion through the elongated opening aligns the major dimension of the bolt head for overlying relationship with the bumper bar to prevent removal of the bolt from the bumper bar, said bolt head having opposed edge faces defining the minor dimension thereof; and
a cage attached to the bumper bar inside the closed box section for retaining the bolt in the elongated opening, said cage having a wall overlying the elongated opening and having first and second integral spring tangs struck from the overlying wall and projecting at a relative angular orientation into engagement with the bolt head to yield



axially upon insertion of the bolt head into the opening and urge the bolt head axially into engagement with the bumper bar, said first and second integral spring tangs further engaging with corners of the opposed edge faces of the bolt head subsequent to quarter-turn rotation of the bolt head and acting to impose opposed acting forces on the opposed edge faces of the bolt head to urge movement of the bolt laterally of the bumper bar to a predetermined central initial position within the range of lateral adjusting movement to facilitate alignment of the bolt with the structural member, and said first and second spring tangs engaging with corners of the oppsed edge faces of the bolt head being yieldable to permit lateral adjusting movement of the bolt from the predetermined central initial position to an adjusted position within the range of lateral adjusting movement of the bumper bar defined by the elongated opening.

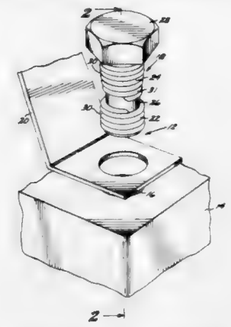
4,661,031

FATIGUE RESISTANT FASTENER ASSEMBLY

Otto R. Heine, Poway, Calif., assignor to R&H Technology, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 384,904, Jun. 4, 1982, abandoned. This application May 15, 1985, Ser. No. 734,574
Int. Cl.⁴ F16B *39/28*
U.S. Cl. 411—263 **19 Claims**

1. A fatigue resistant fastener comprising in combination:
a threaded male member including a head;
a threaded female member substantially complementary to the threaded male member, the threaded male member comprising a first threaded portion of a predetermined pitch, a non-threaded portion adjacent to the first threaded portion, and a second threaded portion of the predetermined pitch adjacent to the non-threaded portion and having threads rotationally offset relative to the threads of the first threaded portion, the first threaded portion being separated from the head by the second threaded portion and by the non-threaded portion, the second threaded portion comprising at least two turns of tapered threads having the predetermined pitch continuous with the non-tapered threads of the second threaded portion and immediately adjacent to the non-threaded portion, whereby a predetermined preload force arises in the assembled male and female members of the fastener



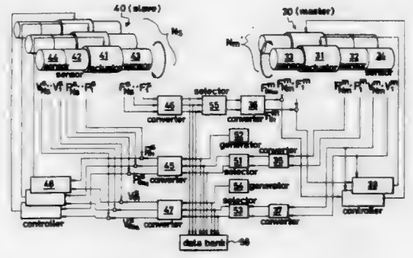
and whereby the preload force is distributed substantially over the tapered threads of the male member.

4,661,032

BILATERAL MASTER-SLAVE MANIPULATOR CONTROL DEVICE

Tatsuo Arai, Yatabemachi, Japan, assignor to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Dec. 18, 1985, Ser. No. 810,263
Claims priority, application Japan, Dec. 20, 1984, 59-269516
Int. Cl.⁴ B25J *3/04*
U.S. Cl. 414—5 **6 Claims**



1. A control device provided between a master device having a given articulation configuration and a given degree of freedom and a slave manipulator having a given articulation configuration and a given degree of freedom, for causing faithful operation of the slave manipulator according to operation command signals from the master device, comprising:
a first position coordinate converter for converting signals of position information concerning articulations of the master device into signals of position information concerning a hand of the master device in a common operating space coordinate system and outputting the converted signals;
a selector for selecting specific signals from the output signals of said first position coordinate converter and supplying the specific signals to corresponding articulations of the slave manipulator;
a second position coordinate converter for converting the signals supplied by said selector into signals of position information concerning the articulations of the slave manipulator and outputting the converted signals;
a first controller for giving drive force signals to actuators for the slave manipulator according to the differences between the output signals from said second position

coordinate converter and position information signals from the slave manipulator;

a first force coordinate converter for converting signals of force information concerning articulations detected by the slave manipulator into signals of force information concerning a hand of the slave manipulator in the common operating space coordinate system;

a second force coordinate converter for converting the signals of force information concerning the hand of the slave manipulator in the common operating space coordinate system into signals of force information concerning the articulations of the master device and outputting the converted signals; and

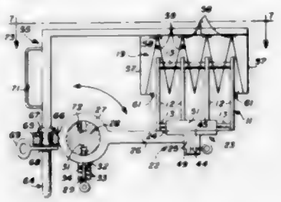
a second controller for giving drive force signals to actuators for the master device according to the differences between the output signals from said second force coordinate converter and force information signals detected by the master device.

4,661,033

APPARATUS FOR UNLOADING WAFERS FROM A HOT BOAT

Daniel A. Worsham, San Jose, Calif., assignor to Pacific Western Systems, Inc., Mountain View, Calif.

Filed Aug. 22, 1984, Ser. No. 643,198
Int. Cl.⁴ B65G *65/04*
U.S. Cl. 414—405 **3 Claims**



1. In a wafer carrier apparatus for unloading wafers from a hot boat of the type having a plurality of elongated parallel electrodes defining elongated processing gaps therebetween with the wafers being serially spaced apart lengthwise of the gaps, said boat being loaded in use and inserted axially within an elongated furnace tube for heating the wafers and the boat to an elevated wafer processing temperature and after processing, the boat is withdrawn axially of the furnace tube to surrounding it for unloading:

wafer carrier means for positioning below the hot boat to receive the wafers to be unloaded from the boat; and

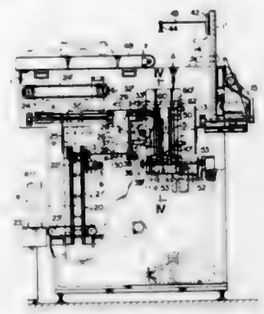
said wafer carrier means having a plurality of foldable elongated receiving means in a corrugated configuration having ridge and valley portions with the ridge portions extending lengthwise of and into the spaces between the elongated electrodes of the boat such that by inverting the boat and the carrier the wafers are caused to drop from the hot boat into said elongated receiving means of said wafer carrier, whereby said wafer carrier means can be unfolded to facilitate access to the unloaded wafers as carried by said wafer carrier means.

4,661,034

BAR-LIKE MEMBER SUPPLYING METHOD AND DEVICE

Katsuhiko Kumata; Isao Endo, both of Nagareyama; Syozi Numa, Tokyo; Ichiro Hirose; Takayoshi Sagawa, both of Hiratsuka, and Katsuyoshi Matono, Fukuoka, all of Japan, assignors to Tokyo Automatic Machinery Works, Ltd. and Japan Tobacco, Inc., both of Tokyo, Japan

Continuation-in-part of Ser. No. 659,217, Oct. 10, 1984. This application Apr. 29, 1985, Ser. No. 728,069
Claims priority, application Japan, Apr. 28, 1984, 59-87496
Int. Cl.⁴ B65G *65/34*
U.S. Cl. 414—416 **12 Claims**



2. Apparatus for supplying bar-like members from a containing box opened at the top end thereof to an entrance side of an accumulating device, comprising:

a bar-like member supplying path located adjacent the entrance side of the accumulating device;

a box delivering mechanism located adjacent the supplying path for placing the containing box in an inverted condition onto the supplying path;

a box lifting mechanism located adjacent the supplying path for lifting the containing box to allow the bar-like members within the containing box to be removed from the containing box and supplied to the supplying path;

a pusher mechanism located adjacent the supplying path for pushing the removed bar-like members supplied to the supplying path into the accumulating device in a lump;

means for temporarily closing the entrance end of the accumulating device after the bar-like members have been supplied to the accumulating device; and

an empty box discharging mechanism located adjacent the supplying path for discharging the containing box thus lifted from the supplying path.

4,661,035

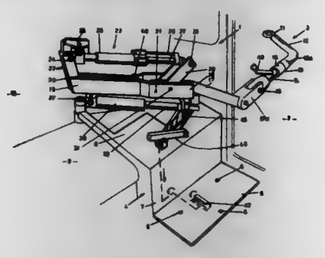
COLLAPSIBLE WHEEL-CHAIR AND APPARATUS FOR LIFTING THE WHEEL-CHAIR INTO AND OUT FROM AN AUTOMOBILE

Jan-Erik Danielsson, Sala, Sweden, assignor to Rolf Ahlbergs Mekaniska Verkstad AB, Fjärdhundra, Sweden

Continuation-in-part of Ser. No. 523,675, Aug. 16, 1983, abandoned. This application Sep. 11, 1985, Ser. No. 775,006
Claims priority, application Sweden, Aug. 25, 1982, 8204870
Int. Cl.⁴ B62D *63/02;* **B60P** *1/46*
U.S. Cl. 414—550 **7 Claims**

7. In combination, a lifting apparatus for lifting a wheel-chair into and out from a vehicle, comprising a lifting arm which may be connected to the wheel chair, a substantially Z-shaped stand having a lower support and mounting plate for attachment to the vehicle floot at the lace for the driver's seat, a substantially vertical middle portion and an upper support plate for positioning on top of the back seat of the vehicle, and means coupled to the upper support plate and to the lifting arm

for pivoting the lifting arm in a vertical and horizontal direction to lift the wheel chair into and out of the vehicle and, a wheel-chair for conventional use as a transport means indoors and outdoors and for use as a driver's seat in a vehicle and adapted for use together with said lifting apparatus, said wheel-chair comprising a seat mounted on a collapsible chassis frame, a backrest attached to the seat, a number of lifting straps for



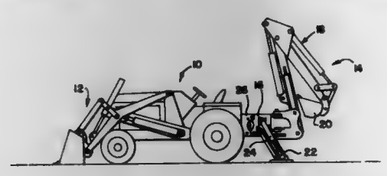
being coupled together with the lifting apparatus and having at least one hand wheel for the propulsion of the wheel-chair when used in a conventional manner, and a combined propulsion and folding maneuvering means mounted in a cradle which is pivotally connected to the wheel-chair seat and in which the rear wheels of the wheel-chair are mounted for swinging up to a position behind the wheel-chair backrest of the seat.

4,661,036

BACKHOE HYDRAULIC LATCH ARRANGEMENT

Rudolf Horsch, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jun. 28, 1984, Ser. No. 625,676
The portion of the term of this patent subsequent to Apr. 22, 2003, has been disclaimed.
Int. Cl.⁴ E02F *3/34*
U.S. Cl. 414—686 **2 Claims**



1. A hydraulic latch arrangement for connecting a backhoe to a material handling implement, wherein said backhoe includes a frame and vertically movable stabilizer means operable by stabilizer hydraulic ram means, said latch arrangement comprising:

upper pivot means pivotally connecting said backhoe frame and said implement for movement of said backhoe relative to said implement about a horizontal axis;

latch means pivotally mounted on said implement generally below said upper pivot means for pivotal movement between engaged and disengaged positions;

latch pin means mounted on said backhoe frame for cooperation with said latch means, whereby in said engaged position of said latch means said latch pin means is adapted to be received and retained by said latch means to hold said backhoe against movement with respect to said implement, and in said disengaged position of said latch means said latch pin means is released from said latch means to permit pivotal movement of said backhoe relative to said implement about said horizontal axis;

hydraulic latch motor means operatively connected to said latch means for selectively moving said latch means between said engaged and disengaged positions;

hydraulic control valve means operable by the operator of said implement for selectively controlling fluid pressurization of said stabilizer hydraulic ram means with pressurized hydraulic fluid from an associated source for selectively raising and lowering said vertically movable stabilizer means; and

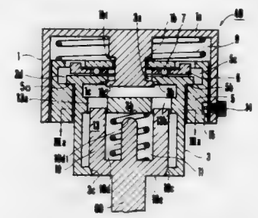
hydraulic fluid conduit means joining said hydraulic latch motor means, said stabilizer hydraulic ram means, and said hydraulic control valve means in fluid communication, whereby selective fluid pressurization of said stabilizer hydraulic ram means by operation of said control valve means for lowering said stabilizer means effects operation of said hydraulic latch motor means for moving said latch means toward said engaged position so that said latch pin means is received and retained by said latch means to hold said backhoe against movement with respect to said implement, and fluid pressurization of said stabilizer hydraulic ram means by operation of said control valve means for raising said stabilizer means effects operation of said hydraulic latch motor means for moving said latch means toward said disengaged position.

4,661,037

ANGULAR AND POSITIONAL DEVIATION ADJUSTING MECHANISM OF A ROBOT HAND

Yoshihide Sugino, Chigasaki; Yoshinori Shiote, Kamakura, and Kazuyoshi Yamaki, Chigasaki, all of Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 513,041, Jul. 12, 1983, abandoned. This application Dec. 24, 1985, Ser. No. 812,960
Claims priority, application Japan, Jul. 12, 1982, 57-121082
Int. Cl.⁴ G01B *3/22;* **B66C** *3/00*
U.S. Cl. 414—729 **6 Claims**



1. An angular and positional deviation adjusting mechanism of a robot hand comprising:

a holder;

an eccentricity accommodating member, said eccentricity accommodating member being capable of eccentric deviate movement with respect to said holder;

an angular deviation accommodating member, said angular deviation accommodating member being capable of angular deviate movement with respect to said holder;

a first inclined seating surface provided on said holder, a second inclined seating surface provided on a top end of eccentricity accommodating member a third inclined seating surface provided on a bottom end of said eccentricity accommodating member, and a fourth inclined seating surface provided on said angular deviation accommodating member;

first urging means for urging said first inclined seating surface and said second inclined seating surface into engagement for the alignment of said eccentricity accommodating member with said holder, said first urging means being compressible to relieve the engagement so that an eccentric deviate movement of said eccentricity accommodating member with respect to said holder can be accommodated;

second urging means for urging said third inclined seating surface and said fourth inclined seating surface into engagement for the alignment of said eccentricity accommodating member with said angular deviation accommodating member, said second urging means being compressible to relieve the engagement so that an angular deviate movement of said angular deviation accommodating member with respect to said eccentricity accommodating member can be accommodated, wherein the urging force of said second urging means is greater than the urging force of said first urging means such that angular deviation is accommodated after eccentric deviation is accommodated.

4,661,038

PROTECTION ARRANGEMENT FOR INDUSTRIAL ROBOTICS

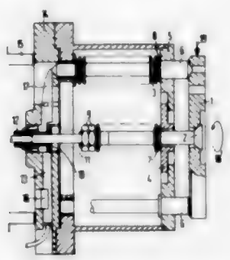
Gerd Kohler, and Rudolf Berger, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 15, 1985, Ser. No. 765,779

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1984, 3437036

Int. Cl.⁴ B66C *1/00*

U.S. Cl. 414—730 **6 Claims**



1. A protection arrangement for industrial robots against consequences resulting from collisions during operating and programming of the industrial robot, the protection arrangement including a flange connected to a movable portion of the industrial robot, the protection arrangement comprising a switching arrangement including a switch responsive to tensional and compressional forces for deactivating the industrial robot, the switching arrangement also response to bending and torsion forces acting upon the flange of the industrial robot for deactivating the industrial robot, the protection arrangement further comprising a protection flange, an anchor pin, and a plurality of movable pins extending from the flange of the industrial robot and having one end mechanically contacting the protection flange, each movable pin having one of a set of first springs located thereon and providing a force at the one end for mechanical contact against the protection flange while the anchor pin provides an opposite force to hold the protection flange in a position against the plurality of pins, first mechanical coupling means located on the anchor rod in the vicinity of the flange of the industrial robot responsive to displacement of the anchor rod in a first detection for operating the switch for deactivating the industrial robot, and second mechanical coupling means responsive to displacement of at least one movable pin in a second direction for operating the switch for deactivating the industrial robot.

4,661,039

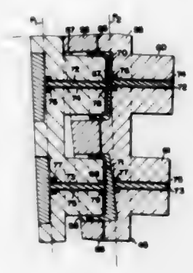
FLEXIBLE-FRAME ROBOT

David L. Brenholt, Menomonie, Wis., assignor to Donaldson Company, Minneapolis, Minn.

Continuation of Ser. No. 543,752, Oct. 20, 1983, abandoned. This application Sep. 23, 1985, Ser. No. 779,224

Int. Cl.⁴ B25J *9/20*

U.S. Cl. 414—735 **8 Claims**



1. A flexible-frame robot, comprising:
a base;
a segmented body having one end secured to said base;
said body including a plurality of aligned members, each member including a pair of end segments and a middle segment;
an opposite pair of springs interconnecting corresponding adjacent end segments of the members of said body;
the middle segment of each member including mating piston and cover sections, the piston section including an opposite pair of openings oriented transverse to said pair of springs;
a pair of bladder diaphragms disposed between adjacent middle segments of the members of said body, each diaphragm being in fluid communication through the corresponding openings in the piston sections thereof to define two passageways adapted for connection at said one end of said body to a source of fluid under pressure, whereby angular displacement of said body can be controlled as desired; and
means connected to the other end of said body for gripping an object.

4,661,040

MANIPULATOR ROBOT, MORE PARTICULARLY FOR TRANSFERRING SHEET METAL ELEMENTS FROM A PRESSING STATION TO THE NEXT PRESSING STATION OF A PRESSING LINE

Paolo Cigna, Turin, Italy, assignor to Comau S.p.A., Turin, Italy

Filed Dec. 11, 1984, Ser. No. 680,431

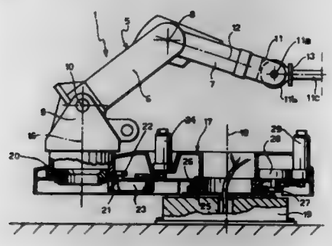
Claims priority, application Italy, Dec. 12, 1983, 54029/83[U]

Int. Cl.⁴ B25J *9/04*

U.S. Cl. 414—744 R **1 Claim**

1. A manipulation robot for transferring sheet metal elements from a pressing station to the next station of a pressing arm comprising a fixed base, an ancillary support structure rotatably supported on said fixed base for rotation about a first vertical axis, a rotatable base structure rotatably supported on said ancillary support structure for rotation about a second vertical axis spaced from said first vertical axis, a manipulating arm including at least two arm elements articulated together, said manipulating arm being pivotably connected at one end to said rotatable base structure and having pickup means for picking up said elements connected to the opposite end of said manipulating arm, wrist means including a transversely extending pivot interposed between said manipulating arm and said pickup means, first drive means for effecting rotation of said

ancillary support structure relative to said fixed base comprising a first electric motor-reducer unit mounted on said ancillary support structure, a first pinion driven by said first electric motor-reducer unit and a first ring gear secured to said fixed base in meshing engagement with said first pinion and second drive means for effecting rotation of said rotatable base structure relative to said ancillary support structure comprising a



second electric motor-reducer unit mounted on said ancillary support structure, a second pinion driven by said second electric motor-reducer unit and a second ring gear secured to said rotatable base structure in meshing engagement with said second pinion whereby said rotatable base structure may be rotated at speeds having a controlled ratio with respect to each other and in opposite directions.

4,661,041

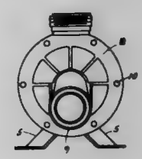
SELF-DRAINING PUMP ARRANGEMENT

William D. Hessler, Wyckoff, N.J., assignor to ITT Corporation, New York, N.Y.

Filed Nov. 5, 1985, Ser. No. 795,396

Int. Cl.⁴ F04D *5/00*

U.S. Cl. 415—52 **10 Claims**



1. A self-draining pump arrangement comprising a motor including a motor housing and an output shaft rotatable about an axis which is substantially horizontal in a position of use of the arrangement and having a free end portion axially projecting out of said motor housing; a pump housing stationarily arranged around said end portion of said output shaft and bounding an impeller chamber which is substantially coaxial with said output shaft and has an open end facing away from said motor housing, and an output passage which communicates with a radially outward region of said impeller chamber; an impeller received in said impeller chamber and connected to said end portion of said output shaft for joint rotation therewith for impelling fluid present in said impeller chamber from a radially inward region toward said radially outward region of the latter; and a lid including a mounting portion mounted on said pump housing for closing said open end of said impeller chamber, an inlet portion axially spaced from said mounting portion and bounding an inlet passage which is centered on an inlet axis that is substantially parallel to said axis and offset therefrom by such a distance that a bottom zone of said inlet passage is at an elevation no higher than a bottom zone of said impeller chamber in said position of use, a connecting portion bounding an internal space connecting said inlet passage with a radial section of said impeller chamber which extends from said radially inward region to said bottom zone of said impeller chamber, and a partitioning wall situated in said internal space and delimiting therein a connecting passage leading from said inlet passage to said radially inward region of said impeller chamber and separating such connecting passage from the remainder of said internal space and of said section, said partitioning wall including at least one aperture of a limited cross section which communicates said bottom zone of said impeller chamber with said bottom zone of said inlet passage for draining fluid from said bottom zone of said impeller chamber when said inlet passage is connected to a drain.

4,661,042

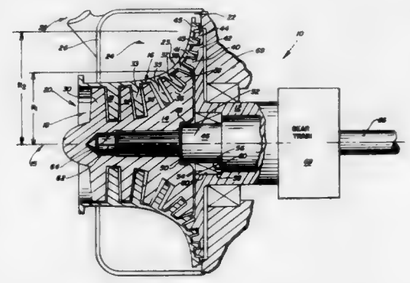
COAXIAL TURBOMACHINE

Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 18, 1984, Ser. No. 433,474

Int. Cl.⁴ F04D *29/56, 13/02*

U.S. Cl. 415—64 **8 Claims**



1. A rotary vaned machine comprising:
first and second blade carrying means rotatable about an axis;
blades on each of said blade carrying means, the radial dimensions of the blades varying progressively between an inlet and outlet and increasing from the first to the second blade carrying means;
means mounting said first and second blade carrying means for rotation;
a rotatable drive member interconnected with at least one of the first and second blade carrying means so that the ratio of the rotational velocities of the drive member and said one of the first and second blade carrying members is constant; and
means permanently coupling said first and second blade carrying means to each other so that the first and second blade carrying means rotate in the same direction and at different velocities and the ratio of the rotational velocities of the first and second blade carrying means is such that the first blade carrying means is rotated at a greater rotational velocity than said second blade carrying means regardless of the speed of the drive member and so that the tip speeds of the blades on the first and second blade carrying means are approximately the same.

4,661,043

STEAM TURBINE HIGH PRESSURE VENT AND SEAL SYSTEM

John C. Groenendaal, Jr., and Boyd Brown, both of Winter Springs, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 23, 1985, Ser. No. 790,679

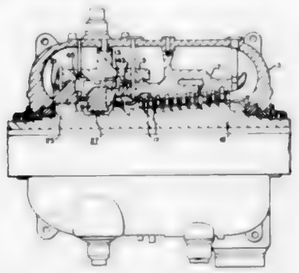
Int. Cl.⁴ F01D *3/00*

U.S. Cl. 415—104 **4 Claims**

1. A steam turbine comprising:
an outer cylinder;

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an inner cylinder disposed within the outer cylinder;
a blade ring disposed partially within the inner cylinder and partially within the outer cylinder;
a nozzle chamber assembly disposed within the inner cylinder for introducing motive steam to the turbine and having nozzle chamber and nozzle block portions;
a rotor having a plurality of circular array of rotatable blades and a thrust balance piston disposed thereon;
a dummy ring disposed within one end of the inner cylinder adjacent the balance piston;
labyrinth sealing means disposed between the dummy ring and the balance piston forming a rotating seal therebetween;



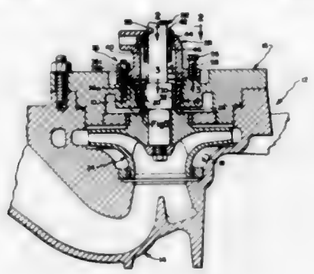
stationary sealing means disposed between the nozzle block and the blade ring;
labyrinth sealing means disposed between the nozzle chamber assembly and the rotor forming a rotatable seal therebetween;
the inner cylinder, nozzle chamber, nozzle block, blade ring, dummy ring and rotor and sealing means cooperating to form an enclosed seal chamber which confines the steam acting on the balance piston; and
a port disposed in the blade ring, the port being in fluid communication with the sealed chamber and located immediately down stream of the first circular array of rotatable blades to provide a more efficient and reliable turbine.

4,661,044

PUMP HAVING A BUSHING REMOVAL MECHANISM

Bruce E. Freeland, Seneca Falls, N.Y., assignor to Goulds Pumps, Incorporated, Seneca Falls, N.Y.

Filed May 24, 1985, Ser. No. 737,517
Int. Cl.[4] F01D *25/24*
U.S. Cl. 415—201 **10 Claims**



1. A pump comprising in combination.
a pump casing;
a backplate cooperating with said pump casing to define a pump chamber, said backplate having an access opening extending therethrough and communicating with said pump chamber and providing an abutment surface facing away from said pump chamber;
a pump shaft having an inner end and an outer end, said inner end extending through said access opening and supporting an impeller within said pump chamber for pumping fluid therethrough;
bushing means for supporting said inner end of said pump shaft for rotation relative to said backplate, said backplate removably supporting said bushing means within said access opening by sliding surface engagement between an inner surface of said access opening and an outer surface of said bushing means, wherein an assembled position of said bushing means within said access opening is defined by engagement of said bushing means with said abutment surface, said backplate having means for constraining said bushing means against rotational movement relative thereto while said bushing means is in said assembled position;
a gland having a through aperture to permit passage of said outer end of said pump shaft therethrough;
means for removably fixing said gland to said backplate for releasably retaining said bushing means in said assembled position, while permitting rotational movements of said gland relative to said backplate; and
connecting said operable to response to said rotational movements of said gland while said bushing means is in said asembled position for removably connecting said gland to said bushing means for extracting the latter from said assembled position within said access opening upon disassembling movement of said gland in a direction away from said backplate and towards said outer end of said pump shaft wherein said inner surface of said access opening is of stepped diameter configuration having axially spaced relatively small and larger diameter support wall portions disposed axially adjacent to and remote from said pump chamber, respectively; and said bushing means includes a sleeve bushing internally sized for engagement with said pump shaft and a bushing holder for supporting said sleeve bushing within said access opening, said bushing holder engages with said abutment surface to define said assembled position and said outer surface of said bushing holder having axially spaced relatively small and relatively large diameter wall portions arranged for slidably engagement with said relatively small and large diameter support wall portions to provide a relatively small clearance fit support for said bushing holder when said bushing means is in said assembled position, while providing a relatively loose fit for said bushing holder relative to said backplate during a substantial portion of travel of said bushing means axially of said pump shaft towards and away from said assembled position.

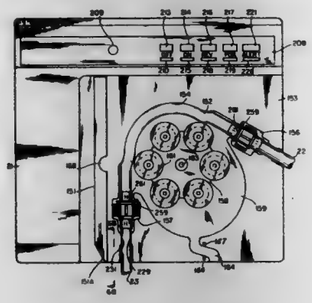
4,661,045

LEAKAGE DETECTION IN REMOTE SUPPLY PAINTING SYSTEM

Walter E. Winston, Carmel, and Lowell G. Atkinson, Indianapolis, both of Ind., assignors to Triune Automated Painting Systems, Carmel, Ind.

Continuation-in-part of Ser. No. 564,724, Dec. 23, 1983, Pat. No. 4,576,553, which is a division of Ser. No. 218,354, Dec. 22, 1980, Pat. No. 4,424,011. This application Jan. 22, 1986, Ser. No. 821,450
Int. Cl.[4] F04B *49/10*
U.S. Cl. 417—9 **23 Claims**

1. Painting apparatus, comprising:
a pump housing;
a pump in said housing, said pump comprising a pump face, a paint pumping tube, a tube support cam, a rotatable carrier, and pumping rollers circularly disposed around and mounted on said carrier;
a motor drivingly connected to said pump for rotating said carrier;
said pump face being comprised principally of upstanding horizontally facing surfaces, and including a cavity receiving said pumping tube;
said cavity having a lowermost point and being shaped to drain to said point;
a leakage directing passageway communicating at an upper end with said lowermost point and extending lengthwise downward therefrom;
a light source disposed on one side of said passageway;



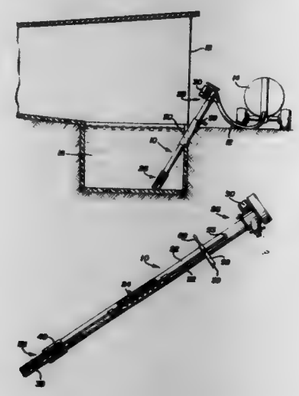
photoelectric sensor means, disposed on another side of said passageway opposite said light source, for receiving light from said light source;
said light source and said photoelectric sensor means being disposed intermediate the length of said passageway;
said photoelectric sensor means being responsive to paint draining from said cavity downwards inside said passageway past said light source to stop said motor; and
alert means for signalling said photoelectric sensor means has stopped said motor in response to said draining paint.

4,661,046

MANURE VACUUM WAGON POWER ASSIST AUGER

Phillip L. Ruyle, Box 141 A, Rte. #1, Medora, Ill. 62063

Filed Sep. 26, 1985, Ser. No. 780,675
Int. Cl.[4] F04B *23/14;* **F10B** *3/00*
U.S. Cl. 417—203 **12 Claims**



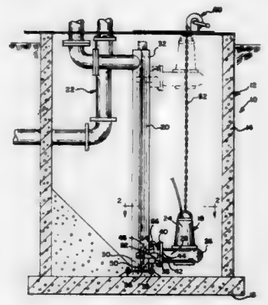
1. In combination with a manure-containing pit, lagoon, or like container, apparatus for removing manure therefrom comprising an elongate auger for insertion into the container, said auger including an elongated hollow auger casing defining an open inlet end, an auger screw extending lengthwise in the casing and journalled therefrom, said screw protruding endwise outwardly of said inlet end and extending therefrom to a lateral outlet adjacent said outlet end of the casing, drive means for the screw, and suction-applying means for applying suction to the auger lateral outlet and including a hose connection extending between said lateral outlet and the suction-applying means.

4,661,047

SUBMERSIBLE PUMP GUIDE RAIL ARRANGEMENT

Frank G. Weis, Kansas City, Mo., assignor to Smith & Loveless, Lenexa, Kans.

Filed Mar. 24, 1986, Ser. No. 842,932
Int. Cl.[4] F04B *17/00, 35/00*
U.S. Cl. 417—360 **8 Claims**



1. In a submersible pump station having a wet well for receipt of a liquid thereinto; an improved submersible pump assembly for pumping liquid from said wet well, comprising: a substantially vertical discharge conduit of rectangular cross-section extending into said wet well having a lower portion positioned adjacent the bottom of said wet well and an upper portion positioned above said lower portion; a submersible pump means positioned within said wet well moveable between a first position in fluid communication with said lower portion of said discharge conduit and a second position adjacent said upper portion of said discharge conduit; and guide means associated with said submersible pump means for guiding the movement of said submersible pump means between its first and second positions, said guide means being received by said discharge conduit for selective vertical movement along the length of said discharge conduit, said guide means having a first end portion which is secured to said submersible pump means and a second end portion which is slidably received about at least two opposing corners of said discharge conduit.

4,661,048

ELECTROMAGNETIC PUMP WITH SIMPLIFIED CONSTRUCTION

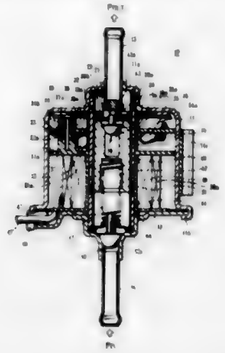
Mitusuke Masaka, Kawagoe, and Takatoshi Arai, Hiki, both of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1985, Ser. No. 785,412
Claims priority, application Japan, Nov. 7, 1984, 59-168009[U]
Int. Cl.[4] F04B *17/04*
U.S. Cl. 417—360 **3 Claims**

1. An electromagnetic pump comprising:
an electrically insulative coil bobbin wound with an excitation coil and disposed around a sleeve member having a plunger therein;
a pair of magnetic cylingers axially inserted from two ends of said coil bobbin between an inner surface of said coil bobbin and an outer surface of said sleeve member to constitute a magenetic flux path;
a printed circuit board arranged at one side of said coil

bobbin and mounted with a transistor and various electronic components; and

a pump housing consisting of a cup-like housing body and a lid for closing an opening of said housing body, said pump housing being adapted to enclose said coil bobbin, said pair of magnetic cylinders and said printed circuit board and to hold said pair of magnetic cylinders mounted at said two ends of said sleeve member, said pump housing



being made of a magnetic material to form the magnetic flux path together with said pair of magnetic cylinder, said housing body and said lid each having a centrally located outwardly extending integrally formed recessed region for securing the respective ends of said sleeve member and said pair of magnetic cylinders, so that said bobbin, said printed circuit board, said sleeve member and said cylinders can be quickly and conveniently mounted in said housing.

4,661,049

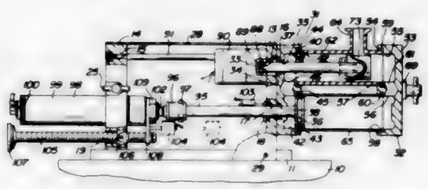
METERING PUMP

Dale Tanner, 201 Evergreen Ave., Apt. 6-2A, Vestal, N.Y. 13850

Filed Aug. 23, 1985, Ser. No. 768,850

Int. Cl.[4] F04B *7/00*

U.S. Cl. 417—418 **5 Claims**



1. a metering pump comprising a mounting structure, a cylindrical valve chamber mounted by and extending from said mounting structure, a single pair of angularly spaced inlet and outlet connections opening into said cylindrical valve chamber intermediate the ends thereof, a valve plug angularly shiftable in said valve chamber adjacent to said inlet and outlet connections, a cylindrical pump chamber mounted by and extending from said mounting structure generally parallel to said cylindrical valve chamber and having spaced locations at its opposite ends in respective fluid communication with opposite ends of said valve chamber on opposite sides of said valve plug, said plug having angularly spaced passageways extending longitudinally of and opening through opposite ends of said plug, said plug passageways each communicating one of said valve chamber connections with a respective one of said spaced end locations of said pump chamber and upon angular plug shifting communicating said one valve chamber connections with the other of said spaced end locations, and a piston in said pump chamber reciprocating between spaced end locations for alternately moving fluid in said inlet connection and out said outlet connection, said mounting structure comprising a pair of end members, said cylindrical valve and pump chambers extending between said end members, said end members being in clamping engagement with the ends of said cylindrical chambers and having passageways defining communication between adjacent chamber ends, and releasable tie members extending between said end members and retaining said clamping engagement.

4,661,050

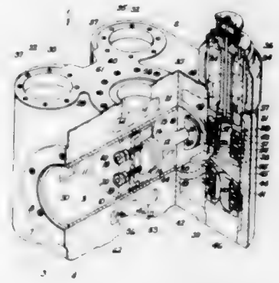
HIGH PRESSURE GAS TRANSMISSION COMPRESSOR

Richard M. Deminski, Mt. Vernon, Ohio, assignor to Anglo Compression, Inc., Mt. Vernon, Ohio

Filed Aug. 13, 1980, Ser. No. 177,863

Int. Cl.[4] F04B *39/10*

U.S. Cl. 417—454 **7 Claims**



1. A high-pressure gas transmission compressor for admitting gas at a suction inlet and discharging gas at increased pressure from a discharge outlet comprising:

a block-like compressor housing having a substantially horizontal elongated smooth bore cylindrical cylinder extending longitudinally therethrough;

a cylindricla piston slidably received for reciprocating movement within said cylinder;

a pair of vertically extending spaced valve housings positioned on each side of said cylinder and formed within the compressor housing, each of said valve housings enclosing a vertically oriented hollow elongated valve chamber positioned so that the upper and lower ends of each of said chambers extend above and below, respectively, said cylinder, said valve chambers being parallel to each other such that the center line of said cylinder is perpendicular to and non-intersecting with the center lines of said valve chambers;

spaced openings extending tHrough the side walls of said cylinder;

a gas passageway connecting each of said openings with one of said valve chambers;

discharge valve means positioned within at least one of said valve chambers to permit gs flow from said cylinder to said discharge outlet but prevent gas flow in the opposite direction;

suction valve means positioned within at least one of said valve chambers to permit gas flow from said suction inlet to said cylinder but prevent gas flow in the opposite direction; and

means connecting the outlet ends of said discharge valves and the inlet ends of said suction valves to the discharge outlet and suction inlet, respectively, said discharge valve means and said suction valve means comprising a plurality of valves positioned within each of said valve chambers and means connecting said valves to permit their withdrawal as a unit through one end of the valve chamber.

4,661,051

FUEL INJECTION PUMP WITH ADJUSTABLE TIMING

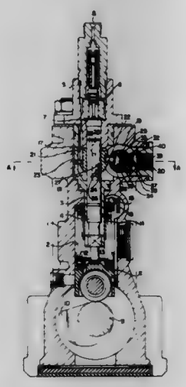
Hisashi Nakamura, and Noriyuki Abe, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1985, Ser. No. 796,442

Claims priority, application Japan, Nov. 16, 1984, 59-241700

Int. Cl.[4] F02M *59/24*

U.S. Cl. 417—499 **3 Claims**



1. A fuel injection pump comprising:

(a) a pump body;

(b) a plunger disposed in said pump body for reciprocating within said pump body;

(c) a pre-stroke adjusting mechanism disposed in said pump body and operatively connected with said plunger for adjusting an effective pre-stroke of said plunger, said pre-stroke adjusting mechanism comprising:

(1) a control sleeve fitted around said plunger for sliding along an axis of said plunger;

(2) a rotatable control rod extending in a direction normal to the axis of said control sleeve and operatively connected with said control sleeve for sliding said control sleeve along said axis of said plunger when said control rod is rotated, said control rod having an aperture extending transversely therethrough facing said control sleeve;

(3) a coupling shaft rotatably mounted on said control rod having a body portion rotatably disposed in said aperture and an engagement portion extending from said body portion for engaging said control sleeve, said engagement portion disposed in an eccentric relation to said body portion, and

(4) a thrusting screw threaded in said aperature for fixing said coupling shaft relative to said control rod.

4,661,052

RECIPROCATING DOWN-HOLE SAND PUMP

James L. Ruhle, 2535 E. Balfour Ave., Fullerton, Calif. 92631

Filed Nov. 19, 1984, Ser. No. 673,124

Int. Cl.[4] F04B *21/04, 39/10;* **E21B** *43/00*

U.S. Cl. 417—552 **1 Claim**

1. The invention of a continuously-operated reciprocating down-hole sand pump comprising:

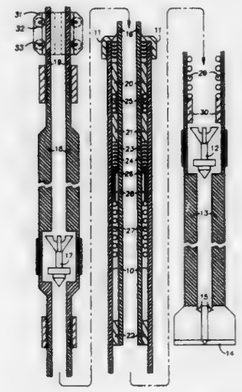
a steel polished plunger pipe that strokes back and forth within a steel honed pump barrel, and is equipped with a self-lubricating fluorocarbon V-ring system that is pressure-actuated during compression strokes,

the self-lubricating fluorocarbon V-ring system also is self-actuated by means of coil springs to provide wiping action to the polished plunger pipe during suction strokes,

the self-lubricating fluorocarbons V-ring system also self-adjusts by means of coil springs located adjacent the fluorocarbon V-ring so as to automatically compensate for V-ring wear,

the self-lubricating fluorocarbon V-ring system also is designed in such a manner so as to eliminate voids and discourage the extrusion of V-rings in high temperature and high-pressure applications.

a foot valve in the pump barrel and a travelling valve in the polished plunger pipe which are actuated by presure-gradient reversals created during the cyclic stroke reversals of the reciprocating down-hole sand pump,



a steel cylindrical weight drop, attached bit, and suction ports, which provide the means to loosen consolidated sand at the bottom of oil, gas, geothermal, and water-supply wells,

a steel cylindrical weighted momentum unit which axially oscillates the polished plunger pipe, or strokes the reciprocating down-hole pump, and oscillates the heavy cylindrical weight drop and bit.

a string of lightweight composite pipe which axially oscillates the weighted momentum unit,

a means at the surface to axially oscillate the lightweight composite pipe string,

a low-friction pipe guide system that supports and guides by means of small wheels the axially oscillating composite pipe within high-angle directionally-drilled wells so as to prevent the composite pipe from contacting the well casing or formation wall.

4,661,053

PLASTIC MAGNET INJECTION MOLDING MACHINE

Akira Yokota, and Masashi Kato, both of Hiroshima, Japan, assignors to The Japan Steel Works Ltd., Japan

Filed Mar. 29, 1985, Ser. No. 717,773

Claims priority, application Japan, Mar. 30, 1984, 59-45046[U]

Int. Cl.[4] B29C *33/32*

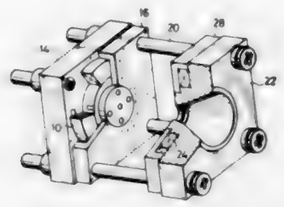
U.S. Cl. 425—3 **3 Claims**

1. A plastic magnet injection molding machine comprising: a stationary platen side block and a movable platen side block each of said side blocks made of a ferromagnetic material and having an outer circumference and each of said side blocks fixed, respectively, to a stationary platen and a movable platen; a stationary platen side coil and a movable platen side exciting

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coil arranged at the respective outer circumferences of said stationary and movable platen side ferromagnetic blocks; and a stationary platen side cover and a movable platen side cover each made of a non-magnetic material and attached, respectively, to said stationary and movable platens so as to surround the respective outer peripheries of said stationary platen side exciting coil and said stationary platen side ferromagnetic block and the respective outer peripheries of said movable platen side exciting coil and said movable platen side ferromagnetic block; wherein said stationary platen side ferromagnetic block and said stationary platen side non-magnetic cover have, respectively, surfaces each being in opposition to said movable platen and being flush with each other in a single plane parallel with said stationary platen and said movable platen side ferromagnetic block and said movable platen side non-magnetic cover have, respectively, surfaces each being in opposition to said stationary platen and being flush with each other in a single plane, said surfaces on said stationary and movable sides being formed with fastening holes for fitting stationary and movable molds, respectively.

3. A plastic magnet injection molding machine comprising: a stationary platen side block and a movable platen side block each of said side blocks made of a ferromagnetic material and having an outer circumference and each of said side blocks fixed, respectively, to a stationary platen and a movable platen; a stationary platen side coil and a movable platen side exciting coil arranged at the respective outer circumferences of said stationary and movable platen side ferromagnetic blocks; and a



stationary platen side cover and a movable platen side cover each made of a non-magnetic material and attached, respectively, to said stationary and movable platens so as to surround the respective outer peripheries of said stationary platen side exciting coil and said stationary platen side ferromagnetic block and the respective outer peripheries of said movable platen side exciting coil and said movable platen side ferromagnetic block; wherein said stationary platen side ferromagnetic block and said stationary platen side non-magnetic cover have, respectively, surfaces each being in opposition to said movable platen and being flush with each other in a single plane parallel with said stationary platen and said movable platen side ferromagnetic block and said movable platen side non-magnetic cover have, respectively, surfaces each being in opposition to said stationary platen and being flush with each other in a single plane, said surfaces on said stationary and movable sides being formed with fastening holes for fitting stationary and movable molds, respectively; said machine further comprising magnetic material tie rod means in contact with both of said stationary and movable platens whereby, with stationary and movable molds fitted to said surfaces on said stationary and movable sides and opposing one another to form a cavity containing a ferromagnetic material, a closed magnetic path is formed including said stationary platen, tie bar means, movable platen, movable platen side ferromagnetic block, movable mold, said ferromagnetic material contained in said cavity, said stationary mold and said stationary platen side ferromagnetic block.

4,661,054

TILE MANUFACTURING APPARATUS

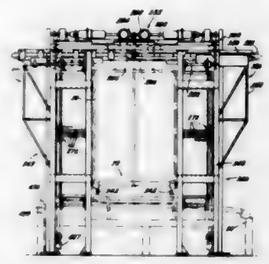
Bhushan K. Oberoi, Horley, and Michael J. Dancy, Horsham, both of United Kingdom, assignors to Redland Roof Tiles Limited, Surrey, England

Filed Jul. 5, 1985, Ser. No. 751,984

Claims priority, application United Kingdom, Jul. 6, 1984, 8417247

Int. Cl.⁴ B29C *71/02*

U.S. Cl. 415—254 **7 Claims**



1. Apparatus for loading a plurality of "green-state" building components on pallets onto shelves in racks, the apparatus comprising a plurality of pairs of supports arranged in vertically spaced relationship, the spaces between adjacent pairs of supports being equal to the spaces between the shelves in the racks and each pair of supports being adapted to engage and support opposed edge portions of a pallet, means for moving the supports upwardly and conveyor means for feeding pallets to the supports, the conveyor means including means to space the pallets at predetermined spaced intervals as they are moved along an inclined path and at least one slideway for supporting a leading edge of a pallet arranged relative to the conveyor means such that each pallet remains generally horizontal as the pallet passes up the said inclined path, the support moving means being operable to move the supports continuously in timed relation to the conveyor means while a plurality of pallets is loaded onto the supports, the movement of the supports being such that a pair of supports is aligned with the slideway or slideways as the leading edge of a pallet reaches the downstream end of the slideway or slideways and the conveyor means continues to move the trailing edge of the pallet along said inclined path keeping the pallet horizontal as the pallet slides into said pair of supports.

4,661,055

MOULDING ASSEMBLY FOR THE INJECTION OF PLASTIC MATERIALS

Guy Thivichon-Prince, Oullins, and Jacky Thivichon-Prince, Brignais, both of France, assignors to Industries Plastiques Maules—IPM, France

Filed Aug. 12, 1985, Ser. No. 764,645

Int. Cl.⁴ B29C *45/40*

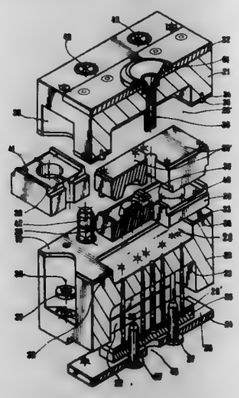
U.S. Cl. 425—556 **6 Claims**

1. Injection molding apparatus, comprising:

a first mold block cast of a single piece of light alloy material, defining first and second cavities therein, said first mold block having plural ejector means projecting therethrough, said first cavity being closed by a steel plate, said first cavity enclosing therein means for maneuvering said ejector means, said second cavity having at least one mold cavity defining insert member disposed therein;

a second mold block cast of a single piece of light alloy material, defining a third cavity therein, said third cavity having at least one mold cavity defining insert member disposed therein, and means for supplying thermoplastic molding material to mold cavities defined by said mold cavity defining insert members;

a face of said first mold block opposite to said first cavity having disposed adjacent thereto a first interchangeable steel plate, and a face of said second mold block opposite to said means for supplying having a second interchange-



able steel plate which is interchangeable as said first interchangeable steel plate, said interchangeable steel plates being in contact with each other in the vicinity of a contact surface between said mold cavity defining insert members.

4,661,056

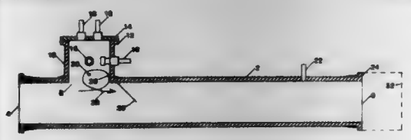
TURBULENT INCINERATION OF COMBUSTIBLE MATERIALS SUPPLIED IN LOW PRESSURE LAMINAR FLOW

Earl Vickery, San Jose, and Mark Yates, Morgan Hill, both of Calif., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Mar. 14, 1986, Ser. No. 839,668

Int. Cl.⁴ F23D *14/00*; F23G *7/08*; F23J *15/00*

U.S. Cl. 431—5 **19 Claims**



1. An apparatus for incinerating combustible gases which comprises:

(a) a first pipe member having open entrance and exit end portions and an inlet opening through the wall thereof intermediate said end portions;

(b) a second pipe member having first and second ends, said first end being fixed about said inlet to provide a means of ingress and egress between said pipe members, said second end being substantially closed to its surroundings;

(c) ignition means disposed within said second pipe portion;

(d) means for conducting a laminar flow of at least one combustible gas into said second pipe portion; and

(e) means for turbulently flowing a stream of a gas capable of supporting combustion into the entrance end of said first pipe member, then centrifugally swirling said turbulent gas flow into and out of said second pipe member through said inlet, and then discharging said turbulent gas flow through the exit end of said first pipe member.

4,661,057

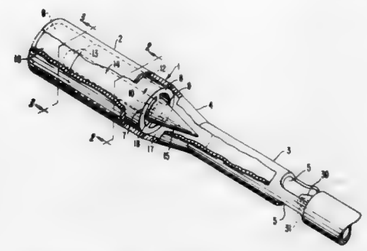
COMBUSTION DEVICE

David S. Pearl, II, Fort Lauderdale; Louis H. Webb, III, Dania, and Stephen B. Kocell, Pompano Beach, all of Fla., assignors to Uniweld Products Incorporated, Ft. Lauderdale, Fla.

Filed Apr. 4, 1985, Ser. No. 719,995

Int. Cl.⁴ F23D *11/44*

U.S. Cl. 431—243 **10 Claims**



1. A combustion device adapted to receive a combustible gas and a combustion supporting gas, comprising means defining a zone for expanding and mixing said gases, means defining a flame zone, means for conveying the gases from the expanding and mixing zone to said flame zone, and means for conducting heat from inside said flame zone to said expanding and mixing zone, said means for conducting heat being a metallic element extending from within said flame zone to said expanding and mixing zone, the portion of said metallic element intermediate said flame zone and said expanding and mixing zone being provided with insulating means to prevent the dissipation of heat.

4,661,058

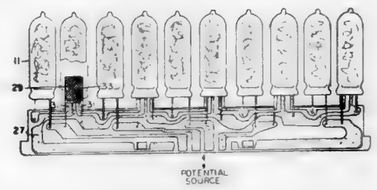
STABILIZED SILVER COMPOUND SWITCH

John W. Shaffer, Williamsport, Pa., assignor to GTE Products Corporation, Danvers, Mass.

Continuation of Ser. No. 623,606, Jun. 22, 1984, abandoned. This application Jan. 27, 1986, Ser. No. 822,959

Int. Cl.⁴ F21K *5/00*

U.S. Cl. 431—359 **17 Claims**



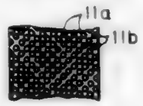
1. A multilamp photoflash array having a plurality of flashlamps, an electrical circuit connected to said flashlamps and to an energizing source and radiation-responsive humidity protected switches located external to and adjacent said flashlamps and responsive to radiation therefrom, said switches each including an admixture of silver carbonate and/or silver oxide, titanium dioxide, a binder, and from about 0.001 to 5.0% by weight elemental sulfur or a sulfide ion source.

4,661,059

ORTHODONTIC BRACKET AND APPARATUS FOR FABRICATING THE SAME

Yoseo Kanno, 5-181-96, Higashi Hatsuishi Nagareyama, Chiba, Japan

Filed Sep. 18, 1984, Ser. No. 651,746
Claims priority, application Japan, Sep. 22, 1983, 58-174183
Int. Cl.⁴ A61C *3/00*
U.S. Cl. 433—9 **5 Claims**



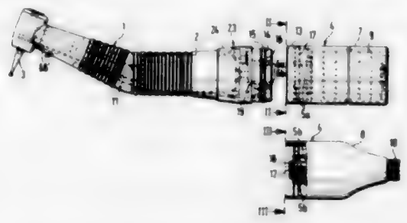
1. Orthodontic bracket with reinforced retentive forces comprising: a base plate (1) and at least one main body (2) standing thereon, both base plate and main body being worked up from originally unitary stock material (10), said main body having at its top a recessed portion (2c) and at its each side a bent arm (2a), said base plate having at its undersurface a plurality of fine crossing grooves (11a, 11b) formed by cutting work, said grooves having along their edges small protrusions formed during cutting and subsequently deformed into the grooves so as to close partially the openings of the grooves, said deformed protrusions exhibiting mechanical retentive forces against adhesives received and solidified in the grooves.

4,661,060

DENTAL HANDPIECE

Ernst Strohmaier, Schussenried, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach/Riss, Fed. Rep. of Germany

Filed Feb. 10, 1986, Ser. No. 829,713
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1985, 3507083
Int. Cl.⁴ A61C *1/10, 1/12*
U.S. Cl. 433—82 **31 Claims**



1. In a dental handpiece including a built-in electric motor for the drive of a dental treating implement mounted at one end of the handpiece, a cooling medium conduit on said handpiece for supplying said implement with a cooling medium; a current provider detachably connectable to the end of the handpiece which is remote from the implement, said current provider including current infeed contacts supplied with electrical current, said contacts coming into contact with current receiving contacts of the electric motor upon connection of the current provider with the handpiece; the improvement comprising: said current provider consisting of two differently constructed current supply parts which are selectively connectable with the handpiece, each said current supply part having current supply contacts, one said current supply part possessing an electric battery and the other said current supply part possessing a current supply cable for respectively supplying electrical current to the current supply contacts, and wherein at least the current supply part possessing the current supply cable includes at least one cooling medium infeed conduit arranged on said current supply part which, upon the connection of the current supply part with the handpiece, concurrently comes into connection with said at least one cooling medium conduit on said handpiece.

4,661,061

FOUR SIDED ROOT CANAL RASP FOR ROOT CANAL PREPARATION

Howard Martin, 909 Pershing Dr., Silver Spring, Md. 20910

Filed Jul. 22, 1985, Ser. No. 757,433
Int. Cl.⁴ A61C *0/02*
U.S. Cl. 433—102 **14 Claims**



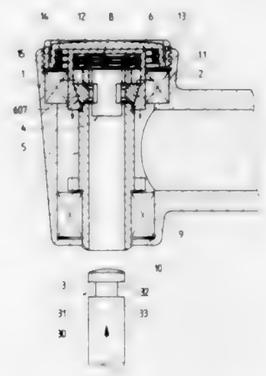
1. A rotary dental root canal instrument having:
a shank portion;
a long thin shaft portion integrally connected to the shank portion; and
an end portion integrally connected to the shaft portion opposite the shank portion; the end portion having a plurality of faces which join one another along a plurality of edges, said plurality of faces being of equal size, shape and orientation, with said edges meeting at a point, and with said edges being curved in an unbroken line toward each other whereby when the canal is being rasped the debris is forced out of the canal away from the instrument end.

4,661,062

DENTAL HANDPIECE CONTRA-ANGLE HEAD

Michel Seigneurin, Douvaine, France, assignor to Micro Mega S.A., Besancon, Switzerland

Filed Sep. 16, 1985, Ser. No. 776,431
Claims priority, application France, Sep. 14, 1984, 84 14730
Int. Cl.⁴ A61C *1/14*
U.S. Cl. 433—128 **8 Claims**



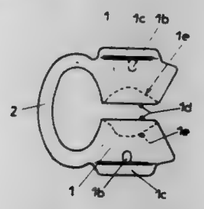
1. Dental handpiece contra-angle head comprising a hollow pinion rotatably mounted in the head casing and adapted to have a dental instrument, notably a bur, fitted therein, said instrument having a shank provided with a flat face adapted to cooperate with a complementary flat face formed in the upper portion of said pinion so as to be rotatably coupled to said pinion, said shank further comprising an annular groove engageable, in the operative position of said instrument, by means for axially locking the instrument in said operative position, said locking means comprising a clamping member mounted in said head casing, movable along the axis of said casing and rotatably coupled to said pinion, at least two wedge members surrounded by said clamping member and provided with outer tapered surfaces adapted to engage a matching inner tapered surface said clamping member and also with inner tapered surfaces engaging an upper ledge of said annular groove of said instrument, respectively, and spring means constantly urging said clamping member axially outwards in said head so as to cause said instrument to be urged by said wedge members inwards in said pinion, characterized in that said pinion is provided with inner abutment means engageable by said instrument as a consequence of the resilient pressure exerted thereon by said wedge members, and that said clamping member consists of a hollow guide member enclosing the top portion of said pinion and having a bore bounded at the top by a bottom wall, and intermediate cylindrical side wall terminating at its lower end with frustoconical portion constituting said inner tapered surface, said spring means being housed in said cylindrical side wall and bearing with one end against said bottom wall and with the opposite end against the top portion of said pinion.

4,661,063

CLAMP FOR USE IN DENTISTRY

Guy Levy, 49, Rue Croix de Regnier, 13004 Marseille, France

Filed Oct. 3, 1985, Ser. No. 783,708
Claims priority, application France, Oct. 4, 1984, 84 15433
Int. Cl.⁴ A61C *5/12*
U.S. Cl. 433—139 **1 Claim**



1. In a clamp, for supporting a flexible sheet for isolating a tooth during a dental operation, of the kind having:
(i) two spaced oppositely-disposed jaws, and
(ii) resiliently-deformable bridge connecting said jaws and serving as a spring to urge the jaws into contact with a tooth,
the improvement that the jaws and bridge are made as an integral one-piece body of resiliently-deformable polycarbonate material permeable to X-rays, and respective opposed edges of the two jaws, to be presented towards the tooth, are straight and parallel and only narrowly spaced, thereby to present a zone which can be cut back from the edge to provide a recess.

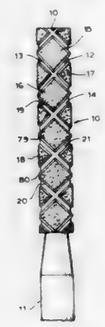
4,661,064

ROTATING TOOL FOR DENTISTRY

Giorgio Beltramini, Milan, Italy, assignor to North Bel S.p.A., Paderne Dugnano, Italy

Filed Jan. 30, 1985, Ser. No. 697,119
Claims priority, application Italy, Feb. 24, 1984, 19801 A/84
Int. Cl.⁴ A61C *3/06*
U.S. Cl. 433—166 **1 Claim**

1. Diamond-coated milling cutter for dental use, comprising a head and a shank, said head including diamond-coated abrasive zones, and a pair of helicoidal grooves free of diamond coating and of constant cross section, said grooves being identical but set in opposite directions, and extending to a top end of the cutter, a distance between turns of said grooves being considerably greater than the width of said helicoidal grooves, said grooves crossing each other symmetrically and freely so that crossing points form rhomboid-shaped diamond-coated abrasive zones, said grooves procuring a double function of cooling and of removal of waste material, and allowing, for the direction of cutter rotation, conveyance by means of an ascending helicoidal groove of a lubricating and cooling liquid towards a top of the cutter, and removal, by means of a descending helicoidal groove, of waste material from the top towards a lower end of the cutter, the diamond-coated rhomboid-shaped abrasive zones also procuring a double function of cutting away material from a body being treated and of finishing said body, said abrasive zones having edges aligned parallel to the axis of the cutter so as to remove material by a cutting action while by means of the abrasive surfaces the body being treated is finished.



4,661,065

SOFT DENTURE LINER

Lawrence Gettleman, Metairie, La., and Paul H. Gebert, Pensacola, Fla., assignors to Gulf South Research Institute, Baton Rouge, La.

Filed Dec. 4, 1985, Ser. No. 804,837
Int. Cl.⁴ A61C *13/02*; A61K *6/00*
U.S. Cl. 433—168.1 **38 Claims**

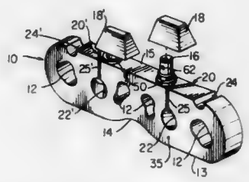
1. In a curable denture liner of the type consisting essentially of a phosphonitrilic fluoroelastomer, and at least one dimethacrylate cross-linking agent, the improvement comprising at least one trimethacrylate cross-linking agent.

4,661,066

MOVABLE PLATE IMPLANT

Leonard I. Linkow, 1530 Palisades Ave., Fort Lee, N.J. 07024, and Leo Hoffman, 15 Woodmere Blvd., Woodmere, N.Y. 11598

Filed Nov. 25, 1985, Ser. No. 801,639
Int. Cl.⁴ A61C *8/00*
U.S. Cl. 433—176 **30 Claims**



1. An oral implant for supporting an artificial tooth structure comprising an implant portion adapted to be fitted in an exposed opening in a bone of a patient in the vicinity of the

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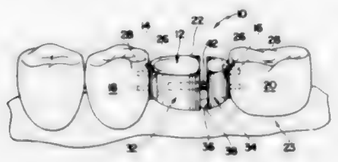
occlusal plane, said implant portion having two spaced-apart edge surfaces and two generally parallel and laterally spaced-apart side walls connecting said edge surfaces, said implant portion defining at least one slit extending from one side wall and from one edge surface a significant distance toward the other side wall and edge surface, said slit being at an oblique angle in longitudinal cross section perpendicular to said side walls so as to create at least two joined parts of said implant portion with respective facing surfaces that are at an angle which differs significantly from a plane perpendicular to said side walls, said joined parts being movable across said slit toward each other, and being slidable along each other such that the two joined parts become laterally displaced with respect to each other.

4,661,067

PERMANENT DENTAL PROSTHESIS AND METHOD

Arthur E. Harvey, Sr., Davis Ave., R.D. #2, Pawcatuck, Conn. 06379, and Thomas J. Harvey, 64 Floral Park Blvd., Pawtucket, R.I. 02861

Filed Feb. 24, 1986, Ser. No. 832,769
Int. Cl.[4] A61C *13/12, 13/225*
U.S. Cl. 433—181 **10 Claims**



1. In a base structure for a dental prosthesis wherein the base structure is of the type which is permanently securable in a gap between spaced first and second teeth in the mouth of a patient and comprises first and second anchor elements securable on said first and second teeth, respectively, in said gap and a base element securable to said first and second anchor elements when they are secured on their respective teeth to retain said base element in a position wherein it extends therebetween, the improvement comprising said base element comprising first and second base element portions which are receivable in interfitting relation with said first and second anchor elements, respectively, so that they are nonrotatable relative to said anchor elements, respectively, about an axis which extends in a direction between said first and second anchor elements and permanently securable to said first and said anchor elements, respectively, and which are received in interfitting relation and rotatable with respect to each other and slidble in telescoping relation with respect to each other in said direction to enable said base element to be adjusted to fit the width of said gap and to compensate for misalignment of said anchor elements.

4,661,068

PARTIAL DENTURE ATTACHMENT APPLIANCE

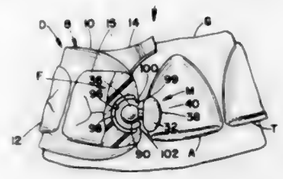
John W. Harrison, R.D. #2, Stoltz Rd., Saegertown, Pa. 16433, and John H. Tucker, 1509 Pasadena Dr., Erie, Pa. 16505

Filed Mar. 11, 1985, Ser. No. 710,478
Int. Cl.[4] A61C *13/22*
U.S. Cl. 433—181 **2 Claims**

1. An appliance for attaching a removable partial denture to an abutment tooth within an oral cavity, said partial denture having a concave support portion receiving and supported by a gingival portion of said oral cavity, and a tooth portion simulating the appearance and operative characteristics of natural teeth, said appliance comprising:

(a) a male attachment member having an attachment portion with a surface contoured to match an exterior surface of said abutment tooth and adapted to be permanently adhesively bonded onto said exterior surface of said abutment tooth, a shaft portion and a ball shaped connector member;

(b) an elongated slotted receiving cavity adjacent a face of said partial denture proximate to said abutment tooth, said cavity being oriented in a vertical plane and extending through said concave support portion substantially into said denture and having a vertically orientated slot, a first open end for receiving said connector member and a



closed second end spaced from said first open end and adapted to be maintained in spaced relationship with said connector member; and,

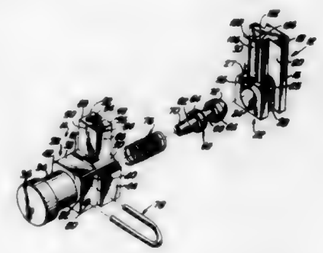
(c) a resilient slotted cylindrical tube member mounted in said receiving cavity having its slot aligned with the slot of said receiving cavity, said resilient slotted cylindrical tube member receiving said connector member in slidable engagement therewith.

4,661,069

DEVICE FOR RETAINING A REMOVABLE DENTAL PROSTHESIS

Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017

Filed Sep. 23, 1985, Ser. No. 778,861
Int. Cl.[4] A61C *13/22*
U.S. Cl. 433—183 **16 Claims**



1. A device for retaining a removable dental prosthesis comprising, in combination:

a first member for securement to a fixed tooth, a projection extending from said first member;

a second member for securement within the dental prosthesis, a housing extending from said second member for receiving said projection;

retaining means for releasably retaining said projection within said housing; and

engaging to prevent relative rotation and lateral movement between said first and second members, said engaging means including members extending from said hosuing and said projection for coacting with each other in an extended path of engagement to maintain stability between said first and second members;

said members of said engaging means including a channel member upstanding from said housing, and a plug member upstanding from said projection and being slidably receivable within said channel member;

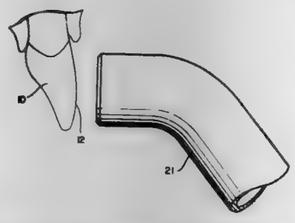
said channel member including an internal longitudinal keyway having an open longitudinal mouth, and said plug member including an elongated key having a T-shaped cross sectional configuration defining a first transverse leg and a second perpendicular leg, said key being received in said keyway.

4,661,070

METHOD FOR BLEACHING DISCOLORED TEETH

Joshua Friedman, 13 Fairfield Ct., Ridgefield, Conn. 06877

Filed Mar. 17, 1986, Ser. No. 840,194
Int. Cl.[4] A61C *13/08*
U.S. Cl. 433—203.1 **6 Claims**



1. A method for treating discolored teeth comprising the steps of:

applying a concentrated solution of peroxide to the pulp chamber of non-vital teeth and/or upon the surface of discolored teeth within the mouth of a dental patient;

focusing a beam of optical energy directly upon each discolored tooth to be treated, with said beam containing ultraviolet energy in the 320 to 420 nanometer range in combination with infrared energy in the 700 to 1200 nanometer range for activating said peroxide solution; and

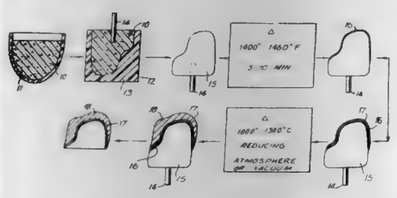
substantially suppressing optical energy in the 500 to 700 nanometer range from reaching the teeth under treatment.

4,661,071

VACUUM SINTERED POWDER ALLOY DENTAL PROSTHETIC DEVICE AND OVEN TO FORM SAME

A. Milton Bell, Teaneck; Murray G. Gamberg, Manalapan, and Ronald Kurzeja, Bridgewater, all of N.J., assignors to Denpac Corp., Hackensack, N.J.

Continuation-in-part of Ser. No. 596,314, Apr. 3, 1984. This application Jun. 21, 1984, Ser. No. 622,997
Int. Cl.[4] A61C *5/10*
U.S. Cl. 433—223 **8 Claims**



1. A method for forming a dental restorative element comprising:

(a) forming an impression of a surface;

(b) mixing a refractory material;

(c) filling the impression with said refractory material to form a die preform;

(d) separating the die preform from the impression;

(e) firing the refractory material to form a solid die having a replicate of the surface;

(f) covering the surface replicate with a powdered metal alloy;

(g) drawing vacuum to 10 to 1000 microns Hg:

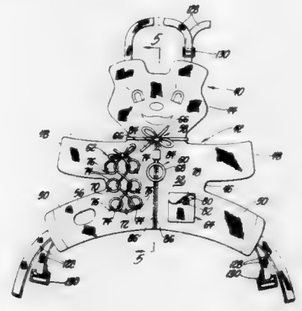
(h) firing the alloy to sinter the alloy in the liquid phase to form a component of the element.

4,661,072

CHILD'S PROTECTIVE, ENTERTAINMENT OR EDUCATIONAL DEVICE

Alyce D. White, 1645 Bedford Square, Rochester, Mich. 48064

Filed Nov. 15, 1985, Ser. No. 798,401
Int. Cl.[4] G04B *19/00*
U.S. Cl. 434—260 **4 Claims**



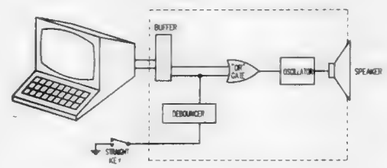
1. An amusement and/or educational device specially adapted to occupy the attention of a child at any time, but particularly during travel in a vehicle having at least one passenger seat, said device comprising a body having intended upper and lower ends and means at each of said upper and lower ends adapted for securing said body in the intended upper-end-up position, said body being formed with a plurality of overlaid adjacent inner and outer pockets open at the top thereof facing said upper end, the outer layer of at least said outer pocket being formed with a vertical slit to provide opposing flaps, said flaps having button, ZIPPER or other amusement or educational fastening means for permitting said flaps to be separated along said slit and folded back to expose said adjacent inner pocket.

4,661,073

CODE TUTORING SYSTEM

David L. Smart, 1311 Glendale Ave., Berkeley, Calif. 94708

Filed Jun. 17, 1985, Ser. No. 745,083
Int. Cl.[4] G09B *19/26*
U.S. Cl. 434—222 **3 Claims**



1. A Morse code tutoring system, comprising:

a micro computer, containing suitable interfacing means,

a "straight key",

a code practice oscillator, interfacing to the computer, and capable of effecting a visual or aural indication when actuated by the operator via the straight key, and capable

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of outputting to the computer the results of such actuation,

a program available for execution by the computer, and capable of analyzing the operator's code for: average length of dits and standard deviation thereof, average length of dahs and standard deviation thereof, ratio of the average dah length to the average dit length, ratio of average length of space between dits and dahs to the average dit length, ratio of average length of space between characters to the average dit length, and ratio of average length of space between words to the average dit length;

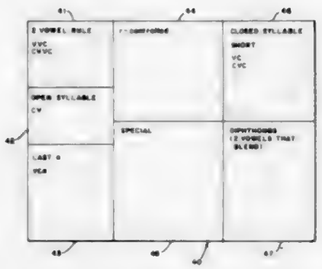
so as to provide the operator quantitative information on the quality and readability of the code he is generating.

4,661,074

APPARATUS FOR AND METHOD OF TEACHING READING AND SPELLING

Susan M. Walker, 2013 Ashley Dr., Phenix City, Ala. 36867

Filed Sep. 9, 1985, Ser. No. 773,607
Int. Cl.[4] G09B *17/00*
U.S. Cl. 434—178 **5 Claims**



1. An instructional system for teaching reading and spelling comprising:

one or more sheets of reading material bearing one or more word groups from one or more phonogram groups further comprising: two vowel phonograms, open syllable phonograms, last e phonograms, r-controlled phonograms, special phonograms, closed syllable phonograms, and diphthongs;

classification means for classifying words into one of said seven phonogram groups, said classification means further comprising a classification board having at least one section corresponding to each of said phonogram groups; and

a reinforcement game further comprising: a game board having a first spinner means and a second spinner means; word cards, each card bearing a word having a phonogram from one of said phonogram groups; and phonogram cards, each card bearing a phonogram from one of said phonogram groups.

4,661,075

SELF-PROPELLED WATERBORNE VESSEL

Marian K. E. Czerniak, 52 Aspley Park Drive, Nottingham NG8 3EG, England

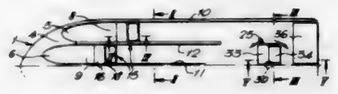
PCT No. PCT/GB84/00258, § 371 Date Mar. 12, 1985, § 102(e) Date Mar. 12, 1985, PCT Pub. No. WO85/00572, PCT Pub. Date Feb. 14, 1985
PCT Filed Jul. 7, 1983, Ser. No. 713,397
Claims priority, application United Kingdom, Jul. 20, 1983, 8319670
Int. Cl.[4] B63H *5/16*
U.S. Cl. 440—69 **16 Claims**

7. A self-propelled waterborne vessel comprising:

a hull,

walls defining at least one downwardly opening channel extending longitudinally of said vessel beneath said hull,

propulsion means located underneath said hull within said channel operable to move water along said channel,



vane means extending across said channel beneath and adjacent said propulsion means,

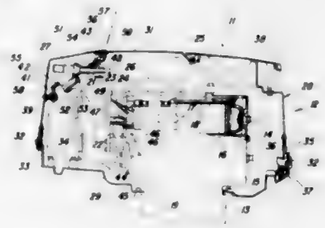
said vane means being selectively operable to vary the effective cross-sectional area of said channel aft of said propulsion means.

4,661,076

COWLING ASSEMBLY FOR AN OUTBOARD ENGINE

Tomio Iwai, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 8, 1986, Ser. No. 849,475
Claims priority, application Japan, Apr. 11, 1985, 60-75310
Int. Cl.[4] B63H *21/26*
U.S. Cl. 440—77 **14 Claims**



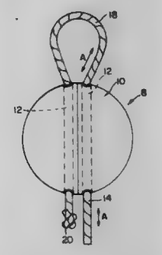
1. In an outboard motor having a power head positioned at the top of a drive shaft housing, said power head comprising an internal combustion engine, a pull starter having a housing fixed relative to said engine, a pull handle and rope for pull starting of said engine, a liquid tank for containing a liquid for said engine and supported in fixed relation to said engine, a filler neck for said tank in an upper surface thereof, and a protective cowling encircling said engine and said liquid tank, the improvement comprising said protective cowling having an opening formed therein in proximity to said pull handle and to said filler neck for access thereto, a plate affixed to said engine and having a guide portion for said rope of said pull starter, said plate having an opening passing said filler neck, first seal means surrounding said plate opening and sealingly engaging said plate and said liquid tank for preventing spilled liquids from passing through said opening, said plate spanning said protective cowling opening, and second seal means between said plate and said protective cowling around said protective cowling opening for precluding spilled liquids from entering said protective cowling through its opening.

4,661,077

LIFESAVING AND MOORING DEVICE

Bruce S. Griffith, Tampa, Fla., and James F. Ward, c/o Original Safety Line Plus; P.O. Box 310136, Tampa, Fla. 33680, assignors to James F. Ward, Tampa, Fla.

Continuation of Ser. No. 632,611, Jul. 19, 1984, abandoned. This application Sep. 27, 1985, Ser. No. 780,726
Int. Cl.[4] B63C *9/00*
U.S. Cl. 441—84 **8 Claims**



1. A lifesaving and mooring device comprising:

a hollow, spherical, buoyant and resiliently deformable member of a suitable size, weight, and deformability to facilitate casting thereof without harming a person accidentally struck thereby, said hollow spherical member having a pair of channels herethrough;

a buoyant elongated member slidably received in said channels and defining an enlargeable loop on one side of said hollow spherical member; and

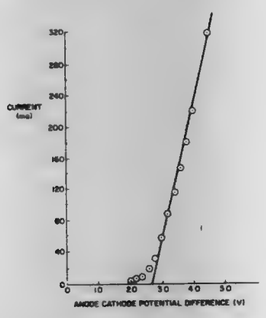
means at one end of said elongated member for preventing passage of said one end through said channels.

4,661,078

METHODS FOR DISPENSING MERCURY INTO DEVICES

Mark W. Grossman, Belmont, and William A. George, Rockport, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 31, 1985, Ser. No. 816,557
Int. Cl.[4] H01J *9/38*
U.S. Cl. 445—9 **19 Claims**



1. A process for placing mercury into a device which requires mercury, comprising:

(a) dissolving HgO in an electrolyte solution, resulting in the dissociation of HgO and the formation of mercuric ions, said electrolyte solution comprising glacial acetic acid and H_2O;

(b) placing an anode and a cathode into the electrolyte solution;

(c) applying an electric voltage across the anode and the cathode, said electric voltage creating an electric current from the anode through the electrolyte solution to the cathode, whereby mercuric ions are reduced and elemental Hg is plated onto said cathode;

(d) continuing to apply the electric voltage to the anode and cathode until the mercuric ions are completely plated onto the cathode;

(e) removing the cathode; and

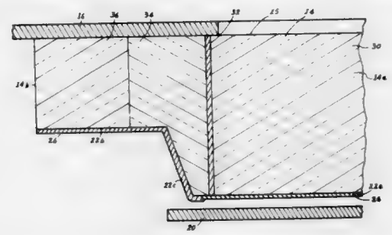
(f) placing the mercury covered cathode into a device requiring mercury.

4,661,079

IMAGE INTENSIFIER TUBE HAVING REDUCED VEILING GLARE

James W. Harris, and Ronald A. Sink, both of Roanoke, Va., assignors to ITT Corporation, New York, N.Y.

Filed Jun. 26, 1985, Ser. No. 749,049
Int. Cl.[4] H01J *43/22*
U.S. Cl. 445—22 **6 Claims**



1. A method of making an image intensifier tube including a face plate made of optical material for transmitting light and photoemissive means associated with the face plate for emitting electrons in response to light transmitted through said face plate, the method comprising the steps of: 'depositing a layer of a low reflective, light absorbing material surrounding and in contact with the longitudinal outer surface of a glass rod;

positioning a glass cladding tube having a softening temperature substantially the same as the glass rod around the outer surface of the glass rod;

placing a glass vacuum jacket tube having a softening temperature substantially the same as the glass rod around the outer surface of the glass cladding tube to form an assembly; and

heating the assembly to its softening temperature to collapse the assembly and fuse the rod, the cladding and the vacuum tube together.

4,661,080

TOY RACING SET WITH EXPLODING RACEWAY

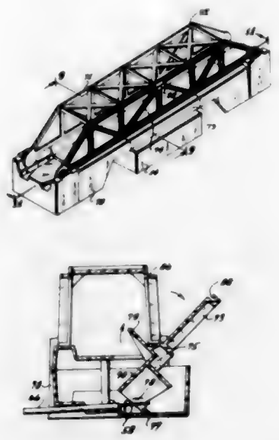
Samuel M. Goldstein, Los Angeles, and Wayne R. Halford, Manhattan Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jun. 18, 1985, Ser. No. 746,223
Int. Cl.[4] A63H *33/00, 33/02;* A63F *9/14*
U.S. Cl. 446—4 **3 Claims**

1. A toy bridge for a toy race set comprising a roadway defining a path of travel for toy vehicles, a rotating section of the roadway being mounted to pivot about an axis paralleling the path of travel of the roadway, trigger means responsive to user command for causing the rotating portion of the roadway to rotate out of the path of travel thereby interrupting the path of travel, at least one spring-loaded overhead bridge element rotatably mounted to pivot about an axis perpendicular to the path of the roadway, means for retaining the overhead bridge element in a position covering the roadway, and means respon-

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sive to the trigger means for releasing the overhead bridge element to rotate upwardly from the roadway simultaneously



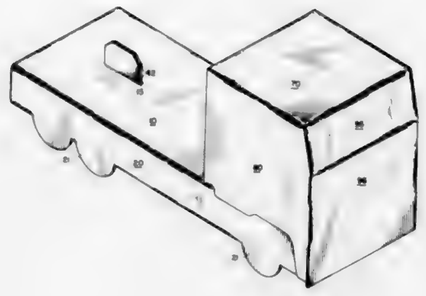
with the rotation of the rotating section of the roadway out of the path of travel.

4,661,081
BALLOON SUPPORT
Jack Basseches, Rue Paul Redfern, 24 Apt. 401, Rio de Janeiro, Brazil
Filed Nov. 5, 1985, Ser. No. 795,134
Int. Cl.[4] A63H *3/06*
U.S. Cl. 446—220 **4 Claims**



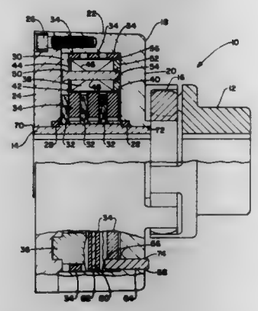
1. A balloon support comprising:
a concave support part,
a first lateral opening through said concave support part,
a central opening centrally provided through the bottom of said concave support part,
a cut or slit through said concave support part connecting said first lateral opening to said central opening,
two slots through said concave support part extending from the outer periphery thereof at least essentially towards the center thereof, said slots being radially oriented about 90° with respect to said first lateral opening,
a fixing sleeve suitable for receiving one end of an elongated stick, and
two connecting ribs connecting said fixing sleeve to said concave support part in spaced apart relationship, so that said fixing sleeve is centrally disposed below the bottom of said concave support part.

4,661,082
PROMOTIONAL TRUCK ASSEMBLY
Phil B. Sheffer, New Oxford, Pa., assignor to Merchandising Innovations, Inc., Hanover, Pa.
Filed Feb. 25, 1986, Ser. No. 832,631
Int. Cl.[4] A63H *33/16*
U.S. Cl. 446—488 **6 Claims**



1. A miniature display truck made of corrugated fiberboard materials including a truck base assembly and a truck cab assembly,
said truck base assembly including a central main section means (**10**) having a slot means (**15**, **16**) formed along a mid-line thereof, said central main section means (**10**) further having tab element means (**11**, **12**) formed in lateral portions thereof,
wherein said truck base central main section means (**10**) has base side wall sections (**20**) formed on both sides thereof, said side wall section (**20**) having wheel cut-out portions (**21**) formed thereon,
said truck base assembly further including lower wall section means (**30**) formed exteriorly of said side wall sections (**20**) by means of score lines therebetween,
said truck base assembly further including end section means (**40**) formed exteriorly of said lower wall section means (**30**) by means of score lines therebetween, said end section means (**40**) having tab means (**42**) formed on the edges (**41**) thereof; wherein, upon assembly, said end section tab means (**42**) are tucked into said slot means (**15**, **16**) formed in said central main section (**10**),
wherein said truck base main section means (**10**) has front and rear vertical wall means (**51**, **61**) formed at the ends thereof and end flap means (**53**, **65**) formed thereon, said end flap means (**53**, **65**) having slot means (**58**, **68**) formed therein and sized so as to fit over the end section means (**40**) of said truck base upon assembly,
wherein said truck cab assembly includes a central cab top means (**70**) with cab side door panel means (**80**) formed on either side thereof, cab rear panel means (**91**) formed on a third side of said cab top means (**70**), and front cab panel means (**95**, **96**) formed on a fourth side of said cab top means (**70**), and wherein said cab side door panel means (**80**) have flap means (**81**) formed thereon having cut-through portion means for sliding over said tab element means (**11**, **12**) formed in said truck base central main section means (**10**).

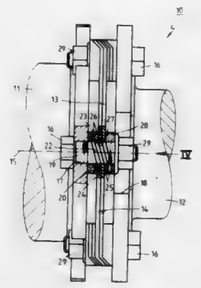
4,661,083
MULTIPLE DISC TORQUE LIMITING CLUTCH
David C. Heidenreich, Akron, and Keith A. Nichols, Canton, both of Ohio, assignors to Power Transmission Technology, Inc., Copley, Ohio
Filed May 9, 1985, Ser. No. 733,136
Int. Cl.[4] F16D *7/02, 13/72;* **F16F** *1/06*
U.S. Cl. 464—17 **23 Claims**



1. A torque limiting clutch, comprising:
first and second plates interconnected in spaced relationship to each other, and defining a cavity therebetween;
a plurality of friction discs maintained within said cavity;
a plurality of separator discs alternatingly interposed between said friction discs, each of said separator discs having an opening passing therethrough in registration with said openings of each of said other separator discs; and
spring means passing through said openings for urging said separator discs and said friction discs into contacting engagement with each other, said spring means comprising a tubular member passing through said openings and engaging at least one of said separator discs, said tubular member receiving a spring maintained in a precompressed state by a pin, said spring being located between first and second end caps respectively located at first and second ends of said pin, said end caps being located within said tubular member.

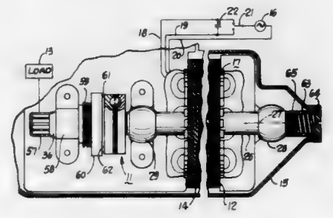
4,661,084
SHAFT COUPLING WHICH IS TORSIONALLY STIFF, YET CAPABLE OF BEING ELASTICALLY BENT
Klaus Federn, Dachsberg 14, 1000 Berlin 33, Fed. Rep. of Germany
Filed May 9, 1985, Ser. No. 732,459
Claims priority, application Fed. Rep. of Germany, May 14, 1984, 3417802
Int. Cl.[4] F16D *3/64*
U.S. Cl. 464—69 **5 Claims**

1. A shaft coupling having an axis of rotation and being of the type which is torsionally stiff and can be elastically bend, said coupling comprising:
a pair of coupling halves:
a plurality of screw connections arranged circumferentially about said coupling halves with alternating ones of said connections being connected to the same one of said pair of coupling halves.
at least a pair of tightening washers mounted to each of said screw connections; and
a plurality of thin-walled guide plates arranged between said coupling halves at generally right angles to said axis of rotation of said coupling and in a generally circumferential direction relative to said coupling halves, said guide plates each having cranked overlapping opposite end sections being alternately connected to said coupling halves between said pairs of tightening washers by said screw connections, said guide plates each also having a generally planar intermediate section extending at a generally right angle to said axis of rotation and between and interconnecting said opposite end sections thereof and between said pairs of tightening washers, said cranked opposite end sections of each guide plate extending at generally oblique angles to said rotational axis and in opposite directions away from and outside of the plane of said planar intermediate section of said guide plate;
each washer of said pairs of tightening washers having a middle section with a front side facing toward one of said cranked opposite end sections of said plates and extending



in a plane intersecting said axis of rotation generally obliquely, said mdidle section extending into opposite end flat zones which extend at generally right angles to said axis of rotation so that said intermediate planar sections of said plates extending away from said opposite ends of said tightening washers lie in a common plane, said tightening washers of each pair thereof also being disposed generally equidistant from one another at least in the region of said flat zones thereof;
said opposite end sections of said plates being cranked in conformity to the shape of said front sides of said middle sections of said tightening washers.

4,661,085
LOST MOTION CLUTCH ASSEMBLY
Alvin J. Carli, Sebring, Ohio, assignor to Philips Home Products, Inc., Akron, Ohio
Filed Sep. 9, 1985, Ser. No. 773,645
Int. Cl.[4] F16D *3/10*
U.S. Cl. 464—160 **12 Claims**

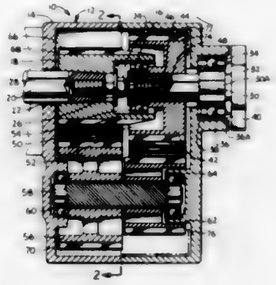


1. A lost motion dog clutch assembly for connecting drive and driven members comprising, in combination:
first, second, and third clutch members;
means mounting said first and third clutch members coaxially on a shaft axis for limited relative rotation therebetween;
means mounting said second clutch member between said first and third clutch members for movement in a plane

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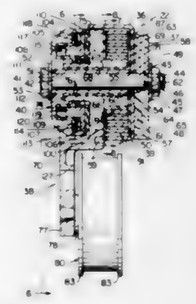
normal to said axis, said second clutch member being a plurality of rolling elements;
each said clutch member having at least a first engagement shoulder and said second member also having a second engagement shoulder, all said engagement shoulders being disposed at substantially equal radii;
said first engagement shoulders on said first and third clutch members being disposed at the termination of a plurality of respective arcuate recesses;
said first engagement shoulders of said first and second clutch members being disposed in a common plane of rotation and said second engagement shoulder of said second clutch member being disposed in the plane of rotation of said first engagement shoulder of said third clutch member, and
means retaining said rolling elements in said arcuate recesses, whereby upon initial rotation of said first clutch member in a first direction said lost motion clutch assembly has a predetermined angular lost motion with said rolling elements rolling in said recesses before the third clutch member is positively rotated by abutting engagement of said first and second engagement shoulders of said second clutch member with said first shoulders on said first and third clutch members and with said rolling elements being constantly retained in said arcuate recesses.

4,661,086
TRANSMISSION
Craig R. Railsback, 6014 Acacia Ave., Whittier, Calif. 90601
Filed Nov. 2, 1984, Ser. No. 667,855
Int. Cl.[4] F16H *7/02, 9/24*
U.S. Cl. 474—84 **4 Claims**



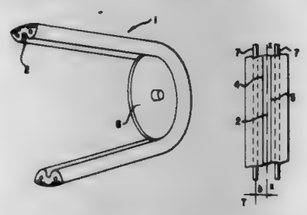
1. A transmission comprising:
a transmission case;
a torque input gear disposed within said case, said input gear including means for fixing a driveshaft to said gear so as to rotate said gear about the axis of rotation of said driveshaft upon rotation of the driveshaft;
an output shaft disposed within said case and extending out thereof;
first bearing means for mounting said output shaft to said transmission case so that said output shaft is rotatable with respect thereto and axially aligned with the driveshaft;
an output gear mounted on said output shaft within the case so as to be axially aligned with said input gear;
an annular recess formed on said output gear so as to open toward said input gear, said output gear having a greater diameter than said input gear;
a flange formed on said input gear so as to extend into said annular recess, said flange having a cylindrical bore formed therein in axial alignment with said driveshaft;
second bearing means mounted between the output shaft and the input gear within the cylindrical bore so as to permit the input gear and output gear to rotate about the same axis independent of one another;
a first intermediate gear disposed within the case so as to be laterally offset from the input gear;
a second intermediate gear disposed within the case in axial alignment within the first intermediate gear and laterally offset with respect to the output gear;
means connecting the first and second intermediate gears, whereby rotation of the first intermediate gear rotates the second intermediate gear in unison therewith;
bearing means for mounting said intermediate gears in said case so that said gears are freely rotatable therein in unison with one another;
first partially elastic drive belt means engaging the gear teeth of said input gear and said first intermediate gear, whereby rotation of the input gear rotates the intermediate gears; and
second partially elastic drive belt means engaging the gear teeth of the second intermediate gear and the output gear, whereby rotation of the second intermediate gear rotates the output gear, thereby rotating the output shaft.

4,661,087
METHOD OF MAKING A BELT TENSIONER HAVING A BIASED ANNULAR PAD OF FRICTION MATERIAL FOR DAMPENING PURPOSES
Dewey D. Henderson, Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio
Division of Ser. No. 643,504, Aug. 23, 1984, Pat. No. 4,596,538.
This application Feb. 7, 1986, Ser. No. 827,572
The portion of the term of this patent subsequent to Jun. 24, 2003, has been disclaimed.
Int. Cl.[4] F16H *7/12*
U.S. Cl. 474—135 **2 Claims**



1. In a method of making a tensioner for a power transmission belt that is adapted to be operated in an endless path, said method comprising the steps of forming a support means for being fixed relative to said belt, providing a belt engaging means carried by said support means and movable relative thereto, providing mechanical spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and providing frictional dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means in at least one direction of movement thereof, said dampening means having first and second parts and a longitudinal axis, said support means comprising a shaft means having a longitudinal axis and being fixed from movement relative to said belt engaging means, said belt engaging means having a portion thereof rotatably carried by said shaft mean so as to rotate relative to said shaft means, the improvement comprising the steps of disposing an annular pad of friction material coaxially on said shaft means so as to be axially movable thereon and to comprise the first part of said dampening means, disposing another spring means in said tensioner to urge said first part against the second part of said dampening means with a certain spring force, and interconnecting one of said parts to said support means and the other of said parts to said belt engaging means whereby said parts dampen the movement of said belt engaging means relative to said support means.

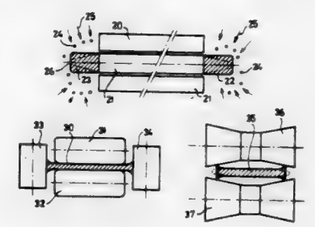
4,661,088
BELT FOR THE TRANSMISSION OF MOTION BETWEEN PULLEYS
Giorgio Tangorra, Monza, Italy, assignor to Industrie Pirelli, S.p.A., Milan, Italy
Filed Oct. 15, 1985, Ser. No. 787,095
Claims priority, application Italy, Oct. 15, 1984, 23150 A/84
Int. Cl.[4] F16G *1/06, 1/28*
U.S. Cl. 474—237 **10 Claims**



1. A belt made substantially of a flexible polymeric material for the transmission of motion with at least two pulleys, each of said pulleys having two opposed lateral surfaces, said belt comprising a plurality of resistant inserts disposed on a ring concentric with the belt oriented according to the longitudinal direction of the belt, said belt being characterized in comprising at least one longitudinal slot according to the direction of maximum development of the belt delimited by a bottom and by two lateral walls and a hinged zone in correspondence with the slot, during a rest condition said slot having a transverse dimension greater than the thickness of said pulleys between said opposed lateral surfaces, whereby the pulling action exercised on the inextensible elements leads to the approach of the lateral walls of said slot to the adjacent lateral surfaces of the pulleys with the resulting transmission of motion through friction.

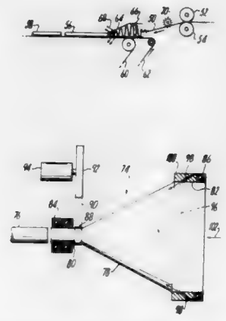
4,661,089
ENDLESS METAL BELT
Martinus H. Cuypers, Eindhoven, Netherlands, assignor to Gayliene Investments Limited, Great Britain
Filed Nov. 4, 1985, Ser. No. 794,621
Claims priority, application Netherlands, Nov. 7, 1984, 8403388
Int. Cl.[4] F16G *1/22*
U.S. Cl. 474—242 **12 Claims**

3. Process for forming an endless metal belt, comprising the steps of:
(a) providing a metal belt; and
(b) incorporating permanent compression stresses in at least edge zones of the belt, adjacent to longitudinal edges of



the belt, the zones with incorporated compression stresses being formed by plastic deformation of the belt material.

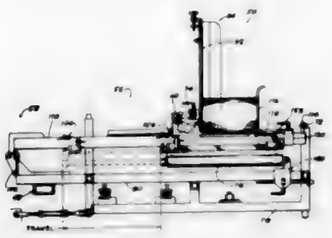
4,661,090
FILTER ROD MANUFACTURE
Hugh M. Arthur, High Wycombe, United Kingdom, assignor to Molins PLC, United Kingdom
PCT No. PCT/GB83/00331, § 371 Date Aug. 10, 1984, § 102(e) Date Aug. 10, 1984, PCT Pub. No. WO84/02257, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 13, 1983, Ser. No. 641,958
Claims priority, application United Kingdom, Dec. 13, 1982, 8235458
Int. Cl.[4] B31C *13/00*
U.S. Cl. 493—44 **20 Claims**



1. Apparatus for producing cigarette filter rod from a tow of filter material, comprising tow shaping means having a tongue for shaping the tow, rod forming means arranged downstream of the tow shaping means, means for opening the tow, and means for delivering a tow stream from said tow opening means to the rod forming means, including tow conveying means arranged upstream of the rod forming means and downstream of the tow opening means for conveying the tow, including means for spinning or twisting the tow so as to impart an axial thrust to the tow, the tow conveying means being arranged at least locally to reduce the longitudinal tension in the tow upstream of the rod forming means.

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4,661,091
MACHINE FOR MANUFACTURE OF BOXES WITH INTEGRALLY REINFORCED WALLS
Lenard E. Moen, 7914 Michigan, Whittier, Calif. 90602
Division of Ser. No. 636,917, Aug. 2, 1984, Pat. No. 4,581,005, which is a continuation-in-part of Ser. No. 499,988, Jun. 1, 1983, abandoned. This application Dec. 27, 1985, Ser. No. 813,982
Int. Cl.⁴ B31B *7/02, 7/28*
U.S. Cl. 493—417 **9 Claims**



1. In a machine for forming a post-reinforced end wall for a paperboard container out of portions of a preformed flat blank of the paperboard material having a pair of first scorelines defining a junction between an end wall area of the blank and an opposite pair of marginal flaps, each flap having a plurality of portions defined by a plurality of scorelines parallel to the first scoreline, the combination comprising:

a frame;

a hopper means mounted at one end of said frame for supporting a stack of the flat blanks;

a feed means comprising an elongate member oriented parallel to a longitudinal axis of said frame substantially midway between opposite sides of said frame, said member being mounted on said frame adjacent to said hopper for reciprocation longitudinally of said frame between retracted and extended positions of said member;

said feed means further comprising an outer blade mounted on an upstream end of said elongate member and unidirectionally engageable with a central portion of the end wall area of a blank when said member is in said retracted position for feeding one of the blanks at a time away from said hopper means and into a flap folding station of said machine downstream from said hopper means;

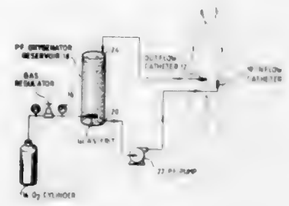
a pair of mandrel means each positioned in parallel relation to and along one side of said frame at said flap folding station of said machine, each of said mandrel means defining the post configuration into which portions of the flap are to be formed;

a pair of support shoe means mounted on opposite sides of said frame in parallel confronting relationship to said pair of mandrel means with sufficient space therebetween to slidably admit the end wall area of a blank therebetween to serve as a friction brake means for resisting downstream movement of the blank by said outer blade of said elongate member;

a pair flap folding means mounted on opposite sides of said frame at said station in operative opposition to corresponding ones of said shoe means and said mandrel means for folding the plurality of portions of one of the flaps of the blank into a post configuration about one of said mandrel means while the blank is frictionally held in an indexed stationary position between said mandrel means and said support shoe means; and

an inner blade mounted on a downstream end of said elongate member and unidirectionally engageable with a central portion of the end wall area of a blank when said member is in said retracted position for transporting a blank downstream away from said mandrel means after the flaps of that blank have been folded into a post configuration.

4,661,092
PERITONEAL ARTIFICIAL LUNG
Robert P. Popovich, 2928 Kassarine Pass, Austin, Tex. 78704, and Jack W. Moncrief, 3633 W. Lake, Austin, Tex. 78746
Filed Dec. 9, 1983, Ser. No. 559,783
Int. Cl.⁴ A61M *37/00*
U.S. Cl. 604—26 **7 Claims**

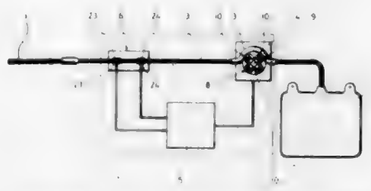


1. A process for the treatment of hypoxia, comprising the steps of:

infusing oxygenated perfluorochemicals into the peritoneal cavity of a patient, for oxygen transport into the body; and

removing the oxygenated perfluorochemicals from the peritoneal cavity.

4,661,093
METHOD FOR ASPIRATING SECRETED FLUIDS FROM A WOUND
Walter Beck, Obere Häslibachstr. 87, CH-8700 Küsnacht; Siegfried Berger, Wernau, and Heinz-Peter Werner, Mainz, all of Fed. Rep. of Germany, assignors to Walter Beck and Margrit Werner, both of, Fed. Rep. of Germany
Filed Jun. 8, 1984, Ser. No. 618,828
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321151
Int. Cl.⁴ A61M *31/00*
U.S. Cl. 604—50 **8 Claims**



1. A method for aspirating secreted fluid out of a wound comprising the steps of:

(a) connecting a drain via a tube with a secretion aspiration and collection device to form a sterile system;

(b) placing said drain into the wound through tissue adjacent the wound;

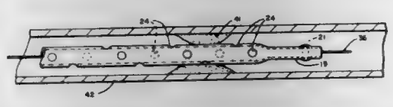
(c) closing said wound;

(d) placing said secretion aspiration and collection device into operation, said secretion aspiration and collection device having a suction effect controlled between a minimum value and a maximum value;

(e) sensing the amount of fluid secreted by the wound; and

(f) varying said suction effect by means of a tube pump on the basis of the quantity of secreted fluid sensed in the wound to be aspirated.

4,661,094
PERFUSION CATHETER AND METHOD
John B. Simpson, Woodside, Calif., assignor to Advanced Cardiovascular Systems, Mountain View, Calif.
Filed May 3, 1985, Ser. No. 730,680
Int. Cl.⁴ A61F *2/66*
U.S. Cl. 604—53 **2 Claims**



1. In a method for maintaining blood flow across a stenosis in a blood vessel by the use of a perfusion catheter comprised of a flexible tubular member having a flow passage extending longitudinally of the same and having a plurality of spaced apart holes spaced longitudinally from the distal extremity of the tubular member and in communication with the flow passage in the tubular member, the method comprising inserting the perfusion catheter into the blood vessel of the patient so that the perfusion catheter extends through the stenosis so that at least one of the holes in the perfusion catheter is disposed on one side of the stenosis and at least one of the holes is disposed on the other side of the stenosis and at least one of the holes is disposed on the other side of the stenosis so that blood can flow into and out of at least certain of the holes in the tubular member and through the flow passage in the tubular member and across the stenosis to thereby permit blood to continue to flow through the blood vessel and across the stenosis.

4,661,095
METHOD FOR BONDING POLYURETHANE BALLOONS TO MULTILUMEN CATHETERS
Robert A. Taller, Centerville, and Charles Daugherty, Xenia, both of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Feb. 12, 1985, Ser. No. 700,779
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—103 **12 Claims**



1. A ballon sleeve for use in a multilumen catheter, said sleeve for mounting in reverse lap fashion on said catheter, said balloon sleeve characterized by

(a) an elongated ballon sleeve body;

(b) said balloon sleeve body comprised of a thermosetting polyurethane polymer, and having an elongated shape of annular cross section;

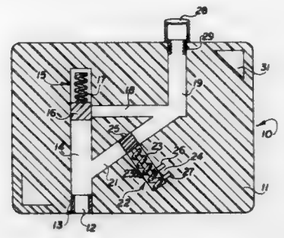
(c) said balloon sleeve body having a distal end and a proximal end;

(d) a first thermoplastic adhesive material coating on the interior wall of said balloon sleeve body adjacent the distal end thereof for attachment to the outer surface of a multilumen catheter at the distal end thereof;

(e) a second thermoplastic adhesive material coating on the exterior wall of said balloon sleeve body adjacent the proximal end thereof for attachment to the outer surface of a multilumen catheter at a point spaced from said attachment of said first thermoplastic adhesive material; and

(f) said balloon sleeve body, when mounted on a multilumen catheter having an internal diameter substantially the same as the catheter on which it is mounted.

4,661,096
ANTI-AIR EMBOLISM AND ANTIBLOOD LOSS DEVICE FOR CVP CATHETER
Edward Teeple, 641 Ridgefield Ave., Mt. Lebanon, Pa. 15216
Filed Sep. 6, 1985, Ser. No. 773,876
Int. Cl.⁴ A61M *5/00*
U.S. Cl. 604—122 **6 Claims**



1. An anti-air embolism safety device adapted for placement between a central venous pressure (CVP) catheter which is attached to a patient and an external source of intravenous fluid being infused into the patient, comprising:

(a) a formed body adapted to operably connect the catheter and the external fluid source;

(b) an inlet connection means within the body adapted to operably connect with said fluid source;

(c) a fluid outlet means on the body and further comprising means for locking the outlet means to the catheter;

(d) a first passageway within the body communicating between the inlet and the outlet means and adapted for intravenous fluid passage therethough;

(e) a first occluder means interposed within the first passageway biased to prevent the entrainment of air therein, and of any airflow to the catheter secured to the outlet means upon the accidental cessation of fluid passage into said inlet means; and

(f) further wherein (i) a second passageway is provided in said body connecting the inlet and outlet sections of the first passageway so as to bypass the first occluder means and (ii) having a second occluder means normally inserted into said second passageway and being associated with (iii) a linear biasing means that normally interposes the second means into said second passageway to occlude same and (iii) manually operable position adjusting means pinned to the biasing means, adapted for exerting a counterforce against the normal passageway occluding position of said second means sufficient to retract same from said second passageway.

4,661,097
METHOD FOR CLEARING A GAS BUBBLE FROM A POSITIVE DISPLACEMENT PUMP CONTAINED WITHIN A FLUID DISPENSING SYSTEM
Robert E. Fischell, Silver Spring; Albert C. Sadilek, Elkridge, both of Md., and William Swift, Fountain Valley, Calif., assignors to The Johns Hopkins University, Baltimore, Md.
Filed Jun. 1, 1984, Ser. No. 616,255
Int. Cl.⁴ A61M *1/00*
U.S. Cl. 604—123 **9 Claims**

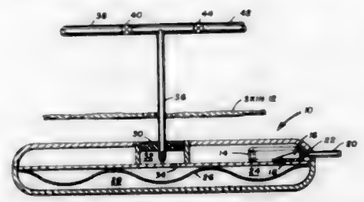
1. A method for removing gas, gas bubbles or liquid from and infusion device, said method comprising the steps of:

inserting a hypodermic needle through a self-sealing septum on the outer surface of said infusion device;

providing bi-directional fluid communication between said hypodermic needle and a fluid container located within said infusion device;

providing bi-directional fluid communication between said

fluid container and a pump chamber of a single valve positive displacement pump; and,



drawing fluid from said container and from said pump chamber by applying a vacuum to said hypodermic needle.

4,661,098

AUTOMATIC INJECTION DEVICE

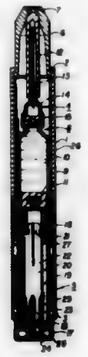
Hendrik M. Bekkering, and Henricus H. M. Vulink, both of Oist, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Division of Ser. No. 544,704, Oct. 24, 1983, Pat. No. 4,565,543. This application Oct. 4, 1985, Ser. No. 784,186

Claims priority, application Netherlands, Oct. 27, 1982, 8204142

Int. Cl.⁴ A61M *5/20*

U.S. Cl. 604—135 **7 Claims**



1. In an automatic injection device comprising:

an assembly of a discharge mechanism, a cartridge holder and a cartridge slidably accommodated in the cartridge holder;

the cartridge comprising a glass ampoule having an injection needle connected to one end thereof and being open-ended at the opposite end thereof, said glass ampoule being manufactured from unhardened glass;

the discharge mechanism comprising a sleeve which bears against the open-end of said ampoule;

the improvement comprising a sheath of shrinkable plastic material shrunk around the exterior of the ampoule and inwardly around the edge of said open-end of said ampoule.

4,661,099

SELF-ADHESIVE SHEET-LIKE STRUCTURES, PROCESS FOR THEIR PREPARATION AND THEIR USE

Miklos von Bittera, Leverkusen; Dietmar Schüpel, Cologne; Ulrich von Gizycki, Leverkusen, and Roland Rupp, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 8, 1984, Ser. No. 669,402

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1983, 3341555

Int. Cl.⁴ A61F *13/02;* **A61L** *15/06;* **C08K** *5/06;* **C08L** *75/04*

U.S. Cl. 604—290 **33 Claims**

1. An adhesive sheet structure comprising at least one support layer and at least one adhesive layer, one of the two surfaces of the structure being at least partially covered with an adhesive layer which is a gel comprising

(A) about 15–62% by weight, relative to the total of (A) and (B), of a covalently crosslinked polyurethane as a high molecular weight matrix and

(B) about 85–38% by weight, relative to the total of (A) and (B), of one or more polyhydroxy compounds which are immobilized in said matrix by van der Walls' forces, have an average molecular weights between about 1,000 and 12,000, and average OH values between about 20 and 112 and serve as a liquid dispersing agent, this dispersing agent being essentially free of hydroxy compounds having a molecular weight below about 800, and

(C) 0–100% by weight, relative to the total of (A) and (B), of fillers and/or additives, said gel being obtained by the reaction of a mixture of

(a) one or more polyisocyanates, and

(b) one or more polyhydroxy compounds having average molecular weight between about 1,000 and 12,000 and an average 1 value between about 20 and 112, which mixture may also include

(c) catalysts for the reaction between isocyanate and hydroxyl groups and

(d) fillers and additives which are known per se from polyurethane chemistry, this mixture being esaentially free of hydroxy compounds having a molecular weight below about 800, the average functionality of the polyisocyanates (F_I) being at least 2, the average functionality of the polyhydroxy compounds (F_P) being at least 3, and the isocyanate number (K) obeying the formula

$$K = \frac{300 \pm X}{(F_I \cdot F_P) - 1} + 7$$

in which $X \leq 120$, said adhesive sheet structure requiring an average force ($\bar{F}$) of at least about 0.5 Newton for detachment of 75 mm of a 125 mm long and 25 mm wide strip initially adhered to a smooth steel plate with a pressing force of 7.5 Newton when the rate of detachment is 100 mm per minute.

20. A process for the production of the adhesive sheet structures of claim 1, comprising reacting a mixture of

(a) one or more polyisocyanates, and

(b) one or more polyhydroxy compounds having an average molecular weight between about 1,000 and 12,000, and an average OH value between about 20 and 112, which mixture may also include

(c) catalysts for the reaction between isocyanate and hydroxyl groups and

(d) fillers and additives known per se from polyurethane chemistry, this mixture being essentially free of hydroxy compounds having a molecular weight below about 800, the average functionality of the polyisocyanates (F_I) being at least about 2, the average functionality of the polyhydroxy compounds (F_P) being at least 3, and the isocyanate number (K) obeying the formula

$$K = \frac{300 \pm X}{(F_I \cdot F_P) - 1} + 7$$

in which $X \leq 120$, to form a gel and during or after completion of the gel-forming reaction, applying the gel to at least part of the surface of a support material, said mixture being selected such that a strip of the adhesive sheet structure 125 mm long and 25 mm wide will require an average force ($\bar{F}$) at least about 0.5 Newton to detach 75 mm of length at a rate of 100 mm per minute after being adhered to a smooth steel plate with a pressing force of 7.5 Newton.

24. A process of fixing a medical appliance to a human body comprising

(a) preparing an adhesive sheet structure in accordance with claim 20,

(b) configuring said structure into one or more elongated strips, and

(c) contacting the portion of the human body to which attachment of the medical appliance is desired with the adhesive layer gel of said structure, and

(d) securing said medical appliance to said portion by either interposing it between the portion and the structure or by attaching it to the structure by mechanical or adhesive means.

4,661,100

URINARY RECEPTACLE

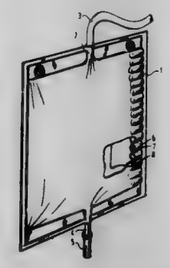
Jim Rechsteiner, Regentesselaan 30, Hilversum, Netherlands

Filed Nov. 20, 1984, Ser. No. 673,339

Claims priority, application Netherlands, Dec. 1, 1983, 8304124

Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—327 **4 Claims**



1. A urinary receptacle for repeated use comprising the combination of a flexible body including a wall defining a chamber for collecting a patient's urine, said chamber having an inlet passage which is continuously open, tubular means connected with the inlet passage and adapted to be connected to a patient for collecting urine from a patient when in use, said chamber also having an outlet passage provided with closing means for sealing the receptacle to allow accumulation of a patient's urine to start a urine collection cycle and for draining the patient's urine to terminate a urine collection cycle, rupturable container means within said receptacle and being separate from said wall, said rupturable container means comprising a plurality of rupturable containers individually and separately retained in position by portions of said wall of said receptacle, each of said containers containing a substance which affects urine within said chamber collected during a urine collection cycle, each of said containers having a cavity therewithin, said substance being disposed within said cavity, whereby, said substance can be released into the chamber by squeezing and rupturing one of said containers through deformation of said body while visually or tactilely verifying such rupture and thereby assuring that said substance has been dispensed within said receptacle.

4,661,101

LAYERED CATAMENIAL DEVICE

Scarlet Sustmann, Viersen, Fed. Rep. of Germany, assignor to Vereinigte Papierwerke, Schickedanz & Co., Nuremberg, Fed. Rep. of Germany

Filed May 15, 1985, Ser. No. 734,376

Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418521

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—360 **32 Claims**



1. A catamenial device having at least two adjacent layers of material wherein said layers are at least:

(A) An outer layer for placement next to the skin or mucous surfaces consisting essentially of non-microbistatic, treated or untreated, porous, fibrous, cellulosic material; and

(B) an inner layer or core consisting essentially of at least partially an absorbent fibrous microbistatic material containing a microbistatic agent which is chemically bound to said fibrous material by attaching an anion to a cellulose anhydroglucose unit and capping said anion with a microbistatically effective cation so that said agent cannot leach through said outer layer, present in a microbistically effective amount.

4,661,102

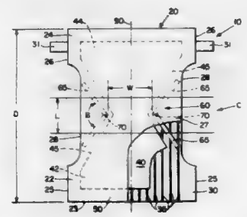
DISPOSABLE DIAPER FEATURING CROTCH TENSIONING MEANS FOR IMPROVED LEAKAGE RESISTANCE AND FIT

Hiroaki Shikata; Jerry Turner; Dennis O. Hirotsu, and Susan E. Burnett, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 3, 1985, Ser. No. 805,532

Int. Cl.⁴ A61F *13/16*

U.S. Cl. 604—385 A **15 Claims**



1. A disposable diaper having front and rear waist portions, said diaper comprising:

(a) a liquid permeable topsheet;

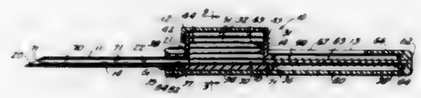
(b) a liquid impermeable backsheet, said backsheet being affixed to said topsheet;

(c) an absorbent core interposed between said topsheet and said backsheet, said absorbent core having oppositely disposed end portions and a pair of longitudinal side edges therebetween;

(d) a crotch portion located intermediate said front and rear waist portions;
(e) a pair of side flaps, one side flap being adjacent each of said longitudinal side edges of said absorbent core; and
(f) crotch tensioning means associated with each of said side flaps for imposing outward lateral tension on the crotch portion of said diaper when in use independent of any tension created by separate elasticized leg openings which may be incorporated, said crotch tensioning means each comprising one or more elasticized members extending from an attachment area in said crotch portion, across the respective side flap to a location longitudinally outside of said crotch portion, said attachment areas being oppositely disposed within said crotch portion and laterally spaced from one another at a distance less than approximately 153 mm to thereby establish said outward lateral tension in use on said crotch portion to reduce sagging and bunching thereof.

4,661,103
MULTIPLE IMPLANT INJECTOR

S. Mitchell Harman, Ellicott City, Md., assignor to Engineering Development Associates, Ltd., Dayton, Md.
Filed Mar. 3, 1986, Ser. No. 835,369
Int. Cl.⁴ A61M *5/18*
U.S. Cl. 604—62 **5 Claims**



1. An improved multiple medicinal implant injector comprising: a hollow cannula having distal and proximal ends, an elongated implant magazine element having an elongated hollow hub member thereon defining a through bore extending between first and second ends thereof, one of said ends having means thereon engaging said proximal end of said cannula; said magazine element having a hollow laterally extending shell defining a void for retaining elongated implants in stacked relation; an elongated hollow barrel element having a distal end and a closed proximal end, an elongated obturator supported at one end thereof by said closed end of said barrel element, and having an effective length approximating that of an implant; said barrel element having an axially disposed slot therein having first and second transversely extending surfaces, said magazine element being slidably positioned within said barrel element with said shell projecting through said slot for reciprocating movement between first and second positions defined by said transversely extending surfaces; and a plurality of implants positioned in stacked relation within said shell whereby reciprocating movement of said magazine element between said first and second positions serves to move said obturator from beneath stacked implants within said shell to permit successive implants to be aligned with said cannula, subsequent movement of said barrel serving to cause said cannula to move successive implants into the proximal end of said cannula, each successive implant transmitting motion to the immediately proceding implant to result in said implants being moved outwardly of said cannula through the distal end thereof.

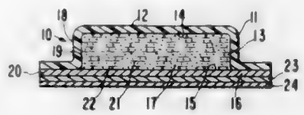
4,661,104
ACTIVE COMPOUND RELEASE SYSTEMS

Miklos von Bittera, Leverkusen; Rolf-Volker Meyer, and Rolf Dhein, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Dec. 14, 1984, Ser. No. 681,976
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347277
Int. Cl.⁴ A61F *7/02, 13/02*; A61L *15/03, 15/06*
U.S. Cl. 604—896 **24 Claims**

1. In a therapeutic system including an active compound, an upper covering layer that is essentially impermeable to the active compound, an active compound reservoir layer and a protective layer that can be pulled off and that is essentially impermeable to the active compound, the improvement which comprises the reservoir layer containing 1 to 30% of an active compound, said active compound being an antiphlogistic agent in an elastomeric mixture, said elastomic mixture comprising predominantly amorphous olefinic polymers or copolymers, said polymers or copolymers having glass transition temperatures of less than 20° C., the mixture containing (a) (i) two different (C_2–C_{18}) α-olefins or cycloolefins, (ii) or the mixture containing two different (C_2–C_{18}) α-olefins or cycloolefins copolymerized with a diolefin alone, with up to 95% by weight of the total amount of polymer being a diene rubber or a diene rubber copolymerized with an α-olefin, said diene rubber-containing copolymer having a molecular weight from 20,000 to 1×10^6 g/mole, (b) an entraining agent selected from the group consisting of polyisobutylene oil, polybutadiene oil, paraffin oil and mixtures thereof and (c) a tackifying resin.

4,661,105
MEDICAL BANDAGE FOR ADMINISTERING VASODILATOR DRUG

Robert M. Gale, Mountain View, Calif., assignor to ALZA Corporation, Palo Alto, Calif.
Continuation of Ser. No. 278,364, Jun. 29, 1981. This application Jun. 9, 1986, Ser. No. 872,369
Int. Cl.⁴ A61K *9/00*
U.S. Cl. 604—897 **7 Claims**



1. A medical bandage for the administration of a drug to the skin, the medical bandage consisting essentially of:
(a) a backing member that is substantially impermeable to the passage of drug, the backing member consisting essentially of polyethylene, aluminized polyethylene-terephthalate, and ethylene-vinyl actate compolymer;
(b) a reservoir in contact with the backing member, the reservoir consisting essentially of a silicone, from about 0.1 to about 25% of silicon dioxide, and from 0.1 to about 70% of a dosage amount of a vasodilator drug having a member selected from the group consisting of ONO and ONO_2; and,
(c) a membrane positioned opposite the backing member and in contact with the reservoir for releasing drug from the medical bandage, said membrane consisting essentially of ethylene-vinyl acetate copolymer and in contact with the backing member to form the medical bandage.

4,661,106
ARTIFICIAL HEART VALVE

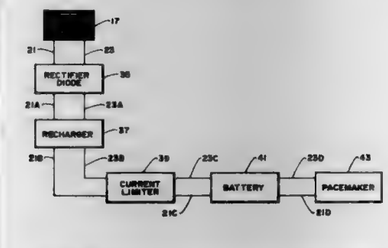
Jacek Moll, Lodz, Poland, assignor to Peter Maroko, Cherry Hill, N.J., a part interest
Filed Oct. 7, 1983, Ser. No. 540,025
Int. Cl.⁴ A61F *2/24*
U.S. Cl. 623—2 **16 Claims**



1. A heart valve comprising:
a disc having a first, convex face which is a portion of a sphere and a second, concave face which is a portion of a sphere and which is parallel to the first face, and a marginal ridge formed only on said first face of said disc, the outside surface of said ridge being circular and forming a convex perpheral edge on said disc and the inside surface of said ridge being a straight line surface sloped at an angle of from forty degrees to seventy degrees; and
a ring having a convex inside surface which is circular and with a center of curvature which lies in the plane containing the outermost points of the peripheral edge of said disc, within which said disc is retained by two pairs of angularly spaced projections which extend radially from said ring, at an angle to said radius, only partially across the opening defined by said ring, to permit pivotal movement of said disc between a closed position in which said disc is contained within said ring to close off the opening of said ring and an open position in which said disc is at an angle less than ninety degrees from said closed position to open said opening of said ring, one projection of each pair of projections extending around the marginal ridge on said disc, to overlie only said marginal ridge with the end of said projection spaced from the surface of said disc and positioned immediately adjacent to said marginal ridge to engage said inside surface of said ridge at its top upon translatory movement of said disc, and the other projection of each pair of projections extending over the opposite second face of said disc to permit said disc to rotate about its axis relative to said ring.

4,661,107
HEART VALVE

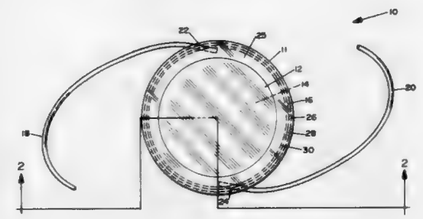
Irving E. Fink, Box 1053, Fort Scott, Kans. 66701
Filed Jul. 21, 1986, Ser. No. 887,823
Int. Cl.⁴ A61F *2/24*
U.S. Cl. 623—2 **7 Claims**



5. A pacemaker rechargeable battery charging system comprising in combination:
a. a heart valve comprising an occluder element which contains a magnet and is capable of providing an inducted AC current,
b. a diode rectifier electrically connected to said valve,
c. a battery charger electrically connected to said diode rectifier and,
d. a rechargeable battery adapted for use in a pacemaker, electrically connected to said battery charger.

4,661,108
INTRAOCULAR LENS

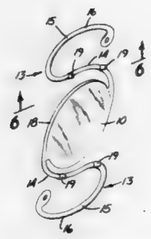
Dennis T. Grendahl, Excelsior, Minn., and William LeMaster, Goleta, Calif., assignors to Surgidev Corporation, Goleta, Calif.
Filed Jul. 3, 1985, Ser. No. 751,555
Int. Cl.⁴ A61F *2/16*
U.S. Cl. 623—6 **11 Claims**



1. Intraocular lens comprising:
a. lens optic including an anterior surface and a posterior surface;
b. plurality of loops secured into holes in said lens optic; and,
c. multiple barrier channeled ledge extending about said optic surfaces, and including a plurality of downwardly extending ledges having a channel therebetween which ledges extend in a posterior direction away from said posterior surface so as to space said posterior lens surface away from the posterior capsule while forming a double seal therewith when engaged with the posterior capsule.

4,661,109
INTRAOCULAR LENS

Thomas C. White, 1701 S. Minnesota Ave., Sioux Falls, S. Dak. 57105
Filed Aug. 16, 1985, Ser. No. 766,732
Int. Cl.⁴ A61F *2/16*
U.S. Cl. 623—6 **8 Claims**



1. An intraocular lens for placement adjacent to the anterior surface of the posterior lens capsule of an eye, comprising: a lens body having a central axis, an anterior surface, and a posterior surface; posteriorly extending protrusion means spaced generally radially outwardly from the lens body for contact with the posterior capsule to space the posterior surface of the lens body from the posterior capsule by a distance of at least about 0.1 mm; and strut means carried by the lens body and extending generally radially outwardly for contact with peripheral eye tissue to secure the lens in the posterior

chamber of the eye adjacent to the posterior capsule, the strut means including:

one or more elongated, resilient struts, each said strut being carried at a first end by the lens body and having a first portion carrying the protrusion means and extending outwardly of the lens generally toward circumferential eye tissue, said first portion, for at least about 45 degrees of the circumference of the lens, being spaced radially from the periphery of the lens body by a distance less than about one-half of the radial distance from the lens body periphery to the tissue-engaging surface; and

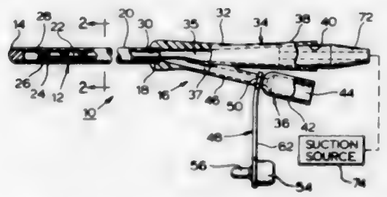
a second portion having an outwardly facing, tissue-engaging surface for supportive engagement with peripheral eye tissue.

4,661,110

MULTIPLE PASSAGE CONNECTOR FITTING FOR A MEDICAL TUBE

Earl J. Fortier, Tucson, Ariz., and Robert D. Banning, St. Peters, Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed May 13, 1985, Ser. No. 733,564
Int. Cl.⁴ A61M *25/00*
U.S. Cl. 604—256 **18 Claims**



1. A multiple passage fitting for a medical tube comprising a body including a first connector having a first passage therethrough and a connector portion at the proximal end thereof for connection to another member, a second connector having a second passage therethrough and a connector portion at the proximal end thereof for connection with another member, and a tube adapter and closure cap device including a first flexible strap connected to said fitting, a tube adapter connected to said first strap and adapted to fit in said connector portion of said first connector in fluid tight connection therewith, said tube adapter having a third passage therethrough connected with said first passage and adapted for connection with another member when said tube adapter is in said connector portion of said first connector, a second flexible strap connected to said tube adapter, a first closure plug connected to said second strap and adapted to fit in said third passage to close the same, a third flexible strap connected to said fitting, a second closure plug connected to said third strap and adapted to fit in said connector portion of said second connector to close said second passage, and both of said first and third straps connected to said second connector by coupling means connected to said first and third straps for connecting said tube adapter and cap device to said second connector.

4,661,111

POLYPEPTIDE

Erkki I. Ruoslahti, Olivenhain, and Michael D. Pierschbacher, San Diego, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Division of Ser. No. 405,239, Aug. 4, 1982, Pat. No. 4,517,686. This application May 17, 1985, Ser. No. 735,816
Int. Cl.⁴ A61F *1/00*; A61K *37/00*; C07C *103/52*; C07G *7/00*
U.S. Cl. 623—11 **6 Claims**

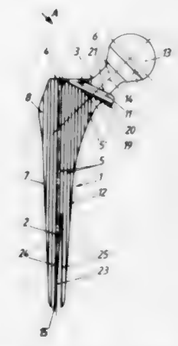
1. The method of preparing substrata for the attachment of cells thereto, comprising deriving a polypeptide exhibiting a cell attachment activity having substantially the formula H-Ile-Gly-Gln-Gln-Ser-Thr-Val-Ser-Asp-Val-Pro-Arg-Asp-Leu-Glu-Val-Val-Ala-Ala-Thr-Pro-Thr-Ser-Leu-Leu-Ile-Ser-Trp-Asp-Ala-Pro-Ala-Val-Thr-Arg-Tyr-Tyr-Arg-Ile-Thr-Tyr-Gly-Glu-Thr-Gly-Gly-Asn-Ser-Pro-Val-Gln-Glu-Phe-Thr-Val-Pro-Gly-Ser-Lys-Ser-Thr-Ala-Thr- le-Ser-Gly-Leu-Lys-Pro-Gly-Val-Asp-Tyr-Thr-Ile-Thr-Val-Tyr-Ala-Val-Thr-Gly-Arg-Gly-Asp-Ser-Pro-Ala-Ser-Ser-Lys-Pro-Ile-Ser-Ile-Asn-Tyr-Arg-Thr-Glu-Ile-Asp-Lys-Pro-Ser-Gln-Met-OH and treating solid substrata having a surface to which cell attachment is desired with said polypeptide.

4,661,112

HIP JOINT PROSTHESIS

Maurice E. Müller, Bern, Switzerland, assignor to Sulzer Brothers Limited, Winterthur and Protek Ag, Berne, both of, Switzerland

Filed Mar. 4, 1985, Ser. No. 707,571
Claims priority, application Switzerland, Mar. 6, 1984, 1094/84
Int. Cl.⁴ A61F *2/32*
U.S. Cl. 623—22 **14 Claims**



1. In combination,

a hip joint prosthesis having a straight conically widening blade type shank, a neck, a transition region between said shank and said neck, and a plurality of grooves on said shank adjacent said transition region and in parallel to a longitudinal axis of said shank; and

a ruff slidably mounted on said shank of said prosthesis in a direction parallel to said longitudinal axis and and distally of said shank, said ruff having an insertion opening disposed about said transition region and a plurality of ribs complementary to and mating with said grooves on said shank.

4,661,113

IMPLEMENT ATTACHMENT FOR A HANDICAPPED ARM

Charles E. Adkins, 17636 Crystal La., Milwaukie, Oreg. 97222

Filed Jun. 24, 1985, Ser. No. 747,945
Int. Cl.⁴ A61F *2/68*
U.S. Cl. 623—65 **2 Claims**

1. An attachment arranged for connection between an implement of the type having a handle portion with a free end and an arm prosthesis mounted on a stump arm and having thread means at its free end for releasable securement to an implement, said attachment comprising:

stud means arranged to be secured in an opening at one end of an implement for permanent installation and having a threaded end arranged to project beyond the end of the implement,

a socket member,

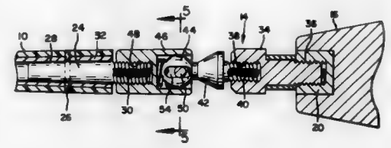
said socket member including two parts each with opposite ends.

one of said parts having said first threaded securing means on one end thereof and a ball on the other end,

the other of said parts having said second threaded securing means on one end and a socket receiving said ball on the other end,

a central aperture in said ball having outwardly tapered recess portions,

and a cross pin secured in said socket member extending freely through said central aperture providing pivotal connection of said socket member around said pin as well as allowing some pivotal movement in said recesses on an axis at right angles to said cross pin but at the same time preventing rotation of said socket member on its longitudinal axis; wherein the threaded end of the second part of said socket member is releasably connected to the threaded end of the stud means, and the threaded end of the first part of said socket member is releasably connected to an adapter means which itself is threadably attached to the free end of an artificial arm.



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4,661,114

3-AMINO-5-HYDROXYPYRIDINE DERIVATIVES AND HAIR COLORING COMPOSITIONS CONTAINING THE SAME

Eugen Konrad, Darmstadt, and Thomas Clausen, Alsbach, both of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

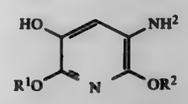
Filed Nov. 14, 1985, Ser. No. 798,018

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1984, 3442128

Int. Cl.⁴ A61K *31/40*; C07D *213/72*

U.S. Cl. 8—409 **12 Claims**

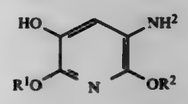
1. 3-amino-5-hydroxypyridine derivatives of the general formula I



(I)

wherein R^1 and R^2 are the same or different and are each CH_3, C_2H_5 or C_2H_4OH and its physiologically compatible salt with an organic or inorganic acid.

4. Composition for the oxidative dyeing of hair, containing a developer substance-coupler substance combination, including as coupler substance a 3-amino-5-hydroxyprydine derivative of the general formula I



(I)

wherein R^1 and R^2 are the same or different and are each CH_3, C_2H_5 or C_2H_4OH or a physiologically compatible salt thereof with an organic or inorganic acid.

4,661,115

HAIR DYEING AGENTS

Winfred Orth, Hassloch/Pfalz; Karl-Heinz Schrader, Bevern, and Werner Fickert, Mannheim, all of Fed. Rep. of Germany, assignors to Ruetgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

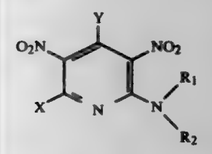
Filed Feb. 6, 1986, Ser. No. 826,646

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1985, 3508265

Int. Cl.⁴ A61K *7/13*

U.S. Cl. 8—409 **8 Claims**

1. A composition for the dyeing of hair comprising at least one oxidation dyestuff, at least one developer for said oxidation dyestuff and as the coupling agent a sufficient amount of a dinitropyridine derivative of the formula (I) or mixture of said derivatives:



(I)

wherein R_1 and R_2 are the same or different and represent hydrogen, alkyl with 1–4 C atoms, an unsubstituted phenyl, phenyl substituted at any position by one or more amino-, methylamino-, dimethylamino-, hydroxy-, alkyl- or alkoxy group with 1–2 C atoms, cycloalkyl with 1 to 7 C atoms or an unsubstituted pyrrolo, pyridino, piperidino, pyrimidino, piperazino or morpholino, or methyl-, ethyl- or propyl substituted pyrrolo-, pyridino-, piperidino-, pyrimidino-, piperazino- or morpholino or alkenyl of the formula (II):

$$-R-Z \qquad \text{(II)}$$

wherein R represents alkyl of 1–6 C atoms or phenyl and

Z is hydroxy- and/or alkoxy with 1–3 C atoms, or an amino group of the formula (III):



(III)

in which R_3 and R_4 are the same or different and represent hydrogen, unsubstituted or hydroxy- or amine substituted alkyl-, aralkyl-, cycloalkyl with 1 to 7 C atoms; an unsubstituted phenyl or phenyl substituted at any position with one or more amino-, methylamino-, dimethylamino-, hydroxy-, alkyl-, or alkoxy group with 1–2 C atoms; or any methyl-, ethyl-, or propyl substituted or unsubstituted pyrrolo-, pyridino-, piperidino-, pyrimidino-, piperazino- or morpholino-;

X represents hydrogen, an hydroxy- or aminoalkyl- or alkoxy group with 1–4 C atoms or an amino group of the formula (I)

and Y is hydrogen, an alkyl group with 1–3 C atoms or an unsubstituted phenyl or hydroxy- or amino substituted phenyl.

4,661,116

CONTINUOUS DYEING OF CATIONIC DYEABLE POLYESTER FIBERS

Frederick E. Barwick, III, Roxboro, and Kyle R. Pearce, Hillsborough, both of N.C., assignors to Collins & Aikman Corporation, New York, N.Y.

Filed Jan. 31, 1985, Ser. No. 696,926

The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.

Int. Cl.⁴ D06P *1/62, 3/54, 5/20*

U.S. Cl. 8—532 **12 Claims**

1. A method of continuously dyeing textile fabrics comprising

(1) continuously advancing through a pad bath, a fabric formed both of cationic dyeable polyester fibers and of at least one additional fiber selected from the group consisting of disperse dyeable polyester fibers and cellulosic fibers;

(2) impregnating the fabric in the pad bath with an aqueous dyebath comprising

(a) 0 to 5 g/l of a thickener

(b) cationic dyestuffs in an amount sufficient to dye the cationic dyeable polyester fibers to the desired depth of shade

(c) at least one additional dyestuff in an amount sufficient to dye said at least one additional fiber to the desired depth of shade, said at least one additional dyestuff being substantive toward said at least one additional fiber

(d) 2 to 100 g/l of a partially sulfated adduct of ethylene oxide with an alkyl phenol or C_8 to C_{16} fatty alcohols

(e) 2 to 60 g/l of nonionic or anionic surfactants, and

(f) 5 to 50 g/l of at least one organic compound selected from the group consisting of aromatic nitrile ethers and ethoxylated chlorophenols;

(3) continuously directing the fabric from the pad bath to and through a heating chamber and heating the fabric to a temperature and for a time sufficient to fix the dyestuffs; and

(4) washing and drying the thus dyed fabric.

4,661,117

WATERLESS DIP DYE COMPOSITION AND METHOD OF USE THEREOF FOR SYNTHETIC ARTICLES

Robert B. Wilson, Greenville, S.C.; William F. Pomeroy, Rocky Mount, N.C., and Louis T. Sovey, Jr., Spartanburg, S.C., assignors to Crucible Chemical Company, Greenville, S.C.

Continuation-in-part of Ser. No. 574,953, Jan. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 440,567, Nov. 10, 1982, abandoned. This application Nov. 8, 1984, Ser. No. 669,355

The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.

Int. Cl.⁴ D06P *5/00*

U.S. Cl. 8—506 **26 Claims**



1. A waterless dip dye composition for non-textile and general utility articles, made from plastic, comprising an aromatic ester of the formula $ArCOOR_2$, $ArCOO—R_1—OOCAr$ or $(ArCOO)_z—R_3$, wherein R_1 is alkylene of 2–8 carbon atoms or polyoxyalkylene of the formula $—C_rH_{2r}(OC_rH_{2r})_s$ in which r is 2 or 3 and s is 1 to 15; R_2 is substituted or unsubstituted alkyl or alkenyl of 8–30 carbon atoms; R_3 is the residue of a polyhydric alcohol having z hydroxyl groups; Ar is substituted or unsubstituted mono- or bicyclic aryl of up to 15 carbon atoms and z is 3–6, admixed with at least about 0.5% by weight of a dyeing assistant agent and an organic colorant.

4,661,118

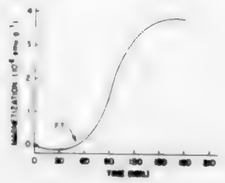
METHOD FOR OXIDATION OF PYRITE IN COAL TO MAGNETITE AND LOW FIELD MAGNETIC SEPARATION THEREOF

Arthur N. Thorpe, Washington, D.C.; Frank E. Senftle, Chevy Chase, Md., and Corrinne C. Alexander, Washington, D.C., assignors to The United States of America, as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 15, 1985, Ser. No. 726,253

Int. Cl.⁴ C22B *1/11*; C01G *49/08*; B03C *1/00*

U.S. Cl. 44—1 SR **23 Claims**



12. A method for reducing the sulfur concentration of pyrite-containing pulverized coal comprising the steps of:

(a) converting at least a fraction of the pyrite in the coal to magnetite for increasing the magnetization of the coal; and

(b) magnetically separating at least a portion of the pyrite from the coal in a low-strength magnetic field;

said step of converting pyrite to magnetite including heating the coal in an atmosphere having an inert gas that is inert to pyrite containing 3 to 60 torr partial pressure of air to a temperature in the range 390° C. to 455° C. for at least two minutes.

4,661,119

COKE BRIQUETTES

D. Bertil Andersson; Nils J. W. Juhlin; Claes I. Gillesium, all of Skovde; Olle Kjell-Berger, Valdemarsvik, and Owe R. Brinck, Hasslebolm, all of Sweden, assignors to Rockwool Aktiebolaget, Skovde, Sweden

Continuation of Ser. No. 593,702, Mar. 26, 1984, abandoned. This application Oct. 10, 1985, Ser. No. 786,159

Int. Cl.⁴ C10L *5/02, 5/12*

U.S. Cl. 44—10 C **5 Claims**

1. A briquette suitable for use as an auxiliary fuel in a shaft furnace for melting of mineral in the manufacture of mineral wool comprising:

(a) 30–75% by weight, based on the dry weight of the briquettes, of particles of coke fines or coal fines or both, said fines consisting essentially of particles having a particle size of from 2 to 25 mm;

(b) at least 7% by weight, based on the dry weight of the briquette, of a hydraulic binder; and

(c) at least 15% by weight, based on the dry weight of the briquette, of a fine grain oxidic mineral component selected from the group consisting of sand, slag, stone powder, fly ash, limestone powder, dolomite powder, silicon dioxide, and waste material from mineral wool manufacturer, said fine grain oxidic mineral component having a particle size of less than 2 mm.

4,661,120

DIESEL FUEL ADDITIVE

Richard P. Carr, Naperville, and Marcos Y. Corpuz, Lisle, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 12, 1985, Ser. No. 754,304

Int. Cl.⁴ C10L *1/18*

U.S. Cl. 44—57 **2 Claims**

1. An improved cold weather diesel fuel treatment of the type comprising:

Ingredients	% by Weight
A. wax crystal modifier	10 to 50%
B. sludge dispersant & stabilizer	1 to 10%
C. hydrocarbon solvent	15 to 40%
D. oil-soluble water solvent comprising of a low molecular weight organic compound containing from 1 to 3 structural units having formula: $—CH_2CH_2O—$	15 to 40%

said improved cold weather diesel fuel treatment being capable of dispersing or dissolving water contained in diesel fuels.

4,661,121

MIDDLE DISTILLATE COMPOSITIONS WITH IMPROVED LOW TEMPERATURE PROPERTIES

Kenneth Lewtas, Wantage, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 18, 1985, Ser. No. 713,022

Claims priority, application United Kingdom, Mar. 22, 1984, 8407403; Aug. 10, 1984, 8420436

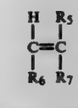
Int. Cl.⁴ C01L *1/18*

U.S. Cl. 44—70 **14 Claims**

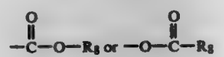
1. A petroleum distillate fuel oil boiling in the range 120° C. to 500° C. having a final boiling point equal to or greater than 370° C., containing

(A) from 0.001% to 2% by weight of a polymer consisting essentially of polyester containing at least 10% (w/w) of a

n-alkyl vinyl or fumarate ester in which the alkyl group of said ester contains an average of from 14 to 18 carbon atoms and no more than 10% (w/w) of said ester contains alkyl groups with fewer than 14 carbon atoms and no more than 10% (w/w) contains alkyl groups with greater than 18 carbon atoms, said polymer being copolymerized with 0 to 70 mole % of ester of the formula:



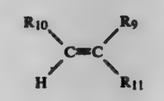
wherein R_5 is hydrogen or a C_1 to C_4 alkyl group, R_6 is



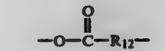
where R_8 is C_1 to C_5 alkyl and R_7 is R_6 or hydrogen; and

(B) at least a cold flow improving amount of a cold flow improving coadditive selected from the group consisting of:

1. copolymers of ethylene with unsaturated esters of the general formula:



wherein R_{10} is hydrogen or methyl, R_9 is selected from the group consisting of (a)



groups wherein R_{12} is hydrogen or a C_1 to C_{17} alkyl group; and (b) $—COOR_{12}$ groups wherein R_{12} is a C_1 to C_{17} alkyl groups; and

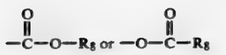
2. polar nitrogen containing compounds of 30 to 300 carbon atoms, having at least one straight chain C_8 to C_{40} alkyl segment, which are amine salts or amides formed by reaction of a molar proportion of C_{12} to C_{40} amine with a molar proportion of hydrocarbyl acid having 1 to 4 carboxylic acid groups or their anhydrides.

14. A method of reducing the wax appearance point of a distillate petroleum fuel oil boiling in the range of 120° to 500° C. and having a final boiling point equal to or greater than 370° C. by adding to said oil

(A) a wax appearance depressing amount of polymer consisting essentially of polyester containing at least 10% (w/w) of a n-alkyl vinyl or fumerate ester in which the alkyl group of said ester contains an average of from 14 to 18 carbon atoms and no more than 10% (w/w) of said ester contains alkyl groups with fewer than 14 carbon atoms and no more than 10% (w/w) contains alkyl groups with greater than 18 carbon atoms, said polymer being copolymerized with 0 to 70 mole % of ester of the formula:



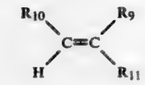
wherein R_5 is hydrogen or a C_1 to C_4 alkyl group, R_6 is



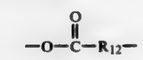
where R_8 is C_1 to C_5 alkyl and R_7 is R_6 or hydrogen; and

(B) a cold flow improving additive selected from the group consisting of:

1. copolymers of ethylene with unsaturated esters of the general formula:



wherein R_{10} is hydrogen or methyl, R_9 is selected from the group consisting of (a)



groups wherein R_{12} is hydrogen or a C_1 to C_{17} alkyl group; and (b) $COOR_{12}$ groups wherein R_{12} is a C_1 to C_{17} alkyl group; and

2. polar nitrogen containing compounds of 30 to 300 carbon atoms, having at least one straight chain C_8 to C_{40} alkyl segment which are amine salts or amides formed by reaction of a molar proportion of C_{12} to C_{40} amine with a molar proportion of hydrocarbyl acid having 1 to 4 carboxylic acid groups or their anhydrides.

4,661,122

MIDDLE DISTILLATE COMPOSITIONS WITH IMPROVED COLD FLOW PROPERTIES

Kenneth Lewtas, Wantage, United Kingdom, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 18, 1985, Ser. No. 713,023

Claims priority, application United Kingdom, Mar. 22, 1984, 8407403; Aug. 10, 1984, 8420436

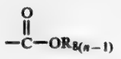
Int. Cl.⁴ C10L *1/18*

U.S. Cl. 44—70 **17 Claims**

1. A petroleum distillate boiling in the range 120° C. to 500° C. and having a final boiling point equal to or greater than 370° C. with a 90% boiling point above 350° C., containing from 0.001% to 2% by weight of (A) a polymer consisting essentially of polyester comprising mono or di-n-alkyl ester of mono-ethylenically unsaturated C_4 to C_8 mono or dicarboxylic acid or anhydride containing at least 25 wt. % of n-alkyl groups containing an average of from 14 to 18 carbon atoms and no more than 10% (w/w) of said alkyl groups containing fewer than 14 carbon atoms and no more than 10% (w/w) of the alkyl groups contain more than 18 carbon atoms copolymerized with 0 to 70 mole % of ester of the formula:

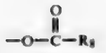


wherein R_5 is hydrogen or a C_1 to C_4 alkyl group, R_6 is



or

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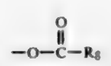
where R_8 is C_1 to C_5 alkyl and R_7 is R_6 or hydrogen.

17. A method of decreasing the wax appearance point and/or cloud point of a petroleum distillate oil being in the range 120° C. to 500° C. having a final boiling point equal to or greater than 370° C., with a 90% boiling point above 350° C., comprising adding from 0.001% to 2% by weight of (A) a polymer or copolymer consisting essentially of polyester comprising mono or di-n-alkyl ester of mono-ethylenically unsaturated C_4 to C_8 mono or dicarboxylic acid or anhydride containing at least 25 wt. % of n-alkyl groups containing an average of from 14 to 18 carbon atoms and no more than 10% (w/w) of said alkyl groups containing fewer than 14 carbon atoms and no more than 10% (w/w) of the alkyl groups contain more than 18 carbon atoms copolymerized with 0 to 70 mole % of ester of the formula:



wherein R_5 is hydrogen or a C_1 to C_4 alkyl group, R_6 is

or



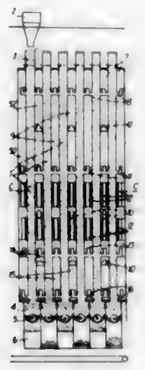
where R_8 is C_1 to C_5 alkyl and R_7 is R_6 or hydrogen.

4,661,123

KILN FOR TREATING BITUMINOUS SCHISTS

Paul R. Duchene, 3 rue Saint Jean Marie Vianney, 78100 St Germain En Laye, France

Filed Apr. 16, 1984, Ser. No. 600,367
Claims priority, application France, Apr. 21, 1983, 83 06531
Int. Cl.⁴ C01S *3/16*
U.S. Cl. 48—76 **7 Claims**



1. A kiln for treating bituminous schists with air and steam, having a top and bottom defining the height of said kiln therebetween, having outer enclosure walls and inner vertical partition walls made from refractory material, said outer enclosure walls defining the length of the kiln therebetween, said outer enclosure walls and inner vertical partition walls comprising the boundaries for vertical schist treatment chambers, said vertical schist treatment chambers comprising columnar vertical voids each extending across said kiln and along the height of said kiln;

a plurality of said chambers having a substantially equal and constant cross-section over their entire height;

said inner partition walls and said outer enclosure walls having substantially horizontal flues comprising a plurality of aligned voids formed in said walls extending across the width of said kiln for supplying reaction gases to, and withdrawing distillation products from, the chambers through vents, said vents comprising a plurality of openings extending through said walls, said kiln comprising, from top to bottom:

(a) means defining a pyrolysis zone comprising a first portion of said kiln, said pyrolysis zone bounded by and including on its upper side a first horizontal flue for withdrawing distillation products, and bounded by and including on its lower side a second horizontal flue for drawing off excess gas and for injecting hot fumes during the start-up of said kiln;

(b) means defining a gasification zone comprising a second portion of said kiln located below said second horizontal flue and having a plurality of hollow diffusion chambers formed in said outer enclosure walls and in said partition walls, said diffusion chambers comprising a plurality of columnar horizontal voids each extending across the width of said kiln gasification zone, the outer diffusion chambers formed in said outer enclosure walls having a diffusion wall on their inner sides, the inner chambers formed in said partition walls having diffusion walls on each of their sides oppositely facing adjacent schist treatment chambers, the walls housing said diffusion chambers comprising porous slabs of at least 50% porosity extending along the height of said gasification zone, said diffusion chambers supplying air and steam to be diffused inside said gasification zone; and

(c) means defining a cooling zone located below said means defining a gasification zone and comprising a third portion of said kiln, said cooling zone having a third horizontal flue for withdrawing gases and fumes, and

a fourth horizontal flue for injecting gases and fumes.

4,661,124

MOLECULAR SIEVE TYPE GAS SEPARATION SYSTEMS

Humphrey A. S. Hamlin, Montacute, and Roger M. Marsh, Sherborne, both of England, assignors to Normalair-Garrett (Holding) Limited, Yeovil, England

Filed Nov. 10, 1982, Ser. No. 440,636
Claims priority, application United Kingdom, Nov. 13, 1981, 8134294
Int. Cl.⁴ B01D *53/04*
U.S. Cl. 55—21 **4 Claims**

1. A method for delivering oxygen-enriched air to a breathing mask of an occupant of an aircraft cabin comprising the steps of:

supplying air to a molecular sieve bed system, the concentration of the oxygen-enriched gas exiting from the sieve bed system being a function of the partial saturation of the sieve bed;

controlling the charge/adsorption on-stream phase and the purge/desorption regeneration phase so that a desired saturation of the sieve bed is maintained so as to produce an oxygen-enriched gas having a concentration appropriate for the actual cabin pressure; said controlling step including the steps of determining the cabin pressure, and then selecting the appropriate overall cycle time and relative duration of each phase from predetermined values appropriate for the determined cabin pressure such that the oxygen-enriched air remains within predetermined physiologically acceptable limits for breathing at the cabin pressure;

venting to aircraft ambient atmosphere the sieve bed during the purge/desorption regeneration phase; and

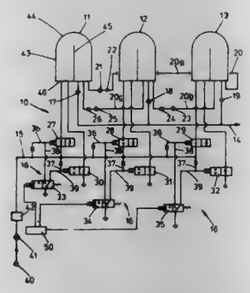
delivering the oxygen-enriched air directly to the breathing mask during the charge/adsorption phase.

2. A molecular sieve type gas separation system adapted to deliver oxygen-enriched air to an oral-nasal breathing mask for breathing by an occupant of an aircraft cabin, the system comprising:

a supply line including supply valve means for supplying air to the system;

at least one molecular sieve bed connected with said supply line and adapted for decreasing the non-oxygen content of the supply air;

a delivery line including delivery valve means connected with said bed for delivering oxygen-enriched air from said bed to said breathing mask;



a vent line including vent valve means connected with said bed for venting gas in said bed to aircraft ambient atmosphere or to aircraft cabin atmosphere;

control means connected with said supply valve means and said vent valve means for controlling opening and closing thereof;

said control means being adapted to cyclically subject said bed to a charge/adsorption on stream phase followed by a purge/desorption regeneration phase, and

pressure transducer means sensing an altitude related pressure and operatively connected with said control means to vary the total cycle time of the on stream and regeneration phases of said bed in accordance with the sensed altitude related pressure such that for predetermined ranges of altitude related pressure the overall cycle time and the relative durations of each of the said phases are at values such that the oxygen content of the oxygen-enriched air delivered to said breathing mask from said sieve bed remains within predetermined physiologically acceptable limits for breathing at the actual cabin pressure.

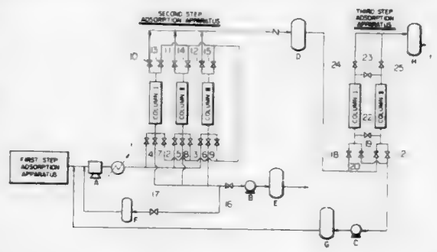
4,661,125

PROCESS FOR PRODUCING HIGH CONCENTRATION OXYGEN BY A PRESSURE-SWING-ADSORPTION METHOD

Kazuo Haruna, and Saburo Hayashi, both of Kakogawa, Japan, assignors to Seitetsu Kagaku Co., Ltd., Hyogo, Japan

Filed May 16, 1985, Ser. No. 734,511
Claims priority, application Japan, May 22, 1984, 59-104239
Int. Cl.⁴ B01D *53/04*
U.S. Cl. 55—26 **7 Claims**

1. A process for producing high concentrations of oxygen by a pressure-swing-adsorption method using air as a raw material; characterized by introducing air into a first step adsorption apparatus packed with a zeolite molecular sieve; subjecting the air to a pressure-swing-adsorption therein to obtain a non-adsorbed gas containing oxygen as the major component, nitrogen and argon; introducing the non-adsorbed gas into a second step adsorption apparatus comprising three columns packed with a carbon molecular sieve; subjecting the gas to a pressure-swing-adsorption operation therein to conduct a desorption of the adsorbed oxygen and obtain a desorbed gas as high concentration oxygen having high concentration of 99%



or above, and to separate a non-adsorbed gas which is an oxygen gas containing argon and nitrogen; introducing the non-adsorbed gas into a third step adsorption apparatus comprising two columns packed with a carbon molecular sieve; subjecting the gas to a pressure-swing-adsorption operation therein to conduct desorption of the adsorbed oxygen; and returning the desorbed oxygen to the raw material gas of the second step adsorption apparatus to enhance the total recovery of oxygen.

4,661,126

STERILIZING PROCESS

Kaoru Inagami, Tokyo, and Takawo Ohtsu, Kanagawa, both of Japan, assignors to The Calpis Food Industry Co., Ltd. and JGC Corporation, both of Tokyo, Japan

Filed Dec. 5, 1985, Ser. No. 805,291
Int. Cl.⁴ B01D *46/00*
U.S. Cl. 55—97 **2 Claims**

1. A process for sterilizing feed or exhaust air by heating, which comprises:

directly heating a high-temperature filter including built-in heat-retaining material by the application of electric current to said heat-retaining material to bring the temperature of the heat-retaining material into a range of 225° to 300° C., the heat-retaining material being at least one material selected from the group consisting of ceramics, carbon fiber, and porous carbon; and

passing said air through said heated high-temperature filter.

4,661,127

SUBMERSIBLE LIQUID/GAS SEPARATOR APPARATUS

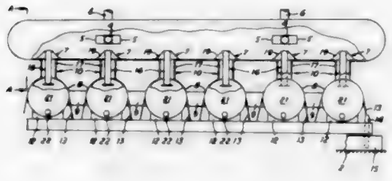
Allan R. Huntley, Northwood, United Kingdom, assignor to Stone & Webster Engineering Limited, Central Milton Keynes, Great Britain

PCT No. PCT/GB85/00043, § 371 Date Sep. 23, 1985, § 102(e) Date Sep. 23, 1985, PCT Pub. No. WO85/03544, PCT Pub. Date Aug. 15, 1985
PCT Filed Jan. 29, 1985, Ser. No. 783,223
Claims priority, application United Kingdom, Feb. 2, 1984, 8402769; Oct. 9, 1984, 8425512
Int. Cl.⁴ B01D *19/00*
U.S. Cl. 55—174 **20 Claims**

1. A liquid/gas separator capable of being taken to a required location and sunk into position adjacent a submerged gas pipeline for separating intermittent slugs of liquid from gas in the pipeline, including at least one hollow elongated separator pressure vessel having at least one inlet for receiving, from a pipeline, liquid/gas to be separated, at least one gas outlet for discharging separated gas to another pipeline, and a plurality

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of liquid outlets for liquid separated from liquid/gas in the separator vessel, and including a plurality of hollow elongated liquid accumulator pressure vessels each substantially rigidly interconnected, in spaced side-by-side substantially co-planar relationship, each accumulator vessel being substantially rigidly connected to the liquid outlets of the overlying transversely substantially horizontally extending separator vessel, by upwardly extending drain pipes, the drain pipes providing fluid flow communication between the separator vessel and the accumulator vessels, so that in operation liquid separating out



in the separator vessel passes downwardly from the separator vessel through the liquid outlets and communicating drain pipes into the accumulator vessels, the drain pipes structurally linking the separator vessel to the accumulator vessels, further comprising coupling means for structurally linking the accumulator vessels to each other and for providing fluid flow communication among the accumulator vessels so that in operation liquid separated out in the separator vessel and accumulated in the accumulator vessels can pass from one accumulator vessel to another for liquid level equilisation purposes.

4,661,128

AIR DESICCATING APPARATUS

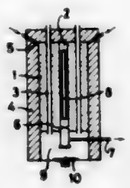
Bruno Bachhofer, Säntisstrasse 85, 7981 Bavendorf, and Anton Locher, Bergstrasse 6, 7981 Torkenweiler, both of Fed. Rep. of Germany

Filed Jun. 4, 1985, Ser. No. 741,163

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423561

Int. Cl.[4] B01D *53/02*

U.S. Cl. 55—208 **10 Claims**



1. An air desiccating apparatus comprising: a tank which is filled with a preferably granular desiccator substance which absorbs moisture, and which is provided with air inlet orifices and outlet orifices; thermal insulating means disposed around said tank for thermally insulating said tank relative to its surroundings; a heater element arranged in said tank and by means of which said desiccator substance can be regenerated by heating and evaporation; and cooling means for cooling said desiccator substance with ambient air during the desiccation process, said cooling means including a plurality of straight cooling pipes which are oriented in the longitudinal direction of said tank and extend through said tank and said desiccating substance contained therein, with said pipes being open at the top and leading at the bottom into a common blast chamber, and a blower which forces ambient air into said blast chamber and upwards through said cooling pipes.

4,661,129

FILTER CLEANING DEVICE

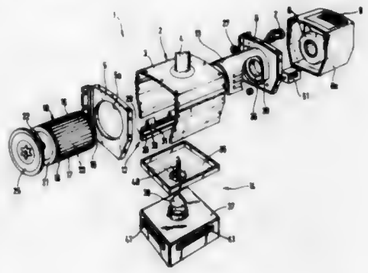
Bill P. P. Nederman, Helsingborg, Sweden, assignor to AB Ph. Nederman & Company, Sweden

Filed May 23, 1985, Ser. No. 737,208

Claims priority, application Sweden, May 30, 1984, 8402918

Int. Cl.[4] B01D *27/06, 29/06, 29/38*

U.S. Cl. 55—218 **12 Claims**



1. Filter device for cleaning gases comprising:

(a) a filter casing having a bottom, a gas inlet, a gas outlet and an impurity outlet;

(b) a filter cartridge having a plurality of radially oriented projections;

(c) mounting means to removably and rotatably mount the filter cartridge within the filter casing such that it may rotate about an axis extending in a substantially horizontal direction, the mounting means comprising:

(i) first and second openings defined in opposite end walls of the filter casing;

(ii) a tubular outlet socket attached to one end of the filter cartridge and adapted to rotatably fit into the first opening;

(iii) a cover member adapted to fit over the second opening; and,

(iv) means to rotatably attach the cover member to the filter cartridge.

(d) fan means operatively communicating with the gas outlet so as to draw contaminated gas into the filter casing through the gas inlet such that it passes through the filter cartridge, thereby removing impurities from the gas;

(e) a first driving motor drivingly connected to the fan means;

(f) drive means to rotate the filter cartridge about the substantially horizontal axis comprising;

(i) a driven gear attached to the filter cartridge;

(ii) a second driving motor

(iii) a driving gear attached to the second driving motor and engaging the driven gear;

(g) at least one impeding means stationarily attached to the bottom of the filter casing and having a portion extending toward the filter cartridge such that it contacts a lower portion of the radial projections thereof as the filter cartridge rotates imparting a shaking movement to them to remove entrapped impurities from the filter cartridge thereby causing them to fall away from the filter cartridge due to the effects of gravity and the centrifugal force generated by the rotation of the filter cartridge to prevent re-clogging the filter cartridge; and,

(h) control circuit means connecting the first and second driving motors to a source of power, the control circuit means including switch means movable between a first position wherein only the first driving motor is connected to the power source and a second position wherein only the second driving motor is connected to the power source such that the filter cartridge rotates only when the fan means is inoperative.

4,661,130

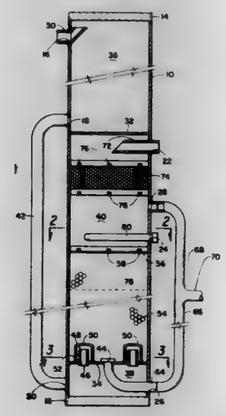
ABSORBER FOR DEHYDRATING GAS USING DESICCANTS

Harold O. Ebeling, and Joseph D. Hoserkamp, both of 4900 S. Lewis, Tulsa, Okla. 74105

Filed Apr. 7, 1986, Ser. No. 849,207

Int. Cl.[4] B01D *53/14*

U.S. Cl. 55—234 **4 Claims**



1. An improved absorber for contacting raw gas having water therein with a liquid desiccant, comprising:

an upright vessel having a lower and an upper partition therein defining an upper zone, a middle zone and a lower zone, the vessel having a raw gas inlet and a gas distribution outlet therein above said upper partition communicating with said upper zone, the vessel having a distribution gas inlet therein below said lower partition communicating with said lower zone, a dehydrated gas outlet therein bleow said upper partition communicating with the upper part of said middle zone, a liquid desiccant inlet therein between said partitions communicating with said middle zone, a desiccant outlet therein below said lower partition communicating with said lower zone and an equalizer opening therein communicating with said middle zone below said gas outlet and above said dessicant inlet, the upper partition being impervious and the lower partition having a desiccant outlet opening therein and a plurality of gas inlet openings therein;

a vertical gas distribution conduit exterior of said vessel having the upper end thereof connected to said distribution gas outlet and the lower end thereof connected to said distribution gas inlet;

a vertical desiccant equalizer conduit connected at its lower end to said desiccant outlet and at its upper end to said equalizer opening and having a desiccant branch outlet intermediate its upper and lower ends;

a spent desiccant conduit within said lower zone connected at one end to said lower partition desiccant outlet opening and at the other end with said vessel desiccant outlet;

a short length, vertical, cylindrical member supported in each of said gas inlet openings in said lower partition, the upper ends of each extending above said lower partition;

a cap covering the upper portion of each of said cylindrical members, the internal diameter of the caps being greater than the external diameter of said cylindrical members, the caps having passageways therein below the upper ends of said cylindrical members; and

packing within said vessel middle zone supported on said lower partition and of depth greater than the height of said caps,

whereby raw gas flows from said upper zone through said gas distribution conduit into said lower zone and upwardly through said cylindrical members and caps into said middle zone, and thence upwardly through said packing and liquid desiccant where water is absorbed by the dessicant, the gas being thereby dehydrated and passes out through said dehydrated gas outlet, the liquid desiccant flowing in the direction opposite to the gas in said middle zone.

4,661,131

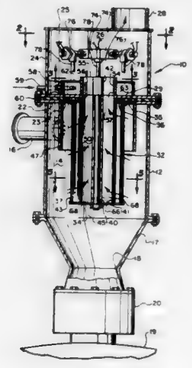
BACKFLUSHED AIR FILTERS

D. Franklin Howeth, 233 Chuck Wagon Trail, Fort Worth, Tex. 76108

Continuation-in-part of Ser. No. 549,963, Nov. 7, 1983, Pat. No. 4,544,389, and a continuation-in-part of Ser. No. 680,942, Dec. 12, 1984. This application Sep. 30, 1985, Ser. No. 782,952

Int. Cl.[4] B01D *46/04*

U.S. Cl. 55—302 **22 Claims**



1. A porous media barrier type air filter unit, said filter unit including:

a housing forming a filter chamber including means for conducting dust laden air into said chamber;

a porous media barrier filter element in said filter chamber, said filter element including a first planar filter panel, said filter panel defining at least in part a clean air chamber for receiving air which has flowed through said filter element, said clean air chamber having an opening for discharging clean air from said clean air chamber, and said filter element including a second planar filter panel spaced apart from said first filter panel, said second filter panel cooperating with said first filter panel to define at least in part said clean air chamber;

means for supporting said filter element in said filter chamber;

means forming a flow tube opening into said clean air chamber for conducting clean air from said clean air chamber and away from said filter element;

reverse flow air jet nozzle means disposed downstream of said filter element with respect to the direction of flow of clean air through said filter element, said nozzle means being in communication with a source of pressure air and including a plurality of orifices arranged in a predetermined pattern for discharging a shaped jet of pressure air for contact with the walls of said flow tube, said nozzle means being arranged in such a way as to generate a jet having a cross-sectional shape conforming to the cross-

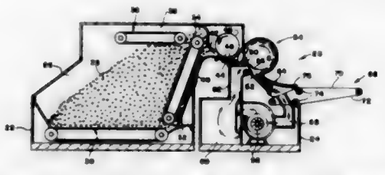
sectional shape of said flow tube and for inducting a relatively large volume of substantially ambient pressure air into said flow tube in a direction opposite to the direction of flow of clean air out of said flow tube to backflush said filter element with a quantity of combined induced and jetted pressure air.

4,661,132

THEMALLY FORMED GRADIENT DENSITY FILTER

Donald I. Thornton, Warwick, and Clarke A. Rodman, East Providence, both of R.I., assignors to Allied Corporation, Morristown, N.J.

Filed Aug. 15, 1985, Ser. No. 765,782
Int. Cl.⁴ B01D *46/02*
U.S. Cl. 55—486 **12 Claims**



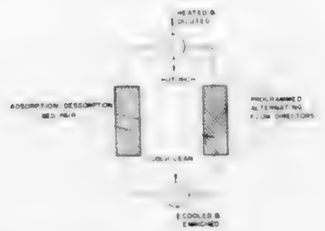
1. Method of forming a fluid filter comprising the steps of forming a nonwoven batt comprising a randomly arrayed mixture of a thermoplastic material and fibers which are not thermoplastic, shaping said batt into the desired shape of a fluid filter, and heating only a selected portion of said batt while molding the latter into said desired filter shape and while maintaining the rest of said batt other than the selected portion at a temperature less than the temperature of said selected portion to thereby permit softening and fusing of the thermoplastic material at said selected portion to thereby increase the stiffness and decrease the permeability of said selected portion, said step of heating and molding said batt being initiated only after formation of the batt has been completed.

4,661,133

METHOD FOR HEAT AND MASS EXCHANGE OPERATIONS

Ram Lavie, 33 Italy Str., Danya, Haifa, Israel, assignor to Technion Research & Development Foundation Ltd., Technion City and Ram Lavie, Haifa, both of, Israel

Filed May 23, 1985, Ser. No. 737,229
Claims priority, application Israel, Jun. 8, 1984, 72058
Int. Cl.⁴ B01D *53/08*
U.S. Cl. 62—18 **16 Claims**



1. A method comprising carrying out a simultaneous heat and mass exchange operation between two input streams, each stream containing at least two components and a there being a temperature gradient of at least 30 degrees Centigrade between the two streams, the two streams being designated a hot stream and a cold stream, by;

providing a reactor containing a reagent capable of preferentially retaining one component, the retaining power of the reagent being higher at lower temperatures than at higher temperatures, and the equilibrium concentration of the reagent at the conditions of the cold stream being higher than that prevailing at the conditions of the hot stream enabling the use of the thermodynamic work potential supplied by the transfer of heat between the two streams to drive the process in the desired direction;

feeding the hot stream into a first end of the reactor and extracting the hot stream from a second end of the reactor,

feeding the cold stream into the second end of the reactor and extracting the cold stream from the first end of the reactor,

and obtaining a stream in which a diluted component becomes more diluted while a concentrated component becomes more concentrated in respect to the input streams.

4,661,134

METHOD AND APPARATUS FOR FIBERIZING MOLTEN MINERAL MATERIAL

Gunnar W. Hartung, Sköude, Sweden, assignor to Rockwool Aktiebolaget, Sweden

Filed Jul. 2, 1985, Ser. No. 751,064
Claims priority, application Sweden, Jul. 3, 1984, 8403522
Int. Cl.⁴ C03B *37/05*
U.S. Cl. 65—6 **18 Claims**



1. In a method of fibrating molten mineral material which comprises discharging an incoming stream of molten mineral material to the peripheral surface of a primary spinner wheel and forming mineral fibers by throwing out molten mineral material from one or more spinner wheels, the improvement which comprises:

applying a force to said incoming stream of molten mineral material to increase the width of said incoming stream of molten mineral material over the peripheral surface of said primary spinner wheel, said force acting in a plane substantially perpendicular to a generatrix to the peripheral surface of said primary spinner wheel, said force acting on said incoming stream of molten material a short distance in advance of the place where said incoming stream of molten mineral material contacts said peripheral surface of said primary spinner wheel, whereby the width of said incoming stream of molten mineral material over the peripheral surface of said primary spinner wheel is increased without breaking up said incoming stream of molten mineral material into small fragments.

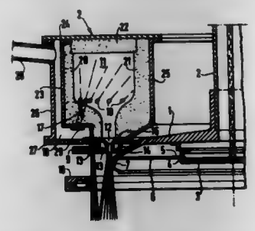
4,661,135

BURNER FOR MANUFACTURING MINERAL FIBERS

Francis Mosnier, Coye La Foret, France, assignor to Isover Saint-Gobain, Courbevoie, France

Filed Jan. 27, 1986, Ser. No. 822,595
Claims priority, application France, Jan. 25, 1985, 85 01042
Int. Cl.⁴ C03B *37/04, 37/06*
U.S. Cl. 65—14 **5 Claims**

1. An internal combustion burner comprising an annular combustion chamber surrounding a mineral fiber forming centrifuge, said chamber opening through a pressure reduction opening, and further comprising elements which define a continuous circular emission orifice, with the direction of said orifice being generally parallel to the axis of the burner, wherewith a mixture of combustible gases is fed into the combustion chamber by feed conduits which open out into said chamber and which are directed such that the gas is fed along one wall



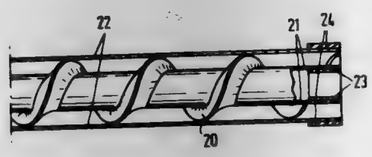
of the combustion chamber and countercurrent to the movement of the combustion gases which pass along a wall which faces the first wall which first wall has the combustible gas mixture passing along it where said combustible said gas mixture is admitted, wherein the feed conduits are directed at an angle to the axis of the burner.

4,661,136

PROCESS OF FABRICATING AN ELONGATED GLASS BODY PARTICULARLY A PREFORM FOR OPTICAL WAVEGUIDES

Reimund Dorn, Schwieberdingen; Armin Baumgartner, Ludwigsburg, and Anca Gutu-Nelle, Stuttgart, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 16, 1985, Ser. No. 766,851
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1984, 3430265
Int. Cl.⁴ C03B *19/06*
U.S. Cl. 65—18.1 **4 Claims**



1. A method of making a glass preform comprising the steps of:

providing an elongated, hollow mold member having a flexible sidewall, one open end and a closed end opposite thereto;

placing a first of a plurality of base bodies into the mold member to extend axially from the closed end to the open end to form an interspace between the mold member and the base body;

applying a longitudinal force against the closure at the closed end so that the force acts upon the closure and upon the mold member in the direction of the open end;

forming a pre-complacted self-supporting body by filling the interspace with a first of a plurality of glass forming pulverulent materials which is forced into the open end so that the increase in mass of material resulting from the filling causes the material to act against the closed end in opposition to the longitudinal force thereby moving the mold member against the longitudinal force;

removing the base body thereby forming a central cavity surrounded by the interior walls of the self-supporting body.

reapplying a longitudinal force against the closure at the closed end so that the force acts upon the closure and upon the mold member in the direction of the open end;

filling the central cavity in the self-supporting body by forcing an additional glass forming pulverulent material into the open end so that the increase in mass of material resulting from the filling causes the additional material to act against the closed end in opposition to the longitudinal force thereby moving the mold member against the longitudinal force;

compressing the material and the additional material to form a porous body; and

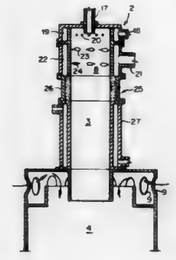
sintering the resulting compressed composite material to form the glass preform.

4,661,137

PROCESS FOR PRODUCING GLASS MICROSPHERES

Patrick Garnier, Paris; Daniel Abriou, Gagny, and Michel Coquillon, Chanconin/Neufmontiers, all of France, assignors to Saint Gobain Vitrage, Courbevoie, France

Filed Jun. 20, 1985, Ser. No. 747,141
Claims priority, application France, Jun. 21, 1984, 84 09736
Int. Cl.⁴ C03B *19/10*
U.S. Cl. 65—21.4 **34 Claims**



1. A process for producing hollow microspheres from particles of soda-lime-silica glass containing between about 0.01 and 0.05 weight precent sulfur in the form of sulfate compounds comprising:

(a) passing the particles in a reducing atmosphere through a burner for treatment at a temperature at least about 100° C. above the normal working temperature at which said glass is manufactured but below about 1750° C.; and

(b) forming hollow microspheres by reducing the sulfates to sulfur dioxide gas which is insoluble in the glass and which causes expansion of the particles.

4,661,138

METHOD OF STRENGTHENING THE ALKALI RESISTANCE OF A POROUS GLASS

Yukio Murakami, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 416,236, Sep. 9, 1982, abandoned. This application May 17, 1985, Ser. No. 735,287
Claims priority, application Japan, Sep. 17, 1981, 59-145548
Int. Cl.⁴ C03C *15/00*
U.S. Cl. 65—31 **9 Claims**

1. A method of strengthening the alkali resistance of a porous glass, which comprises providing a silica glass which has been phase separated eluting an acid-soluble phase of the phase separated glass by contacting the phase separated glass with an acid to form a porous glass, immersing the resulting porous glass in a solution of zirconium alcoholate to form a thin film of the zirconium alcoholate on the outer surface and pore surface of the porous glass, removing the porous glass from the zirconium alcoholate solution hydrolysing the zirconium alcoholate on the outer surface and pore surface of the porous glass to form ZrO_2, drying the outer surface and pore surface

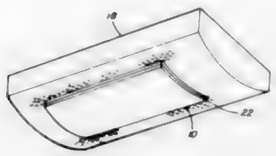
of the porous glass and, calcining the outer surface and pore surface of the porous glass at a temperature in the range of about 450° C. to 650° C. and thereby forming ZrO_2 polymer on the outer surface and pore surface of the porous glass.

4,661,139

VACUUM PRESSING OF GLASS DOUBLETS

Thomas J. Reese, Sarver; John J. Ewing, Tarentum; Michael T. Fecik, Pittsburgh; Robert G. Frank, Murrysville, and Terry A. Bennett, Monroeville, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 10, 1985, Ser. No. 807,088
Int. Cl.⁴ B65H *3/08*
U.S. Cl. 65—106 **23 Claims**



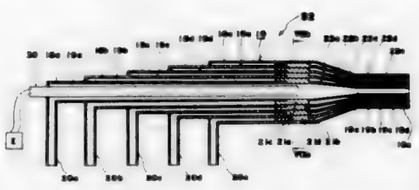
1. A method of handling at least two overlaying, unattached glass sheets comprising:
drawing a vacuum through a lower apertured engaging surface of a vacuum holder;
moving said overlaying unattached glass sheets into engagement with said engaging surface of said vacuum holder; and
maintaining said vacuum to hold said overlaying unattached sheets against said engaging surface of said vacuum holder.

4,661,140

GAS REACTION APPARATUS AND MULTI-WALL PIPE TYPE BURNER THEREFOR

Hiroaki Takimoto, and Ichiro Tsuchiya, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 5, 1986, Ser. No. 826,209
Claims priority, application Japan, Feb. 6, 1985, 60-14629[U]; Feb. 18, 1985, 60-28425
Int. Cl.⁴ C03C *25/02*; C03B *37/027*
U.S. Cl. 65—157 **24 Claims**



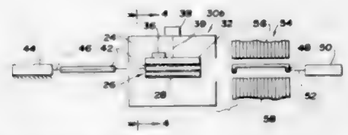
1. In a gas reaction apparatus in which apparatus at least one gaseous raw material of optical fiber and at least one kind of gas different from said gaseous raw material and from a mixture including said gaseous raw material, which gas includes combustion gas, are introduced into a reaction vessel from at least one multi-wall pipe type burner which burner has a plurality of gas passages whereby said gaseous raw material is subjected to flame hydrolysis into powdery glass which powdery glass is deposited on a rod member whereby said powdery glass is formed into porous base material of optical fiber, the improvement comprising:
a means for heating or heat insulating at least one of said gas passages for said gaseous raw material or said mixture at a temperature so that a saturated vapor pressure of whole kinds of said gaseous raw material is set higher than a partial pressure of raw material of optical fiber in said gaseous raw material or said mixture when said gaseous raw material or said mixture is fed through said heated or heat insulated gas passages.

4,661,141

GLASS SHEET PRESS BENDING SYSTEM

Dean M. Nitschke, Maumee; David B. Nitschke; John S. Nitschke, both of Perrysburg, and Harold A. McMaster, Woodville, all of Ohio, assignors to Glasstech, Inc., Perrysburg, Ohio

Filed Mar. 14, 1986, Ser. No. 839,797
Int. Cl.⁴ C03B *23/02*
U.S. Cl. 65—273 **21 Claims**



1. A glass sheet press bending system comprising: a furnace including a heating chamber for providing a heated ambient for heating glass sheets; a conveyor for conveying the heated glass sheets in a generally horizontally extending orientation; an upper mold located above the conveyer and having a downwardly facing curved shaped; means for supplying a differential gas pressure to a heated glass sheet on the conveyor below the upper mold to support the glass sheet against the downwardly facing curved shape of the upper mold at a location above the conveyor; a lower mold having an upwardly facing curved shaped and being mounted for horizontal movement at an elevation above the conveyor from a first position adjacent the upper mold to a second position below the upper mold and the heated glass sheet supported thereby; means for providing relative vertical movement between the upper and lower molds to press bend the heated glass sheet therebetween; and a transfer mold for receiving the bent glass sheet from the upper mold for horizontal movement therefrom for cooling.

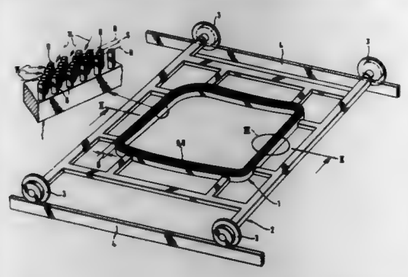
4,661,142

FRAME FOR SUPPORTING A GLASS SHEET DURING TEMPERING

K. Rudolf Bartusel, Stolberg; Werner Diederen, Herzogenrath; Eberhard Liepelt, Stolberg, and Waldemar Linberg, Herzogenrath, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Aubervilliers, France

Filed Oct. 28, 1985, Ser. No. 791,971
Claims priority, application France, Oct. 29, 1984, 84 16482
Int. Cl.⁴ C03B *27/04, 25/035*
U.S. Cl. 65—348 **11 Claims**

1. A frame for use in supporting horizontally a glass sheet heated to the tempering or deformation temperature during tempering blowing, said frame including a body having a shape substantially conforming to the contour and shape of the glass sheet, a plurality of individual bearing members carried by and extending from the body, said bearing members located in the region of an outer edge of said frame, in at least two successive rows toward the outer edge of said frame and in a selected zone of said frame, each bearing member having a surface upon which the glass is supported, and said bearing members in each row being staggered laterally relative to a bearing member in an adjacent row to form a plurality channels in a continuous, indirect network of passages toward said outer edge of said



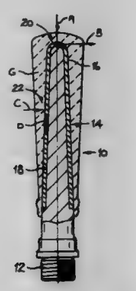
frame for evacuating the blowing gases which shall have impinged upon the supported face of the glass sheet.

4,661,143

PLUNGER FOR USE IN FORMING PARISONS

Thomas V. Foster, Doncaster, England, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Jan. 24, 1986, Ser. No. 821,941
Claims priority, application United Kingdom, Jan. 26, 1985, 8501992
Int. Cl.⁴ C03B *11/06*
U.S. Cl. 65—362 **6 Claims**



1. A plunger for use informing parisons during the manufacture of glass containers, wherein the plunger has, at least in a tip region thereof, a glass-contacting surface layer formed by a material which has a thermal conductivity in directions parallel to the glass-contacting surface of thelayer greater than its thermal conductivity normal to the glass-contacting surface.

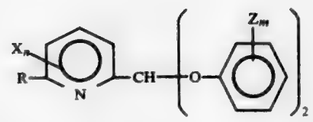
4,661,144

CERTAIN 6-AMINOMETHYL OR MONOALKYLAMINO OR DIALKYLAMINO OR HETEROCYCLICAMINO-2-DIPHENOXYMETHYL PYRIDINES HAVING HERBICIDAL ACTIVITY

Sudarshan K. Malhotra, Walnut Creek, and Ingrid L. Evoy, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

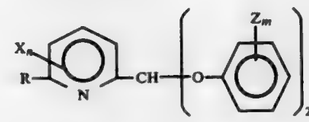
Division of Ser. No. 656,834, Oct. 2, 1984, Pat. No. 4,606,757, which is a continuation of Ser. No. 452,584, Dec. 23, 1982, abandoned. This application Dec. 30, 1985, Ser. No. 814,839
Int. Cl.⁴ A01N *43/32, 43/40*; C07D *213/38, 265/30*
U.S. Cl. 71—88 **30 Claims**

1. A compound corresponding to the formula



wherein R represents aminomethyl, monoalkylamino of 1 to 4 carbon atoms, dialkylamino with each alkyl group independently being of 1 to 4 carbon atoms, piperidino or morpholino; X represents bromo, chloro or fluoro; n represents an integer of 0 or 1; Z represents bromo, chloro, fluoro, alkylthio of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms and m represents an integer of 0 or 1.

21. A method for controlling the growth of undesirable plants which comprises applying to plants, plant parts or their habitat a composition which comprises an inert carrier in admixture with a herbicidally effective amount of a compound corresponding to the formula



wherein R represents aminomethyl, monoalkylamino of 1 to 4 carbon atoms, dialkylamino with each alkyl group independently being of 1 to 4 carbon atoms, piperidinyl or morpholino; X represents bromo, chloro or fluoro; n represents an integer of 0 or 1 with the proviso that when R is hydrogen, n is 0; Z represents bromo, chloro, fluoro, alkylthio of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms and m represents an integer of 0 or 1.

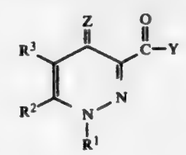
4,661,145

PLANT GROWTH REGULATING 1-ARYL-1,4-DIHYDRO-4-OXO(THIO)-PYRIDAZINES

Ted T. Fujimoto, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 191,650, Sep. 26, 1980, abandoned, which is a division of Ser. No. 15,029, Feb. 26, 1979, Pat. No. 4,345,934, which is a continuation-in-part of Ser. No. 776,394, Mar. 10, 1977, abandoned. This application Sep. 20, 1984, Ser. No. 652,437
Int. Cl.⁴ A01N *43/58*; C07D *237/24*
U.S. Cl. 71—92 **19 Claims**

1. A pyridazine of the formula:

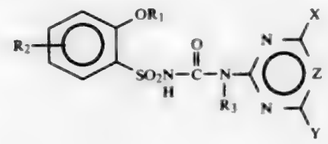


wherein
R^1 is an unsubstituted phenyl group or a phenyl group substituted with up to three substituents each independently selected from the group consisting of halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfinyl, $(C_1–C_4)$alkylsulfonyl and trifluoromethyl groups;
R^2 is a $(C_1–C_4)$alkyl group or a phenyl group;
R^3 is an alkyl group, a halogen atom, a benzyl group or a phenethyl group, and when R^3 is a halogen atom, then R^1 is the substituted phenyl group;
Z is an oxygen or sulfur atom; and

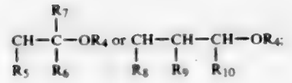
Y is $Z'R^4$ or NR^5R^6
wherein
Z' is an oxygen or sulfur atom;
R^4 is hydrogen or an agronomically acceptable salt thereof, (C_1–C_4)alkyl, (C_1–C_4)alkoxyalkyl, cyclohexylmethyl, bromopropyl, phenyl or benzyl group;
R^5 and R^6 are each independently selected from halogen, (C_1–C_4)alkyl and (C_1–C_4)alkyl substituted with carboxyl or (C_1–C_4)alkoxycarbonyl or when R^5 is hydrogen, R^6 is hydroxyl or an alkali metal salt thereof.

4,661,146
HERBICIDAL ORTHO-(ALKOXY)-BENZENESULFONAMIDES
Robert W. Freerksen, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 474,873, Mar. 21, 1983, Pat. No. 4,500,344. This application Dec. 19, 1984, Ser. No. 683,633
Int. Cl.[4] A01N *47/36*; **C07D** *239/42*
U.S. Cl. 71—92 **22 Claims**

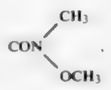
1. A compound of the formula:



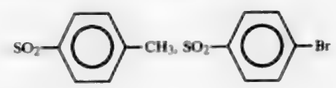
wherein
R_1 is



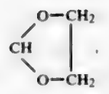
R_2 is H, F, Cl, Br, CH_3, OCH_3 or CF_3;
R_3 is H or CH_3;
R_4 is H, $COCH_3$, COC_2H_5, $COCH_2CH_2CH_3$, $COCH(CH_3)_2$, COC_6H_5, $CONHCH_3$, $CONHC_2H_5$, $CON(CH_3)_2$,



$CONHC_6H_5$, SO_2CH_3, $SO_2C_2H_5$, $SO_2C_6H_5$,



or SO_2CF_3;
R_5 is H or CH_3;
R_6 is H or CH_3;
R_7 is H or CH_3;
R_8 is H or CH_3;
R_9 is H or CH_3;
R_{10} is H or CH_3;
Z is CH
X is CH_3, OCH_3 or Cl; and
Y is CH_3, C_2H_5, OCH_3, OC_2H_5, CH_2OCH_3, $CH(OCH_3)_2$,



NH_2, $NHCH_3$ or $N(CH_3)_2$;
provided that
(1) when R_6 and R_7 are both CH_3, then R_4 is H;
(2) when either R_8, R_9 or R_{10} is CH_3, then the others must be H; and
(3) when X is Cl, then Y is OCH_3, CH_3, OC_2H_5, NH_2, $NHCH_3$ or $N(CH_3)_2$;
and their agriculturally suitable salts.

4,661,147
HERBICIDAL SULFONAMIDES
Donald J. Dumas, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 617,606, Jun. 5, 1984, abandoned. This application Apr. 29, 1985, Ser. No. 726,452
Int. Cl.[4] A01N *43/54*; **C07D** *239/42*
U.S. Cl. 71—92 **30 Claims**

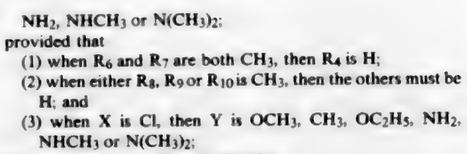
1. A compound of the formula :



I

wherein
J is

J-1 J-2

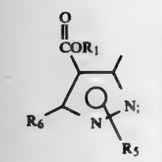


J-3 J-4 J-5



J-6 J-7

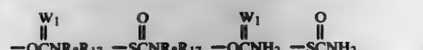
-continued



J-8

W is O or S;
R is H or CH_3;
R_1 is C_2–C_5 alkyl, C_4 alkenyl or C_4 alkynyl substituted with one or two substituents selected from:

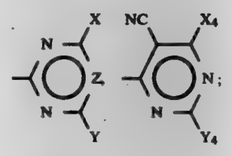






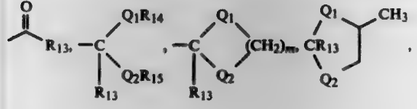


provided that
(1) when R_1 is disubstituted, then the two substituents are identical and are not on the same carbon atom; and
(2) the carbon atom of R_1 adjacent to the ester oxygen does not carry any of the above substituents and must be substituted by at least one hydrogen atom;
W_1 is O or S;
R_2 is H, Cl, F, Br, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 haloalkoxy, C_1–C_3 haloalkylthio, C_1–C_2 haloalkyl, or C_1–C_2 alkyl substituted with OCH_3 or SCH_3;
R_3 is H, F, Cl, CH_3 or OCH_3;
R_4 is H or CH_3;
R_5 is H, C_1–C_3 alkyl, $CH_2CH{=}CH_2$ or phenyl;
R_6 is H or C_1–C_3 alkyl;
R_8 is H or C_1–C_2 alkyl;
R_9 is C_1–C_2 alkyl;
R_{10} is C_1–C_4 alkyl or C_6H_5;
A is

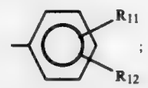


A-1

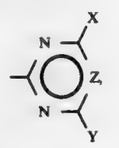
X is CH_3, OCH_3, OCH_2CH_3, Cl, F, Br, OCF_2H, CH_2F, OCH_2CH_2F, OCH_2CHF_2, OCH_2CF_3 or CF_3;
Y is H, CH_3, OCH_3, OC_2H_5, CH_2OCH_3, $NHCH_3$, $N(OCH_3)CH_3$, NH_2, $N(CH_3)_2$, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$,



OCF_2H, SCF_2H, $CH_2S(O)_p(C_1$–C_4 alkyl), cyclopropyl or $CH_2OC_2H_5$;
m is 2 or 3;
p is 0, 1 or 2;
Q_1 and Q_2 are independently O or S;
R_{13} is H or CH_3;
R_{14} and R_{15} are independently C_1–C_2 alkyl;
R_{16} is H, F, Cl or CH_3;
R_{17} is C_1–C_{10} alkyl substituted with 0–3 atoms of F, Cl or Br, 0–2 methoxy groups or 0–1 cyano groups, C_3–C_{10} alkenyl substituted with 0–3 atoms of F, Cl or Br, C_3–C_{10} alkynyl substituted with 0–3 atoms of F, Cl or Br, or



Z is CH;
X_4 is CH_3, OCH_3, OC_2H_5, CH_2OCH_3 or Cl; and
Y_4 is CH_3, OCH_3, OC_2H_5 or Cl;
provided that
(a) when W is S, then R is H. A is



and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, OCH_2CF_3, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or



(b) when X is Cl, F or Br, then Y is OCH_3, OC_2H_5, NH_2, $N(OCH_3)CH_3$, $NHCH_3$, $N(CH_3)_2$ or OCF_2H;
and their agriculturally suitable salts.

4,661,148
PENT-2-EN-4-ON-2-YL 2-(4-(5-TRIFLUOROMETHYL-2-PYRIDINYLOXY)-PHENOXY)PROPANOATE USEFUL FOR INCREASING RECOVERABLE SUGAR IN SUGAR CANE
Louis G. Nickell, Chicago; Leonard J. Stach, Riverside, and Takeo Hokama, Chicago, all of Ill., assignors to Sandoz Ltd., Basel, Switzerland
Filed Aug. 19, 1985, Ser. No. 766,750
Int. Cl.[4] C07D *213/64*; **A01N** *43/40*
U.S. Cl. 71—94 **3 Claims**

1. The compound, pent-2-en-4-on-2-yl 2-[4(5-trifluoromethyl-2-pyridinyloxy)phenoxy]propanoate.

2. A method for increasing the recoverable sugar contained in sugarcane which comprises contacting the sugar cane plant from 2 to 10 weeks before harvest with a recoverable sugar-enhancing effective amount of the compound of claim 1.

4,661,149

SUBSTITUTED PHENOXYPROPIONALDEHYDE DERIVATIVES USEFUL AS HERBICIDES

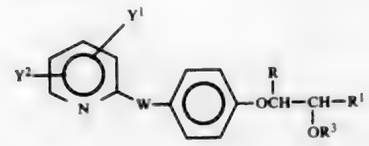
Muppala S. Raju, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 12, 1985, Ser. No. 797,310

Int. Cl.[4] A01N *43/40, 57/16;* **C07D** *213/61, 213/64*

U.S. Cl. 71—94 **4 Claims**

1. A compound of the formula:



wherein

Y^1 and Y^2 are independently hydrogen, halogen, nitro, cyano, or lower alkyl, haloalkyl or alkoxy;

W is O or S;

R is hydrogen or lower alkyl or alkoxy;

R^1 is cyano, vinyl, acetynyl, dialkylphosphinyl or dialkylphosphonyl;

R^3 is hydrogen, or up to C_{10} alkyl, cycloalkyl, haloalkyl, hydroxyalkyl, oxoalkyl, alkoxyalkyl, alkenyl, alkynyl or $-COR^6$ or $-CSR^6$ wherein R^6 is up to C_{10} alkyl, cycloalkyl, haloalkyl, alkoxy, alkenyl, alkynyl, amino, $-COOR^7$ or $-COSR^7$ wherein R^7 is hydrogen, alkali metal, up to C_{10} alkyl, cycloalkyl, haloalkyl, alkenyl or alkynyl.

3. A herbicidal composition containing an agronomically acceptable carrier and a herbicidally effective amount of a compound or mixture of compounds defined in claim 1.

4,661,150

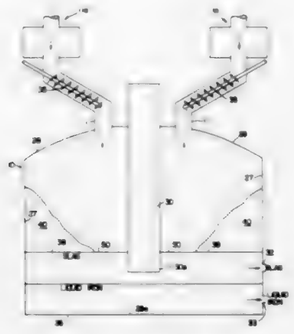
PRODUCTION OF LIQUID IRON

Cecil P. Bates, and Terrence W. Shannon, both of Auckland, New Zealand, assignors to New Zealand Steel Limited, Glenbrook, New Zealand

Continuation of Ser. No. 721,499, Apr. 10, 1985, which is a continuation of Ser. No. 609,653, May 14, 1984, abandoned, which is a continuation of Ser. No. 532,054, Sep. 14, 1983, abandoned. This application Dec. 10, 1985, Ser. No. 806,138

Int. Cl.[4] C22B *4/00;* **F27D** *17/00*

U.S. Cl. 75—10.65 **6 Claims**



1. Apparatus for the production of liquid iron including an electric melter having one or more electrodes therein; means being provided to transfer hot sponge iron having a degree of metallisation in excess of 60% to said melter together with residual carbon, in a hot state; means being provided so that said transfer is substantially in the absence of oxygen; means being provided to thereafter control passage of said sponge iron and residual carbon into said melter, the arrangement being such that in use, said hot sponge iron and said residual carbon are transferred in a hot state and substantially in the absence of oxygen, to said melter; the passage of said sponge iron and residual carbon into said melter being thereafter controlled.

4,661,151

TREATING AGENT FOR DESULFURIZING MOLTEN STEELS AND METHOD FOR TREATING MOLTEN STEELS

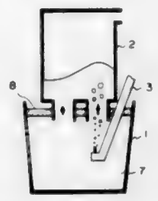
Koichi Endoh; Toshiyuki Kaneko; Hideo Yaoi; Seiji Aso; Yasuo Obana, and Hideyuki Takahama, all of Oita, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 3, 1986, Ser. No. 835,554

Claims priority, application Japan, Mar. 4, 1985, 6041018; Mar. 29, 1985, 6063896

Int. Cl.[4] C21C *7/02*

U.S. Cl. 75—53 **4 Claims**



1. A method for treating molten steel, wherein it is desulfurized in a reaction vessel which is lined with a basic refractory containing MgO, characterized in that

a desulfurizing treating agent, which consists essentially of CaO, CaF_2 and MgO and the balance consisting of unavoidable impurities, which treating agent contains from 10 to 60% by weight of MgO, and has a weight ratio of $((\%CaF_2)/((\%CaO)+(\%CaF_2)))\times 100(\%)$ of from 20 to 80%, is injected into a bath of the molten steel with the aid of an inert carrier gas; and

a reduced pressure- or inert gas-atmosphere is kept above a portion of the bath surface of the molten steel, toward which portion the inert carrier gas floats and at which the inert carrier gas arrives, and, further said portion of the bath surface is essentially free of any slag which may be present in the steel bath during the treatment.

4,661,152

METHOD OF LANCING FOR A COPPER-PRODUCING CONVERTER

Takayoshi Kimura, and Seiichi Tsuyuguchi, both of Nihama, Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

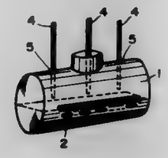
Filed Nov. 21, 1985, Ser. No. 800,403

Claims priority, application Japan, Nov. 26, 1984, 59-249332

Int. Cl.[4] C22B *15/06*

U.S. Cl. 75—76 **8 Claims**

1. A method of lancing for copper-producing converter which contains a molten bath and a gaseous atmosphere thereabove, said method comprising blowing an oxygen-enriched gas having a gauge pressure of at least 1 kg/cm^2 through said gaseous atmosphere and onto the surface of a molten bath through at least one top lancing tube having a lower end held at a height within 0.4 m above the surface of said bath as measured when said bath is at a standstill, while simultaneously blowing air into said bath through tuyeres.



4,661,153

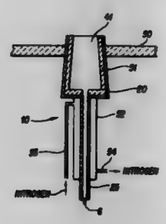
REFRACTORY POROUS PLUG

Uday K. Sinha, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Jul. 1, 1983, Ser. No. 510,055

Int. Cl.[4] C22B *15/14*

U.S. Cl. 75—76 **4 Claims**



1. The method of oxygenation of molten smelter copper containing slag and impurities comprising:

a. flowing molten smelter copper through an oxygenation vessel means,

b. flowing oxygen into the oxygenation vessel via a porous plug means,

c. passing a cooled inert cooling gas around the external portions of the porous plug within a shroud,

d. exhausting said cooling gas from said shroud, and

e. recirculating the inert cooling gas for subsequent reuse.

4,661,154

PROCESS FOR THE PRODUCTION BY POWDER METALLURGY OF COMPONENTS SUBJECTED TO FRICTION

Jean-Francois Faure, Voiron, France, assignor to Cegedur Societe de Transformation de l'Aluminium Pechiney, Voreppe, France

Filed Jan. 27, 1986, Ser. No. 822,523

Claims priority, application France, Feb. 1, 1985, 85 01856

Int. Cl.[4] C22C *29/00*

U.S. Cl. 75—231 **11 Claims**

1. A process for the production of a material based on an aluminum alloy, a solid lubricant, and a ceramic, by powder metallurgy, wherein the said material is imbued with a low coefficient of friction and a high resistance to seizure, said process comprising:

(i) combining an aluminum alloy power, a solid lubricant, and a cermaic, wherein the said ceramic is in powder form and has a granulometry of between 1 μm and 10 μm:

(ii) dispersing the said ceramic in the mass of said alloy;

(iii) compressing the mixture obtained in step (ii); and

(iv) extruding the said compressed mixture into billets or blooms.

4,661,155

MOLDED, BORON CARBIDE-CONTAINING, SINTERED ARTICLES AND MANUFACTURING METHOD

Volker Heinzel, Linkenheim; Hossein-Ali Keschtkar, Karlsruhe, and Ingeborg Schub, Wörth, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed May 21, 1986, Ser. No. 865,477

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1985, 3519710; European Pat. Off., Feb. 18, 1986, 86102025.3

Int. Cl.[4] C22C *29/06*

U.S. Cl. 75—237 **9 Claims**

1. A molded, boron carbide-containing, sintered article, comprising:

at least 65 percent by volume boron carbide; and

from 5 to 35 percent by volume of at least one binder metal selected from the group consisting of molybdenum, molybdenum alloys, tungsten and tungsten alloys, having a melting point above 1,800° C., and forming no molten borides or carbides within a temperature range of from 1,800° to 1,950° C.

4,661,156

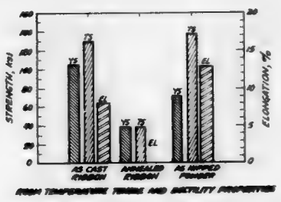
NICKEL ALUMINIDE BASE COMPOSITIONS CONSOLIDATED FROM POWDER

Keh-Minn Chang; Alan I. Taub, both of Schenectady, and Shyh-Chin Huang, Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1985, Ser. No. 783,718

Int. Cl.[4] B22F *3/00*

U.S. Cl. 75—246 **8 Claims**



1. A method of producing an article of a tri-nickel aluminide base alloy of improved strength and ductility which comprises,

forming a melt of the boron doped tri-nickel aluminide of the following base composition

$$(Ni_{1-x}Al_x)_{100-y}B_y$$

where x is between 0.23 and 0.25, and

where y is 0.1 to 2.0,

rapidly solidifying the melt by gas atomization of the melt to fine particles, and

consolidating the particles so produced by hot isostatic pressing for a time and at a temperature above 1000° C., and a pressure above 15 ksi to form a dense article.

4,661,157

PRODUCTION OF SHAPED BODIES OF BORON COMPOUNDS

William Beauford, South Barrow Nr. Yeovil; Nicholas J. Spragg, Bourton, and Malcolm Millar, Widnes, all of England, assignors to Laporte Industries Limited, London, England

Filed Nov. 12, 1985, Ser. No. 796,921

Claims priority, application United Kingdom, Nov. 21, 1984, 8429447

Int. Cl.[4] A01N *25/34;* **C08K** *3/38*

U.S. Cl. 106—18.13 **10 Claims**

1. A process for the production of a shaped body, comprising one or more boron compounds, suitable for use as a preservative insert in structures liable to biological attack, character-

ied by forming a paste comprising water and one or more boron compounds capable of binding water by hydration, shaping the paste and allowing the shaped paste to solidify by the binding of at least a portion of the water therein to form the shaped body.

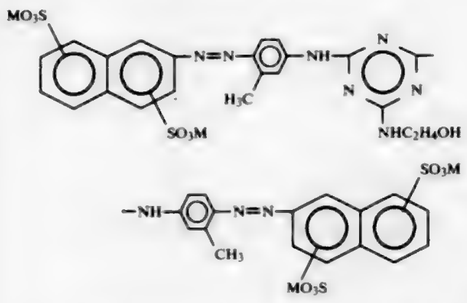
4,661,158

RECORDING LIQUID

Masatsune Kobayashi; Tsuyoshi Eida; Shoji Koike, all of Yokohama, and Keiko Nakonosi, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1985, Ser. No. 732,635
Claims priority, application Japan, May 17, 1984, 59-97537
Int. Cl.⁴ C09D *11/00*
U.S. Cl. 106—22 **14 Claims**

1. A recording liquid comprising:
a recording agent as an image-forming component; and
a liquid medium containing at least water and a glycol for dissolving or dispersing the recording agent, characterized in that the recording agent contains at least one dye represented by the following general formula (A):



wherein M represents one element selected from H, Na, Li and K, and at least 55 mole % of total M in formula (A) is Na, Li or K and wherein the recording liquid contains less than 1% by weight of NaCl, less than 0.5% by weight of Na_2SO_4 and less than 50 ppm of Ca^{2+} ions.

4,661,159

CEMENTITIOUS FLOOR UNDERLAYMENT

Raymond Ortega, 2931 Fontana, and Jesse F. Ortega, 3006 Shadowdale, both of Houston, Tex. 77043

Filed Nov. 13, 1985, Ser. No. 797,584
Int. Cl.⁴ C04B *7/02, 11/00*
U.S. Cl. 106—89 **8 Claims**

1. A floor underlayment composition including beta gypsum, alpha gypsum, Portland cement and fly ash; the beta gypsum present in the range of about 45% to 55% of the total dry weight of the composition; the alpha gypsum present in the range of about 20% to 30% of the total dry weight of the composition; the Portland cement present as about 20% of the total dry weight of the composition; and the fly ash present as about 5% of the total dry weight of the composition.

4,661,160

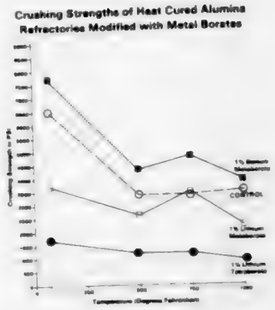
ALKALINE EARTH METABORATES AS PROPERTY ENHANCING AGENTS FOR REFRACTORY CONCRETE

Thomas Novinson, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 11, 1986, Ser. No. 852,469
Int. Cl.⁴ C04B *7/32*
U.S. Cl. 106—104 **12 Claims**

1. An improved cementitious composition for refractory concrete, comprising:
a mixture of approximately 0.5 to 5.0 percent by weight of the total weight of dry ingredients of dry alkaline earth metaborate with a dry calcium aluminate refractory concrete mix, admixed with from 10 to 15 percent by weight of water to provide a refractory composition;
said refractory composition when cured at a range of 500 to 1000 degrees Fahrenheit having at least 1000 psi increased strength over that of the same calcium aluminate concrete without the added alkaline earth metaborate.

11. An improved cementitious composition for refractory concrete, comprising:



a mixture of approximately 0.5 to 5.0 percent by weight of the total weight of dry ingredients of dry zinc metaborate to a dry calcium aluminate refractory concrete mix, admixed with from 10 to 15 percent by weight of water to provide a refractory composition;
said refractory composition when cured at a range of 500 to 1000 degrees Fahrenheit having at least 1000 psi increased strength over that of the same calcium aluminate concrete without the added zinc metaborate.

4,661,161

READY-MIXED, SETTING-TYPE CEMENTITIOUS COMPOSITION HAVING SEPARATELY PACKAGED ACCELERATOR

Edwin J. Jakacki, Buffalo Grove; Larry G. Ogle, Woodstock; Jonathan C. Landwer, Palatine, and James C. Andersen, Wildwood, all of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed May 31, 1983, Ser. No. 499,366
Int. Cl.⁴ C04B *24/14, 11/00*
U.S. Cl. 106—112 **21 Claims**

1. A group of separately packaged components for preparing a setting-type joint compound for finishing joints between adjacent gypsum wallboards, comprising:
A. a cementitious component in pre-mixed form comprising an aqueous slurry of calcium sulfate hemihydrate, a non-leveling agent, and a combination retarder comprising a proteinaceous composition formed from animal tissues and a chelating agent selected from the group consisting of ethylene diamine tetraacetic acid, diethylene triamine pentaacetic acid, and salts thereof, said chelating agent having the ability to chelate calcium ions, the ratio between said proteinaceous composition and said chelating agent being in the range of from about 5:1 to about 1:3 by dry weight, and
B. an accelerator component comprising a compound having a cation with a log K value greater than that of calcium ions and, which, when mixed with said cementitious component, reacts with said chelating agent to release said chelated calcium ions to permit said joint compound to set,
said cementitious components having a shelf life of at least about 118 days, and, when mixed with said accelerator component, providing a joint compound having a suitable working period, suitable properties including non-levelling properties, and the ability to set to form a good joint between said gypsum wallboards.

4,661,162

ENTERIC-SOLUBLE PREPARATIONS

Kozo Kurihara; Yuji Otsuka, and Toshio Fukazawa, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 600,308
Claims priority, application Japan, Apr. 18, 1983, 58-68037
Int. Cl.⁴ A61K *9/32;* **C08L** *1/28*
U.S. Cl. 106—169 **40 Claims**

1. An enteric-soluble composition comprising a mixture of an enteric-soluble polymer with a polyanionic polymer which is soluble in or permeable to a liquid having a pH value less than or equal to 2.

4,661,163

LUBRICANT FOR PROCESSING OF PLASTICS

Fritz Berke, Herne; Helmut Kehr, Schermbeck, and Adolf Kühnle, Marl, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 26, 1985, Ser. No. 759,573
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1984, 3427883
Int. Cl.⁴ B29C *1/04;* **C08J** *5/18;* **C08L** *27/06;* **C10M** *7/26*
U.S. Cl. 106—270 **20 Claims**

1. A compound which is the waxy esterification product of an acidic oxidized polyethylene wax and (a) a polyhydric alcohol of 2–5 carbon atoms or (b) a mixture of a mono-alcohol of 4–20 carbon atoms with a terminal OH group and a polyhydric alcohol of 2–5 carbon atoms, wherein (i) the acid number of the acidic oxidized polyethylene wax is 10–35 mg KOH/g before the esterification, (ii) the acid number of the waxy esterification product is 8 mg KOH/g or less, and (iii) the acid groups represented by the acid number of the starting material acidic oxidized polyethylene wax, are esterified to an extent of at least 70% in the waxy esterification product.

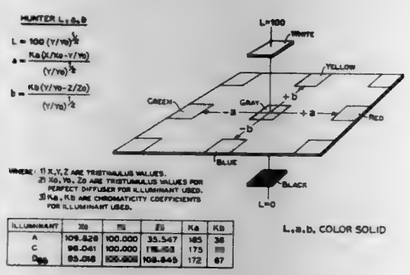
14. In a composition comprising a synthetic thermoplastic resin and an effective amount of a lubricating agent, the improvement wherein the lubricating agent is a compound of claim 1.

4,661,164

METHOD OF TINTING A MINERAL FILLER

Nelson Severinghaus, Jr., Nashville, Tenn., assignor to Franklin Industries, Inc., Nashville, Tenn.

Filed Feb. 15, 1985, Ser. No. 702,004
Int. Cl.⁴ C04B *14/00*
U.S. Cl. 106—288 B **13 Claims**



1. A method of increasing the whiteness of a mineral filler having a natural tint, comprising the steps of:
(a) introducing into a predetermined amount of the mineral filler a pigment of a color and in an optimum amount sufficient to optically transform the natural tint to a predetermined degree of whiteness in said mineral filler,
(b) intimately intermixing with said predetermined amount of mineral filler said optimum amount of pigment in such a manner that said pigment is widely dispersed in said mineral filler and optically transforms said natural tint to said predetermined degree of whiteness in said mineral filler.

4,661,165

SOLVENT FOR THE DYE OF PRESSURE-SENSITIVE RECORDING PAPER

Shigenobu Kawakami, Ichikawa; Eiichi Matsuzaka, Kawasaki; Satoshi Narui, Ayase, and Naoya Takahashi, Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Japan

Filed Jun. 18, 1985, Ser. No. 745,909
Claims priority, application Japan, Jun. 29, 1984, 59-135540
Int. Cl.⁴ C08K *3/00;* **C09D** *11/00*
U.S. Cl. 106—311 **6 Claims**

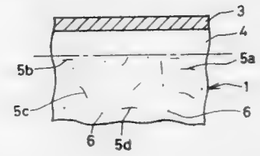
1. A solvent for dyes employed in pressure sensitive recording paper which is characterized in that said solvent consists essentially of a fraction having a boiling point in the range of 270° to 350° C. which is obtained by alkylating toluene with ethylene in the presence of a synthetic zeolite catalyst to obtain a reaction mixture containing unreacted toluene, ethyltoluene, polyethyltoluene and heavier products, said unreacted toluene, ethyltoluene and polyethyltoluene being removed from said reaction mixture to obtain heavier products having a boiling point of greater than 250° C., and distilling said heavier products obtained to produce said fraction.

4,661,166

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE USING A CZOCHRALSKI WAFER AND MULTIPLE HEAT TREATMENT

Tadashi Hirao, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,464
Claims priority, application Japan, Dec. 21, 1983, 58-243263
Int. Cl.⁴ H01L *21/324*
U.S. Cl. 148—1.5 **5 Claims**



1. A method of manufacturing a semiconductor device, said method comprising the steps of:
preparing a wafer obtained by slicing a silicon monocrystal grown by a Czonchralski method, said wafer including some number of crystal defects and oxygens;
a first heat treatment, including the step of annealing said wafer in the temperature range of 600° C. to 800° C. in an atmosphere of an inert gas or an inert gas including a very small amount of oxygen for more than two hours, thereby to precipitate oxygen in said wafer; and
a second heat treatment after said first heat treatment, including oxidation of said wafer in the temperature range of 1000° C. to 1100° C. in an atmosphere of a water vapor including chlorine for more than one hour, with an oxide film being formed on the surface of said wafer and a denuded zone being formed beneath said oxide film with said crystal defects serving as an intrinsic getter being retained in an inner layer.

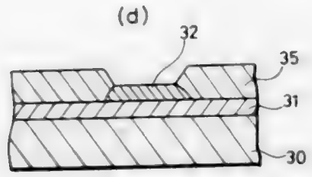
VOL 1077 ISS 4 APR 28 1987 UMI

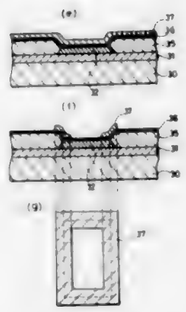
4,661,167

METHOD FOR MANUFACTURING A MONOCRYSTALLINE SEMICONDUCTOR DEVICE

Shigeru Kusunoki, Itami; Tadashi Nishimura, Kawanishi, and Kazuyuki Sugahara, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1984, Ser. No. 677,343
Claims priority, application Japan, Jan. 17, 1984, 59-6671
Int. Cl.[4] H01L *21/263*
U.S. Cl. 148—1.5 11 Claims





1. A method for manufacturing a monocrystalline semiconductor device from a polycrystalline semiconductor layer, comprising the steps of:

depositing the polycrystalline semiconductor layer on the surface of an insulator substrate;

producing an island of the polycrystalline semiconductor layer and a layer of dielectric material from the polycrystalline semiconductor layer that surrounds said island of the polycrystalline semiconductor layer;

covering said island of the polycrystalline semiconductor layer with a film of antireflective material;

creating a frame of antireflective materialenclosing a predetermined region of said island of the polycrystalline semiconductor layer by removing a portion of said film of antireflective material and leaving antireflective material only on said predetermined region of said island; and

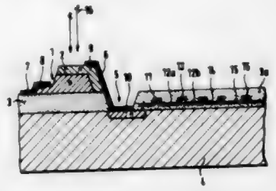
recrystallizing said island of the polycrystalline material by simultaneously irradiating said island and at least a portion of said frame of antireflective material by scanning said island of polycrystalline semiconductor layer and said portion of said frame, with an energy beam, in a direction substantially parallel to said portion of said frame.

4,661,168

METHOD OF INTEGRATING INFRARED SENSITIVE IMAGE RECORDING ELEMENT WITH CCD ON SAME SUBSTRATE

Horst Maier, Heilbronn, and Max Schulz, Uttenreuth, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main and Telefunken electronic GmbH, Heilbronn, both of, Fed. Rep. of Germany

Division of Ser. No. 435,751, Oct. 21, 1982. This application Nov. 25, 1985, Ser. No. 802,601
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1982, 3200853
Int. Cl.[4] H01L *21/265, 29/78;* G11C *19/28*
U.S. Cl. 148—1.5 20 Claims



1. A method of producing a semiconductor arrangement including an image recording unit composed of a plurality of mutually separated mosaic regions formed of a monocrystalline infrared sensitive compound semiconductor material, and each including at least one pn-junction, disposed on the surface of an insulating layer which at least partially covers the surface of a semiconductor body containing an integrated circuit which functions as a read out unit for said image recording unit, said method comprising: initially applying a layer of IR-sensitive compound semiconductor material in polycrystalline form over the entire area of said insulating layer covering said semiconductor body of said integrated circuit; subsequently dividing said semiconductor layer into separate individual said mosaic regions by etching away the intermediate areas; converting the individual polycrystalline mosaic regions to mono-crystalline mosaic regions by melting the individual mosaic regions by means of a focused high energy beam and then permitting these melted regions to resolidify in mono-crystalline form because of the subsequent mono-crystalline growth of the layer; and finally, introducing a pn-junction into said mono-crystalline mosaic regions by diffusion or implantation of impurities.

4,661,169

PRODUCING AN IRON-CHROMIUM-ALUMINUM ALLOY WITH AN ADHERENT TEXTURED ALUMINUM OXIDE SURFACE

George Agges; Paul R. Bornemann, both of Sarver, and Stephen D. Washko, Butler, all of Pa., assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 501,935, Jun. 7, 1983, abandoned, which is a division of Ser. No. 367,710, Apr. 12, 1982, Pat. No. 4,414,023. This application Aug. 15, 1984, Ser. No. 641,128
Int. Cl.[4] C21D *8/00*
U.S. Cl. 148—2 15 Claims

1. A method of making hot workable ferritic stainless steel resistant to thermal cyclic oxidation and having a textured aluminum oxide surface resistant to scaling at elevated temperatures, comprising the steps of

preparing a steel melt consisting essentially of, by weight, 8.0–25.0% chromium, 3.0–8.0% aluminum, and an addition of at least 0.002% and up to 0.05% from the group consisting of cerium, lanthanum, neodymium and praseodymium, up to a total of all rare earths up to 0.060%, up to 4.0% silicon, 0.06 to 1.0% manganese and normal steelmaking impurities of less than 0.050% carbon, less than 0.050% nitrogen, less than 0.020% oxygen, less than 0.040% phosphorus, less than 0.030% sulfur, less than 0.50% copper, less than 1.0% nickel, and the sum of calcium and magnesium less than 0.005%, the remainder being iron;



producing a cold worked ferritic stainless steel article; and then, without pretreating the steel;

heat treating the steel article for 2 minutes to 100 hours within a temperature range of about 1000° to 1025° C. in a stagnant atmosphere to form an adherent textured aluminum oxide surface thereon.

4,661,170

METHOD AND COMPOSITION FOR PRESERVING ALUMINUM SURFACES

Rainer Osberghaus; Dieter Brodalla, both of Duesseldorf; Roland Geissler, Erkrath, and Harald Bosek, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 18, 1985, Ser. No. 777,128
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1984, 3434668
Int. Cl.[4] C23C *25/26;* C25D *11/24*
U.S. Cl. 148—6.27 25 Claims

1. A method for preserving aluminum surfaces comprising applying thereto an aqueous polymer dispersion in diluted form, wherein the aqueous polymer dispersion consists essentially of

A. from about 40 to about 90% by weight of water,

B. from about 5 to about 40% by weight of an acid group-containing acrylate copolymer having a minimum film-forming temperature of from about 30 to about 90° C.,

C. from about 0.5 to about 3% by weight of at least one ammonium or organic salt of a divalent metal which is a beryllim, cadmium, copper, calcium, magnesium, zinc, zirconium, barium, strontium, cobalt, iron, nickel, or a mixture thereof,

D. from about 0.5 to about 5% by weight of at least one nonvolatile plasticizer,

E. from about 1 to about 25% by weight of at least one volatile plasticizer,

F. from about 0.2 to about 5% by weight of at least one anionic surfactant, noionic surfactant, or mixture thereof, and wherein from about 0.05 to about 1% by weight, based on the aqueous polymer dispersion, is a fluorine containing surfactant, and optionally, one or both of

G. from about 1.5 to about 8% by weight of oxidized polyethylene, and

H. from about 1.5 to about 8% by weight of a copolymer of styrene and maleic acid anhydride,

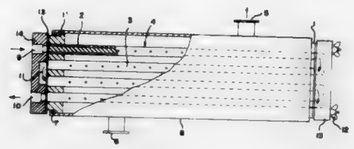
and wherein the diluted form of said polymer dispersion contains a nonaqueous ingredient content of from about 0.5 to about 25% by weight.

4,661,171

METHOD FOR TREATING THE SURFACE OF STAINLESS STEEL BY HIGH TEMPERATURE OXIDATION

Haruji Takahashi; Shigeo Goto; Syuichi Takata; Mitsuaki Shibata, all of Kobe, and Tomihira Hata, Kakogawa, all of Japan, assignors to Shinko-Pfaudler Company, Ltd., Kobe, Japan

Filed Aug. 23, 1985, Ser. No. 768,716
Claims priority, application Japan, Aug. 29, 1984, 59-181524; Feb. 12, 1985, 60-26083
Int. Cl.[4] C23C *8/18*
U.S. Cl. 148—6.35 2 Claims



1. Method for treating a stainless steel surface to provide a uniform colored oxidation film thereon by high temperature treatment, comprising the steps of cleaning which includes electrolytically polishing the stainless steel surface to be treated, applying a substantially uniform thickness of a coating agent on said surface, said agent consisting of microparticles having a high melting point, said surface being subjected to a high temperature heat-treatment in an oxidizing atmosphere, keeping the temperature and the length of time corresponding to a color tone for a formed colored oxide film on said stainless steel surface, and then washing away said coating agent after cooling.

4,661,172

LOW DENSITY ALUMINUM ALLOYS AND METHOD

David J. Skinner, Flanders; Kenji Okazaki, Basking Ridge, and Colin M. Adam, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 29, 1984, Ser. No. 584,856
Int. Cl.[4] C22F *1/04*
U.S. Cl. 148—12.7 A 53 Claims



6. A method for producing a low-density, aluminum alloy, consolidated articles, comprising the steps of:

compacting particles composed of a low density aluminum-base alloy, consisting essentially of the formula $Al_{bal}Zr_aLi_bMg_cT_d$, wherein T is at least one element selected from the group consisting of Cu, Si, Sc, Ti, V, Hf, Be, Cr, Mn, Fe, Co and Ni, "a" ranges from about 0.25–2 wt %,

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"b" ranges from about 2.7–5 wt %, "c" ranges from about 0.5–8 wt %, "d" ranges from about 0.5–5% and the balance is aluminum, said alloy having a primary, cellular dendritic, fine-grain, supersaturated aluminum alloy solid solution phase with filamentary, intermetallic phases of the constituent elements dispersed therein, and said intermetallic phases having width dimensions of not more than about 100 nm;

heating said alloy during said compacting step to a temperature of not more than about 400° C. to minimize coarsening of said intermetallic phases;

solutionizing said compacted alloy by heat treatment at a temperature ranging from about 500° to 550° C. for a period of approximately 0.5 to 5 hrs to convert elements from micro-segregated and precipitated phases into said aluminum solid solution phase; and

quenching said compacted alloy in a fluid bath.

7. A method as recited in claim **6**, further comprising the step of ageing said compacted alloy at a temperature ranging from about 100°–250° C. for a period ranging from about 1–40 hr.

4,661,173

ALLOY-ENRICHED SOLDER CREAM

Felix Barajas, Huntington Beach, and Donald W. Bridges, Irvine, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 25, 1986, Ser. No. 889,200
Int. Cl.⁴ B23K *35/24*
U.S. Cl. 148—24 **21 Claims**

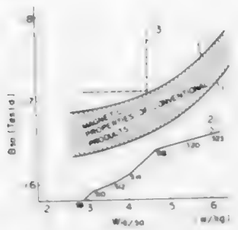
1. A solder composition especially adapted for soldering components in electronic circuits to form solder joints and essentially free of solder ball formation, which comprises at least 85% and less than 90% by weight of finely divided solder metal, and a minor portion of a vehicle for said solder metal consisting essentially of a rosin-type flux, a thickening agent and a fluorinated tertiary alkylamine which is semi-solid at room temperature, whereby during vapor-phase condensation soldering, said tertiary alkylamine is washed from the solder composition and the remaining solder composition comprises essentially about 90% of said solder metal and the remainder of the vehicle components.

4,661,174

NON-ORIENTED ELECTRICAL STEEL SHEET HAVING A LOW WATT LOSS AND A HIGH MAGNETIC FLUX DENSITY AND A PROCESS FOR PRODUCING THE SAME

Kunisuke Miyoshi; Yoshiaki Shimoyama, and Takeshi Kubota, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 460,844, Jan. 25, 1983, abandoned. This application May 25, 1984, Ser. No. 614,139
Claims priority, application Japan, Jan. 27, 1982, 57-10211
Int. Cl.⁴ H01F *1/04*
U.S. Cl. 148—111 **4 Claims**



1. A process for producing a non-oriented electrical steel exhibiting a watt loss ($W_{15/50}$) of at most 4.5 W/kg and a magnetic flux density B_{50} of at least 1.71 Tesla, said steel consisting essentially of:

carbon	at most 0.015%
silicon	0.3% to 2.0%
tin	0.02% to 0.20%
acid-soluble aluminum	0.005% to 0.10%
nitrogen	at most 0.007%
boron	at most 0.005%

provided that the weight ratio of the boron to nitrogen is from 0.5 to 1.5, balance iron and unavoidable impurities, said process comprising the successive steps of:

(1) hot-rolling a silicon steel having the composition as specified above;

(2) annealing the hot-rolled steel strip;

(3) cold-rolling the annealed steel strip at least once with an intermediate annealing; and

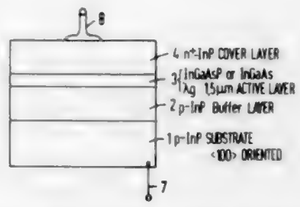
(4) continuously annealing the cold-rolled steel strip.

4,661,175

METHOD OF MAKING INGAASP AND INGAAS DOUBLE HETERO-STRUCTURE LASERS AND LEDS

Eckart Kuphal, and Herbert Burkhard, both of Darmstadt, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 6, 1985, Ser. No. 741,744
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1984, 3421215
Int. Cl.⁴ H01L *21/208*
U.S. Cl. 148—171 **18 Claims**



1. In a method for the production of double heterostructure lasers and light emitting diodes for the wavelength range from about 1.2 to 1.7 microns having either a quaternary active layer of InGaAsP, or, alternatively, a ternary active layer of InGaAs by means of liquid phase epitaxy, the improvement which comprises constructing such a laser or light emitting diode structure on a (100)-oriented crystalline p-doped indium phosphide substrate without an anti-meltback layer, such structure having at least three layers each epitaxially and lattice-matched grown, a first such layer being a p-doped indium phosphide buffer layer, a second layer being an indium gallium arsenide phosphide or indium gallium arsenide active layer, and a third layer being an n^+-doped indium phosphide cover layer and wherein said n^+-doped indium phosphide layer is deposited from an Sn-In-P solution.

4,661,176

PROCESS FOR IMPROVING THE QUALITY OF EPITAXIAL SILICON FILMS GROWN ON INSULATING SUBSTRATES UTILIZING OXYGEN ION CONDUCTOR SUBSTRATES

Harold M. Manasevit, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 27, 1985, Ser. No. 706,205
Int. Cl.⁴ H01L *21/20, 21/76*
U.S. Cl. 148—175 **18 Claims**

1. A method for treating films, said method comprising the steps of:

(a) depositing a thin, heteroepitaxial silicon film onto a surface of an insulator substrate being an oxygen ion conductor thereby forming a silicon-substrate interface between said film and said substrate;

(b) protecting the surface of said silicon film from oxidation;

(c) subjecting said substrate to an oxidizing environment at a temperature and for a period of time sufficient to form a silicon dioxide layer at said interface; and

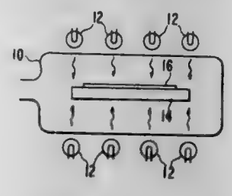
(d) removing said oxidizing environment from said substrate after said silicon dioxide layer reaches a predetermined thickness.

4,661,177

METHOD FOR DOPING SEMICONDUCTOR WAFERS BY RAPID THERMAL PROCESSING OF SOLID PLANAR DIFFUSION SOURCES

Ronald A. Powell, Redwood City, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Oct. 8, 1985, Ser. No. 785,418
Int. Cl.⁴ H01L *21/383*
U.S. Cl. 148—189 **3 Claims**



1. A method of diffusing a material into a planar workpiece comprising the steps of:

inserting a solid planar dopant material source into a rapid thermal processing apparatus,

placing a planar workpiece in close proximity to said solid planar dopant material source, and

rapidly heating said solid planar dopant material source and independently rapidly heating said planar workpiece to high temperature for a short period of time in order to diffuse said dopant material into said planar workpiece without introducing process gas.

4,661,178

BETA COPPER BASE ALLOY ADAPTED TO BE FORMED AS A SEMI-SOLID METAL SLURRY AND A PROCESS FOR MAKING SAME

Sankaranarayanan Ashok, Bethany, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 598,960, Apr. 11, 1984, Pat. No. 4,555,272. This application Jun. 28, 1985, Ser. No. 749,835
Int. Cl.⁴ C22C *9/01*
U.S. Cl. 148—435 **8 Claims**

1. A predominately beta phase copper base alloy adapted for forming in a semi-solid slurry condition, said alloy having a microstructure comprising discrete particles contained in a matrix having a lower melting point than said particles, said alloy consisting essentially of from about 9% to about 10.5% by weight aluminum, from about 3% to about 7% by weight nickel, from about 3% to about 7% by weight iron with the total nickel and iron contents being at least about 10%, balance essentially copper.

4,661,179

DESTRUCTION OF WASTE EXPLOSIVE BY HYDROGENOLYSIS

Benjamin A. Hunter, Kingsport, Tenn., and Everett E. Gilbert, Morristown, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 24, 1986, Ser. No. 891,802
Int. Cl.⁴ D03D *23/00*
U.S. Cl. 149—124 **10 Claims**

1. A process for the destruction of waste explosives contained in a liquor produced in the manufacture and processing of an organic explosive containing a nitro, nitrate or nitramino group in the molecule, which comprises contacting the explosive in said liquor with hydrogen in the presence of a heterogeneous hydrogenation catalyst for a sufficient period to effect destruction of said explosive.

4,661,180

METHOD OF MAKING DIAMOND TOOL

Robert H. Frushour, Ann Arbor, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Filed Mar. 25, 1985, Ser. No. 713,966
Int. Cl.⁴ B32B *31/14*
U.S. Cl. 156—89 **2 Claims**

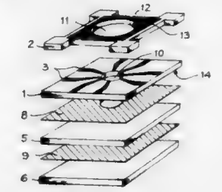
1. The process of forming a substrate to which is bonded a polycrystalline diamond disk comprising the steps of forming layers of powdered diamond material, pressing and sintering said layers to bond the diamond material and form disks thereof, grinding or lapping flat one surface of one said diamond disks, placing said flattened surface of said disk on a substrate with a disk of brazing alloy therebetween, said brazing alloy comprises 61½% silver, 24% copper and 14½% indium and brazing said diamond disk to said substrate at a temperature of 730° C. to 740° C.

4,661,181

METHOD OF ASSEMBLY OF AT LEAST TWO COMPONENTS OF CERAMIC MATERIAL EACH HAVING AT LEAST ONE FLAT SURFACE

Patrick Campo, St. Etienne, and Pierre Roset, Les Ulis, both of France, assignors to Thomson-CSF, Paris, France

Filed May 22, 1985, Ser. No. 736,843
Claims priority, application France, May 25, 1984, 84 08245
Int. Cl.⁴ B32B *18/00, 31/26*
U.S. Cl. 156—89 **9 Claims**



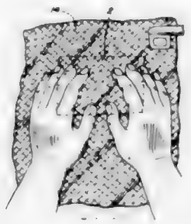
1. A method of assembling at least two ceramic components, each having at least one flat surface and each having been fired at a temperature greater than 1600° C., with at least one of said components being provided with metallization on one flat surface, comprising:

assembling said components in a flat face-to-face relationship; and

autogeneously welding said components by heating the assembled components in a thermal cycle which exceeds 1700° C. for at least ten minutes in a wet hydrogen reducing atmosphere, which heating results in fusion of the components by the fluxes present in the ceramic components.

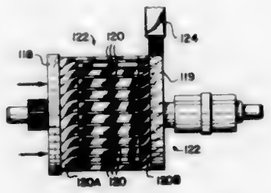
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4,661,182
METHOD AND COMPOSITION FOR REPAIRING MINOR SURFACE DAMAGE TO COATED SURFACES
Stanley Lerner, Highland Park, Ill., assignor to Color Communications, Inc., Chicago, Ill.
Filed Jul. 31, 1985, Ser. No. 761,051
Int. Cl.⁴ B32B *35/00*
U.S. Cl. 156—94 **25 Claims**



1. A method for repairing a damaged painted surface, said method comprising
adhesively affixing a paint coated polymeric sheet to the damaged surface to provide a repaired surface covered with the paint coated polymeric sheet which polymeric sheet remains on the damaged surface, the paint coated polymeric sheet including
a film base having a thickness in the range of about 0.00025 to about 0.002 inches;
a paint coating on the surface of said film base; and
an adhesive coating for adhesively affixing the paint coated polymeric sheet to the damaged surface.

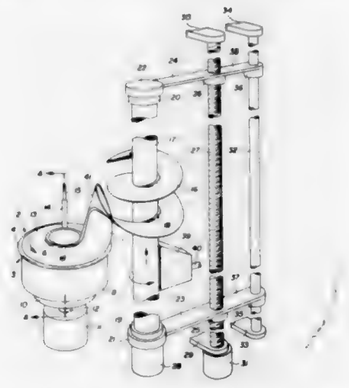
4,661,183
METHOD FOR MAKING AND APPLYING ROTOR BANDS
Dennis J. Beard, Xenia, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio
Filed Oct. 22, 1985, Ser. No. 790,024
Int. Cl.⁴ B65H *81/00*
U.S. Cl. 156—172 **6 Claims**



1. A method for banding rotors of electrodynamic machines for retaining windings on said rotors against centrifugal forces generated by rotation of said rotors, said method comprising the steps of:
providing a source of reinforcing material in continuous strand form;
resinating said reinforcing material;
evenly winding said resinated reinforcing material onto a mandrel to form a single, substantially continuous layer of said resinated reinforcing material onto said mandrel;
curing said resinated reinforcing material to form a solidified cylindrical body on said mandrel;
circumferentially cutting said cylindrical body to form annular bands having a width corresponding to said rotors; and
pressing said annular bands onto said rotors.

5. A method for banding a rotor of an electrodynamic machine to retain windings on said rotor against centrifugal forces generated by rotation of said rotor, said method comprising pressing a cured annular band onto the rotor, said annular band comprising a section of a cylinder formed as a closed cylindrical helix from a single layer of cured resinated reinforcing material, the length of said section corresponding to said rotor.

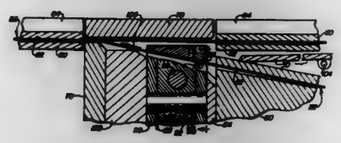
4,661,184
METHOD OF AND MEANS FOR PRODUCING A HELICAL BAND
Hans Kläy, 1171 Bougy, Switzerland
Filed Oct. 2, 1985, Ser. No. 782,866
Int. Cl.⁴ B23P *15/26*
U.S. Cl. 156—185 **13 Claims**



1. A method of producing a helical band, which comprises the steps of:
applying a layer of fluid heat-settable material onto a rotating support to one side of an axis of rotation of the support;
applying heat to said layer while rotating the support for a length of time sufficient for material in the layer to set in shape to a required extent to form a length of the helical band; and,
removing the band from the support before the band comes into contact with the material being applied onto the support, a speed of rotation of the support, a distance traveled by the layer/band on the support and the heat applied to the layer/band being such as to cause the material in the layer to set in shape.

4,661,185
METHOD AND APPARATUS FOR HEAT SEALING STRAP IN A STRAPPING MACHINE
Robert J. Kobiella, Rolling Meadows, Ill., assignor to Signode Corporation, Glenview, Ill.
Filed Mar. 5, 1985, Ser. No. 708,401
Int. Cl.⁴ B65B *13/04, 13/32*
U.S. Cl. 156—212 **7 Claims**

1. A method for providing a tensioned loop of thermoplastic strap around an object, said method comprising the steps of:
(a) feeding said strap to form said loop with overlapping upper and lower strap portions and a trailing portion of strap extending from said loop, said upper strap portion extending over a first gripper member and below an anvil, said lower strap portion extending below at least a portion of said first gripper member, and both said upper and lower strap portions extending above a second gripper member below said anvil;
(b) restraining said upper strap portion by elevating said first gripper member between said upper and lower strap portions to press said upper strap portion against said anvil to grip said strap;
(c) pulling the strap trailing portion to tension said loop while effecting step (b) to restrain said upper strap portion;
(d) before terminating steps (b) and (c), elevating said second gripper member to press together said upper and lower strap portions against said anvil to hold said loop in tension during the subsequent steps (e–j);
(e) severing the trailing portion of the strap from said loop lower strap portion;
(f) lowering said first gripper member below the severed lower strap portion;
(g) extending a heating member between said upper and lower strap portions below said anvil and in a direction parallel to the strap length;

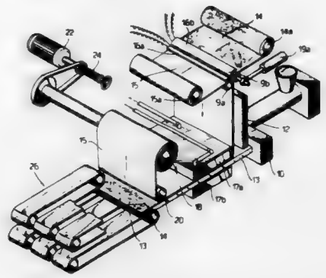


(h) elevating said first gripper member to press said lower strap portion against said heating member and to press said upper strap portion between said heating member and said anvil whereby regions of said upper and lower strap portions melt;
(i) withdrawing said heating member from between said upper and lower strap portions; and
(j) further elevating said first gripper member to press said strap portions together in face-to-face contact between said anvil and said first gripper member as the melted regions of said upper and lower strap portions solidify to form a joint.

7. The assembly in accordance with claim 5 in which said anvil is movable generally normal to the strap length between (1) an extended position below which said upper and lower strap portions can be positioned and (2) a retracted position spaced from said upper and lower strap portions.

4,661,186
PROCESS AND APPARATUS FOR JOINING PROTECTIVE PLASTIC FILMS TO AN EXTRUDED PLASTIC SHEET, WITH THE AID OF AN AUXILIARY PLASTIC FILM
Stefano De Bernardi, Busto Arsizio, Italy, assignor to Carbolux S.p.A., Nera Montoro, Italy
Filed Oct. 24, 1985, Ser. No. 791,202
Claims priority, application Italy, Oct. 26, 1984, 23326 A/84
Int. Cl.⁴ B32B *31/20*
U.S. Cl. 156—230 **7 Claims**

1. A process according to which a cellular sheet of plastic is extruded from an extruding means and then at least one protective film of plastic is joined to at least one of its surface layers, said protective film having a softening temperature lower than that necessary for extruding the sheet, wherein the protective film and a support film are heated and pressed together so as to form a bonded layer, then this bonded layer is laid on the surface of the cellular sheet emerging from the extruding means, with the protective film in contact with the cellular sheet, cooling the combination of cellular sheet, protective film



and support film, and removing said support film from the cooled combination leaving the extruded sheet now integral with the protective film.

4,661,187
METHOD OF MAKING LIFE-LIKE PROSTHETIC DEVICES
Robert W. Beasley, 251 E. 32nd St., New York, N.Y. 10016
Filed Apr. 3, 1985, Ser. No. 719,355
Int. Cl.⁴ B29B *13/10*
U.S. Cl. 156—242 **22 Claims**



1. A method of making a prosthetic device for wearing on a normally visible anatomical appendage of the human body, said device being strong, flexible, seamless, non-irritating and aesthetically life-like in appearance, which method comprises the steps of:
(1) forming a first flexible impression mold by applying a coating of a curable, liquid elastomer material onto a biological body member of which the prosthetic device is to be a duplicate, while monitoring and correction of positioning, as necessary, to assure that the biological member is in its most natural appearing state;
(2) removing said first flexible impression mold after curing said elastomeric material at least sufficiently to effect removal of said mold without tearing;
(3) contacting the interior surface of said impression mold with a wax-like material in liquid form and which upon solidification and removal of the flexible impression mold, provides a duplicate and finely detailed model of said biological member which can be further positioned and scupltured, if desired;
(4) providing one or more pluggable ventilation apertures on said model;
(5) rendering the surface of said model electrically conductive;
(6) electrodepositing metal onto the surface of said model;
(7) removing said wax-like model to provide a metal negative mold of said body member;
(8) contacting the inner surface of said metal mold with a curable, liquid elastomeric material to form the outermost layer of said prosthetic device;
(9) subjecting said metal mold to rotational conditions to evenly disperse said material within said mold;

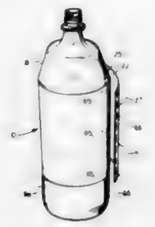
VOL 1077 ISS 1 AP 28 1987 UMI

(10) repeating steps (8) through (9) until a multi-layer thickness is obtained sufficient for said prosthetic device,
(11) curing said elastomeric material and thereafter removing the prosthetic device from said mold; and
(12) adding pigments and coloring materials to at least some of said layers in said prosthetic devices to mimic natural skin pigmentation and coloration.

4,661,188
METHOD OF APPLYING A PLASTIC LABEL TO A CONTAINER

Giancarlo J. Fumei, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 555,786, Nov. 28, 1983, Pat. No. 4,567,681. This application Oct. 21, 1985, Ser. No. 789,814
Int. Cl.⁴ B32B *31/12*
U.S. Cl. 156—244.11 **5 Claims**

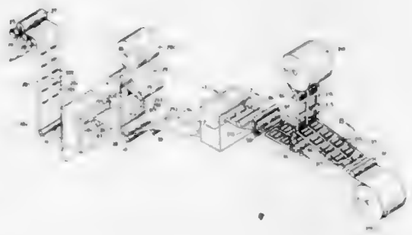


1. A method of coextruded plastic label comprising a solid polymer layer and a foam polymer layer to a container having a body portion, the method comprising the steps of:
A. positioning the label around the container body by advancing a leading lateral edge, the foam layer being disposed adjacent the body portion,
B. contacting the leading edge of the foam layer with a low boiling solvent for the polymer of the foam layer,
C. forming a finite area on the foam polymer leading edge from the contacting with the solvent,
D. tacking the foam layer to the body portion by placing the finite area with a liquid tacky solution of the polymer in the solvent next to the body portion,
E. solidifying the tacky liquid to form a tacky bond between the foam layer and the body portion that becomes weaker and weaker,
F. forming a finite area containing a liquid tacky solution of foam layer polymer in a solvent on the foam layer side of the trailing edge,
G. overlapping the trailing and leading edges to form a seam; and
H. bonding the edges of the seam together by solidifying the liquid tacky solution to form a solid bond between the solid polymer layer and the foam polymer layer.

4,661,189
METHOD FOR MANUFACTURING DISCRETE ELEMENTS

Peter A. Voy, El Dorado Hills, and Robert D. Ihle, Sacramento, both of Calif., assignors to Janus Label Corporation, Rancho Cordova, Calif.

Filed Nov. 14, 1984, Ser. No. 671,294
Int. Cl.⁴ B32B *31/00*
U.S. Cl. 156—248 **4 Claims**



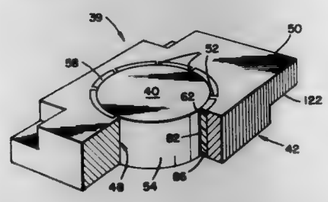
1. A method for manufacturing discrete elements, said discrete elements carried by a carrier sheet and wherein the discrete elements manufactured by the method are arranged in substantial alignment on the carrier sheet, each discrete element to be manufactured having a predetermined periphery along which severing is to be performed, said discrete elements subsequently to be dispensed from the carrier sheet during movement of the carrier sheet in a predetermined direction of movement and the discrete elements each having leading and trailing edges relative to said direction of movement of the carrier sheet, the method comprising:
A. passing the carrier sheet and a face sheet from which said discrete elements are to be manufactured along first and second paths of travel which are initially spaced from each other and thereafter are traveled with each other with corresponding mating surfaces of the carrier sheet and the face sheet disposed substantially in facing engagement;
B. applying adhesive on one of said mating surfaces, prior to the carrier sheet and face sheet being disposed substantially in facing engagement, in discrete zones individual to the discrete elements to be manufactured from the face sheet, each of said zones being recessed from the entire periphery thereof; and
C. severing the face sheet, while the carrier sheet and face sheet are disposed substantially in facing engagement, individually about the periphery of each of the discrete elements whereby no contact is made with the adhesive and the discrete elements are carried by said carrier sheet arranged in substantial alignment thereon with adhesive interposed between each discrete element and the carrier sheet and recessed from the periphery thereof.

4. A method for manufacturing discrete elements from two sheets having longitudinal dimensions wherein the discrete elements manufactured by the method are carried by one of said two sheets and are dispensed therefrom during movement along a dispensing path of travel substantially in alignment with said longitudinal dimensions, the method comprising:
A. applying adhesive on one of said two sheets in substantially intermittent successive zones of adhesive along the longitudinal dimension of the sheet wherein adjoining zones along said longitudinal dimension have portions spaced from each other along the longitudinal dimension of the sheet to form substantially adhesive free areas between said portions of adjoining zones of adhesive along said longitudinal dimension of the sheet;
B. placing the two sheets in engagement in substantial longitudinal alignment so that the zones of adhesive resist separation of the two sheets; and
C. severing one of the two sheets along courses substantially corrolated with said zones of adhesive to form the discrete elements, carried by the other of the two sheets, having edges substantially adjacent to said substantially adhesive free areas whereby the portions of the sheet about the discrete elements can be removed from about said discrete elements and from said other of the two sheets without substantial adhesive resistance.

4,661,190
PROCESS FOR BONDING A CORE MEMBER TO A HOUSING MEMBER

William A. Gelinas, Hadley, Mass.; Edwin R. Holtz, Enfield, Conn.; Dennis J. Argazzi, Deep River, Conn.; Robert L. Smigel, Higganum, Conn., and Dan W. Wiley, Bristol, Conn., assignors to Loctite Corporation, Newington, Conn.

Filed Jun. 17, 1985, Ser. No. 745,656
Int. Cl.⁴ B32B *31/28*
U.S. Cl. 156—273.5 **13 Claims**



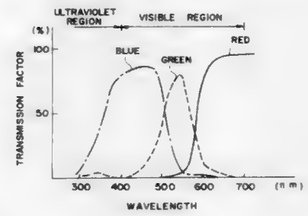
1. A process of bonding a core member to a housing member wherein the core member has upper and lower surfaces and an outer peripheral surface extending between the upper and lower surfaces thereof and wherein the housing member has upper and lower surfaces and an inner peripheral surface extending between the upper and lower surfaces thereof defining an opening extending therethrough, the opening being spaced from the outer peripheral surface of the core member to thereby define a cylindrical cavity therebetween, comprising the steps of:
applying a first continuous bead of viscous sealant to the inner and outer peripheral surfaces at a first terminal region of the cavity, the first bead being sufficiently viscous that it remains in place at the first terminal region;
subjecting the first bead of sealant to a nitrogen atmosphere;
while so subjecting the first bead to a nitrogen atmosphere, exposing the first bead of sealant to ultraviolet radiation for a predetermined period of time to thereby affect a cure of same;
substantially filling the cavity with an anaerobic bonding material;
applying a second continuous bead of viscous sealant to the inner and outer peripheral surfaces at a second terminal region of the cavity spaced from the first terminal region and contiguous with an exposed surface of the anaerobic bonding material to thereby isolate the anaerobic bonding material within the cavity, the second bead being sufficiently viscous that it remains in place at the second terminal region;
subjecting the second bead of sealant to a nitrogen atmosphere; and
while so subjecting the second bead to a nitrogen atmosphere, exposing the second bead of sealant to ultraviolet radiation for a predetermined period of time to thereby affect a cure of same.

4,661,191
METHOD FOR BONDING A COLOR SEPARATION FILTER

Masaru Kamio, Kawaguchi; Shigeharu Iijima; Satoshi Yoshihara, both of Kawasaki, and Yasutsugu Ogura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 541,070, Oct. 12, 1983, abandoned. This application Sep. 3, 1985, Ser. No. 771,179
Claims priority, application Japan, Oct. 20, 1982, 57-183993; Oct. 20, 1982, 57-183994
Int. Cl.⁴ B32B *31/26*
U.S. Cl. 156—275.5 **4 Claims**

1. A method for bonding a color separation filter which comprises placing a color separation filter through an intermediary UV-ray curable type bonding agent on a solid state image pick-up device, effecting registration between the solid state image pick-up device and the color separation filter, then applying irradiation of UV-radiation at a luminous intensity of 30 mW/cm² or higher from the side of the color separation filter for a period of time of such duration that the bonding agent under a blue portion of the color separation filter is not

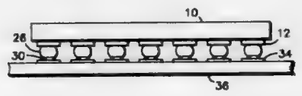


fully cured, thereby to subject said bonding agent to partial curing, and thereafter applying UV-radiation at a luminous intensity of 5 mW/cm² or lower from the side of the color separation filter for a period of time sufficient to complete full curing of the bonding agent, thereby to subject the bonding agent to full curing.

4,661,192
LOW COST INTEGRATED CIRCUIT BONDING PROCESS

Michael B. McShane, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 22, 1985, Ser. No. 768,262
Int. Cl.⁴ H01L *23/10;* **H01R** *43/02*
U.S. Cl. 156—292 **5 Claims**



1. A process for attaching an integrated circuit die to a die support frame having a conductive pattern thereon comprising:
attaching a plurality of balls, one each to a plurality of bonding pads on the integrated circuit die by using a wire bonder to deposit a ball on each bonding pad and severing the wire close to the ball;
planarizing the balls attached to the surface of the integrated circuit die wherein the planarization is performed by force against a flat planarization surface exclusive of the support frame, to provide a flat exposed surface on each ball wherein the flat exposed surfaces are all in the same plane;
coating only the flat exposed surfaces of the balls with a conductive epoxy film by placing the integrated circuit die having planarized balls in a thin film of the conductive epoxy; and
adhering the integrated circuit to the die support frame in correspondence to the conductive pattern thereon by means of the conductive epoxy film on the flat surfaces of the balls.

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4,661,193

ADHESIVE COMPOSITIONS FOR ARYLCYCLOBUTENE MONOMERIC COMPOSITIONS

Robert A. Kirchhoff, and Jo Ann Gilpin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 644,836, Aug. 27, 1984, abandoned. This application Aug. 30, 1985, Ser. No. 771,052

Int. Cl.⁴ C09J *3/14, 5/06;* **C08F** *132/08*

U.S. Cl. 156—307.3 **33 Claims**

1. A method of bonding a first solid substrate to a second solid substrate, said method comprising

(a) applying a functionally effective amount of an arylcyclobutene monomeric composition to a surface of the first substrate,

(b) contacting said surface with a surface of the second substrate, and

(c) subjecting said monomeric composition to bonding conditions sufficient to bond the substrates.

4,661,194

FABRIC BONDING POLYAMIDE RESINS WITH LOWERED FUSION POINT

Roger A. Lovald, Roseville, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Nov. 19, 1985, Ser. No. 799,766

Int. Cl.⁴ C09J *3/14*

U.S. Cl. 156—330.9 **15 Claims**

1. A polyamide adhesive adapted for bonding of fusible interliners for fabrics which are cleanable comprising a polymeric fat acid polyamide having a melt viscosity of not more than 600 poises at 190° C. and being the thermal amidification product product at a temperature of about 100°–300° C. for a time sufficient to effect amidification of

(a) caprolactam, amino-caproic acid or mixtures thereof,

(b) a diamine component which is

(1) 50–75 eq. % hexamethylene diamine, and

(2) 25–50 eq. % 2-methyl pentamethylene diamine, and

(c) a mixture of a polymeric fat acid and an aliphatic straight chain co-dicarboxylic acid having 6–12 carbon atoms wherein substantially equal amounts of amine and carboxyl are employed to provide a polyamide product wherein the caprolactam is present in an amount of 25–30% by weight, the polyamide of said diamine component and said polymeric fat acid is present in an amount of 45–65% by weight and the polyamide of said diamine component and said co-dicarboxylic acid is present in an amount of 10–25% by weight of the polyamide.

11. In a method of adhering a fusible non-woven interliner to a fabric with a polyamide adhesive, the improvement wherein said adhesive is the polyamide as defined in claim 1.

4,661,195

METHODS AND APPARATUS FOR REMOVING LABELS OR CARRIERS FROM CONTAINERS

Eric C. Hopson, Swindon, England, assignor to Metal Box Public Limited Company, United Kingdom

Filed Jun. 13, 1984, Ser. No. 620,169

Claims priority, application United Kingdom, Jun. 21, 1983, 8316823

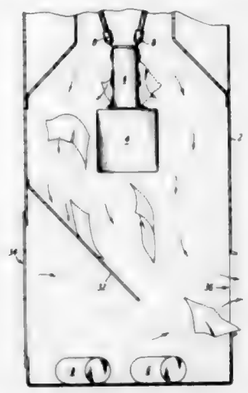
Int. Cl.⁴ B32B *35/00*

U.S. Cl. 156—344 **2 Claims**

1. A dry method for removing wrap-around labels or carriers from containers, said wrap-around labels or carriers comprising labels or carriers in which the opposing ends are brought into overlapping relationship and adhesively secured together but allowing access to air or gas between the label or carrier and the container, the method comprising the steps of

feeding the containers along a path through a stripping station,

directing a gas or air jet between each label or carrier and its container, said gas or air jet being of sufficient force to rupture the label or carrier absent melting thereof, and



creating a gas or air drought to carry the label or carrier after rupture away from said path.

4,661,196

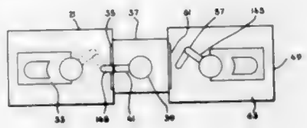
PLASMA ETCH MOVABLE SUBSTRATE

Dan T. Hockersmith, Garland, and Joe W. Gilbert, Leonard, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 22, 1984, Ser. No. 663,909

Int. Cl.⁴ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—345 **12 Claims**



1. An apparatus for the manufacturing of semiconductor devices from semiconductor wafers having a plurality of semiconductor circuit patterns on at least a reacting surface of the semiconductor wafer, the apparatus comprises:

reacting means for providing a stream of reacting gases to react with the semiconductor wafer to create circuit elements according to the semiconductor circuit pattern thereby;

handling means for handling the wafers and includes a chamber means for bringing the wafers into contact with the reacting gas, and the chamber means includes a plasma means for generating a plasma, and means for varying the volume of the chamber means; degassing means for degassing of the semiconductor wafers, port means for preventing the contamination of the chamber means and to provide a port for the transfer of the semiconductor wafers from the degassing means to the chamber means; exit means for isolating the semiconductor wafers and the circuit elements from the chamber means, second port means for providing a port for the transfer of the semiconductor wafer between the chamber means and the exit means, and transfer means for transferring the semiconductor wafer from the degassing means to the chamber means and from the chamber means to the exit means; and

ninth means for controlling the operation of the apparatus.

4,661,197

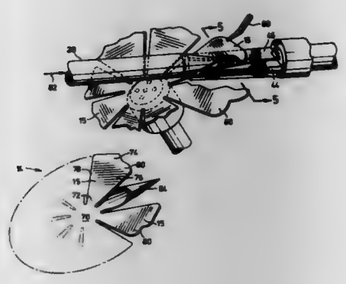
ORNAMENT PRODUCTION APPARATUS

James D. Mancel, Brampton, and Olaf B. Raiskums, Milton, both of Canada, assignors to Rainbow Star Licensing S.A., Fribourg, Switzerland

Filed Sep. 4, 1985, Ser. No. 772,576

Int. Cl.⁴ B31F *1/00*

U.S. Cl. 156—443 **9 Claims**



1. An apparatus for producing an ornament with a plurality of circumferentially arranged conical elements from a circular planar blank having a central part and a plurality of leaves radially projecting from said central part, each leaf having a central portion and lateral portions extending from said central portion, said apparatus comprising:

a conical form having a longitudinal axis;

a winder assembly having means defining a conical bed extending essentially along said longitudinal axis;

positioning means for releasably holding said blank at an angle with respect to said longitudinal axis and with one of said blank leaves being positioned over said conical bed of said winder assembly;

means for moving said conical form in a reciprocating rectilinear motion along said longitudinal axis; said conical form being movable between an active position, wherein said form presses said central portion of said one of said leaves into said conical bed with said side portions of said one leaves bending outwardly of said conical bed on either side thereof, and a retracted position wherein said conical form is located away from said conical bed and said leaf therein;

means for rotating said conical bed about said longitudinal axis when said conical form is in said active position, said means rotating said conical bed first in one direction to apply one of said leaf side portions over said conical form and them in reverse direction to apply the other side portion over said conical form in overlapping relation with said one side portion, whereby to form a conical element;

means for holding said one leaf against said conical form during rotation of said conical bed and subsequently for releasing said leaf from said conical form;

means for applying an adhesive material to at least one of said side portions to retain said conical element in conical configuration, and

wherein said positioning means include means for rotating said blank for positioning the other of said leaves successively over said conical bed for the formation of other conical elements.

4,661,198

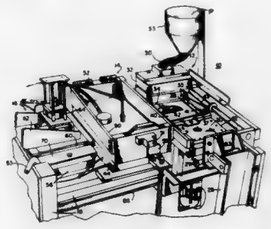
LINEAR DEPOSITION APPARATUS

Robert C. Simmonds, Jr., Topsfield; Andrew J. Gilbride, Swampscott, and Albert I. Morse, Beverly, all of Mass., assignors to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 729,897, May 2, 1985, Pat. No. 4,592,798. This application Mar. 19, 1986, Ser. No. 841,400

Int. Cl.⁴ B31B *31/00*

U.S. Cl. 156—578 **6 Claims**



1. A machine for applying a fused configuration of powder on a shoe substrate comprising

a non-rigid flat belt for receiving a deposit of powder,

means for displacing said belt along a predetermined path from a deposition station whereat powder will be deposited on the belt to a heating station whereat the deposited powder will be fused together,

a stencil having a selectively configured cut-out,

means for deforming the belt portion beneath said cut-out to define with said stencil a selectively configured volume,

means for actuating said deforming means when powder is to be deposited on said belt,

means for depositing powder on said stencil to fill said selectively configured volume when said belt has been so deformed, and

means for releasing said deforming means after said selectively configured volume of power has been deposited whereby said belt portion will reassume its original flat condition.

4,661,199

METHOD TO INHIBIT AUTODOPING IN EPITAXIAL LAYERS FROM HEAVILY DOPED SUBSTRATES IN CVD PROCESSING

Gary W. Looney, Bordentown, and Paul H. Robinson, Lawrenceville, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 12, 1985, Ser. No. 797,126

Int. Cl.⁴ C30B *25/12, 23/00*

U.S. Cl. 156—612 **7 Claims**

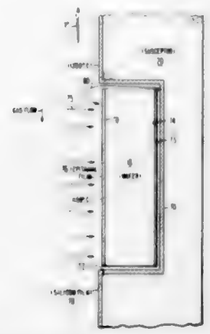
1. In a method for silicon epitaxial growth in a reaction chamber by chemical vapor deposition (CVD) of silicon material deposited epitaxially on one surface of a substrate of a crystalline silicon material heavily doped with a volatile component which will outdiffuse during the deposition, which substrate is in thermal contact with a susceptor inductively heated by radio frequency (RF) energy, improvement comprising the steps of:

(a) providing a film of silicon on said susceptor having a thickness of at least about 35 μm to provide by thermal transport sufficient silicon to seal the other surface of said substrate to inhibit substanially if not eliminate outdiffusion of the dopant from said other surface while still leaving a film of silicon on the surface of the susceptor which is thick enough to seal the surface and prevent outdiffusion of contamination products from the susceptor;

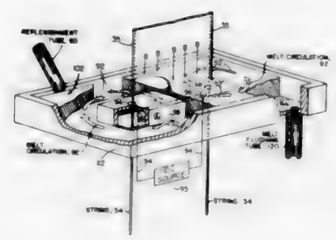
(b) positioning at least one of said substrates on said susceptor with said other surface being in close proximity and in thermal contact with said surface of the susceptor

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to receive epitaxially a deposition of lightly doped silicon on said one surface;
(c) passing a purging gas over said substrate;
(d) passing a reactant gas containing silicon and being lightly doped with a conductivity modifier material over said substrate to deposit epitaxially a layer of said lightly doped silicon on said one substrate surface, whereby silicon from said film of silicon on said susceptor is transported to the other surface of said substrate adjacent said silicon film to seal said other substrate surface from outdiffusion and thereby inhibiting volatile components of said dopant of conductivity modifier material from being outdiffused from said susceptor to thereby maintain the dopant concentration of said epitaxial layer at a value closer than when out diffusion is not inhibit.

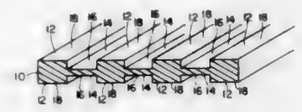


4,661,200
STRING STABILIZED RIBBON GROWTH
Emanuel M. Sachs, 42 Old Middlesex Rd., Belmont, Mass. 02178
Filed Jan. 7, 1980, Ser. No. 109,865
Int. Cl.⁴ C30B *11/02, 15/34*; B01D *9/00*
U.S. Cl. 156—616 R **26 Claims**



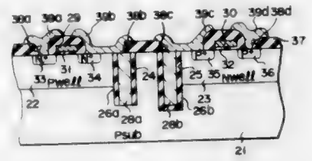
1. A method of continuously growing crystalline or semicrystalline ribbonlike bodies from a melt of the same material wherein the ribbonlike body has a thin flat unobstructed elongate center section grown directly from the melt surface comprising, the steps of:
drawing the ribbonlike body from the surface of the melt; and
stabilizing the edge positions of the ribbonlike body with strings positioned along the edges thereof, which strings are frozen into the growing ribbon.

4,661,201
PREFERENTIAL ETCHING OF A PIEZOELECTRIC MATERIAL
Petros Petridis; Darrel E. Newell, and Keneth D. Hartman, all of DeKalb, Ill., assignors to CTS Corporation, Elkhart, Ind.
Filed Sep. 9, 1985, Ser. No. 773,923
Int. Cl.⁴ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—628 **20 Claims**



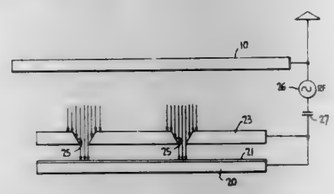
1. A method for preferentially etching a homogeneous piezoelectric material at different etching rates, which comprises:
(a) controllably subjecting a portion of the piezoelectric material to a concentrated thermal energy source; said energy source of a force sufficient to alter the crystalline orientation of the piezoelectric material subjected to the concentrated energy source;
(b) treating the piezoid material with a selected enchant for a controlled duration; wherein the portion of the piezoelectric material not altered by the concentrated energy source is etched at a different rate than the etching rate of the portion of the piezoelectric material altered by the concentrated thermal energy source to preferentially etch a controlled anaglyphic planar configuration upon the piezoelectric material.

4,661,202
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE
Kiyofumi Ochii, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 13, 1985, Ser. No. 701,350
Claims priority, application Japan, Feb. 14, 1984, 59-24459; Feb. 14, 1984, 59-24460
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 156—643 **24 Claims**



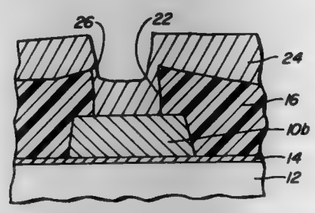
1. A method of manufacturing a semiconductor device comprising the steps of:
forming first and second grooves in a semiconductor substrate having at least one well in a surface region thereof;
forming an insulating film on an overall surface of said semiconductor substrate including inner surfaces of the grooves;
selectively etching said insulating film and leaving said insualting film in the first and second grooves; and
burying a conductive material in the first and second grooves having inner surfaces covered with the insulating film to form a first conductive layer in the first groove and a second conductive layer in the second groove, said second conductive layer being set at a substrate potential and said first conductive layer being set at a potential different from said substrate potential.

4,661,203
LOW DEFECT ETCHING OF PATTERNS USING PLASMA-STENCIL MASK
Donald O. Smith, Lexington; John R. Burgess, Dunstable, and David M. Walker, Westford, all of Mass., assignors to Control Data Corporation, Minneapolis, Minn.
Filed Jun. 28, 1985, Ser. No. 749,788
Int. Cl.⁴ B44C *1/22*; B29C *37/00*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **16 Claims**



1. A method of etching a resist coating from prescribed areas on a surface of a semiconductor wafer, said method comprising the steps of:
placing the semiconductor wafer in a vacuum chamber;
placing an apertured stencil in said chamber in closely spaced proximity to said surface such that apertures in said stencil are aligned with said prescribed areas on said surface;
removing said resist coating from said prescribed areas of said surface by reactive ion etching involving the further steps of:
introducing an etching gas into said chamber, said etching gas having at least one component which reacts chemically with said resist coating to form a volatile reaction plasma; and
bombarding said stencil with energetic charged particles to enhance the etch rate of said resist coating at said prescribed areas by said plasma located between the stencil and wafer and exposed by the stencil apertures;
wherein the step of bombarding includes the steps of:
applying a radio-frequency potential between a first electrode and a second electrode, wherein said wafer and mask constitutes said first electrode; and
directing said energetic particles in a direction substantially perpendicular to said stencil.

4,661,204
METHOD FOR FORMING VERTICAL INTERCONNECTS IN POLYIMIDE INSULATING LAYERS
Vishnu Mathur, and Socorro Garcia, both of San Jose, Calif., assignors to Tandem Computers Inc., Cupertino, Calif.
Filed Oct. 25, 1985, Ser. No. 791,240
Int. Cl.⁴ B44C *1/22*
U.S. Cl. 156—656 **14 Claims**

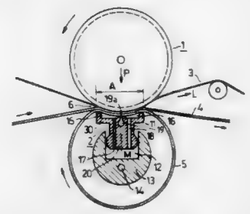


1. A method for forming vertical interconnect holes in a polyimide layer on a semiconductor substrate, said method comprising:
applying a positive photoresist layer having a thickness greater than the polyimide layer directly over the polyimide layer:
exposing and developing the photoresist layer in a predetermined pattern corresponding to the desired pattern of vertical holes in the polyimide layer; and
etching the vertical holes with a fluorocarbon- or fluorosilicon-oxygen plasma under pressure and power conditions selected to provide an etch ratio of the polyimide to the photoresist is at least 2:1.

4,661,205
METHOD OF BLEACHING LIGNOCELLULOSIC MATERIAL WITH PEROXIDE CATALYZED WITH A SALT OF A METAL
Steven S. Ow, Aston, and Rudra P. Singh, Brookhaven, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.
Filed Aug. 28, 1981, Ser. No. 297,385
Int. Cl.⁴ D21C *9/16*
U.S. Cl. 162—78 **10 Claims**

1. A method for the delignification and bleaching of lignocellulosic material by reacting sid material with peroxide in an alkaline medium having a pH of at least 10 wherein the improvement comprises catalyzing the action of peroxide on said material with a salt of a metal taken from the group consisting of aluminum, zinc, and molybdenum.

4,661,206
WET PRESS FOR DEWATERING A MATERIAL WEB WITH PLURAL PRESSURE POCKETS AND UNSYMMETRICAL ARRANGEMENT
Peter Heitmann, Bad Schussenried; Herbert Holik, Ravensburg, and Peter Mirsberger, Berg, all of Fed. Rep. of Germany, assignors to Sulzer-Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany
Filed Jan. 28, 1985, Ser. No. 695,854
Claims priority, application Switzerland, Feb. 6, 1984, 534/84
The portion of the term of this patent subsequent to Dec. 3, 2002, has been disclaimed.
Int. Cl.⁴ D21F *3/02*
U.S. Cl. 162—358 **13 Claims**



1. A wet press for dewatering a web of material, comprising:
a rotatable roll having a circumference;
a contact pressure device;
said contact pressure device and said rotatable roll defining a press nip therebetween;
at least one water-absorbent belt;
the web of material being guided conjointly with said at least one water-absorbent belt between said contact pressure device and said rotatable roll through said press nip and along a portion of said circumference of said rotatable roll;
the web of material having a predetermined direction of travel;
said contact pressure device comprising a hydrostatic pressure element having a predetermined direction or pressing;
said hydrostatic pressure element comprising a support shoe movable in said predetermined direction of pressing;
said support shoe comprising at least two pressure pockets

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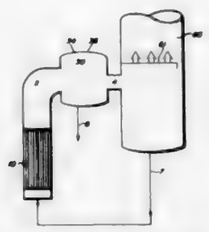
arranged sequentially in said press nip in said predetermined direction of travel of the web;
a common pressure chamber supplied with a suitable pressure medium;
conduits connecting said at least two pressure pockets with said common pressure chamber;
said hydrostatic pressure element comprising a piston movable relative to said pressure chamber and provided with said support shoe;
said pressure pockets defining a total pressure area coming into contact with the web;
said piston having a central axis; and
said piston being arranged unsymmetrically in relation to said support shoe such that a first portion of said total pressure area coming into contact with the web and lying before said central axis, as seen in said predetermined direction of travel of the web is greater than a second portion of said total pressure area coming into contact with the web and lying behind said central axis as seen in said predetermined direction of travel of the web.

4,661,207

METHOD FOR CONTROLLING A REBOILER

Andrew D. Kurtz, Somerville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Nov. 27, 1985, Ser. No. 802,137
Int. Cl.[4] B01D *3/42*
U.S. Cl. 203—3 6 Claims



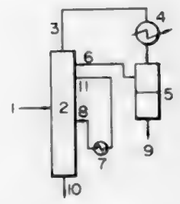
3. A method for vaporizing at least 25±5% of a thermally sensitive bottoms product from a distillation column, comprising,
(a) directing the bottoms product from the distillation column into a reboiler to form a vapor portion and a liquid portion, the vapor portion comprising at least 25±5% by weight of the bottoms product,
(b) directing the vapor portion and the liquid portion into a chamber, said chamber comprising inlet means, means for directing the vapor portion out of the chamber and into the distillation column, and means for withdrawing the liquid portion from the chamber,
(c) contacting the vapor portion and the liquid portion within the chamber to establish equilibrium between the two portions,
(d) determining the equilibrium composition of the vapor portion and the liquid portion,
(e) adjusting the equilibrium composition to be within a predetermined range,
(f) directing the vapor portion from the chamber into the distillation column, and
(g) withdrawing the liquid portion from the chamber.

4,661,208

METHOD FOR DEHYDRATING DISTILLATION OF AN AQUEOUS SOLUTION OF CARBOXYLIC ACID

Yoshihiro Houma, Osaka; Fumiaki Kawamoto, Wakayama, and Shozo Tanaka, Osaka, all of Japan, assignors to Shin-Etsu Vinyl Acetate Co., Ltd., Osaka, Japan

Filed Jun. 21, 1985, Ser. No. 747,279
Claims priority, application Japan, Nov. 2, 1984, 59-231677
Int. Cl.[4] B01D *3/36*
U.S. Cl. 203—15 1 Claim



1. A method for dehydrating an aqueous solution of a carboxylic acid by distillation in the presence of a water immiscible entrainer which has a lower boiling point than the boiling point of the carboxylic acid and which forms an azeotropic mixture with water, comprising,
(a) introducing an aqueous solution of a carboxylic acid into a distillation column at a stage in the column positioned at an intermediate height wherein the water contained in the aqueous solution forms an azeotropic mixture with the entrainer ascending the column;
(b) removing a side-cut portion of a refluxing fluid from a stage in the column above the stage of the introduction of the aqueous solution and below the top of the column;
(c) introducing the side-cut portion into a heat exchanger;
(d) vaporizing the side-cut portion;
(e) introducing the side-cut portion vapor into the column at a stage in the column below the stage of introduction of the aqueous solution;
(f) removing the vapors of the azeotropic mixture from the top of the distillation column and introducing the vapors into a condenser;
(g) condensing the vapors into condensate;
(h) removing the condensate from the condenser and introducing it into a decanter;
(i) separating the condensate in the decanter into an aqueous phase and entrainer phase;
(j) discarding the aqueous phase;
(k) returning and introducing the entrainer phase into the top of the distillation column; and
(l) discharging the dehydrated carboxylic acid from the bottom of the distillation column.

4,661,209

SEPARATION OF METHYL T-BUTYL ETHER FROM HYDROCARBONS BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715

Continuation-in-part of Ser. No. 841,887, Mar. 20, 1986, abandoned. This application Aug. 1, 1986, Ser. No. 891,576
Int. Cl.[4] B01D *3/40*; C07C *41/42*
U.S. Cl. 203—51 4 Claims

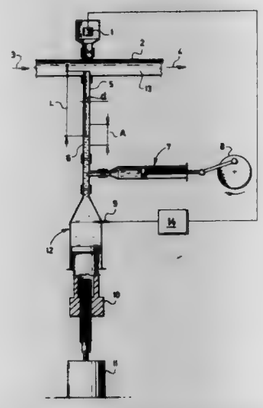
1. A method for recovering methyl t-butyl ether from a mixture of methyl t-butyl ether and close boiling hydrocarbons which comprises distilling a mixture of methyl t-butyl ether and close boiling hydrocarbons in a rectification column in the presence of about one to two parts of extractive agent per part of methyl t-butyl ether-close boiling hydrocarbon mixture, recovering the hydrocarbons as overhead product, obtaining the methyl t-butyl ether and the extractive agent from the stillpot, separating the methyl t-butyl ether from the extractive agent by distillation in another rectification column, wherein said extractive agent is dimethylsulfoxide.

4,661,210

METHOD AND APPARATUS FOR ELECTROCHEMICAL ANALYSIS OF SOLUTIONS

Jiri Tenygl, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Praha, Czechoslovakia

Filed May 16, 1986, Ser. No. 864,283
Claims priority, application Czechoslovakia, May 16, 1985, 3527-85
Int. Cl.[4] G01N *27/30, 27/50*
U.S. Cl. 204—1 T 2 Claims



1. Method of electrochmeical analysis of solutions using the principles of voltammetry, coulometry and potentiometry by measuring an electric signal between a mercury electrode kept in contact with an analyzed solutions and a reference electrode immersed into the analyzed solution, comprising the following steps:
introducing of the mercury into a capillary forming thus a mercury column electrode.,
suction of the analyzed solution in part of the capillary by the movement of the mercury column,
bringing the mercury column into pulsating motion,
applying an electrical signal across the mercury column electrode and reference electrode, and
measuring the electric signal between the mercury column, analyzed solution sucked into the capillary and the reference electrode.

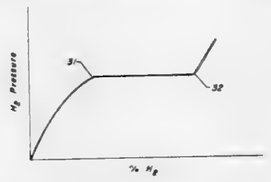
2. An apparatus for performing electrochemical analysis of solutions using the principles of voltammetry or coulometry by measuring the electric signal between a mercury electrode and a reference electrode brought into the contact with an analyzed solution comprising
a cell provided with an inlet and outlet through which the analyzed solution passes,
a reference electrode located in the cell and in conductive contacat with the analyzed solution,
a capillary for containing a column of mercury and the analyzed solution, said capillary being with one of its ends connected to the cell,
a source of mercury connected to the capillary,
means for ejection and suction of the column of mercury, said means being connected to the other end of the capillary,
means for pulsating movement of the column of mercury within the capillary,
an electric contact conductively connected to the column of mercury,
means for supplying an electrical signal to the electric contact and the reference electrode, and
a measuring device electrically connected to the reference electrode and the electric contact for measuring the electric signal between the reference electrode and the electric contact.

4,661,211

GAS DETECTION WITH THREE-COMPONENT MEMBRANE AND SENSOR USING SAID MEMBRANE

Sandra Petty-Weeks, Naperville, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 10, 1985, Ser. No. 753,477
Int. Cl.[4] G01N *27/58*
U.S. Cl. 204—1 T 29 Claims



1. Apparatus for detection, in a gas sample, of a gaseous component which is capable, in the presence of a catalytic agent, of dissociating to yield hydrogen ions or of combining with hydrogen ions comprising:
(a) a thin film polymer-blend membrane which comprises a solution blend of three components, which components comprise a component (1) selected from the group consisting of (i) an organic polymer selected from the group consisting of poly(vinyl alcohol), poly(vinyl fluoride), poly(ethylene oxide), polyethylimine, poly(ethylene glycol), cellulose acetate, polyvinylmethylethyl ether and phenol formaldehyde resins, and (ii) a copolymer having as a repeat unit one of the monomer units of the polymers of (i), (2) an inorganic compound selected from the group consisting of phosphoric acids, sulfuric acid, heteropoly acids, and salts of heteropoly acids, and (3) an organic compound selected from the group consisting of polymers and copolymers having monomer units containing nitrogen, oxygen, or sulfur atoms, which organic compound is compatible with said inorganic compound and said component (1), said organic compound being selected from the group consisting of poly(ethyloxazoline), poly(vinyl sulfonic acid), poly(vinyl pyridine), poly(vinyl pyrrolidene), poly(vinyl pyrrolidone), polyimide and poly(acrylamide);
(b) a membrane housing comprising a sample gas chamber and a reference substance chamber separated by a partition comprising said membrane, said membrane having a first surface in common with the sample gas chamber and a second opposing surface in common with the reference substance chamber;
(c) two separate portions of catalytic agent effective to promote dissociation and combination, a first portion in contact with said first surface of said membrane and a second portion in contact with said second surface of said membrane;
(d) means for forming electical connection in operative contact with said catalytic agent at said first surface and with said catalytic agent at said second surface;
(e) means for measuring EMF between said first and second surfaces;
(f) means to supply sample gas to said sample gas chamber; and
(g) means to provide an indication of the presence of hydrogen or of a gas capable of combining with hydrogen ions based on the measured EMF.

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20. A method for detection, in a gas sample, of a gaseous component which is capable, in the presence of a catalytic agent, of dissociating to yield hydrogen ions or of combining with hydrogen ions, such method comprising the steps of

(a) providing a three component polymer blend membrane which comprises a solution blend of (1) a component selected from the group consisting of (i) an organic polymer selected from the group consisting of poly(vinyl alcohol), poly(vinyl fluoride), poly(ethylene oxide), polyethylimine, poly(ethylene glycol), cellulose acetate, polyvinylmethylethyl ether and phenol formaldehyde resins, and (ii) a copolymer having as a repeat unit one of the monomer units of the polymers of (i), (2) an inorganic compound selected from the group consisting of phosphoric acid, sulfuric acid, heteropoly acids, and salts of heteropoly acids, and (3) an organic compound selected from the group consisting of polymers and copolymers having monomer units containing nitrogen, oxygen, or sulfur atoms, which organic compound is compatible with said inorganic compound and said component (1), said organic compound being selected from the group consisting of poly(ethyloxazoline), poly(vinyl sulfonic acid), poly(vinyl pyridine), poly(vinyl pyrrolidene), poly(vinyl pyrrolidone), polyimide and poly(acrylamide), said membrane including two separate portions of a catalytic agent effective to promote dissociation and combination, with a first portion of said catalytic agent being in contact with a first surface of said membrane and a second portion of said catalytic agent being in contact with a second opposing surface of said membrane,

(b) contacting said gas sample with said first surface of said membrane while isolating a reference substance on the opposing side of said membrane and exposing said reference substance to said opposing second surface of said membrane; and

(c) measuring EMF between said separate portions of catalytic agent during said contacting and determining the presence of said gaseous component in said gas sample.

4,661,212

METHOD FOR PRODUCING A PLURALITY OF PLATE SHAPED MICROSTRUCTURED METAL BODIES

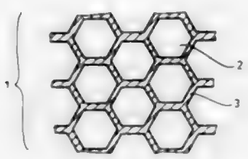
Wolfgang Ehrfeld, Karlsruhe; Peter Hagmann, Eggenstein-Leopoldshafen; Asim Maner; Dietrich Münchmeyer, both of Stutensee, and Erwin Becker, Karlsruhe, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Kalrsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 3, 1986, Ser. No. 903,304

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1985, 3537483

Int. Cl.⁴ C25D *1/08*

U.S. Cl. 204—11 **6 Claims**



1. In a method for producing a plurality of plate shaped metal bodies containing a microstructure from a single molding tool containing the microstructure and having a front surface from which the microstructure extends, which method includes producing a negative mold of the tool, the negative mold being of electrically insulating material and having a portion which conforms to the front surface of the tool, electrolytically filling the negative mold with a mass of metal which constitutes such a metal body, and removing the negative mold from the resulting metal body, the improvement wherein:

said method comprises a preliminary step of releasably disposing a layer of electrically conductive material on the front surface of the tool; and

said step of producing a negative mold includes transferring the layer of electrically conductive material from the tool to the portion of the negative mold which conforms to the front surface of the tool.

4,661,213

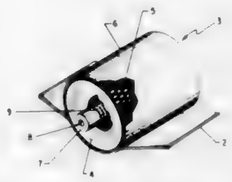
ELECTROPLATE TO MOVING METAL

Terry E. Dorsett, 11205 Hosford Rd., Chardon, Ohio 44024, and David P. Rininger, 505 Courtland St., Fairport Harbor, Ohio 44077

Filed Feb. 13, 1986, Ser. No. 829,283

Int. Cl.⁴ C25D *5/02*

U.S. Cl. 204—15 **10 Claims**



1. The method of metal electroplating a moving strip of metal wherein a rotating anode contacts a cathodic metal strip, which method comprises:

contacting tangentially said metal strip with a cylindrical, non-sacrificial anode capable of rotational movement, said anode comprising a hollow and at least substantially perforate, valve metal cylinder having an exterior surface electrocatalytic coating containing metal oxide, said anode having a thin, non-conductive and highly porous outer sleeve covering of synthetic resin, with said sleeve containing metal electroplating solution;

rotating said anode in contact with said metal strip at a rate providing relative movement between said strip and said anode;

impressing a current between said anode and said cathode; and

electroplating said metal strip at a current density of not less than about 3,500 amperes per square foot of anode area.

4,661,214

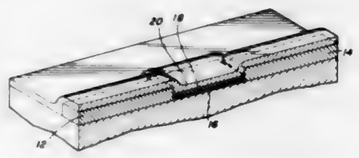
METHOD AND APPARATUS FOR ELECTRICALLY DISCONNECTING CONDUCTORS

Peter L. Young, South Barrington, Ill., assignor to Optical Materials, Inc., Mercer Island, Wash.

Filed Dec. 11, 1985, Ser. No. 807,676

Int. Cl.⁴ C25D *5/02*

U.S. Cl. 204—15 **63 Claims**



1. A method for electrically disconnecting conductors on a substrate comprising:

depositing an electrically conductive film on the substrate that electrically interconnects the conductors to be subsequently electrically disconnected,

depositing adjacent to the conductive film an insulating film to thereby form a composite film, said insulation film being capable of absorbing the conductive film when the composite film is activated, and

inducing diffusion in the composite film to cause the insulating film to absorb the atoms of the conductive film to render the conductive film between the conductors non-conductive.

4,661,215

PROCESS FOR THE PRODUCTION OF TIN-PLATED WIRES

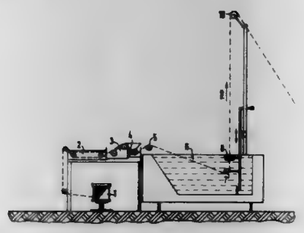
Peter Diehl, Nuruberg, Fed. Rep. of Germany, assignor to Feindrahtwerk Adolf Edelhoff GmbH & Co., Fed. Rep. of Germany

Filed May 9, 1985, Ser. No. 732,451

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420514

Int. Cl.⁴ C25D *7/06*

U.S. Cl. 204—28 **6 Claims**



1. In a process for the production of tin-plated wires for electrical applications, said wires having a diameter of about 0.1 to 1.5 mm, through the intermediary of a two-step tin-plating sequence; the process comprising:

thinly hot tin-plating a finish-drawn wire in a bath at a temperature between 240° C. and 400° C. for a dwelling period of less than two seconds to provide a thin coating;

subsequently cooling the wire; and

finally galvanically tin-plating the wire to a finished coating thickness.

4,661,216

ELECTRODEPOSITING CONIFE ALLOYS FOR THIN FILM HEADS

Nathaniel C. Anderson, Pine Island, Minn., and Robert B. Chessautt, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 21, 1986, Ser. No. 854,451

Int. Cl.⁴ C25D *3/56*

U.S. Cl. 204—44.5 **4 Claims**

1. CoNiFe electroplating bath composition for producing a magnetic thin film having high saturation magnetization and having a magnetostriction coefficient of substantially zero and low coercivity, said bath including:

a. dischargeable ions in concentrations in a range of:

1. Co^{+2} in a range of 0.15–0.4M,

2. Ni^{+2} in a range of 0.03–0.2M,

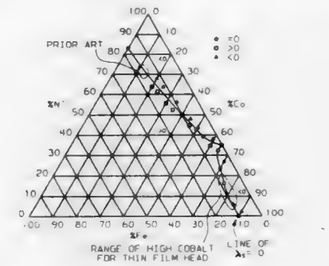
3. Fe^{+2} in a range of 0.1–0.05M;

b. basic bath without dischargeable ions and including a stress relieving agent and a wetting agent in the ranges of:

1. H_3BO_3 in a range of 10–50 g/l;

2. NaCl in a range of 0–100 g/l;

3. stress relieving agent in a range of 0.5–4 g/l; and,



4. wetting agent in a range of 0.01–0.2 g/l; and,

c. at a pH of 2.5–3.5.

4,661,217

PREPARATION OF CARBAMIC ACID ESTERS

Dieter Degner, Dannstadt-Schauernheim; Heinz Hannebaum, Ludwigshafen, and Michael Steiniger, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 11, 1986, Ser. No. 895,173

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1985, 3529531

Int. Cl.⁴ C25B *3/02*

U.S. Cl. 204—59 R **4 Claims**

1. A process for the preparation of carbamic acid esters of the formula (I)

$$R^1NHCOOR^2 \quad \text{(I)},$$

where R^1 is hydrogen, alkyl, cycloalkyl or alkaryl and R^2 is low molecular weight alkyl, wherein a formamide of the formula (II)

$$R^1NHCHO \quad \text{(II)}$$

is oxidized electrochemically in the presence of an alcohol of the formula R^2OH and of an ionic halide.

4,661,218

ION EXCHANGE MEMBRANE CELL AND ELECTROLYSIS WITH USE THEREOF

Yoshio Oda; Takeshi Morimoto, and Kohji Suzuki, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 205,567, Nov. 10, 1980, and a continuation of Ser. No. 355,312, Mar. 5, 1982. This application May 24, 1982, Ser. No. 381,746

Claims priority, application Japan, Nov. 27, 1979, 54-152416; Jan. 31, 1980, 55-9274; Feb. 7, 1980, 55-13012; Mar. 21, 1980, 55-34708; May 6, 1980, 55-58659; May 20, 1980, 55-65964; Jun. 7, 1980, 55-73744; Jul. 1, 1980, 55-88497; Jul. 18, 1980, 55-97608; Aug. 15, 1980, 55-111815; Aug. 22, 1980, 55-114706; Aug. 26, 1980, 55-116404; Canada, Nov. 26, 1980, 365540; Japan, Mar. 20, 1981, 56-39620

Int. Cl.⁴ C25G *1/14*

U.S. Cl. 204—98 **25 Claims**

1. In a process for electrolyzing an aqueous solution of an electrolyte in an electrolytic cell comprising, an anode, a cathode and an anode compartment and a cathode compartment partitioned by an ion exchange membrane, an improvement characterized in that said ion exchange membrane is a cation exchange membrane having a gas and liquid permeable porous non-electrode layer on at least one side thereof and said cation

exchange membrane is formed by a fluorinated polymer having sulfonic acid groups and ion exchange groups having weaker acidity than the sulfonic acid groups.

4,661,219

PROCESS FOR THE ELECTROCHEMICAL ROUGHENING OF ALUMINUM FOR USE IN PRINTING PLATE SUPPORTS

Engelbert Pliefke, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 4, 1986, Ser. No. 825,930

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1985, 3503926

Int. Cl.⁴ C25F *3/04*

U.S. Cl. 204—129.75 **14 Claims**

1. A process for the electrochemical roughening of aluminum for use in printing plate supports, comprising the step of electrochemically roughening an aluminum support by application of an alternating current in an electrolyte comprising nitric acid, an aluminum salt which has a concentration within the range from about 20 to 150 g/l, based on said electrolyte, and at least one compound comprising ammonium ions.

4,661,220

METHOD FOR LOCAL CLEANING OF SURFACES ON A NUCLEAR REACTOR WHICH ARE COATED WITH OXIDES OR OTHER CORROSION PRODUCTS, IN CONNECTION WITH INSPECTION

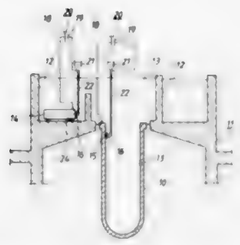
Peter Fejes, and Antti Savanto, both of Västerås, Sweden, assignors to AB Asea-Atom, Västerås, Sweden

Filed Jun. 19, 1985, Ser. No. 746,339

Claims priority, application Sweden, Jul. 4, 1984, 8403542-7

Int. Cl.⁴ C25F *1/00*

U.S. Cl. 204—141.5 **10 Claims**



1. A method of locally cleaning off corrosion products on a metallic surface located below the surface of reactor water in the primary circuit of a nuclear reactor, said corrosion products being primarily oxides, said method comprising the steps of

(1) positioning an electrolyte-permeable electrically insulating spacer element below the surface of the reactor water and against said metallic surface to be cleaned,

(2) positioning an electrically-conductive element in contact with said spacer element,

(3) connecting said metallic surface to be cleaned to the positive pole of a voltage source,

(4) connecting said electrically-conductive element to the negative pole of said voltage source,

(5) supplying an electrolyte to said spacer element, and

(6) allowing some of said electrolyte to leak into said reactor water.

4,661,221

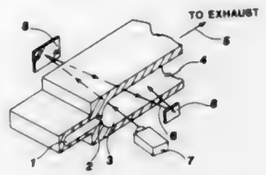
PHOTOCHEMICAL ISOTOPE SEPARATION

C. Paul Robinson; Reed J. Jensen; Theodore P. Cotter; Norman R. Greiner, and Keith Boyer, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 697,439, Feb. 4, 1985, abandoned, which is a continuation of Ser. No. 361,153, Mar. 23, 1982, abandoned, which is a continuation of Ser. No. 387,859, Aug. 16, 1973, Pat. No. 4,334,883, which is a continuation-in-part of Ser. No. 270,800, Jul. 7, 1972, abandoned. This application Dec. 23, 1985, Ser. No. 815,186

Int. Cl.⁴ B01D *59/00*

U.S. Cl. 204—157.22 **21 Claims**



1. In a process for separating isotopes which comprises the steps of (1) irradiating a gaseous compound having molecules each of which contains at least one nuclide of a first isotopic species to be separated and further having different excitation energy levels depending on which isotopic species is present therein with radiation having a first wavelength which substantially excites molecules of the compound containing the first isotopic species, and (2) subjecting the exited molecules to physical or chemical processes other than photodeflection, or a combination thereof, whereby the first isotopic species contained in the excited molecules is separated from the isotopic species contained in the unexcited molecules, the improvement therein which comprises the steps of a. mixing of the gaseous compound with a carrier gas having a low condensation temperature, and a ratio of specific heats, γ, which is greater than that for the gaseous compound; b. adiabatically expanding the gaseous mixture through a convergent-divergent nozzle whereby a density of the gaseous compound of at least about 5×10^{16} molecules/cm^3 is obtained subsequent to said adiabatic expansion, and whereby the gaseous compound is vibrationally cooled and sufficient spectrum simplification has occurred that the radiation preferentially excites molecules of the compound containing the first isotopic species; and c. subjecting the excited molecules to separative processes before substantial condensation occurs.

4,661,222

MONOCHROMIC AND POLYCHROMIC PRINTING OF AN IMAGE REPRODUCED BY ELECTRO-COAGULATION OF A COLLOID

Adrien Castegnier, Outremont, Canada, assignor to Elcorsy Inc., Quebec, Canada

Filed Mar. 27, 1986, Ser. No. 844,885

Int. Cl.⁴ B01D *57/02*

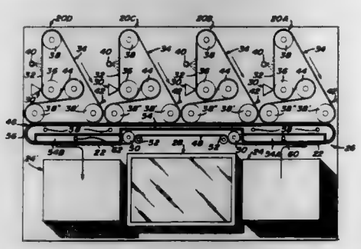
U.S. Cl. 204—180.9 **50 Claims**

1. A method of reproducing an image and transferring same onto an end-use support, which comprises the steps of:

(a) providing a positive electrolytically inert electrode in the form of an endless elongated belt moving at substantially constant speed along a closed horizontal path and having an electrode active surface extending vertically, and a plurality of negative electrolytically inert electrodes electrically insulated from one another and arranged side-by-side in rectilinear alignment to define a series of corresponding electrode active surfaces disposed transversely of said belt and spaced from the positive electrode active surface thereof by a constant predetermined electrode gap;

(b) filling said electrode gap with a substantially liquid colloidal dispersion containing an electrolytically coagulable colloid, a liquid dispersing medium and a soluble electrolyte and having a substantially constant temperature;

(c) electrically energizing selected ones of said negative electrodes to cause point-by-point selective coagulation and adherence of the colloid onto the positive electrode active surface of said belt opposite the electrode active surfaces of said energized negative electrodes while said



belt is moving, thereby forming a series of corresponding dots of coagulated colloid representative of a desired image;

(d) removing any remaining non-coagulated colloid from said positive electrode active surface;

(e) treating with a coloring agent the colloid either before or after the coagulation thereof in step (c) to obtain dots of colored coagulated colloid; and

(f) contacting the dots of colored, coagulated colloid with an end-use support to cause transfer of said coloring agent onto said end-use support and thereby imprint said end-use support with said image.

4,661,223

PROCESS FOR COATING AN ELECTRICALLY CONDUCTIVE SUBSTRATE AND AN AQUEOUS COMPOSITION CONTAINING A CATIONIC BINDER

Angelika A. Zedler, Stuttgart, Fed. Rep. of Germany, and Jean J. Trescol, Nogent, France, assignors to Akzo nv, Arnhem, Netherlands

Continuation of Ser. No. 528,974, Sep. 2, 1983, abandoned. This application Dec. 5, 1985, Ser. No. 804,324

Claims priority, application Netherlands, Sep. 9, 1982, 8203507

Int. Cl.⁴ C25D *13/06;* **B05D** *3/02;* **C08L** *67/02*

U.S. Cl. 204—181.7 **38 Claims**

1. A process for coating an electrically conductive substrate with an aqueous coating composition containing a cationic binder, which comprises:

(a) preparing a binder by polymerizing (i) 100 parts by weight of a monomer mixture consisting of 1–30% by weight of a hydroxyalkyl or hydroxycycloalkyl acrylate or methacrylate wherein the alkyl or cycloalkyl group has 2–8 carbon atoms, (ii) 4–45% by weight of an aminoalkyl acrylate or aminoalkyl methacrylate of the formula:

$$(R_1)_2NR_2OOC-\underset{\displaystyle R_3}{\overset{\displaystyle |}{C}}=CH_2$$

wherein R_1 is an alkyl group having 1–12 carbon atoms or a cycloalkyl group having 5–8 carbon atoms, or groups R_1 together form an alkylene group having 4–7 carbon atoms which together with the nitrogen atom forms a heterocyclic ring system, and wherein one of the groups R_1 may be a hydrogen atom, R_2 is a hydrocarbon group having 2–12 carbon atoms and R_3 is a hydrogen atom or a methyl group, and (iii) 40–80% by weight of a monovinyl aromatic hydrocarbon having 8–14 carbon atoms and 0–35% by weight of a different monoethylenically unsaturated monomer having 2–20 carbon atoms, in the presence of A=1–60 parts by weight of a polyester resin having a hydroxyl number in the range of 15 to 150, a calculated number average molecular weight M_n of 800–10,000 and U=0.1–5.0 equivalents of ethylenically unsaturated double bonds per 1000 molecular weight units, provided that the maximum value U_{max} of U equals

$$\frac{12.5\times Mn\times(100+A)}{A\times10^6},$$

(b) neutralizing the amino groups contained in the binder at least partially with an acid before, during or after polymerization, and then,

(c) preparing an aqueous coating composition by adding to the resultant cationic binder water, pigment and a curing agent for the binder;

(d) coating the electrically conductive substrate with said aqueous coating composition by cataphoretic deposition; and

(e) curing the coating.

4,661,224

PROCESS AND APPARATUS FOR ELECTRICALLY DESORBING COMPONENTS SELECTIVELY SORBED ON AN ELECTROLYTICALLY CONDUCTING BARRIER

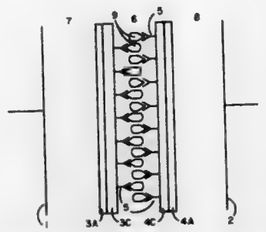
Arthur L. Goldstein; Edgar Haber, both of Weston, and Robert J. Mandle, Lexington, all of Mass., assignors to Ionics, Incorporated, Watertown, Mass.

Continuation-in-part of Ser. No. 675,057, Nov. 26, 1984, Pat. No. 4,584,075. This application Apr. 11, 1986, Ser. No. 851,644

The portion of the term of this patent subsequent to Apr. 22, 2003, has been disclaimed.

Int. Cl.⁴ C07K *3/18*

U.S. Cl. 204—182.3 **9 Claims**



1. A method of recovering biospecifically, sorbable components dispersed in a aqueous solution comprising:

(a) contacting said solution as a first solution with an electrolytically conducting barrier having biospecific sorbing properties for at least one of said components whereby a substantial fraction of said components in said solution having biospecific binding affinity for said barrier is sorbed by said barrier, said barrier supported by and in juxtaposition with an electrolytically conducting membrane thereby forming a composite membrane-barrier pair;

(b) removing said first solution from contact with the said barrier;

(c) contacting said barrier with a second aqueous solution;

(d) passing a direct electric current through said membrane-barrier pair and said second solution in a direction approximately parallel to the smallest dimension of said membrane-barrier pair thereby facilitating the desorption of at least one of said components having biospecific binding affinity for the said barrier into said second solution; and

(e) removing said second solution from contact with said barrier.

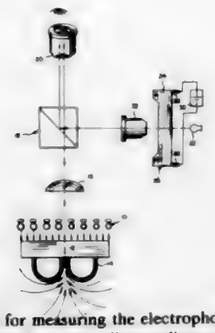
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4,661,225

METHOD AND APPARATUS FOR MEASURING THE ELECTROPHORETIC MOBILITY OF MIGRATING PARTICLES

John G. Penniman, Carmel, and Ryder O. FitzGerald, Brewster, both of N.Y., assignors to Paper Chemistry Laboratory, Inc., Carmel, N.Y.

Filed Jun. 10, 1985, Ser. No. 743,180
Int. Cl.[4] G01N *27/26*
U.S. Cl. 204—183.3 22 Claims



1. An apparatus for measuring the electrophoretic mobility of migrating particles in a suspending medium under the influence of an applied electric field comprising:
an electrophoresis chamber;
means for illuminating the electrophoresis chamber;
a microscope having an objective lens system and an ocular lens system, said microscope being positioned to view the electrophoresis chamber along an optical path extending from the electrophoresis chamber through the objective lens system and toward the ocular lens system;
means for generating moving bands of visible energy within the ocular lens system of the microscope;
means for adjusting the speed of the moving bands of visible energy; and
means for determining the speed of the moving bands.

14. A method for measuring the electrophoretic mobility of migrating particles in a suspending medium under the influence of an applied electric field which comprises:
introducing a suspension medium containing colloidal particles into an electrophoresis chamber;
positioning the electrophoresis chamber on a spring-loaded plate mechanism;
illuminating the contents of the electrophoresis chamber;
viewing the illuminated colloidal particles in the electrophoresis chamber through a microscope;
applying a voltage potential across the electrodes of the electrophoresis chamber, to cause migration of the colloidal particles;
generating moving bands of visible energy with in the ocular lens system of the microscope;
adjusting the speed of the moving bands until they match the speed of the migrating particles; and
determining the speed of the moving bands and thus the corresponding mobility of the colloidal particles.

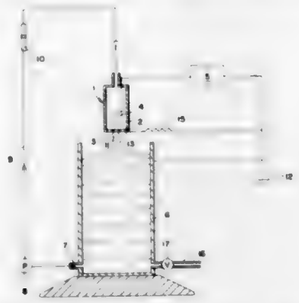
4,661,226

SEPARATION OF DISPERSED PHASE FROM PHASE MIXTURE

Donald J. Mintz, Summit; Arnold J. Kelly, Princeton Junction, and Anthony M. Gleason, Westfield, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 17, 1984, Ser. No. 601,254
Int. Cl.[4] B01D *17/06*
U.S. Cl. 204—186 28 Claims

1. A method for use in the separation of a dispersed phase from a continuous liquid phase, the phases together forming a phase mixture, by producing migration of dispersed phase within the phase mixture, said method comprising the steps of:
(a) introducing free charge that is net unipolar into the phase mixture, at least predominantly by electron emission which causes the continuous phase to act as a medium through which volumetric distribution of the introduced charge takes place by charge motion relative to the continuous liquid phase, there being a sufficient excess of free charge introduced such that the volumetric charge distribution causes, in a body of the charged phase mixture, an electric field to be induced in the mixture and the dispersed phase to become charged and the induced electric field and the charge on the dispersed phase interact to produce an electrical driving force acting on the dispersed phase so that said migration is due substantially to said driving force; and
(b) allowing the migrating dispersed phase to accumulate within a region of said phase mixture adjacent to a dispersed phase collector surface in contact with said phase mixture.

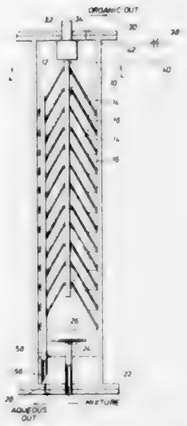


4,661,227

APPARATUS AND METHOD FOR REMOVAL OF INORGANIC AQUEOUS SOLUTIONS FROM ORGANIC SOLVENTS

Alfred R. Reeder, Jr., Danbury; Joe B. Lovett, Sweeny, and Barry W. Archer, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 4, 1985, Ser. No. 772,540
Int. Cl.[4] B01D *17/06*
U.S. Cl. 204—186 17 Claims



1. In an upright aqueous and organic liquid phase coalescer, an apparatus comprising:

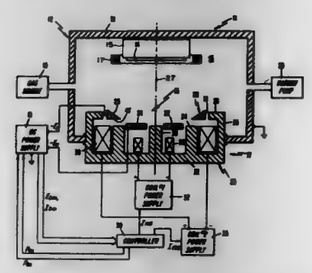
(a) upstanding chamber means having a centrally located electrode therein for initiating electrostatic coalescing of dispersed aqueous and organic liquids mixed together;
(b) means for introducing dispersed aqueous and organic liquids into said chamber means;
(c) interleaved partition means in said chamber means for directing liquid flow moving along said chamber means along a tortuous path toward and away from said electrode, said partition means forming settlement trap means in said chamber means for collecting liquid stratifying in separated coalesced phases; and
(d) flow means connected to said trap means in said chamber means for removing stratified liquid therefrom.

4,661,228

APPARATUS AND METHOD FOR MANUFACTURING PLANARIZED ALUMINUM FILMS

Donald M. Mintz, Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 811,595, Dec. 19, 1985, Pat. No. 4,627,904, which is a continuation-in-part of Ser. No. 759,722, Jul. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 611,435, May 17, 1984, Pat. No. 4,595,482. This application May 15, 1986, Ser. No. 863,745
Int. Cl.[4] C23C *14/00*
U.S. Cl. 204—192.25 11 Claims



1. An apparatus for forming a planarized aluminum layer on a semiconductor wafer comprising:
deposition means for forming a refractory metal silicide layer over the wafer;
sputter means for forming an aluminum layer by sputter deposition over the refractory metal silicide layer including;
means for heating the wafer to temperatures above 400° C. from behind while sputtering;
magnetic mirror means located behind the workpiece for moving a plasma away from the wafer; and
means for positioning the wafer before said deposition means and said sputter means in sequence without exposing the wafer to oxygen-bearing gas.

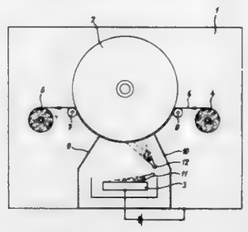
4,661,229

METHOD AND SYSTEM FOR PRODUCING A REACTIVELY SPUTTERED CONDUCTING TRANSPARENT METAL OXIDE FILM ONTO A CONTINUOUS WEB

David H. Hemming, Uithoorn, and Peter G. Turner, Vinkeveen, both of Netherlands, assignors to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed May 29, 1985, Ser. No. 738,770
Claims priority, application Netherlands, May 29, 1984, 8401721
Int. Cl.[4] C23C *14/00*
U.S. Cl. 204—192.13 14 Claims

1. A method for producing a reactively sputtered conducting transparent metal oxide film on a continuous web comprising
(a) moving the continuous web between a metal target and a countere!ectrode within a sputtering chamber;
(b) generating a sputtering discharge within the sputtering chamber causing metal atoms to be transferred to the continuous web;
(c) introducing an oxygen flow to the sputtering chamber such that a metal oxide coating is produced on the continuous web;
(d) monitoring the surface resistance of the metal oxide coating at least at two areas across the width of the continuous web, said areas differing in extent of oxidation of the metal oxide coating;
(e) varying the reactive sputtering conditions such that the resistance measured at a first area of the continuous web is observed to increase after passing through an optimum minimum resistance value, while the resistance measured at a second area is still decreasing towards said minimum value;
(f) comparing the surface resistance values of said first and second areas; and
(g) controlling the sputtering conditions such that the surface resistances of said first and second areas are maintained at approximately equal values.

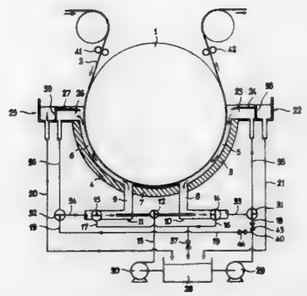


4,661,230

RADIAL CELL ELECTROPLATING DEVICE

Maurizio Podrini, Rome, Italy, assignor to Centro Sperimentale Metallurgico SpA, Rome, Italy

Filed Jul. 16, 1986, Ser. No. 886,095
Claims priority, application Italy, Aug. 12, 1985, 48471 A/85
Int. Cl.[4] C25D *17/00*
U.S. Cl. 204—206 3 Claims



1. Radial cell electroplating device provided with a horizontal shaft rotating drum which pulls along the strip to be plated that is in contact with its cylindrical surface, and sets of electrodes arranged in pairs facing towards the cylindrical surface of the drum so as to form together with the strip surface two channels traversed by the strip one from top to bottom—

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known as the descending channel—and the other from bottom to top—known as the ascending channel—, said electrodes terminating downwards some distance apart, and also complete with at least one pair of conduits, set in the lower terminal part of said electrode units, for the forced passage of electrolyte within said descending and ascending channels, characterized by the fact that the conduits of each pair have tubular means for feeding ejectors positioned in each of said conduits to draw electrolyte through said descending and ascending channels, from a tank set above the channels and in communication therewith, each of said conduits having means for feeding electrolyte in the opposite direction to the one in which said ejectors operate to force the electrolyte from said conduits through said descending and ascending channels to said tank, and also being complete with cooperating means to ensure that in said ascending and descending channels the electrolyte flow is in the established direction and at the desired velocity.

4,661,231

FLUOROCARBON POLYMERS AND PROCESSES FOR THEIR PREPARATION

Kiyohide Matsui, Sagamihara; Yoshiyuki Kikuchi, Tokyo; Tamejiro Hiyama, Sagamihara; Etsuko Tobita, Tokyo, and Kiyoshi Kondo, Yamato, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo and Sagami Chemical Research Center, Tokyo, both of, Japan

Division of Ser. No. 566,431, Dec. 28, 1983, Pat. No. 4,567,206. This application Oct. 30, 1985, Ser. No. 792,860

Claims priority, application Japan, Dec. 28, 1982, 57-227443; Jan. 29, 1983, 58-116062; Oct. 17, 1983, 58-192473

Int. Cl.⁴ C25B *9/00;* **C08D** *5/20;* **B01D** *13/00*

U.S. Cl. 204—252 **12 Claims**

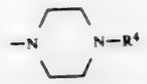
1. A nitrogen-containing fluorocarbon polymer comprising a perfluorocarbon main chain and a pendant chain directly m is 0 or 1 and n is an integer of 1 to 5 attached to the main chain, characterized in that the pendant chain has a structure represented by the formula:

$$[O(CF_2-\underset{X}{CF}-O)_l]_m(CH_2)_nCH_2-Y$$

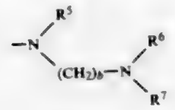
where X is a fluorine atom, a chlorine atom or a $-CF_3$ group, l is an integer of 1 to 5 where Y is



(where each of $R^{1'}$ and $R^{2'}$ is a hydrogen atom, a lower alkyl group, an aromatic group or a hydroxy-lower alkyl group, or $R^{1'}$ and $R^{2'}$ together form a tetramethylene or pentamethylene group),



(where R^4 is a lower alkyl group), or



(where R^5 is a hydrogen atom or a lower alkyl group, each of R^6 and R^7 is a lower alkyl group, or R^6 and R^7 together form a tetramethylene or pentamethylene group, and b is an integer of 2 to 5).

4,661,232

ELECTRODE FOR ELECTROLYTIC EXTRACTION OF METALS OR METAL OXIDES

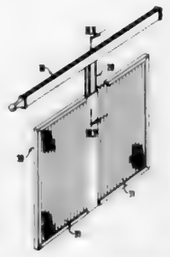
Konrad Koziol, Rötheabach a.d. Pegnitz, and Erich Wenk, Nuremberg, both of Fed. Rep. of Germany, assignors to Conradty GmbH & Co. Metallelektroden KG, Fed. Rep. of Germany

Filed Feb. 20, 1985, Ser. No. 703,549

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406797

Int. Cl.⁴ C25C *7/02;* **C25B** *11/00*

U.S. Cl. 204—286 **8 Claims**



1. Electrode, in particular an anode made of coated valve metal for the electrolytic extraction of metals or metal oxides, comprising:

(a) a horizontally arranged current feed which comprises a rail made of a good electrical conductor, such as copper;

(b) at least one current distributor branching off from said current feed, the current distributor comprising a sleeve made of valve metal, a core disposed therein made of metal which is a good electrical conductor, the core being in electrically conductive connection with the sleeve, a bar disposed in the core, the bar being of a metal that is a good electrical conductor, such as copper, and a contact structure embedded in the core, the contact structure consisting of a valve metal and connected with the interior of said sleeve via a plurality of welded points;

(c) the bar of the current distributor being both mechanically and electrically conductively connected with the rail of the current feed;

(d) the rail of the current feed being surrounded by a sleeve which is connected with an upper edge of the sleeve of the current distributor that faces the current feed, so as to be both gas and liquid-proof; and

(e) an active part which is connected both mechanically as well as electrically conductively with the sleeve of the current distributor.

4,661,233

CATHODE/GROUND SHIELD ARRANGEMENT IN A SPUTTER COATING APPARATUS

Albert D. Glasser, Columbia, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 751,914, Jul. 5, 1985. This application May 1, 1986, Ser. No. 858,325

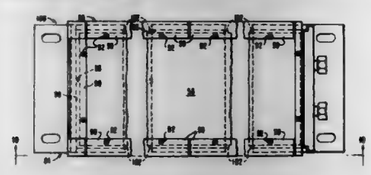
Int. Cl.⁴ C23C *14/00*

U.S. Cl. 204—298 **9 Claims**

1. In a sputter coating apparatus target including an elongated cathode having an outer support surface, sputter target material disposed upon said outer cathode surface, a ground shield containing said cathode in an enclosed state and having an open side adjacent to said outer cathode surface placing said target material in an exposed state, means supporting said cathode within said shield in a spaced electrically insulated relationship relative to said shield such that a gap is defined between said cathode and said shield, the improvement which comprises:

(a) said cathode having a peripheral edge surrounding said support surface;

(b) said ground shield having an annular edge surrounding and spaced outwardly from said peripheral edge of said cathode such that said gap between said ground shield and said cathode is exposed at said edges thereof from a direction directly facing said open side of said ground shield,



said annular edge of said shield being displaced from said peripheral edge of said cathode; and

(c) means mounted on said peripheral edge of said cathode and extending outwardly therefrom so as to overhang said annular edge of said ground shield and cover exposure of said gap from said direction directly facing said open side of said ground shield.

4,661,234

AIR-FUEL RATIO SENSOR AND APPARATUS USING THE SAME

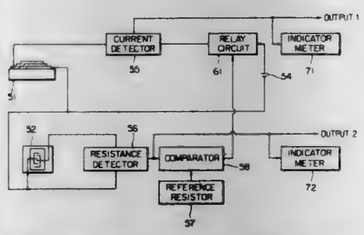
Hideaki Takahashi; Haruyoshi Kondo; Takashi Takeuchi, and Kiyoharu Hayakawa, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Dec. 23, 1985, Ser. No. 812,907

Claims priority, application Japan, Dec. 28, 1984, 59-274586

Int. Cl.⁴ G01N *27/58*

U.S. Cl. 204—406 **7 Claims**



3. An air-fuel ratio detecting apparatus comprising

an air-fuel ratio sensor having: a porous substrate having a porosity of 2% to 40% and a pore diameter of 0.02 μm to 1.2 μm; a limiting electric current type oxygen sensor portion having a first electrode, a solid electrolytic thin film and a second electrode which are sequentially formed on said porous substrate, said first electrode being gas permeable, said solid electrolytic thin film having a specific crystal orientation, a thickness of 0.1 μm to 30 μm and crystallinity; a resistive type oxygen sensor portion having an oxide semiconductor thin film and interdigital electrodes which are formed on said porous substrate, said oxide semiconductor thin film being changeable in resistance in response to oxygen partial pressure, said interdigital electrodes being formed on one or both surfaces of said oxide semiconductor thin film; a heater formed on at least one surface of said porous substrate; and a porous ceramic coating layer for covering the overall structure, said porous cermic coating layer being adapted to carry a catalyst, a ratio x/t of a distance x between an end of said electrolytic thin film and an end of said first electrode to a thickness t of said porous substrate being not less than 0.75,

a limiting electric current measuring voltage source for generating a voltage applied to said limiting electric current type oxygen sensor portion,

a current detector for detecting a current flowing through said limiting electric current type oxygen sensor portion upon an application of the voltage thereto,

a resistance detector for detecting the resistance of said resistive type oxygen sensor portion,

a comparator/discriminator for comparing an output from said resistance detector with a reference value and discriminating a fuel rich or fuel lean state,

a switching controller for controlling switching connection between said limiting electric current measuring voltage source and said limiting electric current type oxygen sensor portion such that said limiting electric current measuring voltage source is connected to said limiting electric current type oxygen sensor portion when a predetermined period of time has elapsed after the fuel rich state changes to the fuel lean state, and that said limiting electric current measuring voltage source is disconnected from said limiting electric current type oxygen sensor portion when the fuel lean state changes to the fuel rich state, and

an output signal adding section for adding an output signal from said limiting electric current type oxygen sensor portion and an output signal from said resistive type oxygen sensor portion and generating an output signal representing an air-fuel ratio.

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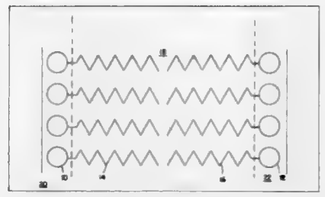
CHEMO-RECEPTIVE LIPID BASED MEMBRANE TRANSDUCERS

Ulrich J. Krull, 151 LaRose Ave., Weston, Ontario, Canada M9P 1B3, and Michael Thompson, 1824 Delaney Dr., Mississanga, Ontario, Canada L5J 3L1

Filed Aug. 3, 1984, Ser. No. 637,565

Int. Cl.⁴ G01N *27/30*

U.S. Cl. 204—414 **18 Claims**



1. A lipid membrane-based device that utilizes transmembrane ion movement for analyzing the concentration of a selected chemical species,

said device comprising a perturbable, ion-permeable, lipid membrane and

an ion conductive support on which is deposited said ion-permeable lipid membrane, said ion-permeable lipid membrane including a complexing agent for selectively interacting with said selected chemical species to increase transmembrane ion movement, and said ion-permeable lipid membrane having an increased transmembrane ion movement when perturbed.

12. A gas-sensor electrochemical cell comprising

(a) a gas-permeable membrane permeable to an inorganic ion-forming gas, and

(b) a perturbable, ion-permeable lipid membrane including a complexing agent for selectively interacting with a selected inorganic ion formed by dissolution of said inorganic ion-forming gas in an aqueous electrolytic solution,

said gas-permeable membrane being separated from said ion-permeable lipid membrane by the lipid membrane-contacting, aqueous electrolytic solution.

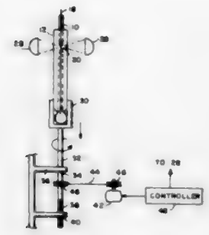
VOL. 1077 ISS 4 APR 28 1987 UMI

4,661,236

FLUID ELECTRODE AND METHOD OF MAKING

Mark A. Gelo, Concord; Moshe J. Hirshberg, Brookline, both of Mass., and Lionel S. Goldring, Woodbridge, Conn., assignors to Orion Research, Inc., Cambridge, Mass.

Filed Oct. 28, 1983, Ser. No. 547,378
Int. Cl.[4] G01N *27/26*; C03B *23/20*; H01R *43/00*
U.S. Cl. 204—420 20 Claims



1. A fluid electrode, comprising:
an inner tube, including a hollow glass tube formed of a glass which absorbs electromagnetic radiation of selected wavelengths, said inner tube having a bottom end which is closed by a membrane glass;
an outer tube having top and bottom ends and formed of a second glass which is substantially transparent to said selected wavelengths;
the inner tube being located within and parallel to the outer tube and being attached at its bottom end to the bottom end of the outer tube:
the inner tube being filled with a filling solution to a level below the top end of the outer tube;
a metal contact extending into the top end of the inner tube to provide an electrical contact to the filling solution; and
a seal between the inner tube and the metal contact located below the top of the outer tube and formed by irradiating the inner tube with electromagnetic radiation of said selected wavelengths at the location of the seal until the inner tube melts and collapses around the metal contact to form said seal.

5. A method of making a fluid electrode, comprising the steps of:
forming an inner tube, including a hollow glass tube formed of a first type of glass which absorbs electromagnetic radiation of selected wavelengths, said inner tube having a bottom end which is closed;
forming an outer tube having top and bottom ends and formed of a second type of glass which is substantially transparent to radiation of said selected wavelengths;
locating the inner tube within and parallel to the outer tube and attaching the bottom end of the outer tube to the inner tube near the bottom end thereof;
filling the inner tube with a filling solution to a lever below the top end of the outer tube;
inserting a metal contact into the top end of the inner tube to provide an electrical contact to the filling solution; and
forming a seal between the inner tube and the metal contact at a location below the top of the outer tube by irradiating the inner tube through the outer tube with electromagnetic radiation of said selected wavelengths at the location of the seal until the inner tube melts and collapses around the metal contact to form said seal.

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PROCESS FOR THERMAL CRACKING OF CARBONACEOUS SUBSTANCES WHICH INCREASES GASOLINE FRACTION AND LIGHT OIL CONVERSIONS

Muneaki Kimura, Shuzuoka, and Tadashi Kai, Tokyo, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 29, 1983, Ser. No. 480,177
Claims priority, application Japan, Mar. 29, 1982, 57-50406; Jul. 28, 1982, 57-130494
Int. Cl.[4] C01G *1/06*
U.S. Cl. 208—423 21 Claims

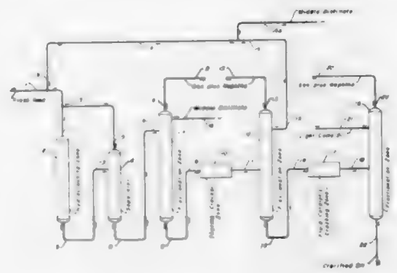
1. A process for thermally cracking a carbonaceous substance comprising the steps of:
providing a reaction vessel containing an atmosphere comprised of hydrogen gas at a pressure of from 35 to 250 kg/cm^2 (gauge pressure);
providing a carbonaceous substance not in the form of a slurry within the reaction vessel;
providing a metal compound within the reaction vessel in an amount of 0.0001 to 0.2 parts by weight per parts by weight of the carbonaceous substance wherein the metal compound is selected from the group consisting of halides, sulfates, nitrates, phosphates, carbonates, hydroxides and oxides of the metal elements selected from the group consisting of Fe, Co and Ni;
rapidly heating the carbonaceous substances in the reaction vessel to a temperature of from 500° to 950° C.; and
allowing the cracking reaction to proceed between the hydrogen gas and the carbonaceous substance.

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COMBINATION PROCESS FOR THE CONVERSION OF A DISTILLATE HYDROCARBON TO MAXIMIZE MIDDLE DISTILLATE PRODUCTION

Michael J. Humbach, Wilmette, Ill., and John G. Hale, Egham, United Kingdom, assignors to UOP Inc., Des Plaines, Ill.

Filed Sep. 5, 1985, Ser. No. 772,795
Int. Cl.[4] C10G *65/12, 69/04*
U.S. Cl. 208—61 15 Claims



1. A process for the conversion of an aromatic-rich, distillable gas oil charge stock which is essentially free from asphaltenic hydrocarbons and possesses an aromatic hydrocarbon concentration greater than about 20 volume percent to selectively produce large quantities of high quality middle distillate while minimizing hydrogen consumption consisting essentially of the steps of:
(a) reacting said charge stock with hydrogen, in a catalytic hydrocracking reaction zone, at hydrocracking conditions including a maximum catalyst bed temperature in the range of about 600° F. (315° C.) to about 850° F. (454° C.) selected to convert at least a portion of said charge stock to lower-boiling hydrocarbon products including middle distillate and to convert at least about 10 volume percent of the aromatic hydrocarbon compounds contained in said charge stock to provide an increased concentration of paraffin hydrocarbon compounds in the resulting hydrocracking reaction zone effluent;
(b) separating said resulting hydrocracking reaction zone effluent to provide a middle distillate product stream and a paraffin-rich hydrocarbonaceous stream boiling at a temperature greater than about 700° F. (371° C.);
(c) recovering said middle distillate product stream;
(d) reacting said paraffin-rich hydrocarbonaceous stream recovered in step (b) in a non-catalytic thermal reaction zone at mild thermal cracking conditions including an elevated temperature from about 700° F. (371° C.) to about 980° F. (526° C.), a pressure from about 30 psig (207k Pa gage) to about 1000 psig (6895k Pa gage) and an equivalent residence time at 900° F. (482° C.) from about 1 to about 60 seconds to provide a non-catalytic thermal reaction zone effluent;
(e) separating said non-catalytic thermal reaction zone effluent to provide a fraction boiling in the range from about 300° F. (149° C.) to about 700° F. (371° C.) and a hydrocarbonaceous stream boiling at a temperature greater than about 700° F. (371° C.); and
(f) reacting at least a portion of said hydrocarbonaceous stream boiling at a temperature greater than about 700° F. (371° C.) recovered in step (e) in a fluid catalytic cracking zone at fluid catalytic cracking conditions.

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MIDDLE DISTILLATE PRODUCING HYDROCRACKING PROCESS

Karl Z. Steigleder, Glen Ellyn, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 751,158, Jul. 2, 1985. This application Jul. 7, 1986, Ser. No. 882,556
Int. Cl.[4] C10G *47/20*
U.S. Cl. 208—111 15 Claims

1. In a process for hydrocracking a hydrocarbon feedstock to middle distillate fractions boiling in the range of about 300° F. to 700° F. comprising contacting said feedstock at hydrocracking conditions with a catalyst composition comprising a mixture of a first hydrothermally treated Y zeolite component and a second hydrothermally treated Y zeolite component in intimate admixture with a refractory inorganic oxide matrix wherein the unit cell size of the first and second Y zeolite components ranges from about 24.20 to 24.35 Angstroms and the difference between the unit cell size of the first and second Y zeolite components is at least 0.1 Angstrom.

4,661,240

LOW SULFUR COKE USING DISPERSED CALCIUM

Michael A. Kessick; Zacharia M. George, and Linda G. Schneider, all of Edmonton, Canada, assignors to Alberta Research Council, Edmonton, Canada

Continuation-in-part of Ser. No. 563,557, Dec. 20, 1983, abandoned, which is a continuation of Ser. No. 157,938, Jun. 9, 1980, abandoned, and a continuation-in-part of Ser. No. 157,939, Jun. 9, 1980, abandoned. This application Mar. 20, 1984, Ser. No. 591,561
Claims priority, application United Kingdom, Jun. 8, 1979, 7920001
Int. Cl.[4] C10G *9/32, 9/14*
U.S. Cl. 208—127 13 Claims

1. A process for the formation of a coke from a heavy crude oil or residua having an API gravity value of less than 25° and containing sulfur, which comprises:
(a) uniformly dispersing solid particles of calcium carbonate in said heavy crude oil or residua in an amount corresponding to a molar ratio of calcium to sulphur in said crude oil or residua of about 1:5 to about 1:1 to form a uniform dispersion, consisting of said calcium carbonate and said crude oil or residua,
(b) feeding said uniform dispersion to a coking zone having a temperature of about 400° to about 500° C. to effect evaporation of volatiles from said crude oil or residua and leave a solid coke product,
(c) removing and recovering said volatiles from said coking zone at least in part as condensed liquid distillate, and
(d) removing and recovering said coke from said coking zone as a product of said process, said coke having a decreased tendency to produce sulphur dioxide upon combustion in air compared to coke produced from said heavy crude oil or residua in the absence of step (a).

8. A process for the formation of a coke from a heavy crude oil or residua having an API gravity value of less than 25° and containing sulfur, which comprises:
(a) uniformly dispersing solid particles of calcium compound selected from the group consisting of calcium hydroxide, calcium oxide and mixtures thereof in an amount corresponding to a molar ratio of calcium to sulfur in said crude oil or residua of about 1:3 to about 1:1 to form a uniform dispersion consisting of said calcium compound and said crude oil or residua,
(b) feeding said uniform dispersion to a coking zone having a temperature of about 450° to about 500° C. to effect evaporation of volatiles from said crude oil or residua and leave a solid coke,
(c) removing and recovering said volatiles from said coking zone at least in part as condensed liquid distillate having a greater yield than that attained by effecting said coking in the absence of step (a), and
(d) removing and recovering said coke from said coking zone as a product of said process, said coke having a decreased tendency to produce sulphur dioxide upon combustion compared to coke produced from said heavy crude oil or residua in the absence of step (a).

4,661,241

DELAYED COKING PROCESS

Michael J. Dabkowski, Mickleton, and Madhava Malladi, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,328
Int. Cl.[4] C10G *9/14*
U.S. Cl. 208—131 20 Claims

1. In a delayed coking process in which a heavy oil coker feedstock is heated to an elevated coking temperature in a furnace and the heated feedstock is subsequently subjected to delayed coking in a coker drum under superatmospheric pressure and the vaporous coking products are removed from the drum and passed to a coker fractionator from which a bottoms fraction is removed,
the improvement comprising coking a feed without the addition of the bottoms fraction from the fractionator and adding to the feed to the coker drum a lower boiling hydrocarbon diluent having an end boiling point of not more than 450° C., the lower boiling hydrocarbon diluent being added to the heated feedstock after the feedstock has passed through the furnace.

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DILUENT DISTILLATION PROCESS AND APPARATUS

Jeffery E. Scott; David W. McDougall, and Robert E. Helgold, all of Calgary, Canada, assignors to Delta Projects Inc., Calgary, Canada

Filed Jun. 12, 1985, Ser. No. 743,834
Int. Cl.[4] C10G *31/06*
U.S. Cl. 208—177 8 Claims

1. In a process for the treatment of a heavy oil stream to remove volatiles, water and sand, in which a hydrocarbon diluent containing light components is added to the stream; the improvement which comprises:
heating the diluent prior to its addition to the heavy oil stream to vaporize at least some of the light components in said diluent;

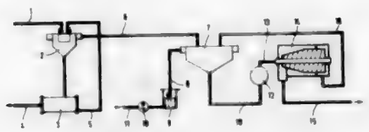
separating the heated diluent into a liquid stream and a vapour stream;
introducing said liquid stream into said heavy oil stream prior to said treatment of the heavy oil stream to remove volatiles, water and sand; and,
introducing the vapour stream into the treated heavy oil stream downstream of the location at which the stream is treated to remove volatiles, water and sand.

4,661,243

METHOD AND APPARATUS FOR TREATING MOIST DUST AND MUD IN THE STEEL INDUSTRY

Rainer Hotz, Werne, and Herbert Muszkiewicz, Dortmund, both of Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 703,812
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1984, 3406383
Int. Cl.⁴ B03B *9/04*; B01F *13/02*; B01D *19/00*
U.S. Cl. 209—10 **3 Claims**



1. Apparatus for processing mud from dust removal equipment in the steel industry, said apparatus comprising a coarse separator means for separating said mud into a coarse liquid-solid suspension and a fine liquid-solid suspension, and a centrifugal separator means for dewatering one of said suspensions, means for transferring a portion of said one of said suspensions to a storage container means for holding a quantity of said one of said liquid-solid suspensions to be fed to said centrifugal separator and said one of said suspensions having a liquid level within said storage container means, said storage container having an upper portion and a lower cone shaped portion which defines a lower central inlet for said one of said suspensions, and said storage container means also having a cover from the center of which is hung a stand pipe which extends downwardly into said lower cone shaped portion and at its lower end forms an annular gap with the wall of said cone shaped portion, said stand pipe having outlet openings in it located above said liquid level of the suspension in said container and said cover having outlet openings for venting air from said storage container to the atmosphere, and a connecting pipe means for conducting the suspension contained in said storage container means from said storage container to said centrifugal separator means, said connecting pipe means being located below the liquid level of said one of said suspensions contained in said storage container.

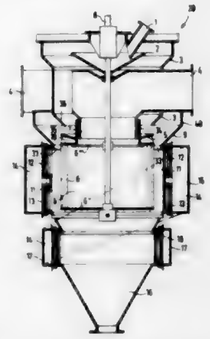
4,661,244

ROTARY BASKET AIR CLASSIFIER

Ernst W. Hanke; Benno Bonk, and Erwin Schmitz, all of Beckum, Fed. Rep. of Germany, assignors to Firma Christian Pfeiffer, Beckum, Fed. Rep. of Germany

Filed Jun. 24, 1985, Ser. No. 748,352
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1985, 3515026
Int. Cl.⁴ B07B *7/083*
U.S. Cl. 209—139.2 **14 Claims**

1. A rotary basket air classifier, said classifier comprising: a housing defining a vertical axis, a substantially cylindrical basket coaxially mounted in said housing having circumferentially positioned axially extending flow blades through which a classifying air flow substantially flows from outside the basket to the inside and a closed plate at one end of said cylindrical basket; drive means for rotating said basket about said vertical axis; a coaxial ring of guide vanes in said housing radially outward outward of said basket defining an annular classifying chamber there between; said housing comprising first inlet means for enabling classifying air to enter into said classifying chamber with a spiral whirling action past said guide vanes; said housing defining an inlet opening above said classifying chamber for feeding a particle mixture of coarse and fine material into said housing to be classified; said housing futher comprising outlet means below said classifying chamber for said coarse material fine material outlet means for fine material laden spent classifying air, said fine material outlet means extending coaxially with respect to the end of the basket opposite said closed plate; a first rotary strewing disk rotatably mounted in said housing about said vertical axis and positioned to receive said particle mixture being fed through said inlet opening; said housing further comprising a first hopper casing



means surrounding said first strewing disk and radially outwardly spaced therefrom having an inwardly tapering outlet means defining an opening for feeding said mixture to a second rotary strewing disk; said second rotary strewing disk rotatably mounted about said vertical axis and positioned below said first strewing disk; said housing further comprising a second hopper casing means surrounding said second strewing disk and radially outwardly spaced therefrom and having a larger diameter than said first hopper casing means, said second hopper casing means having inwardly tapering outlet means which in combination with the top of said cylindrial basket defines in entrance gap for enabling said particle mixture to feed into said classifying chamber; a plurality of rotary dispersing blades rotatably mounted about said vertical axis adjacent said entrance gap; and said fine material outlet means comprising several flow-symmetrical spent classifying air outlet means.

4,661,245

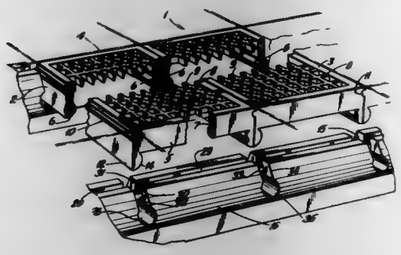
SCREENING SYSTEM

William Rutherford, Valentine, and David J. Tinson, Belmont North, both of Australia, assignors to Floris Pty Ltd., Islington, Australia

PCT No. PCT/AU83/00161, § 371 Date Nov. 14, 1984, § 102(e) Date Nov. 14, 1984, PCT Pub. No. WO84/02290, PCT Pub. Date Jun. 21, 1984
PCT Filed Nov. 4, 1983, Ser. No. 648,164
Claims priority, application Australia, Dec. 9, 1982, PF7191
Int. Cl.⁴ B07B *1/04*; E04C *5/04*
U.S. Cl. 209—399 **8 Claims**

1. A modular screening system positioned and lockingly supported across a screening machine,
said modular screening system comprising a plurality of screening modules with screen opening therein, each module being characterized by a rectangular periphery defining end walls and side walls, said modules being

disposed in parallel and contacting relationship with each other,
protuberance means extending along an outer face of one end wall of each module, and channel means extending along an outer face of the other end wall thereof, such that the end wall protuberance means of one of said modules interengages and mates with end wall channel means of an adjacent module,
clamping bars disposed in spaced relationship across said screening machine beneath said modular screening system,
each of said spaced clamping bars being disposed transverse to the end walls of said modules,
each of said clamping bars having a longitudinal channel running along its length with spaced channel locking means disposed transversely to said bar and the longitudinal channel thereof,



detachable rails disposed below said screen modules in spaced relationship across and transverse to said clamping bars and to the side walls of said modules and above said clamping bars, each of said rails having locking means in the form of protuberance means which snap-fit into said transverse channel locking means on said clamping bars, each of said rails having channel means longitudinally disposed therein,
protuberance means located at the bottom of each module end wall which snap-fit into said rail channel means disposed along each of said spaced rails,
and protuberance means located at the bottom of the side walls of each module which snap-fit into the longitudinal channels of said clamping bars,
whereby adjacent modules are interlocked relative to each other and to the rails and the clamping bars.

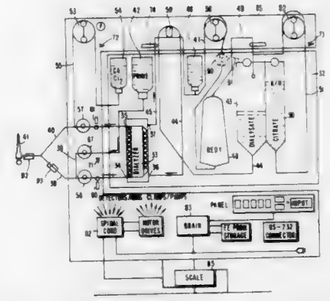
4,661,246

DIALYSIS INSTRUMENT WITH DIALYSATE SIDE PUMP FOR MOVING BODY FLUIDS

Stephen R. Ash, Lafayette, Ind., assignor to Ash Medical Systems, Inc., West Lafayette, Ind.

Filed Oct. 1, 1984, Ser. No. 656,314
Int. Cl.⁴ B01D *13/00*; A61M *1/16*
U.S. Cl. 210—87 **13 Claims**

1. A single access dialysis instrument, comprising:
a single catheter for transmission of body liquids to and from the body;
a reciprocating dialyzer with dialyzer membranes and having body liquid side disposed within said dialyzer membranes including means for defining a body fluid inlet and a body fluid outlet connected to said catheter, said reciprocating dialyzer further having a dialysate side disposed outside said dialyzer membranes including means for defining a dialysate inlet and a dialysate outlet, said body liquid side and said dialysate side separated by said dialyzer membranes, said dialyzer membranes being compliantly formed to expand and contract in response to a corresponding change in pressure between said body liquid and said dialysate within said dialyzer;
storage means connected to said dialysate inlet and said dialysate outlet for holding a supply of liquid including dialysate for use in said dialyzer; and,
dialyzer control means for controlling the inflow and outflow of body liquid and dialysate to and from said dialyzer in a reciprocating cyclic fashion while maintaining said



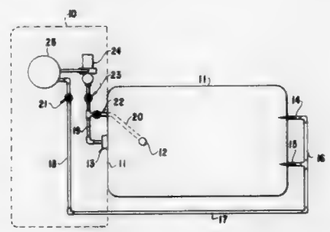
dialysate within said dialysate side of said dialyzer at a non-elevated pressure throughout the entire cycle of said dialyzer, said dialyzer control means further for maintaining a positive pressure gradient from said body liquid side to said dialysate side throughout the reciprocating cycle of said dialyzer.

4,661,247

MODULAR OPERATIONS CENTER FOR IN-GROUND SWIMMING POOL

Donald H. Weir, York, Pa.; Stanley H. Frederick, Sanford, N.C.; Robert A. Hotaling, York, Pa., and Ronald B. Robol, Sanford, N.C., assignors to Fox Industries Incorporated, York, Pa.

Filed Feb. 6, 1986, Ser. No. 826,637
Int. Cl.⁴ B01D *29/06, 29/08, 29/24*
U.S. Cl. 210—97 **19 Claims**



1. A prefabricated swimming pool water filtration/circulation module comprising: means for containing essentially the entirety of the circulatory and filtration piping requirements for a swimming pool including ingress and egress conduits for connection with the interior of the swimming pool including
modular housing having a side with
an inlet to the module through which water skimmed from the water surface of a swimming pool is withdrawn,
a conduit on the module for connection with a swimming pool main drain extending at side of the housing,
a filter contained in said housing through which water drawn from the main drain and from said inlet is filtered,
a return conduit in said housing side through which water withdrawn through said inlet and main drain is returned to the swimming pool at said housing side,
pump means and actuator means for the pump to draw water

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water from the main drain and from the inlet and recirculate it to the return conduit, and

an electrical connector for said actuating means.

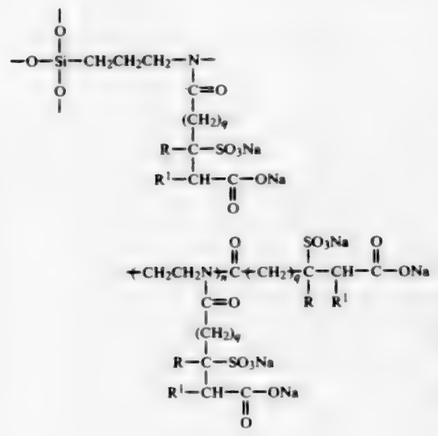
4,661,248

SULFONIC DERIVATIVES OF ACYLATED POLYETHYLENEIMINE BONDED PHASE SILICA PRODUCTS

Hugh E. Ramsden, Scotch Plains, and David R. Nau, Lebanon, both of N.J., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Mar. 6, 1986, Ser. No. 837,051
Int. Cl.[4] B01D *15/08*
U.S. Cl. 210—198.2 **18 Claims**

1. A sulfonic derivative of covalently bound, non-cross-linked polyethyleneimine bonded phase silica of the formula



wherein

is the backbone of a silica gel or controlled pore glass, n is an integer such that the polyethyleneiminopropyl silane group has an average molecular weight of from about 400 to about 1800; q is an integer of zero or one; R is selected from the group consisting of hydrogen, $—CH_2)xH$ or $—CH_2)mCOOH$ where x is an integer of 1 or 2 and m is an integer of zero or 1; when R is hydrogen or $—CH_2)xH$ then R^1 is $—CH_2)pCOOH$ where p is an integer of zero or 1, and when R is $—CH_2)mCOOH$ then R^1 is selected from the group consisting of hydrogen or $—CH_2)yH$ where y is an integer of zero or 1.

4,661,249

PREFILTER DEVICE FOR POLYMERIC MATERIAL

Isaac L. Langley, Greenville, S.C., assignor to Metallurgical Industries, Inc., Tinton Falls, N.J.

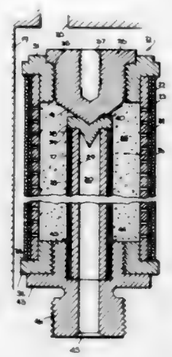
Filed Jan. 28, 1985, Ser. No. 695,618
Int. Cl.[4] B01D *29/26*
U.S. Cl. 210—266 **14 Claims**

1. A filter assembly for polymeric material comprising

at least one outer tubular porous sleeve for filtering large particulate particles from a polymeric material passing therethrough, said sleeve defining a chamber to receive the filtered polymeric material;

a mass of loose shattered metal particles in said chamber to filter micro-gels from the polymeric material passing therethrough while providing high shear for polymer anomalies; and

at least one low velocity filter element within said chamber and said mass of shattered metal particles to support said



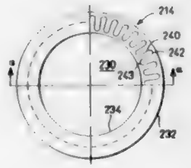
shattered metal particles and to filter out fine particulate matter from the polymeric material passing therethrough, said filter element defining an outlet passage for the filtered polymeric material.

4,661,250

MUTIPLE-DISC FILTER

Peretz Rosenberg, Moshav Beit Shearim, Israel

Continuation-in-part of Ser. No. 613,351, May 23, 1984, Pat. No. 4,592,839. This application Sep. 25, 1985, Ser. No. 779,996
Claims priority, application Israel, Sep. 7, 1983, 69679; Oct. 4, 1984, 73164; Nov. 23, 1984, 73602; Apr. 2, 1985, 74786
Int. Cl.[4] B01D *25/02, 29/46*
U.S. Cl. 210—352 **18 Claims**



1. A multiple-disc fluid filter comprising:

a housing having an inlet and an outlet and a plurality of filtering discs included in a stack for filtering the fluid flowing between the discs form said inlet to said outlet,

each filtering disc being formed with grooves extending only partially through the thickness of the disc and configured to define a continuous, non-apertured surface on one face and a plurality of spaced ribs each having a thin, substantially-linear outer surface bordered by a line edge projecting at a uniform unchanging height throughout its length from the opposite face, with one end of each rib being joined by a bridge to the next adjacent rib at one side thereof, and the opposite end of each rib being joined by a second bridge to the next adjacent rib at the opposite side thereof;

said stack of discs further including spacing means between the contacting faces of adjacent discs of the stack, spacing the line edges in the outer surfaces of said ribs of one disc from the face of the next adjacent disc in the stack, such that the contacting faces of adjacent discs define a first group of recesses between said ribs communicating with said inlet, a second group of recesses alternating with said

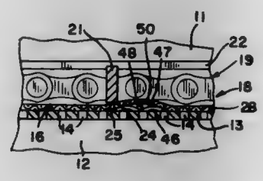
first group of recesses and communicating with said outlet, and a plurality of filtering passageways between the line edges of said ribs and said opposite faces of the next adjacent disc, which line edges block the solid particles in the fluid flowing through said first group of recesses and cause them to accumulate in said first group of recesses.

4,661,251

FILTER UNIT WITH FILTER MEDIA ARRANGEMENT FOR ENGAGEMENT WITH CONVEYOR FLIGHTS

Richard H. Wykoff, Livonia, Mich., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Dec. 9, 1985, Ser. No. 806,484
Int. Cl.[4] B01D *29/02, 33/38, 33/32, 33/04*
U.S. Cl. 210—396 **10 Claims**



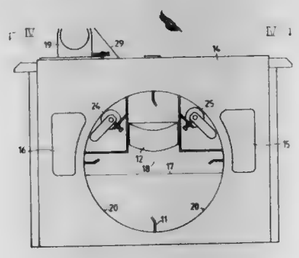
10. A filter unit comprising a flight conveyor assembly including laterally spaced chains and lengthwise spaced flights extending between said chains, a filter media comprising a rectilinear panel of filter material and lengthwise spaced ridges on said panel engagable with said flights, said ridges including laterally extending and lengthwise spaced sleeves, and a rod disposed in said sleeve to join said panel into a continuous loop of filter media.

4,661,252

ROTARY SCREEN

George Burgess, Auckland, New Zealand, assignor to Contra-Shear Holdings Limited, New Zealand

Continuation of Ser. No. 648,150, Sep. 7, 1984, abandoned. This application Oct. 28, 1985, Ser. No. 792,184
Claims priority, application New Zealand, Sep. 8, 1983, 205530
Int. Cl.[4] B01D *33/06*
U.S. Cl. 210—402 **9 Claims**



1. A rotary screen of the kind for in-line semi-submergible screening comprising a drum which is mounted for rotation about a substantially horizontal axis and is at least partially formed by a plurality of spaced-apart wires of wedge-shaped cross-section and a plurality of supporting members traversing and interlinking the wires at least some of which are lifting staves spaced apart around the drum interior characterized in that:

(a) the wires extend circumferentially around the drum,

(b) the base of the wedge-shaped cross-section of each wire faces inwardly of the drum,

(c) the supporting members are spaced apart around the circumference of the drum by a distance of not less than 75 mm between each pair of adjacent supporting members,

(d) a solids removal means positioned within the drum to collect solids falling from said lifting staves, and

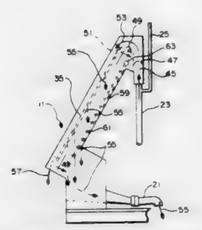
(e) an overhead spray means directed so as to assist the removal of solids from the lifting staves as they pass above the solids removal means so that the solids falling from the lifting staves fall onto said solids removal means.

4,661,253

SOLID WASTE SEPARATOR

Thomas C. Williams, 191 Pacemaker, Atwater, Calif. 95301

Filed Aug. 6, 1985, Ser. No. 763,442
Int. Cl.[4] B01D *35/16*
U.S. Cl. 210—411 **10 Claims**



1. A dairy waste separating system comprising a separation screen inclined at an angle substantially greater than 45° to the horizontal, said screen including a series of parallel screen wires separated from each other by less than 0.05 inches, means above said screen for providing a smooth flow of combined liquid and solid waste over said separation screen, means below substantially the full length of said separation screen for transporting in one direction the liquid separated from said waste and passing through the openings in said screen, means disposed below the lower end of the screen for transporting in a second direction those solids carried all the way down said screen cleaning means disposed below and generally parallel to said separation screen for cleaning said screen, said cleaning means comprising a plurality of water lines extending below said screen, means for oscillating said water lines about their longitudinal axes, a plurality of nozzles disposed along the upper side of each of said water lines and directed toward the lower side of said screen and means for supplying water to said water lines.

4,661,254

CHLORINE-RESISTANT SEMIPERMEABLE MEMBRANES

Joseph J. Zupancic, Bensenville, and Raymond J. Swedo, Mount Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 23, 1985, Ser. No. 737,376
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—490 **25 Claims**

1. A chlorine-resistant semipermeable membrane comprising a porous support backing material having supported thereon an interfacial polymerized condensation reaction product resulting from the reaction of (1) a triaryl triamine selected from the group consisting of 2,3-bis(p-aminobenzyl) aniline, 2,4-bis(p-aminobenzyl) aniline, 2,5-bis(p-aminobenzyl) aniline, 2,6-bis(p-aminobenzyl) aniline, 2,3-bis(o-aminobenzyl) aniline, 2,4-bis(o-aminobenzyl) aniline, 2,5-bis(o-aminobenzyl) aniline, 2,6-bis(o-aminobenzyl) aniline, 2,3-bis(m-aminobenzyl) aniline, 2,4-bis(m-aminobenzyl) aniline, 2,5-bis(m-aminobenzyl) aniline, and 2,6-bis(m-aminobenzyl) aniline and (2) an aromatic polycarboxylic acid chloride.

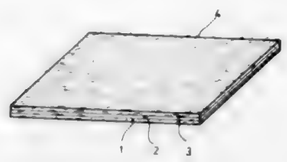
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4,661,255

MULTILAYER FILTER MATERIAL, PROCESS FOR ITS MANUFACTURE AND THE USE THEREOF

Günther Asmann, Bruckmühl; Helmar Aigner, Kolbermoor, and Hans-Karl Schuster, Bruckmühl, all of Fed. Rep. of Germany, assignors to Geamer & Co. GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 451,717, Dec. 20, 1982, abandoned.
This application Apr. 16, 1986, Ser. No. 852,414
Claims priority, application European Pat. Off., Oct. 22, 1982, 82109784.7
Int. Cl.[4] B01D *39/02*
U.S. Cl. 210—491 16 Claims



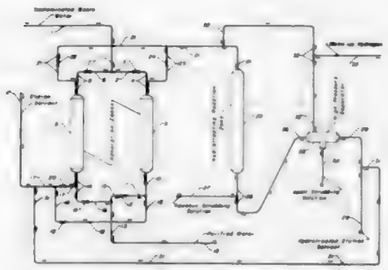
1. Multilayer filter material, comprising:
(a) a coarse filter layer composed of natural and synthetic fibres wherein substantially only the synthetic fibres are structured to have increased surface and wherein the synthetic fibres located on the outer surface protrude in different lengths from the plane of the filter material to provide a rough uneven surface which promotes loose filter cake build up in use;
(b) a fine filter layer composed of natural and synthetic fibres; and
(c) wherein the coarse filter layer and the fine filter layer are interconnected solely by a fibrous interlock.

4,661,256

PROCESS FOR THE REMOVAL OF HYDROCARBONACEOUS COMPOUNDS FROM AN AQUEOUS STREAM AND HYDROGENATING THESE COMPOUNDS

Russell W. Johnson, Villa Park, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 28, 1985, Ser. No. 791,646
Int. Cl.[4] C02F *1/28*
U.S. Cl. 210—634 13 Claims



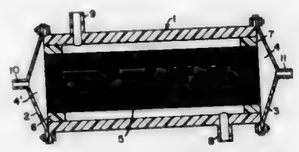
1. A process for the removal of trace quantities of hydrocarbonaceous compounds from an aqueous stream which comprises the steps of:
(a) contacting said aqueous stream with an adsorbent to remove trace quantities of hydrocarbonaceous compounds from said aqueous stream to provide an aqueous stream having a reduced concentration of hydrocarbonaceous compounds;
(b) contacting spent adsorbent which has accumulated said hydrocarbonaceous compounds from said aqueous stream with an elution solvent to remove said hydrocarbonaceous compounds from said spent adsorbent thereby regenerating said adsorbent;
(c) contacting said elution solvent in admixture with said hydrocarbonaceous compounds which were removed from said spent adsorbent in step (b) in the presence of hydrogen with a hydrogenation catalyst in a hydrotreating reaction zone;
(d) contacting the hydrotreating reaction zone effluent with an aqueous scrubbing solution;
(e) introducing a resulting admixture of said reaction zone effluent and said aqueous scrubbing solution into a separation zone to provide a hydrotreated elution solvent and a spent aqueous stream; and
(f) recycling at least a portion of said hydrotreated elution solvent from step (e) to provide at least a portion of said elution solvent utilized in step (b).

4,661,257

LIQUID MEMBRANE SYSTEM FOR THE REMOVAL OF NITRATE FROM WATER

Maurice M. Kreevoy, and Ann T. Kotchevar, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Mar. 13, 1985, Ser. No. 711,391
Int. Cl.[4] C02F *1/26*
U.S. Cl. 210—638 14 Claims



1. A process for the extraction of selected anions from an aqueous feed solution and deposition of said anions in an aqueous stripping solution comprising:
(a) circulating said feed solution through a first compartment so that it contacts one side of a porous support, said support incorporating in a water-immiscible organic liquid a solution of a complexing agent selective for said anions, said solution substantially completely filling, and retained within the pores of said support, where said complexing agent is a quaternary ammonium salt of the formula:

$$(R_1)(R_2)(R_3)(R_4)N^+]X^-$$

wherein R_1, R_2, R_3 and R_4 are alkyl or cycloalkyl, N being substituted by a total number of carbon atoms between about 15–60 and wherein X^- is an aromatic anion of the formula:

$$ArO^- \text{ or } ArSO_2N^- — Z$$

wherein Ar is of the formula:



wherein R_5 and R_6 are H or C_1–C_5 alkyl, R_7 is H or C_1–C_{12} alkyl and Z is R_7 or CH_2Ar, and wherein X^- comprises at least 9 carbon atoms wherein said complexing agent exhibits a pKa of about 10–12 in aqueous solution, to form a complex comprising said complexing agent, hydrogen ions, and said anions in the feed solution;

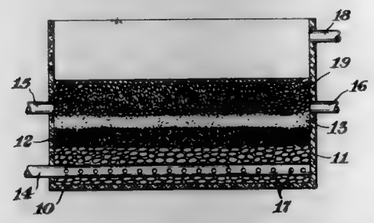
(b) diffusing said complex through the organic liquid to the opposide side of the support; and
(c) circulating said aqueous stripping solution through a second compartment, wherein said aqueous stripping solution is maintained at a higher pH than said aqueous feed solution, so that the stripping solution contacts the opposite side of the support to liberate hydrogen ions and said anions into the stripping solution.

4,661,258

TRAVELING BED ION EXCHANGE CONTACT APPARATUS AND PROCESS EMPLOYING SAME

Gary C. Phillips, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 416,827, Sep. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 239,794, Mar. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 7,089, Jan. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 875,355, Feb. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 788,196, Apr. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 646,201, Jan. 2, 1976, abandoned. This application Jul. 18, 1983, Ser. No. 514,919
Int. Cl.[4] B01D *15/02*
U.S. Cl. 210—661 18 Claims



1. In a process for concentrating ions or removing ions from a liquid containing suspended filterable matter having a particle size ≦ about 0.01 inch by contacting said liquid with an ion exchange resin, the step of performing said contact by passing the liquid upward through a horizontally traveling, fluidized, essentially non-filtering bed of an ion exchange resin in a direction essentially perpendicular to the direction of the plane of flow of said traveling fluidized bed of ion exchange resin and wherein said liquid passes upward through a non-filtering distributor means to uniformly distribute the liquid prior to contact with said traveling bed of ion exchange resin; said fluidization resulting from the passage of the liquid into and through said ion-exchange resin, said fluidization being such as to essentially prevent filtration of said filterable matter in said bed; and wherein said distributor and said traveling bed of ion exchange resin are within the confines of the same apparatus.

4,661,259

PROCESS FOR REDUCING THE CONTENT OF TRIHALOMETHANE COMPOUNDS AND PRECURSORS THEREOF IN INFLUENT WATER

Gerald C. Walterick, Jr., Levittown, and Bruce K. Fillipo, Dublin, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 1, 1985, Ser. No. 761,640
Int. Cl.[4] C02F *1/28*
U.S. Cl. 210—666 3 Claims

1. Method for reducing the content of trihalomethane compounds or precursors thereof in influent water, comprising adding to said water, based upon one million parts water,
a. from about 1–5,000 ppm of powdered activated carbon,
b. and a combination of at least two water soluble or water dispersible cationic polymers, one of said polymers being formed from reaction of dimethylene and epichlorohydrin and being added in an amount of about 8 ppm, the second cationic polymer being polydiallyldimethyl ammonium chloride having a molecular weight of about $250–400 \times 10^3$, and being added in an amount of about 1 ppm,
c. mixing said influent water with said activated carbon and said cationic polymers to form a mixture, and
d. separating said mixture to form a supernatant having a reduced trihalomethane content.

4,661,260

ENDOTOXIN DETOXIFYING PROCESS

Masashi Kodama; Toru Tani, both of Kusatsu; Kazuyoshi Hanazawa, Nagahama; Totaro Oka, Shiga; Kazuo Teramoto, Otsu, and Shiro Nishiumi, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 622,522, Jun. 20, 1984, abandoned.
This application Feb. 21, 1986, Ser. No. 833,421
Claims priority, application Japan, Jun. 24, 1983, 58-112695
Int. Cl.[4] B01D *15/00*
U.S. Cl. 210—679 3 Claims

1. A method of removing endotoxin from a fluid by passing the endotoxin-containing fluid through a column filled with an endotoxin detoxifying material consisting essentially of a fibrous carrier having functional groups thereon to which Polymyxin is fixed and immobilized through the functional groups of the fibrous carrier.

4,661,261

ALUMINA STABILIZATION IN INDUSTRIAL WATERS

Bruce C. Chambers, Clarendon Hills, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed May 19, 1986, Ser. No. 864,358
Int. Cl.[4] C02F *5/10*
U.S. Cl. 210—698 1 Claim

1. A method of preventing alumina-based deposits from precipitating from recirculating industrial waters having a pH between 6 and 9 used for heat exchange purposes and which have previously been treated with either alum or sodium aluminate which consists of adding to said industrial waters from 0.5 to about 500 ppm of citric acid or its water-soluble salts.

4,661,262

METHOD AND COMPOSITION FOR DEACTIVATION OF UNCURED PAINT

Konstantine Cost, 3614 Dukeshire, Royal Oak, Mich. 48072

Filed Mar. 31, 1986, Ser. No. 845,998
Int. Cl.[4] C02F *1/24*; B01D *47/02*
U.S. Cl. 210—705 15 Claims

1. A method of detackifying uncured, solvent-based paint, which comprises:
(a) preparing an aqueous alkyl sulfate-based solution containing from about 0.01 percent to about 0.15 percent by weight of an amphipathic alkyl sulfate having from about eight to about eighteen carbon atoms, from about 0.1 to about 0.6 percent by weight ammonium alum and from about 0.1 to about 0.6 percent by weight potassium bicarbonate;
(b) circulating said amphipathic alkyl sulfate solution in a spray booth, water-wall; and,
(c) capturing and detackifying said paint in said aqueous amphipathic alkyl sulfate solution circulating in said spray booth, water-wall, such that the detackified paint floats to the top of the solution.

4,661,263

WATER CLARIFICATION

David N. Roark, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 702,898, Feb. 19, 1985, abandoned, and a continuation-in-part of Ser. No. 727,077, Apr. 25, 1985, abandoned. This application Sep. 12, 1985, Ser. No. 775,150

Int. Cl.[4] C02F 1/56

U.S. Cl. 210—735 23 Claims

1. A process of removing solids from aqueous suspension which comprises admixing with the suspension a water-soluble polymer of monoallylamine in which some or all of the pendant-CH_2NH_2 groups are neutralized with an acid and are in salt form, so that coalescence of solids is effected.

4,661,264

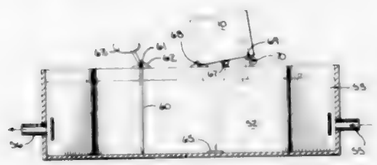
LASER DISINFECTION OF LIQUIDS

Paul R. Goudy, Jr., Milwaukee, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.

Continuation of Ser. No. 571,228, Jan. 16, 1984, abandoned. This application Mar. 31, 1986, Ser. No. 845,499

Int. Cl.[4] C02F 1/32

U.S. Cl. 210—748 11 Claims



1. A method of treating a liquid for disinfecting the liquid, comprising:

passing a stream of the liquid to be treated through a laser beam which radiates light in the ultraviolet range.

4,661,265

CATALYST DEOILING PROCESS

Carl B. Olson, Wheaton; Roman T. Plichta, Naperville, and Daniel W. Coyne, Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 30, 1985, Ser. No. 781,916

Int. Cl.[4] B01D 21/00

U.S. Cl. 210—804 14 Claims



1. A deoiling process, comprising the steps of:

removing a slurry of spent catalyst and oil from an ebullated bed reactor;

transporting said slurry of spent catalyst and oil from said reactor to a vessel;

cooling said slurry of spent catalyst and oil in said vessel to a temperature below the flash point of said oil;

conveying said cooled slurry at an upward angle of inclination in a screw conveyor in a spiral flow pattern while countercurrently draining oil from said slurry to substantially separate said oil from said spent catalyst; and

discharging said spent catalyst from said screw conveyor into a bin after said oil has been substantially separated from said spent catalyst.

4,661,266

COMPLETION AND WORKOVER FLUIDS

Shoichi Kanda, Kanagawa; Makoto Yanagita, Tokyo, and Yukihiko Sekimoto, Saitama, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1985, Ser. No. 755,506

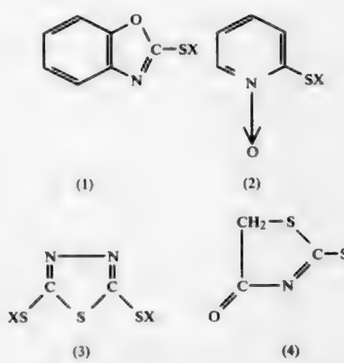
Claims priority, application Japan, Jul. 16, 1984, 59-0147347; Jul. 16, 1984, 59-147348; Jul. 16, 1984, 59-147349; Jul. 16, 1984, 59-147351; Jul. 16, 1984, 59-147352

Int. Cl.[4] E21B 43/00

U.S. Cl. 252—8.551 3 Claims

1. A completion and workover fluid which comprises an aqueous liquid medium containing from about 0.2% by weight to about 2% by weight of hydroxyethyl cellulose, an inorganic salt selected from the group consisting of calcium chloride, calcium bromide and zinc bromide, and from about 0.001% by weight to about 0.2% by weight of a component selected from the group consisting of the following components:

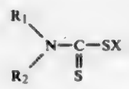
(1) thiol derivatives of heterocyclic compounds selected from the group consisting of a benzoxazole-2-thiol of the formula (1), a N-pyridineoxide-2-thiol of the formula (2), a 1,3,4-thiadiazole-2,5-dithiol of the formula (3) and a 4-ketothiazolidine-2-thiol of the formula (4)):



wherein X represents a hydrogen atom, an alkali metal atom or an ammonium;

(2) thioamide derivatives selected from the group consisting of thioacetamide, hydrazine carbothioamide and allyl thiocarbamide;

(3) dithiocarbamate compounds consisting of the following formula:



(7)

wherein R_1 and R_2, which may me the same or different,

represent a lower alkali group, and X represents a hydrogen atom, an alkyl metal atom or an ammonium; and

(4) benzothiazole.

4,661,267

FABRIC SOFTENER COMPOSITION

Bob Dekker, Strombeek-Bever; Axel König, Wemmel; Theodericus J. Straathof, Meise, all of Belgium, and Eugene P. Goselink, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

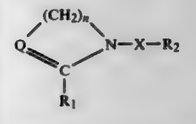
Filed Oct. 18, 1985, Ser. No. 789,054

Int. Cl.[4] D06M 11/00

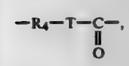
U.S. Cl. 252—8.8 11 Claims

1. An aqueous fabric softener composition comprising:

(A) from 1% to 50% by weight of the composition of a fabric softening active system wherein at least 10% of said active system is selected from the group consisting of di(higher alkyl) cyclic amines having the formula



wherein n is 2 or 3, R_1 and R_2 are each selected from the group consisting of alkyl and alkenyl containing from 8 to 30 carbon atoms and mixtures thereof, Q is CH or N, X is R_4 or



wherein R_4 is an alkylene group containing from 1 to 3 carbon atoms or is $(C_2H_4O)_m$, m being an integer from 1 to 8, and T is O or NR_5, R_5 being H or alkyl having 1 to 4 carbon atoms; and

(B) from 3% to 20% by weight of (A) of a soil release agent.

4,661,268

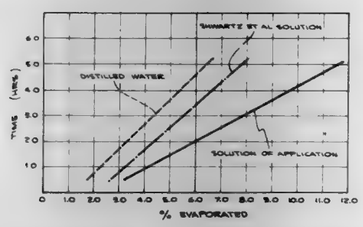
WRINKLE REMOVING SOLUTION AND PROCESS FOR USING SAME

Jeff A. Jacobson, Laguna Beach, and Walter K. Lim, Hacienda Heights, both of Calif., assignors to Very Incredible Products, Inc., Costa Mesa, Calif.

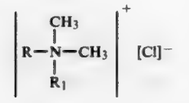
Filed Dec. 24, 1985, Ser. No. 812,121

Int. Cl.[4] D06M 11/00

U.S. Cl. 252—8.8 9 Claims



1. A liquid product for relaxing fibers in textile fabrics consisting essentially of an alcohol-aqueous admixture material having from approximately 89 to 69 parts by weight water, from approximately 10 to 30 parts by weight of lower aliphatic alcohol and approximately 0.5 to 1.5 parts by weight of surfactants wherein the surfactants consist of from about 0.0001 to 0.1 parts by weight of surfactant selected from the group consisting of silicone-glycol copolymer, fluorinated alkyl ester and admixtures thereof, and from about 0.4 to 1.4 parts by weight of a quaternary ammonium salt surfactant having the structural formula



wherein R and R_1 are alkyl radicals having from about 14 to 20 carbon atoms, said silicone-glycol copolymer having a viscosity of approximately 1500 cst and a specific gravity of about 1.035 at 25 degrees centrigrade, and being combustible with the decomposition products being carbon dioxide, silicon dioxide and incompletely burned carbon products, said fluorinated alkyl ester when mixed in about a 50/50 by weight admixture with ethyl acetate being a clear amber liquid having at 25 degrees centrigrade a viscosity of approximately 50 cp and a specific gravity of about 1.05, said 50/50 admixture having an initial boiling point of about 171 degrees Fahrenheit and a vapor pressure of about 76 mm Hg at 20 degrees centrigrade.

4,661,269

LIQUID FABRIC SOFTENER

Toan Trinh, Maineville; Errol H. Wahl, Cincinnati; Donald M. Swartley, Cincinnati, and Ronald L. Hemingway, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 28, 1985, Ser. No. 717,051

Int. Cl.[4] D06M 11/00

U.S. Cl. 252—8.8 19 Claims

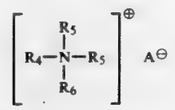
1. An aqueous fabric softening composition comprising the following components:

1. from about 3% to about 35% by weight of the composition of a mixture comprising:

(a) from about 10% to about 92% of the reaction product of higher fatty acids with a polyamine selected from the group consisting of hydroxyalkyl alkylenes diamines and dialkylene triamines and mixture thereof;

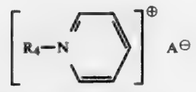
(b) from about 8% to about 90% of cationic nitrogenous salts having only one long chain acyclic aliphatic C_{15}–C_{22} hydrocarbon group selected from the group consisting of:

(i) acyclic quaternary ammonium salts having the formula:



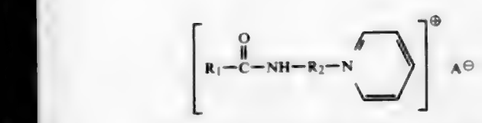
wherein R_4 is an acyclic aliphatic C_{15}–C_{22} hydrocarbon group, R_5 and R_6 are C_1–C_2 saturated alkyl or hydroxyalkyl groups, and $A\ominus$ is an anion;

(ii) alklylpyridinium salts having the formula:



wherein R_4 is an acyclic aliphatic C_{16}–C_{22} hydrocarbon group and $A\ominus$ is an anion; and

(iii) alkanamide alkylene pyridinium salts having the formula:



wherein R_1 is an acyclic aliphatic C_{15}–C_{21} hydrocarbon group and R_2 is a divalent C_1–C_3 alkylene group, and $A\ominus$ is an anion; and mixtures thereof; and

(c) from 0% to about 80% of cationic nitrogenuous salts having two or more long chain acyclic aliphatic C_{15}–C_{22} hydrocarbon groups or one said group and one is arylalkyl group;

all by weight of Component I; and

II. the balance of the composition comprising from about 65% to about 97% of an aqueous carrier selected from the group consisting of water and mixtures of water and up to about 15% of C_1–C_4 monohydric alcohols.

4,661,270

CONCENTRATED FABRIC SOFTENING COMPOSITION AND METHODS FOR MAKING SAME

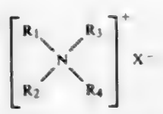
Jean-Paul Grandmaire, Andrimont, and Alain Jacques, Blegny, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 493,450, May 11, 1983, abandoned. This application May 1, 1985, Ser. No. 728,447

Int. Cl.⁴ D06M *13/30, 13/36, 13/38*

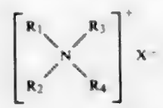
U.S. Cl. 252—8.75 **23 Claims**

1. A stable, aqueous, concentrated fabric softening composition comprising about (A) 12 to 20% by weight of a cationic softener of the formula:

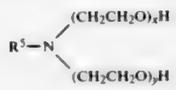


wherein R_1, R_2, R_3 and R_4 are aliphatic radicals of C_1 to C_{30} with at least one being alkyl of C_{14} to C_{30}; (B) 1 to 5% by weight of an amine salt of an ethoxylated alkyl amine and at least one of an C_{12} to C_{18} alkyl aryl sulfonic acid, C_{12} to C_{30} alkyl sulfonic acid, C_{12} to C_{30} olefin sulfonic acid or a C_{12} to C_{30} alkyl or olefin fatty acid, and (C) 0.5 to about 5% by weight of a water soluble metal or ammonium salt viscosity control electrolyte.

11. A stable, aqueous, concentrated fabric softening composition comprising (A) about 12 to 20% by weight a quaternary ammonium cationic softener of the formula:



wherein R_1, R_2, R_3 and R_4 are aliphatic radicals of C_1 to C_{30} with one or two being C_{14} to C_{30} alkyl and the others being C_1 to C_4 alkyl and X is a water solubilizing anion; (B) about 1.0 to 5% by weight of an amine salt of an ethoxylated alkyl amine of the formula:



wherein R^5 is C_{12} to C_{30} alkyl and $x+y=10$ to 35, and C_{12} to C_{30} alkyl fatty acid, C_{12} to C_{30} olefin fatty acid, C_{12} to C_{18} alkyl benzene sulfonic acid, C_{12} to C_{30} alkyl sulfonic acid, or C_{12} to C_{30} olefin sulfonic acid; and (C) about 0.1 to 1.5% by weight of a water soluble alkali metal, alkaline earth metal, or ammonium chloride, bromide, nitrite, nitrate, formate, or acetate salt electrolyte.

4,661,271

FRICTION REDUCING, ANTIWEAR ADDITIVES

Andrew G. Horodysky, Cherry Hill, and Henry Ashjian, E. Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1984, Ser. No. 639,180

Int. Cl.⁴ C10M *137/00*

U.S. Cl. 252—32.5 **13 Claims**

1. A lubricant composition comprising a major amount of an oil of lubricating viscosity or grease prepared therefrom and a minor amount of an additive compound effective for providing friction reducing properties to said composition consisting essentially of an imidazoline salt of a diol-derived acid phosphate or mixtures of imidazoline salts of said diol-derived acid phosphates prepared by reacting said diol or polyol with 5% to 100% molar quantities of phosphorus pentoxide at temperatures of 50° to 150° C. followed by reacting the product thereof with an imidazoline in molar ratios of from about 0.25% to about 150%.

4,661,272

THIOETHER DIESTER LUBRICATING OIL COMPOSITION

Edward T. Marquis; Lewis W. Watts, Jr., and Ernest L. Yeakey, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 22, 1983, Ser. No. 506,733

Int. Cl.⁴ C10M *157/06*

U.S. Cl. 252—32.7 E **1 Claim**

1. A lubricating oil composition comprising

a. a mixed base consisting essentially of

(1) a mineral oil

(2) a thioether diester compound represented by the formula:



in which R and R_1 each represent an alkyl radical having from 1 to 12 carbon atoms, with the total number of carbon atoms in R, R, R_1 and R_1 ranging from about 6 to 40, and n is an integer from 2 to 10, and

b. one or more additives selected from the group consisting of dispersants, overbased calcium sulfonates, polyethoxylated alkylphenols, zinc dialkyldithiophosphates, diarylamines, polymethacrylate V.I. improvers, olefin copolymer VI improvers and silicone antifoamants.

4,661,273

MERCAPTO-THIADIAZOLE REACTION PRODUCTS AS MULTIFUNCTIONAL LUBRICANT ADDITIVES AND COMPOSITIONS THEREOF

Gerassimo Frangatos, Haddonfield, and Robert H. Davis, Pitman, both of N.J., assignors to Mobil Oil Company, New York, N.Y.

Filed Dec. 30, 1985, Ser. No. 814,428

Int. Cl.⁴ C10M *133/00*

U.S. Cl. 252—47 **34 Claims**

1. A product of reaction having multifunctional antiwear-/EP and antioxidation characteristics prepared by reacting a mercapto or dimercapto thiadiazole with a mercaptan and

thionyl chloride wherein the amount of mercapto or dimercapto-to-thiadiazole to thionyl chloride to mercaptan varies in a molar ratio of from 1:2:1.5 to about 1:12:8 and wherein the temperature varies from 50° to about 120° C., the pressure from ambient to about 150 psi and the time from about 1 to about 8 hours or more.

4,661,274

ADDITIVE FOR LUBRICANTS AND HYDROCARBON FUELS COMPRISING REACTION PRODUCTS OF OLEFINS, SULFUR, HYDROGEN SULFIDE AND NITROGEN CONTAINING POLYMERIC COMPOUNDS

Andrew G. Horodysky, Cherry Hill, and Derek A. Law, Pitman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 13, 1986, Ser. No. 818,313

Int. Cl.⁴ C10M *1/38*

U.S. Cl. 252—47 **6 Claims**

1. A process for making an additive for lubricant compositions comprising co-reacting:

a. a monoolefin selected from the group consisting of butenes, propenes, pentenes, and mixtures of two or more thereof;

b. sulfur;

c. hydrogen sulfide;

d. polymeric nitrogen-containing compound selected from the group consisting of succinimides, amides, imides, polyoxyazoline polymers and alkyl imidazoline compounds; and

e. a catalytic amount of an amine selected from the group consisting of polyethylene amines and hydroxyl-containing amines;

at a temperature between about 130° C. and about 200° C. and a pressure of about 0 psig to about 900 psig, the reactants being reacted in a molar ratio of olefin, polymeric nitrogen-containing compound, and hydrogen sulfide to sulfur of 2 to 0.5 0.001 to 0.4, and 0.5 to 0.7, respectively, and the concentration of amine being between 0.5 and 10 percent of the total weight of reactants.

4,661,275

WATER-BASED FUNCTIONAL FLUID THICKENING COMBINATIONS OF SURFACTANTS AND HYDROCARBYL-SUBSTITUTED SUCCINIC ACID AND/OR ANHYDRIDE/AMINE TERMINATED POLY(OXYALKYLENE) REACTION PRODUCTS

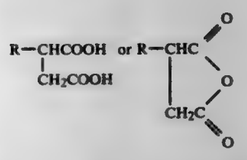
John W. Forsberg, Mentor-on-the-Lake, and Richard W. Jahnke, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jul. 29, 1985, Ser. No. 760,185

Int. Cl.⁴ C10M *173/02*

U.S. Cl. 252—49.3 **55 Claims**

1. A composition comprising (A) at least one water-dispersible reaction product made by reacting (A) (I) at least one hydrocarbyl-substituted succinic acid and/or anhydride represented by the formula



wherein R is a hydrocarbyl group of from about 8 to about 40 carbon atoms, with (A) (II) at least one water-dispersible amine terminated poly(oxyalkylene) having a number average molecular weight of at least about 2000, and (B) at least one surfactant.

4,661,276

GREASE COMPOSITION

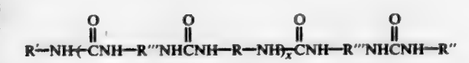
Jeffrey E. Stemke, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 717,402, Mar. 29, 1985, abandoned, which is a continuation of Ser. No. 393,903, Jun. 30, 1982, abandoned. This application May 30, 1986, Ser. No. 868,839

Int. Cl.⁴ C10M *119/24*

U.S. Cl. 252—51.5 A **9 Claims**

1. A grease composition comprising a major amount of a lubricating oil, a polyurea gellant in an amount sufficient to thicken the lubricating oil to grease consistency, and an effective amount in the range of 0.1 to 20 weight percent to improve the low shear stability of the polyurea thickened grease of a polymer having a pKa value greater than 5.0, said polyurea gellant having the following formula:



wherein x is a number having a value from 1 to 3, R′ and R″ are hydrocarbon radicals containing from 1 to 30 carbon atoms, R and R‴ are hydrocarbon radicals containing from 2 to 30 carbon atoms, wherein the ratio of carbon atoms to the number of urea groups is at least 6:1.

4,661,277

ANTI-RUST COMPOSITIONS

Alfred B. Piotrowski, and Richard S. Herd, both of Woodbury, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 545,337, Oct. 25, 1983, Pat. No. 4,579,673, which is a division of Ser. No. 225,574, Jan. 16, 1981, Pat. No. 4,440,658. This application Jan. 17, 1986, Ser. No. 819,569

Int. Cl.⁴ C10M *133/16*

U.S. Cl. 252—51.5 A **7 Claims**

1. A lubricant composition comprising a major amount of a grease or other solvent lubricant prepared from an oil of lubricating viscosity and a minor amount of an anti-rust additive compound, sufficient to inhibit rust formation on metal surfaces contacting said grease, comprising the reaction product of molar amounts of phthalic anhydride, morpholine and a C_{12} to C_{14} tertiary alkyl primary amine.

4,661,278

MONOTHIOPHOSPHINATES AS ACID, NEUTRAL, OR MILDLY ALKALINE CIRCUIT SULFIDE COLLECTORS AND PROCESS FOR USING SAME

D. R. Nagaraj, Stamford, and Samuel S. Wang, Cheshire, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 675,489, Nov. 28, 1984, Pat. No. 4,587,013. This application Jan. 8, 1986, Ser. No. 817,209

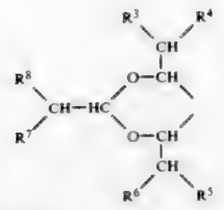
Int. Cl.⁴ C07F *9/30*; **C09K** *3/00*

U.S. Cl. 252—61 **5 Claims**

1. A collector composition for beneficiating base metal sulfide minerals from ores with selective rejection of gangue sulfide minerals, said collector composition comprising: a compound of the formula:



wherein R^1 and R^2 are each isobutyl radicals; or wherein R^1 and R^2 together form a heterocyclic ring having the formula:



wherein R^3, R^4, R^5, R^6, R^7 and R^8 are each, independently, selected from hydrogen and C_1 to C_{12} alkyl; and X is selected from hydrogen, alkali or alkaline earth metal and NH_4 groups.

4,661,279

DETERGENT COMPOSITION

Edward J. Parker, Riverview, Mich., assignor to BASF Corporation, Wyandotte, Mich.

Filed Nov. 22, 1985, Ser. No. 800,797
Int. Cl.[4] C11D *3/395, 7/54*
U.S. Cl. 252—94 **23 Claims**

1. An aqueous bleaching and cleaning composition comprising water, a chlorine releasing compound, an oxyalkylene compound which is a cogeneric mixture of conjugated polyoxyalkylene compounds containing in their structure C_3–C_5 oxyalkylene groups, oxyethylene groups and the nucleus of a Bisphenol compound originally containing a pair of reactive hydrogen atoms wherein said C_3–C_5 oxyalkylene groups and oxyethylene groups are present in chains that are attached to the bisphenol nucleus at the sites of both reactive hydrogen atoms.

4,661,280

BUILT LIQUID LAUNDRY DETERGENT COMPOSITION CONTAINING SALT OF HIGHER FATTY ACID STABILIZER AND METHOD OF USE

Trazollah Ouhadi, Liege; Guy Broze, Grace-Hollogen; Louis Dehan, Neupre, and Daniel van de Gaer, Flemalle, all of Belgium, assignors to Colgate, New York, N.Y.

Continuation-in-part of Ser. No. 707,342, Mar. 1, 1985. This application Apr. 22, 1985, Ser. No. 725,455
Int. Cl.[4] C11D *1/66, 3/20*
U.S. Cl. 252—99 **18 Claims**

1. A fabric treating composition which comprises a non-aqueous liquid, fabric-treating inorganic particles suspended in said non-aqueous liquid and an aluminum salt or a straight or branched, saturated or unsaturated aliphatic carboxylic acid having from about 8 to about 22 carbon atoms to increase the stability of the suspension, said non-aqueous liquid comprising a nonionic surfactant.

4,661,281

PROCESS FOR THE PRODUCTION OF A SPRAY-DRIED NONIONIC WASHING AID

Wolfgang Seiter, Neuss; Ingo Wegener, Duesseldorf, and Herbert Reuter, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 28, 1985, Ser. No. 750,807
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1984, 3424299
Int. Cl.[4] B01J *2/04;* **C11D** *3/075, 11/02, 17/06*
U.S. Cl. 252—140 **19 Claims**

1. A process for the production of a spray-dried, pourable washing aid containing nonionic surface-active agents of the ethoxylated alcohol type and having a powder density of from 300 g/l to 550 g/l, comprising the steps of (1) spraying an aqueous suspension of from 50 to 65 parts by weight of constituents of the following composition where all percentages, based on anhydrous constituents, are percent by weight of the spray-dried product:

(A) from 15 to 30% by weight of at least one nonionic surface-active agent of the ethoxylated alcohol type;
(B) from 8 to 18% by weight of sodium silicate having the composition $Na_2O:SiO_2$ of 1:1.5 to 1:3.4;
(C) from 25 to 55% by weight of finely crystalline, synthetic zeolite selected from the group consisting of zeolite NaA, zeolite NaX and mixtures thereof;
(D) from 8 to 20% by weight of pentasodium tripolyphosphate; and
(E) from 0 to 3% by weight of anionic surface-active compounds selected from the group consisting of soaps, sulfonates and sulfates, in from 35 to 50 parts by weight of water at a temperature of 75° to 90° C. through nozzles under a pressure of from 35 to 100 bar into a spray-drying zone in which the drying gas flowing in countercurrent has an entry temperature of from 160° to 240° C. and an exit temperature of from 80° to 95° C.; and (2) recovering a spray-dried product containing from 13 to 21% by weight of water, of which water from 9 to 16% by weight is removable on heating said spray-dried product at 130° C.

4,661,282

INORGANIC ANION EXCHANGERS AND PREPARATION THEREOF

Howard W. Clark, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 24, 1985, Ser. No. 748,271
Int. Cl.[4] B01J *20/08*
U.S. Cl. 252—179 **35 Claims**

1. An anion exchanger material comprising a material exhibiting anion exchange properties at temperatures above about 160° C., said material represented by the formula:

$$[M_{1-x}{}^{a}Q_x{}^{a+1}]O_y(OH)_z](A^{-1})_d(A^{-2})_e(A^{-3})_f(A^{-4})_g \cdot nH_2O$$

wherein M is a metal element or elements each with a positive valence of a; Q is a metal element or elements each with a positive valence of a+1; a is 2, 3, 4, or 5; A^{-1}, A^{-2}, A^{-3}, and A^{-4} are each one or more exchangeable anions each having a negative valence of 1, 2, 3, or 4, respectively; x is $0<x\leqq 0.5$; and n, z, d, e, f, and g are real numbers greater than or equal to zero and satisfy the following:

$y \leqq z$
$2y+z=a$
$0<d+2e+3f+4g+\leqq x$
$0 \leqq n \leqq 10$.

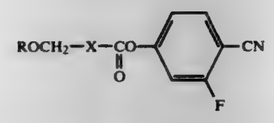
4,661,283

BENZOATE DERIVATIVES HAVING A LARGE POSITIVE DIELECTRIC ANISOTROPY VALUE AND LIQUID CRYSTAL COMPOSITIONS CONTAINING SAME

Shigeru Sugimori, Fujisawashi; Yasuyuki Goto, Yokohamashi; Toyoshiro Isoyama, Yokohamashi, and Kazunori Nigorikawa, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

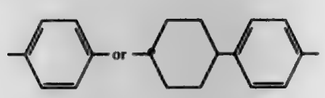
Filed Feb. 28, 1985, Ser. No. 706,609
Claims priority, application Japan, Mar. 2, 1984, 59-40029; Jul. 25, 1984, 59-154277
Int. Cl.[4] C09K *19/30, 19/20;* **C07C** *121/60*
U.S. Cl. 252—299.63 **4 Claims**

1. A benzoic acid ester derivative expressed by the formula



(I)

wherein R represents an alkyl group of 1 to 10 carbon atoms and X represents



4,661,284

SILICA AND BORON-CONTAINING ULTRAPHOSPHATE LASER GLASS WITH LOW CONCENTRATION QUENCHING AND IMPROVED THERMAL SHOCK RESISTANCE

Lee M. Cook, Daryea, Pa., and Stanley E. Stokowski, Danville, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 25, 1985, Ser. No. 779,916
Int. Cl.[4] C03C *3/19, 3/066, 3/068;* **C09K** *11/81*
U.S. Cl. 252—301.4 P **20 Claims**

1. An optical glass having a refractive index, nd>1.520; an Abbe number, Vd, >60; a density <3.0 g/cm^3, a thermal expansion coefficient, α, $\leqq 110\times10^{-7}$°C.$^{-1}$; a Young's Modulus, E, $<70\times10^3$N/mm^2; a Poisson's Ratio, ν, 0.28; a thermal conductivity, K, >0.5 W/m K; a thermal FOM$=(1-\nu)\cdot K/\alpha\cdot E>0.7$, a first e-folding time of the Nd^{3+} fluoresence at 0.5 wt % $Nd_2O_3>375$ μsec, and a first e-folding time of the Nd^{3+} fluorescence at 10 wt. %>175 μsec.
consisting essentially of, in mol. %:
P_2O_5: 40–70%
SiO_2: 0–20%
B_2O_3: 5–20%
Sum $SiO_2+B_2O_3$: 5–35%
Sum $Li_2O+Na_2O+K_2O$: 5–20%
Sum $La_2O_3+Nd_2O_3$: 3–10%
Sum MgO+CaO+SrO+BaO+ZnO: 0–10%.

4,661,285

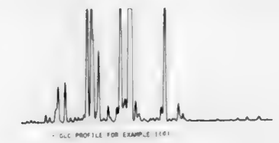
BALSAMIC FRAGRANCE COMPOSITION AND PROCESS FOR PREPARATION

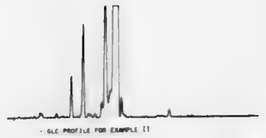
Eugene G. Harris, West Chester, and Jane C. Muenninghoff, St. Bernard, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed May 5, 1986, Ser. No. 860,268
Int. Cl.[4] A61K *7/46;* **C11B** *9/00*
U.S. Cl. 252—522 R **8 Claims**

1. A process for preparing a fragrance composition comprising the steps of:

(a) heating an ethylhaloacetate, camphene and di-t-butyl peroxide present in a molar ratio of 20:1:1 to 7.5:1:0.1 at a temperature from 135° C. to 180° C. and at atmospheric pressure up to 200 psig until essentially all of the camphene is reacted and distilling the mixture at atmospheric or slightly reduced pressure to remove substantially all of the unreacted ethylhaloacetate;
(b) adding from 1 to 5 moles of zinc, per mole of intermediate, and from 1 to 30 moles of water, per mole of intermediate, to the substantially ethylhaloacetate-free mixture and maintaining the temperature at 70° C. to 100° C. with vigorous agitation until reductive elimination is essentially complete;
(c) separating the organic phase from the aqueous phase; and





(d) distilling the organic phase at a pressure of 5 mm Hg or below and collecting the fragrance composition which has a boiling range of 90° C. to 125° C. at 1 mm Hg.

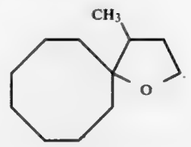
4,661,286

OXASPIRODODECANE DERIVATIVES AND PERFUME COMPOSITIONS CONTAINING THEM

Ulf A. Schaper, Krefeld; Siegfried Blöcal, Düsseldorf, and Klaus Bruns, Krefeld-Taar, all of Fed. Rep. or Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 576,184, Feb. 2, 1984. This application Mar. 24, 1986, Ser. No. 844,231
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3306798
Int. Cl.[4] A61K *7/46;* **C07D** *307/93*
U.S. Cl. 252—522 R **20 Claims**

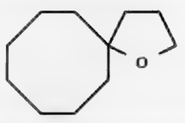
1. A compound of the formula



(I)

2. A perfume composition comprising a perfume-effective amount of the compound of claim 1 in admixture with at least one customary perfume composition constituent.

3. A perfume composition comprising a perfume-effective amount of a compound of the formula



(II)

in admixture with at least one customary perfume composition constituent.

4,661,287

STABLE SOIL RELEASE PROMOTING ENZYMATIC LIQUID DETERGENT COMPOSITION

Michael C. Crossin, Kendall Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 539,079, Oct. 5, 1983, abandoned, and Ser. No. 539,080, Oct. 5, 1983, abandoned, and Ser. No. 628,697, Jul. 11, 1984, abandoned, said Ser. No. 539,079, and Ser. No. 539,080, is a continuation-in-part of Ser. No. 481,904, Apr. 4, 1983, abandoned. This application Mar. 19, 1985, Ser. No. 713,945

Int. Cl.⁴ C11D *1/83, 3/37, 3/28*

U.S. Cl. 252—542 **4 Claims**

1. A stable soil release promoting enzymatic liquid detergent comprising a detersive proportion of a nonionic detergent, a detergent supplementing and fluorescent brightener substantivity increasing proportion of an anionic sulf(on)ated synthetic organic detergent, a fluorescent brightening proportion of a fluorescent brightener, a soil release promoting proportion of a soil release promoting polymer of polyethylene terephthalate and polyoxyethylene terephthalate, a proportion of enyzme sufficient to enzymatically hydrolyze proteinaceous and/or amylaceous soilds on fabrics during washing thereof with an aqueous washing solution of such liquid detergent composition, a stabilizing and buffering proportion of a stabilizer for the enzymes(s), and an aqueous medium, in which, on storage, the pH is maintained in the range of 6.2 to 7.0, and the viscosity is maintained in the range of 50 to 150 centipoises, and in which there is present no triethanolamine and no more than a total of 10% of water soluble ionizable salt material, wherein the nonionic detergent is a condensation product of a mole of higher fatty alcohol of 10 to 20 carbon atoms and 3 to 20 moles of ethylene oxide, and the proportion of such nonionic detergent is within the range of 12 to 20%, the anionic sulf(on)ated detergent is a linear higher alkyl benzene sulfonate and the proportion thereof in in the range of 3 to 5%, the soil release promoting polymer is a polymer of polyethyelene terephthalate and polyoxyethylene terephthalate of a molecular weight in the range of 19,000 to 25,000 wherein the polyoxyethylene of the polyoxyethylene terephthalate is of a molecular weight in the range of about 3,000 to 4,000, and the molar ratio of ethylene terepyhthalate to polyoxyethylene terephthalate units is within the range of 5:2 to 5;1, and the proportion of such soil release promoting polymer is within the range of 0.5 to 1.5%, the enzyme includes proteolytic and amylolytic enzymes and the proportion of enzyme is within the range of 0.025 to 0.05%, the stabilizer for the enzyme is sodium formate and the proportion thereof is within the range of 2 to 4%, the fluorescent brightener is an aminostilbene brightener or an azolystilbene brightener or a mixture of fluorescent brighteners including such a brightener and the proportion thereof is within the range of 0.1 to 0.4%, and the aqueous medium is an aqueous alcoholic medium containing 5 to 15% of such medium of ethanol and 95 to 85% of water, which water is of a hardness, as $CaCO_3$, of less than 50 parts per million.

4,661,288

ZWITTERIONIC COMPOUNDS HAVING CLAY SOIL REMOVAL/ANTI/REDEPOSITION PROPERTIES USEFUL IN DETERGENT COMPOSITIONS

Doan N. Rubingh, and Eugene P. Gosselink, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 452,556, Dec. 23, 1982, abandoned. This application Mar. 8, 1985, Ser. No. 709,614

The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.

Int. Cl.⁴ C11D *1/62, 1/65, 3/37;* **C07C** *141/00, 87/00*

U.S. Cl. 252—545 **28 Claims**

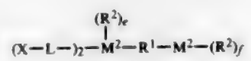
18. A detergent composition, which comprises:

(a) from about 1 to about 75% by weight of a detergent surfactant selected from the group consisting of nonionic, anionic, ampholytic, zwitterionic and cationic surfactants and mixtures thereof; and

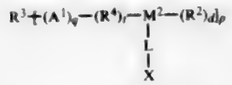
(b) from about 0.05 to about 95% by weight of a water-soluble zwitterionic compound having clay soil removal/anti-redeposition properties selected from the group consisting of:

(1) dizwitterionic compounds having the formula:

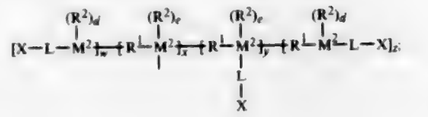




(2) polyzwitterionic compounds having the formula:

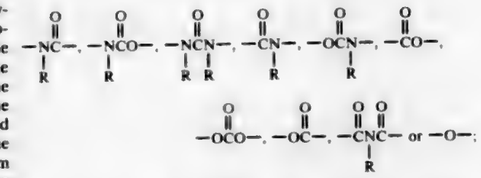


(3) zwitterionic polymers having the general formula:



and

(4) mixtures thereof wherein A^1 is



R is H or C_1–C_4 alkyl or hydroxyalkyl; R^1 is C_2–C_{12} alkylene, hydroxyalkylene, alkenylene, arylene, alkarylene, or a C_2–C_3 oxyalkylene moiety having from 2 to about 20 oxyalkylene units provided that no O—N bonds are formed; each R^2 is C_1–C_4 alkyl or hydroxyalkyl, $-(R^5O)_k-H$, the moiety $-L-X$ or two R^2 together form the moiety $-(CH_2CH_2)_r-A^2-(CH_2CH_2)_s-$, wherein A^2 is —O— or $-CH_2-$, r is 1 or 2, s is 1 or 2, and r+s is 3 or 4; R^3 is a substituted C_3–C_{12} alkyl, hydroxyalkyl, alkenyl, aryl or alkaryl group having p substitution sites; R^4 is C_1–C_{12} alkylene, hydroxyalkylene, alkenylene, arylene, alkarylene, or a C_2–C_3 oxyalkylene moiety having from 2 to about 20 oxyalkylene units provided no O—O or O—N bonds are formed; R^5 is C_2–C_3 alkylene or hydroxyalkylene; L is a hydrophilic chain which contains the polyoxyalkylene moiety $-[(R^6O)_m(CH_2CH_2O)_n]-$, wherein R^6 is C_3–C_4 alkylene or hydroxyalkylene and m and n are number such that the moiety $-(CH_2CH_2O)_n-$ comprises at least about 50% by weight of said polyoxyalkylene moiety; M^1 is an N^+ or N group; each M^2 is an N^+ or N group and at least one M^2 is an N^+ group; X is the anionic group SO_3^- or a mixture of said anionic group and the nonionic group H; d is 2 when M^1 or M^2 is N^+ and is 1 when M^1 or M^2 is N; e is 1 when M^2 is N^+ and is 0 when M^2 is N; f is 3 when M^2 is N^+ and is 2 when M^2 is N; k is from 2 to about 100; for said dizwitterionic compounds, n is at least about 6; for said polyzwitterionic compounds and zwitterionic polymers, n is at least about 3; p is from 3 to 8; q is 1 or 0; t is 1 or 0, provided that t is 1 when q is 1; w is 1 or 0; and x+y+z is from 2 to 9.

4,661,289

DETERGENT COMPOSITIONS

Michael W. Parslow, Upton by Chester, United Kingdom, and Jacobus R. Nool, Hellevoetsluis, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 27, 1985, Ser. No. 769,653

Claims priority, application United Kingdom, Aug. 29, 1984, 8421800

Int. Cl.⁴ C11D *3/30, 3/386;* **D06M** *16/00*

U.S. Cl. 252—547 **6 Claims**

1. An alkaline detergent composition for the cleaning and softening of fabrics comprising:

(a) from 2 to 50% by weight of a detergent surfactant selected from the group consisting of anionic, nonionic surfactants and mixtures thereof;

(b) from 1.5 to 6% by weight of a cationic fabric-softening compound;

(c) from 0 to 80% by weight of a detergency builder, and

(d) from 0.1 to 10% by weight of a fungal cellulase, comprising the cellulase in an amount corresponding to from about 4 to about 150 regular C_x units/gram of the detergent composition.

4,661,290

APPARATUS FOR COMPACTING SOLID WASTE MATERIALS AND ITS ACCESSORY FACILITIES

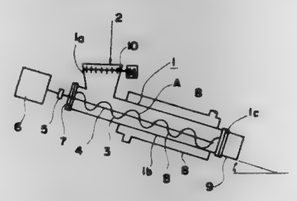
Keazo Sauda; Akitoshi Yokota; Takuro Yagi; Hiroshi Kuribayashi, all of Kanagawa; Saburo Kita, Tokyo; Setsuo Shibata, Kanagawa, and Hirofusa Ogawa, Tokyo, all of Japan, assignors to JGC Corporation, Tokyo, Japan

Filed May 7, 1985, Ser. No. 731,372

Claims priority, application Japan, Mar. 15, 1984, 59-50607; May 18, 1984, 59-98637; Jun. 24, 1984, 59-130980; Jun. 27, 1984, 59-130978; Jun. 27, 1984, 59-130979

Int. Cl.⁴ G21F *9/00, 9/36;* **B30B** *15/34*

U.S. Cl. 252—626 **23 Claims**



1. An apparatus for compacting a solid waste material comprising radioactive material including a thermoplastic material, comprising:

(a) a hollow cylindrical body having a charging inlet for charging the solid waste material therethrough into the hollow cylindrical body, a heating portion for heating the solid waste material in said hollow cylindrical body, and a discharging outlet for discharging the solid waste material from said hollow cylindrical body;

(b) a rotatable shaft disposed in said hollow cylindrical body and having a helical screw blade thereon, said screw blade and an inner wall surface of said hollow cylindrical body being spaced from each other with a clearance provided therebetween for allowing the solid waste material in said hollow cylindrical body to form a bridge therein;

(c) support means for radially movably supporting an end of said rotatable shaft;

(d) a prime mover coupled to said end of the rotatable shaft through said support means; and

(e) an outlet nozzle coupled to said discharging outlet for compressing the solid waste material discharged from said discharging outlet.

4,661,291

METHOD FOR FIXATION OF INCINERATOR ASH OR IODINE SORBENT

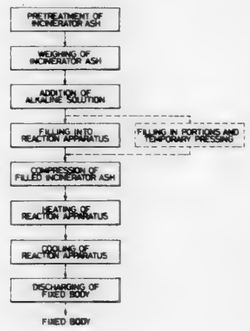
Nakamichi Yamasaki, Kouchi; Takeshi Kubota, Ibaragi; Yoshihiro Hoshino, Kashiwa, and Hiroyuki Tanuma, Hachiouji, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1985, Ser. No. 764,686

Claims priority, application Japan, Sep. 25, 1984, 59-199743; Oct. 24, 1984, 59-223279

Int. Cl.⁴ G21F *9/16*

U.S. Cl. 252—629 **21 Claims**



1. A method for fixing incinerator ash containing SiO_2 and Al_2O_3, said method comprising incorporating the incinerator ash with NaOH or NaOH and an SiO_2-containing substance in such an amount that resulting mixture contains 5 to 90 wt% of SiO_2, 2 to 10 wt% of Na_2O, and more than 3 wt% of Al_2O_3 which is less than the content of SiO_2 in terms of mol%; mixing 100 parts by weight of the mixture with more than 5 parts by weight of water; and subjecting the resulting mixture to hydrothermal reaction under a pressure of 70 kg/cm² and above and at a temperature between 150° C. and 350° C. so that the mixture forms three-dimensional skeleton structure of alkali-containing aluminosilicate to fix and seal the incinerator ash with metals in the three-dimensional skeleton structure.

13. A method for fixing iiodine sorbent which comprises allowing iodine to be adsorbed onto a silver-loaded silicate adsorbent, incorporating the iodine sorbent with 1 to 30 wt% of at least one of sodium hydroxide, potassium hydroxide, and barium hydroxide; and subjecting the resulting mixture to hydrothermal reaction under a pressure of 70 kg/cm² and above and at a temperature between 150° C. and 350° C. so that the mixture forms three-dimensional skeleton structure of alkali-containing aluminosilicate to fix and seal the iodine sorbent in the three-dimensional skeleton structure.

4,661,292

PROCESS FOR THE PREPARATION OF 1,4-DIAMINO-2,3-DICYANOANTHRAQUINONE

Rudolf Schaulin, Rieben, and Maurice Grélat, Melide, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 3, 1985, Ser. No. 784,434

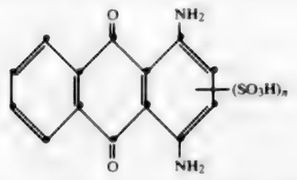
Claims priority, application Switzerland, Oct. 26, 1984, 5121/84

Int. Cl.⁴ C07C *143/665, 97/24*

U.S. Cl. 260—371 **10 Claims**

1. A process for the preparation of 1,4-diamino-2,3-

dicyanoanthraquinone by reacting a diaminoanthraquinone, or a salt, thereof, of the formula



wherein n is 0, 1 or 2, with a compound which denotes cyanide ions, in the presence of an oxidising agent, which comprises using as solvent a mixture of a carboxamide, an N-alkylated carboxamide or a lactam and water, which mixture contains more than 10% and up to 90% by weight of water the reaction temperature being from 40° to 150° C.

4,661,293

METHOD FOR PREPARING 1,4-DIAMINOANTHRAQUINONES AND INTERMEDIATES THEREOF

Alfred G. Zielske, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.

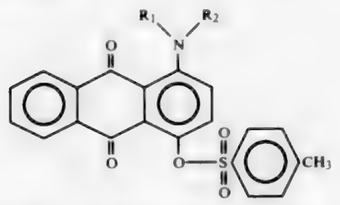
Continuation of Ser. No. 556,835, Dec. 1, 1983, abandoned. This application May 23, 1986, Ser. No. 868,884

Int. Cl.⁴ C07C *97/24, 103/82*

U.S. Cl. 260—377 **8 Claims**

1. A method of preparing an unsymmetrical 1,4-diaminoanthraquinone comprising:

providing a monoamino-monotosyl-anthraquinone having the structure



wherein R_1 is hydrogen, alkyl, cycloalkyl or aryl, the alkyl having 1 to about 4 carbons, the cycloalkyl having about 6 to about 9 carbons, the aryl being unsubstituted or substituted phenyl or benzyl, the substituent thereof being one or more of an alkyl group having 1 to about 4 carbons, an alkoxy group having 1 to about 3 carbons, a cyclohexyl group, a phenoxy group, or an acylamino group, and R_2 is hydrogen, alkyl, cycloalkyl or aryl, the alkyl haaving 1 to about 4 carbons, the cycloalkyl having about 6 to about 9 carbons, the aryl being unsubstituted or substituted phenyl or benzyl, the substituent thereof being one or more of an alkyl group having 1 to about 4 carbons, an alkoxy group having 1 to about 3 carbons, a cyclohexyl group, a phenoxy group, or an acylamino group,

reacting said monoamino-monotosyl-anthraquinone with an excess of a primary or secondary amine in the presence of an organic solvent at an elevated temperature to form an unsymmetrical 1,4-diaminoanthraquinone, said amine having the formula R_3R_4NH wherein R_3 is hydrogen, alkyl, cycloalkyl or aryl, the alkyl having 1 to about 4 carbons, the cycloalkyl having about 6 to about 9 carbons, the aryl being unsubstituted or substituted phenyl or benzyl, the substituent thereof being one or more of an alkyl group having 1 to about 4 carbons, an alkoxy group having 1 to about 3 carbons, a cyclohexyl group, a phenoxy group, or an acylamino group, and R_4 is hydrogen, alkyl, cycloalkyl or aryl, the alkyl having 1 to about 4 carbons, the cycloalkyl having about 6 to about 9 carbons, the aryl being unsubstituted or substituted phenyl or benzyl, the substituent thereof being one or more of an alkyl group having 1 to about 4 carbons, an alkoxy group having 1 to about 3 carbons, a cyclohexyl group, a phenoxy group, or an acylamino group, when R_3 and R_4 are hydrogen, alkyl or cycloalkyl the organic solvent being pyridine, and when at least one of R_3 and R_4 is aryl the organic solvent being dimethyl sulfoxide or dimethyl formamide.

4,661,294

BIOLOGICALLY ACTIVE 1-THIO DERIVATIVES OF VITAMIN D

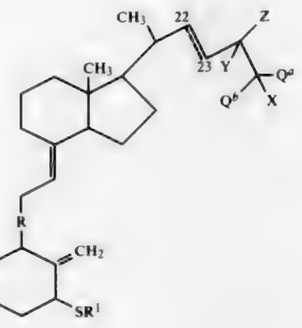
Michael F. Holick, Sudbury, and Brian de Costa, Cambridge, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Mar. 18, 1985, Ser. No. 712,712

Int. Cl.⁴ C07J *9/00*; A61K *31/59*

U.S. Cl. 260—397.2 **17 Claims**

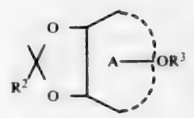
1. A biologically active compound having the formula



wherein:

(1) R is epoxy or double bond;

(2) R^1 is H, an acyl residue or a straight or branched chain glycosidic residue containing 1–20 glycosidic units per residue, or R^1 is an orthoester glycoside moiety of the formula:



(II)

in which said formula

(a) A represents a glucofuranosyl or glucopyranosyl ring,

(b) R^2 is hydrogen, lower alkyl, aralkyl or aryl, and

(c) R^3 is hydrogen or a straight or branched chain glycosidic residue containing 1–20 glyosidic units per residue;

(3) the bond between C_{22} and C_{23} is single or double;

(4) Y is hydrogen, fluorine, methyl or ethyl;

(5) Z is hydrogen, fluorine or OR^1; where R^1 is defined as above;

(6) X is

(a) hydrogen, or

(b) OR^1, wherein R^1 is defined as above;

(7) Q^a is CH_3, CF_3, or CH_2OR^1, where R^1 is defined as above;

(8) Q^b is CF_3 or CH_3; and

(9) the $—SR^1$ moiety is in the alpha or beta configuration;

with the proviso that when Y is fluorine, Z is not OH.

4,661,295

NOVEL RADIOACTIVE ESTRADIENES

Alain Jouquey, Paris; Jean-Noël Veltz, Saint-Denis; Jean Salmon, and Michel Moures, both of Paris, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jun. 14, 1984, Ser. No. 620,454

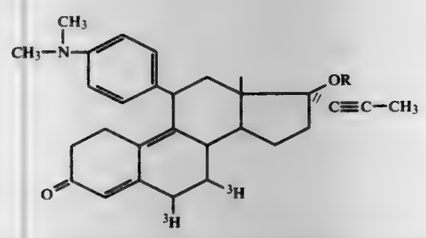
Claims priority, application France, Jun. 14, 1983, 83 09812

The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.

Int. Cl.⁴ C07J *1/00*

U.S. Cl. 260—397.45 **6 Claims**

1. A radioactive estradiene labelled with tritium of the formula



I

wherein ^3H is tritium and R is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms and acyl of an organic carboxylic acid of 1 to 10 carbon atoms.

4,661,296

HF SEPARATION IN A CARBONYLATION PROCESS

Dace Grote, Columbus, Ohio; Bhupendra C. Trivedi, Godhra, India, and Thomas O. Mason, Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 13, 1982, Ser. No. 416,815

Int. Cl.⁴ C07C *51/14, 51/47*

U.S. Cl. 260—413 **4 Claims**

1. In the carbonylation of an olefin with carbon monoxide in the presence of hydrogen fluoride catalyst wherein the reaction product is treated with water to produce a mixture of a carboxylic acid, HF and optionally water, the improvement comprising contacting at a temperature in the range of from about 25° C. up to about 100° C., the mixture with one side of a cation permeable membrane of a copolymer of tetrafluoro ethylene and perfluoro-3,6-dioxa-4-methyl-octen sulfamic acid whose other side is in contact with water.

4,661,297

BASIC ETHERS OF 7-OXO-7H-BENZO(C) FIUORENE AND A PROCESS FOR THEIR PRODUCTION

Jiri Krepelka; Iva Vancurova; Karel Rezabek, all of Prague; Milan Melka, Hradec Kralove; Vojtech Pujman; Stanislava Pokorna, both of Prague; Ruzena Reichlova, and Slavjanka Cernochova, both of Prague, all of Czechoslovakia, assignors to SPOFA, spojene podniky pro zdravotnickou vyrobu, Prague, Czechoslovakia

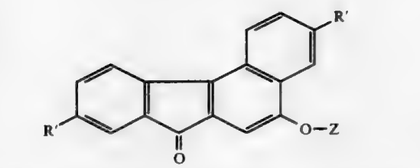
Continuation-in-part of Ser. No. 231,411, Feb. 4, 1981, abandoned. This application Sep. 14, 1982, Ser. No. 417,834

Claims priority, application Czechoslovakia, Feb. 4, 1980, 753-80

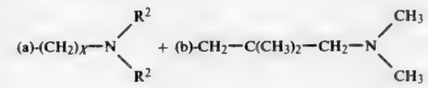
Int. Cl.⁴ C07C *93/06*

U.S. Cl. 260—501.18 **15 Claims**

1. Basic ethers of 7-oxo-7H-benzo(c) fluorene of the formula



wherein R' is selected from the group consisting of hydrogen, a methyl group and an ethyl group, and Z is selected from the group consisting of



wherein R^2 is selected from the group consisting of a methyl group and an ethyl group, and x is an integer of 2–3.

4,661,298

PROCESS FOR THE FORMATION OF PHOSPHONOALKYLATED AMINO ACIDS

Stanley B. Mirviss, Stamford, Conn., and Edward D. Weil, Hastings-on-Hudson, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 31, 1983, Ser. No. 528,283

Int. Cl.⁴ C07F *9/38*

U.S. Cl. 260—502.5 F **9 Claims**

1. In the process for forming N-phosphonoalkylated amino acids by reaction of an amino acid, HO_2CRNH_2, with R alkylene, with a haloalkylphosphonic acid, wherein the improvement consists of using a catalytically effective amount of a polyamine catalyst which comprises groupings of the formula $H_2N\text{-}(C_nH_{2n}NH)_a\text{-}H$ where n can be 2 to 4 and a can range from 6 to 28 which contains a sufficiently high concentration of amine nitrogen atoms to promote the reaction.

4,661,299

RADIO FREQUENCY ENERGY SENSITIZED COMPOSITIONS AND METHOD FOR SENSITIZING COMPOSITIONS TO RADIO FREQUENCY ENERGY

Agmund K. Thorsrud, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 4, 1985, Ser. No. 707,613

Int. Cl.⁴ H05B *1/00*; B29C *35/00*; C08K *3/34*

U.S. Cl. 264—25 **36 Claims**

1. A method for molding wherein a substance suitable for radio frequency enhancement is (1) treated by the method of enhancing the radio frequency sensitivity of a substance suitable for radio frequency enhancement comprising admixing with said substance suitable for radio frequency enhancement a radio frequency sensitizing amount of an inorganic radio frequency sensitizer treated essentially to remove absorbed water and/or other volatiles said sensitizer chosen from crystalline or amorphous alkali or alkaline earth metal aluminosilicate and (2) is subjected to radio frequency energy in a molding process.

4,661,300

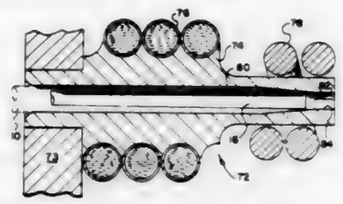
METHOD AND APPARATUS FOR FLASHLESS TIPPING OF AN I.V. CATHETER

Charles W. Daugherty, Xenia, Ohio, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 649,567, Sep. 12, 1984, abandoned. This application Mar. 11, 1986, Ser. No. 838,739

Int. Cl.⁴ B29C *31/08*

U.S. Cl. 264—40.6 **7 Claims**



1. A method of tipping by molding one end of an I.V. catheter, without any flash comprising the steps of;

mounting a catheter to be tipped coaxially over a cantilever support mandrel carried on a carriage whereby said catheter is even with or extends slightly beyond the end of said mandrel,

heating a die having an interior molding surface at least one portion of which is tapered according to the tip desired on said catheter and is open at both ends for allowing flow of catheter material therethrough,

moving said carriage along a guide means toward said die such that said catheter carrying mandrel enters said die and carries said catheter toward engagement with said tapered molding surface,

continuing moving said mandrel into said die and forcing said catheter into the space being established between and by the mandrel and the tapered molding surface of said die,

allowing said catheter to heat and flow in and through said space between the tapered molding surface of the die and the mandrel and flow there through between the end of the mandrel and along the tapered die surface toward said open end,

advancing said flowing heated catheter and carrying mandrel until said mandrel engages said interior tapered molding surface,

severing the flowing tip of said catheter where said mandrel engages said interior tapered molding surface to ultimately define said space and the catheter tip shape as a continuous fine edge and to allow the flow of catheter material beyond said mandrel and to said open end of said die,

cooling said die and said catheter while holding said catheter in said space defined by said mandrel and said tapered die surface,

reversing said carriage along said guide such that said catheter is withdrawn from said die, and

removing said catheter from said mandrel.

5. Apparatus for tipping one end of an I.V. catheter to provide a fine edge for ease of penetration, comprising:

a die defining an interior molding surface therein having at least one portion of which is tapered according to the outer surface of the tip desired on said catheter and being open at both ends for allowing flow of catheter material therethrough,

means for controllably heating said die to a temperature sufficient to cause said catheter material to melt and flow therein and therethrough,

means for cooling said die,

a mandrel for supporting and carrying said catheter thereon in position even with or extending slightly cantilever therefrom,

transport means for supporting and carrying said mandrel and catheter, movable along a predetermined path for inserting said catheter and mandrel toward said die and for removing same from said die following production of the desired tip,

means for biasing said mandrel and said catheter inwardly with respect to said die, with sufficient force first causing said catheter to move inwardly with respect to said die as said catheter is heated to its melting point and begins to flow and then causing said mandrel to touch said die to clip the flow of catheter material which extends slightly cantilever to form a continuous finished edge at the tip of said catheter leaving the catheter end open and allowing the outward flow of the clipped catheter material to pass through said open end of said die.

4,661,301

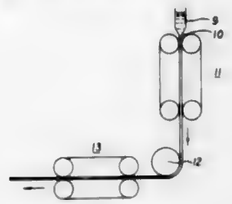
METHOD FOR PRODUCING LAMINATE BOARD CONTAINING UNIFORMLY DISTRIBUTED FILLER PARTICLES

Reisuke Okada, and Hisami Fujino, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 14, 1985, Ser. No. 765,476

Int. Cl.⁴ B29C *47/34*

U.S. Cl. 264—41 **8 Claims**



1. A process for continuous molding of a plate for an electrical printed circuit board comprising a resin and hollow microspheres uniformly distributed in said resin, wherein the hollow microspheres have a specific gravity different from that of the resin, comprising the step of:

extruding a mixture of a resin and hollow microspheres into a vertically disposed moving double belt press maintained at a temperature which allows the extruded plate to harden almost completely.

4,661,302

EXPANDABLE POLYMERIC COMPOSITION AND METHOD

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 7, 1986, Ser. No. 835,133

Int. Cl.⁴ C08J *9/14, 9/22*

U.S. Cl. 264—53 **9 Claims**

1. A process for the preparation of an expanded polymeric foam composition comprising the steps of:

(a) melt processing under pressure at least 50% by weight of an alkenyl aromatic polymer together with a volatile blowing agent and an expansion aid to form a flowable admixture, said expansion aid comprising from about 0.06% to about 15.0% by weight polyphenylene ether,

(b) extruding said admixture through a die to a zone of lower pressure and activating said blowing agent to expand said alkenyl aromatic polymer to a cellular structure, and

(c) exposing said cellular structure to steam or hot air at a temperature of between about 80° to about 115° C. to expand further said cellular structure to a foam having a lower density.

4,661,303

REACTIVE COEXTRUSION OF FUNCTIONALIZED POLYMERS

Pak-Wing S. Chum; Mark A. Barger; Thuan P. Dixit, and James E. Schuetz, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 11, 1985, Ser. No. 743,238

Int. Cl.⁴ B29C *47/04*

U.S. Cl. 264—171 **12 Claims**

1. In a method of forming a multilayered laminate by coextruding alternate layers of two incompatible polymers without the use of an adhesive layer, the improvement which comprises the steps of

(a) modifying the first polymer to have pendant cyclic imino ether groups, and

(b) modifying the second polymer to have coreactive groups comprising an active hydrogen capable of forming a covalent bond with the pendant cyclic imino ether group of the first modified polymer at the interfacial surface of the layers,

the modifications occurring prior to the coextrusion step, whereby the adhesion bond between the alternate layers is increased.

4,661,304

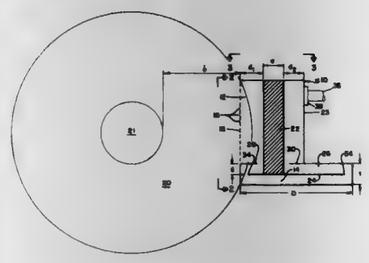
RESONANT-CAVITY ANTENNA FOR PLASMA HEATING

Francis W. Perkins, Jr., Princeton, N.J.; Shiu-Chu Chiu; Paul Parks, both of San Diego, Calif., and John M. Rawls, Del Mar, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 10, 1984, Ser. No. 569,701

Int. Cl.⁴ G21B *1/00*

U.S. Cl. 376—123 **28 Claims**



1. In a magnetic confinement plasma device having a plasma, said plasma being immersed in a strong magnetic field and confined within an evacuated plasma chamber, a wave launcher for launching electromagnetic waves in the range of frequencies of 10 MHz to 200 MHz to energize and thereby heat said plasma, said wave launcher being spaced-apart from said plasma, said wave launcher comprising:

a resonant cavity, said resonant cavity including resonant chamber walls for containing electromagnetic fields;

connection means for connecting said resonant cavity to a transmission line carrying electromagnetic wave energy to said resonant cavity;

at least one capacitive reactive element, and at least one inductive reactive element disposed within said resonant cavity and spaced no farther from said plasma chamber than one-quarter wavelength of said frequency of said launched waves, said capacitive and said inductive reactive elements cooperating at least partially determined said frequency of said launched waves;

said capacitive reactive member separated from said chamber walls of said resonant cavity by a first predefined gap, with said capacitive reactive member and said chamber walls of said resonant cavity oriented approximately tangential to said strong magnetic field;

said capacitive and said inductive reactive elements spaced apart from said plasma a second predetermined distance which at least partially determines said frequency of said launched waves; and

said resonant cavity cooperating with said capacitive and said inductive reactive elements so as to launch electromagnetic waves in said range of frequencies, toward said plasma.

4,661,305

METHOD OF MARKING A SUBSTRATE USING A MARKABLE THERMOCHROMIC ARTICLE

William D. Carlomagno, Redwood City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 470,082, Feb. 28, 1983, abandoned, which is a continuation of Ser. No. 171,278, Jul. 23, 1980, abandoned. This application Jan. 15, 1985, Ser. No. 692,311

Int. Cl.⁴ B32B *33/00, 35/00*

U.S. Cl. 264—132 **33 Claims**

1. A method for marking a substrate comprising the steps of:

(a) placing on the substrate an article that is removable from the substrate until the article is heated to a temperature T1 of at least 100° C., the article being non-removable from the substrate when the article is heated to T1, the article having a thermochromic composition on at least a portion of a visible surface thereof, the thermochromic composition providing a substnatially irreversible visible color change in less than about 5 seconds when heated to a transition temperature T2, T2 being a sufficient amount greater than T1 that the thermochromic composition does not change color when the article is heated to T1;

(b) forming visible indicia on the article by heating only portions of the article to at least T2 for up to about 5 seconds so that only a portion of the thermochromic composition irreversibly changes color without affecting the removability of the article from the substrate; and

(c) preventing the article from being removed from the substrate without changing the color of the thermochromic composition by heating substantially the entire article to at least T1 but less than T2.

4,661,306

FLUID MODERATOR CONTROL SYSTEM REACTOR INTERNALS DISTRIBUTION SYSTEM

Howard F. Fensterer, Sun City West, Ariz.; William E. Klassen, Monroeville, Pa.; Luciano Veronesi, O'Hara Township, Allegheny County, Pa.; David E. Boyle, Kiski Township, Armstrong County, Pa., and Robert B. Salton, Plum Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

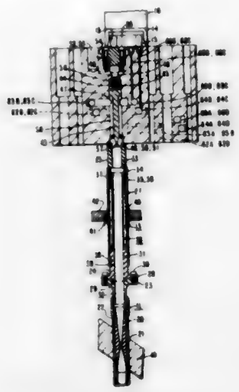
Filed Jul. 2, 1984, Ser. No. 626,943

Int. Cl.⁴ G21C *7/06, 7/32*

U.S. Cl. 376—209 **9 Claims**

1. In a spectral shift pressurized water nuclear reactor employing a low neutron moderating fluid for the spectral shift including a reactor pressure vessel, a core comprising a plurality of fuel assemblies, a core support plate, apparatus comprising means for penetrating the reactor vessel for introducing said moderating fluid into said reactor vessel, means associated with the core support plate for directly distributing said moderating fluid to and from said fuel assemblies comprising at least one inlet flow channel in said core plate; a plurality of branch inlet feed lines connected to said inlet flow channel in said core plate; a plurality of vertical inlet flow lines flow connected to said branch inlet feed lines; each vertical flow line communicating with a fuel assembly; said distribution means further comprising a plurality of lines serving as return flow lines, each of which is connected to one of said fuel assemblies; a plurality of branch exit flow lines in said core plate flow connected to said return flow lines of the fuel assem-

bly; and at least one outlet flow channel flow connected to said branch exit flow lines; and a flow port interposed between said



penetration means and said distribution means for flow connecting said penetration means with said distribution means.

4,661,307

COUPLING DEVICE BETWEEN A MOTOR MEMBER AND A RECEIVER MEMBER

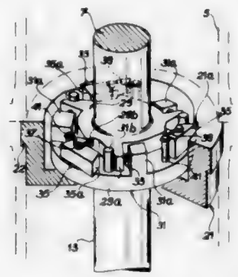
Jean-Francois Guillot, Aixen Provence, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 26, 1985, Ser. No. 727,744

Claims priority, application France, Apr. 27, 1984, 84 06691

Int. Cl.[4] G21C *7/12*

U.S. Cl. 376—232 **5 Claims**



1. A coupling device in rotation between a motor member and at least one receiver member, comprising a first ring, called the ratchet ring and having at least one ratchet on its inner face, a second ring, called the pawl holder ring, and a third ring, called the drive ring, the first, second and third rings being arranged concentrically, the pawl holder ring being located within the ratchet ring and the drive ring being located in the pawl holder ring, at least one pawl being mounted in a pivotable manner on the pawl holder ring, said pawl having a shoulder and a stop surface and being pivotable, under the action of elastic restoring means, between an engaged position in which the stop surface is ratched in the ratchets of the ratchet ring and a disengaged position in which said stop surface is disengaged from the ratchets, wherein the pawl holder ring has at least first and second stops, the drive ring having at least one substantially radial driver arranged between said first and second stops of the pawl holder ring, and at least one cam contour which, in the relative angular displacement direction of the drive ring with respect to the pawl holder ring, bears on the pawl shoulder in order to pivot the pawl towards its engaged position, or releases the shoulder, under the action of the elastic restoring means, in order to pivot said pawl towards its engaged position in which the stop surface of the pawl engages one of the ratchets of the ratchet ring, and further comprising elastic arming means position between said driver of the drive ring and one of said first and second stops, said elastic means tending to rotate the drive ring with respect to the pawl holder ring towards the position where the cam contour releases the pawl shoulder.

4,661,308

REMOTE-CONTROLLED MOBILE INSPECTING AND MONITORING SYSTEM

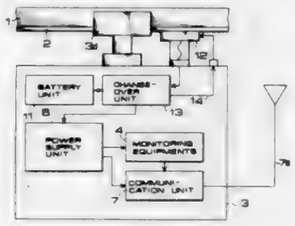
Toshio Takenaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,503

Claims priority, application Japan, Sep. 16, 1983, 58-171451

Int. Cl.[4] G21C *17/00;* **H02J** *9/06*

U.S. Cl. 376—245 **8 Claims**



1. A remote-controlled mobile inspecting and monitoring system comprising:

(a) a rail laid along a predetermined inspection route;

(b) power lines provided along the rail;

(c) an inspection vehicle carrying onboard equipment including inspecting and monitoring equipment and adapted to move along the rail;

(d) a power receiving unit mounted on the inspection vehicle and capable of being connected to or disconnected from the power lines;

(e) a battery unit mounted on the inspection vehicle, for supplying power to the inspecting and monitoring equipment; and

(f) a changeover unit for controlling the power receiving unit so as to be connected to or disconnected from the power lines and for opening or closing a power circuit connecting the battery unit and the onboard equipment;

(g) said changeover unit disconnecting the power receiving unit from the power lines while the inspection vehicle is moving and connecting the power receiving unit to the power lines while the inspection vehicle is stationary.

4,661,309

EQUIPMENT TRANSPORTER FOR NUCLEAR STEAM GENERATOR

Lawrence R. Hayes, Ringgold, Ga., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 13, 1984, Ser. No. 579,748

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—248 **6 Claims**

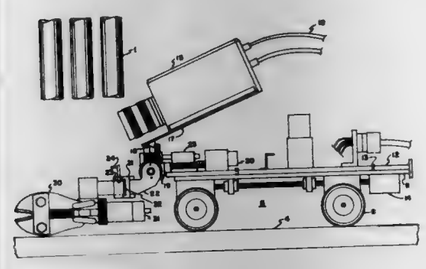
1. A transporter for use in a steam generator of a nuclear power installation wherein the generator is essentially a heat exchanger having a vertically extended shell and across the lower portion of which extends a horizontal tube sheet having an upper surface and supporting a bundle of vertically extending tubes forming a limited annular space with the inside of the shell wall and said upper surface, and an opening of limited

dimensions through the shell wall to gain manual access to the limited annular space,

said transporter having means for locating and removing solid debris from the upper surface of the tube sheet in said annular space and having a means for assembly and disassembly of the transporter in order that it may be manually passed through the shell opening to and from a position on the upper surface of the tube sheet in the annular space, said transporter including:

a body,

at least three wheels mounted on the body for engaging the upper surface of the tube sheet,



a first motor mounted on the body drivingly connected to the wheels for moving the transporter along the upper surface of the tube sheet in the annular space,

a remotely operated means on the body for locating solid debris on the upper surface of the tube sheet as the transporter is moved over the upper surface of the tube sheet in the annular space,

and means for securing and removing solid debris on the upper surface of the tube sheet located by the means for locating.

4,661,310

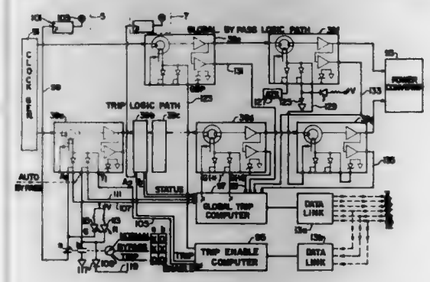
PULSED MULTICHANNEL PROTECTION SYSTEM WITH SATURABLE CORE MAGNETIC LOGIC UNITS

Bruce M. Cook, and Jerzy Gutman, both of Plum Borough, Pa., assignors to Westinghouse Electric Corp, Pittsburgh, Pa.

Filed Oct. 27, 1983, Ser. No. 546,604

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—259 **21 Claims**



8. Apparatus for selectively energizing the undervoltage coils on the trip switchgear of a nuclear power plant, said apparatus comprising:

a plurality of logic units each comprising a single core of a rectangular hysteresis loop magnetic material having a single magnetic flux path, an input winding, and an output winding only in addition to a control winding all wound on said core such that with a d-c current applied to the control winding of sufficient magnitude to saturate the core in one direction, pulses applied to the input winding which are of sufficient magnitude to saturate the core in the opposite direction, generate pulses on the output winding while the absence of current thorugh the control winding results in the core remaining saturated in said opposite direction to block pulses applied to the input winding from appearing on the output winding, said logic unit including means for applying a d-c power source to one side of the control winding;

means connecting said plurality of logic units in series to form a train of logic units with the input winding of each successive logic unit connected to the output winding of the preceding unit;

clock means for applying a repetitive pulse signal to the input winding of the first logic unit;

a plurality of sensor means each of which monitors a given process parameter and generates a sensor signal having a first condition when the parameter is within a selected range and a second trip condition when the parameter is out of the selected range;

a plurality of local bypass means selectively operative to generate a local bypass signal having a first bypass condition and a second not bypassed condition;

switch means connected to the second side of the control winding on each of said logic units and to a sensor means and a local bypass means and operative to a closed position in response to a signal in the first condition from either the associated sensor means or the local bypass means to complete a circuit between the control winding and the d-c power source so that current flows through the associated control winding to permit pulses applied to the input winding to appear at the output winding of the logic unit and said switch means being operative in response to a signal in the second condition from both the sensor means and the local bypass means to an open position which deenergizes the control winding to block the passage of pulses from the input to the output winding of the logic unit; and

output means connected between the output winding of said last logic unit in the series and the reactor trip switchgear and operative to prevent a trip of the switchgear so long as the output means receives pulses and to trip the switch gear in the absence of pulses, whereby when any one of the monitored process parameters is out of its selected range, the pulse signal is interrupted to trip the trip switchgear unless the local bypass signal is generated to effect a bypass of the affected sensor means.

4,661,311

NUCLEAR POWER PLANT ARRANGED IN AN UNDERGROUND CAVITY WITH A SMALL HIGH-TEMPERATURE PEBBLE BED REACTOR

Josef Schoening, Hambruecken; Fritz Schmiedel, Ketsch; Peter Hobrecker, Heidelberg, and Helmut Winkenbach, Viernheim, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Fed. Rep. of Germany

Filed Feb. 7, 1985, Ser. No. 699,263

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1984, 3404572

Int. Cl.[4] G21C *19/28, 19/00*

U.S. Cl. 376—266 **9 Claims**

1. A nuclear power plant comprising:

a reactor pressure vessel positioned in an underground cavity;

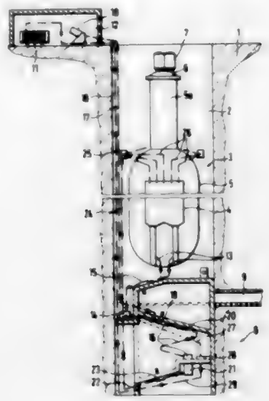
a small high-temperature pebble bed reactor disposed within the reactor pressure vessel and having spherical operating elements passing through a reactor core;

means for addition, removal, and circulation of operating elements associated with said reactor including:

means for discharging said operating elements from said core, depletion measuring means for separating depleted operating elements based on degree of depletion, and

means for sorting and removal of operating element fragments, located under the reactor in a divided loading space;

means for conveying operating elements to said reactor core including an insertion block means for inward transfer of operating elements located in said divided loading space and connected to said depletion measuring means for sorting;



means for adding fresh operating elements located outside of said cavity and connected to said insertion block means;

means for distributing said operating elements to said reactor core, disposed laterally outside said pressure vessel above said reactor core; and

a first conduit connecting the insertion block means with the means for distributing.

4,661,312

PRESSURE RELIEF SYSTEM IN NUCLEAR REACTORS

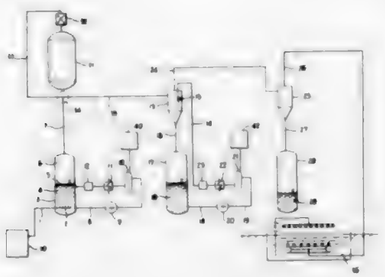
Fritz Schweiger, Hagen, Fed. Rep. of Germany, assignor to Hochtemperatur-Kernkraftwerk GmbH (H K G), Hamm, Fed. Rep. of Germany

Continuation of Ser. No. 383,245, May 28, 1982, abandoned, which is a continuation of Ser. No. 165,504, Jul. 3, 1980, abandoned. This application Jul. 10, 1984, Ser. No. 628,140

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931140

Int. Cl.⁴ G21C *9/00, 19/20*

U.S. Cl. 376—283 **20 Claims**



1. In a nuclear reactor having a reactor pressure vessel with a reactor coolant circulating therethrough, a protective containment vessel for the reactor vessel, and a pressure relief system for relieving excess pressure in at least one of the reactor pressure vessel and protective vessel resulting under fault conditions with the coolant being in fluid form at excess pressure and including a gaseous component and a liquid component, the improvement wherein said pressure relief system comprises a pressure relief station with an inlet and an outlet with the outlet open to the atmosphere and with the inlet connected to and located downstream of at least one of said reactor pressure vessel and protective vessel for receiving the fluid coolant at excess pressure to be relieved and for purifying the coolant and discharging it in vapor form into the atmosphere, means located at the inlet for forming a seal using a liquid for preventing the coolant from entering the pressure relief station until a predetermined increase in pressure in the coolant takes place, means in said pressure relief station for washing radioactive fission products from said fluid coolant for rendering the coolant sufficiently clean and dry for discharge into the atmosphere; and said means of washing includes means for providing a cylonic effect for separating liquid from the fluid coolant, said means for providing a cyclonic effect comprises a first cyclone and a second cyclone with said first and second cyclones connected in series, said first cyclone located upstream from said second cyclone and being constructed as a washing cyclone and said second cyclone being constructed as a drying cyclone, said means forming a seal includes a liquid reservoir located at said inlet and connected between said at least one of the reactor pressure vessel and protective vessel and said washing cyclone and said liquid reservoir having a liquid level dividing the reservoir into a liquid space and an upper gas collecting space, so that when the fluid coolant experiences the predetermined increase in pressure it passes through said liquid reservoir and divides into the gaseous component entering the gas collecting space and the liquid component remaining in the liquid space with the gaseous component flowing from said gas collecting space to said washing cyclone.

4,661,313

METAL LINER FOR THE LINING OF THE CYLINDRICAL CAVITY OF A REINFORCED CONCRETE PRESSURE VESSEL

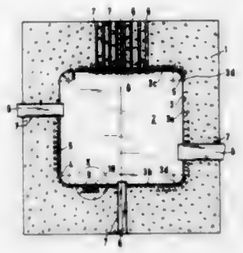
Josef Schoening, Hambruecken; Claus Elter, Bad Durkheim, and Gerhard Becker, Mannheim, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,444

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322998

Int. Cl.⁴ G21C *13/02*

U.S. Cl. 376—295 **14 Claims**



1. A metal liner having top, bottom and sides for lining the cylindrical cavity of a reinforced concrete pressure vessel for a nuclear reactor comprising:

(a) a first plurality of stud shear connectors welded to the exterior side of said liner;

(b) a plurality of cooling tubes welded to the exterior side of said liner;

(c) a second plurality of stud shear connectors having a rigidity selected to withstand forces acting on an area of said liner greater than the forces acting on said liner in the area of said first plurality of stud shear connectors;

(d) at least one steel tube penetrating said liner;

(e) at least one area of said liner having a greater thickness than the remaining areas of said liner;

(f) a plurality of passages through said liner in said area of greater thickness; and

(g) a plurality of shear stud connectors and cooling tubes welded to the exterior of said at least one steel tube penetrating said liner.

4,661,314

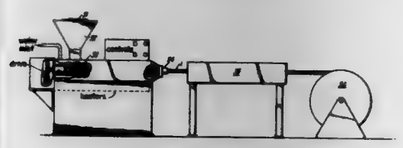
METHOD OF MAKING TEXTURIZED HEAT SHRINKABLE TUBING

Herbert R. Levine, Dover; Stephen G. Gerrato, Greenland, and Benoit L. Poulin, Hudson, all of N.H., assignors to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 465,719, Feb. 11, 1983, Pat. No. 4,576,207. This application Jan. 15, 1986, Ser. No. 818,857

Int. Cl.⁴ B29C *61/08*

U.S. Cl. 264—508 **2 Claims**



1. A method of making heat shrinkable tubing comprising melting polymeric material, extruding such material through a die to produce a pattern of substanially parallel raised portions extending externally across its entire length, while in a heated state imposing positive pressure to the interior of the tubing to impart radial shrinkage memory to the tubing and holding such tubing under linear tension to provide about 5% to about 30% longitudinal shrinkage memory to the tubing, cooling the tubing and rolling the tubing on a take-up reel resulting in tubing capable of shrinking in response to heat over bent, expanded and depressed substrate material in uniform, unwrinkled fashion.

4,661,315

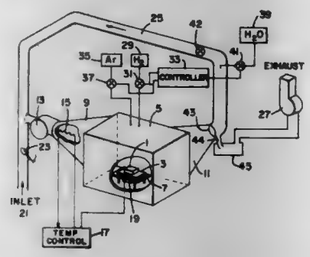
METHOD FOR RAPIDLY REMOVING BINDER FROM A GREEN BODY

Raymond E. Wiech, Jr., San Diego, Calif., assignor to Fine Particle Technology Corp., Camarillo, Calif.

Filed Feb. 14, 1986, Ser. No. 829,306

Int. Cl.⁴ B22F *1/00*

U.S. Cl. 419—10 **17 Claims**



1. A method of producing an article from a fired particulate configuration whereby binder material is removed from the particulate configuration prior to firing without swelling the particulate configuration and consequent imparting of sheer or tensile force to the particulate configuration prior to the firing thereof, wherein said configuration is formed by mixing together predetermined amounts of sinterable particulate material and binder whereby the binder covers substantially all of the surface of the particles of said particulate material and forming said mixture into a desired configuration, comprising the steps of:

(a) heating said configuration to a temperature above the flow point of at least a portion of said binder,

(b) substantially saturating the atmosphere contacting the exposed surfaces of said configuration with water vapor after the temperature of the surface of said configuration is above 100° C.,

(c) moving said water saturated atmosphere over and in contact with said configuration,

(d) elevating the temperature of said configuration with a predetermined temperature-time profile to a level below the sintering temperature of said particulate material to remove remaining binder from said configuration,

(e) providing an atmosphere contacting said configuration suitable to the sintering requirements of said configuration; and

(f) raising the temperature of said configuration according to a predetermined temperature-time profile to sinter said stripped and formed configuration.

4,661,316

HEAT-RESISTANT ALLOY BASED ON INTERMETALLIC COMPOUND TIAL

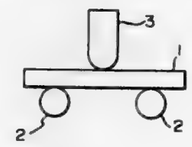
Kenki Hashimoto, Chiba; Haruo Doi, Fijimi; Tsujimoto Tokuzou, Yokohama; Nakano Osamu, Kokubunji, and Nobuki Minoru, Urayasu, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Jul. 30, 1985, Ser. No. 760,502

Claims priority, application Japan, Aug. 2, 1984, 59-161601

Int. Cl.⁴ C22C *14/00*

U.S. Cl. 420—418 **4 Claims**



1. A heat-resistant alloy consisting essentially of (1) an alloy based on an intermetallic compound TiAl composed of 60 to 70% by weight of titanium and 30 to 36% by weight of aluminum and (2) 0.1 to 5.0% by weight of manganese.

4,661,317

METHOD FOR MANUFACTURING A HYDROGEN-STORING ALLOY

Friedrich Bardenheuer, Krefeld, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 747,282, Jun. 21, 1985, abandoned. This application Aug. 21, 1985, Ser. No. 767,660

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1984, 3424341; European Pat. Off., Jun. 8, 1985, EP85730075.0; Aug. 7, 1985, EP85730105.5

Int. Cl.⁴ C22C *1/06, 22/00*

U.S. Cl. 420—434 **18 Claims**

1. A method for manufacturing a hydrogen-storing alloy based on the Laves phase AB_2, by melting in a vacuum or under a protective gas, wherein A is titanium or zirconium, and B is one or more elements from the remainder of the transition metal series, wherein the ratio of the atomic radii or A and B, r_A/r_B, is between 1.05 and 1.68, and wherein the said melting is done in a vessel lined with a lining composed of the oxide or

oxides of one or more metals having a strong affinity for oxygen; said method comprising:

a first step, in which, a partial alloy is produced from the selected elements with the exception of titanium, or zirconium, and, if cerium is to be an alloy element, without cerium;

a second step, in which, the partial alloy is deoxidized with titanium, zirconium or aluminum added in a quantity that corresponds to the quantity of oxygen introduced with the alloy elements, said second step being followed by a rest period in which the oxide particles created by the deoxidation are deposited as completely as possible in the slag; and

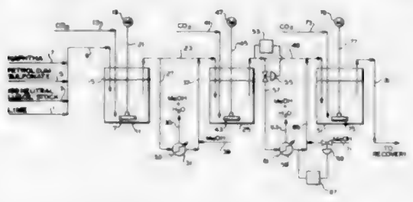
a third step, in which, the remaining quantity of titanium or zirconium is added to the melt, and wherein cerium, if it is to be used, is added only after deoxidation, and then the melt is abruptly cooled.

4,661,318

APPARATUS FOR CONTINUOUS OVERBASING OF PETROLEUM SULFONATE WITH WATER REMOVAL AND METHANOL ADDITION BETWEEN REACTION STAGES

Douglas S. Jack, and James W. Garner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 594,651, Mar. 28, 1984, Pat. No. 4,541,938.
This application May 16, 1985, Ser. No. 734,714
Int. Cl.⁴ B01J *10/00;* **B01F** *3/04*
U.S. Cl. 422—62 **5 Claims**



1. An apparatus for the continuous overbasing of petroleum sulfonate comprising:

(a) a multiplicity of reactor vessels wherein each reactor vessel comprises (1) agitation means, (2) inlet means for reaction mixture, (3) inlet means for CO_2, and (4) outlet means for reactor product effluent:

(b) transfer means for connecting reaction mixture inlet means of the succeeding reactor with reactor product outlet means of the immediately preceding reactor thereby arranging said reactors in series;

(c) transfer means for reactor product from the last reactor in series providing outlet from the multiplicity of vessels; and

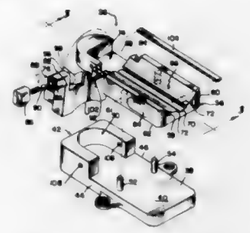
(d) connected to each of said transfer means of (b): (1) bypass means for removing at least a portion of said reactor product effluent from said reactor transfer means, (2) means of removing water from said portion of reactor product effluent and (3) means downstream of said water removing means for returning said portion of reactor product effluent to the same reactor transfer means of (b), said means (d) (3) comprising (4) means for introducing MeOH into said portion of reactor product effluent.

4,661,319

BLOOD TRANSFER ASSEMBLY

Larry J. Lape, Sugarland, Tex., assignor to Boehringer Mannheim Diagnostics, Inc., Indianapolis, Ind.

Filed Apr. 6, 1984, Ser. No. 597,513
Int. Cl.⁴ G01N *1/20, 33/52*
U.S. Cl. 422—68 **10 Claims**



1. A blood transfer apparatus comprising

a base for supporting, a test strip carrying a reagent for reacting with a medically significant component in blood to produce a visual indication on such a test strip of the concentration of such a component in blood,

funnel means for forming a blood droplet from a pricked finger, and

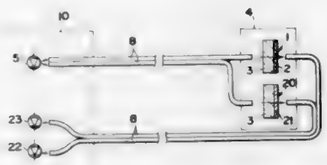
means for pivotally connecting the funnel means to the base for pivotal movement between a test orientation engaging a test strip supported on the base in a blood droplet-receiving position and a release orientation away from a test strip supported on the base.

4,661,320

GAS SENSOR

Kentaro Ito; Tetsuya Kubo, both of Nagano, and Yukio Yamauchi, Atsugi, all of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Aug. 2, 1984, Ser. No. 636,962
Claims priority, application Japan, Aug. 12, 1983, 58-147749
Int. Cl.⁴ G01N *21/01*
U.S. Cl. 422—86 **13 Claims**



1. A gas sensor which comprises a first laminate device comprising a first layer of a catalytic metal which adsorbs and dissociates hydrogen gas and other hydrogen-containing gases; and

a second layer of a solid metal oxide compound which when subjected to reduction by hydrogen atoms produced in said catalytic metal changes its photoabsorption; and

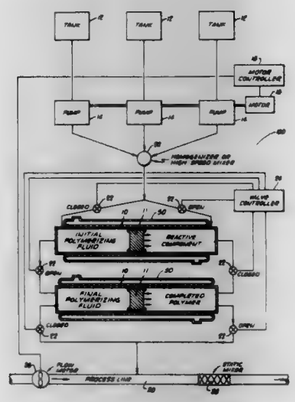
an optical means for detecting changes in photoabsorption of the solid metal oxide compound due to the reduction by hydrogen atoms.

4,661,321

CONTINUOUS REACTOR DESIGN

Audis C. Byrd, Duncan; Robert J. Morris, Lawton; Robert H. Black, and Jimmie D. Weaver, Jr., both of Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 615,440, May 30, 1984, Pat. No. 4,595,566.
This application Sep. 16, 1985, Ser. No. 776,532
Int. Cl.⁴ C07B *61/00;* **B01F** *5/12;* **B01J** *14/00*
U.S. Cl. 422—111 **10 Claims**



1. A process for mixing, reacting and diluting reacted chemicals, said process comprising the steps of:

(a) providing first and second reactors each having a translatable wiper piston therein, one of said pistons dividing said first reactor into first and second zones and the other of said pistons dividing said second reactor into third and fourth zones;

(b) providing fluid communication between said first and fourth zones, between said second and third zones and between a process line and said third and fourth zones;

(c) pumping chemicals into said first zone to initiate a polymerization reaction therein and using said chemicals as the motive force to displace said translatable wiper piston in said first reactor and transfer reacted chemicals in said second zone into said third zone;

(d) during said pumping step using the motive force of said reacted chemicals being transferred into said third chamber to displace said translatable piston in said second reactor and transfer completely reacted chemical in said fourth zone into a process fluid in the process line;

(e) mixing said completely reacted fluid from said fourth zone with said process fluid in the process line to form a diluted mixture of reacted chemicals and process fluid; and

(f) continuously alternating the pumping of chemicals to said first and second zones so that the chemicals charged to an discharged from said first reactor alternately provide the motive force for moving said translatable wiper pistons in first and second reactors to wipe inner wall surfaces of said reactors and alternately discharge completely reacted reactants from said third and fourth zones into said process stream.

4,661,322

FLUE FOR THE PRODUCTION OF SOFT TIO_2 AGGLOMERATES

Joel B. Hill, Jr., Eva, Tenn.; William E. Stevens, and Reg Davies, both of Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 352,075, Feb. 25, 1982, Pat. No. 4,462,979. This application Jun. 25, 1984, Ser. No. 623,907
Int. Cl.⁴ C09C *1/00;* **F28G** *13/00*
U.S. Cl. 422—158 **6 Claims**



1. In a reactor system a flue cooling and transferring the reaction products from the high temperature oxidation of a metal halide with oxygen which comprises a first section of flue with a cross sectional area designed to cause the flow of reaction products from the oxidation reaction to be conveyed in a turbulent manner as defined by a Reynolds number of from 50,000–1,000,000 and then subsequently a second section of flue with a reduced cross-sectional area designed to cause the flow of reaction products to be conveyed in a more tubulent manner than in the first section as defined by a Reynolds number of from 75,000–1,600,000.

4,661,323

RADIATING SLEEVE FOR CATALYTIC REACTION APPARATUS

Ole L. Olesen, 21 Brewster Rd., South Windsor, Conn. 06074

Filed Apr. 8, 1985, Ser. No. 721,241
Int. Cl.⁴ B01J *7/00, 8/06*
U.S. Cl. 422—197 **5 Claims**

1. Catalytic reaction apparatus comprising a furnace including wall means defining a furnace volume, at least one tubular reactor disposed within said furnace volume, said at least one reactor including an outer cylindrical wall and further including catalyst disposed within said outer cylindrical wall;

means for introducing processed fuel into said at least one reactor;

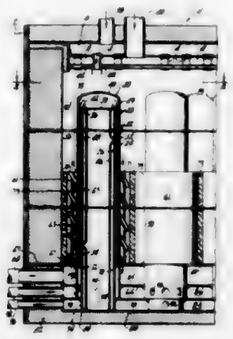
means for conducting reaction products away from said at least one reactor;

means for providing hot gases within said furnace volume external of said at least one reactor; and

at least one tubular radiator of high emissivity material fully surrounding at least a portion of the length of said at least one reactor and coaxial with said reactor, said at least one radiator including a generally cylindrical inner wall having means defining a plurality of adjacent helical channels therein, each of said helical channels extending the length of said radiator and around a major portion of the internal circumference of said radiator, wherein the sum of the cross-sectional areas of said plurality of helical channels of

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said at least one radiator at any cross-section taken perpendicular to a longitudinal axis of said radiator is at least 15 percent of the total cross-sectional flow area between said radiator and its respective reactor at the location of said



cross-section, said catalytic reaction apparatus further comprising hot gas outlet means located such that all of the hot gases within said furnace-volume must pass between said at least one radiator and said at least one reactor in order to exit said furnace.

4,661,324

APPARATUS FOR REPLENISHING A MELT

Nicholas C. Sink, Stoughton, and Myer Rogers, Randolph, both of Mass., assignors to Mobil Solar Energy Corporation, Waltham, Mass.

Filed Feb. 15, 1985, Ser. No. 702,342
Int. Cl.[4] C30B *15/34*
U.S. Cl. 422—246 **9 Claims**



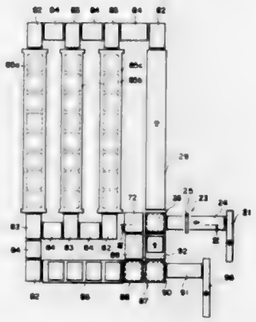
1. In combintaion with a crucible for containting a melt, apparatus for replenishing the melt, said apparatus comprising:
(a) a hollow housing having a top end and a bottom end, said top end being open;
(b) support means within said housing for supporting source material which is to be added to a melt, said support means being vertically movable within said hollow housing;
(c) means for delivering a predetermined charge of source material to said support means;
(d) first spring means for urging said support means toward said open top end of said housing;
(e) stop means for preventing said support means from passing out said top end of said housing; and
(f) retractor means for (a) retracting said support means downward within said housing against the force of said first spring means until said support means reaches a predetermined release point, and (b) automatically releasing said support means when said release point is reached, whereby the force of said first spring means will drive said support means upward within said housing until said support means encounters said stop means, whereupon said support means will abruptly stop and source material supported on said support means will be thrown upward out of said housing for delivery into a melt contained within said crucible.

4,661,325

STERILIZATION PROCESSING SYSTEM FOR CAN-SEALED PRODUCTS

Shingo Noro; Kunio Saitou, both of Nagoya, and Hideki Izumimoto, Takatsuki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Yamashita Iron Works, Ltd., both of, Japan

Filed Feb. 8, 1985, Ser. No. 699,863
Int. Cl.[4] A61L *2/06*; A23L *3/04*
U.S. Cl. 422—304 **6 Claims**



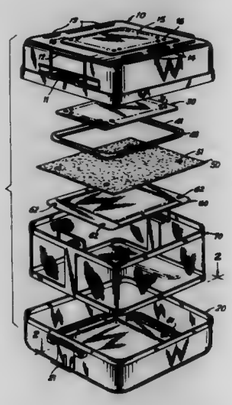
1. A sterilization system for canned products comprising:
a supply conveyor for supplying canned products;
a layer conveyor having an input end adjacent said supply conveyor for receiving canned products therefrom and an output end for discharging a layer of canned products;
layer stopping means positioned adjacent said layer conveyor intermediate said input and output ends thereof for stopping a layer of canned products on said layer conveyor;
first panel lifting means at said output end of said layer conveyor for receiving a partition panel at a horizontal level of said output end;
a basket conveyor having a basket unloading position and an opposite basket loading position, said basket loading position being at said first panel lifting means, said basket conveyor receiving a basket having an open bottom at said basket loading position with a top of the basket being below the horizontal level of said output end of said layer conveyor, the basket conveyor operating to move baskets from said basket unloading position to said basket loading position;
a product loader having a front stop and a rear stop for holding a layer of canned products therebetween;
second panel lifting means next to said first panel lifting means, said second panel lifting means being for receiving a stack of partition panels;
panel suction means for engaging a partition panel in a stack of panels on said second panel lifting means and for conveying the panel onto said first panel lifting means; truck means connected to said panel suction means and said product loader for alternately moving a layer of products held between said front and rear stops of said product loader onto a panel on said first panel lifting means, and moving said panel suction means to place a panel on the layer of products after said first lifting means has lowered the layer of products into a basket at said basket loading position,
so that a stack of alternating layers of canned products and partition panels is formed in the basket at said basket loading position;
a first basket pool conveyor having an input end for receiving a basket loaded with panels and canned products from said basket loading position, said first basket pool conveyor having an output end for discharging baskets loaded with panels and canned products;
at least one sterilization unit having an input end adjacent said output end of said first basket pooling conveyor, said sterilization unit having an output end for discharging baskets containing panels and sterilized canned products;
a second basket pool conveyor at said output end of said sterilization unit, said second basket pool conveyor having an output end adjacent said basket unloading position of said basket conveyor for discharging baskets with panels and sterilized products onto said basket conveyor at said basket unloading position;
unloading means at said basket unloading position for unloading alternate panels and layers of sterilized products from a basket at said basket unloading position;
a discharge conveyor for receiving sterilized canned products from said unloading means; and
a panel conveyor for receiving panels from said unloading means and conveying said panels onto said second panel lifting means;
said supply, layer, basket, first basket pool, second basket pool and panel conveyors all extending substantially horizontally and said sterilizing unit extending substantially horizontally.

4,661,326

STERILIZATION CONTAINER

Herbert Schainholz, 316 Locust St., Teaneck, N.J. 07006

Filed Feb. 25, 1985, Ser. No. 704,873
Int. Cl.[4] A61L *2/10*; B65D *81/21*
U.S. Cl. 422—310 **6 Claims**



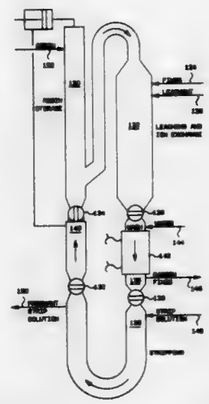
1. In a sterilization container having a top portion and a bottom portion, said top portion having a horizontal top surface and depending vertical side surfaces, said bottom portion having vertical side surfaces and a horizontal bottom surface, wherein the vertical side surfaces of said top portion fit on top of the vertical side surfaces of the bottom portion to form a container, each portion having a perforate surface, the improvement which comprises stiff metal perforate plate means for preventing penetration of an outside object into the sterilization container, with said perforate plate means having perforations of approximately the same size and area as the perforations in the perforate surface of the sterilization container, said perforate plate means being attached parallel to the inner surface of said sterilization container having the perforate surface, the perforations in said perforate plate means being offset from the perforations in the perforate surface of said sterilization container during all phases of use of said sterilization container.

4,661,327

RECOVERY OF MINERAL VALUES USING MAGNETICALLY SUSCEPTIBLE ION EXCHANGE AGENT

Robert L. Horton, South Russell, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 30, 1983, Ser. No. 480,202
Int. Cl.[4] C22B *60/02, 9/00*
U.S. Cl. 423—7 **13 Claims**



1. A continuous method for removing mineral values from a particulate, mineral-containing ore, comprising a fines ore fraction, comprising:
(a) simultaneously contacting said ore with a liquid leach solution, adapted to leach a significant amount of mineral values from said ore, and a solid ion exchange agent, having a magnetically susceptible core material and an outer coating of a polymeric material containing exchangeable ions adapted to exchange with ions of said mineral values in a leach-exchange step, for a time sufficient to leach a significant amount of said mineral values from said ore and produce an essentially barren ore and a pregnant leach solution containing the thus leached mineral values;
(b) continuing said leach-exchange step (a), for a time sufficient to exchange a significant amount of the thus leached mineral values from said pregnant leach solution for said exchangeable ions of said ion exchange agent, substantially immediately after they are leached, to produce effluent (b) comprising said barren ore, said leach solution essentially devoid of said leached mineral values and said ion exchange agent containing the thus exchanged mineral values;
(c) optionally, removing said barren ore from effluent (b) to produce effluent (c) comprising said leach solution devoid

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of said leached mineral values and said ion exchange agent containing exchanged mineral values;

(d) optionally, removing said leach solution devoid of said leached mineral values from effluent (b) to produce effluent (d) comprising said barren ore and said ion exchange agent containing exchanged mineral values;

(e) optionally, removing said barren ore and said leach solution devoid of said leached mineral values from effluent (b) to produce efluent (e) comprising said ion exchange exchange agent containing exchanged mineral values;

(f) contacting effluents (b), (c), (d) or (e) with a wash liquid, in a wash step, to remove barren ore from said ion exchange agent present in said effluent and produce effluent (f) comprising said ion exchange agent free of said barren ore and withdrawing said wash liquid containing said barren ore;

(g) optionally, contacting effluents (b), (c), (d), (e), or (f) with a stripping liquid, adapted to strip exchanged mineral values from said ion exchange agent containing exchanged mineral values, in a stripping step, to strip said exchanged mineral values from said ion exchange agent and produce effluent (g) comprising said ion exchange agent essentially devoid of said exchanged mineral values and withdrawing said stripping liquid containing the thus stripped mineral values;

(h) when step (g) is carried out, contacting effluent (g) with a conditioning liquid, adapted to restore said ion exchange agent to its original condition, in a reconditioning step, to produce said ion exchange agent containing exchangeable ions and withdrawing said conditioning liquid;

(i) simultaneously with at least one of contacting steps (a)–(b), (f), (g) and (h), applying an external magnetic field to said ion exchange agent present in said contacting step to maintain a static body of said ion exchange agent within said magnetic field; and

(j) flowing at least one of a slurry of said ore and said leach liquid of step (a)–(b), said wash liquid, said stripping liquid and said conditioning liquid through the thus formed static body of ion exchange agent in said leach-exchange step, said wash step, said stripping step and said reconditioning step, respectively.

4,661,328

ALUMINA FROM HIGH SILICA BAUXITE

Donald K. Grubbs, Rector, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 746,485, Jun. 19, 1985, abandoned. This application Sep. 10, 1986, Ser. No. 905,518

Int. Cl.⁴ C01F *7/06*

U.S. Cl. 423—121 **18 Claims**

1. In a process for purifying gibbsitic alumina-rich ore of reactive silica content over about 5% by weight including digesting the ore in a sodium aluminate solution, the improvement for extraction of the alumina while inhibiting the dissolution of reactive silica comprising:

admixing said ore with an aqueous digestion solution nearly saturated with silica at a concentration of about 1.8 g/L to 2.5 g/L, alumina at a concentration of about 150 g/L to 170 g/L to be slightly below saturation for a given soda concentration, and soda at a concentration of about 240 g/L to 300 g/L in a back-mixed reactor;

digesting alumina from said ore to form an alumina-saturated digest solution;

adding desilication product seed to form a desilicated liquor;

removing digest residue; and precipitating alumina from the desilicated digest solution.

4,661,329

CATALYST FOR OXIDIZING AN OFFENSIVELY SMELLING SUBSTANCE AND A METHOD OF REMOVING AN OFFENSIVELY SMELLING SUBSTANCE

Kenichirou Suzuki; Yoshiyasu Fujitani; Taisuke Yoshimoto, and Hideaki Muraki, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Nov. 19, 1985, Ser. No. 799,574

Claims priority, application Japan, Dec. 17, 1984, 59-267115

Int. Cl.⁴ B01D *53/36;* **B01J** *23/10, 23/50, 23/72*

U.S. Cl. 423—245 **13 Claims**

1. A catalyst for oxidizing an offensively smelling substance, comprising 0.5 to 50% by weight of copper, 0.1 to 15% by weight of cerium and 0.1 to 20% by weight of silver supported on a porous ceramic carrier, said percentages being based on the weight of said carrier.

4,661,330

PROCESS FOR THE PREPARATION OF CERIUM OXIDE PARTICULATES

Jean-Yves Chane-Ching, and Jean-Yves Dumousseau, both of Paris, France, assignors to Rhone-Poulenc Specialties Chimiques, Courbevoie, France

Filed Feb. 20, 1985, Ser. No. 703,474

Claims priority, application France, Feb. 20, 1984, 84 02507

Int. Cl.⁴ C01F *17/00*

U.S. Cl. 423—263 **21 Claims**

1. A process for the preparation of ceric oxide particulates having a B.E.T. specific surface of at least 85±5 m^2/g, measured at a temperature ranging from 350° C. to 500° C., comprising reacting an aqueous solution of a cerium (IV) salt with a sulfate ion-containing solution to precipitate a basic cerium sulfate, filtering the precipitate of reaction which results, washing at least one with an aqueous ammonia solution and optionally drying said precipitate, and thence calcining said precipitate at a temperature ranging from 300° C. to 500° C.

4,661,331

CONTINUOUS PROCESS FOR PREPARING SODIUM ORTHOPHOSPHATE SLURRIES FROM NATURAL SODA ASH AND ORTHOPHOSPHORIC ACID

N. Earl Stahlheber, Columbia, Ill., and John E. Lyon, Florissant, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 24, 1984, Ser. No. 653,182

Int. Cl.⁴ C01B *25/30*

U.S. Cl. 423—309 **11 Claims**

1. A continuous slurry process for preparing a double salt $Na_3H_3(PO_4)_2$ containing less than about 2% by weight unreacted soda ask which comprises:

(a) providing a reaction medium at a temperature above 80° C. having a molar Na:P ratio in the range of about 1.42 to about 1.58 and uncombined water content in the range of about 7% to about 20% by weight; and

(b) adding to the reaction medium with agitation granular natural soda ash and a mixture consisting essentially of 75–92 weight percent H_3PO_4 and 8–25% H_2O substantially simultaneously in such proportions, rate and acid concentration to maintain said molar Na:P ratio and uncombined water content and to provide a sojourn time of at least 12 minutes at a temperature about 80° C.

4,661,332

ZEOLITE (ECR-18) ISOSTRUCTURAL WITH PAULINGITE AND A METHOD FOR ITS PREPARATION

David E. W. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 29, 1985, Ser. No. 759,847

Int. Cl.⁴ C01B *33/20*

U.S. Cl. 423—326 **9 Claims**

1. A synthetic zeolite containing tetraethylammonium ion which is isostructural to the mineral paulingite.

2. A synthetic zeolite having an overall chemical composition:

$$(TEA,Na)_2O:(Al,Ga)_2O_3:3\text{–}20\ SiO_2$$

and substantially the x-ray diffraction pattern shown in Table 1.

4,661,333

ALUMINOSILICATES

Colin Atkinson, Cheshire; Roger Brace, Merseyside, and Nathan Burak, Manchester, all of England, assignors to Internationale Octrooi Maatschappij "Octropa" BV, Roterdam, Netherlands

Filed Jun. 20, 1983, Ser. No. 505,800

Claims priority, application United Kingdom, Jun. 21, 1982, 8217681

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—328 **11 Claims**

1. An amorphous hydrated sodium aluminosilicate of chemical composition calculated on an anhydrous basis:

$0.8\text{–}1.4\ Na_2O:Al_2O_3:2.2\text{–}3.6\ SiO_2$,

having, calculated on a dry basis, a calcium ion-exchange capacity greater than 100 mg CaO/g, a magnesium capacity greater than 50 mg MgO/g, an average particle size in the range 2 to 20 μm, and the ability to form a filter cake having a solids content in the range 35–50%, in a filter press with a closing pressure of 5.62 kg/cm^2, which filter cake can be converted into a pumpable slurry in said solids range, and having a silicate resistance (as hereinbefore defined) such that the second order rate constant K_s for the calcium exchange process is greater than 0.2° $H^{-1}\ min^{-1}$ and a residual water hardness after 10 minutes of less than 1.5 °H and which after drying at 50° C. to 80% solids has a rate constant k_d (as hereinbefore defined) greater than 0.42° $H^{-1}\ min^{-1}$ and a residual water hardness after 10 minutes of less than 1° H, said aluminisilicate being suitable for use at relatively high solids content in detergent compositions containing sodium silicate and being further characterized by its resistance to reaction with sodium silicate in such detergent compositions.

3. A process for the preparation of amorphous aluminosilicate as claimed in claim 1, in which aqueous sodium silicate, having a composition Na_2O 2–4 SiO_2 and a concentration in the range 1–4 moles/liter SiO_2; and aqueous aluminate having a composition 1–2 Na_2O Al_2O_3 and a concentration in the range 0.5 to 2.0 moles/liter Al_2O_3, are intimately mixed together at a temperature in the range 15°–45° C. in a mixing device to produce a sodium aluminosilicate composition which is immediately subjected to high shear in a disintegrator to produce a particle size of aluminosilicate less than 20 μm and subsequently aged in aqueous slurry for at least one hour.

4,661,334

PREPARATION OF ZEOLITES 4A AND/OR 13X

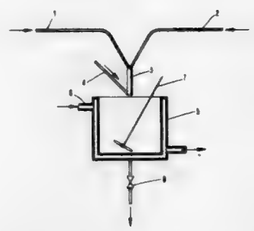
Bertrand Latourrette, Le Raincy, and Anne Menesguen, Paris, both of France, assignors to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed Sep. 21, 1984, Ser. No. 653,084

Claims priority, application France, Sep. 21, 1983, 83 14985

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—329 **14 Claims**



1. A process for the preparation of a zeolite of types 4A and/or 13X comprising simultaneously and continuously introducing as a fluid stream both an aqueous solution of sodium silicate and an aqueous solution of sodium aluminate into a tubular reactor to effect the continuous intimate admixture thereof, continuously transferring said intimate admixture from said tubular reactor to a zone of gelation to effect the continuous homogeneous gelling thereof, said intimate admixture being carried out at a Reynolds number of at least twice the value of the critical Reynolds number of the fluid stream, the time of retention of said intimate admixture in said tubular reactor being less than that period of time required for the gelation thereof, and thence effecting crystallization of a zeolite from said homogeneous gel.

4,661,335

NOVEL SILICON POWDER HAVING HIGH PURITY AND DENSITY AND METHOD OF MAKING SAME

Bernard Boudot, and Philippe Nataf, both of Paris, France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation of Ser. No. 516,845, Jul. 25, 1983, abandoned. This application Nov. 18, 1985, Ser. No. 798,720

Claims priority, application France, Jul. 26, 1982, 82 12968

Int. Cl.⁴ C01B *33/02*

U.S. Cl. 423—348 **10 Claims**



1. A high purity silicon powder which is non-amorphous as determined by X-ray diffraction analysis, said powder having a density in excess of about 0.6 g/cm^3.

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4,661,336
PRETREATMENT OF PAN FIBER
Michael V. McCabe, Franklin, Ohio, assignor to Hitco, Irvine, Calif.
Filed Nov. 25, 1985, Ser. No. 801,417
Int. Cl.⁴ D01F 9/12; D01C 5/00
U.S. Cl. 423—447.2 **14 Claims**



1. a method of heating an acrylic fiber comprising the steps of:
applying to the fiber an effective amount of an accelerator including an aqueous solution of a salt having a cation containing —C=N group and then;
heating the fiber in an oxygen containing atmosphere to form a stabilized fiber.

14. A fiber treated in accordance with the method of claim 1.

4,661,337
PREPARATION OF HYDROGEN PEROXIDE
William F. Brill, Skillman, N.J., assignor to The Halcon SD Group, Inc., Little Ferry, N.J.
Filed Nov. 18, 1985, Ser. No. 799,065
Int. Cl.⁴ C01B 15/02
U.S. Cl. 423—584 **11 Claims**

1. A process for producing hydrogen peroxide which comprises reacting hydrogen and oxygen in an acidic aqueous solution containing suspended therein a supported Group VIII noble metal catalyst in a system wherein the reaction medium has a thickness of at most about 2 millimeters.

4,661,338
PROCESS FOR DETERMINING HYPOACIDITY
Francois Besancon, and Francois Chast, both of Paris, France, assignors to Societe d'Etudes Scientifiques et Industrielles de l'Ile de France, Paris, France
Filed Nov. 19, 1982, Ser. No. 442,965
Claims priority, application France, Nov. 20, 1981, 81 21739
Int. Cl.⁴ A61K 49/00
U.S. Cl. 424—7.1 **3 Claims**

1. A method for rapidly screening candidates by visualizing the presence of a hypoacidity condition of the gastric mucous membrane which comprises: (a) applying to a stomach wall droplets of an indicator selected from the group consisting of bromocresol green, bromophenol blue or bromochlorophenol blue, which indicator undergoes a marked color change in the presence of a hypoacidic condition; and (b) detecting immediately the presence or absence of said color change on the stomach wall to which said droplets are applied in order to promptly screen the candidates for hypoacidity of the gastric mucous membrane.

4,661,339
SUSTAINED RELEASE COMPOSITION
William M. Allen, Reading; Bernard F. Sansom, Newbury; Alan D. Wilson, Liphook; Havard J. Prosser, Royston, and David M. Groffman, Harrow, all of England, assignors to National Research Development Corp., England
Continuation of Ser. No. 513,774, Jul. 14, 1983, abandoned. This application Mar. 4, 1985, Ser. No. 707,958
Claims priority, application United Kingdom, Jul. 20, 1982, 8220969; May 31, 1983, 8314888
Int. Cl.⁴ A61K 9/00
U.S. Cl. 424—486 **18 Claims**

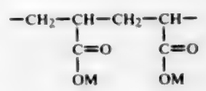
1. A sustained release formed composition, which comprises a source of copper formed into phosphate cement and sustainedly releasable therefrom on contact with an aqueous medium.

4,661,340
QUAIL EGG BASED STABILIZED FOAM COMPOSITIONS FOR COSMETIC PURPOSES
Margit Nagy née Kricsfalussy; Anna Závodszky née Szabó; József Rákóczi, and József Halmos, all of Budapest, Hungary, assignors to Interkémia Vegyipari Gazdasági Társaság, Budapest, Hungary
Continuation-in-part of Ser. No. 511,424, Jun. 6, 1983, abandoned. This application Aug. 15, 1984, Ser. No. 641,120
Int. Cl.⁴ A61K 7/42, 7/46, 7/48, 9/12
U.S. Cl. 424—47 **2 Claims**

1. A stabilized skin and hair treating cosmetic foam composition comprising 5–75% by weight of quail egg, 20–80% by weight of a cosmetically acceptable carrier, 0–40% by weight of a cosmetically acceptable additive selected from the group consisting of a surfactant, odorant, colorant and light protecting agent, 0.1–1% by weight of a cosmetically acceptable antiseptic selected from the group consisting of boric acid, sorbic acid, benzoic acid, salicylic acid, p-hydroxybenzoic acid, propyl p-hydroxybenzoate, benzyl p-hydroxybenzoic acid, methyl p-hydroxybenzoate, benzyl p-hydroxybenzoate, ethyl p-hydroxybenzoate, beta-phenylethanol, beta-phenylpropanol, and beta-phenylbutanol and 1–3% by weight of a sulfonamide which is sulfamethoxazole, sulfa-chloropyridazine, sulfamethoxypyridazine, sulfadiazine, sulfadimidine, sulfa-methoxydiazine, sulfathiourea, and sulfaguanidine, potentiated with trimethoprim in a weight ratio of 1:5 to 5:1, and 5–20% by weight of a propellant.

4,661,341
ORAL COMPOSITIONS
James J. Benedict, Norwich, N.Y., and Richard J. Sunberg, Oxford, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 666,397, Oct. 30, 1984, abandoned. This application Sep. 30, 1985, Ser. No. 781,595
Int. Cl.⁴ A61K 7/16
U.S. Cl. 424—48 **15 Claims**

1. An oral composition effective in reducing calculus comprising:
(a) a safe and effective amount of an anticalculus agent selected from the group consisting of polyacrylic acid polymers,



copolymers of acrylic acid and another monomer and mixtures thereof; and
(b) a pharmaceutically acceptable carrier selected from the group consisting of toothpastes, mouthwashes, chewing gums, and lozenges
wherein said anticalculus agent has a mass average molecular weight of from about 3500 to about 7500 and M is an alkali metal, ammonium, or hydrogen.

4,661,342
ORAL COMPOSITIONS COMPRISING HYDROXAMIC ACIDS AND SALTS THEREOF
Yoji Yamazaki, Hiratsuki; Toshiyuki Okada, and Tsuneo Miyahara, both of Kanagawa, all of Japan, assignors to Lion Corporation, Tokyo, Japan
Filed Nov. 20, 1985, Ser. No. 800,164
Claims priority, application Japan, Nov. 20, 1984, 59-245810
Int. Cl.⁴ A61K 31/19, 7/22
U.S. Cl. 424—54 **14 Claims**

1. An oral composition which inhibits the colonization of *Streptococcus mutans* in the oral cavity and is effective in preventing dental caries and periodontal disease comprising
a therapeutically effective amount of a hydroxamic acid represented by the following formula (1)

R—CH_2—CO—NHOH

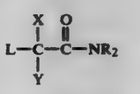
(where R is an alkoxyphenyl group) or a salt thereof, and
at least one ingredient selected from the group consisting of abrasives, binders, humectants, surface active agents and flavors.

4,661,343
AQUEOUS OR ANHYDROUS COSMETIC PREPARATION CONTAINING A FATTY PHASE CONSISTING ESSENTIALLY OF KARITE OIL
Arlette Zabotto, Paris; Jacqueline Grist, Ablon, both of France, and Umberto Bracco, La Tour de Peilz, Sweden, assignors to Societe Anonyme dite: L'Oreal, Paris, France
Filed Dec. 10, 1984, Ser. No. 679,942
Claims priority, application Luxembourg, Dec. 12, 1983, 85130
Int. Cl.⁴ A61K 7/02, 7/021, 7/42, 7/44
U.S. Cl. 424—59 **10 Claims**

1. In a cosmetic preparation for face and body care containing a fatty phase, the improvement consisting of, as said fatty phase, karite oil having the following characteristics: palmitic acid (C_{16}), 3–5 percent; stearic acid (C_{18}), 22–30 percent; oleic acid ($C_{18:1}$), 55–65 percent; linoleic acid ($C_{18:2}$), 0.5–1.5 percent; and arachidic acid (C_{20}), 0.5–1.5 percent, said percentages being based on the total weight of fatty acid present in said karite oil, a viscosity of 100–300 centipoises, a melting point of 5.1°–5.4° C., a crystallization temperature of 2.9°–3° C. and an unsaponifiable content of 1.2–1.5 percent.

4,661,344
ANTIMICROBIAL CATION EXCHANGE COMPOSITION
Attila G. Releanyi, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jun. 1, 1982, Ser. No. 383,665
Int. Cl.⁴ A61K 31/74; A01N 37/34
U.S. Cl. 424—79 **14 Claims**

1. An antimicrobial cation exchange composition comprising a strong acid type cation exchange resin and an antimicrobially effective amount of an antimicrobial which is reversibly attached to said cation exchange resin, said antimicrobial being represented by the structure



wherein X is halogen, Y is hydrogen or halogen, each R is independently hydrogen or an alkyl group having from 1 to 10 carbon atoms, and L is a cyano, alkoxycarbonyl or nitro group.

4,661,345
METHOD FOR TREATING PERTUSSIS
Elaine Tuomanen, New York, N.Y., assignor to The Rockefeller University, New York, N.Y.
Filed Feb. 26, 1985, Ser. No. 705,739
Int. Cl.⁴ A61K 31/70, 39/395, 37/04
U.S. Cl. 424—85 **24 Claims**

1. A method of inhibiting adherence of *Bordetella pertussis* to the cilia of respiratory epithelial cells of humans which comprises bronchial administration of a therapeutic composition containing in an amount which is effective to inhibit such adherence a chemical compound characterized by the presence in its molecule of a galactosido-glucose unit which is available to react with adhesins on the cilia of human respiratory epithelial cells to which Bordetella pertussis normally adheres.

16. A method of stimulating the production of an antibody which will adhere to the cilia of respiratory epithelial cells of humans thereby inhibiting adherence of *Bordetella pertussis* to said cells which comprises administration to a human of a physiologically acceptable composition containing an immunogenically stimulating amount of a chemical compound characterized by the presence of a galactosido-glucose unit which is available to react with adhesions on cilia of human respiratory epithelial cells to which *Bordetella pertussis* normally adheres.

4,661,346
IMMUNOLOGICAL COMPOSITIONS INCLUDING A PEPTIDE AND OSMIUM OR RUTHENIUM TETROXIDE
Roger R. C. New, Liverpool, and Robert D. G. Theakston, Formby, both of England, assignors to National Research Development Corporation, England
PCT No. PCT/GB84/00265, § 371 Date Mar. 28, 1985, § 102(e) Date Mar. 28, 1985, PCT Pub. No. WO85/00749, PCT Pub. Date Feb. 28, 1985
PCT Filed Aug. 1, 1984, Ser. No. 719,274
Claims priority, application United Kingdom, Aug. 4, 1983, 8321009
Int. Cl.⁴ A61K 39/39
U.S. Cl. 424—85 **17 Claims**

1. A method for use in the production of antibodies to a peptide or protein material which comprises administering to a non-human host a composition comprising a peptide or protei material and osmium or ruthenium tetroxide, and thereafter isolating from the host either cells sensitised to, or antibodies to, said peptide or protein material.

4,661,347
CYTOTOXIC COMPOSITIONS
Hans J. Muller-Eberhard, and Cari-Wilhelm E. Vogel, both of LaJolla, Calif., assignors to Scripps Clinic, LaJolla, Calif.
Continuation of Ser. No. 441,135, Nov. 12, 1982, abandoned. This application Mar. 7, 1985, Ser. No. 709,007
Int. Cl.⁴ A61K 39/00; C07K 17/06
U.S. Cl. 424—85 **4 Claims**

1. A composition comprising a monoclonal antibody having binding affinity to a surface structure of a cell and coupled to a moiety having activity as a structural subunit of C3/C5 convertase.

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4,661,348

BABESIOSIS ANTIGEN AND METHOD FOR PREPARATION

Ian G. Wright, Sherwood, Australia, assignor to Commonwealth Scientific & Industrial Research Organization, Canberra, Australia

PCT No. PCT/AU83/00162, § 371 Date Jul. 24, 1984, § 102(e) Date Jul. 24, 1984, PCT Pub. No. WO84/01897, PCT Pub. Date May 24, 1984
PCT Filed Nov. 8, 1983, Ser. No. 631,547
Claims priority, application Australia, Nov. 10, 1982, PF6738
Int. Cl.[4] A61K *39/018*
U.S. Cl. 424—88 8 Claims

1. A method for preparation of babesiosis antigen including the steps of:

(i) forming a crude babesiosis antigenic fraction which is derived from a lysate of Babesia infected erythrocytes or soluble fraction thereof;

(ii) forming monoclonal antibody to said babesiosis antigenic fraction by cloning antibody producing cells from an animal having been administered thereto said babesiosis antigenic fraction;

(iii) absorbing said monoclonal antibody onto an absorbent and passing said babesiosis antigenic fraction through said absorbent whereby an antigen specific to said monoclonal antibody may be bound thereto; and

(iv) separating said specific antigen from the monoclonal antibody.

4,661,349

HERPES SIMPLEX VIRUS SUBUNIT VACCINE

Yoichiro Kino, and Nobuya Ohtomo, both of Kumamoto, Japan, assignors to Juridicial Foundation, The Chemo-Sero-Therapeutic Research Institute, Japan

Continuation of Ser. No. 643,268, Aug. 22, 1984, abandoned. This application Jul. 9, 1986, Ser. No. 883,736
Claims priority, application Japan, Aug. 31, 1983, 58-159641
Int. Cl.[4] A61K *39/245*
U.S. Cl. 424—89 4 Claims

1. A method for preparing a herpes simplex subunit vaccine, which comprises subjecting a solution containing herpes simplex virus glycoproteins to affinity chromatography using as a ligand a monoclonal antibody against herps simplex virus glycoprotein gB, and adsorbing the resulting purified glycoprotein gB onto an aluminum gel to obtain a glycoprotein gB-adsorbed aluminum gel dispersion.

4,661,350

DENTAL VACCINE FOR INHIBITING PERIODONTITIS

Takashi Tsurumizu, Chiba; Takashi Hashimoto, and Takashi Takahashi, both of Tokyo, all of Japan, assignors to Kitasato Kenkyusho, Tokyo, Japan

Continuation of Ser. No. 558,257, Dec. 5, 1983, abandoned. This application Jul. 3, 1986, Ser. No. 881,864
Claims priority, application Japan, Dec. 8, 1982, 57-215146
Int. Cl.[4] A61K *39/07, 39/02, 39/116*
U.S. Cl. 424—92 8 Claims

1. A vaccine for preventing or inhibiting periodontitis induced or deteriorated by the action of oral microorganisms selected from the genera Actinomyces, Bacteriodes and Actinobacillus, which comprises as active ingredient at least one antigen which is obtained by dispersing the cells of at least one of said oral microorganism in a hypertonic buffer solution containing sodium chloride and isolating the desired antigen from pili-like structures on the surface layer of said cells at a low temperature sufficient to obviate the denaturing of said antigen.

4,661,351

COMPOSITIONS CONTAINING BIOSYNTHETIC PESTICIDAL PRODUCTS AND AT LEAST ONE PHOSPHATE, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Ignace Gago, Braine-l'Alleud, and René Detroz, Ohain, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed May 1, 1984, Ser. No. 605,939
Claims priority, application France, May 2, 1983, 83 07399
Int. Cl.[4] A01N *63/02*
U.S. Cl. 424—93 13 Claims

1. Compositions containing biosynthetic pesticidal fermentation products of microorganisms of the family of Bacillaceae, comprising at least one water-soluble inorganic condensed acid phoshate and a wetting agent, said compositions having a neutral or slightly acid pH in water.

4,661,352

WS 7739 SUBSTANCES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Motoaki Nishikawa, Toyonaka; Morita Iwami, Takarazuka; Keizo Yoshida, Suita, and Masanobu Kohsaka, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 19, 1984, Ser. No. 662,927
Claims priority, application United Kingdom, Nov. 15, 1983, 8330465
Int. Cl.[4] A61K *35/74*; C12P *1/06*
U.S. Cl. 424—117 4 Claims

1. WS 7739 substances selected from the group consisting of WS 7739-A substance and WS 7739-B substance, wherein

(i) the WS 7739-A substance has the following physical and chemical properties.

(1) Form and color:
pale yellow powder

(2) Elementary analysis: C: 63.89%, H: 7.09%, N: 9.83%, S: 7.53%

(3) Color reaction:
Positive: Cerium sulfate reaction, iodine reaction, Ehrlich reaction, Dragendorff reaction and phosphomolybdic acid reaction
Negative: ninhydrin reaction

(4) Solubility:
Soluble: methanol, ethanol, acetone, ethyl acetate
Slightly soluble: benzene
Insoluble: hexane, water

(5) Melting point:
100°–105° C.

(6) Specific rotation:
$[\alpha]_D^{23} = +98.0°$ (c=1.0, $CHCl_3$)

(7) Ultraviolet absorption spectrum:

$$\lambda_{max}^{Methanol} = 252\ nm(E_{1\ cm}^{1\%} = 5290)$$

$$= 332\ nm(E_{1\ cm}^{1\%} = 8920)$$

$$\lambda_{max}^{Methanol + HCl} = 252, 332\ nm$$

$$\lambda_{max}^{Methanol + NaOH} = 244, 340\ nm$$

(8) Infrared absorption spectrum:
$\nu_{max}^{CHCl_3}$=3380, 3000, 2930, 1700(sh), 1675, 1615, 1595, 1500, 1475, 1450, 1380, 1355, 1310, 1300, 1130, 1095, 1020, cm^{-1}

(9) Molecular weight:
EIMS: m/z 413 (M^+)

(10) ^{13}C Nuclear magnetic resonance spectrum ($CDCl_3$): δ(ppm): 206.1, 176.1, 168.1, 151.2, 144.4, 128.4, 127.3, 123.2, 123.1, 108.5, 105.4, 56.4, 54.5, 46.1, 44.5, 39.3, 39.3, 28.9, 26.2, 21.3, 16.8, 12.8

(11) ^1H Nuclear magnetic resonance spectrum ($CDCl_3$): δ(ppm): 10.3(1H, d, J=5 Hz), 7.38(1H, d, J=4.6 Hz), 7.32(1H, br. t, J=7.5 Hz), 7.13(1H, d, J=7.5 Hz), 7.08(1H, t, J=7.5 Hz), 6.87(1H, d, J=7.5 Hz), 4.53(1H, dd, J=10 and 4.6 Hz), 4.25(1H, m), 3.93(1H, d, J=4 Hz), 3.22(3H, s), 3.11(1H, dd, J=14 and 4 Hz), 3.00(1H, dd, 14 and 7.3 Hz), 2.98(1H, m), 2.63(1H, m), 2.53(1H, m), 2.38–2.32(2H, m), 2.23(3H, s), 1.90(1H, m), 1.83(1H, m), 0.72(3H, d, J=6.8 Hz)

or

(ii) the WS 7739-B substance has the following properties:

(1) Form and color:
pale yellow powder

(2) Elementary analysis:
C: 63.22%, H:6.10%, N:9.97%, S: 8.30%

(3) Color reaction:
Positive: Cerium sulfate reaction, iodine reaction, Ehrlich reaction, Dragendorff reaction and phosphomolybdic acid reaction
Negative: ninhydrin reaction

(4) Solubility:
Soluble: methanol, ethanol, acetone, ethyl acetate
Slightly soluble: benzene
Insoluble: hexane, water

(5) Melting point:
112°–120° C.

(6) Specific rotation:
$[\alpha]_D^{23} = +97.0°$ (c=0.5, $CHCl_3$)

(7) Ultraviolet absorption spectrum:

$$\lambda_{max}^{Ethanol} = 246\ nm(E_{1\ cm}^{1\%} = 362)$$

$$= 347\ nm(E_{1\ cm}^{1\%} = 347)$$

$$\lambda_{max}^{Ethanol + HCl} = 246, 347\ nm$$

$$\lambda_{max}^{Ethanol + NaOH} = 295, 330\ nm$$

(8) Infrared absorption spectrum:
$\nu_{max}^{CHCl_3}$=3350, 3000, 2900, 1670, 1610, 1595, 1490, 1470, 1445, 1380, 1350, 1340, 1310, 1297, 1220, 1120, 1110, 1085, 1020, 920 cm^{-1}

(9) Molecular weight:
EIMS: m/z 411 (M^+)

(10) ^{13}C Nuclear magnetic resonance spectrum ($CDCl_3$): δ(ppm): 196.8, 176.1, 168.1, 151.0, 150.1, 144.4, 136.3, 128.4, 127.3, 123.2, 123.1, 108.4, 104.9, 56.8, 54.9, 46.0, 44.2, 39.2, 34.5, 26.2, 16.9, 13.2

(11) ^1H Nuclear magnetic resonance spectrum ($CDCl_3$): δ(ppm): 10.18(1H, d, J=5 Hz), 7.18(1H, d, J=4.6 Hz), 7.4–7.0(4H, m), 6.87(1H, d, J=7.8 Hz), 6.34(1H, td, J=5.9 and 2.0 Hz), 4.50(1H, ddd, J=10.2, 4.6 and 1.4 Hz), 4.33(1H, m), 3.97(1H, d, J=3.9 Hz), 3.24(3H, s), 3.22(2H, m), 3.11(2H, m), 2.98(1H, m), 2.27(3H, s), 0.72(3H, d, J=6.8 Hz).

4,661,353

CL-1577-B_4 COMPOUND, ITS PRODUCTION AND USE

John H. Wilton; Gerard C. Hokanson, and James C. French, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 712,294, Mar. 15, 1985, Pat. No. 4,594,248. This application Dec. 4, 1985, Ser. No. 804,411
The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.
Int. Cl.[4] A61K *35/74*; C12P *1/06*
U.S. Cl. 424—123 1 Claim

1. A process for preparing compound CL-1577-B_4, said compound having the characteristics:

a pale yellow solid having an elemental analysis corresponding to 47.8% C; 5.74% H; 3.88% N; 30.66% 0 (by difference); and 11.92% S;

an ultraviolet spectrum showing absorption At 315 nm (inflection), 271 nm (a=10.8), and 213 nm (inflection);

an infrared spectrum showing principal absorption peaks at 3700. 3500, 3180, 2975, 2930, 1735, 1682, 1670, 1603, 1508, 1500, 1383, 1369, 1302, 1154, 1100, 1075, 1020, 990, and 859 reciprocal centimeters;

a 200 MHz proton magnetic resonance spectrum in deuterochloroform showing principal signals at 1.10 (goublet), 1.34 (doublet), 1.39 (doublet), 1.51 (broad double doublet), 2.10 (singlet), 2.13 (doublet of doublets), 2.30 (multiplet), 2.49 (singlet), 2.50 (doublet of doublets), 2.76 (multiplet), 3.39 (doublet of doublets), 3.38–3.4 (multiplet), 3.99 (doublet of doublets), 4.11 (doublet of doublets), 4.29 (singlet), 4.63 (doublet), 4.96 (doublet of doublets), 5.68 (broad doublet), 5.79 (doublet of doublets), 5.88 (doublet), 6.17 (multiplet), 6.22 (doublet), and 6.56 (doublet of doublets) parts per million downfield from tetramethylsilane;

and a 90.56 MHz ^{13}C magnetic resonance spectrum in deuterochloroform showing principal signals at 193.8, 156.0, 149.8, 136.0, 132.7, 130.3, 126.3, 123.6, 100.8, 99.9, 98.4, 89.5, 84.1, 83.8, 79.5, 79.2, 76.8, 72.5, 71.6, 70.8, 70.7, 68.7, 68.6, 67.3, 63.1, 57.1, 56.3, 56.1, 52.5, 47.3, 40.5, 37.8. 34.5, 24.0, 22.9, 22.4, 20.2, 18.5, and 14.8 parts per million downfield from tetramethylsilane;

said process comprising the steps of culturing a purified straint of actinomycete identified as ATCC 39363 under aerobic conditions in a medium comprising assimilable sources of carbon, nitrogen, and sulfur until a sufficient quantity of CL-1577A or CL-1577B intermediate compound is produced;

isolating said CL-1577A or CL-1577B compounds from said medium; and

contacting said CL-1577A or CL-1577B compound with 0.1 molar methanolic HCl at a temperature of about 37° C. for a period of about thirty minutes to produce said CL-1577-B_4 compound and thereafter adjusting the pH of the solution to a value of about pH 5.5 and isolating said CL-1577-B_4 compound by conventional means.

4,661,354

TOPICAL TREATMENT OF HERPES SIMPLEX WITH A ZINC SULFATE-CAMPHOR WATER SOLUTION

Edmund F. Finnerty, 215 Windsor Rd., Waban, Mass. 02168

Continuation of Ser. No. 623,071, Jun. 21, 1984, abandoned, which is a continuation of Ser. No. 409,921, Aug. 20, 1982, abandoned. This application Aug. 2, 1985, Ser. No. 761,676
Int. Cl.[4] A61K *33/30*
U.S. Cl. 424—145 2 Claims

1. A solution for the topical treatment of Herpes Simplex Type I comprising 0.25% zinc sulfate in camphor water.

4,661,355

PROCESS FOR THE PREPARATION OF ALCOHOL-FREE DRINKS WITH A YEAST AROMA

Fritz Schur, Magden, Switzerland, assignor to Brauerei Feldschlosschen, Rheinfelden, Switzerland

Continuation of Ser. No. 366,118, Apr. 7, 1982, abandoned. This application Mar. 25, 1985, Ser. No. 715,583
Claims priority, application Switzerland, Jan. 4, 1982, 11/82
Int. Cl.[4] C12G *1/00, 3/00*
U.S. Cl. 426—14 24 Claims

1. In a process for preparation of an alcohol-free beverage having a yeast aroma which comprises isolating yeast from a fermentation process and removing fermented liquid of said fermentation process from the yeast, contacting said isolated yeasts with an aqueous liquid containing nutrients, flavor substances or a combination thereof suitable for human consumption and removing the yeast totally from said aqueous liquid to provide said alcohol-free beverage, the improvement which comprises carrying out said contacting at a temperature about −0.4° C. or below for a period of time sufficient to have aroma substances of the yeast diffuse from the cells thereof into said aqueous liquid, to have aroma reactions between the yeast and said aqueous liquid take place, or both, said aqueous liquid having a dry substance content of about 7.0 to 7.5% by weight, to prepare a beverage having an alcohol content of less than

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0.05% by weight, said isolated yeast being employed at a ratio of 0.1 to 4 liters on a non-watered, thick liquid basis per hectoliter of said aqueous liquid.

4,661,356

PRODUCTION OF VINEGER WITH BACTERIA ON A SUPPORT

Akira Okuhara, Kashiwa, Japan, assignor to Kikkoman Corporation, Noda, Japan

Filed Nov. 29, 1984, Ser. No. 676,093
Claims priority, application Japan, Nov. 30, 1983, 58-224453
Int. Cl.⁴ C12J *1/00*; C12P *7/54*
U.S. Cl. 426—17 **4 Claims**

1. A process for producing vinegar which comprises inoculating and growing acetic acid bacteria on lipophilic fibers of a synthetic resin selected from the group consisting of polypropylenes, polyethylenes, polystyrenes, polyethyleneterephthalate and polyurethanes packed in a fermentation tower, and forcing a charging wort for vinegar production and an oxygen-containing gas to contact with and pass through said bacteria on the lipophilic fibers to carry out acetic fermentation.

4,661,357

PROCESS FOR THE PREPARATION OF RIPENED PROCESS CHEESE

Jacques Daurelles, Loss le Saunier, and Christian Lombart, Vendome, both of France, assignors to Fromageries Bel, Paris, France

Filed Aug. 2, 1984, Ser. No. 636,801
Claims priority, application France, Aug. 3, 1983, 83 12818
Int. Cl.⁴ A23C *19/08, 19/084, 19/093, 19/14*
U.S. Cl. 426—37 **9 Claims**

1. Process for the preparation of ripened process cheese having the appearance and the organoleptic properties of a soft or hard or semi-hard cheese with a moldy rind, comprising of the steps of: forming a process cheese melt from components selected such that said melt has a composition and condition approximating those of a coagulum suitable for conversion into said soft or hard or semi-hard cheese; forming a cheese block from said process cheese melt; submitting the surface of said cheese block to a surface acidification treatment to acidify the surface to a pH of 4–5, and thereby inducing the formation of a pre-rind by said acidification; seeding the acidified surface of said cheese block with ripening molds; and ripening the thus-seeded cheese block.

4,661,358

WORT-SEQUESTERED DIVALENT METAL SALTS

Kyle A. Brokken, Chaska, and Randolph S. Porubcan, Victoria, both of Minn., assignors to Quali Tech, Inc., Chaska, Minn.

Filed Aug. 23, 1985, Ser. No. 768,961
Int. Cl.⁴ A23K *1/06, 1/175*
U.S. Cl. 426—72 **14 Claims**

1. A water-dispersible solid composition comprising about 5–50% alkali-modified brewer's wort, about 5–60% of at least one nutrient divalent metal ion salt, about 0.5–3.0% of an alkali metal hydroxide, about 10–40% of an inorganic filler and about 0.5–3% of a nonionic surfactant, which is prepared by a process comprising:

(a) adjusting the pH of liquid brewer's wort to about 10–12 by the addition of an alkali metal hydroxide;

(b) combining the pH-adjusted wort with a divalent metal ion salt, wherein the metal ion is selected from the group consisting of iron, manganese, zinc, copper, cobalt, magnesium and mixtures thereof;

(c) drying the salt-wort mixture in admixture with an inorganic filler to yield a solid particulate product; and

(d) blending said particulate product with a nonionic surfactant.

4,661,359

COMPOSITIONS AND METHODS FOR PREPARING AN EDIBLE FILM OF LOWER WATER VAPOR PERMEABILITY

Jonathan Seaborne, Corcoran, and David C. Egberg, Plymouth, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jun. 3, 1985, Ser. No. 740,797
Int. Cl.⁴ A23P *1/08*
U.S. Cl. 426—89 **37 Claims**

1. A method for preparing an edible low water vapor permeable film, comprising the steps of:

A. dissolving in an edible solvent to form a mixed solution

1. unbleached, refined edible shellac, and

2. a first reactant member selected from the group consisting of hydroxypropyl cellulose, hydroxypropyl methyl cellulose and mixtures thereof,

wherein the weight ratio of edible shellac to member ranges from about 1:0.001 to 1:2,

wherein the concentration of the solution ranges from about 1% to 30% by weight,

wherein said solution additionally comprises an acid catalyst selected from the group consisting of citric, tartaric, hydrochloric, malic and mixtures thereof, and

wherein the weight ratio of acid catalyst to the combined weight of shellac and hydroxypropyl cellulose ranges from about 0.001:1 to 0.1:1;

B. applying the solution to a substrate to form a coated substrate; and

C. heating the coated substrate at a temperature of about 130° to 175° C. for about 2 to 15 minutes whereby the solvent is evaporated to form a cured edible film.

4,661,360

FILLED SNACK PRODUCT HAVING A HYDROPHILICALLY COATED FILLING

James P. Smith, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 553,290, Nov. 17, 1983, abandoned. This application Jan. 3, 1986, Ser. No. 815,834
Int. Cl.⁴ A21D *13/00*; A23G *3/00*
U.S. Cl. 426—94 **17 Claims**

12. A method for making a baked filled snack product, which comprises the steps of:

(a) providing an edible, heat stable, lubricious oilseed butter filling selected from the group consisting of peanut butter, cashew nut butter, sunflower seed butter and mixtures thereof having a fat content of from about 40% to about 70% by weight;

(b) coating the filling with an edible hydrophilic material wherein such hydrophilic matrial is corn syrup solids;

(c) partially or completely surrounding the coated filling with a layer of dough containing flour, shortening and water, to form a raw filled snack product; and

(d) baking the raw snack product to form a baked filled snack product.

4,661,361

METHOD OF MAKING A PIZZA

Anthony T. Mongiello, 1663-84th St., Brooklyn, N.Y. 11214; Lawrence A. Mongiello, Sr., 706 Greenwood Ave., Brooklyn, N.Y. 11218, and Angelo A. Mongiello, Sr., 1655 84th St., Brooklyn, N.Y. 11214

Filed Jun. 25, 1984, Ser. No. 624,190
Int. Cl.⁴ A21D *8/02*
U.S. Cl. 426—283 **15 Claims**

1. A method of making a pizza comprising the steps of:

(a) forming a generally flat dough base;

(b) placing a plurality of separated individual food portions on the dough base such that, when the dough base is cut into substantially equalily sized portions, each individual food portion is located upon a portion of each piece;

(c) covering each food portion with an unbaked dough section of sufficient dimensions to cover said food portion thereby forming a separate closed pocket about each food portion;

(d) covering the portions of the dough base which are not covered by said closed pockets with a layer of tomato sauce and cheese to form an unbaked pizza product; and

(e) baking the unbaked product to obtain a pizza.

4,661,362

DEBITTERING BRAN FLAKES USING CITRUS PEEL

Ronald J. Triani, Kalamazoo, and Frank J. Meczkowski, Battle Creek, both of Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 23, 1985, Ser. No. 812,227
Int. Cl.⁴ A23L *1/36*
U.S. Cl. 426—289 **6 Claims**

1. A process for eliminating the harsh bitter flavor associated with bran cereal comprising combining bran cereal with dried citrus peel in amounts sufficient to reduce the harsh bitter flavor.

4,661,363

PROCESS FOR PREPARING PEANUT FLAVOR CONCENTRATE

Peter M. Ganais, Stamford, Conn., assignor to Nabisco Brands, Parsippany, N.J.

Filed Nov. 14, 1985, Ser. No. 797,912
Int. Cl.⁴ A23L *1/221*
U.S. Cl. 426—429 **4 Claims**

1. A process for the preparation of a peanut flavor concentrate which comprises the steps of:

(a) extracting raw, blanched or unblanched peanut-meat with an aqueous glycerol solution containing from about 10 to about 90 percent by weight of glycerol at a temperature in the range of about 80° F. to about 200° F.;

(b) separating the aqueous glycerol extract from the peanut meat;

(c) removing the water from the extract at or approaching the boiling point of the extract until the water is substantially driven off and the color turns brown with the development of freshly roasted peanut aroma.

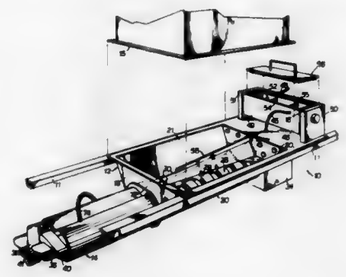
4,661,364

DOUGH PUMP WITH DEGASSING SYSTEM

Sterrett P. Campbell, Norcross, Ga., assignor to AMF Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 571,999, Jan. 19, 1984, Pat. No. 4,517,212, which is a division of Ser. No. 251,261, Apr. 6, 1981, Pat. No. 4,449,908, which is a continuation-in-part of Ser. No. 58,120, Jul. 16, 1979, abandoned. This application May 10, 1985, Ser. No. 733,240
Int. Cl.⁴ A21D *6/00*; A21C *9/00*; B67D *1/08*
U.S. Cl. 426—496 **16 Claims**

1. A method of dispensing dough comprising depositing a batch of dough into a hopper onto an elongated shield extending over the adjacent surfaces of a pair of interference helical screw elements at the lower portion of the hopper and onto portions of the screw elements, rotating the screw elements to move the dough along the lengths of the screw elements toward a discharge opening in the hopper aligned with the screw elements, maintaining an air passage with said shield at a position between the shield and the screw elements along the



length of the screw elements, and drawing a partial vacuum in the air passage to withdraw gas from the dough.

4,661,365

APPARATUS AND METHOD FOR PREPARING FEED GRAIN

Thomas J. Malone, Lubbock, Tex., assignor to Nutri-Developers, Inc., Lubbock, Tex.

Division of Ser. No. 491,856, May 3, 1983, Pat. No. 4,508,029. This application Mar. 13, 1984, Ser. No. 589,695
Int. Cl.⁴ A23K *1/00*
U.S. Cl. 426—507 **14 Claims**

1. A method of treating whole grain comprising the steps of:

scratching the outer surface of said grain by reverberating the grain a plurality of times between a fixed deflector and a rotating roll having scratching protrusions on its surface, said roll being rotated at a speed giving it a surface velocity of approximately 3393 feet per minute;

subsequently spraying moisture onto the scratched grain;

feeding said scratched grain into the inlet of a steam cabinet;

operating the steam cabinet to heat and further mositurize the scratched grain; and

feeding the heated and moisturized grain from the steam cabinet between rollers to compress the grain into flakes.

4,661,366

METHOD TO MAKE ICING USING A CONTROLLED MULTI-ZONE COOLING AND MIXING MACHINE

Albert A. Pinto, White Plains, N.Y., and Clemence K. Dartey, Oakland, N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jul. 22, 1985, Ser. No. 757,306
Int. Cl.⁴ A23G *3/00, 3/14*
U.S. Cl. 426—572 **3 Claims**

1. The process for making icing comprising:

(a) preparing an icing slurry, said icing slurry being about 63% sugar 6X and about 34% soybean oil;

(b) pumping said icing slurry at a pressure between about 80 psi and about 90 psi into a means for congealing said icing slurry; and

(c) forming an icing from said icing slurry by said means for congealing, said means for congealing having:

(i) a plurality of independently controlled temperature zones, said plurality of said independently controlled temperature zones being 5 zones, said 5 zones being set a sequential temperatures of 115° F., 115° F., 82° F., 76° F., and 76° F.;

(ii) a means for simultaneously mixing and propelling said icing slurry through said temperature zones; and

(iii) a means for aerating said icing slurry during said mixing and propelling, whereby said icing slurry is aerated and congealed into an icing having a predominance of beta prime crystals.

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4,661,367

PROCESS FOR THE MANUFACTURE OF COLORED INTAGLIATED ARTICLES

Sidney F. Forse, Macclesfield, and Raymond C. Rowe, Congleton, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 499,141, May 27, 1983, abandoned. This application Sep. 27, 1985, Ser. No. 780,725

Claims priority, application United Kingdom, Jun. 10, 1982, 8216816

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.[4] A61K 9/20

U.S. Cl. 427—3 9 Claims

1. A process for the manufacture of colored solid articles bearing at least one highlighted intagliation, which comprises coating colored intagliated articles by applying a suspension comprising at least one optically anisotropic substance, having a minimum refractive index not greater than 2.00 but free from a film coating agent, in a suitable liquid in which the optically anisotropic substance is insoluble or of relatively poor solubility, which process is carried out in a conventional film coating apparatus in such a way that a rubbing action takes place between the articles being coated and the color or the non intagliated surface of said article being essentially unchanged by said coating while the color of the intagliation is highlighted against the rest of the surface by said layer.

4,661,368

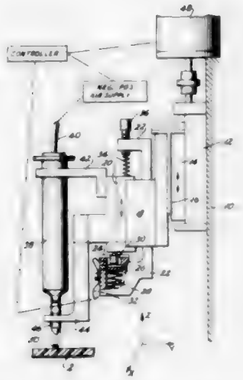
SURFACE LOCATING AND DISPENSED DOSAGE SENSING METHOD AND APPARATUS

Robert R. Rohde, Apalachin, and Joseph J. Bedard, Endicott, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Sep. 18, 1985, Ser. No. 777,262

Int. Cl.[4] H05K 3/30

U.S. Cl. 427—8 18 Claims



1. A method of depositing a dose of flowable material from a tip onto a surface, and comprising the steps of:

advancing said tip toward and into engagement with a portion of said surface and sensing a reactive force on said tip from said surface;

recording a position, on a path of said advancing, when a particular value of said reactive force is attained;

halting said advancing according to attaining said position;

retracting said tip away from said surface portion and back past said position by a preferred distance; and

depositing a dose of said flowable material onto said surface portion from said tip.

4,661,369

NON-DESTRUCTIVE EVALUATION METHOD FOR COATED CARBON-CARBON COMPOSITES

Robert L. Crane, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 5, 1985, Ser. No. 772,815

Int. Cl.[4] B32B 35/00

U.S. Cl. 427—8 4 Claims

1. A method for detecting and repairing surface flaws in the silicon carbide oxidation resistant coating of a carbon-carbon composite which comprises the steps of:

(a) providing a test liquid composition consisting essentially of a carrier fluid, at least one particulate pigment which is insoluble in said carrier fluid, finely divided silicon dioxide, and about 0.25 to 8 weight percent boron oxide, based upon the weight of the silicon dioxide;

(b) applying said test liquid to the surface of said composite;

(c) inspecting said surface for surface flaws;

(d) heating said composite in at least the area of discovered surface flaws to an elevated temperature to fuse said boron oxide and said silicon oxide to form a coherent flaw-sealing coating in said surface flaws; and

(e) thereafter heating said composite to a further elevated temperature to deplete boron from said flaw-sealing coating.

4,661,370

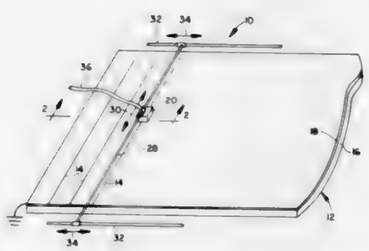
ELECTRIC DISCHARGE PROCESSING OF THIN FILMS

Dale E. Tarrant, Chatsworth, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 8, 1984, Ser. No. 577,943

Int. Cl.[4] B05D 3/06

U.S. Cl. 427—37 18 Claims



1. A method of selectively processing an existing inorganic film in a preselected pattern, comprising the steps of:

providing a gaseous environment at a preselected location on the film;

positioning electric probe means a preselected distance from the film at said location;

applying an electric potential to the probe means to discharge electric energy through the gaseous environment as a spark from the probe means to the film at said location; and

causing relative movement between the probe means and the film along said pattern.

4,661,371

METHOD OF PRODUCING AN EXHAUST VALVE FOR DIESEL ENGINE

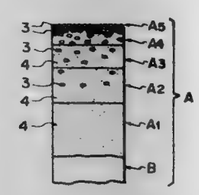
Takemi Yamada, Tokyo; Tamataro Satoh, Yokohama; Masaaki Mizushina, Fujisawa; Koji Toyota, and Hiromi Okamoto, both of Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 705,087, Feb. 25, 1985, abandoned, which is a division of Ser. No. 315,666, Oct. 28, 1981, Pat. No. 4,530,322. This application Mar. 13, 1986, Ser. No. 839,088

Claims priority, application Japan, Oct. 31, 1980, 55-152264; Sep. 24, 1981, 56-149620

Int. Cl.[4] C23C 4/08

U.S. Cl. 427—49 5 Claims



1. A method of forming an exhaust valve for a diesel engine, comprising the steps of

preparing a valve body or valve seat body by removing a predetermined dimension of said valve body or valve seat body at points where said valve body comes into contact with said valve seat body;

forming grains of ceramic and grains of metal, by sintering, then pulverizing, and then pelletizing ceramic material and metal material;

depositing or spraying said grains of ceramic and said grains of metal on said valve body and said valve seat body where a portion was removed;

concurrently changing the proportion of grains of ceramic to grains of metal being deposited or sprayed, with the proportion of grains of ceramic to grains of metal increasing from a range of 0% to 100% from time depositing or spraying begins until depositing or spraying is completed to form a completed coated layer;

concurrently subjecting said coated layer to pressure of up to 10 Kg/mm^2 and temperatures of up to 900° C., thereby to form a hardened contact surface where said valve body and said valve seat body touch each other, with the contact surfaces being of a substantial majority of ceramic grains and the portion of said coated layer being next to the valve body or valve seat body being of a substantial majority of metal grains, with the portion therebetween varying in increasing amounts of ceramic grains from said portion next to said valve or valve seat body to said portion next to said contact surface.

4,661,372

UV-INDUCED COPPER-CATALYZED ELECTROLESS DEPOSITION ONTO STYRENE-DERIVATIVE POLYMER SURFACE

Andrew M. Mance, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1985, Ser. No. 812,833

Int. Cl.[4] C23C 18/20

U.S. Cl. 427—54.1 4 Claims

1. A method for depositing a copper plate onto a selected region of a surface of an injection molded polymer selected from the group consisting of polystyrene, styrene-acrylonitrile copolymer and acrylonitrile-butadiene-styrene copolymer, said method comprising

irradiating the region with ultraviolet radiation having a wavelength between about 240 and 280 nanometers, said irradiation being carried out while said surface is exposed to air to produce an oxidized surface,

vacuum depositing copper onto the surface to produce a discontinuous thin copper film, and

electrolessly depositing a copper plate onto said region by contact with an electroless deposition solution, said electroless deposition being catalyzed by said vacuum-deposited copper film on said irradiated surface.

4,661,373

DISPERSION ELECTROLUMINESCENT ELEMENT

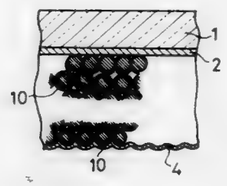
Yoshinori Kato; Masami Igarashi, and Yoshimi Kamijo, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Continuation of Ser. No. 660,506, Oct. 12, 1984, abandoned. This application Jan. 6, 1986, Ser. No. 816,948

Claims priority, application Japan, Oct. 13, 1983, 58-189845

Int. Cl.[4] B44D 1/18; B05D 5/06, 5/12

U.S. Cl. 427—66 9 Claims



1. In a method for forming a dispersion electroluminescent element of the type comprising a transparent electrode, a fluorescent powder layer coated on said transparent electrode, and a counter electrode spaced apart from said transparent electrode by said fluorescent powder layer, the improvement comprising the steps of first forming the fluorescent powder layer by suspending the fluorescent particles of said fluorescent powder layer in a binder with an excess amount of binder being provided as a binder layer in the vicinity of said transparent electrode, then immersing the fluorescent particles suspended in the binder in a copper solution such that the particles are coated with copper to a lesser extent on their sides facing toward said transparent electrode due to the excess binder layer in the vicinity of said transparent electrode than toward said counter electrode, whereby the resultant electroluminescent element is formed with much less or no copper coating on the sides of the fluorescent particles facing the transparent electrode and a subsequent copper diffusion forming step can be minimized or avoided.

9. A dispersion electroluminescent element formed by the method of claim 1.

4,661,374

METHOD OF MAKING MOS VLSI SEMICONDUCTOR DEVICE WITH METAL GATE AND CLAD SOURCE/DRAIN

Robert R. Doering, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 7, 1984, Ser. No. 638,440

Int. Cl.[4] H01L 21/28

U.S. Cl. 427—88 18 Claims

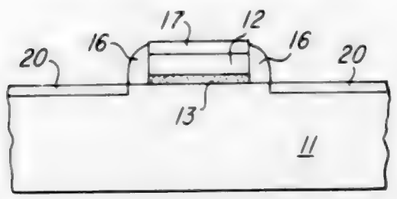
1. A method of making a semiconductor device comprising the steps of:

forming an electrode on a face of a semiconductor body,

covering the top and sides of said electrode with an insulator coating,

depositing a reactive material on said face, and subjecting said body to a treatment to cause the material to react with the surface of the semiconductor body to create a conductive compound,

and removing the unreacted material from said face with an etchant which does not substantially attack said insulator coating or said conductive compound, said etchant tend-



ing to react with the material of said electrode on contact, the electrode being isolated from said etchant by said insulator coating on top and sidewalls to prevent reaction with the material of said electrode.

4,661,375

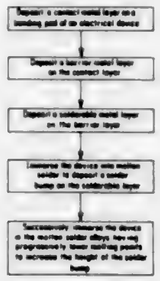
METHOD FOR INCREASING THE HEIGHT OF SOLDER BUMPS

Donald A. Thomas, Hopewell Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Continuation of Ser. No. 725,707, Apr. 22, 1985, abandoned. This application Mar. 7, 1986, Ser. No. 838,187

Int. Cl.⁴ H01L *29/44, 21/88*

U.S. Cl. 427—99 **8 Claims**



1. A method of increasing the height of a bump of solder alloy deposited on a substrate, comprising the steps of:

sequentially applying a plurality of different molten solder alloys to the solder alloy bump wherein each alloy has a lower melting temperature than the alloy previously applied.

4,661,376

METHOD OF PRODUCING ELECTRICALLY CONDUCTIVE FIBERS

Paul M. Lisag, 4216 Hickory Rd., Apt. 3D, Mishawaka, Ind. 46544

Filed Dec. 27, 1985, Ser. No. 813,967

Int. Cl.⁴ B05D *5/12*

U.S. Cl. 427—126.1 **10 Claims**

1. A method of producing electrically conducting fibers comprising the steps of:

(a) preparing a single bath containing a solution of a divalent metal sulfide and an acid; and

(b) heat said bath; and

(c) immersing said fibers in said bath to effect adsorption of said divalent metal sulfide onto said fibers.

4,661,377

PROCESS FOR PRODUCING A MAGNETIC RECORDING MEDIUM HAVING AN IMPROVED DIMENSIONAL STABILITY

Kazuhiko Morita; Shigeo Komine; Akira Kasuga, and Noburo Hibino, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 11, 1984, Ser. No. 569,887

Claims priority, application Japan, Jan. 12, 1983, 58-2282

Int. Cl.⁴ H01F *10/02*

U.S. Cl. 427—130 **30 Claims**

1. A heat-treating process, comprising the steps of:

cutting a polymer support base for a recording medium from a web roll of a long support base into a sheet form; and

heat-treating the sheet form under pressure, whereby said sheet form exhibits improved dimensional stability, the heat-treating being carried out at a temperature in the range of 50° C. to 150° C. under a pressure in the range of 1 g/cm² to 1 kg/cm², wherein the polymer support base is polyethylene terephthalate.

4,661,378

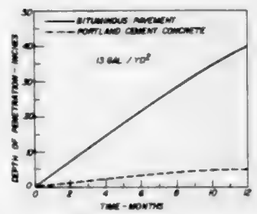
PAVEMENT DRESSING CONDITIONER FORMED OF TAR, AN AROMATIC SOLVENT AND A BITUMINOUS PAVEMENT REJUVENATOR

Edward W. McGovern, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jul. 23, 1985, Ser. No. 757,895

Int. Cl.⁴ B32B *35/00*

U.S. Cl. 427—140 **4 Claims**



3. A method of sealing and rejuvenating bituminous and concrete surfaces which comprises applying to the surface at a rate of 0.05–0.5 gallon per square yard a composition comprising 40–60% by weight of topped coke oven tar having a float test of 50–300 seconds at 50° C., 20–35% by weight of an aromatic solvent having API Gravity at 60° F. of from 11–30, Specific Gravity 60/60° F. of from 876–993, IBP (initial boiling point) between 310 and 450, DP (dry point) of between 350 and 550, and a Flash pt. °F. TCC of from 110–250, and 15–35% by weight of a mixture of di-, tri- and tetracyclic aromatic compounds and their alkyl homologs containing lower alkyl groups together with 1–10% by weight of phenolic and hydroxy derivatives, said mixture being derived from the distillation of coal tar, said mixture having a specific gravity of 25/25° C. of at least 1.08 and an initial boiling point of at least 180° C., a continuous boiling range to at least 300° C., 70–40% of the material remaining as residue at 300° C., with a distillation curve to 300° C., the distillate at 300° C. having a minimum specific gravity at 25/25° C. of about 1.025.

4,661,379

METHOD AND APPARATUS FOR APPLYING STRIP-SHAPED POWDER LAYER TO A CAN BODY OR THE LIKE, AND POWDER-CARRYING CAN BODY

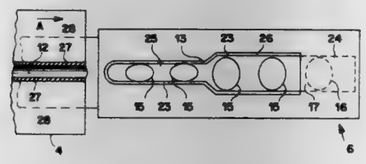
Siegfried Frei, Schoeckstrasse 3, 9000 St. Gallen, and Ernst Hohl, Wittenbach, both of Switzerland, assignors to Siegfried Frei, St. Gallen, Switzerland

Continuation-in-part of Ser. No. 628,129, Jul. 9, 1984, abandoned, which is a continuation of Ser. No. 478,279, Mar. 24, 1983, abandoned. This application Nov. 14, 1985, Ser. No. 797,919

Claims priority, application Switzerland, Apr. 27, 1982, 2562/82; Aug. 24, 1982, 5024/82; Feb. 23, 1983, 1004/83

Int. Cl.⁴ B05D *1/12*

U.S. Cl. 427—181 **29 Claims**



1. A method of applying a substantially strip-shaped powder layer onto the inside of a can body to cover a welding seam of said can body, comprising the steps of:

(a) moving said can body in a predetermined direction over spray head such that spray chamber of said spray head is located within said can body;

(b) transporting powder for forming the substantialy strip-shaped powder layer by means of an air stream through at least one supply passageway in said spray head;

(c) discharging said powder in the form of a substantially bundled powder jet from an outlet opening of said at least one supply passageway and which is located at the neighborhood of said welding seam as said can body moves past said spray head;

(d) aspirating from within said spray chamber through at least on aspiration passageway at least a portion of the air of said air stream transporting said powder for removing said air by suction from said spray chamber and for threby ensuring that said substantially bundled power jet is not atomized by said air and that said substantially bundled powder jet is maintained in a bundled configuration;

(e) directing the powder of the bundled powder jet due to its kinetic energy and without the formation of a powder cloud in the direction of the welding seam;

(f) depositing the thus directed powder at the welding seam in order to form said substantially strip-shaped layer upon said welding seam; and

(g) aspirating from within said spray chamber the portion of said powder which has not adhered to said welding seam through said at least one aspiration passageway.

4,661,380

METHOD FOR COATING A SECONDARY CARPET BACKING

John G. Tillotson, 1311 Dunn Dr., Dalton, Ga. 30720

Filed May 2, 1985, Ser. No. 729,698

Int. Cl.⁴ B05D *5/10*

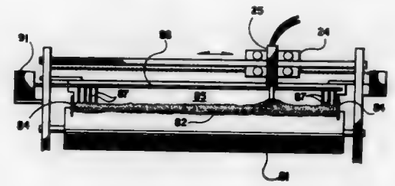
U.S. Cl. 427—207.1 **1 Claim**

1. In a process for laminating a secondary backing fabric to a carpet to form a laminated structure, a method of applying a layer of adhesive to the secondary backing fabric, comprising the steps of:

conveying said secondary backing fabric along a path at a predetermined speed;

depositing a predetermined amount of adhesive onto the top surface of a casting roller rotating in a direction opposite to the direction of movement of said secondary backing fabric, said adhesive being deposited onto said roller adjacent to a doctoring means spaced a predetermined distance from the surface of said casting roller to form a puddle of adhesive adjacent to said doctoring means;

agitating said puddle of adhesive to promote dispersal of said adhesive across the top of said casting roller by disposing a plurality of elongate wiper fingers into said puddle adjacent to said doctoring means and oscillating said elongate wiper fingers transversely to the direction of rotation of said casting roller;



passing said deposited adhesive under said doctoring means to form an adhesive layer of predetermined thickness on said casting roller;

contacting said secondary backing fabric with a portion of said casting roller;

transferring said layer of adhesive from said casting roller to said secondary backing fabric by pressing said secondary backing fabric against said casting roller with a press blade spaced from said casting roller; and

conveying said coated secondary backing fabric away from said casting roller.

4,661,381

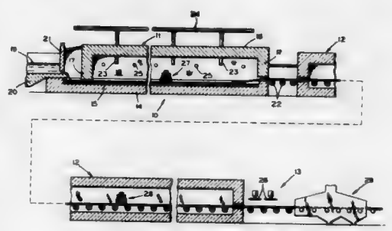
CONTINUOUS VAPOR DEPOSITION METHOD FOR PRODUCING A COATED GLASS ARTICLE

Gerald A. Callies; Eberhard R. Albach, both of Toledo; John F. Conour, Maumee, and Richard A. Herrington, Walbridge, all of Ohio, assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Oct. 7, 1985, Ser. No. 784,976

Int. Cl.⁴ C23C *16/24, 16/40*

U.S. Cl. 427—255 **11 Claims**



1. A continuous chemical vapor deposition method for producing a coated glass article, said method comprising the steps of continuously advancing the article, while hot, past first and second successive treating stations, at least the first of which is in a closed zone, maintaining a non-oxidizing atmosphere in the closed zone in which the first treating station is situated, maintaining an oxidizing atmosphere around the second treating station and the adjacent glass, directing a non-oxidizing gas which contains a silane from the first treating station against a surface of the article to form a silicon coating on that surface, directing an oxidizing gas which includes a metal compound in the vapor phase from the second treating station against the coated surface of the glass article, controlling the temperature

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of the glass article, the residence time in the oxidizing atmosphere around the second treating station, the composition of the non-oxidizing gas from the first treating station and the composition of the oxidizing gas from the second station so that the silane-containing gas forms a reflective silicon coating on the glass surface, the oxidizing gas which includes a metal forms a coating of an oxide of the metal, and oxidation before the article reaches the second treating station forms a silicon oxide layer on the silicon which is of sufficient thickness that the metal oxide layer is substantially free of pinholing.

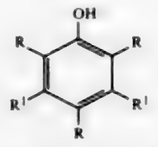
4,661,382

METHOD FOR THE PRESERVATION OF WOOD

Theodore F. Cooke, Jr., 287 Weed Ave., Stamford, Conn. 06902

Filed Feb. 18, 1986, Ser. No. 829,932
Int. Cl.⁴ B05D *1/18, 3/00*
U.S. Cl. 427—297 **16 Claims**

1. A method of treating wood to render it less susceptible to fungal and bacterial deterioration comprising contacting said wood, under conditions such as to cause substantially complete impregnation of the wood, with an aqueous, alkaline solution of a compound having the formula



wherein each R is a blocking group with the proviso that at least one R group is an alkylol group, and Each R^1, individually, is hydrogen or R, and recovering the resultant treated wood.

11. A method according to claim 1 wherein the wood is contacted with said compound under pressure.

4,661,383

METHOD FOR GRAFTING POLYMERS TO POLYTETRAFLUOROETHYLENE, AND GRAFTED COMPOSITES THEREOF

Ronald L. Elsenbaumer, Morristown; Dawn M. Ivory, Stanhope; Zafar Iqbal, and R. Henry Baughman, both of Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 4, 1986, Ser. No. 859,546
Int. Cl.⁴ B05D *3/10;* **C08F** *259/08;* **C08J** *7/12, 7/16*
U.S. Cl. 427—302 **16 Claims**

1. A method for forming a grafted composite comprising a substrate containing polytetrafluoroethylene having a polymer grafted thereto, which method comprises the steps of:

a. reducing all or a portion of the polytetrafluoroethylene at a surface of the substrate to polyacetylene;

b. doping said polyacetylene with a reductive (n-type) or oxidative (p-type) dopant: and

c. contacting said doped polyacetylene with a polymerizable monomer precursor capable of polymerizing with said polyacetylene for a time sufficient to form a first polymer of said monomer bonded to the surface of said substrate.

4,661,384

PROCESS FOR ACTIVATING SUBSTRATE SURFACES FOR ELECTROLESS METALLIZATION

Kirkor Sirinyan, Bergisch Gladbach; Rudolf Mertes, Leverkusen, and Gerhard D. Wolf, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 20, 1985, Ser. No. 746,913
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1984, 3424065
Int. Cl.⁴ C23C *18/30*
U.S. Cl. 427—304 **7 Claims**

1. In a process of activating substrate surfaces for electroless wet chemical metallisation using a solution of an organometallic compund based on elements from sub-group 1 or 8 of the periodic system in an aprotic solvent, the improvement comprising that said activation bath solution contains an organometallic compound with a "host/guest" interrelationship and wherein the host molecule which is capable of complex formation in the organometallic compound is selected from crown ethers, cryptands or podands.

4,661,385

FILTRATION STABILIZATION OF AUTODEPOSITION BATHS

Nestor M. Holyk, North Wales, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Jun. 4, 1985, Ser. No. 741,327
Int. Cl.⁴ C23C *22/86, 22/06*
U.S. Cl. 427—345 **16 Claims**

1. In a method for forming an autodeposited coating on a metallic surface and for stabilizing the iron salt content of an autodeposition bath which is used to form said coating,

said bath comprising latex particles, at least a predominant portion thereof being poly(vinylidene chloride) particles, optionally pigment particles, and an activator containing at least an acid and a ferric salt, said ferric salt being present in a range of 0.5–3 g/l of ferric ions; and wherein, during the course of the coating process, there is a tendency for iron to build up in concentration in the bath and to interfere with the coating process,

the improvement comprising controlling the amount of iron in the bath to maintain the effectiveness of the coating process by:

maintaining the amount of ferric salt in said bath within said range by removing a portion of said bath and feeding said portion to non-dead end filtration means under non-laminar flow conditions, said filtration means having a pore size of 0.0002 to 2.0μ, whereby the portion is separated into an aqueous filtrate comprising predominantly dissolved iron salts and any dissolved contaminant salts present and an aqueous retentate comprising predominantly latex particles and optionally pigment particles;

discarding said filtrate;

recycling said retentate back into said autodeposition bath;

adding to said bath a volume of D.I. water equal to the volume of filtrate; and

continuing the stabilization process until the amount of ferric salt is within ±5% of the initial starting range.

4,661,386

HIGH STRENGTH FOAMED ARTICLES

Adolph V. DiGiulio, Wayne, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 802,906, Nov. 29, 1985, Pat. No. 4,626,554. This application Jul. 16, 1986, Ser. No. 886,137
The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.
Int. Cl.⁴ B27N *5/02*
U.S. Cl. 428—35 **2 Claims**

1. Foamed articles having improved strength and thermal properties molded from expandable styrene polymer beads

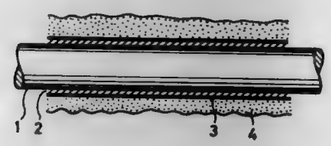
comprising (a) styrene polymer beads having 8–35% by weight of a copolymer of 99.15–99.98% by weight of styrene monomer and 0.02–0.85% by weight of divinylbenzene diffused throughout but distributed primarily at or near the surface of said beads, and (b) 3–12% of a blowing agent selected from the group consisting of aliphatic hydrocarbons containing 4–6 carbon atoms, halogenated hydrocarbons which boil at a temperature below the softening point of the polymer, and mixtures of these; said styrene polymer beads selected from the group consisting of polymers of styrene, alpha-methylstyrene, nuclear-methylstyrene, para-tert-butyl-styrene, chlorostyrene, dichlorostyrene, mixtures of these, and copolymers of at least 50% styrene and up to 50% of other mono-ethylenically unsaturated monomers copolymereizable therewith; and said styrene monomer being selected from the group consisting of styrene, alpha-methylstyrene, nuclear-methyl-styrene, para-tert-butylstyrene, monochlorostyrene, dichlorostyrene and mixtures thereof.

4,661,387

STEEL MATERIALS FOR USE WITH PRESTRESSED CONCRETE

Kanji Watanabe, and Mikio Mizoe, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 14, 1984, Ser. No. 681,774
Claims priority, application Japan, Dec. 16, 1983, 58-194473[U]
Int. Cl.⁴ E04C *5/01;* **D07B** *1/16*
U.S. Cl. 428—36 **7 Claims**



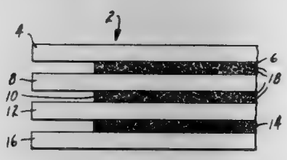
1. An elongated prestressing steel material embedded in prestressed concrete, comprising: an elongated ungreased steel member, and a foamed synthetic resin tube sheathing bonded to said steel member and not bonded to said concrete.

4,661,388

PAD FRAGRANCE SAMPLING DEVICE

Jack W. Charbonneau, Somerset, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 24, 1985, Ser. No. 695,045
The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.
Int. Cl.⁴ A61L *9/04;* **B01J** *13/00;* **D01F** *1/02;* **D04H** *1/04*
U.S. Cl. 428—43 **20 Claims**



1. A stacked, coherent array of elements for providing access to an encapsulated liquid or spreadable material, said array comprising

(1) at least three sheets, each pair of adjacent sheets in adjacent elements bound by an adhesive composition layer,

(2) said adhesive composition layer containing microcapsules with an encapsulated material comprising a liquid or spreadable material within the shell of the microcapsules, and

(3) said microcapsules having an average diameter between 4 and 100 micrometers,

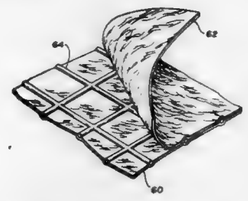
the cohesive strength of the adhesive composition layer being less than the strength of the bond between said adhesive composition and the faces of said sheets, the tensile rupture strength of said microcapsules being such that the cohesive failure of the adhesive results in breakage of the microcapsules, and the tensile rupture strength between said two sheets being at least 1.0 g/cm and less than 90 g/cm at 20° C. and 50% relative humidity.

4,661,389

MULTIPLE-LAYER REINFORCED LAMINATE

Richard C. Mudge, Minneapolis, and Timothy K. Fair, Blaine, both of Minn., assignors to Leucadia, Inc., New York, N.Y.

Continuation of Ser. No. 593,824, Mar. 27, 1984, abandoned. This application Jul. 10, 1985, Ser. No. 753,627
Int. Cl.⁴ B32B *5/12*
U.S. Cl. 428—110 **10 Claims**



1. A multiple layer, reinforced laminate produced by heat bonding and pressure sealing a composite structure comprising in combination: a reinforcing network of interconnecting thermoplastic strands sandwiched between layers of outer covering material, the strands being comprised of an inner reinforcing core of polymeric material and an outer extrudable material of a heat sealable type, the inner and outer materials being co-extruded by continuous extrusion in laminar relationship to form the strand network, whereby the inner cores are integrally joined to each other at points of interconnection by virtue of the extrusion formation thereof.

4,661,390

NON-WOVEN SHEET BY IN-SITU FIBERIZATION

Raymond E. Kelchner, Jr., Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 636,447, Jul. 31, 1984, Pat. No. 4,581,185. This application Nov. 22, 1985, Ser. No. 801,182
Int. Cl.⁴ B32B *5/12*
U.S. Cl. 428—113 **15 Claims**



1. A polymeric fibrous sheet comprising fibers of a preselected polymer in the form of a composite of an open matrix of coarse fibers of said preselected polymer extending throughout the sheet which is integrated with fine fibers of said preselected polymer which are co-crystallized with said coarse fibers and wherein said fine fibers span the open spaces within said matrix.

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4,661,391

METHOD OF MAKING A MOULDED BODY OF FOAM PLASTICS MATERIAL

Ralph Schröder, and Hans Deupineux, both of Eupen, Fed. Rep. of Germany, assignors to Noel, Marquet & Cie. S.A., Eupen, Fed. Rep. of Germany

Filed Dec. 20, 1984, Ser. No. 684,019

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 3407737

Int. Cl.⁴ C08G *18/14*; B29C *45/14, 51/10*

U.S. Cl. 428—159 **8 Claims**



1. A method fo making molded article of foam plastic material with a complicated sharp textured surface profile structure, which is smooth, non-porous and free from mold release agent, comprising the following steps:

(a) a thin, elastic, heat-deformable film is inserted between two heated mold portions so that the film edges are clamped between the superimposed mold edges of the two mold portions and the film lies flat between both mold portions,

(b) a reactive, heat emitting, foaming plastic mixture is introduced through the upper mold portion and distributed on the film, and

(c) the hollow chamber formed between the film and the lower mold portion is evacuated during foaming, so that the film which is heated both by the heated mold portions by heat radiation and by the heat of reaction given off by the reaction mixture is pressed by the foam pressure together with the vacuum provided so that its contours accurately fit the complicated textured or profiled mold surface of the lower mold portion.

8. A moulded body produced by the method of claim 1.

4,661,392

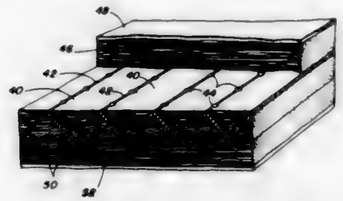
SOUND DAMPENING PANEL AND METHOD OF FABRICATION

Odd B. Kapstad, 5 Minot Ave., Acton, Mass. 01720

Filed Sep. 25, 1985, Ser. No. 779,943

Int. Cl.⁴ B32B *3/28, 17/06*

U.S. Cl. 428—182 **28 Claims**



1. A sound dampening panel comprising a rigid corrugated center sound barrier sandwiched between fibrous sound dampening material, the fibrous material to each side of the corrugated barrier filling the spaces between the corrugations and forming a layer over the corrugations, the fibrous material in the layer over the corrugations having a density different from the density of the material between the corrugations.

4,661,393

INK COMPOSITIONS AND INK SHEETS FOR USE IN HEAT TRANSFER RECORDING

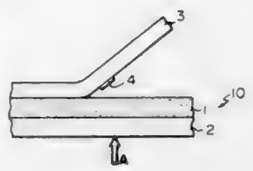
Koji Uchiyama, Kawasaki; Akira Nakazawa, Yokohama, and Masao Tanaka, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 666,551, Oct. 30, 1984, abandoned, which is a division of Ser. No. 646,493, Sep. 4, 1984, abandoned, which is a continuation of Ser. No. 363,853, Mar. 31, 1982, abandoned. This application Oct. 3, 1985, Ser. No. 783,799

Claims priority, application Japan, Mar. 31, 1981, 56-46375

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—200 **13 Claims**



1. A heat transfer recording ink sheet which comprises a substrate having formed thereon a layer of ink composition, said ink composition consisting of:

a transfer component of a solvent dye and at least one low-melting compound having a melting point in the range from 40° to 100° C. and containing at least one of hydroxyl and ethylene oxide; and

at least one inorganic or organic fine powder having a particle size in the range from 0.01 to 200 μm, each said fine powder being insoluble and dispersible in an organic solvent.

4,661,394

LOW GLARE POLYCARBONATE SHEET WITH IMPROVED OPTICAL PROPERTIES

Herbert L. Curry, Mt. Vernon, and Ernest E. Roberts, Wadesville, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 30, 1985, Ser. No. 696,672

Int. Cl.⁴ B32B *27/36*

U.S. Cl. 428—212 **1 Claim**

1. A transparent, low glare, thermoplastic composite comprising:

(a) a transparent polycarbonate sheet having at least one textured surface with a roughness corresponding to that imprinted by the surface of a 5 to 65 microinch RMS finish roller at a temperature of from about 125° C. to about 145° C.; and,

(b) adhered to at least one textured surface of said sheet, a protective coating comprising a methyl methacrylic copolymer consisting essentially of:

(i) methyl methacrylate units;

(ii) from about ½ percent to about 10 percent by number of other methacrylate units selected from the group consisting of ethyl methacrylate, n-butyl methacrylate, i-butyl methacrylate, or mixtures thereof; and

(iii) from about 0 percent to about 5 percent by number of other alpha-beta ethylenically unsaturated units;

wherein said units are combined in such ratio and polymerized to result in a copolymer material having a tensile elongation at break of greater than about 3.5 percent and a glass transition temperature of greater than about 87° C.

4,661,395

PACKAGING MATERIAL FOR PHOTOSENSITIVE MATERIALS FOR PHOTOGRAPHIC PURPOSE

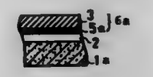
Mutsuo Akao, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 16, 1986, Ser. No. 864,300

Claims priority, application Japan, May 21, 1985, 60-75229[U]

Int. Cl.⁴ B32B *5/16*

U.S. Cl. 428—213 **6 Claims**



1. A packaging material for photosensitive materials for photographic purpose comprising

a light-shielding L-LDPE film layer containing a low-pressure linear low-density polyethylene resin as the largest component and 0.1 to 15 wt. % of a light-shielding meterial and being located as the inner surface layer,

a metal layer provided on said light-shielding L-LDPE film layer directly or through an adhesive layer, and

a flexible sheet layer laminated on said metal layer directly or through an adhesive layer,

and having delamination resistance between said light-shielding L-LDPE film layer and said metal layer or between said metal layer and said flexible sheet layer in the range of 5 to 300 g/15 mm width.

4,661,396

ARTICLE OF INTEGRALLY-MERGED HARD AND SOFT POLYVINYL CHLORIDE

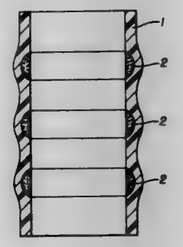
Paul Andorf, Wettstetten, and Hans Jäger, Weinheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr, Fed. Rep. of Germany

Filed Oct. 4, 1985, Ser. No. 784,363

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1984, 3439670

Int. Cl.⁴ B32B *7/02, 7/04*

U.S. Cl. 428—217 **3 Claims**



1. An article, comprising:

a wall having a first, continuous region of a PVC material and at least one, second, smaller region of a PVC material cross linked for greater hardness than the PVC material of the first region, the PVC material of the second, smaller region being on the first region, whereby the PVC material of the second region is piled up sectionally on the PVC material of the first region, and integrally merged with the PVC material of first region where thereupon.

4,661,397

POLYBUTADIENE BONDED EXTREMELY FLEXIBLE POROUS MICA TAPE

James R. Kwiecinski, Wilkins Township, Allegheny County, and Donald D. Jerson, Norvelt, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 7, 1986, Ser. No. 836,869

Int. Cl.⁴ B32B *19/02, 19/06*; H01B *3/04, 3/30*

U.S. Cl. 428—241 **12 Claims**

1. A porous, non-tacky, highly flexible resin bonded insulation tape comprising mica, and a contacting, curable, resinous composition consisting essentially of the admixture of: (A) polybutadiene containing from 70 weight percent to 100 weight percent of 1,2-polybutadiene, and (B) an amount of catalyst effective to cure the polybutadiene at curing temperatures, said resin bonded insulation tape being dry, highly flexible, and containing from 2 weight percent to 15 weight percent of the resinous composition based on the total weight of the resin bonded tape.

4,661,398

FIRE-BARRIER PLYWOOD

Harold Ellis, Miami, Fla., assignor to Delphic Research Laboratories, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 603,799, Apr. 25, 1984, Pat. No. 4,572,862. This application Aug. 8, 1984, Ser. No. 638,796

The portion of the term of this patent subsequent to Feb. 25, 2003, has been disclaimed.

Int. Cl.⁴ C04B *7/32, 9/00*

U.S. Cl. 428—245 **10 Claims**

1. A fire resistant laminate for retarding flame spread and flame penetration therethrough, said laminate comprising:

(A) a solid, combustible lamina; and

(B) bonded to said lamina (A), a hard, thin, continuous layer up to about 1/16 inch thick comprising an inorganic cementitious composition;

wherein said layer (B) is capable of maintaining its structural strength and dimensional stability with zero flame spread when exposed to a flame temperature of 2000° F. for a time period of 1 hour; and

wherein said inorganic cementitious composition in a fluid state is capable of adhesively bonding to lamina (A) and maintaining an adhesive bond after drying to form said thin layer; and

wherein said inorganic cementitious composition consists essentially of

(1) a binder component comprising

(a) 65% by weight magnesium oxide containing 98% MgO;

(b) 16.3% by weight high alumina calcium aluminate cement containing 80% Al_2O_3 and 18% CaO;

(c) 16.3% by weight silica flour; and

(d) 2.4% by weight titanium dioxide; and

(2) an activator comprising a magnesium chloride solution (30° Baumé);

wherein the activator is in an amount of 141 parts by weight per 100 parts by weight magnesium oxide; and

wherein said binder component is caused to set at a temperature up to about 120° F. within about 45 minutes by said activator;

said laminate having a Class I (or A) fire retardancy classification.

4,661,399

POLYMERIC-COATED FABRIC LAYER, PRODUCT UTILIZING THE LAYER AND METHOD OF MAKING THE SAME

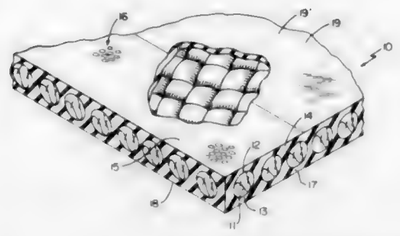
John F. Anderson, Jr., Springfield, Mo., and Delmar D. Long, Rock Hill, S.C., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 482,363, Apr. 5, 1983, Pat. No. 4,522,869. This application Jan. 17, 1985, Ser. No. 692,264

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] B32B *7/00*

U.S. Cl. 428—246 16 Claims



1. In a polymeric-coated fabric layer means that is adapted to be secured to a surface of a polymeric belt body of a polymeric belt construction, said fabric layer means comprising a fabric layer having opposed sides, and first and second layers of polymeric material respectively secured to said sides of said fabric layer and respectively and substantially simultaneously impregnating into said sides of said fabric layer, said first layer of polymeric material having an outer surface facing away from said fabric layer so as to be adapted to be secured to said surface of said polymeric belt body by a heat curing operation on said belt body and said layer means in the assembled relation thereof, the improvement wherein said first polymeric layer comprises a foamed polymeric layer and said second polymeric layer comprises a non-foamed polymeric layer whereby said outer surface of said foamed polymeric layer is adapted to readily conform to said surface of said belt body to improve the bond therebetween during said heat curing operation thereof when said surfaces are brought into contact with each other for such subsequent securement therebetween.

4,661,400

NET ANTIFOULING COMPOSITION

Richard J. Guglielmo, Sr., Cresskill, N.J., assignor to EMA Company, Cresskill, N.J.

Continuation of Ser. No. 508,520, Jun. 27, 1983, which is a continuation-in-part of Ser. No. 888,373, Mar. 20, 1978, Pat. No. 4,393,102, which is a continuation-in-part of Ser. No. 341,275, Jan. 21, 1982, abandoned. This application Nov. 28, 1984, Ser. No. 675,640

Int. Cl.[4] B28B *7/00*

U.S. Cl. 428—255 7 Claims



1. A fishing net coated with an antifouling composition comprised of a tri-n-butyl tin ester selected from the group consisting of tri-n-butyl tin linoleate, bis(tri-n-butyl) tin succinate, tri-n-butyl tin benzoate, tri-n-butyl tin salicylate and mixtures thereof, said tri-n-butyl tin ester being present in an amount of from about 3 to 6 percent by weight.

4,661,401

LAMINATED FILMS

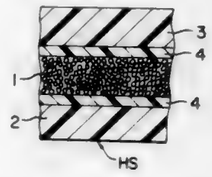
Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1985, Ser. No. 713,795

Claims priority, application Japan, Mar. 21, 1984, 59-52184

Int. Cl.[4] B32B *3/26, 7/02, 7/12, 27/32*

U.S. Cl. 428—215 15 Claims



1. A laminated film comprising a foamed sheet, a molecularly-oriented thermoplastic resin film layer laminated onto one side of the foamed sheet and a low-pressure-processed, linear low-density polyethylene (L-LDPE) film layer laminated onto the other side of the foamed sheet, wherein:

(a) said foamed sheet has a thickness of 0.3 to 2.0 mm and a foaming magnification of 5 to 50 times,

(b) said molecularly-oriented thermoplastic resin film has a thickness of 5 to 120 microns, and

(c) said L-LDPE film layer has a thickness of 13 to 120 microns, the latter two being melt-bonded to each side of said foamed sheet through adhesive layers, respectively; and

(d) the resultant laminated film has a thickness reduced to 25 to 85% of the theoretical sum of the individual original layers.

4,661,402

MAGNETIC RECORDING MEDIUM

Nobuyuki Kishine; Tetsuya Imamura, both of Tochigi; Michihide Yamauchi, Wakayama, and Takashi Takeuchi, Tochigi, all of Japan, assignors to KAO Corporation, Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 647,849

Claims priority, application Japan, Sep. 7, 1983, 58-164677

Int. Cl.[4] G11B *5/708*

U.S. Cl. 428—323 4 Claims

1. A magnetic recording medium exhibiting reduced abrasion and improved lubricant properties comprising a non-magnetic substrate hagving a magnetic layer containing a magnetic powder thereon, the magnetic layer including a glasslike carbon powder having an average particle diameter of from 0.1 to 2.0 μm present in an amount of from 0.5 to 15 parts by weight per 100 parts by weight of the magnetic powder.

4,661,403

YARNS AND TOWS COMPRISING HIGH STRENGTH METAL COATED FIBERS, PROCESS FOR THEIR PRODUCTION, AND ARTICLES MADE THEREFROM

Louis G. Morin, Tarrytown, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 584,483, Feb. 28, 1984, Pat. No. 4,609,449, which is a continuation of Ser. No. 541,611, Oct. 13, 1983, abandoned, which is a division of Ser. No. 358,637, Mar. 16, 1982, abandoned. This application Sep. 12, 1984, Ser. No. 650,583

Int. Cl.[4] B32B *15/04, 15/14;* C25D *7/06, 7/12*

U.S. Cl. 428—367 21 Claims



1. A continuous yarn or tow comprising high strength composite fibers, the majority of which have an electrically conductive semi-metallic core and at least one thin, uniform and firmly adherent, electrically conductive layer of at least one metal on said core.

8. A continuous yarn or tow comprising high strength composite fibers, the majority of which have an electrically conductive semi-metallic core substantially undegraded by I^2R heat and at least one thin, uniform and firmly adherent, electrically conductive layer of at least one metal electrodeposited on said core.

4,661,404

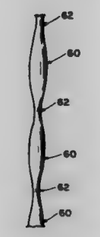
SELF-CRIMPING POLYESTER YARN

William B. Black, Pensacola, Fla., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 696,953, Jan. 31, 1985, Pat. No. 4,562,029, which is a continuation-in-part of Ser. No. 583,801, Mar. 2, 1984, abandoned, which is a continuation of Ser. No. 373,755, Apr. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 267,482, May 26, 1981, abandoned, which is a continuation-in-part of Ser. No. 157,130, Jun. 6, 1980, abandoned. This application Sep. 26, 1985, Ser. No. 780,464

Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—369 6 Claims



1. An as spun latently crimpable yarn which comprises a plurality of polyester filaments, said polyester filaments having;

a generally oblong, quadrolobal cross section defined by perpendicular major and minor axes with major lobes situated at the ends of said minor axis and minor lobes situated at the end of said major axis, substantially regular and periodic variations in thickness along the length of said filaments corresponding to periodic shrinkage peaks and valleys in substantially regular alternating sequence; said shrinkage peaks and valleys being out of phase from filament to filament;

said as spun yarn being capable of developing crimp when thermally treated in a relaxed state and having a crimp-to-shrinkage ratio of at least 0.25.

4,661,405

TEXTILES TREATED WITH HIGHER ALKYL MODIFIED EPOXY TERPOLYMERIC SILICONES

George H. Greene, Croton-On-Hudson, N.Y., and Robert A. Daniele, Jr., Naperville, Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1984, Ser. No. 594,718

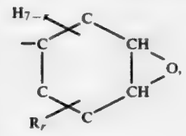
Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—391 42 Claims

1. A fiber treated with a higher alkyl modified epoxy silicone terpolymer having the general formula: $MD_xD'_yD''_zM$ wherein M in each case is an end-blocking unit of the formula: $R_3SiO_{\frac{1}{2}}$; D is a siloxy unit of the formula: R_2SiO; D′ is an epoxy containing siloxy unit of the formula:

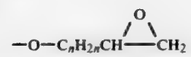
$$E—C_bH_{2b}Si(R)O$$

where E is an epoxy containing group selected from either



(a)

or



(b)

where n is from 1 to 12, D″ is a siloxy unit of the formula R′Si(R)O; R is a lower alkyl group having 1 to 4 carbon atoms; R′ is a higher alkyl group of at least 6 carbon atoms; x is an integer of 20 to 500; y is an integer of 4 to 15; z is an integer of 4 to 40; b is an integer of 2 to 12; and r is an integer of 0 to 7.

4,661,406

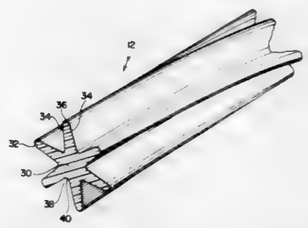
STRENGTH ELEMENT FOR FIBER OPTIC CABLES

Joel D. Gruhn; Mark R. Canrobert, and Robert E. Nelson, all of Hickory, N.C., assignors to Neptco Incorporated, Pawtucket, R.I.

Filed Jul. 2, 1985, Ser. No. 751,370

Int. Cl.[4] D02G *3/00;* G02B *6/44;* B32B *9/00*

U.S. Cl. 428—397 6 Claims



1. A strength element for a fiber optic cable comprising an elongated central portion and at least three substantially longitudinally extending ribs which extend outwardly from said central portion to define substantially longitudinally extending grooves therebetween for receiving optical fibers therein, the inner extremities of said grooves being of rounded configuration, said ribs being tapered in their outward extents from said

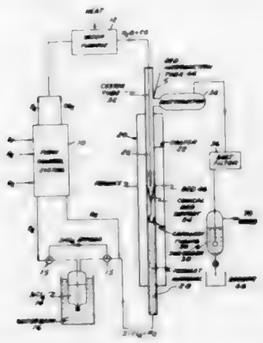
central portion, said central portion and said ribs being integrally formed of a resin material reinforced with fibes, wherein the fibers are selected from the group comprising glass fibers, ceramic fibers, carbon fibers and aramid fibers.

4,661,407

GLASS-SURFACE MICROCARRIER FOR ANCHORAGE-DEPENDENT CELL CULTIVATION

Timothy M. Henderson, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Division of Ser. No. 689,488, Jan. 7, 1985, Pat. No. 4,564,532.
This application Oct. 24, 1985, Ser. No. 790,952
Int. Cl.⁴ B32B *5/16*; **C12N** *5/00, 5/02, 11/14*
U.S. Cl. 428—403 **5 Claims**



1. A microcarrier for anchorage-dependent cell cultivation in a culture medium comprising a hollow spherical shell of material selected from the group consisting of glasses and ceramics, and a discrete continuous non-porous surface layer of silicate glass composition entirely surrounding said shell, said microcarrier having a total composite density in the range of 1.01 to 1.2 g/cc.

4,661,408

COATED CHROMIUM DIOXIDE PARTICLES

Hon-Peng P. Lau, Newark; Esther K. Yang, and Howard W. Jacobson, both of Wilmington, all of Del., assignors to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 18, 1986, Ser. No. 841,107
Int. Cl.⁴ B32B *5/16*
U.S. Cl. 428—405 **18 Claims**

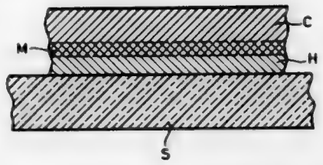
1. A magnetic particle useful as a solid support for bioaffinity separations or immunoassays comprising:
- a core of acicular rutile chromium dioxide having a specific surface area of 5–100 m^2/g,
- said chromium dioxide particle having a reduced surface characterized by a line in the X-ray diffraction pattern of the reduced chromium dioxide corresponding to an interplanar spacing of 316.8 pm;
- said core having an inorganic surface layer coating which resists oxygen diffusion;
- said inorganic surface layer coated core having an outer layer of a silane compound capable of binding proteins, ligands, haptens or linker compounds directly or through intermediate coupling agents to said inorganic surface layer coated core;
- said magnetic particle having a mean volume diameter of from 0.5 to 10 μm, and a remanent magnetization of less than 25 emu.

4,661,409

METHOD OF PRODUCING AMORPHOUS CARBON COATINGS ON SUBSTRATES AND SUBSTRATES COATED BY THIS METHOD

Jörg Kieser, Albstadt, and Michael Neusch, Hanau am Main, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Division of Ser. No. 606,920, May 4, 1984, Pat. No. 4,569,738.
This application Nov. 13, 1985, Ser. No. 797,635
Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3316693
Int. Cl.⁴ B32B *9/00*; **C01B** *31/00*
U.S. Cl. 428—408 **1 Claim**



1. A substrate having an amorphous carbon coating and having between the substrate and the amorphous carbon coating an adhesion-mediating coating of a polymer selected from the group of siloxanes and silazanes, the amorphous carbon coating being produced by applying, by at least one ladder-like, wave guide disposed transversely of a direction of transport of the substrate within a reaction chamber and which is aligned at an acute angle with the substrate surface and is connected at one end to a microwave transmitter, an electromagnetic alternating field having a frequency in the microwave region and having a sufficiently high power to ionize a gaseous hydrocarbon compound and to bring the energy of the carbon-containing ions impinging on the substrate above a threshold value sufficient to produce an amorphous carbon coating on the adhesion-mediating coating on the substrate.

4,661,410

HEAT-HARDENABLE BINDER MIXTURE

Michael Geist, Münster, Fed. Rep. of Germany, assignor to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 679,062, Dec. 6, 1984, Pat. No. 4,581,294, which is a division of Ser. No. 425,528, Sep. 28, 1982, Pat. No. 4,505,981. This application Aug. 12, 1985, Ser. No. 764,620
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145714
The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.
Int. Cl.⁴ B32B *15/08, 17/06, 27/38, 27/40*
U.S. Cl. 428—418 **22 Claims**

1. A process for preparing coatings by applying a coating composition to a substrate and subsequently hardening the resulting film by baking at temperatures of 130° to 200° C. for a period of 10 to 60 minutes to cross-link the film, wherein the coating composition contains a binder mixture of components neutralized to make them water-soluble or water-dispersible, comprising:

(A) 50 to 95% by weight of an organic resin having amino groups, a number average molecular weight of 500 to 20,000 and an amine equivalent weight of 150 to 7,500; and

(B) 5 to 50% by weight of a cross-linking agent based on an organic compound containing at least two carbalkoxymethyl ester groups, said organic compound selected from the group consisting of polyester resins and compounds containing free carboxyl groups to which said carbalkoxymethyl can be attached, the total amount of components A and B being 100%.

11. A coated substrate from a coating composition containing a binder mixture of components neutralized to make them water-soluble or water-dispersible, comprising:

(A) 50 to 95% by weight of an organic resin having amino groups, a number average molecular weight of 500 to 20,000 and an amine equivalent weight of 150 to 7,500; and

(B) 5 to 50% by weight of a cross-linking agent based on an organic compound containing at least two carbalkoxymethyl ester groups, said organic compound selected from the group consisting of polyester resins and compounds containing free carboxyl groups to which said carbalkoxymethyl can be attached, the total amount of components A and B being 100%, said composition hardened to a resulting film by baking at temperatures of 130° to 200° C. for a period of 10 to 60 minutes to cross-link the film.

4,661,411

METHOD FOR DEPOSITING A FLUOROCARBONSULFONIC ACID POLYMER ON A SUPPORT FROM A SOLUTION

Charles W. Martin; Bobby R. Ezzell, and John D. Weaver, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 25, 1986, Ser. No. 832,627
Int. Cl.⁴ B32B *27/00*; **B05D** *3/02, 7/22*
U.S. Cl. 428—421 **14 Claims**

1. The method of supporting a fluorinated polymer having pendant chains containing sulfonic acid groups, on a support, comprising the steps:
- (a) soaking a substrate with a solution that contains a fluorinated polymer having pendant chains containing sulfonic acid groups;
- (b) removing the solvent from the mixture;
- (c) heating the remaining composition to above the glass transition temperature of the polymer for a sufficient time to render the polymer insoluble.

13. The product prepared by the method of claim 1.

4,661,412

MELAMINE-MODIFIED PHENOLIC TYPE RESIN FOR CONTINUOUS LAMINATION

Leopold F. Bornstein, deceased, late of Atlanta (by Marcia G. Bornstein, Executrix), and Gary P. Fillingame, Conyers, both of Ga., assignors to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Division of Ser. No. 690,856, Jan. 11, 1985, Pat. No. 4,611,020.
This application Jun. 5, 1986, Ser. No. 871,465
Int. Cl.⁴ C08G *14/10, 14/12*
U.S. Cl. 428—426 **14 Claims**

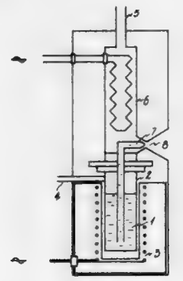
1. A process for producing a laminate comprising the steps of:
- (a) saturating a plurality of continuous fibrous substrate sheets with a fast-curing melamine-modified phenolic laminating resin having a pH in the range of about 7.0 to about 9.0 comprising
  - (i) a melamine-modified phenolic resin, and
  - (ii) a water-soluble, organic solvent for said melamine-modified phenolic resin; said melamine-modified phenolic resin prepared by
    - (1) forming a reaction mixture containing phenol, aldehyde and melamine, the mole ratio of aldehyde to phenol in said reaction mixture being maintained in the range of about 1.5 to about 3.0 and the mol ratio of phenol to melamine in said reaction mixture being maintained in the range of about 2.0 to about 10.0;
    - (2) adjusting the pH of the reaction mixture to within the range of about 7.5 to about 9.5 by adding an inorganic alkaline catalyst;
    - (3) co-reacting said reaction mixture of phenol, aldehyde and melamine in the presence of said inorganic alkaline catalyst and at said pH range until said reaction mixture exhibits a Gardner-Holt viscosity within the range of about B to S;
    - (4) neutralizing said reaction mixture of step (3), and
    - (5) dehydrating said neutralized reaction mixture to a maximum moisture content of about 15% by weight;
- (b) continuously drying and partially curing the resin saturated continuous sheets to produce resin-impregnated continuous sheets; and
- (c) continuously consolidating the resin-impregnated continuous sheets at a pressure between about 140 to 750 psi and for a time and at a temperature sufficient to fully cure the resin.

4,661,413

COMPOSITE MATERIALS ASSOCIATING AN AMORPHOUS BARIUM FLUORIDE COATING WITH A SUBSTRATE AND PREPARATION PROCESSES OF THESE MATERIALS

Gwenael Maze, Rennes; Jean-Yves Carree, Uzel, and Marcel Poulain, Rennes, all of France, assignors to Le Verre Fluore S.A., France

Continuation of Ser. No. 436,789, Oct. 26, 1982, abandoned.
This application Feb. 25, 1985, Ser. No. 705,397
Claims priority, application France, Oct. 27, 1981, 814017125
Int. Cl.⁴ C03C *3/112, 8/00*
U.S. Cl. 428—432 **16 Claims**



2. A process of enameling crystalline, ceramic or metal substrate comprising,
- providing an enameling fluoride glass composition containing approximately 20–34% BaF_2 wherein the fluorine anions are present in the fluoride glass composition in an amount greater than the amount of any other anions present in the glass composition;
- heating said fluoride glass composition to its liquid phase;
- heating and maintaining the portion of said substrate to be enameled to a temperature exceeding the transition temperature of said fluoride glass composition, and
- coating the heated substrate with the liquid fluoride glass composition to provide the desired enameled substrate.

4,661,414

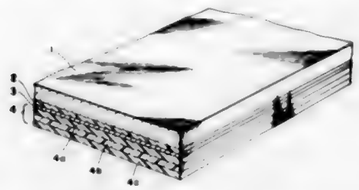
MULTI-LAYER FLEXIBLE PACKAGING MATERIAL

Gregg D. Kowalski, Coon Rapids, Minn., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 20, 1985, Ser. No. 713,889
Int. Cl.⁴ B32B *15/08, 21/08*
U.S. Cl. 428—461 **6 Claims**

1. A flexible, laminated packaging material comprising:
- (a) an external layer of paper;
- (b) a first internal layer of polyethylene affixed to the paper layer;
- (c) a second internal layer of metallic foil affixed to the polyethylene layer; and
- (d) an external three-component, co-extruded layer affixed to the metallic foil layer which includes a middle co-extrudate of high density polyethylene between outer co-extru-

dates formed from a blend of an ionomer resin with ethyl methacrylate, one said outer coextrudate affixed to said



foil layer and the other said outer co-extrudate is an outermost surface.

4,661,415

HYDROGEN ABSORBING ZIRCONIUM ALLOY

Kazuo Ebato, Yokohama; Yasuaki Osumi, Atsugi; Keiji Tamura, Kawasaki, and Hiroshi Yoshida, Ichikawa, all of Japan, assignors to Nihon Yakin Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1985, Ser. No. 790,190

Claims priority, application Japan, Oct. 27, 1984, 59-225103

Int. Cl.⁴ C01B *6/00;* **B22F** *1/02*

U.S. Cl. 428—570 **3 Claims**

1. A hydrogen absorbing zirconium alloy represented by the following rational formula of atomic composition: $Zr_xA_y(Fe_{1-i}V_lCr_m)_2$, wherein A is at least one element selected from the group consisting of titanium, niobium and molybdenum, $0.4 \leqq x \leqq 1.0$, $0 < y \leqq 0.6$, $k = l + m$, $0.2 \leqq k \leqq 0.3$, $l > 0$ and $m > 0$.

4,661,416

DUCTILE REACTIVE METAL-INDIUM-COPPER BRAZING ALLOY ARTICLE

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 596,998, Apr. 5, 1984, Pat. No. 4,603,090. This application Jan. 27, 1986, Ser. No. 822,448

The portion of the term of this patent subsequent to Jul. 29, 2003, has been disclaimed.

Int. Cl.⁴ C22C *9/02, 9/06*

U.S. Cl. 428—606 **2 Claims**

1. An article consisting essentially of a ductile brazing foil suitable for brazing ceramic and having a composition consisting essentially of from about 0.1% to about 5% of a reactive metal selected from the group consisting of titanium, zirconium, vanadium and mixtures thereof, from about 1% to about 30% by weight of indium, from about 5% to about 15% by weight of nickel, balance copper.

4,661,417

COMPOSITE OF METAL AND RESIN HAVING ELECTROLYTICALLY REDUCED METAL LAYER AND PROCESS FOR PRODUCING THE SAME

Yoshihiro Suzuki, Hitachi; Nobuhiro Satoh, Mito; Motoyo Wajima, Hitachi; Toshikazu Narahara, Ibaraki, and Takeshi Shimazaki, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

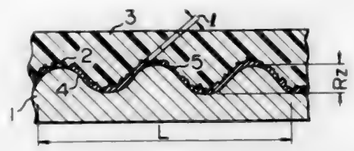
Filed Dec. 31, 1984, Ser. No. 687,754

Claims priority, application Japan, Dec. 29, 1983, 58-247980; Dec. 29, 1983, 58-247981; Oct. 17, 1984, 59-216211

Int. Cl.⁴ B32B *15/08*

U.S. Cl. 428—607 **40 Claims**

1. A composite of metal and resin comprising a resin layer having metal adjacent thereto, said metal comprising a base metal layer, and formed on said base metal layer an electrolytically reduced metal layer having a surface roughness of a degree giving (a) a lusterless appearance, the degree of the lusterlessness being 50% or less in terms of direct reflectivity as determined in a wavelength range of 600 to 700 nm, and (b) a color of olive brown to black, said color having a hue in a range of from 7.5 RP to 7.5 Y, a value of 7 or less, and a



chroma of 12 or less as determined according to Munsell Book of Color, closely adhered through said surface to the resin layer.

4,661,418

MAGNETIC RECORDING MEDIUM

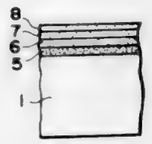
Akio Yasui, and Ryuji Shirahata, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1982, Ser. No. 439,169

Claims priority, application Japan, Nov. 12, 1981, 56-181480

Int. Cl.⁴ H01F *10/02*

U.S. Cl. 428—610 **11 Claims**



1. A magnetic recording medium comprising a magnetic recording layer formed on a non-magnetic substrate by depositing a ferromagnetic metal or a ferromagnetic alloy on the substrate, said recording layer containing oxygen atoms in such a manner that the ratio of the oxygen atoms to magnetic metal atoms gradually reduces in the direction from the substrate side to the surface of the recording layer except the portion thereof very near to the surface thereof.

4,661,419

PHOSPHOR AND RADIATION IMAGE STORAGE PANEL CONTAINING THE SAME

Takashi Nakamura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 29, 1985, Ser. No. 760,035

Claims priority, application Japan, Jul. 31, 1984, 59-163361; Jul. 31, 1984, 59-163362

Int. Cl.⁴ C09K *11/475*

U.S. Cl. 428—691 **12 Claims**

1. A cerium activated rare earth halophosphate phosphor having the formula (I):

$$LnPO_4 \cdot aLnX_3 : xCe^{3+} \quad (I)$$

in which Ln is at least one rare earth element selected from the group consisting of Y, La, Gd and Lu; X is at least one halogen selected from the group consisting of F, Cl, Br and I; and a and x are numbers satisfying the conditions of $0.1 \leqq a \leqq 10.0$ and $0 < x \leqq 0.2$, respectively and exhibiting a higher stimulated emission upon excitation with a He-Ne laser of a wavelength 632.8 nm after exposure to X-rays at 80 KVp, than said phosphor wherein a is less than 0.1.

4,661,420

OPTICAL MAGNETIC RECORDING MEMBER

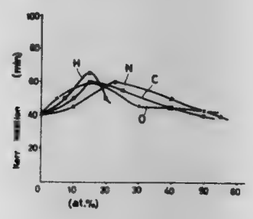
Kyuzo Nakamura; Yoshifumi Ota; Shin Asari, and Tsutomu Asaka, all of Chiba, Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 5, 1985, Ser. No. 698,480

Claims priority, application Japan, Feb. 6, 1984, 59-18253; Mar. 15, 1984, 59-48205

Int. Cl.⁴ G11B *7/24*

U.S. Cl. 428—692 **3 Claims**



1. In an optical magnetic recording member wherein a substrate is provided with a magnetic layer, the improvement comprising providing said magnetic layer, at least on one surface thereof, with a layer of amorphous material which consists essentially of (a) at least one member selected from the group consisting of Si and Ge, and (b) one additional element selected from the group consisting of H, C, F, N, and O, wherein the amount of said additional element in the amorphous material is 10–40 at.%.

4,661,421

METHOD FOR PREPARING A MAGNETIC RECORDING MEDIUM

Tadashi Ishikuro; Kunihiko Honda; Masataka Ohta, and Ryuji Shirahata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 11, 1986, Ser. No. 906,008

Claims priority, application Japan, Sep. 13, 1985, 60-202794

Int. Cl.⁴ G11B *5/64*

U.S. Cl. 428—694 **6 Claims**

1. A method for preparing a magnetic recording medium by vapor depositing a magnetic metal thin film on a polyester film, which comprises winding up a polyester film while subjecting the polyester film to a tension of from 0.1 to 2.0 kg/mm^2, heating the resulting polyester film roll at from 60° C. to 80° C. for from 10 to 100 hours, and vapor depositing a magnetic metal thin film onto the polyester film while subjecting the polyester film to a tension of 0.5 kg/mm^2 or more.

6. A magnetic recording medium comprising a vapor-deposited magnetic thin film on a polyester film, wherein said magnetic recording medium is formed by a method which comprises winding up a polyester film while subjecting the polyester film to a tension of from 0.1 to 2.0 kg/mm^2, heating the resulting polyester film roll at from 60° C. to 80° C. for from 10 to 100 hours, and vapor depositing a magnetic thin film onto the polyester film while subjecting the polyester film to a tension of 0.5 kg/mm^2 or more.

4,661,422

ELECTROCHEMICAL PRODUCTION OF PARTIALLY OXIDIZED ORGANIC COMPOUNDS

Leonard G. Marianowski, South Holland, and Karl S. Vorres, Western Springs, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Mar. 4, 1985, Ser. No. 708,158

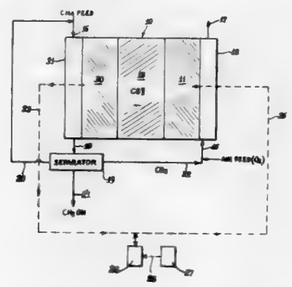
Int. Cl.⁴ H02M *8/00*

U.S. Cl. 429—13 **23 Claims**

1. Process for direct electrochemical partial oxidation of gaseous organic hydrocarbons in a molten salt, oxygen containing, anion conducting electrolyte fuel cell having an anode catalytic to said partial oxidation in an anode compartment and a cathode in a cathode compartment, said catalytic anode and said cathode separated by a molten salt oxygen containing electrolyte and in external electrical communication, said process comprising:

supplying oxygen containing gas to said cathode compartment and contacting said cathode with said molten salt oxygen containing electrolyte under oxidizing reaction conditions to produce oxygen containing anions:

transporting said oxygen containing anions through said molten salt oxygen containing electrolyte to said catalytic anode;



supplying gas consisting essentially of organic hydrocarbon to said anode compartment contacting said catalytic anode with said dry gaseous organic hydrocarbon and oxygen containing anions transported by said electrolyte from said cathode under reaction conditions to produce a partial oxidation product of said organic hydrocarbon, reduced oxygen containing material and electrons;

passing said electrons from said anode to said cathode through an external electrical communication for charge balance; and

removing said partial oxidation product from said anode compartment.

4,661,423

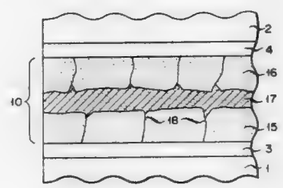
FUEL CELL ELECTROLYTE MATRIX AND METHOD FOR MANUFACTURING THE SAME

Mitsushi Ueno, Yokohama; Tamotsu Shirogami, Yamato, and Noboru Segawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 576,011, Feb. 1, 1984. This application Mar. 10, 1986, Ser. No. 816,794

Int. Cl.⁴ H01M *8/02*

U.S. Cl. 429—41 **5 Claims**



1. A fuel cell electrolyte matrix which is interposed between a fuel electrode and oxidizing electrode, and comprised of:

a first layer consisting of tightly connected particles of electron-insulating and electrolyte-resistive material and electrolyte filled in the spaces formed among said particles;

a second layer which is set adjacent to said first layer and

formed of loosely connected particles of electron-insulating and electrolyte-resistive material, and electrolyte filled in the spaces formed among said particles,

and the amount of the electrolyte contained in the first layer per unit weight of particles being larger than that of the electrolyte contained in the second layer; and

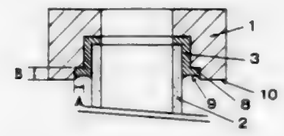
said electrolyte selected from the group consisting of phosphoric acid and a polymer of trifluoromethanol sulfonic acid.

4,661,424

SODIUM-SULFUR STORAGE BATTERY

Kazumasa Matsui, and Asao Kunimoto, both of Takatsuki, Japan, assignors to Yuasa Battery Co., Osaka, Japan

Filed Oct. 4, 1985, Ser. No. 784,479
Int. Cl.⁴ H01M *10/39*
U.S. Cl. 429—104 **4 Claims**



1. A sodium-sulfur storage battery comprising:

an alpha alumina ring having a longitudinally extending recess therein,

a sodium conductive solid electrolyte tube having a longitudinal end disposed in said recess, said end being of smaller cross-section than said recess to define an annular space therebetween, and

solder glass disposed in said annular space to join said ring to said tube,

said annular space including a longitudinally inner portion and an enlarged longitudinally outer portion, each said portion containing said solder glass, said enlarged outer portion situated at an open longitudinal end of said recess and defining a groove for collecting the solder glass, said glass being positioned in said groove by substantially filling said groove with molten glass, and allowing said molten glass to harden such that no portion of an outer surface of said glass projects beyond an outer edge of said groove and at least a portion of said glass outer surface extends inside of said groove outer edge, said groove having a width in a radial direction in the range of from 0.2 mm to 5.0 mm and a depth in the longitudinal direction in the range of from 0.2 mm to 10.0 mm.

4,661,425

LITHIUM HYDRIDE ANODE FOR USE IN ALKALINE BATTERIES

Walter Juda, Lexington, Mass., assignor to Prototech Company, Newton Highlands, Mass.

Filed Dec. 31, 1984, Ser. No. 688,079
Int. Cl.⁴ H01M *4/40, 10/24*
U.S. Cl. 429—206 **2 Claims**

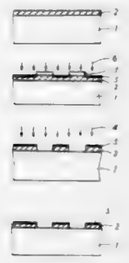
1. In a battery comprising an aqueous alkaline electrolyte, an anode comprising a lithium hydride layer in contact with a current collector, said aqueous electrolyte being sufficiently concentrated so as to minimize the decomposition of said lithium hydride layer to hydrogen.

4,661,426

PROCESS FOR MANUFACTURING METAL SILICIDE PHOTOMASK

Shuichi Matsuda, and Akira Shigetomi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1986, Ser. No. 846,518
Claims priority, application Japan, May 29, 1985, 60-115864
Int. Cl.⁴ G03F *9/00*
U.S. Cl. 430—5 **3 Claims**



1. A process for manufacturing a metal silicide photomask comprising the steps of:

preparing a transparent substrate;

forming a metal silicide film on said transparent substrate;

applying a resist on said metal silicide film;

drawing a desired mask pattern on the resist by using light or electron beam and developing the pattern so that some portion of the applied resist can be removed and the corresponding portion of the metal silicide can be exposed;

removing a scum by using an oxygen-containing plasma etching process, thereby to form an oxide film on the exposed portion of the metal silicide film; and

etching away the left resist portion and the portion of the metal silicide film laying under the resist portion using a dry etching process in which said oxide film serves as a mask.

4,661,427

AMORPHOUS SILICON PHOTOCONDUCTIVE MEMBER WITH REDUCED SPIN DENSITY IN SURFACE LAYER

Masahiro Kanai, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 632,878, Jul. 20, 1984, abandoned. This application Dec. 30, 1985, Ser. No. 815,129
Claims priority, application Japan, Jul. 27, 1983, 58-137135
Int. Cl.⁴ G03G *5/14*
U.S. Cl. 430—57 **17 Claims**

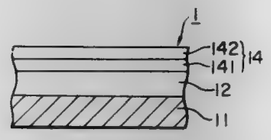
1. A photoconductive member, having a support and a photoconductive light receiving layer comprising a matrix of silicon atoms containing at least one of hydrogen atoms and halogen atoms provided on said support, said light receiving layer having a layer region with a layer thickness of at least 20 Å from the side of the free surface, in which the spin density measured by Electron Spin Resonance is 1.0×10^{20} spins/cm^3 or less.

4,661,428

COMPOSITE PHOTOSENSITIVE ELEMENTS FOR USE IN ELECTROPHOTOGRAPHY AND PROCESS OF FORMING IMAGES USING SAME

Tsutomu Ishida, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 337,211, Jan. 5, 1982, abandoned. This application Sep. 1, 1983, Ser. No. 528,665
Claims priority, application Japan, Jan. 14, 1981, 56-4260; Jan. 24, 1981, 56-9248
Int. Cl.⁴ G03G *5/082, 5/14*
U.S. Cl. 430—58 **6 Claims**



1. A composite photosensitive element for use in electrophotography and capable of achieving dichromatic developement, which comprises: an electrically conductive substrate; a first photoconductive layer laminated on top of said substrate, said first photoconductive layer being substantially insensitive to red light, said first photoconductive layer being selected from the group consisting of (1) a vapor-deposited Se-As sub-layer consisting essentially of from 1 to 6% by weight of As and the balance is essentially Se, said Se-As sub-layer having a thickness of from 20 to 40 μm, and a vapor-deposited Se-Te sub-layer coated directly on top of said Se-As sub-layer, said Se-Te sub-layer consisting essentially of from 4 to 12% by weight of Te and the balance is essentially Se, said Se-Te sub-layer having a thickness of from 0.5 to 5μm, and (2) a vapor-deposited Se-Te-As layer consisting essentially of from 4 to 12% by weight of Te, from 1 to 4% by weight of As and the balance is essentially Se, said layer having a thickness of from 20 to 50μm; a second photoconductive layer laminated on top of said first photoconductive layer, said second photoconductive layer being permeable to light and being sensitive to red light, said second photoconductive layer comprising a charge carrier generating sub-layer consisting essentially of a photoconductive azo pigment laminated on top of said first photoconductive layer, and a charge transport sub-layer laminated on top of said charge carrier generating sub-layer, said charge carrier generating sub-layer having a thickness of from 0.01 to 1.0 μm and said charge transport sub-layer having a thickness of from 10 to 30 μm; wherein said composite photosensitive element is subjected to a first negative electrification in the dark and then to a second, positive or alternating current electrification in the dark at a lower voltage than said first electrification whereby to charge said first photoconductive layer with a positive charge and to charge said second photoconductive layer with a negative charge, then effecting imagewise exposure of said composite photosensitive element through a dichromatic original having a black area and a red area on a white background whereby to form on said composite photosensitive element an electrostatic latent image in which the surface potential of the electrostatic latent image corresponding to the black area of the original is of opposite charge relative to the surface potential of the electrostatic latent image corresponding to the red area of the original, and then developing said electrostatic latent image by applying thereto, in succession, two toners of opposite polarity and different colors, whereby to obtain a dichromatic visible image.

4,661,429

PHOTOELECTROGRAPHIC ELEMENTS AND IMAGING METHOD

Michel F. Molaire, and Samir Y. Farid, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1986, Ser. No. 856,543
Int. Cl.⁴ G03G *5/06*
U.S. Cl. 430—70 **14 Claims**

1. A photoelectrographic element comprising a conductive layer in electrical contact with an acid photogenerating layer which (a) is free of photopolymerizable materials and (b) comprises an electrically insulating binder and an acid photogenerator.

4,661,430

DEVELOPING METHOD AND INSULATING NONMAGNETIC TONER THEREFOR

Katsutoshi Wakamiya, Yokohama; Toru Matsumoto, Tokyo, and Masuo Yamazaki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1984, Ser. No. 637,791
Claims priority, application Japan, Aug. 12, 1983, 58-147360
Int. Cl.⁴ G03G *13/22*
U.S. Cl. 430—120 **5 Claims**

1. A developing method, which comprises:

(a) arranging a latent image-bearing member which bears a latent image on the surface and a toner-carrying member which carries an insulating non-magnetic microcapsule toner at the developing section with a gap provided therebetween, said insulating non-magnetic microcapsule toner comprising a core material containing 1 to 30 wt. % of a colorant and a shell material containing 1 to 30 wt. % of a colorant, said shell material having a thickness of 0.01 to 2 microns;

(b) coating said toner-carrying member with said insulating non-magnetic microcapsule toner by either a vibrating coating means or a magnetic brush coating means,

(c) conveying the resultant coated layer to the developing section while regulating the thickness of said coated layer thinner than said gap; and

(d) developing the latent image on the latent image bearing member under the application of an alternate electric field with said insulating non-magnetic microcapsule toner.

4,661,431

METHOD OF IMAGING RESIST PATTERNS OF HIGH RESOLUTION ON THE SURFACE OF A CONDUCTOR

David P. Bujese, Butler; Peter J. Calabrese, Kinnelon; Gary W. Schmidt, Park Ridge, and Abelardo M. Santos, Englewood, all of N.J., assignors to Olin Hunt Specialty Products, Inc., Palisades Park, N.J.

Continuation-in-part of Ser. No. 655,346, Sep. 27, 1984, abandoned. This application Apr. 4, 1986, Ser. No. 848,669
Int. Cl.⁴ G03G *13/16, 13/22*
U.S. Cl. 430—126 **36 Claims**

1. A method of fabricating a printed circuit board from a conductor laminate comprising the steps of:

(a) forming an electrostatic latent image in a desired pattern on an electrostatically imageable surface;

(b) toning the electrostatic latent image with a heat fusible liquid toner to form a toner image in the desired pattern on the electrostatically imageable surface;

(c) transferring the toner image while still wet, in a first transfer step, from the electrostatically imageable surface to a dielectric transfer sheet;

(d) transferring the toner image, in a second transfer step, from said transfer sheet to the conductor surface of a conductor laminate;

(e) fusing the toner image to the conductor surface to form a pin-hole free, etch resistant toner image on the conductor surface;

(f) etching non-image areas of the conductor to remove conductor from said non-image areas; and
(g) removing toner from the image areas of the conductor surface to obtain a printed circuit board.

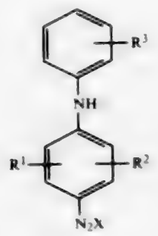
4,661,432
LIGHT-SENSITIVE, DIAZONIUM GROUP-CONTAINING POLYCONDENSATION PRODUCT, PROCESS FOR ITS PRODUCTION, AND LIGHT-SENSITIVE RECORDING MATERIAL CONTAINING THIS POLYCONDENSATION PRODUCT

Walter Latz, Hochheim, and Hartmut Steppan, Wiesbaden-Dotzheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 593,091, Mar. 26, 1984, abandoned. This application Jan. 23, 1986, Ser. No. 824,257
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311435
Int. Cl.⁴ G03C *1/54*; C07C *113/04*
U.S. Cl. 430—175 **10 Claims**

1. A light-sensitive, diazonium group-containing polycondensation product of a process comprising the steps of (i) condensing about 1 mole of a diazonium salt corresponding to formula I

(I)



wherein
R^1, R^2, and R^3 each denote separately a hydrogen atom, an alkyl group having from 1 to 3 carbon atoms, or an alkoxy group having from 1 to 6 carbon atoms, and
X denotes the anion of the diazonium salt;
in a strongly acidic medium with about 0.1 to 1.5 moles of a compound corresponding to the formula II

$$R^4—O—CH_2—R^5 \quad \text{(II)}$$

wherein
R^4 denotes a hydrogen atom, an alkyl group or an aliphatic acyl radical and
R^5 denotes a mononuclear or polynuclear aromatic radical, which is unsubstituted or is substituted by at least one halogen atom, alkyl group, halogenated alkyl group, alkoxy group having from 1 to 3 carbon atoms, carboxy group, aryl group, arylmercapto group, or aryloxy group,
each of said diazonium salt I and said compound II being present in an amount sufficient to produce a first reaction product, and (ii) then reacting said first reaction product in a strongly acid medium with about 0.5 to 1.5 moles of a compound corresponding to formula III

$$R^6—O—CH_2—R^8—CH_2—O—R^7 \quad \text{(III)}$$

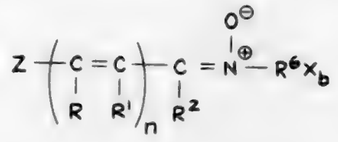
wherein
R^6 and R^7 each denote separately a hydrogen atom, an alkyl group, or an aliphatic acyl radical, and
R^8 denotes the radical of a compound selected from the group consisting of aromatic hydrocarbons, phenols, phenolethers, aromatic thioethers, aromatic heterocyclic compounds, and organic acid amides,
such that the radicals resulting from compound II are directly linked to the units of said diazonium salt I, each of said first reaction product and said compound III being present in an amount sufficient to produce said light-sensitive polycondensation product.

6. A light-sensitive recording material comprising a support and a light-sensitive layer containing as the light-sensitive compound a diazonium-salt polycondensation product as claimed in claim 1.

4,661,433
STORAGE STABLE ARYL NITRONE COMPOSITIONS

Gary C. Davis, Albany, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 31, 1984, Ser. No. 687,681
Int. Cl.⁴ G03C *1/727, 5/00*; C07C *135/02*
U.S. Cl. 430—270 **20 Claims**



1. A composition comprising at least one aryl nitrone and a drying agent which is substantially inert to said aryl nitrone.
2. A composition according to claim 1 which also comprises a solvent suitable for use in providing a spincoatable mixture.
3. A composition according to claim 2 wherein the drying agent is a molecular sieve, silica gel or an alkylalkoxysilane of the formula $(R^7)_mSi(OR^8)_p$, wherein R^7 and R^8 are lower alkyl radicals and $m+p=4$.
4. A composition according to claim 3 which also comprises a substantially inert polymeric binder.

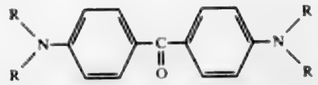
4,661,434
PHOTOPOLYMERIZABLE COMPOSITION CONTAINING A NOVEL COMBINATION OF PHOTOPOLYMERIZABLE INITIATORS

Masayuki Iwasaki; Minoru Maeda, and Fumiaki Shinozaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 16, 1984, Ser. No. 641,151
Claims priority, application Japan, Aug. 16, 1983, 58-149335
Int. Cl.⁴ G03C *1/68*
U.S. Cl. 430—281 **7 Claims**

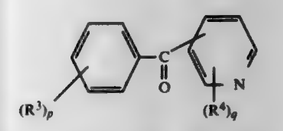
1. A photopolymerizable composition comprising (A) an addition-polymerizable unsaturated compound having two or more ethylenically unsaturated double bonds and (B) a ternary photopolymerization initiator system comprising a combination of a 4,4'-bis(dialkylamino)-benzophenone represented by the following general formula (I), a carbonyl compound represented by the following general formula (IIb), and a compound having a group represented by the following general formula (IIc):

(I)



wherein each R, which is the same or different, represents an alkyl group, a cycloalkyl group or a hydroxyalkyl group, or is bonded to another R substituent of the same nitrogen atom to form a tetramethylene group, a pentamethylene group or an oxybisethylene group;

(IIb)



wherein R^3 and R^4, which is the same or different, each represents an alkyl group, an alkoxy group, a carboxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, a cyano group or a halogen atom, p represents an integer of 0 to 5, and q represents an integer of 0 to 4; and

$$Ar^3—SO_2CZ_3 \quad \text{(IIIc)}$$

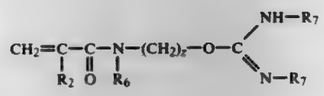
wherein Ar^3 represents a substituted or unsubstituted phenyl or naphthyl group, and Z represents a chlorine atom or a bromine atom,
wherein said compound of general formula (I) is present in a amount of about 0.01 to 100 parts by weight per 100 parts by weight of said addition-polymerizable unsaturated compound; said compound of general formula (IIb) is present in an amount of about 0.01 to 100 parts by weight per 100 parts by weight of said addition-polymerizable unsaturated compound; and said compound of general formula (IIIc) is present in an amount of about 0.01 to 100 parts by weight per 100 parts of said addition-polymerizable unsaturated compound.

4,661,435
PHOTOSENSITIVE POLYAMIC ACID DERIVATIVE, COMPOUNDS USED IN THE MANUFACTURE OF THE DERIVATIVE, METHOD OF MANUFACTURING POLYIMIDE PATTERN ON A SUBSTRATE, AND SEMICONDUCTOR DEVICE COMPRISING A POLYIMIDE PATTERN OBTAINED BY USING THE SAID METHOD

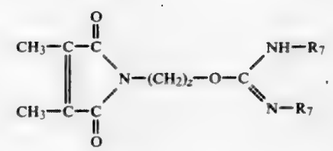
Lourens Minnema, and Johan M. van der Zande, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 626,273, Jun. 29, 1984, abandoned. This application Feb. 10, 1986, Ser. No. 828,093
Claims priority, application Netherlands, Jul. 1, 1983, 8302338
Int. Cl.⁴ G03C *5/16*; G03F *7/26*
U.S. Cl. 430—311 **3 Claims**

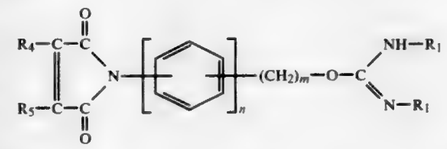
1. A method for producing a semiconductor device having a semiconductor body comprising at least one semiconductor element having a polyimide pattern on a substrate comprising the steps of treating a polyamic acid with a compound of the formula:



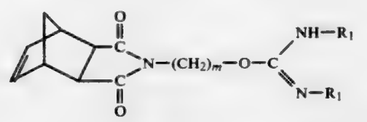
wherein
R_2 is hydrogen or methyl,
R_6 is hydrogen or methyl,
R_7 is isopropyl or cyclohexyl
and z is an integer of 2–4; with a compound of the formula:



wherein R_2 and z are defined above, with a compound of the formula



wherein R_1 is alkyl of 1–8 carbon atoms, R_4 and R_5 each independently are hydrogen, methyl or phenyl, n is 0 or 1 and m is an integer of 1–6, or with a compound of the formula

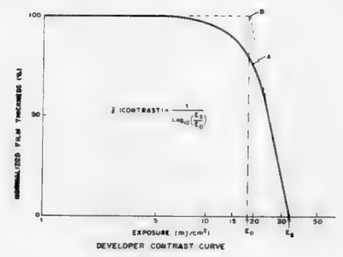


wherein R_1 and m are defined as above; applying the resultant photosensitive polyimide acid derivative onto said substrate to form a layer of photosensitive polyamic acid derivative, subjecting said layer to a desired light pattern, developing said exposed layer to thereby form a polyamic acid derivative pattern and the said polyamic derivative pattern is subjected to a thermal treartment thereby converting the polyamic acid derivative to a polyimide.

4,661,436
PROCESS OF FORMING HIGH CONTRAST RESIST PATTERN IN POSITIVE PHOTOAGENT MATERIAL USING ALKALAI DEVELOPER WITH FLUOROCARBON SURFACTANT

James M. Lewis, Williamsville; Robert A. Owens, East Amherst, and Andrew J. Blakeney, Blasdell, all of N.Y., assignors to Petrarch System, Inc., Bristol, Pa.

Division of Ser. No. 505,571, Jun. 17, 1983, abandoned. This application Aug. 19, 1985, Ser. No. 767,318
Int. Cl.⁴ G03F *7/26*
U.S. Cl. 430—326 **6 Claims**



1. A process for developing a positive radiation sensitive

resist film for a gamma greater than 5, said film being comprised of radiation sensitive o-quinone diazide sulfonic acid derivative compounds and an alkali soluble resin that has been coated on a substrate and having been exposed to radiation in the form of a pattern, and which can thereafter be developed to form a surface relief pattern, which comprises:

contacting the exposed film with an aqueous alkaline developer solution comprising sufficient alkali metal base to obtain a pH of at least 9 and containing at least 0.0001 percent, based on the weight of the developer solution of a fluorocarbon surfactant having the formula:

$$R_f\text{—}Y\text{—}(CH_2CH_2O)_m\text{—}R$$

wherein Y is a radical selected from the group consisting of —CH_2CH_2O—, —SO_2NR', SO_3, $SO_2N(R')CH_2CO_2$, CO_2 and —CO—NR'

wherein R_f is selected from the group consisting of straight and branched chains of the formula C_pF_{2p+1} where p is an integer of from 3–17 and wherein R is hydrogen or an acyl or alkyl radical of 1 to 30 carbon atoms and m is an integer of 2 to 26 and R' is hydrogen or an alkyl radical of 1–6 carbon atoms,

until the exposed portions of the film are at least partially dissolved to form a resist pattern having a gamma greater than 5.

4,661,437

PHOTOGRAPHIC MATERIAL WITH HETEROCYLIC AZO DYE FOR THE SILVER DYE BLEACH PROCESS

Paul Tschopp, Düdingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

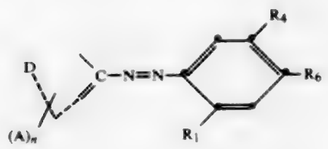
Filed Jul. 19, 1985, Ser. No. 757,550

Claims priority, application Switzerland, Jul. 27, 1984, 3659/84

Int. Cl.⁴ G03C *1/40, 7/26, 5/52*

U.S. Cl. 430—390 **14 Claims**

1. A photographic recording material for the silver dye bleach process, which material contains in at least one silver halide emulsion layer, or in a colloidal layer adjacent to said layer or layers, at least one oil-soluble azo dye of the formula



(I)

wherein

D is the group of atoms necessary to complete a 5-membered ring selected from the group consisting of pyrazolyl, imidazolyl, triazolyl, thiazolyl, thiadiazolyl, and isothiadiazolyl rings or the derivatives thereof which are fused with a benzene ring,

A is hydrogen, C_1–C_{12}alkyl, C_1–C_4alkyl which is substituted by alkoxy, phenoxy, acryl, acyloxy, carbalkoxy, cyano or halogen, or is C_1–C_4alkoxy, phenyl, phenyl which is substituted by an electronegative group, or is C_1–C_4alkylthio, phenyl-substituted C_1–C_4alkylthio, cyano, nitro or halogen, and n is 0, 1, 2 or 3,

R_1 is hydrogen, C_1–C_4alkyl, hydroxyl, or —$NHCOL_1$, wherein L_1 is C_1–C_{20}alkyl or substituted carbamoyl,

R_6 is hydrogen or —NR_2R_3, wherein each of R_2 and R_3 independently of the other is hydrogen, C_1–C_8alkyl or C_1–C_4 which is substituted by acrylamino, phenyl, alkoxy or hydroxyl, and

R_4 is hydrogen, C_1–C_4alkoxy or —$(OCH_2CH_2)_m$—OCH_3, wherein m is 1 or 2.

14. A process for the production of photographic images by the silver dye bleach process, which comprises exposing, developing, dye bleaching silver bleaching and fixing of a photographic recording material according to claim 1.

4,661,438

QUATERNIZED TELLURIUM SALT FOG INHIBITING AGENTS FOR SILVER HALIDE PHOTOGRAPHY

Rosemary Przyklek-Elling, Rochester; Wolfgang H. H. Gunther, Webster, and Roger Lok, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 719,841, Apr. 4, 1985, abandoned. This application Jan. 31, 1986, Ser. No. 824,751

Int. Cl.⁴ G03C *1/34*

U.S. Cl. 430—423 **26 Claims**

1. A photographic element containing a radiation sensitive silver halide emulsion and an effective amount of a fog inhibiting agent characterized in that the fog inhibiting agent is a quaternized aromatic oxatellurazinium salt.

4,661,439

PROCESS FOR PREPARING TONERS SURFACE COATED WITH ANTISTATIC AGENT AND LIQUID SLIP AGENT

Maureen K. Ruskin, Highland Park, N.J., assignor to E.I. De Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 6, 1985, Ser. No. 806,165

Int. Cl.⁴ G03C *5/24*

U.S. Cl. 430—449 **10 Claims**

1. A process for preparing a dry, nonelectroscopic toner surface coated with a liquid slip agent and an antistatic agent, comprising the steps of:

(a) milling in a mixture of water and a suitable organic solvent a pigment and an organic resin to form a toner comprising pigmented organic resin particles having a size distribution of 0.2 to 30 micrometers,

(b) filtering said toner under pressure to form a filter cake having an organic solvent content of about 1000 rpm or less,

(c) transferring said filter cake to a planetary mixer having simultaneous mixing, heating, and vacuum drying capability,

(d) in said planetary mixer, surface coating said toner with the antistatic agent and the liquid slip agent and drying to a moisture content of about 0–4%,

(e) pulverizing the dry, surface-coated toner to the desired particle size.

4,661,440

PROCESS FOR STABILIZING PHOTOGRAPHIC MATERIAL CONTAINING MAGENTA COUPLER

Paul Tschopp, Düdingen, and David G. Leppard, Marly, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

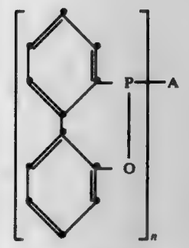
Filed Nov. 7, 1985, Ser. No. 795,859

Claims priority, application Switzerland, Nov. 7, 1984, 5359/84

Int. Cl.⁴ G03C *1/40*

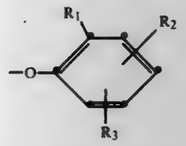
U.S. Cl. 430—512 **11 Claims**

1. A process for stabilising photographic silver halide material containing magenta coupler, which comprises incorporating into the silver halide emulsion layer containing the magenta coupler or into an adjoining colloid layer at least one compound of the formula I



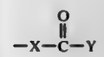
in which n is the number 1 or 2 and

A, if n is 1, is a group of the formula II



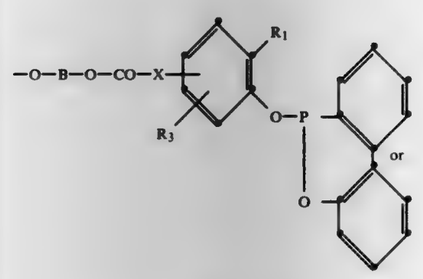
(II)

in which R_1 is C_1–C_{18}-alkyl, C_5–C_6-cycloalkyl, Cl, Br, CN, C_7–C_{21}-aralkyl or a group of the formula III

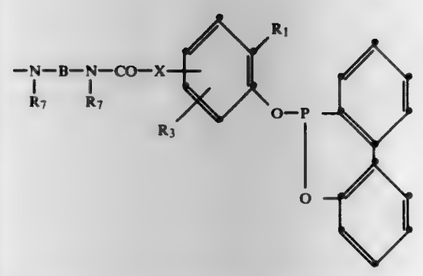


(III)

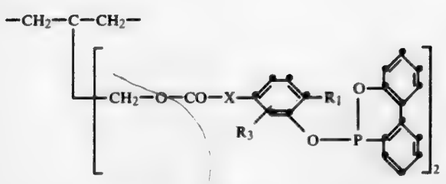
in which X is C_2–C_8-alkylene and Y is a —OR_4, —$N(R_5)(R_6)$, C_1–C_4-alkyl, the residue



or

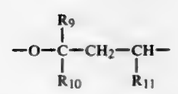


wherein B is C_1–C_{18}-alkylene which is uninterrupted or interrupted one or more times by —O— or —S— or is a group of the formula



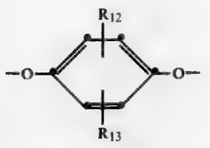
(I)

R_2 is hydrogen, R_1 or a —OR_7 group, R_3 is hydrogen or R_1, R_4 is C_1–C_{18}-alkyl which is uninterrupted or interrupted one or more times by —O— or is a polyethylene glycol radical, phenyl, substituted phenyl or benzyl, R_5 and R_6, independently of each other, are hydrogen, C_1–C_{18}-alkyl, phenyl, benzyl, or a —$(CH_2)_m$—O—R_8 group, R_7 is hydrogen or C_1–C_4-alkyl, R_8 is C_1–C_{18}-alkyl and m is a number between 1 and 4, or R_2 and R_3 together are C_3–C_8-alkylene or a group



in which R_9, R_{10}, R_{11} independently of one another are each C_1–C_4-alkyl, or

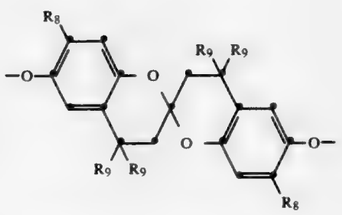
A, if n is 2, is a group of the formula IV



(IV)

in which R_{12} and R_{13}, independently of one another, are each C_1–C_{18}-alkyl or a group of the formula III or

A is a group of the formula V



(V)

in which R_8 and R_9 are as defined above.

10. A process according to claim 1, where the photographic material contains at least one further organic stabiliser, UV absorber, fluorescent brightening agents, anti-fogging agent and/or plasticiser.

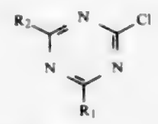
VOL 1077 ISS 4 AP 28 1987 UMI

4,661,441
LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

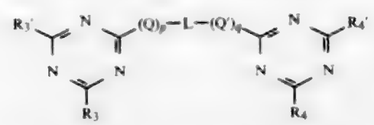
Makoto Kajiwara, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,569
Claims priority, application Japan, Apr. 20, 1984, 59-80593
Int. Cl.⁴ G03C *1/30*
U.S. Cl. 430—555 **18 Claims**

1. A light-sensitive silver halide photographic material containing at least one layer of silver halide emulsion layers on a support characterized in that at least one layer of said silver halide emulsion layers contains silver halide grains which consist essentially of mono-dispersed silver halide grains having (100) faces and (111) faces, said monodispersed silver halide grains are normal crystal grains and are tetradecahedral, and said silver halide emulsion layer is hardened with (i) at least one of the hardening agents represented by the following formula (I) or (ii) at least one of the hardening agents represented by the following formula (II) or mixtures of (i) and (ii),



wherein R_1 represents a chlorine atom, a hydroxy group, an alkyl group, an alkoxy group, an alkylthio group, —OM group wherein M is a monovalent metal atom, —NR'R'' wherein R' and R'' are a hydrogen atom, an alkyl group or an aryl group, respectively, or —NHCOR''' wherein R''' is a hydrogen atom, an alkyl group or an aryl group and R_2 has the same meanings as R_1 except it does not represent a chlorine atom,



wherein R_3, R_3', R_4 and R_4' each represent a chlorine atom, a hydroxy group, an alkyl group, an alkoxy group or a —OM group wherein M is a monovalent metal atom; Q and Q' each represent a binding group of —O—, —S— or —NH—; L represents an alkylene group or an arylene group; and p and q each represent 0 or 1.

4,661,442
PRODUCING LIPID-PROTEIN MEMBRANES FOR CHEMICAL DETECTION

Herbert R. Lukens, LaJolla, Calif., assignor to IRT Corporation, San Diego, Calif.

Filed Jun. 20, 1984, Ser. No. 622,702
Int. Cl.⁴ G01N *33/531, 33/544*
U.S. Cl. 435—4 **20 Claims**

14. A method of detecting the presence of a substance comprising:

providing a membrane which is formed by a process of preparing an aqueous medium containing between about 2 and about 25 mg/ml of dissolved and emulsified lipid and between about 1 and about 10 mg/ml of a protein, said protein equaling between about 5 and about 70 percent by weight of said lipid and a substantial portion of the protein being reactive with the substance to be detected, applying said medium to an orifice with a diameter up to 3 mm in a sheet of material with said sheet exposed to air, the medium being applied in an effective amount for filling said orifice and providing sufficient lipid and protein to form a biomolecular lipid layer across said orifice having protein molecules interspersed as integral membrane proteins, and evaporating the water in said medium in the presence of air to provide a membrane;

exposing the membrane to material potentially containing said substance, and

detecting a change in a physical characteristic of said membrane.

4,661,443
ASSAY FOR MEASURING GENE EXPRESSION

Nathan Brot, West Orange, and Herbert Weissbach, Cedar Grove, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 405,667, Aug. 6, 1982, abandoned. This application Mar. 15, 1985, Ser. No. 712,283
Int. Cl.⁴ C12Q *1/68;* **C12P** *21/00, 21/02, 19/34;* **G01N** *33/48, 33/00*
U.S. Cl. 435—6 **27 Claims**

1. A method for detecting the synthesis of a specific gene product in an in vitro protein synthesizing system capable of carrying out transcription and translation comprising:

(a) reacting

(i) an in vitro protein synthesizing system capable of carrying out transcription and translation which may contain a DNA template coding for a specific gene product, which specific gene product has

A. An amino-terminal methioninyl residue, and

B. an adjacent, second amino acid residue which differs from the corresponding residues of all other gene products formed in the system, with

(ii) a mixture containing

A. methioninyl t-RNA, and

B. a second t-RNA charged with an amino acyl group corresponding to the second amino acid residue of the specific gene product,

one or both of which t-RNA amino acyl groups is labeled, to allow formation of dipeptides;

(b) incubating the reaction mixture for a period of time and at a temperature which would allow any dipeptide formation to be substantially complete;

(c) adding a quantity of base that would be sufficient to stop any reaction and to hydrolyze any dipeptides formed from the t-RNA;

(d) separating any dipeptides formed from the reaction mixture of step (c); and

(e) detecting any separated dipeptides,

thereby detecting the synthesis of the specific gene product in the in vitro protein synthesizing system.

19. A method for detecting the synthesis of a specific gene product in an in vitro protein synthesizing system capable of carrying out transcription and translation, comprising:

(a) reacting

(i) an in vitro protein synthesizing system capable of carrying out transcription and translation which may contain a DNA template coding for a specific gene product, which specific gene product has

A. an amino-terminal methioninyl residue and an adjacent, second amino acid residue, both of which are also present as correponding amino acid residues of one or more other gene products formed in the system, and

B. a third amino acid residue adjacent to the second which differs from correspnding residues of all other gene products formed in the system, with

(ii) a mixture containing

A. methioninyl t-RNA, and

B. second and third t-RNAs charged with amino acyl groups corresponding to the second and third amino acid residues of the specific gene product,

one or more of which t-RNA amino acyl groups is labeled, to allow formation of tripeptides;

(b) incubating the reaction mixture for a period of time and at a temperature which would allow any tripeptide formation to be substantially complete;

(c) adding a quantity of base that would be sufficient to stop any reaction and to hydrolyze any tripeptides formed from the t-RNA;

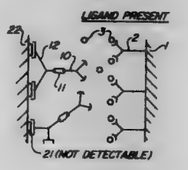
(d) separating any tripeptides formed from the reaction mixture of step (c); and

(e) detecting any separated tripeptides, thereby detecting the synthesis of the specific gene product in the in vitro protein synthesizing system.

4,661,444
HOMOGENEOUS IMMUNOASSAYS EMPLOYING DOUBLE ANTIBODY CONJUGATES COMPRISING ANTI-IDIOTYPE ANTIBODY

Conan K. N. Li, Allston, Mass., assignor to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Mar. 29, 1984, Ser. No. 594,164
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.⁴ G01N *33/53, 33/566, 33/543, 33/551*
U.S. Cl. 435—7 **13 Claims**



1. An immunoassay reagent system for detecting a ligand comprising:

an insolubilized ligand binding partner;

a double binding partner conjugate comprising an anti-idiotype binding partner, capable of blocking said ligand from binding with said insolubilized ligand binding partner, coupled to a second binding partner; and

insolubilized label means for which said second binding partner is specific.

4,661,445
COMPETITIVE ELISA FOR THE DETECTION OF HTLV-III ANTIBODIES

W. Carl Saxinger, 6814 Realta La., Bethesda, Md. 20817, and Robert C. Gallo, 8513 Thornden Terr., Bethesda, Md. 20814

Filed May 24, 1985, Ser. No. 737,458
Int. Cl.⁴ G01N *33/53*
U.S. Cl. 435—7 **2 Claims**

1. A method for the detection of HTLV-III antibodies in a test sample comprising

coating microtiter plates with purified HTLV-III antigen to form antigen-coated wells;

incubating a portion of said antigen coated wells with heterologous anti-HTLV-III;

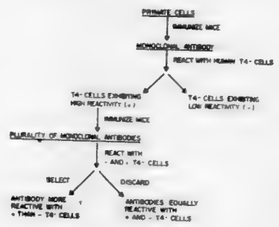
adding test sera to said wells;

screening said wells for the amount of binding of HTLV-III antibodies by comparing said wells containing said heterologous anti-HTLV-III to control wells, said control wells being incubated without said heterologous anti-THLV-III.

4,661,446
MONOCLONAL ANTIBODIES AND METHOD OF IMMUNIZING THEREWITH

Stuart Schlossman, Newton Center; Chikao Morimoto, Needham, and Norman Letvin, Newton, all of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Filed Feb. 19, 1985, Ser. No. 703,219
Int. Cl.⁴ C07K *15/04;* **C12N** *5/00;* **G01N** *33/577, 33/569*
U.S. Cl. 435—7 **6 Claims**



2. A monoclonal antibody which binds specifically to a non-human primate cell, said monoclonal antibody being further characterized in that

it binds specifically with a specific antigenic determinant on a first subset of human T4+ cells, which cells are capable of inducing, in the presence of pokeweed mitogen, a degree of IgG secretion in human B cells,

it does not bind specifically with a second subset of human T4+ cells, which cells are capable of inducing, in the presence of pokeweed mitogen, a lower degree of IgG secretion in human B cells, said degree of IgG secretion of said first subset being approximately 15 times greater than that of said second subset,

it is of the IgG1 isotype, and

it is produced by murine hybridoma cell line identified as ATCC HB 8703.

4,661,447
REGULATORY GLYCOPROTEIN FOR IMMUNE RESPONSE AND THE USE THERE OF IN THE PRODUCTION OF T-CELL GROWTH FACTOR

Hans-Ake Fabricius, Breisach, and Eckart U. Köttgen, Freiburg, both of Fed. Rep. of Germany, assignors to Shanksville Corporation N.V., Curacao, Netherlands Antilles

Division of Ser. No. 255,251, Apr. 17, 1981, Pat. No. 4,406,830. This application Jul. 15, 1983, Ser. No. 514,197
Int. Cl.⁴ C12P *21/00, 21/02;* **C12N** *5/00, 5/02;* **C07K** *15/06*
U.S. Cl. 435—68 **3 Claims**

1. A process for producing a serum-free and mitogen-free T-cell growth factor (Il-2) comprising incubating a serum-free and mitogen-free liquid tissue culture medium containing therein lymphocyte cells, a biologically active blood serum glycoprotein having a molecular weight of about 90,000 and being able to cause T-cell growth factor production in the presence of Interleukin-1 and T-lymphocytes; said glycoprotein being further characterized by at least one sialic acid moiety as a biologically active site; by retaining more than one-half of its biological activity after being heated to 80° C. for 30 minutes; by its specific binding affinity to wheat germ agglutinin and a triazine die, color index 61211, of chemical formula 1-amino-4-[[4-[[4-chloro-6-[[3(or 4)-sulfophenyl-]amino]-1,3,5-triazin-2-yl]amino]-3-sulfophenyl]amino]-9,10-dihydro-9,10-dioxo-2-anthracene sulfonic acid; and by its lack of specific binding affinity to lysine, and a serum-free and mitogen-free Interleukin-1 preparation and allowing the T-cell growth factor synthesized by the T-lymphocyte cells to collect in the liquid phase of the tissue culture medium.

4,661,448

METHOD FOR PRODUCING REDUCED-FORM COENZYME

Sadaji Yokoyama, and Shinichiro Suye, both of Ootsu, Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Filed Mar. 13, 1985, Ser. No. 711,213

Claims priority, application Japan, Mar. 28, 1984, 59-60100; May 4, 1984, 59-89982; Sep. 20, 1984, 59-197081

Int. Cl.⁴ C12N *19/36, 9/04;* **C12Q** *1/32*

U.S. Cl. 435—90 **5 Claims**

1. A method for producing a reduced-form coenzyme which comprises reacting malic acid selected from the group consisting of L-malic acid and D,L-malic acid with one member selected from the coenzyme group consisting of nicotinamide adenine dinucleotide and nicotinamide adenine dinucleotide phosphate in the presence of malate dehydrogenase to obtain the corresponding reduced product.

4,661,449

PROCESS AND INSTALLATION FOR THE PREPARATION OF A SWEET WORT

Michel Billon, Uniexs, France, assignor to Clextral, Paris, France

Filed Jul. 26, 1984, Ser. No. 634,714

Claims priority, application France, Jul. 28, 1983, 83 12475

Int. Cl.⁴ C12C *1/00, 7/04, 7/06;* **C12M** *1/10*

U.S. Cl. 435—93 **13 Claims**

1. Process for the preparation of a sweet wort from at least one cereal, in which the cereal is first mashed with water then mixed with a hydrolyzing substance introducing enzymes to undergo a saccharification treatment, in which process, the cereal is before mashing subjected to a cooking-extrusion treatment carried out at a temperature above 100° C., by passage continuously of the cereal, with an amount of water sufficient for the bursting of the starch grain, in a screw extrusion machine comprising at least two screws and provided with heating means for the material and wherein the extruded material is then mashed and subjected to a saccharification treatment carried out by a progressive heating in the presence of the hydrolyzing substance, until the production of the sweet wort.

4,661,450

MOLECULAR CLONING OF RNA USING RNA LIGASE AND SYNTHETIC OLIGONUCLEOTIDES

Tomas Kempe, Minnetonka; Anthony F. Purchio, Edina; Marc S. Collett, and William J. DeLorbe, both of Minnetonka, all of Minn., assignors to Molecular Genetics Research and Development Limited Partnership, Minnetonka, Minn.

Filed May 3, 1983, Ser. No. 491,099

Int. Cl.⁴ C12P *21/00, 19/34;* **C12N** *1/20, 1/00;* **C07H** *15/12*

U.S. Cl. 435—172.3 **39 Claims**

1. A method for the insertion of a single-stranded RNA sequence into a cloning vector, comprising: annealing both termini of the single-stranded RNA sequence with a linear double-stranded cloning vector having single-stranded termini complementary to both termini of the single-stranded RNA sequence to form an annealed product, in which the complementary termini of the single-stranded RNA sequence where formed by attaching oligonucleotide linkers to the RNA sequence by means of an RNA ligase.

4,661,451

METHODS FOR IMMOBILIZING AND TRANSLOCATING BIOLOGICAL CELLS

W. Peter Hansen, Middleboro, Mass., assignor to Ortho Diagnostic Systems, Inc., Raritan, N.J.

Filed Feb. 6, 1984, Ser. No. 577,120

Int. Cl.⁴ C12N *11/00, 11/16, 13/00, 11/14*

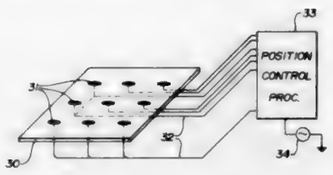
U.S. Cl. 435—174 **5 Claims**

1. An apparatus for immobilizing biological cells comprising:

(a) an insulating substrate having a plurality of conducting contact areas mounted thereon;

(b) an alternating current source having two outputs, one of said outputs connected to ground; and

(c) connecting means for coupling the other of said current source outputs to said contact areas whereby a nonuniform electric field is produced emanating from said plurality of contact areas and capable of attracting and holding biological cells suspended in a conducting solution in contact with said plurality of contact areas, said connecting means further comprising means for controlling the connection between said contact areas and said current source whereby said cells may be released from said contact areas and, wherein said means for controlling includes means for disconnecting at least one contact area, independent of other contact areas, from said alternating current source whereby at least one predetermined cell at said one contact area may be selectively released from said one contact area while cells at other contact areas remain immobilized.



4,661,452

ENZYME CONTAINING GRANULATES USEFUL AS DETERGENT ADDITIVES

Erik K. Markussen, and Arne D. Fog, both of Vaerlose, Denmark, assignors to Novo Industri A/S, Denmark

Filed May 28, 1985, Ser. No. 738,421

Claims priority, application Denmark, May 29, 1984, 2635/84

Int. Cl.⁴ C12N *9/98;* **C11D** *3/386*

U.S. Cl. 435—187 **13 Claims**

4. Enzyme containing granulates adapted for detergent additive purposes containing therein less than about 2% chloride by weight thereof, enzyme, a granulation binder, and at least 35% by weight of a filler system comprising at least one water insoluble salt selected from the group consisting of inorganic water insoluble sulphates, carbonates, phosphates and silicates, and at least one water soluble inorganic salt selected from the group consisting of the sulphates of ammonium, magnesium and metals from the first group of the periodic Table, said water soluble salt and water insoluble salt each being present as from 5% to 70% by weight of the granulates.

4,661,453

PRODUCTION OF TISSUE PLASMINOGEN ACTIVATOR FACTOR

Morris Pollard, South Bend, Ind., assignor to American Biogenetic Sciences, Inc., Copiague, N.Y.

Filed Jun. 19, 1984, Ser. No. 622,182

Int. Cl.⁴ C12N *9/48, 9/72, 9/50*

U.S. Cl. 435—212 **17 Claims**

1. A method for the production of tissue plasminogen activator, comprising:

(a) initially incubating confluent prostate adenocarcinoma cells, having the same characteristics as rat prostate adenocarcinoma cell line PA III deposited with the ATCC and assigned Accession No. CRL 8579, in vitro in nutrient medium at a temperature of about 20° C. to about 25° C. for about 48 hours;

(b) subsequently incubating the confluent cell culture at a temperature of about 35° C. to about 37° C. for about 24 hours to about 72 hours; and

(c) harvesting the nutrient medium from the confluent cells.

4,661,454

GAL1 YEAST PROMOTER LINKED TO NON GALACTOKINASE GENE

David Botstein, Brookline, Mass.; Ronald W. Davis, Menlo Park, Calif.; Gerald R. Fink, Brookline, Mass.; Alison Taunton-Rigby, Lincoln, Mass.; Robert G. Knowlton, Lexington, Mass.; Jen-i Mao, Bedford, Mass.; Donald T. Moir, Waltham, Mass., and Christopher G. Goff, Haverford, Pa., assignors to Collaborative Research, Inc., Bedford, Mass.

Filed Feb. 28, 1983, Ser. No. 470,911

Int. Cl.⁴ C12N *1/18, 15/00, 1/00;* **C07H** *15/12*

U.S. Cl. 435—256 **5 Claims**

5. A DNA segment containing a GAL1 promoter linked to a gene other than the galactokinase gene for directing the expression of the gene within a yeast cell, wherein said GAL1 promoter has the following nucleotide sequence:

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                10                  20                  30
GAATTCGACAGGTTATCAGCAACACAGTCA

                40                  50                  60
TATCCATTCTCAATTAGCTCTACCACAGTG

                70                  80                  90
TGTGAACCAATGTATCCAGCACCACCTGTA

               100                 110                 120
ACCAAAACAATTTTAGAAGTACTTTCACTT

               130                 140                 150
TGTAACTGAGCTGTCATTTATATTGAATTT

               160                 170                 180
TCAAAAATTCTTACTTTTTTTTTGGATGGA

               190                 200                 210
CGCAAAGAAGTTTAATAATCATATTACATG

               220                 230                 240
GCATTACAACCATATACATATCCATATACA

               250                 260                 270
TATCCATATCTAATCTACTATATGTTGTGG

               280                 290                 300
TATGTAAAGAGCCCCATTATCTTAGCCTAA

               310                 320                 330
AAAAACCTTCTCTTTGGAACTTTCAGTAAT

               340                 350                 360
ACGCTTAACTGCTCATTGCTATATTGAAGT

               370                 380                 390
ACGGATTAGAAGCCGCCGAGCGGGTGACAG

               400                 410                 420
CCCTCCGAAGGAAGACTCTCCTCCGTGCGT

               430                 440                 450
CCTCGTCTTCACCGGTCGCGTTCCTGAAAC

               460                 470                 480
GCAGATGTGCCTCGCGCCGCACTGCTCCGA

               490                 500                 510
ACAATAAAGATTCTACAATACTAGCTTTTA

               520                 530                 540
TGGTTATGAAGAGGAAAAATTGGCAGTAAC

               550                 560                 570
CTGGCCCCACAAACCTTCAAATGAACGAAT
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               580                 590                 600
CAAATTAACAACCATAGGATGATAATGCGA

               610                 620                 630
TTAGTTTTTTAGCCTTATTTCTGGGGTAAT

               640                 650                 660
TAATCAGCGAAGCGATGATTTTTGATCTAT

               670                 680                 690
TAACAGATATATAAATGCAAAAACTGCATA

               700                 710                 720
ACCACTTTAACTAATACTTTCAACATTTTC

               730                 740
GGTTTGTATTACTTCTTATTC AAATGTAAT
                                                       750

AAAAGTATCAACAAAAAATT
                   760                 770

GTTAATATACCTCTATACTTTAACGTCAAG
               780                 790                 800

GAGAAAAAACCCCGGATCC
                   810                 820
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4,661,455

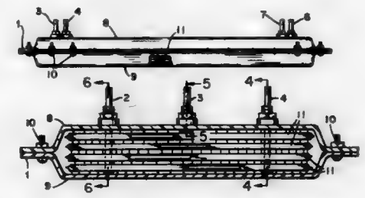
MEMBRANE CELL CULTURING DEVICE

Peter J. Hubbard, Darien, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jan. 16, 1986, Ser. No. 819,762

Int. Cl.⁴ C12N *5/00;* **C12M** *1/14*

U.S. Cl. 435—240 **20 Claims**



1. An apparatus for growing cells comprising:

a first membrane forming a first bag;

a second membrane forming a second bag containing therein said first bag;

a housing which encases said first and second bags;

a first inlet disposed in said housing such that it is only in flow communication with a first chamber defined between the interior surface of said housing and the exterior surface of said second bag;

a second inlet disposed in said housing such that it is only in flow communication with a second chamber defined between the exterior surface of said first bag and the interior surface of said second bag;

a third inlet disposed in said housing such that it is only in flow communication with a third chamber defined within the interior surface of said first bag;

a first outlet disposed in said housing such that it is only in flow communication with said first chamber;

a second outlet disposed in said housing such that it is only in flow communication with said second chamber; and

a third outlet disposed in said housing such that it is only in flow communication with said third chamber.

18. A method for growing cells comprising:

introducing oxygen or air to a first inlet disposed in a housing, said housing encasing a first microfiltration or ultrafil-

tration membrane bag enclosed in a second gas permeable, liquid impermeable membrane bag, said first inlet being in flow communication with a first chamber defined between the interior surface of said housing and the exterior surface of said second gas permeable, liquid impermeable bag;

introducing cells to a second inlet disposed in said housing such that it is in flow communication with a second chamber defined between the exterior surface of said first microfiltration or ultrafiltration membrane bag and the interior surface of said second gas permeable, liquid impermeable membrane bag;

introducing cell nutrients to a third inlet disposed in said housing such that it is in flow communication with a third chamber defined within the interior surface of said first microfiltration or ultrafiltration membrane bag;

withdrawing depleted oxygen or air via a first outlet disposed in said housing such that it is in flow communication with said first chamber;

withdrawing cells via a second outlet disposed in said housing such that it is in flow communication with said second chamber; and

withdrawing cell nutrients and by-products of said cells via a third outlet disposed in said housing such that it is in flow communication with said third chamber.

4,661,456

METHOD FOR CULTIVATION OF PSEUDOMONAS BACTERIA

Hideaki Yamada, 19-1, Matsugasaki-Kinomoto-Cho, Sakyo-Ku, Kyoto-Shi, Kyoto-Fu; Koitchiro Ryuno; Kanchiko Enomoto, both of Yokohama, and Ichiro Watanabe, Yokosuka, all of Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha, Tokyo and Hideaki Yamada, Kyoto, both of, Japan

Filed Jan. 9, 1984, Ser. No. 569,021

Claims priority, application Japan, Oct. 13, 1983, 58-191636

The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.

Int. Cl.⁴ C12N *1/38, 9/78, 1/20;* **C12R** *1/38*

U.S. Cl. 435—244 **8 Claims**

1. A method for increasing the nitrile hydratase activity of Pseudomonas bacteria which comprises providing a a biologically pure culture of Pseudomonas bacteria capable of producing nitrile hydratase, adding to a culture medium an α-amino acid selected from the group consisting of alanine, valine, methionine, aspartic acid, phenylalanine, proline, and glutamic acid, or said α-amino acid together with cysteine and/or cystine and cultivating the Pseudomonas bacteria in the culture medium in the presence of said α-amino acid and an enzyme inducing agent.

4,661,457

METHOD FOR CULTIVATION OF PSEUDOMONAS BACTERIA

Hideaki Yamada, 19-1, Matsugasaki-Kinomoto-Cho, Sakyo-Ku, Kyoto-Shi, Kyoto-Fu; Kanehiko Enomoto, Yokohama, and Ichiro Watanabe, Yokosuka, all of Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha, Tokyo and Hideaki Yamada, Kyoto, both of, Japan

Filed Jan. 9, 1984, Ser. No. 569,047

Claims priority, application Japan, Jan. 10, 1983, 58-1997

Int. Cl.⁴ C12N *1/38, 1/20, 9/78;* **C12R** *1/38*

U.S. Cl. 435—244 **5 Claims**

1. A method for increasing the nitrile hydratase activity of Pseudomonas bacteria which comprises providing a biologically pure culture of Pseudomonas bacteria capable of producing nitrile hydratase, adding an enzyme inducing agent and an enzymatic activity improving agent selected from cysteine, cystine and a combination thereof in an amount effective to increase the nitrile hydratase activity of the Pseudomonas bacteria to a culture medium for the Pseudomonas bacteria and cultivating the Pseudomonas bacteria in the presence of the enzyme inducing agent and enzymatic activity improving agent.

4,661,458

CELL CULTURE SYSTEM

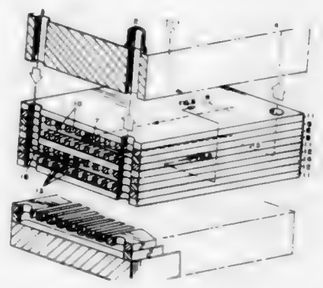
Eric S. Berry, Merrimack, N.H., and Bernard R. Danti, Lexington, Mass., assignors to Cell Environmental Systems, Ltd., Merrimack, N.H.

PCT No. PCT/US84/01350, § 371 Date Oct. 2, 1984, § 102(e) Date Oct. 2, 1984, PCT Pub. No. WO85/01062, PCT Pub. Date Mar. 14, 1985

Continuation of Ser. No. 527,997, Aug. 31, 1983, abandoned. This PCT application Aug. 22, 1984, Ser. No. 697,864

Int. Cl.⁴ C12M *3/00, 1/12, 1/04;* **C12N** *5/00*

U.S. Cl. 435—284 **4 Claims**



1. A cell growth system for the growth of cells and the recovery of desired metabolic products which comprises

(a) a culture medium circulation means providing a plurality of separate, parallel medium channels into which the culture medium is distributed and from which it is withdrawn;

(b) a cell growth means providing a plurality of separate, parallel culture channels into which cells may be introduced and where cell growth may occur, further providing means for removing the desired metabolic product or cells containing said product from said culture channels;

(c) semipermeable membrane means separating said medium channels from said culture channels, said culture channels and medium channels being so dimensioned and disposed so that no cell is more than about 500 microns from the nearest source of nutrients, where each membrane contacts a plurality of culture channels and a plurality of medium channels, where each membrane has a molecular weight cutoff of at least 1000 daltons, and in which the channels have a depth of less than about 1000 microns and a width of less than about 1650 microns.

4,661,459

CONTINUOUS GAS/STEAM MONITOR

Paul N. Hirtz, Santa Rosa, Calif., assignor to GEO Operator Corporation, Santa Rosa, Calif.

Filed Jan. 6, 1986, Ser. No. 816,177

Int. Cl.⁴ G01N *33/24*

U.S. Cl. 436—25 **8 Claims**

1. Apparatus for measuring noncondensible gas in steam flow comprising:

separator means for separating condensate in saturated steam from steam;

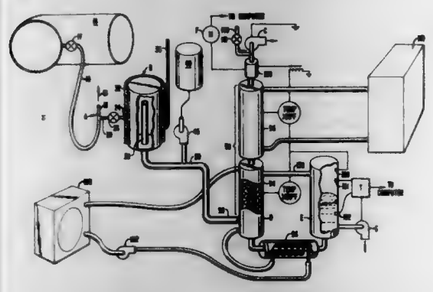
an expansion chamber for expanding said saturated steam to superheat said steam;

a condenser column for receiving said superheated steam having a lower condensate pool and an upper gas discharge portion;

means for maintaining said lower condensate pool at a temperature approximating boiling;

means for maintaining the upper portion of said column at a temperature approaching freezing;

means for pulling under vacuum relative to atmosphere the noncondensible gases from the upper refrigerated portion of said column; and



means for measuring noncondensible gases passing out of the refrigerated portion of said column;

means for measuring condensate accumulated at the bottom of said column whereby the ratio of noncondensible gases to condensate may be determined.

4,661,460

METHOD OF JUDGING IMMUNOLOGICAL REACTIONS

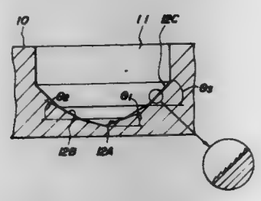
Hajime Sakuma, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Oct. 12, 1984, Ser. No. 660,363

Claims priority, application Japan, Oct. 18, 1983, 58-194858

Int. Cl.⁴ G01N *21/82, 33/53*

U.S. Cl. 436—165 **10 Claims**



1. A method of judging the existance and extent of an immunological reaction between a sample and a reagent by detecting an agglutination or non-agglutination pattern formed by particles descending upon an inclined bottom surface of a reaction vessel comprising:

delivering the sample and the reagent into a reaction vessel having a plurality of discrete substantially flat bottom surface portions, inclination angles of the substantially flat bottom surface portions with respect to a horizontal plane being different from each other, each bottom surface portion including fine steps suitable for forming a stable base layer for descending particles;

keeping the reaction vessel substantially still for such a time period that substantially all particles descend on the substantially flat bottom surface portions of the reaction vessel to form a plurality of particle patterns thereon;

separately detecting the particle patterns formed on respective substantially flat bottom surface portions to produce a plurality of individual agglutination and non-agglutination signals, each signal corresponding to a respective flat bottom surface portion; and

judging the existance and extent of immunological reaction between the sample and reagent on the basis of said plurality of agglutination and non-agglutination signals.

8. A method of judging the existance and extent of an immunological reaction between a sample and a reagent by detecting an agglutination or non-agglutination pattern formed by particles descending upon inclined bottom surfaces of a plurality of reaction vessels comprising:

delivering the sample and the reagent into a plurality of discrete reaction vessels each having a substantially flat bottom surface, inclination angles of the flat bottom surface of adjacent reaction vessels with respect to a horizontal plane being different from each other, each bottom surface including fine steps suitable for forming a stable base layer for descending particles;

keeping the reaction vessels substantially still for such a time period that substantially all particles descend on the substantially flat bottom surface of each of said reaction vessels to form a plurality of particle patterns thereon;

separately detecting the particle patterns fomed on the substantially flat bottom surface of each of said adjacent reaction vessels to produce a plurality of individual agglutination and non-agglutination signals, each signal corresponding to the flat bottom surface of a respective reaction vessel; and

judging the existance and extent of immunological reaction between the sample and reagent on the basis of said plurality of agglutination and non-agglutination signals.

4,661,461

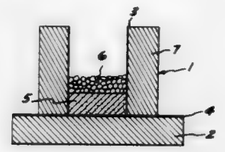
COMPOSITE OF Si_3N_4 BY INFILTRATION

Milivoj K. Brun, and William B. Hillig, both of Ballston Lake, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 3, 1985, Ser. No. 740,444

Int. Cl.⁴ C04B *35/58*

U.S. Cl. 501—97 **12 Claims**



1. A polycrystalline composite consisting essentially of a continuous silicon nitride body containing a member of the group consisting of barium fluoride, calcium fluoride, magnesium fluoride, strontium fluoride, cerium fluoride, dysprosium fluoride, gadolinium fluoride, lanthanum fluoride, samarium fluoride, yttrium fluoride, a mixture thereof and a mixture of at least about 10% by volume of said fluoride and a metal oxide, wherein said mixture of said fluoride and metal oxide has a liquidus temperature ranging from about 1000° C. to below about 1500° C., said silicon nitride ranging in amount from about 60% by volume to about 98% volume of said composite, said member ranging in amount from about 2% by volume to about 40% by volume of said composite, said member being in the form of a network open to the surface of said composite and none of said member being completely enveloped by said silicon nitride, said composite having a total porosity of less than about 10% by volume and an open porosity of less than about 5% by volume of said composite.

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4,661,462

DIELECTRIC CERAMIC COMPOSITION

Yukio Sakabe, Fussi; Goro Nishioka, Yawata, and Junichi Imanari, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 6, 1985, Ser. No. 741,687
Claims priority, application Japan, Jun. 13, 1984, 59-122677
Int. Cl.⁴ C04B *35/46*
U.S. Cl. 501—134 **9 Claims**



1. A dielectric ceramic composition of a ternary system $Pb(Ni_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$—$PbTiO_3$—$Pb(Zn_{\frac{1}{3}}W_{\frac{2}{3}})O_3$ consisting essentially of a solid solution having a composition represented by the general formula:

$$xPb(Ni_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3-yPbTiO_3-zPb(Zn_{\frac{1}{3}}W_{\frac{2}{3}})O_3$$

wherein x, y and z are mole fractions of the respective three components, and $x+y+z=1.00$, said composition falling in a compositional area defined by a polygon ABCD encompassed by the points A, B, C and D in FIG. 1, the sets of mole fractions of the three components at said points being as follows:

	x	y	z
A	0.87	0.125	0.005
B	0.40	0.15	0.45
C	0.30	0.35	0.35
D	0.62	0.375	0.005

said composition having a dielectric constant of not less than 8000 and a sintering temperature of not more than 1100 degrees C.

4,661,463

PREPARATION OF SOLUBLE MOLYBDENUM CATALYSTS FOR EPOXIDATION OF OLEFINS

Michael T. Mocella, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 387,319, Jun. 11, 1982, abandoned, which is a continuation-in-part of Ser. No. 227,116, Jan. 21, 1981, abandoned. This application Sep. 12, 1984, Ser. No. 649,571
Int. Cl.⁴ B01J *38/68;* **C07D** *301/19*
U.S. Cl. 502—24 **9 Claims**

1. The process of regenerating a soluble molybdenum composition to obtain a stable catalyst solution capable of being employed as a catalyst in the process for the epoxidation of an olefin with an organic hydroperoxide which comprises thermally precipitating and separating a molybdenum-containing solid containing up to about 50 percent by weight, of molybdenum from a spent catalyst solution derived from a molybdenum-catalyzed olefin epoxidation reaction, said molybdenum-containing solid having been obtained by heating said spent catalyst solution with either (a) from about 0.5 to about 10 percent by weight, of water at a temperature of between about 150° C. and 250° C. under pressure or, (b) from about 5 to about 50 percent, by weight, of tertiary butyl alcohol, at a temperature of between about 100° C. and 300° C. in a closed vessel or under reflux, separating said thermally precipitated solid solubilizaing said separated precipitated solid to form a soluble molybdenum composition by contacting at a temperature of between about 20° C. and about 130° C. with an admixture comprising a monohydroxy alcohol, a polydroxy alcohol and an organic peroxide, said polyhydroxy alcohol being present in an amount of between about 2 moles and 8 moles per mole of molybdenum to be solubilized, and removing any undesired solid material remaining wtih the said solubilized molybdenum composition.

7. The process of claim 1 wherein contacting of the said precipitated solid is effected at a temperature of between about 50° C. and 90° C. with an admixture comprising tertiary butyl alcohol, propylene glycol, present in an amount of between about 2 and 8 moles per mole of molybdenum to be solubilized, and teritiary butyl hydroperoxide, present in an amount between about 5 and 15 moles per mole of molybdenum to be solubilized.

8. The process of claim 7 wherein said thermally precipitated molybdenum-containing solid is obtained by admixing said spend catalyst stream with water, in an amount between about 0.5 and 10 percent, based on the weight of the spend catalyst stream, to form an admixture of the spent catalyst stream and water, and heating said admixture to a temperature in the range of about 150° C. to about 250° C. under pressure sufficient to maintain said admixture in the liquid phase and for a time sufficient to precipitate at least a portion of the molybdenum contained in said admixture as a thermally precipitated solid.

4,661,464

STABILIZED PILLARED LAYERED CLAY, PROCESS FOR ITS PRODUCTION

Martin P. Atkins, Egham, England, assignor to The British Petroleum Company, p.l.c., London, England

Filed Jun. 21, 1984, Ser. No. 622,847
Claims priority, application United Kingdom, Jun. 25, 1983, 8317328
Int. Cl.⁴ B01J *21/16;* **B32B** *5/18;* **C01F** *5/02;* **C01B** *35/02*
U.S. Cl. 502—84 **19 Claims**

1. A stabilised pillared layered clay comprising a layered clay pillared by boria.

4,661,465

METHOD FOR PREPARING TRANSITION METAL COMPONENT OF ZIEGLER-NATTA CATALYSTS

Ricardo Fuentes, Jr.; Gary R. Marchand, and Larry A. Meiske, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 794,219, Oct. 31, 1985, abandoned. This application Aug. 7, 1986, Ser. No. 894,406
Int. Cl.⁴ C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—111 **12 Claims**

1. In a method for preparing a transition metal component of a Ziegler-Natta catalyst from (1) a hydrocarbon soluble organomagnesium component in an inert hydrocarbon diluent, (2) an aliphatic alcohol, (3) a transition metal (Tm) compound and (4) a reducing halide source in an inert hydrocarbon diluent; wherein the components are employed in quantities so as to provide atomic ratios of Mg:Tm of from about 0.1:1 to about 100:1; Cl:Mg of from about 3:1 to about 20:1; and the aliphatic alcohol component (2) is present in a quantity such that for every magnesium and aluminum atom present in component (1) there remains on the average no more than about 0.9 hydrocarbon groups attached to a magnesium atom and an aluminum atom combined; the improvement which comprises mixing (A), the product resulting from mixing in an inert hydrocarbon diluent components (1), (2) and (3), with (B), component (4), at conditions such that

(a) when it is desirable for a polymer resulting from polymerizing one or more α-olefins in the presence of said transition metal component and a cocatalyst under slurry conditions to have a relatively small average particle size, the ratio of the moles of aliphatic alcohol added to the total number of hydrocarbyl groups originally attached to a metal atom in component (1) is relatively low;

(b) when it is desirable for a polymer resulting from polymerizing one or more α-olefins in the presence of said transition metal component and a cocatalyst under slurry conditions to have a relatively large average particle size, the ratio of the moles of aliphatic alcohol added to the total number of hydrocarbyl groups originaly attached to a metal atom in component (1) is relatively high; and

(c) when it is desirable for a polymer resulting from polymerizing one or more α-olefins in the presence of said transition metal component and a cocatalyst under slurry conditions to have a relatively narrow particle size distribution, the concentration of magnesium in component (A) and the metal concentration in component (B) are relatively low.

4,661,466

POTASSIUM CARBONATE SUPPORTS, CATALYSTS AND PROCESSES THEREWITH

Charles A. Drake, and Donald H. Kubicek, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 23, 1985, Ser. No. 811,985
Int. Cl.⁴ B01J *27/232, 23/04, 23/02;* **C07C** *2/24*
U.S. Cl. 502—184 **12 Claims**

1. A method for producing a catalyst support which comprises:

(a) pelletizing a mixture of potassium carbonate,
in the range of about 1 up to 20 weight percent of at least one alkaline earth aluminate, and
in the range of about 0.1 up to 10 weight percent of at least one carbonaceous material selected from the group consisting of:
carbon black,
charcoal,
amorphous graphite, and
crystallite graphite;

wherein said weight percent ranges are based on the total weight of potassium carbonate, alkaline earth aluminate and carbonaceous material; and

(b) heating the pelletized product of step (a) in an oxygen-containing atmosphere under conditions suitable to oxidatively remove an amount in the range of about 10 up to 90% of said carbonaceous material.

8. A catalyst support consisting essentially of:
potassium carbonate,
in the range of about 1 up to 20 weight percent of at least one alkaline earth aluminate, and
in the rage of about 0.09 up to 9 wt % of at least one carbonaceous material selected from the group consisting of:
carbon black,
charcoal,
amorphous graphite, and
crystallite graphite;

wherein said wt % ranges are based on the total weight of potassium carbonate, alkaline earth aluminate and carbonaceous material wherein the concentration of said carbonaceous material is substantially less at the surface of said support than in the interior portions thereof; and wherein said catalyst support has a minimum particle size of about 300 microns and a crush strength of at least about 5 pounds.

10. A catalyst composition consisting essentially of
(i) a support consisting essentially of potassium carbonate,
in the range of about 1 up to 20 weight percent of at least one alkaline earth aluminate,
in the range of about 0.09 up to 9 weight percent of at least one carbonaceous material selected from the group consisting of:
carbon black,
charcoal,
amorphous graphite, and
crystallite graphite;

wherein the concentration of said carbonaceous material is substantially less at the surface of said support than in the interior portions thereof; and

(ii) in the range of about 0.1 up to 20 weight percent of at least one elemental alkali metal deposited on the surface of said support; wherein said weight percent ranges are based on the total weight of support and elemental alkali metal.

4,661,467

PREPARATION OF CATALYST COMPOSITION COMPRISING A BORON CONTAINING CRYSTALLINE MATERIAL HAVING THE STRUCTURE OF ZEOLITES ZSM-5, ZSM-11, ZSM-12, BETA OR NU-1

Guenter H. Kuehl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 791,656, Oct. 10, 1985, abandoned, which is a continuation-in-part of Ser. No. 709,366, Mar. 11, 1985, abandoned, which is a continuation of Ser. No. 591,091, Mar. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 425,021, Sep. 27, 1982, abandoned. This application Jan. 17, 1986, Ser. No. 819,783
Int. Cl.⁴ B01J *21/02*
U.S. Cl. 502—202 **25 Claims**

1. A method for preparing a catalyst composition for processing high nitrogen-containing oils comprising a boron-containing crystalline material having the structure of zeolite ZSM-5, ZSM-11, ZSM-12, Beta or Nu-1, which comprises the sequential steps of synthesizing a boron-containing crystalline material having the structure of zeolite ZSM-5, ZSM-11, ZSM-12, Beta or Nu-1; drying said crystalline material at a temperature of from about ambient to less than about 170° C.; calcining said dried crystalline material in an oxygen- and water-free environment of anhydrous ammonia, anhydrous nitrogen, other anhydrous inert gases or a mixture thereof at a temperature of from about 200° to about 600° C. to minimize hydrolysis of boron in the boron-containing crystalline material; adsorbing ammonia on said calcined crystalline material; contacting said crystalline material with an ion-exchange solution at a pH of from above about 7 to about 11; compositing said ion-exchange solution contacted crystalline material with an inorganic oxide material; drying said composite at a temperature of from about ambient to less than about 170° C. and calcining said dried composite at a temperature of from about 200° to about 600° C.

4,661,468

CATALYST FOR TREATMENT AND CLEANING OF EXHAUST FUMES

Byong G. Lee; Ju M. Song, and Chi S. Kim, all of Tokyo, Japan, assignors to CPUS Corporation, Tokyo, Japan

Continuation of Ser. No. 510,940, Jul. 5, 1983, abandoned. This application Sep. 11, 1985, Ser. No. 776,110
Claims priority, application Japan, Jul. 13, 1982, 57-121432
Int. Cl.⁴ B01J *23/40, 23/74*
U.S. Cl. 502—333 **15 Claims**

1. A method of manufacturing a catalyst composition for cleaning exhaust fumes comprising;
mixing a base metal gas vaporized hyperfine powder selected from the group consisting of iron, nickel and cobalt with a carrier from the group consisting of gamma-alumina and titanium oxide;
said gas vaporized hyperfine powder having particles diameters in the range of 50 to approximately 2,000 Angstroms;
mixing said mixture of gas vaporized hyperfine powder and carrier in acetone;
mixing said gas vaporized hyperfine powder, carrier and acetone with stearic acid;
drying said mixture;

forming said dried mixture into pellets; heat treating said pellets until said stearic acid is evaporated;
whereby a catalyst composition suitable for efficient use to treat exhaust gas fumes is formed.

4,661,469

T-PA COMPOSITION CAPABLE OF BEING ABSORBED INTO THE BLOOD STREAM AND METHOD OF ADMINISTRATION

Stanley J. Sarnoff, Bethesda, Md., assignor to Survival Technology, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 638,695, Aug. 8, 1984. This application Mar. 6, 1985, Ser. No. 708,845
Int. Cl.⁴ A61K *31/00, 33/02*
U.S. Cl. 514—2 **7 Claims**

1. A method of increasing the absorption of t-PA in the blood in a mammal in need of t-PA therapy comprising administering to the mammal an amount of t-PA inhibitor disassociating agent effective to increase the disassociation of the inhibitor from the t-PA, the amount of exogenous t-PA being less than that required to be administered in the absence of the inhibitor disassociating agent.

4. A method according to claim 1 wherein the inhibitor disassociating agent is hydroxylamine or a non-toxic salt thereof.

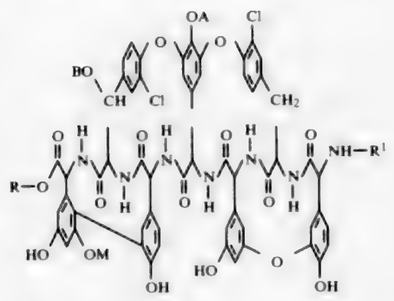
4,661,470

ESTER DERIVATIVES OF ANTIBIOTIC L 17046

Adriano Malabarba, Milan; Ambrogio Magni, Osaago; Paolo Strazzolini, Fiume Veneto; Bruno Cavalleri, and Aldo Trani, both of Milan, all of Italy, assignors to Gruppo Lepetit S.P.A., Milan, Italy

Filed Nov. 12, 1985, Ser. No. 797,295
Claims priority, application United Kingdom, Nov. 13, 1984, 8428619
Int. Cl.⁴ A61K *37/02*; C07K *5/12*
U.S. Cl. 514—9 **5 Claims**

1. An antibiotic L 17046 ester derivative of the following formula I



wherein
R represents (C_1–C_{12}) alkyl, hydroxy(C_1–C_{12})alkyl, (C_1–C_3)alkoxy(C_1–C_{12})alkyl, halo(C_1–C_{12})alkyl, a group of formula

$H\text{-}[O(CH_2)_m]_{\text{-}n}$

$(C_1\text{–}C_3)\text{alkyl}[O(CH_2)_m]_{\text{-}n}$

wherein m represents the integer 2 or 3, n is an integer from 1 to 10, and one of the hydrogen atoms of the —(CH_2)-group may be substituted by a methyl group; (C_2–C_{10}) alkanoyloxymethyl, phenyl, substituted phenyl, phenyl(C_1–C_6)alkyl, substituted phenyl(C_1–C_6)alkyl,
R^1 represents hydrogen or an amino-protecting group, A and M each represents a hydrogen atom,
B is a N-acetyl-β-D-glucosaminyl group,
and the pharmaceutically-acceptable acid addition salts thereof.

4,661,471

METHOD OF INHIBITING AND INDUCING HUMAN PLATELET AGGREGATION

Jack J. Hawiger, Chestnut Hill; Sheila Timmons, Boston, both of Mass.; Thomas J. Lukas, Nashville, Tenn., and Marek Kloczewiak, Boston, Mass., assignors to New England Deaconess Hospital, Boston, Mass.

Filed Apr. 10, 1984, Ser. No. 599,477
Int. Cl.⁴ C07K *7/08*; A61K *37/02*
U.S. Cl. 514—13 **17 Claims**

1. A method for inhibiting thrombin or ADP-induced fibrinogen aggregation of human platelets comprising the step of incubating human platelets with a synthetic peptide analog of the platelet receptor recognition site of fibrinogen which contains 6–14 residues having a carboxyl terminal sequence

Lys-X-X-X-Asp-Val-COOH

where each X is individually selected from a group consisting of amino acids.

4,661,472

GNRH ANTAGONISTS IX

Jean E. F. Rivier, La Jolla; Janos I. Varga, San Diego; Arnold T. Hagler, San Diego; R. Scott Struthers, San Diego; Marilyn H. Perrin, La Jolla; Catherine L. Rivier, La Jolla, and Wylie W. Vale, Jr., La Jolla, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed May 9, 1985, Ser. No. 732,531
Int. Cl.⁴ A61K *37/43*; C07K *7/06*
U.S. Cl. 514—15 **24 Claims**

1. A peptide or a nontoxic salt thereof, said peptide having the formula: X-R_1-(A)D-Phe-R_3-R_4-R_5-R_6-R_7-R_8-(G)Pro-R_{10}-NH_2 wherein X is hydrogen or an acyl group having 7 or less carbon atoms; R_1 is dehydro-Pro, D-pGlu, (A)D-Phe, (B)D-Trp, Pro, or β-D-NAL; A is H,Cl, F, NO_2, CH_3, OCH_3, $C^{\alpha}Me/4Cl$, Cl_2 or Br; B is H, NO_2, NH_2, OCH_3, F, Cl, Br, CH_3, N^{im}For or N^{im}Ac; R_3 is D-PAL, β-D-NAL or (B)D-Tro; R_4 is Cys, Asp, Glu, Orn, daB, daP or aBu; R_5 is Tyr, (C)Arg, (A)Phe, (3I)Tyr or His; R_6 is β-D-NAL, (B)D-Trp, (A')D-Phe, (D)D-Lys, (D)D-Orn, D-Har, D-Tyr, (E)D-His, D-PAL or (C)D-Arg; A' is A, NH_2, $NHCH_3$ or gua; C is (lower alkyl)$_n$ where n is 0, 1 or 2; D is X or an aryl group; E is H, imBzl or dinitrophenyl; R_7 is Nle, Leu, NML, Phe, Met, Nva, Tyr, Trp or PAL; R_8 is Arg, Ser, Tyr, Thr or PAL; G is H, OH or dehydro and R_{10} is cys, asp, glu, orn, dab, dap or abu; provided however that when R_4 is Cys or aBu, R_{10} is cys or abu; when R_4 is Asp or Glu, R_{10} is orn, dab or dap; and When r4 is Orn, daB or daP, R_{10} is asp or glu.

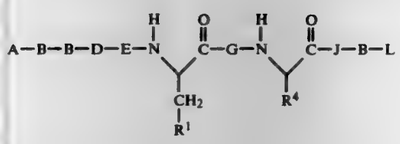
4,661,473

RENIN INHIBITORS CONTAINING PEPTIDE ISOSTERES

Joshua S. Boger, Bryn Mawr, and Mark G. Bock, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

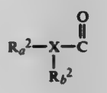
Filed Mar. 27, 1984, Ser. No. 593,758
Int. Cl.⁴ A61K *37/43*; C07K *7/02, 7/06*
U.S. Cl. 514—16 **4 Claims**

1. A peptide of the formula:

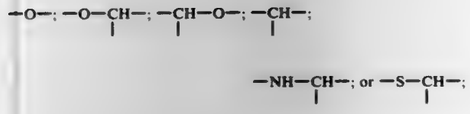


(I.)

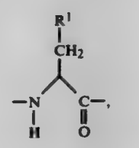
wherein:
A is hydrogen; or



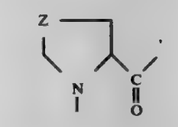
where X is



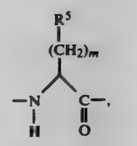
and R_a^2 and R_b^2 may be the same or different and are hydrogen; W—(CH_2)$_n$— or W—(CH_2)$_m$—CH=CH—(CH_2)$_p$—, where W is hydrogen; $C_{1\text{-}4}$alkyl; aryl; $C_{3\text{-}7}$cycloalkyl; or $C_{3\text{-}7}$cycloalkyl or aryl substituted with up to five members independently selected from the group consisting of $C_{1\text{-}8}$alkyl, trifluoromethyl, hydroxy, $C_{1\text{-}4}$alkoxy, and halo; n is 0 to 5; m is 0 to 2; and p is 0 to 2; except that where X is —O—, only one of R_a^2 or R_b^2 is present;
B is absent; glycyl; sarcosyl; or



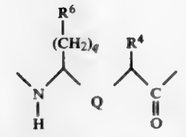
where R^1 is as defined further below;
D is absent; or



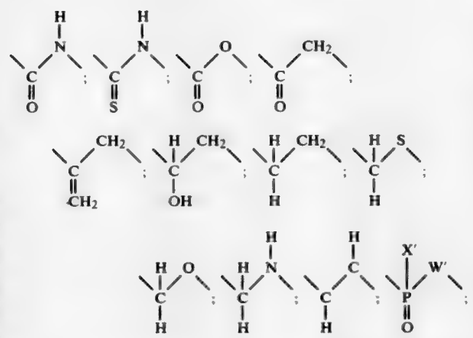
where Z is —(CH_2)$_1$— and 1 is 1 or 2; or —S—;
E is absent; or



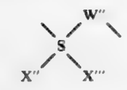
where m is 1 to 4; and R^5 is hydrogen; $C_{1\text{-}4}$alkyl; aryl; aryl $C_{1\text{-}4}$alkyl; aryl $C_{1\text{-}4}$alkyl or aryl where the aryl portion is substituted with up to three members selected from the group consisting of $C_{1\text{-}4}$alkyl, trifluoromethyl, hydroxy, $C_{1\text{-}4}$alkoxy, and halo; or indolyl;
G is



where q is 1 to 4; R^4 is as defined further below; R^6 is $C_{3\text{-}6}$alkyl; $C_{3\text{-}7}$cycloalkyl; aryl; or $C_{3\text{-}7}$cycloalkyl or aryl substituted with up to three members selected from the group consisting of $C_{1\text{-}4}$alkyl, trifluoromethyl, hydroxy, $C_{1\text{-}4}$alkoxy, and halo; and
Q is



wherein X' is hydroxy; amino; or monoor di-$C_{1\text{-}4}$alkyl amino; and W' is absent; —O—; —NH—; or —CH_2—;



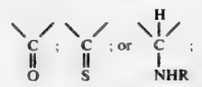
where X'' and X''' are independently absent; or



and W'' is absent; —CH_2—; or



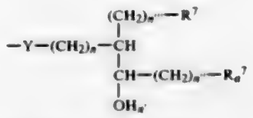
where R^8 is hydrogen or $C_{1\text{-}3}$alkyl;



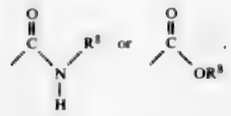
where R is hydrogen; $C_{1\text{-}4}$alkyl; formyl; $C_{1\text{-}4}$alkanoyl; aroyl; carboxy; $C_{1\text{-}4}$alkoxycarbonyl; aryloxycarbonyl; or aryl $C_{1\text{-}4}$alkoxycarbonyl;
J is
(1) —Y—(CH_2)$_n$—R^7 where Y is —NH— or —O—; n is 0 to 5; and R^7 is hydrogen; hydroxy; $C_{1\text{-}4}$alkyl; $C_{3\text{-}7}$cycloalkyl; aryl; aryl substituted with up to five members indepen-

dently selected from the group consisting of C_{1-6}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, amino, mono- or di-C_{1-4}alkylamino, and halo; amino; mono-, di-, or tri-C_{1-4}alkylamino; guanidyl; heterocyclic; or heterocyclic substituted with up to five members independently selected from the group consisting of C_{1-6}alkyl, hydroxy, trifluoromethyl, C_{1-4}alkoxy, halo, aryl, aryl C_{1-4}alkyl, amino, and mono- or di-C_{1-4}alkylamino;

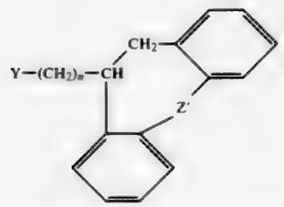
(2)



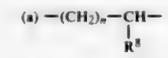
where Y is as defined above; n is 0 or 1; n′ is 0 or 1; n″ is 1 to 4; n‴ is 1 to 4; and R^7 and $R_a{}^7$ may be the same or different and have the same meaning as R^7 above and $R_a{}^7$ may additionally be



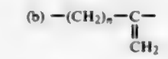
where R^8 is hydrogen or C_{1-3}alkyl; (3)



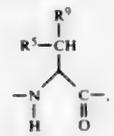
where Y is as defined above; n is 0 or 1; and Z′ is



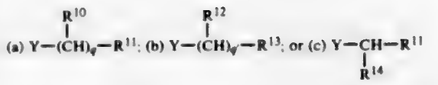
where n is 0 or 1; and R^8 is as defined above; or



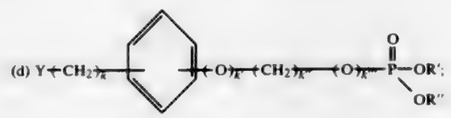
where n is 0 or 1; (4)



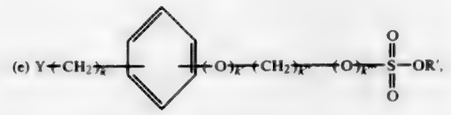
where R^5 is as defined above; and R^9 is hydrogen; C_{1-4}alkyl; hydroxy; or C_{3-7}cycloalkyl; or (5)



where Y is —NH— or —O—; q is 1–5; q′ is 0–5; R^{10} is hydrogen; hydroxy; $N(R')_2$, where R′ may be the same or different and is hydrogen or C_{1-4}alkyl; quanidyl; or $N^{\oplus}(R')_3A^{\ominus}$, where R′ is as defined above, and $A^{\ominus}$ is a counterion; provided that at least one R^{10} is not hydrogen; R^{11} is C_{1-4}alkyl; C_{3-7}cycloalkyl; aryl; aryl substituted with up to three members independently selected from the group consisting of C_{1-6}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, amino, mono- or di-C_{1-4}alkylamino, amino C_{1-4}alkyl, mono-, di-, or tri-C_{1-4}-alkylamino-C_{1-4}alkyl, halo, carboxy, carboxy ester or amide, carboxy-C_{1-4}alkoxy, carboxy-C_{1-4}alkoxy ester or amide, α-aminocarboxy-C_{1-4}alkyl, α-aminocarboxy-C_{1-4}alkyl ester or amide, carboxy-C_{1-4}alkyl, carboxy-C_{1-4}alkyl ester or amide, guanidyl, and guanidyl-C_{1-4}alkyl; carboxy, ester or amide; sulfo; heterocyclic; or heterocyclic substituted with up to five members independently selected from the group consisting of C_{1-6}alkyl, hydroxy, trifluoromethyl, C_{1-4}alkoxy, halo, aryl, aryl C_{1-4}alkyl, amino, and mono- or di-C_{1-4}alkylamino; R^{12} is hydrogen; or carboxy, ester or amide; R^{13} is carboxy, ester or amide; sulfo; or aryl substituted with up to three members selected from the group consisting of amino-C_{1-4}alkyl, mono-, di-, or tri-C_{1-4}-alkylamino-C_{1-4}alkyl, halo, carboxy, carboxy ester or amide, carboxy-C_{1-4}alkoxy, carboxy-C_{1-4}alkoxy ester or amide, α-aminocarboxy-C_{1-4}alkyl, α-aminocarboxy-C_{1-4}alkyl ester or amide, carboxy-C_{1-4}alkyl, carboxy-C_{1-4}alkyl ester or amide, guanidyl, and guanidyl-C_{1-4}alkyl; and R^{14} is carboxy, ester or amide; or



or



where Y is —NH— or —O—; k is 0–4; k′ is 0 or 1; k″ is 0–4; k‴ is 0 or 1; R′ is hydrogen or C_{1-4}alkyl; and R″ is hydrogen or C_{1-4}alkyl;

L is absent; OR″; NHR″; or $N(R'')_2$, where R″ may be the same or different and is hydrogen or C_{1-4}alkyl; provided that, B and/or L are/is present only when J is defined as in (4) thereunder;

R^1 is hydrogen; C_{1-4}alkyl; hydroxy C_{1-4}alkyl; aryl; aryl substituted with up to three members selected from the group consisting of C_{1-4}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, and halo; indolyl; 4-imidazolyl; amino C_{2-4}alkyl; acyl C_{2-4}alkyl wherein the acyl is



and R^9 is as defined above; guanidyl C_{2-3}alkyl; or methylthiomethyl; R^4 is hydrogen; or



where R^9 is as defined above; and R^3 is hydrogen; C_{1-4}alkyl; aryl; aryl C_{1-4}alkyl; aryl C_{1-4}alkyl or aryl substituted with up to three members selected from the group consisting of C_{1-4}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, and halo; or indolyl; and

wherein all of the asymmetric carbon atoms have an S configuration, except for those in the B, D, and Q portion of G substituents, which may have an S or R configuration; and a pharmaceutically acceptable salt thereof.

4,661,474

2′,3′-DIDEOXY-2′-FLUOROKANAMYCIN A AND 1-N-(α-HYDROXY-ω-AMINOALKANOYL) DERIVATIVES THEREOF

Hamao Umezawa; Sumio Umezawa, both of Tokyo; Tsutomu Tsuchiya, Yokohama, and Yoshiaki Takahashi, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

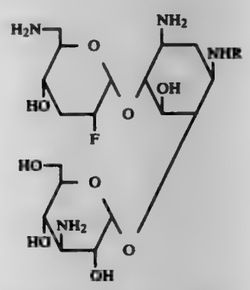
Filed Dec. 10, 1985, Ser. No. 807,485

Claims priority, application Japan, Dec. 15, 1984, 59-263759; Oct. 18, 1985, 60-231027

Int. Cl.⁴ A61K *31/71*; **C07H** *15/234*

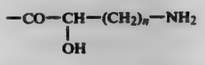
U.S. Cl. 514—41 **6 Claims**

1. A compound represented by the formula



(I)

wherein R denotes a hydrogen atom or an α-hydroxy-ω-aminoalkanoyl group of the formula



wherein n is an integer of 1 or 2, or a pharmaceutically acceptable acid addition salt of said compound.

6. An antibacterial composition comprising an antibacterially effective amount of a compound of the formula (I) as defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof as the active ingredient, in combination with a carrier for the active ingredient.

4,661,475

GELLING AGENTS AND THICKENERS BASED ON CASSIA-GALACTOMANNANS

Friedrich Bayerlein, Krailling; Manfred Kuhn, Munich, both of Fed. Rep. of Germany, and Michel Maton, Vaucresson, France, assignors to Diamalt Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 13, 1984, Ser. No. 650,186

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335593

Int. Cl.⁴ A61K *31/70*

U.S. Cl. 514—54 **14 Claims**

1. A gelling composition and thickener based on Cassia-galactomannans comprising a synergistic mixture in a weight ratio of (a) 10–90 parts by weight of Cassia-galactomnannans and (b) 90–10 parts by weight of carrageenan, agar, xanthan or mixtures thereof.

4,661,476

SKIN COOLING METHOD

James W. Lane, Memphis; Davendra D. Parikshak, Germantown, and Carl Kaplan, Memphis, all of Tenn., assignors to Plough, Inc., Memphis, Tenn.

Filed Apr. 8, 1985, Ser. No. 720,779

Int. Cl.⁴ A61K *31/715*

U.S. Cl. 514—60 **2 Claims**

1. A method of treating skin overheated by exposure to heat, sun or wind to cause cooling thereof and a cooling sensation comprising applying to the surface of such overheated skin an amount effective to cause cooling and a cooling sensation of said skin of a topical aqueous gel composition comprising, on a weight basis, about 75 to 99% water, about 0.5 to 1.5% of a hydrolyzed starch-polyacrylonitrile graft copolymer salt, about 2 to 6% propylene glycol, about 0.10 to 0.25% paraben preservatives, about 0.03 to 0.04% aloe, about 0.04 to 0.06% benzophenone-4, about 0.05 to 0.15% imidazolidinyl urea and up to 0.001% dyes.

4,661,477

PHOSPHORIC ACID MONOESTER SALTS, PROCESS FOR THEIR PREPARATION, AND FUNGICIDAL COMPOSITIONS CONTAINING THEM AS ACTIVE INGREDIENT

Katalin Görög née Privitzer; László Bodnár; Erzsébet Dudar; Mária Kocsis née Bági; Sándor Gaál; Márta Tasnádi; Éva Egyházi née Csizmadia; Valéria M. Varga; István Kajati, all of Budapest; György Kis, Hatvan; János Molnár; Bertalan Tóth, both of Budapest; Ilona Cserháti née Botka, Balassagyarmat; Tibor Kaptás, Eger, and Sándor Csete, Miskolc, all of Hungary, assignors to Borsodi Vegyi Kombinat

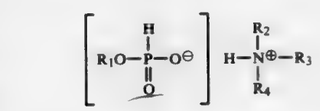
Division of Ser. No. 296,560, Aug. 26, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 426,949

Claims priority, application Hungary, Aug. 27, 1980, 2119/80

Int. Cl.⁴ A01N *57/26*

U.S. Cl. 514—76 **3 Claims**

1. A fungicidal composition comprising a material selected from the group consisting of carriers and surface active agents and a fungicidally effective amount of a compound of the formula I



(I)

wherein

R_1 is a straight or branched chained alkyl having 1 to 13 carbon atoms;

R_2 is alkoxyalkyl with 1 to 16 carbon atoms in the alkoxy portion and 1 to 4 carbon atoms in the alkyl portion,

alkenyl having 2 to 4 carbon atoms, alkinyl having 2 to 4 carbon atoms, aminoalkyl wherein the alkyl portion has from 1 to 6 carbon atoms, alkylaminoalkyl wherein the alkyl portions have 1 to 4 carbon atoms, alkylphosphonate ammoniumalkyl wherein the alkylphosphonate portion has 1 to 4 carbon atoms in the alkyl portion and the remaining alkyl has 1 to 6 carbon atoms;

R_3 is hydrogen, alkenyl having 2 to 5 carbon atoms, and alkoxyalkyl wherein the alkoxy portion has 1 to 4 carbon atoms and the alkyl portion has 1 to 4 carbon atoms;

R_4 is hydrogen.

4,661,478

PROCESS FOR POTENTIATING EFFECTS OF BARBITUATE ANESTHESIA TO A WARM-BLOODED ANIMAL

Charles R. Spillert, West Orange, N.J.; Corinne Devereux, Bronxville, N.Y., and Eric J. Lazaro, Jersey City, N.J., assignors to University of Medicine and Dentistry of New Jersey, Newark, N.J.

Filed Sep. 27, 1984, Ser. No. 655,080

Int. Cl.[4] A61K *31/635, 31/515, 31/505*

U.S. Cl. 514—158 **8 Claims**

1. A process for treating a warm-blooded animal to potentiate the effects of barbiturate anesthesia which comprises administering to said warm-blooded animal

(a) from about 1 to about 30 parts of a member selected from the group consisting of 5-methyl-3-sulfanilamidoisoxazole and a pharmaceutically acceptable salt of 5-methyl-3-sulfanilamidoisoazole

(b) from about 30 to about 1 part of a member selected from the group consisting of 2,4-diamino-5-(3,4,5-trimethoxybenzyl)pyrimidine and a pharmaceutically acceptable salt of 2,4-diamino-5-(3,4,5-trimethoxybenzyl)pyrimidine, and

(c) from 60 to 80 mg/kg of barbiturate anesthesia, said compounds (a) and (b) being administered in an amount effective to potentiate the effects of the barbiturate anesthesia.

4,661,479

BICYCLIC LACTAMS AS ANTIHYPERTENSIVES

Matthew J. Wyvratt, Jr., Mountainside; Eugene D. Thorsett, Fanwood; Edward W. Tristram, Watchung; Arthur A. Patchett, and Elbert E. Harris, both of Westfield, all of N.J., assignors to Merck and Co., Inc., Rahway, N.J.

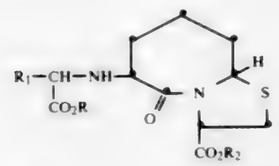
Division of Ser. No. 348,811, Feb. 19, 1982, Pat. No. 4,415,496, which is a continuation-in-part of Ser. No. 246,492, Mar. 23, 1981, abandoned. This application Jul. 15, 1983, Ser. No. 514,219

Int. Cl.[4] A61K *31/55, 35/78*

U.S. Cl. 514—214 **29 Claims**

1. A method for treating hypertension which comprises administering to a patient in need of such treatment an antihypertensively effective amount of a compound of the formula:

I



wherein:

R and R_2 are independently hydrogen, loweralkyl, aryl, and aryl lower alkyl;

R_1 is

hydrogen;

alkyl, alkenyl, alkynyl and unsubstituted cycloalkyl of from 1 to 12 carbon atoms;

substituted lower alkyl wherein the substituent can be halo, hydroxy, carboxy, lower alkylthio, lower alkoxy, lower alkoxy carbonyl, aryl lower alkoxy carbonyl, amino, lower alkylamino, diloweralkylamino, acetylamino or benzoylamino;

substituted lower alkyl having the formula $R_A(CH_2)_n—Q—(CH_2)_m$ wherein n is 0–2, m is 1–3, R_A is aryl or heteroaryl optionally substituted by amino, diloweralkylamino, lower alkylamino, hydroxy, hydroxy loweralkyl, amino lower alkyl, trihalo loweralkyl, cyano, nitro, sulfonamido, benzoyl, 1-naphthoyl, lower alkyl, halo, dihalo, or lower alkoxy, and Q is O, S, $N—R_B$, $CONR_C$, NR_CCO, CH=CH wherein R_B is hydrogen, lower alkyl, aryl, aryl lower alkyl, lower alkanoyl, benzoyl or 1-naphthoyl, and R_C is hydrogen or lower alkyl;

aryl;

substituted aryl wherein the substituent is lower alkyl, amino loweralkyl, loweralkoxy, aryloxy, benzoyl, 1-naphthoyl, hydroxy, halo, or dihalo; aryl lower alkyl or heteroaryl lower alkyl which include branched lower alkyl groups;

substituted aryl lower alkyl or substituted heteroaryl lower alkyl which include branched lower alkyl groups wherein the lower alkyl groups can be substituted by amino, acetylamino, benzoylamino, or hydroxyl and the aryl and heteroaryl groups can be substituted by halo, dihalo, loweralkyl, hydroxy, loweralkoxy, aryloxy, benzoyl, 1-naphthoyl, arylthio, amino, amino lower alkyl, lower alkanoylamino, benzoylamino, 1-naphthoylamino, diloweralkylamino, lower alkylamino, hydroxy, hydroxy loweralkyl, trihalo loweralkyl, nitro, cyano, or sulfonamido;

or pharmaceutically acceptable salts thereof, wherein in said R, R_1 and R_2 groups, the aryl is selected from the group consisting of phenyl, naphthyl, and biphenyl; and, the heteroaryl is selected from the group consisting of indolyl, thienyl, imidazolyl, furyl, benzimidazolyl, pyridyl, quinolinyl, isoquinolinyl, and benzothienyl.

4,661,480

FORMAMIDO OXACEPHEMS

Peter H. Milner, Horsham, England, assignor to Beecham Group p.l.c., England

Filed Jan. 19, 1984, Ser. No. 572,186

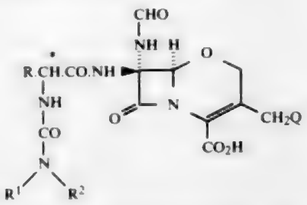
Claims priority, application United Kingdom, Jan. 21, 1983, 8301692; Jul. 9, 1983, 8318619; Jul. 30, 1983, 8320593

Int. Cl.[4] A61K *31/535;* **C07D** *498/04*

U.S. Cl. 514—210 **12 Claims**

1. A compound of the formula (I):

(I)



a pharmaceutically acceptable salt thereof or an in-vivo hydrolyzable ester thereof wherein R is phenyl unsubstituted or substituted by up to three substituents selected from the group consisting of alkyl of 1 to 6 carbon atoms, phenyl, halo, alkoxy of 1 to 6 carbon atoms, amino, nitro, hydroxy, alkylamido of 1 to 6 carbon atoms, alkylcarbonyloxy of 1 to 6 carbon atoms, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, oxoalkyl of 1 to 6 carbon atoms, alkylcarbonyl of 1 to 6 carbon atoms, alkylamino of 1 to 6 carbon atoms and dialkylamino of 1 to 6 carbon atoms in each alkyl moiety,

or cycloalkyl of 3 to 6 carbon atoms, cyclohexenyl or cyclohexadienyl;

Q is acetoxy, carbamoyloxy, S-Het or a pyridinium moiety unsubstituted or substituted by one or two moieties selected from the group consisting of alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms, alkenyl of up to 6 carbon atoms, alkoxyalkyl of 1 to 6 carbon atoms in each of the alkoxy and alkyl moeities, carboxyalkyl of 1 to 6 carbon atoms, sulphonyalky of 1 to 6 carbon atoms, carbamoylmethyl, carbamoyl, trifluoromethyl, hydroxy, halo and aminoalkyl of 1 to 6 carbon atoms;

Het is a imidazolyl, triazolyl, tetrazolyl, thiazolyl, thiadiazolyl, thiatriazolyl, oxazolyl, triazinyl, oxadiazolyl. 1-methyl-1H-tetrazoi-5-ylthio, 2-methyl-1,3,4,-thiadiazol-5-ylthio, 1-carboxymethyl-1H-tetrazol-5-ylthio or (6-hydroxy-2-methyl-5-oxo-2H -1,2,4-triazin-3ylthio;

and R^1 and R^2 together with a nitrogen atom to which they are attached form a 5- or 6-membered hetertocyclic ring containing one or two nitrogen heteroatoms unsubstituted or substituted by alkyl of 1 to 6 carbon atoms, alkenyl of up to 6 carbon atoms, alkynyl of up to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkenyl of 3 to 6 carbon atoms, phenyl, oxo, hydroxy or hydroxy substituted by a substituent selected from the group consisting of alkyl of 1 to 6 carbon atoms, of up to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, pyridyl, pyrimidyl and benzyl; mercapto, alkylsulphonyl of 1 to 6 carbon atoms, alkenylamino of up to 6 carbon atoms, cycloalkylamino of 3 to 6 carbon atoms, phenylamino or benzylamino.

4,661,481

SUBSTITUTED PHENYLALKYLHOMOPIPERAZINYLPROPYL(UREAS OR THIOUREAS) USEFUL FOR TREATMENT OF IMMULOGICAL, INFLAMMATORY AND ALLERGIC DISORDERS

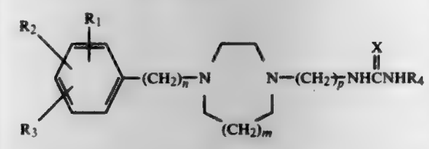
John P. Devlin, Poughkeepsie, N.Y.; Karl D. Hargrave, Brookfield Center, Conn.; Edward L. Barsumian, Danbury, Conn., and Genus J. Possanza, Ridgefield, Conn., assignors to Boehringer Ingelheim Pharmaceuticals, Inc, Ridgefield, Conn.

Division of Ser. No. 614,245, May 29, 1984, Pat. No. 4,579,947, which is a continuation-in-part of Ser. No. 504,837, Jun. 16, 1983, abandoned. This application Dec. 4, 1985, Ser. No. 805,089

Int. Cl.[4] C07D *243/08;* **A61K** *31/33*

U.S. Cl. 514—218 **6 Claims**

1. A compound of the formula



wherein

R_1, R_2, and R_3 are each independently hydrogen, lower alkyl, hydroxyl, lower alkoxy, lower alkylthio, lower alkanoyloxy, lower alkanoyl, halogen, nitro, cyano, lower alkoxycarbonyl, di(lower alkyl)amino, or trihalomethyl;

R_4 is hydrogen, alkyl of 1 to 12 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, allyl, phenyl, or phenyl substituted by lower alkyl, halogen, lower alkoxy, carboxyl, lower alkoxycarbonyl, lower alkoxyethoxycarbonyl, cyano, nitro, lower alkylthio, di(lower alkyl)aminoethoxycarbonyl, lower alkylsulfonyl, lower alkylsulfinyl, carbamyl, tetrazolyl, sulfamyl, hydroxyl, or lower alkanoyl.

n is 1, 2, 3, or 4;

m is 1;

p is 2, 3, or 4; and

X is oxygen or sulfur;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

6. The method of treating an allergic reaction in a warm-blooded animal in need thereof, which comprises perorally, parenterally, topically or by inhalation administering to said animal an effective antiallergic amount of a compound of claim 1.

4,661,482

USE OF PYRAZOLOBENZOXAZINES IN METHOD OF TREATING CEREBRAL SENESCENCE AND CEREBRAL HYPOXIN

Lucien Nedelec, Le Raincy; Patrick Fauveau, Livry Gargan; Gilles Hamon, Montrouge, and Claude Oberlander, Paris, all of France, assignors to Roussel Uclaf, Paris, France

Filed Feb. 25, 1986, Ser. No. 833,347

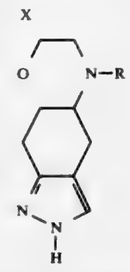
Claims priority, application France, Mar. 1, 1985, 85 03036

Int. Cl.[4] A61K *31/535;* **C07D** *265/34*

U.S. Cl. 514—227 **6 Claims**

1. A method of treating cerebral senescence and cerebral hypoxia in warm-blooded animals comprising administering to warm-blooded animals an antianoxically effective amount of at least one compound of the formula

I



wherein R is selected from the group consisting of hydroge, alkyl of 1 to 5 carbon atoms, cycloalkylalkyl of 4 to 7 carbon atoms, alkenyl and alkynyl of 3 to 5 carbon atoms with the proviso that the multiple bond is not between the carbon α- and β- to the nitrogen atom, aralkyl of 7 to 12 carbon atoms and aralkyl of 7 to 12 carbon atoms substituted with at least one member of the group consisting of alkyl and alkoxy of 1 to 5 carbon atoms, amino, —OH and halogen, X is selected from the group consisting of hydrogen and —CH2—S—Alk, Alk is alkyl of 1 to 5 carbon atoms, the wavy line indicates the α- or β-position and their non-toxic, pharmaceutically acceptable acid addition salts.

4,661,483

ANTIHYPERCHOLESTEROLEMIC LACTONE COMPOUNDS, COMPOSITIONS AND USE

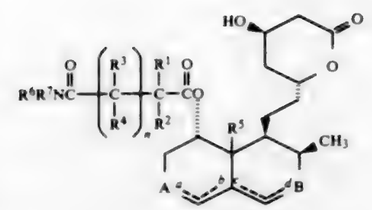
William F. Hoffman, Lansdale; Clarence S. Rooney, Worcester, and Ta J. Lee, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 5, 1986, Ser. No. 859,529

Int. Cl.[4] A61K *31/365, 31/535;* **C07D** *309/30, 413/12*

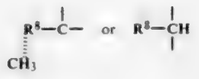
U.S. Cl. 514—236 **16 Claims**

1. A compound represented by the following general structural formulae (I):



(I)

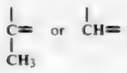
wherein:
n is 0 to 5;
R^1 is C_{1-3} alkyl;
R^2 is hydrogen or C_{1-3}alkyl;
R^3 and R^4 independently are hydrogen or C_{1-3}alkyl, C_{3-7}cycloalkyl, phenyl or substituted phenyl in which the substituents are X and Y and when n is 2 to 5, each of the R^3s and R^4s are independently hydrogen, C_{1-3}alkyl, C_{3-7}cycloalkyl or only one of the R^3s and R^4s is phenyl or substituted phenyl;
R^5 is hydrogen or hydroxy;
R^6 and R^7 independently are hydrogen or C_{1-3}alkyl or R^7 and R^8 together with the nitrogen atom to which they are attached form a heterocycle selected from piperidinyl, morpholinyl, pyrrolidinyl, piperazinyl or thiomorpholinyl;
A is



in which R^8 is hydrogen or hydroxy;
B is



in which R^9 is hydrogen or hydroxy; and a, b, c, and d represent single bonds, one of a, b, c or d represents a double bond, or both a and c or both b and d represent double bonds, provided that when a is a double bond, A is



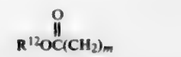
and when d is a double bond B is



X and Y independently are hydrogen, halogen, trifluoromethyl, C_{1-3}alkyl, nitro, cyano or a group selected from:
(a) $R^{10}O(CH_2)_m$ in which m is 0 to 3 and R^{10} is hydrogen, C_{1-3} alkyl or hydroxy-C_{1-3}alkyl;
(b)



in which R^{11} is hydrogen, C_{1-3} alkyl, hydroxy-C_{2-3} alkyl, phenyl, naphthyl, amino-C_{1-3}alkyl, C_{1-3} alkylamino-C_{1-3}alkyl, di(C_{1-3}alkyl)amino-C_{1-3} alkyl, hydroxy-C_{2-3}alkylamino-C_{1-3}alkyl or di(hydroxy-C_{2-3} alkyl)-amino-C_{1-3}alkyl;
(c)



in which R^{12} is hydrogen, C_{1-3}alkyl, hydroxy-C_{1-3}-alkyl, C_{1-3}alkoxy-C_{1-3}alkyl, phenyl or naphthyl;
(d) $R^{13}R^{14}N(CH_2)_m$;



in which R^{13} and R^{14} independently are hydrogen, C_{1-3}alkyl, hydroxy-C_{2-3}alkyl or together with the nitrogen atom to which they are attached form a heterocycle group selected from piperidinyl, pyrrolidinyl, piperazinyl, morpholinyl or thiomorpholinyl;
(e) $R^{15}S(O)_p(CH_2)_m$ in which p is 0 to 2 and R^{15} is hydrogen, C_{1-3}alkyl, amino, C_{1-3}alkylamino or di(C_{1-3}alkyl-)amino.

9. A hypocholesterolemic, hypolipidemic pharmaceutical composition comprising a nontoxic therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

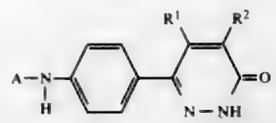
4,661,484

PYRIDAZINONE DERIVATIVES AND SALTS THEREOF AS CARDIAC STIMULANTS

Hiromi Okushima, Kawasaki; Akihiro Narimatsu, Yokohama; Makio Kobayashi; Rikizo Furuya, both of Machida, and Yoshimi Kitada, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 678,808
Claims priority, application Japan, Mar. 16, 1984, 59-50693
Int. Cl.⁴ C07D *401/12, 403/12;* A61K *31/50, 31/53*
U.S. Cl. 514—242 **9 Claims**

1. A pyridazinone compound having the formula (I):



(I)

wherein A represents a member selected from the group consisting of pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, symtriazinyl, asym-triazinyl, pyrrolyl, imidazolyl and pyrazolyl, with substituent A being optionally substituted by at least one member selected from the group consisting of C_{1-5} alkyl, cyano, hydroxyl, C_{1-5} alkoxyl, amino, C_{1-5} alkylamino, C_{2-6} dialkylamino, C_{2-5} acylamino, carboxyl, C_{2-5} alkoxycarbonyl and carbamoyl, and R^1 and R^2 independently represent hydrogen or C_{1-5} alkyl or R^1 and R^2 together may form C_{1-5} alkylene, or a salt thereof.

2. A pharmaceutical composition useful as a cardiac stimulant, comprising:
a therapeutically effective amount of the compound as set forth in claim 1 together with a pharmaceutically acceptable carrier.

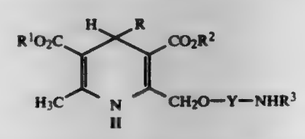
4,661,485

2-PYRIMIDYLAMINOALKOXYMETHYL-6-METHYL-3,5-BIS (ALKOXYCARBONY-1)-1,4-DIHYDROPYRIDINE ANTIHYPERTENSIVE AGENTS

Simon F. Campbell, Deal; Peter E. Cross, Canterbury; John K. Stubbs, and John E. Arrowsmith, both of Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 562,482, Dec. 16, 1983, Pat. No. 4,572,908.
This application Feb. 14, 1986, Ser. No. 830,292
Claims priority, application United Kingdom, Dec. 21, 1982, 8236347
Int. Cl.⁴ A61K *31/505;* C07D *401/12*
U.S. Cl. 514—247 **9 Claims**

1. A dihydropyridine compound of the formula



or a pharmaceutically acceptable said addition salt thereof, wherein R is phenyl; phenyl substituted independently by one or two of nitro, halo, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, trifluoromethyl or cyano; 1-naphthyl; or 2 naphthyl;
R^1 and R^2 are each independently C_{1-4} alkyl or 2-methoxyethyl;
R^3 is pyrimidyl, dihydropyrimidyl or tetrahydropyrimidyl; or a mono or disubstituted pyrimidyl, dihydropyrimidyl or tetrahydropyrimidyl wherein said substituent is independently selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, hydroxy, oxo, cyano, phenyl, phenoxy, pyridyl, amino, carbamyl, piperidino, morpholino and N-methylpiperazino with the proviso that R^3 is attached to the adjacent nitrogen atom by means of a bond between a carbon atom of R^3 and the adjacent nitrogen atom; and
Y is a alkylene or alkylene substituted by 1 to 2 methyl groups wherein alkylene in each instance has 2–4 carbon atoms.

8. A method of treating hypertension in an animal in need of such treatment comprising the step of administering to said animal an anti-hypertensive effective amount of a compound of claim 1.

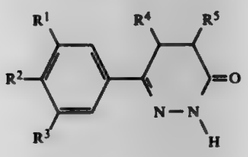
4,661,486

PYRIDAZINONE DERIVATIVES AND THEIR USE AS AGRICULTURAL FUNGICIDES

Hideo Takeshiba; Takao Kinoto, and Terusmi Jojima, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Sep. 11, 1984, Ser. No. 649,499
Claims priority, application Japan, Sep. 16, 1983, 58-170793
Int. Cl.⁴ C07D *237/04;* A01N *43/58*
U.S. Cl. 514—252 **19 Claims**

1. A method of preventing or controlling fungal attack on plant material by applying to said material or to a locus including the same an effective amount of a fungicide, wherein the fungicide comprises at least one compound of the formula (I):



(I)

wherein
R^1 represents a halogen atom;
R^2 represents hydrogen, a C_1–C_3 alkyl group, a C_1–C_3 alkoxy group or a halogen atom;
R^3 represents a hydrogen or a halogen atom; and at least one of R^4 and R^5 represents hydrogen and the other represents hydroxy.

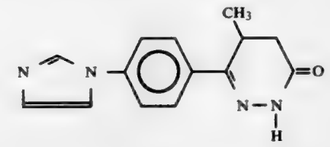
4,661,487

PROCESS FOR REDUCING REFLEX TACHYCARDIA IN THE TREATMENT OF HYPERTENSION EMPLOYING A COMBINATION OF A DIAZACYCLOPENTENE DERIVATIVE AND A PYRIDAZINONE DERIVATIVE

Jürgen Biedermann, Pulheim-Stommelo; Harald Borbe, Cologne; Erich Graf, Kerpen; Gerd Hilboll, and Gerrit Prop, both of Pulheim, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Feb. 26, 1985, Ser. No. 705,668
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1984, 3407509
Int. Cl.⁴ A61K *31/415, 31/495*
U.S. Cl. 514—252 **2 Claims**

1. Process for reducing reflex tachycardia occurring in the treatment of hypertension and thromboembolic diseases in humans with compounds of formula I



I

comprising administering to the humans an effective amount of a combination of the compound of formula I and a compound selected from the group consisting of (±)- and (−)-2-[1-(2,6-dichlorophenoxy)-ethyl]-1,3-diazacyclopent-2-ene hydrochloride in a weight ratio of from 150:1 to 10:1.

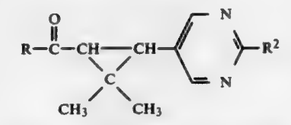
4,661,488

PYRIMIDINE SUBSTITUTED-2,2-DIMETHYLCYCLOPROPANE CARBOXYLATES USEFUL FOR COMBATING INSECT AND ACARINE PESTS AT A LOCUS

Edward McDonald, Marlow, and Roger Salmon, Bracknell, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 15, 1985, Ser. No. 712,252
Claims priority, application United Kingdom, Mar. 26, 1984, 8407810; Jul. 20, 1984, 8418612; Feb. 4, 1985, 8502778
Int. Cl.⁴ A61K *31/505;* C07D *239/02*
U.S. Cl. 514—256 **9 Claims**

1. A compound of formula:



wherein R^2 represents an α-branched alkyl group containing from 3 to 6 carbon atoms, and R represents either (a) hydroxy, halo or alkoxy of up to six carbon atoms, or (b) the group $—OR^1$ where R^1 is the radical of an alcohol of formula R^1OH which forms an insecticidal ester with chrysanthemic acid, permethrin acid or cyhalothrin acid.

4,661,489

BENZAZEPINES, AND THEIR USE AS ANTHELMINTHICS

Roderick J. Dorgan, Outwood, and Richard L. Elliott, Leatherhead, both of England, assignors to Beecham Group p.l.c., United Kingdom

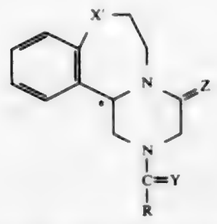
Filed Jul. 13, 1984, Ser. No. 630,524

Claims priority, application United Kingdom, Jul. 16, 1983, 8319357; Dec. 24, 1983, 8334502

Int. Cl.⁴ A61K *31/55;* **C07D** *223/00, 267/08*

U.S. Cl. 514—211 **10 Claims**

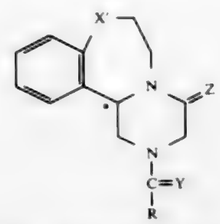
1. A compound of formula (I):



in which R is phenyl or phenyl substituted with fluoro, chloro, C_{1-6} alkyl, C_{1-6} alkoxy, nitro, amino, mono- or di-C_{1-6} alkylamino, and hydroxy; C_{3-8} cycloalkyl; C_{5-8} cycloalkenyl; C_{1-8} alkyl which may be straight or branched; C_{2-8} alkenyl which may be straight or branched; a member selected from the group consisting of 4-tetrahydropyranyl, 4-tetrahydrothiopyranyl and 3-pyridyl; or

phenyl C_{1-4} alkyl or phenyl C_{1-4} alkyl wherein the phenyl is substituted with fluoro, chloro, C_{1-6} alkyl, C_{1-6} alkoxy, nitro, amino, mono- or -di-C_{1-6} alkylamino, and hydroxy, each of Y and Z, which may be the same or different, is oxygen or sulphur; and X is $—CH_2$ or oxygen.

9. A method of treatment and prophylaxis of helminth infections in a human or in a domestic or farm animal comprising administering to said human or domestic or farm animal an effective non-toxic amount of a compound of the formula:



in which R is phenyl or phenyl substituted with fluoro, chloro, C_{1-6} alkyl, C_{1-6} alkoxy, nitro, amino, mono- or di-C_{1-6} alkylamino, and hydroxy; C_{3-8} cycloalkyl; C_{5-8} cycloalkenyl; C_{1-8} alkyl which may be straight or branched; C_{2-8} alkenyl which may be straight or branched; a member selected from the group consisting of 4-tetrahydropyranyl, 4-tetrahydrothiopyranyl and 3-pyridyl; or

phenyl C_{1-4} alkyl or phenyl C_{1-4} alkyl wherein the phenyl is substituted with fluoro, chloro, C_{1-6} alkyl, C_{1-6} alkoxy, nitro, amino, mono- or -di-C_{1-6} alkylamino, and hydroxy, each of Y and Z, which may be the same or different, is oxygen or sulphur; and X is $—CH_2$ or oxygen.

4,661,490

TREATMENT WITH DIALKOXY PYRIDOPYRIMIDINES

David S. Duch, Cary; Charles A. Nichol, Durham, and Carl W. Sigel, Raleigh, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 384,147, Jun. 1, 1982, abandoned, which is a division of Ser. No. 228,164, Jan. 23, 1981, Pat. No. 4,372,957, which is a continuation of Ser. No. 159,243, Jun. 13, 1980, abandoned. This application Mar. 19, 1984, Ser. No. 590,547

Claims priority, application United Kingdom, Jun. 14, 1979, 7920703

Int. Cl.⁴ A61K *31/505*

U.S. Cl. 514—258 **5 Claims**

1. The method of prolonging the life of a mammal suffering from leukemia which comprises administering to said mammal an effective antileukemia amount of the compound 2,4-diamino-6-(2,5-dimethoxybenzyl)-5-methylpyridopyrimidine or a pharmaceutically acceptable acid addition salt thereof together with a pharmaceutically acceptable carrier.

4,661,491

ALFUZOSINE COMPOSITIONS AND USE

Francois Regnier, Nancy, France, assignor to Synthelabo, Paris, France

Filed May 27, 1986, Ser. No. 867,031

Claims priority, application France, May 28, 1985, 85 07950

Int. Cl.⁴ A61K *31/505*

U.S. Cl. 514—260 **5 Claims**

1. A method for treating humans or non-human animals for dysuria comprising administering an effective dysuria controlling, non-toxic amount of alfuzosine or a pharmaceutically acceptable salt thereof to a human or non-human animal suffering dysuria.

4,661,492

ANALGESIC COMPOSITIONS

John W. Lewis, North Ferriby, and John G. Lloyd-Jones, Cottingham, both of England, assignors to Reckitt & Colman Products Limited, United Kingdom

Filed Nov. 21, 1985, Ser. No. 800,303

Claims priority, application United Kingdom, Nov. 30, 1984, 8430346

Int. Cl.⁴ A61K *31/44*

U.S. Cl. 514—282 **8 Claims**

1. A method of treating pain which comprises the administration to a patient of a parenterally effective unit dosage of buprenorphine wherein the weight of buprenorphine is between about 0.3 to about 0.6 mg and simultaneously an amount of naltrexone sufficient to prevent substitution in an opiate dependent subject, the weight of naltrexone and buprenorphine administered parenterally being within the ratio of 1:12 to 1:6.

4,661,493

TIOCONAZOLE AND RELATED COMPOUNDS FOR CONTROL OF HERPES SIMPLEX VIRUS

David L. Gibbs, New York, N.Y., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 717,423, Mar. 29, 1985, abandoned. This application Mar. 6, 1986, Ser. No. 837,658

Int. Cl.⁴ A61K *31/50, 31/415, 31/445, 31/495*

U.S. Cl. 514—252 **7 Claims**

1. A method for the treatment of herpetic infections in a human infected thereby which comprises topically applying to the site of said infection an anti-herpetic amount of drug selected from the group consisting of tioconazole, econazole, clotrimazole, ketoconazole, butaconazole or a pharmaceutically acceptable acid addition salt thereof.

4,661,494

N-SUBSTITUTED-N',N'-DISUBSTITUTED GLYCINAMIDE FUNGICIDES

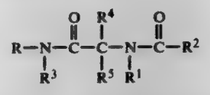
David M. Spatz, Fairfax, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 446,802, Dec. 3, 1982, Pat. No. 4,532,251. This application May 30, 1985, Ser. No. 739,590

Int. Cl.⁴ A61K *31/495;* **C07D** *239/02*

U.S. Cl. 514—255 **21 Claims**

1. A compound of the formula:



wherein R is phenyl, or phenyl substituted with 1 to 4 substituents independently selected from fluoro, chloro, bromo, iodo, nitro, lower alkyl or trihalomethyl; R^1 is lower alkyl; R^2 is a 6-member aromatic heterocyclic ring containing two ring nitrogens and the remainder of the ring atoms carbon atoms, with the proviso that a nitrogen of the 6-member heterocyclic ring is not bonded to the



group; and R^3, R^4 and R^5 are independently lower alkyl or hydrogen.

17. A method for controlling fungi which comprises contacting said fungi or their growth enviornment with a fungicidally effective amount of a compound of the formula defined in claim 1.

4,661,495

ARPHAMENINE-RELATED COMPOUNDS USEFUL FOR POTENTIATING THE IMMUNE RESPONSE IN A LIVING ANIMAL

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Takaaki Aoyagi, Fujisawa, and Shokichi Ohuchi, Kawasaki, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

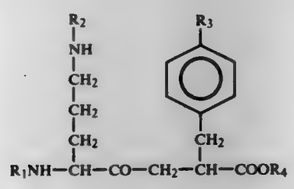
Filed Aug. 26, 1985, Ser. No. 769,076

Claims priority, application Japan, Sep. 3, 1984, 59-182788

Int. Cl.⁴ A61K *31/495;* **C07D** *239/02*

U.S. Cl. 514—275 **5 Claims**

1. An arphamenine-related compound represented by the formula:



(I)

wherein R_1 denotes a hydrogen atom, an alkoxycarbonyl group, an aralkoxy-carbonyl group, or an acyl group, R_2 denotes a dimethylpyrimidinyl group, R_3 denotes a hydrogen atom or a hydroxyl group, and R_4 denotes a hydrogen atom, an alkyl group, or an aralkyl group, or a pharmaceutically acceptable salt or ester thereof.

5. A method of potentiating the immune response in a living animal, including man, which comprises administering to the animal an immunopotentiatingly effective amount of a compound of the formula (I) as defined in claim 1 or a pharmaceutically acceptable salt or ester thereof.

4,661,496

CARDIOTONIC AND ANTIHYPERTENSIVE 2,4-DIHYDRO-5-[(SUBSTITUTED)PHENYL]-4,4-DISUBSTITUTED-3H-PYRAZOL-3-ONES

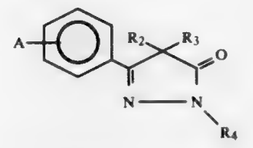
Glenn C. Morrison, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 586,430, Mar. 12, 1984, Pat. No. 4,550,119, which is a division of Ser. No. 497,316, May 23, 1983, Pat. No. 4,526,982. This application Aug. 19, 1985, Ser. No. 766,728

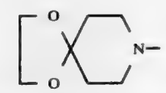
Int. Cl.⁴ A61K *31/445;* **C07D** *491/113*

U.S. Cl. 514—278 **5 Claims**

1. A compound of the formula



where R_2 is alkyl of from one to six carbon atoms; R_3 is alkyl of from one to six carbon atoms, cyano, $—S(O)_{0-2}R_2$, $—OR_2$, or trifluoromethyl; R_4 is hydrogen or alkyl of from one to six carbon atoms; and A is attached to the 3- or 4-position of the phenyl ring and is



or a pharmaceutically acceptable salt thereof.

4. A pharmaceutical composition for increasing cardiac contractility or for lowering blood pressure, comprising an effective amount of a compound as claimed in claim 1 in admixture with a pharmaceutically acceptable carrier.

4,661,497

α-METHYL-(6-PHENOXY)-2-PICOLYL CYCLOPROPANECARBOXYLATES HAVING PESTICIDAL PROPERTIES

Peter Ackermann, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

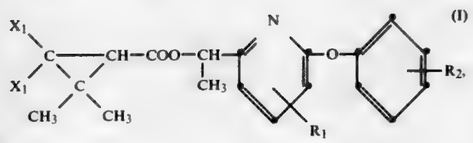
Filed Dec. 31, 1984, Ser. No. 688,123

Claims priority, application Switzerland, Jan. 12, 1984, 140/84; Nov. 30, 1984, 5713/84

Int. Cl.⁴ C07D *213/64;* **A01N** *43/40*

U.S. Cl. 514—345 **8 Claims**

1. An α-methyl-(6-phenoxy)-2-picolyl cyclopropanecarboxylate of the formula



(I)

wherein

R_1 is halogen,

R_1 is hydrogen or halogen, and

R_2 is hydrogen, halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkylthio, C_1–C_4haloalkyl, C_1–C_4haloalkoxy, C_1–C_4haloalkylthio, C_2–C_4alkenyl, C_2–C_4alkynyl, nitro or cyano.

8. A method of controlling a variety of pests of animals and plants and soil pests, which comprises contacting said pests or

their habitat with a pesticidally effective amount of a compound of claim 1.

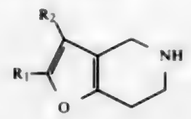
4,661,498

FURO 3,2-C PYRIDINE DERIVATIVES AND THEIR USE IN TREATING DEPRESSION AND CEREBRAL ISCHEMIA

Alexander Wick, St Nom la Breteche; Jonathan Frost, Wissous, and Jean Bertin, Clamart, all of France, assignors to Synthelabo, Paris, France

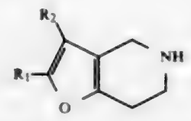
Filed Sep. 26, 1985, Ser. No. 780,453
Claims priority, application France, Sep. 27, 1984, 8414842
Int. Cl.[4] A61K *31/44;* **C07D** *491/048*
U.S. Cl. 514—302 **2 Claims**

1. A compound of the formula



wherein R_1 represents a phenyl, halophenyl, methylphenyl, ethylphenyl, methoxyphenyl, trifluoromethylphenyl or naphthyl group, and R_2 represents hydrogen or a methyl or phenyl group excluding compounds wherein R_1 is a phenyl or 4-fluorophenyl group and R_2 is hydrogen or a pharmaceutically acceptable acid addition salt thereof.

2. Method of treatment of depression or cerebral ischemia wherein there is administered a mammal in need thereof an effective anti-depressant or anti-ischemic dose of a compound of the formula



wherein R_1 represents a phenyl, halophenyl, methylphenyl, ethylphenyl, methoxyphenyl, trifluoromethylphenyl or naphthyl group, and R_2 represents hydrogen or a methyl or phenyl group excluding compounds wherein R_1 is a phenyl or 4-fluorophenyl group and R_2 is hydrogen or a pharmaceutically acceptable acid addition salt thereof.

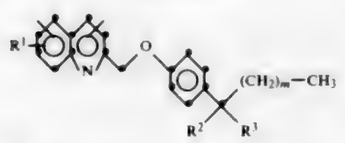
4,661,499

2-[(SUBSTITUTED)-PHENOXYMETHYL]QUINOLINES

Robert N. Young, Quebec, and Robert Zamboni, Longueuil, both of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Jun. 18, 1985, Ser. No. 746,205
Int. Cl.[4] A61K *31/47;* **C07D** *215/14*
U.S. Cl. 514—311 **7 Claims**

1. A compound of the formula:



wherein:

R^1 is H, halogen, C_1–C_6 alkyl, —CF_3, —OR^2, —SR^2, —CHO, —$COOR^2$, —$(C{=}O)R^2$, —$C(OH)R^2R^2$, —CN, —NO_2, unsubstituted phenyl, unsubstituted benzyl, or unsubstituted phenethyl;

R^2 is H or C_1–C_6 alkyl,

R^3 is —OR^4, —SR^4, or —NR^4R^4;

R^4 is H, or C_1–C_6 alkyl, —$(C{=}O)R^2$, unsubstituted phenyl, or unsubstituted benzyl;

m is 1–6; and the pharmaceutically acceptable salts thereof.

3. The compound of claim 1: 2-[4-(1-hydroxyhexyl)phenoxymethyl)] quinoline.

6. A method of preventing the synthesis, the action, or the release of SRS-A and leukotriene D_4, in mammals, which comprises administering to said mammal an effective amount of a compound of claim 1.

4,661,500

METHOD OF MEDICAL TREATMENT WITH SEROTONIN ANTAGONISTS

Roman Rozencwaig, 4721 The Boulevard, Westmount, Quebec, Canada

Filed Aug. 29, 1985, Ser. No. 770,440
Int. Cl.[4] A61K *31/445*
U.S. Cl. 514—325 **4 Claims**

1. A method for the treatment of patients suffering from Alzheimer's disease, which comprises orally administering doses of about 0.5 to about 4 milligrams of cyproheptadine to said patients, said administration essentially taking place once a day every evening.

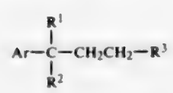
4,661,501

CERTAIN ARYL-ALKANE-2-PYRIDYLOXY-PHENYL DERIVATIVES HAVING INSECTICIDAL AND ACARICIDAL ACTIVITY

Kiyoshi Nakatani, Tokyo; Satoshi Numata, Kanagawa; Kenji Kodaka, Kanagawa; Kengo Oda, Kanagawa; Shiro Shiraishi, Kanagawa, and Takatoshi Udagawa, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

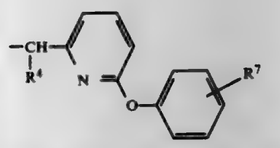
Continuation of Ser. No. 493,756, May 11, 1983, abandoned.
This application Feb. 26, 1986, Ser. No. 833,675
Claims priority, application Japan, May 18, 1982, 57-82473
Int. Cl.[4] C07D *213/64;* **A01N** *43/40*
U.S. Cl. 514—345 **3 Claims**

1. An aromatic alkane derivative represented by the following formula (I)



(I)

wherein Ar stands for an aryl group selected from the group consisting of a napthyl group and phenyl groups which may be unsubstituted or substituted with the same or different substituents selected from the group consisting of a halogen atom; an alkyl(C_1–C_3), haloalkyl(C_1–C_3), alkoxy(C_1–C_3), haloalkoxy(C_1–C_3), alkenyl(C_2–C_3), haloalkenyl(C_2–C_3), alkoxyalkyl(C_2–C_3), haloalkenyloxy(C_2–C_3), alkynyloxy(C_2–C_3), alkoxycarbonyl(C_2–C_3), haloalkoxycarbonyl(C_2–C_3), phenoxy, nitrile or methylenedioxy group, R^1 stands for a methyl, ethyl or isopropyl group and R^2 stands for a hydrogen atom or a methyl group, or R^1 and R^2 together with the carbon atom to which they re attached jointly represent a cycloalkyl group having 3 to 6 carbon atoms, which may be unsubstituted or substituted with halogen atoms or methyl groups, and R^3 stands for a group represented by the following general formula (III):



(III)

wherein R^4 stands for a hydrogen atom, or an ethynyl or cyano group, R^7 stands for a hydrogen or halogen atom, or an alkoxy group having 1 to 3 carbon atoms.

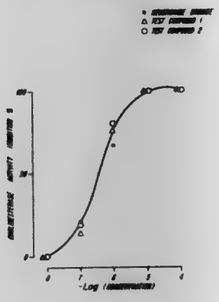
3. A method of combatting insect pests and/or acarids comprising contacting the insect pests or acarids with a pesticidally effective amount of a compound in accordance with claim 1.

4,661,502

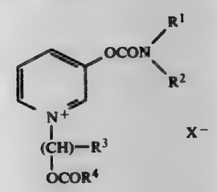
CERTAIN 3-PYRIDINIUMESTERS OF MONO- OR DI-LOWER ALKYL CARBAMATES HAVING ANTICHOLINESTERASE ACTIVITY

Nicholas S. Bodor, Gainesville, Fla., and Yasuo Ohshiro, Tokushima, Japan, assignors to Otsuka Pharmaceutical Co. Ltd., Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 578,958
Claims priority, application Japan, Feb. 10, 1983, 58-21201
Int. Cl.[4] C07D *213/65;* **A61K** *31/44*
U.S. Cl. 514—346 **13 Claims**



1. A pyridine compound of the formula (I) and non-toxic pharmaceutically acceptable salts thereof:



(I)

wherein

R^1 and R^2 are the same or different and represent hydrogen or C_1–C_8 alkyl;

R^3 represents hydrogen, C_1–C_{20} alkyl, C_6–C_{10} aryl, ar(C_1–C_6) alkyl, C_1–C_{20} alkoxy, C_1–C_{20} haloalkyl, C_1–C_{20} alkoxy alkyl, C_1–C_{20} alkanoyloxyalkyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl (C_1–C_6) alkyl or aryl substituted by halogen, C_1–C_8 alkyl, $O(C_1$–$C_4)$ alkyl or nitro;

R^4 represents hydrogen, C_1–C_{20} alkyl, C_6–C_{10} aryl, ar(C_1–C_6) alkyl, C_1–C_{20} alkoxy, C_1–C_{20} haloalkyl, C_1–C_{20} alkoxy alkyl, C_1–C_{20} alkanoyloxyalkyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl (C_1–C_6) alkyl, C_1–C_{20} carboxyalkyl or aryl substituted by halogen, C_1–C_8 alkyl, $O(C_1$–$C_4)$ alkyl, C_1–C_8 alkanoyloxy, nitro or carboxyl; and

X represents a halogen atom or other equivalent organic or inorganic monovalent anion.

8. A method of providing an anticholinesterase effect in mammals in need thereof comprising administering thereto an anticholinesterase effective amount of a compound as defined by claim 1.

4,661,503

SYNERGISTIC BIOCIDE OF DODECYL GUANIDINE HYDROCHLORIDE AND A MIXTURE OF 5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE

Cynthia H. Martin, Plainfield, and Thomas M. LaMarre, Aurora, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jun. 16, 1986, Ser. No. 874,925
Int. Cl.[4] A01N *37/52, 43/80*
U.S. Cl. 514—372 **10 Claims**

1. A synergistic biocidal composition useful in treating industrial process waters to prevent the growth of gram-negative bacteria and fungi which comprises from 10–90% by weight of dodecyl guanidine hydrochloride and from 90–10% by weight of a mixture comprising:

(a) 5-chloro-2-methyl-4-isothiazolin-3-one and

(b) 2-methyl-4-isothiazolin-3-one with the weight ratio of (a) to (b) being 1.15 to 0.35.

4,661,504

DENATONIUM SACCHARIDE COMPOSITIONS AND METHOD OF USE

Gary T. Hollander, Obetz, Ohio, and Mel Blum, New York, N.Y., assignors to Atomergic Chemetals Corporation, Plainview, N.Y.

Filed Nov. 2, 1984, Ser. No. 667,924
Int. Cl.[4] C07D *275/00*
U.S. Cl. 514—373 **12 Claims**

1. A composition for utilizing the lingering bitter tasting property of denatonium saccharide at low concentration consisting essentially of:

(a) an effective amount of denatonium saccharide,

(b) a solvent which provides penetrating capability to the composition selected from dimethyl sulfoxide and 2,4-dimethylsulfolane, and

(c) an inert material therewith.

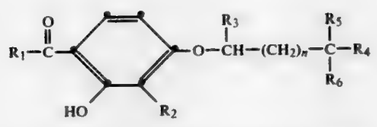
4,661,505

LEUKOTRIENE ANTAGONISTS

Winston S. Marshall, Bargersville, Ind., and John P. Verge, Henley-on-Thames, England, assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 3, 1982, Ser. No. 439,239
Int. Cl.[4] A61K *31/41, 31/19;* **C07D** *257/04;* **C07C** *63/04*
U.S. Cl. 514—381 **39 Claims**

1. A compound of the formula I



I

and pharmaceutically acceptable salts thereof, wherein:

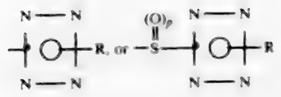
R_1 is hydrogen, C_1–C_6 alkyl, or C_3–C_8 cycloalkyl, or phenyl;

R_2 is hydrogen, C_1–C_6 alkyl, or C_2–C_6 alkenyl;

R_3 is hydrogen, C_1–C_{10} alkyl, phenyl, C_1–C_{10} alkyl-substituted phenyl, biphenyl, or benzylphenyl;

R_4 is —$COOR_7$, —$CONR_8R_9$, —CONHOH,

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where
R_7 is hydrogen or C_1–C_4 alkyl,
R_8 and R_9 are each independently hydrogen or C_1–C_3 alkyl;
R is hydrogen, C_1–C_4 alkyl, or $—CH_2COOR_7$, and
p is 0, 1, or 2;
R_5 and R_6 are each independently hydrogen or C_1–C_3 alkyl; and
n is 0–10.

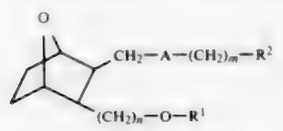
15. A method of treating a mammal suffering from or susceptible to any condition characterized by an excessive release of leukotrienes, which comprises administering to said mammal a leukotriene antagonizing amount of a compound of claim **1**.

4,661,506
7-OXABICYCLOHEPTANE SUBSTITUTED OX PROSTAGLANDIN ANALOGS

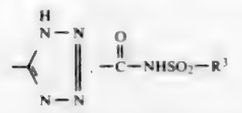
Steven E. Hall, Ewing Township, Mercer County; Martin F. Haslanger, Lambertville, and Ravi K. Varma, Belle Mead, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 30, 1984, Ser. No. 677,131
Int. Cl.⁴ C07D *493/08;* **A61K** *31/34*
U.S. Cl. 511—382 **19 Claims**

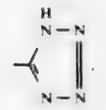
1. A compound having the structural formula



and including all stereoisomers thereof, wherein
A is —CH=CH— or —$(CH_2)_2$—;
m is 1 to 8; n is 1 to 4;
R^1 is lower alkyl, aryl, aralkyl, lower alkenyl containing 2 to 12 carbons, cycloalkyl or cycloalkylalkyl; and R^2 is



wherein R^3 is aryl or arylalkyl; provided that where R^2 is



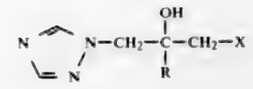
n is 1, wherein lower alkyl or alkyl alone or as part of another group contains 1 to 12 carbons and is unsubstituted or is substituted with halo, CF_3, alkoxy, alkylthio, alkylamino, alkylamino, haloaryl, cycloalkyl or alkylcycloalkyl;
aryl alone or as part of another group contains 6 to 10 carbons in the ring portion and is unsubstituted or is substituted with lower alkyl, halogen or lower alkoxy; and
cycloalkyl alone or as part of another group contains 3 to 12 carbons and is unsubstituted or is substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups.

4,661,507
ANTIFUNGAL S-ETHERS OF 2-ARYL-3-MERCAPTO-1-(1H-1,2,4-TRIAZOL-1-YL) PROPAN-2-OLS AND CORRESPONDING SULFOXIDES AND SULFONES

Geoffrey E. Gymer, and Kenneth Richardson, both of Canterbury, Great Britain, assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 479,524, Mar. 28, 1983, abandoned. This application Aug. 28, 1984, Ser. No. 645,143
Claims priority, application United Kingdom, Apr. 1, 1982, 8209602
Int. Cl.⁴ C07D *249/08;* **A61K** *31/41*
U.S. Cl. 514—383 **9 Claims**

1. Compounds of the formula



wherein
R is mono- or disubstituted phenyl wherein the substituent is Cl or F;
X is SH, $S(C_2$–C_4 alkanoyl), $SO_2(C_1$–C_3 alkyl) or $S(O)_nR^1$ wherein R^1 is C_1–C_6 alkyl, C_3–C_7 cycloalkyl, or C_1–C_2 alkyl substituted by C_2–C_4 alkenyl;
n is 0 or 1;
and their pharmaceutically acceptable salts.

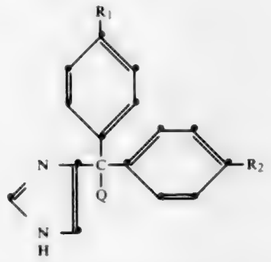
5. A method of treating a fungal infection in a human being, which comprises administering to said human an antifungal amount of a compound as claimed in claim **1**.

4,661,508
AROMATASE INHIBITING α,α-DIPHENYL-4(5)IMIDAZOLE-METHANES OR -ETHANES

Kenneth S. Hirsch, New Palestine, and Harold M. Taylor, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 621,597, Jun. 18, 1984, abandoned. This application May 10, 1985, Ser. No. 732,535
The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.
Int. Cl.⁴ A61K *31/415;* **C07D** *231/12*
U.S. Cl. 514—396 **20 Claims**

1. A compound of the formula



Q is hydrogen, hydroxy, halo, or methyl; and
R_1 and R_2 are independently halo or trifluoromethyl, or a pharmaceutically acceptable salt thereof.

9. A method of inhibiting aromatase in a mammal which comprises administering to said mammal an aromatase inhibiting amount of a compound of claim **1**.

13. A method of treating estrogen-dependent diseases in a mammal which comprises administering to said mammal an effective amount of a compound of claim **1**.

4,661,509
METHODS FOR TREATING LEUKOPENIA

Arnold Z. Gordon, 5129 Mayview Rd., Lyndhurst, Ohio 44124, and Arthur H. Rossof, 4334 No. Hazel - 1301, Chicago, Ill. 60613

Continuation-in-part of Ser. No. 425,460, Sep. 28, 1982, abandoned, which is a division of Ser. No. 291,062, Aug. 7, 1981, abandoned. This application Feb. 21, 1984, Ser. No. 582,068
Int. Cl.⁴ A61K *31/415, 31/14*
U.S. Cl. 514—397 **8 Claims**

1. A method of increasing the peripheral white blood cell count in a patient having disease or therapy induced leukopenia comprising administering to said patient a therapeutically effective amount of a pharmaceutically acceptable, water or lipid soluble tertiary or quaternary amine having cholinergic or anti-chlolinesterase activity.

5. The method of claim **1** wherein said tertiary or quaternary amine is selected from the group consisting of choline, acetylcholine, methacholine, carbachol, bethanacol, muscarine, arecoline, carbamylcholine, aceclinidine, pilocarpine, oxytremarine, neostigmine, edrophonium, physostigmine, pyridostigmine, demarcarium, ambenonium, octamethyl pyrophosphoramide, and diethyloxyphosphinylthiocholine or a pharmaceutically acceptable salt thereof.

6. The method of claim **1** wherein said compound is pilocarpine.

7. The method of claim **1** wherein said compound is neostigmine.

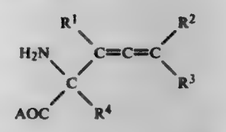
8. The method of claim **1** wherein said compound is choline.

4,661,510
α-ALLENIC-α-AMINO ACIDS AS ENZYME INHIBITORS

Alexander Krantz, Toronto, and Arlindo L. Castelhano, Mississauga, both of Canada, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

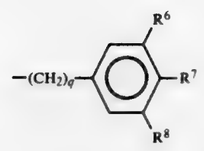
Continuation-in-part of Ser. No. 524,476, Aug. 17, 1983, abandoned. This application Oct. 21, 1985, Ser. No. 790,000
Int. Cl.⁴ A61K *31/415;* **C07D** *233/64*
U.S. Cl. 514—400 **29 Claims**

1. A compound of the formula

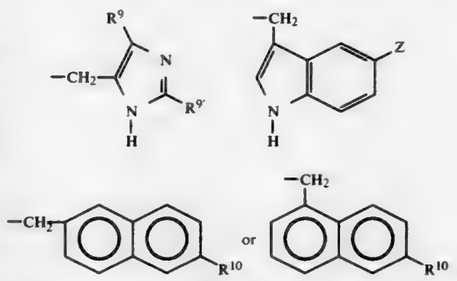


(I)

or a pharmaceutically acceptable salt thereof wherein:
R^1, R^2 and R^3 are selected from the group consisting of: hydrogen; alkyl of 1 to 6 carbon atoms; trifluoromethyl; phenyl; and phenylalkyl of 7 to 9 carbons where the ring is substituted with halo, halo alkyl of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, hydroxy, alkoxy of 1 to 6 carbon atoms or amino; wherein at least two of R^1, R^2 and R^3 are hydrogen or alkyl; and wherein at lest one of R^2 and R^3 is hydrogen when R^4 is hydrogen;
R^4 is selected from the group consisting of: hydrogen; alkyl of 1 to 6 carbon atoms; $—(CHR)_mXR'$ wherein m is 1 or 2 and X is oxygen or sulfur and R and R′ are independently hydrogen or methyl; $—(CH_2)_n—COY$ wherein n is 1 or 2 and Y is hydroxy or amino; $—(CH_2)_oNHC(NH_2)(NH)$ wherein o is 2, 3 or 4; $—(CH_2)_p—NH_2$ wherein p is 2, 3, 4 or 5; a radical of the formula



wherein q is 1 or 2 and R^6, R^7 and R^8 are independently hydrogen or hydroxy; and a radical of the formula



wherein R^9 and $R^{9'}$ are independently hydrogen or trifluoromethyl, R^{10} is hydrogen, hydroxy or methoxy, and Z is hydrogen or hydroxy; and
A is selected from the group consisting of: —OH; —OS wherein S is a cationic portion of a pharmaceutically acceptable salt; —OE wherein E is alkyl of 1 to 22 carbon atoms or arylalkyl of 7 to 10 carbon atoms; amino; monoalkylamino wherein the alkyl radical has 1 to 6 carbon atoms; and di-alkyl amino wherein the alkyl radicals have 1 to 6 carbon atoms.

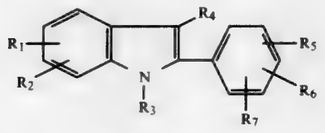
27. A method for inhibiting amino acid decarboxylase enzyme activity which method comprises administering a therapeutically effective amount of a compound according to claim **1** to a mammal.

4,661,511
2-(HYDROXY-PHENYL)-INDOLES AND PROCESS FOR THEIR PRODUCTION

Erwin von Angerer, Regenburg, and Helmut Schoenenberger, Pentling, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 408,898, Aug. 17, 1982, Pat. No. 4,543,360.
This application Jul. 27, 1984, Ser. No. 635,198
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135841
Int. Cl.⁴ C07D *209/32;* **A61K** *31/40*
U.S. Cl. 514—415 **21 Claims**

1. A compound of the formula:



where R_1 is hydrogen, a hydroxy group, or a C_2–C_6-alkanoyloxy group, R_2 is hydrogen, a hydroxy group, a C_2–C_6-alkanoyloxy group or a halogen atom, R_3 is a C_1–C_6 alkyl group, R_4 in hydrogen or a C_1–C_6-alkyl group, R_5 is a hydroxy group or a C_2–C_6-alkanoyloxy group, R_6 is hydrogen, a halogen atom, a hydroxy group, or a C_2–C_6-alkanoyloxy group, and R_7 is hydrogen or halogen atom with the proviso that

when R_2 is hydrogen or halogen R_1 must be a hydroxy group or a C_2–C_6-alkanoyloxy group.

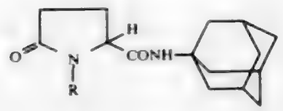
4,661,512

ADAMANTANAMINE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND DRUGS IN WHICH THEY ARE PRESENT

Claude Laruelle, Villeneuve Loubet; Marcel Lepant, Vence, and Bernard Rayaier, Cagnes, all of France, assignors to S. A. Panmedica, Carros, France

Filed Oct. 16, 1985, Ser. No. 787,995
Claims priority, application France, Oct. 31, 1984, 84 16656
Int. Cl.⁴ A61K *31/40;* **C07D** *207/28*
U.S. Cl. 514—423 **12 Claims**

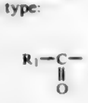
1. An N-(adamantan-1-yl)pyrrolidin-5-one-2-carboxamide derivative corresponding to the formula I:



(I)

in which: R represents hydrogen, a lower alkyl radical containing from 1 to 7 carbon atoms, a lower alkyl radical containing from 1 to 7 carbon atoms substituted by an alkoxy group, a thioalkyl group or nitrile group, or

an acyl radical of the type:



in which R_1 represents:

a lower alkyl radical containing from 1 to 7 carbon atoms,

a 5 to 7 carbon atoms cycloalkyl ring having a $-(CH_2)_n-$ radical attached thereto, wherein n=0,1 or 2, or

a phenyl or benzyl radical, or a phenyl or benzyl radical substituted by 1–2 nitro, C_1 to C_3 alkyl, C_1 to C_3 alkoxy or halogen groups.

12. An immunostimulant comprising an immunostimulating amount of at least one compound as claimed in claim 1 in a pharmaceutically acceptable diluent.

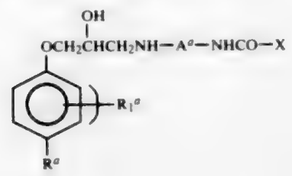
4,661,513

3-AMINOPROPOXYPHENYL DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Richard Berthold, Bottmingen, Switzerland; William J. Louis, 5 Von Nida Crescent, Rosanna, 13084 Victoria, Australia, and André Stoll, Birsfelden, Switzerland, assignors to William John Louis, Victoria, Australia

Filed Sep. 29, 1983, Ser. No. 537,348
Claims priority, application Switzerland, Sep. 30, 1982, 5758/82; Sep. 30, 1982, 5761/82
Int. Cl.⁴ A61K *31/35;* **C07D** *309/10*
U.S. Cl. 514—459 **24 Claims**

1. A compound of the formula Ia,



Ia

wherein

X is tetrahydopyranyl,

A^a is alkylene of 2 to 5 carbon atoms,

$R_1{}^a$ is hydrogen, hydroxy, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, halogen of atomic number of from 9 to 53, trifluoromethyl, pyrrol-1-yl, cyano, carbamoyl, alkenyl of 2 to 5 carbon atoms, alkenyloxy of 3 to 5 carbon atoms wherein the double bond is not attached to the carbon atom adjacent to the oxygen atom, alkanoyl of 2 to 5 carbon atoms, nitro, amino, alkanoylamino of 1 to 5 carbon atoms or alkoxycarbonylamino of 1 to 4 carbon atoms in the alkoxy moiety thereof and

R^a is hydroxy or a group $-Z-(CH_2)_n-Y-R_2{}^a$ wherein Y is an oxygen or sulfur atom and either Z is an oxygen atom and n is 2 or 3 or Z is a bond and n is 1, 2 or 3 and

$R_2{}^a$ is hydrogen, alkyl of 1 to 5 carbon atoms, alkenyl of 3 to 5 carbon atoms wherein the double bond is not attached to the carbon atom adjacent to Y, cycloalkyl of 5 to 7 carbon atoms, cycloalkylalkyl of 3 to 7 carbon atoms in the cycloalkyl moiety and of 1 to 4 carbon atoms in the alkyl moiety thereof, or phenyl, phenylalkyl of 7 to 10 carbon atoms or phenylalkenyl of 9 to 11 carbon atoms wherein the double bond is not attached to the carbon atom adjacent to Y, the last three substituents optionally being mono- or independently di- or independently trisubstituted in the phenyl ring by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen of atomic number of from 9 to 35,

or a pharmaceutically acceptable salt form thereof and physiologically hydrolyzable esters thereof.

4. A method of effecting β-adrenoceptor blockade which comprises administering to a patient in need of such treatment a therapeutically effective amount of a compound of claim 1 in free form or in pharmaceutically acceptable salt form.

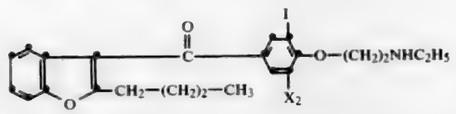
4,661,514

PHARMACEUTICAL AND VETERINARY COMPOSITIONS FOR THE TREATMENT OF ISCHEMIC CARDIAC DISORDERS

Marcel Descamps, Rosieres, and Yves Berger, Wemmel, both of Belgium, assignors to Sanofi, Paris, France

Division of Ser. No. 628,210, Jul. 5, 1984, Pat. No. 4,575,513. This application Dec. 11, 1985, Ser. No. 807,733
Claims priority, application France, Aug. 2, 1983, 83 12739
Int. Cl.⁴ A61K *31/34*
U.S. Cl. 514—469 **16 Claims**

1. A pharmaceutical or veterinary composition for the treatment of cardiac arrhythmia or angina pectoris, comprising as active ingredient from 50 to 1200 mg of a compound of formula:



wherein X_2 represents hydrogen or iodine

or a pharmaceutically acceptable acid addition salt thereof, in association with a pharmaceutical carrier or excipient.

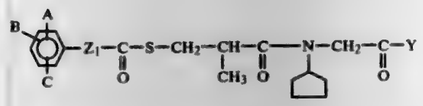
4,661,515

COMPOUNDS HAVING ANGIOTENSIN CONVERTING ENZYME INHIBITORY ACTIVITY AND DIURETIC ACTIVITY

Edward S. Neiss, New Canaan; John T. Suh, Greenwich, both of Conn., and John J. Piwinski, Port Chester, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Continuation of Ser. No. 589,031, Mar. 2, 1984, abandoned, which is a continuation of Ser. No. 400,555, Jul. 21, 1982, abandoned. This application Jan. 17, 1986, Ser. No. 821,201
Int. Cl.⁴ A61K *31/265, 31/34;* **C07C** *153/017;* **C07D** *307/54*
U.S. Cl. 514—471 **18 Claims**

1. A compound of the formula



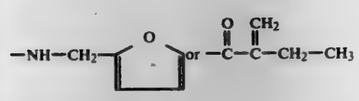
and pharmaceutically acceptable salts thereof;

wherein

Z_1 is a chemical bond or $-OCH_2-$,

A and B are independently hydrogen, halogen or $-SO_2NH_2$,

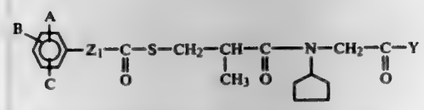
C is hydrogen,



with the proviso that at least one of A, B, or C is other than hydrogen, and

Y is hydroxy or lower alkoxy.

13. A method of simultaneously treating angiotension related hypertension and volume overload hypertension which comprises administering to a human host a therapeutically effective amount of at least one compound of the formula

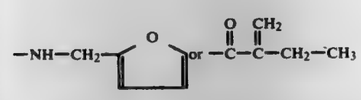


and pharmaceutically acceptable salts thereof; wherein

Z_1 is a chemical bond or $-OCH_2-$,

A and B are independently hydrogen, halogen or $-SO_2NH_2$,

C is hydrogen,



with the proviso that at least one of A, B, or C is other than hydrogen, and

Y is hydroxy or lower alkoxy.

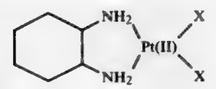
4,661,516

DIAMINOCYCLOHEXANE PLATINUM COMPLEXES

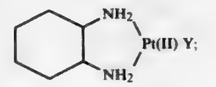
David B. Brown, deceased, late of Essex Junction, Vt. (by Elaine L. Brown, executor); Abdul R. Khokhar, Houston, Tex.; Miles P. Hacker, Williston, and John J. McCormack, Burlington, both of Vt., assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 636,522, Aug. 1, 1984, abandoned, which is a continuation-in-part of Ser. No. 505,965, Jun. 20, 1983, abandoned. This application Apr. 15, 1985, Ser. No. 723,107
Claims priority, application Canada, Jun. 18, 1984, 456842
Int. Cl.⁴ C07F *15/00*
U.S. Cl. 514—492 **86 Claims**

1. A water-soluble square-planar DACH cis-platinum(II) four-coordinate complex having the formula:



or



wherein:

X is a monovalent anion selected from the group consisting of, monosaccharate, saccharate-4-lactone, shikimate, isethionate, 2-aminoethylsulfate, azetidinecarboxylate, proline, hydroxyproline, pipecolinate, cyclopropanecarboxylate, cyclobutanecarboxylate, cyclopentanecarboxylate, cyclopentenecarboxylate, cyclohexanecarboxylate, cyclohexenecarboxylate, bicine, glycine, 2-aminoethanesulfonate, 2-chloroethanesulfonate and

Y is a divalent anion selected from the group consisting of iminodiacetate, isocitratelactone, furanedicarboxylate, cyclopropane-1,1-dicarboxylate, isocitratomonoethylester, N-methyliminodiacetate, N-(2-hydroxyethyl)-iminodiacetate, N-benzyliminodiacetate, N-phenyliminodiacetate, N-(2-acetamido)iminodiacetate, cyclohexane-1,1-diacetate, trans-1,2-cyclopropanedicarboxylate, trans-1,2-cyclobutanedicarboxylate, trans-1,2-cyclopentanedicarboxylate and trans-1,2-cyclohexanedicarboxylate.

45. A pharmaceutical composition in unit dosage form suitable for administration to an animal afflicted with tumor cells sensitive to a platinum complex of claim 1 comprising a therapeutically anti-tumor effective amount of said platinum complex and a pharmaceutically acceptable carrier therefor.

4,661,517

SYNERGISTIC BIOCIDE OF 2-(P-HYDROXYPHENOL) GLYOXYLOHYDROXIMOYL CHLORIDE AND METHYLENE BIS THIOCYANATE

Cynthia H. Martin, Plainfield, and Thomas M. LaMarre, Aurora, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jun. 16, 1986, Ser. No. 874,926
Int. Cl.⁴ A01N *33/24, 47/48*
U.S. Cl. 514—515 **4 Claims**

1. A biocidal composition useful in treating industrial process waters to prevent the growth of gram-negative bacteria which comprises a synergistic mixture of 2-(p-hydroxyphenol)gloxylohydroximoyl chloride and methylene bis thiocyanate wherein the ratio of 2-(p-hydroxyphenol)glyoxyohydroximoyl chloride to methylene bis thiocyanate is within the range 90/10 to 10/90.

4,661,518

SYNERGISTIC BIOCIDE OF 2-(P-HYDROXYPHENOL)-GLYOXYLOHYDROXIMOYL CHLORIDE AND 2,2-DIBROMO-3-NITRILOPROPIONAMIDE

Thomas M. LaMarre, Aurora, and Cynthia H. Martin, Plainfield, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jun. 16, 1986, Ser. No. 874,911
Int. Cl.[4] A01N *33/24, 37/34*
U.S. Cl. 514—528 **2 Claims**

1. A biological composition useful in treating industrial process waters to prevent and control the growth of gram-negative bacteria, which composition comprises a synergistic mixture which contains:

a. from 0–75% by weight of 2-(p-hydroxyphenol)glyoxylohydroxymoyl chloride; and

b. from 90–25% by weight of 2,2-dibromo-3-nitrilopropionamide.

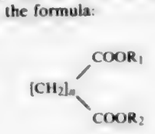
4,661,519

METHOD FOR DERMATOLOGICAL APPLICATION

Takuo Shiga, Shizuoka; Kazuo Nabeta, Yokosuka; Hiroyuki Nakano, Hayama, and Toshimitsu Suzuki, Yokohama, all of Japan, assignors to Pola Chemical Industries Inc., Shizuoka, Japan

Continuation of Ser. No. 484,270, Apr. 12, 1983, abandoned. This application Jun. 18, 1985, Ser. No. 745,832
Int. Cl.[4] A61K *31/225*
U.S. Cl. 514—547 **4 Claims**

1. A dermatological treatment method for freckles, liver-spots, pigmentations and acne, primarily to reduce pigmentation, which comprises the step of applying a composition, to the affected locales of the skin, containing from about 3.0 to 20 wt.% of a dicarboxylic acid ester having 7 to 13 carbon atoms and represented by the formula:



wherein
n=5–11
R_1 is glyceryl and
R_2 is glyceryl or H
in a pharmaceutically acceptable topical carrier.

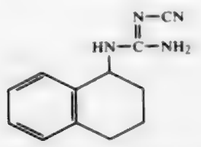
4,661,520

CYANOGUANIDINE USEFUL AS AN ANIMAL GROWTH PROMOTING AGENT

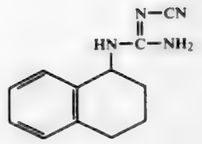
Joseph E. Dunbar; David M. Hedstrand, both of Midland, Mich., and Kimiaki Maruyama, Hastings, Nebr., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 17, 1984, Ser. No. 641,809
Int. Cl.[4] A61K *31/17;* **C07C** *129/14*
U.S. Cl. 514—609 **3 Claims**

1. A compound of the formula:



2. A method for promoting the growth of animals comprising administering to said animals an effective amount of a compound of the formula:



4,661,521

DIRECT TABLETING ACETAMINOPHEN COMPOSITIONS

Anil M. Salpekar, Creve Coeur, and Larry E. Denton, Fenton, both of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mich.

Continuation of Ser. No. 605,160, Apr. 30, 1984, abandoned. This application Jul. 14, 1986, Ser. No. 884,911
Int. Cl.[4] A61K *9/14*
U.S. Cl. 514—613 **11 Claims**

1. A direct tableting, free-flowing, particulate N-acetyl-p-aminophenol composition capable of being directly formed into a tablet having high hardness, short disintegration time, and short dissolution time, the composition comprising as components thereof:

(a) from about 84 to about 94 percent, based on the dry weight of the composition, of N-acetyl-p-aminophenol,

(b) from about 5 to about 15 percent, based on the dry weight of the composition, of a pharmaceutically acceptable pregelatinized starch,

(c) a pharmaceutically acceptable lubricant in an amount at least sufficient to impart effective mold release properties to said tablet, and

(d) water,

said composition being prepared in a fluid bed granulater-dryer by the process which comprises spraying an aqueous slurry of a portion of the pregelatinized starch onto a fluidized composition comprising N-acetyl-p-aminophenol and the remainder of the pregelatinized starch; drying the resulting granules to a moisture level of from about 1.0 to about 2.5 percent; and adding the lubricant during or after drying.

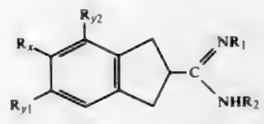
4,661,522

CYCLOALKANE-INDENE-CARBOXIMIDAMIDE DERIVATIVES

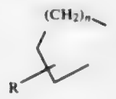
Tom Beetz, Lith, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed May 15, 1985, Ser. No. 734,049
Claims priority, application Netherlands, May 24, 1984, 8401653; May 25, 1984, 8401670
Int. Cl.[4] A61K *31/155;* **C07C** *123/00*
U.S. Cl. 514—632 **5 Claims**

1. A compound of the formula:



wherein
Rx together with either Ry_1 or Ry_2 represent the moiety



(the other Ry being hydrogen).

n represents the number 1, 2 or 3,
R represent hydrogen or a (1–4 C)-alkyl group,
R_1 represents hydrogen, (1–4 C)-alkyl, hydroxyl, (1–4 C)-alkoxy or an amino group which is unsubstituted or substituted by (1–4 C)-alkyl and
R_2 is hydrogen, hydroxyl or (1–4 C)-alkyl, as well as the pharmaceutical acceptable salts thereof.

5. A pharmaceutical composition having blood platelet aggregation-inhibiting activity comprising
a blood platelet aggregation-inhibiting effective amount of a compound of claim 1 and
a pharmaceutically acceptable carrier therefore.

4,661,523

DISINFECTANT SOLUTIONS HAVING IMPROVED CORROSION PROPERTIES

Karlheinz Disch, Haan; Klaus Hachmann, Hilden, and Juergen Pagel, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 29, 1985, Ser. No. 792,361
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1984, 3439519
Int. Cl.[4] A01N *37/52, 33/12;* **C11D** *3/48*
U.S. Cl. 514—635 **15 Claims**

1. A concentrated aqueous or aqueous organic solvent disinfectant composition comprising

A. from about 5 to about 50% of at least one bactericidal aldehyde;

B. from about 0.5 to about 10% of at least one bactericidal quaternary ammonium compound;

C. from about 0.5 to about 5.0% of a mixture of

a. at least one phosphonocarboxylic acid, and,

b. at least one aminopolycarboxylic acid alkali metal salt, wherein the ratio by weight of a. to b. is in the range of from about 1:0.5 to about 1:0.9, wherein b. is added in a quantity sufficient to provide a pH for the concentrate of from about 3.5 to about 4.0, and

wherein the above percentages are percentages by weight based on the total weight of the composition.

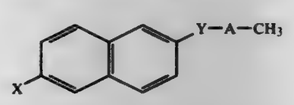
4,661,524

TOPICAL TREATMENT AND COMPOSITION

Michael J. Thomson, Harlow, and Frank R. Mangan, Bishops Stortford, both of England, assignors to Beecham Group P.L.C., Brentford, England

Continuation-in-part of Ser. No. 750,037, Jun. 28, 1985, abandoned. This application Dec. 27, 1985, Ser. No. 814,205
Claims priority, application United Kingdom, Jun. 29, 1984, 8416638
Int. Cl.[4] A61K *31/12, 31/045*
U.S. Cl. 514—682 **16 Claims**

1. A topically effective anti-inflammatory pharmaceutical composition which comprises a topically effective anti-inflammatory amount of a compound of the formula (I):



(I)

wherein X is a chlorine or bromine atom or a methoxyl, methylthio or alkyl group of 1–4 carbon atoms; Y is a —CH-R_1—CH_2— or —CR_1=CH— group where R_1 is a hydrogen atom or a methyl group and A is a CHOH or CO group, and a pharmaceutically acceptable carrier, said composition being selected from the group consisting of creams, ointments, lotions, gels, aerosol formulations, spray formulations, liniments and gel sticks.

4,661,525

PROCESS FOR PRODUCING LOWER ALIPHATIC ALCOHOLS

Michael V. Grazioso, Poughkeepsie, and Edwin R. Kerr, deceased, late of Wappinger, both of N.Y. (by Myra L. Kerr, executor), assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 594,053, Mar. 28, 1984, abandoned. This application Apr. 29, 1985, Ser. No. 728,636
Int. Cl.[4] C07C *27/06*
U.S. Cl. 518—714 **18 Claims**

1. A method for preparing lower aliphatic alcohols characterized by producing a substantial proportion of aliphatic alcohols having from 2 to 6 carbon atoms which comprises reacting carbon monoxide and hydrogen in the presence of a catalyst at a temperature from about 240° to about 400° C., a pressure from about 500 to about 3000 psi and a gas hourly space velocity ranging from about 5,000 to 50,000, said catalyst consisting essentially of from about 5 to about 50 weight percent of molybdenum calculated as MoO_3 and from about 0.3 to about 15 weight percent of a metal selected from the group consisting of cobalt, iron and nickel, calculated as CoO, Fe_2O_3 and NiO respectively, and the balance a support, said catalyst having a surface area greater than about 125 m^2/gm, and said catalyst being modified by the addition of an alkali metal promoter from the class consisting of potassium, cesium and rubidium in an amount ranging from about 2.2 to 10 micromoles of said alkali metal per square meter of catalyst surface area.

4,661,526

CROSS LINKED POROUS MEMBRANES

Douglas L. Ford, New South Wales, Australia, assignor to Memtec Limited, New South Wales, Australia

PCT No. PCT/AU84/00015, § 371 Date Oct. 1, 1984, § 102(e) Date Oct. 1, 1984, PCT Pub. No. WO84/03054, PCT Pub. Date Aug. 16, 1984
PCT Filed Jan. 26, 1984, Ser. No. 662,293
Claims priority, application Australia, Feb. 2, 1983, PF7861
Int. Cl.[4] C08J *9/36*
U.S. Cl. 521—53 **28 Claims**

1. A method of preparing a porous membrane comprising the steps of:

(i) dissolving a thermoplastic polyamide or a thermoplastic polyamide/polyimide copolymer which has both relatively non-crystalline and relatively crystalline portions into a solvent under conditions of temperature and time which cause the relatively non-crystalline portions of the polyamide or copolymer to dissolve while at least a part of the relatively crystalline portions of the polyamide or copolymer do not dissolve, but form a colloidal dispersion in said solvent, wherein the said thermoplastic polyamide is a polyamide 6 or polyamide 6,6, and wherein the said polyamide/polyimide copolymer is a polyamide 6/polyimide copolymer or a polyamide 6,6/polyimide copolymer;

(ii) forming said colloidal dispersion and solvent into a film and thereafter causing precipitation of at least part of the dissolved non-crystalline portions in the film to form a porous membrane matrix in which the pores are defined by spaces between the relatively crystalline portions, and,

(iii) reacting the membrane matrix with an aldehyde as herein defined to link at least some of the relatively crystalline portions with the aldehyde.

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ONE-COMPONENT FORMULATION FOR DETACKIFYING, PRECIPITATING AND COAGULATING ANTI-CHIPPING COATINGS AND UNDERSEAL BASED ON WAXES, WAX-LIKE PLASTICS AND PLASTICS DISPERSIONS

Hans-Peter Seng, Süssen, Fed. Rep. of Germany, assignor to Zeller & Gmelin GmbH & Co., Eislingen, Fed. Rep. of Germany

Filed Jun. 7, 1985, Ser. No. 742,514

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1984, 3421257

Int. Cl.[4] C08K *3/36*; C08J *3/02*

U.S. Cl. 521—55 8 Claims

1. A one-component formulation for detackifying, precipitating and coagulating an anti-chipping coating or underseal based on wax, wax-like plastic or plastic dispersions, or synthetic resin paint in an aqueous mixture comprising an additive which envelopes paint particles, said additive being an aqueous suspension of polyurethane foam particles which comprises:

(a) 1—8% of an aliphatic alcohol having 1-3 carbon atoms,

(b) 0.01—1.0% of pyrogenic silica having a specific surface area of 50-380 m^2/g,

(c) 3—20% of poly-[oxyethylene -(dimethylimmio)-ethylene] dichloride and

(d) 10—30% of polyurethane foam powder,

each relative to the weight of the formulation, the remainder of the formulation being represented by water.

4,661,528

SOLID BIOCIDE DRY BLEND

Nuno M. Rei, Boxford, Mass., assignor to Morton Thiokol, Inc., Chicago, Ill.

Division of Ser. No. 853,083, Apr. 17, 1986, which is a continuation-in-part of Ser. No. 707,628, Mar. 4, 1985, abandoned. This application Oct. 16, 1986, Ser. No. 919,403

Int. Cl.[4] C08J *9/40*

U.S. Cl. 521—85 5 Claims

1. A method of making a substantially non-dusting, free-flowing dry blend mixture comprising mixing:

a. a porous thermoplastic resin powder having a porosity of at least about 0.10 cc/g as measured by the mercury intrusion method or about 30% as measured on a void volume basis having a particle size between about 40 and about 300 mesh, said resin being selected from the group consisting of polyvinyl chloride, polyethylene, polystyrene, polypropylene, nylon, styrene-butadiene copolymer, polycarbonate, polystyrene-polyphenylene oxide blend, polyphenylene oxide and an ethylene/acrylic acid salt ionomer; and

b. from 1 to 80 weight percent, based on the weight of the composition, of a microbiocide selected from the group consisting of 10,10'-oxybisphenoxarsine; N-(trichloromethylthio)-4-cyclohexene-1,2-dicarboximide; 2,3,5-trichloro-4-propylsulfonyl pyridine; 2,3,4,5-tetrachloro-4-(methylsulfonyl)pyridine; zinc salt of 1-hydroxypyridine-2-thione; N-(trichloromethylthio)phthalimide; N-(2-methylnaphthyl)meleimide; cis-N-(1,1,2,2-tetrachlorethyl)-thio-4-cyclohexene-1,2-dicarboximide; 1-isopropyl-3-methyl pyrazolyl-5-dimethyl carbamate; 3-methyl pyrazolyl dimethyl-carbamate; manganese ethylene bisdithiocarbamate; zinc ethylene bisdithiocarbamate; disodium ethylene bisdithiocarbamate; ferric dimethyl dithiocarbamate; zinc dimethyl dithiocarbamate; 2,4-dinitro-6-capryl phenol crotonate; p-chlorophenyl-p-chlorobenzene sulphonate; 2-N-octyl-4-isothiazolin-3-one; methyl(butyl carbamoyl)-2-benzimidazole carbamate; 2-(4-thiazolyl)-benzimidazole; copper 8-hydroxyl-quinolinate; α-diethoxyphosphinodithioacetylurea; α-dimethoxylphosphinodithioacetylurea; diethoxyphosphinodithioacetamide; dimethoxyphosphinodithioacetamide; bis(dimethylamido)-phosphoryl flouride; 2-cyclohexyl-3-isothiazolone; 4,5-dichloro-2-cyclohexyl-3-isothiazolone and tributyl tin fluoride,

in a high intensity high shear mixing apparatus at a temperature sufficient to open the pores of the powder, and then cooling the mixture to obtain a free-flowing powder which contains the microbiocide at a concentration of at least about 20 times greater than the normal upper usage concentration of the microbiocide, the microbiocide being held within the pores of the thermoplastic resin powder.

4,661,529

POLYURETHANE AND URETHANE-MODIFIED ISOCYANURATE FOAMS AND A POLYOL COMPOSITION USEFUL IN THEIR PREPARATION

E. Kuhn, Zurich; J. Den Boer, and J. Thoen, both of Wadenswil, all of Switzerland, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 638,934, Aug. 9, 1984, Pat. No. 4,607,064, which is a continuation of Ser. No. 495,217, May 16, 1983, abandoned. This application Dec. 16, 1985, Ser. No. 809,640

Int. Cl.[4] C08G *18/14*, *18/32*

U.S. Cl. 521—137 13 Claims

1. A precursor composition for the preparation of rigid foams derived from a polyisocyanate and an active hydrogen-containing compound, said precursor composition comprising (a) an active hydrogen-containing compound containing from 2 to 8 active hydrogens and a hydroxyl number of at least 100 and (b) an ethoxylated alkylene oxide polymer, different from compound (a), containing at least two active hydrogens reactive with an isocyanate, said alkylene oxide polymer having an equivalent weight of at least 300 and being composed of at least 10 weight percent, based on a total weight of the polymerized alkylene oxide in the polymer, of polymerized ethylene oxide.

4,661,530

BIOCOMPATIBLE, ANTITHROMBOGENIC MATERIALS SUITABLE FOR RECONSTRUCTIVE SURGERY

Sylwester Gogolewski, Reneas, Switzerland, and Albert J. Pennings, Norg, Netherlands, assignors to Medtronic, Inc., Minneapolis, Minn.

PCT No. PCT/NL83/00027, § 371 Date Mar. 13, 1984, § 102(e) Date Mar. 13, 1984, PCT Pub. No. WO84/00302, PCT Pub. Date Feb. 2, 1984

PCT Filed Jul. 15, 1983, Ser. No. 597,160

Claims priority, application Netherlands, Jul. 16, 1982, 8202893

Int. Cl.[4] C08G *18/14*, *18/34*

U.S. Cl. 521—137 6 Claims

1. Biocompatible, porous, highly antithrombogenic material for reconstructive surgery, which is prepared from mixtures of poly(L-lactic acid) and/or poly(dL-lactic acid) and segmented polyester urethanes or segmented polyether urethanes.

4,661,531

PROCESS FOR PREPARING GRAFT POLYMER DISPERSIONS AND POLYURETHANES PREPARED THEREFROM

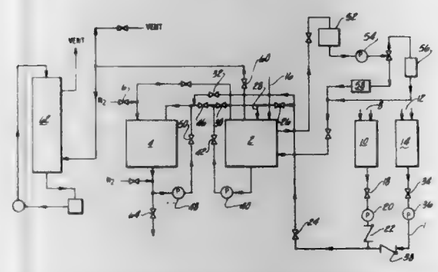
John E. Davis, Woodhaven, and Duane A. Heyman, Monroe, both of Mich., assignors to BASF Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 591,946, Mar. 21, 1984, abandoned. This application Apr. 10, 1985, Ser. No. 703,505

Int. Cl.[4] C08G *18/14*, *18/16*, *18/62*

U.S. Cl. 521—137 12 Claims

1. A continuous process for the preparation of a graft polymer dispersion in a polyol comprising the in situ free radical polymerization of an ethylenically unsaturated monomer or mixture of monomers selected from the group consisting of acrylonitrile, styrene and mixtures thereof in the presence of a free radical initiator, comprising employing a polyol mixture or mixtures of (1) a polyoxyalkylene polyether polyol and (2) a polyol wherein the polyol or mixtures thereof contain from about 0.001 to 0.09 mole of induced unsaturation per mole of said polyol mixture, and wherein said free radical polymerization is conducted in the presence of an effective amount of a chain transfer agent to achieve uniform product viscosity



wherein said product viscosity does not vary more than about ±15 percent at 25° C.

6. A polyurethane foam prepared from the reaction of the graft polymer dispersion produced by the process of claim 1 with an organic polyisocyanate in the presence of a blowing agent.

4,661,532

COAL TAR CONTAINING FOAMING URETHANE COMPOSITION AND A METHOD FOR REPAIRING DEFECTS IN STRUCTURAL COMPONENTS

Sandra K. Morin, Coon Rapids, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.

Filed Jun. 25, 1985, Ser. No. 748,506

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—167 23 Claims

1. A method of repair of a structural member having a surface defect, with a foaming hydrophobic urethane composition that can repair the defect in the presence of environmental water and can form a strong bond, which comprises:

(a) locating a surface defect in a structural member;

(b) obtaining a hydrophobic two package polyurethane composition comprising:

(i) in a first package, a hydrophobic polyol having about 99.5 to 55 parts of a polyol composition, about 0.1 to 45 parts of a coal tar, an effective foaming amount of water and an effective amount of a polyurethane catalyst;

(ii) in a second package, an isocyanate composition comprising an isocyanate compound having at least two —NCO groups; and

(c) blending the first and second packages at a —OH to —NCO mole ratio of about 0.1 to 10:1 to form a blended hydrophobic polyurethane composition; and

(d) applying the blended hydrophobic polyurethane composition to the surface defect.

4,661,533

RIGID POLYURETHANE MODIFIED POLYISOCYANURATE CONTAINING FLY ASH AS AN INORGANIC FILLER

William G. Stobby, Granville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 28, 1985, Ser. No. 791,654

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—122 8 Claims

1. A closed cell, rigid, polyurethane-modified polyisocyanurate foam containing from about 10 to about 80 percent by weight of the foam of fly ash, which polyurethane-modified polyisocyanurate foam is prepared from a polyurethane-modified polyisocyanurate foam-forming composition which when foamed to a density of about 1.75 pounds per cubic foot in the absence of the fly ash, forms a foam having a compressive modulus of about 150 to 325 pounds per square inch.

4,661,534

SURFACE ENHANCEMENT THROUGH CHLORINATION OF THE MOLECULAR SURFACE LAYER OF POLYMERIC SOLIDS

Vincent D. McGinniss, Delaware, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Jun. 7, 1985, Ser. No. 742,263

Int. Cl.[4] C08F *2/46*

U.S. Cl. 522—131 4 Claims

1. An improved process for enhancing the molecular surface layer characteristics of unhalogenated polymeric solids of the type wherein the polymeric solid is chlorinated by gaseous chlorine in the presence of actinic light wherein the improvement comprises chlorinating the surface of the polymeric solid to a depth substantially not in excess of 1800Å and to a chlorine content by weight in said 1800Å layer not exceeding 20%.

4,661,535

THERMOPLASTIC COMPOSITION

Michael J. Borroff, West Yorkshire, and Donald A. Willstead, Hampshire, both of England, assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 9, 1985, Ser. No. 753,217

Claims priority, application United Kingdom, Jul. 13, 1984, 8417872

Int. Cl.[4] C08L *67/04*; A61F *5/04*

U.S. Cl. 523—105 15 Claims

1. An orthopedic cast or splint comprising a mixture of a polycaprolactone and a thermoplastic rubber, crosslinked with from 0.1 to 1.0 percent of an organic peroxide together with a filler, the polycaprolactone and thermoplastic rubber being present in the composition prior to crosslinking in a ratio of from about 4:1 to about 1.5:1.

4,661,536

PROCESS FOR THE PREPARATION OF HARD TISSUE PROSTHETICS

Linneaus C. Dorman, Midland, Mich., and Paul A. Meyers, Dublin, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 702,999, Feb. 19, 1985, Pat. No. 4,634,720. This application Oct. 2, 1986, Ser. No. 914,687

Int. Cl.[4] A61F *2/00*

U.S. Cl. 523—113 12 Claims

1. A process for the preparation of a composite material containing from about 25 to about 75 percent by weight of a calcium phosphate biomaterial and about 75 to about 25 percent by weight of an α-amino acid polymer which comprises polymerizing in situ an N-carboxyanhydride of an α-amino acid in the presence of a powdered calcium phosphate biomaterial, said polymerization taking place in an inert organic solvent.

4,661,537

IMPACT PROMOTERS FOR MINERAL-FILLED THERMOPLASTICS

Fred H. Ancker, Warren, and Arnold C. Ashcraft, Jr., Millstone Township, Mercer County, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 11, 1985, Ser. No. 753,976

Int. Cl.[4] C08K *9/00*

U.S. Cl. 523—200 16 Claims

1. A method for improving the impace strength of a composition, wherein said composition comprises polyethylene and a pretreated mineral filler selected from the group consisting of aluminum trihydrate and magnesium hydrate, said method comprising incorporated into said composition a pretreated

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filler containing from about 0.5 to about 10 percent, based on the weight of the filler of tri(2-ethylhexyl)phosphate.

4,661,538

APPARATUS AND METHOD FOR THE CONTINUOUS PRODUCTION OF AQUEOUS POLYMER SOLUTIONS

Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation of Ser. No. 618,031, Jun. 7, 1984, abandoned, which is a continuation of Ser. No. 412,006, Aug. 27, 1982, Pat. No. 4,402,916. This application Jan. 6, 1985, Ser. No. 742,053
The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.
Int. Cl.⁴ C08K *5/20*
U.S. Cl. 523—348 **9 Claims**

1. A method for the continuous, on-site production of dilute aqueous solutions of water soluble partially hydrolyzed polyacrylamides for injection into an input well of a subterranean, oil-bearing formation, comprising: providing, in a closed, in-line system located at an oil-bearing formation having at least one input well and an output well, a polymer forming aqueous reaction mixture consisting essentially of at least one water-soluble polymerizable acrylamide and at least one polymerization catalyst in an amount sufficient to substantially completely polymerize the acrylamide; passing the aqueous reaction mixture at a predetermined flow rate into first reactor means; regulating the flow rate and the flow pattern of the aqueous reaction mixture in the first reactor means thereby to maintain it therein under conditions such as to effect substantially complete polymerization of the acrylamide monomer in the aqueous reaction mixture to provide a dilute aqueous solution of polyacrylamide; passing the dilute aqueous polyacrylamide solution formed in the first reactor means at a predetermined flow rate from said first reactor means to a second reactor means; introducing an alkali metal hydroxide hydrolyzing agent into the aqueous polymer solution as it is passed from the first reactor means and before it enters the second reactor means to form a second reaction mixture; regulating the flow rate and the flow pattern of said second reaction mixture in the second reactor means to maintain it therein for a time sufficient to effect partial hydrolysis of the polyacrylamide in the dilute aqueous solution from the first reactor means; passing the aqueous partially hydrolyzed polyacrylamide solution from the second reactor means to sequential screen diluter means provided with a plurality of dispersing stations comprising screens having a different mesh size; moving the aqueous partially hydrolyzed polyacrylamide solution at a predetermined flow rate and flow pattern sequentially through each of the dispersing stations of the diluter means to effect dilution of the aqueous partially hydrolyzed polyacrylamide solution, said dilution of the aqueous partially hydrolyzed polyacrylamide solution being carried out in a matter of minutes in a manner to prevent, or reduce to minimum levels, degradation or thinning of the partially hydrolyzed polyacrylamide; further diluting the aqueous partially hydrolyzed polyacrylamide solution formed in the diluter means before injecting it into an input well of the oil-bearing formation; and injecting said further diluted solution into said at least one input well of the oil-bearing formation.

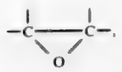
4,661,539

SAG RESISTANT TWO-COMPONENT EPOXY STRUCTURAL ADHESIVE

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 21, 1986, Ser. No. 842,586
Int. Cl.⁴ C08K *3/36, 3/34*
U.S. Cl. 523—400 **8 Claims**

1. A two-component structural adhesive comprising a first epoxy component composed of an epoxy resin containing from 0.5 to 8% by weight based on the epoxy resin of fumed silica, said epoxy resin containing more than one group of the formula



and a second hardener component containing from 20 to 50% by weight of kaolin, said hardener component also containing a member selected from the group consisting of (A) the reaction product of bis-(amino proply) piperazine and dimerized linoleic acid, amino ethyl piperazine, poly (propylene ether) diamine, bis phenol-A, (B) the reaction product of ethylene diamine with dimerized linoleic acid, bis phenol-A, amino ethyl piperazine, poly (propylene ether) diamine, bis (amino proply) piperazine (C) poly (propylene ether) diamine, bis phenol-A, (D) the reaction product of bis (amino propyl) piperazine and dimerized linoleic acid, amino ethyl piperazine, poly (propylene ether) diamine, bis phenol-A, and (E) the reaction product of ethylene diamine with linoleic acid, bis phenol-A, amino ethyl piperazine, poly (propylene ether) diamine, bis (amino propyl) piperazine.

4,661,540

WATER REDUCIBLE COATING COMPOSITIONS

Minh V. Le; Brian S. Hawkett, and William T. Elliott, all of New South Wales, Australia, assignors to Berger, Jenson & Nicholson Limited, London, England

Filed Dec. 4, 1985, Ser. No. 805,383
Claims priority, application Australia, Dec. 6, 1984, PG8445; Jul. 25, 1985, PH01642
Int. Cl.⁴ C08L *33/02*
U.S. Cl. 523—409 **19 Claims**

1. An aqueous dispersion of a tertiary amine terminated polyether and a carboxylic acid functional polymer wherein the tertiary amine terminated polyether is the product of the reaction of the epoxy group of an epoxy resin with the hydroxy group of a hydroxy functional tertiary amine and the carboxylic acid functional polymer is present in an amount sufficient to render the combination water dispersible.

4,661,541

ALCOHOL-MODIFIED POLYEPOXIDES, THEIR PREPARATION AND THEIR USE IN CURABLE MIXTURES

Wolfgang Batzill; Arnold Dobbelstein; Michael Geist, all of Münster; Georg Schön, Everswinkel, and Günther Ott, Münster-Wolbeck, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Mar. 14, 1985, Ser. No. 711,997
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1984, 3409188
Int. Cl.⁴ C08G *59/42, 59/62*
U.S. Cl. 523—414 **28 Claims**

1. A synthetic resin based on alcohol-modified polyepoxides, comprising the reaction product of:

Component A which is a diepoxide, or a mixture of diepoxides, having an epoxide equivalent weight of less than about 500, with

Component B which is a compound containing one hydroxyl group which is reactive with epoxide groups, wherein Component A is reacted with Component B in a molar ratio of about 2:1 to about 7:6 and at temperatures from about 100° C. to about 180° C. in an organic solvent free of hydroxyl groups, the synthetic resin having terminal epoxide groups and a mean molecular weight from about 400 to about 5000.

4,661,542

ADHESIVE COMPOSITIONS

Heinz Gilch; Hubertus von Voithenberg, both of Bad Homburg, and Reinhard Rengel, Bad Soden, all of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Filed Jan. 29, 1986, Ser. No. 823,666
Claims priority, application United Kingdom, Feb. 12, 1985, 8503561
Int. Cl.⁴ C08G *18/10*
U.S. Cl. 524—59 **18 Claims**

1. A moisture-curable adhesive composition capable of providing a pressure-sensitive adhesive layer on a substrate by a process in which the composition is applied to the substrate and cured or allowed to cure by exposure to a moist atmosphere, wherein the composition comprises a prepolymer component having an isocyanate functionality between 2.0 and 3.0 together with one or more polyetherurethane prepolymers having NCO groups available for reaction with water for chain extension, the cured adhesive composition having a glass transition temperature less than 20° C.

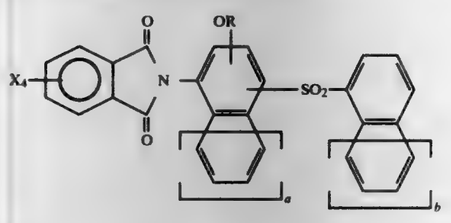
4,661,543

FLAMEPROOFING AGENTS, THEIR PREPARATION AND THEIR USE FOR PROVIDING POLYCARBONATES WITH A FLAME-RESISTANT FINISH

Hans-Jürgen Kress, Krefeld, and Klaus Kircher, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 17, 1984, Ser. No. 661,770
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337857
Int. Cl.⁴ C08K *5/34*
U.S. Cl. 524—94 **2 Claims**

1. A thermoplastic molding composition based on aromatic, branched, thermoplastic polycarbonates of halogen-free phenolic components comprising 0.1 to 1% by weight of a phthalimide conforming to the general formula



wherein

X denotes hydrogen or up to 4 halogen atoms,

a and b independently denote 0 or 1 and

R denotes a C_1–C_4 alkyl radical,

and 0.02 to 2% by weight of an alkali metal salt of an inorganic or organic acid, said percentages being based on the weight of said polycarbonate without other additives.

4,661,544

HOMOGENEOUS STABILIZER COMPOSITIONS FOR VINYL HALIDE POLYMERS

Robert E. Quinn, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Dec. 20, 1985, Ser. No. 811,210
Int. Cl.⁴ C08K *5/15*
U.S. Cl. 524—109 **49 Claims**

1. A process for preparing liquid homogeneous stabilizer compositions for vinyl halide polymers which comprises heating a non-homogeneous mixture comprising

(A) at least one epoxidized glyceride wherein the glyceride is represented by the formula



wherein R_1, R_2 and R_3 are each independently hydroxy or fatty acid groups of from about 12 to about 30 carbon atoms with the proviso that at least one of R_1, R_2 and R_3 is a fatty acid group,

(B) at least one hydrocarbon-soluble

(B-2) basic alkali or alkaline earth metal salt of a monocarboxylic acid, and

(C) a hydrocarbon diluent, at an elevated temperature until the mixture is homogeneous.

33. A stabilizer composition prepared in accordance with the process of claim **1**.

45. The vinyl halide polymer composition comprising a vinyl halide polymer and a stabilizing amount of the homogeneous stabilizer composition of claim **33**.

4,661,545

THERMOPLASTIC MOULDING COMPOUND

Wilhelmus G. M. Bruls, Geulle, and Eize Roerdink, Beek, both of Netherlands, assignors to Stamicarbon B.V. (Licensing subsidiary of DSM), Geleen, Netherlands

Filed Oct. 31, 1985, Ser. No. 793,344
Claims priority, application Netherlands, Nov. 15, 1984, 8403489
Int. Cl.⁴ C08K *5/51, 5/52*
U.S. Cl. 524—147 **14 Claims**

9. A thermoplastic molding compound based on a copolymer of an alkenyl-aromatic monomer and an unsaturated dicarboxylic anhydride consisting of a mixture of:

(a) at least 95% (wt.) of a copolymer consisting of:

(i) 50–95 moles % styrene and/or α-methyl styrene,

(ii) 50–55 moles % unsaturated dicarboxylic anhydride;

(b) at most 5% (wt.) of a phosphite selected from the group consisting of isooctyldiphenylphosphite, trinonylphenylphosphite, diphenyldecylphosphite, triphenylphosphite, phenyldidecylphosphite, tridodecylphosphite, bis(2,4-di-tert-butyl) pentaerythritoldiphosphite, distearylpentaerythritol-di-phosphite, tetratridecyl-[1,1-bis(5-tert-butyl-4-hydroxy-2-methylphenyl)-butane]-di-phosphite, phosphorus acid, di-stearyl-mono(2-hydroxytriacontanol)-sorbitol-tris-phosphite, tris[2-tert-butyl4-thio-(2'-methyl-4'-hydroxy-5'-tertbutyl)-phenyl-5-methyl]-phenylphosphite and di-(2,4-di-nonylphenyl)-nonylphenyl phosphite and mixtures thereof.

4,661,546

HIGH IMPACT POLYETHYLENE TEREPHTHALATE POLYBLENDS

Ismat A. Abu-Isa, Rochester; Elio Eusebi, Troy, and Craig B. Jaynes, Royal Oak, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 9, 1985, Ser. No. 732,405
Int. Cl.⁴ C08L *67/02*
U.S. Cl. 524—153 **1 Claim**

1. A thermoplastic polyblend molding composition comprising an intimate admixture of:

(a) 80 to 60% by weight of total polyblend composition of a polyethylene terephthalate produced by the condensation polymerization of dimethyl terephthalate and ethylene glycol,

(b) 19 to 37% by weight of total polyblend composition of at least one polyester elastomer selected from the group consisting of a block copolymer of tetramethylene glycol and n-butyl terephthalate, and a block copolymer of n-butyl terephthalate and ethylene oxide/propylene oxide,

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(c) 1 to 3% by weight of total polyblend composition of triphenyl phosphite,

the total of (a), (b), and (c) being equal to 100%, whereby said polyblend molding composition having an impact strength of at least about 60 Joules/meter as measured by the ASTM procedure D-256.

4,661,547

ANTISTATIC MATERIAL COMPRISING (A) QUATERNARY AMMONIUM SALT (B) PEG HAVING A MOLECULAR WEIGHT IN THE RANGE 2000–5000 AND (C) RUBBER OR PVC

Masasuke Harada, Kurume; Kouji Tsukamoto, Yanagawa, and Tomohiro Etou, Onojo, all of Japan, assignors to Nippon Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1985, Ser. No. 796,461

Claims priority, application Japan, Dec. 17, 1984, 59-266934

Int. Cl.⁴ C08K *5/41*

U.S. Cl. 524—156 **5 Claims**

1. An antistatic material consisting essentially:

(a) at least one base material selected from the group consisting of rubber and polyvinyl chloride resin,

(b) a cationic quaternary ammonium salt, and

(c) polyethylene glycol having an average molecular weight of 2000–5000.

4,661,548

CERAMIC TILE ADHESIVE WATER RESISTANT COMPOSITIONS BASED ON COPOLYMERS EMULSIONS

Robert G. Parker, Irchester, England, assignor to Scott Bader Company Limited, Wollaston, England

Filed Nov. 20, 1985, Ser. No. 800,111

Claims priority, application United Kingdom, Nov. 20, 1984, 8429320

Int. Cl.⁴ C08L *3/26*; **C08K** *3/10*

U.S. Cl. 524—204 **10 Claims**

1. A ceramic tile adhesive composition containing from 20 to 90% by weight of the total weight of the composition of at least one filler, a zinc compound and an aqueous emulsion of a copolymer containing units derived from (i) at least one unsaturated aliphatic hydrocarbon monomer, (ii) at least one unsaturated monomer copolymerizable therewith, and (iii) an effective amount up to 5% of an unsaturated monomer containing carboxylic acid groups and copolymerizable with each of the monomers (i) and (ii).

4,661,549

GRAFT POLYMERS OF POLYMERIZABLE MONOMERS AND OLEFIN POLYMERS

Leigh E. Walker, Lewiston, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 12, 1983, Ser. No. 541,191

Int. Cl.⁴ C08L *51/06, 23/28*; **C08F** *255/00, 255/02*

U.S. Cl. 524—397 **91 Claims**

1. A graft polymer of an ethylenically unsaturated polymerizable monomer in the liquid state, polymerized with a polymer of an unsubstituted, aliphatic hydrocarbon monoolefin of 2 to about 8 carbon atoms blended with at least one different polymer derived from unsaturated reactants, which blend is in the solid state and which is substantially insoluble in the monomer but absorbs a substantial amount of the monomer, wherein the different polymer facilitates the liquid monomer absorption without dissolving the polymer blend.

4,661,550

THERMOSETTING VINYL ACETATE COPOLYMER COATINGS

Edwin A. Zychowski, Des Plaines, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Jan. 30, 1985, Ser. No. 696,573

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.⁴ C08K *5/06*

U.S. Cl. 524—376 **13 Claims**

1. A thermosetting solvent solution coating composition comprising organic solvent having dissolved therein a solution copolymer of copolymerized monomers consisting essentially of from 55% to 75% of vinyl acetate, from 15% to 40% of C_2–C_8 alkyl acrylate or methacrylate, from 3% to 10% of C_2–C_4 hydroxyalkyl acrylate or methacrylate, and from about 0.5% to about 5% of monoethylenically unsaturated copolymerizable carboxylic acid, said monomers being copolymerized in organic solvent solution medium consisting essentially of C_1–C_8 alkoxy C_2–C_4 alkanol at a solids content of at least about 75% and at an average temperature of from 95° C. to 105° C. at which reflux does not occur, said copolymer being in admixture with from 8% to 20%, based on the mixture, of polyalkoxymethyl melamine in which a volatile alcohol provides the alkoxy groups.

4,661,551

TRANSPARENT AQUEOUS ORGANOPOLYSILOXANE COMPOSITIONS

Hans Mayer; Bernward Deubzer, both of Burghausen; Petra Iretzberger, Simbach; Rudolf Mühlhofer, Burghausen, all of Fed. Rep. of Germany, and Hermann Wilhelm, Braunau, Austria, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 16, 1985, Ser. No. 787,841

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1984, 3447636

Int. Cl.⁴ C08K *5/05*

U.S. Cl. 524—379 **8 Claims**

1. A polysiloxane composition that forms a transparent mixture when diluted with water comprising

(A) a water-soluble organic or inorganic acid salt of a polysiloxane comprising siloxane units having SiC-bonded monovalent radicals with basic nitrogen atoms of the formula $R_2^3NR^4$, where R^3 is selected from the group consisting of hydrogen, alkyl and aminoalkyl radicals and R^4 is a divalent hydrocarbon radical, in which the basic nitrogen atoms are present in an amount of at least 0.5 percent by weight of basic nitrogen atons based on the weight of the polysiloxane;

(B) an organic silicon compound free of basic nitrogen atoms, in which the composition does not contain any water-soluble solvent and halogen atoms or octanols.

4,661,552

POLYMER COMPOSITION AND PROCESS

Lyle R. Kallenbach, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 2, 1984, Ser. No. 657,112

Int. Cl.⁴ C08F *255/02*; **C08L** *23/26*

U.S. Cl. 524—433 **16 Claims**

1. A molding composition comprising:

(a) a high density solid mono-olefin polymer retaining catalyst residue having a tendency when molded to exhibit at least one property selected from the group consisting of low crosslinking, low storage modulus, and high bubble formation,

(b) a crosslinking amount of a acetylenic diperoxy compound, and

(c) an amount of at least one tetraalkenyl orthosilicate compound sufficient to accomplish at least one of increased crosslinking, lowered bubble formation, and increased storage modulus.

4,661,553

VINYL ESTERS OF POLYEPOXIDES OF POLYPHENOL CYANATE MIXTURE AND POLYMALEIMIDE CO-OLIGOMERS

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 24, 1986, Ser. No. 831,958

Int. Cl.⁴ C08L *63/00, 63/10*

U.S. Cl. 524—418 **12 Claims**

1. A mixture of vinyl ester resins comprising

(A) from about 1 to about 99 percent by weight of at least one vinyl ester resin prepared by reacting

(1) at least one polyepoxide of a co-oligomerization product of a mixed cyanate of a polyphenol and a polymaleimide with

(2) from about 0.75 to about 1.2 moles of at least one monounsaturated monocarboxylic acid per epoxide group contained in component (A-1); in the presence of

(3) a catalytic quantity of a suitable catalyst for effecting a reaction between components (A-1) and (A-2); and

(B) from about 99 to about 1 percent by weight of at least one vinyl ester resin prepared by reacting

(1) at least one polyglycidyl ether of an aromatic compound having an average of more than one phenolic hydroxyl group per molecule with

(2) from about 0.75 to 1.2 moles of at least one monounsaturated monocarboxylic acid per epoxide group contained in component (B-1); in the presence of

(3) a catalytic quantity of a suitable catalyst for effecting a reaction between components (B-1) and (B-2).

4,661,554

POLYNETWORK EPDM RUBBER

Aubert Y. Coran, and Cynthia K. Endter, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 30, 1985, Ser. No. 814,475

Int. Cl.⁴ C08L *51/04*; **C08K** *3/04*

U.S. Cl. 524—504 **12 Claims**

1. Polynetwork rubber which rubber is a product of the polymerization of a mixture of ethylene, propylene and a lesser quantity of non-conjugated diene, said rubber containing both ionomeric cross-links and cross-links formed by the reaction of said rubber with sulfur or a sulfur donor, a methylol phenolic resin or an organic peroxide.

4,661,555

POLYCARBONATE RESIN COMPOSITION AND PROCESS FOR ITS PRODUCTION

Shinichiro Koga, Nohgata; Katsuhisa Kohyama, Kitakyushu, and Katsuyuki Sakata, Nakama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Nov. 27, 1985, Ser. No. 802,448

Claims priority, application Japan, Nov. 28, 1984, 59-250765; Mar. 4, 1985, 60-42081; Apr. 19, 1985, 60-83826

Int. Cl.⁴ C08L *69/00*

U.S. Cl. 524—611 **16 Claims**

1. A particulate polycarbonate resin composition having a particle size distribution n of from 3 to 8 as represented by the Rosin-Rammler distribution equation:

$$R = 100 \exp(-b\,Dp^n)$$

wherein R is an on-sieve amount (% by weight), Dp is a particle diameter (mm), and b is a constant, the particle diameter of the 50% on-sieve weight integration being from 0.5 to 6 mm, and the bulk density being from 0.1 to 0.7 g/ml, prepared by separating the resin particles from a solution of from 0.5 to 30% by weight of a polycarbonate resin in an organic solvent, said solution containing an inorganic filler, which is in contact with water, at a temperature lower than the melting point of the polycarbonate, the amount of water present being such that the concentration of filler containing particulate resin is at most 40%.

4,661,556

METHOD OF PRODUCING REINFORCED AQUEOUS EMULSION OF POLYDIORGANOSILOXANE

David J. Huebner, and Julie K. Landis, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 24, 1985, Ser. No. 737,601

Int. Cl.⁴ C08L *83/06*

U.S. Cl. 524—745 **17 Claims**

1. A method of preparing an aqueous emulsion of reinforced polydiorganosiloxane having a molecular weight of at least 5000 consisting essentially of

(A) homogenizing a mixture consisting essentially of

(1) 100 parts by weight of polydiorganosiloxane of the formula

$$HO(R_2SiO)_xH$$

wherein each R is a radical selected from the group consisting of methyl, ethyl, propyl, phenyl, vinyl, allyl, and 3,3,3-trifluoropropyl, and x is an average value in the range of from 3 to 100 inclusive,

(2) from 5 to 50 parts by weight of colloidal silica present as an acidic sol in water,

(3) sufficient anionic emulsifying agent to give an emulsion particle of an average diameter of from 0.3 to 0.4 micrometers, wherein said emulsifying agent is an alkali metal surface active sulfonate or sulfate, and

(4) additional water if needed to give a non-volatile content of from 50 to 80 percent by weight,

to give an emulsion, then,

(B) admixing into the emulsion (A) from 15 to 100 millimoles of surface active anionic catalyst per kilogram of polydiorganosiloxane, wherein said catalyst is a surface active sulfonic acid catalyst or a surface active hydrogen sulfate catalyst, then

(C) maintaining the catalyzed emulsion at a temperature of from 15° to 30° C. for at least 5 hours at a pH of less than 5 until the desired molecular weight of polydiorganosiloxane is obtained, then

(D) admixing sufficient base to raise the pH of the emulsion to greater than 7, to give a stable emulsion having polydiorganosiloxane of a molecular weight of at least 5,000, reinforced with colloidal silica, and a non-volatile content of from 50 to 80 percent by weight.

6. A method of preparing a curable aqueous latex of reinforced polydiorganosiloxane consisting essentially of

(E) admixing into the stable emulsion produced by the method of claim 1, (5) from 0.1 to 2 parts by weight of diorganotindicarboxylate and

(F) aging the mixture of (E) for greater than 6 days at 15° to 30° C.,

to obtain a latex which cures to an elastomer upon removal of the water at room temperature.

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PREPARATION OF STABLE AQUEOUS POLYMER DISPERSIONS WHICH CONTAIN AN ALKENYL-AROMATIC COMPOUND AS COPOLYMERIZED UNITS

Hans-Georg Bubam; Lothar Heider, both of Ludwigshafen; Uwe Biederbeck, Mutterstadt, and Bernd Stanger, Dudenhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 27, 1985, Ser. No. 749,542

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1984, 3423765

Int. Cl.[4] C08K *5/07*

U.S. Cl. 524—770 **1 Claim**

1. A process for the preparation of a stable aqueous polymer dispersion containing an alkenyl-based compound as copolymerized unit, said process comprising copolymerizing a monomer mixture

(a) from 20 to 70% by weight of styrene,

(b) from 0.5 to 10% by weight of acrylic acid, methacrylic acid or itaconic acid, and

(c) from 79.5 to 20% by weight of an acrylic acid ester of an alcohol of 1 to 9 carbon atoms, or butadiene, or mixtures thereof,

in an aqueous emulsion in the presence of (i) a polymerization initiator, (ii) from 0 to 0.6% by weight, based on the monomers, of an emulsifier, and (iii) from 0.2 to 2% by weight of formaldehyde, based on the monomers, at a pH below 7, provided that if monomer (c) is an acrylic acid ester substantially no emulsifier is present.

4,661,558

PROCESS FOR CROSSLINKING AND EXTENDING CONJUGATED DIENE-CONTAINING POLYMERS

Vernon L. Bell, Yorktown, and Stephen J. Havens, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Mar. 11, 1986, Ser. No. 838,655

Int. Cl.[4] C08G *63/76*

U.S. Cl. 525—36 **22 Claims**

1. A process for improving the properties of a polymer using a Diels-Alder reaction which comprises reacting:

(a) a polymer selected from the group consisting of polyesters, polyamides, polyethers, polysulfones and copolymers thereof having a plurality of conjugated 1,3-diene systems incorporated into the molecular structure of the polymers, said polymer having a molecular weight of at least 5000; and

(b) at least 1% by weight based on the weight of the polymer of a bis-unsaturated dienophile which is reactive with the conjugated 1,3-dienes of the polymer.

16. A low molecular weight aromatic polyester with an average molecular weight of about 10,000 and a degree of polymerization of about 48, produced according to the process of claim 1 by reacting 3,3'-methylenedibenzoyl dichloride with 4,4'-methylene diphenol in methylene chloride and triethylamine.

4,661,559

IMPACT RESISTANT MATRIX RESINS FOR ADVANCED COMPOSITES

Hugh C. Gardner, Somerville; Michael J. Michno, Jr.; George L. Brode, both of Bridgewater, and Robert J. Cotter, Bernardsville, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

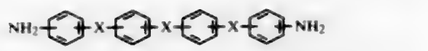
Continuation of Ser. No. 496,398, May 20, 1983, abandoned. This application Jan. 10, 1985, Ser. No. 690,405

Int. Cl.[4] C08L *63/00, 63/02, 63/04, 81/06*

U.S. Cl. 525—65 **35 Claims**

1. A composition comprising:

(a) from about 5 to about 60 weight percent of a diamine hardener represented by the following general formula:



wherein the X's are independently selected from a direct bond, O, S, SO_2, CO, COO, $C(CF_3)_2$, $C(R_1R_2)_2$ wherein R_1 and R_2 are independently hydrogen or alkyl of 1 to 4 carbon atoms,

(b) from about 10 to about 80 weight percent of an epoxy resin containing two or more 1,2-epoxy groups per molecule, and

(c) from 1 to about 25 weight percent of a thermoplastic polymer.

4,661,560

COMPOSITIONS COMPRISING COPOLYMERS OF A VINYL AROMATIC COMPOUND AND AN UNSATURATED CYCLIC ANHYDRIDE AND IMPACT IMPROVERS

Visvaldis Abolins, Delmar, N.Y.; John C. Goossens, Mount Vernon, Ind.; Fred F. Holub, Schenectady, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Selkirk, N.Y.

Division of Ser. No. 507,583, Jun. 24, 1983, Pat. No. 4,478,979, which is a division of Ser. No. 333,984, Dec. 23, 1982, Pat. No. 4,404,321, which is a division of Ser. No. 163,422, Jun. 27, 1980, abandoned, which is a division of Ser. No. 839,905, Oct. 6, 1977, Pat. No. 4,234,701. This application Sep. 21, 1984, Ser. No. 652,950

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.[4] C08L *61/04*

U.S. Cl. 525—68 **10 Claims**

1. A thermoplastic molding composition which comprises an intimate admixture of:

(a) a rubber-modified copolymer of a vinyl aromatic compound and an alpha, beta-unsaturated cyclic anhydride, and

(b) an impact modifier consisting essentially of a rubber modified alkenyl aromatic compound consisting essentially of styrene-polybutadiene graft copolymer;

(c) a polyphenylene ether resin; and

(d) an effective ductile impact strength improving amount of a low molecular weight normally liquid polybutadiene oligomer.

4,661,561

COMPOSITIONS COMPRISING COPOLYMERS OF A VINYL AROMATIC COMPOUND AND AN UNSATURATED CYCLIC ANHYDRIDE AND IMPACT IMPROVERS

Visvaldis Abolins, Delmar, N.Y.; John C. Goossens, Mount Vernon, Ind.; Fred F. Holub, Schenectady, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Selkirk, N.Y.

Division of Ser. No. 507,583, Jun. 24, 1983, Pat. No. 4,478,979, which is a division of Ser. No. 333,984, Dec. 23, 1982, Pat. No. 4,404,321, which is a division of Ser. No. 163,422, Jun. 27, 1980, abandoned, which is a division of Ser. No. 839,905, Oct. 6, 1977, Pat. No. 4,234,701. This application Sep. 21, 1984, Ser. No. 652,990

Int. Cl.[4] C08L *61/04*

U.S. Cl. 525—68 **10 Claims**

1. A thermoplastic molding composition which comprises an intimate admixture of:

(a) a rubber-modified copolymer of a vinyl aromatic compound and an alpha, beta-unsaturated cyclic anhydride, and

(b) an impact modifier consisting essentially of a rubber modified alkenyl aromatic compound comprising an intimate admixture of polystyrene and from 20 to 45 percent by weight of a polybutadiene rubber;

(c) a polyphenylene ether resin; and

(d) an effective ductile impact strength improving amount of a low molecular weight normally liquid polybutadiene oligomer.

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THERMOSET POLYMERS FROM POLYEPOXIDES AND POLYCARBOXYLIC ACIDS CONTAINING CATALYTIC AMOUNTS OF ALKALI AND ALKALINE EARTH METAL CATIONIC COMPLEXES

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 4, 1985, Ser. No. 795,028

Int. Cl.[4] C08G *59/68*

U.S. Cl. 525—122 **8 Claims**

1. A process for the rapid formation of thermoset polymers comprising reacting at a temperature in the range from about room temperature to about 200° C., a polyepoxide with a polycarboxylic acid which contains a catalytic amount of a catalyst having the formula $M(x)_n$ wherein M represents an alkali metal or an alkaline earth metal, X represents BF_4, PF_6, ClO_4, SbF_6, AsF_6, or BPh_4 and n represents 1 or 2 wherein the catalyst is present in from about 0.05 to 10% by weight based on the polyepoxide and the ratio of equivalents of polyexpoxide to equivalents of polycarboxylic acid is in the range of from about 50:1 to 1:1.

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POLYAMIDE-RUBBER BLEND COMPOSITION

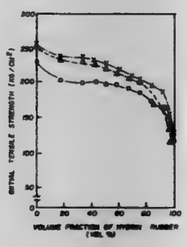
Kouji Sasaki, and Junji Koizumi, both of Nagoya, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Mar. 13, 1984, Ser. No. 589,223

Claims priority, application Japan, Mar. 15, 1983, 58-41576

Int. Cl.[4] C08F *8/30;* **C08L** *77/00*

U.S. Cl. 525—179 **2 Claims**



1. A uniform polyamide-rubber blend composition prepared by mixing the following components under heating in the presence of a crosslinking agent:

(a) 70 to 40 vol% of a rubber composition made of 5 to 50 vol% of an acrylonitrile-butadiene copolymer rubber and 95 to 50 vol% of an epichlorohydrin rubber; and

(b) 30 to 60 vol% of a polyamide resin, wherein the gel fraction of the rubber composition (a) in the polyamide-rubber blend composition is at least 70 wt% and components (a) and (b) have been mixed together such that the rubbers of component (a) are sufficiently crosslinked to provide a uniform polyamide-rubber blend composition.

4,661,564

MODIFIED STYRENIC POLYMER BEADS

Adolph V. DiGiulio, Wayne, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 802,901, Nov. 29, 1985, Pat. No. 4,622,346. This application Jul. 17, 1986, Ser. No. 886,483

The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.

Int. Cl.[4] C08F *2/00, 14/06*

U.S. Cl. 525—242 **2 Claims**

1. A bead product comprising a polystyrene bead having a styrene monomer-divinylbenzene copolymer relatively uniformly dispersed throughout the bead; said copolymer consisting essentially of styrene monomer and 0.02 to 0.85 percent by weight of divinylbenzene and said copolymer comprising 8 to 35 percent by weight of the total bead product; said bead product produced by the process comprising:

(a) forming an aqueous suspension of initial styrene polymer beads having a weight average molecular weight of 230,000 to 350,000 with a polydispersity (Mw/Mn) of 2 to 3.1, with the aid of a suitable suspending agent system; said initial styrene polymer beads selected from the group consisting of polymers of styrene, alpha-methylstyrene, nuclear-methylstyrene, para-tert-butylstyrene, chlorostyrene, dichlorostyrene, mixtures of these, and copolymers of at least 50% styrene and up to 50% of other monoethylenically unsaturated monomers copolymerizable the therewith;

(b) forming a comonomer solution of a styrene monomer and divinylbenzene; said styrene monomer being selected from the group consisting of sytrene, alpha-methylstyrene, nuclearmethylstyrene, para-tert-butylstyrene, monochlorostyrene, dichlorostyrene and mixtures thereof;

(c) forming an emulsion comprising a suitable emulsifier and a portion of said comonomer solution;

(d) adding the emulsion to the styrene polymer bead suspension at 25°–75° C. to allow the comonomers to be absorbed into the beads;

(e) forming a second emulsion comprising a suitable emulsifier, the remaining portion of said comonomer solution, and free-radical-producing catalysts;

(f) adding the second emulsion to the suspension of said beads absorbed with comonomers at 25°–75° C., at a rate such that the rate of absorption of comonomer/catalyst by said beads is at least equivalent to the rate of addition of emulsified comonomer/catalyst solution, then allowing said subpension to stand for 30 minutes to 4 hours, and then raising the temperature to 80°–95° C., and maintaining the suspension at said temperature to polymerize said comonomers; and

(g) heating said suspension to a temperature of 115° to about 135° C. to substantially complete the polymerization of said styrene monomer and divinylbenzene to form beads having copolymer relatively uniformly distributed throughout the beads.

4,661,565

UNIFORMLY CROSSLINKED POLYESTERS

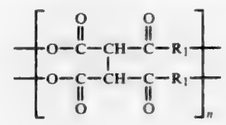
Stephen A. Noding, Brusly, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 17, 1986, Ser. No. 840,107

Int. Cl.[4] C08G *63/76*

U.S. Cl. 525—437 **8 Claims**

1. A composition of matter having the formula:



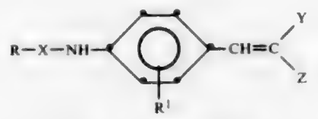
wherein R_1 is an alkylene, a cycloalkylene, an alkenylene, an alkynlene or a p-arylene and n is a whole integer greater than 1 and less than 100,000.

4,661,566
UV-ABSORBING CONDENSATION POLYMERIC COMPOSITION

Wayne P. Pruett; Richard H. S. Wang, both of Kingsport; Samuel D. Hilbert, Jonesborough, and Max A. Weaver, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1986, Ser. No. 826,645
Int. Cl.[4] C08G *63/46, 63/62*
U.S. Cl. 525—445 **8 Claims**

1. A composition comprising polyester or polycarbonate having reacted therein a total of from about 1.0 to about 5,000 parts by weight per million parts by weight of polymer of at least one UV absorbing compound of the formula



having a maximum light absorbance within the range of from about 320 nm to about 380 nm, which is nonextractable from the polyester or polycarbonate and stable under the polyester processing conditions, wherein:

X is carbonyl or sulfonyl;

R is selected from alkyl, substituted alkyl, aryl, substituted aryl, cycloalkyl, substituted cycloalkyl, furanyl, thienyl, alkylamino, substituted alkylamino, dialkylamino, substituted dialkylamino, N-alkyl-N-arylamino, substituted N-alkyl-N-arylamino, alkoxy, substituted alkoxy, aryloxy, substituted aryloxy, cycloalkoxy or substituted cycloalkoxy, and when X is carbonyl, R is further selected from hydrogen;

R^1 is hydrogen or 1–3 groups selected from alkyl, substituted alkyl, alkoxy, substituted alkoxy, or halogen;

Y is selected from hydrogen, alkoxycarbonyl, aryloxycarbonyl, cycloalkyloxycarbonyl, carbamyl, N-alkylcarbamyl, N,N-dialkylcarbamyl, N-alkyl-N-arylcarbamyl, N-aryloxycarbamyl, N-cycloalkylcarbamyl, alkanoyl, aroyl, aryl, cyano, benzimidazolyl, benzoxazolyl, or benzothiazolyl; and

Z is selected from hydrogen, alkoxycarbonyl, aryloxycarbonyl, cycloalkoxycarbonyl, or cyano;

wherein the various alkyl, divalent aliphatic, aryl and cycloalkyl moieties of the Y and Z groups are unsubstituted or substituted with any substituent which does not interfere with a condensation reaction;

at least one of R, R^1, Y, and Z is, or forms part of, or contains one or more reactive groups capable of undergoing a condensation reaction under polyester or polycarbonate forming conditions, such that the UV absorbing compound is reacted into the polymer;

in all of the above definitions the alkyl or divalent aliphatic moieties of the various groups contain from 1–10 carbons, straight or branched chain; and

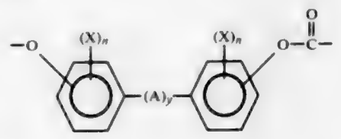
wherein said composition has an inherent viscosity of from about 0.4 to about 1.2 determined according to ASTM D2857-70 procedure in a Wagner Viscometer of Lab Glass Inc. of Vineland, N.J. having a ½ ml. capillary bulb, using a polymer concentration of 0.5% by weight in 60/40 by weight, phenol/tetrachloroethane solvent.

4,661,567
POLYCARBONATE END CAPPED WITH VINYLENE CARBONATE COMPOUND

John A. Tyrell, R.R. #2, Box 76D, and Gary L. Freimiller, 313 Washington, both of Mt. Vernon, Ind. 47620

Filed Sep. 14, 1984, Ser. No. 650,871
Int. Cl.[4] C08G *63/62*
U.S. Cl. 525—468 **21 Claims**

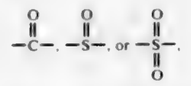
1. High molecular weight aromatic carbonate polymer comprising at least one recurring structural unit represented by the formula



wherein

X is independently selected from monovalent hydrocarbon radicals, halogen radicals, or monovalent hydrocarbonoxy radicals,

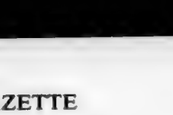
A is selected from divalent hydrocarbon radicals, —O—, —S—, —S—S—,



y is either zero or one, and

n is independently selected from integers having a value of from 0 to 4 inclusive,

containing at least one terminal group represented by the general formula



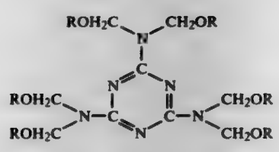
wherein R and R^1 are independently selected from hydrogen or monovalent hydrocarbon radicals.

4,661,568
EPOXY RESIN COMPOSITION AND PROCESS FOR PREPARING LAMINATES THEREFROM

Raymond Koenig, Vendenheim, France; Robert Urscheler, Bühl/Baden, and Dieter H. Klein, Rheinmünster, both of Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/EP85/00026, § 371 Date Sep. 9, 1985, § 102(e) Date Sep. 9, 1985, PCT Pub. No. WO85/03515, PCT Pub. Date Aug. 15, 1985
PCT Filed Jan. 30, 1985, Ser. No. 776,558
Int. Cl.[4] C08G *8/28, 59/40, 65/00*
U.S. Cl. 525—510 **14 Claims**

1. An epoxy resin composition comprising an epoxy resin, a hardener, an organic solvent and, optionally, an accelerator and other standard adjuncts, characterized in that the hardener is the reaction product of a hexa-alkyl ether of a hexamethylol melamine having the general formula:



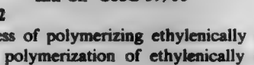
wherein each R is individually an alkyl radical having from 1 to 4 carbon atoms with a polyhydric phenol and, optionally, a monohydric phenol, in the presence of an acidic catalyst and an organic solvent wherein the ratio of phenolic hydroxyl groups to alkoxy groups is less than two phenolic hydroxyl groups for each alkoxy group.

4,661,569
METHOD OF INHIBITING POLYMER DEPOSITION ON REACTOR WALLS DURING FREE-RADICAL POLYMERIZATION

Willi Kleine, Burghausen; Werner Frey, Bergisch-Gladbach, and Albrecht Däweritz, Bad Aibling, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Fed. Rep. of Germany

Filed Feb. 12, 1985, Ser. No. 700,627
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1984, 3405436
Int. Cl.[4] C08G *59/06*
U.S. Cl. 526—62 **7 Claims**

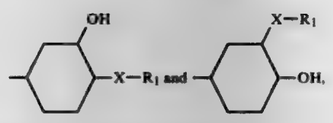
1. In a process of polymerizing ethylenically unsaturated compounds by polymerization of ethylenically unsaturated monomers in the presence of a free radical-forming initiator system and optically customary protective colloids and/or emulsifiers and optional polymerization auxiliaries in a reactor whose surfaces contact the reaction components, the improvement comprising providing the reactor surfaces with a coating that at least suppresses polymer deposit formation, the coating being comprised of at least one compound of the formula



optionally subjected to a cross linking reaction wherein X is selected from the group consisting of —O—, —S—, and



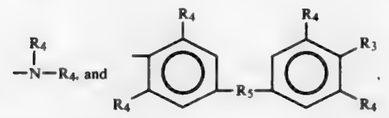
Y is selected from the group consisting of $—CH_2OR_6$,



R_1 is selected from the group consisting of R_2—,



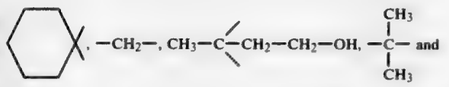
and $R_2—SO_2—$, R_2 is selected from the group consisting of phenyl substituted with at least one R_3, naphthyl substituted with at least one R_3, a heterocycle optionally substituted with at least one R_3 and derived by substitution of nitrogen, sulfur and/or oxygen atoms for at least one carbon of benzene, cyclopentadiene, indene, naphthalene or their partially or completely hydrogenated analogs, an alkyl of 1 to 8 carbon atoms containing at least one R_3,

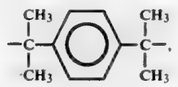


R_3 is selected from the group consisting of —OH, —SH,

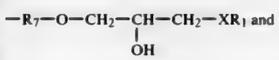


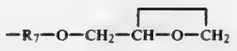
—COOH and $—SO_3H$, the R_4's being independently selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R_5 is selected from the group consisting of



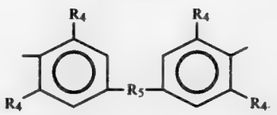


R_6 is selected from the group consisting of





and R_7 is selected from the group consisting of alkylene of 1 to 8 carbon atoms optionally substituted with at least one alkyl of 1 to 4 carbo atoms, phenylene having at least one R_3 and/or R_4, naphthylene having at least one R_3 and/or R_4 and



4,661,570
METHOD OF CONTINUOUS POLYMERIZATION

Masami Yamawaki; Shuichi Chino, both of Fuji; Tsuyoshi Minamisawa, Mishima, and Masaaki Nakamura, Fuji, all of Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Apr. 17, 1986, Ser. No. 853,096
Claims priority, application Japan, Apr. 17, 1985, 60-81697
Int. Cl.[4] C08F *2/02*
U.S. Cl. 526—88 **10 Claims**

1. A method of continuous polymerization for continuously producing a solid polymerization product from a liquid stock by employing a continuous agitator-mixer type reactor including two parallel shafts rotatable in same direction or in opposite directions, a multiplicity of paddles mounted on each of the shafts, and a barrel with its inner periphery proximate to the outer peripheries of the paddles, said paddles being arranged so that the major axis end of each paddle on one of the shafts is allowed to periodically come close to the minor axis end of a

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corresponding paddle on the other shaft, said reactor being such that feed stock is charged from an inlet port provided at one end of the longitudinal of the reactor and polymerization product is discharged from an outlet port provided at the other end, said method of continuous polymerization being characterized in that the rear-side portion of the reactor including the outlet port is raised so that the major axis of the reactor has a slope angle of 1–10 degrees relative to the horizontal, whereby reaction is allowed to take place in the reactor as installed in such inclined state.

4,661,571

PROCESS FOR THE PRODUCTION OF HEAT RESISTANT METHACRYLIC RESIN

Yasuyuki Kato; Masahiro Yuyama; Masahiko Moritani, all of Niihama, and Susumu Iijima, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 27, 1985, Ser. No. 780,903

Claims priority, application Japan, Oct. 2, 1984, 59-207276; Oct. 12, 1984, 59-214809

Int. Cl.⁴ C08F *2/00*

U.S. Cl. 526—216 **11 Claims**

1. A process for the production of a methacrylic polymer, by radical polymerization of a monomer or monomer mixture consisiting of 80 to 100% by weight of methyl methacrylate and 0 to 20% by weight of a copolymerizable vinyl monomer in the presence of a polymerization initiator and one or more chain transfer agents of a 2-mercaptoethyl alkanecarboxylate of the formula:



(1)

wherein R is an alkyl group having 4 to 12 carbon atoms, said chain transfer agent being present in an amount of 0.02 to 2 parts by weight to 100 parts by weight of the monomer or monomer mixture.

4,661,572

PROCESS FOR PRODUCING ACRYLONITRILE-BASED PRECURSORS FOR CARBON FIBERS

Takashi Setsuie; Takeji Otani, and Tadao Kobayashi, all of Hiroshima, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1984, Ser. No. 679,114

Claims priority, application Japan, Nov. 4, 1982, 57-193696

Int. Cl.⁴ C08F *4/30, 220/44*

U.S. Cl. 526—229 **6 Claims**

1. A process for producing an acrylonitrile-based precursor for a carbon fiber having an undetectable amount of alkali-metal impurities therein which comprises:

(a) producing a essentially metal-free acrylonitrile-based copolymer containing as essential components at least 95% by weight of acrylonitrile and from 0.5 to 3% by weight of a carboxylic acid group-containing polymerizable unsaturated monomer, with at least 20% of the carboxyl groups being substituted with ammonium ions by aqueous suspension copolymerization of acrylonitrile and a carboxyl group containing copolymerizable unsaturated monomer, in the presence of a redox polymerization initiator consisting of ammonium persulfate and ammonium sulfite, wherein the amount of the ammonium persulfate added is from 0.2 to 0.8% by weight based on the weight of the monomers, and the weight ratio of ammonium persulfate to ammonium sulfite is from 1:1 to 1:6, and

(b) dissolving the acrylonitrile-based polymer in a sustantially metal-free solvent in which it is soluble to obtain a spinning solution and

(c) spinning the resultant solution to obtain the acrylonitrile-based precursor for carbon fiber.

4,661,573

LENS COMPOSITION ARTICLES AND METHOD OF MANUFACTURE

Donald J. Ratkowski, Mesa, and William J. Burke, Tempe, both of Ariz., assignors to Paragon Optical Inc., Mesa, Ariz.

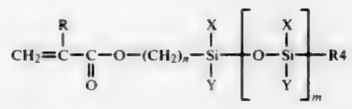
Filed Apr. 14, 1986, Ser. No. 851,929

Int. Cl.⁴ C08F *20/24*

U.S. Cl. 526—245 **33 Claims**

1. A copolymer composition, especially suited for fabricating optical lenses, comprising a copolymer of copolymerized comonomers containing:

(a) about 45% to about 65% by weight of a siloxy substituted ester of acrylic or methacrylic acid having the structure:

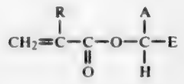


wherein
R=CH_3— or H—;
X=C_1–C_6 alkyl, cyclohexyl, phenyl or Z;
Y=C_1–C_6 alkyl, cyclohexyl, phenyl or Z;
Z=



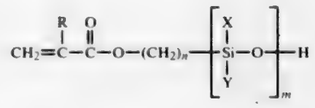
R1=C_1–C_6 alkyl, cyclohexyl, or phenyl; m=1–3;
R2=C_1–C_6 alkyl, cyclohexyl, or phenyl; n=1–5;
R3=C_1–C_6 alkyl, cyclohexyl, or phenyl; p=1–3;
R4=C_1–C_6 alkyl or cyclohexyl;

(b) about 3% to about 35% by weight of a polyfluoroalkyl acrylate having no more than 20 fluorine atoms and the structure:



wherein:
R=H or CH_3;
A=H or E; and
E=a polyfluoroalkyl group;

(c) about 1% to about 15% by weight of an acryloxyalkylsilanol having the structure:

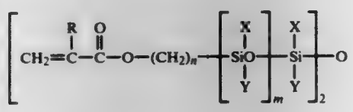


wherein:
R=CH_3— or H—;
X, Y=C_1–C_6 alkyl; phenyl or Z;
Z=

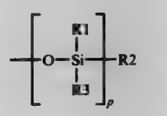


n=1–5
m=1–3
p=1–3
R1=C_1–C_6 alkyl, cyclohexyl, or phenyl;
R2=C_1–C_6 alkyl, cyclohexyl, or phenyl;
R3=C_1–C_6 alkyl, cyclohexyl, or phenyl;

(d) about 2% to about 20% by weight of a polyacryloxyalkylpolysiloxane having the structure:



wherein:
R=CH_3— or H—;
m=0–3;
n=1–5;
X=C_1–C_6 alkyl, cyclohexyl, phenyl or Z;
Y=C_1–C_6 alkyl, cyclohexyl, phenyl or Z; and
Z=

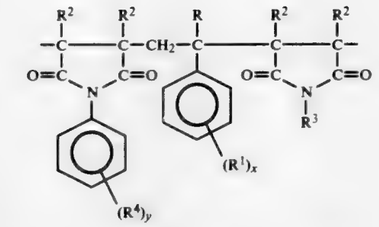


p=1–3;
R1=C_1–C_6 alkyl, cyclohexyl, or phenyl;
R2=C_1–C_6 alkyl, cyclohexyl, or phenyl; and
R3=C_1–C_6 alkyl, cyclohexyl, or phenyl;

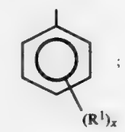
(e) about 2% to 15% of a polyol polyacrylate;

(f) about 2% to about 15% of an ethylenically unsaturated polymerizable wetting agent; and

(g) zero to about 15% by weight of an acrylic acid ester of a monohydric alcohol having no more than 20 carbon atoms.



wherein R represents —H, —CH_3, or —CH_2CH_3; each R^1 separately represents —CH_3, —CH_2CH_3, —$CH(CH_3)_2$, —$C(CH_3)_3$, —OH, —NH_2, —OCH_3, —CO_2H, —$CONH_2$, or —$CON(CH_3)_2$; each R^2 separately represents —H or —CH_3; R^3 represents a C_1 to C_4 alkyl group or



;

R^4 represents —Cl or —Br; x represents an integer of from 0 to 3 and wherein y represents an integer of from 1 to 3.

4,661,574

FLAME RETARDANT MOLDED COMPOSITION WHICH INCORPORATES A POLY[N-(BROMOPHENYL)MALEIMIDE-CO-STYRENE-CO-N-PHENYLMALEIMIDE] COPOLYMER

Usama E. Younes, Newtown Square, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 685,355, Dec. 24, 1984, Pat. No. 4,609,711. This application Apr. 11, 1986, Ser. No. 851,028

Int. Cl.⁴ C08F *214/16*; C08L *39/04*

U.S. Cl. 526—262 **5 Claims**

1. A random copolymer comprised of the following recurring units.

4,661,575

DICYCLOPENTADIENE POLYMER PRODUCT

Glenn M. Tom, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 672,424, Nov. 16, 1984, Pat. No. 4,584,425, which is a continuation-in-part of Ser. No. 497,918, May 25, 1983, Pat. No. 4,507,453, which is a continuation-in-part of Ser. No. 342,455, Jan. 25, 1982, abandoned. This application Mar. 13, 1986, Ser. No. 839,258

Int. Cl.⁴ C08F *32/06*

U.S. Cl. 526—283 **1 Claim**

1. A substantially crosslinked thermoset polymer comprising polymerized units of dicyclopentadiene, said homopolymer being characterized as having a flexural modulus of at least 150,000 psi at ambient temperature, a notched Izod impact strength of at least about 1.2 ft. lb./in. notch, a plate impact strength at 23° C. of at least about 5 ft. lb. and a percent swell in toluene of less than 200%.

4,661,576

THERMOTROPIC POLYMERS WITH LATERAL CHAINS HAVING A CHIRAL STRUCTURE AND PROCESS AND THEIR MANUFACTURE

Guy Decobert, Orsay; Jean C. Dubois, St Remy les Chevreuses, and Francoise Soyer, Villebon sur Yvette, all of France, assignors to Thomson-CSF, Paris, France

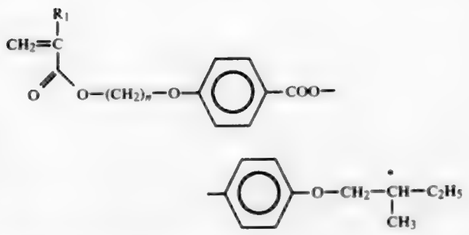
Filed Nov. 12, 1985, Ser. No. 796,737

Claims priority, application France, Nov. 13, 1984, 84 17292

Int. Cl.⁴ C08F *212/24*

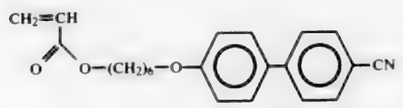
U.S. Cl. 526—298 **2 Claims**

1. A thermotropic polymer of the mesogenic lateral group type having at least one mesomorphous phase through copolymerization of a monomer M_1 of the formula:



(A)

in which R_1 is CH_3 or H with n=11 or R_1 is Cl with $2 \leqq n \leqq 11$, with a second monomer M_2 of the formula:



which provides a copolymer product having at least one nematic phase with the proportion of said monomers in the polymer being such that the existence of a cholesteric phase is allowed.

4,661,577

AMINOFUNCTIONAL POLYSILOXANES

Kimberley Jo Lane, Clifton Park, and Frank J. Traver, Troy, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Oct. 1, 1985, Ser. No. 782,654
Int. Cl.[4] C08G 77/00
U.S. Cl. 528—10 **13 Claims**

1. A substantially trialkylsiloxy terminated polysiloxane composition having at least one amino or substituted amino group linked to at least one trifunctional siloxy unit of said polysiloxane through an alkylene bridge wherein at least about 50 mole percent of aminofunctional siloxy units are trifunctional siloxy units and the amine equivalent of said composition ranges from about 0.1 to about 2.5.

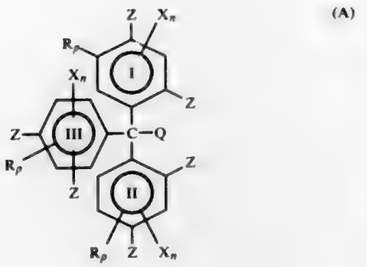
4,661,578

HIGH TEMPERATURE EPOXY RESIN COMPOSITION WITH REDUCED VISCOSITY

Theodore L. Parker, Lafayette, and Patrick H. Martin, Danville, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

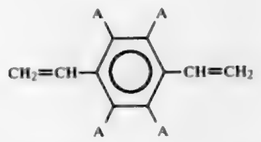
Filed Nov. 25, 1985, Ser. No. 801,360
Int. Cl.[4] C08G 59/40
U.S. Cl. 528—98 **19 Claims**

1. A composition of matter, comprising:
either at least about 80% of
the monomeric or oligomeric epoxidation product of a phenolic compound of the formula



(B)

wherein
X' is Cl or Br and Y is H or $-CH_3$;
said epoxidation product having an average epoxide functionality of from about 2.5 to about 6.0, or at least about 70% of theoretical for the number of available hydroxyls, whichever is greater; or
at least about 80% of an epoxy phenol-formaldehyde or cresol-formaldehyde novolac resin in monomeric or oligomeric form;
in admixture with:
from about 0.1% to about 20% of a divinyl benzene compound of the formula



as such or in admixture with isomers thereof and wherein each A independently represents H, F, Cl, Br or CH_3 but no more than 2 of A are CH_3.

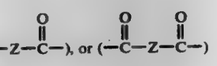
4,661,579

COMPLETELY AROMATIC POLYESTERS, A PROCESS FOR THEIR PREPARATION AND CORRESPONDING SHAPED ARTICLES

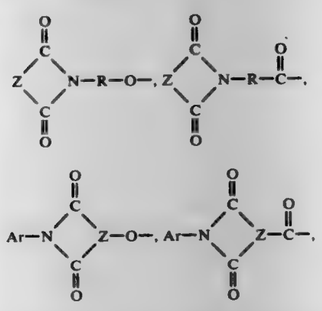
Erich Blöcker, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 21, 1985, Ser. No. 714,720
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3410927
Int. Cl.[4] C08G 63/44
U.S. Cl. 528—170 **8 Claims**

1. A completely aromatic polyester composed essentially of the units



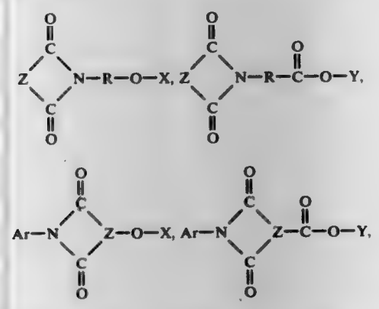
and (—O—Z—O—) or the combination in which Z denotes an aromatic ring system, at least one end of the molecular chains being formed from radicals of a molecular weight regulator, wherein the radicals of the molecular weight regulator have the following structure:



(I)

Z or Ar denotes a benzene or naphthalene ring which is unsubstituted or substituted by inert substituents, R denotes a divalent benzene or naphthalene ring which is unsubstituted or substituted as above; a divalent aliphatic radical having 1 to 6 carbon atoms; or a divalent cycloaliphatic radical having 6 to 16 carbon atoms.

4. A process for the preparation of the completely aromatic polyesters as claimed in claim 1 by the melt condensation of suitable condensation reactants in the presence of a molecular weight regulator, wherein a compound of the following structure or corresponding mixtures are employed as the molecular weight regulator:



(II)

in which Z, R and Ar have the above meaning, the imide ring has five or six members, X is hydrogen or an acyl radical having 2 to 6 carbon atoms and Y is hydrogen or a hydrocarbon radical which is readily eliminated under the conditions of the polycondensation reaction.

4,661,580

OXYGEN DESORPTION FOR IMPROVED COLOR OF POLYESTERS

Gautam R. Ranade, East Lyme, Conn., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 1, 1986, Ser. No. 846,676
Int. Cl.[4] C08G 63/60
U.S. Cl. 528—176 **1 Claim**

1. In a process for preparing polyesters from bisphenol-A and diphenylphthalate monomers, the improvement which comprises vacuum drying the monomers at temperatures from about 50° C. to 70° C., and thereafter polymerizing the monomers in a deoxygenated atmosphere of nitrogen to obtain a polyester product having a reduced yellow coloration.

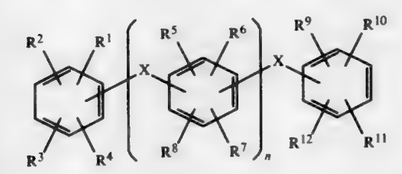
4,661,581

PROCESS FOR PRODUCING AROMATIC POLYETHER KETONES AND POLYTHIOETHER KETONES

Seiichi Nozawa, Yamato, and Michio Nakata, Yokohama, both of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Oct. 1, 1984, Ser. No. 656,325
Claims priority, application Japan, Sep. 29, 1983, 58-181647; Nov. 8, 1983, 58-209727; Nov. 10, 1983, 58-211529
Int. Cl.[4] C08G 63/62
U.S. Cl. 528—176 **11 Claims**

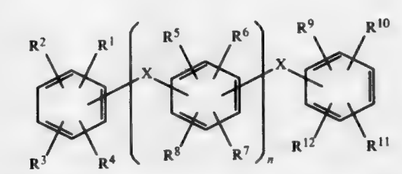
1. A process for producing an aromatic polyether ketone, said method comprising reacting, at a temperature of from −10° to 300° C., an aromatic ether of the formula:



(I)

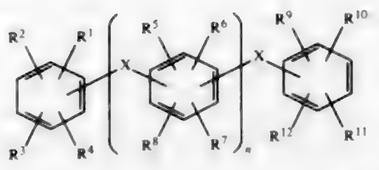
wherein each of R^1 to R^{12} is independently a hydrogen atom, a halogen atom, a hydrocarbon group or an alkoxy group, n is an integer of 0 to 5, and X is an oxygen atom, with 1 to 500 moles of phosgene per mole of the said ether of formula I in 0.1 to 500 parts by weight of an aprotic solvent per 1 part by weight of said ether of formula I, said solvent having a dielectric constant of less than 20 and a dipole moment of less than 3.0, in the presence of 0.01 to 100 moles of a catalyst per mole of said ether of formula I, said catalyst being an anhydrous halide of a metal of Group III of the Periodic Table.

9. An aromatic polyether ketone of the following formula (III):



(I)

wherein each of R^1 to R^{12} is a hydrogen atom, a halogen atom, a hydrocarbon group or an alkoxy group, n is an integer of 0 to 5, and X is an oxygen atom, said polyether ketone being obtained by reacting, at a temperature of from −10° to 300° C., an aromatic ether of the formula:



(I)

wherein each of R^1 to R^{12} is independently a hydrogen atom, a halogen atom, a hydrocarbon group or an alkoxy group, n is an integer of 0 to 5, and X is an oxygen atom, with 1 to 500 moles of phosgene per mole of the said ether formula I in 0.1 to 500 parts by weight of an aprotic solvent per 1 part by weight of the said ether formula I, said solvent having a dielectric constant of less than 20 and a dipole moment of less than 3.0, in the presence of 0.01 to 100 moles of a catalyst per mole of the said ether formula I, said catalyst being an anhydrous halide of a metal of Group III of the Periodic Table.

4,661,582

NOVEL HIGH MOLECULAR WEIGHT DIIMIDE DIACIDS AND MODIFIED THERMOPLASTIC COPOLYETHER ESTER ELASTOMERS PREPARED THEREFROM

Russell J. McCready, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 740,661, Jun. 3, 1985, Pat. No. 4,594,377, which is a division of Ser. No. 665,315, Oct. 26, 1984, Pat. No. 4,544,734. This application May 5, 1986, Ser. No. 860,148

Int. Cl.⁴ C08G *69/08, 69/44*

U.S. Cl. 528—292 **15 Claims**

1. The imidization reaction product of

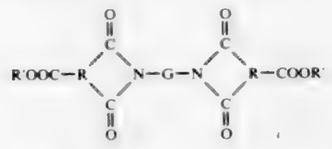
(a) a tricarboxylic acid anhydride or the corresponding acid thereof containing two vicinal carboxyl groups and

(b) a polyoxyalkylene diamine of the formula

$$H_2N—G—NH_2$$

wherein G is the divalent radical remaining after the removal of the amino groups of a long chain poly(alkylene ether) diamine having a molecular weight of from about 600 to about 12000 and a carbon to oxygen, ratio of from about 1.8:1 to about 4.3:1.

7. High molecular weight poly ether diamide diacids of the formula:



wherein each R is independently selected from the group consisting of C_2 to C_{20} aliphatic and cycloaliphatic trivalent organic radicals and C_6 to C_{20} aromatic trivalent organic radicals having two vicinal reactive sites; each R' is independently selected from the group consisting of hydrogen, C_1 to C_6 aliphatic and cycloaliphatic monovalent organic radicals and C_6 to C_{12} aromatic monovalent organic radicals, and G is the radical remaining after removal of the amino groups of a long chain ether diamine having an average molecular weight of from about 600 to 12,000.

4,661,583

REACTION OF BICYCLIC AMIDE ACETAL WITH IMIDE

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 24, 1985, Ser. No. 747,737

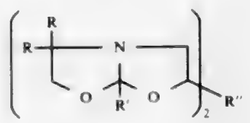
Int. Cl.⁴ C08G *73/00*

U.S. Cl. 528—322 **12 Claims**

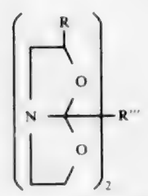
1. The process for preparing a polymer composition comprising reacting a mixture of a bicyclic amide acetal and an imide which is a maleimide compound at a temperature in the range of from about 0° C. to 250° C. wherein the bicyclic amide acetal is one having the formula I, II or III



I



II



III

wherein R, R' and R'' independently represent hydrogen, an alkyl group having from 1 to 20 carbon atoms, an aryl group having from 6 to 12 carbon atoms, an alkaryl group having from 7 to 20 carbon atoms, an alkyl ether group having from 1 to 20 carbon atoms or an aryl ether group having from 6 to 18 carbon atoms and R''' represents an alkylene group having from 1 to 20 carbon atoms, or an arylene group having from 6 to 12 carbon atoms.

4,661,584

PREPARATION OF POLYARYLENE SULPHIDE IN PRESENCE OF AMINO CARBOXYLIC ACID

Karsten Idel, Krefeld; Edgar Ostlinning, Duesseldorf; Dieter Freitag, and Wolfgang Alewelt, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 761,360, Aug. 1, 1985. This application Dec. 30, 1985, Ser. No. 814,795

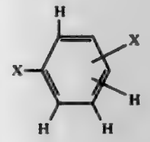
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1984, 3428984

Int. Cl.⁴ C08G *75/16*

U.S. Cl. 528—388 **12 Claims**

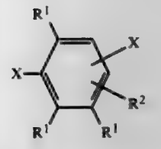
1. A process for the production of high molecular weight polyarylene sulphide which comprises reacting

(a) from 50 to 100 mole % of aromatic dihalogen compound corresponding to the following formula:



(I)

and from 0 to 50 mole % of aromatic dihalogen compound corresponding to the following formula:



(II)

wherein

X represents halogen atoms in the meta- or para-position to one another; and each R^1, which is the same or different, represents hydrogen, alkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, in addition to which two radicals R^1 in the ortho-position to one another are attached to form an aromatic or heterocyclic ring and one of the radicals R^1 is always different from hydrogen; and

(b) from 0 to 5 mole %, based on the sum of components (a) and (b), of an aromatic trihalogen or tetrahalogen compound corresponding to the following formula:

$$ArX_n \quad \text{(III)}$$

wherein

Ar represents an aromatic or heterocyclic radical;

X represents halogen; and

n represents the number 3 or 4; and

(c) alkali metal sulphide the molar ratio of (a+b):c being from 0.85:1 to 1.15:1;

(d) with or without a catalyst; in

(e) a polar solvent, the molar ratio of (a):(c) being from 0.75:1 to 1.25:1 and (c):(e) from 1:2 to 1:15, the reaction time being up to 24 hours and the reaction temperatures being from 150° to 280° C., characterized in that

(f) the reaction is carried out in the presence of from 0.2 to 100 mole %, based on the moles of aromatic dihalogen compound, of an amino carboxylic acid.

4,661,585

PULVERULENT POLYAMIDE COATING COMPOSITIONS WHEREIN THE POLYAMIDE HAS AS AN AVERAGE AT LEAST NINE CARBON ATOMS PER CARBONAMIDE GROUP

Rainer Feldmann, Marl, and Günter Hess, Haltern, both of Fed. Rep. of Germany, assignors to Hüls AG, Marl, Fed. Rep. of Germany

Filed Sep. 30, 1985, Ser. No. 781,599

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1984, 3441708

Int. Cl.⁴ C08G *69/46*

U.S. Cl. 528—502 **12 Claims**

1. A method of preparing a pulverulent polyamide coating composition comprising:

(a) mixing together granulates of

(I) 80 to 20% by weight of a first polyamide having on the average at least nine aliphatically bound carbon atoms per carbonamide group and having a relative viscosity of 1.50 to 1.65 as measured in m-cresol at 25° C. for a concentration of 0.5 g/l; and

(II) 20 to 80% by weight of a second polyamide having on the average at least nine aliphatically bound carbon atoms per carbonamide group and having a relative viscosity of 1.55 to 1.75 as measured in m-cresol at 25° C. for a concentration of 0.5 g/l per German Industrial Standard 53,727, wherein the difference between the relative viscosities of components (I) and (II) is at least 0.04 and at most 0.1 units; and

(b) cold grinding the mixture.

4,661,586

MONOCLONAL ANTI-IDIOTYPE ANTIBODIES

Ronald Levy, Stanford; Jeanette Dilley; David G. Maloney, both of Mt. View, and Richard A. Miller, Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation-in-part of Ser. No. 322,377, Nov. 17, 1981, abandoned. This application Dec. 2, 1983, Ser. No. 557,655

Int. Cl.⁴ C07K *3/00, 15/00;* **C12N** *15/00;* **G01N** *33/53*

U.S. Cl. 530—387 **7 Claims**

1. A monoclonal anti-idiotype antibody against surface immunoglobulin (Ig) of a human B-cell tumor, the antibody being useful for treating the person bearing the tumor for the malignant condition associated with the tumor, and the antibody being useful in immunodiagnosis of the malignant condition associated with the tumor.

4,661,587

BIS 1:2 CHROMIUM COMPLEXES OF DISAZO AND AZO OR AZOMETHINE DYES

Ulrich Schlesinger, Binzen, Fed. Rep. of Germany, and Fabio Beffa, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

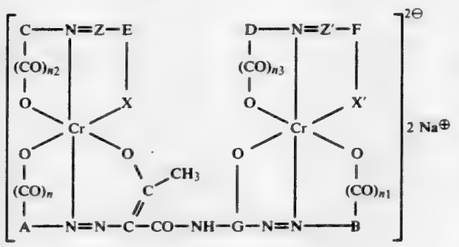
Filed May 3, 1985, Ser. No. 730,027

Claims priority, application Switzerland, May 10, 1984, 2305/84

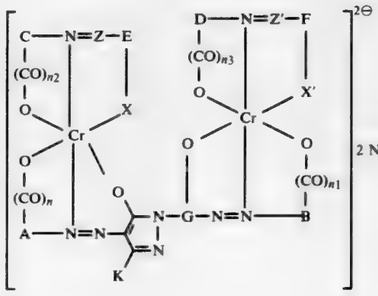
Int. Cl.⁴ C09B *45/26, 45/48;* **D06P** *1/10, 3/32*

U.S. Cl. 534—696 **10 Claims**

1. A chrome complex dye of the formula



or of the formula



wherein

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Z and Z' independently of one another are each nitrogen or —CH—;

X and X' independently of one another are each oxygen, or a group of the formula —NR—, in which R is hydrogen or C_1–C_4-alkyl, provided X is oxygen when Z is —CH— and provided X' is oxygen when Z' is —CH—;

A and B independently of one another are each a benzene or naphthalene radical of a diazo component which carries the hydroxyl or carboxyl group in the o-position with respect to the azo group;

C and D independently of one another are each a benzene or naphthalene radical which carries in the o-position with respect to the azo or azomethine group a hydroxyl or carboxyl group, or, if n_2 or n_3 is 1 and Z or Z' is CH, an alkyl, phenylalkyl or cycloalkyl radical;

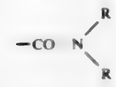
E and F independently of one another are each the radical of a coupling component when Z or Z' is nitrogen, the coupling component containing in the o- and alpha-positions with respect to the azo group the groups X and X', respectively, or the radical of an o-hydroxyaldehyde when Z or Z' is —CH—;

n, n_1, n_2 and n_3 independently of one another are each zero or 1;

$Ka^{\oplus}$ is a cation; and

G is a benzene or naphthalene radical which contains the OH group in the o-position with respect to the coupling position on the group G; and

K is the C_1–C_4 alkyl group or a —COOR or the



group, in which R is hydrogen or C_1–C_4-alkyl.

4,661,588
23-O-SUBSTITUTED CARBAMOYL-23-DEMYCINOSYLDESMYCOSIN

Tatsuro Fujiwara; Kazuyo Obta; Eiichi Honda; Takao Hirano, and Hideo Sakakibara, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

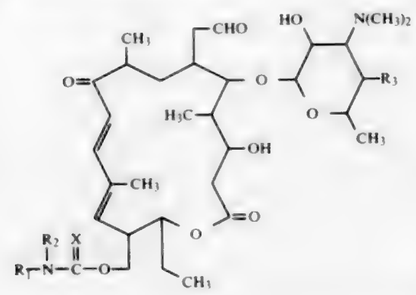
Continuation of Ser. No. 459,653, Jun. 20, 1983, abandoned. This application Oct. 25, 1985, Ser. No. 790,805

Claims priority, application Japan, Jan. 20, 1982, 57-7820; May 10, 1982, 57-78896; May 10, 1982, 57-78897

Int. Cl.⁴ C07H *17/08*

U.S. Cl. 536—7.1 **2 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl, lower alkoxycarbonyl-lower alkyl, phenyl, phenyl substituted by one or more lower alkyl or halogen, phenyl-lower alkyl optionally substituted in its side chain by lower alkyl or lower alkoxycarbonyl, thienylmethyl or thiazolyl, R_2 is hydrogen or lower alkyl, or



constitutes a 3–7-membered nitrogen-containing heterocyclic ring in which R_1 and R_2 are connected, R_3 is hydrogen or hydroxyl, and X is oxygen or sulfur, or a non-toxic salt thereof.

4,661,589
PROCESS FOR PREPARING HYDROXYALKYLCELLULOSE ETHERS

Glen L. Adams, Baton Rouge, La., and Christopher D. Messelt, Gales Ferry, Conn., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 2, 1985, Ser. No. 751,338

Int. Cl.⁴ C08B *11/08, 11/193*

U.S. Cl. 536—91 **34 Claims**

1. In the process for preparing hydroxyalkylcellulose ethers and mixed hydroxyalkylalkylcellulose ethers having a high C_2 or higher hydroxyalkoxyl substitution, said process comprising the steps of

(a) forming a reaction mass comprising cellulose and an amount of an alkali metal hydroxide at least sufficient to break up the crystallinity of the cellulose and to catalyze a reaction between the cellulose and an alkylene oxide and

(b) continuously adding an etherifying agent comprising a C_2 or higher alkylene oxide to the reaction mass under conditions including an elevated temperature such that the alkylene oxide react with the cellulose to attach ether groups thereto;

the improvement characterized by performing said process under reaction conditions such that said alkylene oxide is added in the form of a vapor.

4,661,590
SUBSTITUTED VINYL CEPHALOSPORINS

Hideaki Hoshi, Chiba; Jun Okumura, Yokohama; Takayuki Naito, Kawasaki; Yoshio Abe, and Shimpei Aburaki, both of Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

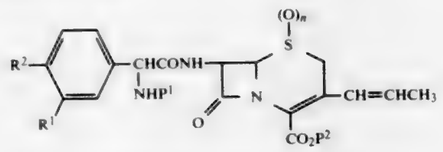
Division of Ser. No. 713,207, Mar. 18, 1985, Pat. No. 4,591,641, which is a division of Ser. No. 564,604, Dec. 28, 1983, Pat. No. 4,520,022, which is a continuation-in-part of Ser. No. 461,833, Jan. 28, 1983, abandoned. This application Jul. 31, 1985, Ser. No. 761,115

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.⁴ C07D *501/22;* **A61K** *31/545*

U.S. Cl. 540—215 **1 Claim**

1. A compound selected from the group consisting of those having the formula



and the z-configuration about the exocyclic double bond wherein

n is the integer 0,

R^1 is hydrogen, hydroxy, chlorine, or methoxy,

P^1, and P^2 are hydrogen atoms,

R^2 is hydrogen, or hydroxy, with the proviso that when R^2 is hydrogen, R^1 is hydrogen, or hydroxy, and when R^2 is hydroxy, R^1 is hydrogen, chlorine, or methoxy, the pharmaceutically acceptable acid addition and metal salts of the foregoing substances said salts being antibacterially effective on oral or parenteral administration.

4,661,591
PREPARATION OF 4,5-DIHYDRODITHIENO[3,4-B:3',4'-E]AZEPINE-5,9-DIONE

Gerd Steiner, Kirchheim, and Marco Thyes, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 9, 1986, Ser. No. 883,814

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1985, 3524743

Int. Cl.⁴ C07D *495/14, 403/14*

U.S. Cl. 540—495 **4 Claims**

1. A process for the preparation of 4,5-dihydrodithieno[3,4-b:3',4'-e]azepine-5,9-dione, wherein thiophene-3,4-dicarboxylic acid 2,5-dichlorothien-3-ylamide is subjected to a Friedel-Crafts cyclization reaction and the product is then dechlorinated.

4,661,592
4H-PYRIMIDO[2,1-A]ISOQUINOLIN-4-ONE DERIVATIVES

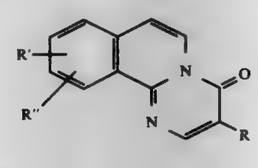
Arthur L. Campbell; Suzanne Evans Radak, both of Glenview, Ill., and Melanie J. Loots, Pennington, N.J., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 27, 1984, Ser. No. 625,061

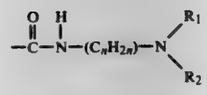
Int. Cl.⁴ C07D *471/04;* **A61K** *31/505*

U.S. Cl. 544—252 **7 Claims**

1. A compound of the formula



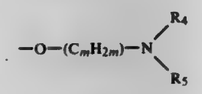
wherein R is



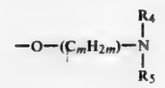
or $—(C_n—H_{2n})—R_3$ wherein n is an integer of from 1 to 4; R_1 and R_2 are independently hydrogen or lower alkyl; and R_3 is a group selected from the class consisting of hydroxyl, amino, substituted amino which is represented by the formula $—NR^6R^7$ wherein R^6 is lower alkyl and R^7 is hydrogen or lower alkyl, lower alkylcarboxyl which is represented by the formula



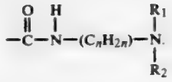
wherein R^8 is lower alkyl, and



wherein m is an integer of from 1 to 4 and R_4 and R_5 are idependently hydrogen or lower alkyl; and R' and R'' are independently hydrogen, halo or trifluoromethyl; or pharmaceutically acceptable salts thereof when R_3 is amino substituted amino or



or when R is



4,661,593
QUINOXALINE ADDUCTS USEFUL AS ANTHELMINTICS

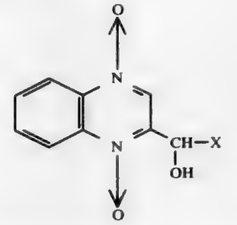
Vernon V. Young, and David R. Bright, both of Terre Haute, Ind., assignors to Angus Chemcial Company, Northbrook, Ill.

Division of Ser. No. 716,506, Mar. 25, 1985, which is a continuation of Ser. No. 329,446, Dec. 10, 1981, abandoned, which is a division of Ser. No. 176,168, Aug. 7, 1980, Pat. No. 4,348,389. This application May 1, 1986, Ser. No. 858,584

Int. Cl.⁴ C07D *403/06, 417/06, 413/06, 403/14*

U.S. Cl. 544—353 **3 Claims**

1. A compound of the formula



wherein X is 2-thiazolylamino or 2-benzothiazolylamino.

4,661,594
CERTAIN [(2,2,6,6-TETRAMETHYL-4-PIPERIDYL)AMINO]-1,3,2-DIOXAPHOSPHORINANES USEFUL AS STABILIZERS FOR PROTECTING RESINS

Michael Rasberger, Riehen; Peter Hofmann, Basel; Hans R. Meier, and Paul Dubs, both of Marly, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

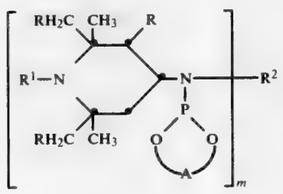
Filed Feb. 19, 1985, Ser. No. 702,994

Claims priority, application Switzerland, Feb. 29, 1984, 964/84

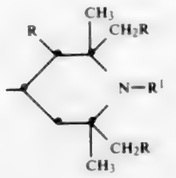
Int. Cl.⁴ C07F *9/65;* **C08K** *5/51*

U.S. Cl. 546—22 **5 Claims**

1. A compound of formula I

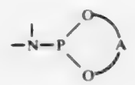


wherein
m is 1 or 2,
A is branched or unbranched 1,2-alkylene or 1,3-alkylene having 2 to 9 carbon atoms, or A is o-phenylene,
R is hydrogen or methyl,
R^1 is hydrogen, C_1–C_{12}-alkyl, C_3–C_5-alkenyl, C_7–C_9-aralkyl, C_2–C_{12}-alkanoyl, C_3–C_6-alkenoyl, benzoyl or cyanomethyl, and
when m is 1, R^2 is C_1–C_{20}-alkyl, C_3–C_{14}-alkoxyalkyl, C_4–C_{12}-dialkylaminoalkyl, C_5–C_{12}-cycloalkyl, C_7–C_9-aralkyl, C_6–C_{10}-aryl, C_7–C_{20}-alkaryl or a group of the formula IV



IV

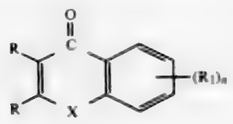
or, when m is 2, R^2 is C_2–C_{20}-alkylene, C_4–C_{12}-alkylene interrupted by one or more —O—, —N(C_1–C_4-alkyl)— or



groups, or R^2 is cyclohexylene, xylylene, phenylene or a group phenylene-Z-phenylene or cyclohexylene-2-cyclohexylene where Z is —O—, —CH_2— or —SO_2—.

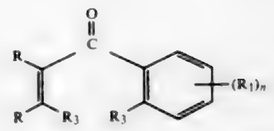
4,661,595
METHOD FOR PRODUCING XANTHONE AND THIOXANTHONE COMPOUNDS USEFUL AS PHOTOINITIATORS
Lajos Ávár, Biel-Benken, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland
Filed Jul. 10, 1985, Ser. No. 753,634
Claims priority, application Switzerland, Jul. 12, 1984, 3388/84; Jul. 12, 1984, 3390/84
Int. Cl.⁴ C07D *491/052, 515/04, 335/16, 319/00*
U.S. Cl. 546—89 **20 Claims**

1. A method for preparing a compound of formula I



(I)

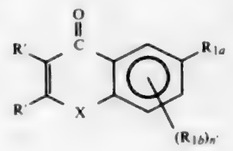
in which
X is O or S,
both groups R together with the two carbon atoms to which they are attached form a fused aromatic group;
R_1 is selected from C_{1-18}alkyl,
cyclo C_{5-7}alkyl, phenyl C_{1-4}alkyl, C_{1-4}alkoxy C_{1-4}alkyl, C_{1-4}alkoxycarbonyl C_{1-4}alkyl, C_{1-4}alkylcarbonyloxy C_{1-4}alkyl, C_{1-8}alkoxy, phenyl C_{1-4}alkoxy and halogen; and
n is 0, 1, 2 or 3
comprising reacting a compound of formula II



(II)

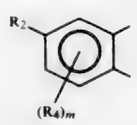
where R, R_1 and n are defined above and where each R_3, independently, is C_{1-12}alkoxy or one R_3 is C_{1-12}alkoxy and the other R_3 is halogen,
with elemental sulphur in an alkaline medium, a metal sulphide or a metal hydrosulphide, provided that when X in formula I is S, then one R_3 in formula II is C_{1-12}alkoxy and the other R_3 is halogen.

2. A method according to claim 1 for preparing a compound of formula Ia

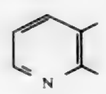


(Ia)

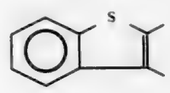
in which
X is O or S,
R_{1a} is hydrogen, C_{1-18}alkyl, phenyl C_{1-3}-alkyl, cycloC_{5-7}alkyl, C_{1-8}alkoxy, benzyloxy, C_{1-3}alkoxycarbonylethyl or halogen;
R_{1b} is C_{1-8}alkyl, C_{1-8}alkoxy or halogen;
n' is 0, 1 or 2;
both groups R' together with the two carbon atoms to which they are attached form a group of formula (a), (b), (c), (d) or (e)



(a)



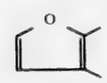
(b)



(c)

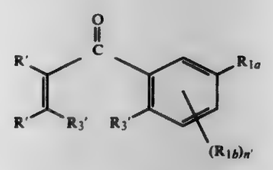


(d)



(e)

where
R_2 is hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy or halogen;
R_4 is C_{1-4}alkyl or halogen provided not more than one R_4 group is halogen; and
m is 0, 1, 2 or 3,
comprising reacting a compound of formula IIa

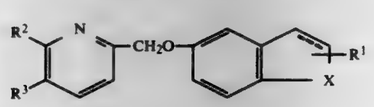


(IIa)

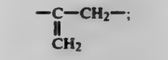
in which R', R_{1a}, R_{1b} and n' are defined above and each R_3, independently, is C_{1-6}alkoxy or one R_3 is C_{1-6}alkoxy and the other R_3 is Cl or Br, with elemental sulphur in alkaline medium, a metal sulphide or a metal hydrosulphide, provided that when X in formula Ia is S, then one R_3 in formula IIa is C_{1-6}alkoxy and the other R_3 is Cl or Br.

4,661,596
QUINOLINYL (OR PYRIDINYL) METHOXY SUBSTITUTED NAPHTHALENE COMPOUNDS AS ANTIALLERGIC AGENTS
Anthony F. Kreft, III, Devon; John H. Musser, Malvern; Thomas W. Pattison, and John P. Yardley, both of King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 703,788, Feb. 21, 1985, abandoned. This application Oct. 3, 1985, Ser. No. 784,141
Int. Cl.⁴ C07D *215/00, 213/30*
U.S. Cl. 546—152 **10 Claims**

1. A compound having the formula:



wherein
X is —CH_2CH_2—, —CH=CH—,



,
R is hydrogen or loweralkyl;
R^1 is hydroxy, amino, loweralkyl sulfonamido, perfluoro loweralkyl sulfonamido or OR;
R^2 is hydrogen or loweralkyl;
R^3 is hydrogen or loweralkyl; or
R^2 and R^3 taken together form a benzene ring; and
the dotted line represents an optional double bond;
and the pharmaceutically acceptable salts thereof.

4,661,597
PROCESS FOR PREPARING 2,2,6,6-TETRAMETHYL-4-OXOPIPERIDINE
Tohru Haruna, Saitama; Atsushi Nishimura, Washinomiya, and Kazuo Sugibuchi, Tokyo, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan
Filed Feb. 14, 1985, Ser. No. 701,474
Claims priority, application Japan, Feb. 16, 1984, 59-27711
Int. Cl.⁴ C07D *211/74*
U.S. Cl. 546—242 **17 Claims**

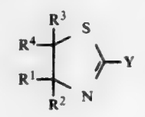
1. A process for preparing triacetone amine which comprises reacting acetone and acetonine in the liquid phase in the presence of a catalytically effective amount of an organic hydrocarbon carboxylic acid halide or organic halo-substituted hydrocarbon carboxylic acid halide selected from the group consisting of hydrocarbon mono and di carboxylic acid halides and halo-substituted hydrocarbon mono and di carboxylic acid halides having from two to about eighteen carbon atoms, and recovering triacetone amine from the reaction mixture.

4,661,598
NEW MONOMER AND POLYMERS CONTAINING 4-AMINOPYRIDINE
Lon J. Mathias, Hattiesburg, Miss., assignor to The University of Southern Mississippi, Hattiesburg, Miss.
Continuation of Ser. No. 674,740, Nov. 26, 1984, Pat. No. 4,591,625. This application May 1, 1986, Ser. No. 858,130
Int. Cl.⁴ C07D *213/74*
U.S. Cl. 546—304 **1 Claim**

1. 4-(Diallylamino)pyridine.

4,661,599
THIAZOLINE COMPOUNDS EXERTING A ANTIDOTAL ACTIVITY FOR THE DEFENSE OF AGRARIAN CULTIVATIONS FROM THE ACTION OF NON-SELECTIVE HERBICIDES
Ottorino Palla, Crema; Giovanni Camaggi, Lodi; Franco Gozzo, San Donato Milanese; Augusto Menconi, Crema, and Ernesto Signorini, Mainate, all of Italy, assignors to Montedison S.p.A., Milan, Italy
Filed Jan. 4, 1985, Ser. No. 688,902
Claims priority, application Italy, Jan. 6, 1984, 19047 A/84
Int. Cl.⁴ C07D *277/10, 263/12;* **A01N** *43/76, 43/78*
U.S. Cl. 548—146 **5 Claims**

1. A compound of formula:



(I)

wherein:
Y is an alkyl C_1–C_4 substituted by at least one halogen atom selected from the group consisting of Cl, Br and F; and
R^1, R^2, R^3 and R^4, the same or different, are selected from the group consisting of hydrogen and a C_1–C_4 alkyl.

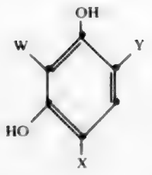
4,661,600
MANUFACTURE OF 2-OXAZOLINES, 2-OXAZINES, 2-IMIDAZOLINES AND 2-IMIDAZINES
Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.
Filed May 20, 1985, Ser. No. 736,172
Int. Cl.⁴ C07D *498/04, 233/04*
U.S. Cl. 548—217 **11 Claims**

1. The process for producing a product selected from the group consisting of (A) a 2-oxazoline, (B) a 2-oxazine, (C) a 2 imidazoline and (D) a 2-imidazine comprising reacting a bicyclic amide acetal with a member selected from the group consisting of (A') a 1,2-alkanolamine, (B') a 1,3-alkanolamine, (C') a 1,2-alkylene diamine and (D') a 1,3-alkylene diamine, respectively, at a temperature in the range of from about 20° C. to 200° C.

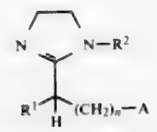
4,661,601
RESORCINOL COMPOUNDS
Frederick H. Howell, Atherton, England, assignor to Ciba-Geigy AG, Basel, Switzerland
Continuation of Ser. No. 389,993, Jun. 18, 1982, abandoned. This application Apr. 3, 1985, Ser. No. 719,184
Claims priority, application United Kingdom, Jun. 19, 1981, 8119011
Int. Cl.⁴ C07C *69/612, 143/78, 103/26, 39/10*
U.S. Cl. 548—251 **29 Claims**

1. Compounds having the formula

VOL 1077 ISS 4 AP 28 1987 UMI

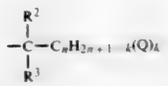


(1)



wherein

W is hydrogen, methyl, —NHCOR[1] wherein R[1] is phenyl or benzyl or W is phenoxyacetylamino or W is halogen; X is selected from hydrogen, chlorine or bromine, Y is a group having the formula



(2)

wherein Q is selected from the residues:

(a) —COOR[4] or —CONR[4]R[5] wherein R[4] is hydrogen, straight- or branch chain alkyl having from 1 to 20 carbon atoms, optionally interrupted by 1 or more oxygen atoms, straight- or branch chain alkenyl having from 3 to 20 carbon atoms, cycloalkyl having from 3 to 12 carbon atoms, aralkyl having from 7 to 13 carbon atoms or optionally substituted C_6–C_{10} aryl group and, R[5] is hydrogen or straight- or branch chain alkyl having from 1 to 20 carbon atoms, or R[4] and R[5], together with the nitrogen atom to which they are each bonded, may form a 5- or 6-membered heterocyclic ring containing nitrogen as the sole hetero atom optionally substituted by a C_1–C_4 straight- or branch chain alkyl group,

(b) —OM wherein M is R[5] or —COR[6] wherein R[5] is as defined above and R[6] is hydrogen, straight- or branch chain alkyl having from 1 to 20 carbon atoms, straight- or branch chain alkenyl having from 3 to 20 carbon atoms, cycloalkyl having from 3 to 12 carbon atoms, aralkyl having from 7 to 13 carbon atoms or optionally by one or two C_1–C_4-alkyl substituted C_6–C_{10} aryl;

(c) —NR[7]R[8] wherein R[7] is hydrogen or straight- or branch chain alkyl having from 1 to 4 carbon atoms and R[8] is hydrogen, straight- or branch chain alkyl having 1 to 4 carbon atoms or acyl of the formula —COR[4] wherein R[4] is as defined above or R[7] and R[8], together with the nitrogen atom to which they are each bonded, form a 5- or 6-membered heterocyclic ring optionally substituted by a C_1–C_4 straight-, or branched chain alkyl group,

(d) —PO(OR[9])$_x$R[10] wherein x is 1, R[9] is hydrogen, methyl or ethyl, R[10] is methyl or ethyl; or

(e) —SO$_2$T where T is —OH or —NR[4]R[5] wherein R[4] and R[5] are as defined above; n is an integer from 1 to 10; k is 1; R[2] is methyl and R[3] is straight- or branch chain alkyl having from 1 to 5 carbon atoms, or salts thereof with acids or bases.

4,661,602

SUBSTITUTED ALKYL IMIDAZOLE DERIVATIVES

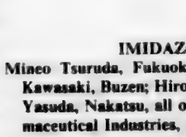
Peter L. Myers, Aylesbury, and Chris D. Floyd, Great Missendes, both of Great Britain, assignors to G. D. Searle & Co., Skokie, Ill.

Filed Mar. 29, 1985, Ser. No. 717,981

Int. Cl.[4] C07D *233/61, 403/06*

U.S. Cl. 548—336 **6 Claims**

1. A compound of the formula



wherein

A is imidazol-1-yl, pyrazol-1-yl, 1,2,4-triazol-1-yl, 4,5-dihydroimidazol-1-yl, substituted imidazol-1-yl or substituted 4,5-dihydroimidazol-1-yl wherein the imidazol-1-yl or 4,5-dihydroimidazol-1-yl is substituted with a substituent selected from the group consisting of C_1–C_4 alkylthio and C_1–C_4 alkyl;

R[1] is phenyl or substituted phenyl having from 1 to 3 substituents independently selected from the group consisting of C_1–C_4 alkyl and halogen;

R[2] is C_1–C_1 alkyl, phenyl, phenyl (C_1–C_4 alkyl), substituted phenyl having from 1 to 3 substitutents independently selected from the group consisting of C_1–C_4 alkyl, halogen and trifluoromethyl; or a



group wherein t is an integer of from 1 to 4 and W[1], W[2] and W[3] are independently hydrogen, C_1–C_4 alkyl, halogen or trifluoromethyl;

n is an integer 1 or 2;

or a pharmaceutically acceptable acid addition salt thereof.

4,661,603

IMIDAZOLE DERIVATIVES

Mineo Tsuruda, Fukuoka; Takanori Oe, Nakatsu; Kazuyuki Kawasaki, Buzen; Hiroshi Mikashima, Fukuoka, and Hiroshi Yasuda, Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 556,231, Oct. 31, 1983, Pat. No. 4,581,369. This application Jan. 29, 1986, Ser. No. 823,633

Claims priority, application Japan, Mar. 3, 1982, 57-34365; Jun. 3, 1985, 60-121220

Int. Cl.[4] C07D *233/60;* **A61K** *31/415*

U.S. Cl. 548—346 **3 Claims**

1. A compound selected from the group consisting of α-(2,6-dimethyl-4-carboxyphenyl)-2-methyl-5-(1-imidazolyl) benzenemethanol, a pharmaceutically acceptable metal salt thereof, a pharmaceutically acceptable acid addition salt thereof, a hydrate thereof, and a mixture of at least two of said compounds.

4,661,604

MONOFUNCTIONAL CROSSLINKING IMIDOPHENOLS

Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to TRW, Inc., Redondo Beach, Calif. and The Boeing Company, Seattle, Wash.

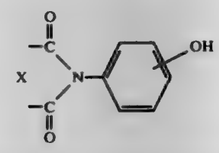
Division of Ser. No. 274,162, Jun. 16, 1981. This application Aug. 12, 1983, Ser. No. 522,676

Int. Cl.[4] C07D *209/56*

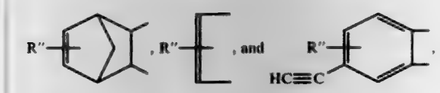
U.S. Cl. 548—435 **4 Claims**



1. A compound having the formula:



wherein X is selected from the group consisting of



and R″ is lower alkyl.

4,661,605

3-(ETHER AND THIOETHER)-3-(INDOLYL)-PHTHALIDES

Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

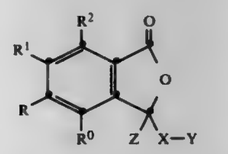
Division of Ser. No. 338,008, Jan. 8, 1982, Pat. No. 4,535,172. This application Jan. 24, 1985, Ser. No. 694,568

Int. Cl.[4] C07D *405/04*

U.S. Cl. 548—463 **2 Claims**

1. A 3-(X-Y)-3-Z-4-R[0]-5-R-6-R[1]-7-R[2]-phthalide of the formula

Formula I

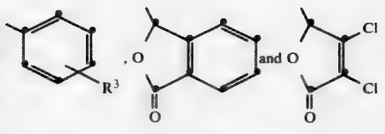


wherein:

R[0] R, R[1] and R[2] each represent hydrogen or halo or when R[0], R[2] and one of R and R[1] are each hydrogen, the other of R and R[1] represents dialkylamino, dibenzylamino or N-alkylbenzylamino in which alkyl is non-tertiary C_1 to C_4 alkyl and benzyl is substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl;

X represents oxygen or sulfur;

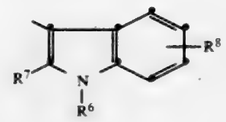
Y represents a non-tertiary C_1 to C_{16} alkyl or is selected from the group consisting of



in which

R[3] represents hydrogen, non-tertiary C_1 to C_8 alkyl, non-tertiary C_1 to C_4 alkoxy or halo;

Z is



in which

R[6] represents hydrogen, non-tertiary C_1 to C_{16} alkyl, benzyl or benzyl substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl;

R[7] represents hydrogen, C_1 to C_3 alkyl or phenyl; and

R[8] represents one or two of hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo or nitro.

4,661,606

EXTRACTION OF AMINO ACIDS FROM AQUEOUS MIXTURES AND QUATERNARY AMMONIUM SALT INTERMEDIATES PRODUCED THEREIN

Francis W. Tuominen, Minneapolis; Ronald R. Swanson, Taylors Falls; Phillip L. Mattison, New Brighton; Kenneth D. MacKay, Plymouth, and Bradley W. Glorvigen, St. Paul, all of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

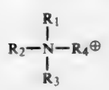
Filed Jun. 6, 1984, Ser. No. 617,767

Int. Cl.[4] C07D *209/20, 99/12, 101/02*

U.S. Cl. 548—497 **12 Claims**

1. A process for the extraction of amino acids from aqueous solutions thereof comprising contacting said aqueous solution containing at least one amino acid not in its zwitterionic form, with a solution of a water-insoluble extractant in a water immiscible organic solvent which forms a separate orgainic phase from said aqueous solution, said contact taking place for a sufficient length of time to allow the amino acid to be extracted from the aqueous phase into said organic phase; separating said organic phase containing said amino acid from said aqueous phase and recovering said amino acids from said organic phase, said water insoluble extractant being

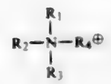
a. A quaternary ammonium ion having the formula:



where R_1, R_2, R_3 and R_4 individually are aliphatic hydrocarbon groups containing from about 1 to about 22 carbon atoms and where R_1, R_2, R_3 and R_4 together have a minimum of 25 carbon atoms, and where at least three groups selected from the group consisting of R_1, R_2, R_3 and R_4 are at least a C4

8. An amino salt of a from the group consisting of:

a. quaternary ammonium ion having the formula:



where R_1, R_2, R_3 and R_4 individually are aliphatic hydrocarbon groups containing from about 1 to about 22 carbon atoms where R_1, R_2, R_3 and R_4 together have a minimum of 25 carbon atoms, and where at least three groups selectd from the group consisting of R_1, R_2, R_3 and R_4 are at least a C_4.

4,661,607

FUROXANTHONE DERIVATIVES USEFUL AS DIURETICS

Hiroshi Koga, Saitama; Takashi Mori; Takashi Dan, both of Tokyo, and Michitaka Akima, Saitama, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

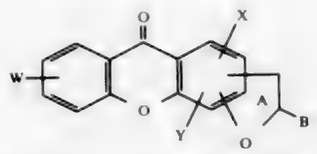
Filed Sep. 12, 1985, Ser. No. 775,240

Claims priority, application Japan, Sep. 21, 1984, 59-196796; Sep. 28, 1984, 59-204351

Int. Cl.⁴ C07D *311/86*

U.S. Cl. 549—383 **3 Claims**

1. A furoxanthone derivative of the formula:



wherein W, X and Y which are the same or different represent a hydrogen atom, a halogen atom or a lower alkyl group having 1 to 4 carbon atoms; B is a hydroxymethyl group, a lower alkoxycarbonyl group having up to 4 carbon atoms or a carboxyl group, and the ring represented by A is constructed by five atoms, or a non-toxic salt of said derivative when B is a carboxyl group.

4,661,608

PROCESS FOR THE MANUFACTURE OF SILYLMETALLOCENE COMPOUNDS

Jean-Claude C. Gautier, Ablon sur Seine, and Serge F. Raynal, Draveil, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jun. 28, 1985, Ser. No. 749,803

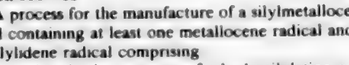
Claims priority, application France, Jul. 20, 1984, 84 11506

Int. Cl.⁴ C07F *17/02, 17/00*

U.S. Cl. 556—11 **9 Claims**

1. A process for the manufacture of a silylmetallocene compound containing at least one metallocene radical and at least one silylidene radical comprising

(a) reacting, in the presence of a hydrosilylation catalyst, a metallocene having the formula:



wherein

M is a transition metal selected from the group consisting of iron, osmium, ruthenium, nickel, cobalt, manganese and titanium,

R_1, which need not be present, represents a saturated or unsaturated aliphatic radical, an aromatic radical or an alkenylcarbonyl radical,

R_5 represents hydrogen, an aliphatic radical or an aromatic radical,

n is equal to 1 or 2 and

y is equal to 5−(n−1),

with a halosilane of the formula



wherein

X represents a halogen selected from the group consisting of chlorine, bromine and iodine,

R_2 and R_3 each independently represent hydrogen, an aliphatic radical or an aromatic radical,

(b) reducing the product of step (a) in the presence of a hydrogenation catalyst so as to form said silylmetallocene compound, and

(c) extracting said silylmetallocene compound from the reaction medium.

4,661,609

PROCESS FOR COSYNTHESIS OF ETHYLENE GLYCOL AND DIMETHYL CARBONATE

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 31, 1986, Ser. No. 891,093

Int. Cl.⁴ C07C *68/06, 27/00*

U.S. Cl. 558—277 **12 Claims**

1. A process for cosynthesis of ethylene glycol and dimethyl carbonate which comprises reacting ethylene carbonate and methanol in the presence of a homogeneous catalyst selected from the group consisting of soluble salts of zirconium, titanium and tin or complexes thereof, at a temperature of 20° to 200° C until the desired products are formed.

4,661,610

PREPARATION OF VERATRYL CYANIDE

Josef Müeller, Grosskarlbach; Walter-Wieland Wiersdorff, Mutterstadt; Wolfram Bürst, Mannheim; Heinz Dralle, Minden; Ernst Schäffner, Minden, and Rolf Steinkamp, Minden, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 22, 1986, Ser. No. 887,940

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1985, 3527338

Int. Cl.⁴ C07C *120/04*

U.S. Cl. 558—344 **1 Claim**

1. A process for the preparation of veratryl cyanide by chloromethylating veratrol in solution in toluene and then reacting the resulting veratryl chloride with from 1 to 5 moles of an alkali metal cyanide, wherein the toluene from the chloromethylation is not removed for the reaction with cyanide, and from 3 to 25% by weight, based on veratryl chloride, of water, from 5 to 50% by weight, based on toluene, of a ketone of 3 to 6 carbon atoms and from 0.1 to 10% by weight, based on veratryl chloride, of a phase transfer catalyst are added before the reaction with cyanide.

4,661,611

POLYFUNCTIONAL ACYLSILANE CROSSLINKING AGENTS AND PHOTOCROSSLINKING SYSTEMS COMPRISING THE SAME

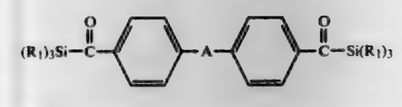
Subhash C. Narang, Menlo Park, Calif.; Richard Vicari, Astoria, and Juesheng Gu, Brooklyn, both of N.Y., assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1985, Ser. No. 805,537

Int. Cl.⁴ C07F *7/08*

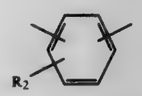
U.S. Cl. 556—418 **7 Claims**

1. Polyfunctional acyl silanes having the formula:



(1)

where A is —O—R—O or —NH—R—NH—, R is $-(CH_2)_n-$ where n is 1 to 12 or



(2)

where R_2 is hydrogen, alkyl, halogen, alkoxy or the group



(3)

where R_3 and R_4 are C_1 to C_6 alkyl or hydrogen, with the proviso that R_3 and R_4 are not simultaneously hydrogen, and wherein R_1 is an unsubstituted alkyl group or an aryl group.

4,661,612

METHOD FOR PURIFYING SILICONE OIL

Ulf George, Ulm; Erwin Rochau, Elchingen; Hans Merk, Ulm-Goegglingen, and Joachim Behnke, Elchingen, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 13, 1985, Ser. No. 797,649

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1984, 3441353; Mar. 8, 1985, 3508219; Sep. 25, 1985, 3534218

Int. Cl.⁴ C07F *7/08*

U.S. Cl. 556—450 **9 Claims**

1. Process for purifying silicone oil to remove impurities contained therein, comprising:

adding a drying agent and an adsorption agent to the silicone oil, said adsorption agent selected from the group consisting of activated carbon and activated fuller's earth and said drying agent selected from the group consisting of molecular sieves, silica gel and activated aluminum oxide;

causing the drying agent and the adsorption agent to act on the silicone oil during a reaction period effective to attain a desired purity of the silicone oil and conducting a low water vapor inert gas through said silicone oil during the reaction period;

at the end of the reaction period, separating the drying agent and the adsorption agent from the silicone oil; said separation step comprising a sedimentation process and a filtering process.

4,661,613

DIRECT CATALYTIC SYNTHESIS OF DIMETHYLDICHLOROSILANE FROM METHYL CHLORIDE AND SILICON

Christian Prud'Homme, Lyons, and Gerard Simon, Roussillon, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Sep. 28, 1984, Ser. No. 655,715

Claims priority, application France, Sep. 28, 1983, 83 15401

Int. Cl.⁴ C07F *7/16*

U.S. Cl. 556—472 **20 Claims**

1. A process for the direct preparation of dimethyldichlorosilane from methyl chloride and silicon, comprising reacting methyl chloride with a solid contact mass comprising silicon and a catalytically effective amount of a catalyst which includes (1) elemental copper or a copper compound, (2) from about 30 to 1,000 ppm (calculated as metallic tin and/or antimony) of at least one of the metals tin and antimony, or at least one compound of at least one of the metals tin and antimony, and (3) from about 0.05 to 4% by weight (calculated as cesium metal) of cesium or a cesium compound, or admixture of cesium with up to 90% by weight of the admixture of lithium, sodium, potassium or rubidium, the amounts of said components (2) and (3) being based upon the total weight of said solid contact mass.

4,661,614

PROCESS FOR THE PREPARATION OF IMINODIACETONITRILE

James T. Most, St. Louis, and Thomas J. Richard, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 6, 1986, Ser. No. 836,926

Int. Cl.⁴ C07C *120/00*

U.S. Cl. 558—346 **5 Claims**

1. A process for preparing iminodiacetonitrile which comprises bringing together simultaneously under reaction conditions formaldehyde, hydrogen cyanide and a source of ammonia,

a. the mole ratio of formaldehyde to hydrogen cyanide being about 0.8 to 1.2,

b. the mole ratio of ammonia to hydrogen cyanide being about 0.4 to 0.6,

c. at a pH between about 1.5 and about 5.3,

d. at a temperature between about 30° C. and about 65° C.

4,661,615

SELECTIVE CONVERSION OF ACRYLONITRILE INTO 1,4-DICYANO-1-BUTENE CATALYZED BY PLYMER-BOUND ALKYL DIARYLPHOSPHINITES

William J. Boyle, Jr., Warren; Frank Mares, Whippany, and Andrea M. Wallo, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

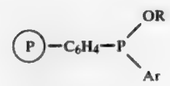
Division of Ser. No. 438,687, Nov. 3, 1982, Pat. No. 4,574,060. This application Jun. 28, 1985, Ser. No. 749,838

The portion of the term of this patent subsequent to Mar. 4, 2003, has been disclaimed.

Int. Cl.⁴ C07C *120/00, 121/30*

U.S. Cl. 558—363 **3 Claims**

1. A heterogeneous catalytic process for converting acrylonitrile into 1,4-dicyano-1-butane which comprises contacting a liquid phase comprising acrylonitrile with an effective amount of an insoluble solid polystyrene bound diarylphosphinite catalyst for time sufficient to effect conversion of acrylonitrile into 1,4-dicyano-1-butene, wherein said catalyst has the formula:



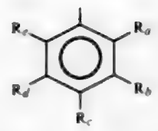
wherein:

p represents polystyrene;

$-C_6H_4-$ represents phenylene rings derived from at least about 5% of the pendant phenyl groups of said polystyrene;

—R represents an alkyl straight chain or branched having from 1 to 10 carbons, or cycloalkyl having from about 5 to 10 carbons;

—Ar represents an aryl group having the formula



wherein R_a through R_e are independently selected from the group consisting of

(a) hydrogen;
(b) alkyl, straight chain or branched, having 1 to 10 carbons;
(c) cycloalkyl having from about 5 to 10 carbons;
(d) —OR^3 wherein R^3 represents alkyl having 1 to 10 carbons or cycloalkyl having from 5 to 10 carbons; and
(e) —$N(R^4R^5)$ wherein R^4 and R^5 are independently alkyl, straight chain or branched, having 1 to 10 carbons or cycloalkyl having from about 5 to 10 carbons;

wherein two of said R_a through R_e groups may form part of a fused alicyclic ring.

4,661,616

BENZOIC AND BENZACRYLIC ACID ESTERS

Michael P. Hill, Saint Lythans, United Kingdom, assignor to Dow Corning, Ltd., Barry, United Kingdom

Division of Ser. No. 638,184, Aug. 6, 1984. This application Sep. 2, 1986, Ser. No. 902,551
Int. Cl.⁴ C07C *101/00*
U.S. Cl. 560—050 **3 Claims**

1. Compounds represented by the general formula



wherein a and b are each 0 or 1 and R when present is selected from the hydroxyl group and alkoxy groups having from 1 to 4 carbon atoms when a is 1, and is selected from the hydroxyl group and the $-NR'_2$ group, in which each R' is selected from hydrogen atoms and alkyl groups having from 1 to 4 inclusive carbon atoms, when a is zero.

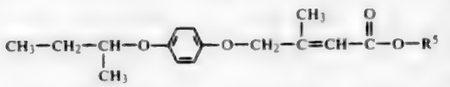
4,661,617

NOVEL COMPOSITIONS

Clive A. Hearick, Palo Alto, Calif., assignor to Sandoz Ltd., Basel, Switzerland

Filed Apr. 19, 1985, Ser. No. 725,453
Int. Cl.⁴ C07C *69/76*
U.S. Cl. 560—61 **3 Claims**

1. A compound of the following formula:



wherein, R^5 is C_{1-8} alkyl, C_{1-8} haloalkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{2-8} haloalkenyl, C_{2-8} haloalkynyl, C_{2-10} alkoxyalkyl or C_{2-10} alkylthioalkyl.

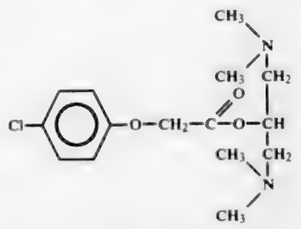
4,661,618

1-3,BIS(DIMETHYLAMINO)-2-PROPYL-4-CHLORO-PHENOXY-ACETATE, ACID ADDITION SALTS THEREOF, A PROCESS FOR THE PREPARATION OF THE SAME AND PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAID COMPOUNDS

Imre Z. Nagy; Zsuzsanna Emri; Sandor Jancsó; István Csernus, and János Bálint, all of Debrecen, Hungary, assignors to Biogal Gyogyszergyar, Debrecen, Hungary

Filed May 2, 1984, Ser. No. 606,347
Claims priority, application Hungary, May 2, 1983, 1496/83
Int. Cl.⁴ C07C *69/76*
U.S. Cl. 560—62 **4 Claims**

1. 1,3-bis(dimethylamino)-2-propyl-4-chlorophenoxyacetate of the Formula (I)



(I)

or a physiologically acceptable acid addition salt thereof.

4,661,619

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACIDS AND/OR ESTERS THEREOF

Howard Alper, Ottawa, Canada; Sang C. Shim, Daegu, D.P.R. of Korea, and David J. H. Smith, Camberley, England, assignors to The British Petroleum Company p.l.c., London, England

Filed Nov. 29, 1984, Ser. No. 676,077
Claims priority, application United Kingdom, Nov. 30, 1983, 8331981; Nov. 15, 1984, 8428869
Int. Cl.⁴ C07C *69/76, 51/12*
U.S. Cl. 560—100 **10 Claims**

1. A process for the production of a carboxylic acid ester of the formula $RCOOR^1$ and/or a carboxylic acid of the formula RCOOH which process comprises reacting at elevated temperature, in the range from 100° to 300° C.,

a mercaptan of the formula RSH wherein R is an aromatic moiety with carbon monoxide and at least one compound of the formula R^1OH wherein R^1 is either hydrogen or hydrogen and a hydrocarbyl group in the presence as catalyst of a cobalt carbonyl,

the product comprising a carboxylic acid when R^1OH is water and a carboxylic acid ester when R^1OH is aqueous alcohol.

4,661,620

PREPARATION PROCESS OF CINNAMATE ESTERS

Usaji Takaki, Fujisawa; Isamu Sudo; Toshio Matsuhisa, both of Yokohama, and Isao Hara, Ninomiya, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Sep. 27, 1985, Ser. No. 780,838
Claims priority, application Japan, Oct. 5, 1984, 59-207950; Apr. 23, 1985, 60-85508; Jul. 12, 1985, 60-152389; Jul. 23, 1985, 60-161155; Aug. 1, 1985, 60-168599
Int. Cl.⁴ C07C *69/76, 51/14*
U.S. Cl. 560—104 **28 Claims**

1. A process for preparing a cinnamate ester by the reaction of carbon monoxide, oxygen, and its corresponding styrene compound and alcohol, which comprises conducting the reaction in the presence of a catalyst containing, as essential components,

(a) a platinum group metal or a compound thereof;

(b) a copper or iron compound; and
(c) a compound of at least one metal selected from Groups 4A, 5A, 7A, 8A(the iron group only), 1B(exclusive of copper) and 2B of the periodic table.

4,661,621

PROCESS FOR THE PREPARATION OF PIVALOYLACETIC ACID ESTERS

Friedrich Werner, Cologne, and Heinz U. Blank, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 200,695, Oct. 27, 1980, abandoned. This application Dec. 26, 1984, Ser. No. 686,188
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1979, 2945604
Int. Cl.⁴ C07C *67/333, 69/716*
U.S. Cl. 560—174 **6 Claims**

1. In a process for the preparation of a pivaloylacetic acid ester by decarbonylation of a pivaloylpyruvic acid ester at an elevated temperature, the improvement which comprises subjecting pivaloylpyruvic acid ester to decarbonylation by heating the same in the presence of 0.01 to 5 percent by weight, relative to the total amount of the pivaloylpyruvic acid ester to be converted, of a metal in metallic and/or oxidic form, said metal being selected from the group consisting of copper, manganese, chromium and molybdenum, such that at most 30 percent of the total amount of the pivaloylpyruvic acid ester to be converted is heated and thereafter following the commencement of the reaction, adding the remaining amount of the pivaloylpyruvic acid ester to be converted according to the rate at which it is converted.

4,661,622

METHOD FOR PRODUCING COMPOSITE ESTER

Satoshi Matsumoto, No. 569-74, Kawajirimachi, Kumamotoshi, Kumamotoken, Japan

Continuation-in-part of Ser. No. 694,594, Jan. 24, 1985, abandoned. This application Jan. 31, 1986, Ser. No. 824,663
Claims priority, application Japan, Sep. 21, 1984, 59-196772
Int. Cl.⁴ C07C *67/08*
U.S. Cl. 560—199 **8 Claims**

1. A method for producing a composite ester represented by the formula

$$R'O(COACOORO)_nCOACOOR' \quad (X)$$

wherein A is straight chain or cyclic hydrocarbon of 0 to 6 carbon atoms with the proviso that A is a bond when the number of carbon atoms is 0, R is a straight or branched chain alcohol residue of a diol or an ether-alcohol, R' is a straight or branched chain alcohol residue having 4 to 10 carbon atoms and n is an integer of 1, 2, 3 or 4 comprising:

(a) subjecting a dibasic acid having the formula of HOCOACOOH, wherein A is as defined above, and a diol having the formula of HOROH, wherein R is as defined above, together with monovalent alcohol having the formula R'OH, wherein R' is as defined above, to a dehydrating esterification reaction, the mol ratio of said dibasic acid to said diol being in the range of 4:1 to 1:1 and the amount of said monovalent alcohol being in excess to said dibasic acid, to thereby form a monovalent alcohol diol diester of dibasic acid represented by the formula R'OCOACOOROH, wherein A, R, and R' are as defined above, and a monovalent alcohol diester represented by the formula R'OCOACOOR', wherein A and R' are as defined above,

(b) effecting alcohol removing ester-interchange reaction between said monovalent alcohol diol diester and said monovalent alcohol diester using a titanium catalyst selected from the group consisting of titanium tetrabutoxide and an alkyl titanate to form said composite ester.

4,661,623

METHOD OF PRODUCING METHYL FORMATE FROM METHANOL AND CARBON MONOXIDE USING ANIONIC GROUP VIII METAL CATAYSTS

Biau-Hung Chang, Worthington; Robert A. Grimm, Upper Arlington, both of Ohio, and Bhupendra C. Trivedi, Nizampura, India, assignors to Ashland Oil, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 467,023, Feb. 16, 1983, abandoned. This application Mar. 19, 1985, Ser. No. 713,449
Int. Cl.⁴ C07C *67/36*
U.S. Cl. 560—232 **12 Claims**

1. A method of producing methyl formate from methanol and carbon monoxide at pressures less than about 3,000 psia comprising reacting a an anhydrous solution of methanol comprising at least about 15 molar percent methanol with carbon monoxide in the presence of a catalyst wherein said catalyst has the following general formula:

$$M^{+n}[H_yA'_QA_X(L)_z]^{-n}$$

wherein

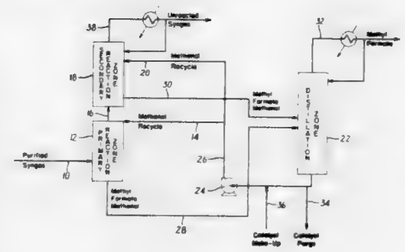
M is a cation;
n is an integer greater than or equal to 1 and less than or equal to 6;
y is an integer greater than or equal to 0 to less than or equal to 4;
A is one or more transition metals selected from the group consisting of Fe, Ru, Os, W, Mo, Cr, Co, Rh, and Ir:
x is an integer greater than or equal to 1;
A' is a Group VIII transition metal;
Q is an integer greater than or equal to 0;
X and Q combined is less than or equal to 36;
L is a ligand; and
z is an integer less than or equal to the available coordination bonding sites of the transition metals represented by A'_QA_X.

4,661,624

PROCESS FOR THE PRODUCTION OF METHYL FORMATE

Tsuan Y. Chang, 1038 Wood Park Dr., Baldwin, N.Y. 11510; Neil Yeoman, 1723 Alexis Rd., Merrick, N.Y. 11566, and Ronald F. Cascone, 40 W. 24th St., New York, N.Y. 10010

Filed Aug. 13, 1984, Ser. No. 639,772
Int. Cl.⁴ C07C *67/36*
U.S. Cl. 560—232 **11 Claims**



1. A thermally efficient process for the production of alkyl formates comprising:

preparing a CO containing gas stream having a concentration of H_2S, COS, CO_2 and H_2O of about one part per million of or less;

reacting the CO in the gas stream with a lower alkyl alcohol in a reaction zone at a temperature from about 70° to 130° C. and a CO partial pressure of about 70 to 1000 psia, in the presence of a homogeneous sodium alkoxide catalyst to from an alkyl formate; said catalyst having a concentration in the alcohol which ranges from about 1.0–8.0 mole

% of alcohol and the conversion of alkyl alcohol to alkyl formate ranging from about 2–10 mole % of the alcohol present in the reaction zone; the process being substantially free of catalyst precipitation;

withdrawing an effluent stream from said reaction zone containing alkyl formate and alkyl alcohol and separating the formed alkyl formate from the alkyl alcohol in a distillation zone;

recycling the alkyl alcohol containing concentrated catalyst to the reaction zone.

4,661,625

SYNTHESIS AND PURIFICATION OF D-PROPOXYPHENE HYDROCHLORIDE

Carl R. White, St. Louis, Mo., assignor to Mallinckkodt, Inc., St. Louis, Mo.

Filed Dec. 2, 1985, Ser. No. 803,321
Int. Cl.⁴ C07C *67/00*
U.S. Cl. 250—560 **18 Claims**

1. In a method for making alpha-d-propoxyphene comprising reacting d-oxyphene and propionyl chloride in a chlorinated solvent, the improvement comprising adding thionyl chloride to the reaction mixture in an amount of at least about 0.01 moles per mole of d-oxyphene, evaporating the solvent, treating the residue with ethyl acetate, and recovering the alpha-d-propoxyphene by filtration;

whereby the need for precipitation of the product in ether and multiple crystallization is substantially negated.

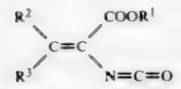
4,661,626

PROCESS FOR THE PRODUCTION OF 2-ISOCYANATO-2,3-DEHYDROCARBOXYLIC ACID ESTERS

Franz Effenberger, Stuttgart; Jürgen Kühlwein, Waiblingen, and Karlheinz Drauz, Freigericht, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

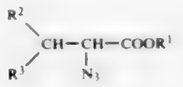
Filed Mar. 10, 1986, Ser. No. 837,792
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1985, 3508563
Int. Cl.⁴ C07C *122/00*
U.S. Cl. 560—343 **4 Claims**

1. A process of producing a 2-isocyanato-2,3-dehydrocarboxylic acid ester of the general formula:



(I)

in which R^1 is a C_1–C_4-alkyl group, a phenyl group or a benzyl group, R^2 is hydrogen or a methyl group and R^3 is hydrogen, a C_1–C_{16}-alkyl group, a C_3–C_8-cycloalkyl group, a C_1–C_6-alkylmercapto group or a phenyl group comprising reacting a 2-azidocarboxylic acid ester of the general formula:



(II)

in an inert solvent at a temperature between 0° and 150° C. with phosgene or diphosgene in the presence of a perrhenate.

4,661,627

METHOD FOR SCAVENGING ACIDIC IMPURITIES FROM POLYMERIC ISOCYANATES

Dale F. Regelman, Wallingford, Conn., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 19, 1986, Ser. No. 897,904
Int. Cl.⁴ C07C *137/00*
U.S. Cl. 560—352 **9 Claims**

1. A process for reducing the acid content of a polymethylene polyphenylisocyanate which comprises contacting said polyisocyanate with an effective amount of a poly(N-vinylimidazole).

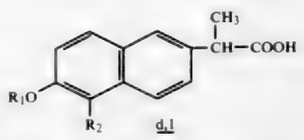
4,661,628

PROCESS FOR THE OPTICAL RESOLUTION OF RACEMIC MIXTURES OF α-NAPHTHYL-PROPIONIC ACIDS

Vincenzo Cannata, and Giancarlo Tamerlani, both of Pontecchio Marconi, Italy, assignors to Alfa Chemicals Italiana S.p.A., Milan, Italy

Filed Nov. 5, 1984, Ser. No. 668,301
Claims priority, application Italy, Nov. 23, 1983, 3632 A/83
Int. Cl.⁴ C07B *57/00*; C07C *103/26, 149/41*; C07D *209/18, 233/64*
U.S. Cl. 562—401 **27 Claims**

1. A process for the optical resolution of a racemic mixture of an α-naphthyl-propionic acid of formula

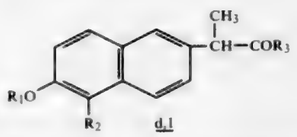


I

d,l

wherein R_1 is (C_{1-6})alkyl and R_2 is hydrogen, halogen, mercapto, (C_{1-6})alkylthio, phenylthio, benzylthio, (C_{1-6})alkylsulfonyl, benzenesulfonyl or benzenesulfonyl substituted by halogen or (C_{1-4}) alkyl, which comprises the steps of:

(A) reacting a substantially racemic substrate of formula



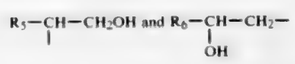
II

d,l

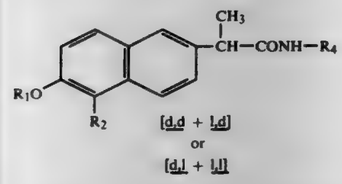
wherein R_1 and R_2 are as defined hereinabove and R_3 is a member selected from the group consisting of hydroxy, (C_{1-8})alkoxy, (C_{1-8})alkoxy substituted by at least one of halogen and phenyl, (C_{2-6})aliphatic acyloxy, benzoyloxy, substituted benzoyloxy, sulfonyloxy, (C_{1-6})alkyl-sulfonyloxy, benzenesulfonyloxy, 4-methyl-benzenesulfonyloxy, 2-imidazol-carbonyloxy and halogen, with a compound of formula

$$R_4—NH_2 \qquad \text{III}$$

in which R_4 is the residue of a primary or secondary alcohol which together with the $—NH_2$ radical, forms an optically active β-aminoalcohol, and is a member selected from the group consisting of



wherein R_5 is (C_{1-6})alkyl, primary hydroxy (C_{1-4})-alkyl, mercaptomethyl, methylthioethyl, phenyl, hydroxyphenyl, phenylmethyl, hydroxyphenylmethyl, naphthyl, indolyl and imidazolyl, and R_6 is (C_{1-6})alkyl, phenyl, hydroxyphenyl, di-hydroxyphenyl and (4-hydroxy-3-methoxy)-phenyl, in the proportion of 1 mole of said compound II with 1–10 moles of said compound III, at a temperature between room temperature and the boiling temperature of the reaction mixture, thus obtaining a pair of diastereoisomeric amides of formula

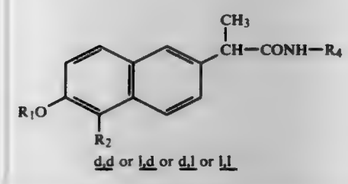


IV

[d,d + l,d]
or
[d,l + l,l]

wherein R_1, R_2 and R_4 are as defined hereinabove;

(B) resolving said pair of diastereoisomeric amides into the single diastereoisomeric amides by preparing a hot solution of said pair of diastereoisomeric amides in an inert organic solvent, or a mixture thereof with water, gradually lowering the temperature of the solution until complete precipitation of the less soluble single diastereosiomeric amide of formula

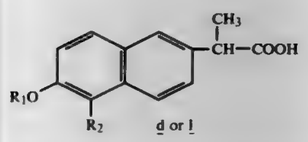


V

d,d or l,d or d,l or l,l

wherein R_1, R_2 and R_4 are as defined hereinabove.

(C) subjecting the obtained single diastereoisomeric amide to acid hydrolysis, thus recovering a compound of formula

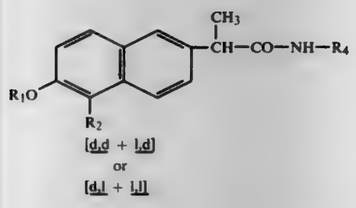


VI

d or l

in which R_1 and R_2 are as defined hereinabove.

22. A compound of formula



IV

[d,d + l,d]
or
[d,l + l,l]

wherein R_1 is (C_{1-6})alkyl, R_2 is hydrogen, halogen, mercapto, (C_{1-6})alkylthio, pheylthio, benzylthio, (C_{1-6})alkylsulfonyl, benzenesulfonyl or benzenesulfonyl substituted by halogen or (C_{1-4})alkyl and R_4 is



wherein R_5 is (C_{1-6})alkyl, primary hydroxy (C_{1-4})alkyl, mercaptomethyl, methylthioethyl, phenyl, hydroxyphenyl, phenylmethyl, hydroxyphenylmethyl, naphthyl, indolyl and imidazolyl, and R_6 is (C_{1-6})alkyl, phenyl, hydroxyphenyl, dihydroxyphenyl or (4-hydroxy-3-methoxy)-phenyl.

4,661,629

SEPARATION OF PHENYLALANINE FROM PHENYLALANINE ETHYL ESTER

Ronald J. Valus, Valley View, and James C. Davis, Hudson, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 2, 1985, Ser. No. 803,754
Int. Cl.⁴ C07C *99/12*
U.S. Cl. 562—443 **1 Claim**

1. A method of separating phenylalanine from its mixture with phenylalanine ethyl ester by contacting one side of a membrane with a solution of said mixture and allowing said phenylalanine to preferentially permeate to the other side of said membrane, and collecting said permeated phenylalanine greatly enriched with respect to said phenylalanine ethyl ester, said membrane being a permeable sulfonated polystyrene cationic exchange resin on polytetrafluoroethylene.

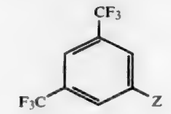
4,661,630

CARBOXYLIC ACID AMIDES AND THEIR DERIVATIVES

Yasuji Harigaya, Chiba; Hiroo Ogura; Mitsuo Mihara, both of Ibaraki; Motosuke Yamanaka, Chiba, and Kiyomi Yamatsu, Kanagawa, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

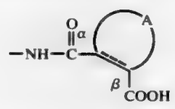
Continuation of Ser. No. 563,924, Dec. 21, 1983, abandoned. This application Dec. 2, 1985, Ser. No. 803,526
Claims priority, application Japan, Dec. 27, 1982, 57-226685
Int. Cl.⁴ C07C *103/737*
U.S. Cl. 562—455 **10 Claims**

1. A carboxylic acid amide derivative represented by the formula (I):



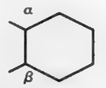
(I)

wherein Z represents a group of the formula:

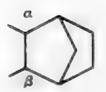


(I)

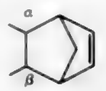
wherein A constitutes along with two carbon atoms respectively represented by α and β, a group of the formula:



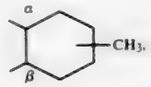
a group of the formula:



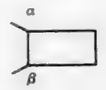
a group of the formula:



a group of the formula:



or a group of the formula:



and ======== denotes a single bond or a double bond, or a pharmaceutically acceptable salt thereof.

4,661,631

PROCESS FOR THE PREPARATION OF ACETIC ACID

Mitchell Becker, Teaneck, N.J., and Howard M. Sachs, Riverdale, N.Y., assignors to The Halcon SD Group, Inc., Little Ferry, N.J.

Continuation of Ser. No. 383,082, May 28, 1982, abandoned. This application Dec. 28, 1983, Ser. No. 566,749

Int. Cl.⁴ C07C *51/12, 53/08*

U.S. Cl. 562—519 **2 Claims**

1. A process for the preparation of acetic acid which comprises reacting methanol with carbon monoxide in a reaction zone in the presence of hydrogen, in the presence of a catalyst comprising a molybdenum-nickel or a tungsten-nickel co-catalyst component, in the presence of an iodide, and in the presence of a promoter comprising an organo-phosphorus compound or an organo-nitrogen compound, the ratio of the partial pressure of hydrogen to the partial pressure of carbon monoxide in the reaction zone being maintained during the reaction in the range of 0.05 to 0.4.

4,661,632

HALOGENOPROPARGYLFORMAMIDE PESTICIDES

Siegfried Oeckl, Bergisch-Gladbach; Paul Reinecke, Leverkusen; Wilhelm Brandes, Leichlingen; Karl-Heinz Kuck, Langenfeld; Wilfried Paulus, and Hermann Genth, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

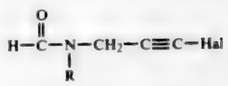
Continuation of Ser. No. 490,898, May 2, 1983. This application Oct. 31, 1985, Ser. No. 793,600

Claims priority, application Fed. Rep. of Germany, May 18, 1982, 3218611; Oct. 2, 1982, 3236522

Int. Cl.⁴ C07C *103/34*

U.S. Cl. 564—217 **6 Claims**

1. A halogenopropargylformamide of the formula



in which

R is phenyl which is monosubstituted to trisubstituted by substituents selected from the group consisting of nitro, halogen, halogenoalkyl having 1 to 5 halogen atoms and 1 to 6 carbon atoms, and halogenoalkylthio having 1 to 5 halogen atoms and 1 to 6 carbon atoms, with the proviso that R is not phenyl monosubstituted with chloro in the position ortho to the nitrogen, and

Hal is fluorine, chlorine, iodine or bromine.

4,661,633

METHOD FOR PREPARING QUATERNARY AMMONIUM SALTS

Michael J. Fazio, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

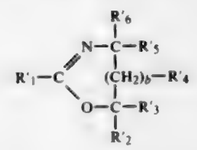
Filed Nov. 15, 1985, Ser. No. 798,503

Int. Cl.⁴ C07C *85/00, 95/08, 97/10*

U.S. Cl. 564—286 **16 Claims**

1. A method for preparing quaternary ammonium compounds comprising:

reacting a tertiary amine salt with a 2-oxazoline or 2-oxazine compound of the following formula:



where

b is zero for oxazoline and one for oxazine; and

R'1–R'6 are the same or different H, alkyl or aryl substituents which will not react with, compete with or sterically interfere with the tertiary amine salt in its ring opening reaction with the oxazoline or oxazine.

4,661,634

REMOVAL OF IMPURITIES FROM AMINES

Walter L. Vaughn, and Milton S. Wing, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 16, 1985, Ser. No. 776,348

Int. Cl.⁴ C07C *91/26, 91/28*

U.S. Cl. 564—292 **29 Claims**

1. A method of removing undissolved, dissolved, polar, or ionizable contaminants from an impure fluid tertiary amine or quaternary amine salt, said method comprising

contacting the said fluid amine or amine salt with an ethylene copolymer having pendant carboxylic acid groups in the alkali salt form, said copolymer being in particulate form having a surface area/weight ratio of at least about 1 m^2/gm, and

separating the fluid amine or amine salt from the particulate polymer whereby impurities are removed from the amine or amine salt,

while maintaining the temperature above the freezing point of the fluid amine or amine salt and below the boiling point or decomposition point of the amine or amine salt as well as below the melting point of the said copolymer.

4,661,635

ARALYKYL (ARYLETHYNYL)ARALKYL AMINES AND THEIR USE AS VASODILATORS AND ANTIHYPERTENSIVES

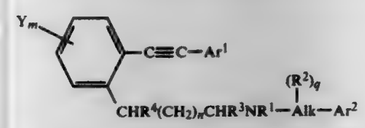
John R. Carson, Norristown, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 553,726, Nov. 21, 1983, abandoned. This application Oct. 29, 1984, Ser. No. 665,684

Int. Cl.⁴ C07C *87/28*

U.S. Cl. 564—374 **32 Claims**

1. An acetylene derivative of the following formula (I):



(I)

wherein

Y is independently alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, amino, monoalkylamino, dialkylamino, hydroxy, halogen or cyano;

m is 0, 1, 2 or 3;

Ar^1 is phenyl which may be independently substituted by one or more of alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, amino, alkylamino, dialkylamino, halogen, fluoroalkyl or cyano;

R^1 is hydrogen, alkyl, hydroxyalkyl, cycloalkyl or cycloalkyalkyl, or R^1 is independently selected from the group consisting of the defined values of —Alk—Ar^2;

R^2 is independently hydroxy, alkyl or phenyl;

Alk is straight chain alkylene of about 1 to 4 carbons;

q is 0, 1 or 2 or 3 if Alk is alkylene of about 2 to 4 carbons;

Ar^2 is phenyl, phenoxy, thiophenoxy or naphthyl ring which rings may be substituted independently by one or more of alkyl, alkoxy, alkylthio, hydroxy, halogen, fluoroalkyl, nitro, amino or dialkylamino;

R^3 is hydrogen, alkyl or alkoxyalkyl;

n is 0, 1 or 2; and

R^4 is hydrogen or alkyl,

provided that the hydroxy of the hydroxyalkyl for R^1 and the hydroxy for R^2 are not attached to the same carbon as the nitrogen atom in formula (I), and the pharmaceutically acceptable acid addition salts and quaternary ammonium compounds thereof.

4,661,636

6-SULFOXYPHENOL DERIVATIVES, THEIR PREPARATION AND THEIR USE AS CYTOPROTECTIVE AGENTS

Heinrich C. Englert; Hans-Jochen Lang, both of Hofheim am Taunus; Dieter Mania, Kelkheim, and Martin Bickel, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

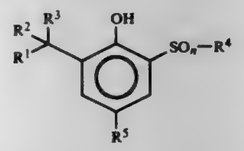
Filed Sep. 7, 1984, Ser. No. 648,139

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1983, 3332780

Int. Cl.⁴ C07C *149/00, 149/32*

U.S. Cl. 568—31 **15 Claims**

1. A compound of the formula I



I

in which

R^1 represents hydrogen, alkyl having 1 to 4 carbon atoms, OR^7, where R^7 denotes hydrogen or alkyl having 1–4 carbon atoms, or NR^8R^9, where R^8 and R^9 are identical or different and denote hydrogen or alkyl having 1 to 4 carbon atoms;

R^2 and R^3 are identical or different and represent OR^{10}, $NR^{10}R^{11}$ or SR^{10}, where R^{10} and R^{11} are identical or different and represent alkyl having 1 to 8 carbon atoms, or

R^2 and R^3 together form a chain —X—$(CH_2)_m$—X—, where X represents O, S or NR^{11}, and m denotes 2 to 6, or together represent a carbonyl group =O or an imine group =N—R^{11};

R^4 represents alkyl having 1 to 4 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, alkenyl having 2 to 4 carbon atoms and up to 2 double bonds, and each having up to 3 halogen atoms, or represents $NR^{12}R^{13}$, where R^{12} and R^{13} are identical or different and denote hydrogen or alkyl having 1 to 4 carbon atoms;

R^5 represents alkyl having 1 to 10 carbon atoms or cycloalkyl having 3 to 8 carbon atoms and up to 8 ring members, or represents halogen; and

n is 1 or 2.

4,661,637

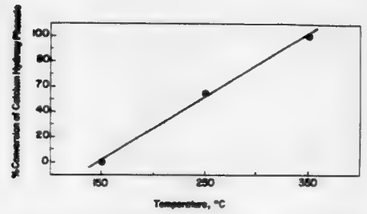
CONVERSION OF SOLID METAL PHENATES TO PHENOLS

Charles G. Scouten, Westfield, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 757,908, Jul. 22, 1985, Pat. No. 4,595,489, which is a continuation of Ser. No. 452,956, Dec. 27, 1982, abandoned. This application Dec. 12, 1985, Ser. No. 808,024

Int. Cl.⁴ C07C *39/04*

U.S. Cl. 568—716 **5 Claims**



1. A process for recovering phenols from solid metal phenates, which process comprises treating the solid metal phenates with steam at a temperature from about 250° C. to about 450° C. thereby forming phenols and hydroxides of the metal of the phenate.

4,661,638

CATALYST DERIVED FROM MIXTURE OF MANGANESE HYDROXIDE AND MAGNESIUM-CONTAINING MATERIAL, AND METHOD OF USE IN ORTHO-ALKYLATION OF PHENOLS

Richard A. Battista, Mt. Vernon, Ind.; James G. Bennett, Jr., Glenmont; John J. Kokoszka, Delmar, both of N.Y., and Freddie L. Tungate, Georgetown, Ind., assignors to General Electric Company, Selkirk, N.Y.

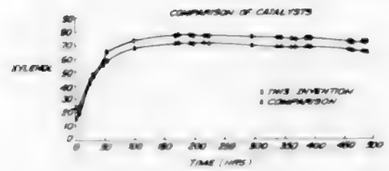
Division of Ser. No. 612,795, May 22, 1984, abandoned. This application Sep. 16, 1985, Ser. No. 776,192

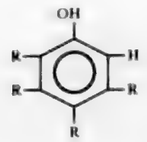
Int. Cl.⁴ C07C *37/00*

U.S. Cl. 568—804 **18 Claims**

1. In a process for the alkylation of a phenolic compound in the ortho position by the vapor phase reaction, in the presence of an alkylation catalyst, of a feed mixture of an alkyl alcohol which is a branched or linear saturated alcohol having up to about 16 carbon atoms, and one or more phenolic compounds represented by the formula

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in which R is independently, a monovalent substituent selected from the group consisting of hydrogen, alkyl, phenyl, and alkyl-substituted phenyl groups, the improvement in which the catalyst product derived by heating a catalyst precursor comprising a solid mixture of a magnesium-containing material and manganese hydroxide, the manganese hydroxide having been formed separately as a precipitate by bringing together an aqueous solution of a soluble manganese compound and a aqueous solution of a caustic.

4,661,639

PROCESS FOR PRODUCING CYCLIC ALCOHOL

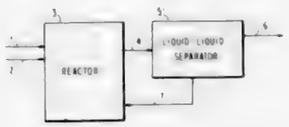
Masahiro Tojo, and Yohei Fukuoka, both of Okayama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 28, 1985, Ser. No. 737,854

Claims priority, application Japan, May 25, 1984, 59-104494; May 25, 1984, 59-104496; May 25, 1984, 59-104634; May 28, 1984, 59-106558

Int. Cl.⁴ C07C *35/06*

U.S. Cl. 568—835 **39 Claims**



1. A process for producing a cyclic alcohol by catalytic hydration of a cyclic olefin with water, comprising using as a catalyst a crystalline aluminosilicate containing at least one member selected from the group consisting of titanium, zirconium, hafnium, chromium, molybdenum, tungsten, and thorium; wherein said catalytic hydration is carried out at a temperature of from about 50° to 250° C.

4,661,640

SUBSTITUTED 5-CYCLOALKYL-2,2-DI-METHYL-PENTAN-3-ONES

Heinz Ziemann, Leichlingen, and Karl-Heinrich Mohrmann, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

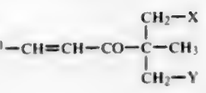
Division of Ser. No. 676,136, Nov. 29, 1984, Pat. No. 4,602,115. This application Feb. 24, 1986, Ser. No. 833,316

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1983, 3343532

Int. Cl.⁴ C07C *49/233*

U.S. Cl. 568—308 **4 Claims**

1. A ketone of the formula



in which

R^1 is cycloalkyl with 5 to 7 carbon atoms, cycloalkyl with 5 to 7 carbon atoms which is mono-, di or tri-substituted by identical or different alkyl radicals with 1 to 3 carbon atoms, cycloalkenyl with 5 to 7 carbon atoms, cycloalkenyl with 5 to 7 carbon atoms which is mono-, di- or trisubstituted by identical or different alkyl radicals with 1 to 3 carbon atoms, phenyl, or phenyl which is mono-, di- or tri-substituted by identical or different alkyl radicals with 1 to 3 carbon atoms,

X is halogen and

Y is hydrogen or halogen.

4,661,641

SUBSTITUTED ALKYNES USEFUL AS INTERMEDIATES IN THE SYNTHESIS OF CAROTENOIDS

Teodor Lukác, Aesch; Milan Soukup, Stein, and Erich Widmer, Münchenstein, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

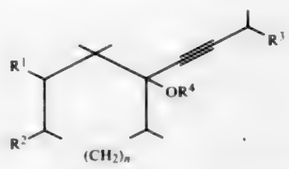
Filed May 29, 1984, Ser. No. 614,607

Claims priority, application Switzerland, Jun. 9, 1983, 3153/83; Oct. 13, 1983, 5583/83

Int. Cl.⁴ C07C *31/135, 31/20, 53/134*

U.S. Cl. 568—377 **11 Claims**

1. A compound of the formula



wherein n is either 0 or 1; one of R^1 or R^2 is hydrogen and the other is hydrogen, hydroxy, oxo group, or a protected hydroxy or protected oxo group; R^3 is hydroxy, oxo group, $=CH-CH_2-OH$ or $=CH-CHO$ or one of the foregoing groups where the hydroxy or oxo functions are protected; R^4 is $-CO-OR^6$, $-CO-R^6$, $-CO-NR^6R^7$, $-CO-Cl$ or $-SO_2-R^6$; R^6 is saturated or aromatic hydrocarbon; and R^7 is saturated or aromatic hydrocarbon or hydrogen.

4,661,642

PROCESS FOR THE OXIDATION OF ALPHA-OLEFINS

Bernard L. Feringa, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 21, 1985, Ser. No. 800,191

Claims priority, application United Kingdom, Nov. 22, 1984, 8429538

Int. Cl.⁴ C07C *45/33*

U.S. Cl. 568—475 **20 Claims**

1. A process for the oxidation of an alpha-olefin reactant comprising one or more alpha olefins having from 3 to about 30 carbon atoms to produce corresponding ketones and aldehydes, which comprises contacting the alpha-olefin reactant with molecular oxygen, at a temperature in the range from about 0° to 150° C. and at a pressure of at least one atmosphere, in the presence of a solution of a Group VIII metal complex containing (a) at least one ligand selected from the group consisting of NO_2 ligands and NO ligands, (b) a divalent copper salt, and (c) a tertiary alcohol solvent, said Group VIII metal complex being present in a quantity in the range of from

0.01 mmol to 10 mmol per mol of alpha-olefin, and said copper salt being present in a quantity of at least 1 gramatom of copper per gramatom of the Group VIII metal.

4,661,643

HYDROGENOLYSIS PROCESS FOR THE PRODUCTION OF MONOETHYLENE GLYCOL MONOMETHYL ETHER, MONOETHYLENE GLYCOL AND ETHANOL

William J. Bartley, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 307,225, Sep. 30, 1981, abandoned. This application May 21, 1985, Ser. No. 736,535

Int. Cl.⁴ C07C *41/01, 31/08, 31/20*

U.S. Cl. 568—678 **8 Claims**

1. A process for making monoethylene glycol monomethyl ether, monoethylene glycol and ethanol from polyethylene glycol comprising providing said polyethylene glycol with molecular hydrogen under hydrogenolysis conditions including elevated temperature and the presence of hydrogenation catalyst comprising ruthenium, sufficient to cleave said polyethylene glycol both at a carbon-to-oxygen covalen bond to produce ethanol and at a carbon-to-carbon covalent bond.

4,661,644

BROMINATED EPOXYAROMATIC COMPOUNDS

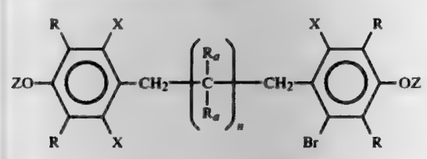
Harry C. Silvis, and Abel Mendoza, both of Midland, MI, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 773,685, Sep. 9, 1985. This application Dec. 23, 1985, Ser. No. 812,476

Int. Cl.⁴ C07C *39/17*; C07D *303/02*

U.S. Cl. 568—723 **20 Claims**

1. A compound of the formula:



wherein n is zero or a positive integer, each X independently is bromine or hydrogen, each R_d independently is hydrogen or alkyl of up to about 12 carbon atoms, each R independently is a primary or secondary alkyl moiety of up to about 6 carbon atoms, and each Z independently is a moiety having a terminal epoxide moiety.

4,661,645

SYNTHESIS OF STYRENATED HYDROQUINONE

David M. Lee; David A. Hutchings, both of Newark; Gloria M. Sieloff, Pataskala, and G. Fred Willard, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 655,803, Oct. 1, 1984, abandoned. This application Mar. 6, 1986, Ser. No. 836,902

Int. Cl.⁴ C07C *39/14*

U.S. Cl. 568—744 **15 Claims**

1. A method for preparing (1-phenylethyl) hydroquinone comprising reacting styrene and hydroquinone, in the presence of an organic diluent at a temperature and for a time sufficient to form a crude product having substantial amounts of said (1-phenylethyl) hydroquinone and containing unreacted hydroquinone, vacuum distilling said crude product in the presence of said diluent to obtain a fraction consisting primarily of said (1-phenylethyl) hydroquinone, and wherein said organic diluent co-distills with said unreacted hydroquinone under the conditions of vacuum distillation.

4,661,646

PROCESS FOR THE PREPARATION OF 1-BUTENE-3,4-DIOL

Rolf Schalenbach, Cologne, and Helmut Waldmann, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 652,794, Sep. 20, 1984, abandoned. This application Nov. 21, 1985, Ser. No. 800,495

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 3334589

Int. Cl.⁴ C07C *29/56, 33/035*

U.S. Cl. 568—857 **16 Claims**

1. In a process for preparing 1-butene-3,4-diol which comprises the isomerization of 2-butene-1,4-diol wherein said 2-butene-1,4-diol is heated in the presence of a catalytically active substance under acid conditions wherein said acid is selected from the group consisting of formic acid, acetic acid, trifluoroacetic acid, phosphoric acid, hydrochloric acid, sulfuric acid, perchloric acid and an acid ion exchanger and, wherein the improvement comprises performing said isomerization in the presence of a catalytically active substance selected from the group consisting of copper, $CuSO_4$, $Cu(NO_3)_2$, $Cu(acetate)_2$, $CuCl_2$, CuCl, CuI and CuBr.

4,661,647

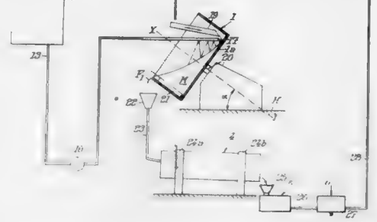
DIRECTLY COMPRESSIBLE GRANULAR MANNITOL AND METHOD FOR ITS MANUFACTURE

Michel Serpelloni, Bethune, and Patrick Lemay, Lestrem, both of France, assignors to Roquette Freres, Lestrem, France

Filed Oct. 11, 1985, Ser. No. 786,859

Int. Cl.⁴ C07C *29/78, 31/26*

U.S. Cl. 568—868 **12 Claims**



1. Directly compressible granular mannitol free from granulation binder, characterized by the fact that its granulometric fraction of 400 to 500 μm has a friability less than 65% in a test A, said test A consisting in subjecting a given amount of mannitol granules whose granulometry is comprised ebtween 400 and 500 μm to crushing in a friabilimeter, the thus crushed mannitol granules being passed through a sieve having a mesh width of 351 μm leaving, retained on the sieve, a residue representing a proportion in percent by weight of the given amount of granules subjected to crushing, the proportion in percent by weight of the given amount not retained on the sieve representing the friability.

8. Method to prepare directly compressible granular mannitol free from granulation binder, of friability less than 65% in a test A consisting in subjecting a given amount of mannitol granules whose granulometry is comprised between 400 and 500 μm to crushing in a friabilimeter, the thus crushed mannitol granules being passed through a sieve having a mesh width of 351 μm leaving, retained on the sieve, a residue representing a proportion in percent by weight of the given amount of granules subjected to crushing, the proportion in percent by weight of the given amount not retained on the sieve representing the friability, said method being characterized by the fact that into an open vessel, of horizontal axis or inclined to the horizontal, rotated around said axis at a speed of 2 to 10 rpm,

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containing a mass of mannitol granules at a temperature 145° to 165° C., kept in motion by the rotation of the vessel, there is introduced simultaneously and continuously

on the one hand, crystalline mannitol of granulometry less than 5 mm, preferably less than 1.5 mm, and of a temperature from 5° to 150° C., preferably from 50° to 150° C.,

on the other hand, mannitol essentially in the liquid state, divided or not into droplets of dry matter content higher than 99% and of a temperature comprised between 164° and 180° C.,

the crystalline mannitol and the liquid mannitol being brought to the surface of the mass of granules in motion in a ratio of 6 to 1.5 parts by weight of liquid mannitol per 1 part by weight of crystalline mannitol, these parameters being selected within the limits indicated so that total fusion at the surface of the mass in motion does not occur where the mannitol essentially in the liquid state and the crystalline mannitol meet, the granules of large size which have a tendency to rise to the surface of the mass in motion by a segregation phenomenon being collected preferably by overflow to the outside of the rotary vessel.

4,661,648

PROCESS FOR CARRYING OUT SUBSTITUTION CHLORINATION REACTIONS OF ORGANIC COMPOUNDS BY MEANS OF MOLECULAR CHLORINE IN THE PRESENCE OF A CHLORINATED PRODUCT SERVING AS A RADICAL INITIATOR, AND RADICAL INITIATORS USED IN SUCH A PROCESS

James Franklin, Brussels, Belgium, assignor to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Aug. 15, 1985, Ser. No. 765,965
Claims priority, application France, Aug. 20, 1984, 84 13051
Int. Cl.⁴ C07C *17/10*
U.S. Cl. 570—200 **7 Claims**

1. Process for carrying out substitution chlorination reactions of organic compounds by means of molecular chlorine in the presence of a chlorinated product serving as a radical initiator, characterised in that the radical initiator used is decachlorobutane or an octachlorobutene such as octachlorobut-1-ene or a mixture containing these two products.

4,661,649

SOLAR CONCENTRATOR PLATES

Renata Reisfeld, and Rivka Zusman, both of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Filed Sep. 6, 1985, Ser. No. 773,357
Claims priority, application Israel, Sep. 6, 1984, 72885
Int. Cl.⁴ H01L *31/04, 25/02;* G02B *5/14*
U.S. Cl. 136—247 **10 Claims**

10. A luminescent solar collector for high efficiency conversion of solar energy to electrical energy wherein solar energy is converted to fluorescent radiation at longer wave lengths at which photovoltaic cells have a better efficiency, comprising a solar concentrator plate having lateral edges, said plate having incorporated therein a dye selected from the group consisting of GF Orange-Red, Fluorol 555, oxazine-4-perchlorate, LDS 730, LDS 750, BASF 241, BASF 339, and combinations thereof with each other or with GF Clear or with 3-phenyl-fluoranthene, said dye being incorporated in a thin film of glass or plastic material covering said plate, and each of said dyes having absorption and emission spectra, quantum efficiency and Stokes Shift as set forth in Table II herein, and said plate further being provided at least at one of its lateral edges with a photovoltaic cell having a high efficiency in the region of the spectrum of the respective fluorescent radiation.

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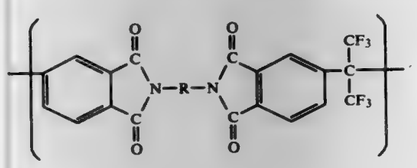
SOLAR CELL COATED WITH HIGH MOLECULAR WEIGHT POLYIMIDE

Abraham L. Landis, Northridge, and Arthur B. Naselow, Marina del Rey, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 801,433, Nov. 25, 1985. This application Sep. 2, 1986, Ser. No. 871,657
Int. Cl.⁴ H01L *31/04*
U.S. Cl. 136—256 **3 Claims**

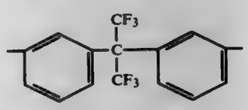
1. A solar cell having an active surface protected by a free-standing film, said film having the recurring repeating unit:

I



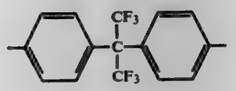
where R is:

II



or

III



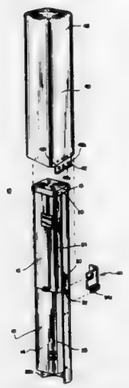
said film having a molecular weight of at least about 25,000.

4,661,651

FLOOD COVER ASSEMBLY FOR PEDESTAL CLOSURES AND METHOD OF INSTALLING SAME

Matt Leschinger, Wheaton, Ill., assignor to Reliance Comm/Tec Corporation, Chicago, Ill.

Filed Apr. 22, 1986, Ser. No. 854,532
Int. Cl.⁴ H02G *9/02*
U.S. Cl. 174—38 **12 Claims**



1. A flood cover assembly for placement over a vertically standing pedestal closure having an outside surface, said pedestal closure having at least one rotatable closure fastener means having a head, said closure fastener means captured in said outside surface such that said closure fastener means can be loosened or tightened by rotating said head, said assembly comprising:

(a) a flood cover including a bell jar type cover having a rigid mouth and first bracket means connected to said mouth such that a portion of said first bracket means projects outwardly therefrom, said projecting portion having therein engagement means; and

(b) second bracket means comprising:

(i) a first portion having engagement means therein, said first portion engagement means having a width sufficient to allow said second bracket means to be slid under said closure fastener means head when said closure fastener means is loosened;

(ii) a second portion at an angle from said first portion such that said second portion engages a portion of said pedestal closure outside surface when said first portion engagement means is slid under said closure fastener means head; and

(iii) a third portion connected to said first portion in a manner to project outwardly therefrom, said third portion having a rotatable fastener means having a head, said third portion fastener means being captured to said third portion in a manner such that said third portion fastener means can be loosened or tightened by rotating its head,

said first bracket means engagement means having a width sufficient to allow said first bracket means engagement means to be slid under said third portion fastener means head to thereby bring said flood cover in engagement with said second bracket means.

9. A method for placing a flood cover assembly over a vertically standing pedestal closure having an outside surface, said pedestal closure having at least one rotatable closure fastener means having a head, said closure fastener means being captured in said outside surface such that said closure fastener means can be loosened or tightened by rotating said head, said assembly having a flood cover including a bell jar type cover having a rigid mouth and first bracket means connected to said mouth such that a portion of said first bracket

means projects outwardly therefrom, said projecting portion having therein engagement means, second bracket means having a first portion having engagement means therein, said first portion engagement means having a width sufficient to allow said second bracket means to be slid under said closure fastener means head when said closure fastener means is loosened, a second portion at an angle from said first portion such that said second portion engages a portion of said pedestal closure outside surface when said first portion engagement means is slid under said closure fastener means head, and a third portion connected to said first portion in a manner to project outwardly therefrom, said third portion having a rotatable fastener means having a head, said third portion fastener means being captured to said third portion in a manner such that said third portion fastener means can be loosened or tightened by rotating its head, said first bracket means engagement means having a width sufficient to allow said first bracket means engagement means to be slid under said third portion fastener means head, said method comprising the steps of:

(a) sliding said second bracket means engagement means in engagement under said closure fastener means head; and

(b) sliding said first bracket means engagement means under said third portion fastener means head.

4,661,652

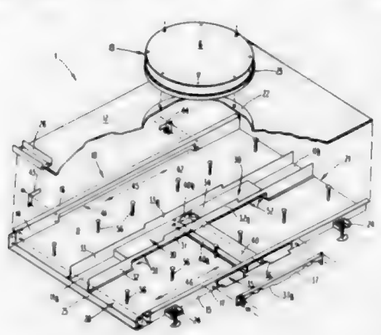
COMPOSITE HEADER/JUNCTION BOX

Richard D. Benscoter, Vienna, W. Va., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Jun. 6, 1985, Ser. No. 742,067

Int. Cl.[4] H02G *3/28*

U.S. Cl. 174—48 **7 Claims**



1. In a single level junction box/header:

a hollow housing the opposite ends of which are open for the passage of conductors;

access means on said housing for access to the interior of the housing;

means forming a header power raceway in the housing extending from one open end to the other open end for passage of power conductors;

means forming a pair of communication header raceways in the housing extending from one open end to the other open end for passage of communication conductors;

means forming a pair of tunnels for passage of communication conductors between said pair of communication header raceways;

means forming a distribution opening in said housing;

means adjacent said distribution opening to receive and support enclosed distribution duct means in alignment with the distribution opening for passage of power and communication conductors; and

means forming a distribution power raceway in communication with said header power raceway and said distribution opening for the passage of power conductors.

4,661,653

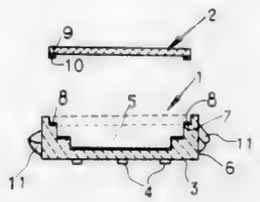
PACKAGE ASSEMBLY FOR SEMICONDUCTOR DEVICE

Seiichiro Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan

Filed Dec. 27, 1984, Ser. No. 686,696

Int. Cl.[4] H01L *23/04*

U.S. Cl. 174—52 FP **6 Claims**



1. A package assembly in which a semiconductor device or devices are enclosed, which comprises

a ceramic package body comprising a first and second face having a circular periphery adapted to be received in a circular opening formed in a base board, a plurality of connector terminals at the first face of the body and at least one stepped portion at the second face of the body for receiving a semiconductor device or devices therein,

at least one ceramic cover plate fitted in the stepped portion of the package body,

a plurality of projections integrally formed on the circular peripheral surface of the body, said projections being adapted to fit in grooves formed in an inner peripheral surface of the opening of the base board,

a paste applied to a ring-shaped area adjacent the inner periphery of the stepped portion,

a paste applied to a similar ring-shaped area adjacent the outer periphery of the cover plate, said pastes being adhered to each other when the cover plate fits into the stepped portion, to thereby sealingly attach the cover plate to the stepped portion.

4,661,654

PRINTED CIRCUIT BOARD

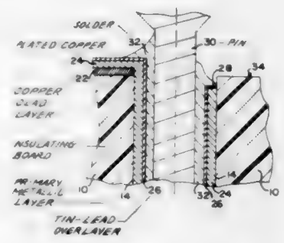
Jean-Paul Strobel, Avully, Switzerland, assignor to Cirtech S.A., Switzerland

Division of Ser. No. 513,337, Jul. 13, 1983, Pat. No. 4,610,756. This application Apr. 21, 1986, Ser. No. 854,092

Claims priority, application Switzerland, Jul. 16, 1982, 4352/82

Int. Cl.[4] H05K *1/00*

U.S. Cl. 174—68.5 **7 Claims**



1. In a printed circuit board having a supporting substrate of electrically insulating material with a major surface plane on each side, conductor paths on at least one major surface plane, and through holes traversing said substrate and electrically conductive inner walls normal to the surface planes which are in electric contact with at least one of said conductor paths, said through holes being designed for receiving solderable leads to be soldered to said circuit board, the circuit board being free from soldering lands, said inner walls of said holes being augmented by an electrically plated copper layer which covers also at least part of said conductor paths, said copper layer covering the hole walls ending at a location no higher than the level of the surface planes on both sides of said substrate, over the entire circumference of said inner wall of said hole except the width of said conductor path with which said copper layer is in contact.

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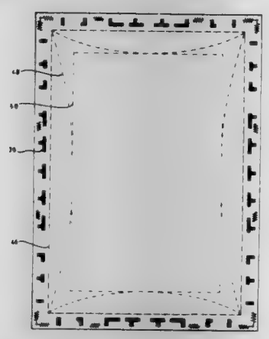
ELECTROGRAPHIC TOUCH SENSOR AND METHOD OF REDUCING BOWED EQUIPOTENTIAL FIELDS THEREIN

William A. Gibson, Knox County, and John E. Talmage, Jr., Anderson County, both of Tenn., assignors to Elographics, Inc., Oak Ridge, Tenn.

Filed Dec. 24, 1984, Ser. No. 685,348

Int. Cl.[4] G06K *9/28; G08C 21/00*

U.S. Cl. 178—18 **20 Claims**



1. A position touch sensor having resistive electrodes which provides a substantially linear response over the total area of said sensor by substantially reducing the bow of equipotential lines along the edges of said sensor, said equipotential lines produced when electric fields are introduced into said sensor, which comprises:

a substrate having an upper and a lower face, said substrate defining a perimeter of a selected configuration;

a uniform resistive coating applied to said upper face of said substrate, said coating covering a substantial portion of said upper face and defining perimeter edges of said coating;

resistance elements positioned proximate each of said perimeter edges of said coating, each of said resistance elements having opposite ends joined to proximate ends of adjoining resistance elements, said resistance elements being insulated from said coating;

a plurality of electrodes positioned along a preselected symmetrical path along each perimeter edge of said coating and electrically attached to said coating, said electrodes each being electrically connected to selected positions along said resistance elements to introduce orthogonal electric fields into said coating, said electrodes having a selected spacing and an effective length along said path;

said spacing and effective length of said electrodes selected to produce a selected voltage gradient at each of said electrodes to compensate for any cummulative voltage drop along said resistance elements perpendicular to current flow through said coating during operation of said sensor when said orthogonal fields are applied to said coating whereby said bow of said equipotential lines is substantially reduced.

4,661,656

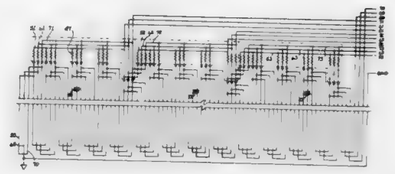
GRAPHIC TABLET AND METHOD

James L. Rodgers, Mesa, and Billy C. Fowler, Scottsdale, both of Ariz., assignors to Kurta Corporation, Phoenix, Ariz.

Filed Jan. 16, 1986, Ser. No. 819,392

Int. Cl.[4] G08C *21/00*

U.S. Cl. 178—18 **7 Claims**



4. In a graphic tablet having a surface and a means for detecting the position of a signal radiating device near or on said surface, the improvement comprising:

(a) a plurality of sensing conductors secured adjacent said surface each comprising a series of parallel segments connected at alternate ends to form a continuous conductor with one end thereof grounded, the parallel segments of the respective sensing conductors being interleaved to form adjacent parallel segments extending across said tablet;

(b) a plurality of groups of auxiliary conductors, each group corresponding to a different one of said sensing conductors; and

(c) each auxiliary conductor within each group of auxiliary conductors connected to a different portion of the corresponding sensing conductor through resistors connected to said alternate ends of said corresponding sensing conductor.

4,661,657

METHOD AND APPARATUS FOR TRANSMITTING AND RECEIVING ENCODED DATA

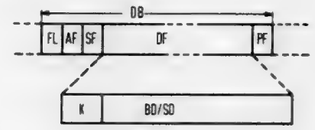
Kurt Grenzebach, Bebra, and Wolfgang Hopf, Heringen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 483,875

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217261

Int. Cl.[4] H04L *9/00*

U.S. Cl. 380—21 **11 Claims**



1. The method of transmitting encoded data from a transmitting data station to a receiving data station wherein the transmitting and the receiving data stations respectively each contain data terminal equipment, cipher equipment and a transmission unit and wherein synchronizing data for synchronizing the receiver cipher equipment with the cipher equipment in the transmitter are transmitted from the cipher equipment of the transmitting data station to the cipher equipment of the receiving data station, comprising the following steps:

(a) establishing a connection between the transmitting data station (DS1) and the receiving data station (DS2) and the data terminal equipment (DE1) of the transmitting data station (DS1) transmitting user data (BD) in the form of

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data blocks (DB) which, in addition to the user data (BD), contain a heading (K) with control information;

(b) replacing in at least one of the data blocks (DB), the user data (BD) by the synchronizing data (SD) and leaving the heading (K) unaltered; and

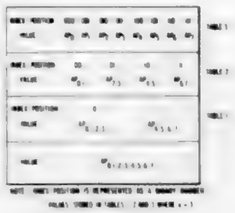
(c) subsequently generating and transmitting the data block (DB) whose user data (BD) were replaced by the synchronizing data (SD); and characterized in that the data block (DB) in which the user date (BD) were replaced by the synchronizing data (SD) is, when a back space request is received is generated again in the data terminal equipment (DE1) of the transmitting data station (DS1) and is retransmitted.

4,661,658

OFFLINE PIN VALIDATION WITH DES

Stephen M. Matyas, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1985, Ser. No. 700,897
Int. Cl.[4] H04L 9/00
U.S. Cl. 380—23 **8 Claims**



1. In a multi-terminal system, a method of offline personal authentication using an authentication tree with an authentication tree function comprising a one-way function, said method employing memory cards issued to users of the system and each user being issued a personal identification number, each of said memory cards having stored thereon a personal key and an index position number representing the tree path for the user to which the card is issued, said method comprising the steps of:

calculating an authentication parameter as a function of a personal key read from a user's card, a personal identification number entered by a user at a terminal being used, and a global secret key stored in the terminal being used, said global secret key being a common secret key stored at every terminal said calculating an authentication parameter step further comprising the steps of:

calculating an encrypted personal identification number (PIN), denoted EPIN, by the equation

$$EPIN = E_{KGbl}(E_{PIN}(ID)),$$

where KGbl is a global secret key stored in each terminal and ID is a user identifier, and

calculating an authentication parameter AP by the equation

$$AP = \text{RightN}[E_{KP \oplus EPIN}(ID) \oplus ID],$$

where the symbol $\oplus$ is the Exclusive OR operation and "RightN" is a function that extracts the rightmost N bits in the binary variable denoted by the argument of the function, wherein said binary variable is greater than N bits

mapping the calculated authentication parameter to a verification value using said index position number in said one-way function to the root of said authentication tree,

comparing the verification value obtained by mapping the calculated authentication parameter with a global verification value of reference stored at the terminal, said global verification value being a common verification value stored at every terminal and

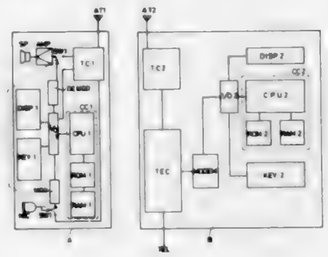
enabling said system if the comparison of the versification value obtained by mapping with the global verification value of reference is favorable.

4,661,659

WIRELESS PHONE SYSTEM COMMUNICATIVELY COMBINED WITH A COMPUTER

Kosuke Nishimura, Yamatokouriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 554,384, Nov. 22, 1983, abandoned. This application Jul. 7, 1986, Ser. No. 882,031
Claims priority, application Japan, Nov. 30, 1982, 57-211566
Int. Cl.[4] H04M 11/00; H04Q 7/04
U.S. Cl. 379—61 **1 Claim**



1. A wireless phone system comprising:

a wireless phone handset for receiving and transmitting voice data and non-voice data;

a master computer unit connected to a telephone line and including,

first central processing unit (CPU) means for processing data,

first keyboard means for inputting non-voice data to said first CPU means,

telephone circuit means for transferring voice data and non-voice data between said telephone line, said first CPU means, and said wireless phone handset,

first wireless communication circuit means for effecting transfer of data between said telephone circuit means and said wireless phone handset, and

first display means for displaying non-voice data from said first CPU means; said wireless phone handset including,

second CPU means for processing non-voice data,

second wireless communication circuit means for effecting transfer of data between said handset and said first wireless communication circuit means,

second keyboard means for inputting said non-voice data to said second CPU means,

second display means for displaying non-voice data from said second CPU means,

microphone means for inputting voice data from a user to said second wireless communication means and non-voice data from a conventional phone transceiver to said second CPU means,

speaker means for outputting voice data from said second wireless communication circuit means and non-voice data from said second CPU means to a conventional phone transceiver, and

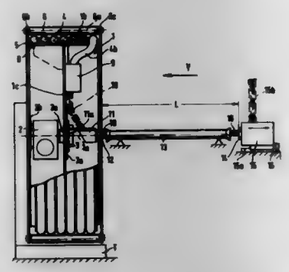
switch means for placing said handset in either a voice data or non-voice data transmission mode.

4,661,660

CABLE DRUM DRIVEN BY AN ELECTRIC MOTOR

Heinrich F. von Sothen, Gerblingerode, Fed. Rep. of Germany, and Leendert Visser, Papendrecht, Netherlands, assignors to Anton Piller GmbH & Co. KG, Osterode/Harz, Fed. Rep. of Germany

Filed Sep. 6, 1985, Ser. No. 773,921
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1984, 3438749
Int. Cl.[4] H02G 11/02
U.S. Cl. 191—12.2 A **12 Claims**



1. A cable drum assembly comprising a drum, a multi-conductor cable of heavy cross section, means for rotating said drum to wind said multi-conductor cable thereon, an input cable comprising a bundle of twistable separately insulated braided stranded conductors of high elasticity, first terminal means on said drum connecting said input cable to said multi-conductor cable, means mechanically fixing said input cable to said drum along the geometrical axis of said drum so that one end of said input cable rotates with said drum, second terminal means nonrotatably securing the other end of said input cable with respect to said drum, a substantially straight guide tube, said input cable extending through said guide tube and being guided by said guide tube between said drum and said second terminal means, and means applying axial tension to said other end of said input cable in the axial direction of said guide tube away from said drum, so that said other end of said input cable is yieldable in the axial direction of said guide tube as said input cable is twisted.

4,661,661

SPARK SHIELD AND INLET AIR VENT FOR AN IGNITION DISTRIBUTOR

Leonard J. Kronberger, Oak Park, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

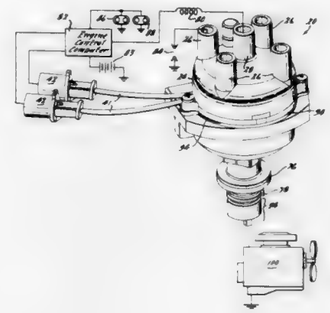
Division of Ser. No. 782,760, Oct. 1, 1985. This application Apr. 24, 1986, Ser. No. 855,240
Int. Cl.[4] H01H 19/00; F02P 1/00
U.S. Cl. 200—19 R **1 Claim**

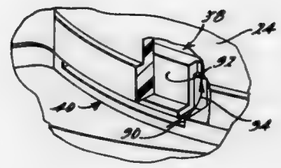
1. For an internal combustion engine with cylinders, an ignition distributor including a distributor cap, a rotor, spark plug electrodes, a coil electrode, a shaft, a bowl shaped housing, a rotor electrode, a vent, a spark shield and a switch plate;

an inlet to increase the flow of air through the distributor by supplying outside air to the distributor cap to augment the venting action created by the motion of the rotor about the shaft, the inlet comprising:

pockets located on the outer circumferential edge of the switch plate; and

legs located on the outer circumferential edge of the spark shield and seated in the pockets leaving a gap through which air is urged inside the distributor cap, the gap being formed when the distributor cap is assembled to the





switch plate assembly trapping the spark shield therebetween.

4,661,662

POWER LINE WORKING APPARATUS

Ronald J. Finke; Victor J. Mullen; Danny R. Williams; Robert J. Morris, and Charles E. Tucker, all of Houston, Tex., assignors to Houston Industries, Incorporated, Houston, Tex.

Filed Sep. 30, 1985, Ser. No. 782,378
Int. Cl.[4] H01H 31/00
U.S. Cl. 200—48 R **16 Claims**



1. An apparatus for permitting a live electrical power line to be cut, comprising:

(a) mounting means for connecting to the line at a first and a second position adjacent a section of the line to be cut;

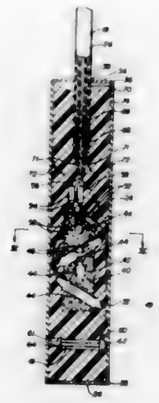
(b) means for moving said mounting means closer to each other once connected to ease tension on the section of the line to be cut;

(c) means for connection in a parallel electrical circuit with the section of the line to be cut; and

(d) means for breaking said parallel electrical circuit once the line has been cut.

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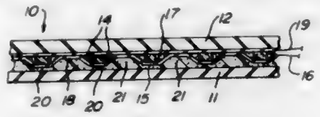
4,661,663
TILT SWITCH
Francis P. Weinheimer, 501-TA Oaklyn Ct., Pittsburgh, Pa. 15220
Filed Oct. 11, 1985, Ser. No. 786,598
Int. Cl.[4] H01H *35/02*
U.S. Cl. 200—61.21 **11 Claims**



1. A hanging tilt switch apparatus which is adapted to hang from an overlying structure to provide an actuating signal in response to angular displacement thereof from a hanging rest position for actuation of a remote apparatus, said tilt switch apparatus comprising:
a hollow switch body member;
tilt switch means carried within said body member;
a quantity of potting compound filling at least a portion of said body member;
suspension cable means having a free end extending into said body member and embedded within said potting compound;
said suspension cable means being adapted to extend from said body member to such a remote apparatus;
said suspension cable means comprising electrical conductor means connected to said tilt switch means and extending intermediate the hollow interior of said body member and such a remote apparatus, and a shield means continuously encompassing said electrical conductor means;
said shield means at least adjacent said free end thereof being a multiple strand wire shield with selected ones of said strands being formed to extend radially outwardly of said suspension cable means within said potting compound for retention thereof within the hollow interior of said body member whereby said shield means provides support for said body member and continuously shields said electrical conductor means between said body member and such a remote apparatus.

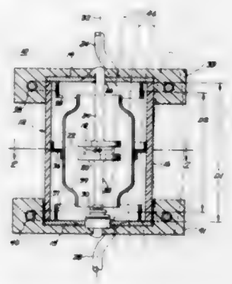
4,661,664
HIGH SENSITIVITY MAT SWITCH
Norman K. Miller, Concord Industrial Park, Concordville, Pa. 19331
Filed Dec. 23, 1985, Ser. No. 812,075
Int. Cl.[4] H01H *13/70*
U.S. Cl. 200—86 R **9 Claims**

1. A high sensitivity mat switch for response to low unit pressure over a broad area and comprising a pair of substantially imperforate broad outer sheets in general parallelism, said outer sheets being relatively rigid for high durability, a resilient compressible open work spacer sheet having a multiplicity of through openings and located between said outer sheets, a resiliently compressible substantially imperforate deflection sheet located between said spacer sheet and one outer sheet, said spacer sheet being compressible and said deflection sheet being elastically deformable into and substantially through multiple openings in said spacer sheet under relatively low compressive force applied to an area of said outer sheets overlying the multiple openings, a first conductive sheet between and engaging said spacer sheet and the other outer sheet, and a second relatively flexible conductive sheet between and engaging said spacer sheet and said deflection



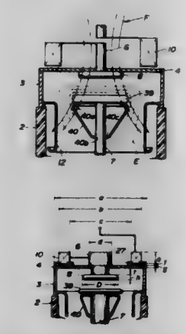
sheet in spaced confronting relation with said first conductive sheet through said multiplicity of openings in the absence of said compressive force, said second conductive sheet being relatively flexible and deflectible with said deflection sheet into said multiple openings to contact said first conductive sheet at a plurality of locations under relatively low compressive force applied to said area of said outer sheets, said outer sheets being more rigid than said deflection sheet and said second flexible conductor sheet.

4,661,665
VACUUM INTERRUPTER AND METHOD OF MODIFYING A VACUUM INTERRUPTER
James J. Carroll, Clifton Park; Gerhard Frind, Altamont, both of N.Y., and John H. VanNoy, Pittsburgh, Pa., assignors to General Electric Company, Schenectady, N.Y.
Filed Jul. 10, 1986, Ser. No. 884,326
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—144 B **14 Claims**



1. A vacuum interrupter comprising:
an evacuated envelope;
a pair of opposing contacts situated within said envelope and relatively movable from an engaged position for conducting a current to a disengaged position for establishing an arc whereby to interrupt said current;
a pair of electrical conductors, each of said electrical conductors extending through said envelope along said common axis and into electrical connection with a respective one of said contacts; and
a pair of coils disposed outside of said envelope on opposite sides of said contacts and generally coaxially with said contacts, each of said coils connected in electrical series with a respective one of said electrical conductors so that an axial magnetic field is established in the space between said contacts when said contacts are in said disengaged position.

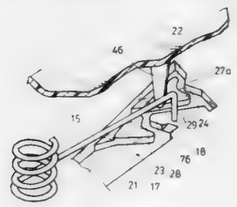
4,661,666
VACUUM INTERRUPTER
Shinzo Sakuma, Kawasaki; Nobuaki Tanaki, Zushi, and Hideo Kawakami, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan
Filed May 21, 1986, Ser. No. 865,895
Claims priority, application Japan, May 28, 1985, 60-115137; Jun. 20, 1985, 60-134814
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—144 B **16 Claims**

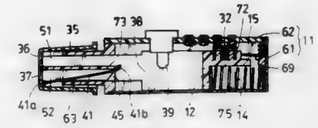


1. A vacuum interrupter comprising a vacuum envelope including an electrically insulating cylinder; a pair of metallic stationary- and movable-side end plates constituting part of the vacuum envelope and hermetically sealed to opposite open ends of the insulating cylinder, one of the end plates being a coil-side end plate; a pair of relatively movable disc-shaped contacts supported within the vacuum envelope, a movable contact being movable by a bellows from a closed position in conductive engagement with a stationary contact, and at an open position the movable contact separated from the stationary contact with an arcing gap therebetween across which an arc forms during circuit interruption, one of the contacts being a coil-side contact; a pair of electrical lead members each supporting and electrically connected to a corresponding contact; and a coil disposed outside the vacuum envelope and near the coil-side end plate for generating an axial magnetic field parallel to the path of the arc in the arcing gap, characterized in that said coil-side contact is made of a material superior in interruption performance to said coil-side end plate, and that the coil-side contact is mounted with a clearance to the coil-side end plate, the clearance being at least 2 mm and at most 30% of the diameter of the coil-side contact.

4,661,667
TWO-STAGE LOCKING PUSH SWITCH
Mitsuo Sorimachi, and Mamoru Sato, both of Isesaki, Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan
Filed Nov. 18, 1985, Ser. No. 799,083
Claims priority, application Japan, Nov. 21, 1984, 59-177226[U]; Mar. 6, 1985, 60-32577[U]
Int. Cl.[4] H01H *9/00, 3/00*
U.S. Cl. 200—314 **16 Claims**

1. A two-stage locking push switch comprising
a rectangularly-sectioned, tubular casing having one end face opened and having a printed circuit board on one side thereof;
a moving member received in the casing but partly projecting out of its open end face and slidable in parallel with its axis;
a spring for urging the moving member in a direction in which it projects out of the casing;
a pushbutton mounted on the projecting portion of the moving member;
a cam type locking mechanism provided between the moving member and the casing, for locking the moving member at a first position in response to a first pushbutton depressing operation, for locking the moving member at a second position in response to a second pushbutton depressing operation, and for returning the moving member to its initial position in response to a third pushbutton depressing operation;
a contact piece held on the moving member in opposing relation to the printed circuit board;
a plurality of contacts held on the printed circuit board in an area corresponding to the range of movement of the contact piece, for selectively contacting the contact piece in accordance with the first, second and initial positions of the moving member;
a partition plate for dividing the inside of the pushbutton into first and second optical path spaces;
a light emitting element in said casing for emitting light into the first and second optical path spaces at the same time;
first and second display portions respectively provided in the first and second optical path spaces of the pushbutton, for providing displays when irradiated by light from the light emitting element;
a light shielding plate mounted at one end to the moving member in the first optical path space and extending therein in opposing relation to the partition plate;





projecting means mounted on the casing, for engaging the light shielding plate in accordance with the position of movement of the moving member to displace the light shielding plate towards the partition plate, thereby closing the first optical path space to intercept light from the light emitting element;
the projecting portion of said moving member having a pair of opposed arm plates extending from a main body of the moving member in the casing and projecting out therefrom, said arm plates being inserted into said pushbutton, the said arm plates being coupled together by said partition plate on the side of said pushbutton, and said light emitting element being disposed between said pair of arm plates behind a rear end of the partition plate; and
a guide frame secured to the open end face of the casing in a manner to project out therefrom, said arm plates projecting out of the casing further than the guide frame, and the pushbutton being in loose engagement with said guide frame, said light shielding plate being placed on an inner surface of said guide frame, said projecting means being formed on the inside of said guide frame integrally therewith, the arrangement being such that when the moving member is at the initial position and at said first position the light shielding plate is not on said projecting means, but when the moving member is at said second position

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the light shielding plate is positioned on said projecting means, the face of said projecting means on the side of the light shielding plate being tapered to gently rise, and the marginal portion of the light shielding plate on the side of said projecting means being bent to depart from the inner surface of said guide frame.

2. A two stage locking push switch comprising:

a rectangularly-sectioned, tubular casing having one end face opened and having a printed circuit board on one side;

a moving member received in the casing but partly projecting out of its open end face and slidable in parallel with its axis;

a coiled spring for urging the moving member in a direction in which it project out of the casing;

a push button mounted on the projecting end of the moving member;

a cam type locking mechanism including a cam forming portion provided with first and second heart cams formed on the moving member and staggered from each other with respect to the axial direction and a direction perpendicular thereto and a blocking projection formed on the moving member between the first and second heart cams and staggered therefrom with respect to the axial direction and in the direction perpendicular thereto, and a hook spring engaged at one end with the cam forming portion and fixed at the other end to the casing and biased to turn in one direction, whereby in response to a first path button depressing operation the hook spring is brought into engagement with a recess of the first heart cam to lock the moving member at a first position, in response to a second push button depressing operation the hook spring is brought into engagement with a recess of the second heart cam to lock the moving member at a second position and in response to a third push button depressing operation the hook spring is disengaged from the second heart cam to return the moving member to its initial position;

a contact piece held on the moving member in opposing relation to the printed circuit board;

a plurality of contacts held on the printed circuit board in an area corresponding to the range of movement of the contact piece, for selectively contacting the contact piece in accordance with the first, second and initial positions of the moving member; and

a stopper projecting out from the inside of the casing towards the cam type locking mechanism, for preventing the hook spring, when it strikes and has moved on to the blocking projection, from reaching a returning passage on the cam forming portion of the cam type locking mechanism.

4,661,668

WELDING INTERCELL CONNECTIONS BY INDUCTION HEATING

William E. Mullane, Warren, Ohio, and David Lund, Minneapolis, Minn., assignors to The Taylor-Winfield Corporation, Warren, Ohio

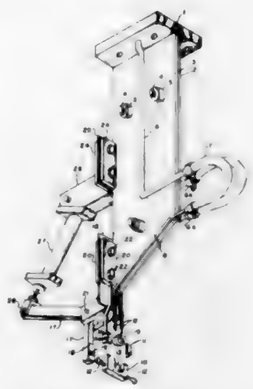
Filed Oct. 1, 1985, Ser. No. 782,477

The portion of the term of this patent subsequent to Feb. 10, 2004, has been disclaimed.

Int. Cl.⁴ H05B *6/10*

U.S. Cl. 219—10.41 **11 Claims**

1. In a storage battery having a plurality of parts of terminals of readily fusible material, each pair of terminals sandwiching an electrical insulating vertical partition having a horizontal hole therethrough, each terminal having a horizontal strap portion extending away from said partition and an integral vertical riser portion, one of said riser portions of each pair of terminals having an integral horizontal pin portion extending through said horizontal hole of said partition and through a registering hole in the other riser portion; the method of making an intercell connection between each pair of terminals comprising applying a vertical insulating sheet against the outside of the terminal having the horizontal hole and applying an electrical induction coil adjacent the outside of said sheet substantially concentric with said pin, squeezing together said sheet, pair of terminals and partition, and applying high frequency electrical current to said coil sufficiently as to partially



fuse said pin and surrounding perimetrical portion of said horizontal hole of said terminal, using said sheet and vertical riser portion of the pin bearing terminal as dams to contain the fused metal, and thereafter allowing said fused metal to cool and solidify.

4,661,669

MICROWAVE OVEN WITH IMPROVED COOLING ARRANGEMENT

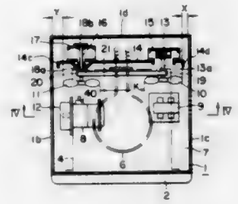
Kazufumi Matsushima, Aichi, and Takamichi Sujaku, Nagoya, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 12, 1986, Ser. No. 838,786

Claims priority, application Japan, Mar. 14, 1985, 60-36484[U]; May 16, 1985, 60-104435; Aug. 23, 1985, 60-185509; Aug. 23, 1985, 60-185510

Int. Cl.⁴ H05B *6/64*

U.S. Cl. 219—10.55 R **12 Claims**



1. A microwave oven with an improved cooling arrangement, comprising:

a casing;

a heating chamber provided in said casing and having a bottom plate;

a machine chamber provided in said casing at a position below said heating chamber and having a bottom plate;

a high-voltage transformer and a high-frequency oscillator provided in said machine chamber wherein said transformer and said oscillator are secured onto the bottom plate of said machine chamber at positions spaced laterally apart from each other;

a pair of cooling fans provided in said machine chamber for

cooling said high-voltage transformer and said high-frequency oscillator, respectively;

an electric motor for driving one of said cooling fans directly and the other of said cooling fans indirectly through transmission means wherein each fan is rotated in a vertical plane in said machine chamber;

venting inlet means for introducing outside air into said casing;

venting outlet means for exhausting air provided inside to outside of said casing; and

means, including a supporting member of a substantially rectangular frame-like configuration disposed vertically in said machine chamber and having an upper end secured to the bottom plate of said heating chamber and a lower end secured to the bottom plate of said machine chamber, for maintaining a constant height of said machine chamber at least at a portion thereof adjacent to said cooling fans.

4,661,670

MICROWAVE OVENS HAVING MODIFIED FINAL COOKING STAGES

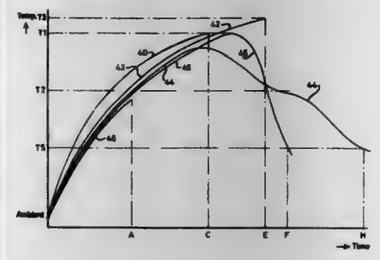
Kenneth I. Eke, South Croydon, England, assignor to Microwave Ovens Limited, Surrey, England

Filed Jan. 2, 1986, Ser. No. 815,531

Claims priority, application United Kingdom, Jan. 3, 1985, 8500096; Feb. 1, 1985, 8502571

Int. Cl.⁴ H05B *6/68*

U.S. Cl. 219—10.55 B **8 Claims**



1. A microwave oven comprising a microwave generator for supplying microwave power to a cavity of the oven, thermal heating means for supplying thermal power in the form of a forced flow of hot air through the cavity, memory means storing a first cooking program appropriate to a baked item, a second cooking program appropriate to a meat joint other than poultry, and a third cooking program appropriate to poultry, selector means for selecting one of said first, second and third cooking programs, temperature sensing means for sensing the temperature of the hot air flow, and control means which are responsive to the selector means and the temperature sensing means and which, when the sensed temperature reaches a predetermined level due to the simultaneous generation of microwave power and thermal power, are operative either to switch off the supply of power to the microwave generator and the thermal heating means and thereby finish the cooking process if the first program has been selected, or if the second or third program has been selected, are operative to finish the cooking process by the application of microwave power without any application of thermal power during a final cooking stage, until the sensed temperature drops to a predetermined switch off temperature which is lower than the predetermined temperature level and at which the supply of microwave power ceases.

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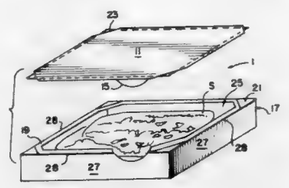
PACKAGE ASSEMBLY WITH HEATER PANEL AND METHOD FOR STORING AND MICROWAVE HEATING OF FOOD UTILIZING SAME

Raymond V. Maroszek, Neenah, Wis., assignor to James River Corporation, Norwalk, Conn.

Filed Jan. 8, 1986, Ser. No. 817,241

Int. Cl.⁴ H05B *6/64*

U.S. Cl. 219—10.55 E **17 Claims**



1. A food package assembly for use in heating a predetermined quantity of food in a microwave oven having a support surface, comprising:

(a) heating means for converting microwave energy into heat, said heating means including a microwave interactive layer; and

(b) packaging means combining together said heating means and the predetermined quantity of food in a package assembly constructed in a manner enabling it to be disposed in a first configuration for shipping and storage and a second configuration for heating, said package assembly in said first configuration having the quantity of food disposed within said packaging means, said heating means being attached to a detachable panel portion of a wall of a carton forming said packaging means, and said package assembly in said second configuration having said panel removed and repositioned in association with a remaining body portion of said carton and having the quantity of food removed from within said carton via an opening formed by removal of said panel portion and positionally rearranged relative to said packaging means so as to be supported in heat transfer relation with respect to said microwave interactive layer above a static air-filled space that is formed by said remaining body portion of said carton for promoting even heating of the food when said portion of the packaging means is situated upon a support surface of a microwave oven.

4,661,672

CONTAINER FOR USE IN HEATING BY MICROWAVE OVEN

Ryusuke Nakanaga, Takatsuki, Japan, assignor to House Food Industrial Company, Limited, Higashiosaka, Japan

Filed Jan. 2, 1986, Ser. No. 815,802

Claims priority, application Japan, Jan. 14, 1985, 60-4609

Int. Cl.⁴ H05B *6/80*

U.S. Cl. 219—10.55 E **16 Claims**

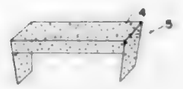
1. A container for use in heating by a microwave oven, said container comprising:

(a) an oblong container proper for holding contents to be heated and cooled, said oblong container proper having two short side walls, two long side walls, a bottom, and a top;

(b) means for elevating said container proper from a microwave oven table by an interval of 2 to 45 mm; and

(c) a microwave shielding layer which covers both said top of said container proper and at least the upper half of said two short side walls of said container proper,

(d) wherein said bottom of said container proper and said means:



(i) are made of a water resisting material that transmits microwaves and

(ii) are not covered by said microwave shielding layer.

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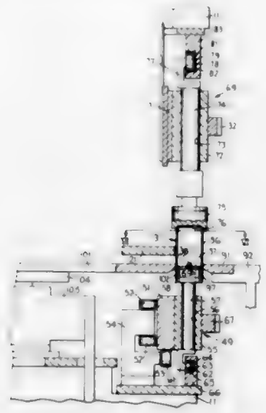
CONTINUOUS MOTION CIRCUMFERENTIAL SEAM WELDER

Thomas J. Geiermann, Bangor Township, Bay County, Mich., assignor to Newcor, Inc., Troy, Mich.

Filed Aug. 28, 1985, Ser. No. 770,532

Int. Cl.⁴ B23K *11/32, 37/04*

U.S. Cl. 219—64 **19 Claims**



1. An apparatus for creating a circumferential seam weld around a series of cylindrical workpieces, comprising:

workpiece conveying means for continuously moving a series of cylindrical workpieces in spaced relationship along a work path, wherein the cylindrical workpieces have opposite ends, said workpiece conveying means including first and second support means for supportingly engaging opposite ends of individual workpieces while permitting the individual workpieces to be rotated about their central longitudinal axes; and

welding electrode means for sequentially engaging each workpiece as it moves along said work path for causing rotation of the respective workpiece about its central axis while simultaneously creating two seam welds which individually extend around a predetermined angle of rotation of the workpiece;

said welding electrode means including a first electrode having a first elongate electrode surface thereon which extends substantially parallel to said work path and engages each workpiece on a first side thereof, said welding electrode means including a second movable electrode having a second elongate electrode surface thereon which engages each workpiece on a second side thereof which is substantially diametrically opposite said first side, and means for moving said second electrode surface at a velocity which is a predetermined amount greater than the movement velocity of said conveying means for causing rotation of each workpiece about its own central axis when the workpiece is engaged between said first and second electrode surfaces.

16. A method for creating a circumferential seam weld around cylindrical workpieces, comprising the steps of:

moving cylindrical workpieces in series and in spaced relationship along a work path at a predetermined velocity, said workpieces being oriented such that the longitudinal central axes thereof extend substantially perpendicularly to said work path;

providing first and second welding electrodes having opposed first and second electrode surfaces thereon, respectively, in opposed relationship adjacent opposite sides of said work path, the spacing between said electrode surfaces being sized to accommodate the workpieces therebetween, said electrode surfaces being elongated in a direction parallel to said path;

moving the workpieces sequentially along said work path into the gap between said electrode surfaces so that said electrode surfaces engage the exterior cylindrical surface of the workpieces at substantially diametrically opposite points thereon;

relatively moving said first and second electrode surfaces with respect to one another for effecting rotation of the workpieces about their longitudinal axes as the workpieces are continuously moved along said work path; and

applying a welding current through said first and second welding electrodes as they engage diametrically opposite sides of the workpieces to create two circumferentially extending seam welds as the workpieces rotate about their longitudinal central axes as they move between said first and second welding electrodes.

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MINIMUM-IMPEDANCE CONDUCTOR ASSEMBLY FOR EDM

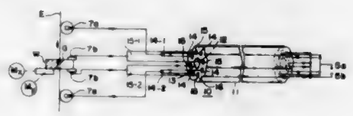
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Japan

Filed Sep. 13, 1984, Ser. No. 650,104

Claims priority, application Japan, Sep. 14, 1983, 58-170123; Sep. 29, 1983, 58-149705[U]

Int. Cl.⁴ B23H *1/02;* **H01B** *7/34;* **H05K** *9/00*

U.S. Cl. 219—69 C **9 Claims**



1. An EDM circuit arrangement, comprising:

an EDM pulse generator having a pair of terminals for providing a succession of EDM current pulses across a machining gap between a tool electrode and an electrically conductive workpiece;

a plurality of first conductors electrically connecting one said terminal and said tool electrode to conduct said current pulses in one direction;

a plurality of second conductors electrically connecting said other terminal and said workpiece to conduct said current pulses in the other direction; and

each of said first and second conductors being individually enclosed in a generally cylindrical sleeve of insulating material, said insulated conductors being tangentially joined together in parallel, annularly adjacent relation to form a hollow cylindrical assembly wherein, except for the tangential junctions with adjacent insulated conductors, the surface of the insulation sleeve of each said conductor is exposed for contact with a cooling fluid at outer and inner generally concentric surfaces of said cylindrical assembly, each said first conductor being annularly adjacent one said second conductor in said assembly.

4,661,675

WELDING SEALANTS FOR METALS AND METHOD OF USE

James L. Guthrie, Ashton; Helen F. Roberts, Sudlersville, and Christian B. Lundsager, Ashton, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 514,667, Jul. 18, 1983, Pat. No. 4,559,373. This application Aug. 23, 1985, Ser. No. 768,656

Int. Cl.⁴ B23K *11/00, 11/10*

U.S. Cl. 219—91.21 **9 Claims**

1. A method of welding together two pieces of metal with a spot welder comprising

(a) adhering the two pieces together in a spaced apart relationship with a sealant composition therebetween to form an assembly, said sealant composition comprising an admixture of

a malleable sealant having a viscosity of from between 6 million to 50 million centripoises at 25° C., said sealant being present in an amount of 60–99% by weight of said admixture, and

a weldably effective amount of ferrous metal particles dispersed in said sealant, said particles being present in an amount of from about 1 to 40% by weight and having a particle size below about 100 mesh,

said sealant composition being capable upon being heated to a temperature of at least 80° C. of softening to form a bead which adheres to the metal surface to be sealed and said adhered sealant composition upon returning to ambient conditions being capable of flowing when squeezed by a stationary welding machine to allow said metal pieces to approach each other sufficiently to be wedled,

(b) placing the assembly between the two electrodes of the spot welder, and

(c) welding together the two pieces of metal.

4,661,676

PROCESS FOR PRODUCING CAMSHAFT WITH CAMS SUBJECTED TO REMELTING CHILLING TREATMENT

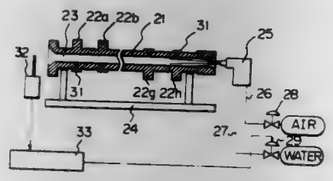
Akiyoshi Morita; Hideo Nonoyama; Toshiharu Fukuizumi, and Kiyokazu Urano, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 24, 1986, Ser. No. 831,863

Claims priority, application Japan, Mar. 1, 1985, 60-41473

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121 LM **7 Claims**



1. A process for producing camshafts with cams, comprising the steps of forming a surface hardened layer in each of said cams by a remelting chilling treatment using high density energy, such as a TIG arc, a laser beam, a plasma arc, and an electron beam, applied on a sliding cam surface of each cam, characterized in that after said remelting chilling treatment with the high density energy for at least one of said cams and prior to the next remelting chilling treatment with the high density energy for other cams, said camshaft is cooled by passing a cooling medium through a through hole formed longitudinally in said camshaft.

4,661,677

DEEP PENETRATION LASER WELDING OF SHEET METAL

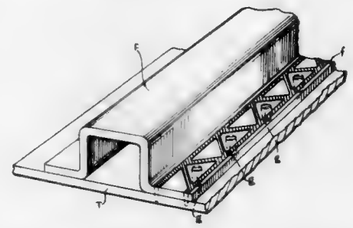
Aldo V. La Rocca, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Aug. 20, 1985, Ser. No. 767,406

Claims priority, application Italy, Aug. 20, 1984, 67835 A/84

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121 LD **1 Claim**



1. A deep penetration laser welding process for welding metal sheets comprising juxtaposing two metal sheets, heating said sheets locally at at least two spaced apart locations having a distance therebetween of at least 1.5 times the thickness of said metal sheet by power laser means to effect deep penetration welding causing the sheets to fuse at said locations to form spaced apart welds, moving said sheets relative to said power laser means to form two spaced apart continuous line welds and forming a plurality of additional discontinuous welds extending between and intersecting said continuous line welds whereby a cross linked structure is formed for effectively absorbing and distributing stresses.

4,661,678

EDM APPARATUS PROVIDED WITH MEANS FOR HOLDING A PORTION CUT OFF FROM THE WORKPIECE

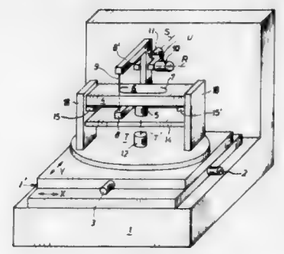
Alain Wavre, Geneva, Switzerland, assignor to Charmilles Technologies S.A., Geneva, Switzerland

Filed Apr. 18, 1985, Ser. No. 724,526

Claims priority, application Switzerland, Apr. 18, 1984, 2017/84

Int. Cl.⁴ B23H *7/02;* **B23Q** *1/04*

U.S. Cl. 219—69 W **23 Claims**



1. A traveling wire EDM apparatus for cutting a portion from a workpiece blank along a closed loop cutting path by means of an electrode wire, said electrode wire being stretched between two support arms, said apparatus comprising at least

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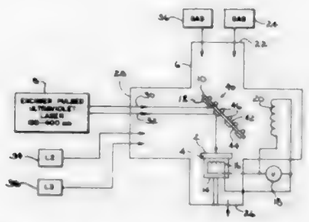
two workpiece blank support members, one of said support members being operative and arranged to continually support the portion of the workpiece blank being severed from the workpiece blank during the entire duration of the closed loop cutting operation and the other of said support members being operative and arranged to continually support the workpiece blank during the entire duration of the closed loop cutting operation, means for effecting a relative linear displacement between the electrode wire support arms and the workpiece blank support members across two crossed axes in a single plane such as to cut said portion from the workpiece blank along the closed cutting path, means for effecting a relative rotational displacement of the workpiece blank support members around an axis of rotation perpendicular to the plane formed by said cross axes, and control means for coordinating said relative linear and rotational displacement and operative to rotate said workpiece blank around a point of intersection between the electrode wire and the cutting path in the workpiece blank at a time between the beginning and the end of a closed loop cut in a manner to prevent collision between one of said electrode wire support arms and said workpiece blank support members.

4,661,679

SEMICONDUCTOR LASER PROCESSING WITH MIRROR MASK

John B. Pardee, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 28, 1985, Ser. No. 750,406
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 L **1 Claim**



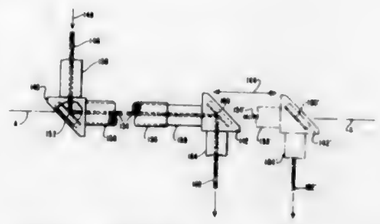
1. Apparatus for fabricating a semiconductor comprising:
a chamber;
means for supporting said semiconductor within said chamber;
means for introducing excimer pulsed ultraviolet laser radiation into said chamber; and
mirror means for reflecting incident said excimer pulsed ultraviolet laser radiation onto said semiconductor at selective localized areas forming a predetermined pattern according to a selective mirror reflective pattern, to selectively activate designated areas of said semiconductor;
wherein said mirror means comprises a front side reflecting said incident excimer pulsed ultraviolet laser radiation along said predetermined pattern, and a backside disposed oppositely from said front side, and comprising means for cooling said backside; and
wherein said mirror means comprises a laser-absorbing medium and a laser-reflective medium, said laser-absorbing medium having said cooling means adjacent thereto, and said laser-reflective medium having said selective reflective pattern formed thereon; and
comprising a laser-transparent medium between said laser-absorbing medium and said laser-reflective medium.

4,661,680

END-OF-ARM TOOLING CAROUSEL APPARATUS FOR USE WITH A ROBOT

Roger L. Swenarud, Plum Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 28, 1985, Ser. No. 750,720
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 LU **2 Claims**



1. A carousel tooling apparatus comprising:
a base member adapted to be mounted onto a wrist assembly of an industrial manipulator such that rotational movement is imparted to said base member thereby said base member having a first tooling station thereon and at least a second tooling station thereon wherein the rotation movement of said base member, as effected by said wrist assembly, selectively presents each of said tooling stations to a terminal location of a laser beam delivery system;
said first tooling station comprising means defining a first set of focussing optics and means for coupling said means for defining the first set of focussing optics with said laser beam delivery system wherein a predetermined focal length, spot size or intensity of said beam is established; and
said second tooling station comprising means defining a second set of focussing optics and means for coupling said means for defining the second set of focussing optics with said integral laser beam delivery system;
said means for coupling the tooling station optics with the terminal location of a laser beam delivery system comprising a conduit having a normally biased closed cover means which is rotatable to an open position through interaction with the laser beam delivery system, said conduit defining a counterbore-groove therein, the laser beam delivery system including at the terminal location thereof a vertically movable transmission tube size for insertion into the counterbore groove and means operably associated with the transmission tube for effecting the vertical movement thereof.

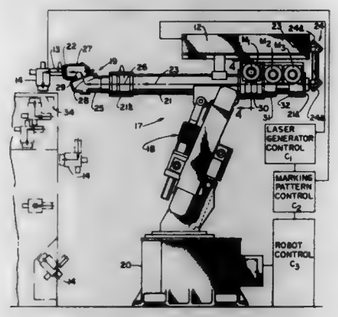
4,661,681

ROBOTIC MARKING MACHINE

Robert D. Bannister, Loveland, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 6, 1986, Ser. No. 915,581
Int. Cl.⁴ B23K *26/02*
U.S. Cl. 219—121 LU **3 Claims**

1. In an articulatable robotic structure, a robotic marking system, comprising:
a laser forearm, movable on said robotic structure, having a forward end, an aft end, and an internal forearm beam path connecting said forward and aft ends;
a laser beam source means connected to said aft end of said forearm for providing a laser beam traveling said beam path from said aft end to said forward end;
laser wrist means carried at said forward end of said forearm for receiving and manipulating said beam, said wrist means including a tooling plate and means for moving said tooling plate with respect to said forearm;
a laser marker galvo head affixed to said tooling plate, said head including galvo head means for moving said laser beam through a predetermined output pattern with respect to said tooling plate;



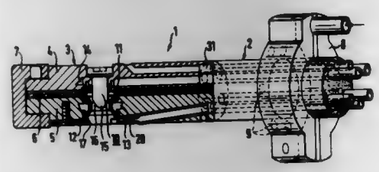
first control means for moving said tooling plate through predetermined spatial movements; and
second control means for driving said galvo head means.

4,661,682

PLASMA SPRAY GUN FOR INTERNAL COATINGS

Heiko Gruner, Beinwil a.See, and Markus Müller, Villmergen, both of Switzerland, assignors to Plasmainvent AG, Zug, Switzerland

Filed Aug. 15, 1985, Ser. No. 765,940
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1984, 3430383
Int. Cl.⁴ B23K *15/00*
U.S. Cl. 219—121 PL **11 Claims**



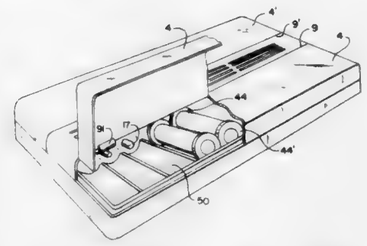
1. A plasma spray gun for insertion into pipes and bores of work pieces and for coating the internal surfaces of said work pieces, comprising:
(a) an electrode having a longitudinal axis and a shape that is radially symmetrical relative to the longitudinal axis, said electrode including an electrode head that has a plurality of surface features within whose peripheries the electrode head deviates from being radially symmetrical;
(b) a burner nozzle in which said electrode is partially and coaxially disposed, said burner nozzle having a minimum inner diameter that is larger than the maximum outer diameter of said electrode;
(c) said burner nozzle having an outer area whose inner diameter is larger than the minimum inner diameter of said burner nozzle; and
(d) a powder injector tube arranged at said outer area of said burner nozzle and having a flattened cross-sectional powder exit opening into said burner nozzle.

4,661,683

HAIR CURLING SET

Dov Z. Glucksman, 26 Beacon St., Burlington, Mass. 02146

Filed Jan. 7, 1986, Ser. No. 816,836
Int. Cl.⁴ H05B *1/00*; **A45D** *2/12, 4/12*
U.S. Cl. 219—222 **16 Claims**



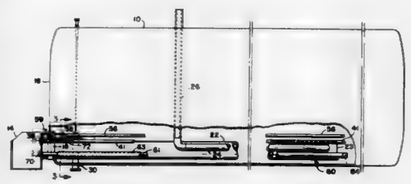
1. A hair curler set adapted for heating a plurality of hair curling rollers by electric resistance means comprising:
a case containing an elongated heater body having its longitudinal axis disposed substantially horizontally and extending parallel to one side of said case and locating means in said case for positioning a plurality of rollers in parallel and substantially horizontal alignment perpendicular to the axis of said heater body, said heater body being provided with electric resistor means and with a plurality of spaced-apart substantially horizontally disposed heat-transfer portions, each in substantial coaxial alignment with a different one of the curlers positioned by said roller locating means,
a plurality of rollers, each roller having a top and bottom and positioned in said case with its bottom adjacent to a respective one of said heat-transfer portions, each said roller consisting of a cylindrical metal shell and a metal bottom end so shaped as to cooperate with said heat-transfer portions to effect a large common contact area therebetween;
elastic means associated with said said case and acting on the top portions of said rollers and adapted to urge their bottom ends into heat-conductive contact with said heat transfer portions of said heater body.

4,661,684

ASPHALT HEATING SYSTEM

William W. Sellers, The Sellers Company, Inc., 396 E. Church Rd., King of Prussia, Pa. 19406

Filed Oct. 16, 1978, Ser. No. 951,339
Int. Cl.⁴ H05B *1/02*
U.S. Cl. 219—279 **16 Claims**



1. Apparatus for heating a fluid in storage such as asphalt or similar fluids that are viscous or solid under heated conditions and a circulating heat transfer fluid comprising:
a storage tank;
a fuel fired heating means mounted to extend horizontally a substantial distance within said tank for delivering heat to

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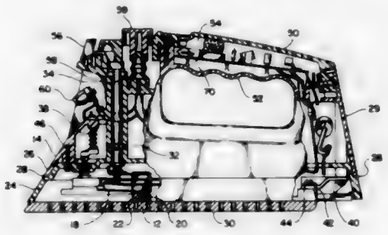
a heating zone within said tank for heating the fluid in storage;
a heat transfer fluid;
and a conduit means providing for the recirculating flow of said heat transfer fluid, said conduit means including a flow path within said storage tank for conducting the flow of the heat transfer fluid to the interior of said storage tank;
said flow path of said conduit means being constructed and arranged to extend with said heating zone in close proximity to and in heat exchange relationship with said fuel fired heating means;
the improvement comprising electric heating means constructed and arranged to heat the heat transfer fluid for maintaining a desired temperature thereof,
said conduit means including an elongated portion within said tank and said electric heating means being arranged to extend within said elongated portion of said conduit means,
said conduit means including a scavenger coil portion including a plurality of loops extending into the heating zone some portion of which is above the fuel fired heating means,
said fuel fired heating means being located near the bottom of said tank with said elongated conduit portion being located with an elongated conduit on each side of fuel fired heating means at the bottom of the tank with said scavenger coil being located above both said fuel fired heater and said electric heating means.

4,661,685

ELECTRONIC PRESSING IRON

Robert F. Contri, Westmont, Ill., assignor to John Zink Company, Tulsa, Okla.

Filed Sep. 6, 1985, Ser. No. 773,383
Int. Cl.[4] D06F *75/26*
U.S. Cl. 219—250 **13 Claims**



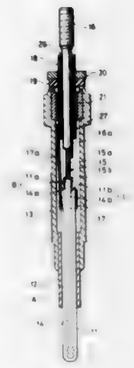
1. A safety circuit for disabling a heating element of a pressing iron, comprising: a motion sensor connected to a pressing iron and producing a motion sensor signal in response to a state of motion of said pressing iron; a timer connected to said motion sensor and receiving said motion sensor signal therefrom, said timer being reinitialized when said motion sensor signal indicates said pressing iron is moving, said timer generating a time-out signal after a predetermined period from last receipt of said motion sensor signal indicating said pressing iron is in motion; and a thermal relay connected to said timer and being responsive to said time-out signal therefrom, said thermal relay including a heat operated switch and an electric heater positioned to actuate said switch, said electric heater being connected to a source of electric current and to said timer, said heat operated switch being connected in series with an electric heating element, said thermal relay disabling a flow of an electric current through said electric heating element upon receipt of said time-out signal by said electric heater.

4,661,686

DUAL LINE CERAMIC GLOW PLUG

Shinichi Yokoi; Tsuneo Itoh, both of Aichi; Seishi Yasuhara, and Hiroshi Kondo, both of Kanagawa, all of Japan, assignors to NGK Spark Plug Co., Ltd, Aichi and Nissan Motor Co., Ltd, Kanagawa, both of, Japan

Filed Apr. 12, 1985, Ser. No. 722,461
Claims priority, application Japan, Apr. 12, 1984, 59-71795; Apr. 12, 1984, 59-71796
Int. Cl.[4] F23Q *7/00;* **F02P** *19/02;* **H05B** *3/00*
U.S. Cl. 219—270 **9 Claims**



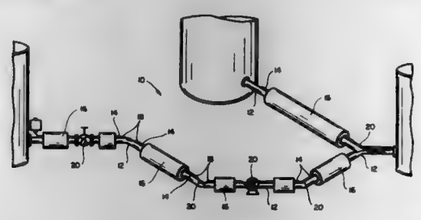
1. A dual line ceramic glow plug comprising:
an elongated metal fitting having an opening therethrough, a first end, and a second end;
a heater assembly comprised of an elongated sintered ceramic member having a refractory metal heater wire embedded therein, said ceramic member having an inner portion at one end thereof disposed within said opening of said metal fitting, an exposed portion at the opposite end of said ceramic member projecting from said second end of said elongated metal fitting, and a middle portion between said inner portion and said exposed portion, said heater wire having first and second ends exposed at the surface of said ceramic member proximate said one end;
first electrode means connected to said first exposed end of said wire and projecting from said first end of said elongated metal fitting;
second electrode means connected to said second exposed end of said wire and projecting from said first end of said elongated metal fitting;
means for electrically insulating said first electrode means from said second electrode means and for electrically insulating said first and second electrode means from said metal fitting;
a metal sheath bonded to said metal fitting at said second end, said metal sheath encircling said middle portion of said ceramic member while leaving said ends of said ceramic member exposed;
an insulating layer of glass bonded to the outer surface of said ceramic member on at least said middle portion; and
a layer of brazing material disposed on said insulating layer and bonding said insulating layer to said metal sheath.

4,661,687

METHOD AND APPARATUS FOR CONVERTING A FLUID TRACING SYSTEM INTO AN ELECTRICAL TRACING SYSTEM

Khosrow Afkhampour, and Neville S. Batliwalla, both of Foster City, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 629,645, Jul. 11, 1984, abandoned. This application May 9, 1985, Ser. No. 732,527
Int. Cl.[4] F24H *1/10*
U.S. Cl. 219—301 **21 Claims**



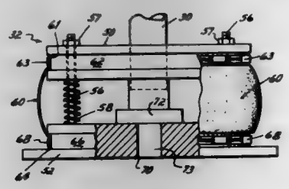
1. Apparatus comprising
(a) a substrate to be heated;
(b) a plurality of interconnected elongate tubes which are adjacent to and in thermal contact with said substrate, at least some of said tubes having once formed part of a former heating system for said substrate, in which system a heated fluid was passed through the tubes and thermal insulation surrounded the tubes and the substrate;
(c) an elongate electrical heating element which lies within and extends along said elongate tubes and which can be connected to a power supply to provide an elongate electrical heater; and
(d) thermal insulation which surrounds the elongate tubes and the substrate, at least part of said thermal insulation being the same as the thermal insulation in said former heating system.

4,661,688

BULK MELTER PLATEN ASSEMBLY

Gregory J. Gabryszewski, Lawrenceville, Ga., assignor to Nordson Corporation, Amherst, Ohio

Filed Nov. 27, 1985, Ser. No. 802,538
Int. Cl.[4] F27B *14/06*
U.S. Cl. 219—421 **14 Claims**



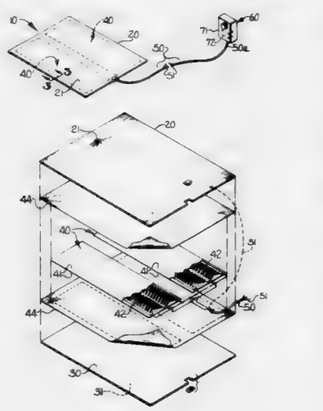
1. Apparatus for melting and pumping molten liquid material from a drum of material which is solid at room temperature, which apparatus comprises:
a platen assembly comprising a top platen and a lower heating platen, said top platen being substantially circular in peripheral configuration and located in a horizontal plane,
said heating platen being located beneath said top platen, said heating platen being substantially circular in peripheral configuration and of slightly less diameter than the interior of said drum,
means supporting said heating platen for vertical movement toward and away from said top platen,
a flexible expansible element extended between and secured to peripheral portions of said top platen and said heating platen,
means for lowering said platen assembly into the open top of a drum of solid material until said heating platen contacts the top of said solid material, said contact of said heating platen with said solid material and subsequent downward movement of said top platen being operable to move said top platen downwardly toward said heating platen so as to cause said expansible element to expand radially outwardly into contact with the interior surface of said drum, and
means for lifting said platen assembly from said drum, said lifting of said platen assembly being operable to move said top platen away from said heating platen and thereby contract the diameter of said expansible element so as to move it out of contact with the interior surface of said drum.

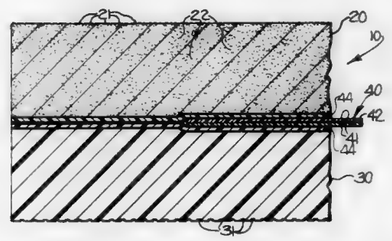
4,661,689

ELECTRICAL HEATING PAD WITH ANTISTATIC SURFACE

John M. Harrison, Chattanooga, Tenn., assignor to Collins & Aikman Corporation, New York, N.Y.

Filed Oct. 28, 1985, Ser. No. 791,787
Int. Cl.[4] H05B *3/34*
U.S. Cl. 219—528 **4 Claims**





1. An electrical heating pad of the type adapted to be placed on a floor and walked upon, said pad including an encapsulated electrical resistance means serving as a heater for supplying heat to the pad, and wherein the upper surface of said pad is formed of a solid high impact plastic material having electrically conductive material present on the upper surface thereof for imparting antistatic properties to the upper surface of the

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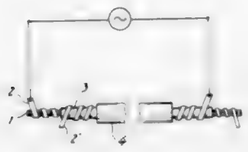
pad, and an elongate electrical conductor electrically connected to said electrical resistance means and also electrically connected to the electrically conductive upper surface of the plastic material for providing a source of electrical power for said electrical resistance means and for also providing means for conducting away any static electricity present in the upper surface of said pad.

4,661,690

PTC HEATING WIRE

Shuji Yamamoto, Nara; Yoshio Kishimoto, Osaka; Seishi Terakado, Nara, and Hideho Shinoda, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

PCT No. PCT/JP84/00500, § 371 Date Jun. 21, 1985, § 102(e) Date Jun. 21, 1985, PCT Pub. No. WO85/02086, PCT Pub. Date May 9, 1985
PCT Filed Oct. 19, 1984, Ser. No. 752,043
Claims priority, application Japan, Oct. 24, 1983, 58-198530
Int. Cl.⁴ H05B *3/34*
U.S. Cl. 219—549 **13 Claims**



1. In a PTC heating wire of a tubular or band form which comprises a pair of facing electrodes, a PTC (positive temperature coefficient) resistor having a large positive resistance temperature coefficient and provided between the paired electrodes, and an insulative sheath provided about the paired electrodes and the resistor, the improvement in that when electrode resistance per unit length is taken as R_E [ohm/m], a unit conduction path length of the PTC heating wire is taken as L [m] and a PTC characteristic of the PTC resistor is expressed as a ratio, R_{70}/R_{20}, in which R_{70} represents a resistance of the PTC resistor at 70° C. and R_{20} represents a resistance at 20° C., the value of R_E is determined to satisfy the following relationship for arbitrary values of R_{70}/R_{20} and L

$$1.44 - \frac{0.1}{\log(R_{70}/R_{20}) - 0.20} \leqq \log (L \times R_E)$$

10. In a method for forming a PTC heater wire by providing a pair of electrodes, providing a PTC (positive temperature coefficient) resistor between the paired electrodes, and providing an insulative sheath about the paired electrodes and the resistor, the improvement comprising the steps of:

determining whether materials for said electrodes and said resistor satisfy a relationship

$$1.44 - \frac{0.1}{\log(R_{70}/R_{20}) - 0.20} \leqq \log (L \times R_E)$$

wherein

R_E [ohm/m] represents a resistance per unit length of the material to be used for said electrodes,

L [m] represents a unit conduction path length of the PCT heater wire, and R_{70}/R_{20} represents a PCT characteristic of the material to be used for said resistor, in which R_{70} represents a resistance of the resistor at 70° C. and R_{20} represents a resistance of the resistor at 20° C., and

selecting for said electrodes and said resistor only materials which satisfy said relationship.

4,661,691

PROXIMITY DATA TRANSFER SYSTEM

John W. Halpern, Novato, Calif., assignor to Paperless Accounting, Inc., Washington, D.C.

Continuation of Ser. No. 663,162, Mar. 2, 1976, abandoned, which is a continuation of Ser. No. 564,404, Apr. 2, 1975, abandoned, which is a continuation of Ser. No. 322,249, Jan. 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 14,931, Feb. 27, 1970, abandoned. This application Nov. 1, 1983, Ser. No. 548,013
Int. Cl.⁴ G06K *5/00*
U.S. Cl. 235—375 **28 Claims**



1. A proximity data transfer system incorporating a self-contained transportable data carrying component, said system comprising:

first electronic storage means in the data carrying component for storing data in the form of a plurality of data bits;

means in the data carrying component for generating in the environment of said component a serial output of said data in the form of sequential field force changes;

a reactive sensor device external to the data carrying component for converting said sequential field force changes into sequential electric voltage changes whose serial configuration is substantially identical with that of said bits in said first electronic storage means holding said data;

second electronic storage means external to the data carrying component for storing said electric voltage change; and

oscillator means external to said data carrying component for impressing pulses on said generating means via said reactive sensor device to effect said serial output;

said oscillator means including means for producing clock pulses and data pulses for transfer into the data carrying component via said reactive sensor device;

and wherein said system further includes:

means for generating pulses of distinguishable characteristics from different portions of said pulses from said oscillator; and

means in the data carrying component for channeling said pulses of distinguishable characteristics, interpretable as shift and data pulses, into different parts of electronic storage means in the data carrying component.

4,661,692

MICROSCOPE PROVIDED WITH AUTOMATIC FOCUSING DEVICE HAVING MEMORY MEANS

Masami Kawasaki, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

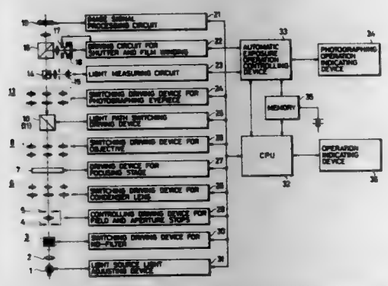
Filed Mar. 26, 1984, Ser. No. 593,311
Claims priority, application Japan, Mar. 29, 1983, 58-53169; Mar. 29, 1983, 58-53170
Int. Cl.⁴ G01J *1/20*
U.S. Cl. 250—201 **13 Claims**

1. A microscope which includes a field stop, an aperture stop, means for producing a light, a plurality of condenser lens means for condensing the light emitted from said light producing means source and capable of being selectively inserted into a light path, a focusing stage, a revolver, and a plurality of objectives with magnifications different from each another attached to the revolver, and which is provided with an automatic focusing device, comprising:

data input means for inputting data relating to the magnification and kinds of the objectives;

memory means, connected to said data input means, for memorizing said data relating to a plurality of objectives input by said data input means;

first driving controlling means coupled to said memory means, for controlling at least one of adjustment of the light producing means, field stop, aperture stop, switching of a condenser lens, movement of a stage, and switching of a light path, while referring to data read out relating to a selected objective, which is selected to be used, so as to be



able to perform optimum focusing for said selected objective;

image pickup means, receiving a projected image formed by said selected objective, for focusing said image,

second driving controlling means, connected to said image pickup means and said memory means for driving said image pickup means, and

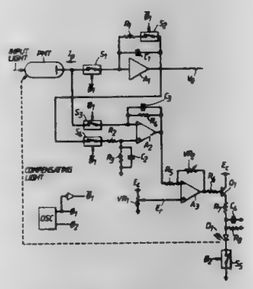
a central processing unit, coupled to said second driving controlling means.

4,661,693

PHOTOMULTIPLIER CONTROL CIRCUIT HAVING A COMPENSATING LIGHT SOURCE

Kazunori Masanobu, Hachiohji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 29, 1985, Ser. No. 717,819
Claims priority, application Japan, Mar. 31, 1984, 59-63633; Mar. 31, 1984, 59-63657
Int. Cl.⁴ H01J *40/14*
U.S. Cl. 250—207 **8 Claims**



1. A photomultiplier control circuit comprising:

a photomultiplier which detects an incident light and converts the detected light to a first current electrical signal in order to generate an output depending on the level of said incident light;

a first circuit means for receiving said first current electrical signal from said photomultiplier for changing said first current electrical signal into a voltage electrical signal wherein said first circuit means outputs a voltage electrical signal representative of said level of said incident light during a first time period, and wherein said first circuit means holds the voltage produced at the time immediately before ending said first time period and outputs said voltage as said votlage electrical signal during a second time period;

a light source for applying a compensating light to said photomultiplier;

a second circuit means for detecting and outputting an average anode current of said photomultiplier;

a third circuit means for comparing the output of said second circuit means with a predetermined setting voltage and for generating an output which corresponds to the difference between said output of said second circuit means and said predetermined setting votlage; and

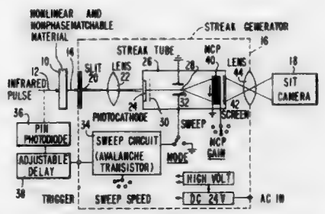
a fourth circuit means for controlling the intensity of said compensating light emitted from said light source during third time period which is shorter than said second time period based on the output of said third circuit means.

4,661,694

INFRARED STREAK CAMERA

Vincent J. Corcoran, P.O. Box 953, McLean, Va. 22101

Filed Sep. 13, 1985, Ser. No. 775,679
Int. Cl.⁴ H01J *40/14, 40/00*
U.S. Cl. 250—213 VT **3 Claims**



1. A streak camera arrangement for viewing a spatial representation of an incident infrared pulse, comprising:

a streak generator including a photo-cathode non-responsive to infrared radiation but responsive to visible radiation for producing a beam of electrons from an incident pulse of visible radiation, means for multiplying the intensity of the beam of electrons generated by the photocathode, a phosphor display screen for converting the multiplied beam of electrons into visible radiation, and means for sweeping the multiplied beam of electrons across the display screen to produce a streak image;

camera means for recording a streak image produced on the display screen; and

a frequency multiplier plate formed from a nonlinear nonphase-matchable material disposed in the path of the incident infrared pulse to convert a portion of the incident infrared pulse into the incident pulse of visible radiation.

4,661,695

OPTICAL APPARATUS AND METHOD FOR DETECTING THE TOP DEAD CENTER POSITION OF AN ENGINE PISTON

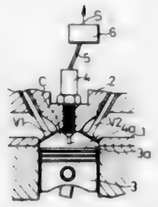
Satoshi Mori, Nagoya; Tsuneyuki Egami, Nukata; Konichi Mori, Okazaki; Hidetaka Nohira, and Kunimasa Yoshimura, both of Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 5, 1985, Ser. No. 708,813
Claims priority, application Japan, Mar. 5, 1984, 59-42396
Int. Cl.⁴ H01J *5/16*
U.S. Cl. 250—227 **11 Claims**

1. A TDC (top dead center) position detector of an engine, comprising:

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a casing adapted to penetrate a top wall defining a combustion chamber of the engine, and to be fixed thereto;
a light emission element accommodated within said casing;
light reception means accommodated within said casing, for transmitting a light reception signal corresponding to an amount of received light;
light inlet means for guiding light emitted by said light emission element into the combustion chamber of the engine; one end of said light inlet means being connected to said light emission element, and the other end of said light inlet means adapted to be located within the combustion chamber; said other end of said light inlet means being adapted to be opposed to an upper surface of a piston within said combustion chamber at a predetermined distance therefrom when the piston ascends in the vicinity of a TDC position;
light outlet means for guiding light reflected by the upper surface of the piston out of the combustion chamber; one



end of said light outlet means being connected to said light reception means while the other end of said light outlet means being located close to said other end of said light inlet means;
said light inlet means and said light outlet means being composed of optical fibers; said optical fibers being shaped into a bundle and inserted into said casing, at least one optical fiber extending in the axial center of said bundle and acting as one of said light inlet means and said light outlet means and at least three optical fibers extending around said at least one optical fiber at equal intervals in the circumferential direction and acting as the other one of said light inlet means and said light outlet means; and
detecting means for detecting the TDC position of the piston from the variation of the light reception signal transmitted by said light reception means in accordance with the position of the reciprocating piston and transmitting a TDC position detecting signal, said detecting means being connected to said light reception means.

4,661,696

OPTICAL ENCODER WHICH USE A RECTANGULAR PHOTODETECTOR ARRAY

Thomas R. Stone, Pleasanton, Calif., assignor to Plus Development Corporation, Milpitas, Calif.

Filed Jun. 4, 1985, Ser. No. 741,174
Int. Cl.⁴ H03M *1/00*
U.S. Cl. 250—231 SE **4 Claims**

1. In an improved optical encoder having a moveable scale with alternating equally dimensioned opaque and translucent regions extending generally perpendicular to the locus of scale movement; and a light source, a mask and a photodetector array having at least a pair of photodetector areas responsive to light energy from said light source to produce electrical analog signals, said light source, said mask and said array being commonly mounted on a single axis of rotation in a rotatable housing, the mask defining at least two sets of openings with one set being spatially offset from the other set so that a predetermined phase difference is provided between the electrical analog signals put out by the photodetector areas, the improvement comprising:
a generally symmetrical, rectangular photodetector array formed with generally rectangular photodetector areas, the major lineal dimensions of said areas being disposed relative to said regions of said scale at a predetermined angle of rotation,
each set of said mask defining a series of equally spaced apart elongated openings aligned to be generally parallel with



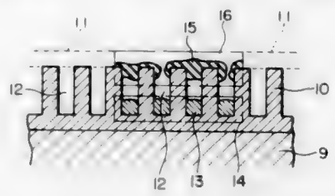
the regions of said scale, said openings being aligned at said angle of rotation relative to said major lineal dimensions of said areas and said openings being sized and arranged to be substantially coextensive with said areas,
said housing being rotatable about said axis of rotation so that said phase difference may be bilaterally trimmed to its precise nominal value.

4,661,697

OPTICALLY REFLECTING CODE PLATE

Yoshihiro Takahashi; Hiraku Abe, both of Furukawa, and Kourou Hayasaka, Tokyo, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 15, 1985, Ser. No. 723,049
Claims priority, application Japan, Apr. 13, 1984, 59-73069
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **3 Claims**



1. An optically reflecting code plate having a multiplicity of reflective portions and unreflective portions formed alternately on the surface thereof, comprising: a substrate made of aluminum; a colorless, transparent and porous aluminum oxide film formed on the surface of said substrate; a metal-deposited layer formed in a predetermined position on said aluminum oxide film and having metal deposited in the bottoms of the pores of said aluminum oxide film; and a dye-impregnated layer impregnated with a dye and overlaid near the openings of the pores of said aluminum oxide film for providing said unreflective portions while leaving those portions of said aluminum

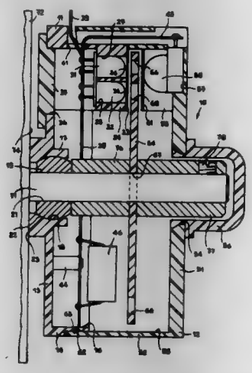
oxide film, which are exposed directly to the outside, as said reflective portions.

4,661,698

ROTARY OPTICAL TRANSDUCER

Emilio C. Cappio, Biella, and Giampaolo Guerrini, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 6, 1984, Ser. No. 678,994
Claims priority, application Italy, Dec. 7, 1983, 68269 A/83
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **13 Claims**



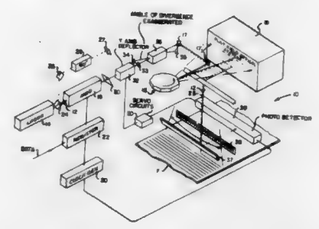
1. In an optical transducer connectable to a fixed body and a rotary member for detecting the angular position of the rotary member with respect to the fixed body and generatng corresponding electrical signals, comprising light emitter means for emitting a light beam having a predetermined axis, light detector means, a casing in which are mounted said light emitter means and said light detector means, first means actuatable for fixing a front portion of said casing to said fixed body, a shutter disc assembly connectable to said rotary member and provided with a hub engageable slidably with said rotary member and a fixing member operable from the outside of said casing for fixing said hub to said rotary member and wherein said shutter disc assembly includes a shutter disc having a plurality of transparent radial elements alternated with opaque radial elements capable of cooperating with said emitter means and said light detector means for generating said electrical signals, the combination comprising:
at least one self-aligning bush having an outer surface with a spherical portion, a rear surface, and an inner surface for cooperating rotatably with said rotary member;
at least a seat on the front portion of said casing having an inner surface cooperative with said spherical portion of the bush to enable adjustment of inclination of said rotary member with respect to the front portion of the casing; and
a distantial member interposed between said bush and said shutter disc;
wherein a front portion of said distantial member is cooperative with the rear surface of said self-aligning bush upon the operation of the fixing member for the fixing of the hub of said shutter disc assembly to said rotary member for holding said shutter disc exactly interposed between said light detector means and said light emitter means and substantially orthogonal to the axis of the light beam emitted by said light emitter means.

4,661,699

SCANNING BEAM CONTROL SYSTEM AND METHOD WITH BI-DIRECTIONAL REFERENCE SCALE

Thomas E. Welmers, Santa Monica, and Theodore R. Whitney, Woodland Hills, both of Calif., assignors to T. R. Whitney Corporation, Reseda, Calif.

Continuation of Ser. No. 479,139, Mar. 28, 1983, abandoned.
This application Feb. 10, 1986, Ser. No. 828,592
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—235 **22 Claims**



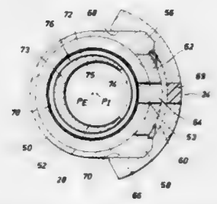
12. A system for controlling scanning of a light beam along a scan line at an object plane comprising:
means providing a light beam;
means disposed along the light beam path for splitting off a reference beam substantially parallel to and spaced apart from the principal beam;
an optical system for scanning the principal beam along the scan line and the reference beam adjacent thereto;
electrically controllable single axis beam adjustment means in the path of the principal and reference beams before the optical system, the single axis being orthogonal to the scan line direction; and the
means including reference scale means disposed along the scan line adjacent the object plane and responsive only to reference beam position, for providing clocking signals to identify the position of the principal beam along the scan line and control signals that are coupled to the beam adjustment means to adjust beam position along the single axis.

4,661,700

WELL LOGGING SONDE WITH SHIELDED COLLIMATED WINDOW

Jacques M. Holenka, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed May 28, 1985, Ser. No. 737,756
Int. Cl.⁴ G01V *5/12*
U.S. Cl. 250—267 **22 Claims**



1. A well logging sonde adapted for generating indications of the characteristics of the formation surrounding a borehole in which a borehole mudcake may have formed, the sonde comprising:
a first section including source means for irradiating the formation with gamma rays;
a second section including;
a shielded housing having a collimated window facing the formation, the window being substantially transparent

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to gamma rays including low energy gamma rays of energies below 100 keV;

a near detector disposed in said housing in the path of said collimated window, the window being disposed so that the high energy gamma rays reaching the detector have been singly scattered in a first region in the formation primarily beyond the borehole mudcake; and

means responsive to said near detector for generating signals representative of the density of said first region and of the photoelectric absorption of said formation surrounding said borehole;

wherein said shielded housing having a collimated window comprises:

an inner cylindrical shell fabricated of a gamma ray opaque material and having a conduit formed in its wall at an angle with respect to its axis;

an outer substantially "U" shaped metallic outer shell partially enveloping said inner shell and having an axial length L, the open ends of said "U" shaped outer shell extending outwardly and symmetrically with respect to said inner shell conduit;

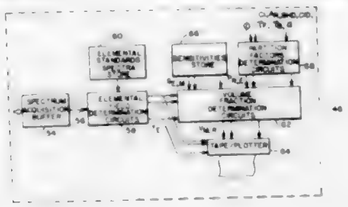
an arcuate closing member, fabricated of a strong, substantially gamma ray transparent material and sealingly secured to the open ends of said "U" shaped outer shell; and

an arcuate pad fabricated of a gamma ray opaque material and disposed about said closing member and about said open ends of said "U" shaped outer shell, said arcuate pad having a conduit formed at the same angle as the conduit in said inner shell, said arcuate pad conduit being aligned with said inner shell to form a collimating window interrupted by said closing member.

4,661,701
METHODS AND APPARATUS FOR BOREHOLE-CORRECTED SPECTRAL ANALYSIS OF EARTH FORMATIONS

James A. Grau, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jul. 17, 1985, Ser. No. 756,007
Int. Cl.[4] G01V *5/10*
U.S. Cl. 250—270 **30 Claims**



1. A method for analyzing an earth formation traversed by a borehole, comprising:

moving a logging tool, including a pulsed high-energy neutron source and a gamma ray detector, through the borehole;

irradiating the borehole/formation environment with pulses of high-energy neutrons from said source;

detecting gamma rays with said detector which result from the capture of thermal neutrons by chemical elements of the borehole and formation constituents;

determining from said detected gamma rays elemental gamma ray yields, Y_E, indicative of the presence of specific chemical elements, E, in the borehole/formation measurement environment;

determining sensitivity factors, $S_{E,M}$, representative of the efficiency of detecting said chemical elements, E, in predetermined borehole and formation constituents, M;

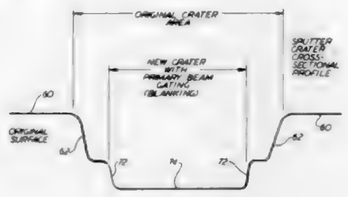
deriving for each of predetermined constituent regions, R, in the borehole/formation measurement environment which contains a chemical element, E, of interest a partition factor, $P_{R,E}$, which is a function of the spatial and temporal effects of said region on said gamma rays; and

determining from said elemental gamma ray yields, Y_E, said sensitivity factors, $S_{E,M}$, and said partition factors, $P_{R,E}$, the volume fractions, $V_{M,R}$, of said constituents M in said borehole/formation regions R.

4,661,702
PRIMARY ION BEAM RASTER GATING TECHNIQUE FOR SECONDARY ION MASS SPECTROMETER SYSTEM

David G. Welkie, Chanhassen, Minn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 24, 1984, Ser. No. 664,196
Int. Cl.[4] G01N *23/00*
U.S. Cl. 250—309 **8 Claims**



1. A primary ion gun usable in a secondary ion mass spectrometer system for analyzing a surface comprising, in combination:

an ion source;

means to produce from said ions a primary ion beam;

a plurality of ion beam directing plates disposed around the path of said primary ion beam, the electrical potential thereon being operative to redirect the beam;

beam scanning means coupled to at least one of said plates to cause the electrical potential to repetitively vary with time so that the beam is directed in a repetitive pattern over the surface being analyzed to produce a first crater therein;

means to produce a gating signal to indicate that the area scanned by the beam on the surface being analyzed should be made smaller;

means responsive to said gating signal for blanking the beam thereby preventing the beam from striking a selectable area on the surface being analyzed so that the area thereafter subject to being hit by the ion beam is smaller than the area hit by the ion beam prior to the time said gating signal is produced for producing a second crater within the first crater.

4,661,703
TWO-COLOR COPYING MACHINE

Noriyoshi Ishikawa; Haruhiko Takahashi; Hitoshi Funato; Svay Leng; Hiroyuki Saitoh; Takashi Ohmori; Masami Kurata, and Yasuo Katou, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1985, Ser. No. 763,792
Claims priority, application Japan, Aug. 9, 1984, 59-165727
Int. Cl.[4] G03C *5/16*
U.S. Cl. 250—317.1 **12 Claims**

1. A two-color copying machine capable of producing a copy with two colors from an original to be copied comprising:

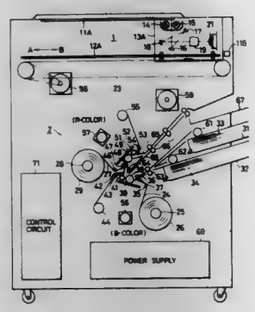
(a) platen means for supporting the orignal to be copied;

(b) scanner unit means movable reciprocally relative to said platen means in a scanning direction for reading a series of lines on the original and for generating a composite image signal for each said line, said composite image signal being separated into two single color image signals, each corresponding to one of the two colors;

(c) a pair of thermal head means, each having a heating region with heating body units for selectively generating thermal pulses, each said thermal head means respectively generating said thermal pulses in response to a different one of the single color image signals from said scanner unit means;

(d) means for supplying each said thermal head means with a cooresponding ink donor shhet coated with thermally transferable inks of one of said two colors, said inks becoming fluidized or sublimated when heated;

(e) means for supplying a recording sheet in the vicinity of at least one said thermal head means;



(f) means for bringing the recording sheet into intimate contact with said heating region of each of said thermal head means and for interposing the ink donor sheet between the recording sheet and said heating regions to record an image on the recording sheet;

(g) means for separating the ink donor sheets from the recording sheet and for discharging the recording sheet after the image has been recorded on the recording sheet;

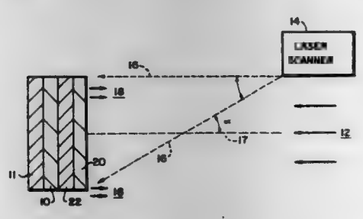
(h) buffer memory means for temporarily storing at least one of the image signals from said scanner unit means; and

(i) means responsive to the number of image signals stored in said buffer memory means for controlling the speed of movement of said scanner unit relative to said platen in the auxiliary scanning direction when the original is read.

4,661,704
IMAGE RECORDING AND READOUT DEVICE BASED ON LIGHT-STIMULABLE PHOSPHORS

Dagobert M. de Leeuw, White Plains, and Jacob Khurgin, Croton-on-Hudson, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Jul. 12, 1985, Ser. No. 754,100
Int. Cl.[4] G03C *5/16*
U.S. Cl. 250—327.2 **29 Claims**



1. An image recording and readout device comprising:

an image-storage layer capable of absorbing incident radiation in an incident radiation image;

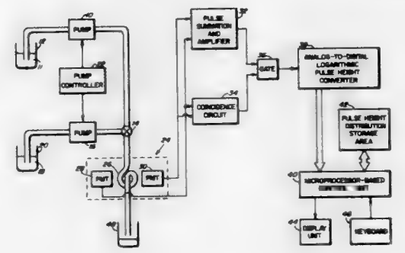
means for scanning the image-storage layer with stimulating radiation to cause the image-storage layer to emit luminescent radiation, said stimulating radiation being incident on the image-storage layer over an angular scanning range; and

filter means arranged between the image-storage layer and the scanning means so that the stimulating radiation which is incident on the image-storage layer passes through the filter means, said filter means passing stimulating radiation incident on the filter means within an angular acceptance range, said filter means reflecting stimulating radiation incident thereon within an angular reflectance range outside of the angular acceptance range, said angular scanning range being within the angular acceptance range.

4,661,705
QUENCH, VOLUME AND ACTIVITY DETERMINATIONS IN A LIQUID SCINTILLATION FLOW SYSTEM

Donald L. Horrocks, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 21, 1984, Ser. No. 612,181
Int. Cl.[4] G01T *1/00*
U.S. Cl. 250—328 **12 Claims**



1. A method for determining quench and volume in a liquid scintillation flow system, comprising the steps of:

flowing a mixture comprising the sample in a liquid scintillation medium through a flow detector and developing a pulse height distribution spectrum for the solution, the liquid scintillation medium comprising a scintillating material and an alpha emitting radionuclide marker having a predetermined activity;

detecting a unique point on the portion of the pulse height spectrum representing the energy spectrum of the marker and determining a pulse height value relating to the unique point;

comparing the pulse height value of the unique point to a pulse height value obtained in a like manner for a calibration standard, the difference between such pulse height values indicating a degree of quench present in the solution;

determining the number of counts of the liquid scintillation medium during the measurement period that the pulse height distribution spectrum was developed;

determining the volume of the liquid scintillation medium that flowed through the photodetector during the measurement period according to:

$$\text{volume} = \frac{C}{T} \times \frac{V_o}{L}$$

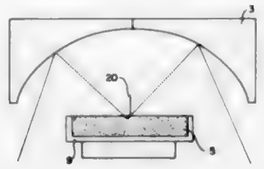
where C is the number of counts detected for the liquid scintillation medium, T is the time period, L is the activity of the liquid scintillation medium in counts per unit time, and V_o is the volume of liquid scintillation medium which produces the count rate L.

4,661,706

BLOCKER DEVICE FOR ELIMINATING SPECULAR REFLECTANCE FROM A DIFFUSE REFLECTION SPECTRUM

Robert G. Messerschmidt, Westport, and Donald W. Sting, New Canaan, both of Conn., assignors to Spectra-Tech Inc., Stamford, Conn.

Filed Feb. 25, 1985, Ser. No. 705,201
Int. Cl.⁴ G01J *1/00*
U.S. Cl. 250—341 **20 Claims**



1. An apparatus for obtaining a diffuse reflectance spectra comprising:

means for providing an incident energy beam;

means for directing the incident energy beam to a sample;

means for collecting energy that is diffusely reflected from the sample;

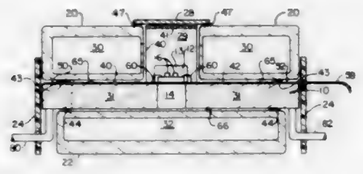
blocking means positioned on or adjacent to the sample to substantially eliminate energy that is specularly reflected off the sample.

4,661,707

DISC DETECTOR ASSEMBLY HAVING PREFABRICATED VACUUM CHAMBERS

David L. Jungkman, Hudson, N.H.; Peter N. Nicholson, Dracut, and Thomas M. Brennan, Cambridge, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 7, 1985, Ser. No. 763,163
Int. Cl.⁴ G01J *1/00*
U.S. Cl. 250—352 **19 Claims**



1. An infrared energy apparatus for receiving infrared energy from a scene of interest, said apparatus having a refrigerator device, such apparatus comprising:

A. said refrigerator device comprising:

(i) an upper surface and a lower surface,

(ii) means for cooling a first region of said refrigerator device,

(iii) a second region which remains substantially at the ambient temperature of said infrared energy apparatus, and

(iv) a third region for heat exchange, said third region at an intermediate temperature between that of said first and second regions;

B. a tube to which is mounted a first optically transparent means such that the tube and optically transparent means form an interior chamber,

C. a detector assembly having one or more detector elements mounted in said interior chamber on said upper surface of said refrigerator device in said first region such that said detector assembly is cooled by operation of said refrigerator device;

D. an electrically conductive pattern applied to said upper surface of said refrigerator device, said pattern having electrical leads to enable electrical connection to said detector elements of said detector assembly;

E. a first prefabricated vacuum chamber means positioned with respect to said refrigerator device such that said first and said third region are thermally separated from the ambient environment of said second region, said first chamber means shaped such that energy entering said apparatus from said scene of interest may be collected and measured by said detector assembly;

F. a second prefabricated vacuum chamber means positioned in close proximity on the side of said refrigerator device opposite said first vacuum chamber means in order to provide thermal isolation of said detector assembly; and

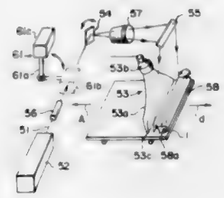
G. a second optically transparent means, coupled to said first vacuum chamber means, covering said interior chamber such that energy of the desired waveband from said scene of interest may be collected and measured by said detector assembly.

4,661,708

RADIATION IMAGE READ-OUT APPARATUS

Toshitaka Agano, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 2, 1985, Ser. No. 782,819
Claims priority, application Japan, Oct. 3, 1984, 59-207877
Int. Cl.⁴ G03C *5/16*
U.S. Cl. 250—327.2 **4 Claims**



1. A radiation image read-out apparatus provided with a stimulating ray source for emitting stimulating rays for scanning a stimulable phosphor sheet carrying a radiation image stored therein, a photoelectric read-out means for photoelectrically detecting light emitted by the stimulable phosphor sheet during scanning by the stimulating rays, and a reflection mirror for reflecting the emitted light towards the photoelectric read-out means,

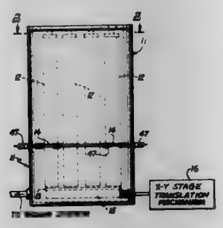
wherein the improvement comprises the provision of: a stimulating ray adjustment means which comprises a beam diameter increasing means for increasing the beam diameter of said stimulating rays on the surface of said stimulable phosphor sheet by acting on the beam of said stimulating rays, a light intensity decreasing means for decreasing the intensity of said stimulating rays by acting on the beam of said stimulating rays, and an optical path changing means for changing the optical path of said stimulating rays by acting on the beam of said stimulating rays, said stimulating ray adjustment means being moveable between a position for acting on the beam of said stimulating rays and a position for not acting thereon, said reflection mirror being moveable in such a direction that the distance between said reflection mirror and said photoelectric read-out means changes, the movement of said stimulating ray adjustment means to the position for acting on the beam of said stimulating rays being interlocked with the movement of said reflection mirror in such a direction that said distance is increased.

4,661,709

MODULAR ALL-ELECTROSTATIC ELECTRON-OPTICAL COLUMN AND ASSEMBLY OF SAID COLUMNS INTO AN ARRAY AND METHOD OF MANUFACTURE

David M. Walker, Westford; Alan P. Sliski, Lincoln; Kenneth J. Harte, Carlisle, and John J. Carrona, Concord, all of Mass., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jun. 28, 1985, Ser. No. 749,792
Int. Cl.⁴ H01J *3/38*
U.S. Cl. 250—396 R **22 Claims**



1. A miniaturized, easily assembled and aligned, all-electrostatic charged particle optical column comprising an outer hollow, elongated insulating housing for supporting at least a unitary deflector for deflecting the charged particle beam along two orthogonal axes simultaneously, lens and aperture elements together with required insulating spacer elements of a charged particle column axially centered on the optical axis of the charged particle optical column and properly axially-spaced and rotationally oriented relative to each other and to a target plane, said deflector, lens, aperture and spacer elements all being fabricated in unitary structure form with equal outside dimensions for sliding into the elongated housing within its center opening with an interference press fit while being centered on the center optical axis of the assembly and being axially spaced-apart predesigned distances by interspersed different thickness spacer elements, said elongated housing and at least the unitary structure deflector and lens elements having complementary axially extending keys and keyway formed thereon for maintaining at least the deflector, lens and aperture elements in a desired rotational orientation, said aperture elements being formed by an apertured flat plate secured to one end of a lens element, said deflector, lens, spacer and aperture elements having suitable size internal openings formed therein centered on the charged particle optical axis of the elongated housing.

4,661,710

NEGATIVE ION SOURCE

Marthe B. Verney, Paris, and Henri J. Doucet, Les Molières, both of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Jun. 29, 1984, Ser. No. 626,242
Claims priority, application France, Jul. 4, 1983, 83 11084
Int. Cl.⁴ H01J *27/02*
U.S. Cl. 250—423 R **11 Claims**

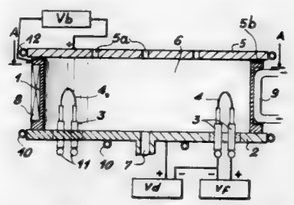
1. A negative ion source having a gas or vapour plasma generator comprising:

a magnetic multicusp confinement configuration realized by permanent magnets surrounding the plasma,

thermionic electron emitters producing primary electrons made energetic by a potential difference applied between the thermionic emitters and the generator anode and sufficient for fulfilling two functions: namely ionizing the gas or vapour for forming the plasma and exciting the molecules of the gas to high vibrational levels, whilst in this way aiding the production of negative ions by dissociative attachment of the slow electrons of the plasma to the excited molecules and also having:

a negative ion extraction system, wherein:

the number and distribution of the permanent magnets forming the magnetic multicusp confinement is chosen in such a way that the confinement time of the primary electrons



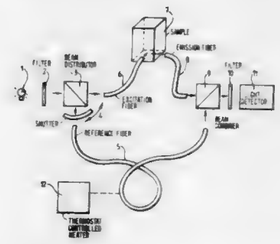
is between 10^{-7} and 10^{-6} second, and wherein the thermionic electron emitters are located in the multicusp magnetic field between the saddle point of the magnetic field, formed by two adjacent permanent magnets and the centre of the plasma, in the vicinity of said saddle points.

4,661,711

FLUOROMETER

Hannu Harjunmaa, Makslahdentie, Finland, assignor to Labsystems Oy, Helsinki, Finland

Filed Aug. 12, 1985, Ser. No. 765,059
Claims priority, application Finland, Aug. 29, 1984, 843409
Int. Cl.⁴ G01N *21/64*
U.S. Cl. 250—458.1 **4 Claims**



1. A fluorometer comprising in combination a light source, a beam distributor in the path of light from said source for dividing said light into first and second paths, a measurement channel for passing light from said first path, a reference channel for passing light from said second path, means disposed between said beam distributor light paths and said measurement and reference channels for alternately interrupting the passage of said light to said measurement and reference channels, means for positioning a sample in said measurement channel for receiving light from said first path and producing emitted fluorescent light responsive to said received light, a light detector, and means for coupling to said light detector a predetermined bandwidth of light frequencies from both said emitted fluorescent light in said measurement channel and light in said reference channel, characterized in that said reference channel comprises a fiber optic conductor formed at least in part of fluorescent material having sufficient fluorescence when excited by light from said second path to produce a reference standard of fluorescent emission to calibrate said detector.

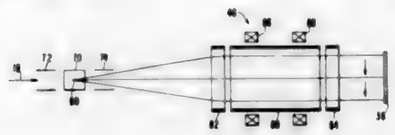
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4,661,712

APPARATUS FOR SCANNING A HIGH CURRENT ION BEAM WITH A CONSTANT ANGLE OF INCIDENCE

Richard M. Mobley, Ipswich, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 28, 1985, Ser. No. 737,840
Int. Cl.[4] H01J *37/317, 37/04*
U.S. Cl. 250—492.2 **7 Claims**



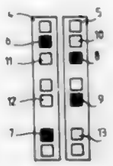
1. Apparatus for charged particle beam treatment of a workpiece comprising:
- means for forming a charged particle beam of predetermined parameters;
- means for positioning the workpiece generally in the path of the charged particle beam;
- scanning means for deflecting the beam in at least one dimension over the surface of the workpiece; and
- space charge lens means interposed between said workpiece and said scanning means for steering the scanned beam into parallel paths, said spaced charge lens means including means for generating electrostatic and magnetic fields for confining an electron cloud having a generally uniform spatial distribution within a region traversed by the scanned beam.

4,661,713

PHOTOVOLTAIC DIODE DETECTION DEVICE HAVING COMPENSATION FOR DEFECTIVE DIODES

Jean G. Besson, Meudon; Michel Royer, Paris; André A. Salaville, Egly, and Michel B. Sirieix, Jouy-en-Josas, all of France, assignors to S.A.T., Paris, France

Filed Dec. 4, 1984, Ser. No. 678,271
Claims priority, application France, Dec. 8, 1983, 83 19649
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **9 Claims**



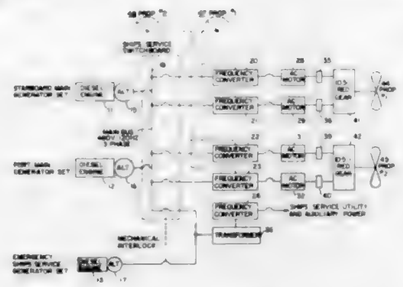
1. A detection device comprising:
- a first array of photovoltaic diodes for producing output signals, wherein the first array includes some defective diodes;
- at least a second array of photovoltaic diodes for producing output signals, said second array being adjacent to said first array, some of the diodes of said second array being defective, corresponding diodes of the first and second arrays being arranged in diode pairs aligned along a scanning direction, each of said pairs comprising at least one diode which is non-defective; and
- selection means for selecting the output signal of a non-defective diode in each diode pair so as to effect readout of the diodes in serpentine fashion.

4,661,714

ELECTRIC MARINE PROPULSION SYSTEM

J. Glean Satterthwaite, 4408 Point West Dr., Portsmouth, Va. 23703, and George B. Field, Jr., 8425 Larkspur Rd., Richmond, Va. 23235

Filed Jun. 17, 1985, Ser. No. 745,175
Int. Cl.[4] H02P *5/46*
U.S. Cl. 290—4 R **14 Claims**



1. A marine propulsion system comprising:
- a diesel engine for providing a continuous rotational shaft horsepower, said diesel engine operated at a speed of maximum efficiency;
- an alternator having a standard rated frequency output for a standard rated input RPM connected to be driven by said diesel engine, said alternator standard rated RPM selected to be less than said generated diesel engine continuous shaft RPM whereby voltage is generated having a higher frequency than said rated standard frequency and said diesel engine and alternator produces a power output at a maximum efficiency;
- a frequency converter connected to receive voltage from said alternator, said frequency converter providing an alternating output voltage having a selectable frequency;
- an AC motor connected to receive a voltage from said frequency converter, said AC motor producing a horsepower output which is constant and a torque proportional to the frequency of said received voltage; and
- gear reduction means for coupling said AC motor and a propeller shaft, whereby said propeller shaft RPM is controlled by said frequency converter output voltage frequency, which may be varied by said frequency converter.

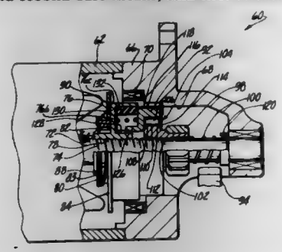
4,661,715

ELECTRIC ROLLER CLUTCH STARTER DRIVE

Nicholas A. Volino, Elmira, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Mar. 14, 1985, Ser. No. 711,633
Int. Cl.[4] F02N *11/08;* **H02P** *9/04*
U.S. Cl. 290—48 **21 Claims**

1. A starter drive for engagement with the engine ring gear of an internal combustion engine for starting said internal combustion engine, said starter drive comprising:
- a starter housing;
- a cavity formed in said starter housing;
- annular electromagnetic means fixedly positioned in said starter housing;
- a motor driven shaft rotatably positioned in said cavity of said starter housing, said motor driven shaft having a portion passing through said annular electromagnetic means;
- external helical means formed on said motor driven shaft, and including said portion passing through said annular electromagnetic means;
- rotatable annular first case means disposed about said portion of said motor driven shaft, said first case means being disposed radially inwardly of said annular electromagnetic means and having a cylindrical portion disposed about said portion of said motor driven shaft;
- an annular disk-shaped portion extending radially from said cylindrical portion; and
- an axially extending flange extending from said annular disk-shaped portion at a location remote from said cylindrical portion;
- internal helical means formed in said cylindrical portion of said first case means, said internal helical means being drivingly engaged with said external helical means on said motor driven shaft;
- magnetically permeable armature means rotatably interconnected with said first case means, said magnetically permeable armature means being selectively engageable with said annular electromagnetic means;
- second case means movably disposed about said motor driven shaft adjacent said first case means, said second case means having a first portion interposed axially between said first case means and said engine ring gear and a second portion disposed radially inwardly of said first case means;
- first interconnection means interconnecting said first case means and said second case means, said first interconnection means rotatably driving said second case means when said first case means is rotated, said first interconnection means permitting axial displacement between said first case means and said second case means;
- biasing means interposed said first case means and said second case means, said biasing means abutting said cylindrical portion of said first case means and urging said first case means and said second case means axially away from each other, at least a portion of said biasing means being surrounded by said axially extending flange of said first case means;
- pinion means movably disposed surrounding said motor driven shaft and adjacent said second case means, said pinion means being selectively engageable with said engine ring gear;
- second interconnection means rotatably interconnecting said second case means and said pinion means, such as to prevent relative axial motion therebetween; and
- one-way clutch means interposed said second case means and said pinion means, said one-way clutch means permitting said second case means to rotatably drive said pinion means in one predetermined angular direction.



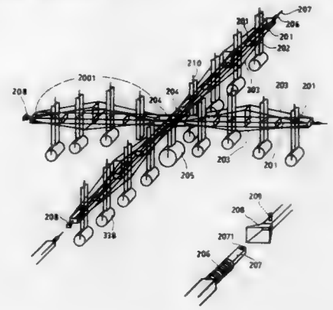
4,661,716

UNLIMITED AND CONTINUOUS PNEUMATIC GENERATING SYSTEM TO BE DRIVEN WITH THE SEA WAVE FORCE

Chun T. Chu, No. 66, Ta Ting Hsin Chun, Pan Chiao City, Taiwan

Filed Feb. 22, 1985, Ser. No. 704,580
Int. Cl.[4] F03B *13/10*
U.S. Cl. 290—53 **5 Claims**

1. A continuous pneumatic generating system to be driven by sea wave forces, comprising an energy absorbing network formed by a plurality of absorber units, each comprising a rigid frame movably supporting a vertically extending ascending and descending frame assembly, a suspension frame supported at a lower end of said ascending and descending frame assembly, a swinging member movably supported by said suspension frame, an absorber means rotatably supported by said swinging member and adapted to float on the surface of the sea, a gear linkage coupling said absorber means to one end of a drive member extending through said rigid frame, a transmission gear linkage coupling the other end of said drive member to an



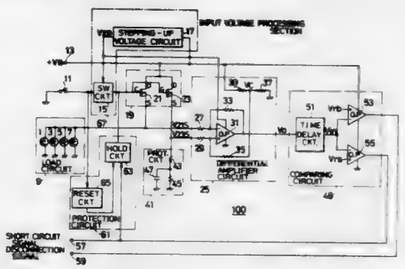
output means driving pneumatic means, and means for interconnecting all of said pneumatic means to provide a source of compressed fluid, whereby the wave forces applied to the absorber means are transmitted thereby to said gear and transmission gear linkages to actuate said compressor.

4,661,717

LOAD CONDITION DETERMINING APPARATUS

Tetsuji Nishioka, Isezaki, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 6, 1985, Ser. No. 795,460
Claims priority, application Japan, Nov. 19, 1984, 59-242436
Int. Cl.[4] H02J *3/14;* **G08B** *21/00*
U.S. Cl. 307—10 LS **15 Claims**



1. A monitoring apparatus for indicating the normal and abnormal condition of an electrical load which comprises:
- (a) a powr supply;
- (b) a drive circuit having first and second type transistors and connected to said power supply at one end thereof;
- (c) a load circuit of an electrical device, one end of which is connected to the output of the first type transistor in said drive circuit and the other end of the which is connected to ground;
- (d) a load equivalence circuit having resistors and a capacitor, one end of said load equivalence circuit being connected to the output of said second type transistor in the drive circuit and the other end being connected to ground, whereby the electrical characteristic of said load equivalence circuit is substantially equal to that of said load circuit;
- (e) a differential amplifier circuit, the differential inputs of which are connected to the outputs of said first and second type transistors respectively so as to detect the difference between the input voltages to the differential amplifier circuit in accordance with the normal and abnormal conditions for said load circuit means; and

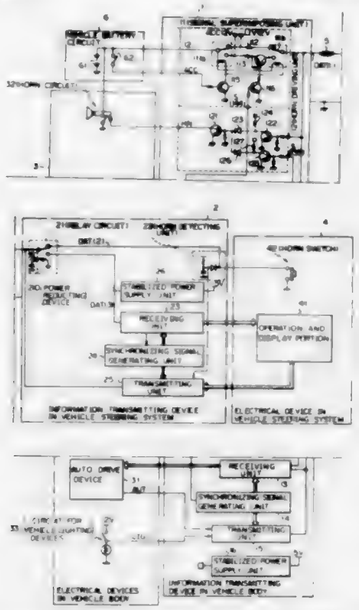
(f) comparing means having first and second comparators with first and second reference voltages respectively and connected to the output of said differential amplifier circuit at the input thereof; thereby determining the normal and abnormal conditions of said load circuit in accordance with the balance and unbalance between the input voltages to the differential amplifier circuit.

4,661,718

INFORMATION AND ELECTRICAL POWER TRANSMISSION SYSTEM AND METHOD FOR VEHICLE

Muneaki Matsumoto; Shigeyuki Akita, both of Okazaki, and Akira Kuno, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Jun. 6, 1985, Ser. No. 742,060
Claims priority, application Japan, Jun. 7, 1984, 59-115375; Mar. 7, 1985, 60-46190
Int. Cl.[4] H02G *3/00*
U.S. Cl. 307—10 R **12 Claims**



6. An information and electrical power transmission system for a vehicle, comprising:

a power supply circuit having an ignition keyswitch;

a first group of electrical devices connected to said power supply circuit;

a first information transmitting device connected to said first group of electrical devices and said power supply circuit said information transmitting device having an information sending unit and an information receiving unit;

a second group of electrical devices provided remote from said first group of electrical devices on the vehicle;

a second information transmitting device connected to said second group of electrical devices said second information transmitting device having an information sending unit and an information receiving unit;

a signal line which connects said second information transmitting device with said first information transmitting device for transmitting a plurality of information and electrical power between said first and second information transmitting device;

a switching device for the transmitting route which detects an ON/OFF state of said ignition keyswitch and switches to the transmitting route for transmitting said plurality of information and said electrical power between said first and second information transmitting devices through said signal line when said ignition keyswitch is in an ON state and switches to the transmitting route for transmitting only information which is required to be always transmitted between said first and second information transmitting device through said signal line when said ignition keyswitch is in an OFF state; and

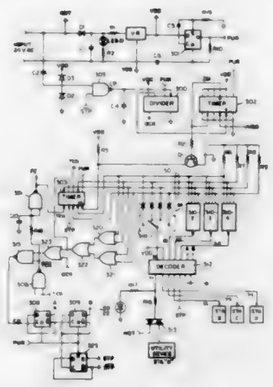
a power reducing device which reduces electrical power supplied to said switching device from said power supply circuit when said switching device is in the switched state after detection of the OFF state of said ignition keyswitch.

4,661,719

AUXILIARY SWITCHING CIRCUIT

Loyal E. Burchfiel, Anaheim, and John M. Baker, Santa Ana, both of Calif., assignors to J. B. Enterprises, Anaheim, Calif.

Filed Oct. 15, 1984, Ser. No. 660,741
Int. Cl.[4] H02J *3/14*
U.S. Cl. 307—38 **19 Claims**



1. A control device comprising,

source means (**305** etc.) for providing power and main clock signals,

divider means (**300**) connected to said source means for dividing said main clock signals,

first timer means (**302**) connected to receive signals from said divider means and providing at least one periodic timing signal (**2M**),

timer setting means (**50, 310**),

second timer means (**303**) connected to said timer setting means and to said first timer means so that the time value stored in said second timer means can be selectively changed by said timer setting means in response to said one periodic timing signal from said first timer means,

said second timer means operative to produce different timer cycles as a function of the time value stored therein,

bistable means (**308**) connected to said second timer means to count the timing cycles of said second timer means and to produce output signals representative of said count, and

decoder means (**312**) connected to said bistable means for decoding the output signals produced by said bistable means and connected to said timer means to control said timer setting means as a function of said output signals produced by said bistable means.

4,661,720

OCCUPANCY SENSOR

Maclyn C. Cameron, Jr.; Charles C. Hu, both of San Jose, and Jerome M. Mix, Redwood City, all of Calif., assignors to The Watt Watcher, Inc., Santa Clara, Calif.

Filed Jun. 9, 1986, Ser. No. 872,308
Int. Cl.[4] G08B *13/16*
U.S. Cl. 307—117 **8 Claims**

1. An apparatus for switching off power to an electric load in the absence of the detection of movement from the doppler shift of a transmission frequency, comprising:

oscillator means for generating an ultrasonic transmission frequency;

a transmission plate, coupled to said oscillator means, for emitting ultrasonic sound at said transmission frequency;

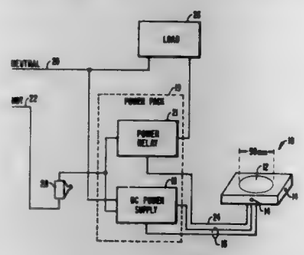
a plurality of receivers for detecting reflections of said ultrasonic sound;

a bandpass filter coupled to said receivers for passing said transmission frequency;

a lowpass demodulator coupled to said bandpass filter for passing a doppler-shift signal;

amplifier means, coupled to said lowpass demodulator, for amplifying said doppler-shift signal;

narrow band filter means, coupled to said amplifier means,



for passing a band of said doppler-shift signal corresponding to human movement;

switching means, coupled to said narrow band filter means, for discharging a first node;

a resistor and capacitor coupled to said first node and to a voltage source for charging said first node to above a first voltage level in a first, predetermined time;

comparator means, having a first input coupled to said first node and a second input coupled to a voltage reference, for producing an output signal when said first input has a lower voltage than said second input; and

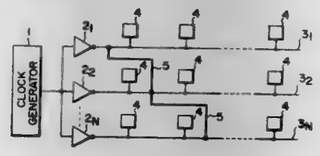
control means, coupled to said comparator means, for supplying current to said electric load in response to said output signal.

4,661,721

CLOCK DRIVER DISTRIBUTION SYSTEM IN A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Yukihiro Ushiku, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 21, 1985, Ser. No. 767,847
Claims priority, application Japan, Sep. 29, 1984, 59-204451
Int. Cl.[4] H03K *5/15, 19/01*
U.S. Cl. 307—269 **1 Claim**



1. A semiconductor large scale integrated circuit subject to clock skewing due to umbalanced current demands therein comprising:

a clock generator;

a plurality of clock drivers connected to one output terminal of said clock generator;

a plurality of clock signal lines drawn out independently from the respective output terminals of said clock drivers;

a plurality of different current demand load circuits supplied with clock signals through the corresponding clock signal lines; and

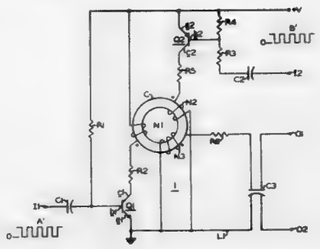
a common connecting line for connecting said plural clock signal lines together to thereby maintain synchronized clocking of said load circuits.

4,661,722

FAIL-SAFE PULSE COINCIDENCE DETECTOR

Richard D. Campbell, Swissvale, Pa., assignor to American Standard Inc., North Hills, Pa.

Filed Sep. 17, 1984, Ser. No. 651,731
Int. Cl.[4] H02M *5/10*
U.S. Cl. 307—419 **9 Claims**



1. A vital coincidence detecting circuit comprising, a saturable core reactor having at least a pair of input windings and an output winding, one source of a first train of pulses, another source of a second train of pulses which are in concurrence with the first train of pulses, one of said pair of input windings receiving the first train of pulses from one type of transistor amplifier, the other of said pair of input windings receiving the second train of pulses from a complementary type of transistor amplifier, and said output winding producing signal pulses only when the first and second trains of pulses are substantially in synchronism to cause said one type of transistor amplifier to be rendered conductive while causing said complementary type of transistor amplifier to be rendered nonconductive and to alternately cause said one type of transistor amplifier to be rendered nonconductive while causing said complementary type of transistor amplifier to be rendered conductive.

4,661,723

COMPOSITE CIRCUIT OF BIPOLAR TRANSISTORS AND FIELD EFFECT TRANSISTORS

Ikuro Masuda; Masahiro Iwamura, both of Hitachi, and Motohisa Nishihara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 23, 1984, Ser. No. 633,476
Claims priority, application Japan, Jul. 25, 1983, 58-134433
Int. Cl.[4] H03K *19/08, 19/01*
U.S. Cl. 307—446 **30 Claims**



1. A composite circuit having an input and an output and comprising:

a first bipolar transistor including a collector of first conductivity type connected to a first potential, an emitter of the

first conductivity type connected to said output, and a base of a second conductivity type;

a second bipolar transistor includig a collector of the first conductivity type connected to said output, an emitter of the first conductivity type connected to a second potential, and a base of the second conductivity type;

a first field effect transistor of the second conductivity type, a gate connected to said input and a source connected to a third potential and a drain connected to the base of said first bipolar transistor;

a second field effect transistor of the first conductivity type, a gate connected to said input, a drain connected to the bae of said first bipolar transistor, and a source connected to the base of said second bipolar transistor; and

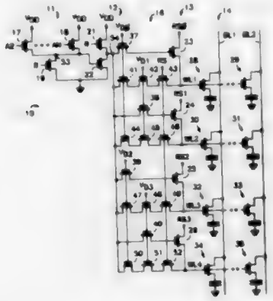
a unidirectional element for forming a current from said output to the base of said second bipolar transistor through said second field effect transistor, and for blocking a current from the base of said first bipolar transistor to said output.

4,661,724

ROW DECODER

Scott Remington, and William L. Martino, Jr., both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1985, Ser. No. 731,199
Int. Cl.[4] H03K *19/094, 19/20, 17/16;* **G11C** *8/00*
U.S. Cl. 307—449 **16 Claims**



1. A row decoder, having an active cycle and an inactive cycle, for enabling at least one of a plurality of word lines when selected, wherein an enabled word line corresponds to a decoded signal which is active, comprising:

a logic decoder having an input for receiving a plurality of address signals, and an output for providing an output signal at a first logic state during the inactive cycle, at the first logic state during the active cycle when the logic decoder is selected by the address signals, and at a second logic state during the active cycle when the logic decoder is deselected by the address signals;

a plurality of word line driver circuits, each coupling a respective one of the plurality of decoded signals to a corresponding word line when the first logic state is present on a control input thereof;

first coupling means for selecting a predetermined one of the word lines by coupling the output of the logic decoder to only that driver circuit which receives a decoded signal which is active during the active cycle, and for coupling the output of the logic decoder to all of the driver circuits during the inactive cycle; and

second coupling means for coupling the selected word line to the output of the logic decoder when the logic decoder is deselected during the active cycle; and

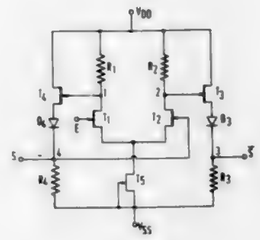
whereby the selected word line will be enabled only if the corresponding decoded address signal is active and the logic decoder is selected during the active cycle.

4,661,725

ELEMENTARY LOGIC CIRCUIT OBTAINED BY MEANS OF FIELD EFFECT TRANSISTORS OF GALLIUM ARSENIDE AND COMPATIBLE WITH THE ECL 100 K TECHNOLOGY

Bernard Chantepie, Lozere, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1985, Ser. No. 699,108
Claims priority, application France, Feb. 8, 1984, 84 01932
Int. Cl.[4] H03K *19/003, 19/01, 19/094, 3/356*
U.S. Cl. 307—450 **2 Claims**



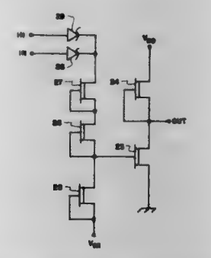
1. An elementary logic circuit having Schottky barrier field effect transistors of gallium arsenide and comprising a differential amplifier, a load register R_1 and a transistor T_1, a first branch of said amplifier being formed by the transistor T_1, which is of the enhancement type, controlled by an input signal E and connected by its drain, at which a signal S_1 is available, to a first supply voltage terminal (V_{DD}) through the load resistor R_1, a load resistor R_2 and an enhancement type transistor T_2, a second branch of said amplifier being formed by the enhancement transistor T_2 controlled by a reference signal and connected by its drain, at which a signal S_2 is available, to the first supply source terminal (V_{DD}) through the load resistor R_2, a transistor T_5, the coupled sources of the transistors T_1 and T_2 being supplied with current through the transistor T_5 of the charge depletion type connected in a common gate-source arrangement to a second supply potential terminal (V_{SS}), said circuit further comprising two paired level translator stages, the first of which comprises a diode D_4 and a transistor T_4 connected in a common drain arrangement to the first supply voltage terminal (V_{DD}), controlled by the signal S_1 of the first branch of the differential amplifier and connected by its source to the anode of the diode D_4, and the second of which comprises a diode D_3, and transistor T_3 connected in a common drain arrangement to the first voltage supply terminal (V_{DD}), controlled by the signal S_2 of the second branch of the differential amplifier and connected by its source to the anode of the diode D_3, the transistors T_3 and T_4 of the level translator stages being of the enhancement type, further comprising resistors R_3 and R_4, the cathodes of the diodes D_3 and D_4 of the level translator stages being connected to the second supply voltage terminal (V_{SS}) through the resistors R_3 and R_4, which are paired, the output signal S, which is the inverse value of the input signal E of the elementary logic circuit, being provided at the cathode of the diode D_4 of the first level translator stage, the output signal $\bar{S}$, complementary to the output signal S, being provided at the cathode of the diode D_3 of the second level translator stage, and the output signal S of the elementary logic circuit comprising a reference signal which controls the transistor T_2 of the second branch of the differential amplifier.

4,661,726

UTILIZING A DEPLETION MODE FET OPERATING IN THE TRIODE REGION AND A DEPLETION MODE FET OPERATING IN THE SATURATION REGION

James R. Biard, Richardson, Tex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 31, 1985, Ser. No. 793,379
Int. Cl.[4] H03K *17/14, 19/094*
U.S. Cl. 307—450 **50 Claims**



1. A temperature compensated logic gate comprising depletion mode FET's, said logic gate being constructed at least in part in a body of semiconductor material, said logic gate comprising temperature compensation means, said temperature compensation means comprising:

a first depletion mode FET means having first and second terminal regions in said semiconductor body, a gate terminal region comprising a metallic electrical conductor means on a surface of said semiconductor body, and a channel region defined by electrical voltage conditions on said first FET means gate terminal region, said first FET means first terminal region being connected for operation at a higher voltage than said first FET means second terminal region, said first FET means gate terminal region being electrically connected to said first FET second terminal region, said first FET means being adapted to operate at current levels within its triode region of operation by appropriate choice of width to length ratio of said first FET means channel region; and

a second FET means having first and second terminal regions in said semiconductor body, a gate terminal region, and a channel region defined by electrical voltage conditions as said second FET means gate terminal region, said second FET means first terminal region being connected for operation at a higher voltage than said second FET means second terminal region, said second FET means gate terminal region being electrically connected to said second FET means, said second FET means first terminal region being electrically connected in series with said first FET means second terminal region, said second FET means being adapted to operate at current levels in its saturation mode of operation by appropriate choice of width to length ratio of said second FET means channel region.

4,661,727

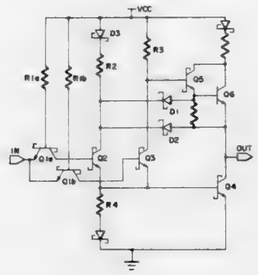
MULTIPLE PHASE-SPLITTER TTL OUTPUT CIRCUIT WITH IMPROVED DRIVE CHARACTERISTICS

David A. Ferris, West Buxton, Me., and Richard J. Caswell, Swindon, England, assignors to Fairchild Semiconductor Corporation, Palo Alto, Calif.

Filed Jul. 19, 1984, Ser. No. 632,433
Int. Cl.[4] H03K *19/013, 19/088, 17/04, 17/60*
U.S. Cl. 307—456 **11 Claims**

1. An improved multiple phase-splitter TTL output circuit having a signal input for receiving binary signals of low or high potential, a signal output for delivering binary signals of high or low potential, pulldown transistor means coupled to the signal output for sinking current from the signal output to low potential, a plurality of at least first and second phase-splitter transistor means having emitters coupled in parallel to the base of the pulldown transistor means for controlling the conducting state of the pulldown transistor means, said first and second phase-splitter transistor means being operatively coupled in phase at the signal input for simultaneous switching of the first and second phase splitter transistor means in phase in response to signals at the signal input, the improvement comprising:

feedback diode means coupled between the signal output and the collector of the first phase-splitter transistor means to accelerate sinking of current from the output to low potential during transition of binary signals at the output from high to low potential; and



independent first and second base drive means respectively coupled to the bases of the first and second phase-splitter transistor means said first base drive means coupled to the first phase-splitter transistor means being independent from the second base drive means coupled to the second phase splitter transistor means while the first and second phase splitter transistor means are operatively coupled in phase to the signal input for simultaneous switching in phase in response to signals at the signal output, thereby preventing current hogging of the base drive current to the first phase-splitter transistor means by eliminating current mirroring in the second phase-splitter transistor means.

4,661,728

PROGRAMMABLE LOGIC ARRAY CIRCUIT

Masahiko Kashimura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 11, 1985, Ser. No. 774,684
Claims priority, application Japan, Sep. 12, 1984, 59-190912
Int. Cl.[4] H03K *19/096;* **G06F** *7/38*
U.S. Cl. 307—468 **6 Claims**

1. A programmable logic array circuit comprising a product term array receiving input signals, a sum term array deriving

output signals, and control transistors having control electrodes coupled to output ends of said product term array, the

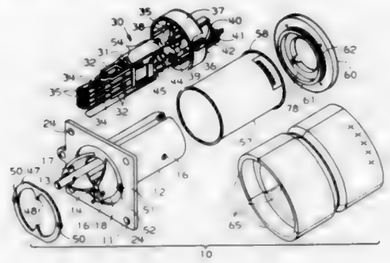


source-drain paths of said control transistors being coupled between input ends of said sum term array and a power source.

4,661,729
VOICE COIL MOTOR MAGNET ASSEMBLY

Jeffrey L. Hames, Rochester, Minn.; Charles M. Lacey, Peterfield, United Kingdom; Ronald R. Neuman, and John R. Reidenbach, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 3, 1986, Ser. No. 827,125
Int. Cl.⁴ H02K *41/02*
U.S. Cl. 310—13 **3 Claims**



1. A magnet assembly subtending an arc small enough to permit radial installation of said assembly on a linear voice coil motor comprising

a pair of arcuate pole portions of magnetically permeable material which have concave inner surfaces, are axially aligned, formed as cylindrical sectors and have a continuous axial separation therebetween;

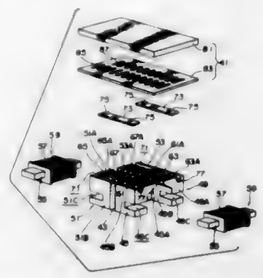
a radially polarized magnet element formed as a cylindrical sector having a convex outer surface with substantially the same radius as the inner surface of said pole portions; and

bonding means for securing said convex magnet surface to said pole portion concave inner surfaces, whereby the axial separation between said arcuate pole portions forms a reluctance gap therebetween.

4,661,730
LINEAR PULSE MOTOR

Toshiki Maruyama; Hiroshi Nakagawa, and Minoru Maeda, all of Ise, Japan, assignors to Shinko Electric Co., Ltd, Tokyo, Japan

Filed Mar. 28, 1985, Ser. No. 717,081
Claims priority, application Japan, Mar. 28, 1984, 59-60364; May 15, 1984, 59-97346; May 15, 1984, 59-97347
Int. Cl.⁴ H02K *41/00*
U.S. Cl. 310—12 **5 Claims**



1. In a linear pulse motor which includes: a primary magnetic flux generating unit (**27**, **37**) composed of a pair of cores (**4**, **5**) each having a coil (**2**, **3**) wound therearound and a plurality of magnetic poles (**4***a*, **4***b*; **5***a*, **5***b*) provided at end portions thereof; and a scale (**21**; **31**) having a row of first teeth (**21A**, **21B**; **31A**, **31B**) formed therein along a direction of relative travel thereof with respect to the magnetic flux generating unit, the scale and the flux generating unit being disposed so that the scale moves relatively with respect to the primary magnetic flux generating unit by generating magnetic flux between gaps formed between the magnetic poles (**4***a*, **4***b*; **5***a*, **5***b*) and the first teeth (**21A**, **21B**; **31A**, **31B**) facing to the magnetic poles, the improvement wherein;

(a) the magnetic flux generating unit (**27**, **37**) comprises a spacer (**43**, **90**) through which the cores are jointed in a parallel manner;

(b) each core has a pair of parallel separate yokes (**45**, **49**; **51**, **53**), each yoke having a magnetic pole (**61**, **63**, **67**, **71**) at one end thereof, and a connecting member (**55**) magnetically coupled to the other end of each yoke of the core to give the core a substanially U shape, said connecting member having the coil wound therearound; and

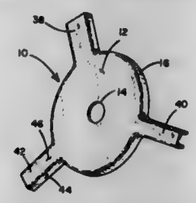
(c) the magnetic flux generating unit is disposed so that the cores are placed in one of a direction parallel to and a direction perpendicular to the row of first teeth (**21A**, **21B**; **31A**, **31B**).

4,661,731
SHIELD FOR FAN MOTOR FOR REDUCING STRUCTUREBORNE NOISE AND THE EXTERNAL MAGNETIC FIELD

Charles F. Wenz, St. Paul, Minn., assignor to Sperry Corporation, Blue Bell, Pa.

Filed Apr. 25, 1986, Ser. No. 855,576
Int. Cl.⁴ H02K *5/24*
U.S. Cl. 310—51 **1 Claim**

1. A shield for a fan motor assembly having a plurality of struts which join to an end plate that supports the motor shaft of the fan, the improvement comprising a shield of an electrically conductive material which is shaped to conform to the end plate and to the struts so as to fit partially over said elements, a vibration damping adhesive interspersed between said end plate and said struts over substantially the entire surface thereof, and adhesive means for securing said shield and said vibration damping layer to said end plate and said struts, wherein the flexural rigidity of said shield and the damping

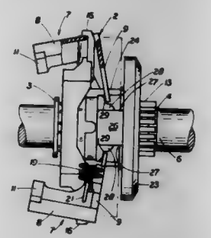


properties of said adhesive are controlled to reduce the propagation of structureborne noise by said end plate and struts.

4,661,732
SAFETY DEVICE FOR A CENTRIFUGAL ACTUATOR ASSEMBLY

Louis M. Gehrt, Desoto, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 28, 1986, Ser. No. 834,580
Int. Cl.⁴ H02K *11/00*; H01H *35/10*; H02P *5/30*
U.S. Cl. 310—68 E **6 Claims**



1. A centrifugal actuator assembly adapted to be mounted on a rotatable shaft, comprising:

a pair of actuating levers disposed on opposite sides of the longitudinal axis of said shaft responsive to the rotational speed of said actuator assembly on said shaft for actuating movement of said levers between first and second positions upon acceleration and deceleration of said actuator assembly;

means for biasing said levers toward said first position;

guide means cooperating with said pair of levers to guide them in a preselected guided path as they move between said first and said second positions during normal operations of acceleration and deceleration, said guide means including a stop ledge for engaging at least one of said levers; and

means to interrupt and prevent further outward movement of said levers in the event of improper actuator operation, said interrupt means including lever camming surfaces cooperatively positioned with said stop ledge so as to engage said levers to ensure alignment and snug nesting of said levers with said stop ledge in the event of improper actuator operation.

4,661,733
DC MOTOR

Marc A. Heyraud, La Chaux-de-Fonds, Switzerland, assignor to Asgalium SA, Switzerland

Filed Mar. 11, 1986, Ser. No. 838,581
Claims priority, application Switzerland, Apr. 3, 1985, 1452/85
Int. Cl.⁴ H02K *11/00*
U.S. Cl. 310—68 R **5 Claims**



1. A DC motor comprising:

a rotor, said rotor including winding means and a commutator;

a stator, said stator including brushes and supply terminals, and a thin substrate bearing a printed pattern of conductors;

an air gap between said rotor and said stator, said thin substrate located adjacent said air gap;

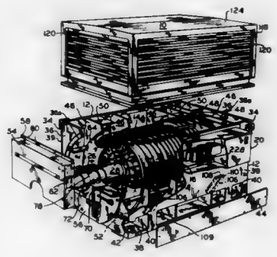
said printed pattern comprising paths connecting said brushes to said supply terminals, at least one solid zone forming a shorted turn, and at least one split area formed so as to constitute resistor means;

wherein each solid zone is connected in series with a split area between said supply terminals.

4,661,734
DYNAMOELECTRIC MACHINE

Angelo D. Capuano, Ballston Lake, and Gordon R. Hallenbeck, Amsterdam, both of N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Filed Sep. 10, 1985, Ser. No. 774,557
Int. Cl.⁴ H02K *5/00*
U.S. Cl. 310—89 **10 Claims**



1. A dynamoelectric machine comprising:

a frame having spaced end portions and side panels coupling said end portions, said end portions each having a lower support member and an upper end shield removably secured thereto;

a stator fixedly mounted with respect to said frame;

a rotor rotatable about its axis in operative proximity to said stator;

a shaft rotatable about its axis and supporting said rotor so as

to be concurrently rotatable therewith, said shaft being supported adjacent its ends by said lower support members, said rotor and shaft being asymmetric about a plane passing radially therethrough midway of said end portions;

releasable coupling means for selectively coupling and uncoupling each said lower support member and said upper end shield from said end portions of said frame to facilitate the removal and replacement of said rotor and said shaft either frontward or backward with respect to said stator and said frame;

a generally rectangular power conduit assembly having attachment means for releasably attaching said power conduit assembly to one of said side panels, said power conduit assembly having an aperture therein in communication with a correspoding aperture in said one side panel to allow the passage of leads between the interior of said frame, said power conduit assembly and the interior of said power conduit assembly also including an additional aperture to allow the passage of leads between the interior of said power conduit assembly and a source of electrical power, said attachment means adapted to couple said power conduit assembly to said one side panel with said additional aperture facing selectively either upwardly, or downwardly or to either side; and

an accessories conduit box fixedly secured to another of said side panels and including sensor means for monitoring selected operating parameters of the dynamoelectric machine, a plurality of insulating terminal blocks within said accessories conduit box each with conductive terminals receiving leads coupled to said sensor means, and separation means for isolating said terminal blocks and said terminals within a plurality of electrically discrete compartments within said accessories conduit box, at least some of said compartments being adapted to support said terminal blocks and terminals only of a predetermined electric characteristic.

4,661,735

ARRANGEMENT FOR MOUNTING A PLURALITY OF MOTORS

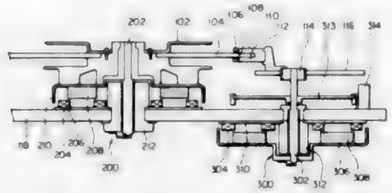
Tatsuya Miki, Sagamihara; Takashi Saito, Ayase, and Yukihiro Kishima, Yokohama, all of Japan, assignors to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Sep. 11, 1985, Ser. No. 774,831

Claims priority, application Japan, Sep. 19, 1984, 59-141830[U]

Int. Cl.⁴ G11B *21/08*; H02K *17/34*

U.S. Cl. 310—112 **7 Claims**



1. A motor mounting arrangement for mounting a plurality of motors comprising a single ferromagnetic base plate, electrical insulating means provided on the surfaces of said base plate for electrically insulating said base plate, each of the motors including a stator coil mounted on the base plate over said insulating means, a rotor magnet located to face the stator coil, and a shaft on which the rotor magnet is mounted, the stator coil of those motors which immediately neighbor each other being mounted on the opposite surfaces of the base plate.

4,661,736

ROTOR FOR A SYNCHRONOUS MOTOR

Shigeki Kawada; Yoichi Amemiya; Masatoyo Sogabe, all of Hachioji, and Noboru Iwamatsu, Hino, all of Japan, assignors to Fanuc Ltd, Yamanashi, Japan

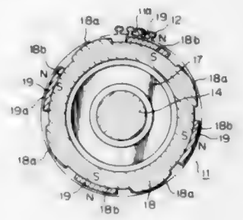
PCT No. PCT/JP84/00574, § 371 Date Jul. 30, 1985, § 102(e) Date Jul. 30, 1985, PCT Pub. No. WO85/02726, PCT Pub. Date Jun. 20, 1985

PCT Filed Dec. 5, 1984, Ser. No. 767,586

Claims priority, application Japan, Dec. 5, 1983, 58-228362

Int. Cl.⁴ H02K *21/12*

U.S. Cl. 310—156 **4 Claims**



1. A rotor for a synchronous motor, rotatably supported inside a cylindrical stator provided with armature coils having a plurality of phases, comprising: a motor shaft; yoke means fixed to said motor shaft; a plurality of first magnetic poles formed by a plurality of permanent magnets fixedly disposed on a circumference of said yoke means at substantially equal circumferential intervals; and a plurality of second magnetic poles each projecting radially from said yoke means and disposed between adjacent said first magnetic poles; the pole faces of the poles of said first magnetic poles being in a circular arc in a plane perpendicular to the axis of said motor shaft and the pole faces of each of the poles of said second magnetic poles being in a true circle in said plane perpendicular to said axis of said motor shaft, said circular arc of each of said first magnetic poles having a radius smaller than the radius of said true circle of said second magnetic poles.

4,661,737

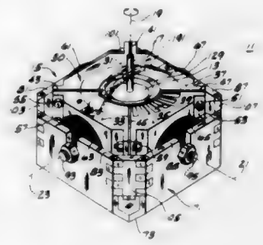
ELECTRICAL MACHINES WITH MULTIPLE AXES OF ROTATION

Mohamed M. Barri, Aleppo, Syria, assignor to The Curators of the University of Missouri, Columbia, Mo.

Filed Aug. 21, 1985, Ser. No. 767,920

Int. Cl.⁴ H02K *1/06, 5/04*

U.S. Cl. 310—166 **28 Claims**



1. An electrical machine comprising:

a base member including a first magnetically permeable body with a first winding arrangement;

a rotor including a second magnetically permeable body, the rotor being rotatable relative to said base member around first and second axes; and

a stator adjacent to said base member, surrounding said rotor and including a stator core and second and third winding arrangements, the stator core being wound with the second winding arrangement held inward near the rotor, and wound with the third winding arrangement exterior to said stator core, said second winding arrangement being energizable to rotate said rotor around the first axis and said first and third winding arrangements being jointly energizable to rotate said rotor around the second axis.

4,661,738

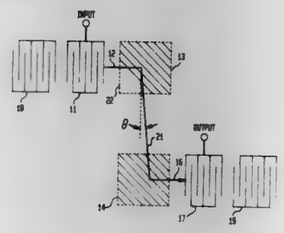
COMPENSATION TECHNIQUES FOR TEMPERATURE EFFECTS AND NON-UNIFORM AMPLITUDE DISTRIBUTIONS IN SAW DEVICES

Halvor Skeie, San Jose, Calif., assignor to Crystal Technology, Inc., Palo Alto, Calif.

Filed Sep. 26, 1985, Ser. No. 780,513

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—313 D **15 Claims**



1. A surface acoustic wave (SAW) device of the type formed by a piezoelectric substrate having a substrate surface and at least two transducers disposed on said surface, said device comprising:

a first grating reflector of elements in a first orientation for receiving a surface wave launched in a first direction by a first transducer of the at least two transducers and reflecting the surface wave in a second direction substantially perpendicular to the first direction, the propogation in the second direction being unstable due to temperature dependence exhibited by the material of the piezoelectric substrate;

a second grating reflector of elements in a second orientation for receiving the surface wave reflected in the second direction and reflecting the surface wave into another direction parallel to the first direction for cancelling out the instability effects of the propogation in the second direction and toward a second transducer of the at least two transducers;

the first grating reflector including a non-reflective corner for offsetting a non-uniform amplitude distribution present across the reflected wave front produced by the first grating reflector; and

the non-reflective corner intersecting with the first grating reflector and forming a straight line obliquely oriented with respect to the first grating reflector.

4,661,739

WELDED TUNGSTEN FILAMENT TO LEAD JOINT

Antonin J. Dvorak, Richmond Hts., and Francis C. Toth, Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 202,131, Oct. 30, 1980, abandoned. This application Mar. 14, 1983, Ser. No. 475,208

Int. Cl.⁴ H01J *5/50*

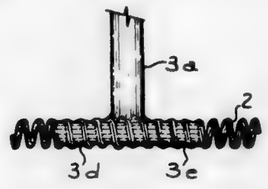
U.S. Cl. 313—333 **9 Claims**

1. A tungsten filament to lead wire joint comprising:

a tungsten filament of recrystallized wire having a coiled portion,

a lead wire of metal other than tungsten entering said coiled portion and continuing integrally into a weld section extending longitudinally within said coiled portion,

said weld section comprising metal from the lead wire coalesced with and substantially filling the turns of the filament within said section,



said tungsten filament being substantially undeformed and exhibiting no significant change in its crystallographic structure where it enters the weld section.

4,661,740

POLYCRYSTALLINE SINTERED BODIES BASED ON LANTHANUM HEXABORIDE, AND A PROCESS FOR THEIR MANUFACTURE

Heinrich Knoch, Waltenhofen-Lanzen; Eckhart Bechler, Kempten, and Alfred Lipp, Bad Worishofen, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Kempten, Fed. Rep. of Germany

Filed Apr. 21, 1986, Ser. No. 854,044

Claims priority, application Fed. Rep. of Germany, May 10, 1985, 3516955

Int. Cl.⁴ A47B *88/00*; H01B *1/06*

U.S. Cl. 313—346 R **12 Claims**

1. Polycrystalline sintered bodies based on lanthanum hexaboride having a density of at least 95% of the theoretical density, comprising lanthanum hexaboride, boron carbide and amorphous carbon and having a content of boron carbide+-carbon of from 0.1 to 10% by weight, a total amount of La+B+C of at least 99.0% by weight, in each case calculated on the total weight, and a homogeneous microstructure with a mean grain size of <10 μm and wherein, in addition to the crystalline lanthanum hexaboride phase, boron carbide and carbon are detectable as separate, finely divided phases.

12. A cathode comprising the sintered body of claim 1.

4,661,741

MINIATURE ELECTRON GUN WITH FOCUSING GRID STRUCTURE

John Valun, Beverly, and Kenneth J. Harte, Carlisle, both of Mass., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jun. 28, 1985, Ser. No. 749,787

Int. Cl.⁴ H01J *29/48, 19/46*

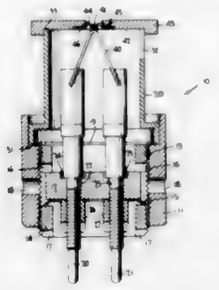
U.S. Cl. 313—447 **35 Claims**

1. A miniature electron gun for providing an electron beam having a predetermined transverse cross-sectional configuration at a pre-established location downstream of the gun, said electron gun comprising:

a cathode for emitting said electron beam and having a substantially flat surface facing said pre-established downstream location, said flat surface having a predetermined periphery;

a grid structure for focusing said electron beam, said grid structure being disposed between said cathode and said pre-established downstream location, said grid structure having a flat upstream-facing surface closely spaced from and substantially parallel to said flat surface of said cathode, a downstream-facing surface facing said downstream location, and an aperture extending lengthwise between said upstream-facing surface and said downstream-facing

surface and circumscribed by an aperture wall generally converging from said downstream-facing surface to said upstream-facing surface, whereby the aperture has a smallest dimension at said upstream-facing surface, said smallest dimension of said aperature being very much smaller than said flat surface of said cathode and longitudinally aligned so as to be entirely within said predetermined periphery;



wherein said aperture is several times larger at said downstream-facing surface than at said upstream-facing surface, and wherein said aperture wall is contoured to shape said electron beam to said predetermined transverse cross-sectional configuration at said pre-established downstream location.

4,661,742

LUMINESCENT SCREEN AND A METHOD OF FABRICATION OF SAID SCREEN

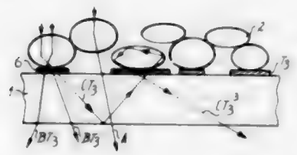
Daniel Gibilini, Grenoble, and Jean Pierre Galves, Meylan, both of France, assignors to Thomson-CSF, Paris, France

Filed Nov. 20, 1984, Ser. No. 673,424

Claims priority, application France, Nov. 29, 1983, 83 19019

Int. Cl.⁴ H01J *29/28;* **A23C** *9/12*

U.S. Cl. 313—474 **18 Claims**



1. Luminescent screen comprising a transparent substrate (1); several layers of grains of luminescent material (2) adjacent one surface of said substrate; a discontinuous layer of blocks (6) between said substrate and a first layer of said luminescent grains, each of said blocks and a respective adjacent grain of said first layer having a cross-sectional area in a plane parallel to said substrate, with the cross-sectional area of the blocks being less than or equal to the largest cross-sectional area of said respective adjacent grains; and said blocks having an optical transparency smaller than one.

4,661,743

FLUORESCENT DISPLAY TUBES AND METHOD OF MANUFACTURING THE SAME

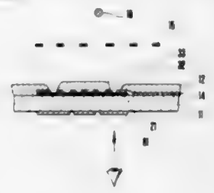
Nobuyuki Matsuoka; Yo Takasaki; Sadao Minamitsu, and Katsumi Motoyama, all of Kagoshima, Japan, assignors to Nec Corporation, Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,535

Claims priority, application Japan, Feb. 22, 1983, 58-24896[U]; Apr. 19, 1983, 58-58495[U]; Apr. 20, 1983, 58-58946[U]

Int. Cl.⁴ H01J *5/16, 17/10, 61/40;* **H01K** *1/26*

U.S. Cl. 313—496 **10 Claims**



1. A fluorescent display tube comprising:

a transparent anode substrate having an inner surface and an opposing outer surface;

a transparent colored film layer formed on said inner surface;

a plurality of anode segments of a transparent electroconductive material disposed on said transparent colored film layer; and

a layer of fluorescent substance covering said anode segments, whereby displayed data indicia are observed from said outer surface of said transparent anode substrate opposite to said inner surface on which said transparent colored film layer is formed.

4,661,744

ELECTROMAGNETIC ENERGY GENERATORS HAVING RESONATING CAVITY WITH REFLECTING ZONES

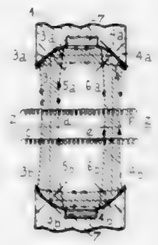
Georges Mourier, Le Port Marly, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 1, 1984, Ser. No. 585,292

Claims priority, application France, Mar. 11, 1983, 83 04056

Int. Cl.⁴ H01J *23/20;* **H01P** *7/06*

U.S. Cl. 315—4 **9 Claims**



1. A generator of millimeter and submillimeter waves such as gyrotron comprising means forming an electron beam along a beam axis and cavity resonator means disposed along the beam axis for providing at least one interaction region along the beam axis between the electron beam and an electromagnetic field, characterized in that the cavity comprises reflecting walls which correspond to a particular surface of revolution and so have revolution symmetry about the beam axis and that the reflecting walls also form, in each meridian plane through the beam axis, at least four separate curved reflecting zones for

reflecting radial modes of said electromagnetic field, said reflecting zones positioned so that the centers of the reflecting zones form each of the vertices of a polygon, and the normal to the center of each reflecting zone is the bisector of the angle formed at the corresponding vertex, the curved reflecting zones being dimensioned and positioned to obtain said at least one interaction region which is a limited portion of the beam axis enclosed within the cavity so that non-radial modes of said electromagnetic field cannot reflect in all said reflecting zones and are thus eliminated.

4,661,745

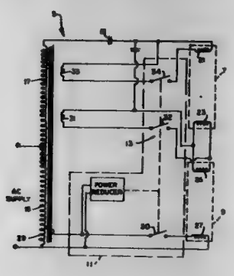
RAPID-START FLUORESCENT LAMP POWER REDUCER

Richard J. Citino, Revere; Carlo S. Bessone, Bedford, and William J. Roche, Merrimac, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Continuation-in-part of Ser. No. 576,795, Feb. 6, 1984, abandoned. This application Apr. 15, 1985, Ser. No. 723,403

Int. Cl.⁴ H05B *41/16*

U.S. Cl. 315—106 **7 Claims**



1. A rapid-start fluorescent lamp power-reducing system comprising:

a plurality of rapid-start fluorescent lamps each having a pair of spaced filaments;

a ballast formed for connection to an energizing source and including a plurality of filament windings for energizing said filaments of said lamps; and

a power-reducing means shunting one of said filament windings and including a relay having a plurality of N/O switches each coupled to a respective one of said filament windings, said power-reducing means responsive to energization from said source for operating said relay closing said N/O switches and connecting said filament windings to aid filaments of said lamps for a given period of time sufficient to effect ionization of said lamps and de-energizing said relay, opening said N/O switches and disconnecting said filament windings from said filaments of said lamps after said given period of time required to effect ionization of said lamps.

4,661,746

ELECTRODELESS LOW-PRESSURE DISCHARGE LAMP

Pieter Postma, and Johannes A. J. M. van Vliet, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

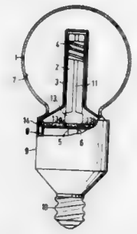
Filed Jun. 5, 1985, Ser. No. 741,061

Claims priority, application Netherlands, Jun. 14, 1984, 8401878

Int. Cl.⁴ H05B *41/16*

U.S. Cl. 315—248 **8 Claims**

1. An electrodeless low-pressure discharge lamp comprising a lamp vessel which is sealed in a gastight manner and is filled at least with a metal vapour and a rare gas and an electrical supply unit which is connected to a winding around a cylindrical core of magnetic material for producing during operation an electrical field in the lamp vessel, said supply unit being located in a metal housing forming part of the lamp, and said core of magnetic material accommodating a rod-shaped body of thermally conducting material connected to the housing,



characterized in that the part of the thermally conducting body located at the area of the winding is electrically insulated from the metal housing accommodating the electrical supply unit.

4,661,747

EFFICIENT ELECTRICAL CONVERSION SWITCHING TUBE SUITABLE FOR INDUCTIVE LOADS

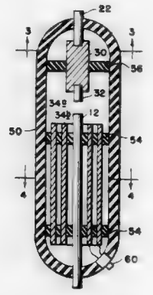
Edwin V. Gray, Sr., P.O. Box 362, Council, Id. 83612

Division of Ser. No. 662,339, Oct. 18, 1984, Pat. No. 4,595,975. This application Oct. 25, 1985, Ser. No. 791,508

Claims priority, application Greece, Dec. 16, 1983, 124388

Int. Cl.⁴ H01J *11/04, 13/48;* **H05B** *37/00, 39/00*

U.S. Cl. 315—330 **4 Claims**



1. An electrical conversion switching element tube comprising:

a closed insulative housing (**50**);

a first low-voltage anode (**32**) mounted internally to said housing and extending internally to an electrical discharge area (**62**), said first anode adapted to be connected to a voltage source external to the housing;

a second high-voltage anode (**12**) mounted internally to said housing and extending internally to said electrical discharge area (**62**), said second anode also being adapted to be connected to a voltage source external to the housing;

electrically conductive means (**34***b*) positioned internally within said housing and extending circumferentially about said second anode while being directly exposed thereto but not conductively connected thereto but, rather, spaced therefrom for receiving an electrostatic charge from the second anode when a discharge current is triggered across said discharge area between said first and second anodes, said charge receiving electrically conductive means also being internally mounted to said housing; and

an output terminal (**60**) communicating with said charge

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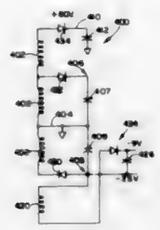
receiving electrically conductive means, said terminal adapted to be connected to an inductive load externally of said housing.

4,661,748

POWER SUPPLY FOR DEFLECTION CIRCUIT

Richard A. Sunderland, Aloha, Oreg., assignor to SpaceLabs, Inc., Chatsworth, Calif.

Filed Nov. 9, 1984, Ser. No. 669,717
Int. Cl.[4] H01J *29/70*
U.S. Cl. 315—411 **2 Claims**



1. A power supply circuit for an output stage portion of a magnetic deflection circuit amplifier having a yoke for a load and for providing a raster scan comprising:

first power supply means for providing a first power supply voltage for the retrace portion of said raster scan;

second power supply means for providing a second power supply voltage for a selected portion of said raster scan immediately preceding said retrace portion;

third power supply means coupled to said second power supply means for providing a third power supply voltage during the collapse of the magnetic field of said yoke following said retrace portion, said third power supply means providing to said second power supply means a portion of the energy removed from said second power supply means during said selected portion of said raster scan, said power supply means further comprising:

a grounded center tap transformer winding for providing said second power supply voltage from a first terminal of said winding through a first diode;

a first capacitor coupled between the center tap and the output of said first diode;

a first additional winding having one terminal coupled to the output of said first diode;

a second terminal of said first additional winding coupled through a second diode to provide an output;

a second capacitor coupled between the output of said first diode and the output of said second diode to provide said third power supply voltage; and

the polarity of said third power supply voltage being such to cause the magnitude of the sum of said second and said third power supply voltages to be less than the magnitude of said second supply voltage.

4,661,749

APPARATUS FOR ENSURING SYNCHRONISM IN LIFTING JACKS

Walter Finkbeiner, Kasernenstrasse 6, 7290 Freudenstadt, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 651,518
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333292
Int. Cl.[4] H02P *7/68*
U.S. Cl. 318—41 **3 Claims**

1. Apparatus for positively inducing synchronism in at least two movable lifting jacks, each lifting jack having an upwardly and downwardly movable carriage, a column, a lifting device extending along the column, a first control device to control the lifting device in a lift direction, a second control device to control the lifting device on a lower direction, and a motor device acting on the lifting device, at least one of the lifting jacks having a lift switch and a lower switch, comprising the improvement wherein:

a. each lifting device has an electrical switching device for operating the motor device,

b. a control line is looped serially through all of the lifting jacks and serially connects the electrical switching devices,

c. along each column there is an equally-spaced marking unit, the spacing corresponding to the maximum admissible lift difference between the lifting jacks,

d. each marking unit is rigidly connected along the length of each column,

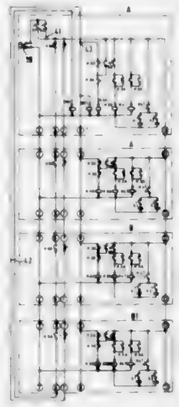
e. each marking unit has an "ON" zone and an "OFF" zone,

f. rigidly fixed to each carriage is a tracer for scanning the marker units,

g. each tracer is in the electrical switching device, and inhibits the motor device when the tracer is in the "OFF" zone, until such time as the tracer of the carriage which is lagging most behind is also in the "OFF" zone,

h. after which the switching devices switch all motor devices on again,

i. the lift switch and the lower switch have a common point from which emerges a first rhythm monitoring line which



is looped through all the lifting jacks and in which, at each lifting jack, there is in each case a closer contact which is closed when in the inoperative position,

j. from the rhythm monitoring line, a line leads to two serially disposed closer contacts which are connected to a delayless 'synchronism satisfied' relay,

k. the first of two closer contacts is operated by the 'synchronism satisfied relay',

l. connected to the common point is an opener contact which leads to a point between the two closer contacts, the opener contact also being operated by the 'synchronism satisfied' relay,

m. at the common point is disposed a serial connection of synchronism relays, the tracer switch and a parallel connection of two opener contacts, one of which is actuated by the 'synchronism' relays while the other is actuated by the 'synchronism satisfied' relay,

n. there is at the common point a serial connection of a time-delayed 'synchronism stop' relay and a parallel connection of two opener contacts, of which one is operated by the 'synchronism satisfied' relay and the other by a 'synchronism rhythm' relay, the 'synchronism stop' relay having a time lag which is substantially less than the time required to overrun one marking unit, and

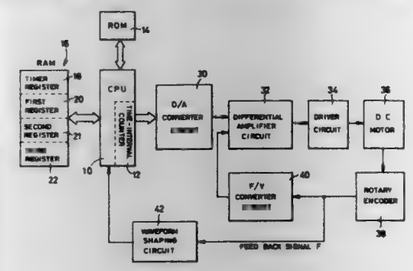
o. there is at the common point a serial connection of and opener contact and a parallel connection of the first with the second control devices.

4,661,750

DEVICE FOR CONTROLLING DC MOTOR

Isao Mori, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Aug. 14, 1985, Ser. No. 765,501
Claims priority, application Japan, Aug. 22, 1984, 59-175407
Int. Cl.[4] H02P *5/00*
U.S. Cl. 318—326 **4 Claims**



1. A device for controlling a DC motor to establish a target speed, comprising:

speed setting means for providing plural command values of speed of the DC motor;

selector means for selecting one of said plural command values of speed;

current regulator means for controlling an amount of electric current to be applied to the DC motor whereby a feedback signal corresponding to a current speed of the DC motor coincides with the command value of speed selected by said selector means; and

control means for controlling said selector means to select a first command value of said plural command values of speed for a first time span of a cyclic control time which is determined as a function of a period of said feedback signal, and to select a second command value of said plural command values of speed for a second time span which is a remainder of said cyclic control time, said target speed falling within a range defined by said first and second command values, said control means determining a ratio of said first time span to said second time span whereby said target speed is established,

said speed setting means, said selector means and said control means being constituted by a computer.

4,661,751

WELL PUMP CONTROL SYSTEM

John W. Werner, Lubbock, Tex., assignor to Claude C. Freeman, Lubbock, Tex.

Continuation-in-part of Ser. No. 398,085, Jul. 14, 1982, Pat. No. 4,476,418. This application Oct. 9, 1984, Ser. No. 658,500
Int. Cl.[4] H02P *5/00;* **F04B** *49/00*
U.S. Cl. 318—332 **3 Claims**

1. A motor control system for a well pump system comprising:

a support member;

a rocking member having first and second ends and a center pivotally mounted on the support member;

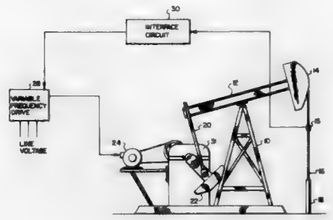
a reciprocating member having first and second opposing ends, the first end operatively connected to the first end of the rocking member;

a down-hole pump connected to the second end of the reciprocating member;

a load cell operatively connected between the first and second opposing ends adjacent to the first end of the reciprocating member for producing dc signals indicative of actual loads being imposed on the reciprocating member during the return and pump stroke portions of an operating cycle;

a counterbalance crank operatively connected to the second end of the rocking member;

a motor operatively connected to the counterbalance crank for cycling the counterbalance crank through a reciprocating member return and pump stroke cycle; and



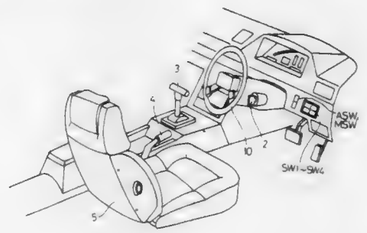
a well pump control means operatively connected to the motor for varying the frequency of the voltage applied to the motor as a function of the difference between the dc signals of the load cell and a preselected compression level indicating dc signal during the rod return portion of the operating cycle, and as a function of the difference of the dc signals of the load cell and a preselected stress level indicating dc signal during the pump stroke portion of the operating cycle wherein the speed of the motor is quickly and smoothly varied for keeping the reciprocating member fully loaded, but not overstressed.

4,661,752

ATTITUDE CONTROLLING SYSTEM FOR A STEERING WHEEL

Masumi Nishikawa, Toyoake; Masanobu Ishikawa, Nagoya, and Hiroshi Nakashima, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Sep. 10, 1985, Ser. No. 774,497
Claims priority, application Japan, Sep. 10, 1984, 59-189457
Int. Cl.[4] H02P *7/00*
U.S. Cl. 318—434 **9 Claims**



1. An attitude controlling system for a steering wheel comprising:

a vehicle-loaded attitude controlling mechanism for adjusting an attitude of said steering wheel;

an electric drive source for driving said vehicle-loaded attitude controlling mechanism;

attitude detection means for detecting an attitude of said steering wheel;

at least one switch means for setting an adjustment of the attitude of said steering wheel; and

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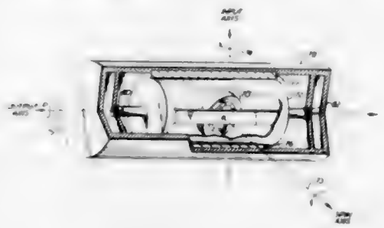
electronic control means including means for energizing said electric drive source to adjust the attitude of said steering wheel, when said switch means outputs a predetermined electric signal, means for supervising a status of an output of said attitude detection means, and means for detecting the presence or absence of overload in accordance with the status of the output of said attitude detection means to stop energization of said electric drive source upon detection of overload.

4,661,753

DIFFERENTIAL TORQUER

Gregory J. McBrien, Portland, and Richard E. Swarts, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 15, 1985, Ser. No. 692,071
Int. Cl.⁴ G05B *17/00*; H04B *3/28*
U.S. Cl. 318—689 **2 Claims**



1. A differential torquer, comprising:

a first winding for carrying a varying first portion of a constant magnitude uni-directional direct electrical current for providing a first magnetic field which tends to produce a first counter-balancing torque;

a second winding for carrying a varying second portion of said constant magnitude uni-directional direct electrical current for providing a second magnetic field which opposes said first magnetic field and tends to produce a second counter-balancing torque which opposes said first counter-balancing torque; and

a housing upon which said first and second windings are mounted for providing a structure for summation of said first and second magnetic fields and for summation of said first and second counter-balancing torques which together counteract an externally applied input torque tending to rotate said housing, the difference in magnitudes of said first and second varying portions for said constant magnitude uni-directional direct electrical current being indicative of the magnitude of the counter-balancing torque needed to counter-balance said externally applied input torque.

4,661,754

CONTROL CIRCUIT FOR A STEPPING MOTOR

Taiji Tajima, Yokohama, and Shigemitsu Higuchi, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1985, Ser. No. 732,696
Claims priority, application Japan, May 14, 1984, 59-94616
Int. Cl.⁴ H02P *8/00*
U.S. Cl. 318—696 **4 Claims**

1. A control circuit for a stepping motor comprising an oscillator, synchronization means, first and second up/down counters, a comparator, memory means and a timer;

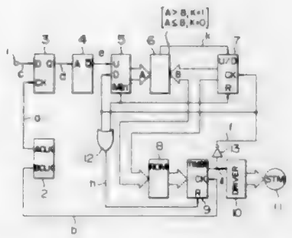
said oscillator generating first and second clock signals having the same frequency and different phases, said first clock signal being supplied to said synchronization means and said second clock signal being supplied to said timer;

said synchronization means being connected to said oscillator and having an input terminal to which control pulse signals equal in number to the number of steps to be stepped by the stepping motor and producing control pulse signals synchronized with the first clock signal;

said first up/down counter being connected to said synchronization means and said timer, counting up the synchronized control pulses supplied from said synchronization means and counting down output signals of said timer;

said comparator being connected to said first up/down counter and said second up/down counter, comparing the count of said first up/down counter with the count of said second up/down counter and generating a first state output signal when the count of said first up/down counter is larger than the count of said second up/down counter, the first state output signal being supplied to said second up/down counter;

said second up/down counter being connected to said timer and said comparator and counting up the output signals



supplied from said timer while said first state output signal is supplied thereto from said comparator and counting down the output signals of said timer when said first state output signal is not supplied thereto;

said memory means being connected to said second up/down counter and receiving the count of said second up/down counter and supplying to said timer a data stored at an address thereof corresponding to said count; and

said timer being connected to said memory means and said oscillator and counting said second clock signals supplied from said oscillator by the number determined by the data supplied from said memory means, and generating a stepping pulse to be supplied to said stepping motor when the count thereof reaches said number, said timer being reset by said stepping pulse.

4,661,755

STEPPING MOTOR CONTROL APPARATUS

Hiroshi Suzuki, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 6, 1985, Ser. No. 730,579
Claims priority, application Japan, May 9, 1984, 59-92446
Int. Cl.⁴ H02P *8/00*
U.S. Cl. 318—696 **9 Claims**

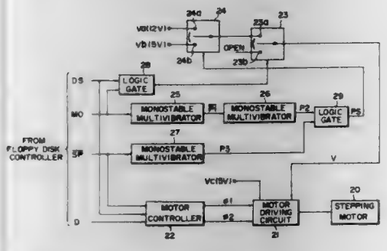
1. A stepping motor control apparatus for a positioning device comprising:

a stepping motor having excitation coils;

stepping motor driving means for applying a high or low excitation voltage to the excitation coils when the positioning device is in a non-standby state and for stopping the application of the excitation voltage when the positioning device is in a standby state; and

control means for controlling said stepping motor driving means such that, after the positioning device has come out of the standby state, said stepping motor driving means

applies a high excitation voltage to the excitation coils of the stepping motor for a predetermined period needed to



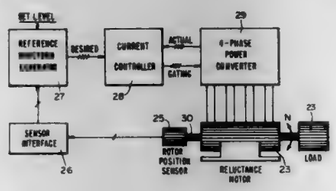
place and stably hold the positioning device at a predetermined position.

4,661,756

SERVOMOTOR CONTROL SYSTEMS

John Murphy, Bishopstown; Francis McMullin, Ennis; Michael Egan, Wilton, and Michael Brosnan, Ennis, all of Ireland, assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Oct. 18, 1985, Ser. No. 789,095
Claims priority, application Ireland, Oct. 19, 1984, 2698/84; Apr. 16, 1985, 958/85
Int. Cl.⁴ H02K *19/24*; H02P *7/40*
U.S. Cl. 318—701 **30 Claims**



1. A control system for a variable reluctance electrical machine having driving member pole windings, comprising power supply means including voltage source means connectible across said driving member pole windings of said machine in a predetermined sequence and for a predetermined increment of displacement of a driven member of the machine and means for regulating the instantaneous magnitude of the current in one of said driving member pole windings when connected to said voltage source means, the control system also comprising driven member position-sensing means for generating at least one signal, the instantaneous value of which is dependent on the position of the driven member, for providing driven member position information at a succession of intervals within each said predetermined increment of driven member displacement during which one of said driving member pole windings is connectible to said voltage source means, said current-regulating means including means for generating relative current magnitudes for each of a plurality of positions of the driven member in accordance with the instantaneous value of said at least one signal of the driven member position-sensing means and means for forcing the instantaneous magnitude of the current in one of said driving member pole windings when connected to said voltage source means to track said relative current magnitudes so that the instantaneous value of said current set by said regulating means at any position of the driven member within said increment of driven member displacement during which the winding is connectible to said voltage source means relative to its value at any other said position is substantially determined by the instantaneous position of the driven member within said increment of driven member displacement, and the system further including means for providing a speed signal, the magnitude of which is indicative of the speed of driven member displacement and the polarity of which is indicative of the direction of driven member displacement, the power supply means including means for combining said speed signal with a speed demand signal to produce a speed error signal of variable magnitude and polarity, said speed error signal defining a direction input of variable polarity which is applied to said relative current magnitude generating means and said generating means being responsive to the polarity of said direction input for selection of current magnitudes appropriate to the direction of driven member displacement as indicated by the polarity of said speed error signal.

20. A drive system comprising a saturable variable reluctance electrical machine, said electrical machine comprising a stationary or driving member having a plurality of salient driving poles, a magnetizing winding for each driving pole, a movable or driven member having a plurality of salient driven poles, the number of driven poles being less than the number of driving poles, and a plurality of airgaps, the airgap between each driving pole and a driven pole positioned in alignment therewith being small relative to the dimensions of the poles transverse to said airgap and at least the driven poles being formed so that in operation of the machine, magnetic saturation occurs substantially in a region of the mechanically variable interface or overlap between the driving and driven poles, and the extents and dispositions of the driven poles being related to those of the driving poles so that in operation of the machine, a force-producing increment of driven member displacement resulting from the mechanical interface or overlap of each driven pole with a driving pole overlaps a force-producing increment of driven member displacement resulting from the overlap of another driven pole with a further driving pole, and the system also comprising power supply means including voltage source means connectible across the driving pole windings, said windings being connectible across said voltage source means in a predetermined sequence during driven member displacement and each driving pole winding being thus connectible for a predetermined increment of driven member displacement, and driven member positioning-sensing means for generating at least one signal, the instantaneous value of which is dependent on the position of the driven member, for providing driven member position information at a succession of intervals within each said predetermined increment of driven member displacement during which a driving pole winding is connectible to said voltage source means, the power supply means also including means for regulating the instantaneous magnitude of the current in a driving member winding when connected to said voltage source means, said current-regulating means including memory means for storing digitized relative current magnitudes for each of a plurality of positions of the driven member and for recall in appropriate sequence in accordance with the instantaneous value of said at least one signal of the driven member position-sensing means and means for forcing the instantaneous magnitude of the current in a driving pole winding when connected to said voltage source means to track said relative current magnitudes so that the instantaneous value of said current set by said regulating means at any position of the driven member within said increment of driven member displacement during which the winding is connectible to said voltage source means relative to its value at any other said position is substantially determined by the instantaneous position of the driven member within said increment of driven member displacement.

4,661,757

CONTROLLER FOR AC ELEVATOR

Sadao Hokari, Katsuta; Takamasa Hori, Tsukai; Katsu Komuro, Mito; Takaaobu Hatakeyama, Nagareyama; Toshiroo Narita, Hitachi; Yasunori Katayama, Mito, and Noboru Arahori, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

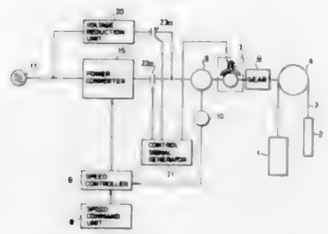
PCT No. PCT/JP84/00090, § 371 Date Nov. 1, 1984, § 102(e) Date Nov. 1, 1984, PCT Pub. No. WO84/03486, PCT Pub. Date Sep. 13, 1984

PCT Filed Mar. 7, 1984, Ser. No. 673,749

Claims priority, application Japan, Mar. 9, 1983, 58-37463

Int. Cl.⁴ H02P *5/40;* **B66B** *1/24*

U.S. Cl. 318—798 **11 Claims**



1. A controller for an AC elevator provided with an elevator car running past a plurality of floors comprising:

an AC source for producing AC power of a fixed voltage and a fixed frequency;

an induction motor for driving said elevator care;

frequency converter means for varying, in accordance with a speed command, the frequency of the AC power supplied from said AC source and applied to said induction motor so that the output frequency of said frequency converter means during rated-speed running of said elevator car is set to be higher than the fixed frequency of said AC source;

voltage reduction means for supplying, for said induction motor, the AC power of the same frequency as the fixed frequency of said AC source, and a reduced voltage lower than said fixed voltage of said AC source; and

switching means for changing the AC power supplied for said induction motor from the output of said frequency converter means to the output of said voltage reduction means, when a low-speed running command is issued.

4,661,758

SOLAR POWER SUPPLY AND BATTERY CHARGING CIRCUIT

Jerry R. Whittaker, Phoenix, Ariz., assignor to Lane S. Garrett, Scottsdale, Ariz.

Filed Feb. 22, 1980, Ser. No. 123,561

Int. Cl.⁴ H02J *7/10;* **G05F** *1/60*

U.S. Cl. 320—21 **7 Claims**



1. A solar power supply and battery charging circuit including in combination:

a photovoltaic solar energy source of direct current;

a secondary battery coupled with said photovoltaic solar energy source for being charged thereby;

control circuit means coupled with said battery to sense the state of charge thereof, said control circuit means comprising a voltage comparator and a voltage reference circuit means, said voltage comparator coupled to said voltage reference circuit means and said secondary battery for producing signals on an output indicative of a predetermined relationship between the voltages supplied thereto;

a short-circuit shunt open/closed switch means coupled across said entire photovoltaic solar energy source to place a full dead short circuit across said photovoltaic energy source when said switch means is closed and a fully open circuit across said photovoltaic energy source when said switch means is open;

pulse width generator means coupled to the output of said voltage comparator and operated in response to the signals on the output of said comparator to produce output pulses of varying width proportional to the state of charge sensed by said control circuit means, said pulse width generator means further coupled with said shunt switch means for continuously periodically fully closing and fully opening said shunt switch means in response to the variable width output pulses produced by said pulse width generator means, causing the proportion of total time said switch means is open to decrease to a minimum amount as said battery becomes fully charged; and

means for preventing said secondary battery from discharging through said shunt switch means.

4,661,759

NICKEL-OXYGEN MONITOR CELL SYSTEM

Martin G. Klein, Brookfield, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Aug. 16, 1984, Ser. No. 641,436

Int. Cl.⁴ H02J *7/04*

U.S. Cl. 320—48 **18 Claims**



1. A system for use in monitoring the state of charge of a nickel-alkaline secondary battery, comprising:

(a) sensor means for providing an output signal indicative of the magnitude and sense of terminal current of said monitored battery;

(b) a sealed metal-gas monitor cell, said monitor cell including: a positive electrode comprising a nickel electrode; and a negative electrode comprising a first oxygen counter-electrode;

(c) and circuit means responsive to said sensor means output signal for conforming the sense of terminal current of said monitor cell to the sense of suchmonitored battery terminal current and for proportionally conforming the magnitude of such monitor cell terminal current to the magnitude of said monitored battery terminal current during both charging and loading of said monitored battery; whereby the gas pressure in said monitor cell is nade indicative of the state of charge of said monitored battery.

4,661,760

CONTROL SYSTEM FOR ENGINE-DRIVEN GENERATOR

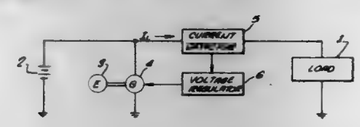
Hiroshi Goto; Akira Kikuchi; Yoshitaka Hibino, all of Saitama; Atsushi Totsuno, Tokyo; Norimitsu Kurikara, Saitama; Takefumi Hosaka, Saitama, and Takeshi Kijima, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1984, Ser. No. 616,262

Claims priority, application Japan, Jun. 1, 1983, 58-97558

Int. Cl.⁴ H02J *7/14*

U.S. Cl. 322—27 **17 Claims**



1. In a power supply system for a vehicle in which a battery and an engine-driven generator are electrically connected in parallel with an electric load, a control system for the engine-driven generator, said control system including first means connected in series with the electric load for directly detecting the total load current fed to the electric load, and second means for switching the generated voltage level of the generator by performing a field regulation for the generator in accordance with the detected output of said first means.

4,661,761

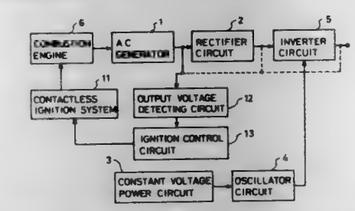
INTERNAL COMBUSTION ENGINE ELECTRICAL SYSTEM

Mitsuo Katsumata, Suzono, Japan, assignor to Kokusan Denki Co., Ltd., Numazu

Filed Feb. 11, 1985, Ser. No. 700,262

Int. Cl.⁴ H02J *7/14*

U.S. Cl. 322—28 **5 Claims**



1. An internal combustion engine electrical system comprising:

an A.C. generator driven by an internal combustion engine;

a rectifier circuit for rectifying A.C. output generated by said A.C. generator;

a constant voltage power circuit which outputs a substantially constant D.C. voltage;

an oscillator circuit driven by means of the output voltage of said constant voltage power circiut;

an inverter circuit adapted to invert the D.C. output of said rectifier circuit into an A.C. output of a predetermined frequency using the output signal of said oscillator circuit as a commutation command signal;

a contactless ignition system for controlling the ignition operation of said internal combustion engine;

an output voltage detecting circuit connected to be responsive to the output of said A.C. generator to generate a detecting signal corresponding to the output voltage of said A.C. generator; and

an ignition control circuit which is adapted to control said contactless ignition system so as to decrease the rotational speed of said internal combustion engine when said detecting signal of said output voltage detecting circuit reaches a predetermined level.

4,661,762

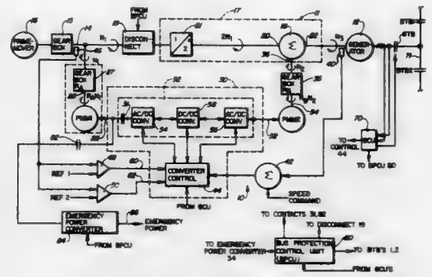
EMERGENCY POWER SYSTEM

Robert C. Baker, Loves Park, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jun. 18, 1986, Ser. No. 875,459

Int. Cl.⁴ H02H *7/06;* **H02P** *9/00, 15/00*

U.S. Cl. 322—40 **7 Claims**



1. A generating system driven by a source of motive power, comprising:

a first permanent magnet machine having a motive power shaft coupled to an output shaft of the motive power source and further having electrical power windings;

a disconnect unit having an input shaft coupled to the output shaft of the motive power source and an output shaft;

a differential having a first input shaft coupled to the output shaft of the disconnect unit, a second input shaft and an output shaft;

a second permanent magnet machine having a motive power shaft coupled to the second input shaft of the differential and further having electrical power windings;

a generator coupled to the output shaft of the differential;

a power converter interconnecting the electrical power windings of the first and second permanent magnet machines; and

means for operating the power converter and the disconnect unit in a normal mode of operation wherein the differential output shaft rotates at a constant speed and in a failure mode of operation whereby the disconnect unit is actuated to decouple the motive power source from the differential and to operate the first permanent magnet machine to provide emergency power.

4,661,763

PHASE SHIFTER

Niyazi Ari, Nussbaumen, and Gerhard Linhofer, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 6, 1985, Ser. No. 698,845

Claims priority, application Switzerland, Feb. 10, 1984, 647/84

Int. Cl.⁴ G05F *1/70;* **H02J** *3/18*

U.S. Cl. 323—215 **11 Claims**

1. A phase shifter, particularly for a multi-phase power supply system, having

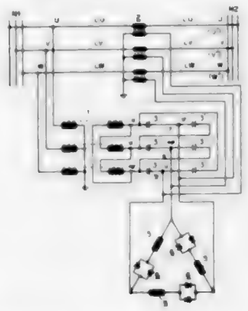
(a) at least one first transformer, which at its input is fed by a system input voltage for each phase of the alternating current and which has for each phase at least one output winding at which, in operation, an intermediate-circuit voltage can be tapped off,

(b) at least one auxiliary transformer which, for each phase of the alternating voltage, has at least one primary and at least one secondary winding, the primary windings being

fed as a function of said intermediate-circuit voltages and the secondary windings being series-connected with phase conductors which are to be influenced with respect to phase, wherein

(c) the output windings for generating the intermediate-circuit voltages of the first transformers are operatively connected by at least one controllable resonant circuit to the primary windings of the auxiliary transformer,

(d) said controllable resonant circuit for each alternating current phase is provided with at least one first capacitor which is series-connected to at least one second capacitor,



the output of each first capacitor being operatively connected to the input of each second capacitor and being provided with a tap at which a tap voltage can be tapped off for feeding the primary winding of the auxiliary transformer,

(e) the input of the first capacitor is operatively connected to an output winding of the first transformer,

(f) the output of each second capacitor is operatively connected to an input of the first capacitor of a cyclically adjacent alternating-current phase, and

(g) each tap is operatively connected via at least one controllable inductive resistance to each other tap.

4,661,764

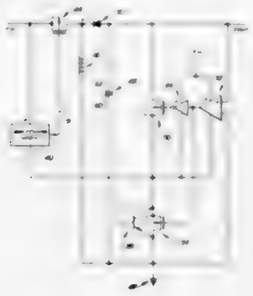
EFFICIENCY SWITCHING VOLTAGE CONVERTER SYSTEM

Graham Y. Mostyn, Saratoga, and Mohammad Yunus, Fremont, both of Calif., assignors to Intersil, Inc., Cupertino, Calif.

Division of Ser. No. 615,353, May 30, 1984. This application Oct. 6, 1986, Ser. No. 916,070

Int. Cl.⁴ G05F *1/46*

U.S. Cl. 323—222 **4 Claims**



1. A switching voltage inverter system comprising:

voltage input means for receiving an input voltage;

semiconductor switching means coupled to said voltage input means for selectively allowing current flow therethrough;

voltage output means coupled to said switching means for providing an output voltage; and

means coupled to system ground and said voltage output means for selectively providing the voltage from said system ground and said voltage output means to said switching means.

4,661,765

ALTERNATING CURRENT LOAD POWER CONTROLLER

Toshiro Bando, and Kiyoto Kozaiku, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 17, 1985, Ser. No. 735,433

Claims priority, application Japan, Jun. 18, 1984, 59-124929

Int. Cl.⁴ G05F *1/10*

U.S. Cl. 323—241 **9 Claims**



1. An alternating current load power controller comprising:

switching means for controlling application of an alternating current voltage applied from an alternating current power source to a load, said power source having a predetermined waveform, said waveform having first and second half cycles;

first detection means for generating and electric signal corresponding to said alternating current voltage applied to said load;

analog-to-digital conversion means for converting the signal from said first detection means from analog to digital data;

second detection means for generating a synchronizing signal in synchronism with the waveform of said alternating current power source; and

electronic control means for alternately

(1) sampling said digital data of the signal from said analog-to-digital conversion means during a first half cycle of the waveform, and in response to the sampling, calculating a square of said sampled digital form of the signal,

(2) calculating the square-root of data resulting from calculating the square of said sampled digital data during a second half cycle of said waveform to derive a square root value,

said electronic control means comparing the derived square root value with a preset control value to derive a control signal, said control signal being used to set a switching phase of said switching means, said switching means being controlled in timed relationship with said switching phase and the synchronizing signal from said second detection means.

4,661,766

DUAL CURRENT SENSING DRIVER CIRCUIT

John P. Hoffman, Peoria, and Weldon L. Phelps, Dunlap, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 23, 1985, Ser. No. 812,677

Int. Cl.⁴ G05F *1/56*

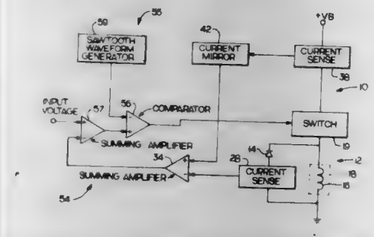
U.S. Cl. 323—287 **7 Claims**

1. A driver circuit (**10**) for controllably connecting an inductive load (**12**) to a source of electical power, said inductive load (**12**) having a reverse biased flyback diode (**14**) connected in parallel with an inductive winding (**16**) of a solenoid (**18**) comprising:

switching means (**19**) for respectively connecting and disconnecting, at a constant preselected frequency, said inductive load (**12**) to and from said source in response to receiving a first and second control signal;

first means (**28**) for sensing the current flowing through only said flyback diode (**14**) and delivering a signal having a magnitude responsive to the magnitude of said flyback current;

second means (**38**) connected between the power source and the switching means (**19**), for sensing the current flowing through only said switching means (**19**) and delivering a



signal having a magnitude proportional to the magnitude of the switching means current; and

means (**54**) for receiving said flyback and switching current signals and delivering said first and second control signals to said switching means (**19**) at a preselected frequency and variable duty cycle, said duty cycle being responsive to the magnitude of said flyback and switching current signals.

4,661,767

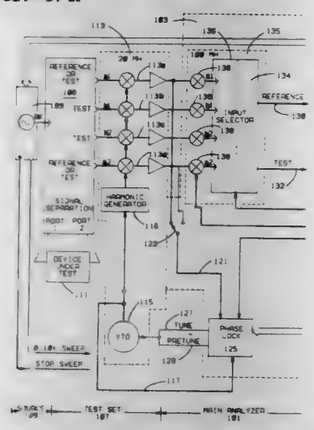
VECTOR NETWORK ANALYZER WITH INTEGRAL PROCESSOR

David D. Sharrit; Michael J. Neering, both of Santa Rosa; S. Bruce Donecker, Sebastopol; Mark D. Roos, San Carlos; Wayne C. Cannon, Forestville, and John T. Barr, IV, Santa Rosa, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 9, 1984, Ser. No. 569,081

Int. Cl.⁴ G01R *23/16*; G06F *15/34*

U.S. Cl. 324—57 R **4 Claims**



1. An RF network analyzer system for analyzing responses of a device under test (DUT) in real time to a stimulus of RF output signals from an RF signal source having a sweep system for automatically varying the RF signal source output frequency and for returning the RF signal source output frequency to an intitial start frequency, said RF signal source providing said RF output signals with at least one period of idle time, comprising:

IF converter means for being coupled to said RF signal source and said DUT, for simultaneously providing a plurality of parallel intermediate frequency analog output signals corresponding to a reference signal and at least one of a reflected signal and a transmitted signal from said DUT in response to said stimulus of RF output signals;

signal means coupled to said IF converter means for providing digital data acquisition points which are representative of both the real and imaginary parts of said intermediate frequency analog output signals, said coverter means providing said points at a speed high enough to achieve said analysis of DUT responses in real time;

distributed high speed processing means integrated into said RF network analyzer comprising;

central procesing means for calculating and storing S-parameters corresponding to characteristics of said DUT, substantially in real time based on said digital data acquisition points;

vector error correction means for providing corrections to data in substantially real time to remove systematic errors in said stored S-parameters;

Input/Output control means for processing and formatting commands to and from said central processing means;

and display means for calculating and storing display information based on said corrected data; and

said central processing means operating in a multitasking systems environment for controlling at least one of said RF signal source, said IF converter means, said signal means, and said display means during said period of idle time.

4,661,768

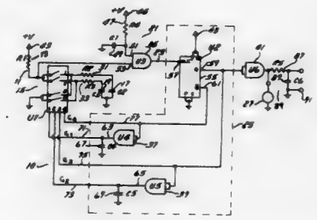
CAPACITANCE TRANSDUCING METHOD AND APPARATUS

Steven J. Carusillo, Elkhart, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 532,017, Sep. 14, 1983, Pat. No. 4,558,274. This application Sep. 11, 1985, Ser. No. 774,796

Int. Cl.⁴ G01R *11/52, 27/26*

U.S. Cl. 324—60 C **4 Claims**



1. A signal generating circuit useful in determining the value of a capacitor and including:

a charging source including a resistive element;

a plurality of switches, each switch being positionable between a first, open position and a second, closed position in response to logic signals, said switches thereby being controllable for sequentially connecting a first reference capacitor of known value and a second capacitor to said resistive element for charging said capacitors to a potential;

an oscillating comparator network for establishing a trigger reference voltage and generating a clocking pulse when the sequentially detected charge potential of said capacitors is equal to said trigger reference voltage;

a logic network connected to said comparator network for generating said logic signals in response to said clocking pulse, said logic network including a network for resetting said signal generating circuit, and;

means for determining a first time required to charge said first capacitor from an initially-depleted state to said trigger reference voltage and for determining a second time required to charge said second capacitor from an initially-depleted state to said trigger reference voltage.

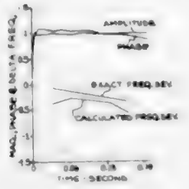
VOL 1077 ISS 4 AP 28 1987 UMI

4,661,769

MEASUREMENT OF MAGNITUDE AND PHASE ANGLE OF VOLTAGE AND CURRENT PHASORS AND FREQUENCY DEVIATION IN POWER SYSTEMS

Adly A. Girgis, Burlington, N.C., assignor to North Carolina State University, Raleigh, N.C.

Filed Jan. 23, 1985, Ser. No. 693,765
Int. Cl.[4] G01R *23/02*
U.S. Cl. 324—78 Z 10 Claims



1. A method of determining frequency deviation in the sinusoid wavefrom output of electrical power generation apparatus characterized by the fact that the method is accurate in the presence of noise and that it minimizes error introudced by such noise comprisng the steps of:

successively sampling the voltage output of the sinusoid waveform of an electrical power generation apparatus;

recursively electronically calculating in response to said successive sampling a voltage waveform sinusoid estimate by optimal estimation using state variables, said optimal estimation including electronically calculating the magnitude and phase angle of said sample from said state variables; and

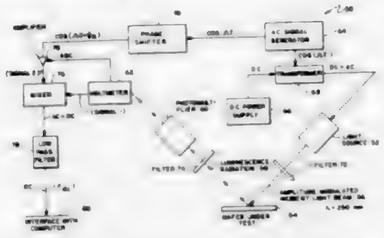
electronically calculating the frequency deviation of said voltage waveform by linearly relating the frequency deviation to the average rate of change of said phase angle.

4,661,770

METHOD AND APPARATUS FOR MEASURING MINORITY CARRIER LIFETIME IN A DIRECT BAND-GAP SEMICONDUCTOR

Oldwig von Roos, So. Pasadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 18, 1984, Ser. No. 683,111
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—158 D 14 Claims



1. A method of measuring minority carrier lifetime in a direct band-gap semiconductor having a preselected energy gap, comprising:

producing luminescence radiation within a sample of the semiconductor by irradiating the sample with incident photon radiation having a characteristic energy at least as great as said energy gap;

modulating the intensity of the incident radiation according to a simple sinusoidal wave form having a frequency of at least 1.6 megahertz to induce modulation of the luminescence radiation at a phase shifted from the incident radiation;

detecting the luminescence radiation; and

isolating information as to the amount by which the phase of the luminescence radiation is shifted relative to the incident radiation, as a measure of minority carrier lifetime.

4,661,771

METHOD OF SCREENING RESIN-SEALED SEMICONDUCTOR DEVICES

Kazuo Nakamura, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 23, 1983, Ser. No. 535,964
Claims priority, application Japan, Sep. 28, 1982, 57-168933
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—158 D 4 Claims



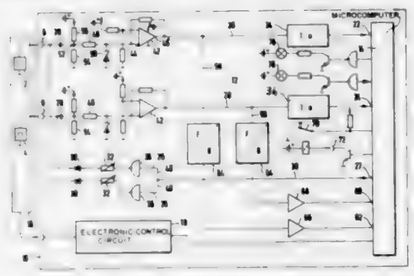
1. A method of screening a resin-sealed semiconductor device, said semiconductor device comprising a semiconductor chip, a resin body for sealing said semiconductor chip, a die stage wherein said semiconductor chip is mounted on said die stage, and first and second bars connected to said die stage extending from said die stage to opposite side surfaces of the body, said first and second bars having first and second exposed ends, said method comprising the steps of applying an electric voltage between said first and second ends of said first and second bars wherein said die stage is heated and thereby said semiconductor chip is heated, and subjecting the device to a screening test by inspecting the rate of temperature rise of said semiconductor chip.

4,661,772

MEASURING AND TESTING CIRCUIT

Gerhard Kirstein, Augsburg, Fed. Rep. of Germany, assignor to Zahnraderfabrik Renk AG, Fed. Rep. of Germany

Filed Jan. 14, 1985, Ser. No. 691,124
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1984, 3405289
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—158 R 4 Claims



1. A measuring and testing circuit for an electric component of an electrically controlled device, such as a gearing, said electrical component producing pulse signals indicative of operational data of the device having a test contact, said circuit comprising:

a microcomputer including a contact and a rate signal output which is supplied only during a testing phase of the circuit;

a measuring branch which connects said contact of said microcomputer to the test contact for measurement of the operational data of the electric component;

a capacitor through which said measuring branch is connected to the test contact, said capacitor transmitting pulse signals indicative of the electric compont;

a Schmitt trigger circuit in said measuring branch connected in series with said capacitor and located on a side toward said contact of said microcomputer;

a testing branch which connects said rate signal output with the test contact and which is connected to said microcomputer through said capacitor and said measuring branch, said testing branch including a diode connected in a transmission direction to the test contact; and

a monitoring branch for determining a dynyamic or static state of the controlled device, said monitoring branch containing a frequency/voltage converter for digitizing pulse signals, an input to said measuring branch located between said capacitor which transmits pulse signals and an input of said measuring branch to said microcomputer, and an output connected to an additional contact of said microcomputer such that depending upon the digitized signals from said monitoring branch said microcomputer determines whether the controlled device is in the dynamic state and activates said testing branch.

4,661,773

METHOD OF AND APPARATUS FOR MAGNETICALLY DETECTING THE THREE-DIMENSIONAL ROTATIONAL POSITION AND MOVEMENT OF AN OBJECT

Kazuaki Kawakita, and Makio Higuchi, both of Fukuoka, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 288,115
Claims priority, application Japan, Mar. 19, 1981, 56-38726
Int. Cl.[4] G01B *7/14;* G01R *33/12, 33/06*
U.S. Cl. 324—208 3 Claims



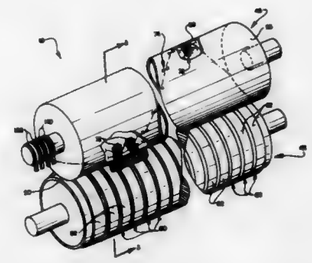
2. Apparatus for detecting the three-dimensional rotational position and movement of a magnetized ball that is one of a plurality of balls of a ball bearing having inner and outer races with a retainer holding said balls between said races, said magnetized ball having a magnetic axis of known predetermined direction relative thereto, said apparatus comprising means including magnetosensitive semiconductor elements supported on said retainer along two substantially orthogonal axes passing through said magnetized ball for detecting the direction of said magnetic axis with respect to said two axes, means supporting said ball bearing for rotation of said inner race relative to said outer race about an axis of rotation, whereby said balls may rotate, and means including a plurality of magnetosensitive semiconductor elements disposed at positions spaced circumferentially about said axis of rotation and magnetically coupled to said magnetized ball for detecting the direction of said magnetic axis with respect to an axis substantially orthogonal to the previously mentioned orthogonal axes.

4,661,774

METHOD AND APPARATUS FOR MONITORING FILM THICKNESS BETWEEN ROTATABLE ROLLS

Robert M. Montgomery, Indialantic, Fla., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Dec. 12, 1983, Ser. No. 560,324
Int. Cl.[4] G01B *7/10;* G01R *33/12*
U.S. Cl. 324—231 16 Claims



1. An apparatus for monitoring the thickness of a film of liquid, said apparatus comprising a first roll which is rotatable about a first axis, said first roll including material having a relatively high magnetic permeability, a second roll which is rotatable about a second axis, said second roll cooperating with said first roll to form a nip through which the film of liquid passes, means for rotating said first roll about the first axis and said second roll about the second axis, a plurality of magnets mounted in said second roll at locations which are spaced apart along the second axis so that rotation of said second roll moves said magnets toward and away from the nip along circular paths which are spaced apart along the width of the film, said magnets being spaced apart about the circumference of said second roll whereby rotation of said second roll moves each of said magnets in turn to a location on its circular path of movement in which it is closest to the nip, and a plurality of sensor means, each of said magnets having an associated sensor means for sensing the flux density of its magnetic field provided upon movement of the associated magnet to the location on its path of movement which is closest to the nip and which flux density is representative of the thickness of the film of liquid, and to generate a signal representative of film thickness.

4,661,775

CHEMICAL SHIFT IMAGING WITH FIELD INHOMOGENEITY CORRECTION

Donald W. Kormos, Parma; Hong-Ning Yeung, Richmond Heights, and Henry S. Dewhurst, Cleveland Heights, all of Ohio, assignors to Technicare Corporation, Solon, Ohio

Filed Jul. 15, 1985, Ser. No. 755,120
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—307 24 Claims

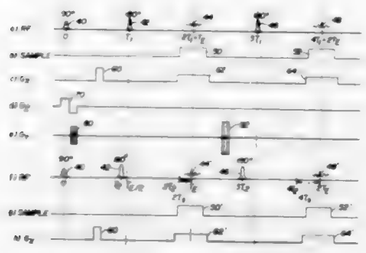
1. A method for identifying chemical shift information in the presence of field inhomogeneities in an NMR information signal comprising the steps of:

(a) obtaining a first data set of NMR signal information which contains substantially no chemical shift and magnetic field inhomogeneity information;

(b) obtaining a second data set of NMR signal information which contains chemical shift and field inhomogeneity information;

(c) obtaining a third data set of NMR signal information which contains field inhomogeneity information;

(d) combining the first and third data sets to identify the field inhomogeneity information; and



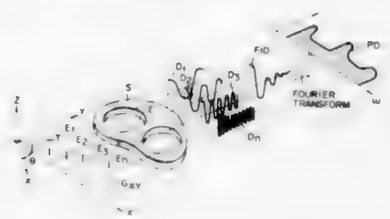
(e) using the identified field inhomogeneity information in combination with the second data set to identify the chemical shift information.

4,661,776

NUCLEAR MAGNETIC RESONANCE DIAGNOSTIC APPARATUS

Hidetomo Takase, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 536,509, Sep. 28, 1983, abandoned. This application Mar. 24, 1986, Ser. No. 843,933
Claims priority, application Japan, Sep. 29, 1982, 57-170379
Int. Cl.⁴ G01R *33/20*
U.S. Cl. 324—309 **4 Claims**



1. An apparatus for producing a two-dimensional projection image of an object by nuclear magnetic resonance comprising:

means for applying a static magnetic field to said object along a longitudinal axis thereof;

means for applying a first magnetic field gradient to said object for a first predetermined time period along said longitudinal axis to cause magnetizations of individual nuclear spins polarized by said static magnetic field in said object to rotate in respective different phases responsive to the field strength of said first gradient, rotation of said nuclear spins varying as a function of relative positions of the nuclei in a predetermined region of said object, said predetermined region extending to portions of said object within affective limits of said first magnetic field gradient;

means for applying a non-selective radio frequency pulse to said object, in the absence of said first magnetic field gradient, for nutating nuclear spins in said object to a transverse orientation, and for exciting nuclei in the entire predetermined region;

means for appying during a second predetermined time period subsequent to said first time period, a second magnetic field gradient to vary the magnetic field within said predetermined region along at least one direction transverse to said longitudinal axis;

means for receiving from said entire predetermined region nuclear magnetic resonance signals indicative of the relative density and position of nuclei disposed within said predetermined region, and;

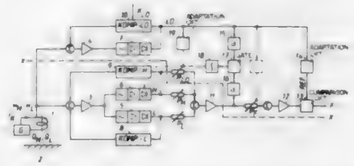
means for constructing from said signals obtained from said entire predetermined region a two-dimensional projection image of said relative density and position.

4,661,777

PLURAL FREQUENCY EDDY CURRENT METHOD AND APPARATUS WITH LIFT-OFF COMPENSATION FOR DETECTING FAULTS IN ELECTRICALLY CONDUCTIVE OBJECTS

Bengt H. Törnblom, Västeras, Sweden, assignor to Törnbloms Kvalitetskontroll AB, Västeras, Sweden

Filed Feb. 8, 1985, Ser. No. 699,594
Claims priority, application Sweden, Feb. 10, 1984, 8400698
Int. Cl.⁴ G01N *27/90*; G01R *33/12*
U.S. Cl. 324—225 **11 Claims**



1. A device for testing an electrically conductive object for the presence of a localized change therein, comprising:

at least one transducer adapted to be moved over the surface of said object at a given lift-off distance therefrom;

means for feeding said at least one transducer with electrical signals having at least two different frequencies to induce electrical currents in the object;

said transducer sensing said electrical currents and providing a transducer output signal representative thereof and having components representing said at least two different frequencies; and

means for processing said transducer output signal to provide an output signal unaffected by a change in said lift-off distance and representative of a localized change in the object in the vicinity of said at least one transducer, and including first circuit means for processing the components of said transducer output signal to generate said output signal, said first circuit means having an adjustable element for adjusting said output signal and further including second circuit means for processing a selected one of said components of said transducer output signal and connected to said first circuit means for adjusting said adjustable element to compensate said output signal for changes in said lift-off distance.

4,661,778

IGNITION DIAGNOSTIC MONITOR

Robert L. Anderson, Saline, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 4, 1984, Ser. No. 647,304
Int. Cl.⁴ H04B *1/04*; F02P *17/00*
U.S. Cl. 324—380 **1 Claim**

1. An ignition diagnostic monitor for detecting a ignition malfunction in an internal combustion engine having an engine control module coupled to an ignition module, said ignition dignostic monitor including:

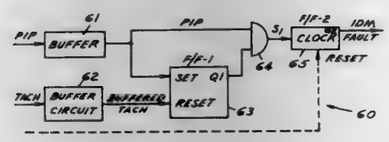
PIP means for monitoring crankshaft position of an engine and providing an input to the engine control module;

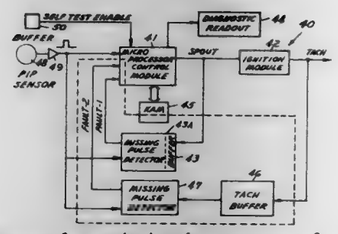
SPOUT means for monitoring the occurrence of a signal from the engine control module for initiating an ignition spark;

a SPOUT comparison means for comparing the output of said PIP means and SPOUT means to detect faulty operation in the engine control module;

said SPOUT comparison means including a first flip-flop circuit having a reset input coupled to the output of said SPOUT means, a set input having a set input coupled to said PIP means an AND gate having a first input coupled to said PIP means and a second input coupled to the output of said first flip-flop circuit, a second flip-flop circuit having an input coupled to the output of said AND gate ad an output indicating a missed ignition pulse;

said second flip-flop circuit having a reset input coupled to a reset signal for resetting the logic level of the output of said second flip-flop circuit;





TACH means for monitoring the occurrence of a signal from the ignition module for initiating the occurrence of an igition spark;

a TACH comparison means for comparing the output of said TACH means and said PIP means to detect faulty operation in the combination of the ignition module and the engine control module; and

a keep-alive memory means coupled to said SPOUT comparison means for storing a detected faulty operation of the engine control module and to said TACH comparison means for storing a detecting faulty operation of the combination of the ignition module and the engine control module.

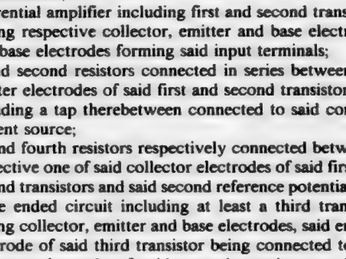
4,661,779

OPERATIONAL AMPLIFIER

Toshiyuki Okamoto, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Dec. 11, 1985, Ser. No. 807,905
Claims priority, application Japan, Dec. 11, 1984, 59-261283
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—253 **22 Claims**

1. An operational amplifier which comprises an initial amplifier stage having a pair of inputs, a second amplifier stage connected to an output of the initial stage, a phase compensating capacitive element connected between an output terminal of the second stage and a virtual ground point, and a constant current source connected to the virtual ground point and the output of the initial stage, wherein the improvement comprises a resistive element and a second capacitive element series-connected between the output of the initial stage and the output of the second stage.

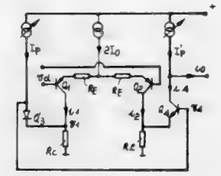


4,661,780

DIFFERENTIAL STAGE PARTICULARLY FOR ACTIVE FILTERS

Marco Siligoni, Vittuone, and Bruno Murari, Monza, both of Italy, assignors to IS-ATES Componenti Elettronici S.p.A., Catania, Italy

Filed May 21, 1984, Ser. No. 612,486
Claims priority, application Italy, Jun. 3, 1983, 21457 A/83
Int. Cl.⁴ H03F *3/45*
U.S. Cl. 330—254 **3 Claims**



1. A differential stage particularly for active filters, comprising:

first and second reference potential lines;

input and output terminals;

a constant current source connected to said first reference potential line;

a differential amplifier including first and second transistors having respective collector, emitter and base electrodes, said base electrodes forming said input terminals;

first and second resistors connected in series between said emitter electrodes of said first and second transistors and including a tap therebetween connected to said constant current source;

third and fourth resistors respectively connected between a respective one of said collector electrodes of said first and second transistors and said second reference potential line;

a single ended circuit including at least a third transistor having collector, emitter and base electrodes, said emitter electrode of said third transistor being connected to said collector electrode of said second transistor, and said collector electrode of said third transistor being connected to said output terminal; a variable current source; having own first and second terminals, said own first terminal of said variable current source being connected to said first reference potential line and said own second terminal of said variable current source being connected to said base electrode of said third transistor; a semiconductor element having at least first and second terminals, said first terminal of said semiconductor element being connected to said variable current source and said base

VOL 1077 ISS 4 AP 28 1987 UMI

electrode of said third transistor and said second terminal of said semiconductor element being connected to said collector electrode of said first transistor; and a further current source connected between said first reference potential line and said collector electrode of said third transistor, thereby by varying the current supplied by said variable current source varying at least the dynamic resistence of said third transistor and the differential stage gain.

4,661,781

AMPLIFIER WITH FLOATING INVERTING AND NON-INVERTING INPUTS AND STABILIZED DIRECT OUTPUT VOLTAGE LEVEL

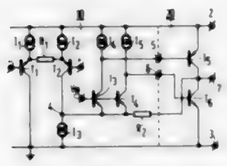
Adrianus J. M. Van Tuijl, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1985, Ser. No. 703,146

Claims priority, application Netherlands, Feb. 29, 1984, 8400633

Int. Cl.⁴ H03F *3/45*

U.S. Cl. 330—255 **8 Claims**



1. An amplifier arrangement having an inverting and a non-inverting input and an output, which arrangement comprises, connecting between a first and a second terminal of a direct current power supply:

a preamplifier comprising a first transistor (T_1) and a second transistor (T_2) which are arranged as a differential pair, the emitter of the first transistor being coupled to the first power-supply terminal by means of a first current source (I_1), the base of the first transistor being coupled to the inverting input and the base of the second transistor to the non-inverting input of the amplifier arrangement, which preamplifier has a first and a second output,

an output amplifier comprising a third transistor (T_5) and a fourth transistor (T_6) of opposite conductivity types, whose collector-emitter paths are arranged in series between the two power-supply terminals, a similar electrode of each of the third and fourth transistors being coupled to the output of the amplifier arrangement, the base of the third transistor being coupled to the first output and the base of the fourth transistor to the second output of the preamplifier,

the collector of the first transistor (T_1) being connected to the second power-supply terminal,

the collector of the second transistor (T_2) being coupled to the second power-supply terminal by means of a second current source (I_3) and to the output of the amplifier arrangement by means of a first resistor (R_2),

the emitters of a fifth transistor (T_3) and a sixth transistor (T_4), whose base-emitter paths are connected in parallel with each other, being connected to the second current source (I_3), the bases of said fifth and sixth transistors being at a reference voltage (V_R), and the collectors thereof being connected to the first power-supply terminal by means of third and fourth current sources (I_4, I_5) respectively and being also respectively coupled to the first and second outputs of the preamplifier stage respectively; the current carried by the second current source (I_3) being substantially equal to the sum of the quiescent current flowing in the second transistor (T_2), the currents carried by the third and the fourth current sources (I_4, I_5) and the current flowing through the first resistor (R_2); the resistance of said first resistor being such that the direct voltage at the output of the amplifier arrangement is substantially equal to half the direct voltage supplied between the power-supply terminals.

4,661,782

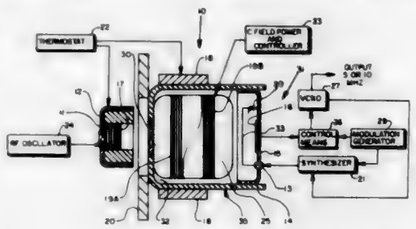
INTEGRATED MICROWAVE CAVITY RESONATOR AND MAGNETIC SHIELD FOR AN ATOMIC FREQUENCY STANDARD

Werner Weidemann, Mission Viejo, Calif., assignor to Ball Corporation, Muncie, Ind.

Filed Nov. 25, 1985, Ser. No. 801,269

Int. Cl.⁴ H03L *7/26*; H01P *7/06*; H01S *1/06*

U.S. Cl. 331—3 **42 Claims**



1. A microwave cavity resonator for an atomic frequency standard comprising a cavity resonator formed of highly magnetically permeable material, means for injecting microwave radiation within said resonator capable of producing atomic transitions of atoms, and means for applying a magnetic field in the presence of said cavity resonator.

4,661,783

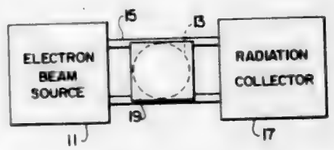
FREE ELECTRON AND CYCLOTRON RESONANCE DISTRIBUTED FEEDBACK LASERS AND MASERS

Avraham Gover, Tel Aviv, Israel, and Michael E. Read, Vienna, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1981, Ser. No. 244,947

Int. Cl.⁴ H01J *25/36*; H01S *3/00*; H03B *9/08*

U.S. Cl. 331—82 **11 Claims**



1. In an electromagnetic wave gyrotron oscillator of the type which produces radiation by direct conversion of the kinetic energy of an electron beam to radiative energy, the oscillator including an active region where an interaction between the electron beam and an electromagnetic wave takes place and a transmission line for guiding the electromagnetic wave at the active region,

means for perturbing the transmission characteristics of the transmission line along the zero electric field lines of a wave mode at which the oscillator is desired to operate, to provide a high Q factor to the desired wave mode and a low Q factor to other wave modes which may compete with the desired wave mode.

4,661,784

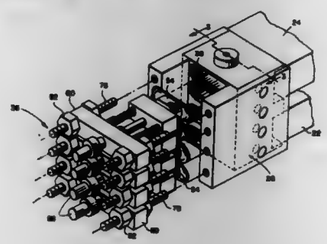
KLYSTRON HAVING FIXED AND VARIABLE TUNING MECHANISMS

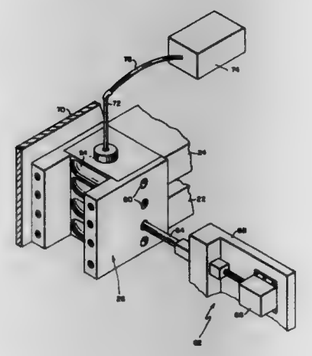
Arthur W. Kelley, Sudbury, and Charles J. Larsen, South Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 52,390, Jun. 27, 1979, abandoned. This application Apr. 10, 1981, Ser. No. 252,965

Int. Cl.⁴ H01J *25/10*

U.S. Cl. 331—83 **5 Claims**





1. A klystron comprising:

an electron beam;

a cavity bounded by a set of walls, two opposite walls of said set of walls each having an aperture aligned with each other to allow said beam to enter and exit said cavity;

one of said walls parallel to said beam comprising a reversibly deformable diaphragm, and a different one of said walls parallel to said beam having a partially penetrating hole to reduce the thickness of said different wall at the bottom of said hole for the admission of a plunger into said hole to permanently deform the wall at the bottom of said hole to reduce the volume of said cavity and hence the frequency of said klystron is altered to provide fixed tuning, the deformable diaphragm reversibly deforming the wall of the cavity of which it forms a part to reversibly tune the klystron about its fixed tuned frequency.

4,661,785

BALANCED FEEDBACK OSCILLATORS

Albert Benjaminson, Arlington, Va., assignor to S. T. Research Corporation, Newington, Va.

Filed May 22, 1985, Ser. No. 736,883

Int. Cl.⁴ H03B *5/36*

U.S. Cl. 331—109 **18 Claims**

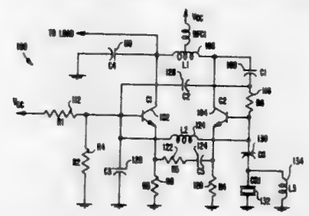
1. An oscillator circuit comprising:

a differential amplifier having an inverting input and a non-inverting input and having a positive feedback path connected to one of said inputs, a negative feedback path connected to the other of said inputs, and an output path;

a series resonant circuit connected in said negative feedback path; and

at least one impedance element in said positive feedback path for establishing a feedback ratio sufficient to cause oscillation to occur at the resonant frequency of said series resonant circuit;

wherein the negative feedback path is separate from said output path such that the output power of said amplifier can be controlled independently of current in said negative feedback path.



4,661,786

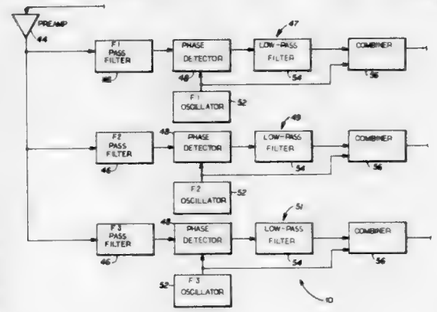
METHOD AND APPARATUS FOR PRODUCING AN OPTICAL PHASED ARRAY

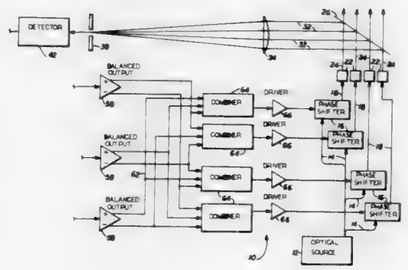
Gerald M. Bender, University City, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Apr. 16, 1984, Ser. No. 600,992

Int. Cl.⁴ H01S *3/10*; H04B *9/00*

U.S. Cl. 332—7.51 **34 Claims**





1. A system to produce an amplified single mode coherent laser beam from a single source comprising:

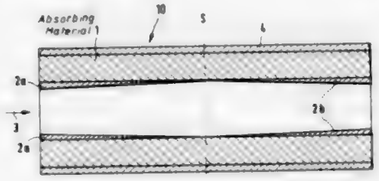
a single optical source,
means to produce a plurality of optical signals from said optical source,
means to individually amplify a plurality (n) of said optical signals,
means to detect the combined outputs of said optical signals, and produce a first electrical signal corresponding thereto,
means to select (n−1) frequency components of said first electrical signal,
means to independently generate a second electrical signal at the same frequency as each of said selected frequency components,
means to detect the phase difference between each selected frequency component and its associated independently generated signal and produce a correction signal corresponding thereto,
means to combine each of said correction signals with its associated independently generated signal to produce a number (n−1) of phase correction functions,
means to combine said phase correction functions to produce a plurality (n) of phase shift signals, the transformation matrix defined by said correction function combination means having rows which are linearly independent, and
means associated with each amplified optical signal to modulate it in response to an associated phase shift signal.

4,661,787

WAVEGUIDE

Manfred Lang, Taufkirchen, Fed. Rep. of Germany, assignor to Spinner GmbH, Elektotechnische Fabrik, Munich, Fed. Rep. of Germany

Filed Dec. 12, 1985, Ser. No. 808,357
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1984, 3446196
Int. Cl.⁴ H01P *1/22, 1/26*
U.S. Cl. 333—22 R **11 Claims**



1. A waveguide for electromagnetic waves; comprising: a tube having an inner wall lined with a coating of highly dissipative material and with a metallized layer along the inside of said coating, said metallized layer having a thickness continuously decreasing in direction of propagation of the waves through said tube from an initial thickness of a magnitude in correspondence with the penetration depth of the waves.

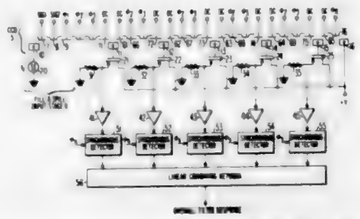
4,661,788

TAPPED CCD DELAY LINE WITH NON-DESTRUCTIVE CHARGE SENSING USING FLOATING DIFFUSIONS

Peter A. Levine, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 10, 1985, Ser. No. 732,607
Int. Cl.⁴ H03H *15/00*
U.S. Cl. 333—165 **8 Claims**

1. In combination:
a CCD delay line having input means for introducing charge packets into said delay line, a plurality of floating diffusion electrometer signal taps spaced from said input along said delay line for developing a corresponding plurality of delayed outputs, means clocking said charge packets along said delay line for generating potential responses at the floating diffusion of said electrometers; and
means for detecting energy at the output of said electrometers that lies in a range of frequencies including at least one sideband of a harmonic of the charge packets clocking rate, but does not include at least the lower baseband frequencies.

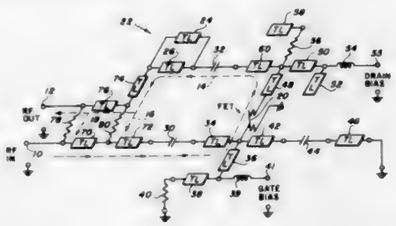


4,661,789

MICROWAVE RECURSIVE FILTER

Christen Rauscher, Fort Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 17, 1985, Ser. No. 755,757
Int. Cl.⁴ H03H *11/12;* **H01P** *1/20*
U.S. Cl. 333—202 **5 Claims**



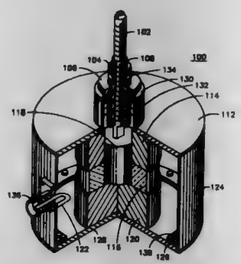
1. A broadband recursive filter that provides sharp transitions in the frequency domain between adjacent stop and passbands, comprising:
a signal input node;
a signal output node;
a filter circuit connected between signal input node and said signal output node for providing a signal flow therebetween which has a predetermined frequency bandwidth characteristic, said filter circuit including a plurality of distributed feedback loop circuits
a microwave transistor circuit including an output port, said microwave transistor circuit being bandlimited for providing gain in only a restricted window of frequencies within said predetermined frequency bandwidth for providing amplification to said signal flowing between said signal input node and said signal output node while suppressing out-of-window signals resulting from design approximations said transistor circuit further including an FET which is impedance-matched to obtain an approximately flat gain response across said window and wherein each of said feeedback loop circuits in said filter circuit include said FET therein;
wherein said plurality of feedback loop circuits comprises:
a first feedback loop which includes a first delay line with a first and second ends and which is not common to any of the other of said plurality of feedback loop circuits and is connected at said first end to said output node, a first resistive element which is not common to any other of said plurality of feedback loop circuits and which is connected between said output node and said input node, and a second delay line connected at a first end to said input node and at a second end thereof indirectly to the gate of said FET; and
a second feedback loop which includes a second resistive element, not common to any other of said plurality of feedback loop circuits, and which is connected at one end to the second end of said first delay line and connected at the other end to the second end of said second delay line;
wherein each of said feedback loop circuits has a different electrical length in relation to the other of said plurality of feedback loop circuits; and
at least one passive filter connected to said microwave transistor circuit for providing filter response zeros on both sides of said restricted window of frequencies.

4,661,790

RADIO FREQUENCY FILTER HAVING A TEMPERATURE COMPENSATED CERAMIC RESONATOR

Mark A. Gannon; Richard S. Kommrusch, both of Schaumburg, and Francis R. Yester, Jr., Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 562,901, Dec. 19, 1983, abandoned. This application Jan. 2, 1986, Ser. No. 816,672
Int. Cl.⁴ H01P *7/10, 1/20*
U.S. Cl. 333—234 **13 Claims**



1. A radio frequency (RF) filter coupled to an input signal from a signal source and producing an output signal, said RF filter comprising:
resonating means, having top and bottom surfaces with, a hole disposed therebetween, being comprised of a ceramic material having a predetermined thermal conductivity and a predetermined rate of change of resonant frequency with temperature;
first and second compensating means each having top and bottom surfaces and being disposed above and below the resonating means, respectively, the bottom surface of the first compensating means and the top surface of the second compensating means being thermally coupled to the top and bottom surfaces of the resonating means, respectively, the first compensating means including a hole substantially concentrically aligned with the hole of the resonating means, and the first and second compensating means being comprised of a dielectric material having a rate of change of resonant frequency with temperature opposite in polarity to the predetermined rate of change, and the dielectric material of the first and second compensating means further having a thermal conductivity grater than the predetermined thermal conductivity of the resonating means ceramic material;
tuning means comprised of a dielectric material and being insertable into the holes of the first compensating means and resonating means for changing the resonant frequency of the resonating means; and
housing means including an input probe for coupling the input signal to said RF filter, an output prove disposed at a predetermined distance from the input probe for coupling the output signal from said RF filter, and top and bottom surfaces, and side surfaces therebetween for substantially enclosing and compressively retaining the resonating means between the first and second compensating means, the top and bottom surfaces of the housing means being thermally coupled to the top surface of the first compensating means and the bottom surface of the second compensating means, respectively, whereby a low thermal resistance path is produced between the resonating means, first and second compensating means, and the housing means for conducting away from said resonating means heat dissipated therein thereby minimizing the temperature rise of said resonating means due to power dissipation.

4,661,791

REED SWITCH WITH HIGH INSULATION

Tomio Wakasugi, Hino, and Akinori Maeda, Hachioji, both of Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 8, 1985, Ser. No. 732,464
Claims priority, application Japan, May 29, 1984, 59-79239[U]
Int. Cl.⁴ H01H *1/66, 51/00*
U.S. Cl. 335—151 **2 Claims**



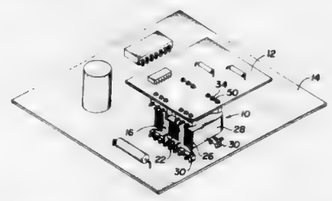
1. A reed switch with high insulation comprising:
a pair of conducting leads for selectively making contact; and
an enclosure for enclosing said pair of leads, an outer surface of said enclosure being coated with a fluoroplastic, said fluoroplastic providing high electrical insulation between said pair of conducting leads.

4,661,792

APPARATUS FOR MOUNTING PRINTED CIRCUIT BOARDS

Tommy R. Watkins, Plano, Tex., assignor to Basler Electric Company, Richardson, Tex.

Filed Jun. 23, 1986, Ser. No. 877,176
Int. Cl.⁴ H01F *15/02, 27/30*
U.S. Cl. 336—65 **2 Claims**



1. The combination comprising:
(a) a primary printed circuit board including a circuit;
(b) a secondary printed circuit board including a circuit;
(c) a transformer having a bobbin;
(d) a plurality of circuit board supporting electrically conductive connector pins mounted in a first surface of said bobbin for electrical connection to said transformer, each located within a preformed hole in the primary printed circuit board and soldered therein so as to mount said transformer bobbin to said primary printed circuit board and to electrically connect said transformer to said circuit on said primary printed circuit board;
(e) a plurality of circuit board supporting electrically con-

ductive connector pins mounted in a second surface of said bobbin for electrical connection to said transformer, each of said connector pins located within a preformed hole in said secondary printed circuit board and soldered therein so as to mount the secondary printed circuit board to said primary circuit board and to electrically connect said transformer to said circuit on said secondary printed circuit board; and

(f) means for electrically interconnecting at least one pair of said connector pins on said transformer bobbin.

4,661,793

PLUG-IN FUSE ASSEMBLY WITH SPECIALLY CONFIGURED FUSE LINK

John M. Borzoni, Indian Rocks Beach, Fla., assignor to Littelfuse, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 640,841, Aug. 17, 1984. This application Oct. 4, 1985, Ser. No. 784,231

Claims priority, application Japan, Aug. 15, 1985, 60-180382

Int. Cl.⁴ H01H *85/16*

U.S. Cl. 337—260 **14 Claims**



1. In a conductive plug-in fuse element having laterally spaced, generally parallel confronting terminals at the bottom thereof, upwardly extending current-carrying extensions of said terminals and a fuse link which is to blow under overload current extending between points of support in a given plane on said current-carrying extensions, the improvement wherein said fuse link is of much smaller cross-section than said terminals and current-carrying extensions and has a double undulating configuration in said plane with an upper leg joined to and inclining away from said terminals in a given direction from a portion of the inner vertical margin of one of said current-carrying extensions at a point in the central region of such current-carrying extension and a lower leg joined to and inclining away in the opposite direction from the inner vertical margin of the other current-carrying extension at a pont in the central region of such current-carrying extension, and said fuse link has for substantially its entire length a width measured in said plane no greater than about ½ the thickness thereof measured transversely to said plane.

4,661,794

MOUNTING STRUCTURE FOR RESISTORS USED FOR CONTROLLING THE RUNNING OF INDUSTRIAL VEHICLES

Yasuhisa Yamauchi, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jul. 22, 1986, Ser. No. 888,730

Claims priority, application Japan, Jul. 26, 1985, 60-115442[U]

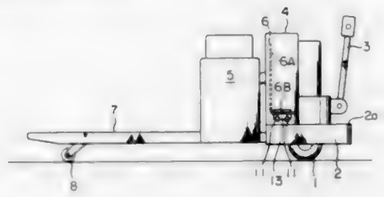
Int. Cl.⁴ H01C *1/01*

U.S. Cl. 338—315 **5 Claims**

1. A mounting structure for resistors used for controlling the running of industrial vehicles, said structure comprising:

an L-shaped control panel, said control panel being mounted to an inner wall surface of a frame cover which is mounted on a floor plate with a gap from said inner wall surface, said panel including a vertically extending section and a horizontally extending section;

control means provided on said vertically extending section;



resistor means provided on said horizontally extending section; and

window opening means provided in said floor plate and said frame cover.

4,661,795

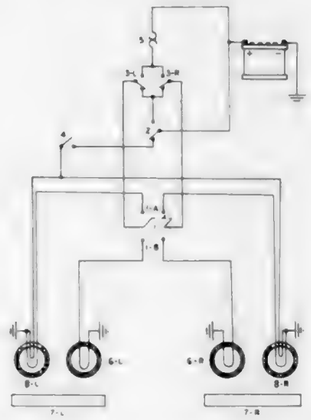
VEHICLE REAR LIGHTING SYSTEM DISPLAYING RED COLORED LIGHT ONLY DURING BRAKING

David L. Cameron, P.O. Box 10616, Westside Sta., Daytona Beach, Fla. 32014

Continuation of Ser. No. 649,739, Sep. 12, 1984, abandoned. This application Aug. 11, 1986, Ser. No. 895,290

Int. Cl.⁴ B60Q *1/26*

U.S. Cl. 340—71 **5 Claims**



1. A method for displaying red colored light at the rear of an automotive vehicle only during braking, including the following electrical components:

a source of electrical energy;

manually actuated left and right turn signal selector switches;

a turn signal flasher device for automatically opening and closing electric circuits between said source of electrical energy and said turn signal selector switches;

a manually actuated tail light switch;

manually actuated brake actuation means;

lamps illuminated by the flow of energizing electric current to effect the tail lights of said vehicle, light emanating from said illuminated lamps being transmitted through material containing a non-red colored pigment;

lamps illuminated by the flow of energizing electric current to effect the rear turn signal lights of said vehicle, light emanating from said illuminated lamps being transmitted through material containing a non-red colored pigment;

lamps illuminated by the flow of energizing electric current to effect the brake signal lights of said vehicle, light emanating from said illuminated lamps being transmitted through material containing a red colored pigment; and

electrical conductor means by which said components are interconnected; said method comprising:

electric switching means actuated by actuation of said brake actuation means, said actuation of said electric switching means opening electric circuits between said source of electrical energy and said lamps effecting tail lights and rear turn signal lights, thereby preventing flow of energizing electric current through the said lamps, and closing electric circuits between said source of electrical energy and said brake signal lamps, thereby enabling energizing electric current to flow through said brake signal lamps, said flow of energizing electric current being constant except in the case that the closed electric circuit includes an actuated turn signal selector switch, in which case the said closed electric circuit also includes said turn signal flasher device, said flasher device causing said flow of energizing electric current to be intermittent, said actuation of the said electric switching means, and said effects thereof, ending upon release of the said brake actuation means.

4,661,797

ELECTRONIC WARNING AND MONITORING APPARATUS AND ELECTRODE ARRANGEMENT THEREFOR

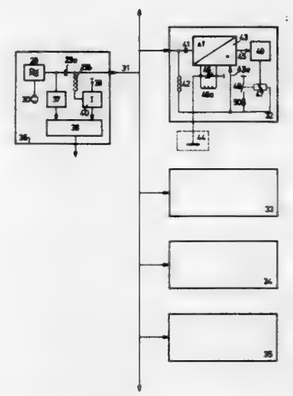
Karl-Heinz Schmall, Baden-Baden, Fed. Rep. of Germany, assignor to Get Gesellschaft fur Elektroniktechnologie mbH, Baden-Baden, Fed. Rep. of Germany

Filed Apr. 8, 1985, Ser. No. 720,671

Claims priority, application Switzerland, Apr. 9, 1984, 1777/84

Int. Cl.⁴ G08B *13/26*

U.S. Cl. 340—561 **10 Claims**



1. A moving machinery safety means comprising: a central monitoring circuit for delivering a warning or control signal upon receipt of an activating signal; a device for detecting changes of an electromagnetic field including in combination a central constant frequency generator, at least two sensor circuits energizing by said central frequency generator, each sensor circuit including as L/C-circuit having at least one sensor-electrode creating an electromagnetic field and comprising a resonance-frequency defining element of the said L/C-circuit for changing the resonance-frequency if the sensor-electrode approaches to or comes in contact with an object, each sensor circuit further including a trigger circuit connected to the output of said L/C-circuit, which trigger circuit includes means for varying the current consumption of the sensor circuit for triggering a change in the said current consumption upon a certain change in the L/C-circuit frequency; a central current supply means which is connected to and supplies the sensor circuits through a common supply line; a current monitoring circuit also connected to the central current supply means for delivering an activating signal to the central monitoring circuit when the current consumption rises above or falls below a respective reference value; and an oscillator monitoring circuit for functional monitoring of the constant frequency generator and for delivering a warning signal if the frequency generator malfunctions.

4,661,796

NORMAL AND ABNORMAL CONDITION INDICATING DEVICE

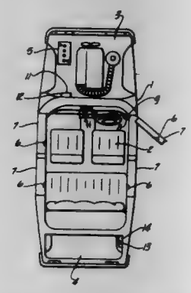
Kazuo Hirano, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 5, 1984, Ser. No. 586,851

Claims priority, application Japan, May 10, 1983, 58-68513[U]

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—85 **15 Claims**



1. A fault indicating system comprising a light, means including an electric light circuit for illuminating said light in response to a predetermined normal condition, another circuit for operating an electrical device other than said light and means for illuminating said light in response to a failure in said other circuit and in the absence of said normal condition.

4,661,798

VIDEO FIELD DECODER

Kiyonao Ohtsu, Kawasaki, Japan, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 28, 1984, Ser. No. 687,413

Int. Cl.⁴ G09G *1/14*

U.S. Cl. 340—744 **2 Claims**

1. In a raster scan, interlaced video display system which displays a series of frames, each comprising a first field and a second field displayed successively, including a video signal source comprising a horizontal sync signal (1, FIG. 1) and a field sync signal (2, FIG. 1) and further including a synchroniz-

ing circuit for generating an internal horizontal sync signal which is synchronized with said horizontal sync signal, the improvements comprising:

a video field decoding circuit comprising a comparator (50,

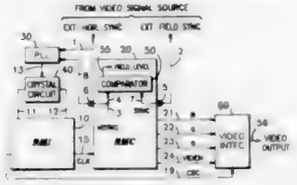


FIG. 1) responsive to a coincidence or non-coincidence between the respective rising edges of said internal horizontal sync signal and said field sync signal for generating an output signal indicative of which field is currently being displayed.

4,661,799

LOOP DETECTOR

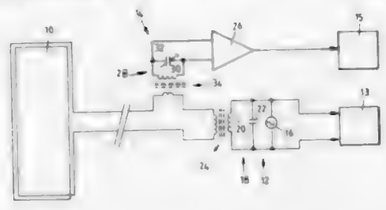
David A. Buttemer, Natal, South Africa, assignor to Electromatic (Proprietary) Limited, Natal, South Africa

Filed Aug. 23, 1985, Ser. No. 768,782

Claims priority, application United Kingdom, Aug. 28, 1984, 8421715

Int. Cl.⁴ G08C *1/00*

U.S. Cl. 340—941 **5 Claims**



1. A method of operating a loop detector which includes the steps of energizing a loop with a first signal at a first frequency, monitoring the first signal to detect the presence of a vehicle within the electromagnetic area of the loop, and upon so detecting the presence of a vehicle, of transmitting a signal to the vehicle to activate a transmitter on the vehicle, the transmitter transmitting a second signal at a second frequency which is different from the first frequency, and monitoring the loop to detect the second signal.

4,661,800

FLICKER LAMPS FOR A CAR

Tomio Yamazaki, Tokyo, Japan, assignor to Yugen Kaisha Yamazaki Jutaku Kanri, Tokyo, Japan

Filed May 1, 1985, Ser. No. 729,322

Claims priority, application Japan, Jan. 21, 1985, 60-7366

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—98 **4 Claims**

1. Turn signal apparatus for an automotive vehicle, comprising

means defining a flickering light turn signal located on the vehicle in the field of view of a motorcyclist or bicyclist riding beside the vehicle and for signaling intention to turn the vehicle across the path of the motorcyclist or bicyclist;

means for mounting the turn signal on the side of the vehicle in the region of the front door or front fender at about the height of the vehicle belt line, namely of the fender top or bottom of the door glass, said means including a sidewardly projecting box-like housing, said turn signal having a light emitting portion on the laterally outward side face of the housing so as to be visible to a motorcyclist or bicyclist riding beside the vehicle but not to the vehicle driver;



a rear view mirror on the rear face of said housing for seeing by the vehicle driver of objects to the rear of the vehicle.

4,661,801

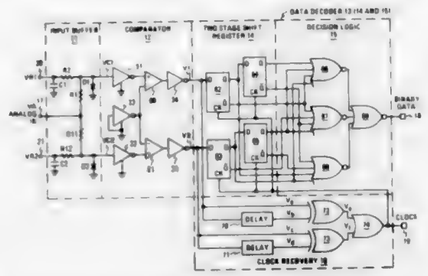
DECODER FOR THREE LEVEL CODED DATA

Young K. Chen, Syracuse; David C. Dening, Chittenango; Christopher E. Marchant, Baldwinsville, and Salvatore F. Nati, Jr., Syracuse, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,114

Int. Cl.⁴ H03M *5/16*

U.S. Cl. 340—347 DD **12 Claims**



1. An electrical decoder for converting a three level coded (TLC) data stream to serial binary data in which data stream each transmitted TLC bit has three possible states, transitions between all states being possible, each TLC bit representing a binary coded bit and for recovering the clocking implicit in said data stream at the transmitted bit rate, said decoder comprising:

A. an input terminal for reception of said TLC data stream,

B. means coupled to said input terminal for translating each of said three possible states of said TLC data stream to two bit binary values, each translation occurring at the TLC bit rate, comprising

a first comparison means for determining the higher of said two binary bits, and

a second comparison means for determining the lower of said two binary bits,

C. means coupled to said means B for converting said two bit binary values to serial binary data on the basis of sensing one of the possible amplitude transitions which occur between said three possible states between adjacent clocking intervals, a single binary data bit representing each transmitted TLC bit comprising:

1. means for storing said two bit binary values received during the (n-1)th and nth clocking intervals comprising four flip-flops, and

2. decision logic responsive to said two bit binary values for said (n-1)th and nth clocking intervals to obtain a bit of binary data for each clocking interval, and

D. means coupled to said means B for recovering the clocking from said TLC data stream comprising:

1. means responsive to said means B for producing an output upon change in state of the higher of said two bits between the (n-1)th and nth clocking interval comprising,

a first delay and a first two input exclusive OR-gate, the output of said first comparison means being applied undelayed to one of said first exclusive OR-gate inputs and applied via said first delay to the other of said first exclusive OR-gate inputs;

2. means responsive to said means B for producing an output upon a change in state of the lower of said two bits between the (n-1)th and the nth clocking interval comprising,

a second delay and a second two input exclusive OR-gate, the output of said second comprising means being applied undelayed to one of said second exculsive OR-gate inputs and applied via said second delay to the other of said second exclusive OR-gate inputs, and

3. means responsive to the outputs of D(1) and D(2) for producing an output for each clocking interval comprising an OR-gate,

said output being coupled to the clocking inputs of said flip-flops for clocking said serial binary data.

4,661,802

DIGITAL-TO-ANALOG CONVERTER

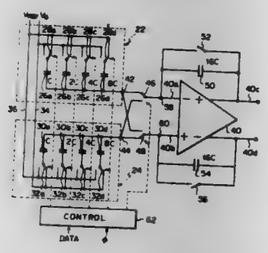
Akira Yukawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 30, 1985, Ser. No. 760,429

Claims priority, application Japan, Jul. 31, 1984, 49-160499

Int. Cl.⁴ H03K *13/02*

U.S. Cl. 340—347 DA **8 Claims**



1. A digital-to-analog converter for converting binary codes into analog voltages, each of the binary codes including a predetermined number of data bits comprising

(1) first and second capacitor arrays each comprising a predetermined number of capacitors having respective capacitances which are weighted to progressively vary by a factor of a predetermined number from one to another, and selective coupling means for coupling each of said capacitors selectively to a source of a single predetermined reference voltage and a source of a ground voltage, one of the capacitors of the first capacitor array and one of the capacitors of the second capacitor array being paired to correspond to one of the data bits in each of said binary codes,

(2) a balanced operational amplifier having complementary first and second input terminals and complementary first and second output terminals,

(3) a parallel combination of a first feedback capacitor and a first reset switch connected between the first input and output terminals of said operational amplifier;

(4) a parallel combination of a second feedback capacitor and a second reset switch connected between the second input and output terminals of said operational amplifier, each of said first and second feedback capacitors having a capacitance larger by a factor of two than the largest one of the capacitances of the capacitors in each of said first and second capacitor arrays,

(5) polarity switch means having a first state providing connection from said first capacitor array to the first input terminal and from said second capacitor array to the second input terminal of said operational amplifier and a second state providing connection from said first capacitor array to the second input terminal and from said second capacitor array to the first input terminal of said operational amplifier, and

(6) control means responsive to said binary codes and operative to detect the polarity of the voltage into which each of the binary codes is to be converted, said control means being coupled to said selective coupling means and said polarity switch means and being further operative to control the coupling means to shift each of said capacitors selectively between said single predetermined reference voltage and said ground voltage depending upon the status of the data bit which corresponds to the paired capacitors and to shift said polarity switch means between said first and second states thereof depending upon the detected polarity of the voltage into which each of the binary codes is to be converted.

4,661,803

ANALOG/DIGITAL CONVERTER

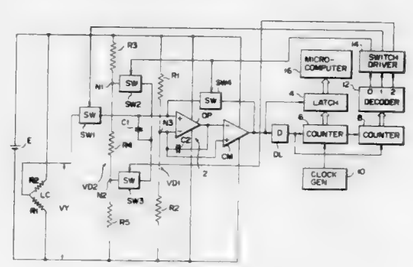
Yoshihisa Nishiyama, Shizuoka, and Noriyasu Fujii, Numazu, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1986, Ser. No. 854,200

Claims priority, application Japan, Apr. 27, 1985, 60-91804

Int. Cl.⁴ H03M *1/12*

U.S. Cl. 340—347 NT **7 Claims**



1. An analog/digital converter, comprising:

an input voltage terminal to which an input voltage is applied;

first and second source terminals between which a source voltage is applied;

a first voltage divider, coupled between said first and second source terminals and generating a voltage substantially equal to half the source voltage;

a second voltage divider, coupled between said first and second source terminals and generating from first and second output terminals first and second output voltages lower than the output voltage from said first voltage divider;

first to fourth switching means;

operating means having an integrator which has a first input terminal coupled to an input voltage terminal through said first switching means, and a second input terminal coupled to an output terminal of said first voltage divider, said integrator integrating the difference voltage between the input voltages to said first and second input terminals, said operating means generating an end signal when the output voltage from said integrator becomes equal to the output voltage from said first voltage divider, an output terminal

of said operating means being coupled to said first input terminal of said integrator through said fourth switching means;

capacitive means, having one terminal coupled to said first input terminal of said integrator and the other terminal coupled to said first and second output terminals of said second voltage divider through said second and third switching means, respectively;

counting means for generating a first control signal for a first predetermined period of time and, after the first predetermined period has elapsed, generating a second control signal for a second predetermined period of time and, after the second predetermined period has elapsed, generating a third control signal and performing a counting operation until the end signal is generated by said operating means; and

switch driving means for turning on said second and fourth switching means in response to the first control signal from said counting means, turning on said first switching means in response to the second control signal, and turning on said third switching means in response to the third control signal.

4,661,804

SUPERVISED WIRELESS SECURITY SYSTEM

William E. Abel, Lake Oswego, Oreg., assignor to Sentrol, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 429,116, Sep. 30, 1982, Pat. No. 4,523,184. This application Feb. 16, 1984, Ser. No. 580,877

Int. Cl.⁴ G08B *1/08*

U.S. Cl. 340—539 **8 Claims**



6. An FM wireless security system comprising:

(a) a plurality of transmitters operating on the same frequency each of said transmitters having means for transmitting a first predetermined number of identically coded messages within a single transmission period; and

(b) receiver decoder means for receiving said coded messages from each of said transmitters said means including automatic frequency control means responsive to a first one of said indentically coded messages for locking said receiver-decoder means to the frequency of each of said transmitters, and further including message verification means for providing an indication for having received a valid transmission from each of said transmitters only upon receipt of a second predetermined number of identically coded messages from each of said transmitters within a preset period of time.

4,661,805

DEVICE FOR INDICATING THE MOVEMENT AND/OR POSITION OF A SHUTOFF MEANS

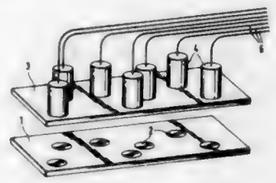
Heinrich Silzer, Industriestrasse 4, 3550 Marburg-Wehrda, Fed. Rep. of Germany

Continuation of Ser. No. 709,574, Mar. 8, 1985, abandoned. This application Sep. 15, 1986, Ser. No. 908,007

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1984, 3409549

Int. Cl.⁴ G08B *13/08*

U.S. Cl. 340—545 **4 Claims**



1. A tamper proof device for indicating the movement and position of a closure member relative to a frame member adapted to surround said closure member in the shut position of said closure member comprising a plurality of signal transmitters on one said member, a plurality of signal receivers on the other said member, at least a plurality of said transmitters and receivers being in registry in said shut position, said transmitters being positioned relative to said receivers such that certain said receivers are activated by certain said transmitters in a predetermined sequence responsive to movement of said closure member to and from said shut position and readout means operatively connected to said receivers, said readout means being responsive to the sequence in which signals from said transmitters are impressed on said receivers.

4,661,806

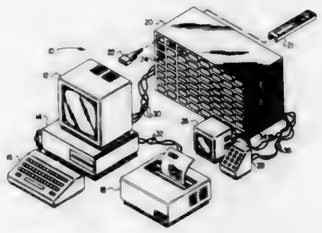
COMPUTER CONTROLLED KEY MANAGEMENT SYSTEM

Gilbert A. Peters, 1608 Lake Hill La., and J. Brooks Mitchell, 1805 Lakeshore La., both of Plano, Tex. 75023

Filed May 10, 1985, Ser. No. 733,224

Int. Cl.⁴ G08B *13/14*

U.S. Cl. 340—568 **25 Claims**



1. A system controlling access to a plurality of keys or the like comprising:

a plurality of individual keyholders, each attached to at least one of the keys and including an individually coded mating means for enabling insertion of the holder and key in only a keyholder housing having a corresponding individually coded mating means;

a storage means containing a plurality of the keyholder housings and for controlled storage of the keys and keyholders and including access means for providing access to selected ones of the keys and keyholders in response to an access signal while preventing access to the selected ones of the keys and keyholders in the absence of said access signal and further including means for indicating the return of a key and keyholder to its appropriate keyholder housing;

input means for receiving input data from a system user requesting access to at least one selected key;

display means for providing information to the system user; and

processing means connected to the storage means, the input means and the display means for receiving the input data, for providing information to the display means, for determining access from the input date in accordance with stored data, for generating the access signal upon determining a grant of access, for recording the access grant, for receiving the return signal and for recording the return.

4,661,807

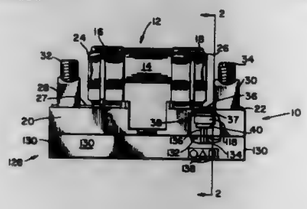
ELECTRIC FUSE HOLDER HAVING AN INTEGRAL CURRENT SENSOR

Robert J. Panaro, Byfield, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 12, 1984, Ser. No. 659,974

Int. Cl.⁴ G08B *21/00*

U.S. Cl. 340—638 **23 Claims**



1. A holder for an electric fuse, the fuse having a pair of spaced electrical terminals, the holder comprising:

a mounting base formed from a dielectric material;

first means, carried by said base, for electrically conductively cooperating with one of the fuse's electrical terminals and for electrically conductively cooperating with a first external conductor;

second means, carried by said base, for electrically conductively cooperating with the other of the fuse's electrical terminals and for electrically conductively cooperating with a second external conductor;

said first means and said second means together defining the current path through said fuse holder when an electric fuse is in cooperating relationship therewith; and,

current sensor means carried by said holder at a location where it will be electromagnetically coupled with the magnetic field surrounding at least a portion of said current path when electric current is passing along said current path and for generating an electrical signal responsive to said electromagnetic coupling.

4,661,808

VARIABLE FONT DISPLAY

Robert E. Rector, Richardson; Larry T. Taylor, Plano, and Richard J. Grassi, Royse City, all of Tex., assignors to Gulton Industries, Inc., Metuchen, N.J.

Continuation of Ser. No. 656,095, Sep. 28, 1984, abandoned. This application Jan. 31, 1985, Ser. No. 696,896

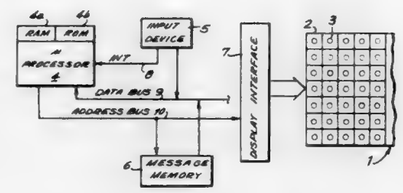
Int. Cl.⁴ G09G *3/20*

U.S. Cl. 340—735 **32 Claims**

1. A method of providing improved legibility for display of a sequence of characters, wherein in said display, all characters are displayed in equal sized display spaces, aid characters including narrower, wider and intermediate-width characters, said method comprising the steps of

dividing said sequence of characters into one or more blocks of characters, said blocks being separated by one or more narrower characters,

displaying said wider characters of each said block in their respective display spaces in a width equal to said display space,



identifying in each block a primary wider character,

displaying said intermediate-width characters of each block in their display spaces with widths less than their respective display spaces,

said intermediate-width characters of any block which are to the left of the primary character of their block being displayed off-center and shifted to the left in their display spaces.

4,661,809

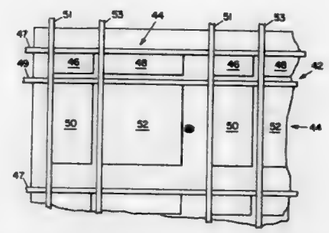
MAGNETO-OPTIC CHIP WITH GRAY-SCALE CAPABILITY

Robert H. Anderson, Long Beach; William E. Ross, Woodland Hills, and Theodore R. Maki, Northridge, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Division of Ser. No. 375,321, May 5, 1982, Pat. No. 4,495,492. This application Jan. 11, 1985, Ser. No. 690,593

Int. Cl.⁴ G09G *3/34*

U.S. Cl. 340—783 **3 Claims**



1. A magneto-optic chip (**42**) to achieve gray-scale including a plurality of pixel positions (**44**); the magneto-optic chip comprising:

(a) each of the pixel positions including individually-addressable pixel sub-positions (**46**, **48**, **50**, **52**);

(b) at least two of said pixel sub-positions having respective areas of different size; and

(c) a first pair of conductors (**47**, **49**) oriented in a first direction and a second pair of conductors (**51**, **53**) oriented in a second direction to electrically address individual ones of said different sized pixel sub-positions and place a selected one of said pixel sub-positions in a respective one of three magnetic states, which affect the passage of light therethrough at an associated one of three light levels; a first magnetic state when magnetized one direction so that the selected pixel sub-position is transparent to light passage, a second magnetic state when magnetized in an opposite direction so that the sub-position is opaque to light pas-

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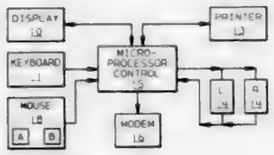
sage, and a third magnetic state when demagnetized or stripped out so that the sub-position is both transparent and opaque to light passage, so that an associated amount of light passage through said selected pixel sub-position has one of the three levels of light passage or brightness, and selected pixel sub-positions associated with the respective pixel position develop a desired degree of gray scale at the respective pixel position.

4,661,810

METHOD FOR INTERACTIVE ROTATION OF DISPLAYED GRAPHIC OBJECTS

Carol S. Himelstein, and John S. Wang, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1985, Ser. No. 703,073
Int. Cl.[4] G09G *1/14*
U.S. Cl. 340—709 **9 Claims**



1. A method to assist the operator of an interactive draw graphic system having an operator positionable cursor to rotate from a first position to a second position a graphic object that includes a center point and that is defined by a plurality of line segments, said method comprising the steps of:

(a) displaying said object at said first position to said operator,

(b) establishing a positional relationship of said object for said system relative to a line extending between said cursor and said center of said object including the step of positioning said cursor adjacent one of said plurality of segments,

(c) moving said cursor away from said center point along a substantially straight line extending from said center point through said one line segment for a distance which is proportional to the degree of accuracy desired by said operator in said rotation of said object to said second position, and

(d) moving said cursor in a direction transverse to said straight line to rotate said object to said second position.

4,661,811

VIDEO MAP DISPLAY

Michael J. Gray; Ian Langdon, both of Woodbridge, and Barry J. Woods, Ipswich, all of England, assignors to British Telecommunications plc, United Kingdom

Filed Sep. 10, 1984, Ser. No. 648,689
Claims priority, application United Kingdom, Sep. 12, 1983, 8324318
Int. Cl.[4] G09G *1/14*
U.S. Cl. 340—744 **14 Claims**

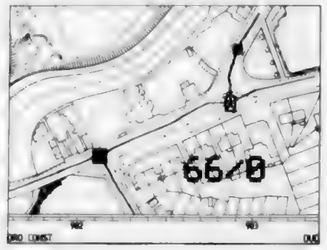
1. An information display apparatus comprising:

video reproduction means, adapted for connection to a storage medium having data recorded thereon representing a plurality of map frames of different scales, for producing first video signals representing a selected one of said plurality of map frames;

graphic generator means for generating, from prestored overlay information in digital form, second video signals representing an overlay image;

means connected to said video reproduction means and said graphic generator means for combining said first and second video signals; and

control means connected to said graphic generator means and including means for storing information representing said overlay image, said control means for selecting, in response to information indicative of the geographical



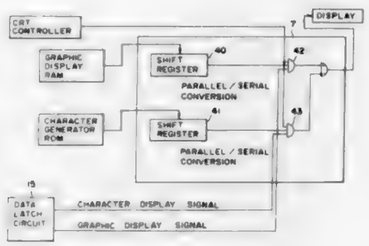
area covered by, and the relative scale of, (a) said selected map frame, overlay image information stored by the overlay information storage means corresponding to said geographical area and for controlling the graphic generator means to display the overlay information at the same scale as the map frame.

4,661,812

DATA TRANSFER SYSTEM FOR DISPLAY

Yoshiaki Ikeda, Hachioji, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

Filed Sep. 29, 1983, Ser. No. 536,878
Claims priority, application Japan, Sep. 29, 1982, 57-172460
Int. Cl.[4] G09G *1/16*
U.S. Cl. 340—799 **3 Claims**



1. A display unit comprising:

display means for providing a display during display periods between blanking periods;

a picture memory for storing data to be displayed in said display means during said display periods;

a CRT controller to provide scanning addresses to read out said picture memory to provide each said display and to provide a vertical synchronizing signal for each said blanking period;

a work memory for selectively storing data for rewriting the picture memory;

data transfer means started by each respective vertical synchronizing signal when said stored data for said rewriting exists in said work memory, for reading out the stored data from the work memory and for supplying adresses for transfering the data to the picture memory at least in the respective vertical blanking period corresponding to the respective vertical blanking signal, said data transfer means including means for deciding whether the amount of the existing stored data to be transferred is larger than a predetermined value, and for permitting said transfer of

said stored data to continue beyond the respective vertical blanking period while inhibiting said display during said transfer of the stored data, until the transfer of all of the stored data corresponding to the respective vertical synchronizing signal is completed, when it is decided that the amount of the existing stored data to be transferred is larger than the predetermined value; and

an address switching circuit controlled by said data transfer means for switching between supplying saod addresses from the data transfer means and from the CRT controller to the picture memory;

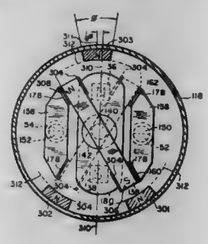
wherein said transfer of stored data by the data transfer means and said display of the data in the picture memory are provided depending on the amount of the existing stored data in said work memory, at the occurrence of the respective vertical blanking signal, that is to be transferred to said picture memory, and when said data in said word memory to be transferred to said picture memory is less than said predetermined value, but more than an amount to be transferred during a single one of said blanking periods, said stored data is transferred from said work memory to said picture memory in a successive plurality of blanking periods between respective ones of said displays.

4,661,813

MAGNETIC LATCHING AND DAMPING FOR ELECTROMAGNETIC INDICATORS

Robert Mazzamauro, and John Ambrozaitis, both of Waterbury, Conn., assignors to Minelco, Inc., Thomaston, Conn.

Filed Jan. 18, 1985, Ser. No. 692,793
Int. Cl.[4] G08B *5/00*
U.S. Cl. 340—815.26 **16 Claims**



1. A bistable electromagnetic indicator for providing binary indication of first and second conditions comprising:

a housing;

first and second indicator discs supported on a central axis in coaxial spaced relation at one end of said housing and at least said first disc adapted for rotation about said axis whereby when said first disc is in a first of two bistable dispositions said discs indicate one of said conditions and whereby when said first disc is in a second bistable disposition said discs indicate the second of said conditions;

electromagnetic means including at least one electromagnet having a core and a winding therearound;

means adapted for connecting said winding to a source of current whereby said core of said electromagnetic means may be alternately polarized;

a first permanent magnet;

means immovably supporting said electromagnetic means and said first permanent magnet in said casing so that an end of said core and said first permanent magnet are directed axially and extend coextensively toward said discs;

a second permanent magnet having two ends disposed along a polar axis substantially normal to said central axis and having two magnetic poles disposed along said polar axis;

means supporting said second permanent magnet for rotation about said central axis between first and second limit positions, said second permanent magnet supporting said first indicator disc and moving said disc between said first and second limit positions which define said first and second bistable dispositions, respectively, said second permanent magnet being driven from said first to said second bistable disposition by magnetic forces upon application of a signal to said electromagnetic means;

flux permeable means that many be moved into mechanical engagement either with said core of said electromagnetic means, when the indicator is either in the first or second bistable position, or with said first permanent magnet, when the indicator is to be reset from said second bistable position, thereby to form an extension of said core of said electromagnetic means or said first permanent magnet, respectively, whereby said flux permeable means is magnetized in accordance with the magnetic field of said core of said electromagnetic means or said first permanent magnet, said flux permeable means disposed in the path of movement of said second permanent magnet for magnetically latching said second permanent magnet in one of said limit positions;

means for rotating said flux permeable means about said central axis from a position of engagement with said electromagnetic means to a position of engagement with said first permanent magnet, whereby said first indicator disc and said second permanent magnet are likewise moved about said central axis until said flux permeable means is repulsed to cause said first indicator disc and said second permanent magnet to move a further distance in the same direction of rotation to return to said first bistable disposition;

means biasing said flux permeable means toward said position of engagement with said electromagnetic means; and

auxiliary magnetic latching means for aiding in magnetically latching said second permanent magnet in one of said limit positions, said auxiliary magnetic means comprising a plurality of auxiliary permanent magnets, the magnetic fields of said plurality of auxiliary magnets acting upon said second oermanent magnet so as to latch said second permanent magnet in one of said two limit positions until said flux permeable means is magnetized in accordance with the magnetic field of the magnetic means with which said flux permeable means is in contact with, either said core of said electromagnetic means or said first permanent magnet.

4,661,814

DEVICE FOR READING OUT A TWO-DIMENSIONAL CHARGE PATTERN BY MEANS OF AN ARRAY

Bernd Granz, Oberasbach; Ralph Oppelt, Memmelsdorf, and Bertram Sachs, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 28, 1985, Ser. No. 716,904
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1984, 3412665
Int. Cl.[4] H04Q *9/00*; H04N *3/15*
U.S. Cl. 340—825.79 **15 Claims**

1. A device for reading out a two-dimensional charge pattern, comprising:

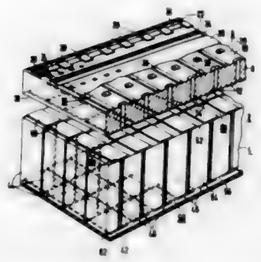
a receiver matrix comprising a plurality of elementary transducers arranged in orthogonal rows and columns;

a rectangular carrier plate with two long sides and two short sides and having holes which pass through it;

electrodes which are provided on a long side of the carrier plate which faces toward the receiver matrix and which are arranged in orthogonal rows and columns; and

a switching matrix comprising a plurality of switchable amplifiers in chip form and arranged in orthogonal rows and columns on a long side of the carrier plate which faces away from the receiver matrix, a switchable amplifier being associated with each elementary transducer and being connected to a contact lip by a connecting line, the

electrodes being connected to the contact lips by electrically conductive material provided on surfaces of said



holes with all connecting lines being of approximately equal length.

4,661,815

GATE ARRAY INTEGRATED DEVICE HAVING MIXED SINGLE COLUMN TYPE AND MATRIX TYPE ARRAYS

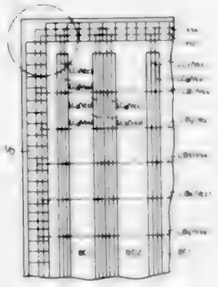
Yoshihisa Takayama, Kawasaki; Shigeru Fujii, Yokohama; Kazuyuki Kawauchi, Yokohama, and Toshihiko Yoshida, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 2, 1985, Ser. No. 782,923

Claims priority, application Japan, Oct. 3, 1984, 59-206144; Oct. 22, 1984, 59-220447; Oct. 22, 1984, 59-220450; Dec. 28, 1984, 59-274504

Int. Cl.⁴ H04Q *1/00*; H01L *29/78*; H03K *19/177*

U.S. Cl. 340—825.86 **10 Claims**



1. A gate array integrated device comprising:

a plurality of single column type arrays each including a series of basic cells arranged in columns;

a plurality of matrix type arrays each including a plurality of arrays arranged in proximity to each other in rows, each of said arrays including a series of basic cells arranged in columns;

a plurality of first power supply lines arranged in columns over said single column type arrays and said matrix type arrays; and

longitudinal connection areas, arranged in columns between said single column type arrays and said matrix type arrays, for providing connection areas for connecting said basic cells to each other, thereby creating unit cells,

each of said matrix type arrays having first and second sides, one of said single column type arrays facing at least one of said first and second sides of each of said matrix type arrays.

4,661,816

ADAPTIVE RADAR SIGNAL PROCESSOR

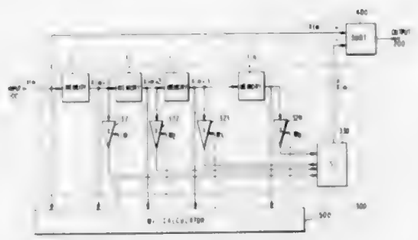
Toshimitsu Musha; Eichi Kiuchi, and Toshihiko Hagisawa, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Oct. 5, 1983, Ser. No. 539,239

Claims priority, application Japan, Oct. 5, 1982, 57-174897

Int. Cl.⁴ G01S *7/30*

U.S. Cl. 342—91 **8 Claims**



1. An adaptive radar apparatus comprising:

a memory for storing radar data in a time sequence;

means for reading out the radar data from the same range in response to a plurality of transmission pulses;

a plurality of multipliers for multiplying each of a plurality of data read out from said memory by a predetermined weighting coefficient;

an adder for adding the outputs of said multipliers and generating the added data as an estimated data relative to an observing position;

weighting coefficient determination means for determining the weighting coefficients based upon said stored radar data necessary for the optimal estimation of the data at said observing position so that the difference between the radar data and the estimated data at said observing position is minimized; and

means for producing the difference between the radar data and the estimated data obtained from said adder as a clutter-suppressed radar signal.

4,661,817

METHOD AND APPARATUS FOR MEASURING THE DISTANCE TO AN OBJECT

Fritz Bekkadal, Tiller, and Tor Schoug-Pettersen, Trondheim, both of Norway, assignors to 501 Autronica A/S, Trondheim, Norway

PCT No. PCT/NO84/00019, § 371 Date Oct. 3, 1984, § 102(e) Date Oct. 3, 1984, PCT Pub. No. WO84/03942, PCT Pub. Date Oct. 11, 1984

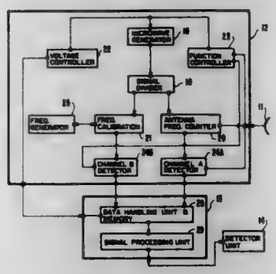
PCT Filed Apr. 5, 1984, Ser. No. 668,372

Claims priority, application Norway, Apr. 5, 1983, 831198

Int. Cl.⁴ G01S *13/08*; G01F *23/28*

U.S. Cl. 342—124 **16 Claims**

1. A method for measuring the distance to an object, such as the surface of a liquid or another flowable medium in a container or similar environment, wherein a microwave signal with a predetermined frequency is generated, a part of the the signal is used as a reference signal while a second part is fed to an antenna which is directed against said surface whereby the surface and other present objects influence the input impedance of the antenna and the corresponding unit reflection coefficient through their distant dependent contributions to said reflection coefficient, characterized in making a measurement function of the input reflection coefficient of the antennaa at a combination of values of the reflection coefficient at at least two frequencies in an interval around a nominal measuring frequency in a manner to emphasize contributions to said function from objects in certain distances relatively to contributions from objects in other distances, calculating by fourier transformation a set of values of this function at the predetermined set of measuring frequencies, the different object's contribution to the fourier transformed function are separated according to their different distance from the antenna while contributions from fixed objects are eliminated since their



contributions to the fourier transformed function are known, and the contributions of the surface is divided out due to its strength and/or position to enable the determination of the distance to the surface.

4,661,818

ELECTRONICALLY ADJUSTABLE DELAY-SIMULATOR FOR DISTANCE-MEASURING APPARATUS OPERATING ON THE FREQUENCY-MODULATED CONTINUOUS WAVE PRINCIPLE

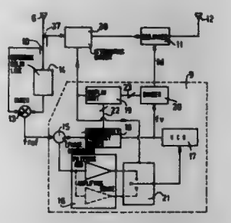
Michel Riffiod, Fontenay aux Roses, and Jean-Pierre Tomasi, Les Molieres, both of France, assignors to Telecommunications Radio-Electriques et Telephiques (TRT), Paris, France

Filed Oct. 13, 1983, Ser. No. 543,066

Claims priority, application France, Oct. 13, 1982, 82 17142

Int. Cl.⁴ G01S *7/40*

U.S. Cl. 342—172 **10 Claims**



1. A delay-simulator for testing the accuracy of a distance measuring apparatus operating on the frequency-modulated continuous wave principle comprising:

means for receiving a distance measuring wave emitted by said apparatus,

means for providing a simulated reflection wave to said apparatus;

first and second signal processing paths arranged in parallel between said receiving means and said providing means; said first signal processing path comprising means connected to the output of said receiving means for generating from a received distance measuring wave a first signal, the frequency fref of which is proportional to the slope of a straight line defining a linear frequency modulation of said apparatus, means for generating from the first signal a second signal of frequency fd, the ratio of fd and fref assuming a predetermined value, said means for generating said second signal including means for changing said ratio and thus said predetermined value, and a display means for displaying a simulated distance and including means for controlling said changing means to adjust said predetermined value to correspond with a displayed simulated distance; said second signal processing path comprising a signal coupler connected to said receiving means, and a variable attenuator connected to an output of said coupler, said variable attenuator being controlled by said controlling means; and

a single-sideband mixer having a first input connected to receive the output of said variable attenuator and a second input connected to receive said second signal, the output of said single-sideband mixer being provided as an input to said means for providing a simulated reflection wave.

4,661,819

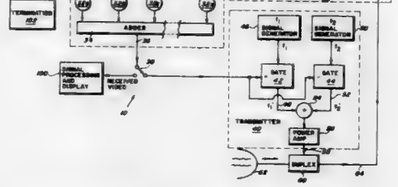
DOPPLER TOLERANT BINARY PHASE CODED PULSE COMPRESSION SYSTEM

Bernard L. Lewis, Fort Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1983, Ser. No. 493,831

Int. Cl.⁴ G01S *13/28*

U.S. Cl. 342—201 **13 Claims**



1. A Doppler tolerant binary phase coded system comprising:

input signal expansion means coupled to receive an input pulse for expanding said input pulse into a binary coded sequence of pulses according to a binary code;

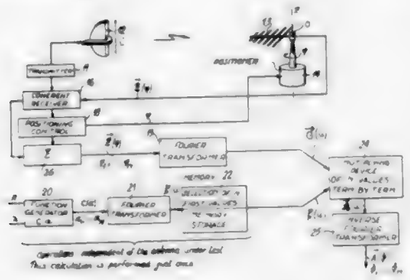
modulation means coupled to receive said binary coded sequence of pulses for frequency shift coding a carrier in response thereto;

means coupled to receive the output of said modulation means for transmitting said frequency shift coded carrier and for receiving frequency shift coded echo returns reflected by targets in response thereto;

frequency discriminator means coupled to receive said echo returns for demodulating said returns to produce an echo sequence of pulses; and

pulse compressor means coupled to receive said echo sequence of pulses for comparing said echo sequence of pulses to said binary code to detect a target sequence of pulses in said echo sequence of pulses which matches said binary code and for compressing said detected target sequence of pulses to produce an output echo pulse signal representative of targets detected by said system, said output echo signal being independent of target speed.

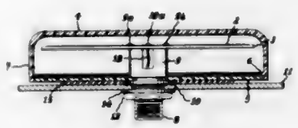
4,661,820
METHOD AND EQUIPMENT FOR PICKING UP ANTENNA PATTERNS IN NEAR-FIELDS
Christian Pouit, 15, rue d'Alsace Lorraine, 31000 Toulouse, and René Guers, 24, Rue de Clamart, Boulogne Billancourt, both of France
Filed Jul. 2, 1984, Ser. No. 626,983
Claims priority, application France, Jul. 4, 1983, 83 11062
Int. Cl.[4] G01S *3/02*; H01Q *3/00*
U.S. Cl. 342—351 **3 Claims**



1. A method for determining the radiation pattern of a test antenna based on near field measurements and on near-to-far field conversion calculations, comprising the steps of
(a) rotating the test antenna about a rotation axis;
(b) positioning the test antenna at discrete angular positions about said rotation axis;
(c) illuminating the test antenna with a transmit antenna, said transmit antenna being arranged sufficiently close to the test antenna, whereby a planar wavefront for the wave transmitted by said transmit antenna is prevented at the location of the test antenna, said transmit antenna having a radiation pattern in the shape of a circular cylinder with the direction of the generating line of the cylinder being parallel to said rotation axis;
(d) storing sample signals received by the test antenna at each angular position thereof, whereby the radiation pattern of the test antenna is a Fourier integral transform of the function formed by said sample signals, said function being multiplied by a kernel function;
(e) transforming said sample signals by Fourier transform, thereby to obtain Fourier transformed sample signals;
(f) generating samples of said kernel function;
(g) transforming said kernel function samples by Fourier transform, thereby to obtain Fourier transformed kernel samples;
(h) multiplying said Fourier transformed sample signals by said Fourier transformed kernel samples on a term by term basis, thereby to obtain multiplied samples; and
(i) transforming said multiplied samples by inverse Fourier transforms.

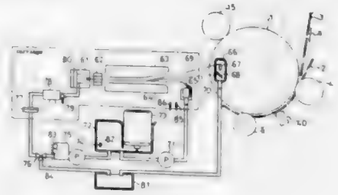
4,661,821
VANDALISM-RESISTANT UHF ANTENNA
Alan M. Smith, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.
Filed Mar. 15, 1985, Ser. No. 712,053
Int. Cl.[4] H01Q *1/42, 7/00*
U.S. Cl. 343—743 **5 Claims**

1. A vandalism-resistant antenna for ultra high frequencies comprising:
a ring-shaped radiator printed on a dielectric board,
a shallow enclosure of insulating material having high impact strength,
mounting means for holding said board within said enclosure and for fastening said enclosure to a conducting surface member serving as a ground plane whereby to locate said



radiator at a substantially constant distance above a ground plane, and
means for coupling a coaxial RF line to said radiator.

4,661,822
INK JET PRINTER
Tetsuro Hirota, Zama; Shigeyuki Araki, Komae; Shizuo Yokoyama, Atsugi; Haruyoshi Masui, Yokohama, and Toshitaka Hirata, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 10, 1986, Ser. No. 838,337
Claims priority, application Japan, Mar. 11, 1985, 60-47808
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—75 **9 Claims**

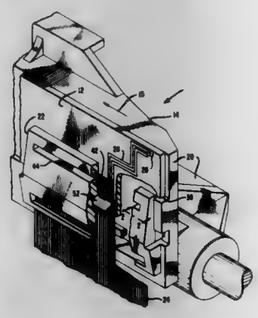


1. An ink jet printer comprising
an ink vessel;
a pump for supplying an ink from the ink vessel to an ink stream projecting head under pressure;
detection means for detecting whether or not the projection of an ink stream from a projecting nozzle of head is proper;
a switching solenoid valve assembly having a first state in which a communication is established between the head and a low pressure vessel while a communication between the head and the low pressure vessel on one hand and the pump on the other hand is interrupted and a second state in which a communication is established between the discharge port of the pump and the head while a communication between the discharge port of the pump and the head on one hand and the low pressure vessel on the other hand is interrupted;
and an ink supply controller for controlling the drive to the pump and the state of the solenoid valve assembly, the ink supply controller being responsive to a detection by the detection means that the projection of the ink stream is improper by changing the drive to the pump so as to supply the ink under a reduced pressure.

4,661,823
THERMAL PRINT HEAD
Richard G. Bangs, and Michael O. Grey, both of Ithaca, N.Y., assignors to NCR Corporation, Dayton, Ohio
Filed Jun. 27, 1985, Ser. No. 749,357
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **25 Claims**

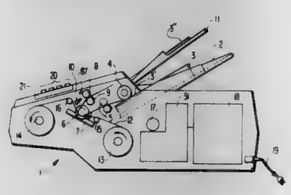
1. A connection device for a print head comprising a
unitary member having an integral first portion for carrying the print head, a

ribbon-type cable for operably connecting with the print head and including individual leads at one end thereof adjacent and in contact with the print head, a
second integral portion of said unitary member for holding said cable relative to the print head, and



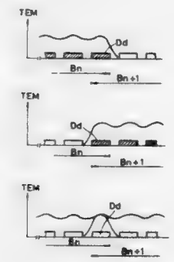
resilient means carried by the second integral portion and engageable to directly contact the individual leads which extend beyond one end of said cable for urging the leads into contact with the print head.

4,661,824
THERMAL PRINTER FOR PRINTING ON ROUGH SURFACE
Akira Kuge, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Jul. 12, 1985, Ser. No. 754,115
Claims priority, application Japan, Jul. 13, 1984, 59-145400
Int. Cl.[4] B01D *15/10*
U.S. Cl. 346—70 PH **5 Claims**



1. A thermal printer suitable for printing on several kinds of paper including rough-surface paper and smooth-surface paper, comprising a thermal head including a plurality of heater elements arranged on its one surface, a platen located opposite to said surface of said thermal head, ink holding means passing in front of said surface of said thermal head, means for indicating the kind of said paper to be printed by said thermal printer, first feeding means for feeding said paper to a location between said platen and said ink holding means, means for selectively energizing said heater elements whereby the ink of said ink holding means is thermally transferred onto said paper, second feeding means for feeding the paper out of said location after said ink has been transferred thereto, heater means adapted to receive said paper and to heat said paper fed out of said location, and control means connected to said indicating means for controlling the temperature of said heater elements in accordance with the kind of said paper, said control means determining said temperature of said heater means to be high level when the kind of said paper is of rough surface paper and to be low level when the kind of said paper is of smooth-surface paper.

4,661,825
IMAGE RECORDING APPARATUS WITH THERMAL HEAD
Hidehisa Tsuchihashi, Kawasaki, and Kaoru Naito, Yokohama, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan
Filed Jul. 8, 1985, Ser. No. 752,514
Claims priority, application Japan, Jul. 19, 1984, 59-150055
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **12 Claims**



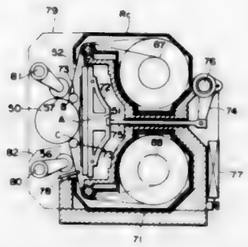
1. An apparatus for printing an image on an object, including:
(a) image signal generating means for repeatedly generating a one-line image signal a plurality of times;
(b) comparing means, having a plurality of comparison levels, for comparing the one-line image signal with one of said plurality of comparison levels and for generating a comparison signal, said comparing means being arranged to change the corparison levels every time the one-line image signal is generated;
(c) thermal head means having a plurality of heating elements one dimensionally, said plurality of heating elements generating heat upon energization and being driven to perform one-line image signal printing on said object;
(d) current supply means for supplying a current to said plurality of heating elements in response to the comparison signal, each of said plurality of heating elements being energized by said current from said current supply means;
(e) control means for controlling said current supply means such that current supply to said elements belonging to a first group and current supply to said elements belonging to a second group are inhibited at different times, said first group being constituted by at least some adjacent heating elements of said plurality of heating elements, said second group being constituted by heating elements of said plurality which are adjacent to said some adjacent heating elements at an interval of at least one of said plurality of heating elements, whereby said some adjacent heating elements are not included in said second group;
(f) detection signal generating means for detecting that said comparing means compares a predetermined comparison level of said plurality of comparison levels with the one-line image signal, and for generating a detection signal;
(g) means for inhibiting energization of said at least one heating element adjacent to said first group in response to the detection signal while current supply to said heating elements of said first group is inhibited under the control of said control means; and
(h) means for inhibiting energization of said at least one heating element adjacent to said second group in response to the detection signal while current supply to said heating elements of said second group is inhibited under the control of said control means.

4,661,826

PICTURE IMAGE FORMING APPARATUS

Masao Saitou, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed May 23, 1985, Ser. No. 737,056
Claims priority, application Japan, May 23, 1984, 59-104977; May 28, 1984, 59-107771; Jul. 17, 1984, 59-148373
Int. Cl.⁴ G01D *15/10*
U.S. Cl. 346—76 PH **20 Claims**



1. A picture image forming apparatus for transferring ink from an ink donor sheet onto a copying medium having a leading end, said apparatus comprising:

a platen roller having a peripheral surface portion;

a first core for taking up one end of said ink donor sheet;

a second core for taking up the other end of said ink donor sheet;

means for guiding said ink donor sheet along said peripheral surface portion of said platen roller;

means for conveying said copying medium to place the leading end of said copying medium between said ink donor sheet and said peripheral surface portion of said platen roller, and for conveying said copying medium along said peripheral surface portion of said platen roller while said copying medium is superposed on said ink donor sheet;

a recording head disposed in opposition to said platen roller, for transferring ink from said ink donor sheet onto said copying medium while said superposed ink donor sheet and copying medium are conveyed along said peripheral surface of said platen roller; and

ink donor sheet control means having first and second drive means for applying first and second torques different in value and opposite in direction to said first core and said second core respectively to subject said ink donor sheet to a first tension, said ink donor sheet control means including means for increasing the difference in value between said first and second torques to subject said ink donor sheet to a second tension greater than said first tension at times when the leading end of said copying medium is at a selected location near said recording head to prevent separation of the leading end of said copying medium from said peripheral surface of said platen roller.

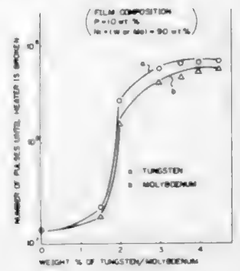
4,661,827

THERMAL HEAD

Hideo Sawai; Takashi Kanamori; Kenji Kuroki, and Susumu Shibata, all of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Japan

Continuation of Ser. No. 584,137, Feb. 27, 1984, abandoned. This application Mar. 3, 1986, Ser. No. 835,421
Claims priority, application Japan, Mar. 9, 1983, 58-37534
Int. Cl.⁴ H01C *17/18*; G01D *15/10*
U.S. Cl. 346—76 PH **4 Claims**

1. A thermal printing head having a dielectric substrate, a plurality of heater elements attached on a surface of said substrate through electroless plating, and lead lines coupled with the heater elements for supplying power to the same, wherein the material of the heater elements comprises nickel, at least one of phosphorus and boron, and at least 2% by weight of an



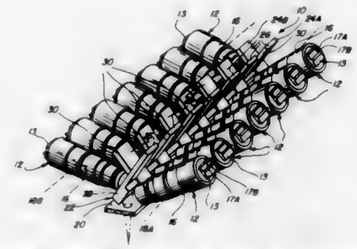
additive agent selected from at least one of tungsten and molybdenum.

4,661,828

OPTICAL IMAGING HEAD

Verelyn A. Miller, Jr., 5228 Cypress Ct., Lisle, Ill. 60532; Richard W. Diener, 9101 Barberry La., Des Plaines, Ill. 60016, and Leonid Drapatsky, 624 Hibbard Rd., Wilmette, Ill. 60091

Filed Mar. 20, 1985, Ser. No. 713,835
Int. Cl.⁴ G01D *9/42, 15/14*
U.S. Cl. 346—108 **12 Claims**



1. An optical imaging head for directing an image onto a focal plane, comprising:

a plurality of first imaging devices for forming a plurality of first, spaced reproduced image segments of an original image onto the focal plane in a linear array;

a plurality of second imaging devices for forming a plurality of second, spaced reproduced image segments of the original image onto the focal plane in a linear array between the spaced reproduced image segments formed by the first imaging devices; and

reflecting means for reflecting the spaced reproduced image segments from at least one of the first and second plurality of imaging devices onto the focal plane simultaneously along the same line location on the focal plane as the other of the first and second plurality of imaging devices such that the first and second spaced reproduced image segments combine in an alternating array to simultaneously emulate a complete line of the original image.

4,661,829

DEVICE USING ORDERED SEMICONDUCTOR ALLOY

John C. Bean, New Providence, and Abbas Ourmazd, Middletown, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 5, 1985, Ser. No. 741,636
Int. Cl.⁴ H01L *27/14, 29/78*
U.S. Cl. 357—30 **12 Claims**



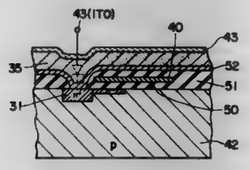
1. A semiconductor device comprising a superlattice of interleaved first and second semiconductor layers, such interleaved first and second layers having first and second compositions, said first composition comprising ordered Ge_xSi_{1-x}.

4,661,830

SOLID STATE IMAGER

Yoshio Ohta, Amagasaki; Takao Chikamura, Tsuzuki; Yutaka Miyata, Hirakata; Kohsaku Yano, Higashiosaka, and Shinji Fujiwara, Minoo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 2, 1984, Ser. No. 626,730
Claims priority, application Japan, Jul. 6, 1983, 58-122802; Jul. 6, 1983, 58-122803
Int. Cl.⁴ H01L *27/14, 29/78, 31/00*
U.S. Cl. 357—30 **14 Claims**



1. A solid state imager comprising:

a scanning circuit including a semiconductor substrate, said scanning circuit having a signal storage period and being operated by application of vertical clock pulses including vertical transfer pulses separated by vertical blanking periods and with high frequency transfer pulses having a frequency higher than that of the vertical transfer pulses occuring for a predetermined period in the vertical blanking periods;

a photoelectric conversion film formed on said scanning circuit for generating signal charges in response to incident light, said charges being stored in said substrate during the signal storage period;

a transparent electrode formed on said photoelectric conversion film;

means for applying a voltage to said transparent electrode in a period that said high frequency transfer pulses exist for setting said semiconductor substrate at a more shallow potential level relative to the potential level of said substrate during the signal storage period; and

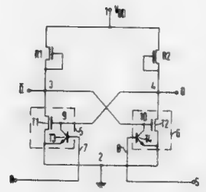
means for transferring excess photoelectric generated charges to outside of said imager during the vertical blanking period.

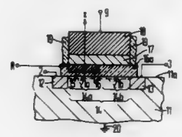
4,661,831

INTEGRATED RS FLIP-FLOP CIRCUIT

Doris Schmitt-Landsiedel, and Gerhard Dorda, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 23, 1984, Ser. No. 633,599
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1983, 3330026
Int. Cl.⁴ H01L *27/02, 27/12*; G11C *11/34*
U.S. Cl. 357—46 **19 Claims**





1. In an integrated RS flip-flop circuit of the type in which a pair of cross-coupled inverters respectively comprise a resistor element and a field effect transistor having a gate and a source-drain segment connected in series with the resistor element between a supply terminal and a reference terminal, in which each field effect transistor has a gate cross-connected to the junction of the other field effect transistor and its series-connected resistor element, and in which a pair of switching elements are respectively connected to the field effect transistors and include control inputs constituting an R input and an S input, the improvement wherein:

each of said switching elements comprises a tunnel emission hot electron transistor comprising a base, an emitter, and a collector;

each of said field effect transistors comprises a doped semiconductor body of a first conductivity type including a boundary surface and being connected to a reference potential, a pair of doped first regions of a second conductivity type opposite said first conductivity type spaced apart and extending from said boundary surface into said body and defining a channel region in said body therebetween and constituting a source and a drain, an insulator carried on said boundary surface over said channel region, and a gate layer structure provided on said insulator; and

each of said hot electron transistors comprises an inversion layer in said channel abutting one of said first regions and constituting said emitter, a conductive layer carried on said insulator extending over said emitter and constituting said base, and a portion of said gate layer structure extending over said base and constituting said collector.

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4,661,832

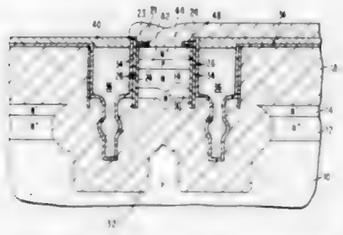
TOTAL DIELECTRIC ISOLATION FOR INTEGRATED CIRCUITS

John S. Lechaton, Wappingers Falls; Shashi D. Malaviya, Fishkill; Dominic J. Schepis, Wappingers Falls, and Gurumakonda R. Srinivasan, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 665,824, Oct. 29, 1984, abandoned, which is a division of Ser. No. 393,932, Jun. 30, 1982, Pat. No. 4,502,913. This application Feb. 6, 1986, Ser. No. 826,938

Int. Cl.⁴ H01L *27/12*

U.S. Cl. 357—49 **12 Claims**



1. An integrated circuit having semiconductor devices therein which are completely isolated from other semiconductor devices comprising:

a silicon semiconductor body composed of a substrate and an epitaxial silicon layer of a predetermined thickness on said substrate;

regions of said epitaxial layer are completely isolated from other completely isolated epitaxial layer regions by a combination of recessed oxide isolation regions of a thickness substantially that of said epitaxial layer extending from the surface of said silicon body and fully recessed into said epitaxial layer, insulator filled trenches extending between said recessed oxide isolation regions and from the surface of said silicon body into said body, said trenches being contiguous with said recessed oxide isolation regions and having a depth exceeding the thickness of said epitaxial layer and an oxide layer between said filled trenches and said recessed oxide isolation regions and extending to a depth exceeding said trench depth;

said semiconductor devices located in certain of said completely isolated epitaxial layer regions; and

means for electrically contacting said semiconductor devices and connecting them with other semiconductor devices in said other completely isolated epitaxial layer regions on said substrate to form said integrated circuit.

4,661,833

ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY

Yoshihisa Mizutani, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 29, 1985, Ser. No. 792,562

Claims priority, application Japan, Oct. 30, 1984, 59-228521

Int. Cl.⁴ H01L *29/78, 29/06, 29/34, 27/02*

U.S. Cl. 357—54 **6 Claims**

1. An electrically erasable and programmable read only memory which comprises:

a semiconductor substrate of a first conductivity type;

source and drain regions both of a second conductivity type separately formed in the surface of said substrate;

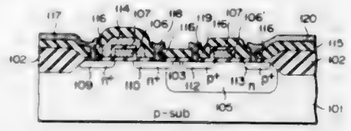
a gate insulation film formed on that portion of the surface of said substrate which includes a channel region defined between said source and drain regions;

a first diffusion region of the second conductivity type, part of which is formed in said substrate surface in contact with said drain region and which has a lower impurity concentration than said drain region;

a first insulation film formed on said first diffusion region;

a floating gate having an extension which extends over said first insulation film;

a second diffusion region of the first conductivity type which is formed in said first diffusion region lying near the extension of said floating gate;



a third diffusion region of the first conductivity type which is formed in said first diffusion region;

a second insulation film covering said floating gate; and

a control gate crossing at least that section of the surface of said second insulation layer which faces part of said floating gate.

4,661,834

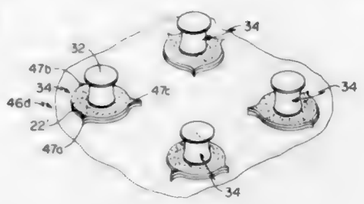
SEMICONDUCTOR STRUCTURES AND MANUFACTURING METHODS

Michael G. Varteresian, Watertown, and S. Robert Steele, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 679,680, Dec. 10, 1984, abandoned. This application Dec. 20, 1985, Ser. No. 810,901

Int. Cl.⁴ H01L *29/06*

U.S. Cl. 357—56 **1 Claim**



1. A semiconductor device comprising:

a heat spreader surface;

at least one mesa shaped diode having a first electrode contact disposed on a first portion of said mesa shaped diode and a thermally conductive layer having a thickness in the range of 1 to 2 microns disposed on a second, opposite portion of the mesa shaped diode; and

wherein said thermally conductive layer is bonded to said heat spreader surface and said thermally conductive layer has small finger-like portions emanating from peripheral portions of the thermally conductive layer.

4,661,835

SEMICONDUCTOR STRUCTURE AND METHOD OF ITS MANUFACTURE

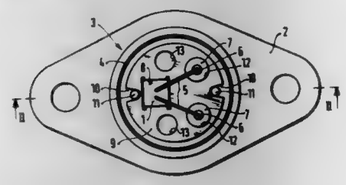
Lothar Gademann, Rottenburg, and Johann Tschepella, Reutlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 671,554

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 3401404

Int. Cl.⁴ H01L *23/48*

U.S. Cl. 357—68 **14 Claims**



1. Semiconductor structure having

a plate-like semiconductor element (1);

a carrier structure (2, 14) having a solderable surface;

the plate-like semiconductor element (1) being soldered to the carrier structure on one major surface of the plate-like element;

at least one geometrically defined electrical connection zone formed on the other major surface of the plate-like semiconductor element;

a housing (3) enclosing the plate-like semiconductor element; and

at least one connection conductor (6, 4″) insulatingly sealed through the housing, and having a portion extending inwardly of the housing, connected to the at least one connection zone;

and comprising, in accordance with the invention,

a wire (5) intefconnecting element (1) and conductor (6,6″);

a positioning templet (9) formed with an opening (8) dimensioned and shaped to receive the plate-like semiconductor element (1) therein with sufficient clearance to prevent collision between said templet (9) and said semiconductor element (1) during simultaneous soldering of said templet (9) and said element (1) to said carrier (2) and during differential thermal expansion and contraction of said templet (9) and element (1), located on the carrier structure (2, 14), and having a solderable surface which is soldered to the carrier structure (2, 14), the positioning templet being a plate-like structure, and the opening (8) being located inwardly of the edge of said plate-like templet structure (9) to approximately position and to protect the plate-like semiconductor element (1) within the opening (8); and

interfitting means (10, 10′; 11) located, respectively, on the positioning templet (9) and on the carrier structure (2,14), thereby positively positioning said templet (9) and carrier structure (2,14) with respect to each other.

4,661,836

FABRICATING INTEGRATED CIRCUITS

Joseph Mun, Old Harlow, England, assignor to ITT Industries Inc., New York, N.Y.

Continuation of Ser. No. 386,158, Jun. 7, 1982, abandoned. This application Sep. 25, 1985, Ser. No. 781,194

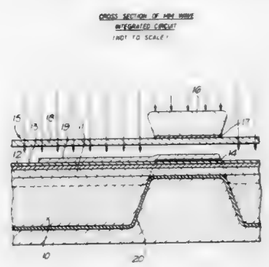
Claims priority, application United Kingdom, Jun. 25, 1981, 8119677

Int. Cl.⁴ H01L *23/36, 23/12, 25/04*

U.S. Cl. 257—81 **7 Claims**

1. A millimeter wave integrated circuit comprising:

a semi-insulating substrate having a thickness of between 75 to 125 micrometers, said substrate having a semiconductor layer on one surface, a plurality of components formed in said semiconductor layer, one of said components being a high power component, said substrate being formed with



openings in registery with said high power component, and a body of thermally conductive material disposed in said opening.

4,661,837

RESIN-SEALED RADIATION SHIELD FOR A SEMICONDUCTOR DEVICE

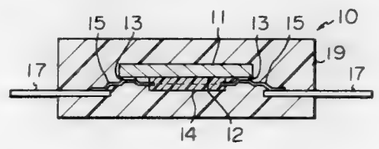
Michio Sono, Yamato, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 497,791, May 25, 1983. This application Dec. 12, 1985, Ser. No. 807,212

Claims priority, application Japan, May 28, 1982, 57-090684

Int. Cl.⁴ H01L *25/04*

U.S. Cl. 357—84 **7 Claims**



1. A semiconductor device comprising:

a semiconductor chip having a top surface in which a circuit having electrical elements is formed, and having a plurality of electrodes provided on the top surface of the semiconductor chip in which said circuit is formed;

internal leads each having a central portion bonded to said electrodes of said semiconductor chip, said internal leads having first ends projecting inward in a substantially horizontal direction from said electrodes and having second ends projecting outward in a substantially horizontal direction from said electrodes;

a radiation shield film having an area smaller than the area of said semiconductor chip, a portion of said radiation shield being arranged on and in close contact with said top surface of said semiconductor chip and adjacent to said first ends of said internal leads arranged thereon, supporting said first ends of said internal leads so that a gap is not formed therebetween, said first ends being inserted into said radiation shield film, said semiconductor chip being substantially supported by said internal leads and said radiation shield film;

external leads having first ends bonded to said second ends of said internal leads; and

a sealing resin molded around said semiconductor chip, said radiation shield film, said internal leads, and said first ends of said external leads, a portion of the surface of said chip directly opposite said top surface of said semiconductor chip and the surface of said radiation shield film farthest

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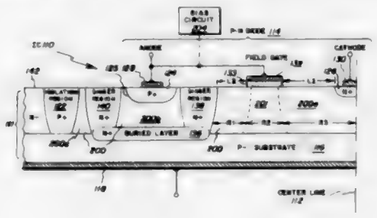
from said chip having said sealing resin formed directly thereon.

4,661,838

HIGH VOLTAGE SEMICONDUCTOR DEVICES ELECTRICALLY ISOLATED FROM AN INTEGRATED CIRCUIT SUBSTRATE

Eric J. Wildi, and James E. Kohl, both of Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 24, 1985, Ser. No. 790,716
Int. Cl.⁴ H01L *29/78, 29/40, 29/80, 29/90*
U.S. Cl. 357—23.8 **28 Claims**



1. In an integrated circuit of the type including a substrate layer of a first conductivity type, a drift layer of an opposite conductivity type having a selected first charge density and overlying said substrate layer, and an isolation region of said first conductivity type adjoining said substrate and surrounding said drift layer, a semiconductor device comprising:

a first main device region of said opposite conductivity type extending into an upper portion of said drift layer;

a second main device region of said first conductivity type extending into an upper portion of said drift layer and configured as a loop surrounding said first main device region;

a highly-doped buried layer of said opposite conductivity type situated between said substrate and drift layers, beneath said second main device region and configured as a loop surrounding said first main device region;

a highly-doped first sinker region of said opposite conductivity type extending from an upper surface of said drift layer to said buried layer, said sinker region being configured as a loop surrounding said first main device region;

a highly-doped second sinker region of said opposite conductivity type extending from said upper surface of said drift layer to said buried layer, said second sinker region being configured as a loop surrounding said first and second main device regions;

a field gate electrode insulatingly spaced from said drift layer, situated between said first sinker region and said first main device region, and configured as a loop surrounding said first main device region; and

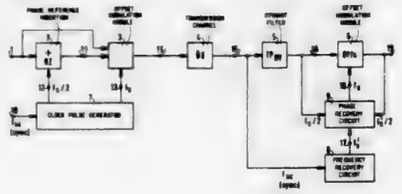
a portion of said drift region underlying said field gate electrode having a selected second charge density of lesser magnitude than said first charge density.

4,661,839

METHOD AND APPARATUS FOR USING A VERTICAL INTERNAL TEST SIGNAL FOR PHASE CONTROL OF AN OFFSET MODULATION OF OFFSET SAMPLING SYSTEM

Martin Plenthoit, Dortmund; Berthold Elberger, Darmstadt, and Hartmut Schröder, Dortmund, all of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Apr. 12, 1985, Ser. No. 722,364
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414271
Int. Cl.⁴ H04N *7/12*
U.S. Cl. 358—12 **8 Claims**



1. In the transmission of a color television signal containing chrominance burst and sync signals over a Nyquist channel, which has a Nyquist frequency which determines its bandwidth and which extends between a transmitting station and a receiving station, by means of a method for modulating and synchronously demodulating the television signal according to the offset modulation and offset sampling principle, the improvement comprising:

using the chrominance burst or synch pulses as a reference signal for frequency recovery at the receiving station;

generating an additional reference signal at the transmitting station and transmitting the additional reference signal over the Nyquist channel, with said additional reference signal consisting of an oscillation train at said Nyquist frequency which is equal to one half of the frequency of the modulation carrier or sampling signal used in said offset modulating and demodulating method; and

utilizing said additional reference signal for phase recovery at the receiving station.

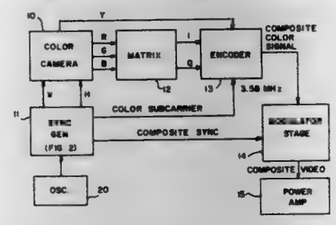
4,661,840

NTSC COLOR TELEVISION TRANSMISSION

Arthur C. Phelps, Hollywood, Calif., assignor to High Resolution Television, Inc., Los Angeles, Calif.

Filed Mar. 29, 1985, Ser. No. 717,862
Int. Cl.⁴ H04N *9/45*
U.S. Cl. 358—16 **4 Claims**

1. A method for an improved color television transmission compatible with NTSC standards comprised of the steps of generating a color subcarrier at about 3,579,545 Hz, by dividing down a clock frequency of four times the desired color subcarrier, dividing said clock frequency to produce a controlled horizontal scan rate at about 15,734 Hz with 227.5 cycles of color subcarrier per line, and dividing said clock



frequency to produce a controlled vertical scan rate at about 59.940 Hz to produce frames of two interlaced fields, each at a rate of about 29.970 Hz with 59,718.5 cycles of said color subcarrier per field.

4,661,841

COLOR SIGNAL PROCESSING CIRCUIT

Susumu Suzuki, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 19, 1985, Ser. No. 713,599
Claims priority, application Japan, Mar. 21, 1984, 59-53808; Jan. 7, 1984, 59-117067
Int. Cl.⁴ H04N *9/67*
U.S. Cl. 358—27 **10 Claims**

1. A color signal processing circuit comprising:

multiplier means for receiving a first digital chroma signal and a second signal and producing a third signal which represents the multiplication of said first and second signals;

means for transmitting said first signal to said multiplier means;

matrix coefficient means responsive to said third signal for generating a plurality of matrix coefficients, said matrix coefficient means including a first selector means for selecting said matrix coefficients in time division manner and for producing said second signal; and

ACC means, connected between said multiplier means and said matrix coefficient means, for generating an ACC signal upon application of said third signal.

4,661,842

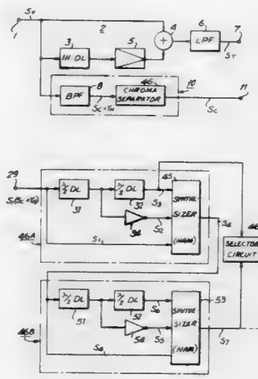
LUMINANCE/CHROMINANCE SEPARATOR

Masafumi Ishige; Yoshitaka Kanemoto; Tamio Yokoyama, and Ichitaro Sato, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1985, Ser. No. 753,573
Claims priority, application Japan, Jul. 11, 1984, 59-144071
Int. Cl.⁴ H04N *5/21*
U.S. Cl. 358—36 **24 Claims**

1. Apparatus for removing high-frequency luminance cross-talk components from a chrominance signal modulated on a chrominance subcarrier signal and formed as part of a composite video signal of specified length, comprising:

first chroma separator means receiving said composite video signal and including first delay means for imparting a first time delay based on a period of said chrominance subcarrier signal to said composite video signal and producing a first time delayed output and first signal synthesizer means receiving said composite video signal and said first time delayed output for producing therefrom a first horizontally correlated, synthesized output signal formed of said chrominance signal and reduced cross-talk components; and



second chroma separator means receiving said first horizontally correlated, synthesized output signal from said first chroma separator means and including second delay means for imparting to said synthesized output signal a time delay corresponding to said first time delay and producing a second time delayed output therefrom and a second signal synthesizer means receiving said second time delayed output and said first horizontally correlated, synthesized output signal from said first chroma separator means for producing therefrom a second horizontally correlated, synthesized output signal having a length substantially equal to said specified length of said composite video signal.

4,661,843

COLOR IMAGE COPYING APPARATUS

Hidekazu Sekizawa, Yokohama; Akito Iwamoto, Kamakura; Naofumi Yamamoto, Tokyo, and Hitoshi Yoneda, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 9, 1985, Ser. No. 753,260
Claims priority, application Japan, Jul. 16, 1984, 59-146099; Sep. 29, 1984, 59-204820
Int. Cl.⁴ H04N *1/46*
U.S. Cl. 358—80 **15 Claims**

1. A color copying apparatus comprising:

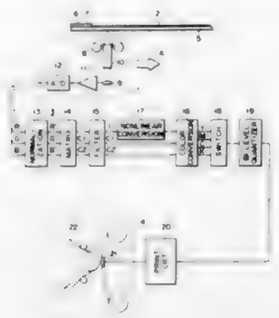
a color image sensor for optically scanning an input color image original to produce image informatinn signals representative of the color image original;

a color printer responsive to color printing signals for printing a color image corresponding to the input color image original using a plurality of color inks;

first circuit means connected to receive the image information signals from said color image sensor for producing a luminance signal component and color difference signal components;

second circuit means coupled between said first circuit means and said printer for converting the luminance signal component and the color difference signal components

into the color printing signals used in said color printer; and



nonlinear conversion circuit means coupled between said first and second circuit means for converting, on a nonlinear basis, at least one of the luminance signal component and the color difference signal components.

4,661,844

INTEGRATED CIRCUIT FOR THE COLOR DECODER OF A TELEVISION SET

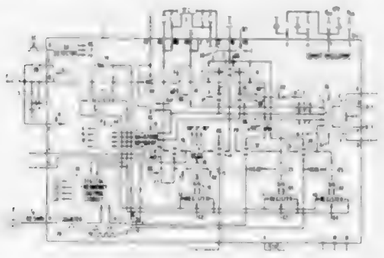
Jean-Claude Rufray, VS-Überauchen, and Antoine Pery, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, VS-Villingen, Fed. Rep. of Germany

Filed Nov. 23, 1984, Ser. No. 674,227

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342181

Int. Cl.⁴ H04N *9/64, 3/27*

U.S. Cl. 358—23 **37 Claims**



1. An integrated circuit for chrominance decoding in a television receiver comprising

an adding stage for adding chrominance carrier signals of two time sequentially following lines;

a subtraction stage for subtracting chrominance carrier signals of two time sequentially following lines, where the adding stage and the subtraction stage require the presence of external adjustment components for synchronization, balancing and/or calibration of their input signals;

oscillators providing a demodulation of the chrominance carrier signals;

the improvement comprising

an automatic control circuit for substituting said external adjustment components for synchronization, balancing and/or calibration by automatic adjustment components internal to the automatic control circuit for automatically adjusting the desired operational condition to a optimal value of providing equal amplitude and a defined phase relationship to the chrominance carrier signals at the input of said adding stage and at the input said subtracting stage;

an internal digital frequency control circuit;

a terminal for the application of an external reference voltage in order to provide synchronizing functions via said internal digital automatic frequency control circuit;

internal oscillators synchronized by the internal automatic frequency control circuit and generating a reference carrier for the decoding of a chrominance carrier F;

a PAL and/or NTSC reference carrier oscillator; and

a phase locked loop circuit such that the PAL and/or NTSC reference carrier oscillator becomes synchronized by a color synchronization burst signal via the phase locked loop.

4,661,845

MICROORGANISM MONITORING APPARATUS

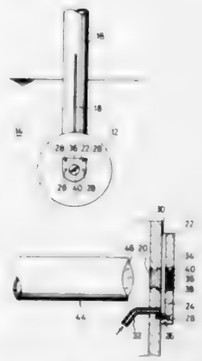
Toshio Saito; Kazuo Yukawa, both of Yokohama, and Tomio Suzuki, Tokyo, all of Japan, assignors to Nishihara Environmental Sanitation Research Corporation Limited, Tokyo, Japan

Filed Dec. 24, 1984, Ser. No. 685,309

Claims priority, application Japan, Dec. 23, 1983, 58-197182; Apr. 9, 1984, 59-50752; Jul. 10, 1984, 59-141308; Aug. 21, 1984, 59-172393; Sep. 3, 1984, 59-132650

Int. Cl.⁴ H04N *7/18*

U.S. Cl. 358—99 **34 Claims**



1. An apparatus for directly monitoring microorganisms present in a liquid, comprising:

transparent window means, one face of which is adapted to be in contact with the liquid;

a plate member disposed opposite to the one face of said transparent window means so as to form a narrow sample cell between said one face and a surface of said plate member, said sample cell being adapted to be submerged in the liquid to be monitored and having an opening to permit introduction and discharge of a sample from the liquid thereinto;

a tube member, one end of which is connected to said sample cell and the other end of which can be connected to a source for a cleaning fluid to purge the sample held therein;

a light source for directing a light beam onto the sample held in said sample cell;

an optical magnifying system disposed opposite to the other face of said transparent window means to magnify an image of said microorganisms in the sample illuminated by said light beam; and

means for observing the image magnified by said optical magnifying system.

4,661,846

APPARATUS FOR DETECTING A MOVEMENT OF A DIGITAL TELEVISION SIGNAL

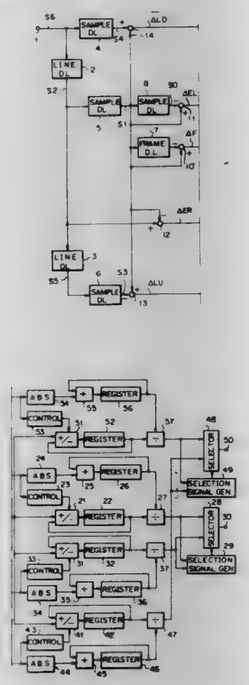
Tetsujiro Kondo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 6, 1985, Ser. No. 773,078

Claims priority, application Japan, Sep. 7, 1984, 59-187826; Sep. 10, 1984, 59-189352

Int. Cl.⁴ H04N *7/12*

U.S. Cl. 358—165 **5 Claims**



1. An apparatus for detecting a movement of a television signal comprising: horizontal movement detecting means having means for integrating a frame difference signal (ΔF) obtained by subtracting an image signal of one frame before from an image signal in the current frame of a television signal in a movement region, first addition/subtraction control means for controlling an adding or subtracting operation of said frame difference signal (ΔF) integrating means in accordance with a positive or negative sign of a differential horizontal pixel signal (ΔE) derived by subtracting an intensity value of a pixel horizontally adjacent to a predetermined pixel in said current frame image signal from an intensity value of said predetermined pixel, means for integrating an absolute value of said differential horizontal pixel signal (ΔE), and first dividing means for dividing an output signal of said frame difference signal (ΔF) integrating means by an output signal of said integrating means of the absolute value of said differential horizontal pixel signal (ΔE), said horizontal movement detecting means detecting an output signal of said first dividing means as a movement amount of the image in the horizontal direction; and vertical movement detecting means having second addition/subtraction control means for controlling an adding or subtracting operation of said frame difference signal (ΔF) integrating means in accordance with a positive or negative sign of a differential vertical pixel signal (ΔL) derived by subtracting an intensity value of a pixel vertically adjacent to said predetermined pixel in said current frame image signal from the intensity value of said predetermined pixel, and second dividing means for dividing the output signal of said frame difference signal (ΔF) integrating means by an output signal of the integrating means of the absolute value of said differential vertical pixel signal (ΔL), said vertical movement detecting means detecting an output signal of said second dividing means as a movement amount of the image in the vertical direction,

wherein said horizontal movement detecting means has first and second horizontal movement detecting means (**21, 22, 23, 24, 25, 26, 27; 31, 32, 33, 34, 35, 36, 37**) for detecting first and second horizontal movements in accordance with respective differential horizontal pixel signals (ΔEL, ΔER) between said predetermined pixel (S_1) and a pixel (S_0) which is one pixel before said predetermined pixel (S_1) and between said predetermined pixel (S_1) and a pixel (S_2) which is one pixel after said predetermined pixel (S_1), and selecting means which is controlled in dependence on the magnitudes of output signals of said first and second horizontal movement detecting means or on the signs indicative of positive or negative of said output signals of said first and second horizontal movement detecting means and which selectively takes out one of the output signals of the first and second horizontal movement detecting means, and

said vertical movement detecting means has first and second vertical movement detecting means (**41, 42, 43, 44, 45, 46, 47; 51, 52, 53, 54, 55, 56, 57**) for detecting first and second vertical movements in accordance with respective differential vertical pixel signals (ΔLU, ΔLD) between said predetermined pixel (S_1) and a pixel (S_3) which is one line before said predetermined pixel (S_1) and between said predetermined pixel (S_1) and a pixel (S_4) which is one line after said predetermined pixel (S_1), and selecting means which is controlled in dependence on the magnitudes of output signals of said first and second vertical movement detecting means or on the signs indicative of positive or negative of the output signals of said first and second vertical movement detecting means and which selectively takes out one of said output signals of the first and second vertical movement detecting means.

4,661,847

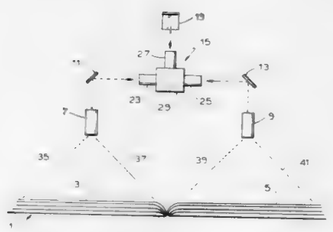
TECHNIQUE FOR MONITORING MAGAZINE READERS

Lee S. Weinblatt, 797 Winthrop Rd., Teaneck, N.J. 07666

Filed Feb. 19, 1986, Ser. No. 831,234

Int. Cl.⁴ H04N *7/14*

U.S. Cl. 358—108 **11 Claims**



1. Apparatus for determining the extent to which pages in a selected publication are looked at by an individual test subject, comprising:

a housing;

first optic means secured to said housing and placed opposite the publication for providing an image of said publication;

second optic means secured to said housing and aimed at the eyes of the individual test subject to provide an image of at least one of said eyes and

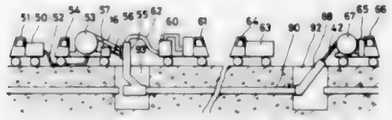
means in said housing for superimposing the images provided by the said first and second optic means.

4,661,848

METHOD AND APPARATUS FOR CLEANING OF PIPES

Shinichi Matsuda, 32-14, Higiriyama 1-chome, Konan-ku, Yokohama, Kanagawa 233, Japan

Filed Dec. 26, 1985, Ser. No. 813,612
Claims priority, application Japan, Sep. 25, 1985, 60-210093
Int. Cl.[4] B08B *9/06;* **H04N** *7/18*
U.S. Cl. 358—100 **2 Claims**



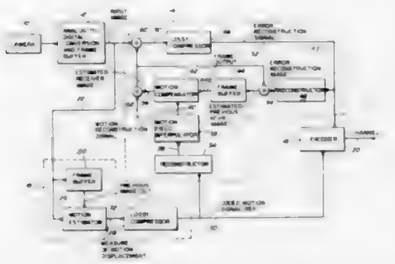
1. A method for cleaning a pipe comprising the steps of:
linearly connecting in a pipe to be cleaned a grinding device having a rotatable ejection pipe which is connected to a compressed air abrasive material supplying hose, an electric motor for rotating said ejecting pipe, a video signal device having a television camera, and an air ejection device connected to a dust discharge compressed air supplying hose,
cleaning said pipe by discharging abrasive material against an inner surface of said pipe from said ejection pipe while advancing said apparatus and using said electric motor to rotate said ejection pipe;
simultaneously using said video signal device for viewing the cleaned pipe,
using said air ejection device for ejecting air towards said video signal device, and
moving said apparatus backward by pulling said dust discharge compressed air supplying hose.

4,661,849

METHOD AND APPARATUS FOR PROVIDING MOTION ESTIMATION SIGNALS FOR COMMUNICATING IMAGE SEQUENCES

Brian L. Hinman, Lynn, Mass., assignor to PicTel Corporation, Peabody, Mass.

Filed Jun. 3, 1985, Ser. No. 740,900
Int. Cl.[4] H04N *7/13*
U.S. Cl. 358—136 **22 Claims**



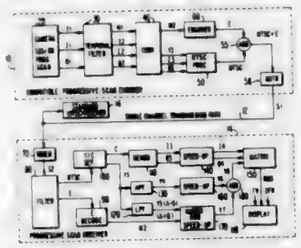
1. In an image sequence transmission method for transmitting a sequence of images over a bandwidth limited channel, a motion estimation method for estimating for successive image frames, a measure of motion displacement between successive images comprising the steps of
dividing each said image into non-overlapping blocks, each block having a plurality of picture elements,
selecting an initial value of a motion vector displacement for each successive block,
iteratively determining, using a steepest descent method, succession values of said motion vector displacement for successive blocks of an image, and
terminating said iteration step for a block when an iteration error measure, associated with said steepest descent method, is less than a predetermined threshold value.

4,661,850

PROGRESSIVE SCAN TELEVISION SYSTEM WITH INTERLACED INTER-FIELD SUM AND DIFFERENCE COMPONENTS

Christopher H. Strolle, Glenside, Pa., and Glenn A. Reitmeier, West Trenton, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jan. 31, 1986, Ser. No. 824,902
Int. Cl.[4] H04N *7/01, 11/06, 11/14*
U.S. Cl. 358—140 **10 Claims**



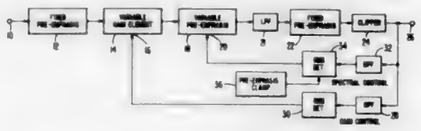
1. A progressive scan encoder, comprising:
signal source means for providing a first luminance signal of given line scan form and having a line-rate greater than that of a given broadcast standard;
temporal filter means coupled to said signal source means for adding corresponding lines of adjacent fields of said luminance signal to provide a sum output signal and for subtracting said corresponding lines of said adjacent fields to provide a difference signal;
sub-sampling time-expanding converter means coupled to said filter means for selecting every other line of each of said sum and difference signals and for time expanding the selected lines of each of said sum and difference signals by a selected factor to provide a processed sum output signal compatible with said given broadcast standard and a processed difference output signal; and
transmission means coupled to said converter means for transmitting said output signals.

4,661,851

APPARATUS FOR REDUCING THE EFFECT OF NOISE INTERFERENCE IN AUDIO COMPANDING SYSTEM

Max W. Muterspaugh, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 27, 1984, Ser. No. 593,967
Int. Cl.[4] H04N *7/04*
U.S. Cl. 358—144 **4 Claims**



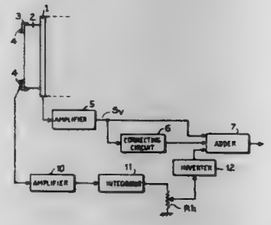
3. A channel for processing an audio signal comprising:
fixed filter means for emphasizing high frequency components of said audio signal to produce a preemphasized audio signal;
variable filter means for controlling between upper and lower gain limits the amplitude of said preemphasized audio signal in a first frequency range in response to a control signal;
first control means for generating said first control signal; and
clamp means coupled to said first control means for limiting the amplitude of said control signal so as to limit the control provided by said variable filter means to a range between said lower gain limit and a predetermined limit, less than said upper gain limit.

4,661,852

OPTICAL-DIFFUSION CORRECTING DEVICE FOR A TELEVISION CAMERA TUBE

Christian Mourier, Le Chesnay, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 17, 1985, Ser. No. 692,128
Claims priority, application France, Jan. 20, 1984, 84 00888
Int. Cl.[4] H04N *5/14*
U.S. Cl. 358—160 **5 Claims**



1. An optical-duffison correcting device for a television camera tube in which the camera has a lens for supplying an image and the tube has a video output and a target for receiving the image and producing video signals, said device comprising along with a first diffusion correcting signal an adding circuit for receiving the video and first diffusion correcting signals, and peripheral-diffusion correcting mean for scanning a closed band which forms part of the image supplied by the camera lens and surrounds on the target a useful image to be televised and for delivering to the adding circuit a second diffusion-correcting signal which is representative of a means value of a signal obtained by scanning of the closed-band.

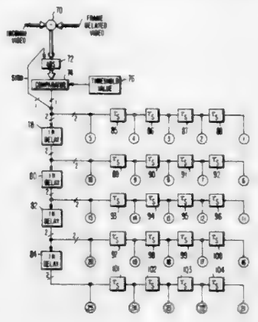
4,661,853

INTERFIELD IMAGE MOTION DETECTOR FOR VIDEO SIGNALS

Barbara J. Roeder, Pt. Pleasant, Pa.; Leopold A. Harwood, Bridgewater, and Hermann J. Weckenbrock, Bordentown, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 1, 1985, Ser. No. 794,222
Int. Cl.[4] H04N *7/18, 5/14, 5/213*
U.S. Cl. 358—167 **12 Claims**

1. A motion detector for detecting image motion in a video signal from sampled data signals representing differences between pixels separated by substantially integral numbers of field intervals, comprising:
a source of said sampled data signals representing pixel differences;
means coupled to said source for concurrently providing a plurality of said sampled data signals corresponding to an array of pixel differences disposed about and including a pixel difference under examination for image motion;
detection means coupled to said means for providing a plurality of sample data signals, for examining subarrays of said sampled data signals, each subarray including the sampled data signal corresponding to the pixel difference under examination and at least one sample data signal exclusive of the other subarrays, and providing a motion signal if all of the sampled data signals in any one of the subarrays exhibit a like predetermined characteristic.

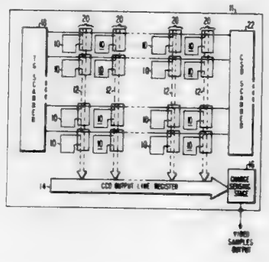


4,661,854

TRANSFER SMEAR REDUCTION FOR CHARGE SWEEP DEVICE IMAGERS

Eugene D. Savoye, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 26, 1985, Ser. No. 813,423
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213 **14 Claims**



1. CCD imager apparatus, comprising:
a semiconductor substrate;
a parallel array of CCD charge transfer channels formed on a major surface of said substrate;
sets of gate electrodes formed on said substrate and crossing said CCD charge transfer channels for defining successive charge transfer stages in each of said CCD charge transfer channels and transfer gate electrodes for controlling the transfer of charge packets into said CCD charge transfer channels;
a plurality of photoresponsive charge collecting regions formed in an array of rows and columns on said substrate, each charge collecting region being associated with a respective one of said CCD charge transfer channels;
output means coupled to one end of each of said CCD charge transfer channel for collecting charge packets transferred from said CCD charge transfer channels and providing therefrom successive samples of a video signal said video signal having line trace and line retrace periods therein; and
clock signal generating means for developing transfer signals which are applied to said transfer gate electrodes for causing transfer of photoresponsive charge packets from a selected row of said array of charge collecting regions

into said CCD charge transfer channels during a line retrace interval, and for developing clocking signals which are applied during said line retrace interval to said sets of gate electrodes crossing said CCD charge transfer channels for transferring said selected row of photoresponsive charge packets through said CCD charge transfer channels and accumulating them in said output means.

4,661,855

TELEVISION CAMERA WITH A DEVICE FOR VARYING ITS VIEWING DIRECTION

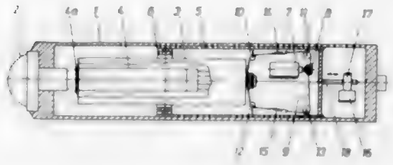
Erich Gülck, Kiel, Fed. Rep. of Germany, assignor to IBAK, Helmut Hunger GmbH & Co., KG, Kiel, Fed. Rep. of Germany

Filed Jan. 17, 1986, Ser. No. 820,401

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1985, 3536435

Int. Cl.[4] H04N *7/18;* **G02B** *13/16*

U.S. Cl. 358—225 **4 Claims**



1. Television camera with a device for varying its viewing direction, comprising a cylindrical housing, a camera insert disposed in said housing, a camera tube with a target of a given size disposed in said camera insert, a fixed wide angle lens at least partially disposed in said housing, said lens having a beam spread angle of at least 180° and a picture field several times larger than said given size of said target, a universal mounting supporting said camera insert in said housing, and an electrically controllable positioning motor for swiveling said camera insert in each of two mutually perpendicular planes.

4,661,856

CATHODE RAY TUBE GLARE FILTER, RADIATION AND STATIC ELECTRICITY SUPPRESSION DEVICE

Peter G. Schnack, Santa Rosa, Calif., assignor to Sun-Flex Company, Inc., Novato, Calif.

Filed Aug. 2, 1985, Ser. No. 761,755

Int. Cl.[4] H04N *5/72*

U.S. Cl. 358—252 **17 Claims**



1. A preformed glare and radiation suppression device adapted for attachment to the face of a cathode ray tube comprising:

(a) a thin, lightweight, portable frame having a curved plane of formation and constructed of a formable material, said material being formable to produce a substantially permanently, resilient biasing profile to said frame,

(b) said frame having a rectangular perimeter configuration in the plane of its formation with an inner surface and an outer surface, having top, bottom and side portions of substantially the same cross-section transverse to said frame,

(c) said frame being preformed to establish a radius of curvature for said perimeter configuration in the plane of said frame for said top, bottom and side portions,

(d) a fabric of conductive material stretched across the inner surface of said frame and secured to said top, bottom and side portions on the inner surface thereof to establish an inner perimeter surface of said frame having said fabric secured thereto,

(e) an electrically conductive material included in said securing of said fabric to said frame to conductively bond said fabric to said frame,

(f) an electrical conductor electrically connected at least to said electrically conductive material included in securing said fabric to said frame to permit electrical contact with said frame and fabric,

(g) and means on said inner perimeter surface of said frame for attaching said device to said face of a cathode ray tube.

4,661,857

FACSIMILE COMMUNICATION CONTROL METHOD

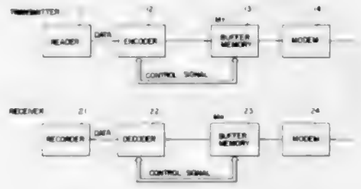
Mitsuru Kondo, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 10, 1983, Ser. No. 522,039

Claims priority, application Japan, Aug. 11, 1982, 57-139590

Int. Cl.[4] H04N *1/32*

U.S. Cl. 358—257 **5 Claims**



1. A method for controlling a facsimile communication between a transmitter including an encoder and a receiver including a buffer memory and a decoder, characterized in that, during protocol procedure, information containing at least a decoding speed V_D of said decoder of said receiver and a capacity M_R of said buffer memory of said receiver is supplied from said receiver to said transmitter, and, during transmission of data, said transmitter controls an encoding speed of its encoder to be equal to or slower than V_D by inserting an appropriate number of fillbits and it is so controlled to interrupt the encoding operation when the number of bits stored in said buffer memory of said receiver has exceeded a first amount M_1 ($M_1 \leqq M_R$), to resume the encoding operation when said number of bits has become smaller than a second amount M_2 ($M_2 < M_1$) and to insert a predetermined number of fillbits when said number of bits has become even smaller than a third amount M_3 ($0 \leqq M_3 < M_2$).

4,661,858

READING APPARATUS

Masamichi Tateoka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1985, Ser. No. 703,498

Claims priority, application Japan, Feb. 28, 1984, 59-35430; Jul. 26, 1984, 59-157885

Int. Cl.[4] H04N *1/04*

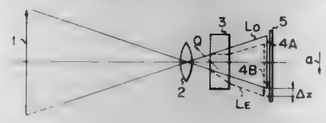
U.S. Cl. 358—284 **11 Claims**

1. An apparatus for reading the image of an original, comprising:

imaging means for forming the image of the original;

a one-dimensional line sensor provided at a position where the image of the original is formed by said imaging means; and

means for separating the light beam from the original provided between the original and said line sensor, said separating means separating the light beam from the original into a plurality of light beams shifted lengthwisely of said



line sensor relative to each other in order to form on said line sensor a plurality of images of the original shifted lengthwisely of said line sensor relative to each other, and the amount of the image shift being a value smaller than a minimum picture element of a predetermined dither matrix.

4,661,859

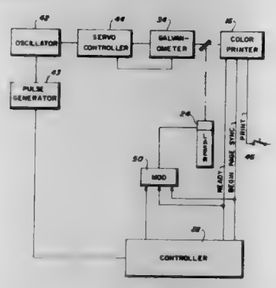
PULSE WIDTH MODULATION GREYSCALE SYSTEM FOR HALFTONE PRINTER

Louis D. Mailloux, Fairport, and Brian L. Waldron, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 3, 1981, Ser. No. 270,079

Int. Cl.[4] H04N *1/23, 1/40*

U.S. Cl. 358—283 **4 Claims**



1. In a one dimensional electronic halftone screening method wherein sequentially generated pictorial signals are representative of a number of pixel positions in a plurality of scan lines to define an original image and wherein synchronously generated halftone screen signals are representative of halftone values for each pixel position in each scan line, the method of producing a halftone image including the steps of

providing a digital word representative of the discrete greyscale value for each pixel,

storing the digital data word in a counter,

activating the counter to produce a count representative of the value of the pixel greyscale,

converting the count into a variable pulse width, and

activating a modulator in response to the pulse width to provide the greyscale value for each pixel whereby a line screen of pixel elements is provided.

4,661,860

IMAGE READER FOR IMAGE PROCESSING APPARATUS

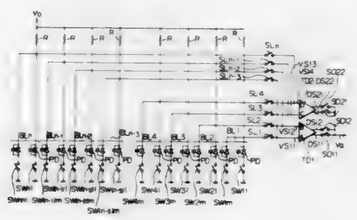
Hideyuki Miyazawa, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 12, 1985, Ser. No. 796,730

Claims priority, application Japan, Nov. 16, 1984, 59-240498

Int. Cl.[4] H04N *3/14, 1/024*

U.S. Cl. 358—294 **4 Claims**



1. An image reader for an image processing apparatus in which an array of light-sensitive cells arranged in a line image sensor are divided into a predetermined number of blocks and the blocks are divided into at least a first group and a second group in the order of arrangement, the blocks being sequentially selected and driven, said image reader comprising:

a plurality of block selector means, one for each block associated in one-to-one correspondence with each of said blocks for selecting one of the selected blocks in each of the groups and sequentially driving the cells in the selected block;

a first common terminal to which output terminals of all the block selector means which belong to the first group are commonly connected;

a second common terminal to which output terminals of all the block selector means which belong to the second group are commonly connected;

a first differential amplifier having a non-inverting input terminal connecting to said first common terminal and an inverting input terminal connecting to said second common terminal, thereby producing a first output by subtracting an output of the second group from an output of the first group;

a second differential amplifier having a non-inverting input terminal connecting to the second common terminal and an inverting input terminal connecting to the first common terminal, thereby producing a second output by subtracting an output of the first group from an output of the second group; and

output selector means for exclusively selecting one of the first and second outputs to deliver the selected output as an image signal,

the block selector means being constructed to simultaneously select one of the blocks and another block which is different in group from said one block for reading out image signals, whereby switching noise is removed.

4,661,861

LASER PRINTING FACSIMILE RECEIVER

David G. Rutherford, North Caldwell; Bernd Helling, Old Bridge; David M. Shearn, Somerset, and David Shaler, Madison, all of N.J., assignors to The Associated Press, East Brunswick, N.J.

Filed Jun. 4, 1985, Ser. No. 741,290

Int. Cl.[4] H04N *1/23, 1/40;* **G01D** *9/42*

U.S. Cl. 358—302 **32 Claims**

MICROFICHE APPENDIX INCLUDED

(2 Microfiche, 101 Pages)

1. A facsimile receiver for converting a received video

signal containing a scan line synchronization signal to a printed image, comprising:

transport means for moving a light sensitive record medium in a longitudinal direction;

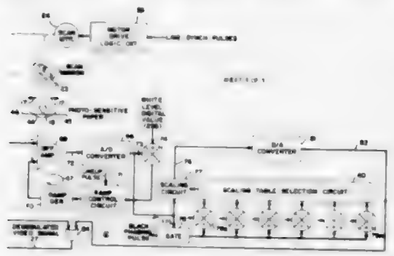
a light source comprising a laser having an output light beam;

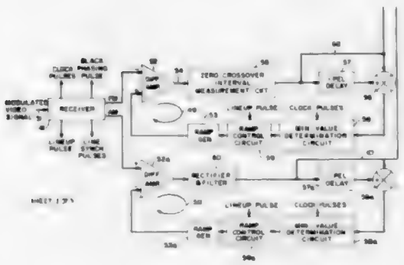
laser output intensity compensation means comprising:

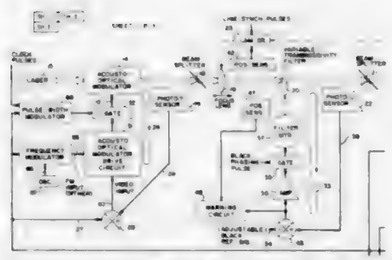
a variable transmissivity filter in the path of said light beam;

laser intensity measuring means for generating a laser intensity signal corresponding to the intensity of the output light beam of the laser; and

filter control means for adjusting said filter to vary the







transmittance of said light beam through said filter to compensate for variations in the intensity of the output light beam of the laser;

means for providing a dither control signal;

optical modulator means disposed in the path of said light beam between said laser and said paper transport means, for (i) intensity modulating said light beam in accordance with the value of said video signal, and (ii) causing said light beam to dither in the longitudinal direction of said transport means with a spatial amplitude of dither corresponding to the value of said dither control signal;

pulse width modulation control means for modulating the intensity of said light beam with a train of pulses, the pulses of said train having a width varying in inverse relation to the value of said video signal;

dither control means for varying the value of said dither control signal to cause the spatial amplitude of dither to vary inversely with the value of said video signal;

lens means for focusing said light beam on any light sensitive record medium coupled to said transport means;

scan means for deflecting said light beam in a transverse direction, in synchronism with the synchronization signal contained in said video signal, to generate a series of scan lines on said record medium corresponding to said printed image; and

dynamic focus control means coupled to said scan means for varying the focal point of said lens means in synchronism with the transverse deflection of said light beam along each of said scan lines, to maintain said light beam in focus on said record medium.

4,661,862

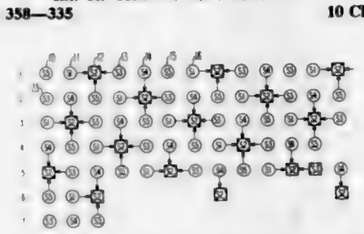
DIFFERENTIAL PCM VIDEO TRANSMISSION SYSTEM EMPLOYING HORIZONTALLY OFFSET FIVE PIXEL GROUPS AND DELTA SIGNALS HAVING PLURAL NON-LINEAR ENCODING FUNCTIONS

Charles R. Thompson, Morrestown Township, Burlington County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 27, 1984, Ser. No. 604,501

Int. Cl.[4] **H04N** *5/92, 7/13, 7/12*

U.S. Cl. 358—335 **10 Claims**



6. A method for transmitting N-bit digital television representative signals through a transmission path, comprising:

organizing said digital signals into recurrent groups of five time-adjacent samples representative of horizontally-adjacent pixels on each one of a plurality of lines of said television representative signal;

offsetting each group of samples by two pixel positions from line-to-line;

comparing first and second samples of a group of a first one of said lines with a second sample of said group to form first and second difference signals, respectively;

comparing a fourth sample of said group with the second sample of a group on a second horizontal line adjacent said first horizontal line to form a third difference signal;

comparing a fifth sample of said group with the second sample of a group on a third horizontal line adjacent said first horizontal line to produce a fourth difference signal;

representing each of said first, second, third and fourth difference signals by words of M bits, where M is less than N bits;

transmitting said first, second, third and fourth difference signals of M bits and said N-bit second signal.

4,661,863

COLOR VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS

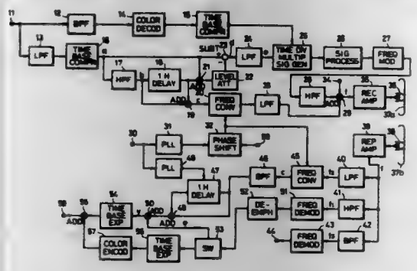
Yutaka Ichinoi, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Apr. 3, 1984, Ser. No. 596,296

Claims priority, application Japan, Apr. 7, 1983, 58-61292

Int. Cl.[4] **H04N** *9/495, 5/76, 9/491*

U.S. Cl. 358—334 **8 Claims**



1. A color video signal recording and reproducing apparatus comprising:

input terminal means (**11**) for receiving a standard system color video signal comprising a luminance signal and a carrier chrominance signal, said carrier chrominance signal comprising two kinds of color difference signals;

time base compressed line-sequential color difference signal forming means (**12, 14, 15**) supplied with the standard system color video signal from said input terminal means for separating said carrier chrominance signal and for forming a time base compressed line-sequential color difference signal from the two kinds of color difference signals of said carrier chrominance signal;

first frequency separating means (**13, 17**) coupled to said input terminal means for separating a high-frequency component of said luminance signal from the standard system color video signal;

second frequency separating means (**13, 17, 18, 21, 22, 23, 24, 65, 66**) coupled to said input terminal means for separating a low-frequency component of said luminance signal from the standard system color video signal;

luminance signal time base compressing means (**16, 67**) for compressing a time base of said low-frequency component of said luminance signal so as to obtain a time base compressed low-frequency component of the luminance signal;

a time-division-multiplexed signal generating circuit (**25**) supplied with said time base compressed low-frequency component of the luminance signal and said time base compressed line-sequential color difference signal for generating a time-division-multiplexed signal in which one of said time base compressed color difference signals, and said time base compressed low-frequency component of the luminance signal are multiplexed in time-sequence within one horizontal scanning period, the two kinds of time base compressed color difference signals being alternately transmitted for every one horizontal scanning period in the time-division-multiplexed signal;

modulating means (**26, 27, 28**) for frequency-modulating a carrier by said time-division-multiplexed signal so as to obtain a frequency modulated time-division-multiplexed signal;

first frequency converting means (**18, 19, 20, 31, 32, 33**) supplied with said high-frequency component of the luminance signal from said first frequency separating means for obtaining a low-band converted high-frequency component of the luminance signal by frequency-converting the high-frequency component of said luminance signal to a frequency band which is lower than the frequency band of said frequency modulated time-division-multiplexed signal;

first mixing means (**29**) for mixing said frequency modulated time-division-multiplexed signal and said low-band converted high-frequency component of the luminance signal to produce a mixed signal;

recording and reproducing means (**35, 36, 38, 39**) for recording the mixed signal on a recording medium and reproducing the mixed signal from the recording medium;

third frequency separating means (**40, 41**) supplied with the mixed signal which is reproduced by said recording and reproducing means for separating the frequency modulated time-division-multiplexed signal and the low-band converted high-frequency component of the luminance signal from the mixed signal;

demodulating means (**51, 52**) for frequency-demodulating the frequency modulated time-division-multiplexed signal which is supplied from said third frequency separating means to obtain a reproduced time-division-multiplexed signal;

separating means (**53**) supplied with said reproduced time-division-multiplexed signal from said demodulating means for separating a reproduced time base compressed line-sequential color difference signal and a reproduced time base compressed low-frequency component of the luminance signal;

a carrier chrominance signal reproducing circuit (**56, 57**) for forming a reproduced carrier chrominance signal which is in conformance with the standard system by subjecting said reproduced time base compressed line-sequential color difference signal to a time base expansion so as to return the time base to the original time base;

second frequency converting means (**31, 32, 45, 46, 47, 48, 49**) supplied with the low-band converted high-frequency component of the luminance signal from said third frequency separating means for obtaining a reproduced high-frequency component of the luminance signal by frequency-converting the low-band converted high-frequency component of the luminance signal back to the original frequency band;

a luminance signal reproducing circuit (**50, 54, 68, 69**) supplied with said reproduced time base compressed low-frequency component of the luminance signal from said separating means and said reproduced high-frequency component of the luminace signal from said second frequency converting means for subjecting said reproduced time base compressed low-frequency component of the luminance signal to a time base expansion so as to return the time base to the original time base, and for obtaining a reproduced luminance signal in the original frequency band; and

second mixing means (**55**) supplied with said reproduced carrier chrominance signal and said reproduced luminance signal for producing a reproduced color video signal which is in conformance with the standard system by mixing said reproduced carrier chrominance signal and said reproduced luminance signal.

4,661,864

MAGNETIC RECORDING AND REPRODUCING APPARATUS

Hideki Kuwajima, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 19, 1985, Ser. No. 724,886

Int. Cl.[4] **G11B** *5/027*

U.S. Cl. 360—85 **3 Claims**

1. A magnetic recording and reproducing apparatus, in which a magnetic tape wound on a reel built in a cassette is pulled out of said cassette and caused to travel while contacting a magnetic head installed outside said cassette, thereby recording or reproducing signals, said apparatus comprising:

a first shaft provided on a board:

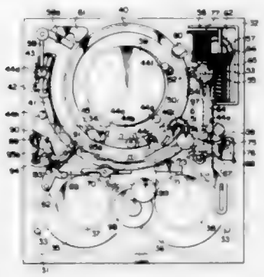
a first gear provided in a manner as to be rotatable about said

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first shaft provided on said board as well as to be slidable in the axial direction of said first shaft, said first gear having a tooth profile formed on a cylinder to generate a spiral curve;

a second gear meshed with said first gear and rotatable about a second shaft fixedly provided on said board;

driving means for driving said first gear in rotation;



operation changeover means adapted to be driven by the movement of said first gear in the axial direction of said first shaft for controlling driving movement of said magnetic tape in said apparatus; and

tape loading means adapted to be driven by the rotation of said second gear, when said first gear is not moving axially, for pulling out said magnetic tape from said cassette to a position where said magnetic tape is able to record or reproduce signals while contacting said magnetic head.

4,661,865

BATTERY HOLDER OF SINGLE HEAD MINIMUM SIZE CASSETTE TAPE PLAYER

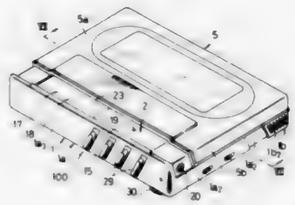
Mitsuru Ida, Saitama, and Minoru Shimada, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,791

Claims priority, application Japan, Jun. 3, 1983, 58-84948[U]

Int. Cl.⁴ G11B *15/66*

U.S. Cl. 360—96.6 **10 Claims**



1. A cassette tape player for use with a cassette having a substantially rectangular housing comprised of opposed panels and a peripheral wall therebetween with windows spaced along a relatively long side of the peripheral wall for exposing tape contained in the housing and guided in a run along said long side, said player having a single head which is adapted for reproducing and comprising:

a casing defining a compartment having a bottom surface for receiving the cassette with one of said panels on said bottom surface and including a hollow, box-like structure extending only partly across the casing above said bottom surface of the compartment to confront a corresponding portion of said long side of a cassette housing disposed in said compartment; said single head being mounted within said hollow, box-like structure, a battery receptacle extending longitudinally from said hollow, box-like structure across substantially the remainder of said casing for receiving at least one elongated cylindrical battery with the longitudinal axis of the latter extending parallel with said long side of the cassette housing in said compartment, and closure means engageable with said battery receptacle for retaining and locating said at least one battery in said receptable and being configured to define, with said receptacle, a box-like extension of said hollow box-like structure which is similarly above said bottom surface of the compartment and cooperates with said box-like structure to define a substantially continuous surface extending along and engaging said long side of the peripheral wall for locating the cassette housing in said compartment, the portion of said surface defined by said hollow box-like structure having at least one opening therein to register, at least partly, with one of said windows of the cassette housing in said compartment, said signle head being engageable through the registered opening and window with the tape in said run for reproducing signals therefrom.

4,661,866

SWITCHING MECHANISM FOR THE TAPE DECK OF A MAGNETIC-TAPE-CASSETTE APPARATUS

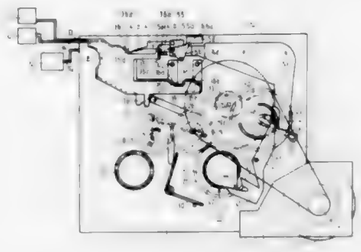
Norbert Kunze, Ehringshausen, Fed. Rep. of Germany, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1985, Ser. No. 741,054

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1984, 3422259

Int. Cl.⁴ G11B *15/00, 21/02*

U.S. Cl. 360—96.1 **10 Claims**



1. A switching mechanism for the tape deck of a magnetic-tape-cassette apparatus comprising a head-mounting plate, which can be moved towards and away from a magnetic tape to be scanned, which plate is latched in the advanced operating position by a first latching mechanism and after release of the first latching mechanism can return to a rest position under spring force, and an actuating rod for the actuation of a tape-deck function, which rod can be latched in the actuated position by means of a second latching mechanism, which two latching mechanisms can be latched separately and independently of each other, characterized in that

the two latching mechanisms (first latching mechanism; second latching mechanism), which are constructed by means of mechanical parts, can be coupled to each other when they are released, and

when the two latching mechanisms are coupled to each other the second latching mechanism is released during the return of the head-mounting plate under the influence of the spring of the head-mounting plate.

4,661,867

CASSETTE LOADING DEVICE AND METHOD

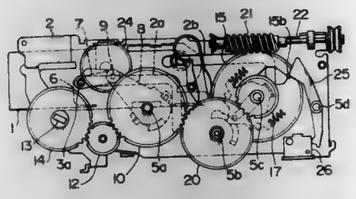
Shinya Tsubota, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1985, Ser. No. 783,364

Claims priority, application Japan, Oct. 3, 1984, 59-206410

Int. Cl.⁴ G11B *15/18*

U.S. Cl. 360—96.5 **9 Claims**



1. A cassette loading device comprising:

motor means rotatable in a normal direction and in a reverse direction;

a driving mechanism for transmitting a power of said motor means to a cassette holder and moving said cassette holder between an initial position and a cassette-set position;

elastic means mounted on said driving mechanism for generating an elastic force against a manual depression of a tape cassette when the tape cassette is manually depressed from an initial position to the cassette-in position;

position detecting means for detecting that said cassette holer reaches predetermined positions in its moving path to generate respective signals, said predetermined positions being said initial position, said cassette-in position, and said cassette-set position;

initial position detecting means for detecting an initial position of said elastic means upon initializing to generate a signal, said initializing being in an unloading process of the cassette for returning said elastic means to the initial condition thereof;

eject signal generating means for generating a signal commanding unloading of the cassette; and

a micro-processor for controlling said motor means in response to the signals from said position detecting means, said initial position detecting means and said eject signal generating means, said micro-processor rotating said motor means in a normal direction and dissipating the force stored in said elastic means caused by said manual depression upon receipt of the signal of the cassette-in position from said position detecting means and stopping said motor means upon receipt of the signal of the cassette-set position from said position detecting means, whereby the cassette is set in the cassette-set position, and wherein said micro-processor causes a rotating of said motor means in a reverse direction so as to store the elastic force in said elastic means upon receipt of a signal of an ejection from the eject signal generating means and for causing a rotation of said motor means in a normal direction upon a dissipation of the elastic force stored in the elastic means by the reverse rotation of the motor means upon receipt of the signal of the initial position of said cassette holder from said position detecting means, and stopping said motor means upon receipt of a signal from the initial position of the elastic means from said initial position detecting means, whereby the cassette is ejected by the motor means and the elastic means is returned to the initial position.

4,661,868

CASSETTE LOADING MECHANISM WITH MALFUNCTION PREVENTING MEANS

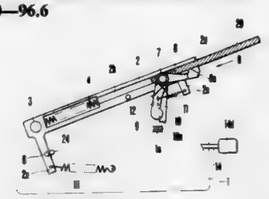
Nobuo Tezuka, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha

Filed May 10, 1983, Ser. No. 493,302

Claims priority, application Japan, May 19, 1982, 57-84405

Int. Cl.⁴ G11B *5/008, 17/00*

U.S. Cl. 360—96.6 **5 Claims**



1. A recording and/or reproducing apparatus using a recording medium contained in a cassette, comprising:

(A) a main body part;

(B) a cassette receiving part adapted to be loaded with said cassette, said receiving part being movable relative to said main body part between a first position where loading and unloading of the cassette relative to the receiving part is enabled and a second position where the cassette is operatively associated with the main body part;

(C) ejecting means for generating an urging force to eject the cassette from said cassette receiving part;

(D) latching means for latching the cassette relative to said cassette receiving part against the urging force of said ejecting means in a condition where the cassette is completely loaded on the receiving part against the ejecting means, said latching means being movable between a latched position and an unlatched position;

(E) movable means arranged to follow said latching means so that the movable means occupies a first position when the latching means is at its latched position and a second position when the latching means is at its unlatched position; and

(F) engageable means engageable with said movable means when the movable means is at its second position so as to prevent said cassette receiving part from being moved to its second position.

4,661,869

DISK RECORDING AND REPRODUCING DEVICE HAVING A DISK LOADING AND SLIDE EJECTOR MECHANISM

Kuninobu Takeda, and Osamu Shigenai, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed May 24, 1985, Ser. No. 738,097

Claims priority, application Japan, May 25, 1984, 59-75743[U]

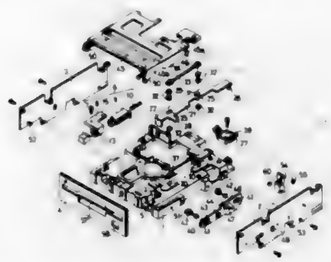
Int. Cl.⁴ G11B *17/02*

U.S. Cl. 360—97 **4 Claims**

1. A disk recording and reproducing device having a chassis including side panels and a front panel with a slot through which a disk is inserted in a horizontal longitudinal direction in the chassis, a disk holder in the chassis for receiving at an unloaded position a disk inserted through the slot in the front panel and movable substantially vertically downward to a loaded position in the chassis, and an ejector mechanism for unloading a disk in the disk holder at the loaded position for ejecting it from the device, comprising:

(a) the disk holder having a front receiving end and a rear engaging end and a disk receiving path defined therein, wherein at least said rear engaging end of the disk holder is biased by biasing means downwardly toward the loaded position;

(b) a lock lever having an abutment surface disposed in said disk receiving path and an engagement portion engageable with said rear engaging end of said disk holder for holding it in the unloaded position against the biasing force of said biasing means, said lock lever being pivotable rearwardly by abutment of an end of a disk inserted in said disk holder against said abutment surface to thereby release said engagement portion from said rear engaging end of said disk holder and allow said disk holder to be moved substantially vertically downward to the loaded position;
(c) the ejector mechanism being mounted in the chassis and including an ejector button projecting from the front



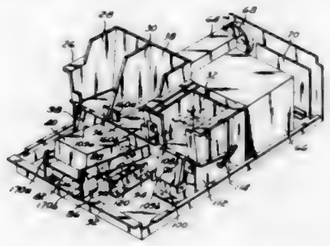
panel, and eject lever actuatable by said ejector button so as to be slidable in the horizontal longitudinal direction of the chassis and having an engagement tongue extending transverse to the longitudinal direction toward a side panel of the chassis, and a slide member slidably mounted on the side panel substantially parallel to the eject lever and having an engagement portion for receiving said engagement tongue of said eject lever such that said slide member is slidably in the longitudinal direction of the chassis upon actuation of said eject lever, said slide member further having means engaging a portion of said disk holder for moving said disk holder substantially vertically between the unloaded and loaded positions.

4,661,870

AUTOMATIC MICRO-FLOPPY DISK DRIVE LOADER

James A. Norton, Orange, and Brent W. Murray, El Toro, both of Calif., assignors to Media Systems Technology, Inc., Irvine, Calif.

Continuation of Ser. No. 554,988, Nov. 25, 1983, abandoned. This application Jan. 22, 1986, Ser. No. 821,511
The portion of the term of this patent subsequent to Oct. 28, 2003, has been disclaimed.
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—98 **34 Claims**



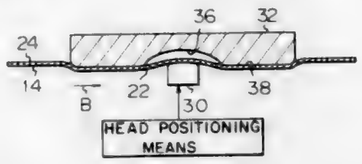
1. A loader apparatus for moving a stack of micro-floppy computer disks into and out of a disk drive, said loader apparatus comprising:
a hopper assembly including a supply hopper which can hold a stack of micro-floppy disks to be loaded into said disk drive, an accept bin and a reject bin to selectively receive micro-floppy disks that have been ejected from the disk drive;
a pusher assembly for sequentially feeding the micro-floppy disk at the bottom of the supply hopper into the disk drive;
a movably mounted alignment framework which includes a disk drive positioned to receive said micro-floppy disk pushed from the bottom of the stack when the framework is in a raised position;
a conveyor belt assembly secured to said alignment framework and mounted in front of said disk drive and beneath said hopper assembly; and
a translatable ramp assembly which lowers and raises the alignment framework, such that when the alignment framework is lowered, said disk drive is lowered and caused to eject a micro-floppy disk onto the conveyor belt, which conveyor belt translates the micro-floppy disk to one of two ends of the conveyor belt beneath a selected one of the reject bin and the accept bin, and such that when the alignment framework is raised, the micro-floppy disk is pushed into the selected bin by said conveyor belt assembly and the disk drive is returned to the position to receive a micro-floppy disk from the supply hopper.

4,661,871

REGULATING APPARATUS AND METHOD FOR USE WITH ROTARY MAGNETIC RECORDING SHEET PERMITTING IMPROVED HEAD CONTACT

Yasuo Nagashima, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 22, 1984, Ser. No. 613,065
Claims priority, application Japan, May 23, 1983, 58-89100
Int. Cl.[4] G11B *5/016, 5/012, 23/03, 5/54*
U.S. Cl. 360—99 **16 Claims**



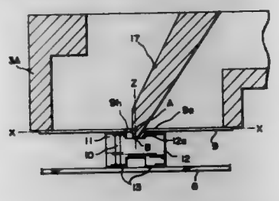
1. A magnetic head assembly for use with a small-sized, rotary disc sheet of magnetic recording medium having a recording surface and a back surface, opposite to the recording surface, comprising:
supporting means for rotatably supporting a major portion of the sheet at a predetermined level in a direction perpendicular to the recording and back surfaces of the sheet, said predetermined level defining a dynamic plane of rotation of the sheet;
magnetic head means arranged in contact with the recording surface for performing recording or playback on the recording surfaces;
a regulator plate positioned opposite said back surface of the sheet, and having a main surface and a recess formed thereon opposingly to said head means, said main surface being opposite to a minor portion of the back surface of the sheet to define a regulation level of the recording surface of the sheet;
means for positioning said magnetic head means to protrude a portion of the sheet into the recess beyond the regulation level; and
means for positioning the main surface of said regulator plate at least into the dynamic plane of rotation of the sheet or protruded a distance beyond said dynamic plane of rotation in a direction toward said recording surface of the sheet;
whereby swaying of the sheet is minimized.

4,661,872

HEAD UNIT FOR PREVENTING HEAD OSCILLATION DUE TO DISEQUILIBRIUM BETWEEN HEAD AND RECORDING MEDIUM

Makoto Saito, Chichibu, Japan, assignor to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Filed Aug. 17, 1984, Ser. No. 641,837
Claims priority, application Japan, Aug. 24, 1983, 58-153168
Int. Cl.[4] G11B *5/48, 21/16*
U.S. Cl. 360—104 **8 Claims**



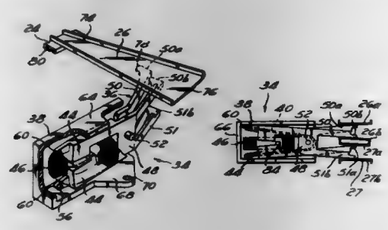
1. A head unit comprising:
a head means having a first surface for recording or reproducing information on or from a recording medium while in contact with said recording medium, and a second surface which is opposite to said first surface;
a head supporting member for supporting said head means at said second surface thereof, said supporting member permitting displacement of said head means in directions excluding displacement around an axis which is perpendicular to the first and second surfaces of said head means; and
a depressing member for depressing said head means at a depressing position located between said first surface and said second surface, said depressing position being located substantially along said axis.

4,661,873

HEAD LIFTER MECHANISM FOR HARD DISK DRIVE

Dietor M. Schulze, Saratoga, Calif., assignor to Lapine Technology, Milpitas, Calif.

Filed Nov. 14, 1984, Ser. No. 671,232
Int. Cl.[4] G11B *21/12, 21/02*
U.S. Cl. 360—105 **12 Claims**



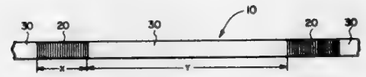
1. A head lifter for a disk drive which records digital data from a computer onto a disk, the disk drive comprising a pair of magnetic heads for recording digital information on the disk, a first flexure for supporting one of the heads, and a second flexure for supporting the other of the heads, said head lifter protecting the heads and disk from damage during shipping or transportation of the drive or from accidental loss of power, said head lifter comprising:
a fulcrum;
a first arm having two ends and pivotally connected to said fulcrum for making contact with the first flexure, said first arm being connected to said fulcrum at a pivot point intermediate the ends of said first arm;
a second arm having two ends and pivotally connected to said fulcrum for making contact with the second flexure, said second arm being connected to said fulcrum at said pivot point; and
an electromagnet with a first armature connected to said first arm and a second armature connected to said second arm for causing said arms to pivot about said fulcrum to allow the first and second flexures to load the magnetic heads onto the disk.

4,661,874

LOW FRICTION CLEANER FOR MAGNETIC TRANSDUCER HEAD

G. Thomas Buehl, Columbia, and Leemer Cernohlavek, Fulton, both of Mo., assignors to International Jensen Incorporated, Schiller Park, Ill.

Filed Jun. 1, 1984, Ser. No. 616,554
Int. Cl.[4] G11B *5/41*
U.S. Cl. 360—128 **20 Claims**



1. A cleaning device for an apparatus of the type comprising a magnetic head and a drive mechanism, said cleaning device comprising:
a cleaning member adapted to be moved past the magnetic head during a cleaning operation, said cleaning member defining a length dimension and a width dimension;
said cleaning member defining an array of spaced cleaning surfaces, each separated along the length dimension by a respective smooth, low friction surface such that the low friction surfaces extend across the entire effective width of the cleaning member between the cleaning surfaces, and the length of the low friction surfaces along the length dimension is greater than the length of the magnetic head along the length dimension to ensure that the magnetic head is maintained out of contact with the cleaning surfaces for selected portions of the cleaning operation;
said cleaning surfaces and low friction surfaces arranged such that both the cleaning surfaces and the low friction surfaces alternately come into contact with the magnetic head during a cleaning operation;
said cleaning surfaces effective to clean the magnetic head;
said low friction surfaces effective to reduce friction between the cleaning member and the magnetic head to protect the drive mechanism against excessive frictional loading.

4,661,875

INFORMATION STORAGE DISC ASSEMBLY

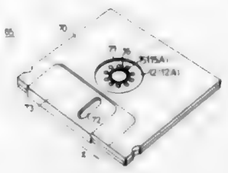
Hisao Kinjo, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 23, 1986, Ser. No. 821,704
Claims priority, application Japan, Jan. 24, 1985, 60-11178; Jun. 4, 1985, 60-120850
Int. Cl.[4] G11B *23/03*
U.S. Cl. 360—133 **26 Claims**

1. An information storage disc assembly comprising:
at least one flexible information storage disc, said information storage disc having a recording layer on one surface thereof;
at least one rotary support plate fixed to said information storage disc at a part in a vicinity of centers of said information storage disc and said rotary support plate, said rotary support plate being provided coaxially to said information storage disc and aving a diameter approximately equal to or greater than a diameter of said information storage disc, said rotary support plate being made of a rigid material so that one surface thereof opposing an-

other surface of said information storage disc remains undeformed during a high speed rotation of the information storage disc assembly; and

air introducing means provided in a vicinity of the centers of said information storage disc and said rotary support plate for introducing air between said other surface of said



information storage disc and said one surface of said rotary support plate during the high speed rotation of the information storage disc assembly so that an air cushion is generated between said other surface of said information storage disc and said one surface of said rotary support plate, said air cushion supporting a substantial part of said information storage disc

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4,661,876

PRESSURE SENSITIVE FAULT INTERRUPTER

Thomas F. Strange, and John W. Carino, both of Columbia, S.C., assignors to North American Philips Corporation, New York, N.Y.

Filed Jun. 27, 1985, Ser. No. 749,615
Int. Cl.⁴ H02H *7/16*
U.S. Cl. 361—15 **9 Claims**



1. An AC capacitor having a pressure sensitive fault interrupter for its capacitor section, wherein said capacitor is a dry metallized film AC motor start or motor run capacitor, wherein said capacitor includes a metallized foil capacitor section, said section having a void core, a contact bridge for each electrode of said capacitor section, one contact bridge being on each end of said capacitor section, connecting tabs to said contact bridges, said capacitor being connectable to a circuit through said connecting tabs, a case, potting material securing said capacitor section within said case, and connecting terminals for said tabs in a cover for said case, wherein the fault interrupter for said capacitor section comprises:

a diaphragm mechanically and electrically attached to a contact bridge at the base end of said capacitor section;

a tab connection for one electrode through said diaphragm to one of said connecting terminal;

a plug positioned over the upper end of said core;

said capacitor section with said diaphragm connected thereto being positioned within said case, such that the perimeter of said diaphragm is in firm contact with the base of said case and a void space is left beneath said diaphragm to permit a movement thereof;

potting material disposed around said capacitor section within said case such that said capacitor section is firmly sealed within said case; and

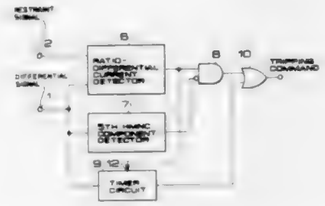
said diaphragm being secured to the bottom of said capacitor section within said case such that, when a fault occurs, said diaphragm is depressed by gaseous pressure from within the core of the capacitor section to break the electrical contact between said diaphragm and its contact bridge, thereby electrically isolating the faulty capacitor section.

4,661,877

TRANSFORMER PROTECTIVE RELAY

Masaji Usui, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1985, Ser. No. 723,152
Claims priority, application Japan, Jun. 27, 1984, 59-131202
Int. Cl.⁴ H02H *7/04*
U.S. Cl. 361—36 **6 Claims**



1. A protective relay for a transformer comprising:

a ratio-differential current detection means which produces an output when the magnitude of a differential current that is the difference between currents in a primary and secondary windings of the transformer is in excess of a predetermined value;

a fifth harmonic component detection means which produces an output when said differential current includes a fifth harmonic component greater than a predetermined value;

a first gate means which receives the output of said ratio-differential current detection means and which provides an output when the output of said fifth harmonic component detection means is absent;

a timer circuit which receives an input signal representing said differential current and provides an output on the basis of a predetermined time characteristic; and

a second gate means which produces a trip command for tripping said relay in response to the reception of at least one of the outputs of said first gate means and said timer circuit.

4,661,878

OVERVOLTAGE PROTECTION CIRCUIT

Leland T. Brown, Phoenix, and Byron G. Bynum, Tempe, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

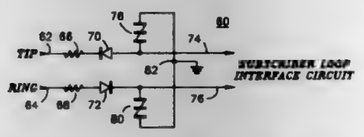
Continuation of Ser. No. 573,531, Jan. 25, 1984, abandoned. This application Aug. 9, 1985, Ser. No. 764,513
Int. Cl.⁴ H02H *3/20*
U.S. Cl. 361—56 **3 Claims**

1. An overvoltage protection circuit for directing a surge current on first and second telephone lines, each having respective input and output terminals, to a ground terminal when said surge current exceeds a predetermined level thereof comprising:

a ground terminal;

first and second telephone lines, each having respective input and output terminals;

first and second diodes having respective anode and cathode terminals thereof, said first diode having said cathode terminal coupled to the input terminal of said first telephone line and said anode terminal connected to the output terminal of said first telephone line, said second diode having said anode terminal coupled to the input terminal of said second telephone line and said cathode terminal



connected to the output terminal of said second telephone line; and

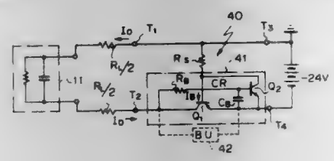
first and second bilateral trigger devices respectively coupling the output terminals of said first and second telephone lines to said ground terminal.

4,661,879

OVERCURRENT PROTECTION CIRCUIT FOR LINE CIRCUITS IN A SWITCHING SYSTEM

Kazuhiro Sato, and Hiroyoshi Mori, both of Yokohama, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 28, 1985, Ser. No. 750,164
Claims priority, application Japan, Jul. 5, 1984, 59-137966; Jul. 6, 1984, 59-140921; Jul. 6, 1984, 59-140922
Int. Cl.⁴ H02H *9/02*
U.S. Cl. 361—58 **23 Claims**



1. An overcurrent protection circuit, comprising:

first switching means for controlling a current flow from a power source to a load, said first switching means being operatively connected in said circuit to be in a normally conducting state and having a voltage drop thereacross within a predetermined range during normal current flow conditions;

a second switching means operatively connected to said first switching means and having an input terminal, said second switching means being normally nonconductive and responsive to a predetermined signal supplied to said input terminal thereof to be switched to a conducting state, for turning off said first switching means and thereby terminating the current flow from the power source to the load;

first delay means defining a time constant (τ_B) operatively connected to said first and second switching means and responsive to a change in the voltage drop across said first switching means, indicative of an overcurrent condition, to produce an output, delayed in time in accordance with the said time constant (τ_B);

means for supplying the output of said first delay means to said input of said second switching means as said predetermined signal for switching said second switching means to a conducting state; and

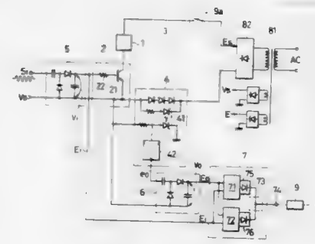
means for connecting said first switching means to a power source, said connecting means comprising a second delay means defining a second time constant (τ_S) where (τ_S) is less than (τ_B), for delaying the switching of said first switching means to said normally conducting state when said overcurrent protection circuit is connected to the power source.

4,661,880

FAILSAFE MONITORING SYSTEM WITH INPUT CONTROLLED SWITCH CIRCUITS

Koichi Futsuhara, Omiya, Japan, assignor to Nippon Signal Co., Ltd., Japan

Filed Apr. 24, 1985, Ser. No. 726,885
Claims priority, application Japan, Apr. 25, 1984, 59-83529
Int. Cl.⁴ H02H *7/10*
U.S. Cl. 361—93 **9 Claims**



1. A monitoring system, which comprises a circuit which drives an electric load, a switch circuit performing on-off control of said driving circuit on receipt of an input signal Si consisting of two different voltages, fail-safe input signal converting means for converting said input signal Si of the two voltages to a predetermined first voltage corresponding to the value of the input signal Si turning on said switch circuit, a predetermined second voltage corresponding to the value of the input signal Si turning off said switch circuit and a predetermined third voltage corresponding to a problem of said input signal converting means itself and putting out said three voltages, fail-safe load current detecting means for detecting a load current in said driving circuit and generating two different voltages corresponding to the flow state and non-flow state of said load current, respectively, fail-safe load current signal converting means for converting the two different voltage inputs from said load current detecting means to a predetermined fourth voltage corresponding to the flow state of the load current, a predetermined fifth voltage corresponding to the non-flow state of the load current and predetermined sixth voltage corresponding to a problem of said load current signal means itself and putting out said three voltages, and fail-safe monitor signal generating means, in which said three output voltages of said input signal converting means and said three output voltages of said load current signal converting means are put and which generates a voltage output corresponding to the normal state only when at least one of the condition that the first and fourth voltage signals are simultaneously put in and the condition that the second and fifth voltage signals are simultaneously put in is satisfied and generates a voltage output corresponding to the abnormal state under other conditions.

4,661,881

OVERLOAD PROTECTOR FOR A TELEPHONE SET

John C. Watson, and Bing G. Chan, both of London, Canada, assignors to Northern Telecom Limited, Montreal, Canada

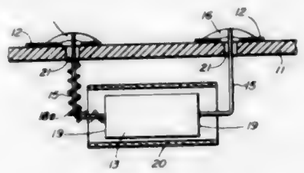
Continuation-in-part of Ser. No. 480,260, Mar. 30, 1983, Pat. No. 4,486,804. This application Sep. 17, 1984, Ser. No. 651,482
Int. Cl.⁴ H02H *5/04*
U.S. Cl. 361—104 **9 Claims**

1. An overload protector in the circuitry of a telephone set and similar telecommunications terminals, comprising:

an electrical component having DC continuity and DC resistance, said component in series with remaining components of said circuitry; said component having two

leads, each lead soldered to a conductor of a circuit pattern on a circuit board; said component suspended below said circuit board;

the arrangement such that on a continuous overload above a



predetermined value, the component heats up to a level such that heat travels down the leads and melts the solder for at least one lead, said at least one lead moving physically downward away from said circuit board to give an open circuit condition.

4,661,882

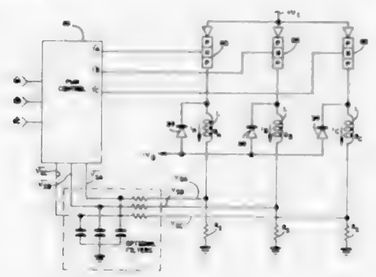
POWER SUPPLY/SINK FOR USE WITH SWITCHED INDUCTIVE LOADS

Donald r. Presley, Lexington, Ky., assignor to IBM Corporation, Armonk, N.Y.

Filed Dec. 24, 1985, Ser. No. 813,314

Int. Cl.⁴ H01H *47/00*

U.S. Cl. 361—159 **13 Claims**



1. A power source/sink for use with an inductive load which is switched between energized and de-energized states, to reduce flyback time by sinking power from the load as the load is de-energized, comprising:

a transformer with a secondary winding,

a power supply terminal,

first means including a rectifier connected to an energy storage device, said first means coupled between said secondary winding of said transformer and said power supply terminal for supplying power to said load,

a power sink terminal,

energy storage means coupled between a voltage reference and said power sink terminal,

controlled conduction path means for supplying current through a conduction path including a further winding of said transformer and said sink terminal in response to said power sink terminal tending to rise in voltage magnitude.

4,661,883

ELECTROMAGNET APPARATUS WITH SHORTENED ARMATURE RELEASE TIME

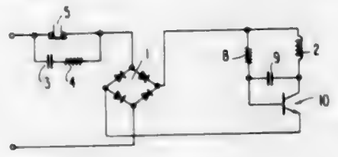
Shizutaka Nishizako; Toshikazu Kitou; Shinki Shoji, and Sadaaki Baba, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1986, Ser. No. 832,959

Claims priority, application Japan, Mar. 8, 1985, 60-44893; Mar. 8, 1985, 60-44894; Mar. 8, 1985, 60-44895

Int. Cl.⁴ H01H *47/32*

U.S. Cl. 361—159 **6 Claims**



1. An electromagnet apparatus including a full-wave rectifier (1), a.c. signal supply means coupled across input terminals of the rectifier, a fixed magnetic core (6), a movable magnetic armature (7) operably disposed proximate the core, and a coil (2) connected across output terminals of the rectifier and wound on the core for attracting the armature thereto when energized, characterized by: means for absorbing inductive energy stored in the coil upon an interruption of the supply means to reduce a release time of the armature from the core, said energy absorbing means comprising:

(a) a transistor (10) having an emitter-collector path connected in series with one side of the coil,

(b) a bias resistor (8) connected between another, opposite side of the coil and a base of the transistor, and

(c) a capacitor (9) connected between the base and collector of the transistor.

4,661,884

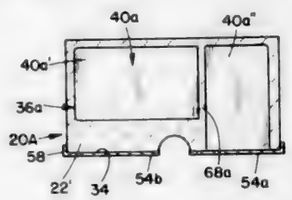
MINIATURE, MULTIPLE LAYER, SIDE MOUNTING HIGH FREQUENCY BLOCKING CAPACITOR

Harry V. Seaman, Northport, N.Y., assignor to American Technical Ceramics Corp., Huntington Station, N.Y.

Filed Mar. 10, 1986, Ser. No. 837,744

Int. Cl.⁴ H01G *4/38, 7/00;* **H02B** *1/04*

U.S. Cl. 361—306 **7 Claims**



1. A miniature, high frequency blocking capacitor, comprising:

a block of dielectric material having at least one flat side;

a multiplicity of spaced, thin, flat electrodes in said block disposed perpendicular to said one side, with each of said electrodes having a flat body which is comprised of two coplanar segments separated by a gap;

an electrically conductive layer applied to said one side of said block;

said block having a groove formed therein at said one side dividing said layer into separate, spaced, coplanar sections, each of said electrodes having a tab integral with one of said segments and extending laterally of an coplanar with said body and terminating at said one side for contacting one of said sections of said layer, each one of said sections being adapted for attachment to a differently polarized terminal of an external electric circuit;

wherein said portions of a first group of said electrodes contact one of said sections of said layer, and wherein said portions of a second group of said electrodes contact another one of said sections, said electrodes in said first group alternating with said electrodes in said second group across said block; and

whereby inductance of said capacitor between said sections of said layer is minimized, so that the minimum frequency of parallel resonance of said capacitor is approximately three times the series resonant frequency of the capacitor, to maximize the blocking effect upon high frequency currents at said parallel resonant frequency.

4,661,885

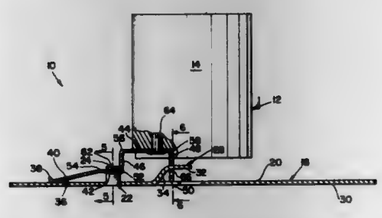
LOCKABLE LAMPHOLDER MOUNTING SYSTEM

Stanley S. Breaner, Massapequa, and Charles Chase, East Meadow, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Sep. 11, 1985, Ser. No. 774,103

Int. Cl.⁴ H02B *1/04*

U.S. Cl. 361—346 **4 Claims**



1. An assembly mounting an electrical device on a panel, said assembly comprising:

a housing, electrical contacts supported by said housing, electrical means interconnected with said housing for interconnecting power to said electrical contacts, and

said panel includes an upper surface, a first bearing surface spaced above and opposite to the upper panel surface, a locking tab spaced above the upper panel surface and a second bearing surface on said locking tab opposite to the upper panel surface,

clip means mounted to the housing, and

having three spaced bearing surfaces on said clip means which mount said housing on said panel, and

said clip means slidably inserted between the first panel bearing surface and said upper surface, and

including a portion receiving the second panel bearing surface, and wherein

no portion of said clip means extends below the panel upper surface, wherein said clip means formed with said three bearing surfaces comprises a resilient spring member.

4,661,886

MAGNETICALLY SEALED MULTICHIP INTEGRATED CIRCUIT PACKAGE

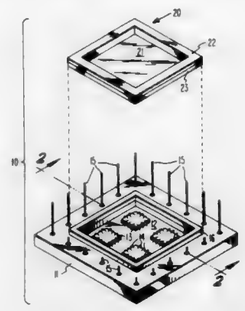
John A. Nelson, San Diego, and Dale L. Robinson, Escondido, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 3, 1985, Ser. No. 783,616

Int. Cl.⁴ H01L *23/02*

U.S. Cl. 361—399 **13 Claims**

1. An improved integrated circuit package of the type which includes a substrate having a cavity used in holding multiple integrated circuit die, and includes a lid for covering said cavity to protect said die; wherein the improvement comprises a ferromagnetic member which is fixed to said substrate as a ring around said die, and a ring-shaped magnet which is fixed



to said lid and coincides in shape to said ferromagnetic member for magnetically attracting said ferromagnetic member and holding said lid in place.

4,661,887

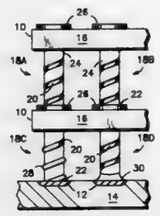
SURFACE MOUNTABLE INTEGRATED CIRCUIT PACKAGES HAVING SOLDER BEARING LEADS

Paul T. Lin, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1985, Ser. No. 793,414

Int. Cl.⁴ H01R *9/09*

U.S. Cl. 361—405 **32 Claims**



1. A surface mountable integrated circuit package comprising a plurality of exterior package leads having integral electrically conductive binder bearing means each terminating at a substrate butt joint mounting end for guiding an electrically conductive binder thereto in a reflow operation.

4,661,888

REMOVABLE MODULAR HOUSING FOR RF CIRCUITS

Michael B. Jewell, Spokane, Wash.; Mark W. Johnson, Arlington, Va., and Arthur F. Upham, Spokane, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 3, 1984, Ser. No. 627,590

Int. Cl.⁴ H05K *5/04*

U.S. Cl. 361—424 **4 Claims**

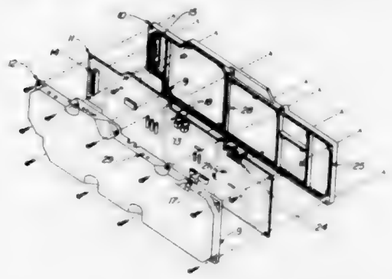
1. A module housing and shielding electronic circuitry sensitive to or radiating RF energy, said module comprising:

a base plate having front and rear faces and two ends, the base plate including a periphery wall having two edges, one of the edges forming a continuous mounting surface about the periphery of the base plate in the plane of the front face and the other of the edges forming a continuous mounting surface about the periphery of the base plate in the plane of the rear face, the periphery wall having a pre-selected size and shape;

at least one electronic circuit substrate having a front side

and a back side, the electronic circuitry disposed on the front and back sides thereof, the electronic circuit substrate having electrically conductive common areas disposed on the front and back sides in a predetermined pattern forming a continuous ground plate which divides the electronic circuitry into sections and extends to and along the periphery of the electronic circuit substrate adjacent the electronic circuitry, the electronic circuit substrate removably mounted on the base plate;

at least one cover covering and shielding the electronic circuitry, the cover, the electronic circuit substrate and the base plate shaped to be substantially congruent with respect to the shape and size of their periphery, the cover and the base plate including internal shielding walls, the internal walls shaped to conform to the pattern of the ground plane dividing the electronic circuitry into sec-



tions, the cover removably mounted to the base plate enclosing the electronic circuitry;

the mounting surface of the base in touch contact with the front side of the electronic circuit substrate near the periphery thereof and the cover in touch contact with the back side of the electronic circuit substrate near the periphery thereof, the internal walls in touch contact with the ground plane dividing the electronic circuitry into sections shielding one section of the electronic circuitry from another section of the electronic circuitry; and

the base plate and the cover including electrically conductive material disposed along the periphery and internal walls contacting the ground plane and preventing spurious and conducted RF energy from affecting operation of the electronic circuitry and from being emitted from the module.

4,661,889

ELECTRONIC APPARATUS WITH A BATTERY

Hideo Fushimoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1985, Ser. No. 796,421

Claims priority, application Japan, Nov. 16, 1984, 59-241687

Int. Cl.[4] H05K *5/04, 1/04*

U.S. Cl. 361—424 **18 Claims**

1. An electronic apparatus having a battery as an electrical power source, comprising

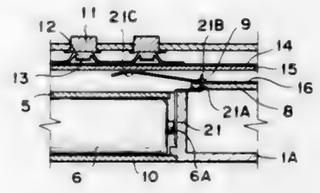
a housing having a recessed portion;

a battery provided in the recessed portion of the housing and having a positive electrode and a negative electrode;

a printed circuit board provided in the housing and an electronic circuit disposed on the printed circuit board; the printed circuit board being provided with two holes and at least one of said holes being formed in the electronic circuit;

a conductive noise shield plate provided in the housing for electrically shielding the electronic circuit from electrical noise; and

a contact member made of bent wire having two ends, a contact portion formed in the vicinity of one end of the wire, a multiply bent first electrode portion contacting one electrode of the battery and a separate second electrode portion, wherein the wire is bent at the second electrode portion, and the second electrode portion and



the other end of the wire are inserted into one of the two holes to secure at least one of the second electrode portion and the other end of the wire to the electronic circuit so that the first electrode portion and the contact portion contact the noise shield plate.

4,661,890

LAMP UNIT

Yoshimi Watanabe; Norihiro Umeoka, and Hiroshi Kuroda, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 28, 1986, Ser. No. 845,869

Claims priority, application Japan, Mar. 29, 1985, 60-65918

Int. Cl.[4] F21S *3/00;* **G03B** *27/54;* **H01J** *1/62*

U.S. Cl. 362—217 **13 Claims**



1. A lamp unit comprising:

first and second support members facing each other, each support member including a plurality of support portions arranged at predetermined intervals, the support portions of the first support member being disposed directly opposite those of the second support member; and

a plurality of baseless fluorescent lamps supported parallel to one another by the first and second support members, each lamp including a straight bulb with two sealed ends and lead wires extending from the ends of the bulb, said bulb having an elongate radiation window extending in the axial direction thereof, one end of said bulb being fixed to each corresponding support portion of the first support member and the other end to each corresponding support portion of the second support member, with the radiation window thereof oriented in a predetermined direction.

4,661,891

DECORATIVE HANGING LIGHTING APPARATUS

Masaharu Kitamura, Ohtsu, Japan, assignor to Kuroi Garasu Kougyo Co., Ltd., Kyoto, Japan

PCT No. PCT/JP85/00049, § 371 Date Sep. 27, 1985, § 102(e) Date Sep. 27, 1985, PCT Pub. No. WO85/04703, PCT Pub. Date Oct. 24, 1985

PCT Filed Feb. 6, 1985, Ser. No. 783,932

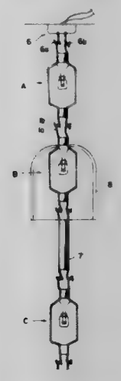
Claims priority, application Japan, Apr. 4, 1984, 59-49803[U]

Int. Cl.[4] F21S *3/00*

U.S. Cl. 362—219 **7 Claims**

1. A decorative hanging lighting apparatus adapted to be hung from the ceiling, and composed of a plurality of lighting units coupled together, characterized in that two hooking

members each equipped with hooking means at both ends and formed of a conductor are provided in each of the aforementioned lighting units, electrode wires of an electric bulb are



linked respectively to the aforementioned two hooking members and the top hooking means of one lighting unit are hooked on the bottom hooking means of the other lighting unit located just above the aforementioned lighting unit.

4,661,892

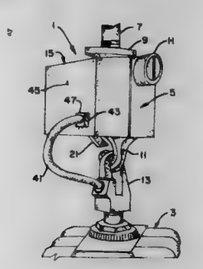
ELECTRICAL PLUG AND RECEPTACLE FOR LIGHTING FIXTURE POWER HOOK

Gueary T. Reed, Jr., Lee, Miss., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 1, 1985, Ser. No. 749,991

Int. Cl.[4] H01R *33/00*

U.S. Cl. 362—226 **2 Claims**



1. In a power hook for suspending a lighting fixture from an overhead support and for supplying electrical power to said lighting fixture, said power hook comprising a support housing having means for securement of said power hook to said overhead support, said housing having a bottom on which one member of an eye and hook support means is provided for the removable attachment of said lighting fixture to said support housing, said lighting fixture supported from said eye and hook means being substantially universally swivelable so as to assume a generally vertical operating position, a power plug housing removably securable to said support housing without the requirement of tools, said support housing having a female plug receptacle carried thereby facing said power plug housing when said power plug housing is attached to said support housing, said power plug housing having a male power plug carried thereby for being received by said female receptacle in said support housing when said plug housing is secured to said support housing, said male power plug having a flexible power lead connected thereto and also connected to said lighting fixture for supplying power to said lighting fixture, wherein the improvement comprises: said female receptacle having a receptacle body of electrically insulative synthetic resin material, a pair of power leads and a ground lead molded in place within said receptacle body, said receptacle body being at least in part compressible so as to snap-fit into an aperture in said support housing thereby to securely hold said receptacle body in place with respect to said support housing, and said male plug having a male plug body of electrically insulative synthetic resin material, a pair of male terminals, and a ground terminal extending therefrom, said male plug body being of a compressible material for snap-fitting into an aperture of said power plug housing thereby to securely hold said male plug body in place with respect to said power plug housing, said male and ground terminals engage said receptacle for making electrical contract therewith upon securing said power plug housing to said support housing, said power plug housing having fuse means therewithin, and said male plug body having fuse leads integrally molded with and extending sideways from said male plug body for electrically connecting said fuse means with said power leads.

4,661,893

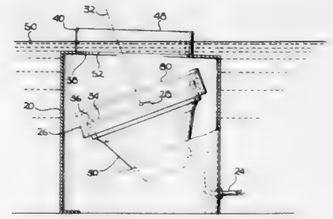
UNDERWATER LIGHTING SYSTEM

Alan S. Robinson, El Monte, and Mark W. Fuller, Studio City, both of Calif., assignors to Wet Enterprises, Inc., Burbank, Calif.

Filed Nov. 25, 1985, Ser. No. 801,465

Int. Cl.[4] F21Y *29/00*

U.S. Cl. 362—267 **19 Claims**



1. An underwater lighting system for illuminating an object above the surface of water from a light source under the water surface comprising

a light source means disposed below the water surface to direct light toward the object to be illuminated above the water surface; and

a baffle means having an upper surface and a lower surface and being disposed in the path of the light from said light source to the object to be illuminated, said upper surface of said baffle means being disposed above the water surface and said lower surface of said baffle means being disposed below the water surface, said baffle means being a means for allowing light from said light source to pass therethrough in a predetermined first direction, and to inhibit the passage of light therethrough in directions deviating from said first direction, at least about a first axis.

4,661,894

STABILIZING DEVICE FOR LUMINAIRE SUPPORT RING

Louis A. Chenot, North Canton, Ohio, assignor to Metaltec Corporation, Canton, Ohio

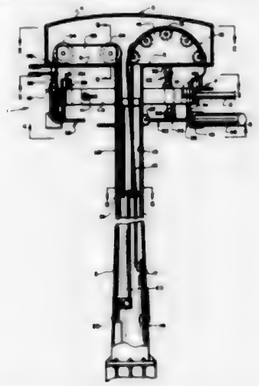
Filed Aug. 31, 1984, Ser. No. 646,213

Int. Cl.[4] F21V *21/36, 21/14*

U.S. Cl. 362—391 **21 Claims**

1. An improved device for raising and lowering a luminaire support ring on a pole including:

(a) a support ring adapted to be telescopically mounted about the pole for vertical movement along the pole;
(b) cable means for raising and lowering the support ring along the pole;
(c) a plurality of stabilizing arms pivotally mounted on the support ring and operatively connected to the cable means, said arms being biased by the tension in the cable means into engagement with the pole to maintain the



support ring centered about the pole as it is raised and lowered along the pole, with the tension exerted by the arms against the pole remaining generally constant throughout the length of the pole uneffected by the changing diameter of the pole, and with said arms extending a predetermined distance beyond the pole to prevent disengagement of the arms from the pole if the support ring is moved off-center from said pole.

4,661,895

ADJUSTABLE COUNTERBALANCED ARM ASSEMBLY FOR AN ELECTRIC LAMP

James R. Hull, 148 S. Westgate Ave., Los Angeles, Calif. 90049

Filed Mar. 31, 1981, Ser. No. 249,431
Int. Cl.⁴ F21M *3/18*; **F21S** *1/12*; **F16F** *1/06*
U.S. Cl. 362—427 **3 Claims**



1. A counterbalanced arm assembly for supporting a lamp head, or the like, comprising: at least two tubular arms; and means coupling the end sections of the tubular arms to one another in mutual coaxial relationship, said means including a coiled torsion spring mounted coaxially within the end sections of the tubular arms to provide counterbalancing forces, in which said coupling means includes an internal tubular member extending coaxially between said end sections, said internal tubular member having a flared end, a coaxial annular wedge interposed between the internal tubular member and the internal surface of one of said two tubular arms adjacent to the flared end of said internal tubular member, and adjustable means for moving the internal tubular member axially with respect to said end sections to cause the flared end thereof to move the annular wedge into frictional engagement with the internal surface of the aforesaid tubular arm.

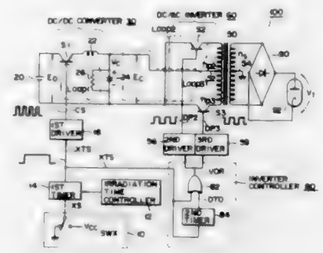
3. An equapoised lamp assembly comprising: three tubular arms having bent-over end sections; movable means coupling the end sections of the tubular arms to one another in mutually coaxial relationship, and means including a coiled torsion spring mounted coaxially within the end sections of the tubular arms to provide counterbalancing forces for said tubular arms; a lamp head mounted on one of said tubular arms for movement to selected positions by causing the arms to turn to selected angular positions about two mutually perpendicular axes; a fourth tubular arm having a bent-over section, and a further one of said coupling means coupling the end section of the fourth tubular arm to the end section of the third tubular arm, so that movement of the lamp causes the tubular arms to turn to selected angular positions about three different axes; said lamp head being mounted on one of said tubular arms at an intermediate position so that the distal end of such arm may function as a handle for permitting manual adjustment of the position of said lamp head, and which includes an electric switch for the lamp head mounted on the distal end of said first arm.

4,661,896

HIGH VOLTAGE POWER SUPPLY SYSTEM INCLUDING INVERTER CONTROLLER

Hiroyoshi Kobayashi, and Kenji Honda, both of Ootawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 30, 1986, Ser. No. 879,963
Claims priority, application Japan, Jul. 4, 1985, 60-147173
Int. Cl.⁴ H02M *3/335*
U.S. Cl. 363—24 **8 Claims**



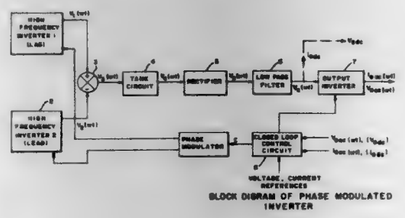
1. A high voltage power supply system comprising:
means for producing a command signal to determine a time period of X-ray irradiation;
a DC-to-DC converter circuit including first switching means for switching a DC (direct current) input voltage so as to produce a DC low output voltage in response to said command signal during only said time period of X-ray irradiation, and filtering means having at least a capacitive element for filtering said DC low output voltage to produce a filtered DC low output voltage;
a DC-to-AC inverter circuit including second switching means connected to said DC-to-DC converter circuit, for switching said filtered DC low output voltage so as to produce an AC (alternating current) low voltage, and a step-up transformer having a primary winding and a secondary winding magnetically coupled to said primary winding, said primary winding being connected to said second switching means so as to receive said AC low voltage and said secondary winding including an AC high voltage for the X-ray irradiation by transforming said AC low voltage applied to said primary winding; and
an inverter control circuit coupled to said second switching means of the DC-to-AC inverter circuit, for controlling, in response to said command signal, an operation time period of said DC-to-AC inverter circuit to be longer than said time period of X-ray radiation so as to discharge a residual charge stored in said capacitive element of said filtering means.

4,661,897

PHASE MODULATED, RESONANT POWER CONVERTING HIGH FREQUENCY LINK INVERTER/CONVERTER

Ira J. Pitel, Whippany, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 693,955, Jan. 23, 1985. This application Oct. 1, 1985, Ser. No. 782,755
The portion of the term of this patent subsequent to Feb. 3, 2004, has been disclaimed.
Int. Cl.⁴ H02M *3/335*
U.S. Cl. 363—17 **15 Claims**



BLOCK DIAGRAM OF PHASE MODULATED INVERTER

1. A high-frequency converter for conducting phase modulated, resonant power conversion, comprising:
(a) first high frequency inverter module for producing first AC voltage at first output frequency;
(b) second high frequency inverter module for producing second AC voltage at second output frequency, which is substantially the same as said first output frequency and is out of phase with said first output voltage by a selected angular phase displacement;
(c) mixing means for mixing said first and second output voltages to produce a high frequency carrier which has a selected base frequency impressed on the sidebands thereof;
(d) tank circuit means for being driven by high frequency carrier and for suppressing harmonics in said high frequency carrier;
(e) rectifying means for rectifying said carrier;
(f) filtering means for filtering the rectified carrier; and
(g) phase modulating means for adjusting the relative angular phase displacement between the output of said first and second high frequency inverter modules to control the base frequency of the line voltage from said filtering means.

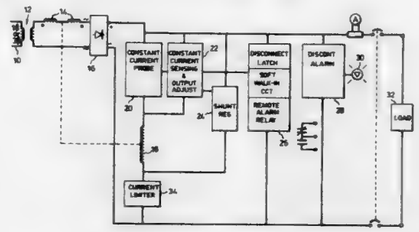
4,661,898

PRECISION CONSTANT CURRENT CONTROL WITH AUTOMATIC COMPENSATION

Alfred M. Hase, 6 Manorwood Road, Scarborough, Ontario, Canada M1P 4G7

Filed Apr. 19, 1985, Ser. No. 724,873
Int. Cl.⁴ H02M *7/00*
U.S. Cl. 363—82 **13 Claims**

1. A circuit having an alternating current input, a synchronous switch means in series with the input and having a control coil to control the energy throughput of said synchronous switch means;
characterized in that the output of said circuit is at a predetermined constant current level to a load;
wherein the rate of alternating current input through said synchronous switch means is controlled by said control coil, and where the current through said control coil is sensed and controlled so as to maintain the ampere-turns ratio of said control coil at a constant value;



whereby said output current to a load is maintained at said predetermined constant current level irrespective of the internal resistance characteristic of said control coil, or changes of said resistance characteristics;
and wherein current through said control coil is sensed by way of a current probe in series with said control coil, the output of said current probe being fed to a constant current sensing and output adjusting circuit whose output controls a regulator for said control coil, whereby the amount of current flowing through said control coil may be maintained constant.

4,661,899

NUMERICAL CONTROL SYSTEM

Eiji Usuda, Fussa, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP84/00458, § 371 Date May 13, 1985, § 102(e) Date May 13, 1985, PCT Pub. No. WO83/01595, PCT Pub. Date Apr. 11, 1985
PCT Filed Sep. 25, 1984, Ser. No. 744,007
Claims priority, application Japan, Sep. 27, 1983, 58-177043
Int. Cl.⁴ G06F *15/46*
U.S. Cl. 364—171 **2 Claims**



1. A numerical control system for displaying information elements, comprising:
input-output means including:
means for inputting address numbers of a plurality of information elements to be displayed;

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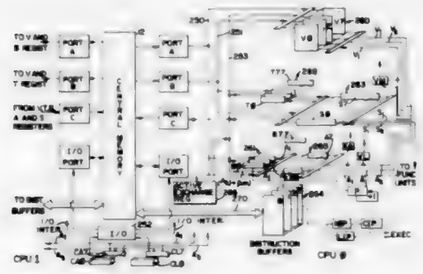
means for inputting a time scale for a graphic display;
means for inputting an address number of a display trigger information element;
means for inputting a command for selection of either a set of repetitive pictures or a non-repetitive picture; and
means for inputting a delay time; processing means including:
means for selecting the address numbers of the plurality of information elements to be displayed;
means for selecting the time scale for the graphic display;
means for selecting the address number of the display trigger information element;
means for conducting the command for selection of either a set of repetitive pictures or a non-repetitive picture; and
means for inputting the delay time;
and
display means including:
a first area for displaying the address numbers of the information elements to be displayed;
a second area for graphically displaying the sequential progress of each of the information elements to be displayed; and
a third area for displaying the display conditions.

4,661,900

FLEXIBLE CHAINING IN VECTOR PROCESSOR WITH SELECTIVE USE OF VECTOR REGISTERS AS OPERAND AND RESULT REGISTERS

Steve S. Chen, and Alan J. Schiffleger, both of Chippewa Falls, Wis., assignors to Cray Research, Inc., Minneapolis, Minn.

Continuation of Ser. No. 488,083, Apr. 25, 1983, abandoned.
This application Apr. 30, 1986, Ser. No. 858,862
Int. Cl.[4] G06F *15/347*
U.S. Cl. 364—200 **20 Claims**



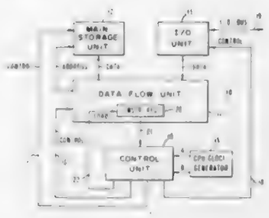
11. In a vector processing computer including a plurality of vector registers for holding a plurality of elements of ordered sets of data and one or more arithmetic or logical functional units having an input for receiving operands and an output for delivering results, said functional units including segmented means for holding data for operations not yet completed while receiving operands for successive operations, a method of controlling the movement of operands from vector registers to said functional units and back to said vector registers as results, comprising the steps of:
(a) selecting a vector register as an operand register to provide a plurality of operands, said operands consisting of elements of an ordered set of data;
(b) selecting a vector register as a result register to receive results;
(c) selecting a functional unit for performing operations on said operands;
(d) monitoring the operand register to determine the availability of one of said operands to be sent to the selected functional unit;
(e) sending one of said operands from the operand register to the selected functional unit on each clock cycle the operand register has an operand available as determined in step (d);
(f) operating on said one operand in the selected functional unit over a plurality of clock cycles;
(g) tracking the progression of said one operand through the selected functional unit and signalling the result register to receive the result of the operation on the operand when it becomes available, said tracking performed in connection with each operand sent from the operand register;
(h) receiving the result in the result register without delay in accordance with step (g); and
(i) repeating steps (e), (f), (g) and (h) until the operands are exhausted whereby an individual operand may be delivered to a functional unit and the result of the operation stored in a result register in accordance with the availability of operands in said selected operand register.

4,661,901

MICROPROCESSOR CONTROL SYSTEM UTILIZING OVERLAPPED PROGRAMMABLE LOGIC ARRAYS

Gerard A. Veneski, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,526
Int. Cl.[4] G06F *9/16, 7/00*
U.S. Cl. 364—200 **7 Claims**



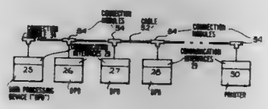
1. In a microprogrammed data processor wherein sequences of microwords are used to control the execution of processor instructions, some of said microwords being produced in response to software-initiated control instructions during a run mode of said data processor and others of said microwords being produced in response to hardware-initiated control instructions in a non-run mode of said data processor, an improved microword control system comprising:
a first plurality of programmable logic array mechanisms responsive to said hardware-initiated control instructions in a non-run mode of said data processor for producing first sequences of microwords for executing said instructions;
microword-responsive control circuitry for controlling operations of predetermined hardware elements of said data processor in response to said first sequences of microwords;
a second plurality of second programmable logic array mechanisms responsive to said software-initiated instructions in a run mode of said data processor for producing microwords for executing said software initiated instructions;
clock generation means for generating a plurality of sequences of clock pulses;
first multiplexing circuitry for supplying microwords from different ones of said first plurality of programmable logic array mechanisms to said control circuitry during respective ones of said clock pulse sequences; and
second multiplexing circuitry for supplying microwords from different ones of said second plurality of programmable logic array mechanisms to said control circuitry during different respective time intervals.

4,661,902

LOCAL AREA NETWORK WITH CARRIER SENSE COLLISION AVOIDANCE

Ronald R. Hochsprung, Saratoga; Lawrence A. Kenyon, Jr., Sunnyvale; Alan B. Oppenheimer, Cupertino, and Gursharan S. Sidhu, Menlo Park, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 21, 1985, Ser. No. 715,065
Int. Cl.[4] G06F *15/16*
U.S. Cl. 364—200 **38 Claims**



1. A communication medium for transferring data between a plurality of data processing devices ("agents") including a sending agent and a receiving agent, comprising:
sensing means coupled to said sending agent for therein if said medium is currently carrying data of another agent and is thereby in use;
timing means coupled to said sending agent for timing a first predetermined waiting period once said medium is idle and available for use;
first random number generating means coupled to said sending agent for generating a random number within a predefined range corresponding to a second waiting period prior to transmittng data on said communication medium to said receiving agent;
first signal generation means coupled to said sending agent for generating a first signal and transmitting said signal to said receiving agent;
signal receiving means coupled to said sending agent for receiving a signal transmitted from said receiving agent to said sending agent within a second predetermined time (IFG) after said sending agent has transmitted said first signal;
data transmission means coupled to said sending agent for transmitting data to said receiving agent within said IFG time after receiving said signal from said receiving agent;
whereby data is transferred between said sending and receiving agents coupled to said communication medium.

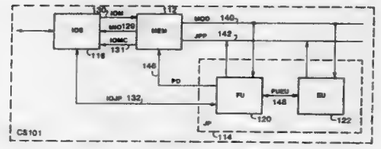
4,661,903

DIGITAL DATA PROCESSING SYSTEM INCORPORATING APPARATUS FOR RESOLVING NAMES

Walter A. Wallach, Jr., Raleigh; Michael S. Richmond, Pittsboro, both of N.C.; John K. Ahlstrom, Mountain View, Calif.; David H. Bernstein, Ashland, and Richard G. Bratt, Wayland, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 266,429, May 22, 1981, abandoned.
This application Sep. 4, 1984, Ser. No. 647,271
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 **21 Claims**

1. In a digital computer system including
(A) memory means for performing memory operations including storing data items including instructions and instruction sequences containing instructions, said intructions containing names permanently associated with instruction sequences, and
said memory means including means for storing a plurality of name table entries corresponding to said instruction sequences, said name table entries each containing information for determining the address of the data item represented by the name to which the name table entry corresponds,
said memory operations further including providing data items in response to memory operation specifiers, ech memory operation specifier specifying a memory operation and an address of a data item in said memory means, and
(B) processor means connected to said memory means for processing said data items and providing said memory operation specifiers in response to said instructions,
said processor means including name interpretation means for providing addresses of data items associated with instruction sequences to be processed by said processor means, said name interpretation means comprising:



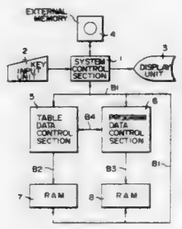
means responsive to a name in an instruction of an instruction sequence for determining the name table entry associated with said name in the plurality of name table entries associated with said instruction sequence, each of said names associated with a given one of said instruction sequences having a correponding name table entry in the name table entries associated with said given instruction sequence, and each said corresponding name table entry containing information for determining the address of the data item represented by the name to which said name table entry corresponds; and
name processing means responsive to the information in the name table entry associated with the sequence of instructions containing the instruction currently being executed by said processor means for resolving said information to produce the address of the data item specified by the corresponding name table entry.

4,661,904

COMPUTER FOR FORMING A TABLE BY SELECTING A PROGRAM LANGUAGE MODE DURING A TABLE MODE

Sigeo Kurakake, Hanno, and Satoshi Ogasawara, Tokyo, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1984, Ser. No. 595,040
Claims priority, application Japan, Apr. 12, 1983, 58-64031
Int. Cl.[4] G06F *9/06*
U.S. Cl. 364—200 **6 Claims**



1. A computer capable of switching to a program language mode during a table mode of operation, comprising:
system control means including mode switching means for

selecting one of a table mode and a program language mode of operation;

key input means coupled to said system control means for entering table format data and table item data when the table mode is selected, and for entering a program expressed by a program language when the program language mode is selected;

table managing means, coupled to said mode switching means, for establishing a completed table in response to instruction codes, after said mode switching means is set in the table mode and the table format data and the table item data are entered to said system control means by operation of said key input means, and for generating program language request codes;

program memory means for storing data corresponding to said program and said instruction codes when said mode switching means is set in the program language mode and the program language is entered upon operation of said key input means;

program language-managing means, coupled to said mode switching means and said program memory means, for managing program execution according to the data stored in said program memory means;

instruction decoder means, coupled to said table managing means and said program language-managing means, for decoding the instruction codes corresponding to the table establishing operation of said table managing means, and for decoding the program language-request codes from said table managing means wherein said request codes correspond to the program data stored in said program memory means;

bus line means, coupled to said table managing means and said instruction decoder means, for transferring data required for the table establishing operation to both latter means;

memory means, coupled to said key input means through said bus line means and said mode switching means, for storing the table format and item data which are entered in the table mode;

program language-requesting means, coupled to said instruction decoder means, for generating a start signal for starting said program language-managing means when said instruction decoder means decodes the program language-request codes while in said table mode;

program designating means coupled to said bus line means, for designating the program stored in said program memory means when the start signal is generated by said program language requesting means;

memory area-designating means, coupled to said program language-managing means, for designating a predetermined memory area of said memory means so as to store in said predetermined memory area table item data obtained by said program language-managing means on the basis of the program designated by said program designating means;

means operating to store the table item data in said predetermined area of said memory means which is designated by said memory area-designating means; and

output means, coupled to said table managing means and said program language-managing means through said mode switching means, for generating a completed table on the basis of said table format and item data.

4,661,905

BUS-CONTROL MECHANISM

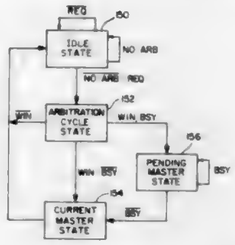
Frank C. Bomba, Andover; Reinhard Schumann, Stow; Steven R. Jenkins, Acton, all of Mass., and Paul Binder, Coral Springs, Fla., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 22, 1983, Ser. No. 534,781
Int. Cl.[4] G06F *13/18*
U.S. Cl. 364—200 **2 Claims**

1. For use in a data processing system that includes a plurality of bus devices and a common communications path for conducting signals asserted thereon, the path including the NO ARB line, a BUSY line, a plurality of command lines, at least one timing line for carrying timing signals defining timing cycles, and a plurality of arbitration lines, each of which is associated with a different one of the bus devices, a subject bus device, adapted for connection to the communications path to operate in cycles in accordance with the timing signals on the timing line and operable to assume a control-requiring state, in which it requires control of the communications path, the subject bus device comprising:

A. monitoring means for, when the subject bus device is in its control-requiring state, monitoring the NO ARB line to determine whether a signal has been asserted on the NO ARB line;

B. arbitration means, responsive to the determination of the monitoring means, for refraining from placing signals on the arbitration lines when a signal has been asserted on the NO ARB during the previous cycle and, when the subject bus device is in its control-requiring state, arbitrating for control of the communications path during a given cycle whenever the NO ARB line was unasserted during the previous cycle, regardless of the signals on any of the other lines of the communications path, by (a) asserting a



signal on an arbitration line associated with the subject bus device, (b) monitoring the other arbitration lines to determine whether a signal has been asserted on any arbitration line associated with a bus device whose priority, in accordance with a predetermined priority protocol, is higher than the priority of the subject bus device, and (c) if the arbitration means determines that the subject bus device has the highest priority, causing the subject bus device to assume a pending-master state, in which it is the next device to take control of the communications path;

C. pendency means for, when the subject bus device is in its pending-master state, asserting the NO ARB line and monitoring the BUSY line to determine whether the BUSY line is unasserted; and

D. current-master means, responsive to the pendency means, for taking control of the communications path during a given cycle whenever the pendency means determines that the BUSY line was unasserted during the previous cycle, regardless of the signals on the other lines of the communications path, by releasing assertion of the NO ARB line and placing on the command lines command signals designating a transaction to be performed during a plurality of successive cycles.

4,661,906

BINGO GAME CALCULATOR WITH IMPROVED PROCESSING

Joseph C. DiFrancesco, 238 Oakdale Ave., Horsham, Pa. 19044, and Adelbert M. Gillen, 1 Cornwell Dr., New Hope, Pa. 18938

Filed Jun. 25, 1984, Ser. No. 624,237
Int. Cl.[4] A63F *3/00, 3/06*
U.S. Cl. 364—410 **14 Claims**

1. A multiple bingo card, simultaneous play, electronic calculator, for playing a plurality of entered bingo cards according to an entered bingo game pattern having reduced memory requirements and increased calculating speed, comprising:

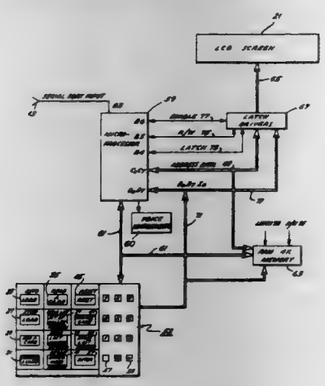
display means for displaying alpha-numeric information, said display means including a driver circuit connected thereto, said driver circuit controlling the information displayed;

a calculator circuitry connected to said display means driver circuit, said calculator circuitry including a plurality of working storage elements;

a dedicated instruction keyboard pad connected to said calculator circuitry and to said display means driver circuit;

a numeric keyboard pad connected to said calculator circuitry and to said display means driver circuit;

a memory chip for storing bingo card information and called bingo numbers information, said memory chip being connected to said calculator circuitry;



wherein said calculator circuitry storage elements include a storage location for the bingo game pattern selected to be played; and wherein said calculator circuitry places said bingo game pattern over said memory chip stored bingo card information and then compares called bingo numbers with each stored bingo card pattern number;

wherein said bingo game pattern selected forms a "mask," said mask limiting bingo card number search for each bingo card stored to patterns required for the particular bingo game selected, said mask being divided into a series of submasks each said submask corresponding to one possible winning bingo pattern; and

wherein said calculator circuitry include means for skipping stored bingo card for comparison when two missed comparisons between called and stored bingo numbers for each submask of said mask are attained.

4,661,907

METHOD FOR DETERMINING AN ANGSTROM EXPONENT FOR CORRECTING SATELLITE COLOR SCANNER IMAGES

Robert A. Arnone, and Ronald J. Holyer, both of Carriere, Miss., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 23, 1985, Ser. No. 778,827
Int. Cl.[4] G06F *15/20*; G01J *5/00*
U.S. Cl. 364—420 **4 Claims**

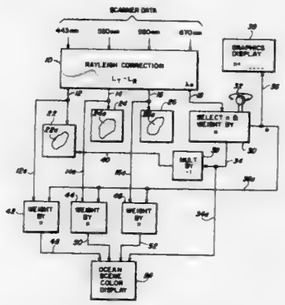
1. A method for determining an optimum Angstrom coefficient η for use in weighting satellite scanner collected ocean image data in a plurality of different visible wavelength data channels, said method comprising the steps of:

effecting Rayleigh correction of said data by subtracting Rayleigh contribution from total radiance in each of said channels to provide Rayleigh corrected data in each;

applying said Rayleigh corrected data of at least one of said channels to an interactive display as a refresh plane;

selecting another of said channels as a reference data channel;

weighting the reference channel Rayleigh corrected data by an intermediate value of η in a weighting function with η being in the range of about $\eta = -1$ to about $+3$ to provide weighted reference channel data;



applying said weighted reference channel data as a negative input to said interactive display so as to subtract said weighted reference data from the refresh plane to display aerosol bands in said refresh plane; and

varying the intermediate value of η within said range until said aerosol bands become transparent at an optimum value of η; and

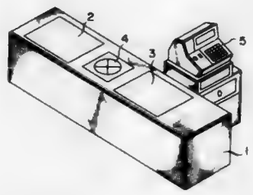
weighting said Rayleigh corrected data of said one of said channels by said optimum value of η.

4,661,908

SALES DATA PROCESSING SYSTEM

Koichi Hamano; Hajime Yamato, and Hideo Karasawa, all of Shizuoka, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1985, Ser. No. 743,167
Claims priority, application Japan, Jun. 13, 1984, 59-119792; Jun. 13, 1984, 59-119793; Jun. 13, 1984, 59-119794
Int. Cl.[4] G07G *1/12*; G06F *15/21*
U.S. Cl. 364—405 **10 Claims**



1. A sales data processing system comprising:

data reading means for reading sales article data previously attached to sales articles;

first weighing scale means for measuring weight of one or a plurality of sales articles whose sales data are to be read out by said data reading means, to produce weight data corresponding to a stable measured value;

second weighing scale means for measuring weight of one or a plurality of sales articles whose sales data have been read out by said data reading means, to produce weight data corresponding to a stable measured value;

first and second memory means for storing weight data from said first and second weighing scales;

third memory means for storing data representing a differ-

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ence between the weight data derived from said first weighing scale means and the contents in said first memory means when the former contents have varied from the latter contents;

fourth memory means for storing data representing a difference between the weight data derived from said second weighing scale means and the contents in said second memory means when the former contents have varied from the latter contents;

fifth memory means for storing sales data read by said data reading means;

means for comparing the respective differences stored in said third and fourth memory means; and

data processing means for executing the registration of the article data according to the sales data stored in said fifth memory means, when said data processing means detects that the contents of said third and fourth memory means are substantially coincident with each other.

4,661,909

SCINTILLATION CAMERA WITH PULSE HEIGHT ANALYZER

Yoshihiko Kumazawa, and Tsunekazu Matsuyama, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Nov. 21, 1983, Ser. No. 553,784
Claims priority, application Japan, Jan. 31, 1983, 58-14389
Int. Cl.⁴ G06F *15/42*; G01T *1/20*
U.S. Cl. 364—414 **11 Claims**



1. A radiation imaging apparatus comprising:

(a) means for producing a scintillation in response to each of a plurality of radiation events obtained from an object being observed;

(b) means for detecting said scintillation to produce coordinate position signals corresponding to a coordinate position of said scintillation in said scintillation producing means and an energy signal corresponding to an energy level of said scintillation;

(c) means for analyzing said energy signal to produce an output signal when said energy signal has a pulse height falling within at least one predetermined energy window, said analyzing means comprising a memory having a plurality of address groups with each group corresponding to at least one of plural coordinate positions and designatable by a set comprising said position signals and said each group including a plurality of addresses with each address designatable by an energy signal with each address of each said energy window being predefined by data of a binary one therein;

(d) means for storing correction data for correcting a nonuniformity of detection sensitivity of said scintillation in said coordinate positions; and

(e) means for conducting predetermined calculations with said correction data to provide data for defining at least one energy window for each of said positions and causing said energy window defining data to be written into said addresses of said memory corresponding to each of said positions;

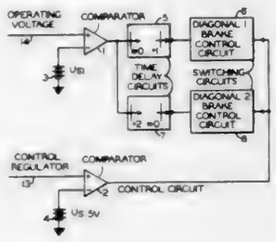
(f) whereby said set of position signals and energy signal produced in response to a scintillation event designate one of said memory addresses for read out of said window defining data from said one address in order to determine whether a pulse height of said energy signal is within said energy window.

4,661,910

PROTECTION CIRCUIT FOR DETECTING UNDERVOLTAGES IN THE ELECTRICAL CHARGING SYSTEM OF A MOTOR VEHICLE

Erich Reinecke, Burgdorf, and Gerhard Ruhnau, Neustadt, both of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed May 6, 1985, Ser. No. 730,890
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1984, 3435055
Int. Cl.⁴ B60T *8/88*
U.S. Cl. 364—426 **9 Claims**



1. A protection circuit for monitoring undervoltage conditions in a vehicle electrical system of a motor vehicle equipped with an anti-skid brake control system which is separated into two pairs of operational wheel brake units comprising:

(a) a voltage comparator means for sensing when an operating voltage in the vehicle electrical system drops below a given threshold voltage value of a source of reference voltage; and

(b) means controlled by the voltage comparator means for initially deactivating one of the two pair of operational wheel brake units and for subsequently deactivating the other of the two pairs of operational wheel brake units of the anti-skid brake control system when the operating voltage drops below the given threshold voltage value.

4,661,911

ADAPTIVE CONSTANT REFINER INTENSITY CONTROL

John M. Ellery, Sr., Pittsfield, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Jan. 31, 1985, Ser. No. 696,904
Int. Cl.⁴ G06F *15/46*; B02C *7/14*
U.S. Cl. 364—471 **20 Claims**

1. A method of controlling a paper making refiner which includes a gearmotor for adjusting refiner plates and which is driven by a main drive motor, comprising the steps of:

(a) sensing the stock consistency and stock flow rate of the flow rate signals;

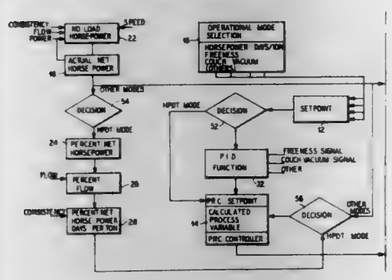
(b) sensing the speed and power of the drive motor and producing corresponding speed and power signals;

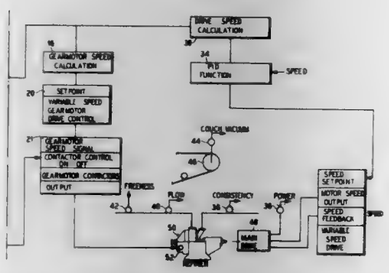
(c) producing a no load horsepower signal of the drive motor in response to the consistency, flow rate and speed signals;

(d) converting the no load horsepower into percent horsepower days per ton in response to the power, flow rate and consistency signals, including the step

(e) converting the no load horsepower into actual net horsepower in response to the power signal;

(f) producing a drive motor speed signal from the actual net horsepower, a first adjustable constant dependent on therefiner plate configuration and an intensity factor defined as a second adjustable constant representing a required refining result, and applying the drive motor speed signal to the drive motor; and





(g) producing a gearmoror speed signal from the percent horsepower days per ton, a main drive speed setpoint, the main motor power, theavailable main motor power and the maximum and minimum gearmotor speed, and applying the gearmotor speed signal to the gearmotor.

4,661,912

NUMERICAL CONTROL DEVICE FOR SCHEDULING MACHINING OF GROUPS OF WORKPIECES

Kazuo Imanishi, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo

Filed Feb. 10, 1984, Ser. No. 579,050
Claims priority, application Japan, Feb. 10, 1983, 58-20771
Int. Cl.⁴ G06F *15/46*; G05B *15/08*; B24B *49/00*; G07C *3/00*
U.S. Cl. 364—474 **4 Claims**

1. A numerical control device including a memory for storing machining programs for a plurality of groups of work pieces, comprising:

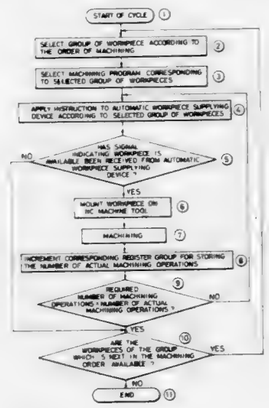
means for supplying data representing the number of workpieces to be machined in each group and a machining order for each group of workpieces;

first register means for storing said data;

counting means for counting the number of workpieces actually machining for each group of workpieces;

second register means for storing said number of workpieces actually machined from said counting means; and

a machining control section for determining a machining schedule according to contents stored in said first and second registers to machine said groups of workpieces as required in said machining order and, when the workpieces in one group of workpieces have been machined in accordance with said data, specifying a next group of workpieces to be machined to cause said groups of workpieces to be automatically machined, whereby said plurality of groups of workpieces are successively machined according to said machining schedule.

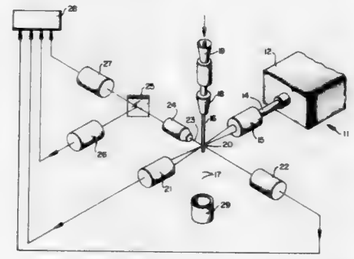


4,661,913

APPARATUS AND METHOD FOR THE DETECTION AND CLASSIFICATION OF ARTICLES USING FLOW CYTOMETRY TECHNIQUES

Hai-Ping Wu, Chapel Hill; Burton H. Sage, Jr., Raleigh, and Robert F. Adrion, Cary, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 11, 1984, Ser. No. 649,449
Int. Cl.⁴ G06F *15/46*; G01N *15/00*
U.S. Cl. 364—500 **69 Claims**



1. A flow cytometry apparatus for the detection of biological particles of interest from a sample of unknown biological particles comprising:

means for moving particles from a sample of biological particles of an unknown class, substantially one at a time, in a fluid flow stream;

means for providing an incident beam of illumination directed at the particles in said flow stream;

means for detecting light-related data associated with each moving particle as the particle passes through said beam of illumination;

means for storing data representing a known class of particles having common characteristics based on light data collected from such known class of particles;

means for applying such stored data to light data detected from sample particles of said unknown class in order to match patterns between the data of the known and unknown particles; and

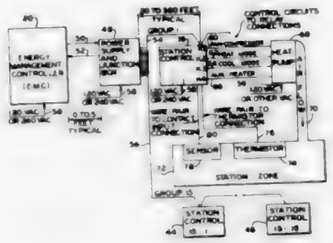
means for recognizing that particles from said unknown class belong to said known class as a result of matching patterns of respective light-related data.

4,661,914

ENERGY MANAGEMENT CONTROL APPARATUS

William P. Mulokey, Washington, D.C., and Peter A. Weiskopf, Fairfax, Va., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Jun. 7, 1984, Ser. No. 618,034
Int. Cl.⁴ G06F *15/20*; **F28F** *28/00*; **G05D** *23/00*; **F23N** *5/20*
U.S. Cl. 364—505 **16 Claims**



1. Energy management control system apparatus comprising:

a plurality of bit carrying communication lines;

first means electrically coupled to said lines for transmitting serial clock bits having transition edges, transmitting first serial data bits and receiving second serial data bits;

second means comprising a group of a plurality of stations, each of said stations electrically coupled to said lines at spaced points along said lines;

control means at each of said stations electrically connected to said serial clock bits from said first means for performing a plurality of functions including the following functions;

a first function of counting transition edges of said clock bits from said first means;

a second function of providing an address count at said each station for each predetermined number of said edges and incrementing said address count by one for each of said predetermined number of said edges;

a third function of providing a set address count increment for said each station, whereby each of said stations can be set to a different said increment than each of the other of said stations;

a fourth function of transmitting and receiving serial information bits to said first means on said lines; and

a fifth function of enabling said each station control means fourth function when said address count increment from said each control means second function matches said address count increment set in said third function for said each control means whereby said stations are placed in data communication with said first means in sequence without said first means providing address bits to selectively communicate data with said stations.

4,661,915

ALLOPHONE VOCODER

Granville E. Ott, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

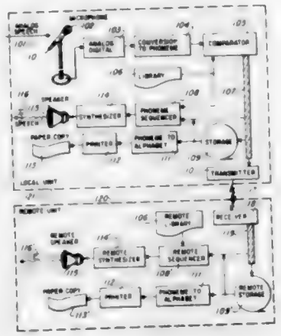
Filed Aug. 3, 1981, Ser. No. 289,604
Int. Cl.⁴ G10L *5/00*
U.S. Cl. 364—513.5 **10 Claims**

1. A speech recognition system comprising:

means for analyzing digital speech data representative of an analog speech signal to generate perceived phonemes representative of component parts of said digital speech data;

memory means having encoded digital speech data stored therein, said encoded digital speech data including phoneme codes representative of a plurality of respective reference phonemes, said memory means further having digital speech data stored therein representative of allophones analogous to said phoneme codes;

means operably coupled to said analyzing means and to said memory means for selecting encoded digital speech data representative of a particular reference phoneme from



said memory means as the closest match for each of said perceived phonemes of said digital speech data to provide a phoneme code at least approximating each of said perceived phonemes; and

means operably coupled to said selecting means and said memory means for forming a phoneme code sequence of a plurality of said phoneme codes, said phoneme code sequence-formeing means being responsive to said phoneme codes as determined by said selecting means to access digital speech data from said memory means representative of analogous allophones corresponding to said phoneme codes.

4,661,916

SYSTEM FOR METHOD FOR PRODUCING SYNTHETIC PLURAL WORD MESSAGES

Bruce R. Baker, 425 Cumberland St., Cumberland, Md. 15234; Richard D. Creech, Rte. 3, Box 170A, Silver City, N.C. 27344, and Kenneth W. Smith, 3316 Englewood Rd., Wilmington, Del. 19897

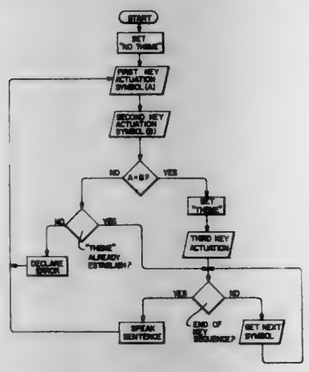
Continuation of Ser. No. 659,878, Oct. 15, 1984, abandoned, which is a continuation of Ser. No. 340,287, Jan. 18, 1982, abandoned. This application Dec. 27, 1985, Ser. No. 815,196
Int. Cl.⁴ G10L *5/00*
U.S. Cl. 364—513.5 **6 Claims**

1. In a system for producing plural word synthetic messages from a compilation of a large number of predetermined plural word messages stored in a memory in response to acutation of a relatively small number of selected keys on a keyboard in a selected sequence, said actuation of said keys selectively retrieving desired messages from said memory, the improvement comprising:

a plurality of keys in said keyboard, each bearing polysemic pictorial illustrations related to the message to be retrieved from said memory;

classification means for designating one of said keys as a primary message theme key in response to successive actuations of said keys, the other keys acting as modifying keys following said successive actuations of said keys;

said modifying keys being selectively actuated in combination with said primary message theme keys in selected sequences to selectively retrieve one of said plural word



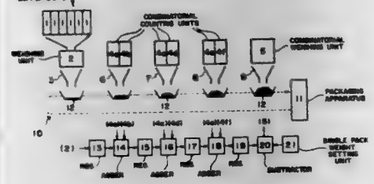
messages having a theme associated with the polysemic pictorial illustrations on said theme keys.

4,661,917

MIXING COMBINATORIAL COUNTING AND WEIGHING METHOD, AND APPARATUS THEREFOR

Setsuo Haze, Shiga, and Yugo Fujitani, Ohtsu, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Nov. 18, 1983, Ser. No. 553,074
Claims priority, application Japan, Nov. 18, 1982, 57-203480
Int. Cl.⁴ G01G *13/02*; **G06F** *15/46*
U.S. Cl. 364—567 **4 Claims**



1. A mixing combinatorial counting and weighing apparatus for providing categories of articles for packaging in a single pack, comprising:

a plurality of article supply units each for discharging a predetermined number of articles at a time;

a weighing unit positioned to collect the articles discharged by each of said article supply units, for weighing the articles and for discharging the articles along first or second discharge routes;

means for discharging the articles in said weighing unit along the first discharge route if the weight value of the articles falls within a first preset allowable range of a first set batch weight value, for discharging the articles in said weighing unit along the second discharge route if the weight value of the articles is greater than the upper limit of the first preset allowable range of the first set batch weight value, and for supplying articles to any of said article supply units from which a number of articles less than the predetermined number of articles is discharged if the weight value of the articles is less than the lower limit of the first preset allowable range of the first set batch weight value;

a plurality of combinatorial counting units, each for executing a combinatorial counting operation to obtain a best combination of articles having a total number of articles which is equal or closest to a preset number of articles;

means for discharging the articles in the combinatorial counting units along a third discharge route if the best combination of the articles in each of the combinatorial counting units falls within a second preset allowable range and for discharging the articles in the combinatorial counting units along a fourth discharge route if the best combination of articles in each of the combinatorial counting units does not fall within the second preset allowable range;

means for adding the weights of the articles discharged along the first and third discharge routes by said weighing unit and said combinatorial counting units, respectively, and for storing the sum of the weights;

means, operatively connected to said adding means, for computing a weight difference by subtracting the sum of the weights from a predetermined weight set for the single pack; and

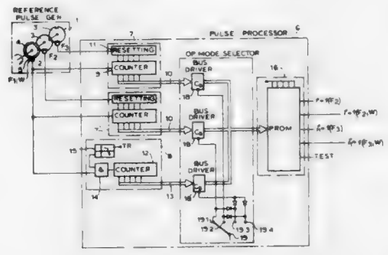
a combinatorial weighing unit, operatively connected to said computing means, for performing combinatorial weighing with the weight difference serving as a target value and for discharging additional articles based on the results of the combinatorial weighing, the articles discharged by said weighing unit, said plurality of combinatorial counting units and said combinatorial weighing unit being provided for packaging in the single pack.

4,661,918

TIMING DEVICE FOR PRINTING MACHINES

Falk Buschmann, Coswig; Karl-Heinz Foerster, Dresden; Volker Eichler, Weinhoehla; Hartmut Helber, Radebeul, and Volkmar Dittrich, Coswig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jun. 25, 1984, Ser. No. 623,913
Claims priority, application German Democratic Rep., Jun. 23, 1983, 252271
Int. Cl.⁴ G04G *3/00*; **G05B** *11/26*; **B41F** *5/00*
U.S. Cl. 364—569 **5 Claims**



1. A timing device for controlling the operation of a printing machine, including a reference pulse generator for generating a sequence of pulses related to a working cycle of the printing machine, the reference pulse generator including a generator of pulses corresponding to incremental angles of rotation of a rotary part of the machine, at least one generator of singular synchronizing pulses corresponding to a predetermined angular position of the rotary part, and a device for processing the pulses from the reference pulse generator, the pulse processing device comprising address generating means and a programmable read-only storing device having addressing inputs connected to the address generating means and outputs for reading out timing signals stored at respective addresses, said address generating means including a first device for generating addresses pertaining to angles of rotation of the rotary part, the first device cooperating with the pulse generator for incremen-

tal angles of rotation and with the pulse generator for singular synchronizing pulses, a second device for generating addresses pertaining to rotary speed of the rotary part, the second device cooperating with the pulse generator for incremental angles of rotation and with the first device, and the read-only storing device being divided in as many addressing fields as many devices for generating addresses are present in the address generating means.

4,661,919

TIMING DEVICE FOR PRINTING MACHINES

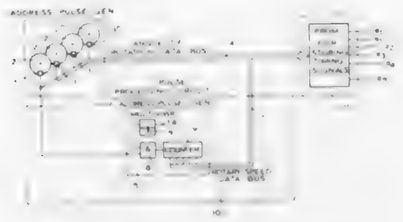
Falk Buschmann, Coswig; Karl-Heinz Foerster, Dresden; Volker Eichler, Weinboehla; Hartmut Heiber, Radebeul, and Volker Dittrich, Coswig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jun. 25, 1984, Ser. No. 623,911

Claims priority, application German Democratic Rep., Jun. 23, 1983, 2522733

Int. Cl.⁴ G04G *3/00;* **G05B** *11/26;* **B41F** *5/00*

U.S. Cl. 364—569 **5 Claims**



1. A timing device for controlling the operation of rotary printing machines, comprising a pulse generator having encoding means coupled to the printing machine to generate a sequence of coded addresses related to the angle of rotation of the machine, a pulse processing device coupled to the encoding means, and a programmable storing device for storing data corresponding to predetermined timing signals assigned to respective angles of rotation, said storing device having a plurality of addressing inputs connected to the address generator and a plurality of outputs for reading out the addressed timing signals.

4,661,920

AUTOMATIC ZERO-ADJUSTMENT METHOD AND APPARATUS

Setsuo Haze, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Apr. 27, 1984, Ser. No. 605,376

Claims priority, application Japan, Apr. 27, 1983, 58-074831

Int. Cl.⁴ G01G *19/52;* **G06F** *11/02*

U.S. Cl. 364—571 **5 Claims**



1. A combinatorial weighing apparatus including apparatus for automatically adjusting the zero points of weighing machines, comprising:

a plurality of weighing machines for weighing articles and for generating analog signals respectively corresponding to weight values provided by the weighing machines;

a multiplexer, coupled to said weighing machines, for sequentially outputting the analog signals from an output terminal as an analog output signal;

a subtractor, coupled to said multiplexer, for subtracting a zero-point correction value from the analog output signal delivered by said multiplexer to obtain an output value;

an A/D converter, coupled to said subtractor, for converting the output value from said subtractor into a digital value;

a comparator coupled to said subtractor, for comparing the output value from said subtractor with a preset value representing a weight value of zero;

a plurality of memories corresponding the number of said weighing machines, each of said memories for storing a digital weight value for articles weighed by the corresponding one of said weighing machines, and a digital zero-point correction value;

means for executing a combinatorial weighing operation based on the weight values of said weighing machines stored in said memories and for obtaining a prescribed combinatorial weight value;

switching means for switching between a combinatorial weighing mode for executing the combinatorial weighing operation for articles placed on said weighing machines, and a zero-point correction mode for adjusting the zero-point of each of said weighing machines without articles placed on said weighing machines;

arithmetic operation means for calculating the digital zero-point correction values and storing digital zero-point correction values in the respective ones of said memories, in accordance with the output value from said subtractor, for each of said weighing machines, at least one of the digital zero-point correction values being adjusted so that the output value from said subtractor approaches the preset value when said switching means designates the zero-point correction mode, and for sequentially outputting the zero-point correction values stored in said memories corresponding to said weighing machines when said switching means designates the combinatorial weighing mode;

a D/A converter, coupled to said arithmetic operation means, for converting one of the digital zero-point correction values output from said arithmetic operation means into an analog value; and

a level adjusting voltage divider, coupled to said D/A converter and said substractor, for converting the analog value from said D/A converter into a prescribed value and for outputting the prescribed value as the zero-point correction value to said subtractor.

4,661,921

ADAPTER FOR SIMULTANEOUS USE OF LOGIC ANALYZER AND IN CIRCUIT EMULATOR

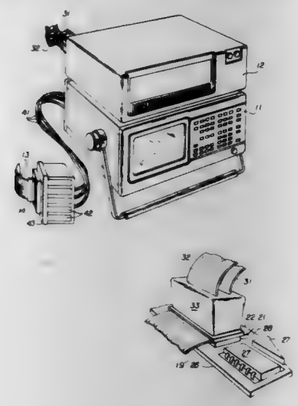
Keith Barnes, San Carlos, Calif., assignor to Kontron Electronics, Inc., Mountain View, Calif.

Filed Apr. 23, 1984, Ser. No. 603,223

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—708 **2 Claims**

1. An electrical connecting device for stepwise sequential connection of a logic analyzer to a microprocessor emulator plug and to a microprocessor socket in a device to be tested, comprising a flat body element, a plug having pins arranged so as to fit into a microprocessor socket in said flat body element, socket means in said flat body element having sockets corresponding and connected to said pins, a ribbon cable having lead wires connected to said pins and a logic analyzer probe rack connected to said lead wires, whereby said logic analyzer and said emulator may be used simultaneously without the necessity of clipping the probes of one onto the contacts of the other.



4,661,922

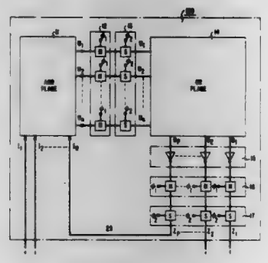
PROGRAMMED LOGIC ARRAY WITH TWO-LEVEL CONTROL TIMING

Mark E. Thierbach, Lincroft, N.J., assignor to American Telephone and Telegraph Company, Murray Hill, N.J.

Filed Dec. 8, 1982, Ser. No. 448,002

Int. Cl.⁴ G06F *9/28*

U.S. Cl. 364—716 **6 Claims**



1. A programmed logic array comprising:

(a) an AND plane

(b) an OR plane

(c) intermediate wordlines connecting the OR plane to the AND plane;

(d) a first master register connected in the intermediate wordline, for receiving intermediate data from the AND plane in response to a first control timing sequence;

(e) a first slave register connected for receiving the intermediate data from the first master register and for delivering the intermediate data to the OR plane in response to a second control timing sequence; and

(f) a second master register connected for receiving output data from the OR plane in response to a third control timing sequence, the propagation delays of the OR plane and of the AND plane being much larger than those of any of the registers.

4,661,923

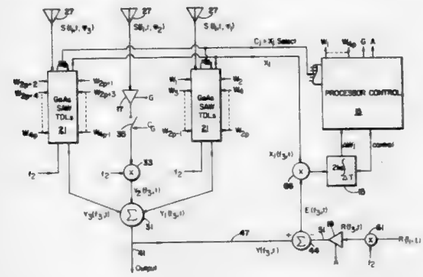
LARGE BANDWIDTH SAW ADAPTIVE PROCESSOR ARRANGEMENT

Thomas W. Grudkowski, and Gary K. Montress, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 29, 1984, Ser. No. 665,815

Int. Cl.⁴ G06G *7/195*

U.S. Cl. 364—821 **2 Claims**



1. An arrangement for selectively processing a plurality of complex array values employed as corresponding first and second tap weights in a first surface acoustic wave (SAW) device comprising a corresponding first and second adjacent series of field effect transistor (FET) elements effective for mixing oppositely launched radio frequency (RF) signals directed toward each other and said FET elements, said tap weights applied to corresponding ones of said FET elements, wherein said arrangement is characterized by an additional SAW device in parallel with said first SAW device and having an equivalent set of series FET elements and similarly subject to equivalent ones of said oppositely launched RF signals, and is further characterized by said additional SAW device being effective for producing a delay signal indicative of the selected tap weight, whereby the tap weights of said first SAW device are addressable by applying a signal on a corresponding one of said FET elements of said parallel SAW device.

4,661,924

MULTIPLE-PARTS-OF-SPEECH DISAMBIGUATING METHOD AND APPARATUS FOR MACHINE TRANSLATION SYSTEM

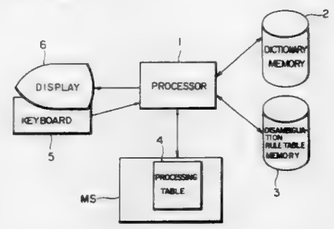
Eri Okamoto, Tokyo, and Atsushi Okajima, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1985, Ser. No. 756,670

Claims priority, application Japan, Jul. 31, 1984, 59-162445

Int. Cl.⁴ G06F *15/38*

U.S. Cl. 364—900 **15 Claims**



1. A part-of-speech disambiguating apparatus for a machine translation system, comprising:

input means for inputting a sentence constituted by words to

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be disambiguated with respect to the parts of speech which the words function as, respectively;

a dictionary memory for storing a number of words belonging to a language used in said sentence together with respective parts of speech and appearance frequencies thereof;

a rule table memory for storing a table containing parts-of-speech disambiguating rules for specifying the parts of speech of the words each of which can function as multiple parts of speech from an array of parts of speech of successive words in which said words whose parts of speech are to be specified are included; and

a processor connected to said input means, said dictionary memory and said rule table memory, wherein said processor receives said sentence from said input means and determines the parts of speech of the words which are contained in said sentence and capable of functioning as multiple parts of speech, on the basis of data read out from said rule table memory, while determining the parts of speech on the basis of said appearance frequencies read out from said dictionary memory for those words whose parts of speech could not been determined on the basis of the data read out from said rule table memory.

4,661,925

COMPUTER CONTROL MEMORY APPARATUS PROVIDING VARIABLE MICROINSTRUCTION LENGTH

Tiziano Maccianti, Pregnana Milanese, and Flavio Balasini, Cornaredo, both of Italy, assignors to Honeywell Information System Italia, Milan, Italy

Filed Nov. 9, 1983, Ser. No. 550,270
Claims priority, application Italy, Nov. 24, 1982, 24400 A/82
Int. Cl.⁴ G06F *9/22, 9/46*
U.S. Cl. 364—900 **1 Claim**



1. Apparatus for providing a sequence of variable microinstructions having a first priority to a digital computer for controlling operations in said digital computer, wherein each variable microinstruction is made up of two microinstructions stored in and read from a memory in said computer, and execution of said sequence of variable microinstructions to control operations in the computer may be interrupted by an interruption signal generated within the computer in order that a higher priority sequence of microinstructions input to said computer from said memory may be executed before the computer completes execution of the first priority sequence of microinstructions, said apparatus comprising:

a main control memory with addressable storage locations, each location containing a first microinstruction, said main control memory being provided with an input for addresses, and an output for first microinstructions read out of said main control memory in response to addresses on its input;

a secondary control memory with addressable storage locations, each location containing a second microinstruction, said secondary control memory being provided with an input for addresses, and an output for second microinstructions read out of said secondary control memory in response to addresses on its input;

means for jointly addressing said main and said secondary control memories to read said first and said second microinstructions therefrom, said addressing means being connected to said input of both said memories;

a microinstruction register having a first and a second storage portion, said first storage portion being connected to said output of said main memory and receiving a first microinstruction therefrom; and said second storage portion receiving said second microinstruction read out of said secondary control memory, or a third microinstruction read out of an expansion register, or all zeroes, and the microinstructions or zeroes in said first and said second storage portions making up a variable microinstruction having a bit length equal to the sum of the bit lengths of the microinstructions or zeroes stored in said first and said second storage portions, said variable microinstruction for controlling operations in the computer,

means for decoding connected to said microinstruction register for decoding said variable microinstruction received therein,

said expansion register connected to said decoding means and said first storage portion and responsive to a decoded variable microinstruction to store a portion of said first storage portion, said expansion register also storing a microinstruction which is said third microinstruction;

multiplexing means having a plurality of inputs to which are applied said second microinstructions stored in said secondary control memory, said third microinstructions stored in said expansion register, or all zeroes, and an output which is selectively connected to one of the plurality of inputs for outputting ones of the microinstructions or all zeroes from the inputs connected thereto to be stored in said second storage portion of said microinstruction register, a first one of said multiplexing means inputs being connected to said output of said secondary control memory, a second one of said multiplexing means inputs being connected to the output of said expansion register, and a third one of said multiplexing means inputs having a binary number of all zeroes input thereto, said multiplexing means output being connected to said second storage portion of said microinstruction register, and said multiplexing means having a first and a second control input to which are respectively applied first and second selection signals to control said multiplexing means;

a first logical circuit having input thereto a portion of a microinstruction address from said addressing means and in response thereto generating said first selection signal which is applied to said first control input of said multiplexing means, said first selection signal being used to enable said multiplexing means to transfer a microinstruction or all zeroes from one of said three inputs of said multiplexer to said second storage portion of said microinstruction register; and

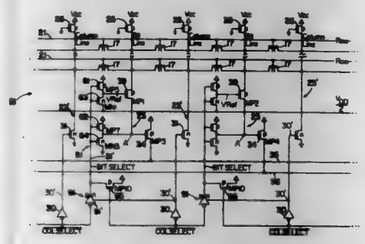
second logical circuits connected to said decoding means and set by said interruption signal and reset by a decoded variable microinstruction of said first priority sequence of microinstructions, said second logical circuits being in their reset state generating said second selection signal which is applied to said second control input of said multiplexing means and enables said multiplexing means to connect one of the second or third microinstructions or all zeroes on said three inputs of said multiplexer to said second storage portion of said microinstruction register.

4,661,926

BIT LINE GAIN CIRCUIT FOR READ ONLY MEMORY

Robert D. Lee, Denton, Tex., assignor to Thomson Components-Mostek Corp., Carrollton, Tex.

Filed Nov. 20, 1984, Ser. No. 674,103
Int. Cl.⁴ G11C *17/00*
U.S. Cl. 365—104 **3 Claims**



1. A ROM memory circuit, including

an array of row lines (21);

an array of bitlines (23);

an array of column lines (23'); and

a first plurality of transistors (17), each having a gate connected to row line (21) and a source-drain path connected between one of said column lines (23') and one of said bit lines (23), and serving to slew, i.e. adjust voltage on, said bit line (23);

at least one output line (35,36); and

means for selectively connecting one of said bitlines (23) to said output line (35,36);

wherein:

said means (FIG. 7) comprises an amplifier (39) having a gate selectively connected to a reference voltage and an input connected to said one of said bit lines (23) and a p-channel transistor (34) having a gate connected to an output terminal of said amplifier (39) and a drain connected to and driving said output line (35,36), whereby capacitance on the output line (35,36) is isolated from capacitance on the selected bitline (23) and said first plurality of transistors (17) need slew only said bitlines (23) and not said output line (35, 36);

a plurality of column select lines (30') are provided, which carry COLSELECT signals and alternate with said bitlines;

a selected one of said bitlines (23) is set high whenever either, but not both, of the adjacent COLSELECT lines is high;

said circuit further comprises bit select circuitry (91, 95) effective for performing a logical OR between two adjacent column select signals;

said bit select circuitry (91, 91', 95) for each bitline is implemented using only first (95), second (96) and third (97) transistors, said second (96) and third (97) transistors being series-connected and having their gates commonly connected to the complement of a first COLSELECT signal, the remaining terminal of said third transistor (97) being tied to a power supply potential and the remaining terminal of said second transistor (96) being connected to a second COLSELECT signal,

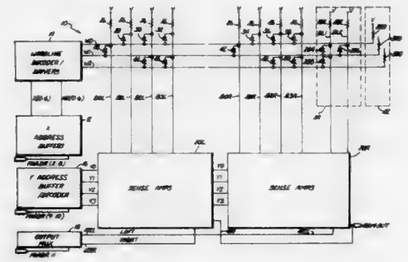
said first transistor (95) having a gate connected to the complement of said second COLSELECT signal, one terminal connected to said power supply potential and one terminal connected to the junction of said second (96) and third transistors (97), said junction being further connected to an output line which provides a BITSELECT signal.

4,661,927

INTEGRATED SCHOTTKY LOGIC READ ONLY MEMORY

Jeffrey P. Graebel, Maple Grove, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 15, 1985, Ser. No. 691,258
Int. Cl.⁴ G11C *11/36*
U.S. Cl. 365—175 **23 Claims**



1. A read-only memory (ROM) device comprising:

a plurality of wordlines;

a plurality of data bitlines;

diodes selectively connected between wordlines and data bitlines to represent a predetermined data pattern based upon presence and absence of a diode connected between each wordline and data bitline;

wordline driver means for addressing a selected wordline;

output means for deriving output signals representative of the data pattern based upon signals received from the data bitlines as the selected wordline is addressed; and

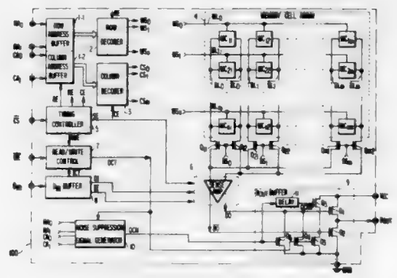
pattern sensitivity compensation means connected to the wordlines for compensating for variations of loading due to the predetermined data pattern.

4,661,928

OUTPUT BUFFER IN WHICH INDUCTIVE NOISE IS SUPPRESSED

Nobuyuki Yasuoka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,586
Claims priority, application Japan, Nov. 28, 1983, 58-223720
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—189 **16 Claims**



1. A memory device comprising a plurality of memory cells arrayed in a matrix form, first means responsive to address signals for selecting at least one of said memory cells, second means responsive to a data stored in the selected memory cell for producing true and complementary outputs corresponding to said data, a data output terminal, a first terminal supplied with a first fixed potential, a second terminal supplied with a

second fixed potential, a data output buffer circuit responsive to said true and complementary outputs for producing an output data signal at said data output terminal, said output buffer circuit including a first transistor supplied with said true output and connected between said data output terminal and said first terminal and a second transistor supplied with said complementary output and connected between said data output terminal and said second terminal, a third transistor connected between said first terminal and a control electrode of said second transistor, and third means responsive to a control signal used for a data read operation for turning said third transistor ON thereby to turn said second transistor ON before said true and complementary outputs are supplied to said first and second transistors, whereby said data output terminal is discharged by said second transistor before said output data signal is produced at said data output terminal.

4,661,929

SEMICONDUCTOR MEMORY HAVING MULTIPLE LEVEL STORAGE STRUCTURE

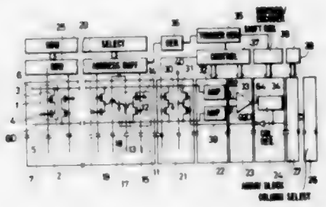
Masakazu Aoki, Tokorozawa; Yoshinobu Nakagome, Hachioji; Masashi Horiguchi; Shinichi Ikenaga, both of Kokubunji, and Katsuhiro Shimohigashi, Musashimurayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 24, 1984, Ser. No. 686,018

Claims priority, application Japan, Dec. 23, 1983, 58-242021; Jul. 9, 1984, 59-140511; Jul. 19, 1984, 59-150057

Int. Cl.⁴ G11C *11/40*

U.S. Cl. 365—189 **28 Claims**



1. A semiconductor memory having multiple level storage structure at least comprising a memory array including a plurality of memory cells respectively having at least one storage capacitor, an address selecting means which designates location of each memory cell, data lines which transfer data through connections to said memory cells and data writing and reading means being connected to said data lines, said memory further comprising

a means for sequentially applying, on time series basis, different voltages of at least three levels or more to said memory cells,

at least a data judging means, a first transfer gate provided between said judging means and data lines and a bias charge supplying means provided between said first transfer gate and the judging means, as said data reading means, and

a column register providing at least two or more storage cells which temporarily store said judged data.

4,661,930

HIGH SPEED TESTING OF INTEGRATED CIRCUIT

Bao G. Tran, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1984, Ser. No. 636,941

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—201 **5 Claims**

1. A semiconductor memory device comprising:

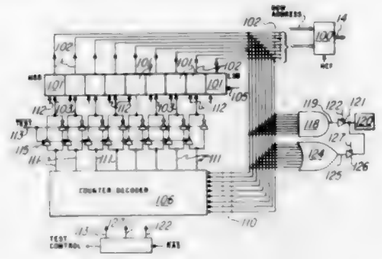
an array of rows and columns of storage cells, each storage cell having a storage capacitor which decays with time,

addressing means for activating one of said rows of storage cells,

an address input to said device, said address input including terminals of the device,

an address counter having a plurality of bits and an internal carry circuit,

multiplex means to apply an address either from said address input of the device or from said address counter to said addressing means,



and testing means for testing the operation of said counter without counting through all combinations of said bits, including:

logic circuit means to detect the bits in said counter and to produce a 1-bit output at a terminal of said device indicating either all 1's or all 0's in said counter,

and means coupled to said internal carry circuit for altering said carry circuit in response to a control input.

4,661,931

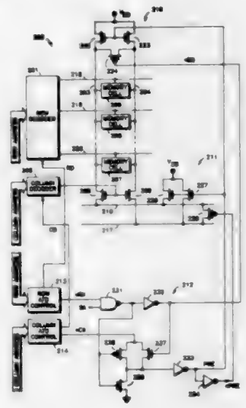
ASYNCHRONOUS ROW AND COLUMN CONTROL

Stephen T. Flannagan, and Paul A. Reed, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1985, Ser. No. 762,341

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—203 **17 Claims**



1. A memory circuit which has a plurality of bit line pairs which are selected by a column address and a plurality of word line lines which are selected by a row address, the bit line pairs being selectively coupled to a common data line by column decoders as determined by the column address and the word lines being selectively enabled by a row decoder as determined

by the row address, a memory cell being located at each intersection of the bit line pairs and word lines, comprising:

column detection means means providing a column transition signal for at least a predetermined time duration following a column address transition; and

decoupling means for decoupling at least one selected bit line pair from the common data line in response to the column transition signal.

4,661,932

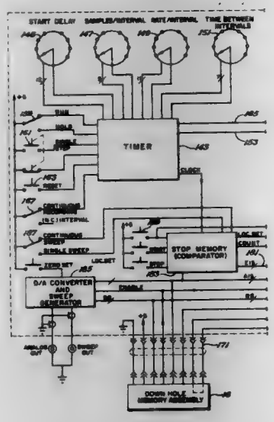
DYNAMIC DOWNHOLE RECORDER

Mig A. Howard, Houston, and Louis H. Barnard, Pasadena, both of Tex., assignors to Hughes Tool Company - USA, Houston, Tex.

Filed Dec. 14, 1983, Ser. No. 561,487

Int. Cl.⁴ G01V *1/00*; **G01D** *9/00*

U.S. Cl. 367—25 **2 Claims**



1. A system for recording information in a borehole, comprising in combination:

a string of drill pipe for drilling a borehole;

a sub adapted to be mounted in the string of drill pipe;

transducer means carried in the string of drill pipe and located in the vicinity of the sub for sensing a parameter in the borehole and providing an electrical response corresponding thereto;

converter means in the sub connected to the transducer means for providing a digital value corresponding to the electrical response of the transducer means upon the receipt of a timer pulse during a sampling interval;

digital memory means in the sub, upon receipt of each of the timer pulses, for addressing a new memory location and storing the digital value produced by the converter means;

downhole pulse means in the sub for providing the timer pulses to the converter means and to the memory means during each sampling interval, and for providing the timer pulses free of any simultaneous control from the surface;

selection means in the sub for preselecting prior to lowering the sub into the borehole a time delay before the pulse means provides timer pulses, a total number of pulses to be provided at each sampling interval, a frequency at which the pulses are provided during each sampling interval, and a time between each sampling interval; and

surface timer means at the surface for providing to a counter timer pulses substantially simultaneously with the timer pulses of the downhole pulse means, to allow one at the surface to know which particular memory location is being filled downhole at any given time.

4,661,933

METHOD AND APPARATUS FOR ACOUSTICALLY MEASURING THE TRANSVERSE DIMENSIONS OF A BOREHOLE

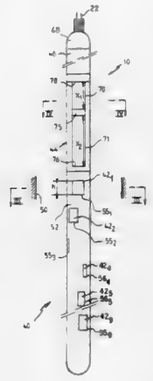
Bronislaw Seeman, Meudon, and Benoit G. L. Froelich, Palaiseau, both of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Dec. 17, 1982, Ser. No. 450,595

Claims priority, application France, Dec. 21, 1981, 81 24021

Int. Cl.⁴ G01V *1/00, 1/40*

U.S. Cl. 367—27 **3 Claims**



1. Method for measuring the transverse dimensions of a well, comprising the steps of moving a sonde through the hole, simultaneously transmitting sonic energy toward two diametrically opposed sectors of the wall of the well from a single transducer within the sonde, said transducer being positioned at an offset position with respect to the longitudinal axis of the sonde, detecting by means of said transducer at least the first echo retransmitted by said two diametrically opposed sectors of the wall, obtaining from the time elapsed between the transmission and the detection of the sonic energy an indication of the transverse dimension of the well in the direction of the sonic energy transmission and including measuring the propagation rate of the acoustic waves in the medium surrounding said transducer by positioning a reference transducer and two reflectors at different distances from the reference transducer on the sonde, and by measuring the time elapsing between the transmission of a pulse from the reference transducer and the reception of the echo from the reflectors.

4,661,934

GROUND POSITION CONTROLLER AND METHOD FOR AUTOMATICALLY INDICATING PARAMETERS THAT SPATIALLY CROSS-REFERENCE THE LOCATIONS OF SEISMIC SPREAD AND SOURCE ARRAYS DURING EXPLORATION FOR HYDROCARBONS AND THE LIKE

H. T. Carruth, Jr., Anaheim, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 16, 1980, Ser. No. 169,345

Int. Cl.⁴ G01V *1/28, 1/24*

U.S. Cl. 367—37 **11 Claims**

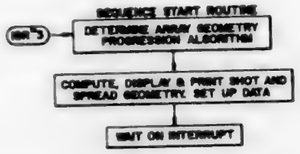
1. Method of calculating, storing and displaying positional data, associated with a digital exploration system during generation and collection of seismic data by a source-detector array positioned at known locations along a line of survey at the earth's surface, said positional data including information related to both detector and source locations relative to each other and to a reference location, and being generated as bits of digital data in a microcomputer system including a microprocessor unit (MPU), memory units and a series of display/s-

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torage devices interconnected to each other and to a digital field system (DFS) via a system bus, whereby errors in exploration activity—both pre-activation and post-release of energy from said source—are substantially reduced, comprising

(a) encoding and automatically storing additional digital data related to array geometry and exploration parameters that allow repetition in sequence of activities along said line, said encoded and stored parameters including both source and detector locations relative to each other and to a reference location,

(b) automatically displaying at least a portion of said encoded data in alpha-numeric form for operator examination and for correction, if required,



(c) automatically generating via said microcomputer system further additional data related to array parameters based in part on data encoded as (a), and previously stored data related to exploration parameters, said additional data including at least positional data related to end-positions of active detectors along said line of survey, and

(d) displaying at said display/storage devices of said microcomputer system at least a portion of said new array parameters of (c) for operator examination and correction, if required, whereby errors in exploration activities can be substantially reduced, prior to activation of said source of said array.

4,661,935

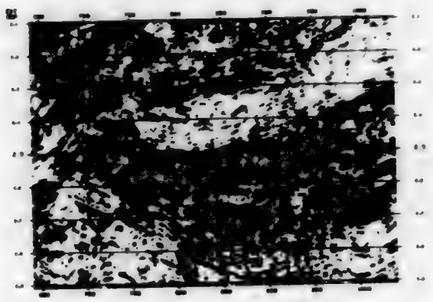
SEISMIC DATA PROCESSING

Clifford L. Shock, Bartlesville, Okla., and Colin Johnson, London, England, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 17, 1984, Ser. No. 651,733

Int. Cl.[4] G01V *1/34*; G01D *7/02*

U.S. Cl. 367—70 **11 Claims**



1. A method for producing a variable amplitude/phase seismic display from a plurality of real seismic wiggle traces, said method comprising the steps of:

(a) selecting a plurality of data points for each one of said plurality of real seismic wiggle traces, wherein said plurality of data points are equally spaced apart;

(b) determining the real amplitude for each one of said plurality of data points selected in step (a);

(c) determining the instantaneous phase of a plurality of complex seismic wiggle traces corresponding to said plurality of real seismic wiggle traces at each one of the data points selected in step (a);

(d) assigning color one, color two, color three or color four to each data point selected in step (a) based on the instantaneous phase, determined in step (c), at each data point, wherein said colors are assigned in accordance with Table I and wherein BA in Table I is a base angle

TABLE I

Color	Range
one	(BA −90°) to (BA −180°)
two	BA to (BA −90°)
three	BA to (BA +90°)
four	(BA +90°) to (BA +180°);

(e) assigning a shade of color one, a shade of color two, a shade of color three or a shade of color four to each data point selected in step (a), wherein the darkness of the shade assigned is based on the amplitude determined in step (b) and wherein the particular color applied to each data point is determined by the instantaneous phase in accordance with step (d); and

(f) plotting the color and shade of color assigned to each data point to produce said variable amplitude/phase seismic display.

4,661,936

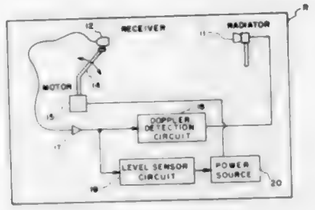
APPARATUS FOR AND METHOD OF DOPPLER MOTION DETECTION WITH STANDING WAVE DRIFT COMPENSATION

Mark R. Magee, Saratoga, Calif., and Richard E. Saffran, Boston, Mass., assignors to GTE Government Systems Corporation, Stamford, Conn.

Filed Nov. 26, 1984, Ser. No. 675,033

Int. Cl.[4] G08B *13/16*

U.S. Cl. 367—94 **13 Claims**



1. Apparatus for detecting motion of an object in a confined space to the degree that said object amplitude modulates a carrier wave in a predetermined frequency range, said apparatus comprising:

means for generating the carrier wave;

radiator means connected to said generating means and positioned to radiate the carrier wave into said space;

receiving means spaced from said radiator means and positioned in said space to receive said carrier wave;

demodulator means connected to the output of said receiver means for demodulating said carrier wave and for producing an alarm in response to movement of an object in said space: and

means to change the effective position of said radiator means or said receiver means, in response to a decrease in the strength of the carrier wave at said receiver means below a predetermined level.

4,661,937

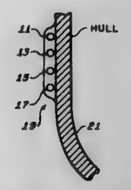
SONAR BEAM STEERING CIRCUIT

Kenneth W. Groves, Forest Hills, N.Y., assignor to Sperry Corporation, New York, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,407

Int. Cl.[4] G01S *3/80*

U.S. Cl. 367—103 **2 Claims**



1. A broadband multi-beam sonar apparatus comprising a multiplicity of hydrophone elements each having an inherent capacitance serially coupled electrically to provide junctions interjacent neighboring hydrophone elements and arranged to establish a hydrophone array, and a plurality of inductive elements arranged such that an inductive element is coupled between each junction and a common buss thereby forming a capacitance-inductance phase lead network providing progressive phase advances between successive serially coupled hydrophone elements that are an inverse function of frequency.

4,661,938

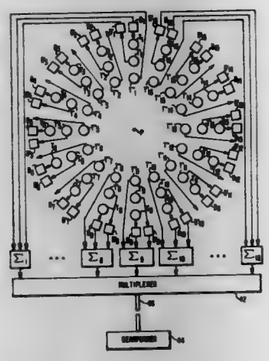
SONAR APPARATUS

Charles H. Jones, Pasadena, and John W. Kesner, Severna Park, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 23, 1986, Ser. No. 821,717

Int. Cl.[4] G01S *3/80*

U.S. Cl. 367—123 **11 Claims**



1. Sonar apparatus comprising:

(A) beamformer apparatus;

(B) a plurality of groups of transducer elements, each said transducer element being operable to provide an output signal in response to impingement of acoustic energy emanating from a distant target;

(C) each said group including at least two said transducer elements positioned one behind the other along a generally radial line and spaced from one another by a distance of λ/4, where λ is the wavelength of the center frequency of interest of said acoustic energy;

(D) means for delaying the output signal from one said transducer element with respect to the output signal provided by the next adjacent transducer element in said group;

(E) means for summing and amplifying the (a) output signals and (b) delayed signals of said transducer elements of respective ones of said groups; and

(F) means for providing said summed and amplified signals to said beamformer apparatus.

4,661,939

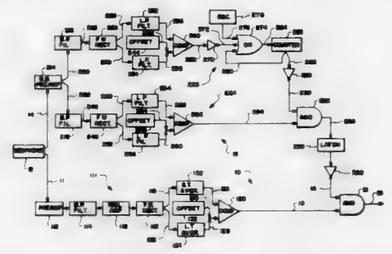
LIGHT VEHICLE RANGE DISCRIMINATOR

Russell D. Braunling, Hennepin, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 3, 1985, Ser. No. 772,101

Int. Cl.[4] G08B *13/00*

U.S. Cl. 367—136 **5 Claims**



1. Apparatus for detecting and signaling the intrusion (with respect to a point on the earth) of a light vehicle including means to prevent a signaling of a heavy vehicle intruding upon said point, said apparatus comprising in combination:

(a) single geophone means mounted and adapted to respond to vibrations in the ground and to provide an output indicative of vibrations sensed thereby;

(b) first means including high-pass means connected to receive the output of said geophone means, said first means further including means for providing an output when the long-term average of high frequency vibrations reaches a predetermined relation to the short-term average thereof;

(c) second means including low pass means connected to receive the output of said geophone means, said second means further including means for providing an output when the long-term average of low-frequency vibrations reaches a pedetermined relation to the short-term average thereof;

(d) an oscillator means having an output for providing pulses;

(e) OR circuit means having three inputs and an output means;

(f) counter means having an input and an output;

(g) first AND circuit means having a pair of inputs and an output;

(h) latch means having an input and an output;

(i) means including inverter means for connecting the output of said first means to one of said inputs of said OR circuit means, said other inputs of said OR circuit means being connected to receive: (1) the output of said oscillator means, and (2) an output from said counter means, and said OR circuit output means being connected to the input of said counter means;

(j) means including inverter means for connecting the output of said counter means to one of the input means of said first AND circuit means;

(k) means connecting the output of said second means to the other of the input means of said first AND circuit means;

(l) means connecting the output of said first AND circuit means to the input of said latch means;

(m) second AND circuit means having a pair of inputs and an output;

(n) means including inverter means connecting the output of

said latch means to one of the inputs of said second AND circuit means;

(o) third means including low pass means connected to receive the output of said geophone means, said third means further including means for providing an output when the long-term average of low-frequency vibrations reaches a predetermined relation to the short-term average thereof; and

(p) means connecting the output of said third means to the other input of said second AND circuit means whereby said apparatus functions as follows:

(1) upon the approach of a heavy vehicle toward said point said first and second means signals are connected as aforesaid to thereby cause said latch means to operate to thereby signal the intrusion of a heavy vehicle, the operation of said latch means in turn inhibiting said second AND gate from signal in a vehicle at the output thereof,

(2) upon the approach of a light vehicle toward said point, said first and second means function coactively so as to inhibit the operation of said latch means, and said third means functions to produce an output signal which is applied to said other input of said second AND circuit means to thereby produce a signal at the output thereof indicative of the presence of a light vehicle.

4,661,940

OPTICAL DISC PLAYER

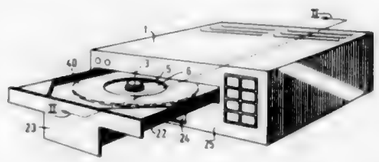
Eduard Camerik, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 13, 1984, Ser. No. 649,887

Claims priority, application Netherlands, Sep. 19, 1983, 8303217

Int. Cl.⁴ G11B *7/00, 25/04*

U.S. Cl. 369—111 **4 Claims**



1. An optical disc player for discs carrying opticaly encoded information and comprising:

a housing (**1**),

a drive motor (**2**) having a casing and a rotatable spindle (**4**) with a free end (**5**),

a disc-supporting means on the spindle for supporting a record disc (**6**) thereon in a plane perpendicular to the axis of rotation (**3**), of the spindle,

an optical reading device (**7**) having an optical read head (**8**) which is movable over the surface of the disc (**6**) on the spindle and reads the information on the disc by means of a light beam (**9**), and

a carriage (**10**) for the drive motor (**2**), which carriage is movable between a first position inside the housing (**1**), in which position the disc on the spindle can be read by means of the optical read head, and a second position in which the carriage projects from the housing and a disc can be placed on the spindle and removed from the spindle, characterized, in that

the optical reading device (**7**) is secured in the housing, and

aligning means (**11**) are fixed in the housing, which means, when the carriage (**10**) is in the first position, cooperate with the drive motor (**2**) to align the spatial position of the axis of rotation (**3**) of the spindle accurately relative to the optical reading device.

4,661,941

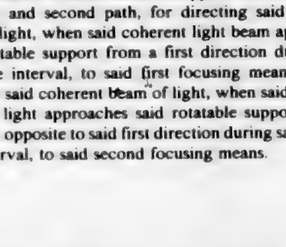
OPTICAL VIDEO OR DATA TAPE RECORD AND PLAYBACK APPARATUS

Alan E. Bell, East Windsor, and Fred W. Spong, Lawrenceville, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 18, 1979, Ser. No. 76,752

Int. Cl.⁴ G11B *7/00;* **G01D** *9/42*

U.S. Cl. 369—111 **8 Claims**



1. Apparatus for recording information signals, said apparatus comprising:

an optical tape record medium;

a source of radiant energy providing a beam of coherent light; said beam of coherent light being modulated in accordance with said information signals;

a rotatable support;

means for guiding said optical tape record medium in a substantially 180° arc adjacent to said rotatable support;

first and second means, attached to said rotatable support, for focusing said coherent light beam to a first spot and a second spot, respectively on said optical tape record medium;

means for establishing relative motion between said rotatable support and said optical tape record medium such that said first and second focused light spots scan said optical tape record medium in a helical fashion along the arc established by said guiding means; and

means, in the path of said beam of coherent light, for switching said beam of coherent light between a first path and a second path, said first path coupling said beam of coherent light to said first focusing means during a first time interval during which said optical tape record medium is helically scanned by said coherent beam of light focused by said first focusing means and said second path coupling said coherent beam of light to said second focusing means during a second time interval during which said optical tape record medium is helically scanned by said coherent beam of light focused by said second focusing means; and

means, attached to said rotatable support and common to said first and second path, for directing said coherent beam of light, when said coherent light beam approaches said rotatable support from a first direction during said first time interval, to said first focusing means and for directing said coherent beam of light, when said coherent beam of light approaches said rotatable support from a direction opposite to said first direction during said second time interval, to said second focusing means.

4,661,942

CONTROL APPARATUS FOR INFORMATION STORAGE AND RETRIEVAL SYSTEM

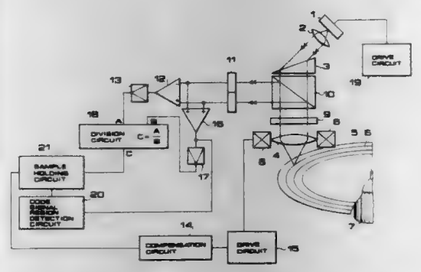
Kyosuke Yoshimoto, and Osamu Ito, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1984, Ser. No. 643,869

Claims priority, application Japan, Aug. 26, 1983, 58-155875; Sep. 30, 1983, 58-182191

Int. Cl.⁴ G11B *7/00*

U.S. Cl. 369—44 **8 Claims**



1. A control apparatus for an information system comprising a recording medium with a recorded code signal and a recorded information signal identified by the code signal; a signal reading unit having a movable part for reading signals from said recording medium; and control means for moving said movable part by generating and using a corrective error signal derived from characteristics of the signals read from said recording medium by said movable part; said control means including code signal detection means for detecting the code signal in said signals read by said movable part, and holding means operated by said code signal detection means when the code signal is detected for generating the corrective error signal based on a previous read information signal while said code signal detection means is detecting the code signal.

4,661,943

OPTICAL DATA READER

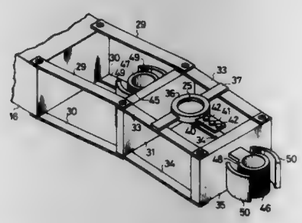
Atsuo Ikeda, Saitama, Japan, assignor to Pioneer Electroni Corporation, Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,414

Claims priority, application Japan, Feb. 27, 1984, 59-27043[U]

Int. Cl.⁴ G11B *7/135*

U.S. Cl. 369—44 **6 Claims**



1. In an optical data reader comprising: an optical system including an objective lens; a holding mechanism for holding said optical system, said holding mechanism being movable in the radial direction of a disc; and a tilt servomechanism for maintaining an optical axis of an irradiating light beam directed from said optical system to a recording surface of said disc and said surface orthogonal to each other; the improvement wherein said tilt servomechanism comprises: support means for supporting said objective lens in such a manner as to be rotatable and movable in a plane including a rotational axis of said disc; detection means for detecting an angle between said optical axis and said recording surface of said disc and issuing a detection signal when said angle deviates significantly from the orthogonal; and drive means for driving said objective lens in accordance with said detection signal.

4,661,944

OPTICAL RECORDING/PLAYBACK APPARATUS HAVING A FOCUSING CONTROL SYSTEM WITH REDUCED SPOT-OFFSET SENSITIVITY

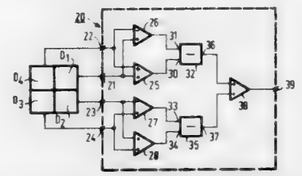
Robert N. J. Van Sluys, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,430

Claims priority, application Netherlands, Mar. 2, 1984, 8400674

Int. Cl.⁴ G11B *7/12, 21/00, 7/095*

U.S. Cl. 369—44 **7 Claims**



1. An apparatus for recording and/or reading information in or from a track on a radiation reflecting record carrier, said apparatus comprising means for producing a beam of radiation, means for focusing said beam to a spot on the record carrier in dependence on a control signal, a focus error detection system, means for directing a beam of radiation reflected from the carrier onto said detection system, said detection system including four radiation sensitive detectors each supplying an output signal and an astigmatic element disposed in the path of said reflected radiation between said detectors and the record carrier, each of said detectors being disposed in a quadrant formed by a pair of orthogonal axes which extend at an angle of substantially 45° with respect to astigmatic focal lines of said astigmatic element, and means for deriving said control signal from said output signals, said deriving means having an input which is coupled to said detector means for receiving said output signals and an output for supplying a signal, S_f, which defines said control signal and satisfies the formula:

$$S_f = \alpha \left[\frac{S_1 - S_4}{S_1 + S_4} + \frac{S_3 - S_2}{S_3 + S_2} \right]$$

where S_1, S_2, S_3 and S_4 are output signals of consecutive detectors taken in the clockwise sense and α is a constant.

4,661,945

DIFFERENTIAL CODING SYSTEM AND APPARATUS THEREFOR

Botaro Hirosaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 26, 1984, Ser. No. 625,054

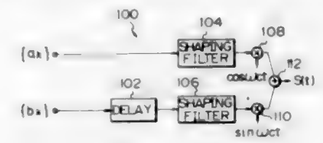
Claims priority, application Japan, Jun. 27, 1983, 58-115535

Int. Cl.⁴ H04J *11/00;* **H04B** *14/06*

U.S. Cl. 370—20 **3 Claims**

1. In a differential coding method for a staggered quadrature modulation transmission system which transmits and receives afirst data sequence $a_1, a_2, \ldots, a_k, \ldots$ and a second data sequence delayed half a clock period relative to the first data sequence, $b_1, b_2, \ldots, b_k, \ldots$, by transmitting the first and second data sequences through an in-phase channel and a

quadrature channel, respectively, the improvement wherein said differential coding method includes the steps of: regarding said two data sequences as a single data sequence, $a_1, b_1, a_2, b_2, \ldots, a_k, b_k, \ldots$, using said single data sequence to generate a



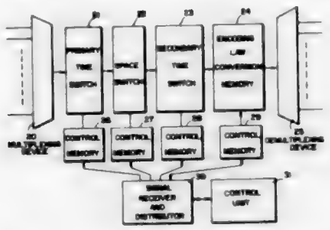
state transition sequence, $(a_1, b_1) \rightarrow (b_1, a_2) \rightarrow (a_2, b_2) \rightarrow \ldots (a_k, b_k) \rightarrow \ldots$, and assigning a data source code to the state transition between two consecutive states in conformity to a predetermined relation.

4,661,946

DIGITAL SWITCH MODULE HAVING ENCODING LAW CONVERSION CAPABILITY

Atsuhiro Takahashi, Kawasaki; Takashi Nara, Yokohama; Masami Maruyama, Yokohama, and Hiroaki Takeichi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 29, 1985, Ser. No. 738,763
Claims priority, application Japan, May 29, 1984, 59-107516
Int. Cl.⁴ H04Q *11/04*; H04B *14/06*
U.S. Cl. 370—58 **19 Claims**



1. A digital switch module for time division switching of data between digital channels used for input and output, the switching occurring in time slots, the digital channels having corresponding encoding laws and carrying digitized voice signals; said module comprising:

conversion memory means for converting the digitized voice signals on the digital channels from a first digital encoding law directly to a second digital encoding law using conversion data previously stored in said conversion memory means; and

control memory means for designating the conversion data used by said conversion memory means during each of the time slots in dependence upon the corresponding encoding laws of the digital channels used for input and output during each of the time slots.

4,661,947

SELF-ROUTING PACKET SWITCHING NETWORK WITH INTRASTAGE PACKET COMMUNICATION

Chin-Tau A. Lea, Lisle, and Warren A. Montgomery, DeKalb, both of Ill., assignors to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

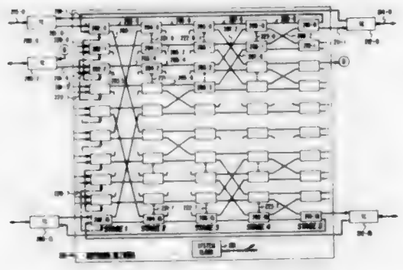
Filed Sep. 26, 1984, Ser. No. 654,763
Int. Cl.⁴ H04J *6/00*
U.S. Cl. 370—60 **28 Claims**

1. A packet switching network for communicating packets each comprising routing information from network input ports to network output ports, said network comprising:

a plurality of stages each comprising a plurality of switch nodes;

inter-node and intra-node links connecting one of said switch nodes of one of said stages to a set of switch nodes in another stage;

each of said intra-node links intra-connecting said one of said switch nodes to a switch node of said other stage via another switch node of said one of said stages and another inter-node link from said other switch node of said one of said stages to said switch node of said other one of said stages;



said one of said switch nodes comprising means responsive the routing information of one of said packets for selecting a subset of said inter-node and intra-node links;

means for generating signals to designate one of said subset of said inter-node and intra-node links for communication of said one of said packets; and

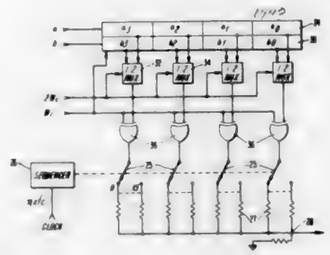
means responsive to said signals for routing said one of said packets to one of said set of said switch nodes of said other one of said stages.

4,661,948

DIGITAL QUADRATURE AMPLITUDE MODULATOR

Garry R. Shapiro, Los Gatos, and Charles S. Meyer, Nevada City, both of Calif., assignors to Fairchild Semiconductor Corporation, Cupertino, Calif.

Filed Feb. 12, 1985, Ser. No. 701,036
Int. Cl.⁴ H04J *3/00*
U.S. Cl. 370—77 **20 Claims**



1. A method for quadrature amplitude modulation of a carrier signal with plural binary synchronous sequences, comprising the steps of:

storing at least one bit of each of the binary synchronous sequences;

multiplexing the stored bits at a frequency that is an integer multiple of the frequency of the carrier signal to produce a multiplexed multibit signal;

modulating a square wave signal having a frequency equal to that of the carrier frequency of the quadrature amplitude modulation with the multiplexed multibit signal; and

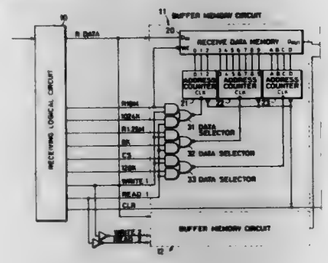
spectrally shaping the modulated square wave signal to generate a quadrature-amplitude-modulated analog signal.

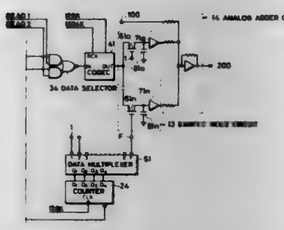
4,661,949

CIRCUIT FOR CONFERENCE TELEPHONY

Takase Sato, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 20, 1985, Ser. No. 735,743
Claims priority, application Japan, Jun. 7, 1984, 59-115545
Int. Cl.⁴ H04M *3/00*; H04Q *11/04*; H04J *3/24*
U.S. Cl. 370—62 **7 Claims**





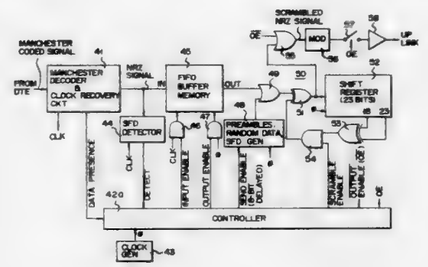
1. A circuit for conference telephony by the use of a multiple-station communication network wherein digital signals representative of voice data of a conference are transmitted on communication cables and are located within frames which are periodically repeated on a time axis and a plurality of stations are allowed to transmit signals which occupy regions within the frames on a time sharing basis to effect transmission of digital signals, the circuit characterized by receiving logical circuit means for determining whether received voice data is for the conference and for providing timing control signals, at least two buffer memory circuits of identical configuration for reading and writing each of said frames of voice data transmitted from member stations of conference telephony alternately, each buffer memory circuit including receive data memory coupled to the receiving logical circuit means for memorizing the voice data transmitted from the member stations in the order of transmission through the communication cables and at a rate synchronized with transmission speed of the voice data during writing, and means coupled to the receiving logical circuit means for causing the voice data to be read out of the receive data memory repeatedly in fixed amounts during reading, the circuit also characterized by means coupled to the receiving logical circuit means for alternately causing reading and writing by the buffer memory circuits for each frame of voice data, means for D/A converting, on a time sharing basis, said voice data from said member stations of conference telephony read out of said buffer memory circuits, and means for adding said voice data.

4,661,950

INFORMATION TRANSMISSION SYSTEM IN A LOCAL AREA NETWORK SUITABLE FOR COLLISION DETECTION

Hiroshi Kobayashi, Tokyo; Hideaki Haruyama, Yokohama, and Tsuguhiro Hirose, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 26, 1985, Ser. No. 769,027
Claims priority, application Japan, Sep. 4, 1984, 59-183873
Int. Cl.⁴ H04J *3/02, 3/24*
U.S. Cl. 370—85 **14 Claims**



1. An information transmission system comprising:

a communication medium;

a plurality of information processors each coupled to an arbitrary point on said medium, said processor being arranged to transmit and receive an information signal in a data format having a preamble section with a predetermined bit pattern and a data section following said preamble section; and

said information processors each including means for detecting the collision of transmission signals among said processors on said communication medium to inhibit the transmission of the information signal when the collision is detected; and

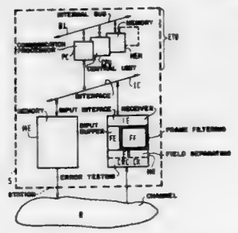
means for replacing part of said preamble section with random data prior to the transmission of the information signal.

4,661,951

COMMUNICATION NETWORK IN WHICH AT LEAST ONE STATION COMPRISES A DETERMINATION-TYPE MESSAGE FILTERING DEVICE

Gérard Segarra, Jossigny, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 9, 1985, Ser. No. 689,887
Claims priority, application France, Jan. 13, 1984, 84 00504
Int. Cl.⁴ H04J *3/02, 3/16*
U.S. Cl. 370—85 **12 Claims**



1. A communication network comprising several stations, at least one station being provided with a data processing unit and a receiver module for receiving frames transmitted via the network, each frame comprising at least a header, said receiver

module comprising an electronic determination type filtering device for filtering said frames, said filtering device comprising:

(a) a localizing device having one input for receiving said frames and other input connected to said data processing unit for receiving a localizing signal, said localizing signal indicating a portion of said frame to be analyzed for localizing a portion of at least one group of bits within said portion of said received frame;

(b) an identification unit which is connected between an output of said localizing device and an input of said data processing unit, said identification unit comprising:

(1) a memory means which is programmable for each frame, said memory having a data input which is connected to said data processing unit for receiving at least one reference value; and

(2) a comparator connected to said memory for comparing a content of said localized group of bits with said reference value stored in said memory and for forming a result signal when said group of bits within said frame corresponds to said reference value, said identification unit supplying said result signal to said data processing unit;

whereby said data processing unit receives the frames validated upon said result signal as designated for the station.

4,661,952

METHOD FOR TRANSMITTING DATA IN A TELECOMMUNICATIONS EXCHANGE

Frithjof von Sichart, and Jörg Eberspächer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 577,747, Feb. 7, 1984, abandoned. This application Oct. 4, 1985, Ser. No. 784,711

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1983, 3304823

Int. Cl.⁴ H04J 3/24

U.S. Cl. 370—94 **7 Claims**



1. Method for a telecommunications system, in particular a telephone PBX, with a data transmission line system, in particular an optical data transmisson line system, and with different connection points, in particular with subscriber connection points, with connecting line transmissions and with terminal devices, which all have different traffic properties for data transmission between at least two connectable connection points with respect to data transmission quantity and speed as well as with regard to transmission method, which may be a continuous transmission method, and where the continuous transmission method is based on a time slot combination process, in which periodically recurring time slots are combined in a pulse frame to be transmitted as a certain data quantity in a given time, in which for the certain data quantity a time slot position is clearly defined, and where the data transmitted are exchanged via a common data transmission line system connected with all different connection points, wherein an uniterrupted sequence of data storage volume between the start and end characteristics of the pulse frame is continuously available to the connection points, the improvement to the method further including the steps of (1) dividing a pulse frame into at least two sub-frames, the data quantities to be transmitted in the different sub-frames being divided arbitrarily into time slots; (2) in the first sub-frame, seizing the individual data channels formed by the time slots (1 to M) independently of one another in a time slot combination process for continuous, non-packeted data exchange, in particular, voice transmission; (3) in the second sub-frame, forming a single data channel from the time slots (N−M) primarily for the transmission of data packets via the same data transmission line group, and (4) transmitting in the single data channel, an access characteristic permitting access of all connection points to this data channel and in conjunction with this access characteristic, from a connection point initiating or ending a connection in one of the individual data channels formed in the first sub-frame, data which define the seizure or release of this individual data channel (e.g. time channel M−1) is delivered and transmitted in the single data channel from connection point to connection point for the purpose of updating tables associated with the connection points and containing the free/seized states of the time slots in the first sub-frame.

4,661,953

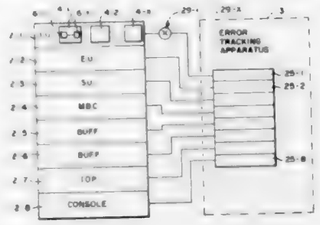
ERROR TRACKING APPARATUS IN A DATA PROCESSING SYSTEM

Venkatramiah Venkatesh, Milpitas, and Robert M. Maier, San Jose, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 790,179, Oct. 22, 1985, abandoned, which is a continuation of Ser. No. 527,173, Aug. 26, 1983, abandoned. This application Sep. 12, 1986, Ser. No. 907,131

Int. Cl.⁴ G06F 11/00

U.S. Cl. 371—16 **6 Claims**



1. In a data processing system including a plurality of data locations, an error tracking apparatus comprising:

a plurality of error detection means, each for detecting errors in data locations, and generating a data error signal upon the occurrence of an error;

a plurality of storage means, each connected to store a data error signal from a corresponding data location upon the detection of an error and adapted to be read during error processing;

an error freeze latch connected to be set by a data error signal generated by said error detection means, said error freeze latch connected to inhibit said storage means from changing state after being set by the data error signal;

a first combining means for combining the error signals from a section of said data locations to form a section error signal representing an error in any of said data locations within said section; and

a second combining means for combining a block of said section error signals to form a block error signal indicating an error in a data location within said block of sections, whereby the block and section of the data location causing the error is identified.

4,661,954

ERROR PROTECTION OF LINEARLY CODED DIGITAL SIGNALS

Wilfrid B. Harding, and Mohammad B. Amin, both of Hampshire, United Kingdom, assignors to Independent Broadcasting Authority, London, United Kingdom

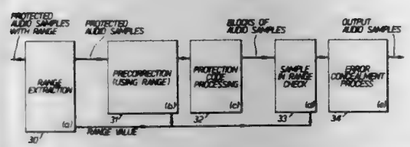
PCT No. PCT/GB84/00125, § 371 Date Dec. 4, 1984, § 102(e) Date Dec. 4, 1984, PCT Pub. No. WO84/04218, PCT Pub. Date Oct. 25, 1984

PCT Filed Apr. 11, 1984, Ser. No. 678,689

Claims priority, application United Kingdom, Apr. 11, 1983, 8309768

Int. Cl.⁴ G06F 11/00

U.S. Cl. 371—37 **8 Claims**



5. Receiving apparatus for receiving an error-protected digital signal which includes error correction information and further information representing a parameter of the signal in each of a plurality of blocks of digital information present in the signal, comprising means for separating protected digital information from error correction and further information, and means for correcting the protected digital information in response to information derived from the further information and the error protection information, and said correcting means comprises pre-correction means responsive to said further information for pre-correcting the protected digital information, and second correction means responsive to the error correction information for correcting the corrected protected digital information from the pre-correction means.

4,661,955

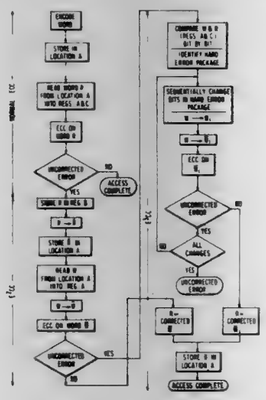
EXTENDED ERROR CORRECTION FOR PACKAGE ERROR CORRECTION CODES

David L. Arlington, Essex Junction, Vt.; Chia-Long Chen, Wappinger Falls, N.Y., and Edward K. Evans, Essex Junction, Vt., assignors to IBM Corporation, N.Y.

Filed Jan. 18, 1985, Ser. No. 692,804

Int. Cl.⁴ G06F 11/10

U.S. Cl. 371—38 **8 Claims**



1. A digital error detection and correction apparatus comprising:

data source means for providing n-bit error correction-coded code words including data and redundant binary bits, n being an integer, each code word comprising a plurality of sub-words having b bits each, b being an integer, one or more bits of a code word being possibly provided by a faulty element in said data source;

error correcting means responsive to n-bit code words from said data source means for correcting up to a predetermined number of errors within a code word, said error correcting means providing a corrected code word in the presence of a correctable number and distribution of errors and providing an uncorrectable error output signal in the presence of an uncorrectable number and distribution of errors;

fault-identifying means for identifying at least one b-bit sub-word of each said code word from said data source means, which sub-word was provided by a faulty element in said data source means;

sub-word generating means for generating up to 2^b unique combinations of said b-bit sub-word; and

control means responsive to said error correcting means output signal and to said fault-identifying means for substituting a sub-word generated by said sub-word generating means for at least one sub-word of said n-bit code word identified by said fault-identifying means to form a modified code word and for applying said modified code word to said error correcting means, said control means operating cyclically to substitute a different generated sub-word up to 2^b times in response to the output signal of said error correcting means.

4,661,956

METHOD OF CORRECTING ERRORS OF DIGITAL SIGNALS IN THE RECORDING AND REPRODUCTION OF DIGITAL SIGNALS

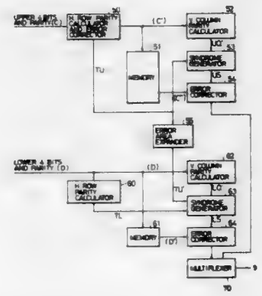
Morishi Izumita, Inagi; Seiichi Mita, Tsukui; Masuo Umemoto, Nishitama; Hidehiro Kanada, Kodaira, and Morito Rokuda, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed Feb. 21, 1985, Ser. No. 703,917

Claims priority, application Japan, Mar. 2, 1984, 59-39769

Int. Cl.⁴ G06F 11/10

U.S. Cl. 371—38 **12 Claims**



7. A system for correcting an error of a digital signal comprising:

parity addition means for adding parity bits having a relatively high redundancy to the upper significant bits of a data signal which is digitized, and parity bits having a relatively low redundancy to lower significant bits of said data signal;

recording means for recording said data bits and their parity bits on a recording medium;

reproduction means for reproducing signals corresponding to said data bits and to said parity bits from said recording medium;

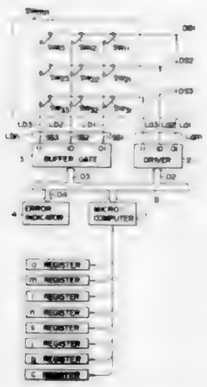
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error detection and correction means for detecting the position of the error in an upper significant bit group on the basis of said parity bits of said reproduced upper significant bits, and correcting the error;
designation means for designating a data block, in which the error is detected by said error detection and correction means, and data blocks preceding and subsequent to said data block as an area of occurrence of error in said lower significant bit group;
correction means for correcting the error in said lower significant bit group on the basis of the data sent from said designation means and on the basis of the parity bits of said reproduced lower significant bits; and
synthesis means for synthesizing said corrected upper significant bits and said corrected lower significant bits in order to generate a data signal.

4,661,957
INPUT DATA READER APPARATUS FOR SWITCH ARRAY

Hiroo Okuhara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 12, 1984, Ser. No. 660,127
Claims priority, application Japan, Oct. 14, 1983, 58-191927
Int. Cl.⁴ G06F *11/00*
U.S. Cl. 371—59 **19 Claims**

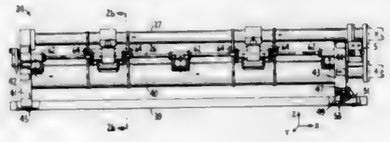


1. An input data reader apparatus comprising:
a switch array being formed of a plurality of switches and having input lines and output lines, one or more of said output lines being connected to one or more of said input lines according to a switch selection state of said switch array;
driver means for supplying drive signals to the respective input lines of said switch array and defining input address data representing a line selection state of the input lines;
buffer means coupled to the output lines of said switch array and being responsive to sense signals which are obtained in accordance with the contents of the drive signals and with the switch selection state of said switch array and wherein said sensed signals are formed of a plurality of bits, for generating output address data representing a line selection state of the output lines;
detector means having a memory portion for storing a reference table and coupled to said driver means and said buffer means, for detecting a combination of one or more simultaneously turned-on switches of said switch array according to the input address data and the output address data; and
a 1 register contained within said detector means which stores an address number of the input line of said switch array when two or more bits of said sense signals have a prescribed logic level, said address number being utilized for the detection of said combination of one or more simultaneously turned-on switches.

4,661,958
LASER

Donald Bowes; Peter N. Allen, both of Los Altos Hills, and William Blake, Palo Alto, all of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Continuation of Ser. No. 492,500, May 6, 1983. This application Feb. 6, 1986, Ser. No. 826,861
Int. Cl.⁴ H01S *3/04*
U.S. Cl. 372—34 **12 Claims**

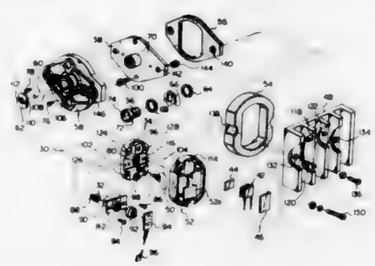


1. A laser comprising
a fluid lasing medium which flows through and is enclosed in a support tube and a discharge tube, said support tube being connected to said discharge tube;
said support tube supports and aligns an optical resonator structure;
means for maintaining said medium in said support tube at a substantially constant temperature, such that said support tube maintains the alignment of said resonator structure;
said discharge tube includes means for exciting said lasing medium;
said discharge tube being positioned in and aligned with said optical resonator structure;
said discharge tube receives said lasing medium, from said support tube, and passes said medium away from said support tube after excitation to an exhaust tube so that said support tube continues to be maintained at a substantially constant temperature.

4,661,959
LASING DEVICE

Yutaka Kaneko, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 14, 1985, Ser. No. 701,514
Claims priority, application Japan, Feb. 17, 1984, 59-28063; Feb. 17, 1984, 59-28064
Int. Cl.⁴ H01S *3/04*
U.S. Cl. 372—34 **6 Claims**



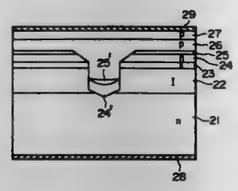
1. A lasing device in an optical scanning system, said lasing device comprising:
a semiconductor laser which emits a divergent laser beam;
an optical system which focuses the divergent laser beam to a parallel beam;

support means for mechanically supporting said semiconductor laser and said optical system in a fixed imaging position;
temperature control means for controlling a temperature of said support means to a predetermined temperature;
heat-insulating means for thermally insulating the support means by surrounding the support means; and
isolating means connected to the heat-insulating means and surrounding said optical system for thermally isolating an aperture which defines an optical path for the laser beam
whereby said optical system is kept at the same temperature as said laser.

4,661,960
SEMICONDUCTOR LASERS

Noriyuki Hirayama, Kawasaki; Masaaki Ohshima, Yokohama; Naoki Takenaka, and Yoshihiro Kino, both of Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 3, 1984, Ser. No. 657,436
Claims priority, application Japan, Oct. 7, 1983, 58-189120
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—45 **8 Claims**



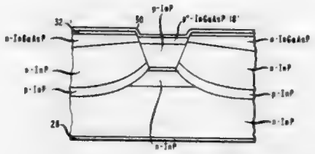
1. In a semiconductor laser having a resonant cavity, the combination comprising;
an n-type InP substrate;
a p-type InP current blocking layer having a carrier concentration in the range 1.2×10^{13} to about 10^{15} cm^{-3}, said p-type InP layer having a stripe-shaped groove cut therein and penetrating into said substrate;
an n-type InP clad layer disposed in the bottom of said groove in contact with said substrate;
an InGaAsP active layer formed on said n-type InP clad layer and disposed within said groove;
a p-type InP clad layer formed over said InGaAsP active layer to at least partially fill said groove; and
first and second electrodes affixed to said n-type InP substrate and said p-type InP clad layer respectively, a voltage for operating said laser being applied across said first and second electrodes.

4,661,961
BURIED HETEROSTRUCTURE DEVICES WITH UNIQUE CONTACT-FACILITATING LAYERS

Ronald J. Nelson, Berkeley Heights, and Randall B. Wilson, Maplewood, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 505,993, Jun. 20, 1983, Pat. No. 4,566,171. This application Oct. 22, 1985, Ser. No. 790,072
Int. Cl.⁴ H01L *23/48*; H01S *3/19*
U.S. Cl. 372—46 **7 Claims**

1. A buried heterostructure device comprising:
an elongated, mesa-shaped, double heterostructure which includes a pair of opposite-conductivity-type InP cladding layers and an InGaAsP active layer disposed between said cladding layers and essentially lattice-matched thereto,
a p^+-InGaAsP contact-facilitating layer formed on said heterostructure and essentially lattice-matched thereto, and
a pair of opposite-conductivity-type InP blocking layers on each side of said mesa so as to form therebetween a p-n

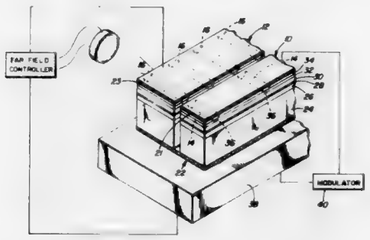


junction which is reverse-biased when said cladding layers are forward-biased, characterized in that
said contact-facilitating layer has a bandgap in the range of approximately 1.05–1.24 eV.

4,661,962
PHASED LINEAR LASER ARRAY

Richard D. Clayton, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 22, 1984, Ser. No. 663,424
Int. Cl.⁴ H01S *3/19*
U.S. Cl. 372—50 **10 Claims**



1. A semiconductor laser phase-locked array having an output array and a control laser array, the output array having a plurality of optical gain elements, the control laser array having a plurality of diode lasers, the control array being mounted in phase retaining relationship with the output array with optical gain elements of the output array coupled with alternating lasers of the control laser array, whereby the tendency of adjacent ones of the closely spaced lasers of the control array lasers to emit in anti-phase of each other ensures in-phase emission from the output array optical gain element coupled thereto.

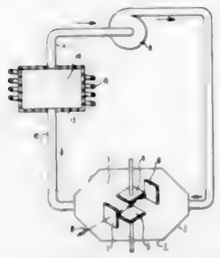
4,661,963
RECOVERY SYSTEM FOR XENON CHLORIDE LASER

Chi-Sheng Liu, Monroeville Boro, Pa., and Donald W. Feldman, Los Alamos, N. Mex., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 17, 1985, Ser. No. 788,301
Int. Cl.⁴ H01S *3/223*
U.S. Cl. 372—59 **12 Claims**

7. In a xenon chloride laser having a lasing chamber that contains gases, including hydrogen chloride and xenon, apparatus for maintaining the power of the output of said laser comprising:
(A) a reforming chamber containing at least one metal chloride of less chemical stability than hydrogen chloride;
(B) conduit means between said reforming chamber and said lasing chamber;
(C) pump means for circulating gases through said conduit

means between said lasing chamber and said reforming chamber in contact with said metal chloride; and



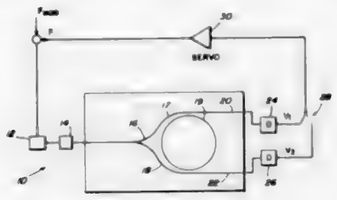
(D) means for heating said reforming chamber to a temperature between the condensation temperature of said hydrogen chloride and the dissociation temperature of the metal chloride used.

4,661,964

RESONANT WAVEGUIDE LASER GYRO WITH A SWITCHED SOURCE

John R. Haavisto, Scituate, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Oct. 2, 1985, Ser. No. 783,210
Int. Cl.[4] H01S *3/083*; G01B *9/02*
U.S. Cl. 372—94 **3 Claims**



1. Laser gyro comprising:
a laser;
a ring waveguide;
branching means for coupling light from the laser into the ring waveguide to generate counter propagating beams;
output waveguides evanescently coupled to the ring waveguide for receiving light propagating in the ring waveguide;
first and second detectors for detecting light in the output waveguide; and
servo means responsive to the first and second detectors for adjusting the frequency of the laser to maintain counter propagating light beams on resonance within the ring waveguide.

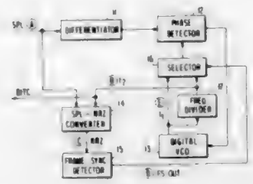
4,661,965

TIMING RECOVERY CIRCUIT FOR MANCHESTER CODED DATA

Tsuguo Maru, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 15, 1985, Ser. No. 787,419
Claims priority, application Japan, Oct. 15, 1984, 59-215831
Int. Cl.[4] H04L *7/02*
U.S. Cl. 375—110 **4 Claims**

1. A timing recovery circuit comprising:
means for detecting the varying points of a split-phase signal having a pattern of the repetition of logical "1" and "0" at its beginning;
voltage-controlled oscillator means for generating a signal whose frequency is twice as high as that of the timing signal of said split-phase signal and controlling the frequency of the generated signal in response to a control signal;
frequency dividing means for dividing by two the output frequency of said voltage-controlled oscillator means;
selector means for selectively supplying the output of said voltage-controlled oscillator means and that of said frequency dividing means;



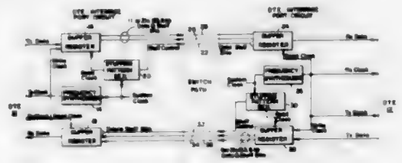
phase detector means for phase-comparing the output of said varying point detector means and that of said selector means, and supplying said voltage-controlled oscillator means with a signal indicating the relative delay or advance between the two outputs as said control signal; and
control means for controlling said selector means so that it selects the output of said frequency dividing means during said repetitive pattern of logical "1" and "0" and that of said voltage-controlled oscillator means at the times.

4,661,966

METHOD AND APPARATUS FOR ADJUSTING TRANSMISSION RATES IN DATA CHANNELS FOR USE IN SWITCHING SYSTEMS

Stanley M. Schreiner, Stamford, Conn., assignor to T-Bar Incorporated, Wilton, Conn.

Filed Sep. 17, 1985, Ser. No. 777,021
Int. Cl.[4] H04L *7/04*
U.S. Cl. 375—112 **12 Claims**



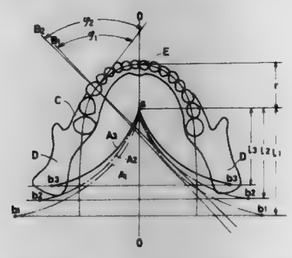
8. The method of modifying bit frequency in data switching between first and second data equipments on one or more transmission lines where the data rate is a rational fraction of the transmission path rate in an equipment switching system comprising:
receiving data from the first equipment to be transmitted into a buffer register;
generating from the system clock which is common to the equipment to be connected a stuff control signal for transmission to the second equipment on a separate high speed transmission line from the data;
using the stuff control signal to trigger said buffer register to receive data from the first equipment and to allow passage of data bits only during a period coded by the stuff control signal for transmitting data;
using the stuff control signal at the second equipment interface to delete all signal information during the stuff period and retain only valid data; and
reestablishing the original frequency of the data bit information to that in the first equipment.

4,661,967

DENTAL RADIOGRAPHIC APPARATUS FOR PHOTOGRAPHING ENTIRE JAWS

Kazuo Nishikawa, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Nov. 2, 1984, Ser. No. 667,769
Claims priority, application Japan, Nov. 12, 1983, 58-212992
Int. Cl.[4] A61B *6/14*; G03B *41/16*
U.S. Cl. 378—39 **1 Claim**



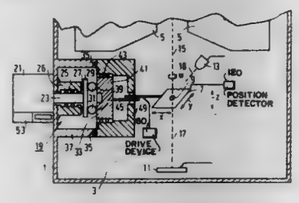
1. A dental radiographic apparatus for photographing the entire jaws in which the apparatus includes a rotary arm having an X-ray source at one end and an X-ray film cassette at the other end thereof and having means for moving an X-ray beam of the X-ray source with respect to the dental arch so that said beam describes a symmetrically extending approximately triangular envelope projecting toward the front tooth region of the dental arch by sequentially shifting the center of rotation of the X-ray beam irradiated from the X-ray source upon the X-ray film cassette, said apparatus being characterized in that it comprises a means for changing the straight-line distance on the medial line of the human body between the apex and the line joining the receding points of limit of the envelope, said means for changing the straight-line distance on the medial line between the apex and the line joining the receding points of limit of the envelope changes the straight-line distance on the medial line of the human body between the apex and the line joining the receding points of limit of the envelope by varying the position of the receding points of limit without changing the position of the apex of the envelope.

4,661,968

BEAM EXPOSURE APPARATUS COMPRISING A DIAPHRAGM DRIVE FOR AN OBJECT CARRIER

Willem Wondergem, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 508,203, Jun. 27, 1983. This application Oct. 31, 1985, Ser. No. 792,631
Claims priority, application Netherlands, Mar. 23, 1983, 8301033
Int. Cl.[4] G01K *1/08*; G01N *23/20*
U.S. Cl. 378—79 **12 Claims**



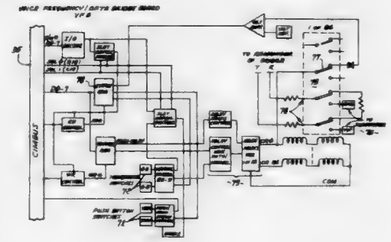
1. In a beam exposure device comprising means for generating an electromagnetic beam, an object receiving said beam in an enclosed space, detecting means for detecting radiation from said object, and means for positioning said object, the improvement comprising said means for positioning comprising
an object carrier for carrying said object,
a first shaft coupled to said object carrier for moving said object carrier and said object in said beam,
a diaphragm for moving said first shaft,
a second shaft for moving said diaphragm, and
motor means for moving said second shaft.

4,661,969

COMMUNICATION LINES WITH TERMINATE AND LEAVE CAPABILITY-VF DATA BRIDGE

Myron C. Butler, Edmond, Okla.; Lawrence O. Hilligoss, Seal Beach, and William R. Hilligoss, Long Beach, both of Calif., assignors to Communications Technology Corporation, Los Angeles, Calif.

Filed May 3, 1985, Ser. No. 730,082
Int. Cl.[4] H04M *1/24*
U.S. Cl. 379—1 **10 Claims**



1. In an apparatus for interconnecting a plurality of communication line pairs, the combination of:
a resistance bridge having a plurality of pairs of bridge terminals to provide communication between subscribers spaced from each other;
a terminating resistor;
switch means for connecting a pair of bridge terminals to a comunication line pair and to said terminating resistor, with said bridge, resistor and switch means positioned at a communication equipment location remote from the subscriber; and
control means for actuating said switch means from a remote location to selectively connect said bridge terminal pair to said communication line pair and to said terminating resistor, said control means including means for connecting a separate communications control line to said control means in controlling relation.

4,661,970

CORDLESS TELEPHONE SYSTEM

Yoshihiko Akaiwa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 28, 1986, Ser. No. 868,140
Claims priority, application Japan, May 30, 1985, 60-117137
Int. Cl.[4] H04Q *7/04*
U.S. Cl. 379—61 **3 Claims**

1. A cordless telephone system including a plurality of radiophones, each having a first transmitter and a first receiver of different transmission and reception frequencies; and a radio station, wired to a telephone line,
said radio station comprising:
a second receiver and a second transmitter, having reception and transmission frequencies which are respectively same as the transmission and reception frequencies of said radiophones:
switching means for connecting an input terminal of said second transmitter and an output terminal of said second receiver to said telephone line, or for connecting said

input terminal of said second transmitter and said output terminal of said second receiver in accordance with a switching control signal; and



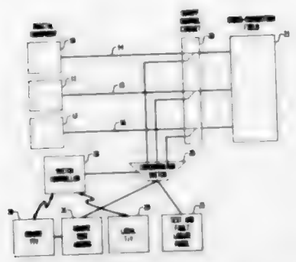
control means for receiving a control signal from said radiophones through said second receiver and supplying the switching control signal to said switching means, wherein half duplex communication can be performed between said radiophones.

4,661,971

DIGITAL SIGNAL CROSS-CONNECTION SYSTEM

George R. Nesenbek, Norwood, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Dec. 5, 1985, Ser. No. 805,313
Int. Cl.⁴ H04M *3/26*
U.S. Cl. 379—29 **1 Claim**



1. A digital signal cross-connection bay comprising jumpers for manually interconnecting terminals connectable to distinct digital equipments, a plurality of test access ports, said test access ports including test jack positions; and means for connecting said test positions to said bay terminals, characterized in that said connecting means comprises a concentrator switch interposed between said digital cross-connection bay terminals and said test access ports, the number of said test access ports being less than the number of said digital cross-connection bay terminals, and electronic means for automatically operating said concentrator switch to connect a distinct one of said test access ports to the digital equipment normally connectable to a distinct one of said cross-connection bay terminals.

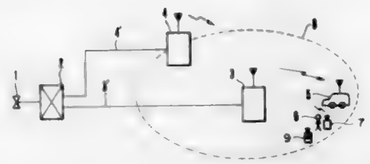
4,661,972

MOBILE TELEPHONE SYSTEM FOR AUTOMATICALLY PAGING ABSENT MOBILE SUBSCRIBER

Tomokazu Kai, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 14, 1986, Ser. No. 830,511
Claims priority, application Japan, Feb. 18, 1985, 60-29923; Apr. 26, 1985, 60-62999[U]
Int. Cl.⁴ H04M *11/00*
U.S. Cl. 379—57 **6 Claims**

1. A mobile telephone system for automatically calling an absent mobile subscriber, comprising an exchange connected to a plurality of stationary subscriber telephone sets; a mobile telephone base station connected to said exchange; a mobile telephone unit installed in a vehicle and connected by a radio channel to said mobile telephone base station; a pager base station connected to said exchange; and a pager to be paged by said pager base station, wherein said mobile telephone unit includes a radio transmitter/receiver, a telephone set connected to said radio transmitter/receiver, and automatic pager calling means, and said automatic pager calling means includes



call detecting means, for detecting an incoming call from a calling subscriber while the mobile subscriber is away form the vehicle and storing the information indicating that the mobile subscriber is away from the vehicle, and pager number supplying means, for automatically supplying said pager base station through said radio transmitter/receiver, said mobile telephone base station and said exchange, with a signal representing a pager number in response to a signal from said call detecting means.

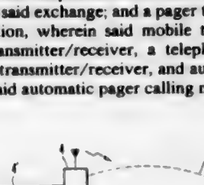
4,661,973

MINIMIZATION OF DISTORTION DUE TO A VOICE COIL DISPLACEMENT IN A SPEAKER UNIT

Shunichi Takahashi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 3, 1984, Ser. No. 677,405
Claims priority, application Japan, Dec. 3, 1983, 58-228669; Feb. 13, 1984, 59-24889
Int. Cl.⁴ H04R *9/06, 9/02;* **H01F** *3/00*
U.S. Cl. 379—194 **16 Claims**





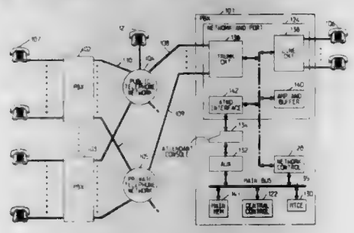
1. A speaker unit comprising: a yoke having a pole portion; a cup-shaped body of magnetic material having a bottom in contact with a pole surface of said pole portion and a flared portion that increases in diameter away from said pole surface; and a metal cap shaped and mounted on said pole portion in such a manner that it covers said cup-shaped body of magnetic material, said metal cap comprising a cylindrical portion fitted around said pole portion, a tapered portion continuous with said cylindrical portion and which decreases in diameter away from said pole surface, and a bottom continuous with said tapered portion, an outer periphery of an open end of said cup-shaped body of magnetic material being in contact with a border between said bottom and said tapered portion.

4,661,974

AUTOMATIC ROUTE SELECTION OF A PRIVATE TELEPHONE NETWORK PATH ON THE BASIS OF A PUBLIC TELEPHONE NETWORK NUMBER

Bruce M. Bales; Steven M. London, both of Boulder, and Nancy K. Schmidt, Thornton, all of Colo., assignors to AT&T Company and AT&T Information Systems Inc., both of Holmdel, N.J.

Filed Apr. 13, 1984, Ser. No. 600,148
Int. Cl.⁴ H04M *3/38, 7/14*
U.S. Cl. 379—198 **31 Claims**



6. A method of determining the presence of access restriction on communication from a plurality of subscriber stations each having a facility access authorization level and connected to a switching system to a public telephone unit having a facility access restriction level via a public telephone network, comprising the steps of:

collecting a set of dialing digits from one of said subscriber stations;

analyzing said set of dialing digits to determine the presence of access restriction control to said public telephone unit;

comparing said facility access restriction level with said facility access authorization level of said one of said subscriber stations; and

transmitting to said one of said subscriber stations a tone signal indicating that said public telephone unit is unaccessible to said one of said subscriber stations upon said facility access restriction level being greater than said facility access authorization level.

4,661,975

ENHANCED CALL-WAITING SERVICE

Sergio M. Brecher, Tenafly, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 13, 1985, Ser. No. 711,471
Int. Cl.⁴ H04M *3/42*
U.S. Cl. 379—215 **6 Claims**

1. A method of controlling a switching machine to provide customer-controllable call-waiting to predetermined stations served by said machine, comprising the steps of:

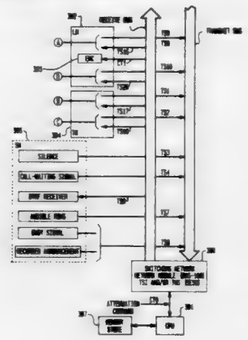
(a) storing in a memory unit of said machine a respective indication for each station which is to be accorded control of call-waiting process,

(b) determining, responsive to the detection of a third party call made during the continuance of a connection between two stations, whether said memory unit has said indication stored for the called one of said station,

(c) assigning to said called station having said stored indication a dual tone multifrequency register for receiving digits from said called station during a predetermined short interval following said detection, loading said register responsive to the receipt of said dual-tone multifrequency signals, and

(d) responding to said register to control the disposition of said third party call.

2. In a process for controlling call completion in which a first and a second alerting signal are sent to a busy station upon the detection of a third party call to said busy station, the improvement comprising the steps of:



(a) assigning a dual tone multifrequency register for use by said busy station during the interval between said first and second alerting signal,

(b) modifying the completion of said third party call in accordance with the signals received by said register from said busy station, and

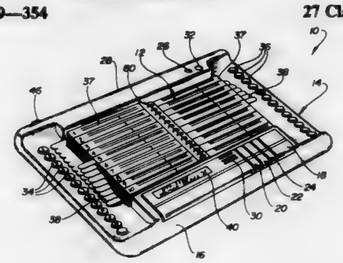
(c) cancelling said second alerting signal in the event that said signals are received by said register.

4,661,976

AUTOMATIC TELEPHONE DIALER UTILIZING AN ELECTRONIC TELEPHONE BOOK

Maxim F. Basch, Fort Lee, N.J., assignor to MFB Enterprises, Inc., Fort Lee, N.J.

Filed Apr. 21, 1986, Ser. No. 854,436
Int. Cl.⁴ H04M *1/23*
U.S. Cl. 379—354 **27 Claims**



1. An automatic telephone dialer device comprising, in combination:

an electronic telephone book with a plurality of pages, each with a capability for having listed thereon a plurality of entries in a column and line array;

random access memory means for storing at predetermined locations encoded data corresponding to each said entry;

microprocessor means for cooperative functional relationship with said memory means by receiving encoded data for locating in a predetermined location of said memory means, by providing an address accumulator for predetermining locations within said memory means, and by retrieving by random access the encoded data from the predetermined locations;

one or more signal generators for providing, in response to

encoded data received from the microprocessor means, a chain of signals to telephone lines;

a plurality of page sensors transmitting a signal representing the page being viewed;

a plurality of column and line actuators, each operable to a condition representing the column and line selected;

said microprocessor means, in turn, further comprising:

page subprogram means for continuously scanning the page sensors and for providing data representing part of a predetermined location to the address accumulator;

column and line subprogram means for continuously scanning the condition of the column and line actuators and for providing data representing part of a predetermined location to the address accumulator; and

one or more data buffers for holding data prior to transmittal to the signal generator and prior to transmittal to the predetermined location in said memory means;

whereby, upon operation for telephone dialing purposes and upon a complete location being received by the address accumulator, data is transmitted from memory means to the data buffer of the microprocessor means, and a telephone number is automatically dialed by signals generated by the signal generator.

4,661,977

TELEPHONE

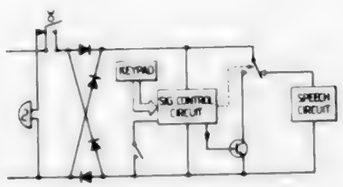
Frederick J. Howett, Barnet, England, assignor to STC, plc, London, England

Filed Dec. 11, 1985, Ser. No. 807,660

Claims priority, application United Kingdom, Dec. 15, 1984, 8431708

Int. Cl.⁴ H04M *1/27*

U.S. Cl. 379—355 **1 Claim**



1. A telephone subscriber's instrument, which has a repertory dial facility with storage means for regularly-used numbers and a repeat-last-number-dialled (redial) facility, which last-mentioned facility provision includes a further storage means into which a number is written when dialled, wherein:

when the instrument is in use the numbers stored in the repertory dial store include at least one number with an access pause code at a defined position in that number at which a further dial tone may be received;

when a wanted number for which an access pause code is needed is sent from the instrument by the use of the redial facilitate control means checks the numbers in the repertory dialler stores to see if any such number has an access pause code, which said control means performs such a check by examining the digit codes stored for the numbers in the repertory dialler store in search of a said pause code;

the result of said check by the control means is applied to the circuitry used to provide the redial facility; and

as a result of said application the digit sending for redial is interrupted at a point defined by the said access pause code detection, so that an access pause is inserted into the number as sent by the redial facility at the appropriate position, digit sending then being resumed when a said further dial tone is received and detected.

4,661,978

SUBSCRIBER LINE INTERFACE CIRCUIT HAVING AN IMPEDENCE SYNTHESIZER

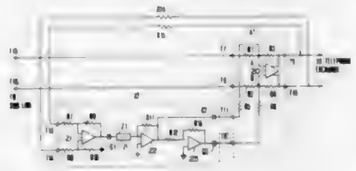
Hideyuki Hirata, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 26, 1984, Ser. No. 686,254

Claims priority, application Japan, Dec. 28, 1983, 58-247035

Int. Cl.⁴ H04M *1/76*

U.S. Cl. 379—394 **8 Claims**



1. A subscriber line interface circuit having a pair of line terminals adapted to be connected to a subscriber line, comprising:

a first amplifier having a first pair of input terminals coupled to said pair of line terminals, a second pair of input terminals and a pair of output terminals adapted to be connected to a telecommunication exchange, said first amplifier having a unity gain over a path from said first pair of input terminals to said pair of output terminals and a gain K over a path from said second pair of input terminals to said pair of output terminals;

a pair of reference resistors connected from said pair of output terminals to said pair of line terminals, each of said reference resistors having a resistance Ro; and

a second amplifier connected from said pair of line terminals to said second pair of input terminals, said second amplifier having a transfer function $-Ro/K \cdot Zt$, where Zt is an impedance to be synthesized across said pair of line terminals.

4,661,979

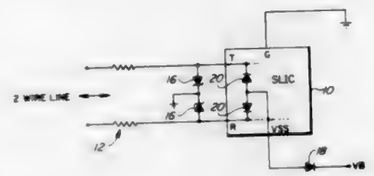
FAULT PROTECTION FOR INTEGRATED SUBSCRIBER LINE INTERFACE CIRCUITS

Gyula Jakab, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 24, 1985, Ser. No. 779,560

Int. Cl.⁴ H04M *7/00*; H03K *3/26*

U.S. Cl. 379—412 **7 Claims**



1. An integrated circuit fault protection arrangement comprising an integrated circuit which includes an input and a substrate, a zener diode connected between the input and a point of reference potential, a first diode connected to the substrate for coupling a supply voltage thereto, and a second diode connected between the substrate and the input; the zener diode, first diode, and second diode being arranged to be respectively reverse biassed, forward biassed, and reverse biassed in normal operation, the arrangement being such that the zener diode clamps voltages at the input at a predetermined voltage which is not less than the supply voltage.

4,661,980

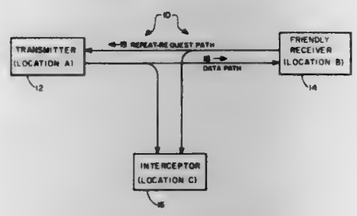
INTERCEPT RESISTANT DATA TRANSMISSION SYSTEM

George W. Byram, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1982, Ser. No. 397,338

Int. Cl.⁴ H04K *1/02*

U.S. Cl. 380—46 **15 Claims**



BASIC SECURE COMMUNICATION SYSTEM

13. A secure communication system including a transitter for accepting a first sequence of binary words and for transmitting a second, encrypted sequence of binary words, and further including a receiver for receiving said encrypted sequence of binary words and for decoding said encrypted sequence of binary words so as to provide an output that comprises said first sequence of binary words wherein:

said transmitter comprises:

a first adder having first and second inputs and an output, said first sequence of binary words being applied to said first adder first input;

a first addressable storage device having an input connected to said first adder output and having an output;

a delay network having an input connected to said first addressable storage means output and having an output, said delay network output being connected to said first adder second input;

a second addressable storage device having an input connected to said delay network output and having an output;

a second adder having a first input connected to said output of said first addressable storage device and having a second input connected to said output of said second addressable storage device and having an output, whereby the output of said second adder is said second, encrypted sequence of binary words; and wherein said receiver comprises:

a third adder having a first and second input and an output, for receiving on said first input said second, encrypted sequence of binary words;

a receiver delay network having an input connected to said third adder output and having an output;

a third addressable storage device having an output and having an input connected to said receiver delay network output, said third addressable storage device output being connected to said third adder second input;

a foruth addressable storage device having an input connected to said third adder output and having an output;

a fourth adder having a first input connected to said fourth addressable storage device output and having a second input connected to said receiver delay network output, whereby the output of said fourth adder comprises said first sequence of binary words.

4,661,981

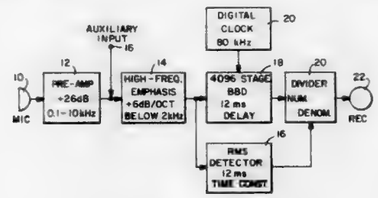
METHOD AND MEANS FOR PROCESSING SPEECH

Larry K. Henrickson, 27A Terr. Ct., Los Gatos, Calif. 95030, and Dorothy A. Huntington, 830 Escondido Rd., Stanford, Calif. 94305

Continuation of Ser. No. 683,956, Dec. 19, 1984, abandoned, which is a continuation of Ser. No. 455,250, Jan. 3, 1983, abandoned. This application Sep. 20, 1985, Ser. No. 778,326

Int. Cl.⁴ G10L *5/00*

U.S. Cl. 381—31 **1 Claim**



1. Apparatus for enhancing speech comprising

microphone means for receiving audio signals and generating electrical signals in response thereto,

high-frequency emphasis means connected to said microphone means for amplifying said electrical signals and providing spectrally shaped electrical signals,

amplitude detection means connected to said high-frequency emphasis means for receiving said spectrally shaped electrical signals and obtaining a root-mean-square (RMS) amplitude of said spectraly shaped electrical signals over a selected period of time corresponding approximately to a glottal period of speech,

delay means connected to said high-frequency emphasis means for receiving and delaying said spectrally shaped electrical signals for said selected period of time corresponding approximately to a glottal period of speech, and

signal compression means connected to said delay means and to said amplitude detection means and including divider means for dividing a delayed spectrally shaped electrical signal by the root-mean-square amplitude of said delayed spectrally shaped electrical signal and thereby compressing the delayed spectrally shaped electrical signal by a ratio of at least 10:1 in accordance with said root-mean-square average value whereby a constant amplitude output signal without significant signal distortion is obtained for each segment of speech.

4,661,982

DIGITAL GRAPHIC EQUALIZER

Naohisa Kitazato, Tokyo, and Osamu Hamada, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 25, 1985, Ser. No. 715,949

Claims priority, application Japan, Mar. 24, 1984, 59-56874

Int. Cl.⁴ H03G *5/00*

U.S. Cl. 381—103 **12 Claims**

1. A digital graphic equalizer comprising:

first and second digital signal processing means operable in a first mode for respectively equalizing two stereo related digital audio signals;

a pulse-sequence generator for generating a sequence of pulse signals;

calibration mode means for setting a second mode, which configures said first digital signal processing means for filtering said pulse signals to produce a filtered signal;

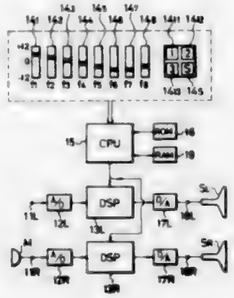
digital-to-analog converter means responsive to said filtered signal for producing a calibrating signal;

loudspeaker means responsive to said calibrating signal for propagating a calibrating sound in a listening environment, the frequency characteristics of said calibrating

sound being subject to modification by said listening environment;

means for detecting said calibrating sound as propagated in said listening environment and producing a detection signal representative thereof;

analog-to-digital converter means responsive to said detection signal for producing a digital signal corresponding thereto;



said calibration mode means also configuring said second digital signal processing means to respond to said digital signal to produce a plurality of frequency-divided signals when said second mode is set, and to

spectrum analyze said frequency-divided signals to determine the frequency characteristics of the calibrating sound as modified in said listening environment and produce a compensating signal adapted to compensate for said modification.

4,661,983

SECURE DOCUMENT IDENTIFICATION TECHNIQUE

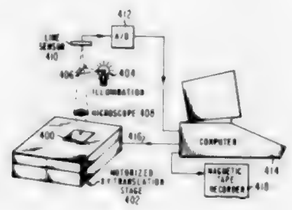
Karl H. Knop, Zurich, Switzerland, assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 21, 1983, Ser. No. 534,389

Claims priority, application United Kingdom, Oct. 5, 1982, 8228450

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—1 **1 Claim**



1. In combination:

an individual item of sheet material incorporating an element purporting to be a particular one of a given type of authenticating device, wherein said given type of authenticating device exhibits predetermined macroscopic reflectivity characteristics and wherein said particular authenticating device includes a unique pattern of microscopic lines having widths in the order of micrometers that are randomly positioned in at least one dimension with each separation distance between adjacent lines being in the order of tens of micrometers;

a record medium forming part of said item of sheet material and having recorded thereon digital codes representing the locations of the respective line positions of at least some of said pattern lines in at least said one dimension within a certain preselected area of said particular authenticating device;

wherein said element is comprised of a relatively high index-of-refraction inorganic dielectric coating layer situated at the interface between relatively low index-of-refraction plastic substrate and overcoat layers, said interface being in the form of a surface relief pattern defining a diffraction-grating-line structure having a value of line spacing period with respect to at least some of the free-space wavelengths included in polychromatic illuminating light such that both zero and first diffraction order light can propagate in said inorganic dielectric coating layer but only zero diffraction order light can propagate in said plastic substrate and overcoat layers; and

wherein said dielectric coating layer inherently forms a random pattern of cracks that define said pattern lines, such pattern lines being preferentially oriented substantially parallel to said lines of said grating-line structure.

4,661,984

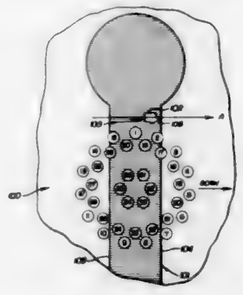
LINE INSPECTION SYSTEM

William A. Bentley, 170 The Masters Cir., Costa Mesa, Calif. 92627

Continuation-in-part of Ser. No. 803,360, Jun. 3, 1977, abandoned. This application Aug. 29, 1979, Ser. No. 70,899

Int. Cl.⁴ G06K *9/00*

U.S. Cl. 382—8 **70 Claims**



1. A line defect detection system which comprises:

means for sensing the presence or absence of a line at a plurality of points in an area to be inspected, said points being in a circular pattern, said plurality of points including:

(i) first and second points spaced apart a distance related to the minimum acceptable line width; and

(ii) a third point between said first and second points;

means responsive to the relative states of said sensing means for recognizing the presence of a line segment having a width less than said acceptable line width; and

means for determining whether the center of said circular pattern is on a line.

4,661,985

PROCESS FOR MEASURING LAMINA SIZE DISTRIBUTION

Takao Akutsu, Tokyo, Japan, assignor to Japan Tobacco, Inc., Japan

Filed Dec. 20, 1984, Ser. No. 684,369

Claims priority, application Japan, Dec. 23, 1983, 58-242087

Int. Cl.⁴ G06K *9/00*; A24C *1/00*; H04N *7/18*

U.S. Cl. 382—8 **4 Claims**

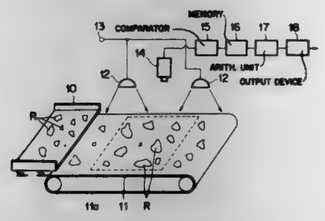
1. A process for measuring size distribution of leaf products and articles comprising the steps of

(a) uniformly spreading sampled laminae over a conveyor and transporting the same;

(b) imaging a conveyed lamina at a detection region having a predetermined area by using a television camera each time when the lamina moves by a length corresponding to that of the detection region;

(c) storing in a memory binary video data, each having one of two values, which are obtained by conversion of a video signal obtained by the imaging step;

(d) processing the stored video data to encircle by a rectangular frame a contiguous group of data each having a first



value of the two values of binary data which correspond to the lamina;

(e) counting the number of contiguous ones of the binary data having said first value;

(f) converting the contiguous ones of the binary data in the frame into the other of said two values of the binary data after the counting step;

(g) successively carrying out the same processing of different contiguous groups of binary data to calculate the size of respective laminae; and

(h) determining the distribution of the laminae sizes upon the basis of the calculation results.

4,661,986

DEPTH-OF-FOCUS IMAGING PROCESS METHOD

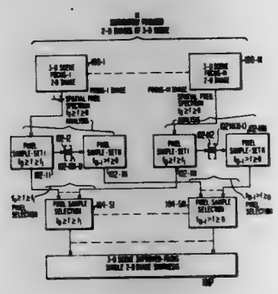
Edward H. Adelson, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 18, 1984, Ser. No. 611,962

Claims priority, application United Kingdom, Jun. 27, 1983, 8317407

Int. Cl.⁴ G06K *9/36*

U.S. Cl. 382—41 **8 Claims**



1. A method for processing M (where M is a first plural integer) two-dimensional images of a given three-dimensional spatial scene, which images are separately focused in the depth dimension, to derive therefrom a single improved-focus two-dimensional image of said given three-dimensional scene, each of said M images being defined by a spatial-frequency spectrum corresponding thereto; said method comprising the steps of:

(a) dividing the respective spatial-frequency spectra of said M two-dimensional images into M substantially similar assemblages of N separate sets of pixel samples having sample levels that vary in height and defining N specified spatial frequency bands (where N is a second plural integer), each of said N separate sets occurring at a sample density that corresponds therewith and the respective sample densities of each individual group of sets that define corresponding ones of said specified bands of said M assmblages being substantially the same as one another;

(b) selecting, as a given function of the relative levels of a sub-group of corresponding samples of each of said individual group of sets, a single one of the corresponding samples of that sub-group to derive thereby respective single sets of improved-focus pixel samples for each of said N bands; and

(c) combining corresponding pixel samples of said respective single sets to derive thereby said improved-focus two-dimensional image.

4,661,987

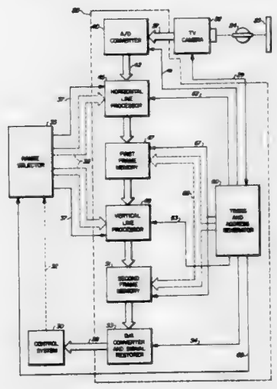
VIDEO PROCESSOR

Vernon A. Anderson; Daryl E. Hinman, and Jon H. Bumgardner, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 3, 1985, Ser. No. 740,942

Int. Cl.⁴ G06K *9/36*

U.S. Cl. 382—41 **6 Claims**



1. A video processing method for varying the size of an input video image in a video frame represented by the time varying signals individually corresponding to successive lines of the frame, the method comprising the steps of:

digitizing each of a plurality of said time varying signals at a plurality of predetermined intervals to generate a plurality of pixel values representing each signal individually at each interval of said plurality of pixel values;

storing the pixel values for access as a two dimensional array with such values representing successive such lines stored along successive row vectors of the array and such values representing successive corresponding such intervals stored along successive column vectors of the array, so that the input image corresponds to a stored image in which such values occupy a plurality of adjacent such row vectors and occupy a plurality of adjacent elements along each such row vectors;

perfiorming a plurality of first interpolations between a plurality of adjacent pixel values corresponding to each of a plurality of adjacent row vectors of such an array to generate pixel values representing a transformed video image in which, in such an array, the generated pixel

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values occupy adjacent row vectors equal in number to said plurality of adjacent row vectors and occupy a different number of adjacent elements along each row vector than said plurality of adjacent pixel values, so that said transformed image is varied in size from the input image in a direction along said lines; and

performing a plurality of second interpolations between a plurality of adjacent pixel values corresponding to each of a plurality of adjacent column vectors of such an array to generate pixel values representing a transformed video image in which, in such an array, the generated pixel values occupy column vectors equal in number to said plurality of adjacent column vectors and occupy a different number of adjacent elements along each column vector than said plurality of adjacent pixel values, so that said transformed image is varied in size from the input image in a direction orthogonally related to said lines,

so that, when pixel values representing the input image are so stored and said first plurality of interpolations and said second plurality thereof are performed, such an array is generated representing an output image varied in size from the input image; and wherein, in said method a transformed image is reduced in such a direction from the corresponding stored image so that along a first vector corresponding to such a direction there are more pixel values representing such stored image than there are pixel values representing the transformed image in a second vector correspondingly positioned in such an array to the first vector, and wherein the pixel values of the second vector are generated by performing a plurality of said interpolations according to the following steps, where

L is the number of pixel values in the first vector which represent the stored image,

N is the number of pixel values in the second vector which represent the transformed image,

A is the first vector,

B is the second vector,

I is an index to the pixel values of the first vector,

J is an index to the pixel values of the second vector, and

F is an arbitrary index

and the steps are:

(A) setting I equal to a value specifying a first pixel value to be used from the first vector, setting J equal to a value specifying a first pixel value to be generated for the second vector, setting F equal to L, and setting B_J equal zero;

(B) when F is greater than or equal to N, determining B_J as follow:

$$B_J = B_J + N/L(A_I)$$

and proceeding to step (C), and when F is less than N determining B_J and B_{J+1} as follows:

$$B_J = B_J + N/L(F/N)(A_I)$$

$$B_{J+1} = N/A(1 - F/N)(A_I)$$

then setting F and J as follows:

$$F = F + L$$

$$J = J + 1$$

and the proceeding to step (C);

(C) setting I and F as follows:

$$I = I + 1$$

$$F = F = N;$$ and

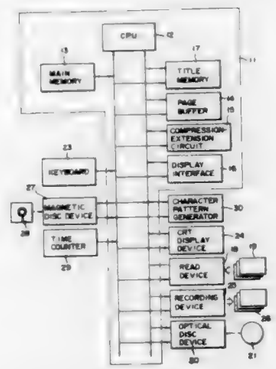
(D) when I is not equal to a value specifying a last pixel value to be used from the first vector, repeating steps (B) and (C).

4,661,988

IMAGE INFORMATION-FILING APPARATUS

Makoto Shimizu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 20, 1984, Ser. No. 641,988
Claims priority, application Japan, Aug. 26, 1983, 58-154965
Int. Cl.⁴ G06K *9/00*
U.S. Cl. 382—65 **10 Claims**



1. An image information-filing apparatus comprising:

image information-reading means for optically reading a visible image to provide image information;

temporary memory means for temporarily storing at least one portion of image information delivered from said image information-reading means;

means for issuing time stamp information indicative of at least one of time information and date information;

character pattern-generating means for generating a character pattern corresponding to said time stamp information;

writing means for writing the character pattern of time information generated by said character pattern-generating means in said temporary memory means;

displaying means for displaying at least part of said image information stored in said temporary memory means; and

image information storing means for recording the image information and character pattern stored in said temporary memory means.

4,661,989

COMPRESSIBLE PACKING BAG

Bengt Risby, Alsätrav. 190, 127 36 Skärholmen, Sweden

Filed Sep. 27, 1985, Ser. No. 781,109
Int. Cl.⁴ A45F *4/00*
U.S. Cl. 383—2 **20 Claims**



1. A bag having a variable volume and being substantially cylindrical when substantially fully packed, said bag having an exterior portion, an interior portion and a longitudinal axis, said bag comprising:

a flexible sheet material for enclosing and compressing contents within said bag when in use;

said flexible sheet material comprising substantially one unitary piece and forming said exterior portion of said bag;

said flexible sheet material having two separate portions spaced apart at a substantial distance from one another;

two substantially straight, substantially rigid, elongated, stiffening members being disposed and fastened at said two spaced-apart portions of said flexible sheet material;

said elongated members each having an elongated axis along the elongation thereof;

tensioning means comprising first tensioning means and second tensioning means;

said first tensioning means comprising at least one strap means, said at least one strap means having first attachment means attached directly at a first of said substantially straight, rigid, elongated, stiffening members to transfer tension in use from said at least one strap means to said first one of said two substantially rigid, straight, elongated, stiffening members, said tension of said at least one strap means being transferred substantially transversely to said elongated axis of said first one of said two substantially straight, rigid, elongated, stiffening members when said bag is substantially fully packed with compressible contents and with said at least one strap means tensioned;

said at least one strap means having second means for attachment attached directly at a second of said substantially straight, rigid, elongated stiffening members to transfer tension from said at least one strap means to said second one of said two substantially straight, rigid, elongated, stiffening members, said tension of said second attachment means being transferred substantially transversely to said elongated axis of said second one of said two substantially rigid, straight, elongated, stiffening members when said bag is substantially fully packed with said compressible contents and with said at least one strap means tensioned; and

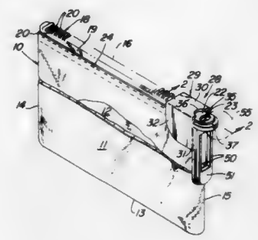
said second tensioning means being for transferring tension directly to said first stiffening member and substantially transversely to said elongated axis of said first one of said two substantially rigid, straight, elongated, stiffening members when said bag is substantially fully packed with said compressible contents and said second tensioning means tensioned, said second tensioning means being disposed at a position a substantial distance from said first attachment means, said second tensioning means for transferring tension substantially directly and transversely to said elongated axis of said second one of said two substantially rigid, straight, elongated, stiffening members when said bag is substantially fully packed with said compressible contents and said second tensioning means being tensioned at a position disposed from said first attachment means, said two substantially straight, rigid, elongated, stiffening members, disposed and fastened at said two spaced-apart portions, which are disposed at ends of said flexible sheet material for enclosing contents within said bag, whereby said elongated axes of said two substantially rigid, elongated, straight, stiffening members are substantially in appropriate alignment with said longitudinal axis of said bag when said bag is substantially fully packed with said compressible contents and said at least one strap means is tensioned to a predetermined tension, and whereby said compressible contents of said substantially fully packed bag are compressed in use by said tensioning of said at least one strap means to form a substantially cylindrical shape.

4,661,990

HOODED TYPE BAG SEAL

Arnold S. Rifkin, 1400 Sans Souci Pkwy., P.O. Box 878, Wilkes-Barre, Pa. 18703-0878

Filed Jan. 29, 1986, Ser. No. 823,758
Int. Cl.⁴ B65D *33/16*
U.S. Cl. 383—97 **7 Claims**



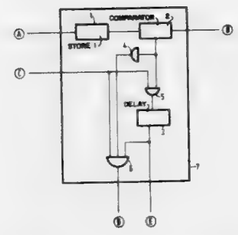
1. The combination with a bag having a pair of side edges meeting at a corner, a pair of releasably interlocking slide runners along one of said bag edges terminating at said corner, a slider moveable along said runners toward said corner for interlocking the runners and away from said corner to release the runners, and an apertured slider pull extending from said slider; of a seal comprising a hood conformably covering said corner, hood mounting means mounting said hood to said bag for movement into and out of said covering relation with said corner, said hood having an opening for passing said slider pull when said slider is in position towards said corner, and an apertured tab projecting from said hood adjacent to said opening and positioned to lie along said slider pull passed through said opening with the tab and pull apertures in registry for receiving a sealing shackle.

4,661,991

CIRCUIT ARRANGEMENT FOR PREVENTING UNAUTHORIZED ACCESS TO A COMMUNICATION SYSTEM WHICH IS PROTECTED BY A SUBSCRIBER-SPECIFIC PASSWORD

Helmut Logemann, Darmstadt, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 7, 1985, Ser. No. 709,015
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1984, 3408904
Int. Cl.⁴ H04B *1/00*
U.S. Cl. 455—26.1 **2 Claims**



1. A circuit arrangement for impeding unauthorized access to a communication system which is protected by a subscriber-specific password, said system having a memory containing all possible passwords, and a comparator for comparing each entered password with passwords stored in said memory, said comparator allowing a calling subscriber access to a line after an access time interval when there is agreement between an

entered and a stored password, said circuit arrangement including:

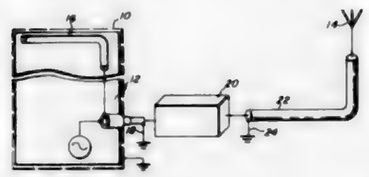
a monostable delay circuit (3) with a subsequent logic combining gate (6), said delay circuit connected to the output of said comparator (2) via an input gate (5) and said delay circuit and said logic combining gate (6) being connected such that when an energizing signal is present at a special input (C) and there is no agreement between an entered password and a stored password, said monostable delay circuit (3) becomes operative to inhibit said logic combining gate (6) for an extended time period which is at least an order of magnitude greater than said access time interval, not withstanding that during such extended time period a password is entered which agrees with a stored password; while when said monostable delay circuit is not operative and there is agreement between an entered and a stored password said logic combining gate (6) is enabled.

4,661,992

SWITCHLESS EXTERNAL ANTENNA CONNECTOR FOR PORTABLE RADIOS

Oscar Garay, North Lauderdale; Harvey N. Turner, Jr., Tamarac, and Quirino Balzano, Plantation, all of Fla., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 31, 1985, Ser. No. 760,854
Int. Cl.⁴ H04B *1/38, 1/08, 1/04*
U.S. Cl. 455—89 **8 Claims**



2. A radio housing adaptable to being mounted in a mobile unit with an external antenna, for removably mounting a portable radio having an internal antenna and an internal antenna contact therein, said radio housing comprising:

a housing adaptable to receiving said portable radio, said housing including an electrostatic shield for shielding said internal antenna when said portable radio is inserted therein;

first contact means carried by the inside of said housing, adaptable to being electrically coupled to said external antenna for making electrical touch contact with said internal antenna contact of said portable radio when said portable radio is inserted into said housing.

4,661,993

TECHNIQUE FOR IMPROVING RADIO SYSTEM PERFORMANCE DURING FADING

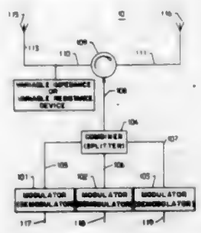
Kenneth W. Leland, Howell, and Nelson R. Sollenberger, West Keansburg, both of N.J., assignors to AT&T Company and AT&T Bell Laboratories, both of Murray Hill, N.J.

Filed Oct. 12, 1984, Ser. No. 660,078
Int. Cl.⁴ H04B *1/14, 1/18*
U.S. Cl. 455—103 **19 Claims**

1. Radio system apparatus comprising

a modulator for modulating a carrier signal with an information signal, and

means for coupling said modulated carrier signal to a pair of antennas, each antenna having a fixed location, said coupling means smoothly and continuously altering the power of said modulated carrier signal coupled to each of said antennas but never varying the power coupled to either one of said antennas below a predetermined non-zero level, and the power alterations of said modulated carrier signal coupled to a first one of said antennas being opposite to the power alterations of said modulated carrier



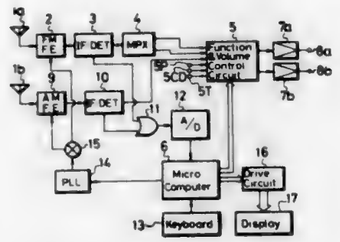
signal coupled to the other one of said antennas, whereby said alterations simulate motion of said antennas.

4,661,994

FREQUENCY AND VOLUME DISPLAY FOR A RECEIVER

Masanobu Tanaka, and Takeru Tani, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 18, 1985, Ser. No. 810,242
Claims priority, application Japan, Dec. 28, 1984, 59-280070
Int. Cl.⁴ H04B *1/16*
U.S. Cl. 455—157 **12 Claims**



1. A receiver comprising:

tuning means for tuning to a desired broadcast station within a predetermined frequency band;

tuning control means connected to said tuning means for selecting the broadcast frequency of said desired broadcast station;

detector means connected to said tuning means for producing a demodulated signal;

function selector means having a plurality of inputs respectively supplied with said demodulated signal and with at least one other input signal from another source thereof, and being operative to provide either said demodulated signal or said other input signal as an output signal therefrom;

volume control means connected to said function selector means for adjusting the volume of said output signal therefrom;

a common display device; and

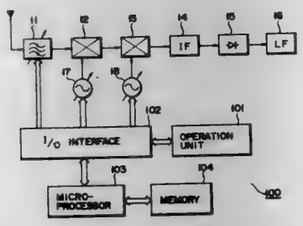
display control means connected with said tuning control means and said volume control means and being operative to selectively display said broadcast frequency of the selected broadcast station and said volume on said common display device.

4,661,995

MULTI-SUPERHETERODYNE RECEIVER

Toshihiro Kashiwagi, Ebina, Japan, assignor to Anritsu Electric Co., Limited, Tokyo, Japan

Continuation of Ser. No. 703,650, Feb. 21, 1985, abandoned.
This application Sep. 9, 1986, Ser. No. 906,580
Int. Cl.⁴ H04B *1/26*
U.S. Cl. 455—183 **2 Claims**



1. A multi-superheterodyne receiver, comprising:

means for setting data corresponding to a desired receiving frequency,

a first local oscillator for generating a first local frequency signal,

a first frequency converter for converting to a first intermediate frequency signal a received signal in response to said first local frequency signal,

a second local oscillator for generating a second local frequency signal,

a second frequency converter for converting to a second intermediate frequency signal said first intermediate frequency signal in response to said second local frequency signal,

memory means for storing preset receiving frequency data corresponding to receiving frequencies which can be set by said setting means and at which residual spurious components would be generated in a frequency passband of the receiver by active circuits in the receiver when said first and said second local oscillators generate said first and said second local frequency signals,

judging means for comparing the receiving frequency data set by said setting means with the preset receiving frequency data stored in said memory means, and for determining that a residual spurious component would result when the compared frequency data match one another; and

control means for shifting the frequency of said first local frequency signal by a first predetermined frequency to cause said first intermediate frequency signal to suppress said residual spurious component, and for shifting the frequency of said second local frequency signal by a second predetermined frequency to maintain the frequency of said second intermediate frequency signal constant, when said judging means determines that a residual spurious component would be generated at the desired receiving frequency, wherein intermodulation disturbances are suppressed.

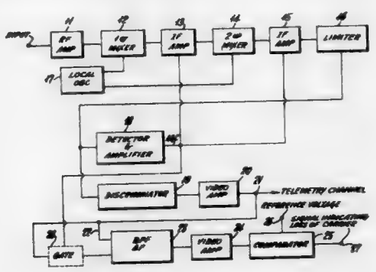
4,661,996

METHOD AND APPARATUS FOR INDICATING RADIO FREQUENCY CARRIER LOSS IN REMOTELY CONTROLLED VEHICLES

Aldo M. Scandurra, 22 Monett Pl., Greenlawn, N.Y. 11740

Filed Apr. 25, 1984, Ser. No. 603,719
Int. Cl.⁴ H04B *1/16, 17/00*
U.S. Cl. 455—205 **5 Claims**

1. Apparatus for the determination of loss of a frequency modulated carrier resulting from the carrier-to-noise ratio received by a remotely controlled vehicle comprising a limiter and discriminator for receiving a frequency modulated carrier signal containing telemetry information, said modulated signal having a bandwidth in excess of that utilized for said information, a narrow band-pass filter connected to said discriminator and tuned to an unused portion of the output bandwidth, a reference signal and a comparator for comparing the noise level at the output of said band-pass filter to said reference signal, said comparator producing an output signal when the noise level at least equals said reference signal, said receiver including detecting means for producing



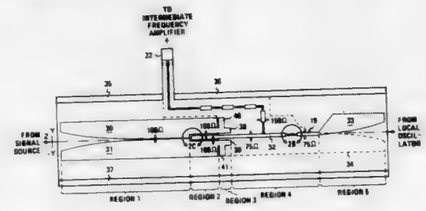
an AGC voltage for controlling gain of the receiver, a normally closed gate connected in series with the input to said band-pass filter and means connecting said AGC voltage to said gate, said gate being closed to prevent the output of said discriminator from being fed to said band-pass filter when said AGC voltage is above a predetermined value and opened to feed the output of the discriminator to said band-pass filter when said AGC voltage falls to at least said predetermined value.

4,661,997

MIXER FOR USE IN A MICROWAVE SYSTEM

Clayton R. Roberts, Syracuse, and Stephen J. Nightingale, Liverpool, both of N.Y., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 23, 1985, Ser. No. 779,139
Int. Cl.⁴ H04B *1/26*
U.S. Cl. 455—327 **12 Claims**



1. A mixer comprising:

A. a pair of mixer diodes,

B. a member housing said mixer diodes, and providing a rectangular waveguide chamber suitable for propagating a wave in a TE 10 mode and having axis extending in the Z dimensions, the E field of said TE 10 mode having a Y axis orientation, parallel to the shorter waveguide dimensions, the X axis being parallel to the logger waveguide dimension and transverse to the Y and Z axis, said waveguide having

(1) a first opening at one end for coupling to a waveguide supplying signal waves to said mixer,

(2) a second opening at the other end for coupling to a waveguide supplying local oscillator waves to said mixer, and

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(3) a third opening in a lateral wall for said member, for coupling the mixer output to an intermediate frequency amplifier;

C. a dielectric substrate, providing a site for said mixer diodes, said substrate lying substantially in the Y Z plane of said waveguide and having a first patterned metallization on one surface thereof and a second patterned metallization on the opposite surface thereof, said metallization successively providing first, second, third, fourth, and fifth consecutive region in which:

(1) said first metalllization in said first region between said first opening and said diode site provides a planar tapered slot for coupling to said E field and is dimensioned to match the characteristic impedance of the waveguide to the impedance at the mixer diode site;

(2) said first and second metallizations in said fifth region between said second opening and said fourth region provide a non-coplanar tapered slot for coupling to said E field and rotating the Y axis oriented E field to an X axis orientation, said pattered metallizations being tapered to match the characteristic impedance of the waveguide to an impedance value comparable to the impedance at the mixer diode site;

(3) said first and second metallizations in said fourth region form, respectively, the top and ground plane conductors of a microstrip line with an X axis oriented E field and further provide:

(i) a hgih pass filter for passing local oscillator waves toward said mixer diode site but blocking intermediate frequency waves from said second opening, and

(ii) a tap disposed between said mixer diode site and said high pass filter, for deriving waves at the intermediate frequency,

(4) said first metallization in said third region consists of at least two conductor portions spaced from said top conductor of said microstrip line to form two coplanar slots with said top conductor at the center, said ground plane conductor continues from said fourth region, through said third region and terminates at the boundary between said third region and second region, for rotating the X axis oriented E field from said microstrip line in clockwise and counter clockwise directions to form two substantially equal Y axis oriented E field components, both or like sense in relation to said top conductor of said microstrip line,

(5) the first metallization in said second region forms a "T" junction slot coupled to the planar tapered slot of the first region that branches into two coplanar slots with said top conductor of said microstrip line at the center, said two coplanar slots continuing into an orientation parallel to said Z axis, each of said mixer diodes being sited across one branch of said "T" junction and poled for alternate conduction in successive half cycles of the local oscillator waves and poled for simultaneous conduction in alternating half cycles of the signal waves, and

said two coplanar slots conduct intermediate frequency waves arising in said mixer diodes via said microstrip line to said tap for coupling to said third opening.

4,661,998

DOUBLE SUPERHETERODYNE TUNER

Sadahiko Yamashita, Sagamihara; Makoto Hasegawa, Tokyo; Motoi Ohba, Kawasaki; Koh Kikuchi, Tokyo, and Tsutomu Shishido, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Sep. 19, 1984, Ser. No. 652,678

Claims priority, application Japan, Sep. 22, 1983, 58-175302; Sep. 22, 1983, 58-175303; Sep. 22, 1983, 58-175301

Int. Cl.⁴ H04B *1/26, 1/08*

U.S. Cl. 455—315 **5 Claims**

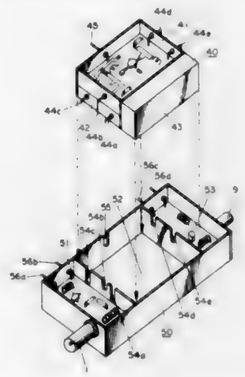
1. A double superheterodyne tuner comprising:

a first printed circuit board on one surface of which a first mixing portion including a first local oscillator is provided and on another surface of which a grounding means is provided;

a second printed circuit board on one surface of which a second mixing including a second local oscillator is provided and on another surface of which a grounding means is provided;

a casing having two containing spaces separated by a separating plate;

each of said first and second printed boards is disposed in said casing in a back to back relationship and separated between said two containing spaces in such a manner that said surfaces on which said grounding means are provided



are arranged so as to face each other and hold said separating plate therebetween;

a filter container including a bandpass filter for filtering a first intermediate frequency arranged adjacently to a side wall common to said two containing spaces of said casing;

an input circuit container including a radio frequency signal amplifier arranged adjacently to one common side wall of said two containing spaces of said casing and said filter container, and

an output circuit container including an amplifier for amplifying at a second intermediate frequency arranged adjacently to another common side wall of said two containing spaces of said casing and said filter container.

4,661,999

MICROWAVE PUSH-PULL FREQUENCY CONVERTER

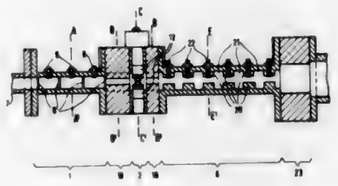
Wolfgang Ullmann, Backnang, and Walter Gross, Auenwald, both of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Nov. 21, 1984, Ser. No. 673,999

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1983, 3342400

Int. Cl.⁴ H04B *1/26*

U.S. Cl. 455—328 **7 Claims**



1. In a microwave push-pull frequency converter having the form of a waveguide for converting the frequency of a broad-band microwave signal between a high frequency level and a low frequency level, which converter includes a converter module having first and second ends and composed of a waveguide section extending between the ends and a pair of semiconductor mixer elements disposed in the waveguide section for effecting frequency conversion of the microwave signal between the high frequency level and the low frequency level directly without any intervening frequency conversion, the converter further including a waveguide filter for the low frequency level microwave signal connected to the second end of the module and an input waveguide coupled to the first end of the module for coupling the high frequency level microwave signal to the mixer elements, the improvement wherein: said waveguide filter comprises a plurality of ridged waveguide sections and a plurality of blocking waveguide sections interposed between, and coupling, said ridged waveguide sections; and said converter module comprises fastening devices supporting said semiconductor mixer elements and configured to give said converter module the form of a ridged waveguide which permits the high and low frequency level microwave signals to pass in a single mode.

4,662,000

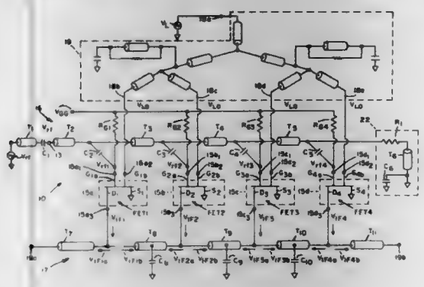
FREQUENCY CONVERSION CIRCUITS

Yusuke Tajima, Acton; Robert A. Pucel, Needham, and Ward S. Titus, Natick, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 15, 1985, Ser. No. 723,417

Int. Cl.⁴ H04B *1/28*

U.S. Cl. 455—333 **28 Claims**



1. A radio frequency circuit having first and second input terminals fed by first and second input signals having first and second frequencies and first and second output terminals comprising:

(i) a plurality of nonlinear elements, each having an input electrode and an output electrode;

(ii) input means, fed by the first input signal having a first frequency, comprising at least one two port phase shift element connected to the first input terminal of the circuit and the input electrode of each non-linear element, for providing a phase shift difference between portions of said signal coupled to the input electrodes of adjacent, successive ones of said nonlinear elements;

(iii) means, having a first end coupled to the second one of the input terminals of the circuit for feeding a second input signal having the second frequency to each non-linear element; and

(iv) output means, connected between the pair of output terminals of the circuit, for successively electrically connecting the output electrodes of each nonlinear element;

wherein in response to said first and second input signals, output signals are provided from said output electrodes and said signals propagate in first and second directions along said output means providing first and second output signal portions to provide a composite output signal at one of said terminals having a frequency component equal to at least a first one of the sum of and difference between of the frequencies of said first and second input signals.

4,662,001

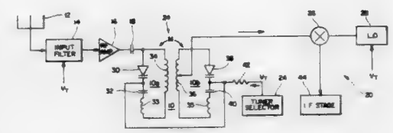
TUNABLE NOTCH FILTER FOR IMAGE FREQUENCY AND CONDUCTED LOCAL OSCILLATOR LEAKAGE REJECTION

Michael S. Cruz, Des Plaines, and Harmon P. Vaughter, Evanston, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 15, 1985, Ser. No. 766,161

Int. Cl.⁴ H04B *1/26*

U.S. Cl. 455—340 **22 Claims**



1. In an RF receiver generating an IF signal having desired and undesired components by heterodyning a local oscillator signal with a selected RF signal and an image frequency signal respectively, the improved tuning arrangement comprising:

tuning means for generating a tuning voltage representing the selected RF signal; and

a filter circuit including a parallel resonant circuit having tunable means coupled to said tuning means and responsive to said tuning voltage for assuming in response to said tuning voltage a parallel resonance for establishing a maximum response at the frequency of said selected RF signal, said parallel resonant circuit further comprising a series resonance circuit including said tunable means for assuming in response to said tuning voltage a series resonance for establishing a notch near the frequency of said local oscillator signal so as to pass the selected RF signal while attenuating the local oscillator and image frequency signals.

4,662,002

OPTICAL REPEATERS

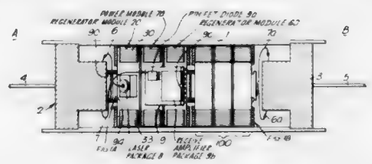
Arthur A. Davis, Harrold Wood, and Robert W. Eady, London, both of England, assignors to Standard Telephones and Cables Public Limited Company, London, England

Filed Jan. 11, 1985, Ser. No. 690,535

Claims priority, application United Kingdom, Jan. 19, 1984, 8401433

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—601 **2 Claims**



1. A digital signal repeater for a submerged optical transmission system having a pair of optical fibres for providing signal transmission in respective opposite directions along the system, said repeater comprising:

an outer sealed submersible housing;

for each fibre of the pair an independently-sealed regenerator module having electronic and opto-electronic components for regenerating the signal in the fibre;

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a further independently-sealed power module arranged to provide a power feed for each regenerator module; and

a hermetically sealed semiconductor laser package sealed through a wall of the regenerator module for transmitting the regenerated signal to the fibre.

4,662,003

SYSTEM FOR ELECTROOPTICAL INFORMATION TRANSMISSION

Kurt Eichweber, Hamburg, Fed. Rep. of Germany, assignor to Precitronic Gesellschaft fur Feinmechanik und Electronic m.b.H., Fed. Rep. of Germany

Filed May 22, 1984, Ser. No. 612,887

Claims priority, application Fed. Rep. of Germany, May 26, 1983, 3319158

Int. Cl.⁴ H04B 9/00

U.S. Cl. 455—605 **5 Claims**



1. A system for the transmission of information between an inquiry station and a response station,

wherein the inquiry station includes an optical radiation means for transmitting an outgoing signal and for subjecting this outgoing signal to a modulation in fixed pulse rate and at a separate time with an information code, the optical radiation means also coding the outgoing signal with an indication of an end of a transmitted message,

wherein the response station includes a means for receiving and evaluating the outgoing signal, a means for subjecting to a modulation and reflecting back the outgoing signal as a return signal, and an enabling means for controlling an enablement of the reflecting back means in-dependance on an evaluation by said receiving and evaluating means of the indication of the end of the transmitted message contained in the outgoing signal,

characterized in that

(a) an initiation of said enabling means is controlled by the evaluating of the indication of the end of the transmitted signal by said receiving and evaluating means,

(b) at the initiation of the return reflection, an acknowledgement signal is transmitted by said reflecting back means of said response station,

(c) by use of the acknowledgement signal, a control means for switching said radiation means of the inquiry station to at least one of a fixed pulse rate and a fixed coding of the outgoing signal is controlled, and

(d) at the response station, said receiving and evaluating means includes a means for recognizing the at least one of the fixed pulse rate and the fixed coding of the outgoing signal and for actuating a modulator tuned to a fixed pulse rate in order to appropriately modulate the return signal produced by said reflecting back means.

4,662,004

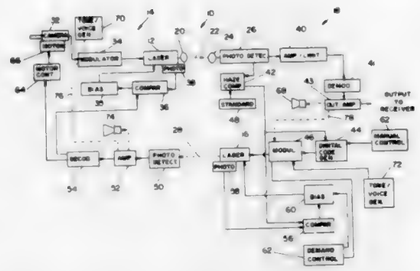
LASER COMMUNICATION SYSTEM

Herbert A. Fredriksen, Mountville; Richard K. Walter, Manheim, and Ronald B. Mentzer, Lancaster, all of Pa., assignors to FMW Corporation, Lancaster, Pa.

Filed Dec. 17, 1984, Ser. No. 682,084

Int. Cl.⁴ H04B 9/00

U.S. Cl. 455—607 **3 Claims**



1. A laser communication system for transmission across an atmospheric link between a radio frequency source and a load comprising:

a primary transmitter including a primary laser, a primary laser modulator connected to the primary laser and to a signal source, and a laser intensity control means connected to the laser for varying the primary laser intensity;

a primary receiver located in the path of a beam from the primary laser and including photodetector means located in the beam path functioning to convert a received laser beam to an electrical signal and a connection to feed the received signal to a load;

a haze comparator circuit connected to the primary photodetector means and comparing the electrical signal from the primary photodetector means to a standard signal to produce an output signal which indicates the sense and degree of the difference between the two;

a secondary laser located at the primary receiver location;

secondary laser modulator circuit providing modulation and intensity control circuit providing power with both circuits connected to the secondary laser;

a secondary laser control circuit connected to the haze comparator circuit and to the secondary laser modulator circuit and converting the output signal from the haze comparator circuit to a form useable to modulate the secondary laser so that the sense and magnitude information from the haze comparator circuit are imposed upon the beam of the secondary laser;

a secondary photodetector, located at the primary transmitter and in the path of a beam from the secondary laser, which converts the light signal to an electrical output signal;

a first control means connected to the secondary photodetector and the primary laser intensity control means and which converts the signal output from the secondary photodetector to a form which varies the primary laser intensity according to the sense and degree of the signal received from the secondary photodetector; and

an interconnection between the output of the haze comparator circuit and the secondary laser intensity control circuit so that the intensity of the output of the secondary laser is varied by the haze comparator in the same manner as is the intensity of the output of the primary laser.

DESIGNS

APRIL 28, 1987

289,460

UMBRELLA HANDLE

Jyll Exley, Deptford, N.J., and Thiebault Bouet, New York, N.Y., assignors to Yves Saint Laurent, Inc., New York, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,442

Term of patent 14 years

U.S. Cl. D3—12



289,461

MEDIC CASE

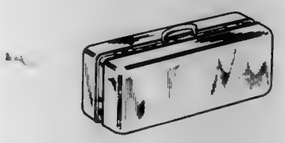
Larry B. Humphries, Guelph, Canada, assignor to Samsonite Corporation, Denver, Colo.

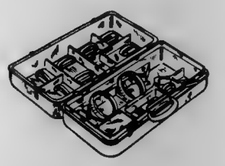
Filed Sep. 25, 1984, Ser. No. 654,299

Claims priority, application Canada, Mar. 27, 1984, 27-03-84-8

Term of patent 14 years

U.S. Cl. D3—74





289,462

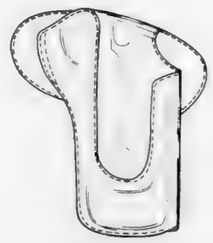
HOLSTER

Martin Miller, Fallbrook, Calif., assignor to Bianchi International, Temecula, Calif.

Filed Nov. 5, 1984, Ser. No. 667,955

Term of patent 14 years

U.S. Cl. D3—101



289,463

BRUSH

Tommie J. Jones, 25623 Lincoln Ter., Apartment 2, Oak Park, Mich. 48237, and Janet Bradley, 3370 Pasadena, Detroit, Mich. 48238

Filed Feb. 14, 1985, Ser. No. 701,742

Term of patent 14 years

U.S. Cl. D14—117





289,464

APPLIQUE OR THE LIKE

Walter B. Reid, III, 1718 Wilshire Blvd., and Alexander R. Sarratt, III, 2202 W. Nash St., both of Wilson, N.C. 27893

Filed Sep. 19, 1983, Ser. No. 533,522

Term of patent 14 years

U.S. Cl. D5—65



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289,465
INFANT CARRIER
Robert D. Wise, Akron, Ohio, assignor to Gerber Products Company, Fremont, Mich.
Filed Sep. 6, 1983, Ser. No. 529,313
Term of patent 14 years
U.S. Cl. D6—333



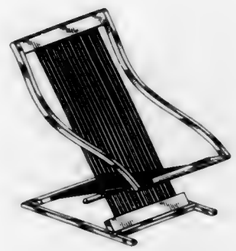
289,466
COMBINED SEAT AND TABLE UNIT
Roger K. Leib, 1064 S. Crescent Hgts., Los Angeles, Calif. 90035
Filed Jul. 9, 1984, Ser. No. 628,903
Term of patent 14 years
U.S. Cl. D6—335



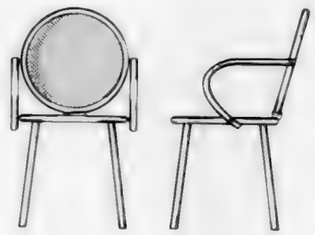
289,467
CHILD'S CHAIR
Ned J. Pickett, 416 Buttonwood La., Largo, Fla. 33540
Filed Sep. 17, 1984, Ser. No. 651,342
Term of patent 14 years
U.S. Cl. D6—358



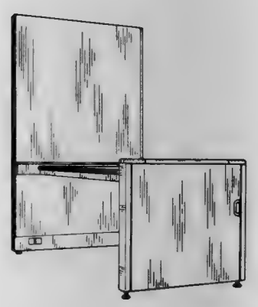
289,468
FOLDABLE CHAIR
Robert C. MacVeigh, 339 Olivewood Road, Toronto, Ontario M8Z 2Z6, Canada
Filed Aug. 30, 1984, Ser. No. 645,510
Claims priority, application Canada, Mar. 15, 1984, 15-03-84-01
Term of patent 14 years
U.S. Cl. D6—368

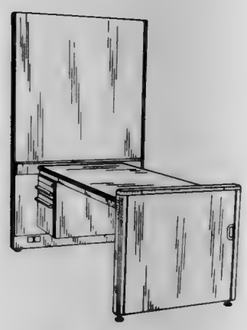


289,469
CHAIR
Sandro Tonon, Manzano, Italy, assignor to Tonon & C. S.p.A., Italy
Filed Aug. 6, 1984, Ser. No. 638,252
Term of patent 14 years
U.S. Cl. D6—379

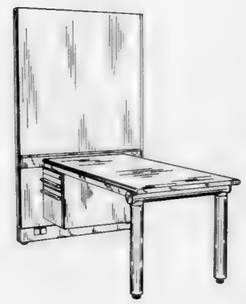


289,470
COMBINED DESK AND PARTITION PANEL UNIT
Ettore Sottsass, and Michele De Lucchi, both of Milan, Italy, assignors to Olivetti Synthesis, S.p.A., Ivrea, Italy
Division of Ser. No. 456,773, Jan. 10, 1983, abandoned. This application Jan. 21, 1986, Ser. No. 820,376
Claims priority, application Italy, Jul. 8, 1982, 53490-B/82
Term of patent 14 years
U.S. Cl. D6—397

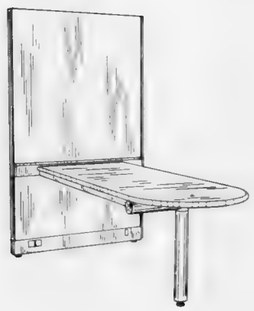




289,471
COMBINED DESK AND PARTITION PANEL UNIT
Ettore Sottsass, and Michele De Lucchi, both of Milan, Italy, assignors to Olivetti Synthesis, S.p.A., Ivrea, Italy
Division of Ser. No. 456,773, Jan. 10, 1983, abandoned. This application Jan. 21, 1986, Ser. No. 820,377
Claims priority, application Italy, Jul. 8, 1982, 53490-B/82
Term of patent 14 years
U.S. Cl. D6—397

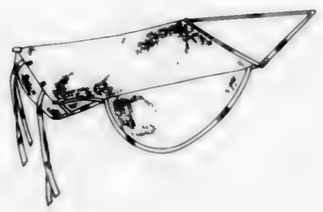


289,472
COMBINED DESK AND PARTITION PANEL UNIT
Ettore Sottsass, and Michele De Lucchi, both of Milan, Italy, assignors to Olivetti Synthesis, S.p.A., Ivrea, Italy
Division of Ser. No. 456,773, Jan. 10, 1983, abandoned. This application Jan. 21, 1986, Ser. No. 820,637
Claims priority, application Italy, Jul. 8, 1982, 53490-B/82
Term of patent 14 years
U.S. Cl. D6—397



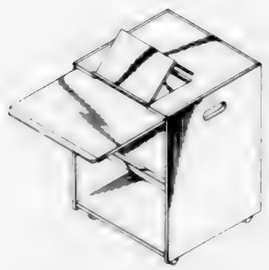
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289,473
SUN VISOR FOR CHILD'S CAR SEAT
Patricia A. Myers, P.O. Box 228, Boston Bar, British Columbia, Canada V0K 1C0
Filed Oct. 30, 1984, Ser. No. 666,297
Term of patent 14 years
U.S. Cl. D6—611

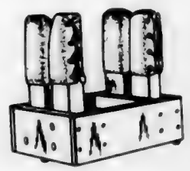


289,474
RESEARCH AND STORAGE UNIT
Richard G. Underwood, and Janet W. Underwood, both of 8900 Wandering Trail Dr., Potomac, Md. 20854
Filed Jan. 15, 1985, Ser. No. 691,628
Term of patent 14 years
U.S. Cl. D6—420





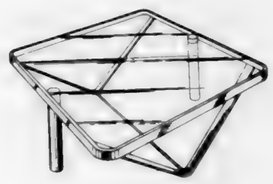
289,475
GUN SUPPORT
Larry R. McClung, Box 411, Craigsville, W. Va. 26205
Filed Jul. 11, 1984, Ser. No. 630,715
Term of patent 14 years
U.S. Cl. D6—449



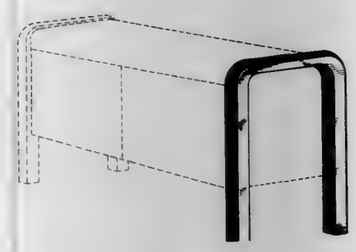
289,476
TABLE
Steven Holl, New York, N.Y., assignor to Pace Collection, Inc., Long Island City, N.Y.
Filed Sep. 14, 1984, Ser. No. 650,796
Term of patent 14 years
U.S. Cl. D6—487



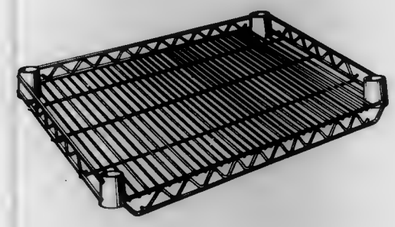
289,477
TABLE
Richard D. Berry, Jr., Hickory, N.C., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Dec. 28, 1984, Ser. No. 687,449
Term of patent 14 years
U.S. Cl. D6—487



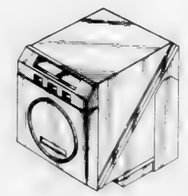
289,478
FURNITURE LEG OR SIMILAR ARTICLE
Burkhard Vogtherr, Kandern-Holzen, Fed. Rep. of Germany, assignor to Klöber GmbH & Co., Fed. Rep. of Germany
Filed Jun. 18, 1984, Ser. No. 621,471
Term of patent 14 years
U.S. Cl. D6—495

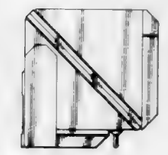


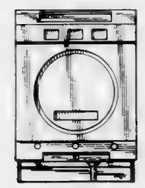
289,479
WIRE SHELF
Rodney E. Brancher, Wyoming, Pa., assignor to InterMetro Industries Corporation, Wilkes-Barre, Pa.
Filed Jun. 8, 1984, Ser. No. 618,556
Term of patent 14 years
U.S. Cl. D6—511



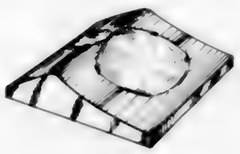
289,480
MODULE FOR LIQUID DETERGENT PUMP AND CONTROL COMPONENTS
Wilhelmus K. der Kinderen, Wilnis, Netherlands; Veronica Steel, London, and David Maddison, Worthing, both of England, assignors to Lever Brothers Company, New York, N.Y.
Filed Apr. 13, 1984, Ser. No. 599,905
Claims priority, application United Kingdom, Oct. 13, 1983, 1015,684
Term of patent 14 years
U.S. Cl. D6—559







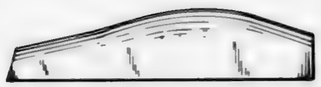
289,481
SACRUM CUSHION
Kenneth T. Reddick, 387 Ridgeview Dr., Apt. C, Grand Junction, Colo. 81503, assignor to Kenneth T. Reddick and Robert H. Reddick, both of Clifton, Colo.
Filed Dec. 19, 1984, Ser. No. 683,480
Term of patent 14 years
U.S. Cl. D6—601



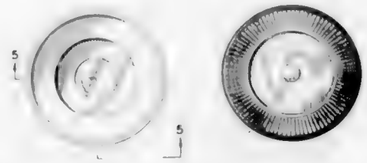


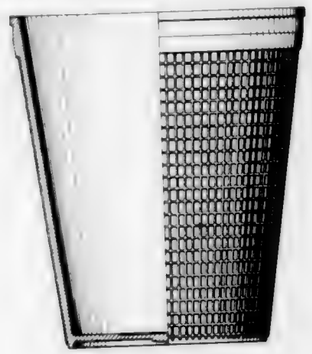
289,482
SACRUM CAR SEAT CUSHION
Kenneth T. Reddick, 387 Ridgeview Dr., Apt. C, Grand Junction, Colo. 81503, assignor to Kenneth T. Reddick and Robert H. Reddick, both of Clifton, Colo.
Filed Dec. 19, 1984, Ser. No. 683,481
Term of patent 14 years
U.S. Cl. D6—601



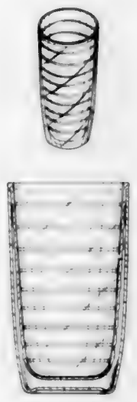


289,483
BEVERAGE CUP
Bruno Wetter, St-Eustache, Canada, assignor to Innopac Inc., Williamdale, Canada
Continuation-in-part of Ser. No. 353,627, Mar. 1, 1982, abandoned. This application Mar. 2, 1984, Ser. No. 585,422
Term of patent 14 years
U.S. Cl. D7—6





289,484
DOUBLE-WALL INSULATED TUMBLER
William F. Forquer, and Dolores V. Parker, both of 5042 Linda St., Venice, Fla. 33595
Filed Oct. 26, 1984, Ser. No. 665,536
Term of patent 14 years
U.S. Cl. D7—15



289,485
SOUP BOWL OR SIMILAR ARTICLE
Steve A. Unger, Manlius, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Apr. 13, 1984, Ser. No. 600,295
Term of patent 14 years
U.S. Cl. D7—20

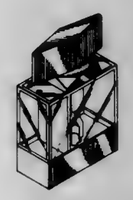




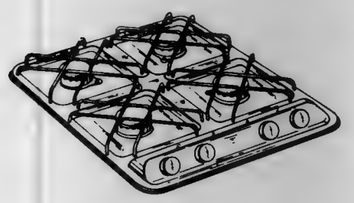
289,488
COMBINED COVER AND COUNTERTOP FOR COOLER
Zoltan V. Gyebnar, 2340 Starr Ave., #3, Oregon, Ohio 43616
Filed May 14, 1984, Ser. No. 610,308
Term of patent 14 years
U.S. Cl. D7—391



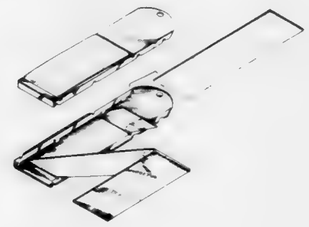
289,496
COMBINATION CONDIMENT MILL AND SHAKER
William E. Bounds, 3737 W. 240th St., Torrance, Calif. 90505
Filed Aug. 29, 1984, Ser. No. 645,410
Term of patent 14 years
U.S. Cl. D7—53



289,487
RANGE TOP
Günter Schultz, Remscheid, Fed. Rep. of Germany, assignor to Cramer GmbH & Co. KG, Menden, Fed. Rep. of Germany
Filed Nov. 8, 1984, Ser. No. 669,518
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1984, 4 MR 1016
Term of patent 14 years
U.S. Cl. D7—346



289,489
EMERY TAPE HOLDING SHARPENER
Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.
Filed Nov. 19, 1984, Ser. No. 674,284
Term of patent 14 years
U.S. Cl. D8—91



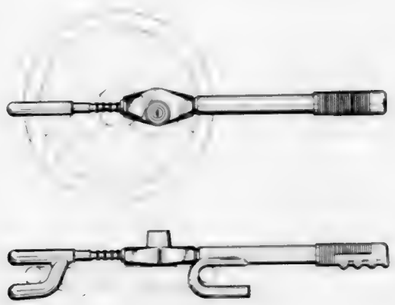
VOL
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289,490
HANDLE
Richard Miles, Guildford, and Stephen T. Green, Clanfield, both of England, assignors to Samsonite Corporation, Denver, Colo.
Filed Apr. 23, 1984, Ser. No. 602,869
Claims priority, application United Kingdom, Nov. 1, 1983, 1016032
Term of patent 14 years
U.S. Cl. D8—306

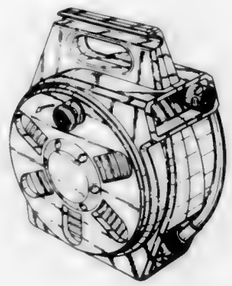


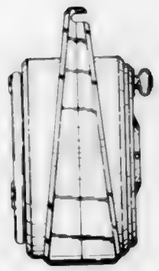
289,491
AUTOMOBILE STEERING LOCK
Charles R. Johnson, Hudson, Ohio, assignor to James E. Winner, Sharon, Pa.
Filed Nov. 15, 1985, Ser. No. 805,226
Term of patent 14 years
U.S. Cl. D8—330



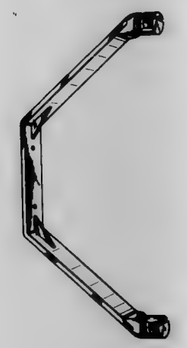


289,492
COMBINED PORTABLE HOSE REEL AND HOSE THEREFOR
Franco Clivio, Zürich, Switzerland, and Dieter Raffler, Neu-Ulm, Fed. Rep. of Germany, assignors to Gardena Kress & Kastner GmbH, Fed. Rep. of Germany
Filed Feb. 28, 1985, Ser. No. 706,678
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1984, 1989/84-03
Term of patent 14 years
U.S. Cl. D8—359



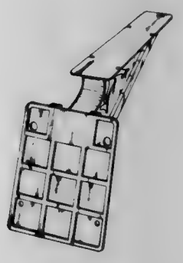


289,493
INSULATING MEMBER FOR LIVESTOCK-ENCLOSURE FENCES
Gert A. N. Monell, Bondarp, 578 00 Arneby, Sweden
Filed Dec. 20, 1984, Ser. No. 684,017
Claims priority, application Sweden, Jun. 21, 1984, 84-1857
Term of patent 14 years
U.S. Cl. D8—364

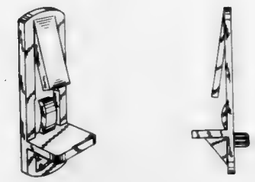


289,494
SWIM SHELF PLATFORM BRACKET
Paul W. Rice, 1811 Surfside Pl., Byron, Calif. 94514
Filed Oct. 18, 1984, Ser. No. 663,327
Term of patent 14 years
U.S. Cl. D8—381

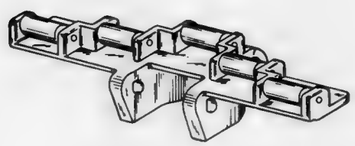




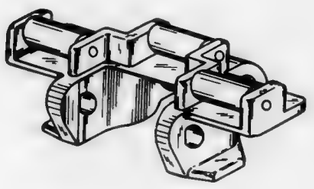
289,495
SHELF BRACKET
Robert T. Hughes, Thomasville, and Timothy K. Crooks, Winston-Salem, both of N.C., assignors to Hughes Supply Company, Thomasville, N.C.
Filed Aug. 12, 1985, Ser. No. 764,482
Term of patent 14 years
U.S. Cl. D8—381



289,496
CONVEYOR CHAIN LINK
Roger H. Schroeder, Hartland, and Wasyly G. Hodlewsky, Greendale, both of Wis., assignors to Rexnord Inc., Brookfield, Wis.
Filed Jan. 11, 1985, Ser. No. 690,694
Term of patent 14 years
U.S. Cl. D8—499



289,497
CONVEYOR CHAIN LINK
Roger H. Schroeder, Hartland, and Wasyly G. Hodlewsky, Greendale, both of Wis., assignors to Rexnord Inc., Brookfield, Wis.
Filed Jan. 11, 1985, Ser. No. 690,921
Term of patent 14 years
U.S. Cl. D8—499



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289,498
LIQUID MAKEUP CONTAINER
Theodore Simonetti, New York, N.Y., and Elaine P. Spakowski, Little Falls, N.J., assignors to L'Oreal, S.A., Paris, France
Filed Nov. 1, 1984, Ser. No. 667,213
Term of patent 14 years
U.S. Cl. D9—372



289,499
FOOD CUP
Robert T. Drummond, Chicago, and Archie G. Drummond, Jr., Palatine, both of Ill., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Sep. 10, 1984, Ser. No. 649,086
Term of patent 14 years
U.S. Cl. D9—429



289,500
CLOCK
Ray Sally, 26 Port Royal Road, Aylmer, Quebec, Canada
Filed Aug. 11, 1983, Ser. No. 522,265
Claims priority, application Canada, Apr. 15, 1983, 15-04-83-5
The portion of the term of this patent subsequent to Apr. 28, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—9



289,501
MAPLE LEAF CLOCK
George Sandy, Valrico, Fla., assignor to Ray Sally, Aylmer, Canada
Filed Aug. 11, 1983, Ser. No. 522,266
Claims priority, application Canada, Mar. 2, 1983, 02-03-83-2
The portion of the term of this patent subsequent to Apr. 28, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—9



289,502
WRISTWATCH
Benjamin E. Woomer, 1597 E. 30th St., Cleveland, Ohio 44114
Filed Oct. 22, 1984, Ser. No. 663,762
Term of patent 14 years
U.S. Cl. D10—32



289,503
WATCH CASE
Pierre Ludvig, St-Nom la Breteche, and Gerard Flandin, 11 Rue Alfred Dehodencq, 75016 Paris, both of France, assignors to Gerard Flandin, Paris, France
Filed May 8, 1984, Ser. No. 608,148
Term of patent 14 years
U.S. Cl. D10—39

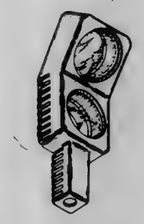


289,504
DIGITAL MULTIMETER
George L. McCain, Seattle, and Indle G. King, Mercer Island, both of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Apr. 9, 1984, Ser. No. 598,160
Term of patent 14 years
U.S. Cl. D10—78

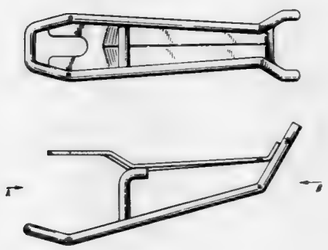




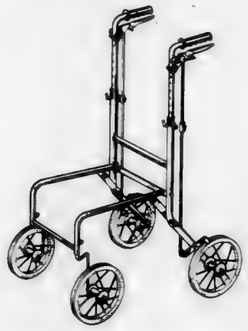
289,505
TWO INSTRUMENT DIVE CONSOLE
Mark Faulconer, Costa Mesa, Calif., assignor to U.S.D. Corp, Santa Ana, Calif.
Filed Jul. 24, 1984, Ser. No. 633,842
Term of patent 14 years
U.S. Cl. D10—85



289,506
GEAR CHAIN GUARD FOR A CYCLE
Christopher J. Boyett, Nottingham, United Kingdom, assignor to TI Sturmey-Archer Limited, Nottingham, England
Filed Apr. 9, 1984, Ser. No. 598,232
Claims priority, application United Kingdom, Nov. 11, 1983, 1016246
Term of patent 14 years
U.S. Cl. D12—127



289,507
WHEELED WALKING FRAME
Jan-Erik Danielsson, Sala, Sweden, assignor to Rolf Ahlbergs Mekaniska Verkstad AB, Sweden
Filed Apr. 11, 1984, Ser. No. 599,184
Claims priority, application Sweden, Oct. 13, 1983, 83-2649
Term of patent 14 years
U.S. Cl. D12—130



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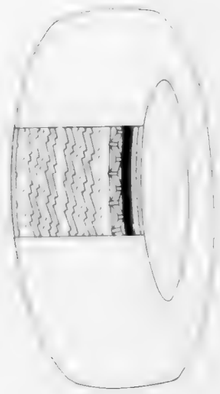
289,508
BICYCLE TIRE TREAD
Eiju Fukuchi, Kagawa, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan
Filed Jul. 9, 1984, Ser. No. 629,003
Term of patent 14 years
U.S. Cl. D12—136



289,509
TIRE FOR A VEHICLE WHEEL
Giuliano Ghilardi, Sesto San Giovanni, Italy, assignor to Societa' Pneumatici Pirelli S.p.A., Italy
Filed May 24, 1984, Ser. No. 613,531
Claims priority, application Italy, Dec. 6, 1983, 23757/83[U]
Term of patent 14 years
U.S. Cl. D12—142



289,510
TIRE FOR A VEHICLE WHEEL
Giuliano Ghilardi, Sesto S. Giovanni, Italy, assignor to Societa' Pneumatici Pirelli S.p.A., Italy
Filed May 24, 1984, Ser. No. 613,532
Claims priority, application Italy, Dec. 6, 1983, 23756/83[U]
Term of patent 14 years
U.S. Cl. D12—142



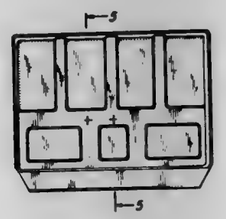
289,511
TIRE
Andre E. J. Baus, Bettembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 25, 1984, Ser. No. 623,866
The portion of the term of this patent subsequent to Apr. 22, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—143



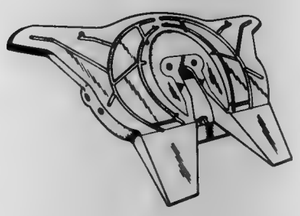
289,512
BICYCLE TIRE
Eiji Fukuchi, Kagawa, Japan, assignor to Mitsuboshi Belting Ltd., Hyogo, Japan
Filed Nov. 7, 1984, Ser. No. 669,149
Term of patent 14 years
U.S. Cl. D12—147



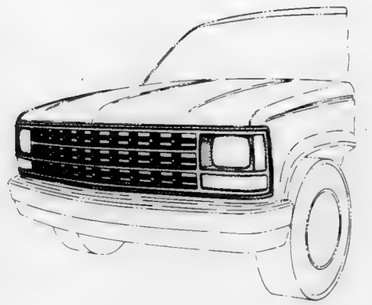
289,513
REAR DECK LINER FOR CORVETTE AUTOMOBILES
John Hankinson, Jr., 6349 Musket Ct., Bensalem, Pa. 19020
Filed Apr. 5, 1984, Ser. No. 596,954
Term of patent 14 years
U.S. Cl. D12—155



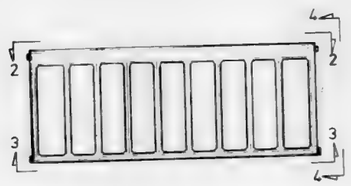
289,514
FIFTH WHEEL
Grover H. Capps, Travelers Rest, S.C., assignor to Trucksafe, Inc., Greenville, S.C.
Filed Apr. 9, 1984, Ser. No. 597,929
Term of patent 14 years
U.S. Cl. D12—161



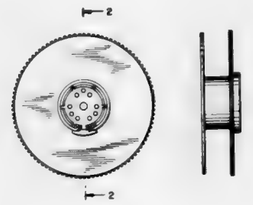
289,515
VEHICLE GRILLE
Donald H. Wood, Jr., Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 10, 1985, Ser. No. 690,188
Term of patent 14 years
U.S. Cl. D12—163



289,516
TRUCK TAILGATE
Billy M. Watts, 1935 W. 47th Ave., Denver, Colo. 80211
Filed Jun. 12, 1984, Ser. No. 619,999
Term of patent 14 years
U.S. Cl. D12—196

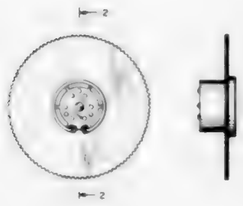


289,517
REEL HUB FOR MAGNETIC TAPE CASSETTE OR THE LIKE
Katsutoshi Kikuchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 4, 1984, Ser. No. 678,154
Claims priority, application Japan, Jul. 2, 1984, 59-27236
Term of patent 14 years
U.S. Cl. D14—10

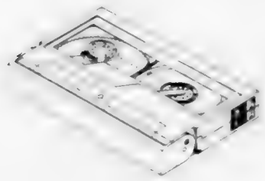


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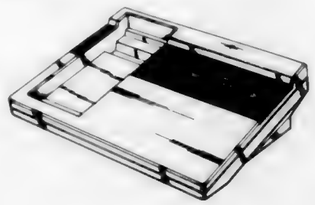
289,518
REEL HUB FOR MAGNETIC TAPE CASSETTE OR THE LIKE
Katsutoshi Kikuchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 4, 1984, Ser. No. 678,155
Claims priority, application Japan, Jul. 2, 1984, 59-27235
Term of patent 14 years
U.S. Cl. D14—10

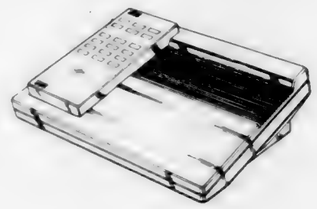


289,519
MAGNETIC TAPE CASSETTE OR THE LIKE
Toshio Ohya, Tokyo, and Yuko Wada, Tachikawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 4, 1984, Ser. No. 678,156
Claims priority, application Japan, Jul. 2, 1984, 59-27237
Term of patent 14 years
U.S. Cl. D14—11

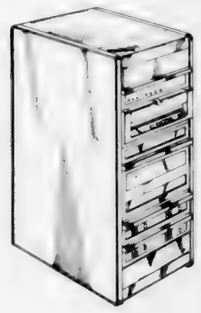


289,520
TELEPHONE BASE AND HANDPIECE SET
Floyd J. Pusbelberg, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Mar. 18, 1985, Ser. No. 713,170
Term of patent 14 years
U.S. Cl. D14—53

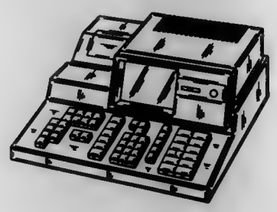




289,521
COMPUTER PERIPHERAL
Brian Macowski, Los Altos; Michael J. Nuttall, Palo Alto, and Simon S. H. Wong, Sunnyvale, all of Calif., assignors to Metaphor Computer Systems, Mountain View, Calif.
Filed Aug. 14, 1984, Ser. No. 641,172
Term of patent 14 years
U.S. Cl. D14—102



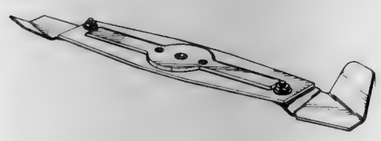
289,522
ELECTRONIC TELLER MACHINE
Kunio Akiyama, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Jun. 15, 1984, Ser. No. 620,896
Claims priority, application Japan, Dec. 15, 1983, 58-54500
Term of patent 14 years
U.S. Cl. D14—106



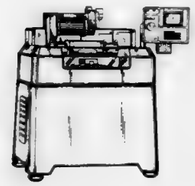
289,523
AIR COMPRESSOR
David A. Fussell, Lawrenceville, Ga., assignor to Air Shot, Inc., Lawrenceville, Ga.
Filed Dec. 6, 1984, Ser. No. 678,811
Term of patent 14 years
U.S. Cl. D15—9



289,524
LAWNMOWER BLADE
Roger Andersson, Gränna; Lennart Engdahl, and Jan Klasson, both of Tranås, all of Sweden, assignors to Stiga AB, Tranås, Sweden
Filed Feb. 29, 1984, Ser. No. 584,957
Claims priority, application Sweden, Sep. 9, 1983, 83-2321
Term of patent 14 years
U.S. Cl. D15—17



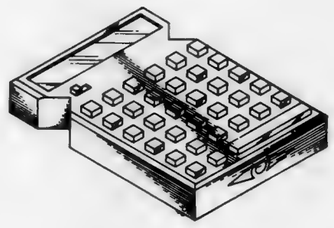
289,525
SLICING MACHINE FOR MAGNETIC TAPE OR THE LIKE
Christian M. Nielsen, and James C. Bolton, both of Ojai, Calif., assignors to Industrial Tools, Inc., Ojai, Calif.
Filed Oct. 1, 1984, Ser. No. 656,473
Term of patent 14 years
U.S. Cl. D15—127



289,526
FORTE GRIP FOR BOWS OF STRINGED INSTRUMENTS OR THE LIKE
Louis F. Fortunato, 2510 Audrey Ter., Union, N.J. 07083
Filed Aug. 7, 1984, Ser. No. 638,664
Term of patent 14 years
U.S. Cl. D17—20

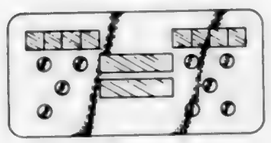


289,527
ELECTRONIC DICTIONARY
Joseph G. Echols, Jr., and Joseph G. Echols, Sr., both of P.O. Box #2871, Detroit, Mich. 48231
Filed Apr. 22, 1985, Ser. No. 725,773
Term of patent 14 years
U.S. Cl. D18—7



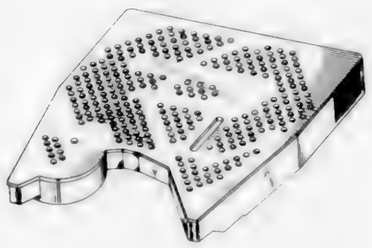
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289,528
FISHING TOURNAMENT CALCULATOR
Thomas J. Hunsaker, 1450 Carman Rd., Ballwin, Mo. 63011
Filed Apr. 22, 1985, Ser. No. 725,775
Term of patent 14 years
U.S. Cl. D18—7

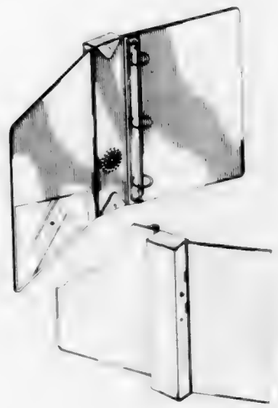




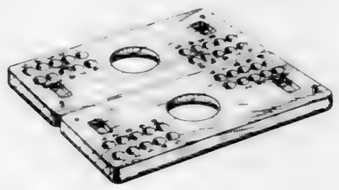
289,529
RIBBON CASSETTE
Samuel D. Cappotto, Syracuse, and Anthony Bartolone, Lansing, both of N.Y., assignors to SCM Corporation, Cortland, N.Y.
Filed Apr. 5, 1985, Ser. No. 720,335
Term of patent 14 years
U.S. Cl. D18—22



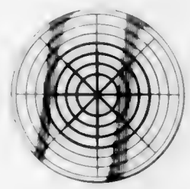
289,530
COMBINED BINDER AND RADIO
Galen C. Arrington, 4535 E. Beverly La., Phoenix, Ariz. 85032
Filed Feb. 11, 1985, Ser. No. 700,720
Term of patent 14 years
U.S. Cl. D19—27



289,531
GAME BOARD
Blain G. Coghill, 1873 SE. Elkart, Stuart, Fla. 33425
Filed Jul. 5, 1984, Ser. No. 628,293
Term of patent 14 years
U.S. Cl. D21—15



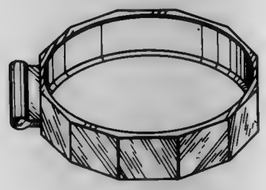
289,532
GAME BOARD
Michael S. Ivie, 7816 Millstone Dr., Apt. C, Dallas, Tex. 75228
Filed Aug. 2, 1984, Ser. No. 637,028
Term of patent 14 years
U.S. Cl. D21—32



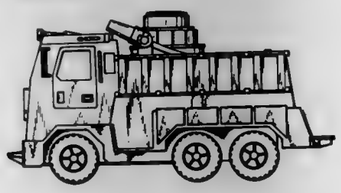
289,533
TOY RETAINING DEVICE
Sylvia A. Morrison, 4 Buttonwood Dr., New Hope, Pa. 18938
Filed Sep. 10, 1984, Ser. No. 648,566
Term of patent 14 years
U.S. Cl. D21—62



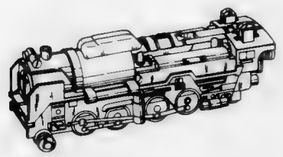
289,534
TOY TRACKWAY
Charles E. Davis, Rte. 3, Box 437, Bessemer City, N.C. 28016
Filed Sep. 12, 1984, Ser. No. 649,697
Term of patent 14 years
U.S. Cl. D21—92

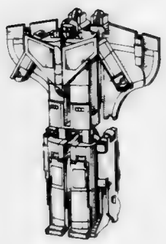


289,535
TOY FIRE TRUCK
Kenneth R. Wilkes, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 23, 1985, Ser. No. 693,757
Term of patent 14 years
U.S. Cl. D21—133

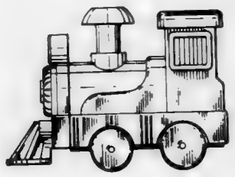


289,536
RECONFIGURABLE TOY
Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jan. 30, 1985, Ser. No. 696,640
Claims priority, application Japan, Jan. 14, 1985, 60-537
Term of patent 14 years
U.S. Cl. D21—150





289,537
TOY LOCOMOTIVE
Chan K. Leung, Kowloon, Hong Kong, assignor to Blue Box Toy Factory Limited, Hong Kong, Hong Kong
Filed Mar. 5, 1984, Ser. No. 586,485
Claims priority, application United Kingdom, Oct. 13, 1983, 1015663
Term of patent 14 years
U.S. Cl. D21—129

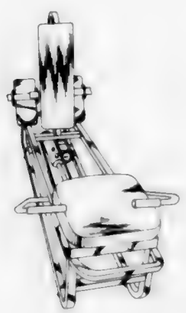


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289,538
EXERCISE BAR
Robert M. Wilson, Vanceboro, N.C., assignor to Exerpac, Inc., Vanceboro, N.C.
Filed Jun. 25, 1984, Ser. No. 624,463
Term of patent 14 years
U.S. Cl. D21—198



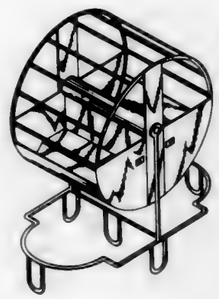
289,539
ROWING MACHINE
Jerry D. Bretham, P.O. Box 599, Belton, Tex. 76513
Filed Jan. 3, 1985, Ser. No. 688,606
Term of patent 14 years
U.S. Cl. D21—195



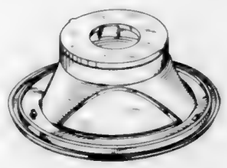
289,540
PORTABLE STAND FOR A VOLLEYBALL NET OR THE LIKE
Amos N. Bender, Rte. One, Cumberland, Wis. 54829
Filed May 1, 1986, Ser. No. 859,211
Term of patent 14 years
U.S. Cl. D21—199



289,541
PLAYGROUND ROTATING SWING
Karen K. S. Forester, 2025 Stone Rd., Wylie, Tex. 75098
Filed Sep. 26, 1984, Ser. No. 654,850
Term of patent 14 years
U.S. Cl. D21—248



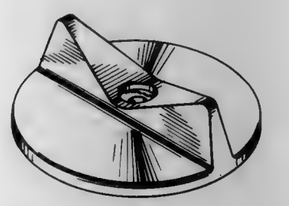
289,542
SPRINKLER HEAD HOUSING
Barry F. Byrne, Killarney Heights, Australia, assignor to Wormald International Limited, Crows Nest, Australia
Filed Jan. 5, 1984, Ser. No. 568,412
Claims priority, application Australia, Jul. 5, 1983, 4310/83
Term of patent 14 years
U.S. Cl. D23—6



289,543
PLUMBING FITTING HANDLE
William R. Davis, Kiel, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 31, 1984, Ser. No. 687,965
Term of patent 14 years
U.S. Cl. D23—29



289,544
PLUMBING FITTING HANDLE
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 24, 1985, Ser. No. 694,432
Term of patent 14 years
U.S. Cl. D23—28

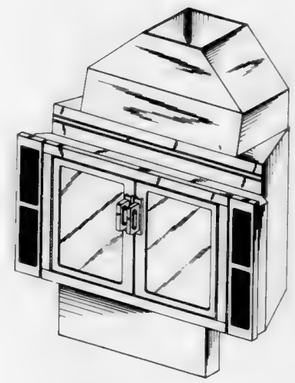


289,545
HANDSHOWER
Karl-Erich Koch, Neu-Ulm, Fed. Rep. of Germany, assignor to Knebel & Rottger GmbH & Co., Iserlohn, Fed. Rep. of Germany
Filed Aug. 14, 1984, Ser. No. 640,707
Claims priority, application World Int. Prop. O., Feb. 14, 1984, DM/003 417
Term of patent 14 years
U.S. Cl. D23—35





289,546
HEAT CIRCULATING FIREPLACE SYSTEM FOR USE IN MASONRY CONSTRUCTION
Terry G. Schoeff, Andrews, and George K. MacAleese, Huntington, both of Ind., assignors to American Standard Inc., New York, N.Y.
Filed Apr. 16, 1984, Ser. No. 600,721
Term of patent 14 years
U.S. Cl. D23—94

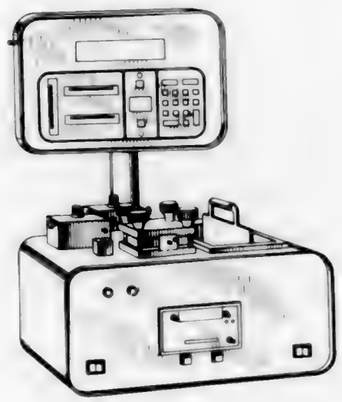


289,547
ELECTRICAL RADIANT HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Dec. 17, 1984, Ser. No. 682,133
Claims priority, application Japan, Jun. 19, 1984, 59-25285
Term of patent 14 years
U.S. Cl. D23—123

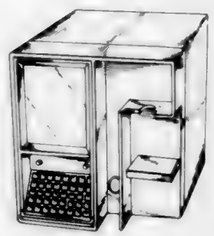


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289,548
COMBINED PLASMAPHERESIS CONSOLE AND FLUID EXCHANGER
Ardis R. Lavender, Chappaqua, N.Y., and Michael Diker, Danbury, Conn., assignors to Armour Pharmaceutical Company, Tuckahoe, N.Y.
Filed Dec. 26, 1984, Ser. No. 686,349
Term of patent 14 years
U.S. Cl. D24—1.1



289,550
CABINET FOR PARTICLE AND CELL ANALYSIS APPARATUS OR SIMILAR ARTICLE
Robert H. Berg, Elmhurst, Ill., assignor to Particle Data, Inc., Elmhurst, Ill.
Filed Oct. 10, 1984, Ser. No. 659,529
Term of patent 14 years
U.S. Cl. D24—21



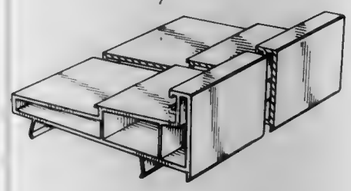
289,551
URINE LEG BAG
Peter L. Steer, Surrey, England, assignor to Craig Medical Products Ltd., Surrey, England
Filed Nov. 1, 1984, Ser. No. 667,196
Claims priority, application United Kingdom, May 10, 1984, 1019551
Term of patent 14 years
U.S. Cl. D24—54



289,549
DENTAL GAUGE
Robert P. Berger, 4421 Rochelle Pl., Encino, Calif. 91316
Filed Nov. 2, 1984, Ser. No. 667,630
Term of patent 14 years
U.S. Cl. D24—10



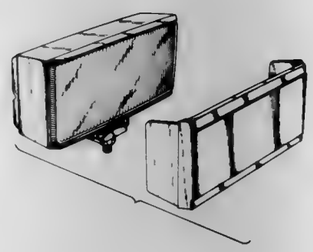
289,552
WINDOW FRAME COMPONENT
Terence Hardy, Belper, England, assignor to L.B. (Plastics) Limited, England
Filed Jun. 20, 1984, Ser. No. 622,804
Claims priority, application United Kingdom, Apr. 12, 1984, 1019074
Term of patent 14 years
U.S. Cl. D25—74



289,553
REFLECTOR FLUORESCENT LAMP
Peter C. J. Gallagher, 38 Elan La., Wayne, Pa. 19087
Filed Jul. 11, 1983, Ser. No. 512,622
Term of patent 14 years
U.S. Cl. D26—3



289,554
COMBINED AUXILIARY LIGHT AND COVER THEREFOR
Matsuo Ichikawa, Takasaki, Japan, assignor to Ichikawa Press Industry Co., Ltd., Japan
Filed Nov. 26, 1984, Ser. No. 675,016
Term of patent 14 years
U.S. Cl. D26—28



289,555
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,139
Term of patent 14 years
U.S. Cl. D26—110



289,556
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,137
Term of patent 14 years
U.S. Cl. D26—110



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289,557
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,140
Term of patent 14 years
U.S. Cl. D26—110



289,558
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,384
Term of patent 14 years
U.S. Cl. D26—110



289,559
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,471
Term of patent 14 years
U.S. Cl. D26—110



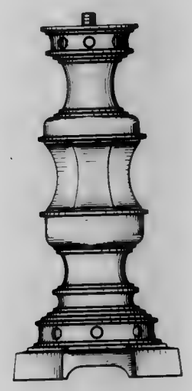
289,560
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,472
Term of patent 14 years
U.S. Cl. D26—110



289,561
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,473
Term of patent 14 years
U.S. Cl. D26—110



289,562
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Jan. 2, 1985, Ser. No. 688,476
Term of patent 14 years
U.S. Cl. D26—110



289,563
LAMP BASE
Terry Manton, Clifton, N.J., assignor to Westwood Lighting Group, Inc., Paterson, N.J.
Filed Feb. 7, 1985, Ser. No. 699,293
Term of patent 14 years
U.S. Cl. D26—110



289,564
SUNTAN LOTION APPLICATOR
Douglas C. Harford, Richmond, Canada, assignor to Curtex of Canada Ltd., Richmond, Canada
Filed Mar. 4, 1985, Ser. No. 708,045
Term of patent 14 years
U.S. Cl. D28—7

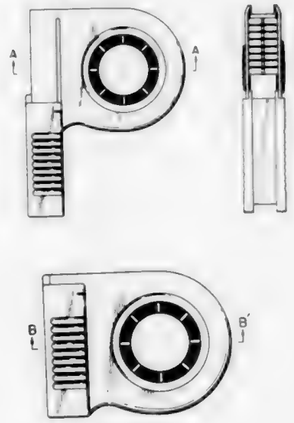


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289,565
DEPILATORY DISPENSER
Samuel J. Mann, Englewood, N.J., assignor to Inverness Corporation, Fair Lawn, N.J.
Filed Nov. 15, 1984, Ser. No. 671,534
Term of patent 14 years
U.S. Cl. D28—10



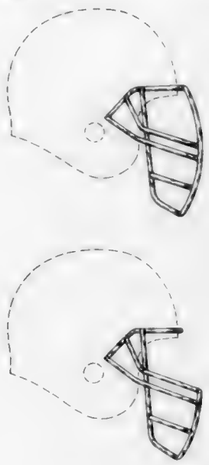
289,566
HAIR DRYER
Kazuyoshi Yonezawa, Kadoma; Kuniharu Ichikawa, and Yonosuke Iwai, both of Yawata, all of Japan, assignors to Matsushita Electric Works, Ltd., Japan
Filed Mar. 4, 1985, Ser. No. 707,898
Claims priority, application Japan, Sep. 11, 1984, 59-37747
Term of patent 14 years
U.S. Cl. D28—13



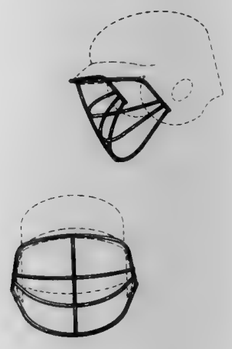
289,567
DELOUSING COMB
Mark A. O'Connor; Rodney J. O'Connor, both of College Station, and Munson R. Snedeker, Bryan, all of Tex., assignors to Texas Romec, Inc., College Station, Tex.
Filed Jan. 23, 1985, Ser. No. 694,088
Term of patent 14 years
U.S. Cl. D28—25



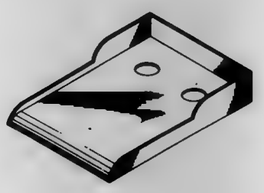
289,568
FACEGUARD FOR A HELMET
Kenneth W. Nimmons, Litchfield, Ill., assignor to Schutt Manufacturing Company, Litchfield, Ill.
Filed Sep. 19, 1984, Ser. No. 652,300
Term of patent 14 years
U.S. Cl. D29—16



289,569
FACEGUARD FOR A BATTER'S HELMET
Kenneth W. Nimmons, Litchfield, Ill., assignor to Schutt Manufacturing Company, Litchfield, Ill.
Filed Sep. 19, 1984, Ser. No. 652,302
Term of patent 14 years
U.S. Cl. D29—16



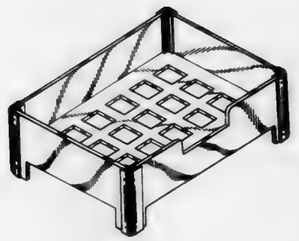
289,570
PET FEEDING TRAY
Keith T. Hagency, 3827 Belle Ave., Davenport, Iowa 52807
Filed Aug. 5, 1985, Ser. No. 762,180
Term of patent 14 years
U.S. Cl. D30—13



289,571
TWO-PART BUCKLE FOR A GIRTH STRAP
Elizabeth A. Bird, Droitwich, England, assignor to Cottage Industries (Equestrian) Ltd., Worcestershire, England
Filed Nov. 19, 1984, Ser. No. 673,087
Claims priority, application United Kingdom, May 19, 1984, 1019777
Term of patent 14 years
U.S. Cl. D30—25



289,572
PET WATERBED FRAME
Loretta L. Wanat, 11090 Woodruff Rd., Fairburn, Ga. 30213
Filed Aug. 17, 1984, Ser. No. 641,878
Term of patent 14 years
U.S. Cl. D30—33

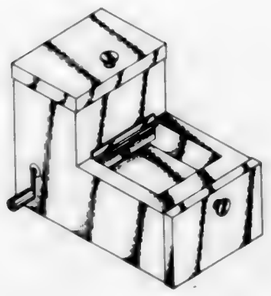


289,573
COMBINED BIRD BEAK EXPANDER AND SHIELD THEREFOR
Bernard A. Lizotte, 440 Breed Ave., San Leandro, Calif. 94577
Filed Jan. 13, 1984, Ser. No. 570,390
Term of patent 14 years
U.S. Cl. D30—33

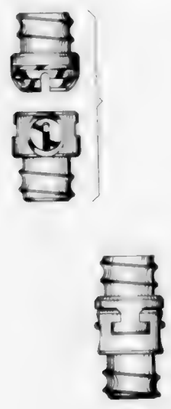


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289,574
SELF CLEANING CAT LITTER BOX
James A. Stianer, 1206 E. 76th St., Kansas City, Mo. 64131
Filed Jan. 24, 1985, Ser. No. 694,270
Term of patent 14 years
U.S. Cl. D30—99



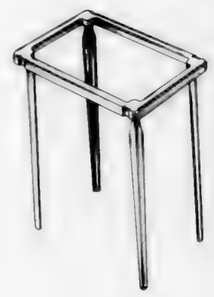
289,575
LOCKING SEPARABLE COUPLING FOR SEWER SNAKES OR THE LIKE
Michael Schneider, 1120 S. Union St., Alliance, Ohio 44601
Filed Aug. 8, 1984, Ser. No. 638,899
Term of patent 14 years
U.S. Cl. D32—14



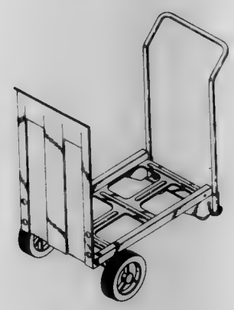
289,576
VACUUM CLEANER
Eiji Okada, Nara, and Motoi Furuta, Hyogo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Dec. 30, 1983, Ser. No. 567,016
Claims priority, application Japan, Jul. 1, 1983, 58-28722
Term of patent 14 years
U.S. Cl. D32—18



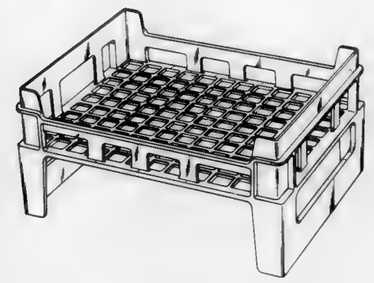
289,577
WASTEBASKET FRAME
Charles H. Graham, 7281 S. 3100 East, Salt Lake City, Utah 84121
Filed Aug. 31, 1984, Ser. No. 646,587
Term of patent 14 years
U.S. Cl. D34—5



289,578
COMBINED PLATFORM TRUCK AND HAND TRUCK DOLLY
Phillip G. Ruffin, 1522 S. Florence, Wichita, Kans. 67209
Filed Jul. 27, 1984, Ser. No. 635,193
Term of patent 14 years
U.S. Cl. D34—17



289,579
CRATE
Kjell Andersson, Löddeköpinge, Sweden, assignor to Tetra Pak International Aktiebolag, Lund, Sweden
Filed Sep. 7, 1984, Ser. No. 648,050
Claims priority, application Sweden, Mar. 2, 1984, 84-0717
Term of patent 14 years
U.S. Cl. D34—40



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF APRIL, 1987

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie GmbH: *See*—
Biedermann, Jurgen; Borbe, Harald; Graf, Erich; Hilboll, Gerd; and Prop, Gerrit, 4,661,487, Cl. 514-252.000.

A. O. Smith Corporation: *See*—
Rice, Kenneth T., 4,660,772, Cl. 239-704.000.

A-Z International Tool Company: *See*—
Bailey, Thomas F.; and Shah, Nehal M., 4,660,863, Cl. 285-145.000.

AB Asea-Atom: *See*—
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Goel, Anil B., 4,661,539, Cl. 523-400.000.
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Goel, Anil B., 4,661,583, Cl. 528-322.000.
Goel, Anil B., 4,661,600, Cl. 548-217.000.
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Rutherford, David G.; Helling, Bernd; Shearn, David M.; and Shaler, David, 4,661,861, Cl. 358-302.000.

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Leland, Kenneth W.; and Sollenberger, Nelson R., 4,661,993, Cl. 455-103.000.

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Muething, Kevin A., 4,660,979, Cl. 356-357.000.
Thomas, Donald A., 4,661,375, Cl. 427-89.000.

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Airhart, Tom P., 4,660,674, Cl. 181-113.000.
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Mocella, Michael T., 4,661,463, Cl. 502-24.000.
Perkins, Thomas K., 4,660,643, Cl. 166-283.000.
Tarrant, Dale E., 4,661,370, Cl. 427-37.000.
Younes, Usama E., 4,661,574, Cl. 526-262.000.

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Granstrom, Bengt P. O.; and Skogberg, Bo T., 4,661,021, Cl. 405-244.000.

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Gustafsson, Per S. G., 4,660,658, Cl. 175-296.000.

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Hollander, Gary T.; and Blum, Mel, 4,661,504, Cl. 514-373.000.

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Attey, Graeme S. Sailboard booms. 4,660,489, Cl. 114-39.000.

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Aubert, Jean, to Groupement d'Interet Economique. Prefabricated civil engineering module, method for the construction of a structure including said module and resulting structure. 4,661,014, Cl. 405-111.000.

Aughton, John E., to Crosfield Electronics Limited. Controlling light beam spectrum. 4,660,975, Cl. 356-308.000.

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Kramp, Jurgen; Schramm, Peter; Augsberg, Gerhard; and Steiner, Gerd, 4,660,470, Cl. 101-426.000.

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Munning, Hans; Bock, Jurgen; Oldach, Bernd; Ladic, Josef; Rauert, Max-Otto; Emde, Hugo; Petzsch, Dietrich; and de Baan, Johannes J., 4,660,686, Cl. 188-280.000.

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Suhr, Heinz-Peter; and Weinberger, Bernd, 4,660,885, Cl. 297-353.000.

Aumann, Gunther; Aigner, Helmar; and Schuster, Hans-Karl, to Gessner & Co. GmbH. Multilayer filter material, process for its manufacture and the use thereof. 4,661,255, Cl. 210-491.000.

Ausmit, Steven, to Minigrip, Inc. Twist resistant reclosable extruded plastic fastener. 4,660,259, Cl. 24-587.000.

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Nix, Richard A.; Kassin, Charles A.; and Leigh-Monstevens, Keith V., 4,660,694, Cl. 192-85.0CA.
Young, Alastair J., 4,660,441, Cl. 74-867.000.

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Paterlini, Elio, 4,660,900, Cl. 312-7.100.

Autotrol Corporation: *See*—
Goudy, Paul R., Jr., 4,661,264, Cl. 210-748.000.

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Ziegler, Ferdinand, 4,660,875, Cl. 294-26.000.

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Bergeron, Ned A., 4,660,600, Cl. 137-552.000.

Baba, Sadaaki: *See*—
Nishizako, Shuzutaka; Kitou, Toshikazu; Shoji, Shinki; and Baba, Sadaaki, 4,661,883, Cl. 361-159.000.

Babitzka, Rudolf, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,660,522, Cl. 123-450.000.

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Bachhofer, Bruno; and Locher, Anton. Air desiccating apparatus. 4,661,128, Cl. 55-208.000.

Bailey, Thomas F.; and Shah, Nehal M., to A-Z International Tool Company. Casing patch seal. 4,660,863, Cl. 285-145.000.

Baker, Bart M.: *See*—
Baker, Stanley Z.; Baker, Benjamin H.; and Baker, Bart M., 4,660,320, Cl. 43-131.000.

Baker, Benjamin H.: *See*—
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Baker, Bruce R.; Creech, Richard D.; and Smith, Kenneth W. System for method for producing synthetic plural word messages. 4,661,916, Cl. 364-513.500.

Baker, John M.: *See*—
Burchfiel, Loyal E.; and Baker, John M., 4,661,719, Cl. 307-38.000.

Baker, Robert C., to Sundstrand Corporation. Emergency power system. 4,661,762, Cl. 322-40.000.

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Ball Corporation: *See*—
Weidemann, Werner, 4,661,782, Cl. 331-3.000.

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Brandon, Howard R., Jr., Ball, Dean M.; and Guest, Joanathan D., 4,660,740, Cl. 222-1.000.

Ballester, Hector G., to Ameron, Inc. Grounding saddle. 4,660,908, Cl. 339-14.00R.

Baltz, Gene F.; and Breckenfeld, Paul W., to Outboard Marine Corporation. Fuel primer and enrichment system for an internal combustion engine. 4,660,516, Cl. 123-187.50R.

Balzano, Quirino: *See*—
Garay, Oscar; Turner, Harvey N., Jr.; and Balzano, Quirino, 4,661,992, Cl. 455-89.000.

Bando Kiko Co., Ltd.: *See*—
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Bando, Toshiro; and Kozaiku, Kiyoto, to Ricoh Company, Ltd. Alternating current load power controller. 4,661,765, Cl. 323-241.000.

Bangs, Richard G.; and Grey, Michael O., to NCR Corporation. Thermal print head. 4,661,823, Cl. 346-76.0PH.

Banning, Robert D.: *See*—
Fortier, Earl J.; and Banning, Robert D., 4,661,110, Cl. 604-256.000.

Bannister, Robert D., to Cincinnati Milacron Inc. Robotic marking machine. 4,661,681, Cl. 219-121.0LU.

Barajas, Felix; and Bridges, Donald W., to McDonnell Douglas Corporation. Alloy-enriched solder cream. 4,661,173, Cl. 148-24.000.

Barber, James E.: *See*—
Hicks, Robert R., 4,660,757, Cl. 232-1.00C.

Bardenheuer, Friedrich, to Mannesmann Aktiengesellschaft. Method for manufacturing a hydrogen-storing alloy. 4,661,317, Cl. 420-434.000.

Barger, Mark A.: *See*—
Chum, Pak-Wing S.; Barger, Mark A.; Dixit, Thuan P.; and Schuetz, James E., 4,661,303, Cl. 264-171.000.

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Howard, Mig A.; and Barnard, Louis H., 4,661,932, Cl. 367-25.000.

Barnard, William B., Shavit, Gideon; and Wruck, Richard A., to Honeywell Inc. Optimum start/stop dependent upon both space temperature and outdoor air temperature. 4,660,759, Cl. 236-46.00R.

Barnes, Keith, to Kontron Electronics, Inc. Adapter for simultaneous use of logic analyzer and in circuit emulator. 4,661,921, Cl. 364-708.000.

Barnhouse, Robert L.; Elo, James C.; Mattison, George F., Jr.; and Hart, Marshall, to Northern Telecom Limited. Localized removal of a precious metal inlay from a metal strip and a broaching tool therefor. 4,660,272, Cl. 29-558.000.

Barr, John D.: *See*—
Short, Lot W., Jr.; and Barr, John D., 4,660,659, Cl. 175-329.000.

Barr, John T., IV: *See*—
Sharrit, David D.; Neering, Michael J.; Donecker, S. Bruce; Roos, Mark D.; Cannon, Wayne C.; and Barr, John T., IV, 4,661,767, Cl. 324-57.00R.

Barrett, Michael; Tattersall, William A.; and O'Donnell, Dennis, to Hollingsworth (UK) Limited. Friction spinning apparatus. 4,660,366, Cl. 57-263.000.

Barri, Mohamed M., to University of Missouri, The Curators of the. Electrical machines with multiple axes of rotation. 4,661,737, Cl. 310-166.000.

Barsumian, Edward L.: *See*—
Devlin, John P.; Hargrave, Karl D.; Barsumian, Edward L.; and Possanza, Genus J., 4,661,481, Cl. 514-218.000.

Bartholomew, Richard D., to Boeing Company, The. Optical feedback loop system for a hydraulic servovalve. 4,660,589, Cl. 137-83.000.

Bartholomew, Roy E.; and Sebo, Milan J., to Allied Corporation. Proportioning brake valve with dual area secondary piston. 4,660,894, Cl. 303-54.000.

Bartley, William J., to Union Carbide Corporation. Hydrogenolysis process for the production of monoethylene glycol monoemthyl ether, monoethylene glycol and ethanol. 4,661,643, Cl. 568-678.000.

Bartusel, K. Rudolf; Diederen, Werner; Liepelt, Eberhard; and Linberg, Waldemar, to Saint-Gobain Vitrage. Frame for supporting a glass sheet during tempering. 4,661,142, Cl. 65-348.000.

Barwick, Frederick E., III; and Pearce, Kyle R., to Collins & Aikman Corporation. Continuous dyeing of cationic dyeable polyester fibers. 4,661,116, Cl. 8-532.000.

Barzakov, Valentin Y.: *See*—
Petkov, Georgi K.; Kyurkchiev, Bencho P.; Barzakov, Valentin Y.; and Minchev, Stefan P., 4,660,326, Cl. 51-7.000.

Rasch, Maxim F., to MFB Enterprises, Inc. Automatic telephone dialer utilizing an electronic telephone book. 4,661,976, Cl. 379-354.000.

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Bubam, Hans-Georg; Heider, Lothar; Biederbeck, Uwe; and Stanger, Bernd, 4,661,557, Cl. 524-770.000.
Degner, Dieter; Hannebaum, Heinz; and Steiniger, Michael, 4,661,217, Cl. 204-59.00R.
Muller, Josef; Wiersdorff, Walter-Wielant; Burst, Wolfram; Dralle, Heinz; Schaffner, Ernst; and Steinkamp, Rolf, 4,661,610, Cl. 558-344.000.
Steiner, Gerd; and Thyes, Marco, 4,661,591, Cl. 540-495.000.

BASF Corporation: *See*—
Davis, John E.; and Heyman, Duane A., 4,661,531, Cl. 521-137.000.
Parker, Edward J., 4,661,279, Cl. 252-94.000.

BASF Farben & Fasern AG: *See*—
Batzill, Wolfgang; Dobbelstein, Arnold; Geist, Michael; Schon, Georg; and Ott, Gunther, 4,661,541, Cl. 523-414.000.
Geist, Michael, 4,661,410, Cl. 428-418.000.

Basler Electric Company: *See*—
Watkins, Tommy R., 4,661,792, Cl. 336-65.000.

Basseches, Jack. Balloon support. 4,661,081, Cl. 446-220.000.

Batai, Masaru: *See*—
Katayama, Kazuo; Ooishi, Katumi; Ogawa, Toshiake; Batai, Masaru; and Kataoka, Mitsuru, 4,660,852, Cl. 280-750.000.

Bates, Cecil P.; and Shannon, Terrence W., to New Zealand Steel Limited. Production of liquid iron. 4,661,150, Cl. 75-10.650.

Bath Iron Works Corporation: *See*—
McInture, Dana L., III, 4,660,610, Cl. 150-52.00R.

Batliwalla, Neville S.: *See*—
Afkhampour, Khosrow; and Batliwalla, Neville S., 4,661,687, Cl. 219-301.000.

Battaglia, Gino C. Method and apparatus for cutting and polishing marble slabs. 4,660,539, Cl. 125-10.000.

Battelle Development Corporation: *See*—
McGinniss, Vincent D., 4,661,534, Cl. 522-131.000.

Battista, Richard A.; Bennett, James G., Jr.; Kokoszka, John J.; and Tungate, Freddie L., to General Electric Company. Catalyst derived from mixture of manganese hydroxide and magnesium-containing material, and method of use in ortho-alkylation of phenols. 4,661,638, Cl. 568-804.000.

Battle, Billy J.: *See*—
Jones, Lawrence S.; and Battle, Billy J., 4,660,866, Cl. 285-231.000.

Batts, Inc.: *See*—
Blanchard, Russell O., 4,660,750, Cl. 223-91.000.
Dooley, Edward J.; and Bredeweg, Robert A., 4,660,739, Cl. 221-70.000.

Batzill, Wolfgang; Dobbelstein, Arnold; Geist, Michael; Schon, Georg; and Ott, Gunther, to BASF Farben & Fasern AG. Alcohol-modified polyepoxides, their preparation and their use in curable mixtures. 4,661,541, Cl. 523-414.000.

Bauer, Barney J.; Buehler, William E.; and Wingate, Gregory A., to Dura Corporation. Flexible window regulator assembly. 4,660,325, Cl. 49-352.000.

Bauernfeind, Robert A.; and Carroll, C. Braley. Duck decoy deployer. 4,660,313, Cl. 43-3.000.

Baugh, Benton F.; and Panicker, Narayana N., to Mobil Oil Corporation. Subsea flowline connector. 4,661,016, Cl. 405-169.000.

Baughman, R. Henry: *See*—
Elsenbaumer, Ronald L.; Ivory, Dawn M.; Iqbal, Zafar; and Baughman, R. Henry, 4,661,383, Cl. 427-302.000.

Baumgartner, Armin: *See*—
Dorn, Reimund; Baumgartner, Armin; and Gutu-Nelle, Anca, 4,661,136, Cl. 65-18.100.

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Idel, Karsten; Ostlinning, Edgar; Freitag, Dieter; and Alewelt, Wolfgang, 4,661,584, Cl. 528-388.000.
Kress, Hans-Jurgen; and Kircher, Klaus, 4,661,543, Cl. 524-94.000.
Oeckl, Siegfried; Reinecke, Paul; Brandes, Wilhelm; Kuck, Karl-Heinz; Paulus, Wilfried; and Genth, Hermann, 4,661,632, Cl. 564-217.000.
Schalenbach, Rolf; and Waldmann, Helmut, 4,661,646, Cl. 568-857.000.
Sirinyan, Kirkor; Merten, Rudolf; and Wolf, Gerhard D., 4,661,384, Cl. 427-304.000.
von Bittera, Miklos; Schapel, Dietmar; von Gizycki, Ulrich; and Rupp, Roland, 4,661,099, Cl. 604-290.000.
von Bittera, Miklos; Meyer, Rolf-Volker; and Dhein, Rolf, 4,661,104, Cl. 604-896.000.
Werner, Friedrich; and Blank, Heinz U., 4,661,621, Cl. 560-174.000.
Ziemann, Heinz; and Mohrmann, Karl-Heinrich, 4,661,640, Cl. 568-308.000.

Bayerlein, Friedrich; Kuhn, Manfred; and Maton, Michel, to Diamalt Aktiengesellschaft. Gelling agents and thickeners based on Cassia-galactomannans. 4,661,475, Cl. 514-54.000.

BBC Brown, Boveri & Company, Limited: *See*—
Ari, Niyazi; and Linhofer, Gerhard, 4,661,763, Cl. 323-215.000.

Beacon Electric, Inc.: *See*—
Levy, George D., 4,660,919, Cl. 339-99.00L.

Beas, John C.; and Ourmazd, Abbas, to American Telephone and Telegraph Company, AT&T Bell Laboratories. Device using ordered semiconductor alloy. 4,661,829, Cl. 357-30.000.

Beard, Dennis J., to Vernay Laboratories, Inc. Method for making and applying rotor bands. 4,661,183, Cl. 156-172.000.

Beasley, Robert W. Method of making life-like prosthetic devices. 4,661,187, Cl. 156-242.000.

Beauford, William; Spragg, Nicholas J.; and Millar, Malcolm, to La-porte Industries Limited. Production of shaped bodies of boron compounds. 4,661,157, Cl. 106-18.130.

Beaver, Lueretta. Portable shampoo, manicure, and washing apparatus. 4,660,233, Cl. 4-516.000.

Bechler, Eckhart: *See*—
Knoch, Heinrich; Bechler, Eckhart; and Lipp, Alfred, 4,661,740, Cl. 313-346.00R.

Beck, Walter; Berger, Siegfried; and Werner, Heinz-Peter, to Beck, Walter; and Werner, Margrit. Method for aspirating secreted fluids from a wound. 4,661,093, Cl. 604-50.000.

Becker, Erwin: *See*—
Ehrfeld, Wolfgang; Hagmann, Peter; Maner, Asim; Munchmeyer, Dietrich; and Becker, Erwin, 4,661,212, Cl. 204-11.000.

Becker, Gerhard: *See*—
Schoening, Josef; Elter, Claus; and Becker, Gerhard, 4,661,313, Cl. 376-295.000.

Becker, Mitchell; and Sachs, Howard M., to Halcon SD Group, Inc., The. Process for the preparation of acetic acid. 4,661,631, Cl. 562-519.000.

Becker, Rudolf, to Liebherr-Werk Ehingen GmbH. Telescopic crane for heavy loads. 4,660,731, Cl. 212-175.000.

Beckman Instruments, Inc.: *See*—
Horrocks, Donald L., 4,661,705, Cl. 250-328.000.

Becton, Dickinson and Company: *See*—
Daugherty, Charles W., 4,661,300, Cl. 264-40.600.
Sage, Burton H.; Adrion, Robert F.; and Malpass, Michael W., 4,660,971, Cl. 356-39.000.
Taller, Robert A.; and Daugherty, Charles, 4,661,095, Cl. 604-103.000.
Wu, Hai-Ping; Sage, Burton H., Jr.; and Adrion, Robert F., 4,661,913, Cl. 364-500.000.

Bedard, Joseph J.: *See*—
Rohde, Robert R.; and Bedard, Joseph J., 4,661,368, Cl. 427-8.000.

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Dorgan, Roderick J.; and Elliott, Richard L., 4,661,489, Cl. 514-211.000.
Milner, Peter H., 4,661,480, Cl. 514-210.000.
Thomson, Michael J.; and Mangan, Frank R., 4,661,524, Cl. 514-682.000.

Beer, Michael: *See*—
Binder, Robert; and Beer, Michael, 4,660,512, Cl. 123-41.600.

Beetz, Tom, to Akzo N.V. Cycloalkane-indene-carboximidamide derivatives. 4,661,522, Cl. 514-632.000.

Beffa, Fabio: *See*—
Schlesinger, Ulrich; and Beffa, Fabio, 4,661,587, Cl. 534-696.000.

Behnke, Joachim: *See*—
George, Ulf; Rochau, Erwin; Merk, Hans; and Behnke, Joachim, 4,661,612, Cl. 556-450.000.

Behr, Michael E.; Wozniak, Kenneth P.; Gaubis, Philip A.; Guest, Philip Q., Jr.; Graves, James L.; and Wand, Thomas J., to TRW Inc. Electric steering gear. 4,660,671, Cl. 180-142.000.

Bekkadal, Fritz; and Schoug-Pettersen, Tor, to 501 Autronica A/S. Method and apparatus for measuring the distance to an object. 4,661,817, Cl. 342-124.000.

Bekkering, Hendrik M.; and Vulink, Henricus H. M., to Duphar International Research B.V. Automatic injection device. 4,661,098, Cl. 604-135.000.

Bell, A. Milton; Gamberg, Murray G.; and Kurzeja, Ronald, to Denpac Corp. Vacuum sintered powder alloy dental prosthetic device and oven to form same. 4,661,071, Cl. 433-223.000.

Bell, Alan E.; and Spong, Fred W., to RCA Corporation. Optical video or data tape record and playback apparatus. 4,661,941, Cl. 369-111.000.

Bell Communications Research, Inc.: *See*—
Brecher, Sergio M., 4,661,975, Cl. 379-215.000.
Nemchek, George R., 4,661,971, Cl. 379-29.000.

Bell, Frank H.: *See*—
Rogowski, Gerald W.; and Bell, Frank H., 4,660,475, Cl. 102-284.000.

Bell, Vernon L.; and Havens, Stephen J., to United States of America, National Aeronautics & Space Administration. Process for crosslinking and extending conjugated diene-containing polymers. 4,661,558, Cl. 525-36.000.

Bellersen, Martin E.: *See*—
McElfresh, Mark W.; and Bellersen, Martin E., 4,660,231, Cl. 4-228.000.

Beloit Corporation: *See*—
Ellery, John M., Sr., 4,661,911, Cl. 364-471.000.

Belter, Robert E., to Kyocera International, Inc. EMI filter connector block. 4,660,907, Cl. 339-14.00R.

Beltramini, Giorgio, to North Bel S.p.A. Rotating tool for dentistry. 4,661,064, Cl. 433-166.000.

Bendel, Lee: *See*—
McGregor, Walter; and Bendel, Lee, 4,660,559, Cl. 128-339.000.

Bender, Gerald M., to McDonnell Douglas Corporation. Method and apparatus for producing an optical phased array. 4,661,786, Cl. 332-7.510.

Bender, Richard; Bendler, Hellmut; Scheiderer, Gerrit; and Winkler, Hans, to Dynamit Nobel Aktiengesellschaft. Compressed gas-actuated mechanical power element. 4,660,473, Cl. 102-223.000.

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Bacardit, Juan S.; and Planas, Fermin P., 4,660,459, Cl. 91-375.00R.

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Bender, Richard; Bendler, Hellmut; Scheiderer, Gerrit; and Winkler, Hans, 4,660,473, Cl. 102-223.000.

Benedek, Robin A., to Johnson Matthey Public Limited Co. Calibration warning device. 4,660,993, Cl. 374-1.000.

Benedict, James J.; and Sunberg, Richard J., to Procter & Gamble Company, The. Oral compositions. 4,661,341, Cl. 424-48.000.

Benjaminson, Albert, to S. T. Research Corporation. Balanced feedback oscillators. 4,661,785, Cl. 331-109.000.

Bennett, Alan F.; and Gooderham, Roy J., to Spirax Sarco Limited. Thermodynamic steam trap valve discs. 4,660,760, Cl. 236-59.000.

Bennett, James G., Jr.: *See*—
Battista, Richard A.; Bennett, James G., Jr.; Kokoszka, John J.; and Tungate, Freddie L., 4,661,638, Cl. 568-804.000.

Bennett, Terry A.: *See*—
Reese, Thomas J.; Ewing, John J.; Fecik, Michael T.; Frank, Robert G.; and Bennett, Terry A., 4,661,139, Cl. 65-106.000.

Benoit, Louis: *See*—
Morell, Joseph; Benoit, Louis; and Bonnet, Maurice, 4,660,300, Cl. 36-50.000.

Bensch, Walter D. Underhood tool box. 4,660,880, Cl. 296-37.100.

Benscoter, Richard D., to Butler Manufacturing Company. Composite header/junction box. 4,661,652, Cl. 174-48.000.

Benson, Richard E.: *See*—
Hardesty, Richard A.; Kerber, Dathan R.; Johnson, Orlin W.; and Benson, Richard E., 4,660,360, Cl. 56-208.000.

Benthin, Morten; Dahl, Philip I.; Gennser, Gerhard M.; and Lindstrom, Kjell O. T., to Teltec Electronic Equipment AB. Apparatus for measuring pulsetile part-structures within a living body. 4,660,564, Cl. 128-660.000.

Bentley, William A. Line inspection system. 4,661,984, Cl. 382-8.000.

Berg, Lloyd. Separation of methyl t-butyl ether from hydrocarbons by extractive distillation. 4,661,209, Cl. 203-51.000.

Berger, Jenson & Nicholson Limited: *See*—
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Erweka Apparatebau GmbH: *See—*
Kaminski, Reiner, 4,660,713, Cl. 198-443.000.
Erwin, Bohler: *See—*
Buhler, Ludwig; Erwin, Bohler; and Bruderer, Werner, 4,660,457, Cl. 89-12.000.
Erwin Sick GmbH Optik-Elektronik: *See—*
Sick, Erwin, 4,660,929, Cl. 350-104.000.
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Levine, Herbert R.; Gerrato, Stephen G.; and Poulin, Benoit L., 4,661,314, Cl. 264-508.000.
Etherington, Roger F., to Sealsyringe Corporation. Venting, automatic-stopping, aspirating plungers for syringes. 4,660,569, Cl. 128-765.000.
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McGregor, Walter; and Bendel, Lee, 4,660,559, Cl. 128-339.000.
Ethyl Corporation: *See—*
Roark, David N., 4,661,263, Cl. 210-735.000.
Etou, Tomohiro: *See—*
Harada, Masasuke; Tsukamoto, Kouji; and Etou, Tomohiro, 4,661,547, Cl. 524-156.000.
Ettenhofer, Michael E.: *See—*
Armstrong, John M.; and Ettenhofer, Michael E., 4,660,423, Cl. 73-864.520.
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Abu-Isa, Ismat A.; Eusebi, Elio; and Jaynes, Craig B., 4,661,546, Cl. 524-153.000.
Eustace, Robert H., to United States of America, Air Force. Ductless acoustical noise attenuator. 4,660,676, Cl. 181-224.000.
Evans, Donald R., to Kennametal, Inc. Rolling mill roll assembly. 4,660,268, Cl. 29-523.000.
Evans, Edward K.: *See—*
Arlington, David L.; Chen, Chin-Long; and Evans, Edward K., 4,661,955, Cl. 371-38.000.
Evans Radak, Suzanne: *See—*
Campbell, Arthur L.; Evans Radak, Suzanne; and Loots, Melanie J., 4,661,592, Cl. 544-252.000.
Evans, T. B. Keith. Apparatus for supporting and agitating a fishing rod. 4,660,317, Cl. 43-19.200.
Eversman Mfg. Company, The: *See—*
Mayeda, Bruce H.; and Owen, Robert R., 4,660,653, Cl. 172-522.000.
Eversole, Brad K.: *See—*
Watt, Dwayne B.; and Eversole, Brad K., 4,660,842, Cl. 280-43.230.
Evoy, Ingrid L.: *See—*
Malhotra, Sudarshan K.; and Evoy, Ingrid L., 4,661,144, Cl. 71-88.000.
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Reese, Thomas J.; Ewing, John J.; Fecik, Michael T.; Frank, Robert G.; and Bennett, Terry A., 4,661,139, Cl. 65-106.000.
Exac Corporation: *See—*
Dahlin, Erik B.; Kaiser, Sidney V.; Young, Alan M.; and Levien, Andrew K., 4,660,421, Cl. 73-861.380.
Excelermatic Inc.: *See—*
Kraus, Charles E., 4,660,995, Cl. 384-121.000.
Exxon Production Research Co.: *See—*
Richart, Jene A., 4,660,647, Cl. 166-386.000.
Wood, Norman H.; Gray, Walter E.; Yemington, Charles R.; and Louis, Bill G., 4,661,017, Cl. 405-169.000.
Exxon Research & Engineering Co.: *See—*
Lewtas, Kenneth, 4,661,121, Cl. 44-70.000.
Lewtas, Kenneth, 4,661,122, Cl. 44-70.000.
Mintz, Donald J.; Kelly, Arnold J.; and Gleason, Anthony M., 4,661,226, Cl. 204-186.000.
Newlove, John C.; and McDougall, Lee A., 4,660,645, Cl. 166-304.000.
Scouten, Charles G., 4,661,637, Cl. 568-716.000.
Vaughan, David E. W.; and Strohmaier, Karl G., 4,661,332, Cl. 423-326.000.
Ezzell, Bobby R.: *See—*
Martin, Charles W.; Ezzell, Bobby R.; and Weaver, John D., 4,661,411, Cl. 428-421.000.
Fabco-Air, Inc.: *See—*
Schmidt, Alfred W.; and Reed, Douglas G., 4,660,877, Cl. 294-88.000.
Fabricius, Hans-Ake; and Kottgen, Eckart U., to Shanksville Corporation N.V. Regulatory glycoprotein for immune response and the use there of in the production of T-cell growth factor. 4,661,447, Cl. 435-68.000.
Facet Enterprises, Inc.: *See—*
Volino, Nicholas A., 4,661,715, Cl. 290-48.000.
Fair, Timothy K.: *See—*
Mudge, Richard C.; and Fair, Timothy K., 4,661,389, Cl. 428-110.000.
Fairchild Semiconductor Corporation: *See—*
Ferris, David A.; and Caswell, Richard J., 4,661,727, Cl. 307-456.000.
Shapiro, Garry R.; and Meyer, Charles S., 4,661,948, Cl. 370-77.000.
Falk, Heinz, to Jenoptik Jena GmbH. Method and device for electrothermal atomization of a sample material. 4,660,976, Cl. 356-312.000.
Fanuc Ltd: *See—*
Ikeda, Yoshiaki, 4,661,812, Cl. 340-799.000.
Kawada, Shigeki; Amemiya, Yoichi; Sogabe, Masatoyo; and Iwamatsu, Noboru, 4,661,736, Cl. 310-156.000.
Usuda, Eiji, 4,661,899, Cl. 364-171.000.
Farid, Samir Y.: *See—*
Molaire, Michel F.; and Farid, Samir Y., 4,661,429, Cl. 430-70.000.
Farling, Gene M.; Parr, Jack E.; and Zolman, Arden R., to Zimmer, Inc. Method for constructing a surgical implant. 4,660,755, Cl. 228-178.000.
Farmer, Kenneth R. Advertising copy display sign and stand combination. 4,660,310, Cl. 40-607.000.
Fast, Ronald W., to United States of America, Energy. Relief device for a vacuum vessel. 4,660,599, Cl. 137-512.200.
Faure, Jean-Francois, to Cegedur Societe de Transformation de l'Aluminum Pechiney. Process for the production by powder metallurgy of components subjected to friction. 4,661,154, Cl. 75-231.000.
Fauveau, Patrick: *See—*
Nedelec, Lucien; Fauveau, Patrick; Hamon, Gilles; and Oberlander, Claude, 4,661,482, Cl. 514-227.000.
Fay, John W. Cover for film irons. 4,660,307, Cl. 38-94.000.
Fazio, Michael J., to Dow Chemical Company, The. Method for preparing quaternary ammonium salts. 4,661,633, Cl. 564-286.000.
Fecik, Michael T.: *See—*
Reese, Thomas J.; Ewing, John J.; Fecik, Michael T.; Frank, Robert G.; and Bennett, Terry A., 4,661,139, Cl. 65-106.000.
Federn, Klaus. Shaft coupling which is torsionally stiff, yet capable of being elastically bent. 4,661,084, Cl. 464-69.000.
Feindrahtwerk Adolf Edelhoff GmbH & Co.: *See—*
Diehl, Peter, 4,661,215, Cl. 204-28.000.
Feisser, Jan J. J. L., to Louet Beheer b.v. Handloom provided with a mechanism for variation of the distance between breastbeam and back beam. 4,660,604, Cl. 139-29.000.
Fejes, Peter; and Suvanto, Antti, to AB Asea-Atom. Method for local cleaning of surfaces on a nuclear reactor which are coated with oxides or other corrosion products, in connection with inspection. 4,661,220, Cl. 204-141.500.
Feldman, Donald W.: *See—*
Liu, Chi-Sheng; and Feldman, Donald W., 4,661,963, Cl. 372-59.000.
Feldmann, Rainer; and Hess, Gunter, to Huls AG. Pulverulent polyamide coating compositions wherein the polyamide has as an average at least nine carbon atoms per carbonamide group. 4,661,585, Cl. 528-502.000.
Fensterer, Howard F.; Klassen, William E.; Veronesi, Luciano; Boyle, David E.; and Salton, Robert B., to Westinghouse Electric Corp. Fluid moderator control system reactor internals distribution system. 4,661,306, Cl. 376-209.000.
Fenton, John W. Continuously variable transmission. 4,660,427, Cl. 74-63.000.
Feringa, Bernard L., to Shell Oil Company. Process for the oxidation of alpha-olefins. 4,661,642, Cl. 568-475.000.
Fern Engineering, Inc.: *See—*
Wadsworth, Walter, 4,660,377, Cl. 60-39.511.
Ferrano, Gert, to Carl-Zeiss-Stiftung. Method and apparatus for the contact-less measuring of objects. 4,660,970, Cl. 356-1.000.
Ferris, David A.; and Caswell, Richard J., to Fairchild Semiconductor Corporation. Multiple phase-splitter TTL output circuit with improved drive characteristics. 4,661,727, Cl. 307-456.000.
Ferro, Daniel. Spear gun having air valve formed by inner and outer barrel. 4,660,315, Cl. 43-6.000.
Fiat Auto S.p.A.: *See—*
La Rocca, Aldo V., 4,661,677, Cl. 219-121.0LD.
Fibra-Sonics, Inc.: *See—*
Brumbach, Joseph F., 4,660,573, Cl. 128-303.00R.
Fickert, Werner: *See—*
Orth, Winfred; Schrader, Karl-Heinz; and Fickert, Werner, 4,661,115, Cl. 8-409.000.

Fidelity Medical, Inc.: *See*—
Palti, Yoram, 4,660,566, Cl. 128-677.000.
Field, Charles A.: *See*—
Griffin, Dennis; and Field, Charles A., 4,660,456, Cl. 89-1.819.
Field, George B., Jr.: *See*—
Satterthwaite, J. Glenn; and Field, George B., Jr., 4,661,714, Cl. 290-4.00R.
Figgie International Inc.: *See*—
Krahk, Douglas R., 4,660,831, Cl. 273-65.00E.
Figliuzzi, Vincent D., to Vindof Incorporated. Timing adjusted engine and conversion kit therefor. 4,660,513, Cl. 123-65.00A.
Filcich, Nevio; and Owen, Robert A. T., to Filcich, Nevio. Method and apparatus for machine safety. 4,660,703, Cl. 192-130.000.
Fillingame, Gary P.: *See*—
Bornstein, Leopold F., deceased; and Fillingame, Gary P., 4,661,412, Cl. 428-426.000.
Fillipo, Bruce K.: *See*—
Walterick, Gerald C., Jr.; and Fillipo, Bruce K., 4,661,259, Cl. 210-666.000.
Fine Particle Technology Corp.: *See*—
Wiech, Raymond E., Jr., 4,661,315, Cl. 419-10.000.
Fink, Gerald R.: *See*—
Botstein, David; Davis, Ronald W.; Fink, Gerald R.; Taunton-Rigby, Alison; Knowlton, Robert G., Mao, Jen-i; Moir, Donald T.; and Goff, Christopher G., 4,661,454, Cl. 435-256.000.
Fink, Irving E. Heart valve. 4,661,107, Cl. 623-2.000.
Finkbeiner, Walter. Apparatus for ensuring synchronism in lifting jacks. 4,661,749, Cl. 318-41.000.
Finke, Ronald J.; Mullen, Victor J.; Williams, Danny R.; Morris, Robert J.; and Tucker, Charles E., to Houston Industries, Incorporated. Power line working apparatus. 4,661,662, Cl. 200-48.00R.
Finnerty, Edmund F. Topical treatment of herpes simplex with a zinc sulfate-camphor water solution. 4,661,354, Cl. 424-145.000.
Fiorn Pty Ltd.: *See*—
Rutherford, William; and Timson, David J., 4,661,245, Cl. 209-399.000.
Fischell, Robert E.; Sadilek, Albert C.; and Swift, William, to Johns Hopkins University, The. Method for clearing a gas bubble from a positive displacement pump contained within a fluid dispensing system. 4,661,097, Cl. 604-123.000.
Fischer, Helmut. Plate heat exchanger. 4,660,633, Cl. 165-167.000.
Fischer, Robert R.; and Fischer, W. James, to Urschel Laboratories, Inc. Circular knife and method of making same. 4,660,453, Cl. 83-663.000.
Fischer, Robert R.; and Urschel, Joe R., to Urschel Laboratories, Inc. Impeller for comminuting equipment. 4,660,778, Cl. 241-292.100.
Fischer, W. James: *See*—
Fischer, Robert R.; and Fischer, W. James, 4,660,453, Cl. 83-663.000.
Fishman, Aaron H.; and Bottitta, Joseph, to APL Corporation. Stackable integrally molded receptacle. 4,660,725, Cl. 206-509.000.
FitzGerald, Ryder O.: *See*—
Pennman, John G.; and FitzGerald, Ryder O., 4,661,225, Cl. 204-183.300.
Flanagan, Thomas P., to National Starch and Chemical Corporation. Hot melt adhesive composition for book lining. 4,660,858, Cl. 281-21.00R.
Flannagan, Stephen T.; and Reed, Paul A., to Motorola, Inc. Asynchronous row and column control. 4,661,931, Cl. 365-203.000.
Fleming, Philip S.; and Neagle, Richard M., to Shaw-Walker Company, The. Ergonomic support. 4,660,887, Cl. 297-445.000.
Florer, Richard: *See*—
Snyder, Larry L.; Hansen, Lavelle H.; and Florer, Richard, 4,660,733, Cl. 220-69.000.
Flotow, Richard A., to Dana Corporation. Clutch release bearing. 4,660,702, Cl. 192-98.000.
Flow Industries, Inc.: *See*—
O'Hanlon, Thomas A., 4,660,773, Cl. 239-596.000.
Floyd, Chris D.: *See*—
Myers, Peter L.; and Floyd, Chris D., 4,661,602, Cl. 548-336.000.
FMC Corporation: *See*—
Kurtz, Andrew D., 4,661,207, Cl. 203-3.000.
FMW Corporation: *See*—
Fredriksen, Herbert A.; Walter, Richard K.; and Mentzer, Ronald B., 4,662,004, Cl. 455-607.000.
Foerster, Karl-Heinz: *See*—
Buschmann, Falk; Foerster, Karl-Heinz; Eichler, Volker; Heiber, Hartmut; and Dittrich, Volkmar, 4,661,918, Cl. 364-569.000.
Buschmann, Falk; Foerster, Karl-Heinz; Eichler, Volker; Heiber, Hartmut; and Dittrich, Volker, 4,661,919, Cl. 364-569.000.
Fog, Arne D.: *See*—
Markussen, Erik K.; and Fog, Arne D., 4,661,452, Cl. 435-187.000.
Ford, Douglas L., to Memtec Limited. Cross linked porous membranes. 4,661,526, Cl. 521-53.000.
Ford Motor Company: *See*—
Anderson, Robert L., 4,661,778, Cl. 324-380.000.
Forsberg, John W.; and Jahnke, Richard W., to Lubrizol Corporation, The. Water-based functional fluid thickening combinations of surfactants and hydrocarbyl-substituted succinic acid and/or anhydride/amine terminated poly(oxyalkylene) reaction products. 4,661,275, Cl. 252-49.300.
Forse, Sidney F.; and Rowe, Raymond C., to Imperial Chemical Industries PLC. Process for the manufacture of colored intaglated articles. 4,661,367, Cl. 427-3.000.
Fortier, Earl J.; and Banning, Robert D., to Sherwood Medical Company. Multiple passage connector fitting for a medical tube. 4,661,110, Cl. 604-256.000.
Foster, Thomas V., to Emhart Industries, Inc. Plunger for use in forming parisons. 4,661,143, Cl. 65-362.000.
Fowler, Billy C.: *See*—
Rodgers, James L.; and Fowler, Billy C., 4,661,656, Cl. 178-18.000.
Fox Industries Incorporated: *See*—
Weir, Donald H.; Frederick, Stanley H.; Hotaling, Robert A.; and Robol, Ronald B., 4,661,247, Cl. 210-97.000.
Frangatos, Gerassimo; and Davis, Robert H., to Mobil Oil Company. Mercapto-thiadiazole reaction products as multifunctional lubricant additives and compositions thereof. 4,661,273, Cl. 252-47.000.
Frank, Robert G.: *See*—
Reese, Thomas J.; Ewing, John J.; Fecik, Michael T.; Frank, Robert G.; and Bennett, Terry A., 4,661,139, Cl. 65-106.000.
Franklin Industries, Inc.: *See*—
Severinghaus, Nelson, Jr., 4,661,164, Cl. 106-288.00B.
Franklin, James, to Solvay & Cie (Societe Anonyme). Process for carrying out substitution chlorination reactions of organic compounds by means of molecular chlorine in the presence of a chlorinated product serving as a radical initiator, and radical initiators used in such a process. 4,661,648, Cl. 570-208.000.
Franz, Philip M. Self-steering rail truck. 4,660,476, Cl. 105-168.000.
Frazer-Nash Limited: *See*—
Griffin, Dennis; and Field, Charles A., 4,660,456, Cl. 89-1.819.
Frederick, Stanley H.: *See*—
Weir, Donald H.; Frederick, Stanley H.; Hotaling, Robert A.; and Robol, Ronald B., 4,661,247, Cl. 210-97.000.
Fredriksen, Herbert A.; Walter, Richard K.; and Mentzer, Ronald B., to FMW Corporation. Laser communication system. 4,662,004, Cl. 455-607.000.
Freeland, Bruce E., to Goulds Pumps, Incorporated. Pump having a bushing removal mechanism. 4,661,044, Cl. 415-201.000.
Freeman, Claude C.: *See*—
Werner, John W., 4,661,751, Cl. 318-332.000.
Freerksen, Robert W., to Du Pont de Nemours, E. I., and Company. Herbicidal ortho-(alkoxy)-benzenesulfonamides. 4,661,146, Cl. 71-92.000.
Frei, Siegfried; and Hohl, Ernst, to Frei, Siegfried. Method and apparatus for applying strip-shaped powder layer to a can body or the like, and powder-carrying can body. 4,661,379, Cl. 427-181.000.
Freimiller, Gary L.: *See*—
Tyrell, John A.; and Freimiller, Gary L., 4,661,567, Cl. 525-468.000.
Freitag, Dieter: *See*—
Idel, Karsten; Ostlinning, Edgar; Freitag, Dieter; and Alewelt, Wolfgang, 4,661,584, Cl. 528-388.000.
French, James C.: *See*—
Wilton, John H.; Hokanson, Gerard C.; and French, James C., 4,661,353, Cl. 424-123.000.
Fresnel, Jacques, to Sleever International. Machine for placing sleeve around objects that are laid flat. 4,660,357, Cl. 53-585.000.
Frey, Werner: *See*—
Kleine, Willi; Frey, Werner; and Daweritz, Albrecht, 4,661,569, Cl. 526-62.000.
Friedman, Joshua. Method for bleaching discolored teeth. 4,661,070, Cl. 433-203.100.
Fries, Robert; and Michels, Kurt, to Poccino-Expresso Import- und Export GmbH. Espresso coffee machine. 4,660,466, Cl. 99-294.000.
Frind, Gerhard: *See*—
Carroll, James J.; Frind, Gerhard; and VanNoy, John H., 4,661,665, Cl. 200-144.00B.
Fringes, Wilhelm: *See*—
Dirksmeier, Ulrich; Kamp, Franz; and Fringes, Wilhelm, 4,660,601, Cl. 137-613.000.
Frisbie, Milo W.: *See*—
Swapp, Mavin C.; and Frisbie, Milo W., 4,660,710, Cl. 198-397.000.
Fritch, Donald P., to Point Blank Body Armor, Inc. Protective body armor. 4,660,223, Cl. 2-2.500.
Froelich, Benoit G. L.: *See*—
Seeman, Bronislaw; and Froelich, Benoit G. L., 4,661,933, Cl. 367-27.000.
Frohbieter, Edwin H.; and Linstromberg, William J., to Whirlpool Corporation. Temperature limiting system for a spring loaded torque limiting clutch. 4,660,247, Cl. 15-339.000.
Fromageries Bel: *See*—
Daurelles, Jacques; and Lombart, Christian, 4,661,357, Cl. 426-37.000.
Frost, Jonathan: *See*—
Wick, Alexander; Frost, Jonathan; and Bertin, Jean, 4,661,498, Cl. 514-302.000.
Frushour, Robert H., to GTE Valeron Corporation. Method of making diamond tool. 4,661,180, Cl. 156-89.000.
Fu, Shen-Li: *See*—
Huang, Kung-Da; Yang, Yin-Chiao; Huang, Jung-Tarng; and Fu, Shen-Li, 4,660,395, Cl. 70-351.000.
Fuchi, Ikuo; Arai, Takashi; and Amaya, Yoshio, to Canon Kabushiki Kaisha. Coupling device for photographing apparatus. 4,660,953, Cl. 354-286.000.
Fuchs, Otto, to Burroughs Corporation. Bevel tool. 4,660,330, Cl. 51-216.00R.
Fuentes, Ricardo, Jr.; Marchand, Gary R.; and Meiske, Larry A., to Dow Chemical Company, The. Method for preparing transition metal component of Ziegler-Natta catalysts. 4,661,465, Cl. 502-111.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Higuchi, Masaaki; and Atsuumi, Masaru, 4,660,521, Cl. 123-376.000.
Sakakiyama, Ryuzo, 4,660,699, Cl. 192-0.075.
Fuji Kiko Company, Limited: *See*—
Ikegaya, Isao; and Kawashima, Hatsuo, 4,660,795, Cl. 248-430.000.
Fuji Machine Mfg. Co., Ltd.: *See*—
Asai, Koichi; Tsuda, Mamoru; and Kodama, Jiro, 4,660,280, Cl. 29-759.000.
Fuji Photo Film Co., Ltd.: *See*—
Agano, Toshitaka, 4,661,708, Cl. 250-327.200.
Akao, Mutsuo, 4,661,395, Cl. 428-213.000.
Akao, Mutsuo, 4,661,401, Cl. 428-215.000.
Fujita, Susumu; and Konagaya, Masahiko, 4,660,954, Cl. 354-403.000.
Ishikuro, Tadashi; Honda, Kunihiko; Ohta, Masataka; and Shirahata, Ryuji, 4,661,421, Cl. 428-694.000.
Iwasaki, Masayuki; Maeda, Minoru; and Shinozaki, Fumiaki, 4,661,434, Cl. 430-281.000.
Matsumoto, Fumio, 4,660,965, Cl. 355-41.000.
Morita, Kazuhiko; Komine, Shigeo; Kasuga, Akira; and Hibino, Noburo, 4,661,377, Cl. 427-130.000.
Murakami, Yukio, 4,661,138, Cl. 65-31.000.
Nagashima, Yasuo, 4,661,871, Cl. 360-99.000.
Nakamura, Takashi, 4,661,419, Cl. 428-691.000.
Narang, Subhash C.; Vicari, Richard; and Gu, Juesheng, 4,661,611, Cl. 556-418.000.
Yanai, Akio; and Shirahata, Ryuji, 4,661,418, Cl. 428-610.000.
Yoshikawa, Sumio; and Shiraishi, Atsushi, 4,660,964, Cl. 355-28.000.
Fuji Xerox Co., Ltd.: *See*—
Ishikawa, Noriyoshi; Takahashi, Haruhiko; Funato, Hitoshi; Leng, Svay; Saitoh, Hiroyuki; Ohmori, Takashi; Kurata, Masami; and Katou, Yasuo, 4,661,703, Cl. 250-317.100.
Sato, Takane, 4,661,949, Cl. 370-62.000.
Tei, Sadahiro, 4,660,277, Cl. 29-572.000.
Fujii, Noriyasu: *See*—
Nishiyama, Yoshihisa; and Fujii, Noriyasu, 4,661,803, Cl. 340-347.0NT.
Fujii, Shigeru: *See*—
Takayama, Yoshihisa; Fujii, Shigeru; Kawauchi, Kazuyuki; and Yoshida, Toshihiko, 4,661,815, Cl. 340-825.860.
Fujikawa, Wataru: *See*—
Tsuchiya, Sohji; Fujikawa, Wataru; Kojima, Toshikuni; Higuchi, Sadashi; and Yamashita, Akio, 4,660,939, Cl. 350-357.000.
Fujimoto, Ted T., to Rohm and Haas Company. Plant growth regulating 1-aryl-1,4-dihydro-4-oxo(thio)-pyridazines. 4,661,145, Cl. 71-92.000.
Fujimoto, Yoriaki; Sasaki, Hiroshi; and Karimata, Yukihiro, to Mazda Motor Corporation. Vibration detecting apparatus for multi-rotor rotary piston engines. 4,660,517, Cl. 123-210.000.
Fujino, Hisami: *See*—
Okada, Reisuke; and Fujino, Hisami, 4,661,301, Cl. 264-41.000.
Fujioka, Hisatake: *See*—
Horikawa, Tokio; Sawai, Mitsuaki; Fujioka, Hisatake; Kawashima, Nobumasa; and Yanagawa, Nobuhide, 4,660,668, Cl. 180-19.100.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Nishikawa, Motoaki; Iwami, Morita; Yoshida, Keizo; and Kohsaka, Masanobu, 4,661,352, Cl. 424-117.000.
Fujita, Katsuto: *See*—
Nagata, Tsuyoshi; and Fujita, Katsuto, 4,660,501, Cl. 118-203.000.
Fujita, Kazuhiro: *See*—
Sumida, Takashi; Sasaki, Sigeo; Ketori, Takao; Fujita, Kazuhiro; and Ogiro, Kenji, 4,660,784, Cl. 242-198.000.
Fujita, Susumu; and Konagaya, Masahiko, to Fuji Photo Film Co., Ltd. Automatic focusing device equipped with close-up range focal control. 4,660,954, Cl. 354-403.000.
Fujitani, Yoshiyasu: *See*—
Suzuki, Kenichirou; Fujitani, Yoshiyasu; Yoshimoto, Taisuke; and Muraki, Hideaki, 4,661,329, Cl. 423-245.000.
Fujitani, Yugo: *See*—
Haze, Setsuo; and Fujitani, Yugo, 4,661,917, Cl. 364-567.000.
Fujitsu Limited: *See*—
Nakamura, Kazuo, 4,661,771, Cl. 324-158.00D.
Sato, Kazuhiro; and Mori, Hiroyoshi, 4,661,879, Cl. 361-58.000.
Sono, Michio, 4,661,837, Cl. 357-84.000.
Takahashi, Atsuhisa; Nara, Takashi; Murayama, Masami; and Tamichi, Hiroaki, 4,661,946, Cl. 370-58.000.
Takayama, Yoshihisa; Fujii, Shigeru; Kawauchi, Kazuyuki; and Yoshida, Toshihiko, 4,661,815, Cl. 340-825.860.
Uchiyama, Koji; Nakazawa, Akira; and Tanaka, Masao, 4,661,393, Cl. 428-200.000.
Fujiwara, Shinji: *See*—
Ohta, Yoshio; Chikamura, Takao; Miyata, Yutaka; Yano, Kohsaku; and Fujiwara, Shinji, 4,661,830, Cl. 357-30.000.
Fujiwara, Tatsuro; Ohta, Kazuyo; Honda, Eiichi; Hirano, Takao; and Sakakibara, Hideo, to Toyo Jozo Kabushiki Kaisha. 23-O-substituted carbamoyl-23-demycinosyldesmycosin. 4,661,588, Cl. 536-7.100.
Fukami, Akira: *See*—
Kobayashi, Toshiki; Fukami, Akira; Mizuno, Junzi; and Sasaya, Hideaki, 4,660,879, Cl. 296-1.00S.
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Kramer-Wasserka, Thomas, to Institut CERAC S.A. High pressure water valve. 4,660,891, Cl. 299-81.000.

Kramp, Jurgen; Schramm, Peter; Augsberg, Gerhard; and Steiner, Gerd, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Inking unit pre-adjustment method. 4,660,470, Cl. 101-426.000.

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Nozawa, Seiichi; and Nakata, Michio, 4,661,581, Cl. 528-176.000.
Okushima, Hiromi; Narimatsu, Akihiro; Kobayashi, Makio; Furuya, Rikizo; and Kitada, Yoshimi, 4,661,484, Cl. 514-242.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Hirao, Tadashi, 4,661,166, Cl. 148-1.500.
Imanishi, Kazuo, 4,661,912, Cl. 364-474.000.
Kido, Hitoshi; Igarashi, Yoshinobu; and Okabe, Junji, 4,660,389, Cl. 62-298.000.
Kinoshita, Tsuyoshi, 4,660,798, Cl. 248-648.000.
Kusunoki, Shigeru; Nishimura, Tadashi; and Sugahara, Kazuyuki, 4,661,167, Cl. 148-1.500.
Matsuda, Shuchi; and Shigetomi, Akira, 4,661,426, Cl. 430-5.000.
Nishizako, Shizutaka; Kitou, Toshikazu; Shoji, Shinki; and Baba, Sadaaki, 4,661,883, Cl. 361-159.000.
Takenaka, Toshio, 4,661,308, Cl. 376-245.000.
Usui, Masaji, 4,661,877, Cl. 361-36.000.
Yamauchi, Satomi, 4,660,483, Cl. 112-317.000.
Yoshimoto, Kyosuke; and Ito, Osamu, 4,661,942, Cl. 369-44.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Yoneda, Haruaki; and Hiramatsu, Takeo, 4,660,697, Cl. 192-0.033.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Katayama, Kazuso; Mori, Yasushi; Kanki, Hiroshi; Morii, Shigeki; Takeshita, Koji; Ozawa, Yutaka; and Yoshida, Zenichi, 4,660,838, Cl. 277-97.000.
Noro, Shingo; Saitou, Kunio; and Izumimoto, Hideki, 4,661,325, Cl. 422-304.000.

Mitsubishi Rayon Co., Ltd.: *See*—
Setsuie, Takashi; Otani, Takeji; and Kobayashi, Tadao, 4,661,572, Cl. 526-229.000.

Mitsui Engineering & Shipbuilding Co., Ltd.: *See*—
Yamasaki, Nakamichi; Kubota, Takeshi; Hoshino, Yoshihiro; and Tanuma, Hiroyuki, 4,661,291, Cl. 252-629.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Nakatani, Kiyoshi; Numata, Satoshi; Kodaka, Kenji; Oda, Kengo; Shirashi, Shiro; and Udagawa, Takatoshi, 4,661,501, Cl. 514-345.000.
Takaki, Usaji; Sudo, Isamu; Matsuhisa, Toshio; and Hara, Isao, 4,661,620, Cl. 560-104.000.

Mitumaru, Mititoshi, to Koyo Seiko, Co. Ltd. Endless backup ring for hydraulic apparatus seal. 4,660,839, Cl. 277-153.000.

Miura, Osamu, to Tok Bearing Company, Inc. One way clutch. 4,660,698, Cl. 192-45.000.

Mix, Jerome M.: *See*—
Cameron, Maclyn C., Jr.; Hu, Charles C.; and Mix, Jerome M., 4,661,720, Cl. 307-117.000.

Miyahara, Tsuneo: *See*—
Yamazaki, Yoji; Okada, Toshiyuki; and Miyahara, Tsuneo, 4,661,342, Cl. 424-54.000.

Miyata, Hiroshi; and Kawajiri, Shogo, to NGK Spark Plug Co., Ltd. Piezoelectric pick-up device for internal combustion engine. 4,660,409, Cl. 73-35.000.

Miyata, Yutaka: *See*—
Ohta, Yoshio; Chikamura, Takao; Miyata, Yutaka; Yano, Kohsaku; and Fujiwara, Shinji, 4,661,830, Cl. 357-30.000.

Miyazawa, Hideyuki, to Ricoh Company, Ltd. Image reader for image processing apparatus. 4,661,860, Cl. 358-294.000.

Miyoshi, Kunisuke; Shimoyama, Yoshiaki; and Kubota, Takeshi, to Nippon Steel Corporation. Non-oriented electrical steel sheet having a low watt loss and a high magnetic flux density and a process for producing the same. 4,661,174, Cl. 148-111.000.

Mizoe, Mikio: *See*—
Watanabe, Kanji; and Mizoe, Mikio, 4,661,387, Cl. 428-36.000.

Mizoguchi, Haruki, to Mizoguchi Iron Works & Co., Ltd. Needle-roller type chuck. 4,660,840, Cl. 279-1.00N.

Mizoguchi Iron Works & Co., Ltd.: *See*—
Mizoguchi, Haruki, 4,660,840, Cl. 279-1.00N.

Mizuhara, Howard, to GTE Products Corporation. Ductile reactive metal-indium-copper brazing alloy article. 4,661,416, Cl. 428-606.000.

Mizuno, Junzi: *See*—
Kobayashi, Toshiki; Fukami, Akira; Mizuno, Junzi; and Sasaya, Hideaki, 4,660,879, Cl. 296-1.00S.

Mizushina, Masaaki: *See*—
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,661,371, Cl. 427-49.000.

Mizutani, Yoshihisa, to Kabushiki Kaisha Toshiba. Electrically erasable and programmable read only memory. 4,661,833, Cl. 357-54.000.

Moak, Ross D. Sod cutting apparatus. 4,660,650, Cl. 172-21.000.

Mobil Oil Company: *See*—
Frangatos, Gerassimo; and Davis, Robert H., 4,661,273, Cl. 252-47.000.

Mobil Oil Corporation: *See*—
Baugh, Benton F.; and Panicker, Narayana N., 4,661,016, Cl. 405-169.000.
Dabkowski, Michael J.; and Malladi, Madhava, 4,661,241, Cl. 208-131.000.
Horodysky, Andrew G.; and Ashjian, Henry, 4,661,271, Cl. 252-32.500.
Horodysky, Andrew G.; and Law, Derek A., 4,661,274, Cl. 252-47.000.
Hoskin, Dennis H.; and Rollmann, Louis D., 4,660,640, Cl. 166-270.000.
Kuehl, Guenter H., 4,661,467, Cl. 502-202.000.
Piotrowski, Alfred B.; and Herd, Richard S., 4,661,277, Cl. 252-51.50A.

Mobil Solar Energy Corporation: *See*—
Sink, Nicholas C.; and Rogers, Myer, 4,661,324, Cl. 422-246.000.

Mobley, Richard M., to Varian Associates, Inc. Apparatus for scanning a high current ion beam with a constant angle of incidence. 4,661,712, Cl. 250-492.200.

Mocella, Michael T., to Atlantic Richfield Company. Preparation of soluble molybdenum catalysts for epoxidation of olefins. 4,661,463, Cl. 502-24.000.

Moen, Lenard E. Machine for manufacture of boxes with integrally reinforced walls. 4,661,091, Cl. 493-417.000.

Moffatt, E. Marston; and Swarts, Richard E., to United Technologies Corporation. Impulse jet pump. 4,660,417, Cl. 73-505.000.

Mohrmann, Karl-Heinrich: *See*—
Ziemann, Heinz; and Mohrmann, Karl-Heinrich, 4,661,640, Cl. 568-308.000.

Moir, Donald T.: *See*—
Botstein, David; Davis, Ronald W.; Fink, Gerald R.; Taunton-Rigby, Alison; Knowlton, Robert G.; Mao, Jen-i; Moir, Donald T.; and Goff, Christopher G., 4,661,454, Cl. 435-256.000.

Molaire, Michel F.; and Farid, Samir Y., to Eastman Kodak Company. Photoelectrographic elements and imaging method. 4,661,429, Cl. 430-70.000.

Molecular Genetics Research and Development Limited Partnership: *See*—
Kempe, Tomas; Purchio, Anthony F.; Collett, Marc S.; and DeLorbe, William J., 4,661,450, Cl. 435-172.300.

Molex Incorporated: *See*—
DeRoss, Robert; and Gierut, Joseph J., 4,660,917, Cl. 339-97.00R.
Szumierz, Anthony J.; and Chmela, Frank P., 4,660,279, Cl. 29-747.000.

Molins PLC: *See*—
Arthur, Hugh M., 4,661,090, Cl. 493-44.000.

Moll, Jacek, to Maroko, Peter, a part interest. Artificial heart valve. 4,661,106, Cl. 623-2.000.

Molnar, Janos: *See*—
Gorog nee Privitzer, Katalin; Bodnar, Laszlo ; Dudar, Erzsebet; Kocsis nee Bagi, Maria; Gaal, Sandor; Tasnadi, Marta; Egyhazi nee Csizmadia, Eva; Varga, Valeria M.; Kajati, Istvan; Kis, Gyorgy; Molnar, Janos; Toth, Bertalan; Cserhati nee Botka, Ilona; Kaptas, Tibor; and Csete, Sandor, 4,661,477, Cl. 514-76.000.

Molzahn, Herbert W.: *See*—
Remillard, Rheal; and Molzahn, Herbert W., 4,660,361, Cl. 56-297.000.

Moncrief, Jack W.: *See*—
Popovich, Robert P.; and Moncrief, Jack W., 4,661,092, Cl. 604-26.000.

Mongiello, Angelo A., Sr.: *See*—
Mongiello, Anthony T.; Mongiello, Lawrence A., Sr.; and Mongiello, Angelo A., Sr., 4,661,361, Cl. 426-283.000.

Mongiello, Anthony T.; Mongiello, Lawrence A., Sr.; and Mongiello, Angelo A., Sr. Method of making a pizza. 4,661,361, Cl. 426-283.000.

Mongiello, Lawrence A., Sr.: *See*—
Mongiello, Anthony T.; Mongiello, Lawrence A., Sr.; and Mongiello, Angelo A., Sr., 4,661,361, Cl. 426-283.000.

Monsanto Company: *See*—
Coran, Aubert Y.; and Endter, Cynthia K., 4,661,554, Cl. 524-504.000.
Most, James T.; and Richard, Thomas J., 4,661,614, Cl. 558-346.000.
Stahlheber, N. Earl; and Lyon, John E., 4,661,331, Cl. 423-309.000.

Montedison S.p.A.: *See*—
Palla, Ottorino; Camaggi, Giovanni; Gozzo, Franco; Menconi, Augusto; and Signorini, Ernesto, 4,661,599, Cl. 548-146.000.

Montgomery, Robert M., to Harris Graphics Corporation. Method and apparatus for monitoring film thickness between rotatable rolls. 4,661,774, Cl. 324-231.000.

Montgomery, Warren A.: *See*—
Lea, Chin-Tau A.; and Montgomery, Warren A., 4,661,947, Cl. 370-60.000.

Montress, Gary K.: *See*—
Grudkowski, Thomas W.; and Montress, Gary K., 4,661,923, Cl. 364-821.000.

Moore, Gerald L. Tamper evident seal. 4,660,732, Cl. 215-232.000.

Moore, Henry J., to Mor-Flo Industries, Inc. Water heater with submerged combustion chamber. 4,660,541, Cl. 126-360.00R.

Moos, Niklaus J.; and Papworth, Richard C., to Versatile Corporation. Hydraulic trip mechanism. 4,660,652, Cl. 172-260.500.

Mor-Flo Industries, Inc.: *See*—
Moore, Henry J., 4,660,541, Cl. 126-360.00R.

Morell, Joseph; Benoit, Louis; and Bonnet, Maurice, to Salomon S.A. Traction device for ski boot. 4,660,300, Cl. 36-50.000.

Morgan, Francis, to SSMC Inc. Rotating needle guard. 4,660,485, Cl. 112-467.000.

Mori, Hiroyoshi: *See*—
Sato, Kazuhiro; and Mori, Hiroyoshi, 4,661,879, Cl. 361-58.000.

Mori, Isao, to Brother Kogyo Kabushiki Kaisha. Device for controlling DC motor. 4,661,750, Cl. 318-326.000.

Mori, Kouichi: *See*—
Mori, Satoshi; Egami, Tsuneyuki; Mori, Kouichi; Nohira, Hidetaka; and Yoshimura, Kunimasa, 4,661,695, Cl. 250-227.000.

Mori, Satoshi; Egami, Tsuneyuki; Mori, Kouichi; Nohira, Hidetaka; and Yoshimura, Kunimasa, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Optical apparatus and method for detecting the top dead center position of an engine piston. 4,661,695, Cl. 250-227.000.

Mori, Takashi: *See*—
Koga, Hiroshi; Mori, Takashi; Dan, Takashi; and Akima, Michitaka, 4,661,607, Cl. 549-383.000.

Mori, Yasushi: *See*—
Katayama, Kazuso; Mori, Yasushi; Kanki, Hiroshi; Morii, Shigeki; Takeshita, Koji; Ozawa, Yutaka; and Yoshida, Zenichi, 4,660,838, Cl. 277-97.000.

Morii, Shigeki: *See*—
Katayama, Kazuso; Mori, Yasushi; Kanki, Hiroshi; Morii, Shigeki; Takeshita, Koji; Ozawa, Yutaka; and Yoshida, Zenichi, 4,660,838, Cl. 277-97.000.

Morimoto, Chikao: *See*—
Schlossman, Stuart; Morimoto, Chikao; and Letvin, Norman, 4,661,446, Cl. 435-7.000.

Morimoto, Takeshi: *See*—
Oda, Yoshio; Morimoto, Takeshi; and Suzuki, Kohji, 4,661,218, Cl. 204-98.000.

Moris, Albert Z. Spray shield for automotive vehicles. 4,660,846, Cl. 280-154.50R.

Moris, Louis G., to American Cyanamid Company. Yarns and tows comprising high strength metal coated fibers, process for their production, and articles made therefrom. 4,661,403, Cl. 428-367.000.

Moris, Sandra K., to H. B. Fuller Company. Coal tar containing foaming urethane composition and a method for repairing defects in structural components. 4,661,532, Cl. 521-167.000.

Morisawa, Kunio: *See*—
Taga, Yutaka; and Morisawa, Kunio, 4,660,693, Cl. 192-0.075.

Morita, Akiyoshi; Nonoyama, Hideo; Fukuizumi, Toshiharu; and Uruno, Kiyokazu, to Toyota Jidosha Kabushiki Kaisha. Process for producing camshaft with cams subjected to remelting chilling treatment. 4,661,676, Cl. 219-121.0LM.

Morita, Kazuhiko; Komine, Shigeo; Kasuga, Akira; and Hibino, Noburo, to Fuji Photo Film Co., Ltd. Process for producing a magnetic recording medium having an improved dimensional stability. 4,661,377, Cl. 427-130.000.

Moritani, Masahiko: *See*—
Kato, Yasuyuki; Yuyama, Masahiro; Moritani, Masahiko; and Iijima, Susumu, 4,661,571, Cl. 526-216.000.

Morooka, Noriji: *See*—
Terui, Mituru; Obata, Masaaki; and Morooka, Noriji, 4,660,884, Cl. 297-317.000.

Morris, Robert J.: *See*—
Byrd, Audis C.; Morris, Robert J.; Black, Robert H.; and Weaver, Jimmie D., Jr., 4,661,321, Cl. 422-111.000.
Finke, Ronald J.; Mullen, Victor J.; Williams, Danny R.; Morris, Robert J.; and Tucker, Charles E., 4,661,662, Cl. 200-48.00R.

Morrison, Glenn C., to Warner-Lambert Company. Cardiotonic and antihypertensive 2,4-dihydro-5-[(substituted)phenyl]-4,4-disubstituted-3H-pyrazol-3-ones. 4,661,496, Cl. 514-278.000.

Morse, Albert I.: *See*—
Simmonds, Robert C., Jr.; Gilbride, Andrew J.; and Morse, Albert I., 4,661,198, Cl. 156-578.000.

Morton Thiokol, Inc.: *See*—
Rei, Nuno M., 4,661,528, Cl. 521-85.000.
Rogowski, Gerald W.; and Bell, Frank H., 4,660,475, Cl. 102-284.000.
Stevens, George L., 4,660,472, Cl. 102-202.100.

Moskovsky Institut Stali I Splavov: *See*—
Potapov, Ivan N.; Styrkin, German D.; Gremyakov, Ivan P.; and Sheikh-Ali, Alexei D., 4,660,400, Cl. 72-214.000.

Mosley, Bobbie L., to Infinity Pumping Systems. Pumping unit for actuating a down hole pump with static and dynamic counterweights. 4,660,426, Cl. 74-41.000.

Mosnier, Francis, to Isover Saint-Gobain. Burner for manufacturing mineral fibers. 4,661,135, Cl. 65-14.000.

Most, James T.; and Richard, Thomas J., to Monsanto Company. Process for the preparation of iminodiacetonitrile. 4,661,614, Cl. 558-346.000.

Mostyn, Graham Y.; and Yunus, Mohammad, to Intersil, Inc. Efficiency switching voltage converter system. 4,661,764, Cl. 323-222.000.

Motorola Inc.: *See*—
Brown, Leland T.; and Bynum, Byron G., 4,661,878, Cl. 361-56.000.
Flannagan, Stephen T.; and Reed, Paul A., 4,661,931, Cl. 365-203.000.
Gannon, Mark A.; Kommrusch, Richard S.; and Yester, Francis R., Jr., 4,661,790, Cl. 333-234.000.
Garay, Oscar; Turner, Harvey N., Jr.; and Balzano, Quirino, 4,661,992, Cl. 455-89.000.
Lin, Paul T., 4,661,887, Cl. 361-405.000.
McShane, Michael B., 4,661,192, Cl. 156-292.000.
Ohtsu, Kiyonao, 4,661,798, Cl. 340-744.000.
Remington, Scott; and Martino, William L., Jr., 4,661,724, Cl. 307-449.000.
Roberts, Clayton R.; and Nightingale, Stephen J., 4,661,997, Cl. 455-327.000.
Stocker, Herbert B.; and Deutsch, Robert W., 4,660,519, Cl. 123-339.000.
Swapp, Mavin C.; and Frisbie, Milo W., 4,660,710, Cl. 198-397.000.

Motoyama, Katsumi: *See*—
Matsuoka, Nobuyuki; Takasaki, Yo; Minamitsu, Sadao; and Motoyama, Katsumi, 4,661,743, Cl. 313-496.000.

Mouren, Michel: *See*—
Jouquey, Alain; Veltz, Jean-Noel; Salmon, Jean; and Mouren, Michel, 4,661,295, Cl. 260-397.450.

Mourier, Christian, to Thomson-CSF. Optical-diffusion correcting device for a television camera tube. 4,661,852, Cl. 358-160.000.

Mourier, Georges, to Thomson-CSF. Electromagnetic energy generators having resonating cavity with reflecting zones. 4,661,744, Cl. 315-4.000.

Mudge, Richard C.; and Fair, Timothy K., to Leucadia, Inc. Multiple-layer reinforced laminate. 4,661,389, Cl. 428-110.000.

Mueninghoff, Jane C.: *See*—
Harris, Eugene G.; and Mueninghoff, Jane C., 4,661,285, Cl. 252-522.00R.

Muething, Kevin A., to AT&T Technologies, Inc. Method and apparatus for automatically measuring semiconductor etching process parameters. 4,660,979, Cl. 356-357.000.

Muhlbach, Heinz: *See*—
Reutler, Harald; Loser, Wolfgang; Muhlbach, Heinz; Richter, Gerhard; and Stephani, Gunter, 4,660,622, Cl. 164-463.000.

Muhlhahn, Dieter; Marsella, Gino; Detzner, Friedhelm; Simons, Dieter; Schafer, Horst-Dieter; and Haarkotter, Hermann, to Ringfeder GmbH. Synthetic-resin compression spring. 4,660,811, Cl. 267-141.100.

Muhlhofer, Rudolf: *See*—
Mayer, Hans; Deubzer, Bernward; Iretzberger, Petra; Muhlhofer, Rudolf; and Wilhelm, Hermann, 4,661,551, Cl. 524-379.000.

Mullane, William E.; and Lund, David, to Taylor-Winfield Corporation, The. Welding intercell connections by induction heating. 4,661,668, Cl. 219-10.410.

Mullen, Victor J.: *See*—
Finke, Ronald J.; Mullen, Victor J.; Williams, Danny R.; Morris, Robert J.; and Tucker, Charles E., 4,661,662, Cl. 200-48.00R.

Muller-Eberhard, Hans J.; and Vogel, Carl-Wilhelm E., to Scripps Clinic. Cytotoxic compositions. 4,661,347, Cl. 424-85.000.

Muller, Josef; Wiersdorff, Walter-Wieland; Burst, Wolfram; Dralle, Heinz; Schaffner, Ernst; and Steinkamp, Rolf, to BASF Aktiengesellschaft. Preparation of veratryl cyanide. 4,661,610, Cl. 558-344.000.

Muller, Markus: *See*—
Gruner, Heiko; and Muller, Markus, 4,661,682, Cl. 219-121.0PL.

Muller, Maurice E., to Sulzer Brothers Limited; and Protek Ag. Hip joint prosthesis. 4,661,112, Cl. 623-22.000.

Mulokey, William P.; and Weisskopf, Peter A., to Magnavox Government and Industrial Electronic Company. Energy management control apparatus. 4,661,914, Cl. 364-505.000.

Mun, Joseph, to ITT Industries Inc. Fabricating integrated circuits. 4,661,836, Cl. 257-81.000.

Munchmeyer, Dietrich: *See*—
Ehrfeld, Wolfgang; Hagmann, Peter; Maner, Asim; Munchmeyer, Dietrich; and Becker, Erwin, 4,661,212, Cl. 204-11.000.

Munning, Hans; Bock, Jurgen; Oldach, Bernd; Ladic, Josef; Rauert, Max-Otto; Emde, Hugo; Petzsch, Dietrich; and de Baan, Johannes J., to August Bilstein GmbH & Co KG. Adjustable shock absorber, especially for motor vehicles. 4,660,686, Cl. 188-280.000.

Munski, Michael S. Helicopter antitorque auxiliary propulsion system. 4,660,785, Cl. 244-17.190.

Murakami, Hiroyasu: *See*—
Notagashira, Hidefumi; Sumi, Akiyasu; Inaba, Hiroyoshi; Katsuma, Makoto; Murakami, Hiroyasu; and Hiramatsu, Akira, 4,660,933, Cl. 350-255.000.

Murakami, Yukio, to Fuji Photo Film Co., Ltd. Method of strengthening the alkali resistance of a porous glass. 4,661,138, Cl. 65-31.000.

Muraki, Hideaki: *See*—
Suzuki, Kenichirou; Fujitani, Yoshiyasu; Yoshimoto, Taisuke; and Muraki, Hideaki, 4,661,329, Cl. 423-245.000.

Muramoto, Yasuo: *See*—
Ogawa, Yasuhiro; and Muramoto, Yasuo, 4,660,228, Cl. 2-167.000.

Murari, Bruno: *See*—
Siligoni, Marco; and Murari, Bruno, 4,661,780, Cl. 330-254.000.

Murata Kikai Kabushiki Kaisha: *See*—
Kawarabashi, Tsukasa, 4,660,367, Cl. 57-274.000.
Konishi, Yuji; and Inoue, Tetsuo, 4,660,369, Cl. 57-281.000.

Matsui, Isamu; Tone, Shoichi; and Ueda, Yutaka, 4,660,370, Cl. 57-281.000.
Otoshima, Hiroo, 4,660,780, Cl. 242-35.60E.
Murata Manufacturing Co., Ltd.: *See*—
Sakabe, Yukio; Nishioka, Goro; and Imanari, Junichi, 4,661,462, Cl. 501-134.000.
Murata, Seiichiro; Tateishi, Masaru; Yoshioka, Toshio; Kamei, Sakito; Nakazono, Hiroshi; and Yamawaki, Yoshiro, to Hitachi Zosen Corporation. Double hull ship without reinforcing transverse members between the inner and outer hull platings. 4,660,491, Cl. 114-65.00R.
Murayama, Masami: *See*—
Takahashi, Atsuhisa; Nara, Takashi; Murayama, Masami; and Takeichi, Hiroaki, 4,661,946, Cl. 370-58.000.
Murphy, John; McMullin, Francis; Egan, Michael; and Brosnan, Michael, to Kollmorgen Technologies Corporation. Servomotor control systems. 4,661,756, Cl. 318-701.000.
Murray, Brent W.: *See*—
Norton, James A.; and Murray, Brent W., 4,661,870, Cl. 360-98.000.
Musashi Seimitsu Kogyo Kabushiki Kaisha: *See*—
Suzuki, Hideo, 4,660,269, Cl. 29-523.000.
Musha, Toshimitsu; Kiuchi, Eichi; and Hagisawa, Toshihiko, to NEC Corporation. Adaptive radar signal processor. 4,661,816, Cl. 342-91.000.
Musinski, Donald L., to KMS Fusion, Inc. Heat transport system, method and material. 4,660,625, Cl. 165-47.000.
Musser, John H.: *See*—
Kreft, Anthony F., III; Musser, John H.; Pattison, Thomas W.; and Yardley, John P., 4,661,596, Cl. 546-152.000.
Muszkiewicz, Herbert: *See*—
Hotz, Rainer; and Muszkiewicz, Herbert, 4,661,243, Cl. 209-10.000.
Muterspaugh, Max W., to RCA Corporation. Apparatus for reducing the effect of noise interference in audio companding system. 4,661,851, Cl. 358-144.000.
Muz, Edwin, to Nicolay GmbH. Cable support with tines. 4,660,790, Cl. 248-68.100.
MWA Company: *See*—
Rugh, Clyde J.; King, John L., Jr.; Tuttle, Francis M.; and Jones, William E., 4,660,404, Cl. 72-446.000.
Rugh, Clyde J.; King, John L., Jr.; Tuttle, Francis M.; and Jones, William E., 4,660,406, Cl. 72-448.000.
Mydata AB: *See*—
Stridsberg, Gustaf L., 4,660,981, Cl. 356-375.000.
Myers, Peter L.; and Floyd, Chris D., to G. D. Searle & Co. Substituted alkyl imidazole derivatives. 4,661,602, Cl. 548-336.000.
Mykleby, Laurie G., to CVP Systems, Inc. Sterilization package. 4,660,721, Cl. 206-439.000.
N P S P PO Hydroplastichna Obrabotka na Metalite: *See*—
Petkov, Georgi K.; Kyurtchiev, Bencho P.; Barzakov, Valentin Y.; and Minchev, Stefan P., 4,660,326, Cl. 51-7.000.
Nabeta, Kazuo: *See*—
Shiga, Takuo; Nabeta, Kazuo; Nakano, Hiroyuki; and Suzuki, Toshimitsu, 4,661,519, Cl. 514-547.000.
Nabisco Brands: *See*—
Gannis, Peter M., 4,661,363, Cl. 426-429.000.
Nabisco Brands, Inc.: *See*—
Pinto, Albert A.; and Dartey, Clemence K., 4,661,366, Cl. 426-572.000.
Nafziger, Steven: *See*—
Charbonneau, Arthur G.; McMennamy, John A., and Nafziger, Steven, 4,660,416, Cl. 73-168.000.
Nagaoka, Shinji: *See*—
Sato, Takeo; and Nagaoka, Shinji, 4,660,949, Cl. 354-21.000.
Nagaraj, D. R.; and Wang, Samuel S., to American Cyanamid Company. Monothiophosphinates as acid, neutral, or mildly alkaline circuit sulfide collectors and process for using same. 4,661,278, Cl. 252-61.000.
Nagashima, Yasuo, to Fuji Photo Film Co., Ltd. Regulating apparatus and method for use with rotary magnetic recording sheet permitting improved head contact. 4,661,871, Cl. 360-99.000.
Nagata, Tsuyoshi; and Fujita, Katsuto, to Sunstar Giken Kabushiki Kaisha. Coating device. 4,660,501, Cl. 118-203.000.
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Saito, Makoto, to Canon Denshi Kabushiki Kaisha. Head unit for preventing head oscillation due to disequilibrium between head and recording medium. 4,661,872, Cl. 360-104.000.
Saito, Takashi: *See*—
Miki, Tatsuya; Saito, Takashi; and Kishima, Yukihiro, 4,661,735, Cl. 310-112.000.
Saito, Takeo; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Automatic film sensitivity setting device for cameras. 4,660,949, Cl. 354-21.000.
Saito, Toshio; Yukawa, Kazuo; and Suzuki, Tomio, to Nishihara Environmental Sanitation Research Corporation Limited. Microorganism monitoring apparatus. 4,661,845, Cl. 358-99.000.
Saitoh, Hiroyuki: *See*—
Ishikawa, Noriyoshi; Takahashi, Haruhiko; Funato, Hitoshi; Leng, Svay; Saitoh, Hiroyuki; Ohmori, Takashi; Kurata, Masami; and Katou, Yasuo, 4,661,703, Cl. 250-317.100.
Saitoh, Takashi, to Technical Products Co., Ltd. Method and apparatus for affixing a ribbon to a bag. 4,660,351, Cl. 53-417.000.
Saitoh, Yasuo: *See*—
Nambu, Yutaka; Sugawara, Hitosi; and Saitoh, Yasuo, 4,660,298, Cl. 34-30.000.
Saitou, Kunio: *See*—
Noro, Shingo; Saitou, Kunio; and Izumimoto, Hideki, 4,661,325, Cl. 422-304.000.
Saitou, Masao, to Kabushiki Kaisha Toshiba. Picture image forming apparatus. 4,661,826, Cl. 346-76.0PH.
Sakabe, Yukio; Nishioka, Goro; and Imanari, Junichi, to Murata Manufacturing Co., Ltd. Dielectric ceramic composition. 4,661,462, Cl. 501-134.000.
Sakai, Kazuo: *See*—
Akibe, Shigeyuki; Utaka, Katsuyuki; Sakai, Kazuo; and Matsushima, Yuichi, 4,660,934, Cl. 350-320.000.
Sakai, Yukio: *See*—
Kuramoto, Yukimasa; Oonishi, Hajimu; Sakai, Yukio; Hayashi, Yoshiki; and Wells, Robert C., 4,660,961, Cl. 355-4.000.
Sakakibara, Hideo: *See*—
Fujiwara, Tatsuro; Ohta, Kazuyo; Honda, Eiichi; Hirano, Takao; and Sakakibara, Hideo, 4,661,588, Cl. 536-7.100.
Sakakibara, Shiro; and Tsuzuki, Shigeo, to Aisin-Warner Limited. Centrifugal and torque responsive clutch. 4,660,692, Cl. 192-3.310.
Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. System for controlling the clutch torque of an electromagnetic clutch for vehicles. 4,660,699, Cl. 192-0.075.
Sakata, Katsuyuki: *See*—
Koga, Shinichiro; Kohyama, Katsuhisa; and Sakata, Katsuyuki, 4,661,555, Cl. 524-611.000.
Sakuma, Hajime, to Olympus Optical Co., Ltd. Method of judging immunological reactions. 4,661,460, Cl. 436-165.000.
Sakuma, Shinzo; Tamaki, Nobuaki; and Kawakami, Hideo, to Kabushiki Kaisha Meidensha. Vacuum interrupter. 4,661,666, Cl. 200-144.00B.
Sakurai, Yoshimi: *See*—
Nishikawa, Masao; Sakurai, Yoshimi; and Aoki, Takashi, 4,660,690, Cl. 192-3.310.
Salaville, Andre A.: *See*—
Besson, Jean G.; Royer, Michel; Salaville, Andre A.; and Sirieix, Michel B., 4,661,713, Cl. 250-578.000.
Salisbury, Jeffery. Anchor for mortarless block wall system. 4,660,342, Cl. 52-358.000.
Salk Institute for Biological Studies, The: *See*—
Rivier, Jean E. F.; Varga, Janos I.; Hagler, Arnold T.; Struthers, R. Scott; Perrin, Marilyn H.; Rivier, Catherine L.; and Vale, Wylie W., Jr., 4,661,472, Cl. 514-15.000.
Salmon, Jean: *See*—
Jouquey, Alain; Veltz, Jean-Noel; Salmon, Jean; and Mouren, Michel, 4,661,295, Cl. 260-397.450.
Salmon, Roger: *See*—
McDonald, Edward; and Salmon, Roger, 4,661,488, Cl. 514-256.000.
Salomon S.A.: *See*—
Morell, Joseph; Benoit, Louis; and Bonnet, Maurice, 4,660,300, Cl. 36-50.000.
Salpekar, Anil M.; and Denton, Larry E., to Mallinckrodt, Inc. Direct tableting acetaminophen compositions. 4,661,521, Cl. 514-613.000.

Salton, Inc.: *See—*
Mark, Andrew, 4,660,793, Cl. 248-231.800.

Salton, Robert B.: *See—*
Fensterer, Howard F.; Klassen, William E.; Veronesi, Luciano; Boyle, David E.; and Salton, Robert B., 4,661,306, Cl. 376-209.000.

Salzer, Heinrich. Device for indicating the movement and/or position of a shutoff means. 4,661,805, Cl. 340-545.000.

Sames S.A.: *See—*
Chabert, Pierre; and Tholome, Roger, 4,660,771, Cl. 239-694.000.

Sanchez, George, to Berger, Kenneth E. Inflation pressure regulator. 4,660,590, Cl. 137-226.000.

Sanden Corporation: *See—*
Shinagawa, Katsumi, 4,660,903, Cl. 312-116.000.

Sandoz Ltd.: *See—*
Avar, Lajos, 4,661,595, Cl. 546-89.000.
Henrick, Clive A., 4,661,617, Cl. 560-61.000.
Nickell, Louis G.; Stach, Leonard J.; and Hokama, Takeo, 4,661,148, Cl. 71-94.000.

Sanger, Leon A. Reverse cutting expansion tap. 4,661,028, Cl. 408-165.000.

Sanki Kogyo Kabushiki Kaisha: *See—*
Tanaka, Hirokuni, 4,660,464, Cl. 98-115.300.

Sankyo Company, Limited: *See—*
Kurihara, Kozo; Otsuka, Yuji; and Fukazawa, Toshio, 4,661,162, Cl. 106-169.000.
Takeshiba, Hideo; Kinoto, Takao; and Jojima, Teruomi, 4,661,486, Cl. 514-252.000.

Sano, Shoichi: *See—*
Yamamoto, Osamu; Sano, Shoichi; and Furukawa, Yoshimi, 4,660,844, Cl. 280-91.000.

Sanofi: *See—*
Descampe, Marcel; and Berger, Yves, 4,661,514, Cl. 514-469.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Iwai, Tomio, 4,661,076, Cl. 440-77.000.

Sansom, Bernard F.: *See—*
Allen, William M.; Sansom, Bernard F.; Wilson, Alan D.; Prosser, Havard J.; and Groffman, David M., 4,661,339, Cl. 424-486.000.

Santo Industries Co., Ltd.: *See—*
Watabe, Takaharu, 4,660,251, Cl. 16-367.000.

Santos, Abelardo M.: *See—*
Buyese, David P.; Calabrese, Peter J.; Schmidt, Gary W.; and Santos, Abelardo M., 4,661,431, Cl. 430-126.000.

Sardi, William F.: *See—*
Herrick, Robert S.; and Sardi, William F., 4,660,546, Cl. 128-1.00R.

Sarnoff, Stanley J., to Survival Technology, Inc. t-PA composition capable of being absorbed into the blood stream and method of administration. 4,661,469, Cl. 514-2.000.

Sasahara, Akira: *See—*
Shino, Satoshi; Sasahara, Akira; Ishikawa, Kiyoshi; Shibasaki, Shigeru; and Takashina, Shinki, 4,660,820, Cl. 271-9.000.

Sasaki, Hiroshi: *See—*
Fujimoto, Yoriaki; Sasaki, Hiroshi; and Karimata, Yukihiro, 4,660,517, Cl. 123-210.000.

Sasaki, Kouji; and Koizumi, Junji, to Toyoda Gosei Co., Ltd. Polyamide-rubber blend composition. 4,661,563, Cl. 525-179.000.

Sasaki, Sigeo: *See—*
Sumida, Takashi; Sasaki, Sigeo; Ketori, Takao; Fujita, Kazuhiro; and Oguro, Kenji, 4,660,784, Cl. 242-198.000.

Sasaya, Hideaki: *See—*
Kobayashi, Toshiki; Fukami, Akira; Mizuno, Junzi; and Sasaya, Hideaki, 4,660,879, Cl. 296-1.00S.

Sato, Akira, to Tokyo Electric Co., Ltd. Sheet feeding device for business machine. 4,660,823, Cl. 271-22.000.

Sato, Ichitaro: *See—*
Ishige, Masafumi; Kanemoto, Yoshitaka; Yokoyama, Tamio; and Sato, Ichitaro, 4,661,842, Cl. 358-36.000.

Sato, Kazuhiro; and Mori, Hiroyoshi, to Fujitsu Limited. Overcurrent protection circuit for line circuits in a switching system. 4,661,879, Cl. 361-58.000.

Sato, Mamoru: *See—*
Sorimachi, Mitsuo; and Sato, Mamoru, 4,661,667, Cl. 200-314.000.

Sato, Shigetada: *See—*
Ogawa, Ryota; and Sato, Shigetada, 4,660,940, Cl. 350-458.000.

Sato, Takane, to Fuji Xerox Co., Ltd. Circuit for conference telephony. 4,661,949, Cl. 370-62.000.

Sato, Yoichi: *See—*
Nishikawa, Masao; Aoki, Takashi; and Sato, Yoichi, 4,660,442, Cl. 74-869.000.

Satoh, Nobuhiro: *See—*
Suzuki, Yoshihiro; Satoh, Nobuhiro; Wajima, Motoyo; Narahara, Toshikazu; and Shimazaki, Takeshi, 4,661,417, Cl. 428-607.000.

Satoh, Tamataro: *See—*
Yamada, Takemi; Satoh, Tamataro; Mizushina, Masaaki; Toyota, Koji; and Okamoto, Hiromi, 4,661,371, Cl. 427-49.000.

Satoru, Kudo. *See—*
Sadanori, Nishimura; and Satoru, Kudo, 4,660,707, Cl. 192-53.00F.

Satterthwaite, J. Glenn; and Field, George B., Jr. Electric marine propulsion system. 4,661,714, Cl. 290-4.00R.

Sauda, Kenzo; Yokota, Akitoshi; Yagi, Takuro; Kuribayashi, Hiroshi; Kita, Saburo; Shibata, Setsuo; and Ogawa, Hirofusa, to JGC Corporation. Apparatus for compacting solid waste materials and its accessory facilities. 4,661,290, Cl. 252-626.000.

Savage, Kerry D.: *See—*
Rundell, Herbert A.; Vinton, Richard H.; and Savage, Kerry D., 4,660,636, Cl. 166-60.000.

Savoye, Eugene D., to RCA Corporation. Transfer smear reduction for charge sweep device imagers. 4,661,854, Cl. 358-213.000.

Sawai, Hideo; Kanamori, Takashi; Kuroki, Kenji; and Shibata, Susumu, to OKI Electric Industry Co., Ltd. Thermal head. 4,661,827, Cl. 346-76.0PH.

Sawai, Mitsuaki: *See—*
Horikawa, Tokio; Sawai, Mitsuaki; Fujioka, Hisatake; Kawashima, Nobumasa; and Yanagawa, Nobuhide, 4,660,668, Cl. 180-19.100.

Sawaide, Minoru: *See—*
Machi, Fumiharu; and Sawaide, Minoru, 4,660,340, Cl. 52-249.000.

Saxinger, W. Carl; and Gallo, Robert C. Competitive ELISA for the detection of HTLV-III antibodies. 4,661,445, Cl. 435-7.000.

Scandurra, Aldo M. Method and apparatus for indicating radio frequency carrier loss in remotely controlled vehicles. 4,661,996, Cl. 455-205.000.

Schad, Robert D., to Husky Injection Molding Systems Ltd. Mold core including ejection sleeve. 4,660,801, Cl. 249-66.00A.

Schaefer, Karl; and Stein, Heinz, to Inter-wood Maschinen GmbH & Co. KG. Apparatus for manufacturing flakes. 4,660,777, Cl. 241-88.000.

Schafer, Horst-Dieter: *See—*
Muhlhahn, Dieter; Marsella, Gino; Detzner, Friedhelm; Simons, Dieter; Schafer, Horst-Dieter; and Haarkotter, Hermann, 4,660,811, Cl. 267-141.100.

Schaffner, Ernst: *See—*
Muller, Josef; Wiersdorff, Walter-Wielant; Burst, Wolfram; Dralle, Heinz; Schaffner, Ernst; and Steinkamp, Rolf, 4,661,610, Cl. 558-344.000.

Schainholz, Herbert. Sterilization container. 4,661,326, Cl. 422-310.000.

Schalenbach, Rolf; and Waldmann, Helmut, to Bayer Aktiengesellschaft. Process for the preparation of 1-butene-3,4-diol. 4,661,646, Cl. 568-857.000.

Schapel, Dietmar: *See—*
von Bittera, Miklos; Schapel, Dietmar; von Gizycki, Ulrich; and Rupp, Roland, 4,661,099, Cl. 604-290.000.

Schaper, Ulf A.; Blosl, Siegfried; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Oxaspirododecane derivatives and perfume compositions containing them. 4,661,286, Cl. 252-522.00R.

Scharpf, Otto H., to Outboard Marine Corporation. Exhaust system with side branch. 4,660,378, Cl. 60-313.000.

Schaulin, Rudolf; and Grelat, Maurice, to Ciba-Geigy Corporation. Process for the preparation of 1,4-diamino-2,3-dicyanoanthraquinone. 4,661,292, Cl. 260-371.000.

Scheiderer, Gerrit: *See—*
Bender, Richard; Bendler, Hellmut; Scheiderer, Gerrit; and Winkler, Hans, 4,660,473, Cl. 102-223.000.

Schelhaas, Douglas D.: *See—*
Kemper, Dennis C.; and Schelhaas, Douglas D., 4,660,867, Cl. 285-256.000.

Schepis, Dominic J.: *See—*
Lechaton, John S.; Malaviya, Shashi D.; Schepis, Dominic J.; and Srinivasan, Gurumakonda R., 4,661,832, Cl. 357-49.000.

Scherer, Richard M., to South Bend Escan Corporation. Cooking system with closed loop heat transfer means. 4,660,542, Cl. 126-378.000.

Schiffleger, Alan J.: *See—*
Chen, Steve S., and Schiffleger, Alan J., 4,661,900, Cl. 364-200.000.

Schildmeier, J. Henry: *See—*
Tavel, Goldie K.; and Schildmeier, J. Henry, 4,660,758, Cl. 232-43.200.

Schimko, Reinhold, to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG. Needle selection device for a flat knitting machine. 4,660,391, Cl. 66-75.100.

Schlemmer, Harry: *See—*
Machler, Meinrad; Sachse, Richard; and Schlemmer, Harry, 4,660,974, Cl. 356-128.000.

Schlesinger, Ulrich; and Beffa, Fabio, to Ciba-Geigy Corporation. Bis 1:2 chromium complexes of disazo and azo or azomethine dyes. 4,661,587, Cl. 534-696.000.

Schlichthorst, Norbert; and Mangelsdorf, Wolfgang. Catamaran air cushion water vehicle. 4,660,492, Cl. 114-67.00A.

Schlossman, Stuart; Morimoto, Chikao; and Letvin, Norman, to Dana-Farber Cancer Institute, Inc. Monoclonal antibodies and method of immunizing therewith. 4,661,446, Cl. 435-7.000.

Schlumberger Technology Corporation: *See—*
Grau, James A., 4,661,701, Cl. 250-270.000.
Holenka, Jacques M., 4,661,700, Cl. 250-267.000.
Seeman, Bronislaw; and Froelich, Benoit G. L., 4,661,933, Cl. 367-27.000.
Sharp, Stanley O.; and Dieken, John M., 4,660,910, Cl. 339-16.00R.

Schmall, Karl-Heinz, to Get Gesellschaft fur Elektroniktechnologie mbH. Electronic warning and monitoring apparatus and electrode arrangement therefor. 4,661,797, Cl. 340-561.000.

Schmid, Peter: *See—*
Rossberg, Rolf; and Schmid, Peter, 4,660,972, Cl. 356-73.100.

Schmidt, Alfred W.; and Reed, Douglas G., to Fabco-Air, Inc. Power operated gripper. 4,660,877, Cl. 294-88.000.

Schmidt, Gary W.: *See—*
Bujese, David P.; Calabrese, Peter J.; Schmidt, Gary W.; and Santos, Abelardo M., 4,661,431, Cl. 430-126.000.

Schmidt, George S., to General Electric Company. Surface parallelism measurement system. 4,660,294, Cl. 33-533.000.

Schmidt, Nancy K.: *See—*
Bales, Bruce M.; London, Steven M.; and Schmidt, Nancy K., 4,661,974, Cl. 379-198.000.

Schmidt, Paul J.; and Hung, William M., to Hilton-Davis Chemical Co., The. 3-(ether and thioether)-3-(indolyl)-phthalides. 4,661,605, Cl. 548-463.000.

Schmidt, Peter. Bathtub insert for handicapped persons. 4,660,234, Cl. 4-566.000.

Schmiedel, Fritz: *See—*
Schoening, Josef; Schmiedel, Fritz; Hobrecker, Peter; and Winkenbach, Helmut, 4,661,311, Cl. 376-266.000.

Schmits, Heinz-Herbert: *See—*
Hahn, Franz D.; Heinemann, Otto; and Schmits, Heinz-Herbert, 4,660,805, Cl. 251-328.000.

Schmitt-Landsiedel, Doris; and Dorda, Gerhard, to Siemens Aktiengesellschaft. Integrated RS flip-flop circuit. 4,661,831, Cl. 357-46.000.

Schmitz, Erwin: *See—*
Hanke, Ernst W.; Bonk, Benno; and Schmitz, Erwin, 4,661,244, Cl. 209-139.200.

Schmitz, Guenter: *See—*
Langlitz, Karlheinz; and Schmitz, Guenter, 4,660,809, Cl. 266-246.000.

Schmitz, James R.: *See—*
Nemesi, Stephen A.; and Schmitz, James R., 4,660,779, Cl. 242-7.020.

Schmitz, Johannes H. A.: *See—*
van der Hoorn, Gustaaf H. A.; van der Staak, Caspert G. I.; Lamberts, Joseph J. M.; and Schmitz, Johannes H. A., 4,660,930, Cl. 350-126.000.

Schnack, Peter G., to Sun-Flex Company, Inc. Cathode ray tube glare filter, radiation and static electricity suppression device. 4,661,856, Cl. 358-252.000.

Schneider, Alfred, to Siegenia-Frank KG. Corner guide assembly. 4,661,007, Cl. 403-24.000.

Schneider, Linda G.: *See—*
Kessick, Michael A.; George, Zacharia M.; and Schneider, Linda G., 4,661,240, Cl. 208-127.000.

Schoen, Klaus-Peter, to Hoechst Aktiengesellschaft. Device for the electrophotographic manufacture of printing forms. 4,660,959, Cl. 355-3.00R.

Schoenhard, James D., to International Technology Services, Inc. Apparatus for treatment of polymeric material. 4,660,585, Cl. 134-96.000.

Schoening, Josef; Schmiedel, Fritz; Hobrecker, Peter; and Winkenbach, Helmut, to Hochtemperatur-Reaktorbau GmbH. Nuclear power plant arranged in an underground cavity with a small high-temperature pebble bed reactor. 4,661,311, Cl. 376-266.000.

Schoening, Josef; Elter, Claus; and Becker, Gerhard, to Hochtemperatur-Reaktorbau GmbH. Metal liner for the lining of the cylindrical cavity of a reinforced concrete pressure vessel. 4,661,313, Cl. 376-295.000.

Scholler, Siegfried. Spiral staircase arrangement. 4,660,335, Cl. 52-187.000.

Schon, Georg: *See—*
Batzill, Wolfgang; Dobbelstein, Arnold; Geist, Michael; Schon, Georg; and Ott, Gunther, 4,661,541, Cl. 523-414.000.

Schonenberger, Helmut: *See—*
von Angerer, Erwin; and Schonenberger, Helmut, 4,661,511, Cl. 514-415.000.

Schoug-Pettersen, Tor: *See—*
Bekkadal, Fritz; and Schoug-Pettersen, Tor, 4,661,817, Cl. 342-124.000.

Schrader, Karl-Heinz: *See—*
Orth, Winfred; Schrader, Karl-Heinz; and Fickert, Werner, 4,661,115, Cl. 8-409.000.

Schramm, Peter: *See—*
Kramp, Jurgen; Schramm, Peter; Augsberg, Gerhard; and Steiner, Gerd, 4,660,470, Cl. 101-426.000.

Schreiner, Stanley M., to T-Bar Incorporated. Method and apparatus for adjusting transmission rates in data channels for use in switching systems. 4,661,966, Cl. 375-112.000.

Schroder, Hartmut: *See—*
Plantholt, Martin; Eiberger, Berthold; and Schroder, Hartmut, 4,661,839, Cl. 358-12.000.

Schroder, Helmut, to Werner & Pfleiderer. Baking oven with hot-air circulation heating. 4,660,540, Cl. 126-21.00A.

Schroder, Ralph; and Despineux, Hans, to Noel, Marquet & Cie. S.A. Method of making a moulded body of foam plastics material. 4,661,391, Cl. 428-159.000.

Schub, Ingeborg: *See—*
Heinzel, Volker; Keschtkar, Hossein-Ali; and Schub, Ingeborg, 4,661,155, Cl. 75-237.000.

Schuetz, James E.: *See—*
Chum, Pak-Wing S.; Barger, Mark A.; Dixit, Thuan P.; and Schuetz, James E., 4,661,303, Cl. 264-171.000.

Schulz, Max: *See—*
Maier, Horst; and Schulz, Max, 4,661,168, Cl. 148-1.500.

Schulze, Dieter M., to Lapine Technology. Head lifter mechanism for hard disk drive. 4,661,873, Cl. 360-105.000.

Schumann, Reinhard: *See—*
Bomba, Frank C.; Schumann, Reinhard; Jenkins, Steven R.; and Binder, Paul, 4,661,905, Cl. 364-200.000.

Schuppler, Berthold: *See—*
Jentzsch, Horst; and Schuppler, Berthold, 4,660,465, Cl. 98-115.400.

Schur, Fritz, to Brauerei Feldschlosschen. Process for the preparation of alcohol-free drinks with a yeast aroma. 4,661,355, Cl. 426-14.000.

Schuster, Hans-Karl: *See—*
Aumann, Gunther; Aigner, Helmar; and Schuster, Hans-Karl, 4,661,255, Cl. 210-491.000.

Schutz, Peter: *See—*
Breitfeld, Wolf; and Schutz, Peter, 4,660,311, Cl. 42-72.000.

Schwab, Allen: *See—*
Weiss, John, 4,660,828, Cl. 272-138.000.

Schwab, Richard: *See—*
Weiss, John, 4,660,828, Cl. 272-138.000.

Schweiger, Fritz, to Hochtemperatur-Kernkraftwerk GmbH (H K G). Pressure relief system in nuclear reactors. 4,661,312, Cl. 376-283.000.

Schwerin, Gunther: *See—*
Hofer, Friedrich-Wilhelm; and Schwerin, Gunther, 4,660,380, Cl. 60-422.000.

Scosche Industries, Inc.: *See—*
Putnam, Rob R., 4,660,789, Cl. 248-27.300.

Scott Bader Company Limited: *See—*
Parker, Robert G., 4,661,548, Cl. 524-204.000.

Scott, Craig H., to Sundstrand Corporation. Differential gear box. 4,660,437, Cl. 74-675.000.

Scott, Jeffery E.; McDougall, David W.; and Heigold, Robert E., to Delta Projects Inc. Diluent distillation process and apparatus. 4,661,242, Cl. 208-177.000.

Scott Paper Company: *See—*
Hazard, James E., 4,660,781, Cl. 242-55.200.
Ow, Steven S.; and Singh, Rudra P., 4,661,205, Cl. 162-78.000.

Scott, Thomas J. Paste applicating apparatus for wall covering sheet. 4,660,502, Cl. 118-415.000.

Scouten, Charles G., to Exxon Research and Engineering Company. Conversion of solid metal phenates to phenols. 4,661,637, Cl. 568-716.000.

Scrace, Harold A., to Rolls-Royce. Vectorable exhaust nozzle for gas turbine engines. 4,660,767, Cl. 239-265.350.

Scranton, Joseph D.: *See—*
McGill, Howard L.; and Scranton, Joseph D., 4,660,637, Cl. 166-120.000.

Scripps Clinic: *See—*
Muller-Eberhard, Hans J.; and Vogel, Carl-Wilhelm E., 4,661,347, Cl. 424-85.000.

Seaborne, Jonathan; and Egberg, David C., to General Mills, Inc. Compositions and methods for preparing an edible film of lower water vapor permeability. 4,661,359, Cl. 426-89.000.

Sealsyringe Corporation: *See—*
Etherington, Roger F., 4,660,569, Cl. 128-765.000.

Seaman, Harry V., to American Technical Ceramics Corp. Miniature, multiple layer, side mounting high frequency blocking capacitor. 4,661,884, Cl. 361-306.000.

Seaton, Starling: *See—*
Sorensen, Robert K.; and Seaton, Starling, 4,660,444, Cl. 76-108.00A.

Sebo, Milan J.: *See—*
Bartholomew, Roy E.; and Sebo, Milan J., 4,660,894, Cl. 303-54.000.

Sedlmair, Gerhard; and Knabel, Walter, to Marker International Company. Toe piece for a safety ski-binding. 4,660,849, Cl. 280-625.000.

Seegmiller, Ben L. Rock bolt structure and installation. 4,661,022, Cl. 405-260.000.

Seeman, Bronislaw; and Froelich, Benoit G. L., to Schlumberger Technology Corporation. Method and apparatus for acoustically measuring the transverse dimensions of a borehole. 4,661,933, Cl. 367-27.000.

Segarra, Gerard, to U.S. Philips Corporation. Communication network in which at least one station comprises a determination-type message filtering device. 4,661,951, Cl. 370-85.000.

Segawa, Noboru: *See—*
Ueno, Mitsushi; Shirogami, Tamotsu; and Segawa, Noboru, 4,661,423, Cl. 429-41.000.

Seigneurin, Michel, to Micro Mega S.A. Dental handpiece contra-angle head. 4,661,062, Cl. 433-128.000.

Seiko Epson Corporation: *See—*
Iwashita, Yukihiro; and Ueno, Kotaro, 4,660,935, Cl. 350-336.000.

Seiko Koki Kabushiki Kaisha: *See—*
Saito, Takeo; and Nagaoka, Shinji, 4,660,949, Cl. 354-21.000.

Seiter, Wolfgang; Wegener, Ingo; and Reuter, Herbert, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of a spray-dried nonionic washing aid. 4,661,281, Cl. 252-140.000.

Seitetsu Kagaku Co., Ltd.: *See—*
Haruna, Kazuo; and Hayashi, Saburo, 4,661,125, Cl. 55-26.000.

Sekiguchi, Kyoji: *See—*
Nakamura, Yukitugu; Masuda, Takashi; and Sekiguchi, Kyoji, 4,660,946, Cl. 351-212.000.

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Carroll, James J.; Frind, Gerhard; and VanNoy, John H., 4,661,665, Cl. 200-144.00B.

Van Sluys, Robert N. J., to U.S. Philips Corporation. Optical recording/playback apparatus having a focusing control system with reduced spot-offset sensitivity. 4,661,944, Cl. 369-44.000.

Van Tuijl, Adrianus J. M., to U.S. Philips Corporation. Amplifier with floating inverting and non-inverting inputs and stabilized direct output voltage level. 4,661,781, Cl. 330-255.000.

van Vliet, Johannes A. J. M.: *See*—
Postma, Pieter; and van Vliet, Johannes A. J. M., 4,661,746, Cl. 315-248.000.

Varga, Janos I.: *See*—
Rivier, Jean E. F.; Varga, Janos I.; Hagler, Arnold T.; Struthers, R. Scott; Perrin, Marilyn H.; Rivier, Catherine L.; and Vale, Wylie W., Jr., 4,661,472, Cl. 514-15.000.

Varga, Valeria M.: *See*—
Gorog nee Privitzer, Katalin; Bodnar, Laszlo ; Dudar, Erzsebet; Kocsis nee Bagi, Maria; Gaal, Sandor; Tasnadi, Marta; Egyhazi nee Csizmadia, Eva; Varga, Valeria M.; Kajati, Istvan; Kis, Gyorgy; Molnar, Janos; Toth, Bertalan; Cserhati nee Botka, Ilona; Kaptas, Tibor; and Csete, Sandor, 4,661,477, Cl. 514-76.000.

Varian Associates, Inc.: *See*—
Mintz, Donald M., 4,661,228, Cl. 204-192.250.
Mobley, Richard M., 4,661,712, Cl. 250-492.200.
Powell, Ronald A., 4,661,177, Cl. 148-189.000.

Varma, Ravi K.: *See*—
Hall, Steven E.; Haslanger, Martin F.; and Varma, Ravi K., 4,661,506, Cl. 511-382.000.

Varteresian, Michael G.; and Steele, S. Robert, to Raytheon Company. Semiconductor structures and manufacturing methods. 4,661,834, Cl. 357-56.000.

Vaughan, David E. W.; and Strohmaier, Karl G., to Exxon Research and Engineering Company. Zeolite (ECR-18) isostructural with paulingite and a method for its preparation. 4,661,332, Cl. 423-326.000.

Vaughn, Walter L.; and Wing, Milton S., to Dow Chemical Company, The. Removal of impurities from amines. 4,661,634, Cl. 564-292.000.

Vaughter, Harmon P.: *See*—
Cruz, Michael S.; and Vaughter, Harmon P., 4,662,001, Cl. 455-340.000.

Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See*—
Buschmann, Falk; Foerster, Karl-Heinz; Eichler, Volker; Heiber, Hartmut; and Dittrich, Volkmar, 4,661,918, Cl. 364-569.000.
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VEB Rohrkombinat, Stahl und Walzwerk, Riesa: *See*—
Reutler, Harald; Loser, Wolfgang; Muhlbach, Heinz; Richter, Gerhard; and Stephani, Gunter, 4,660,622, Cl. 164-463.000.

Veltz, Jean-Noel: *See*—
Jouquey, Alain; Veltz, Jean-Noel; Salmon, Jean; and Mouren, Michel, 4,661,295, Cl. 260-397.450.

Veneski, Gerard A., to International Business Machines Corporation. Microprocessor control system utilizing overlapped programmable logic arrays. 4,661,901, Cl. 364-200.000.

Venkatesh, Venkatramiah; and Maier, Robert M., to Amdahl Corporation. Error tracking apparatus in a data processing system. 4,661,953, Cl. 371-16.000.

Vereinigte Aluminium-Werke AG: *See*—
Spriestersbach, Jochen; and Woithe, Herbert, 4,660,614, Cl. 164-113.000.

Vereinigte Flugtechnische Werke GmbH: *See*—
Thiede, Peter, 4,660,788, Cl. 244-209.000.

Vereinigte Papierwerke, Schickedanz & Co.: *See*—
Sustmann, Scarlet, 4,661,101, Cl. 604-360.000.

Verge, John P.: *See*—
Marshall, Winston S.; and Verge, John P., 4,661,505, Cl. 514-381.000.

Vernay Laboratories, Inc.: *See*—
Beard, Dennis J., 4,661,183, Cl. 156-172.000.

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Veronesi, Luciano: *See*—
Fensterer, Howard F.; Klassen, William E.; Veronesi, Luciano; Boyle, David E.; and Salton, Robert B., 4,661,306, Cl. 376-209.000.

Versatile Corporation: *See*—
Moos, Niklaus J.; and Papworth, Richard C., 4,660,652, Cl. 172-260.500.

Very Incredible Products, Inc.: *See*—
Jacobson, Jeff A.; and Lim, Walter K., 4,661,268, Cl. 252-8.800.

Vicari, Richard: *See*—
Narang, Subhash C.; Vicari, Richard; and Gu, Juesheng, 4,661,611, Cl. 556-418.000.

Vickery, Earl; and Yates, Mark, to American Hoechst Corporation. Turbulent incineration of combustible materials supplied in low pressure laminar flow. 4,661,056, Cl. 431-5.000.

Victor Company of Japan, Ltd.: *See*—
Ichinoi, Yutaka, 4,661,863, Cl. 358-334.000.
Kinjo, Hisao, 4,661,875, Cl. 360-133.000.
Miki, Tatsuya; Saito, Takashi; and Kishima, Yukihiro, 4,661,735, Cl. 310-112.000.

VILTER Manufacturing, Inc.: *See*—
Pallanch, Francis T., 4,660,384, Cl. 62-81.000.

Vindof Incorporated: *See*—
Figliuzzi, Vincent D., 4,660,513, Cl. 123-65.00A.

Vinton, Richard H.: *See*—
Rundell, Herbert A.; Vinton, Richard H.; and Savage, Kerry D., 4,660,636, Cl. 166-60.000.

Visser, Leendert: *See*—
von Sothen, Heinrich F.; and Visser, Leendert, 4,661,660, Cl. 191-12.20A.

Visser, Melvin J.; and Malot, James J., to Upjohn Company, The. Removal of volatile contaminants from the vadose zone of contaminated ground. 4,660,639, Cl. 166-267.000.

Vitro Tec Fideicomiso: *See*—
Alonso, Antonio C.; Alvarez-Icaza, Luis L.; and Canales, Roberto R., 4,660,711, Cl. 198-430.000.

Vogel, Carl-Wilhelm E.: *See*—
Muller-Eberhard, Hans J.; and Vogel, Carl-Wilhelm E., 4,661,347, Cl. 424-85.000.

Volino, Nicholas A., to Facet Enterprises, Inc. Electric roller clutch starter drive. 4,661,715, Cl. 290-48.000.

Vollrath Company, The: *See*—
Heaney, Dennis J.; and Reiter, Wm. Bruce, 4,660,734, Cl. 220-74.000.

von Angerer, Erwin; and Schonenberger, Helmut, to Degussa Aktiengesellschaft. 2-(hydroxy-phenyl)-indoles and process for their production. 4,661,511, Cl. 514-415.000.

von Bittera, Miklos; Schapel, Dietmar; von Gizycki, Ulrich; and Rupp, Roland, to Bayer Aktiengesellschaft. Self-adhesive sheet-like structures, process for their preparation and their use. 4,661,099, Cl. 604-290.000.

von Bittera, Miklos; Meyer, Rolf-Volker; and Dhein, Rolf, to Bayer Aktiengesellschaft. Active compound release systems. 4,661,104, Cl. 604-896.000.

von Dewitz, Albrecht. Device to secure shoulder straps of a rucksack. 4,660,751, Cl. 224-210.000.

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von Bittera, Miklos; Schapel, Dietmar; von Gizycki, Ulrich; and Rupp, Roland, 4,661,099, Cl. 604-290.000.

von Laar, Klaus; Heberlein, Werner; and Winter, Cavit, to Diehl GmbH & Co. Pivoting projectile loading chamber for high angle-firing weapons. 4,660,458, Cl. 89-25.000.

von Roos, Oldwig, to United States of America, National Aeronautics and Space Administration. Method and apparatus for measuring minority carrier lifetime in a direct band-gap semiconductor. 4,661,770, Cl. 324-158.00D.

von Sichart, Frithjof; and Eberspacher, Jorg, to Siemens Aktiengesellschaft. Method for transmitting data in a telecommunications exchange. 4,661,952, Cl. 370-94.000.

von Sothen, Heinrich F.; and Visser, Leendert, to Anton Piller GmbH & Co. KG. Cable drum driven by an electric motor. 4,661,660, Cl. 191-12.20A.

von Voithenberg, Hubertus: *See*—
Gilch, Heinz; von Voithenberg, Hubertus; and Rengel, Reinhard, 4,661,542, Cl. 524-59.000.

Vornberger, Karl F.: *See*—
Vornberger, Walter; and Vornberger, Karl F., 4,660,242, Cl. 12-54.300.

Vornberger, Walter; and Vornberger, Karl F., to International Shoe Machine Corporation. Activator. 4,660,242, Cl. 12-54.300.

Vorres, Karl S.: *See*—
Marianowski, Leonard G.; and Vorres, Karl S., 4,661,422, Cl. 429-13.000.

Voy, Peter A.; and Ihle, Robert D., to Janus Label Corporation. Method for manufacturing discrete elements. 4,661,189, Cl. 156-248.000.

Vulink, Henricus H. M.: *See*—
Bekkering, Hendrik M.; and Vulink, Henricus H. M., 4,661,098, Cl. 604-135.000.

W. R. grace & Co.: *See*—
Guthrie, James L.; Roberts, Helen F.; and Lundsager, Christian B., 4,661,675, Cl. 219-91.210.

W. Schlafhorst & Co.: *See*—
Derichs, Josef, 4,660,373, Cl. 57-404.000.
Kupper, Wilhelm, 4,660,368, Cl. 57-281.000.
Raasch, Hans, 4,660,365, Cl. 57-263.000.
Wassenhoven, Heinz-Georg, 4,660,374, Cl. 57-407.000.

WABCO Westinghouse Fahrzeugbremsen GmbH: *See*—
Bortfeld, Harald; Danne, Lutz; Lehrmann, Joachim; and Klatt, Alfred, 4,660,430, Cl. 74-335.000.
Reinecke, Erich; and Ruhnau, Gerhard, 4,661,910, Cl. 364-426.000.

Wacker-Chemie GmbH: *See*—
Kleine, Willi; Frey, Werner; and Daweritz, Albrecht, 4,661,569, Cl. 526-62.000.

Mayer, Hans; Deubzer, Bernward; Iretzberger, Petra; Muhlhofer, Rudolf; and Wilhelm, Hermann, 4,661,551, Cl. 524-379.000.

Wadsworth, Walter, to Fern Engineering, Inc. Regenerative system for a gas turbine. 4,660,377, Cl. 60-39.511.

Wagner, Hugo. Sealing element for components of buildings. 4,660,338, Cl. 52-232.000.

Wahl, Errol H.: *See*—
Trinh, Toan; Wahl, Errol H.; Swartley, Donald M.; and Hemingway, Ronald L., 4,661,269, Cl. 252-8.800.

Wajaroff, Theodor: *See*—
Hoch, Dietrich; Wajaroff, Theodor; and Konrad, Eugen, 4,660,580, Cl. 132-7.000.

Wajima, Motoyo: *See*—
Suzuki, Yoshihuro; Satoh, Nobuhiro; Wajima, Motoyo; Narahara, Toshikazu; and Shimazaki, Takeshi, 4,661,417, Cl. 428-607.000.

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Kobama, Masayuki; Wakabayashi, Tatsuro; and Tsunoda, Koichi, 4,660,401, Cl. 72-331.000.

Wakamiya, Katsutoshi; Matsumoto, Toru; and Yamazaki, Masuo, to Canon Kabushiki Kaisha. Developing method and insulating non-magnetic toner therefor. 4,661,430, Cl. 430-120.000.

Wakasugi, Tomio; and Maeda, Akinori, to Hewlett-Packard Company. Reed switch with high insulation. 4,661,791, Cl. 335-151.000.

Wakita, Naomasa: *See*—
Hattori, Shuzo; Wakita, Naomasa; and Okuda, Makoto, 4,660,941, Cl. 350-487.000.

Waks, Edna. Food processing apparatus. 4,660,467, Cl. 99-339.000.

Waldmann, Helmut: *See*—
Schalenbach, Rolf; and Waldmann, Helmut, 4,661,646, Cl. 568-857.000.

Waldron, Brian L.: *See*—
Mailloux, Louis D.; and Waldron, Brian L., 4,661,859, Cl. 358-283.000.

Walker, David M.; Shiki, Alan P.; Harte, Kenneth J.; and Carrona, John J., to Control Data Corporation. Modular all-electrostatic electron-optical column and assembly of said columns into an array and method of manufacture. 4,661,709, Cl. 250-396.00R.

Walker, David M.: *See*—
Smith, Donald O.; Burgess, John R.; and Walker, David M., 4,661,203, Cl. 156-643.000.

Walker, Leigh E., to Occidental Chemical Corporation. Graft polymers of polymerizable monomers and olefin polymers. 4,661,549, Cl. 524-397.000.

Walker, Susan M. Apparatus for and method of teaching reading and spelling. 4,661,074, Cl. 434-178.000.

Wallach, Walter A., Jr.; Richmond, Michael S.; Ahlstrom, John K.; Bernstein, David H.; and Bratt, Richard G., to Data General Corporation. Digital data processing system incorporating apparatus for resolving names. 4,661,903, Cl. 364-200.000.

Wallo, Andrea M.: *See*—
Boyle, William J., Jr.; Mares, Frank; and Wallo, Andrea M., 4,661,615, Cl. 558-363.000.

Walter, Richard K.: *See*—
Fredriksen, Herbert A.; Walter, Richard K.; and Mentzer, Ronald B., 4,662,004, Cl. 455-607.000.

Walterick, Gerald C., Jr.; and Fillipo, Bruce K., to Betz Laboratories, Inc. Process for reducing the content of trihalomethane compounds and precursors thereof in influent water. 4,661,259, Cl. 210-666.000.

Waltz, Marion D.: *See*—
Knapp, David J.; Waltz, Marion D.; and Clarke, David W., 4,660,586, Cl. 137-2.000.

Wand, Thomas J.: *See*—
Behr, Michael E., Woznak, Kenneth P.; Gaubis, Philip A.; Guest, Philip Q., Jr.; Graves, James L.; and Wand, Thomas J., 4,660,671, Cl. 180-142.000.

Wang, John S.: *See*—
Himelstein, Carol S.; and Wang, John S., 4,661,810, Cl. 340-709.000.

Wang, Richard H. S.: *See*—
Pruett, Wayne P.; Wang, Richard H. S.; Hilbert, Samuel D.; and Weaver, Max A., 4,661,566, Cl. 525-445.000.

Wang, Samuel S.: *See*—
Nagaraj, D. R.; and Wang, Samuel S., 4,661,278, Cl. 252-61.000.

Ward, James F.: *See*—
Griffith, Bruce S.; and Ward, James F., 4,661,077, Cl. 441-84.000.

Warner-Lambert Company: *See*—
Morrison, Glenn C., 4,661,496, Cl. 514-278.000.
Wilton, John H.; Hokanson, Gerard C.; and French, James C., 4,661,353, Cl. 424-123.000.

Warner-Lambert Technologies Inc.: *See*—
Hill, Arthur T., 4,660,942, Cl. 350-521.000.

Warren, Tommy M., Winters, Warren J.; and Brett, J. Ford, to Amoco Corporation. Method and apparatus for controlling the rotational torque of a drill bit. 4,660,656, Cl. 175-26.000.

Washko, Stephen D.: *See*—
Aggen, George; Borneman, Paul R.; and Washko, Stephen D., 4,661,169, Cl. 148-2.000.

Wassenhoven, Heinz-Georg, to W. Schlafhorst & Co. Open-end rotor spinning machine. 4,660,374, Cl. 57-407.000.

Watabe, Akira; Tomobe, Norio; and Kobayashi, Hideo, to Honda Giken Kogyo Kabushiki Kaisha. Air intake side secondary air supply system for an internal combustion engine. 4,660,533, Cl. 123-588.000.

Watabe, Takaharu, to Santo Industries Co., Ltd.; and Western Trading Co., Ltd. Hinge-type lid mounting device. 4,660,251, Cl. 16-367.000.

Watanabe, Ichiro: *See*—
Yamada, Hideaki; Ryuno, Koitchiro; Enomoto, Kanehiko; and Watanabe, Ichiro, 4,661,456, Cl. 435-244.000.
Yamada, Hideaki; Enomoto, Kanehiko; and Watanabe, Ichiro, 4,661,457, Cl. 435-244.000.

Watanabe, Kanji; and Mizoe, Mikio, to Sumitomo Electric Industries, Ltd. Steel materials for use with prestressed concrete. 4,661,387, Cl. 428-36.000.

Watanabe, Kazunori: *See*—
Arakawa, Tetsuo; Kato, Masaaki; and Watanabe, Kazunori, 4,660,515, Cl. 123-90.270.

Watanabe, Yoshimi; Umeoka, Norihiro; and Kuroda, Hiroshi, to Kabushiki Kaisha Toshiba. Lamp unit. 4,661,890, Cl. 362-217.000.

Watkins, Tommy R., to Basler Electric Company. Apparatus for mounting printed circuit boards. 4,661,792, Cl. 336-65.000.

Watson, John C.; and Chan, Bing G., to Northern Telecom Limited. Overload protector for a telephone set. 4,661,881, Cl. 361-104.000.

Watt, Dwayne B.; and Eversole, Brad K., to J. I. Case Company. Agricultural implement with elevation control mechanism. 4,660,842, Cl. 280-43.230.

Watt Watcher, Inc., The: *See*—
Cameron, Maclyn C., Jr.; Hu, Charles C.; and Mix, Jerome M., 4,661,720, Cl. 307-117.000.

Watts, Lewis W., Jr.: *See*—
Marquis, Edward T.; Watts, Lewis W., Jr.; and Yeakey, Ernest L., 4,661,272, Cl. 252-32.70E.

Wavre, Alain, to Charmilles Technologies S.A. EDM apparatus provided with means for holding a portion cut off from the workpiece. 4,661,678, Cl. 219-69.00W.

Weast, David H.: *See*—
Pfenninger, Billy J.; Smith, David R.; and Weast, David H., 4,660,651, Cl. 172-311.000.

Weaver, Jimmie D., Jr.: *See*—
Byrd, Audis C.; Morris, Robert J.; Black, Robert H.; and Weaver, Jimmie D., Jr., 4,661,321, Cl. 422-111.000.

Weaver, John D.: *See*—
Martin, Charles W.; Ezzell, Bobby R.; and Weaver, John D., 4,661,411, Cl. 428-421.000.

Weaver, Max A.: *See*—
Pruett, Wayne P.; Wang, Richard H. S.; Hilbert, Samuel D.; and Weaver, Max A., 4,661,566, Cl. 525-445.000.

Webb, Louis H., III: *See*—
Pearl, David S., II; Webb, Louis H., III; and Kocell, Stephen B., 4,661,057, Cl. 431-243.000.

Weckenbrock, Hermann J.: *See*—
Roeder, Barbara J.; Harwood, Leopold A.; and Weckenbrock, Hermann J., 4,661,853, Cl. 358-167.000.

Wegener, Ingo: *See*—
Seiter, Wolfgang; Wegener, Ingo; and Reuter, Herbert, 4,661,281, Cl. 252-140.000.

WEGU Gummi- und Kunststoffwerlee Walter Drabing: *See*—
Tonnies, Herbert, 4,660,797, Cl. 248-610.000.

Weidemann, Werner, to Ball Corporation. Integrated microwave cavity resonator and magnetic shield for an atomic frequency standard. 4,661,782, Cl. 331-3.000.

Weil, Edward D.: *See*—
Mirviss, Stanley B.; and Weil, Edward D., 4,661,298, Cl. 260-502.50F.

Weinberger, Bernd: *See*—
Suhr, Heinz-Peter; and Weinberger, Bernd, 4,660,885, Cl. 297-353.000.

Weinblatt, Lee S. Technique for monitoring magazine readers. 4,661,847, Cl. 358-108.000.

Weinheimer, Francis P. Tilt switch. 4,661,663, Cl. 200-61.210.

Weir, Donald H.; Frederick, Stanley H.; Hotaling, Robert A.; and Robol, Ronald B., to Fox Industries Incorporated. Modular operations center for in-ground swimming pool. 4,661,247, Cl. 210-97.000.

Weis, Frank G., to Smith & Loveless. Submersible pump guide rail arrangement. 4,661,047, Cl. 417-360.000.

Weiss, John, to Schwab, Allen; Schwab, Richard; Jacoabs, Michael; and Woodward, William R. Reactive control apparatus. 4,660,828, Cl. 272-138.000.

Weissbach, Herbert: *See*—
Brot, Nathan; and Weissbach, Herbert, 4,661,443, Cl. 435-6.000.

Weissenberger, Walter G.: *See*—
Mayling, Rudolf M., 4,660,230, Cl. 2-413.000.

Weisskopf, Peter A.: *See*—
Mulokey, William P.; and Weisskopf, Peter A., 4,661,914, Cl. 364-505.000.

Weissman, Bernard. Device for retaining a removable dental prosthesis. 4,661,069, Cl. 433-183.000.

Weitzel, Richard A., to Eastman Kodak Company. Tensionable skive for magnetic brush application. 4,660,504, Cl. 118-657.000.

Weldex, Inc.: *See*—
Slasinski, Arthur L., 4,660,403, Cl. 72-389.000.

Weldin, William B.; and Lehman, Raymond C., to Beverage Mate Corp. Reusable bottle handle. 4,660,876, Cl. 294-33.000.

Welkie, David G., to Perkin-Elmer Corporation, The. Primary ion beam raster gating technique for secondary ion mass spectrometer system. 4,661,702, Cl. 250-309.000.

Wella Aktiengesellschaft: *See*—
Hoch, Dietrich; Wajaroff, Theodor; and Konrad, Eugen, 4,660,580, Cl. 132-7.000.
Konrad, Eugen; and Clausen, Thomas, 4,661,114, Cl. 8-409.000.

Wells, Robert C.: *See*—
Kuramoto, Yukimasa; Oonishi, Hajimu; Sakai, Yukio; Hayashi, Yoshiki; and Wells, Robert C., 4,660,961, Cl. 355-4.000.

Welmers, Thomas E.; and Whitney, Theodore R., to T. R. Whitney Corporation. Scanning beam control system and method with bi-directional reference scale. 4,661,699, Cl. 250-235.000.

Wenk, Erich: *See*—
Koziol, Konrad; and Wenk, Erich, 4,661,232, Cl. 204-286.000.

Wenz, Charles F., to Sperry Corporation. Shield for fan motor for reducing structureborne noise and the external magnetic field. 4,661,731, Cl. 310-51.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
Buhler, Ludwig; Erwin, Bohler; and Bruderer, Werner, 4,660,457, Cl. 89-12.000.

Werner, Friedrich; and Blank, Heinz U., to Bayer Aktiengesellschaft. Process for the preparation of pivaloylacetic acid esters. 4,661,621, Cl. 560-174.000.

Werner, Heinz-Peter: *See*—
Beck, Walter; Berger, Siegfried; and Werner, Heinz-Peter, 4,661,093, Cl. 604-50.000.

Werner, John W., to Freeman, Claude C. Well pump control system. 4,661,751, Cl. 318-332.000.

Werner, Margrit: *See*—
Beck, Walter; Berger, Siegfried; and Werner, Heinz-Peter, 4,661,093, Cl. 604-50.000.

Werner & Pfleiderer: *See*—
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Western Trading Co., Ltd.: *See*—
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Westinghouse Electric Corp: *See*—
Cook, Bruce M.; and Gutman, Jerzy, 4,661,310, Cl. 376-259.000.

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Draper, Robert, 4,660,510, Cl. 122-31.00R.
Fensterer, Howard F.; Klassen, William E.; Veronesi, Luciano; Boyle, David E.; and Salton, Robert B., 4,661,306, Cl. 376-209.000.
Glasser, Albert D., 4,661,233, Cl. 204-298.000.
Groenendaal, John C., Jr.; and Brown, Boyd, 4,661,043, Cl. 415-104.000.
Jones, Charles H.; and Kesner, John W., 4,661,938, Cl. 367-123.000.
Kwiecinski, James R.; and Jerson, Donald D., 4,661,397, Cl. 428-241.000.
Liu, Chi-Sheng; and Feldman, Donald W., 4,661,963, Cl. 372-59.000.
Rieben, Stuart L.; and Wylie, Mark E., 4,660,270, Cl. 29-525.000.
Swensrud, Roger L., 4,661,680, Cl. 219-121.0LU.

Westphal, Donald J.: *See*—
Kowalski, Frank P.; and Westphal, Donald J., 4,660,549, Cl. 128-69.000.

Wet Enterprises, Inc.: *See*—
Robinson, Alan S.; and Fuller, Mark W., 4,661,893, Cl. 362-267.000.

Wheeler, C. Ray, to Richards Medical Company. Method for fabricating an arthroscopic shaver. 4,660,267, Cl. 29-437.000.

Whirlpool Corporation: *See*—
Frohbieter, Edwin H.; and Linstromberg, William J., 4,660,247, Cl. 15-339.000.

White, Alyce D. Child's protective, entertainment or educational device. 4,661,072, Cl. 434-260.000.

White, Carl R., to Mallinckkodt, Inc. Synthesis and purification of d-propoxyphene hydrochloride. 4,661,625, Cl. 250-560.000.

White, Thomas C. Intraocular lens. 4,661,109, Cl. 623-6.000.

Whiteman, Robert N.: *See*—
Reynolds, Charles E.; and Whiteman, Robert N., 4,660,911, Cl. 339-17.0LC.

Whiteneir, Paul J. Body joint position monitoring system. 4,660,829, Cl. 273-29.00A.

Whitey Co.: *See*—
Brown, Cal R.; Gallagher, Michael T.; Wozniak, Richard F.; and Williams, Peter C., 4,660,591, Cl. 137-312.000.

Whitney, Theodore R.: *See*—
Welmers, Thomas E.; and Whitney, Theodore R., 4,661,699, Cl. 250-235.000.

Whittaker, Jerry R., to Garrett, Lane S. Solar power supply and battery charging circuit. 4,661,758, Cl. 320-21.000.

Wick, Alexander; Frost, Jonathan; and Bertin, Jean, to Synthelabo. Furo 3,2-c pyridine derivatives and their use in treating depression and cerebral ischemia. 4,661,498, Cl. 514-302.000.

Widegren, Tage K.; and Ericsson, Tommy T., to Nicator AB. Work rack structure. 4,660,405, Cl. 72-447.000.

Widmer, Erich: *See*—
Lukac, Teodor; Soukup, Milan; and Widmer, Erich, 4,661,641, Cl. 568-377.000.

Wiebe, Kenneth J.; and Bexten, Eugen J., to J. I. Case Company. Implement wing frame folding apparatus with automatically pivoted biased latch. 4,660,654, Cl. 172-776.000.

Wiech, Raymond E., Jr., to Fine Particle Technology Corp. Method for rapidly removing binder from a green body. 4,661,315, Cl. 419-10.000.

Wiersdorff, Walter-Wielant: *See*—
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Wildi, Eric J.; and Kohl, James E., to General Electric Company. High voltage semiconductor devices electrically isolated from an integrated circuit substrate. 4,661,838, Cl. 357-23.800.

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Willard, G. Fred: *See*—
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Williams, Howard M., Jr., to Hubbell-Bell Inc. Lampholder gasket. 4,660,916, Cl. 339-94.00L.

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Wilner, Pieter. Pile-driving apparatus and method of operating such apparatus. 4,660,655, Cl. 173-82.000.

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Wilton, John H.; Hokanson, Gerard C.; and French, James C., to Warner-Lambert Company. CL-1577-B_4 compound, its production and use. 4,661,353, Cl. 424-123.000.

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Winkler, Theodore; and Burger, Fredric W., to Brandt, Inc. Compact apparatus for dispensing a preselected mix of paper currency or the like. 4,660,822, Cl. 271-10.000.

Winston, Walter E.; and Atkinson, Lowell G., to Triune Automated Painting Systems. Leakage detection in remote supply painting system. 4,661,045, Cl. 417-9.000.

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Wittrisch, Christian, to Institut Francais du Petrole. Equipment for a pipe string such as a drill-pipe string, comprising a side entry connection for passing a cable. 4,660,635, Cl. 166-54.500.

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Wollet, William M., to GTE Communication Systems Corporation. Coin receiving mechanism having a slideable door to prevent coin insertion after stuffing. 4,660,706, Cl. 194-351.000.

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Woode, Rudolf. Bar screen. 4,660,726, Cl. 209-674.000.

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Keystone International, Inc.: *See*—
Holtgraver, Edward G., Re. 32,409, Cl. 137-315.000.
Masonite Corporation: *See*—
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Mengshoel, Hans C.; and Rykken, Oddvin. Combined seat and backrest unit for a chair. Re. 32,407, Cl. D6-365.000.
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Mengshoel, Hans C.; and Rykken, Oddvin, Re. 32,407, Cl. D6-365.000.

LIST OF REEXAMINATION PATENTEES

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Baker, Stanley Z.; and Baker, Benjamin H., to J. T. Eaton & Company, Inc. Trap for rats, mice, and other vermin. B1 4,438,584, 4-28-87, Cl. 43-58.000.
Bedinghaus Business Forms Inc.: *See*—
Tonges, Gerald A.; and Elmlinger, Eugene L., B1 4,175,774, Cl. 283-94.000.
Birkner, John M.; and Chua, Hua-Thye, to Monolithic Memories, Inc. Programmable array logic circuit. B1 4,124,899, 4-28-87, Cl. 364-716.000.
Chapman, Ronald H., to Motorola, Inc. DC restoration amplifier with automatic zero offset adjustment. B1 3,846,710, 4-28-87, Cl. 330-11.000.
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Gould, Gordon. Optically pumped laser amplifiers. B1 4,053,845, 4-28-87, Cl. 330-4.300.
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Bender, Amos N. Portable stand for a volleyball net or the like. 289,540, 4-28-87, Cl. D21-199.000.
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Kikuchi, Katsutoshi, to Sony Corporation. Reel hub for magnetic tape cassette or the like. 289,518, 4-28-87, Cl. D14-10.000.
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ISSUED APRIL 28, 1987

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456 4,660,531
458 4,660,523
468 4,660,524
525 4,660,525
559 4,660,526
563 4,660,532
588 4,660,533
643 4,660,534

CLASS 124
24 R 4,660,536
86 4,660,537
89 4,660,538

CLASS 125
10 4,660,539

CLASS 126
21 A 4,660,540
360 R 4,660,541
378 4,660,542
400 4,660,543
440 4,660,544
452 4,660,545

CLASS 128
1 R 4,660,546
1.1 4,660,547
33 4,660,548
69 4,660,549
77 4,660,550
79 4,660,551
134 4,660,552
156 4,660,553
158 4,660,554
207.18 4,660,555
303 R 4,660,573
305 4,660,556
4,660,557
325 4,660,558
339 4,660,559
344 4,660,560
376 4,660,561
640 4,660,562
654 4,660,563
660 4,660,564
4,660,565
677 4,660,566
682 4,660,567
748 4,660,568
765 4,660,569
4,660,570
784 4,660,571
804 4,660,572

CLASS 131
105 4,660,574
256 4,660,575
281 4,660,578
336 4,660,576
339 4,660,579
352 4,660,577

CLASS 132
7 4,660,580
4,660,581
88.7 4,660,582
89 4,660,583
92 A 4,660,584

CLASS 134
96 4,660,585

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CLASS 136

247 4,661,649
256 4,661,650

CLASS 137

2 4,660,586
8 4,660,587
4,660,588
83 4,660,589
226 4,660,590
312 4,660,591
315 Re 32,409
330 4,660,592
340 4,660,593
375 4,660,594
404 4,660,595
496 4,660,596
505.42 4,660,597
510 4,660,598
512.2 4,660,599
552 4,660,600
613 4,660,601
899.4 4,660,602

CLASS 138

92 4,660,603

CLASS 139

29 4,660,604
420 R 4,660,605

CLASS 141

1 4,660,606
4,660,607
12 4,660,608

CLASS 144

117 R 4,660,609

CLASS 148

1.5 4,661,166
4,661,167
4,661,168
2 4,661,169
6.27 4,661,170
6.35 4,661,171
12.7 A 4,661,172
24 4,661,173
111 4,661,174
171 4,661,175
175 4,661,176
189 4,661,177
435 4,661,178

CLASS 149

124 4,661,179

CLASS 150

52 R 4,660,610

CLASS 152

243 4,660,611

CLASS 156

89 4,661,180
4,661,181
94 4,661,182
172 4,661,183
185 4,661,184
212 4,661,185
230 4,661,186
242 4,661,187
244.11 4,661,188
248 4,661,189
273.5 4,661,190
275.5 4,661,191
292 4,661,192
307.3 4,661,193
330.9 4,661,194
344 4,661,195
345 4,661,196
443 4,661,197
578 4,661,198
612 4,661,199
616 R 4,661,200
628 4,661,201
643 4,661,202
4,661,203
656 4,661,204

CLASS 160

173 4,660,612
199 4,660,613

CLASS 162

78 4,661,205
358 4,661,206

CLASS 164

113 4,660,614
418 4,660,615
426 4,660,616
451 4,660,617
454 4,660,618
455 4,660,619
457 4,660,620
461 4,660,621
463 4,660,622
518 4,660,623

CLASS 165

41 4,660,624
47 4,660,625
76 4,660,626
86 4,660,627
92 4,660,628
104.12 4,660,629
133 4,660,630
159 4,660,631
160 4,660,632
167 4,660,633

CLASS 166

54.5 4,660,635
60 4,660,636
77.5 4,660,634
120 4,660,637
250 4,660,638
267 4,660,639
270 4,660,640
272 4,660,641
280 4,660,642
283 4,660,643
285 4,660,644
304 4,660,645
321 4,660,646
386 4,660,647

CLASS 169

38 4,660,648

CLASS 172

2 4,660,649
21 4,660,650
260.5 4,660,652
311 4,660,651
522 4,660,653
776 4,660,654

CLASS 173

82 4,660,655

CLASS 174

38 4,661,651
48 4,661,652
52 FP 4,661,653
68.5 4,661,654

CLASS 175

26 4,660,656
269 4,660,657
296 4,660,658
329 4,660,659
410 4,660,660

CLASS 177

25 4,660,661
50 4,660,662
4,660,663
108 4,660,664
145 4,660,665
148 4,660,666
164 4,660,667

CLASS 178

18 4,661,655
4,661,656

CLASS 180

19.1 4,660,668
79.1 4,660,669
117 4,660,670
142 4,660,671
175 4,660,672
334 4,660,673

CLASS 181

113 4,660,674
4,660,675
224 4,660,676

CLASS 182

10 4,660,677
14 4,660,678
18 4,660,679
36 4,660,680
90 4,660,681

CLASS 187

1 R 4,660,682

CLASS 188

18 A 4,660,683
71.9 4,660,684
73.37 4,660,685
280 4,660,686
287 4,660,687
299 4,660,688
319 4,660,689

CLASS 191

12.2 A 4,661,660

CLASS 192

0.033 4,660,697
0.075 4,660,693
4,660,699
3 H 4,660,691
3.31 4,660,690
4,660,692
4 A 4,660,696
45 4,660,698
53 F 4,660,707
85 CA 4,660,694
89 B 4,660,695
4,660,700
98 4,660,701
4,660,702
130 4,660,703

CLASS 193

38 4,660,704

CLASS 194

318 4,660,705
351 4,660,706

CLASS 198

339.1 4,660,709
341 4,660,708
397 4,660,710
430 4,660,711
434 4,660,712
443 4,660,713

CLASS 200

19 R 4,661,661
48 R 4,661,662
61.21 4,661,663
86 R 4,661,664
144 B 4,661,665
4,661,666
314 4,661,667

CLASS 203

3 4,661,207
15 4,661,208
51 4,661,209

CLASS 204

1 T 4,661,210
4,661,211
11 4,661,212
15 4,661,213
4,661,214
28 4,661,215
44.5 4,661,216
59 R 4,661,217
98 4,661,218
129.75 4,661,219
141.5 4,661,220
157.22 4,661,221
180.9 4,661,222
181.7 4,661,223
182.3 4,661,224
183.3 4,661,225
186 4,661,226
4,661,227
192.13 4,661,229
192.25 4,661,228
206 4,661,230
252 4,661,231
286 4,661,232
298 4,661,233
406 4,661,234
414 4,661,235
420 4,661,236

CLASS 206

0.6 4,660,714
0.8 4,660,715
216 4,660,716
338 4,660,717
343 4,660,718
379 4,660,719
426 4,660,720
439 4,660,721
454 4,660,722
493 4,660,723
509 4,660,724
4,660,725

CLASS 208

61 4,661,238
111 4,661,239
127 4,661,240
131 4,661,241
177 4,661,242
423 4,661,237

CLASS 209

10 4,661,243
139.2 4,661,244
399 4,661,245
674 4,660,726

CLASS 210

87 4,661,246
97 4,661,247
198.2 4,661,248
266 4,661,249
352 4,661,250
396 4,661,251
402 4,661,252
411 4,661,253
490 4,661,254
491 4,661,255
634 4,661,256
638 4,661,257
861 4,661,258
4,661,259
679 4,661,260
4,661,261
4,661,262
735 4,661,263
748 4,661,264
804 4,661,265

CLASS 211

74 4,660,727
118 4,660,728

CLASS 212

149 4,660,729
163 4,660,730
175 4,660,731

CLASS 215

232 4,660,732

CLASS 219

10.41 4,661,668
10.55 B 4,661,670
10.55 E 4,661,671
4,661,672
10.55 R 4,661,669
64 4,661,673
69 C 4,661,674
69 W 4,661,678
91.21 4,661,675
121 L 4,661,679
121 LD 4,661,677
121 LM 4,661,676
121 LU 4,661,680
4,661,681
121 PL 4,661,682
222 4,661,683
250 4,661,685
270 4,661,686
279 4,661,684
301 4,661,687
421 4,661,688
528 4,661,689
549 4,661,690

CLASS 220

69 4,660,733
74 4,660,734
276 4,660,735
327 4,660,736
410 4,660,737
414 4,660,738

CLASS 221

70 4,660,739

CLASS 222

1 4,660,740
4,660,741
36 4,660,742
146.5 4,660,743
147 4,660,744
174 4,660,745
207 4,660,746
213 4,660,747
509 4,660,748
600 4,660,749

CLASS 223

91 4,660,750

CLASS 224

210 4,660,751

CLASS 226

95 4,660,752

CLASS 228

48 4,660,753
151 4,660,754
178 4,660,755
184 4,660,756

CLASS 232

1 C 4,660,757
43.2 4,660,758

CLASS 235

375 4,661,691

CLASS 236

46 R 4,660,759
59 4,660,760

CLASS 237

2 B 4,660,761

CLASS 239

1 4,660,762
43 4,660,763
44 4,660,764
222.17 4,660,765
4,660,766
265.35 4,660,767
423 4,660,768
542 4,660,769
585 4,660,770
596 4,660,773
694 4,660,771
704 4,660,772
708 4,660,774
727 4,660,775

CLASS 241

53 4,660,776
88 4,660,777
292.1 4,660,778

CLASS 242

7.02 4,660,779
35.6 E 4,660,780
55.2 4,660,781
86 4,660,782
155 R 4,660,783
198 4,660,784

CLASS 244

17.19 4,660,785
118.5 4,660,787
209 4,660,788
324 4,660,786

CLASS 248

27.3 4,660,789
68.1 4,660,790
122 4,660,791
174 4,660,792
231.8 4,660,793
238 4,660,794
430 4,660,795
444 4,660,796
610 4,660,797
648 4,660,798
676 4,660,799

CLASS 249

24 4,660,800
66 A 4,660,801

CLASS 250

201 4,661,692
207 4,661,693
213 VT 4,661,694
227 4,661,695
231 SE 4,661,696
4,661,697
4,661,698
235 4,661,699
267 4,661,700
270 4,661,701
309 4,661,702
317.1 4,661,703
327.2 4,661,704
4,661,708
328 4,661,705
341 4,661,706
352 4,661,707
396 R 4,661,709
423 R 4,661,710
458.1 4,661,711
492.2 4,661,712
560 4,661,625
578 4,661,713

CLASS 251

9 4,660,802
149.1 4,660,803
149.6 4,660,804
328 4,660,805

CLASS 252

8.551 4,661,266
8.75 4,661,270
8.8 4,661,267
4,661,268
4,661,269
32.5 4,661,271
32.7 E 4,661,272
47 4,661,273
4,661,274
49.3 4,661,275
51.5 A 4,661,276
4,661,277
61 4,661,278
94 4,661,279
99 4,661,280
140 4,661,281
179 4,661,282
299.63 4,661,283
301.4 P 4,661,284
522 R 4,661,285
4,661,286
542 4,661,287
545 4,661,288
547 4,661,289
626 4,661,290
629 4,661,291

CLASS 254

11 4,660,806

CLASS 257

81 4,661,836

CLASS 260

371 4,661,292
377 4,661,293
397.2 4,661,294
397.45 4,661,295
413 4,661,296
501.18 4,661,297
502.5 F 4,661,298

CLASS 264

25 4,661,299
40.6 4,661,300
41 4,661,301
53 4,661,302
132 4,661,305
171 4,661,303
508 4,661,314

CLASS 266

75 4,660,807
236 4,660,808
246 4,660,809

CLASS 267

64.25 4,660,810
140.1 4,660,812
4,660,813
141.1 4,660,811

CLASS 269

16 4,660,814
22 4,660,815
238 4,660,816
323 4,660,817

CLASS 270

1.1 4,660,818

CLASS 271

3.1 4,660,819
9 4,660,820
10 4,660,821
4,660,822
22 4,660,823
208 4,660,824
276 4,660,825

CLASS 272

73 4,660,826
78 4,660,827
138 4,660,828

CLASS 273

29 A 4,660,829
32.5 4,660,837
60 B 4,660,830
65 E 4,660,831
73 J 4,660,832
143 R 4,660,833
176 AB 4,660,834
200 R 4,660,835
247 4,660,836

CLASS 277

97 4,660,838
153 4,660,839

CLASS 279

1 N 4,660,840
61 4,660,841

CLASS 280

43.23 4,660,842
80 B 4,660,843
91 4,660,844
95 R 4,660,845
154.5 R 4,660,846
298 4,660,847
404 4,660,848
625 4,660,849
642 4,660,850
673 4,660,851
750 4,660,852
772 4,660,853
782 4,660,854

CLASS 281

2 4,660,855
5 4,660,856
20 4,660,857
21 R 4,660,858

CLASS 283

70 4,660,859
94 B1 4,175,774

CLASS 285

12 4,660,860
45 4,660,861
114 4,660,862
145 4,660,863

173 4,660,864
174 4,660,865
231 4,660,866
256 4,660,867
354 4,660,868
365 4,660,869
419 4,660,870

CLASS 290

4 R 4,661,714
48 4,661,715
53 4,661,716

CLASS 292

81 4,660,871
242 4,660,872
251 4,660,873
307 R 4,660,874

CLASS 294

26 4,660,875
33 4,660,876
88 4,660,877

CLASS 296

1 R 4,660,878
1 S 4,660,879
37.1 4,660,880
37.9 4,660,881
104 4,660,882

CLASS 297

85 4,660,883
317 4,660,884
353 4,660,885
367 4,660,886
445 4,660,887
452 4,660,888
467 4,660,889

CLASS 299

79 4,660,890
81 4,660,891
4,660,892

CLASS 301

37 SA 4,660,893

CLASS 303

54 4,660,894
75 4,660,895
106 4,660,896
114 4,660,897
4,660,898
115 4,660,899

CLASS 307

10 LS 4,661,717
10 R 4,661,718
38 4,661,719
117 4,661,720
269 4,661,721
419 4,661,722
446 4,661,723
449 4,661,724
450 4,661,725
4,661,726
456 4,661,727
468 4,661,728

CLASS 310

12 4,661,730
13 4,661,729
51 4,661,731
68 E 4,661,732
68 R 4,661,733
89 4,661,734
112 4,661,735
156 4,661,736
166 4,661,737
313 D 4,661,738

CLASS 312

7.1 4,660,900
111 4,660,901
114 4,660,902
116 4,660,903
140.2 4,660,904
195 4,660,905

CLASS 313

333 4,661,739
346 R 4,661,740
447 4,661,741
474 4,661,742
496 4,661,743

CLASS 315

4 4,661,744
106 4,661,745
248 4,661,746
330 4,661,747
411 4,661,748

CLASS 318

41 4,661,749
326 4,661,750
332 4,661,751
434 4,661,752
689 4,661,753
696 4,661,754
4,661,755
701 4,661,756
798 4,661,757

CLASS 320

21 4,661,758
48 4,661,759

CLASS 322

27 4,661,760
28 4,661,761
40 4,661,762

CLASS 323

215 4,661,763
222 4,661,764
241 4,661,765
287 4,661,766

CLASS 324

57 R 4,661,767
60 C 4,661,768
78 Z 4,661,769
158 D 4,661,770
4,661,771
158 R 4,661,772
208 4,661,773
225 4,661,777
231 4,661,774
307 4,661,775
309 4,661,776
380 4,661,778

CLASS 330

4.3 B1 4,053,845
11 B1 3,846,710
253 4,661,779
254 4,661,780
255 4,661,781

CLASS 331

3 4,661,782
82 4,661,783
83 4,661,784
109 4,661,785

CLASS 332

7.51 4,661,786

CLASS 333

22 R 4,661,787
165 4,661,788
202 4,661,789
234 4,661,790

CLASS 335

151 4,661,791

CLASS 336

65 4,661,792

CLASS 337

260 4,661,793

CLASS 338

315 4,661,794

CLASS 339

2 L 4,660,906
14 L 4,660,909
14 R 4,660,907
4,660,908
16 R 4,660,910
17 LC 4,660,911
44 R 4,660,912
49 R 4,660,913
59 R 4,660,914
61 R 4,660,915
94 L 4,660,916
97 P 4,660,918
97 R 4,660,917
99 L 4,660,919
176 MP 4,660,920
177 R 4,660,921
278 T 4,660,922

CLASS 340

71 4,661,795
85 4,661,796
98 4,661,800
347 DA 4,661,802
347 DD 4,661,801
347 NT 4,661,803
539 4,661,804
545 4,661,805
561 4,661,797
568 4,661,806
638 4,661,807
709 4,661,810
735 4,661,808
744 4,661,798
4,661,811
783 4,661,809
799 4,661,812
815.26 4,661,813
825.79 4,661,814
825.86 4,661,815
941 4,661,799

CLASS 342

91 4,661,816
124 4,661,817
172 4,661,818
201 4,661,819
351 4,661,820

CLASS 343

743 4,661,821

CLASS 346

70 PH 4,661,824
75 4,661,822
76 PH 4,661,823
4,661,825
4,661,826
4,661,827
108 4,661,828

CLASS 350

96.10 4,660,924
96.15 4,660,925
96.23 4,660,926
96.33 4,660,928
96.34 4,660,923
4,660,927
104 4,660,929
126 4,660,930
140 4,660,931
171 4,660,932
255 4,660,933
320 4,660,934
336 4,660,935
339 D 4,660,936
349 4,660,937
355 4,660,938
357 4,660,939
458 4,660,940
487 4,660,941
521 4,660,942
538 4,660,943
635 4,660,944

CLASS 351

203 4,660,945
212 4,660,946
4,660,947
239 4,660,948

CLASS 354

21 4,660,949
173.1 4,660,950
187 4,660,951
246 4,660,952
286 4,660,953
403 4,660,954
408 4,660,955
416 4,660,956

CLASS 355

3 DD 4,660,958
4,660,960
3 R 4,660,959
3 SH 4,660,957
4 4,660,961
15 4,660,962
24 4,660,963
28 4,660,964
41 4,660,965
43 4,660,966
67 4,660,967
68 4,660,968

CLASS 356

1 4,660,969
4,660,970
39 4,660,971
73.1 4,660,972
4,660,973
128 4,660,974
308 4,660,975
312 4,660,976
319 4,660,977
353 4,660,978
357 4,660,979
4,660,980
375 4,660,981
383 4,660,982
445 4,660,983
446 4,660,984

CLASS 357

23.8 4,661,838
30 4,661,829
4,661,830
46 4,661,831
49 4,661,832
54 4,661,833
56 4,661,834
68 4,661,835
84 4,661,837

CLASS 358

12 4,661,839
16 4,661,840
23 4,661,844
27 4,661,841
36 4,661,842
80 4,661,843
99 4,661,845
100 4,661,848
108 4,661,847
136 4,661,849
140 4,661,850
144 4,661,851
160 4,661,852
165 4,661,846
167 4,661,853
213 4,661,854
225 4,661,855
252 4,661,856
257 4,661,857
283 4,661,859
284 4,661,858
294 4,661,860
302 4,661,861
334 4,661,863
335 4,661,862

CLASS 360

85 4,661,864
96.1 4,661,866
96.5 4,661,867
96.6 4,661,865
4,661,868
97 4,661,869
98 4,661,870
99 4,661,871
104 4,661,872
105 4,661,873
128 4,661,874
133 4,661,875

CLASS 361

15 4,661,876
36 4,661,877
56 4,661,878
58 4,661,879
93 4,661,880
104 4,661,881
159 4,661,882
4,661,883
4,661,884
306 4,661,885
346 4,661,886
399 4,661,887
405 4,661,888
424 4,661,889

CLASS 362

217 4,661,890
219 4,661,891
226 4,661,892
267 4,661,893
391 4,661,894
427 4,661,895

CLASS 363

17 4,661,897
24 4,661,896
82 4,661,898

CLASS 364

171 4,661,899
200 4,661,900
4,661,901
4,661,902
4,661,903
4,661,904
4,661,905
405 4,661,908
410 4,661,906
414 4,661,909
420 4,661,907
426 4,661,910
471 4,661,911
474 4,661,912
500 4,661,913
505 4,661,914
513.5 4,661,915
4,661,916
567 4,661,917
569 4,661,918
4,661,919
571 4,661,920
708 4,661,921
716 4,661,922
B1 4,124,899
821 4,661,923
900 4,661,924
4,661,925

CLASS 365

104 4,661,926
175 4,661,927
189 4,661,928
4,661,929
201 4,661,930
203 4,661,931

CLASS 366

5 4,660,985
67 4,660,987
137 4,660,988
154 4,660,986
331 4,660,989
348 4,660,990

CLASS 367

25 4,661,932
27 4,661,933
37 4,661,934
70 4,661,935
94 4,661,936
103 4,661,937
123 4,661,938
136 4,661,939

CLASS 368

10 4,660,991
223 4,660,992

CLASS 369

44 4,661,942
4,661,943
4,661,944
111 4,661,940
4,661,941

CLASS 370

20 4,661,945
58 4,661,946
60 4,661,947
62 4,661,949
77 4,661,948
85 4,661,950
4,661,951
94 4,661,952

CLASS 371

16 4,661,953
37 4,661,954
38 4,661,955
4,661,956
59 4,661,957

CLASS 372

34 4,661,958
4,661,959
45 4,661,960
46 4,661,961
50 4,661,962
59 4,661,963
94 4,661,964

CLASS 374

1 4,660,993

CLASS 375

110 4,661,965
112 4,661,966

CLASS 376

123 4,661,304
209 4,661,306
232 4,661,307
245 4,661,308
248 4,661,309
259 4,661,310
266 4,661,311
283 4,661,312
295 4,661,313

CLASS 378

39 4,661,967
79 4,661,968

CLASS 379

1 4,661,969
29 4,661,971
57 4,661,972
61 4,661,659
4,661,970
194 4,661,973
198 4,661,974
215 4,661,975
354 4,661,976
355 4,661,977
394 4,661,978
412 4,661,979

CLASS 380

4,661,657
23 4,661,658
46 4,661,980

CLASS 381

31 4,661,981
103 4,661,982

CLASS 382

1 4,661,983
8 4,661,984
4,661,985
41 4,661,986
4,661,987
65 4,661,988

CLASS 383

2 4,661,989
97 4,661,990

CLASS 384

49 4,660,994
121 4,660,995
138 4,660,996
490 4,660,997

CLASS 400

61 4,660,998
4,660,999
83 4,661,000
103 4,661,001
124 4,661,002
216.1 4,661,003
234 4,661,004
489 4,661,005

CLASS 402

18 4,661,006

CLASS 403

24 4,661,007
294 4,661,008
349 4,661,009

CLASS 404

6 4,661,010
124 4,661,011

CLASS 405

16 4,661,012
74 4,661,013
111 4,661,014
115 4,661,015
169 4,661,016
4,661,017
178 4,661,018
183 4,661,019
227 4,661,020
244 4,661,021
260 4,661,022
262 4,661,023

CLASS 406

63 4,661,024
70 4,661,025
74 4,661,026

CLASS 408

151 4,661,027
165 4,661,028

CLASS 409

233 4,661,029

CLASS 411

85 4,661,030
263 4,661,031

CLASS 414

5 4,661,032
405 4,661,033
416 4,661,034
550 4,661,035
686 4,661,036
729 4,661,037
730 4,661,038
735 4,661,039
744 R 4,661,040

CLASS 415

52 4,661,041
64 4,661,042
104 4,661,043
201 4,661,044
254 4,661,054

CLASS 417

9 4,661,045
203 4,661,046
360 4,661,047
4,661,048
418 4,661,049
454 4,661,050
499 4,661,051
552 4,661,052

CLASS 419

10 4,661,315

CLASS 420

418 4,661,316
434 4,661,317

CLASS 422

62 4,661,318
68 4,661,319
86 4,661,320
111 4,661,321
158 4,661,322
197 4,661,323
246 4,661,324
304 4,661,325
310 4,661,326

CLASS 423

7 4,661,327
121 4,661,328
245 4,661,329
263 4,661,330
309 4,661,331
326 4,661,332
328 4,661,333
329 4,661,334
348 4,661,335
447.2 4,661,336
584 4,661,337

CLASS 424

7.1 4,661,338
47 4,661,340
48 4,661,341
54 4,661,342
59 4,661,343
79 4,661,344
85 4,661,345
4,661,346
4,661,347
88 4,661,348
89 4,661,349
92 4,661,350
93 4,661,351
117 4,661,352
123 4,661,353
145 4,661,354
486 4,661,339

CLASS 425

3 4,661,053
556 4,661,055

CLASS 426

14 4,661,355
17 4,661,356
37 4,661,357
72 4,661,358
89 4,661,359
94 4,661,360
283 4,661,361
289 4,661,362
429 4,661,363
896 4,661,364
507 4,661,365
572 4,661,366

CLASS 427

3 4,661,367
8 4,661,368
4,661,369
37 4,661,370
49 4,661,371
56.1 4,661,372
66 4,661,373
88 4,661,374
89 4,661,375
126.1 4,661,376
130 4,661,377
140 4,661,378
181 4,661,379
207.1 4,661,380
255 4,661,381
297 4,661,382
302 4,661,383
304 4,661,384
345 4,661,385

CLASS 428

35 4,661,386
36 4,661,387
43 4,661,388
110 4,661,389
113 4,661,390
159 4,661,391
182 4,661,392
200 4,661,393
212 4,661,394
213 4,661,395
215 4,661,401
217 4,661,396
241 4,661,397
245 4,661,398
246 4,661,399
255 4,661,400
323 4,661,402
367 4,661,403
369 4,661,404
391 4,661,405
397 4,661,406
403 4,661,407
405 4,661,408
408 4,661,409
418 4,661,410
421 4,661,411
426 4,661,412
432 4,661,413
461 4,661,414
570 4,661,415
606 4,661,416
607 4,661,417
610 4,661,418
691 4,661,419
692 4,661,420
694 4,661,421

CLASS 429

13 4,661,422
41 4,661,423
104 4,661,424
206 4,661,425

CLASS 430

5 4,661,426
57 4,661,427
58 4,661,428
70 4,661,429
120 4,661,430
126 4,661,431
175 4,661,432
270 4,661,433
281 4,661,434
311 4,661,435
326 4,661,436
390 4,661,437
423 4,661,438
449 4,661,439
512 4,661,440
555 4,661,441

CLASS 431

5 4,661,056
243 4,661,057
359 4,661,058

CLASS 433

9 4,661,059
82 4,661,060
102 4,661,061
128 4,661,062
139 4,661,063
166 4,661,064
168.1 4,661,065
176 4,661,066
181 4,661,067
4,661,068
183 4,661,069
203.1 4,661,070
223 4,661,071

CLASS 434

178 4,661,074
222 4,661,073
260 4,661,072

CLASS 435

4 4,661,442
6 4,661,443
7 4,661,444
4,661,445
4,661,446
68 4,661,447
90 4,661,448
93 4,661,449
172.3 4,661,450
174 4,661,451
187 4,661,452
212 4,661,453
240 4,661,455
244 4,661,456
4,661,457
256 4,661,454
284 4,661,458

CLASS 436

25 4,661,459
165 4,661,460

CLASS 440

69 4,661,075
77 4,661,076

CLASS 441

84 4,661,077

CLASS 445

9 4,661,078
22 4,661,079

CLASS 446

4 4,661,080
220 4,661,081
488 4,661,082

CLASS 455

26.1 4,661,991
89 4,661,992
103 4,661,993
157 4,661,994
183 4,661,995
205 4,661,996
315 4,661,998
327 4,661,997
328 4,661,999
333 4,662,000
340 4,662,001
601 4,662,002
605 4,662,003
607 4,662,004

CLASS 464

17 4,661,083
69 4,661,084
160 4,661,085

CLASS 474

84 4,661,086
135 4,661,087
237 4,661,088
242 4,661,089

CLASS 493

44 4,661,090
417 4,661,091

CLASS 501

97 4,661,461
134 4,661,462

CLASS 502

24 4,661,463
84 4,661,464
111 4,661,465
184 4,661,466
202 4,661,467
333 4,661,468

CLASS 511

382 4,661,506

CLASS 514

2 4,661,469
9 4,661,470
13 4,661,471
15 4,661,472
16 4,661,473
41 4,661,474
54 4,661,475
60 4,661,476
76 4,661,477
158 4,661,478
210 4,661,480
211 4,661,489
214 4,661,479
218 4,661,481
227 4,661,482
236 4,661,483
242 4,661,484
247 4,661,485
252 4,661,486
4,661,487
4,661,493
255 4,661,494
256 4,661,488
258 4,661,490
260 4,661,491
275 4,661,495
278 4,661,496
282 4,661,492
302 4,661,498
311 4,661,499
325 4,661,500
345 4,661,497
4,661,501
346 4,661,502
372 4,661,503
373 4,661,504
381 4,661,505
383 4,661,507
396 4,661,508
397 4,661,509
400 4,661,510
415 4,661,511
423 4,661,512
459 4,661,513
469 4,661,514
471 4,661,515
492 4,661,516
515 4,661,517
528 4,661,518
547 4,661,519
609 4,661,520
613 4,661,521
632 4,661,522
635 4,661,523
682 4,661,524

CLASS 518

714 4,661,525

CLASS 521

53 4,661,526
55 4,661,527
85 4,661,528
122 4,661,533
137 4,661,529
4,661,530
4,661,531
167 4,661,532

CLASS 522

131 4,661,534

CLASS 523

105 4,661,535
113 4,661,536
200 4,661,537
348 4,661,538
400 4,661,539
409 4,661,540
414 4,661,541

CLASS 524

14 Re.32,408
59 4,661,542
94 4,661,543
109 4,661,544
147 4,661,545
153 4,661,546
156 4,661,547
204 4,661,548
376 4,661,550
379 4,661,551
397 4,661,549
418 4,661,553
433 4,661,552
504 4,661,554
611 4,661,555
745 4,661,556
770 4,661,557

CLASS 525

36 4,661,558
65 4,661,559
68 4,661,560
4,661,561
122 4,661,562
179 4,661,563
242 4,661,564
437 4,661,565
445 4,661,566
468 4,661,567
510 4,661,568

CLASS 526

62 4,661,569
88 4,661,570
216 4,661,571
229 4,661,572
245 4,661,573
262 4,661,574
283 4,661,575
298 4,661,576

CLASS 528

10 4,661,577
98 4,661,578
170 4,661,579
176 4,661,580
4,661,581
292 4,661,582
322 4,661,583
388 4,661,584
502 4,661,585

CLASS 530

387 4,661,586

CLASS 534

696 4,661,587

CLASS 536

7.1 4,661,588
91 4,661,589

CLASS 540

215 4,661,590
495 4,661,591

CLASS 544

252 4,661,592
353 4,661,593

CLASS 546

22 4,661,594
89 4,661,595
152 4,661,596
242 4,661,597
304 4,661,598

CLASS 548

146 4,661,599
217 4,661,600
251 4,661,601
336 4,661,602
346 4,661,603
435 4,661,604
463 4,661,605
497 4,661,606

CLASS 549

383 4,661,607

CLASS 556

11 4,661,608
418 4,661,611
450 4,661,612
472 4,661,613

CLASS 558

277 4,661,609
344 4,661,610
346 4,661,614
363 4,661,615

CLASS 560

61 4,661,617
62 4,661,618
050 4,661,616
100 4,661,619
104 4,661,620
174 4,661,621
199 4,661,622
232 4,661,623
4,661,624
343 4,661,626
352 4,661,627

CLASS 562

401 4,661,628
443 4,661,629
455 4,661,630
519 4,661,631

CLASS 564

217 4,661,632
286 4,661,633
292 4,661,634
374 4,661,635

CLASS 568

31 4,661,636
308 4,661,640
377 4,661,641
475 4,661,642
678 4,661,643
716 4,661,637
723 4,661,644
744 4,661,645
804 4,661,638
835 4,661,639
857 4,661,646
868 4,661,647

CLASS 570

208 4,661,648

CLASS 604

26 4,661,092
50 4,661,093
53 4,661,094
62 4,661,103
103 4,661,095
122 4,661,096
123 4,661,097
135 4,661,098
256 4,661,110
290 4,661,099
327 4,661,100
360 4,661,101
385 A 4,661,102
896 4,661,104
897 4,661,105

CLASS 623

2 4,661,106
4,661,107
6 4,661,108
4,661,109
11 4,661,111
22 4,661,112
65 4,661,113

D1—	12	289,460			289,482			289,501		102	289,521		199	289,540			289,560
	74	289,461		611	289,473		32	289,502		106	289,522		248	289,541			289,561
	101	289,462	D7—	6	289,483		39	289,503		117	289,463	D23—	6	289,542			289,562
D5—	65	289,464		15	289,484		78	289,504	D15—	9	289,523		28	289,544			289,563
D6—	333	289,465		20	289,485		85	289,505		17	289,524		29	289,543	D28—	7	289,564
	335	289,466		53	289,486	D12—	127	289,506		127	289,525		35	289,545		10	289,565
	358	289,467		346	289,487		130	289,507	D17—	20	289,526		94	289,546		13	289,566
	368	289,468		391	289,488		136	289,508	D18—	7	289,527		123	289,547		25	289,567
	379	289,469	D8—	91	289,489		142	289,509			289,528	D24—	1.1	289,548	D29—	16	289,568
	397	289,470		306	289,490			289,510		22	289,529		10	289,549			289,569
		289,471		330	289,491		143	289,511	D19—	27	289,530		21	289,550	D30—	13	289,570
		289,472		359	289,492		147	289,512	D21—	15	289,531		54	289,551		25	289,571
	420	289,474		364	289,493		155	289,513		32	289,532	D25—	74	289,552		33	289,572
	449	289,475		381	289,494		161	289,514		62	289,533	D26—	3	289,553			289,573
	487	289,476			289,495		163	289,515		92	289,534		28	289,554		99	289,574
		289,477		499	289,496		196	289,516		129	289,537		110	289,555	D32—	14	289,575
	495	289,478			289,497	D14—	10	289,517		133	289,535			289,556		18	289,576
	511	289,479	D9—	372	289,498			289,518		150	289,536			289,557	D34—	5	289,577
	559	289,480		429	289,499		11	289,519		195	289,539			289,558		17	289,578
	601	289,481	D10—	9	289,500		53	289,520		198	289,538			289,559		40	289,579

CLASSIFICATION OF PLANTS

P.—	1	5,956		9	5,958			5,960			5,962			5,964			
	7	5,957		68	5,959			5,961			5,963		73	5,965		74	5,966

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PATENTS

01	:	4,660,589	4,660,789	4,661,578	4,660,736	13	:	4,660,310	4,661,185
		4,660,630	4,660,799	4,661,586	4,660,793			4,660,416	4,661,201
		4,660,706	4,660,806	4,661,604	4,660,932			4,660,445	4,661,211
		4,660,866	4,660,835	4,661,611	4,660,977			4,660,740	4,661,214
		4,661,074	4,660,848	4,661,617	4,661,067			4,660,741	4,661,238
04		4,660,390	4,660,857	4,661,650	4,661,070			4,660,876	4,661,239
		4,660,537	4,660,860	4,661,687	4,661,178			4,661,153	4,661,254
		4,660,710	4,660,872	4,661,691	4,661,278			4,661,309	4,661,256
		4,661,110	4,660,890	4,661,696	4,661,298			4,661,364	4,661,261
		4,661,306	4,660,893	4,661,699	4,661,323			4,661,380	4,661,265
		4,661,573	4,660,902	4,661,705	4,661,363			4,661,412	4,661,331
		4,661,656	4,660,907	4,661,719	4,661,382			4,661,688	4,661,422
		4,661,758	4,660,908	4,661,720	4,661,455	15	:	4,660,427	4,661,503
		4,661,878	4,660,909	4,661,738	4,661,515	16	:	4,661,747	4,661,517
06		4,660,224	4,660,938	4,661,764	4,661,580	17	:	Re.32,408	4,661,518
		4,660,225	4,660,978	4,661,767	4,661,627			4,660,263	4,661,550
		4,660,227	4,661,005	4,661,770	4,661,701			4,660,279	4,661,592
		4,660,232	4,661,013	4,661,782	4,661,706			4,660,297	4,661,651
		4,660,245	4,661,023	4,661,809	4,661,753			4,660,318	4,661,685
		4,660,287	4,661,028	4,661,840	4,661,759			4,660,360	4,661,762
		4,660,323	4,661,031	4,661,856	4,661,813			4,660,385	4,661,766
		4,660,329	4,661,033	4,661,870	4,661,923			4,660,425	4,661,790
		4,660,330	4,661,052	4,661,873	4,661,966			4,660,428	4,661,828
		4,660,355	4,661,056	4,661,886	4,660,295	10	:	4,660,437	4,661,947
		4,660,408	4,661,073	4,661,893	4,661,146			4,660,479	4,662,001
		4,660,421	4,661,080	4,661,895	4,661,147			4,660,513	3,846,710
		4,660,422	4,661,086	4,661,902	4,661,408			4,660,514	4,660,453
		4,660,431	4,661,091	4,661,921	4,661,575			4,660,516	4,660,460
		4,660,435	4,661,094	4,661,934	4,660,341	11	:	4,660,549	4,660,691
		4,660,450	4,661,105	4,661,936	4,660,948			4,660,573	4,660,702
		4,660,478	4,661,111	4,661,948	4,661,118			4,660,585	4,660,746
		4,660,495	4,661,144	4,661,953	4,661,914			4,660,598	4,660,758
		4,660,499	4,661,160	4,661,958	4,660,272	12	:	4,660,599	4,660,778
		4,660,507	4,661,173	4,661,980	4,660,291			4,660,716	4,660,779
		4,660,525	4,661,176	4,661,981	4,660,313			4,660,721	4,660,889
		4,660,528	4,661,177	4,661,984	4,660,545			4,660,724	4,660,951
		4,660,539	4,661,189	4,661,987	4,660,550			4,660,754	4,661,045
		4,660,541	4,661,204	4,124,899	4,660,571			4,660,759	4,661,246
		4,660,544	4,661,228	08	4,660,238	4,660,676			4,660,791	4,661,376
		4,660,546	4,661,253		4,660,312	4,660,877			4,660,803	4,661,394
		4,660,554	4,661,268		4,660,413	4,660,989			4,660,817	4,661,453
		4,660,561	4,661,276		4,660,471	4,661,012			4,660,829	4,661,505
		4,660,569	4,661,293		4,660,653	4,661,043			4,660,842	4,661,508
		4,660,590	4,661,305		4,660,867	4,661,057			4,660,870	4,661,567
		4,660,592	4,661,315		4,660,912	4,661,077			4,660,895	4,661,582
		4,660,603	4,661,347		4,661,538	4,661,398			4,660,904	4,661,593
		4,660,606	4,661,370		4,661,974	4,661,404			4,660,917	4,661,638
		4,660,632	4,661,390	09	: 4,660,284	4,661,502			4,661,042	4,661,768
		4,660,662	4,661,416		4,660,293	4,661,774			4,661,046	4,661,851
		4,660,732	4,661,442		4,660,497	4,661,793			4,661,120	19 : 4,660,255
		4,660,745	4,661,459		4,660,417	4,661,795			4,661,148	4,660,359
		4,660,748	4,661,472		4,660,547	4,661,901			4,661,161	4,660,462
		4,660,785	4,661,494			4,661,992			4,661,182	4,660,816

		4,660,845	4,660,704	4,660,992	4,661,624	4,661,020	4,660,388
		4,661,036	4,660,739	4,661,041	4,661,658	4,661,130	4,660,414
20	:	4,660,498	4,660,750	4,661,066	4,661,665	4,661,299	4,660,444
		4,660,651	4,660,752	4,661,071	4,661,704	4,661,318	4,660,502
		4,661,107	4,660,755	4,661,172	4,661,715	4,661,321	4,660,588
21	:	4,660,231	4,660,770	4,661,199	4,661,734	4,661,466	4,660,634
		4,660,353	4,660,792	4,661,207	4,661,801	4,661,552	4,660,636
		4,660,552	4,660,832	4,661,226	4,661,823	4,661,935	4,660,637
		4,660,558	4,660,842	4,661,241	4,661,832	4,661,969	4,660,638
		4,660,612	4,660,905	4,661,248	4,661,838	41 : 4,660,240	4,660,641
		4,661,004	4,660,913	4,661,271	4,661,859	4,660,314	4,660,643
		4,661,882	4,661,030	4,661,273	4,661,884	4,661,018	4,660,645
22	:	4,660,237	4,661,072	4,661,274	4,661,885	4,661,113	4,660,646
		4,660,596	4,661,180	4,661,277	4,661,937	4,661,748	4,660,647
		4,660,600	4,661,193	4,661,287	4,661,996	4,661,804	4,660,657
		4,660,650	4,661,251	4,661,304	4,661,997	42 : 4,660,264	4,660,659
		4,660,680	4,661,262	4,661,326	4,053,845	4,660,268	4,660,660
		4,660,843	4,661,279	4,661,332	37 : 4,660,274	4,660,270	4,660,674
		4,661,065	4,661,282	4,661,337	4,660,305	4,660,306	4,660,675
		4,661,263	4,661,303	4,661,375	4,660,562	4,660,344	4,660,677
		4,661,465	4,661,344	4,661,383	4,660,577	4,660,347	4,660,800
		4,661,565	4,661,353	4,661,400	4,660,602	4,660,386	4,660,815
		4,661,589	4,661,362	4,661,431	4,660,883	4,660,509	4,660,837
23	:	4,660,594	4,661,372	4,661,439	4,660,971	4,660,510	4,660,863
		4,660,794	4,661,407	4,661,443	4,661,025	4,660,511	4,660,880
		4,661,727	4,661,496	4,661,467	4,661,116	4,660,586	4,660,910
24	:	4,660,543	4,661,520	4,661,478	4,661,406	4,660,611	4,660,995
		4,660,685	4,661,531	4,661,479	4,661,490	4,660,615	4,661,009
		4,661,017	4,661,536	4,661,506	4,661,769	4,660,616	4,661,016
		4,661,061	4,661,546	4,661,537	4,661,821	4,660,619	4,661,092
		4,661,097	4,661,556	4,661,559	4,661,903	4,660,679	4,661,131
		4,661,103	4,661,633	4,661,615	4,661,913	4,660,781	4,661,159
		4,661,445	4,661,644	4,661,631	38 : 4,660,649	4,660,814	4,661,192
		4,661,469	4,661,661	4,661,637	39 : 4,660,252	4,660,822	4,661,196
		4,661,675	4,661,673	4,661,788	4,660,289	4,660,827	4,661,227
		4,661,789	4,661,778	4,661,829	4,660,319	4,660,856	4,661,258
		4,661,819	27 : 4,660,244	4,661,847	4,660,320	4,660,874	4,661,272
		4,661,916	4,660,384	4,661,861	4,660,325	4,660,911	4,661,319
		4,661,938	4,660,536	4,661,862	4,660,345	4,660,916	4,661,365
25	:	4,660,242	4,660,666	4,661,897	4,660,348	4,660,918	4,661,374
		4,660,377	4,660,719	4,661,922	4,660,376	4,661,058	4,661,411
		4,660,455	4,660,729	4,661,941	4,660,419	4,661,068	4,661,553
		4,660,560	4,660,774	4,661,961	4,660,446	4,661,082	4,661,609
		4,660,563	4,660,873	4,661,971	4,660,193	4,661,096	4,661,634
		4,660,568	4,660,968	4,661,975	4,660,555	4,661,139	4,661,662
		4,660,582	4,660,987	4,661,976	4,660,557	4,661,145	4,661,700
		4,660,610	4,661,108	4,661,986	4,660,584	4,661,169	4,661,724
		4,660,627	4,661,194	4,661,993	4,660,591	4,661,205	4,661,726
		4,660,841	4,661,216	35 : 4,661,221	4,660,663	4,661,247	4,661,751
		4,660,875	4,661,257	36 : 4,660,223	4,660,688	4,661,259	4,661,792
		4,660,906	4,661,358	4,660,230	4,660,720	4,661,284	4,661,806
		4,660,919	4,661,359	4,660,259	4,660,757	4,661,310	4,661,808
		4,660,922	4,661,389	4,660,265	4,660,772	4,661,328	4,661,810
		4,660,928	4,661,414	4,660,294	4,660,802	4,661,378	4,661,887
		4,660,994	4,661,450	4,660,316	4,660,807	4,661,385	4,661,915
		4,661,078	4,661,532	4,660,333	4,660,894	4,661,386	4,661,926
		4,661,190	4,661,606	4,660,339	4,660,925	4,661,397	4,661,930
		4,661,198	4,661,702	4,660,342	4,660,937	4,661,463	4,661,931
		4,661,200	4,661,729	4,660,383	4,661,029	4,661,473	4,661,932
		4,661,203	4,661,731	4,660,412	4,661,050	4,661,483	49 : 4,660,420
		4,661,224	4,661,927	4,660,467	4,661,083	4,661,564	4,660,472
		4,661,236	4,661,939	4,660,490	4,661,085	4,661,574	4,660,475
		4,661,294	28 : 4,660,337	4,660,503	4,661,095	4,661,596	4,660,575
		4,661,324	4,661,598	4,660,504	4,661,102	4,661,635	4,660,859
		4,661,354	4,661,892	4,660,556	4,661,141	4,661,663	4,661,019
		4,661,392	4,661,907	4,660,607	4,661,149	4,661,664	4,661,022
		4,661,425	29 : 4,660,267	4,660,715	4,661,183	4,661,680	50 : 4,661,516
		4,661,444	4,660,609	4,660,725	4,661,188	4,661,684	4,661,955
		4,661,446	4,660,831	4,660,727	4,661,213	4,661,722	51 : 4,660,307
		4,661,451	4,660,842	4,660,761	4,661,269	4,661,850	4,660,349
		4,661,454	4,661,047	4,660,819	4,661,275	4,661,853	4,660,399
		4,661,471	4,661,087	4,660,821	4,661,285	4,661,854	4,660,469
		4,661,528	4,661,399	4,660,828	4,661,288	4,661,906	4,660,665
		4,661,683	4,661,521	4,660,855	4,661,296	4,661,963	4,660,836
		4,661,709	4,661,614	4,660,878	4,661,300	4,661,990	4,661,079
		4,661,712	4,661,625	4,660,921	4,661,302	4,662,004	4,661,558
		4,661,741	4,661,732	4,660,942	4,661,327	44 : 4,660,315	4,661,694
		4,661,745	4,661,786	4,660,945	4,661,336	4,660,996	4,661,714
		4,661,784	4,661,874	4,660,950	4,661,360	4,661,132	4,661,785
		4,661,807	30 : 4,661,209	4,660,963	4,661,369	45 : 4,660,246	53 : 4,660,352
		4,661,834	31 : 4,660,733	4,660,984	4,661,381	4,660,397	4,660,738
		4,661,849	4,660,775	4,661,044	4,661,504	4,660,411	4,660,766
		4,661,905	4,660,782	4,661,049	4,661,509	4,661,117	4,660,773
		4,661,911	32 : 4,660,833	4,661,069	4,661,533	4,661,233	4,660,834
		4,661,964	33 : 4,660,281	4,661,156	4,661,534	4,661,249	4,660,864
		4,662,000	4,660,334	4,661,187	4,661,539	4,661,876	4,660,888
26	:	4,660,229	4,661,314	4,661,225	4,661,544	46 : 4,661,109	54 : 4,660,644
		4,660,235	4,661,458	4,661,341	4,661,554	47 : 4,660,587	4,660,865
		4,660,239	4,661,707	4,661,345	4,661,562	4,661,164	4,661,643
		4,660,247	34 : 4,660,253	4,661,361	4,661,583	4,661,179	4,661,652
		4,660,275	4,660,276	4,661,366	4,661,600	4,661,322	55 : 4,660,226
		4,660,324	4,660,309	4,661,368	4,661,605	4,661,476	4,660,236
		4,660,403	4,660,332	4,661,403	4,661,623	4,661,566	4,660,304
		4,660,404	4,660,343	4,661,405	4,661,629	4,661,655	4,660,378
		4,660,406	4,660,379	4,661,429	4,661,645	4,661,689	4,660,538
		4,660,423	4,660,468	4,661,433	4,661,668	48 : Re.32,409	4,660,730
		4,660,443	4,660,485	4,661,436	4,661,681	4,660,233	4,660,734
		4,660,449	4,660,506	4,661,438	4,661,739	4,660,248	4,660,763
		4,660,477	4,660,559	4,661,461	4,661,775	4,660,278	4,661,039
		4,660,542	4,660,640	4,661,481	4,661,894	4,660,282	4,661,264
		4,660,570	4,660,737	4,661,493	4,175,774	4,660,292	4,661,388
		4,660,597	4,660,744	4,661,525	4,438,584	4,660,301	4,661,671
		4,660,625	4,660,858	4,661,549	4,660,631	4,660,308	4,661,679
		4,660,639	4,660,887	4,661,560	40 : 4,660,642	4,660,354	4,661,900
		4,660,671	4,660,936	4,661,561	4,660,656	4,660,364	56 : 4,660,426
		4,660,694	4,660,979	4,661,577			

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DESIGN PATENTS

04	289,530	12	289,467	24	289,474		289,560		289,495	48	289,532
06	289,462		289,484	26	289,463		289,561		289,534		289,539
	289,466		289,501		289,515		289,562		289,538		289,541
	289,486		289,531		289,527		289,563	39	289,465		289,567
	289,494	13	289,523	29	289,528		289,565		289,488	49	289,577
	289,505		289,572		289,574	36	289,476		289,491	51	289,489
	289,521	17	289,499	34	289,460		289,485		289,502	53	289,504
	289,525		289,550		289,526		289,498		289,575	54	289,475
	289,549		289,568		289,555		289,529	42	289,479	55	289,496
	289,573		289,569		289,556		289,535		289,513		289,497
08	289,481	18	289,546		289,557		289,548		289,533		289,540
	289,482	19	289,570		289,558	37	289,464		289,553		289,543
	289,516	20	289,578		289,559		289,477	45	289,514		289,544

PLANT PATENTS

25	5,957					
39	5,961	5,962	41	5,959	5,960	5,963	5,964

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